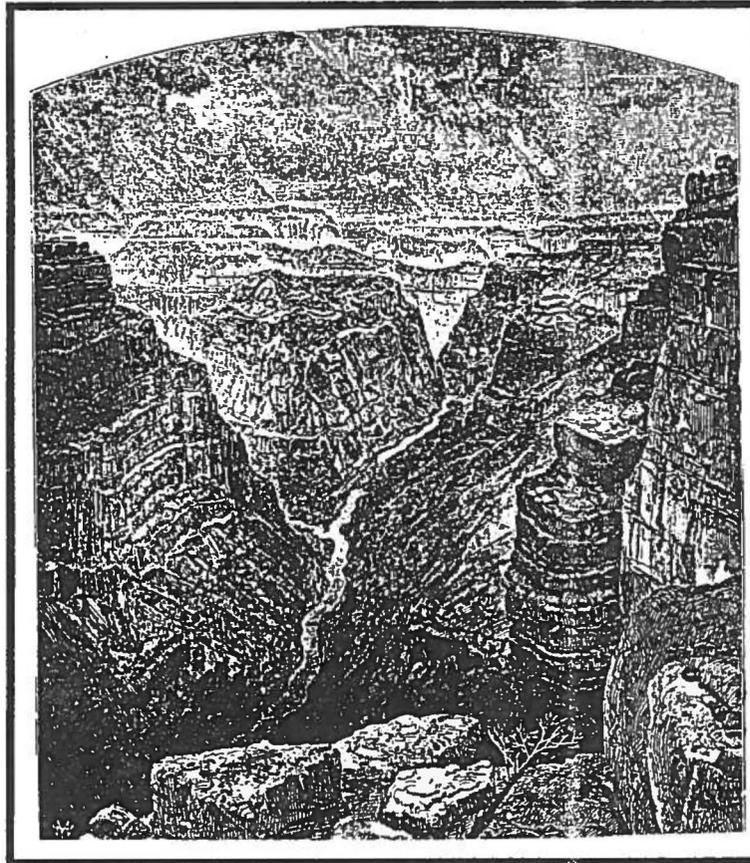


DAY USE HIKING IN GRAND CANYON NATIONAL PARK



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Introduction

Day Use Hiking

Day use hiking in parks, wilderness, and related areas is an emerging issue that warrants research and management attention. Although monitoring of day use is often sketchy and difficult to interpret, it is apparent that day use accounts for the majority of visitation in many, perhaps most, park and related areas. For example, the National Park Service reported a total of nearly 279 million visits in 1995. However, only 14 million visits were reported as overnight stays (National Park Service 1996).

Even in the backcountry and wilderness portions of parks and forest lands, which are commonly associated with overnight use, day use hiking accounts for a large percentage of total use, even a majority of use, in many areas. This is true across all four of the major federal land management agencies. Day visits, for example, are the most common length of stay in many small to medium size U.S. Forest Service wilderness areas (Roggenbuck and Lucas 1987). Even in some large U.S. Forest Service wilderness areas, such as the Spanish Peaks and Selway-Bitterroot Wilderness Areas, day use accounts for about half of all visitors (Lucas 1980). A recent study of backcountry areas in the national park system estimates that day use comprises 64 percent of total use (Marion et al. 1993; Manning et al. 1996). Earlier research estimated that day use represents 44 percent, and 83 percent of all use on Bureau of Land Management and U.S. Fish and Wildlife Service wilderness areas, respectively (Washburne and Cole 1983).

Recent research suggests that day use hiking may be especially problematic for several reasons (Roggenbuck et al. 1994). First, little is known about day use hiking, including characteristics of users and use patterns. Most research, especially that oriented toward backcountry and wilderness areas, has focused on overnight users, often relying on overnight camping permits as a sampling frame. Even when such studies have included day visitors, little effort has been devoted to distinguishing between day and

overnight visitors. Second, day users may cause a disproportionate share of environmental and social impacts. Managers of National Park Service backcountry areas attribute the majority of responsibility for most types of backcountry management problems to day users (Marion et al. 1993; Manning et al. 1996). Finally, planning and management of backcountry and wilderness areas has traditionally been focused on overnight use and has largely neglected day use. For example, permits are required for overnight use in nearly all National Park Service backcountry areas, but are required for day use hiking in only 8 percent of such areas (Marion et al. 1993).

Study Objectives

The primary purpose of this study was to learn more about day use hiking and hikers at Grand Canyon National Park. Because little is known about day use hiking and hikers, the study was designed to be as comprehensive as possible, addressing several major aspects of the subject. Principle areas of study included the following:

1. *Descriptive characteristics of day use and users.* Little is known about many of the descriptive elements of day use hiking and hikers. Baseline information on selected characteristics of day use hikers and their use patterns would help managers and researchers better understand and serve this important group. Variables included in this component of the study include size and type of group, socio-demographic characteristics of users, and length and frequency of hikes.
2. *Hiker preparedness.* Hiking in Grand Canyon can be rigorous and is subject to extreme environmental conditions. Search and rescue activity associated with day hiking in the park has increased substantially in recent years. Issues included in this component of the study include sources of information used by day hikers, the effectiveness of this information, and hiker

knowledge of appropriate hiking guidelines and behavior. Special emphasis was placed on evaluating the effectiveness of recent hiker information/education programs conducted by the park.

3. *The day hiking experience.* Outdoor recreation research indicates that visitor experiences can be affected by a variety of environmental, social, and managerial variables (Manning 1999). This component of the study was designed to explore the quality of the day hiking experience at Grand Canyon and the influence of selected variables on the quality of the visitor experience. Issues included in this component included the satisfaction of day use hikers, and potential problems associated with day use hiking. Special emphasis was placed on exploring the motives of day use hikers (Brown and Haas 1980; Driver 1990; Driver 1996).
4. *Crowding on trails.* As use of parks and wilderness areas has increased, concern has arisen over crowding and carrying capacity (Stankey and Manning 1986; Manning 1985; Shelby and Heberlein 1986). How many visitors can be accommodated in parks and wilderness before the quality of the experience diminishes to an unacceptable degree? Contemporary approaches to managing crowding and carrying capacity focus on indicators and standards of quality (Stankey et al. 1985; Graefe et al. 1990; National Park Service 1997; Manning et al 1998). Indicators of quality are variables that are important to visitors in determining the quality of their recreation experience. Standards of quality define the minimum acceptable condition of indicator variables. This component of the study was designed to measure standards of quality for crowding among day hikers.
5. *Attitudes toward management.* A considerable variety of management practices are theoretically available to design and maintain day use hiking opportunities. A recent study by Marion et al. (1993) identified over one hundred management

practices that might be applied in the context of backcountry. The outdoor recreation literature identifies at least two conceptual approaches to classifying outdoor recreation management practices, including strategic purpose (Manning 1979) and directness (Lime 1977; Peterson and Lime 1979). However, little is known about attitudes of day use hikers toward these management practices. This component of the study was designed to measure attitudes of day use hikers toward a spectrum of recreation management practices.

Study Report

This report describes study methods and findings. Chapter 2 outlines the research methods used to accomplish the study objectives described above. Chapters 3 through 7 present study findings related to each of the five study objectives. Chapter 8 outlines study conclusions and recommendations.

II. Study Methods

Introduction

Two principal methods were used to design and conduct this study. First, a series of workshops involving Principal Investigators and park staff were conducted. Second, a survey of a representative sample of day use hikers at Grand Canyon National Park was administered.

Study Workshops

A series of four workshops were conducted to help design and conduct the study. All workshops included Principal Investigators and park staff, including staff from the Grand Canyon Science Center. The first workshop was conducted at the park in November, 1996. A series of issues associated with day use hiking was identified and prioritized for inclusion in the study. The second workshop was conducted in March, 1997 in association with the George Wright Society Conference. The purpose of this workshop was to design the study questionnaires and sampling plans. The third workshop was held in May, 1998 in association with the Seventh International Symposium on Society and Resource Management. The purpose of this workshop was to organize data analysis and report preparation. The fourth workshop was held in July, 1999 at the park. The purpose of this workshop was to review the draft study report and to discuss major study conclusions and recommendations.

Survey of Day Use Hikers

At the first workshop noted above, it was decided that the most efficient and effective means of accomplishing study objectives was to conduct a survey of a representative sample of day use hikers at the park. Two questionnaires were developed for this purpose. The first questionnaire was designed to be administered as an on-site interview. Issues addressed in this questionnaire included those that were most important to study objectives and/or questions that needed the assistance of a trained interviewer. The second questionnaire was designed to be administered through a mail back procedure. Respondents who completed the first questionnaire were given the second questionnaire to complete and return through the mail. Both questionnaires are shown in Appendix A.

A sampling plan was designed to obtain a representative sample of day hikers in each of the four hiking zones within the park—rim, corridor, threshold and primitive. An interviewer was stationed at selected trails within the rim, corridor and threshold zones during the summer and fall of 1997. The sampling schedule and the number of interviews completed is shown in Table 1-1. All respondents were given a mailback questionnaire to complete. Respondents were sent a postcard reminder and a second questionnaire if the original questionnaire had not been returned within three weeks. Response rates for the mailback questionnaire were 48% for rim hikers, 48% for corridor hikers, and 47% for threshold hikers.

Because there is little day hiking on primitive trails, self-registration stations were placed at two primitive trailheads, and day hikers were asked to record their name and mailing address. Persons who registered were mailed a mailback questionnaire followed by a postcard reminder. Non-respondents were mailed a second questionnaire. A total of 38 completed questionnaires were received from day hikers using trails in the primitive zone.

Questions addressing trail crowding used a series of photographs to represent a range of use levels. This visual approach to measuring standards of quality has been used in similar studies at other national parks (Manning et al. 1995a; Manning et al. 1995b; Manning et al. 1996a; Manning et al. 1996b). Six photographs were prepared for both rim and corridor trails, and these photographs included a range of 0 to 18 and 0 to 16 hikers, respectively. Five photographs were prepared for threshold trails, and these photographs included a range of 0 to 12 hikers. All study photographs are shown in Appendix B.

| Date | Type of Trail | | | Total |
|-----------|---------------|----------|-----|-------|
| | Threshold | Corridor | Rim | |
| 11-JUN-97 | 5 | | | 5 |
| 13-JUN-97 | 9 | | | 9 |
| 14-JUN-97 | | | 26 | 26 |
| 15-JUN-97 | | | 2 | 2 |
| 16-JUN-97 | | | 24 | 24 |
| 17-JUN-97 | 9 | | | 9 |
| 18-JUN-97 | | | 22 | 22 |
| 19-JUN-97 | 2 | | | 2 |
| 21-JUN-97 | | 14 | | 14 |
| 22-JUN-97 | | 24 | | 24 |
| 27-JUN-97 | | 20 | 1 | 21 |
| 28-JUN-97 | 5 | | | 5 |
| 29-JUN-97 | | | 15 | 15 |
| 30-JUN-97 | 6 | | | 6 |
| 03-JUL-97 | | 21 | | 21 |
| 04-JUL-97 | 4 | | | 4 |
| 05-JUL-97 | | 17 | | 17 |
| 06-JUL-97 | | 23 | | 23 |
| 07-JUL-97 | 3 | | | 3 |
| 09-JUL-97 | | | 23 | 23 |
| 10-JUL-97 | | | 7 | 7 |

Table 1-1. Sampling Schedule (continued)

| Date | Type of Trail | | | Total |
|-----------|---------------|----------|-----|-------|
| | Threshold | Corridor | Rim | |
| 11-JUL-97 | 6 | | | 6 |
| 12-JUL-97 | | 13 | | 13 |
| 17-JUL-97 | 1 | 2 | | 3 |
| 18-JUL-97 | | | 18 | 18 |
| 19-JUL-97 | | 18 | | 18 |
| 20-JUL-97 | 6 | | 5 | 11 |
| 23-JUL-97 | | 20 | | 20 |
| 24-JUL-97 | | | 21 | 21 |
| 25-JUL-97 | | 20 | | 20 |
| 26-JUL-97 | | | 20 | 20 |
| 27-JUL-97 | | 19 | | 19 |
| 28-JUL-97 | | 18 | | 18 |
| 30-JUL-97 | 1 | | 10 | 11 |
| 31-JUL-97 | | | 19 | 19 |
| 01-AUG-97 | | 20 | | 20 |
| 02-AUG-97 | | 11 | 14 | 25 |
| 03-AUG-97 | | 10 | | 10 |
| 04-AUG-97 | | 18 | 1 | 19 |
| 05-AUG-97 | | | 28 | 28 |
| 06-AUG-97 | | | 31 | 31 |
| 07-AUG-97 | | 31 | | 31 |
| 08-AUG-97 | | | 28 | 28 |
| 10-AUG-97 | | | 3 | 3 |
| 10-AUG-97 | 2 | 2 | | 4 |
| 15-OCT-97 | 7 | | | 7 |
| 16-OCT-97 | 7 | | | 7 |
| 17-OCT-97 | 6 | 1 | | 7 |
| 20-OCT-97 | | 15 | | 15 |
| 21-OCT-97 | 3 | | | 3 |
| 22-OCT-97 | 3 | | | 3 |
| 23-OCT-97 | | | 16 | 16 |

Table 1-1. Sampling Schedule (continued)

| Date | Type of Trail | | | Total |
|--------------|---------------|------------|------------|------------|
| | Threshold | Corridor | Rim | |
| 25-OCT-97 | 1 | | | 1 |
| 28-OCT-97 | 4 | | | 4 |
| 29-OCT-97 | 2 | | | 2 |
| 30-OCT-97 | | 13 | | 13 |
| 31-OCT-97 | 4 | 1 | | 5 |
| 03-NOV-97 | 1 | | | 1 |
| 04-NOV-97 | | 15 | | 15 |
| 05-NOV-97 | 1 | | | 1 |
| 06-NOV-97 | | | 14 | 14 |
| 18-NOV-97 | 1 | | | 1 |
| 21-NOV-97 | 2 | | | 2 |
| 25-NOV-97 | | 13 | | 13 |
| 26-NOV-97 | | | 13 | 13 |
| 28-NOV-97 | 7 | | | 7 |
| 29-NOV-97 | 7 | | | 7 |
| 30-NOV-97 | 3 | | | 3 |
| Total | 118 | 379 | 361 | 858 |

III. Study Findings: Day Hikers and Hiking

Respondents were asked to report their group size, including the number of adults, youths, and children in their group (Table 3-1). The most common day hiking group at Grand Canyon, on all trail types in both summer and fall, was a group of two adult members (over 16 years). In fall, solo hikers were the second most common hiking “group” on all trail types, while in summer, groups of three were the second most common type of group. Groups larger than five were rare except on rim and corridor trails in the summer, where groups larger than five made up 9% and 14% of day hiking groups respectively. On corridor trails in summer, 5% of day hiking groups were larger than 10. Two groups interviewed on a summer corridor trail exceeded 100 people in size, with one group of 270 contacted. Mean group size varied between two and three people, except on summer corridor trails, where mean group size was 5.7 people.

Groups with children (< 5 years old) were very rare, but most common on rim trails where 4-5% of hiking groups had children. Groups with youths (5-16 years old) were more common, but still the exception. In fall, groups with youths accounted for 11-14% of groups. In summer, 18% of groups on threshold trails included youths, while 34-35% of groups on corridor and rim trails included youths.

| Table3-1. Size of hiking group (onsite q1) | | | | | | |
|---|-----------------------------|---------------------------|----------------------------|--------------------------|-----------------------|---------------------|
| | User Type | | | | | |
| | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) |
| Mean Number of Adults | 2.23 | 2.74 | 4.37 | 1.55 | 2.37 | 2.02 |
| Differences | none | none | e | none | c | none |
| Mean Number of Youths | 0.54 | 0.16 | 1.32 | 0.18 | 0.68 | 0.19 |
| Differences | none | none | none | none | none | none |
| Mean Number of Children | 0.02 | 0.00 | 0.02 | 0.02 | 0.05 | 0.05 |
| Differences | none | none | none | none | none | none |

Respondents were asked about the type of group they visited the Grand Canyon with on the day they were contacted for the survey (Table 3-2). Family groups were the most common type of day hiking group at Grand Canyon, with groups of friends the second most common type of group. Solo hikers were relatively common, comprising over 10% of all groups. Mixed groups of family members and friends were less common, as were organized groups and clubs. Not surprisingly, family groups were much more common in summer than in fall. Solo hikers were much more common in fall than in summer. Groups of friends were most common on threshold trails, and organized groups were most common on corridor trails in the summer.

| | User Type (Percent) | | | | | | |
|-------------------------|---------------------|----------------|-----------------|---------------|------------|----------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Friends | 26.32 | 31.15 | 21.07 | 25.00 | 14.78 | 25.58 | |
| Family only | 47.37 | 34.43 | 54.72 | 40.00 | 68.24 | 55.81 | |
| Family and Friends | 8.77 | 6.56 | 8.49 | 1.67 | 4.40 | 0.00 | |
| Organized Group or Club | 1.75 | 1.64 | 5.97 | 0.00 | 1.57 | 4.65 | |
| Alone | 15.79 | 26.23 | 9.43 | 33.33 | 11.01 | 13.95 | |
| Other | 0.00 | 0.00 | 0.31 | 0.00 | 0.00 | 0.00 | Chi-squared=82.46;p=.000 |

Respondents were asked to report the round-trip distance of their hike on the day they were contacted for this study (Table3-3). As noted in Chapter 2, all respondents had to have hiked at least one mile to be included in the sample. The most common round-trip distance hiked was 2-5 miles, except on fall threshold and primitive trails, where the most common response was 5-10 miles.

| | User Type (Percent) | | | | | | | |
|--------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| 1-2 Miles | 30.00 | 21.43 | 27.16 | 15.15 | 31.93 | 10.53 | 7.89 | |
| 2-5 miles | 53.33 | 32.14 | 45.68 | 48.48 | 51.20 | 68.42 | 18.42 | |
| 5-10 Miles | 13.33 | 35.71 | 19.14 | 15.15 | 16.27 | 21.05 | 42.11 | |
| More than 10 miles | 3.33 | 10.71 | 8.02 | 21.21 | 0.60 | 0.00 | 31.58 | Chi-squared=85.38;p=.000 |

Respondents were also asked how long their hike took (Table3-4). The most common response was 2-4 hours, except on fall threshold and primitive trails, where the most common response was 4-8 hours. Fall hikes tended to be longer, particularly on the more rugged threshold and primitive trails. In summer, more corridor hikers took long hikes than threshold or rim hikers. In fall, more threshold and primitive hikers took long hikes and more rim hikers took short hikes. It is notable, however, that in both summer and fall, substantial proportions of hikers took both short and long hikes on each of the trail types. One issue of concern might be the large number of hikers taking long corridor hikes. A much larger proportion of hikers on primitive trails were on long hikes, but these hikers are generally more experienced.

| | User Type (Percent) | | | | | | | |
|-------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|---------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| <1 hour | 10.00 | 0.00 | 1.85 | 3.03 | 7.23 | 5.26 | 5.26 | |
| 1-2 hours | 20.00 | 21.43 | 25.31 | 15.15 | 28.31 | 31.58 | 5.26 | |
| 2-4 Hours | 60.00 | 28.57 | 46.91 | 45.45 | 47.59 | 52.63 | 15.79 | |
| 4-8 hours | 10.00 | 50.00 | 22.84 | 36.36 | 15.66 | 10.53 | 50.00 | |
| More than 8 hours | 0.00 | 0.00 | 3.09 | 0.00 | 1.20 | 0.00 | 23.68 | Chi-squared=111.00;p=.000 |

Respondents were asked about the typical length of hiking trips they have taken throughout their life (Table3-5). Most Grand Canyon day hikers think of themselves as hikers. Only about 10-15% stated that they don't do much hiking. Very few of the hikers that ventured down the more rugged threshold and primitive trails were non-hikers. With the exception of fall hikers on threshold and primitive trails, however, most of these hikers were dedicated day hikers. That is they very seldom or never went on overnight hikes.

Table3-5. Typical length of hikes (mailback q3)

| | User Type (Percent) | | | | | | | |
|--|---------------------|----------------|-----------------|---------------|------------|----------|-----------|----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Almost always hike for a day or less | 60.00 | 32.14 | 72.22 | 78.79 | 71.08 | 57.89 | 24.32 | |
| Usually hike for a day or less; but often camp overnight | 20.00 | 35.71 | 7.41 | 6.06 | 8.43 | 21.05 | 37.84 | |
| Usually camp overnight; but often hike for a day or less | 10.00 | 10.71 | 4.32 | 0.00 | 1.81 | 5.26 | 27.03 | |
| Almost always camp at least one night | 3.33 | 10.71 | 1.23 | 0.00 | 3.01 | 5.26 | 10.81 | |
| Don't do much hiking | 6.67 | 10.71 | 14.81 | 15.15 | 15.66 | 10.53 | 0.00 | Chi-squared=116.12 ;p=.000 |

Respondents were asked about the typical length of day hikes they have taken throughout their life (Table3-6). The most common response was between 2 and 4 hours. However, hikes of less than 2 hours were unusually common among rim hikers and hikes lasting longer than 4 hours were most common for fall hikers on threshold and primitive trails.

| | User Type (Percent) | | | | | | | |
|---|----------------------------|-----------------------|------------------------|----------------------|-------------------|-----------------|------------------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Usually last for less than two hours | 6.90 | 0.00 | 12.50 | 12.12 | 19.28 | 26.32 | 0.00 | |
| Usually last between 2-4 hours | 51.72 | 39.29 | 51.88 | 45.45 | 41.57 | 47.37 | 15.79 | |
| Usually last more than 4 hours | 31.03 | 46.43 | 18.13 | 24.24 | 22.29 | 15.79 | 68.42 | |
| I don't have a typical length of day hike | 10.34 | 3.57 | 10.00 | 15.15 | 10.84 | 5.26 | 15.79 | |
| Don't do much day hiking | 0.00 | 10.71 | 7.50 | 3.03 | 6.02 | 5.26 | 0.00 | Chi-squared=72.45;p=.000 |

Respondents were asked a series of questions about their prior hiking experience in the Grand Canyon, and in other parks or wilderness areas. Among the questions, respondents were asked how many day hikes they have taken in the past twelve months at any park or wilderness area (Table3-7). Grand Canyon day hikers reported taking substantial numbers of day hikes in parks or wilderness within the past 12 months. The mean number of reported day hikes in the past year varied substantially between trail type and season, from 38 hikes in the past year for fall primitive trail hikers to 8 hikes in the past year for summer corridor trail hikers. The only statistically significant difference was between the primitive trail hikers (who took many recent day hikes) and all other hikers. However, threshold trail hikers had also taken more recent day hikes than hikers on rim or corridor trails.

Respondents were also asked to report how many visits they had made to Grand Canyon prior to this trip (Table3-7). Although many Grand Canyon day hikers have substantial prior experience at Grand Canyon, about one-half of the hikers sampled were making their first visit to Grand Canyon National Park. Threshold trails had substantially fewer first time visitors (37%) than the other trail types. The mean number of prior visits to Grand Canyon was significantly higher for threshold and primitive trail hikers than for other hikers. Fall hikers also appeared to generally have had more experience at Grand Canyon than summer hikers, with the exception of corridor trail hikers.

The last two questions in the series asked respondents about the number of day hikes they had taken in Grand Canyon (Table3-7). The first question asked respondents how many day hikes they had taken in the past twelve months. The second question asked respondents how many day hikes they had taken at Grand Canyon altogether. Hikers on primitive trails had taken significantly more day hikes at Grand Canyon than other trail users, both in the past 12 months and altogether. Although differences were not statistically significant, corridor hikers had the least hiking experience at Grand Canyon. The proportion of hikers who were sampled on their first Grand Canyon day hike ranged from about 40-50% on rim and corridor trails to about 20% on threshold trails and 5% on primitive trails.

| | | User Type | | | | | | |
|--|-------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|---------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| Number of Grand Canyon day hikes in the last 12 months | Mean | 2.48 | 2.70 | 1.65 | 1.63 | 2.03 | 4.47 | 7.53 |
| | Differences | g | g | g | g | g | none | a,b,c,d,e |
| Number of Grand Canyon day hikes altogether | Mean | 4.60 | 8.37 | 2.39 | 1.90 | 3.54 | 9.58 | 28.35 |
| | Differences | g | g | g | g | g | g | a,b,c,d,e,f |
| Number of park or wilderness day hikes in the last 12 months | Mean | 18.73 | 13.82 | 8.00 | 9.41 | 10.03 | 26.16 | 38.16 |
| | Differences | g | g | f,g | g | g | c | a,b,c,d,e |
| Number of prior visits to the Grand Canyon | Mean | 3.73 | 10.11 | 1.98 | 0.64 | 1.22 | 4.16 | 27.11 |
| | Differences | g | c,e,g | b,g | g | b,g | g | a,b,c,d,e,f |

Grand Canyon day hikers were asked to indicate whether they live in the United States (Table3-8). Although the majority of Grand Canyon day hikers were U.S. residents, hikers from other countries comprised a sizeable minority. Typically between one quarter and one third of day hikers were residents of countries other than the U.S.

| | User Type (Percent) | | | | | | |
|------------------------------------|---------------------|----------------|-----------------|---------------|------------|----------|-------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Do not reside in the United States | 28.07 | 29.51 | 24.53 | 38.33 | 24.92 | 35.71 | |
| Reside in the United States | 71.93 | 70.49 | 75.47 | 61.67 | 75.08 | 64.29 | Chi-squared=7.45;p=.189 |

A follow-up question asked United States residents to report their state of residence (Table3-9). Residents of 46 states were included in the sample. Arizona and California were the states which contributed the most hikers. The national and international draw of Grand Canyon hiking trails is indicated by the finding that less than one-quarter of all day hikers were from Arizona and the five other states that adjoin Arizona.

| State of Residence | User Type (Percent) | | | | | |
|--------------------|---------------------|----------------|-----------------|---------------|------------|----------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Alabama | 2.44 | 0.00 | 0.00 | 0.00 | 0.84 | 0.00 |
| Arizona | 14.63 | 34.88 | 14.05 | 7.89 | 7.98 | 18.52 |
| Arkansas | 0.00 | 0.00 | 0.41 | 0.00 | 0.42 | 0.00 |
| California | 19.51 | 6.98 | 13.64 | 10.53 | 15.97 | 22.22 |
| Colorado | 0.00 | 4.65 | 0.41 | 5.26 | 1.68 | 0.00 |
| Connecticut | 4.88 | 0.00 | 0.83 | 0.00 | 0.84 | 3.70 |
| Delaware | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 | 0.00 |
| Florida | 0.00 | 0.00 | 5.79 | 2.63 | 3.36 | 0.00 |
| Georgia | 0.00 | 2.33 | 2.48 | 0.00 | 2.94 | 3.70 |
| Hawaii | 0.00 | 0.00 | 0.41 | 2.63 | 0.42 | 0.00 |
| Idaho | 0.00 | 0.00 | 0.00 | 0.00 | 0.42 | 0.00 |
| Illinois | 7.32 | 4.65 | 5.79 | 2.63 | 5.04 | 3.70 |
| Indiana | 2.44 | 4.65 | 2.07 | 5.26 | 2.10 | 0.00 |
| Iowa | 0.00 | 0.00 | 1.24 | 0.00 | 2.10 | 0.00 |
| Kansas | 2.44 | 0.00 | 0.83 | 0.00 | 1.26 | 0.00 |
| Kentucky | 0.00 | 2.33 | 0.00 | 0.00 | 0.84 | 0.00 |
| Louisiana | 0.00 | 0.00 | 2.07 | 5.26 | 0.84 | 0.00 |
| Maine | 0.00 | 0.00 | 0.41 | 0.00 | 1.26 | 3.70 |
| Maryland | 2.44 | 0.00 | 2.07 | 5.26 | 3.36 | 0.00 |
| Massachusetts | 0.00 | 9.30 | 4.96 | 0.00 | 1.68 | 7.41 |
| Michigan | 2.44 | 0.00 | 2.07 | 0.00 | 1.68 | 3.70 |
| Minnesota | 2.44 | 4.65 | 0.83 | 5.26 | 0.42 | 0.00 |

Table3-9. State of residence for United States residents (onsite q 3b) continued.

| State of Residence | User Type (Percent) | | | | | |
|--------------------|---------------------|----------------|-----------------|---------------|------------|----------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Mississippi | 0.00 | 0.00 | 1.24 | 0.00 | 1.26 | 0.00 |
| Missouri | 2.44 | 0.00 | 0.41 | 0.00 | 1.68 | 0.00 |
| Nebraska | 0.00 | 0.00 | 0.83 | 0.00 | 0.84 | 0.00 |
| Nevada | 2.44 | 0.00 | 0.83 | 0.00 | 0.42 | 0.00 |
| New Hampshire | 0.00 | 0.00 | 1.65 | 2.63 | 1.26 | 0.00 |
| New Jersey | 2.44 | 2.33 | 3.31 | 5.26 | 1.68 | 3.70 |
| New Mexico | 0.00 | 4.65 | 2.07 | 2.63 | 2.10 | 3.70 |
| New York | 4.88 | 9.30 | 4.13 | 7.89 | 6.30 | 7.41 |
| North Carolina | 0.00 | 0.00 | 1.24 | 0.00 | 1.26 | 0.00 |
| North Dakota | 2.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Ohio | 9.76 | 0.00 | 3.72 | 5.26 | 3.78 | 0.00 |
| Oklahoma | 0.00 | 0.00 | 0.41 | 2.63 | 0.84 | 0.00 |
| Oregon | 2.44 | 0.00 | 0.41 | 2.63 | 0.42 | 0.00 |
| Pennsylvania | 2.44 | 0.00 | 4.13 | 0.00 | 5.04 | 0.00 |
| Rhode Island | 0.00 | 0.00 | 0.41 | 0.00 | 0.42 | 0.00 |
| South Carolina | 0.00 | 0.00 | 1.24 | 0.00 | 0.84 | 0.00 |
| South Dakota | 0.00 | 0.00 | 0.00 | 0.00 | 0.42 | 3.70 |
| Tennessee | 2.44 | 0.00 | 0.41 | 0.00 | 0.84 | 0.00 |
| Texas | 0.00 | 2.33 | 5.37 | 7.89 | 7.56 | 3.70 |
| Utah | 0.00 | 4.65 | 0.83 | 2.63 | 0.42 | 0.00 |
| Vermont | 0.00 | 0.00 | 1.65 | 0.00 | 0.84 | 0.00 |
| Virginia | 2.44 | 0.00 | 2.48 | 2.63 | 2.10 | 0.00 |
| Washington | 2.44 | 0.00 | 1.24 | 2.63 | 1.68 | 7.41 |
| Wisconsin | 2.44 | 2.33 | 1.65 | 2.63 | 1.68 | 3.70 |

Chi-squared=224.00;p=.507

A second follow-up question asked international visitors to report their country of residence (Table3-10). Residents of the United Kingdom and Germany were most abundant, followed by residents of Canada, France and the Netherlands. Residents from twenty-nine different countries were included in the sample. Residents of countries other than the U.S. were particularly common hiking on either rim or corridor trails in the fall. However, this tendency was not pronounced enough to be statistically significant.

| | User Type (Percent) | | | | | |
|-----------------------|---------------------|----------------|-----------------|---------------|------------|----------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| United Kingdom | 31.25 | 22.22 | 16.88 | 18.18 | 27.16 | 13.33 |
| Germany | 25.00 | 27.78 | 16.88 | 13.64 | 18.52 | 26.67 |
| Ireland | 0.00 | 0.00 | 0.00 | 0.00 | 2.47 | 0.00 |
| Canada | 12.50 | 5.56 | 9.09 | 27.27 | 3.70 | 6.67 |
| France | 0.00 | 11.11 | 10.39 | 9.09 | 12.35 | 6.67 |
| Switzerland | 0.00 | 0.00 | 5.19 | 0.00 | 3.70 | 6.67 |
| Belgium | 12.50 | 0.00 | 2.60 | 9.09 | 2.47 | 0.00 |
| Denmark | 0.00 | 0.00 | 2.60 | 4.55 | 2.47 | 13.33 |
| Sweden | 0.00 | 0.00 | 0.00 | 4.55 | 1.23 | 0.00 |
| Pakistan | 0.00 | 0.00 | 1.30 | 0.00 | 0.00 | 0.00 |
| Netherlands | 12.50 | 0.00 | 15.59 | 0.00 | 9.87 | 6.67 |
| Spain | 6.25 | 0.00 | 0.00 | 0.00 | 0.00 | 6.67 |
| South Africa | 0.00 | 0.00 | 1.30 | 0.00 | 0.00 | 0.00 |
| Columbia | 0.00 | 0.00 | 1.30 | 0.00 | 0.00 | 0.00 |
| Scotland | 0.00 | 0.00 | 0.00 | 0.00 | 1.23 | 0.00 |
| Australia | 0.00 | 0.00 | 5.19 | 4.55 | 2.47 | 6.67 |
| Austria | 0.00 | 5.56 | 2.60 | 0.00 | 3.70 | 0.00 |
| Italy | 0.00 | 5.56 | 2.60 | 0.00 | 2.47 | 6.67 |
| Israel | 0.00 | 5.56 | 1.30 | 0.00 | 1.23 | 0.00 |
| Sri Lanka | 0.00 | 0.00 | 0.00 | 0.00 | 1.23 | 0.00 |
| Czech Republic | 0.00 | 0.00 | 2.60 | 0.00 | 0.00 | 0.00 |
| Soloman Island/Mexico | 0.00 | 0.00 | 1.30 | 0.00 | 1.23 | 0.00 |

| | User Type (Percent) | | | | | | |
|-----------|---------------------|----------------|-----------------|---------------|------------|----------|---------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Chile | 0.00 | 0.00 | 0.00 | 0.00 | 1.23 | 0.00 | |
| Norway | 0.00 | 0.00 | 0.00 | 0.00 | 1.23 | 0.00 | |
| Poland | 0.00 | 0.00 | 1.30 | 0.00 | 0.00 | 0.00 | |
| Japan | 0.00 | 11.11 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Finland | 0.00 | 0.00 | 0.00 | 4.55 | 0.00 | 0.00 | |
| Korea | 0.00 | 0.00 | 0.00 | 4.55 | 0.00 | 0.00 | |
| Hong Kong | 0.00 | 5.56 | 0.00 | 0.00 | 0.00 | 0.00 | Chi-squared=151.24;p=.344 |

Respondents were asked about the type of community they live in (Table3-11). Most Grand Canyon day hikers reside in urban areas, with less than about 10% residing in rural areas and small towns. Between one quarter and one third of Grand Canyon day hikers live in cities with a population of more than one million, while just 13% of the U.S. population lives in cities of more than one million. There were no significant differences in residence among the different trail strata.

| | User Type (Percent) | | | | | | | |
|---|---------------------|----------------|-----------------|---------------|------------|----------|-----------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| On a farm or ranch | 3.33 | 7.41 | 2.53 | 0.00 | 1.83 | 0.00 | 2.63 | |
| Rural or small town (<1000 population) | 10.00 | 7.41 | 2.53 | 3.57 | 9.15 | 0.00 | 2.63 | |
| Town (1,001 to 10,000 population) | 16.67 | 11.11 | 12.03 | 10.71 | 12.20 | 15.79 | 23.68 | |
| Small city (10,001-75,000 population) | 23.33 | 18.52 | 26.58 | 39.29 | 26.83 | 42.11 | 31.58 | |
| Medium city (75,001-1 million population) | 23.33 | 22.22 | 22.78 | 14.29 | 17.07 | 10.53 | 10.53 | |
| Major city (>1 million population) | 20.00 | 29.63 | 32.91 | 32.14 | 32.32 | 31.58 | 23.68 | |
| Other | 3.33 | 3.70 | 0.63 | 0.00 | 0.61 | 0.00 | 5.26 | Chi-squared=37.02;p=.422 |

Respondents were asked to report the year in which they were born (Table3-12). Visitors of all ages day hike at Grand Canyon, with the 40-49 year old age class most abundant. The mean age of day hikers is slightly higher than the mean age of the entire U.S. population. Not surprisingly, the mean age of rim hikers is significantly higher than the mean age of hikers on other trails.

| Table3-12. Age (mailback q22) | | | | | | | |
|--------------------------------------|-----------------------------|---------------------------|----------------------------|--------------------------|-----------------------|---------------------|----------------------|
| | User Type (Percent) | | | | | | |
| | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| Under 20 | 0.00 | 0.00 | 1.27 | 3.57 | 1.84 | 0.00 | 2.63 |
| 20 to 29 | 23.33 | 14.81 | 23.42 | 50.00 | 11.04 | 15.79 | 10.53 |
| 30 to 39 | 30.00 | 44.44 | 27.22 | 10.71 | 23.31 | 5.26 | 18.42 |
| 40 to 49 | 36.67 | 33.33 | 32.28 | 10.71 | 34.36 | 15.79 | 42.11 |
| 50 to 59 | 10.00 | 7.41 | 12.03 | 21.43 | 23.31 | 36.84 | 23.68 |
| 60 to 69 | 0.00 | 0.00 | 3.80 | 3.57 | 4.91 | 21.05 | 2.63 |
| 70 and over | 0.00 | 0.00 | 0.00 | 0.00 | 1.23 | 5.26 | 0.00 |
| Means | 37.57 | 37.37 | 38.92 | 35.32 | 43.20 | 50.79 | 42.37 |
| Differences | f | f | e,f | e,f | c,d | a,b,c,d | none |

Respondents were asked to report their gender (Table3-13). Male day hikers are more common than females, comprising about 60% of all hikers. Differences between trails and seasons are not statistically significant.

| Table3-13. Gender of respondents (onsite q19) | | | | | | | |
|--|----------------------------|-----------------------|------------------------|----------------------|-------------------|-----------------|-------------------------|
| | User Type (Percent) | | | | | | |
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Male | 59.26 | 67.21 | 66.33 | 55.93 | 60.61 | 59.52 | |
| Female | 40.74 | 32.79 | 33.67 | 44.07 | 39.39 | 40.48 | Chi-squared=4.39;p=.494 |

Respondents were asked about their highest level of education attained (Table3-14). Grand Canyon day hikers are typically highly educated, with about one-half having taken at least some graduate school. There were no significant differences in education between seasons or among trail types.

| | User Type (Percent) | | | | | | | |
|-------------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Elementary School | 0.00 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | |
| Junior High/High School | 0.00 | 0.00 | 7.28 | 7.14 | 6.25 | 0.00 | 10.53 | |
| College | 39.29 | 62.96 | 39.74 | 50.00 | 36.88 | 47.37 | 34.21 | |
| Graduate School | 60.71 | 37.04 | 52.98 | 42.86 | 56.25 | 52.63 | 55.26 | Chi-squared=56.70;p=.907 |
| Mean Number of Years | 17.21 | 16.26 | 16.74 | 16.64 | 17.04 | 16.95 | 16.68 | |
| Differences | none | none | none | none | none | none | none | |

Grand Canyon day hikers were asked about their current employment status (Table3-15). Greater than 75% day hikers were employed outside the home, although there were some sizeable differences among trail types. Retirees were particularly abundant on rim trails and virtually absent from threshold trails. Students were particularly abundant on corridor trails and least abundant on rim trails.

| | User Type (Percent) | | | | | | | |
|----------------------|----------------------------|-----------------------|------------------------|----------------------|-------------------|-----------------|------------------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Employed | 90.00 | 81.48 | 72.73 | 78.57 | 79.75 | 61.11 | 89.47 | |
| Unemployed | 0.00 | 0.00 | 2.60 | 3.57 | 1.90 | 5.56 | 0.00 | |
| Retired | 3.33 | 0.00 | 4.55 | 3.57 | 9.49 | 27.78 | 5.26 | |
| Homemaker | 0.00 | 7.41 | 7.79 | 3.57 | 4.43 | 5.56 | 0.00 | |
| Student | 6.67 | 7.41 | 11.69 | 10.71 | 3.80 | 0.00 | 5.26 | |
| Temporarily laid off | 0.00 | 3.70 | 0.65 | 0.00 | 0.63 | 0.00 | 0.00 | Chi-squared=42.99;p=.059 |

Finally, respondents were asked about their annual household income before taxes (Table3-16). Although Grand Canyon day hikers span a wide range in household income, high incomes are over represented. For about 40% of Grand Canyon day hikers, household income exceeded \$75,000, compared with about 15% of the U.S. population. Threshold trail hikers had lower incomes than hikers on other trail types. This may reflect more use of threshold trails by younger, more outdoor-oriented people from less distant locations.

Table3-16. Income (mailback q24)

| | User Type (Percent) | | | | | | | |
|--------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|--------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Less than\$5,000 | 3.33 | 0.00 | 1.97 | 0.00 | 0.66 | 5.56 | 2.70 | |
| \$5,000-\$9,999 | 0.00 | 3.85 | 2.63 | 0.00 | 1.99 | 0.00 | 0.00 | |
| \$10,000-\$14,999 | 0.00 | 3.85 | 1.97 | 7.41 | 1.32 | 0.00 | 2.70 | |
| \$15,000-\$19,999 | 6.67 | 0.00 | 1.97 | 0.00 | 1.99 | 0.00 | 0.00 | |
| \$20,000-\$24,999 | 3.33 | 3.85 | 3.95 | 18.52 | 1.32 | 0.00 | 16.22 | |
| \$25,000-\$34,999 | 23.33 | 11.54 | 6.58 | 14.81 | 7.95 | 16.67 | 8.11 | |
| \$35,000-\$49,999 | 26.67 | 26.92 | 13.16 | 11.11 | 11.26 | 11.11 | 10.81 | |
| \$50,000-\$74,999 | 20.00 | 23.08 | 23.68 | 18.52 | 31.13 | 16.67 | 10.81 | |
| \$75,000-\$100,000 | 10.00 | 11.54 | 20.39 | 14.81 | 27.15 | 22.22 | 24.32 | |
| Over \$100,000 | 6.67 | 15.38 | 23.68 | 14.81 | 15.23 | 27.78 | 24.32 | Chi-squared=82.79;p=.007 |

IV. Study Findings: Hiker Preparedness and Impact

The onsite interview contained a series of questions related to hiking preparedness and safety. A primary objective of the NPS' 1997 hiking preparedness information campaign was to change visitor behavior to promote safety. Questions were developed to evaluate the effectiveness of the hiking preparedness campaign, and were organized in the following sequence: (1) respondent identified the information used to prepare for a safe hike, (2) reported the location of information source, (3) specified what was learned from the information source, and (4) what behavior was changed due to learned information.

The first question asked respondents to identify the primary sources of information that helped them prepare for a safe day hike; respondents could indicate all sources that they used (Table 4-1). In general, summer compared to fall hikers were more likely to use information sources. Across both summer and fall, the most common information source used was the Park Guide. Over 90% of summer respondents on the corridor, threshold and rim trails reported using the Park Guide; at least 40% of fall respondents on the corridor, threshold and rim trails reported using the Park Guide. The poster on hiking safety was the second most popular source of information. During the summer, 91% of corridor and 82% of threshold respondents reported using the poster to prepare for a safe day hike; during the fall, 49% of corridor and 34% of threshold respondents reported using the poster.

The message about "heat kills" also was popular during the summer months with more than one-third of respondents on the corridor, threshold, and rim trails reporting that they used this message as an information source. Respondents who hiked on the corridor trails in the summer were almost twice as likely to report using a Park Ranger as an information source compared to hikers of other trails and/or season; 33% of summer corridor respondents reported that a Park Ranger was a helpful source of information

compared 18% of fall corridor respondents who reported use of Park Rangers as a helpful source of information; summer threshold respondents were the least likely to use a Park Ranger with 14% reporting use of one.

During the summer of 1997, stop signs were placed on trails at strategic locations warning hikers not to proceed beyond the sign. These stop signs contained explicit information concerning problems with heat exhaustion and other maladies. Hikers of the summer corridor trails were most likely to report the stop signs as an information source with 36% of such respondents reporting use of stop signs on trails; next highest were the summer threshold respondents with 18% reporting use of the signs.

There were three sources of information listed that were not directly administered by the NPS. Use of "guidebook, magazine, or newspaper" was reported by a plurality of day hikers; about 45% of fall threshold and summer rim respondents indicated use of such sources. "Friends or relatives" were reported as a useful source and ranged from 12% of fall corridor to 3% of summer corridor respondents reporting use of friends or relatives. "Employees from store or lodge" was the least likely to be reported as a source of information, with less than 1% of summer respondents on the corridor, threshold, and rim trails reporting use of this source.

| Table 4-1. Information source used (onsite q4a) | | | | | | | | |
|---|-----|---------------------|-------------------|--------------------|------------------|---------------|-------------|-----------------------------|
| | | User Type (Percent) | | | | | | |
| | | Summer Threshold | Fa l Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Park Guide | No | 5.26 | 41.38 | 8.54 | 40.35 | 7.62 | 58.14 | |
| | Yes | 94.74 | 58.62 | 91.46 | 59.65 | 92.38 | 41.86 | Chi-Squared =152.06; p=.000 |
| Trip Planner | No | 82.46 | 93.10 | 91.14 | 100.00 | 92.06 | 97.67 | |
| | Yes | 17.54 | 6.90 | 8.86 | 0.00 | 7.94 | 2.33 | Chi-Squared =14.25; p=.014 |
| Poster on Hiking Safety | No | 17.54 | 65.52 | 8.54 | 50.88 | 32.70 | 95.35 | |
| | Yes | 82.46 | 34.48 | 91.46 | 49.12 | 67.30 | 4.65 | Chi-Squared =211.31; p=.000 |
| Message about "Heat Kills" | No | 59.65 | 81.03 | 61.08 | 77.19 | 64.44 | 97.67 | |
| | Yes | 40.35 | 18.97 | 38.92 | 22.81 | 35.56 | 2.33 | Chi-Squared =33.18; p=.000 |
| "Stop" sign on trails | No | 82.46 | 100.00 | 63.61 | 96.49 | 97.14 | 100.00 | |
| | Yes | 17.54 | 0.00 | 36.39 | 3.51 | 2.86 | 0.00 | Chi-Squared =163.59; p=.000 |
| Guidebook, magazine or newspaper | No | 63.16 | 53.45 | 62.34 | 66.67 | 54.92 | 83.72 | |
| | Yes | 36.84 | 46.55 | 37.66 | 33.33 | 45.08 | 16.28 | Chi-Squared =16.52; p=.006 |
| Park Ranger | No | 85.96 | 81.03 | 66.77 | 82.46 | 83.49 | 81.40 | |
| | Yes | 14.04 | 18.97 | 33.23 | 17.54 | 16.51 | 18.60 | Chi-Squared =30.77; p=.000 |
| Friends or relatives | No | 92.98 | 91.38 | 97.15 | 87.72 | 95.87 | 95.35 | |
| | Yes | 7.02 | 8.62 | 2.85 | 12.28 | 4.13 | 4.65 | Chi-Squared =12.57; p=.028 |
| Employees from store or lodge | No | 100.00 | 100.00 | 99.05 | 89.47 | 99.68 | 97.67 | |
| | Yes | 0.00 | 0.00 | 0.95 | 10.53 | 0.32 | 2.33 | Chi-Squared =46.14; p=.000 |
| Other source 1 | No | 92.98 | 46.55 | 90.13 | 54.39 | 90.48 | 60.47 | |
| | Yes | 7.02 | 53.40 | 9.87 | 45.61 | 9.52 | 39.53 | Chi-Squared =144.10; p=.000 |
| Other source 2 | No | 100.00 | 96.60 | 99.37 | 94.74 | 99.05 | 93.00 | |
| | Yes | 0.00 | 3.45 | 0.63 | 5.26 | 0.95 | 6.98 | Chi-Squared =50.80; p=.000 |
| Other source 3 | No | 100.00 | 100.00 | 99.68 | 98.25 | 100.00 | 97.67 | |
| | Yes | 0.00 | 0.00 | 0.32 | 1.75 | 0.00 | 2.33 | Chi-Squared =23.03; p=.011 |

Along with identifying sources of information, respondents were asked the location of information source for each source reported (Table 4-2). For the Park Guide, the majority of respondents reported receiving this at the entrance station. For example, 70% of summer corridor respondents reported the NPS entrance station as the location for the Park Guide. A distant second place for receiving the Park Guide was the Visitor Center; 17% of summer corridor respondents reported the Visitor Center as the location for the Park Guide.

For the poster on hiking safety, about two-thirds of respondents on corridor and threshold trails reported the trailhead as the location of this poster. Rim trail respondents were split between two locations: the trailhead and visitor center. There were 37% of summer rim respondents who reported the trailhead as the poster's location, and 31% who reported the Visitor Center.

Messages about "heat kills" were reported in a variety of locations, with the three most popular being the Visitor Center, hotel or restaurant, and the trailhead. Other locations where respondents reported seeing this message include miscellaneous places inside and outside the park, at the Backcountry Office, and at the NPS entrance station.

Learning about hiking preparedness from Park Rangers took place in a variety of locations. For summer corridor respondents, 56% reported the location as being on the trail. For fall corridor and threshold respondents, 89% and 55% respectively reported the location as being the Visitor Center. Other places where Park Rangers were reported as being an information source include Backcountry Office, hotel and restaurant, miscellaneous places inside the park, and guided programs.

Table 4-2. Location of Information source (onsite q4b)

| | | User Type (Percent of Responses) | | | | | |
|--------------|----------------------------------|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Park Guide | Entrance Station/NPS Station | 76.20 | 62.90 | 70.40 | 75.70 | 66.00 | 70.00 |
| | Visitor Center | 14.30 | 17.10 | 16.80 | 16.20 | 21.90 | 15.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 1.60 | 2.90 | 6.10 | 2.70 | 4.10 | 0.00 |
| | Outside the park – miscellaneous | 6.30 | 5.70 | 4.00 | 0.00 | 4.10 | 10.00 |
| | Inside the park – miscellaneous | 1.60 | 0.00 | 2.10 | 2.70 | 3.80 | 5.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 0.30 | 0.00 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 2.90 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 2.90 | 0.00 | 2.70 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.30 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 5.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| Trip Planner | Entrance Station/NPS Station | 0.00 | 0.00 | 3.10 | 0.00 | 20.00 | 0.00 |
| | Visitor Center | 10.00 | 0.00 | 28.10 | 0.00 | 36.00 | 0.00 |
| | Backcountry office | 50.00 | 0.00 | 15.60 | 0.00 | 8.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 0.00 | 0.00 | 9.40 | 0.00 | 4.00 | 0.00 |
| | Outside the park – miscellaneous | 40.00 | 100.00 | 34.40 | 0.00 | 32.00 | 100.00 |
| | Inside the park – miscellaneous | 0.00 | 0.00 | 3.10 | 0.00 | 0.00 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 6.30 | 0.00 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Table 4-2. Location of Information source (or site q4b) continued.

| | | User Type (Percent of Responses) | | | | | |
|-----------------------------------|----------------------------------|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| "Stop" signs on trail | Entrance Station/NPS Station | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Visitor Center | 0.00 | 0.00 | 0.00 | 0.00 | 11.10 | 0.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 11.10 | 0.00 | 0.00 | 0.00 | 33.30 | 0.00 |
| | Outside the park – miscellaneous | 0.00 | 0.00 | 2.40 | 0.00 | 0.00 | 0.00 |
| | Inside the park – miscellaneous | 11.10 | 0.00 | 6.50 | 0.00 | 0.00 | 0.00 |
| | Trailhead/trail map/on the trail | 77.80 | 0.00 | 91.10 | 0.00 | 55.60 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Guidebook, magazine, or newspaper | Entrance Station/NPS Station | 0.00 | 0.00 | 15.40 | 0.00 | 0.00 | 0.00 |
| | Visitor Center | 0.00 | 0.00 | 7.70 | 0.00 | 0.00 | 0.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 16.70 | 0.00 | 15.40 | 0.00 | 0.00 | 0.00 |
| | Outside the park - miscellaneous | 50.00 | 40.00 | 46.20 | 0.00 | 100.00 | 0.00 |
| | Inside the park - miscellaneous | 33.30 | 0.00 | 7.70 | 0.00 | 0.00 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 7.70 | 33.33 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 60.00 | 0.00 | 33.33 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 33.33 | 0.00 | 0.00 |

Table 4-2. Location of Information source (onsite q4b) continued.

| | | User Type (Percent of Responses) | | | | | |
|-------------|----------------------------------|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Park ranger | Entrance Station/NPS Station | 0.00 | 0.00 | 0.90 | 0.00 | 3.40 | 0.00 |
| | Visitor Center | 28.60 | 54.50 | 21.80 | 88.90 | 49.20 | 100.00 |
| | Backcountry office | 14.30 | 9.10 | 0.90 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 14.30 | 0.00 | 0.90 | 0.00 | 1.70 | 0.00 |
| | Outside the park - miscellaneous | 0.00 | 0.00 | 12.70 | 0.00 | 11.90 | 0.00 |
| | Inside the park - miscellaneous | 28.60 | 9.10 | 6.40 | 0.00 | 11.90 | 0.00 |
| | Trailhead/trail map/on the trail | 14.30 | 0.00 | 56.40 | 0.00 | 22.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 18.20 | 0.00 | 11.10 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 9.10 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Friends | Entrance Station/NPS Station | 0.00 | 0.00 | 0.00 | 0.00 | 8.33 | 0.00 |
| | Visitor Center | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Outside the park - miscellaneous | 0.00 | 100.00 | 100.00 | 0.00 | 83.33 | 0.00 |
| | Inside the park - miscellaneous | 0.00 | 0.00 | 0.00 | 0.00 | 8.33 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Table 4-2. Location of Information source (onsite q4b) continued. | | | | | | | |
|---|----------------------------------|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | User Type (Percent of Responses) | | | | | |
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Poster on hiking safety | Entrance Station/NPS Station | 0.00 | 5.30 | 0.00 | 5.40 | 1.40 | 0.00 |
| | Visitor Center | 8.10 | 0.00 | 7.80 | 2.70 | 31.00 | 50.00 |
| | Backcountry office | 0.00 | 0.00 | 0.20 | 0.00 | 0.40 | 0.00 |
| | Concessionaire/hotel/restaurant | 4.80 | 5.30 | 4.40 | 8.10 | 6.80 | 50.00 |
| | Outside the park – miscellaneous | 3.20 | 0.00 | 2.60 | 2.70 | 8.50 | 0.00 |
| | Inside the park – miscellaneous | 19.40 | 0.00 | 8.80 | 2.70 | 15.30 | 0.00 |
| | Trailhead/trail map/on the trail | 64.50 | 73.70 | 76.10 | 73.00 | 36.70 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 15.80 | 0.00 | 5.40 | 0.00 | 0.00 |
| Messages about "Heat Kills" | Entrance Station/NPS Station | 3.40 | 0.00 | 1.90 | 0.00 | 1.50 | 0.00 |
| | Visitor Center | 24.10 | 8.30 | 15.20 | 5.60 | 34.30 | 0.00 |
| | Backcountry office | 6.90 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 |
| | Concessionaire/hotel/restaurant | 24.10 | 8.30 | 17.10 | 11.10 | 16.10 | 0.00 |
| | Outside the park – miscellaneous | 10.30 | 16.70 | 13.30 | 11.10 | 10.20 | 0.00 |
| | Inside the park – miscellaneous | 6.90 | 8.30 | 22.80 | 16.70 | 18.20 | 0.00 |
| | Trailhead/trail map/on the trail | 24.10 | 25.00 | 29.70 | 38.90 | 19.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 16.70 | 0.00 | 11.10 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 16.70 | 0.00 | 5.60 | 0.00 | 100.00 |

Table 4-2. Location of Information source (onsite q4b) continued.

| | | User Type (Percent of Responses) | | | | | |
|-----------------------------|----------------------------------|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Employees from store, lodge | Entrance Station/NPS Station | 0.00 | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 |
| | Visitor Center | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 0.00 | 0.00 | 25.00 | 20.00 | 0.00 | 100.00 |
| | Outside the park - miscellaneous | 0.00 | 100.00 | 75.00 | 20.00 | 0.00 | 0.00 |
| | Inside the park - miscellaneous | 0.00 | 0.00 | 0.00 | 20.00 | 100.00 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 |
| Other 1 | Entrance Station/NPS Station | 0.00 | 0.00 | 6.50 | 35.70 | 0.00 | 12.50 |
| | Visitor Center | 0.00 | 0.00 | 0.00 | 7.10 | 4.20 | 25.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 0.00 | 0.00 | 3.20 | 7.10 | 4.20 | 12.50 |
| | Outside the park - miscellaneous | 0.00 | 0.00 | 61.30 | 0.00 | 58.30 | 12.50 |
| | Inside the park - miscellaneous | 100.00 | 0.00 | 22.60 | 0.00 | 29.20 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 3.20 | 7.10 | 0.00 | 25.00 |
| | Foreign country/foreign book | 0.00 | 50.00 | 0.00 | 14.30 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 3.20 | 7.10 | 0.00 | 12.50 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 4.20 | 0.00 |
| | Miscellaneous | 0.00 | 50.00 | 0.00 | 21.40 | 0.00 | 0.00 |

| | | User Type (Percent of Responses) | | | | | |
|---------|----------------------------------|---|-----------------------|------------------------|----------------------|-------------------|-----------------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Other 2 | Entrance Station/NPS Station | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Visitor Center | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 0.00 | 100.00 | 0.00 | 0.00 | 33.33 | 0.00 |
| | Outside the park - miscellaneous | 0.00 | 0.00 | 50.00 | 33.33 | 33.33 | 0.00 |
| | Inside the park - miscellaneous | 0.00 | 0.00 | 50.00 | 33.33 | 33.33 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 33.33 | 0.00 | 0.00 |
| Other 3 | Entrance Station/NPS Station | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Visitor Center | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Backcountry office | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Concessionaire/hotel/restaurant | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Outside the park - miscellaneous | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 | 0.00 |
| | Inside the park - miscellaneous | 0.00 | 0.00 | 0.00 | 100.00 | 0.00 | 0.00 |
| | Trailhead/trail map/on the trail | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Foreign country/foreign book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | U.S. Guidebook or book | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Park ranger/guided program | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Along with identifying sources of information and their locations, respondents were asked to identify the information they learned from each source (Table 4-3). As a general finding, there were several things learned by each information source, and no information was exclusively related to one source. The most common information learned to prepare for a safe day hike included:

need adequate drinking water, need food and electrolyte replacement, knowing one's limits and being prepared to rest, avoiding the heat of mid-day, appropriate equipment to bring, and trail conditions and lengths.

Summer threshold respondents were more likely to learn about needs for adequate drinking water and food/electrolyte replacement from the Trip Planner compared to other sources; they also were likely to learn about avoiding the heat of mid-day from stop signs on trail compared to other sources. Both summer and fall threshold respondents were most likely to learn about altitude problems and weather/lightning from the Trip Planner compared to other sources. Across most trails and seasons, respondents were likely to learn about trail conditions, lengths, and not hiking to river-and-back from a Park Ranger, with the Park Guide being the second likely source for this information.

Table 4-3. Safety/Preparedness Information Learned (onsite q4c)

| | | User Type (Percent of Responses) | | | | | |
|--------------|---|---|---------------------------|----------------------------|--------------------------|-----------------------|---------------------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Park Guide | Need for adequate drinking water | 25.40 | 26.50 | 24.10 | 20.80 | 22.60 | 25.70 |
| | Need for food/electrolyte replacement | 11.90 | 15.70 | 10.10 | 10.80 | 7.40 | 14.30 |
| | Know your limits/be prepared/rest | 7.50 | 4.90 | 9.40 | 5.80 | 9.20 | 2.90 |
| | avoid heat/timing of hike/cool in morning | 10.40 | 3.90 | 11.40 | 9.20 | 10.50 | 2.90 |
| | clothing/equipment/gear | 9.70 | 21.60 | 9.80 | 17.50 | 11.90 | 11.40 |
| | first aid/safety/supplies/symptoms | 3.00 | 3.90 | 1.80 | 0.80 | 1.50 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 7.50 | 14.70 | 20.40 | 23.30 | 12.90 | 5.70 |
| | Altitude/weather/lightning | 0.70 | 2.90 | 0.90 | 6.70 | 1.60 | 0.00 |
| | Did not read/do not remember/nothing learned | 3.70 | 0.00 | 0.60 | 0.00 | 1.20 | 11.40 |
| | Miscellaneous | 20.10 | 5.90 | 11.50 | 5.00 | 21.20 | 25.70 |
| Trip Planner | Need for adequate drinking water | 36.00 | 27.30 | 22.70 | 0.00 | 18.30 | 0.00 |
| | Need for food/electrolyte replacement | 24.00 | 18.20 | 7.60 | 0.00 | 15.00 | 0.00 |
| | Know your limits/be prepared/rest | 8.00 | 0.00 | 10.60 | 0.00 | 11.70 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 12.00 | 0.00 | 12.10 | 0.00 | 8.30 | 0.00 |
| | clothing/equipment/gear | 4.00 | 9.10 | 7.60 | 0.00 | 10.00 | 0.00 |
| | first aid/safety/supplies/symptoms | 0.00 | 9.10 | 1.50 | 0.00 | 0.00 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 0.00 | 18.20 | 15.20 | 0.00 | 11.70 | 0.00 |
| | Altitude/weather/lightning | 8.00 | 18.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Did not read/do not remember/nothing learned | 4.00 | 0.00 | 18.20 | 0.00 | 20.00 | 100.00 |
| | Miscellaneous | 4.00 | 0.00 | 4.50 | 0.00 | 5.00 | 0.00 |

Table 4-3. Safety/Preparedness Information Learned (onsite q4c) continued.

| | | User Type (Percent of Responses) | | | | | |
|-----------------------------|---|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Poster on hiking safety | Need for adequate drinking water | 22.80 | 20.00 | 22.00 | 24.00 | 24.80 | 33.30 |
| | Need for food/electrolyte replacement | 10.20 | 11.10 | 11.10 | 13.30 | 9.10 | 16.70 |
| | Know your limits/be prepared/rest | 8.70 | 13.30 | 11.50 | 12.00 | 8.50 | 16.70 |
| | avoid heat/timing of hike/cool in morning | 9.40 | 6.70 | 15.10 | 10.70 | 16.90 | 0.00 |
| | clothing/equipment/gear | 9.40 | 28.90 | 7.10 | 10.70 | 9.40 | 0.00 |
| | first aid/safety/supplies/symptoms | 1.60 | 6.70 | 1.60 | 2.70 | 2.00 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 11.00 | 8.90 | 17.70 | 20.00 | 9.40 | 0.00 |
| | Altitude/weather/lightning | 2.40 | 2.20 | 0.70 | 4.00 | 0.90 | 0.00 |
| | Did not read/do not remember/nothing learned | 2.40 | 0.00 | 2.60 | 0.00 | 4.40 | 0.00 |
| | Miscellaneous | 22.00 | 2.20 | 10.60 | 2.70 | 14.40 | 33.30 |
| Messages about "Heat Kills" | Need for adequate drinking water | 27.10 | 26.10 | 23.00 | 30.00 | 25.10 | 0.00 |
| | Need for food/electrolyte replacement | 12.50 | 13.00 | 9.90 | 0.00 | 9.60 | 0.00 |
| | Know your limits/be prepared/rest | 18.80 | 4.30 | 12.50 | 15.00 | 12.40 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 6.30 | 13.00 | 16.60 | 20.00 | 18.70 | 0.00 |
| | clothing/equipment/gear | 10.40 | 21.70 | 4.40 | 5.00 | 7.20 | 0.00 |
| | first aid/safety/supplies/symptoms | 0.00 | 4.30 | 1.50 | 0.00 | 0.80 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 8.30 | 17.40 | 17.20 | 30.00 | 9.60 | 0.00 |
| | Altitude/weather/lightning | 2.10 | 0.00 | 0.30 | 0.00 | 1.60 | 0.00 |
| | Did not read/do not remember/nothing learned | 6.30 | 0.00 | 6.40 | 0.00 | 8.80 | 100.00 |
| | Miscellaneous | 8.30 | 0.00 | 8.40 | 0.00 | 6.40 | 0.00 |

Table 4-3. Safety/Preparedness Information Learned (onsite q4c) continued.

| | | User Type (Percent of Responses) | | | | | |
|-----------------------------------|---|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| "Stop" signs on trail | Need for adequate drinking water | 23.50 | 0.00 | 9.60 | 0.00 | 23.80 | 0.00 |
| | Need for food/electrolyte replacement | 11.80 | 0.00 | 4.30 | 0.00 | 4.80 | 0.00 |
| | Know your limits/be prepared/rest | 17.60 | 0.00 | 22.60 | 100.00 | 19.00 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 23.50 | 0.00 | 20.70 | 0.00 | 9.50 | 0.00 |
| | clothing/equipment/gear | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 |
| | first aid/safety/supplies/symptoms | 0.00 | 0.00 | 0.00 | 0.00 | 4.80 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 0.00 | 0.00 | 14.40 | 0.00 | 9.50 | 0.00 |
| | Altitude/weather/lightning | 0.00 | 0.00 | 0.00 | 0.00 | 4.80 | 0.00 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 13.50 | 0.00 | 9.50 | 0.00 |
| | Miscellaneous | 23.50 | 0.00 | 14.40 | 0.00 | 14.30 | 0.00 |
| Guidebook, magazine, or newspaper | Need for adequate drinking water | 20.00 | 26.00 | 16.40 | 24.60 | 18.80 | 33.30 |
| | Need for food/electrolyte replacement | 12.00 | 9.60 | 8.40 | 12.30 | 6.40 | 0.00 |
| | Know your limits/be prepared/rest | 18.00 | 6.80 | 8.80 | 10.80 | 8.30 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 6.00 | 9.60 | 8.80 | 4.60 | 10.20 | 0.00 |
| | clothing/equipment/gear | 14.00 | 20.50 | 10.90 | 18.50 | 12.10 | 33.30 |
| | first aid/safety/supplies/symptoms | 10.00 | 1.40 | 4.00 | 1.50 | 1.90 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 10.00 | 15.10 | 22.30 | 16.90 | 12.80 | 0.00 |
| | Altitude/weather/lightning | 0.00 | 4.10 | 0.00 | 6.20 | 1.90 | 8.30 |
| | Did not read/do not remember/nothing learned | 4.00 | 1.40 | 11.70 | 0.00 | 16.30 | 8.30 |
| | Miscellaneous | 6.00 | 5.50 | 8.80 | 4.60 | 11.20 | 16.70 |

Table 4-3. Safety/Preparedness Information Learned (onsite q4c) continued.

| | | User Type (Percent of Responses) | | | | | |
|-------------|---|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Park ranger | Need for adequate drinking water | 20.00 | 23.30 | 25.20 | 19.00 | 28.00 | 15.40 |
| | Need for food/electrolyte replacement | 6.70 | 13.30 | 13.10 | 19.00 | 11.80 | 7.70 |
| | Know your limits/be prepared/rest | 6.70 | 0.00 | 7.30 | 14.30 | 4.30 | 7.70 |
| | avoid heat/timing of hike/cool in morning | 6.70 | 6.70 | 8.30 | 4.80 | 7.50 | 0.00 |
| | clothing/equipment/gear | 0.00 | 26.70 | 1.90 | 23.80 | 4.30 | 0.00 |
| | first aid/safety/supplies/symptoms | 20.00 | 10.00 | 2.90 | 0.00 | 0.00 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 33.30 | 20.00 | 27.70 | 14.30 | 22.60 | 0.00 |
| | Altitude/weather/lightning | 0.00 | 0.00 | 1.90 | 4.80 | 0.00 | 0.00 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 6.30 | 0.00 | 8.60 | 23.10 |
| | Miscellaneous | 6.70 | 0.00 | 5.30 | 0.00 | 12.90 | 46.20 |
| Friends | Need for adequate drinking water | 28.60 | 36.40 | 22.20 | 20.80 | 24.00 | 28.60 |
| | Need for food/electrolyte replacement | 14.30 | 9.10 | 11.10 | 16.70 | 16.00 | 0.00 |
| | Know your limits/be prepared/rest | 28.60 | 18.20 | 11.10 | 12.50 | 4.00 | 28.60 |
| | avoid heat/timing of hike/cool in morning | 0.00 | 0.00 | 11.10 | 0.00 | 8.00 | 0.00 |
| | clothing/equipment/gear | 14.30 | 36.40 | 5.60 | 29.20 | 16.00 | 14.30 |
| | first aid/safety/supplies/symptoms | 0.00 | 0.00 | 5.60 | 0.00 | 0.00 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 14.30 | 0.00 | 16.70 | 8.30 | 24.00 | 0.00 |
| | Altitude/weather/lightning | 0.00 | 0.00 | 0.00 | 8.30 | 0.00 | 14.30 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 16.70 | 4.20 | 8.00 | 14.30 |

Table 4-3. Safety/Preparedness Information Learned (onsite q4c) continued.

| | | User Type (Percent of Responses) | | | | | |
|--------------------------------|---|----------------------------------|-------------------|--------------------|------------------|---------------|-------------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Employees from store, lodge | Need for adequate drinking water | 0.00 | 0.00 | 33.30 | 33.30 | 33.30 | 0.00 |
| | Need for food/electrolyte replacement | 0.00 | 0.00 | 11.10 | 16.70 | 0.00 | 0.00 |
| | Know your limits/be prepared/rest | 0.00 | 0.00 | 11.10 | 16.70 | 0.00 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 0.00 | 0.00 | 11.10 | 0.00 | 0.00 | 0.00 |
| | clothing/equipment/gear | 0.00 | 0.00 | 11.10 | 16.70 | 0.00 | 0.00 |
| | first aid/safety/supplies/symptoms | 0.00 | 0.00 | 0.00 | 16.70 | 0.00 | 0.00 |
| | Trail conditions, lengths/no hiking to river and back | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| | Altitude/weather/lightning | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 22.20 | 0.00 | 66.70 | 0.00 |
| Other 1 | Need for adequate drinking water | 40.00 | 24.10 | 28.40 | 18.60 | 27.10 | 19.00 |
| | Need for food/electrolyte replacement | 10.00 | 14.90 | 10.40 | 9.30 | 5.10 | 14.30 |
| | Know your limits/be prepared/rest | 0.00 | 5.70 | 7.50 | 14.00 | 10.20 | 4.80 |
| | avoid heat/timing of hike/cool in morning | 10.00 | 1.10 | 13.40 | 8.10 | 8.50 | 4.80 |
| | clothing/equipment/gear | 10.00 | 37.90 | 1.50 | 26.70 | 10.20 | 28.60 |
| | first aid/safety/supplies/symptoms | 20.00 | 4.60 | 7.50 | 0.00 | 1.70 | 2.40 |
| | Trail conditions, lengths/no hiking to river and back | 10.00 | 4.60 | 17.90 | 14.00 | 20.30 | 9.50 |
| | Altitude/weather/lightning | 0.00 | 3.40 | 0.00 | 7.00 | 3.40 | 4.80 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 3.00 | 0.00 | 5.10 | 0.00 |
| | Miscellaneous | 0.00 | 3.40 | 10.40 | 2.30 | 8.50 | 11.90 |

| | | User Type (Percent of Responses) | | | | | |
|---------|---|----------------------------------|----------------|-----------------|---------------|------------|----------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim |
| Other 2 | Need for adequate drinking water | 0.00 | 0.00 | 20.00 | 11.10 | 33.30 | 22.20 |
| | Need for food/electrolyte replacement | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 | 11.10 |
| | Know your limits/be prepared/rest | 0.00 | 0.00 | 20.00 | 22.20 | 0.00 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 0.00 | 0.00 | 20.00 | 22.20 | 0.00 | 0.00 |
| | clothing/equipment/gear | 0.00 | 0.00 | 0.00 | 0.00 | 33.30 | 55.60 |
| | first aid/safety/supplies/symptoms | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11.10 |
| | Trail conditions, lengths/no hiking to river and back | 0.00 | 50.00 | 0.00 | 22.20 | 33.30 | 0.00 |
| | Altitude/weather/lightning | 0.00 | 50.00 | 0.00 | 22.20 | 0.00 | 0.00 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 | 0.00 |
| Other 3 | Need for adequate drinking water | 0.00 | 0.00 | 50.00 | 20.00 | 0.00 | 0.00 |
| | Need for food/electrolyte replacement | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Know your limits/be prepared/rest | 0.00 | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 |
| | avoid heat/timing of hike/cool in morning | 0.00 | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 |
| | clothing/equipment/gear | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | first aid/safety/supplies/symptoms | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| | Trail conditions, lengths/no hiking to river and back | 0.00 | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 |
| | Altitude/weather/lightning | 0.00 | 0.00 | 0.00 | 20.00 | 0.00 | 0.00 |
| | Did not read/do not remember/nothing learned | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Miscellaneous | 0.00 | 0.00 | 50.00 | 0.00 | 0.00 | 0.00 |

The information learned was effective in changing the *timing of the hike* for at least one-third of threshold and corridor respondents (Table 4-4). Specifically, 35% of summer and 43% of fall threshold respondents changed the timing of their hike due to information they learned; and 55% of summer and 47% of fall corridor respondents reported changing the timing of their hike.

| | User Type (Percent) | | | | | | |
|-----|---------------------|----------------|-----------------|---------------|------------|----------|----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| No | 64.91 | 57.38 | 44.79 | 53.33 | 75.16 | 85.71 | |
| Yes | 35.09 | 42.62 | 55.21 | 46.67 | 24.84 | 14.29 | Chi-Squared =74.71; p=.000 |

Table 4-5 reports the way the timing of visitors' hikes were changed by the information they learned. The most likely change was to start the hike earlier or later to avoid the mid-day heat.

| | User Type (Percent) | | | | | | |
|--|---------------------|----------------|-----------------|---------------|------------|----------|----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Started earlier or later to avoid heat | 89.47 | 72.00 | 99.43 | 66.67 | 98.73 | 83.33 | |
| Shortened hike | 5.26 | 16.00 | 0.00 | 7.41 | 1.27 | 0.00 | |
| Miscellaneous | 5.26 | 12.00 | 0.57 | 25.93 | 0.00 | 16.67 | Chi-Squared =79.42; p=.000 |

The information learned also was effective in changing the *length of the hike* for about two-thirds of summer threshold and corridor respondents (Table 4-6). Specifically, 68% of summer threshold and 64% of summer corridor respondents changed the length of their hike due to information they learned; and 44% of fall threshold and 56% of fall corridor respondents changed the length of their hike.

| | User Type (Percent) | | | | | | |
|-----|---------------------|----------------|-----------------|---------------|------------|----------|----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| No | 31.58 | 55.74 | 35.96 | 43.33 | 62.15 | 73.81 | |
| Yes | 68.42 | 44.26 | 64.04 | 56.67 | 37.85 | 26.19 | Chi-Squared =62.61; p=.000 |

Table 4-7 reports the way the length of visitors' hikes were changed by the information they learned. The most likely change was to shorten the distance hiked.

| | User Type (Percent) | | | | | | |
|---------------------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Shortened distance or time | 100.00 | 36.00 | 100.00 | 48.48 | 98.35 | 36.36 | |
| Preparation issues, kids, guide | 0.00 | 16.00 | 0.00 | 21.21 | 0.83 | 0.00 | |
| Miscellaneous | 0.00 | 48.00 | 0.00 | 30.30 | 0.83 | 63.64 | Chi-Squared =248.38; p=.000 |

The information learned also was effective in changing that which respondents *brought with them on the hike*, with more than one-half of summer respondents reporting such (Table 4-8). Specifically, 68% of summer threshold and 72% of summer corridor respondents reported that the information they learned influenced what they brought with them on their hike. In addition, 46% of fall threshold and 62% of fall corridor day hikers reported that the information they learned influenced what they brought with them on their hike.

| | User Type (Percent) | | | | | | |
|-----|----------------------------|-----------------------|------------------------|----------------------|-------------------|-----------------|----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| No | 32.14 | 54.10 | 28.08 | 38.33 | 44.79 | 73.81 | |
| Yes | 67.86 | 45.90 | 71.92 | 61.67 | 55.21 | 26.19 | Chi-Squared =48.51; p=.000 |

The most reported change in behavior concerned bringing more water on the hike (Table 4-9). Specifically, about 63% of summer threshold and 69% of summer corridor respondents brought more water due to information they learned; and 33% of fall threshold and 48% of fall corridor respondents brought more water. The second most reported change in behavior concerned bringing food and electrolyte replacement on the hike. About 42% of summer threshold and 34% of summer corridor respondents brought food due to information they learned.

| | | User Type (Percent) | | | | | | |
|---------------------|-----|---------------------|----------------|-----------------|---------------|------------|----------|----------------------------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Water | No | 36.84 | 67.21 | 31.35 | 51.67 | 49.06 | 88.37 | Chi-Squared =73.55; p=.000 |
| | Yes | 63.16 | 32.79 | 68.65 | 48.33 | 50.94 | 11.63 | |
| Food | No | 57.89 | 77.05 | 65.52 | 86.67 | 84.91 | 95.35 | Chi-Squared =55.88; p=.000 |
| | Yes | 42.11 | 22.95 | 34.48 | 13.33 | 15.09 | 4.65 | |
| Extra Clothing | No | 92.98 | 78.69 | 94.04 | 76.67 | 94.65 | 93.02 | Chi-Squared =38.13; p=.000 |
| | Yes | 7.02 | 21.31 | 5.96 | 23.33 | 5.35 | 6.98 | |
| Adequate shoes | No | 91.23 | 100.00 | 94.98 | 96.67 | 89.94 | 95.35 | Chi-Squared =13.45; p=.020 |
| | Yes | 8.77 | | 5.02 | 3.33 | 10.06 | 4.65 | |
| Electrolytes | No | 96.49 | 98.36 | 95.61 | 100.00 | 97.17 | 100.00 | Chi-Squared =5.71 ; p=.335 |
| | Yes | 3.51 | 1.64 | 4.39 | | 2.83 | | |
| Hat | No | 89.47 | 95.08 | 93.10 | 93.33 | 87.74 | 100.00 | Chi-Squared =12.23; p=.032 |
| | Yes | 10.53 | 4.92 | 6.90 | 6.67 | 12.26 | | |
| Sunscreen | No | 87.72 | 96.72 | 90.91 | 98.33 | 88.36 | 97.67 | Chi-Squared =12.20; p=.032 |
| | Yes | 12.28 | 3.28 | 9.09 | 1.67 | 11.64 | 2.33 | |
| Sunglasses | No | 100.00 | 100.00 | 97.81 | 100.00 | 98.74 | 97.67 | Chi-Squared =4.30; p=.507 |
| | Yes | | | 2.19 | | 1.26 | 2.33 | |
| First-Aid kit | No | 98.25 | 98.36 | 97.49 | 98.33 | 99.06 | 100.00 | Chi-Squared =3.18; p=.672 |
| | Yes | 1.75 | 1.64 | 2.51 | 1.67 | 0.94 | | |
| Packed light | No | 98.25 | 98.36 | 97.81 | 98.33 | 99.69 | 97.67 | Chi-Squared =4.55; p=.473 |
| | Yes | 1.75 | 1.64 | 2.19 | 1.67 | 0.31 | 2.33 | |
| Map | No | 100.00 | 98.36 | 99.69 | 98.33 | 99.69 | 100.00 | Chi-Squared =4.46; p=.485 |
| | Yes | | 1.64 | 0.31 | 1.67 | 0.31 | | |
| Flashlight | No | 100.00 | 96.72 | 99.06 | 100.00 | 99.69 | 100.00 | Chi-Squared =7.92; p=.161 |
| | Yes | | 3.28 | 0.94 | | 0.31 | | |
| Other miscellaneous | No | 98.25 | 90.16 | 99.37 | 90.00 | 99.69 | 97.67 | Chi-Squared =46.85; p=.000 |
| | Yes | 1.75 | 9.84 | 0.63 | 10.00 | 0.31 | 2.33 | |

The mailback questionnaire also contained a set of questions that asked about the amount of time spent day hiking (Table 4-10). Respondents were asked "Did you spend more time (or less time) than you expected on your day hike?" About one-half of summer corridor respondents reported hiking about what they expected; 37% reported less time than expected, and 12% reported more time than expected. Summer rim and primitive respondents were the two groups with the largest proportion *reporting spending more time compared to less time* day hiking; compare 28% to 14% for summer rim respondents, and 22% to 8% for primitive respondents.

| | User Type (Percent) | | | | | | | |
|---------------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|-----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| More time than I expected | 16.67 | 22.22 | 11.73 | 3.03 | 27.71 | 21.05 | 21.62 | |
| Less time than I expected | 30.00 | 22.22 | 37.04 | 57.58 | 13.86 | 26.32 | 8.11 | |
| About what I expected | 53.33 | 55.56 | 51.23 | 39.39 | 58.43 | 52.63 | 70.27 | Chi-Squared = 50.04; p=.000 |

As indicated in Table 4-11, the amount of time reported as being more or less than expected generally averaged more than an hour across both seasons and all locations.

| | | User Type (in hours) | | | | | | |
|---------------------------|----------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|---------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| Amount more than expected | Mean | 1.05 | 1.25 | 2.68 | 2.0 | 1.44 | 0.63 | 1.62 |
| | Std. Deviation | 0.11 | 0.70 | 4.57 | 0.00 | 0.70 | 0.25 | 1.09 |
| | Differences | none | none | none | none | none | none | none |
| Amount less than expected | Mean | 1.70 | 2.00 | 1.58 | 1.47 | 1.46 | 2.75 | 1.83 |
| | Std. Deviation | 1.85 | 0.63 | 3.06 | 0.65 | 1.18 | 2.22 | 1.26 |
| | Differences | none | none | none | none | none | none | none |

The reason why the hike was longer or shorter than expected also is presented in Table 4-12. Both the summer corridor and threshold respondents were most likely to report the trail conditions as the reason, whereas fall rim respondents were most likely to report fatigue, injury, or physical fitness conditions affected their hiking time.

Table 4-12. Reason hike was longer or shorter than expected (mailback q7c).

| | User Type (Percent) | | | | | | | |
|--|---------------------|----------------|-----------------|---------------|------------|----------|-----------|----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Weather, heat | 7.14 | 10.00 | 10.53 | 29.41 | 4.76 | 28.57 | 18.18 | |
| Fatigue, injury, physical conditions, children | 14.29 | 20.00 | 18.42 | 11.76 | 9.52 | 42.86 | 18.18 | |
| Timing, ran out of time, early or late hike | 7.14 | 20.00 | 2.63 | 0.00 | 6.35 | 14.29 | 27.27 | |
| Guided hike | 0.00 | 0.00 | 2.63 | 17.65 | 0.00 | 0.00 | 0.00 | |
| Trail conditions | 50.00 | 20.00 | 56.58 | 5.88 | 22.22 | 0.00 | 18.18 | |
| Miscellaneous | 21.43 | 30.00 | 9.21 | 35.29 | 57.14 | 14.29 | 18.18 | Chi-Squared =97.93; p=.000 |

Another item on the mailback questionnaire asked respondents if any one in their group became sick, injured, or lost on their day hike (Table 4-13). The responses for summer are reliable indicators and provide insight to potential problem areas; whereas the sample size for the fall season are low, and thus may not be reliable. The summer threshold and rim respondents were the most likely to report sickness, injury, and/or being lost. For example, 20% of summer threshold respondents reported that someone in their group became sick on their day hike, 10% of summer rim respondents reported this, and 6% of summer corridor respondents reported the same. In this sense, the *problem trails for day hikers being sick, injured, or lost in the summer are the threshold and rim trails compared to the corridor trails.*

| | | User Type (Percent) | | | | | | | |
|---------|-----|---------------------|----------------|-----------------|---------------|------------|----------|-----------|-----------------------------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Sick | No | 80.00 | 100.00 | 93.79 | 96.88 | 89.70 | 100.00 | 100.00 | |
| | Yes | 20.00 | 0.00 | 6.21 | 3.13 | 10.30 | 0.00 | 0.00 | Chi-Squared = 17.16; p=.009 |
| Injured | No | 80.00 | 96.43 | 96.89 | 100.00 | 90.91 | 100.00 | 100.00 | |
| | Yes | 20.00 | 3.57 | 3.11 | 0.00 | 9.09 | 0.00 | 0.00 | Chi-Squared = 22.54; p=.001 |
| Lost | No | 80.00 | 100.00 | 97.50 | 100.00 | 91.52 | 100.00 | 97.30 | |
| | Yes | 20.00 | 0.00 | 2.50 | 0.00 | 8.48 | 0.00 | 2.70 | Chi-Squared = 23.64; p=.001 |

As part of the onsite questionnaire, respondents also were asked “How much water (and/or fluids) did you and the rest of your group carry today?” (Table 4-14). On average, summer corridor respondents carried the most water per person at 4.9 quarts/person. On average, summer threshold respondents carried about half the water of their corridor counterparts; 2.6 quarts/person was the average water carried.

| | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) |
|-------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|
| Mean | 2.63 | 4.41 | 4.90 | 1.93 | 1.97 | 5.18 |
| Differences | none | none | e | none | c | none |

As a consequence, summer corridor hikers were the least likely to report that the amount of water they brought was inadequate (Table 4-15). In fact, *summer threshold respondents were more than twice as likely to report that the amount of water was inadequate compared to summer corridor respondents, compare 5% with 2%, respectively.*

| Table 4-15. Amount of Water Adequate (onsite q7b) | | | | | | | |
|---|---------------------|----------------|-----------------|---------------|------------|----------|----------------------------|
| | User Type (Percent) | | | | | | |
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| No | 5.36 | 5.00 | 2.27 | 5.00 | 8.28 | 4.76 | |
| Yes | 94.64 | 95.00 | 97.73 | 95.00 | 91.72 | 95.24 | Chi-Squared =11.35; p=.045 |

Respondents also were asked about the supplies and equipment that “you or someone in your group brought with you on your hike today” (Table 4-16). For summer corridor respondents, 97% of the groups interviewed brought water with them, 27% brought electrolyte replacement, 79% brought food, 10% brought a map, and 25% brought toilet paper. For the summer threshold respondents, 88% of the groups interviewed brought water with them, 19% brought electrolyte replacement, 68% brought food, 39% brought a map, and 37% brought toilet paper. For summer rim respondents, 69% of the groups interviewed brought water with them, 17% brought electrolyte replacement, 46% brought food, 68% brought a map, and 17% brought toilet paper. For more detail see Table _____. With threshold respondents being the most likely to bring along toilet paper and a trail map, they appear to be aware of trail amenities and have given thought to supplies they need on their day hike; *yet it is a concern that threshold respondents are less likely to bring water compared to their corridor counterparts.*

| Table 4-16. Supplies or Equipment brought on day hike (onsite q8) | | | | | | | | |
|---|-----|---------------------|----------------|-----------------|---------------|------------|----------|-----------------------------|
| | | User Type (Percent) | | | | | | |
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| Water | No | 12.28 | 11.48 | 2.84 | 6.67 | 30.82 | 61.90 | |
| | Yes | 87.72 | 88.52 | 97.16 | 93.33 | 69.18 | 38.10 | Chi-Squared =150.01; p=.000 |
| Electrolyte Replacement | No | 80.70 | 59.02 | 72.96 | 86.67 | 83.02 | 90.48 | |
| | Yes | 19.30 | 40.98 | 27.04 | 13.33 | 16.98 | 9.52 | Chi-Squared =28.91; p=.000 |
| Food | No | 31.58 | 9.84 | 21.38 | 26.67 | 54.40 | 69.05 | |
| | Yes | 68.42 | 90.16 | 78.62 | 73.33 | 45.60 | 30.95 | Chi-Squared =116.69; p=.000 |
| Signal Mirror | No | 85.96 | 90.16 | 90.88 | 91.67 | 91.82 | 97.62 | |
| | Yes | 14.04 | 9.84 | 9.12 | 8.33 | 8.18 | 2.38 | Chi-Squared =4.41; p=.492 |
| First aid supplies | No | 59.65 | 47.54 | 66.04 | 78.33 | 77.04 | 92.86 | |
| | Yes | 40.35 | 52.46 | 33.96 | 21.67 | 22.96 | 7.14 | Chi-Squared =40.19; p=.000 |
| Trail Map | No | 61.40 | 54.10 | 50.00 | 66.67 | 31.76 | 45.24 | |
| | Yes | 38.60 | 45.90 | 50.00 | 33.33 | 68.24 | 54.76 | Chi-Squared =45.30; p=.000 |
| Topographic Map | No | 91.23 | 91.80 | 90.25 | 96.67 | 93.71 | 97.62 | |
| | Yes | 8.77 | 8.20 | 9.75 | 3.33 | 6.29 | 2.38 | Chi-Squared =6.27; p=.281 |
| Sun Screen | No | 21.05 | 42.62 | 23.27 | 66.67 | 34.28 | 71.43 | |
| | Yes | 78.95 | 57.38 | 76.73 | 33.33 | 65.72 | 28.57 | Chi-Squared =77.36; p=.000 |
| Toilet Paper | No | 63.16 | 42.62 | 75.16 | 75.00 | 83.33 | 88.10 | |
| | Yes | 36.84 | 57.38 | 24.84 | 25.00 | 16.67 | 11.90 | Chi-Squared =54.81; p=.000 |
| Flashlight | No | 82.46 | 62.30 | 80.50 | 80.00 | 87.42 | 92.86 | |
| | Yes | 17.54 | 37.70 | 19.50 | 20.00 | 12.58 | 7.14 | Chi-Squared =26.81; p=.000 |
| Jacket | No | 68.42 | 13.11 | 75.47 | 10.00 | 74.21 | 14.29 | |
| | Yes | 31.58 | 86.89 | 24.53 | 90.00 | 25.79 | 85.71 | Chi-Squared =217.99; p=.000 |
| Hat | No | 28.07 | 18.03 | 12.26 | 28.33 | 23.58 | 33.33 | |
| | Yes | 71.93 | 81.97 | 87.74 | 71.67 | 76.42 | 66.67 | Chi-Squared =24.10; p=.000 |

Two items on the mailback questionnaire asked respondents about their level of physical fitness (Table 4-17). The first question asked "How physically fit (for hiking) do you consider yourself to be?" Most respondents indicated being at least

“somewhat fit.” The group with the lowest average self-reported fitness were the summer rim respondents; primitive respondents averaged the highest fitness response.

Table 4-17. Perceived level of physical fitness (mailback q9)

| | User Type (Percent) | | | | | | | |
|------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|-----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| 1 Not at all fit | 3.33 | 0.00 | 0.00 | 3.03 | 0.61 | 0.00 | 0.00 | |
| 2 | 0.00 | 3.57 | 6.21 | 3.03 | 5.45 | 5.56 | 2.70 | |
| 3 Somewhat fit | 43.33 | 25.00 | 37.89 | 36.36 | 51.52 | 44.44 | 5.41 | |
| 4 | 40.00 | 46.43 | 42.24 | 42.42 | 32.73 | 44.44 | 37.84 | |
| 5 Extremely fit | 13.33 | 25.00 | 13.66 | 15.15 | 9.70 | 5.56 | 54.05 | Chi-Squared = 37.45; p=.000 |

The second question asked respondents to report “how frequently do you get at least 20 minutes of physical exercise?” (Table 4-18). Again summer rim respondents reported the least amount of exercise and primitive respondents the most.

Table 4-18. Frequency of physical exercise (mailback q10)

| | User Type (Percent) | | | | | | | |
|----------------------------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|-----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Nearly every day | 41.38 | 32.14 | 33.33 | 42.42 | 37.80 | 47.37 | 57.89 | |
| About every other day | 48.28 | 46.43 | 46.91 | 39.39 | 38.41 | 36.84 | 31.58 | |
| About once a week | 10.34 | 21.43 | 14.81 | 12.12 | 14.63 | 5.26 | 5.26 | |
| About once every two weeks | 0.00 | 0.00 | 1.85 | 3.03 | 5.49 | 5.26 | 5.26 | |
| About once a month | 0.00 | 0.00 | 1.85 | 3.03 | 2.44 | 5.26 | 0.00 | |
| Less than once a month | 0.00 | 0.00 | 1.23 | 0.00 | 1.22 | 0.00 | 0.00 | Chi-Squared = 24.53; p=0.75 |

As part of the onsite interview, respondents also were asked the following open-ended question: “Is there anything else the National Park Service could have done to make you more prepared for a safe day hike at Grand Canyon?” (Table 4-19). About two-thirds of respondents reported an answer for this question. The most common response across both seasons and all locations indicated that the NPS could provide more information about Grand Canyon trails, with several asking for a trail rating system.

Table 4-19. What the National Park Service could do to make visitors more prepared for day hiking in the Grand Canyon (onsite q6)

| | User Type (Percent) | | | | | | |
|--|---------------------|----------------|-----------------|---------------|------------|----------|-----------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | |
| More information about trails | 24.00 | 50.00 | 33.92 | 50.00 | 21.33 | 100.00 | |
| More supplies/water available | 0.00 | 8.33 | 0.00 | 25.00 | 0.00 | 0.00 | |
| Improve trail conditions, trailhead location | 0.00 | 25.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| Miscellaneous | 76.00 | 16.67 | 66.08 | 25.00 | 78.67 | 0.00 | Chi-Squared =298.34; p=.000 |

The mailback questionnaire contained a set of items that assessed day hiker attitudes about minimum impact issues (Table 4-20). From their responses, day hikers are clearly concerned about minimizing their individual impact on Grand Canyon and would like further information about low-impact hiking. In addition, respondents were asked for their agreement level on “if an accident happens to me on a Grand Canyon day hike, park rangers will be able to help me back to safety” (Table 4-20). Respondents of the primitive trails were most likely to agree with this statement with summer corridor respondents most likely to disagree.

| | | User Type (Percent) | | | | | | |
|---|------------------------|-------------------------------------|-----------------------------------|------------------------------------|----------------------------------|-------------------------------|-----------------------------|--------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| If I learned that something I did while hiking damaged the park, I would change my behavior | Strongly disagree (-2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 |
| | Disagree (-1) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Neutral (0) | 0.00 | 0.00 | 0.62 | 0.00 | 0.61 | 0.00 | 0.00 |
| | Agree (1) | 30.00 | 14.29 | 23.60 | 15.63 | 19.39 | 26.32 | 29.73 |
| | Strongly agree (2) | 70.00 | 85.71 | 75.78 | 84.38 | 79.39 | 73.68 | 70.27 |
| | Mean | 1.70 | 1.86 | 1.75 | 1.84 | 1.77 | 1.74 | 1.70 |
| | Differences | none | none | none | none | none | none | none |
| If I learned that something I did while hiking damaged the park, I would want to learn more about low-impact hiking | Strongly disagree (-2) | 0.00 | 0.00 | 0.62 | 0.00 | 1.22 | 0.00 | 0.00 |
| | Disagree (-1) | 0.00 | 0.00 | 0.62 | 0.00 | 2.44 | 0.00 | 0.00 |
| | Neutral (0) | 3.33 | 0.00 | 6.79 | 0.00 | 6.71 | 0.00 | 0.00 |
| | Agree (1) | 30.00 | 26.92 | 41.98 | 35.48 | 31.71 | 33.33 | 33.33 |
| | Strongly agree (2) | 66.67 | 73.08 | 50.00 | 64.52 | 57.93 | 66.67 | 66.67 |
| | Mean | 1.63 | 1.73 | 1.40 | 1.65 | 1.43 | 1.67 | 1.67 |
| | Differences | none | none | none | none | none | none | none |

Table 4-20. Day hiking issues in Grand Canyon (mailback q15a-j) continued.

| | | User Type (Percent) | | | | | | |
|--|------------------------|--------------------------------|--------------------------|---------------------------|-----------------------------|----------------------|--------------------|------------------|
| | | Summer Threshol d (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corrido r (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| It is important for day hikers to minimize their impact on park resources | Strongly disagree (-2) | 0.00 | 0.00 | 0.62 | 0.00 | 1.82 | 0.00 | 0.00 |
| | Disagree (-1) | 0.00 | 0.00 | 0.00 | 0.00 | 1.21 | 0.00 | 0.00 |
| | Neutral (0) | 0.00 | 0.00 | 4.32 | 0.00 | 4.24 | 0.00 | 0.00 |
| | Agree (1) | 33.33 | 17.86 | 30.86 | 20.00 | 21.21 | 5.56 | 27.78 |
| | Strongly agree (2) | 66.67 | 82.14 | 64.20 | 80.00 | 71.52 | 94.44 | 72.22 |
| | Mean | 1.67 | 1.82 | 1.58 | 1.80 | 1.59 | 1.94 | 1.72 |
| | Differences | none | none | none | none | none | none | none |
| A single hiker cannot damage park resources because he or she is just one of many hikers | Strongly disagree (-2) | 63.33 | 0.00 | 62.96 | 33.33 | 63.03 | 0.00 | 0.00 |
| | Disagree (-1) | 33.33 | 0.00 | 32.72 | 0.00 | 30.91 | 0.00 | 0.00 |
| | Neutral (0) | 0.00 | 0.00 | 1.23 | 0.00 | 1.82 | 0.00 | 0.00 |
| | Agree (1) | 3.33 | 0.00 | 1.85 | 66.67 | 1.21 | 0.00 | 66.67 |
| | Strongly agree (2) | 0.00 | 0.00 | 1.23 | 0.00 | 3.03 | 100.00 | 33.33 |
| | Mean | -1.57 | 0.00 | -1.54 | 0.00 | -1.50 | 2.00 | 1.33 |
| | Differences | none | none | none | none | none | none | none |
| Day hiking Grand Canyon trails requires special conditioning | Strongly disagree (-2) | 3.33 | 0.00 | 2.47 | 0.00 | 4.32 | 0.00 | 0.00 |
| | Disagree (-1) | 13.33 | 0.00 | 12.35 | 0.00 | 19.14 | 0.00 | 0.00 |
| | Neutral (0) | 13.33 | 0.00 | 19.14 | 0.00 | 24.07 | 0.00 | 0.00 |
| | Agree (1) | 43.33 | 84.21 | 50.62 | 76.47 | 41.36 | 61.54 | 54.84 |
| | Strongly agree (2) | 26.67 | 15.79 | 15.43 | 23.53 | 11.11 | 38.46 | 45.16 |
| | Mean | 0.77 | 1.16 | 0.64 | 1.24 | 0.36 | 1.38 | 1.45 |
| | Differences | none | e | g | e | b,d,g | none | c,e |

| Table 4-20. Day hiking issues in Grand Canyon (mailback q15a-j) continued. | | | | | | | | |
|---|------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|---------------|
| | | User Type (Percent) | | | | | | |
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| Day hiking Grand Canyon trails requires special equipment | Strongly disagree (-2) | 10.00 | 0.00 | 4.97 | 0.00 | 7.32 | 0.00 | 0.00 |
| | Disagree (-1) | 16.67 | 0.00 | 26.71 | 0.00 | 31.10 | 0.00 | 0.00 |
| | Neutral (0) | 26.67 | 0.00 | 29.19 | 0.00 | 24.39 | 0.00 | 0.00 |
| | Agree (1) | 43.33 | 100.00 | 34.16 | 81.82 | 30.49 | 81.82 | 82.35 |
| | Strongly agree (2) | 3.33 | 0.00 | 4.97 | 18.18 | 6.71 | 18.18 | 17.65 |
| | Mean | 0.13 | 1.00 | 0.07 | 1.18 | -0.02 | 1.18 | 1.18 |
| | Differences | d,f,g | c,e | b,d,f,g | a,c,e | b,d,f,g | a,c,e | a,c,e |
| Day hiking Grand Canyon trails requires special caution | Strongly disagree (-2) | 0.00 | 0.00 | 1.85 | 0.00 | 1.21 | 0.00 | 0.00 |
| | Disagree (-1) | 6.67 | 0.00 | 2.47 | 0.00 | 3.64 | 0.00 | 0.00 |
| | Neutral (0) | 3.33 | 0.00 | 5.56 | 0.00 | 10.30 | 0.00 | 0.00 |
| | Agree (1) | 40.00 | 57.69 | 48.77 | 64.52 | 50.91 | 72.22 | 71.88 |
| | Strongly agree (2) | 50.00 | 42.31 | 41.36 | 35.48 | 33.94 | 27.78 | 28.13 |
| | Mean | 1.33 | 1.42 | 1.25 | 1.35 | 1.13 | 1.28 | 1.28 |
| | Differences | none | none | none | none | none | none | none |
| Day hiking in Grand Canyon is more dangerous than hiking in most other parks and wilderness areas | Strongly disagree (-2) | 3.33 | 0.00 | 4.94 | 0.00 | 6.67 | 0.00 | 0.00 |
| | Disagree (-1) | 23.33 | 0.00 | 15.43 | 0.00 | 21.82 | 0.00 | 0.00 |
| | Neutral (0) | 20.00 | 0.00 | 22.84 | 0.00 | 21.21 | 0.00 | 0.00 |
| | Agree (1) | 33.33 | 80.00 | 41.36 | 60.00 | 32.73 | 100.00 | 56.52 |
| | Strongly agree (2) | 20.00 | 20.00 | 15.43 | 40.00 | 17.58 | 0.00 | 43.48 |
| | Mean | 0.43 | 1.20 | 0.47 | 1.40 | 0.33 | 1.00 | 1.43 |
| | Differences | g | e | d,g | c,e | b,d,g | none | a,c,e |

| | | User Type (Percent) | | | | | | |
|--|------------------------|-------------------------------------|-----------------------------------|------------------------------------|----------------------------------|-------------------------------|-----------------------------|--------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| If an accident happens to me on a Grand Canyon day hike, park rangers will be able to help me back to safety | Strongly disagree (-2) | 0.00 | 0.00 | 4.97 | 0.00 | 1.84 | 0.00 | 0.00 |
| | Disagree (-1) | 16.67 | 0.00 | 13.66 | 0.00 | 17.79 | 0.00 | 0.00 |
| | Neutral (0) | 36.67 | 0.00 | 27.95 | 0.00 | 25.77 | 0.00 | 0.00 |
| | Agree (1) | 33.33 | 78.57 | 40.99 | 83.33 | 42.33 | 75.00 | 57.14 |
| | Strongly agree (2) | 13.33 | 21.43 | 12.42 | 16.67 | 12.27 | 25.00 | 42.86 |
| | Mean | 0.43 | 1.21 | 0.42 | 1.17 | 0.45 | 1.25 | 1.43 |
| | Differences | none | c | b,d | c,e | d | none | none |
| Park rangers depict Grand Canyon hiking as being more difficult than it really is | Strongly disagree (-2) | 20.00 | 0.00 | 12.96 | 14.29 | 12.20 | 0.00 | 0.00 |
| | Disagree (-1) | 43.33 | 0.00 | 41.36 | 14.29 | 43.29 | 0.00 | 0.00 |
| | Neutral (0) | 30.00 | 0.00 | 23.46 | 0.00 | 32.93 | 0.00 | 0.00 |
| | Agree (1) | 3.33 | 75.00 | 16.05 | 71.43 | 10.37 | 100.00 | 75.00 |
| | Strongly agree (2) | 3.33 | 25.00 | 6.17 | 0.00 | 1.22 | 0.00 | 25.00 |
| | Mean | -0.73 | 1.25 | -0.39 | .29 | -.55 | 1.00 | 1.25 |
| | Differences | b,g | a,c,e | b,g | none | b,g | none | a,c,e |

Respondents to the mailback questionnaire indicated their knowledge of appropriate low-impact behavior by completing a set of true/false items (Table 4-21). There were four items that respondents had difficulty, and they concerned toilet paper disposal, recommended quantity of water, temperature differential between rim and river, and food scrap disposal. Each is discussed in turn. Of all the true/false items, respondents were most likely to lack knowledge about disposing toilet paper. Their lack of knowledge was indicated in response to the following statement "When disposing of human wastes in places where toilets are not available, park rangers recommend that visitors bury their toilet paper." The statement is false; toilet paper, like other things, should be packed out.

Corridor respondents were most likely to think this statement was true; 61% of summer corridor and 71% of fall corridor indicated it was true. Threshold respondents of both seasons were split in half regarding this statement being true or false.

In response to the statement “when hiking the Grand Canyon in warm weather, park rangers recommend that visitors take one quart of water per day,” 26% of summer corridor respondents indicated the incorrect response of “true” and 17% of summer threshold respondents indicated “true.” Summer rim respondents were the least knowledgeable with 32% who indicated this statement to be true. Park Rangers recommend visitors take four quarts of water per day per person.

In response to the statement “the air temperature at the bottom of Grand Canyon is usually about 5 degrees warmer than the air temperature at the rim,” 38% of summer corridor respondents indicated the incorrect response of “true” and 31% of summer threshold respondents indicated “true.” There were 40% of summer rim respondents who indicated “true.” The temperature differential between the rim and the river is usually a minimum of 15 degrees.

In response to the item “food scraps should be scattered widely to avoid concentrating wild animals,” corridor and rim hikers were the least knowledgeable. For summer corridor respondents, 14% reported the incorrect answer of “true,” and 15% of summer rim respondents answered “true.” Like toilet paper, food scraps should be packed out.

| Table 4-21. Knowledge of appropriate low-impact behaviors at Grand Canyon (mailback q16a-k) | | | | | | | | | |
|---|-------|---------------------|----------------|-----------------|---------------|------------|----------|-----------|------------------------------|
| | | User Type (Percent) | | | | | | | |
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Hikers are not allowed to collect plants and rocks along the trails in Grand Canyon | False | 3.45 | 89.29 | 6.21 | 96.88 | 5.42 | 94.12 | 92.1053 | |
| | True | 96.55 | 10.71 | 93.79 | 3.13 | 94.58 | 5.88 | 7.89474 | Chi-Squared =337.92 ; p=.000 |
| The air temperature at the bottom of Grand Canyon is usually about 5 degrees warmer than the air temperature at the rim | False | 68.97 | 22.22 | 62.03 | 50.00 | 60.37 | 50.00 | 10.53 | |
| | True | 31.03 | 77.78 | 37.97 | 50.00 | 39.63 | 50.00 | 89.47 | Chi-Squared =45.60 ; p=.000 |
| Most trails going down into the Grand Canyon have water fountains along the way | False | 96.55 | 3.57 | 81.48 | 21.88 | 90.57 | 5.88 | 2.63 | |
| | True | 3.45 | 96.43 | 18.52 | 78.13 | 9.43 | 94.12 | 97.37 | Chi-Squared =249.10 ; p=.000 |
| Park rangers discourage visitors from hiking rim-to-river-to-rim in one day | False | 0.00 | 100.00 | 1.88 | 93.75 | 3.66 | 88.24 | 94.74 | |
| | True | 100.00 | 0.00 | 98.13 | 6.25 | 96.34 | 11.76 | 5.26 | Chi-Squared =391.49 ; p=.000 |
| Food scraps should be scattered widely to avoid concentrating wild animals | False | 89.66 | 10.71 | 85.53 | 18.75 | 84.76 | 17.65 | 2.63 | |
| | True | 10.34 | 89.29 | 14.47 | 81.25 | 15.24 | 82.35 | 97.37 | Chi-Squared =219.37 ; p=.000 |
| When hiking the Grand Canyon in warm weather, park rangers recommend that visitors take one quart of water per day | False | 82.76 | 29.63 | 74.38 | 32.26 | 68.07 | 23.53 | 5.26 | |
| | True | 17.24 | 70.37 | 25.63 | 67.74 | 31.93 | 76.47 | 94.74 | Chi-Squared =101.57 ; p=.000 |
| All day hikers at Grand Canyon should be prepared to carry out their own trash and litter | False | 0.00 | 100.00 | 0.62 | 100.00 | 1.21 | 100.00 | 97.37 | |
| | True | 100.00 | 0.00 | 99.38 | 0.00 | 98.79 | 0.00 | 2.63 | Chi-Squared =449.88 ; p=.000 |

Table 4-21. Knowledge of appropriate low-impact behaviors at Grand Canyon (mailback q16a-k) continued.

| | User Type (Percent) | | | | | | | | |
|--|---------------------|------------------|----------------|-----------------|---------------|------------|----------|-----------|------------------------------|
| | | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitive | |
| Off-trail hiking to make a shortcut is appropriate at Grand Canyon | False | 100.00 | 0.00 | 99.38 | 0.00 | 99.39 | 0.00 | 5.26 | |
| | True | 0.00 | 100.00 | 0.63 | 100.00 | 0.61 | 100.00 | 94.74 | Chi-Squared =448.02 ; p=.000 |
| Hunting wild animals is not allowed in Grand Canyon | False | 0.00 | 100.00 | 1.23 | 100.00 | 3.66 | 100.00 | 94.74 | |
| | True | 100.00 | 0.00 | 98.77 | 0.00 | 96.34 | 0.00 | 5.26 | Chi-Squared =418.59 ; p=.000 |
| Park rangers recommend that you drink water regularly, even before you become thirsty | False | 0.00 | 100.00 | 1.23 | 100.00 | 1.20 | 100.00 | 97.37 | |
| | True | 100.00 | 0.00 | 98.77 | 0.00 | 98.80 | 0.00 | 2.63 | Chi-Squared =445.73 ; p=.000 |
| When disposing of human wastes in places where toilets are not available, park rangers recommend that visitors bury their toilet paper | False | 48.28 | 46.15 | 39.47 | 70.97 | 39.49 | 53.33 | 16.22 | |
| | True | 51.72 | 53.85 | 60.53 | 29.03 | 60.51 | 46.67 | 83.78 | Chi-Squared =23.03 ; p=.001 |

V. Study Findings: The Day Hiking Experience

A series of close-ended questions was used to explore the quality of the day hiker's experience in Grand Canyon. First, respondents were asked to indicate the extent to which they agreed or disagreed with a series of statements about their satisfaction with their day hike in Grand Canyon (Table 5-1). Respondents were asked to state whether they "strongly agree", "agree", "disagree", or "strongly disagree" with each statement. A "neutral" option was also provided.

There were no significant differences between trail strata with respect to respondents' satisfaction with their day hike in Grand Canyon. The majority of all types of Grand Canyon day hikers agree or strongly agree that they cannot imagine a better day hike than the one they took in Grand Canyon, and that their day hike was well worth the cost. In addition, the majority of all types of Grand Canyon day hikers strongly agree that they thoroughly enjoyed their day hike in Grand Canyon. No Grand Canyon day hikers during the fall indicated that they strongly disagree or disagree that their day hike was well worth the cost. The majority of all types of Grand Canyon day hikers strongly disagree that they did not want to have any more day hikes like their Grand Canyon day hike. In addition, the majority of all types of Grand Canyon day hikers disagree or strongly disagree that they were disappointed with some aspect of their Grand Canyon day hike.

Table 5-1. Respondents' satisfaction with their day hike in Grand Canyon (mailback q11)

| | | User Type (Percent) | | | | | | |
|--|------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Thoroughly enjoyed my day hike | Strongly disagree (-2) | 0.00 | 0.00 | 0.60 | 3.03 | 0.00 | 0.00 | 0.00 |
| | Disagree (-1) | 6.70 | 3.70 | 0.00 | 0.00 | 1.80 | 0.00 | 2.63 |
| | Neutral (0) | 0.00 | 0.00 | 3.10 | 0.00 | 3.60 | 0.00 | 2.63 |
| | Agree (1) | 30.00 | 11.11 | 38.30 | 36.36 | 37.30 | 26.32 | 13.16 |
| | Strongly agree (2) | 63.30 | 85.19 | 58.00 | 60.61 | 57.20 | 73.68 | 81.58 |
| | Mean | 1.50 | 1.78 | 1.53 | 1.52 | 1.50 | 1.74 | 1.74 |
| | Differences | none | none | none | none | none | none | none |
| Cannot imagine a better day hike | Strongly disagree (-2) | 10.00 | 3.70 | 2.50 | 6.06 | 6.00 | 0.00 | 2.63 |
| | Disagree (-1) | 10.00 | 18.52 | 16.00 | 12.12 | 17.50 | 5.26 | 10.53 |
| | Neutral (0) | 20.00 | 18.52 | 29.60 | 21.21 | 24.70 | 31.58 | 23.68 |
| | Agree (1) | 43.30 | 33.33 | 32.70 | 30.30 | 31.30 | 26.32 | 34.21 |
| | Strongly agree (2) | 16.70 | 25.93 | 19.10 | 30.30 | 20.50 | 36.84 | 28.95 |
| | Mean | 0.47 | 0.59 | 0.50 | 0.67 | 0.43 | 0.95 | 0.76 |
| | Differences | none | none | none | none | none | none | none |
| My day hike was well worth the cost | Strongly disagree (-2) | 3.33 | 0.00 | 1.30 | 0.00 | 1.80 | 0.00 | 0.00 |
| | Disagree (-1) | 3.33 | 0.00 | 1.90 | 0.00 | 5.50 | 0.00 | 0.00 |
| | Neutral (0) | 20.00 | 3.70 | 12.70 | 9.38 | 8.60 | 5.26 | 8.33 |
| | Agree (1) | 33.33 | 25.93 | 37.30 | 34.38 | 33.70 | 47.37 | 25.00 |
| | Strongly agree (2) | 40.00 | 70.37 | 46.80 | 56.25 | 50.30 | 47.37 | 66.67 |
| | Mean | 1.03 | 1.67 | 1.27 | 1.47 | 1.25 | 1.42 | 1.58 |
| | Differences | none | none | none | none | none | none | none |

| Table 5-1. Respondents' satisfaction with their day hike in Grand Canyon (mailback q11) continued | | | | | | | | |
|---|------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | User Type (Percent) | | | | | | |
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| I do not want to have any more day hikes like my Grand Canyon day hike | Strongly disagree (-2) | 73.30 | 92.59 | 67.90 | 81.82 | 72.70 | 84.21 | 81.58 |
| | Disagree (-1) | 13.30 | 0.00 | 23.50 | 15.15 | 18.80 | 15.79 | 15.79 |
| | Neutral (0) | 3.30 | 0.00 | 5.60 | 3.03 | 5.50 | 0.00 | 0.00 |
| | Agree (1) | 6.70 | 3.70 | 2.50 | 0.00 | 2.40 | 0.00 | 2.63 |
| | Strongly agree (2) | 3.30 | 3.70 | 0.60 | 0.00 | 0.60 | 0.00 | 0.00 |
| | Mean | -1.47 | -1.74 | -1.56 | -1.79 | -1.61 | -1.84 | -1.76 |
| | Differences | none | none | none | none | none | none | none |
| I was disappointed with some aspect of my day hike | Strongly disagree (-2) | 56.70 | 57.14 | 43.20 | 54.55 | 45.50 | 63.16 | 57.89 |
| | Disagree (-1) | 16.70 | 17.86 | 29.00 | 24.24 | 25.50 | 26.32 | 23.68 |
| | Neutral (0) | 3.30 | 3.57 | 9.90 | 12.12 | 10.30 | 10.53 | 15.79 |
| | Agree (1) | 16.70 | 21.43 | 14.20 | 9.09 | 15.20 | 0.00 | 2.63 |
| | Strongly agree (2) | 6.70 | 0.00 | 3.70 | 0.00 | 3.60 | 0.00 | 0.00 |
| | Mean | -1.00 | -1.11 | -0.94 | -1.24 | -0.94 | -1.53 | -1.37 |
| | Differences | none | none | none | none | none | none | none |

Second, respondents were asked how they felt about the number of other people they saw during their Grand Canyon day hike (Table 5-2). About one-quarter of threshold trail hikers during the fall (21.4%), and corridor (24.4%) and rim (27.3%) trail hikers during the summer, indicated that they saw too many people during their day hike in Grand Canyon. However, the majority of all types of Grand Canyon day hikers, except summertime rim trail hikers, indicated that the number of people they saw during their day hike was about right. Nearly half of all summertime rim trail hikers (49.7%) indicated that the number of people they saw was about right.

Table 5-2. How did you feel about the number of other people you saw during your Grand Canyon day hike? (mailback q12)

| | User Type (Percent) | | | | | | | |
|--|---------------------|----------------|-----------------|---------------|------------|----------|----------------|----------------------------------|
| | Summer Threshold | Fall Threshold | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Fall Primitive | |
| Saw way too few | 0.00 | 0.00 | 0.63 | 3.03 | 0.61 | 5.26 | 7.89 | |
| Saw too few | 6.67 | 0.00 | 1.25 | 3.03 | 0.00 | 0.00 | 2.63 | |
| About right | 76.67 | 75.00 | 59.38 | 63.64 | 49.70 | 68.42 | 71.05 | |
| Saw too many | 13.33 | 21.43 | 24.38 | 15.15 | 27.27 | 10.53 | 5.26 | |
| Saw way too many | 0.00 | 3.57 | 6.88 | 3.03 | 11.52 | 0.00 | 0.00 | |
| Did not matter how many other people I saw | 3.33 | 0.00 | 7.50 | 12.12 | 10.30 | 10.53 | 13.16 | |
| Do not remember how I felt | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 5.26 | 0.00 | Chi-square = 73.11; p = 0.000 |

Third, Grand Canyon day hikers were asked to evaluate how problematic a series of 27 potential management issues were on their day hike (Table 5-3). Respondents were asked to rate each potential management issue as “not a problem”, a “small problem”, or a “big problem”. A “don’t know” option was also provided. For 20 out of the 27 potential management issues, the majority of all types of Grand Canyon day hikers indicated that the item was not a problem to them. The majority of corridor trail hikers during summer (64.6%) and fall (56.2%) indicated they had a problem with too much urine and manure on trails. However, the majority of all other types of Grand Canyon day hikers indicated they had no problem with too much urine and manure on trails. Two management issues – not enough trails and no loop trails – were not a problem for the majority of all types of Grand Canyon hikers, except summer threshold trail hikers. However, nearly half of all summer threshold trail hikers indicated not enough trails (43.3%) and no loop trails (40%) were not a problem to them. During the summer, the majority of rim trail day hikers indicated that they had a problem with too many places congested with people (58.1%) and not enough water along the trail (52.1%). However, the majority of

all other types of Grand Canyon day hikers indicated that these two management issues were not a problem to them. Excluding individuals who hiked on a corridor trail during the summer, the majority of all types of Grand Canyon day hikers reported having no problem with too many other hikers. During the summer, just over half of all individuals who hiked on a corridor trail (53.4%) reported having a problem with too many other hikers. The majority of threshold trail day hikers in the fall (53.6%) indicated having a problem with too many aircraft overhead. However, the majority of all other types of Grand Canyon day hikers did not have a problem with too many aircraft overhead.

During the summer, the most significant problems for threshold trail day hikers were not enough information on the trails, not enough water along the trails, and too much urine and manure on the trails. The most significant problems for corridor trail day hikers during the summer were too much urine and manure on the trails, too many other hikers, and too many places congested with people. Summer rim trail hikers indicated that too many places congested with people, not enough water along the trail, and too many other hikers were the most significant problems on their day hike.

In the fall, the most significant problems for threshold trail day hikers were too many aircraft overhead, not enough information about natural and cultural history, and not enough water along the trail. The most significant problems for corridor trail day hikers during the fall were too much urine and manure on the trails, too many other hikers, and no loop trails. Fall rim trail hikers indicated that lack of public transportation, not enough water along the trail, and too much soil and vegetation damage from people going off the trails were the most significant problems on their day hike. Primitive trail hikers during the fall indicated that too many aircraft overhead, not enough information about natural and cultural history, and too much soil and vegetation damage from people going off the trails were the most significant problems.

Table 5-3. Problems on your day hike (mailback q13)

| | | User Type (Percent) | | | | | | |
|--|---------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Trails poorly maintained | Not a problem (1) | 73.33 | 85.19 | 85.19 | 75.00 | 92.68 | 89.47 | 78.38 |
| | A small problem (2) | 23.33 | 7.41 | 14.20 | 21.88 | 6.10 | 5.26 | 16.22 |
| | A big problem (3) | 3.33 | 7.41 | 0.62 | 3.13 | 0.61 | 5.26 | 5.41 |
| | Don't know (4) | 0.00 | 0.00 | 0.00 | 0.00 | 0.61 | 0.00 | 0.00 |
| | Mean | 1.30 | 1.22 | 1.15 | 1.28 | 1.07 | 1.16 | 1.27 |
| | Differences | none | none | none | none | none | none | none |
| Trails poorly marked | Not a problem (1) | 66.67 | 81.48 | 91.36 | 84.38 | 82.21 | 89.47 | 78.38 |
| | A small problem (2) | 20.00 | 14.81 | 8.02 | 12.50 | 12.88 | 5.26 | 18.92 |
| | A big problem (3) | 13.33 | 3.70 | 0.62 | 3.13 | 3.07 | 0.00 | 2.70 |
| | Don't know (4) | 0.00 | 0.00 | 0.00 | 0.00 | 1.84 | 5.26 | 0.00 |
| | Mean | 1.47 | 1.22 | 1.09 | 1.19 | 1.19 | 1.06 | 1.24 |
| | Differences | c,e,f | none | a | none | a | a | none |
| Trails too developed | Not a problem (1) | 76.67 | 88.89 | 84.57 | 78.13 | 72.73 | 57.89 | 77.14 |
| | A small problem (2) | 20.00 | 7.41 | 13.58 | 18.75 | 22.42 | 36.84 | 11.43 |
| | A big problem (3) | 3.33 | 3.70 | 0.00 | 0.00 | 3.64 | 0.00 | 5.71 |
| | Don't know (4) | 0.00 | 0.00 | 1.85 | 3.13 | 1.21 | 5.26 | 5.71 |
| | Mean | 1.27 | 1.15 | 1.14 | 1.19 | 1.30 | 1.39 | 1.24 |
| | Differences | none | none | e | none | c | none | none |
| Too much urine and manure on trails | Not a problem (1) | 51.72 | 69.23 | 35.40 | 43.75 | 66.87 | 63.16 | 62.16 |
| | A small problem (2) | 27.59 | 7.69 | 45.34 | 40.63 | 21.47 | 21.05 | 18.92 |
| | A big problem (3) | 20.69 | 15.38 | 19.25 | 15.63 | 6.75 | 15.79 | 13.51 |
| | Don't know (4) | 0.00 | 7.69 | 0.00 | 0.00 | 4.91 | 0.00 | 5.41 |
| | Mean | 1.69 | 1.42 | 1.84 | 1.72 | 1.37 | 1.53 | 1.49 |
| | Differences | none | none | e | none | c | none | none |

Table 5-3. Problems on your day hike (mailback q13) continued

| | | User Type (Percent) | | | | | | |
|---|---------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Not enough trails | Not a problem (1) | 43.33 | 61.54 | 67.92 | 67.74 | 68.71 | 66.67 | 83.78 |
| | A small problem (2) | 26.67 | 30.77 | 23.27 | 25.81 | 25.77 | 22.22 | 10.81 |
| | A big problem (3) | 16.67 | 3.85 | 6.92 | 0.00 | 1.23 | 5.56 | 5.41 |
| | Don't know (4) | 13.33 | 3.85 | 1.89 | 6.45 | 4.29 | 5.56 | 0.00 |
| | Mean | 1.70 | 1.40 | 1.38 | 1.28 | 1.29 | 1.35 | 1.22 |
| | Differences | e,g | none | none | none | a | none | a |
| No loop trails | Not a problem (1) | 40.00 | 62.96 | 57.76 | 50.00 | 56.36 | 63.16 | 70.27 |
| | A small problem (2) | 33.33 | 18.52 | 31.68 | 28.13 | 30.30 | 31.58 | 21.62 |
| | A big problem (3) | 13.33 | 11.11 | 6.21 | 6.25 | 4.85 | 5.26 | 5.41 |
| | Don't know (4) | 13.33 | 7.41 | 4.35 | 15.63 | 8.48 | 0.00 | 2.70 |
| | Mean | 1.69 | 1.44 | 1.46 | 1.48 | 1.44 | 1.42 | 1.33 |
| | Differences | none | none | none | none | none | none | none |
| Too much litter on trails | Not a problem (1) | 86.21 | 81.48 | 84.47 | 90.63 | 78.66 | 84.21 | 78.95 |
| | A small problem (2) | 6.90 | 18.52 | 13.66 | 9.38 | 15.24 | 15.79 | 15.79 |
| | A big problem (3) | 6.90 | 0.00 | 1.24 | 0.00 | 4.88 | 0.00 | 2.63 |
| | Don't know (4) | 0.00 | 0.00 | 0.62 | 0.00 | 1.22 | 0.00 | 2.63 |
| | Mean | 1.21 | 1.19 | 1.16 | 1.09 | 1.25 | 1.16 | 1.22 |
| | Differences | none | none | none | none | none | none | none |
| Too much soil and vegetation damage from people going off trail | Not a problem (1) | 60.00 | 73.08 | 69.57 | 78.13 | 53.99 | 57.89 | 63.16 |
| | A small problem (2) | 33.33 | 19.23 | 22.36 | 12.50 | 32.52 | 31.58 | 21.05 |
| | A big problem (3) | 3.33 | 3.85 | 3.11 | 6.25 | 9.20 | 10.53 | 10.53 |
| | Don't know (4) | 3.33 | 3.85 | 4.97 | 3.13 | 4.29 | 0.00 | 5.26 |
| | Mean | 1.41 | 1.28 | 1.30 | 1.26 | 1.53 | 1.53 | 1.44 |
| | Differences | none | none | e | none | c | none | none |

Table 5-3. Problems on your day hike (mailback q13) continued

| | | User Type (Percent) | | | | | | |
|---|---------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Vandalism/ graffiti on rocks | Not a problem (1) | 73.33 | 64.29 | 81.37 | 81.25 | 79.14 | 73.68 | 78.38 |
| | A small problem (2) | 20.00 | 25.00 | 14.91 | 15.63 | 12.88 | 21.05 | 13.51 |
| | A big problem (3) | 0.00 | 7.14 | 2.48 | 3.13 | 1.23 | 0.00 | 8.11 |
| | Don't know (4) | 6.67 | 3.57 | 1.24 | 0.00 | 6.75 | 5.26 | 0.00 |
| | Mean | 1.21 | 1.41 | 1.20 | 1.22 | 1.16 | 1.22 | 1.30 |
| | Differences | none | none | none | none | none | none | none |
| Too many other hikers | Not a problem (1) | 63.33 | 60.71 | 46.58 | 53.13 | 53.70 | 78.95 | 84.21 |
| | A small problem (2) | 30.00 | 32.14 | 45.34 | 43.75 | 35.19 | 10.53 | 7.89 |
| | A big problem (3) | 6.67 | 7.14 | 8.07 | 3.13 | 11.11 | 10.53 | 7.89 |
| | Don't know (4) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.43 | 1.46 | 1.61 | 1.50 | 1.57 | 1.32 | 1.24 |
| | Differences | none | none | g | none | none | none | c |
| People that were inconsiderate | Not a problem (1) | 86.67 | 78.57 | 81.99 | 78.13 | 75.61 | 68.42 | 89.47 |
| | A small problem (2) | 10.00 | 14.29 | 13.66 | 15.63 | 18.90 | 31.58 | 10.53 |
| | A big problem (3) | 0.00 | 7.14 | 4.35 | 6.25 | 5.49 | 0.00 | 0.00 |
| | Don't know (4) | 3.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.10 | 1.29 | 1.22 | 1.28 | 1.30 | 1.32 | 1.11 |
| | Differences | none | none | none | none | none | none | none |
| Groups encountered were too large | Not a problem (1) | 66.67 | 78.57 | 65.84 | 75.00 | 58.54 | 73.68 | 78.38 |
| | A small problem (2) | 33.33 | 14.29 | 28.57 | 25.00 | 31.71 | 21.05 | 13.51 |
| | A big problem (3) | 0.00 | 7.14 | 4.97 | 0.00 | 8.54 | 5.26 | 2.70 |
| | Don't know (4) | 0.00 | 0.00 | 0.62 | 0.00 | 1.22 | 0.00 | 5.41 |
| | Mean | 1.33 | 1.29 | 1.39 | 1.25 | 1.49 | 1.32 | 1.20 |
| | Differences | none | none | none | none | none | none | none |

Table 5-3. Problems on your day hike (mailback q13) continued

| | | User Type (Percent) | | | | | | |
|---|---------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Too many places congested with people | Not a problem (1) | 63.33 | 60.71 | 53.42 | 62.50 | 41.82 | 57.89 | 81.58 |
| | A small problem (2) | 30.00 | 21.43 | 39.13 | 37.50 | 42.42 | 36.84 | 13.16 |
| | A big problem (3) | 6.67 | 17.86 | 7.45 | 0.00 | 15.76 | 5.26 | 2.63 |
| | Don't know (4) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.63 |
| | Mean | 1.43 | 1.57 | 1.54 | 1.38 | 1.74 | 1.47 | 1.19 |
| | Differences | none | none | g | none | g | none | c,e |
| Too many mules on trails | Not a problem (1) | 68.97 | 81.48 | 67.08 | 75.00 | 74.53 | 78.95 | 69.44 |
| | A small problem (2) | 20.69 | 7.41 | 19.88 | 18.75 | 9.94 | 10.53 | 16.67 |
| | A big problem (3) | 10.34 | 7.41 | 9.94 | 6.25 | 4.35 | 5.26 | 11.11 |
| | Don't know (4) | 0.00 | 3.70 | 3.11 | 0.00 | 11.18 | 5.26 | 2.78 |
| | Mean | 1.41 | 1.23 | 1.41 | 1.31 | 1.21 | 1.22 | 1.40 |
| | Differences | none | none | none | none | none | none | none |
| Too many aircraft overhead | Not a problem (1) | 63.33 | 46.43 | 85.19 | 81.25 | 78.05 | 94.74 | 48.65 |
| | A small problem (2) | 26.67 | 25.00 | 8.64 | 9.38 | 14.02 | 0.00 | 21.62 |
| | A big problem (3) | 6.67 | 28.57 | 3.70 | 6.25 | 4.88 | 5.26 | 27.03 |
| | Don't know (4) | 3.33 | 0.00 | 2.47 | 3.13 | 3.05 | 0.00 | 2.70 |
| | Mean | 1.41 | 1.82 | 1.16 | 1.23 | 1.25 | 1.11 | 1.78 |
| | Differences | none | c,d,e,f | b,g | b,g | b,g | b,g | c,d,e,f |
| Not enough people on trails | Not a problem (1) | 96.67 | 100.00 | 98.14 | 90.63 | 97.56 | 100.00 | 97.37 |
| | A small problem (2) | 0.00 | 0.00 | 1.86 | 3.13 | 1.22 | 0.00 | 2.63 |
| | A big problem (3) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Don't know (4) | 3.33 | 0.00 | 0.00 | 6.25 | 1.22 | 0.00 | 0.00 |
| | Mean | 1.00 | 1.00 | 1.02 | 1.03 | 1.01 | 1.00 | 1.03 |
| | Differences | none | none | none | none | none | none | none |

Table 5-3. Problems on your day hike (mailback q13) continued

| | | User Type (Percent) | | | | | | |
|--|---------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Too many rules and regulations | Not a problem (1) | 93.33 | 89.29 | 94.44 | 93.75 | 94.48 | 89.47 | 68.42 |
| | A small problem (2) | 6.67 | 10.71 | 4.32 | 6.25 | 4.29 | 10.53 | 21.05 |
| | A big problem (3) | 0.00 | 0.00 | 0.62 | 0.00 | 1.23 | 0.00 | 7.89 |
| | Don't know (4) | 0.00 | 0.00 | 0.62 | 0.00 | 0.00 | 0.00 | 2.63 |
| | Mean | 1.07 | 1.11 | 1.06 | 1.06 | 1.07 | 1.11 | 1.38 |
| | Differences | g | g | g | g | g | g | a,b,c,d,e,f |
| Regulations not adequately publicized | Not a problem (1) | 73.33 | 88.46 | 85.19 | 87.50 | 80.25 | 73.68 | 92.11 |
| | A small problem (2) | 23.33 | 11.54 | 11.11 | 12.50 | 14.20 | 21.05 | 5.26 |
| | A big problem (3) | 3.33 | 0.00 | 2.47 | 0.00 | 3.09 | 5.26 | 2.63 |
| | Don't know (4) | 0.00 | 0.00 | 1.23 | 0.00 | 2.47 | 0.00 | 0.00 |
| | Mean | 1.30 | 1.12 | 1.16 | 1.13 | 1.21 | 1.32 | 1.11 |
| | Differences | none | none | none | none | none | none | none |
| Not enough information on trails | Not a problem (1) | 48.28 | 74.07 | 76.88 | 56.67 | 69.14 | 78.95 | 89.19 |
| | A small problem (2) | 34.48 | 22.22 | 20.00 | 40.00 | 27.16 | 21.05 | 8.11 |
| | A big problem (3) | 17.24 | 3.70 | 2.50 | 3.33 | 2.47 | 0.00 | 2.70 |
| | Don't know (4) | 0.00 | 0.00 | 0.63 | 0.00 | 1.23 | 0.00 | 0.00 |
| | Mean | 1.69 | 1.30 | 1.25 | 1.47 | 1.33 | 1.21 | 1.14 |
| | Differences | c,e,f,g | none | a | none | a | a | a |
| Not enough information on the number of hikers on trails | Not a problem (1) | 66.67 | 66.67 | 75.00 | 61.29 | 62.35 | 82.35 | 89.19 |
| | A small problem (2) | 26.67 | 25.93 | 19.87 | 22.58 | 25.31 | 17.65 | 8.11 |
| | A big problem (3) | 3.33 | 0.00 | 1.92 | 6.45 | 3.09 | 0.00 | 0.00 |
| | Don't know (4) | 3.33 | 7.41 | 3.21 | 9.68 | 9.26 | 0.00 | 2.70 |
| | Mean | 1.34 | 1.28 | 1.25 | 1.39 | 1.35 | 1.18 | 1.08 |
| | Differences | none | none | none | none | none | none | none |

Table 5-3. Problems on your day hike (mailback q13) continued

| | | User Type (Percent) | | | | | | |
|--|---------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Not enough information on how to prepare for a safe hike | Not a problem (1) | 70.00 | 88.89 | 82.61 | 77.42 | 84.15 | 78.95 | 97.37 |
| | A small problem (2) | 13.33 | 11.11 | 14.91 | 22.58 | 14.02 | 21.05 | 0.00 |
| | A big problem (3) | 10.00 | 0.00 | 2.48 | 0.00 | 1.83 | 0.00 | 2.63 |
| | Don't know (4) | 6.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Mean | 1.36 | 1.11 | 1.20 | 1.23 | 1.18 | 1.21 | 1.05 |
| | Differences | none | none | none | none | none | none | none |
| Not enough restrooms along the trail | Not a problem (1) | 66.67 | 81.48 | 71.07 | 56.25 | 56.10 | 78.95 | 89.47 |
| | A small problem (2) | 26.67 | 11.11 | 25.16 | 34.38 | 34.76 | 10.53 | 10.53 |
| | A big problem (3) | 3.33 | 7.41 | 1.89 | 6.25 | 6.71 | 10.53 | 0.00 |
| | Don't know (4) | 3.33 | 0.00 | 1.89 | 3.13 | 2.44 | 0.00 | 0.00 |
| | Mean | 1.34 | 1.26 | 1.29 | 1.48 | 1.49 | 1.32 | 1.11 |
| | Differences | none | none | e | none | c,g | none | e |
| Not enough water along the trail | Not a problem (1) | 50.00 | 62.96 | 61.49 | 53.13 | 46.06 | 52.63 | 89.47 |
| | A small problem (2) | 40.00 | 29.63 | 30.43 | 28.13 | 42.42 | 36.84 | 7.89 |
| | A big problem (3) | 10.00 | 7.41 | 6.21 | 15.63 | 9.70 | 10.53 | 0.00 |
| | Don't know (4) | 0.00 | 0.00 | 1.86 | 3.13 | 1.82 | 0.00 | 2.63 |
| | Mean | 1.60 | 1.44 | 1.44 | 1.61 | 1.63 | 1.58 | 1.08 |
| | Differences | g | none | g | g | g | none | a,c,d,e |
| Too many facilities along the trails | Not a problem (1) | 89.29 | 88.89 | 93.13 | 86.67 | 85.98 | 89.47 | 89.47 |
| | A small problem (2) | 7.14 | 7.41 | 5.63 | 10.00 | 9.15 | 10.53 | 7.89 |
| | A big problem (3) | 0.00 | 3.70 | 0.00 | 0.00 | 0.00 | 0.00 | 2.63 |
| | Don't know (4) | 3.57 | 0.00 | 1.25 | 3.33 | 4.88 | 0.00 | 0.00 |
| | Mean | 1.07 | 1.15 | 1.06 | 1.10 | 1.10 | 1.11 | 1.13 |
| | Differences | none | none | none | none | none | none | none |

Table 5-3. Problems on your day hike (mailback q13) continued

| | | User Type (Percent) | | | | | | |
|--|---------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Not enough information about natural/cultural history | Not a problem (1) | 56.67 | 51.85 | 70.44 | 65.63 | 65.22 | 77.78 | 92.11 |
| | A small problem (2) | 26.67 | 40.74 | 25.16 | 31.25 | 28.57 | 16.67 | 7.89 |
| | A big problem (3) | 10.00 | 7.41 | 3.14 | 3.13 | 5.59 | 5.56 | 0.00 |
| | Don't know (4) | 6.67 | 0.00 | 1.26 | 0.00 | 0.62 | 0.00 | 0.00 |
| | Mean | 1.50 | 1.56 | 1.32 | 1.38 | 1.40 | 1.28 | 1.08 |
| | Differences | g | g | none | none | g | none | a,b,e |
| Not enough parking at trailhead | Not a problem (1) | 56.67 | 77.78 | 61.49 | 59.38 | 54.04 | 68.42 | 60.53 |
| | A small problem (2) | 33.33 | 22.22 | 26.09 | 28.13 | 26.09 | 26.32 | 23.68 |
| | A big problem (3) | 3.33 | 0.00 | 11.18 | 6.25 | 17.39 | 5.26 | 15.79 |
| | Don't know (4) | 6.67 | 0.00 | 1.24 | 6.25 | 2.48 | 0.00 | 0.00 |
| | Mean | 1.43 | 1.22 | 1.49 | 1.43 | 1.62 | 1.37 | 1.55 |
| | Differences | none | none | none | none | none | none | none |
| Lack of public transportation | Not a problem (1) | 66.67 | 66.67 | 80.75 | 71.88 | 61.11 | 52.63 | 65.79 |
| | A small problem (2) | 20.00 | 18.52 | 11.80 | 9.38 | 20.99 | 26.32 | 18.42 |
| | A big problem (3) | 6.67 | 3.70 | 2.48 | 3.13 | 13.58 | 21.05 | 10.53 |
| | Don't know (4) | 6.67 | 11.11 | 4.97 | 15.63 | 4.32 | 0.00 | 5.26 |
| | Mean | 1.36 | 1.29 | 1.18 | 1.19 | 1.50 | 1.68 | 1.42 |
| | Differences | none | none | e,f | none | c | c | none |

Fourth, Grand Canyon day hikers were asked to indicate the extent to which 24 things that can happen during a hike like the one they took in Grand Canyon would negatively or positively effect their day hiking experience (Table 5-4). Respondents were asked to state whether the effect of each item would be “extremely negative”, “negative”, “positive”, or “extremely positive”. A “neutral” option was also provided.

Several items were indicated as having a negative effect on the hiking experience of all types of Grand Canyon day hikers, if they were to happen. These items included hearing many aircraft while hiking, encountering many inconsiderate people, being unable to reach their destination, not learning much about natural and cultural history, not seeing much wildlife, seeing many other people along the trail, seeing lots of trash and litter along the trail, seeing many mules on the trail, seeing lots of soil and vegetation damage, and not having many canyon views while hiking. The items that tended to have the strongest negative effect on the hiking experience of all types of Grand Canyon day hikers were seeing lots of trash and litter along the trail, encountering many inconsiderate people, and seeing lots of soil and vegetation damage.

There were a number of items that all types of Grand Canyon day hikers, on average, indicated would have a positive effect on their day hiking experience. These items included not seeing many people along the trail, having many canyon views while hiking, not hearing any aircraft while hiking, not seeing much litter and trash along the trail, not seeing much soil and vegetation damage, not seeing many mules along the trail, seeing lots of wildlife while hiking, not encountering many inconsiderate people, learning lots about the natural and cultural history of the area, and being able to reach their destination. The items that tended to have the strongest positive effect on the hiking experience of all types of Grand Canyon day hikers were having many canyon views while hiking, not seeing much litter and trash along the trail, and not seeing much soil and vegetation damage.

On average, the positive effect of being able to reach their destination was greater, for all types of Grand Canyon day hikers, than the negative effect of not being able to reach their destination. In addition, the positive effect of learning about the natural and cultural history of the area, and the positive effect of seeing wildlife during their day hike were stronger, for all types of Grand Canyon day hikers, than the negative effect of not learning about the natural and cultural history of the area, and the negative effect of not

seeing wildlife, respectively. The positive effect of not seeing many people along the trail was not as significant for all types of corridor and rim trail day hikers as it was for all other types of Grand Canyon day hikers. Also, the negative effect of seeing many people along the trail was not as significant for all types of corridor and rim trail day hikers as it was for all other types of Grand Canyon day hikers.

Half of all threshold trail hikers during the summer (50.0%), and nearly half of all primitive trail day hikers (46.0%) indicated that they were neutral about socializing with other members of their group. The majority of all other types of Grand Canyon day hikers reported that they were neutral about socializing with other members of their group. More than one-quarter of all types of Grand Canyon day hikers were neutral about not being able to find many sources of drinking water along the trail.

Table 5-4. Things that can happen on a day hike (mailback q14)

| | | User Type (Percent) | | | | | | |
|---------------------------------------|-------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Heard many aircraft while hiking | Extremely negative (-2) | 33.33 | 57.14 | 29.40 | 34.38 | 29.30 | 31.58 | 44.74 |
| | Negative (-1) | 33.33 | 17.86 | 41.90 | 21.88 | 40.90 | 31.58 | 39.47 |
| | Neutral (0) | 33.33 | 25.00 | 25.60 | 43.75 | 25.60 | 31.58 | 13.16 |
| | Positive (1) | 0.00 | 0.00 | 1.30 | 0.00 | 1.20 | 0.00 | 0.00 |
| | Extremely Positive (2) | 0.00 | 0.00 | 1.90 | 0.00 | 3.00 | 5.26 | 2.63 |
| | Mean | -1.00 | -1.32 | -0.96 | -0.91 | -0.92 | -0.84 | -1.24 |
| | Differences | none | none | none | none | none | none | none |
| Encountered many inconsiderate people | Extremely negative (-2) | 50.00 | 67.86 | 52.80 | 51.61 | 58.50 | 52.63 | 54.05 |
| | Negative (-1) | 23.30 | 17.86 | 30.40 | 22.58 | 23.20 | 26.32 | 21.62 |
| | Neutral (0) | 26.70 | 7.14 | 14.30 | 22.58 | 13.40 | 10.53 | 24.32 |
| | Positive (1) | 0.00 | 3.57 | 1.20 | 0.00 | 2.40 | 5.26 | 0.00 |
| | Extremely Positive (2) | 0.00 | 3.57 | 1.20 | 3.23 | 2.40 | 5.26 | 0.00 |
| | Mean | -1.23 | -1.43 | -1.32 | -1.19 | -1.33 | -1.16 | -1.30 |
| | Differences | none | none | none | none | none | none | none |
| Found many drinking water sources | Extremely negative (-2) | 6.90 | 25.00 | 4.40 | 6.25 | 4.80 | 15.79 | 18.42 |
| | Negative (-1) | 17.20 | 25.00 | 15.10 | 9.38 | 21.20 | 15.79 | 23.68 |
| | Neutral (0) | 27.60 | 21.43 | 24.50 | 28.13 | 19.40 | 26.32 | 44.74 |
| | Positive (1) | 34.50 | 14.29 | 38.40 | 46.88 | 30.30 | 31.58 | 10.53 |
| | Extremely Positive (2) | 13.80 | 14.29 | 17.60 | 9.38 | 24.20 | 10.53 | 2.63 |
| | Mean | 0.31 | -0.32 | 0.50 | 0.44 | 0.48 | 0.01 | -0.45 |
| | Differences | none | c,e | b,g | g | b,g | none | c,d,e |

| Table 5-4. Things that can happen on a day hike (mailback q14) continued | | | | | | | | |
|--|-------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | User Type (Percent) | | | | | | |
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Was unable to reach my destination | Extremely negative (-2) | 23.30 | 22.22 | 17.10 | 9.38 | 37.40 | 21.05 | 10.53 |
| | Negative (-1) | 33.30 | 14.81 | 44.30 | 56.25 | 25.20 | 36.84 | 31.58 |
| | Neutral (0) | 43.30 | 48.15 | 31.60 | 28.13 | 29.40 | 26.32 | 47.37 |
| | Positive (1) | 0.00 | 7.41 | 3.80 | 0.00 | 4.90 | 15.79 | 5.26 |
| | Extremely Positive (2) | 0.00 | 7.41 | 3.20 | 6.25 | 3.10 | 0.00 | 5.26 |
| | Mean | -0.80 | -0.37 | -0.68 | -0.63 | -0.89 | -0.63 | -0.37 |
| | Differences | none | none | none | none | none | none | none |
| Didn't see many people along the trail | Extremely negative (-2) | 3.30 | 3.70 | 3.10 | 3.13 | 2.50 | 10.53 | 0.00 |
| | Negative (-1) | 3.30 | 3.70 | 11.90 | 9.38 | 8.60 | 10.53 | 0.00 |
| | Neutral (0) | 23.30 | 3.70 | 31.30 | 34.38 | 28.80 | 26.32 | 21.05 |
| | Positive (1) | 30.00 | 22.22 | 30.60 | 25.00 | 35.60 | 31.58 | 23.68 |
| | Extremely Positive (2) | 40.00 | 66.67 | 23.10 | 28.13 | 24.50 | 21.05 | 55.26 |
| | Mean | 1.00 | 1.44 | 0.59 | 0.66 | 0.71 | 0.42 | 1.34 |
| | Differences | none | c,e,f | b,g | none | b,g | b,g | c,e,f |
| Did a lot of socializing with other members of my group | Extremely negative (-2) | 3.30 | 3.70 | 1.30 | 0.00 | 3.10 | 10.53 | 5.26 |
| | Negative (-1) | 3.30 | 0.00 | 5.60 | 0.00 | 3.10 | 10.53 | 13.16 |
| | Neutral (0) | 46.70 | 55.56 | 38.10 | 41.94 | 34.20 | 52.63 | 44.74 |
| | Positive (1) | 46.70 | 37.04 | 42.50 | 41.94 | 42.90 | 26.32 | 21.05 |
| | Extremely Positive (2) | 0.00 | 3.70 | 12.50 | 16.13 | 16.80 | 0.00 | 15.79 |
| | Mean | 0.37 | 0.37 | 0.59 | 0.74 | 0.67 | -0.01 | 0.29 |
| | Differences | none | none | f | f | f | c,d,e | none |

Table 5-4. Things that can happen on a day hike (mailback q14) continued

| | | User Type (Percent) | | | | | | |
|--|-------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Didn't learn much about natural and cultural history | Extremely negative (-2) | 16.70 | 7.41 | 13.10 | 6.25 | 11.10 | 10.53 | 5.26 |
| | Negative (-1) | 50.00 | 51.85 | 57.50 | 59.38 | 54.90 | 63.16 | 34.21 |
| | Neutral (0) | 23.30 | 37.04 | 26.30 | 31.25 | 26.50 | 21.05 | 57.89 |
| | Positive (1) | 10.00 | 0.00 | 1.90 | 0.00 | 4.90 | 0.00 | 2.63 |
| | Extremely Positive (2) | 0.00 | 3.70 | 1.30 | 3.13 | 2.50 | 5.26 | 0.00 |
| | Mean | -0.73 | -0.59 | -0.79 | -0.66 | -0.67 | -0.74 | -0.42 |
| | Differences | none | none | none | none | none | none | none |
| Didn't see much wildlife while hiking | Extremely negative (-2) | 16.70 | 18.52 | 15.10 | 9.38 | 15.40 | 15.79 | 5.26 |
| | Negative (-1) | 60.00 | 51.85 | 56.00 | 59.38 | 49.40 | 52.63 | 39.47 |
| | Neutral (0) | 20.00 | 22.22 | 26.40 | 25.00 | 27.20 | 21.05 | 47.37 |
| | Positive (1) | 0.00 | 7.41 | 0.60 | 0.00 | 5.60 | 5.26 | 5.26 |
| | Extremely Positive (2) | 3.30 | 0.00 | 1.90 | 6.25 | 2.50 | 5.26 | 2.63 |
| | Mean | -0.87 | -0.81 | -0.82 | -0.66 | -0.70 | -0.68 | -0.39 |
| | Differences | none | none | none | none | none | none | none |
| Had many canyon views while hiking | Extremely negative (-2) | 0.00 | 0.00 | 2.50 | 3.23 | 0.60 | 0.00 | 0.00 |
| | Negative (-1) | 0.00 | 3.70 | 1.30 | 0.00 | 2.50 | 0.00 | 5.26 |
| | Neutral (0) | 3.30 | 0.00 | 1.90 | 0.00 | 2.50 | 0.00 | 7.89 |
| | Positive (1) | 20.00 | 18.52 | 21.40 | 22.58 | 19.80 | 5.26 | 18.42 |
| | Extremely Positive (2) | 76.70 | 77.78 | 73.00 | 74.19 | 74.70 | 94.74 | 68.42 |
| | Mean | 1.73 | 1.70 | 1.61 | 1.65 | 1.65 | 1.95 | 1.50 |
| | Differences | none | none | none | none | none | none | none |
| Saw many other people along the trail | Extremely negative (-2) | 26.70 | 48.15 | 15.80 | 21.88 | 20.00 | 15.79 | 28.95 |
| | Negative (-1) | 60.00 | 22.22 | 38.00 | 31.25 | 41.90 | 31.58 | 44.74 |
| | Neutral (0) | 10.00 | 22.22 | 29.70 | 34.38 | 25.00 | 26.32 | 15.79 |
| | Positive (1) | 3.30 | 3.70 | 13.30 | 9.38 | 9.40 | 26.32 | 2.63 |
| | Extremely Positive (2) | 0.00 | 3.70 | 3.20 | 3.13 | 3.80 | 0.00 | 7.89 |
| | Mean | -1.10 | -1.07 | -0.50 | -0.59 | -0.65 | -0.37 | -0.84 |
| | Differences | c | none | a | none | none | none | none |

Table 5-4. Things that can happen on a day hike (mailback q14) continued

| | | User Type (Percent) | | | | | | |
|---|-------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Didn't hear any aircraft while hiking | Extremely negative (-2) | 0.00 | 0.00 | 0.60 | 0.00 | 1.90 | 5.26 | 2.70 |
| | Negative (-1) | 0.00 | 3.70 | 1.30 | 0.00 | 3.10 | 5.26 | 2.70 |
| | Neutral (0) | 13.30 | 22.22 | 20.30 | 18.75 | 18.50 | 10.53 | 8.11 |
| | Positive (1) | 43.30 | 3.70 | 36.70 | 37.50 | 32.10 | 42.11 | 21.62 |
| | Extremely Positive (2) | 43.30 | 70.37 | 41.10 | 43.75 | 44.40 | 36.84 | 64.86 |
| | Mean | 1.30 | 1.41 | 1.16 | 1.25 | 1.14 | 1.00 | 1.43 |
| | Differences | none | none | none | none | none | none | none |
| Didn't see much trash and litter along the trail | Extremely negative (-2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.63 |
| | Negative (-1) | 3.30 | 0.00 | 3.80 | 0.00 | 4.30 | 10.53 | 0.00 |
| | Neutral (0) | 0.00 | 3.70 | 3.80 | 6.25 | 6.20 | 5.26 | 10.53 |
| | Positive (1) | 20.00 | 14.81 | 25.80 | 12.50 | 20.40 | 15.79 | 13.16 |
| | Extremely Positive (2) | 76.70 | 81.48 | 66.70 | 81.25 | 69.10 | 68.42 | 73.68 |
| | Mean | 1.70 | 1.78 | 1.55 | 1.75 | 1.54 | 1.42 | 1.55 |
| | Differences | none | none | none | none | none | none | none |
| Didn't see much soil and vegetation damage | Extremely negative (-2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.26 | 0.00 |
| | Negative (-1) | 3.30 | 0.00 | 1.90 | 0.00 | 6.2 | 0.00 | 0.00 |
| | Neutral (0) | 0.00 | 3.70 | 5.10 | 9.38 | 9.90 | 5.26 | 13.16 |
| | Positive (1) | 33.30 | 18.52 | 39.90 | 21.88 | 25.90 | 15.79 | 26.32 |
| | Extremely Positive (2) | 63.30 | 77.78 | 53.20 | 68.75 | 58.00 | 73.68 | 60.53 |
| | Mean | 1.57 | 1.74 | 1.44 | 1.59 | 1.36 | 1.53 | 1.47 |
| | Differences | none | none | none | none | none | none | none |
| Didn't see many mules along trail | Extremely negative (-2) | 0.00 | 0.00 | 1.30 | 0.00 | 2.50 | 0.00 | 2.63 |
| | Negative (-1) | 3.30 | 7.41 | 8.90 | 6.25 | 7.60 | 0.00 | 2.63 |
| | Neutral (0) | 6.70 | 29.63 | 39.20 | 40.63 | 40.10 | 47.37 | 13.16 |
| | Positive (1) | 36.70 | 18.52 | 27.20 | 28.13 | 28.70 | 36.84 | 26.32 |
| | Extremely Positive (2) | 53.30 | 44.44 | 23.40 | 25.00 | 21.00 | 15.79 | 55.26 |
| | Mean | 1.40 | 1.00 | 0.63 | 0.72 | 0.58 | 0.68 | 1.29 |
| | Differences | c,e | none | a,g | none | a,g | none | c,e |

Table 5-4. Things that can happen on a day hike (mailback q14) continued

| | | User Type (Percent) | | | | | | |
|--|-------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Didn't find many sources of drinking water | Extremely negative (-2) | 16.70 | 3.70 | 9.50 | 9.38 | 19.80 | 10.53 | 5.41 |
| | Negative (-1) | 16.70 | 18.52 | 41.80 | 34.38 | 40.70 | 31.58 | 2.70 |
| | Neutral (0) | 46.70 | 37.04 | 32.90 | 43.75 | 29.00 | 26.32 | 48.65 |
| | Positive (1) | 13.30 | 18.52 | 10.80 | 6.25 | 6.80 | 15.79 | 16.22 |
| | Extremely Positive (2) | 6.70 | 22.22 | 5.10 | 6.25 | 3.70 | 15.79 | 27.03 |
| | Mean | -0.23 | 0.37 | -0.40 | -0.34 | -0.66 | -0.01 | 0.57 |
| | Differences | g | c,e | b,g | g | b,g | none | a,c,d,e |
| Saw lots of trash and litter along the trail | Extremely negative (-2) | 80.0 | 85.19 | 75.30 | 78.13 | 69.60 | 89.47 | 72.22 |
| | Negative (-1) | 10.00 | 7.41 | 17.10 | 9.38 | 11.20 | 5.26 | 11.11 |
| | Neutral (0) | 6.70 | 3.70 | 5.10 | 9.38 | 12.40 | 0.00 | 11.11 |
| | Positive (1) | 0.00 | 0.00 | 1.30 | 0.00 | 2.50 | 5.26 | 0.00 |
| | Extremely Positive (2) | 3.30 | 3.70 | 1.30 | 3.13 | 4.30 | 0.00 | 5.56 |
| | Mean | -1.63 | -1.70 | -1.64 | -1.59 | -1.39 | -1.79 | -1.44 |
| | Differences | none | none | none | none | none | none | none |
| Saw lots of wildlife while hiking | Extremely negative (-2) | 10.00 | 0.00 | 1.30 | 3.13 | 5.00 | 0.00 | 2.63 |
| | Negative (-1) | 0.00 | 3.70 | 3.80 | 6.25 | 5.60 | 5.26 | 0.00 |
| | Neutral (0) | 3.30 | 7.41 | 3.80 | 6.25 | 13.00 | 0.00 | 13.16 |
| | Positive (1) | 26.70 | 14.81 | 33.10 | 31.25 | 29.20 | 47.37 | 28.95 |
| | Extremely Positive (2) | 60.00 | 74.07 | 58.00 | 53.13 | 47.20 | 47.37 | 55.26 |
| | Mean | 1.27 | 1.59 | 1.43 | 1.25 | 1.08 | 1.37 | 1.34 |
| | Differences | none | none | e | none | c | none | none |
| Didn't encounter many inconsiderate people | Extremely negative (-2) | 3.30 | 0.00 | 0.00 | 6.25 | 2.50 | 5.26 | 0.00 |
| | Negative (-1) | 0.00 | 0.00 | 3.20 | 0.00 | 3.80 | 0.00 | 0.00 |
| | Neutral (0) | 13.30 | 7.41 | 3.20 | 3.13 | 12.50 | 5.26 | 15.79 |
| | Positive (1) | 40.00 | 29.63 | 46.80 | 40.63 | 30.60 | 42.11 | 31.58 |
| | Extremely Positive (2) | 43.30 | 62.96 | 46.80 | 50.00 | 50.60 | 47.37 | 52.63 |
| | Mean | 1.20 | 1.56 | 1.37 | 1.28 | 1.23 | 1.26 | 1.37 |
| | Differences | none | none | none | none | none | none | none |

Table 5-4. Things that can happen on a day hike (mailback q14) continued

| | | User Type (Percent) | | | | | | |
|--|-------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Didn't socialize much with other members of my group | Extremely negative (-2) | 10.00 | 3.70 | 5.70 | 9.38 | 7.00 | 5.26 | 10.81 |
| | Negative (-1) | 26.70 | 11.11 | 32.50 | 25.00 | 35.70 | 26.32 | 29.73 |
| | Neutral (0) | 50.00 | 66.67 | 54.80 | 56.25 | 51.00 | 52.63 | 45.95 |
| | Positive (1) | 10.00 | 11.11 | 5.10 | 9.38 | 4.50 | 15.79 | 8.11 |
| | Extremely Positive (2) | 3.30 | 7.41 | 1.90 | 0.00 | 1.90 | 0.00 | 5.41 |
| | Mean | -0.30 | 0.01 | -0.35 | -0.34 | -0.41 | -0.21 | -0.32 |
| | Differences | none | none | none | none | none | none | none |
| Saw many mules on the trail | Extremely negative (-2) | 50.00 | 25.93 | 22.20 | 18.75 | 17.90 | 10.53 | 39.47 |
| | Negative (-1) | 33.30 | 40.74 | 34.80 | 43.75 | 35.30 | 31.58 | 28.95 |
| | Neutral (0) | 13.30 | 22.22 | 34.20 | 34.38 | 37.20 | 52.63 | 23.68 |
| | Positive (1) | 3.30 | 7.41 | 8.90 | 3.13 | 7.70 | 5.26 | 5.26 |
| | Extremely Positive (2) | 0.00 | 3.70 | 0.00 | 0.00 | 1.90 | 0.00 | 2.63 |
| | Mean | -1.30 | -0.78 | -0.70 | -0.78 | -0.60 | -0.47 | -0.97 |
| | Differences | c,e,f | none | a | none | a | a | none |
| Learned lots about natural and cultural history | Extremely negative (-2) | 0.00 | 0.00 | 2.50 | 0.00 | 1.90 | 0.00 | 2.63 |
| | Negative (-1) | 0.00 | 0.00 | 3.80 | 0.00 | 3.70 | 0.00 | 5.26 |
| | Neutral (0) | 16.70 | 18.52 | 17.80 | 21.88 | 17.40 | 5.26 | 26.32 |
| | Positive (1) | 53.30 | 40.74 | 40.10 | 34.38 | 46.00 | 57.89 | 36.84 |
| | Extremely Positive (2) | 30.00 | 40.74 | 35.70 | 43.75 | 31.10 | 36.84 | 28.95 |
| | Mean | 1.13 | 1.22 | 1.03 | 1.22 | 1.01 | 1.32 | 0.84 |
| | Differences | none | none | none | none | none | none | none |
| Saw lots of soil and vegetation damage | Extremely negative (-2) | 63.30 | 70.37 | 56.10 | 62.50 | 56.90 | 63.16 | 57.89 |
| | Negative (-1) | 23.30 | 18.52 | 35.00 | 28.13 | 26.90 | 26.32 | 23.68 |
| | Neutral (0) | 6.70 | 3.70 | 4.50 | 6.25 | 12.50 | 5.26 | 10.53 |
| | Positive (1) | 6.70 | 0.00 | 2.50 | 3.13 | 2.50 | 0.00 | 5.26 |
| | Extremely Positive (2) | 0.00 | 7.41 | 1.90 | 0.00 | 1.30 | 5.26 | 2.63 |
| | Mean | -1.43 | -1.44 | -1.41 | -1.50 | -1.36 | -1.42 | -1.29 |
| | Differences | none | none | none | none | none | none | none |

| | | User Type (Percent) | | | | | | |
|--|-------------------------|---------------------------------------|-------------------------------------|--------------------------------------|------------------------------------|---------------------------------|-------------------------------|-------------------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Was able to reach my destination | Extremely negative (-2) | 3.30 | 0.00 | 1.30 | 0.00 | 2.50 | 0.00 | 5.26 |
| | Negative (-1) | 3.30 | 3.70 | 7.00 | 9.38 | 1.90 | 10.53 | 0.00 |
| | Neutral (0) | 16.70 | 29.63 | 12.00 | 3.13 | 11.20 | 0.00 | 21.05 |
| | Positive (1) | 36.70 | 29.63 | 32.90 | 43.75 | 34.80 | 42.11 | 39.47 |
| | Extremely Positive (2) | 40.00 | 37.04 | 46.80 | 43.75 | 49.70 | 47.37 | 34.21 |
| | Mean | 1.07 | 1.00 | 1.17 | 1.22 | 1.27 | 1.26 | 0.97 |
| | Differences | none | none | none | none | none | none | none |
| Didn't have many canyon views while hiking | Extremely negative (-2) | 40.00 | 38.46 | 49.00 | 40.63 | 50.90 | 63.16 | 34.21 |
| | Negative (-1) | 40.00 | 34.62 | 42.70 | 37.50 | 32.90 | 26.32 | 31.58 |
| | Neutral (0) | 16.70 | 19.23 | 5.70 | 15.63 | 9.90 | 5.26 | 21.05 |
| | Positive (1) | 0.00 | 3.85 | 1.30 | 3.13 | 2.50 | 5.26 | 10.53 |
| | Extremely Positive (2) | 3.30 | 3.85 | 1.30 | 3.13 | 3.70 | 0.00 | 2.63 |
| | Mean | -1.13 | -1.00 | -1.37 | -1.09 | -1.25 | -1.47 | -0.84 |
| | Differences | none | none | none | none | none | none | none |

Fifth, respondents were asked about what motivated them to day hike at Grand Canyon (Table 5-5). Respondents were asked to indicate how important each of 22 experiences was to them as a reason to go day hiking. Respondents were asked to rate the importance of each experience on a scale from 1 ("Not At All Important") to 5 ("Extremely Important").

Several experiences were identified by the majority of all types of Grand Canyon day hikers as not being important reasons to go day hiking. These experiences included taking risks, using their equipment, meeting new people, being away from the family for a while, sharing their skill and knowledge with others, and showing others they can do it. The majority of all types of Grand Canyon day hikers indicated that experiencing a nicer temperature was either not an important reason or only a slightly important

reason to day hike at Grand Canyon. In addition, the majority of all types of Grand Canyon day hikers indicated that enjoying views of the canyon was an extremely important reason to go day hiking.

Being on their own and experiencing solitude were particularly important experiences for individuals who hiked on a primitive trail – 57.8% indicated that being on their own was very important or extremely important, and 79% indicated that experiencing solitude was very important or extremely important. More than half of all individuals who hiked on a primitive trail (51.3%) indicated that doing something with their family was not an important reason to go day hiking. However, during the summer, the majority of all types of day hikers indicated that doing something with their family was very important or extremely important. In addition, during the fall, more than three-quarters of rim hikers (82.3%) indicated doing something with their family was very important or extremely important. The majority of all types of day hikers during the summertime, and the majority of threshold and rim trail hikers in the fall indicated that being with members of their group was very important or extremely important. Half of all primitive trail day hikers and nearly half of all corridor trail day hikers during the fall (44.8%) reported that being with members of their group was not an important reason for them to go day hiking.

Grand Canyon day hikers tended to place no more than moderate importance on day hiking in order to test their endurance, to be creative, to bring back pleasant memories of a prior visit, or to experience a hike to the bottom of the Grand Canyon. All types of Grand Canyon day hikers tended to place at least moderate importance on day hiking in order to get exercise, to relax physically, to help reduce tension, to be close to nature, and to learn more about things.

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|---------------------|--------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To be on my own | Not at all important (1) | 16.67 | 18.52 | 45.00 | 24.14 | 42.77 | 44.44 | 10.53 |
| | Slightly important (2) | 26.67 | 14.81 | 18.13 | 17.24 | 11.95 | 16.67 | 5.26 |
| | Moderately important (3) | 23.33 | 22.22 | 23.13 | 27.59 | 23.27 | 27.78 | 26.32 |
| | Very important (4) | 23.33 | 29.63 | 6.25 | 27.59 | 16.35 | 5.56 | 26.32 |
| | Extremely important (5) | 10.00 | 14.81 | 7.50 | 3.45 | 5.66 | 5.56 | 31.58 |
| | Mean | 2.83 | 3.07 | 2.13 | 2.69 | 2.30 | 2.11 | 3.63 |
| | Differences | none | c | b,g | g | g | g | c,d,e,f |
| To take risks | Not at all important (1) | 76.67 | 61.54 | 67.30 | 75.86 | 74.84 | 82.35 | 52.63 |
| | Slightly important (2) | 0.00 | 15.38 | 17.61 | 10.34 | 13.21 | 11.76 | 18.42 |
| | Moderately important (3) | 16.67 | 11.54 | 11.95 | 13.79 | 8.81 | 0.00 | 18.42 |
| | Very important (4) | 6.67 | 7.69 | 1.89 | 0.00 | 1.89 | 0.00 | 5.26 |
| | Extremely important (5) | 0.00 | 3.85 | 1.26 | 0.00 | 1.26 | 5.88 | 5.26 |
| | Mean | 1.53 | 1.77 | 1.52 | 1.38 | 1.42 | 1.35 | 1.92 |
| | Differences | none | none | none | none | g | none | e |
| To use my equipment | Not at all important (1) | 70.00 | 51.85 | 59.24 | 72.41 | 59.62 | 50.00 | 38.89 |
| | Slightly important (2) | 10.00 | 18.52 | 17.20 | 3.45 | 10.26 | 16.67 | 19.44 |
| | Moderately important (3) | 16.67 | 14.81 | 12.74 | 13.79 | 19.23 | 22.22 | 22.22 |
| | Very important (4) | 3.33 | 3.70 | 8.28 | 6.90 | 6.41 | 0.00 | 5.56 |
| | Extremely important (5) | 0.00 | 11.11 | 2.55 | 3.45 | 4.49 | 11.11 | 13.89 |
| | Mean | 1.53 | 2.04 | 1.78 | 1.66 | 1.86 | 2.06 | 2.36 |
| | Differences | none | none | none | none | none | none | none |

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|-----------------------------------|--------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To do something with my family | Not at all important (1) | 25.00 | 42.31 | 18.13 | 35.71 | 13.07 | 5.88 | 51.35 |
| | Slightly important (2) | 7.14 | 3.85 | 6.88 | 7.14 | 3.92 | 0.00 | 2.70 |
| | Moderately important (3) | 7.14 | 15.38 | 11.88 | 10.71 | 7.19 | 11.76 | 8.11 |
| | Very important (4) | 39.29 | 23.08 | 26.88 | 35.71 | 33.33 | 23.53 | 16.22 |
| | Extremely important (5) | 21.43 | 15.38 | 36.25 | 10.71 | 42.48 | 58.82 | 21.62 |
| | Mean | 3.25 | 2.65 | 3.56 | 2.79 | 3.88 | 4.29 | 2.54 |
| | Differences | none | e,f | g | e,f | b,d,g | b,d,g | c,e,f |
| To be with members of my group | Not at all important (1) | 23.33 | 26.92 | 22.15 | 44.83 | 30.34 | 17.65 | 50.00 |
| | Slightly important (2) | 16.67 | 11.54 | 7.38 | 3.45 | 4.14 | 11.76 | 7.89 |
| | Moderately important (3) | 6.67 | 7.69 | 14.09 | 20.69 | 11.72 | 17.65 | 7.89 |
| | Very important (4) | 30.00 | 42.31 | 32.89 | 20.69 | 22.76 | 17.65 | 18.42 |
| | Extremely important (5) | 23.33 | 11.54 | 23.49 | 10.34 | 31.03 | 35.29 | 15.79 |
| | Mean | 3.13 | 3.00 | 3.28 | 2.48 | 3.20 | 3.41 | 2.42 |
| | Differences | none | none | g | none | none | none | c |
| To meet new people | Not at all important (1) | 60.00 | 85.19 | 60.38 | 65.52 | 64.15 | 55.56 | 65.79 |
| | Slightly important (2) | 23.33 | 14.81 | 21.38 | 27.59 | 17.61 | 16.67 | 23.68 |
| | Moderately important (3) | 13.33 | 0.00 | 12.58 | 6.90 | 11.32 | 16.67 | 5.26 |
| | | | | | | | | |
| | Very important (4) | 3.33 | 0.00 | 4.40 | 0.00 | 5.66 | 5.56 | 0.00 |
| | Extremely important (5) | 0.00 | 0.00 | 1.26 | 0.00 | 1.26 | 5.56 | 5.26 |
| | Mean | 1.60 | 1.15 | 1.65 | 1.41 | 1.62 | 1.89 | 1.55 |
| | Differences | none | none | none | none | none | none | none |

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|-----------------------------------|--------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To learn more about things there | Not at all important (1) | 0.00 | 7.41 | 5.70 | 3.45 | 3.14 | 0.00 | 13.51 |
| | Slightly important (2) | 16.67 | 14.81 | 12.03 | 6.90 | 5.66 | 0.00 | 5.41 |
| | Moderately important (3) | 30.00 | 22.22 | 32.28 | 31.03 | 21.38 | 11.76 | 37.84 |
| | Very important (4) | 33.33 | 33.33 | 37.34 | 41.38 | 46.54 | 47.06 | 16.22 |
| | Extremely important (5) | 20.00 | 22.22 | 12.66 | 17.24 | 23.27 | 41.18 | 27.03 |
| | Mean | 3.57 | 3.48 | 3.39 | 3.62 | 3.81 | 4.29 | 3.38 |
| | Differences | none | none | e,f | none | c | c,g | f |
| To enjoy views of the canyon | Not at all important (1) | 0.00 | 0.00 | 0.63 | 0.00 | 0.62 | 0.00 | 0.00 |
| | Slightly important (2) | 0.00 | 0.00 | 0.63 | 0.00 | 0.62 | 0.00 | 0.00 |
| | Moderately important (3) | 3.33 | 3.70 | 4.38 | 3.45 | 3.73 | 0.00 | 10.53 |
| | Very important (4) | 30.00 | 33.33 | 28.75 | 20.69 | 21.74 | 5.88 | 28.95 |
| | Extremely important (5) | 66.67 | 62.96 | 65.63 | 75.86 | 73.29 | 94.12 | 60.53 |
| | Mean | 4.63 | 4.59 | 4.58 | 4.72 | 4.66 | 4.94 | 4.50 |
| | Differences | none | none | none | none | none | none | none |
| To think about my personal values | Not at all important (1) | 20.00 | 25.93 | 27.67 | 27.59 | 26.58 | 16.67 | 10.53 |
| | Slightly important (2) | 10.00 | 11.11 | 22.64 | 13.79 | 22.15 | 33.33 | 18.42 |
| | Moderately important (3) | 30.00 | 25.93 | 23.90 | 31.03 | 21.52 | 27.78 | 18.42 |
| | Very important (4) | 26.67 | 22.22 | 20.75 | 6.90 | 18.99 | 5.56 | 31.58 |
| | Extremely important (5) | 13.33 | 14.81 | 5.03 | 20.69 | 10.76 | 16.67 | 21.05 |
| | Mean | 3.03 | 2.89 | 2.53 | 2.79 | 2.65 | 2.72 | 3.34 |
| | Differences | none | none | g | none | none | none | c |

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|---|--------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To be close to nature | Not at all important (1) | 3.33 | 0.00 | 1.26 | 3.45 | 1.24 | 0.00 | 0.00 |
| | Slightly important (2) | 3.33 | 0.00 | 7.55 | 0.00 | 4.97 | 0.00 | 2.63 |
| | Moderately important (3) | 10.00 | 11.11 | 15.72 | 6.90 | 11.80 | 11.11 | 7.89 |
| | Very important (4) | 30.00 | 29.63 | 35.22 | 37.93 | 32.30 | 22.22 | 23.68 |
| | Extremely important (5) | 53.33 | 59.26 | 40.25 | 51.72 | 49.69 | 66.67 | 65.79 |
| | Mean | 4.27 | 4.48 | 4.06 | 4.34 | 4.24 | 4.56 | 4.53 |
| | Differences | none | none | none | none | none | none | none |
| To be creative | Not at all important (1) | 33.33 | 33.33 | 41.25 | 31.03 | 30.00 | 27.78 | 28.95 |
| | Slightly important (2) | 26.67 | 14.81 | 17.50 | 17.24 | 15.63 | 16.67 | 26.32 |
| | Moderately important (3) | 30.00 | 25.93 | 18.75 | 17.24 | 24.38 | 27.78 | 26.32 |
| | Very important (4) | 3.33 | 14.81 | 16.88 | 17.24 | 21.25 | 22.22 | 5.26 |
| | Extremely important (5) | 6.67 | 11.11 | 5.63 | 17.24 | 8.75 | 5.56 | 13.16 |
| | Mean | 2.23 | 2.56 | 2.28 | 2.72 | 2.63 | 2.61 | 2.47 |
| | Differences | none | none | none | none | none | none | none |
| To bring back pleasant memories of prior visits | Not at all important (1) | 53.57 | 32.00 | 52.23 | 74.07 | 40.94 | 38.89 | 13.89 |
| | Slightly important (2) | 7.14 | 0.00 | 11.46 | 7.41 | 10.74 | 0.00 | 25.00 |
| | Moderately important (3) | 14.29 | 28.00 | 9.55 | 0.00 | 20.81 | 16.67 | 36.11 |
| | | | | | | | | |
| | | | | | | | | |
| | Very important (4) | 14.29 | 20.00 | 13.38 | 11.11 | 12.75 | 22.22 | 11.11 |
| | Extremely important (5) | 10.71 | 20.00 | 13.38 | 7.41 | 14.77 | 22.22 | 13.89 |
| | Mean | 2.21 | 2.96 | 2.24 | 1.70 | 2.50 | 2.89 | 2.86 |
| | Differences | none | d | none | b,g | none | none | d |

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|---------------------------------|--------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To get exercise | Not at all important (1) | 3.33 | 11.11 | 5.66 | 0.00 | 8.13 | 5.56 | 0.00 |
| | Slightly important (2) | 6.67 | 7.41 | 14.47 | 10.34 | 15.00 | 16.67 | 7.89 |
| | Moderately important (3) | 26.67 | 11.11 | 27.67 | 27.59 | 26.88 | 11.11 | 15.79 |
| | Very important (4) | 30.00 | 40.74 | 32.70 | 44.83 | 29.38 | 27.78 | 23.68 |
| | Extremely important (5) | 33.33 | 29.63 | 19.50 | 17.24 | 20.63 | 38.89 | 52.63 |
| | Mean | 3.83 | 3.70 | 3.46 | 3.69 | 3.39 | 3.78 | 4.21 |
| | Differences | none | none | g | none | g | none | c,e |
| To relax physically | Not at all important (1) | 10.71 | 18.52 | 21.02 | 17.86 | 17.50 | 5.56 | 10.53 |
| | Slightly important (2) | 10.71 | 3.70 | 16.56 | 21.43 | 15.00 | 16.67 | 18.42 |
| | Moderately important (3) | 35.71 | 33.33 | 27.39 | 28.57 | 26.88 | 11.11 | 23.68 |
| | Very important (4) | 28.57 | 18.52 | 22.29 | 17.86 | 20.63 | 27.78 | 18.42 |
| | Extremely important (5) | 14.29 | 25.93 | 12.74 | 14.29 | 20.00 | 38.89 | 28.95 |
| | Mean | 3.25 | 3.30 | 2.89 | 2.89 | 3.11 | 3.78 | 3.37 |
| | Differences | none | none | none | none | none | none | none |
| To help reduce built up tension | Not at all important (1) | 13.33 | 14.81 | 31.41 | 17.86 | 25.00 | 11.11 | 5.41 |
| | Slightly important (2) | 16.67 | 22.22 | 15.38 | 25.00 | 13.46 | 22.22 | 16.22 |
| | Moderately important (3) | 26.67 | 18.52 | 19.23 | 32.14 | 25.64 | 22.22 | 27.03 |
| | Very important (4) | 23.33 | 22.22 | 21.15 | 7.14 | 20.51 | 22.22 | 21.62 |
| | Extremely important (5) | 20.00 | 22.22 | 12.82 | 17.86 | 15.38 | 22.22 | 29.73 |
| | Mean | 3.20 | 3.15 | 2.69 | 2.82 | 2.88 | 3.22 | 3.54 |
| | Differences | none | none | g | none | none | none | c |

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|---|--------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To experience solitude | Not at all important (1) | 10.00 | 15.38 | 39.38 | 25.00 | 33.95 | 27.78 | 0.00 |
| | Slightly important (2) | 10.00 | 11.54 | 18.75 | 10.71 | 19.14 | 0.00 | 7.89 |
| | Moderately important (3) | 30.00 | 19.23 | 23.13 | 32.14 | 20.99 | 16.67 | 13.16 |
| | Very important (4) | 26.67 | 23.08 | 11.88 | 14.29 | 14.81 | 38.89 | 28.95 |
| | Extremely important (5) | 23.33 | 30.77 | 6.88 | 17.86 | 11.11 | 16.67 | 50.00 |
| | Mean | 3.43 | 3.42 | 2.28 | 2.89 | 2.50 | 3.17 | 4.21 |
| | Differences | c,e | c,e | a,b,g | g | a,b,g | none | c,d,e |
| To be away from the family for a while | Not at all important (1) | 66.67 | 69.23 | 82.91 | 67.86 | 85.06 | 72.22 | 59.46 |
| | Slightly important (2) | 10.00 | 11.54 | 7.59 | 10.71 | 7.14 | 11.11 | 5.41 |
| | Moderately important (3) | 13.33 | 3.85 | 5.06 | 10.71 | 1.95 | 5.56 | 10.81 |
| | Very important (4) | 0.00 | 3.85 | 3.16 | 3.57 | 3.25 | 5.56 | 8.11 |
| | Extremely important (5) | 10.00 | 11.54 | 1.27 | 7.14 | 2.60 | 5.56 | 16.22 |
| | Mean | 1.77 | 1.77 | 1.32 | 1.71 | 1.31 | 1.61 | 2.16 |
| | Differences | none | none | g | none | g | none | c,e |
| To share my skill and knowledge with others | Not at all important (1) | 60.00 | 48.15 | 65.63 | 82.14 | 74.05 | 61.11 | 50.00 |
| | Slightly important (2) | 13.33 | 25.93 | 19.38 | 14.29 | 15.19 | 16.67 | 23.68 |
| | Moderately important (3) | 20.00 | 11.11 | 8.13 | 0.00 | 10.13 | 11.11 | 15.79 |
| | Very important (4) | 3.33 | 14.81 | 6.25 | 3.57 | 0.63 | 11.11 | 5.26 |
| | Extremely important (5) | 3.33 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 | 5.26 |
| | Mean | 1.77 | 1.93 | 1.57 | 1.25 | 1.37 | 1.72 | 1.92 |
| | Differences | none | e | none | g | b,g | none | d,e |

Table 5-5. Importance of experiences on your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|-----------------------------------|--------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To experience a nicer temperature | Not at all important (1) | 60.00 | 62.96 | 69.38 | 57.14 | 53.13 | 38.89 | 50.00 |
| | Slightly important (2) | 10.00 | 14.81 | 10.00 | 17.86 | 14.38 | 27.78 | 26.32 |
| | Moderately important (3) | 20.00 | 11.11 | 15.00 | 17.86 | 16.25 | 5.56 | 13.16 |
| | Very important (4) | 3.33 | 11.11 | 5.00 | 3.57 | 8.13 | 22.22 | 5.26 |
| | Extremely important (5) | 6.67 | 0.00 | 0.63 | 3.57 | 8.13 | 5.56 | 5.26 |
| | Mean | 1.87 | 1.70 | 1.58 | 1.79 | 2.04 | 2.28 | 1.89 |
| | Differences | none | none | e | none | c | none | none |
| To show others I can do it | Not at all important (1) | 86.21 | 70.37 | 54.78 | 64.29 | 69.57 | 83.33 | 68.42 |
| | Slightly important (2) | 0.00 | 18.52 | 24.20 | 21.43 | 14.29 | 11.11 | 21.05 |
| | Moderately important (3) | 10.34 | 7.41 | 13.38 | 10.71 | 13.04 | 0.00 | 0.00 |
| | Very important (4) | 0.00 | 3.70 | 3.82 | 3.57 | 3.11 | 0.00 | 7.89 |
| | Extremely important (5) | 3.45 | 0.00 | 3.82 | 0.00 | 0.00 | 5.56 | 2.63 |
| | Mean | 1.34 | 1.44 | 1.78 | 1.54 | 1.50 | 1.33 | 1.55 |
| | Differences | none | none | none | none | none | none | none |
| To test my endurance | Not at all important (1) | 37.93 | 33.33 | 26.58 | 14.29 | 47.20 | 55.56 | 13.16 |
| | Slightly important (2) | 10.34 | 18.52 | 24.05 | 28.57 | 21.74 | 27.78 | 15.79 |
| | Moderately important (3) | 34.48 | 29.63 | 27.22 | 32.14 | 20.50 | 11.11 | 34.21 |
| | Very important (4) | 13.79 | 11.11 | 13.29 | 17.86 | 8.07 | 0.00 | 21.05 |
| | Extremely important (5) | 3.45 | 7.41 | 8.86 | 7.14 | 2.48 | 5.56 | 15.79 |
| | Mean | 2.34 | 2.41 | 2.54 | 2.75 | 1.97 | 1.72 | 3.11 |
| | Differences | none | none | e | e | c,d,g | g | e,f |

| | | User Type (Percent) | | | | | | |
|--|--------------------------|---------------------------------------|-------------------------------------|--------------------------------------|------------------------------------|---------------------------------|-------------------------------|-------------------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To experience a hike to the bottom of the Grand Canyon | Not at all important (1) | 31.03 | 48.00 | 38.06 | 14.81 | 58.28 | 66.67 | 24.32 |
| | Slightly important (2) | 13.79 | 20.00 | 13.55 | 11.11 | 9.27 | 5.56 | 8.11 |
| | Moderately important (3) | 17.24 | 12.00 | 22.58 | 37.04 | 14.57 | 5.56 | 21.62 |
| | Very important (4) | 31.03 | 12.00 | 10.32 | 22.22 | 12.58 | 11.11 | 21.62 |
| | Extremely important (5) | 6.90 | 8.00 | 15.48 | 14.81 | 5.30 | 11.11 | 24.32 |
| | Mean | 2.69 | 2.12 | 2.52 | 3.11 | 1.97 | 1.94 | 3.14 |
| | Differences | none | none | none | none | none | none | none |

The twenty-four experiences mentioned above were grouped into six factors, based on each items correlation to the factors (Table 5-6). The six factors include challenge/risk, solitude, fitness, social/setting, aesthetic/artistic/educational, and group experience. Table 22 reports the mean value of the six factors for each type of Grand Canyon day hiker. The most significant factor groups of hiker motivation for all types of Grand Canyon day hikers were aesthetic/artistic/educational, fitness, and group experience. On average, challenge/risk and social/setting were only slightly important factors for all types of Grand Canyon day hikers. Of all the types of Grand Canyon day hikers, primitive trail day hikers had the highest mean scores for challenge/risk, solitude, and fitness factors, and the lowest mean value for the group experience factor. Rim trail day hikers had the lowest mean values for the challenge/risk factor and corridor trail day hikers had the lowest mean scores for the social/setting factor.

Table 5-6. Factor groups of hiker motivation (mailback q19)

| | | User Type (Percent) | | | | | | |
|------------------------------------|-------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| Challenge/Risk | Mean | 1.95 | 1.93 | 2.09 | 2.14 | 1.71 | 1.58 | 2.43 |
| | Differences | none | none | e | none | c,g | g | e,f |
| Solitude | Mean | 2.77 | 2.77 | 2.07 | 2.51 | 2.22 | 2.40 | 3.35 |
| | Differences | c,e | c | a,b,g | g | a,g | g | c,d,e,f |
| Fitness | Mean | 3.42 | 3.38 | 3.02 | 3.16 | 3.12 | 3.59 | 3.71 |
| | Differences | none | none | g | none | g | none | c,e |
| Social/Setting | Mean | 1.80 | 1.93 | 1.76 | 1.55 | 1.88 | 2.17 | 2.10 |
| | Differences | none | none | none | g | none | none | d |
| Aesthetic/Artistic/ Educational | Mean | 3.68 | 3.78 | 3.58 | 3.85 | 3.84 | 4.08 | 3.72 |
| | Differences | none | none | e,f | none | c | c | none |
| Group Experience | Mean | 3.18 | 2.89 | 3.47 | 2.66 | 3.58 | 3.81 | 2.51 |
| | Differences | none | none | d,g | c,e,f | d,g | d,g | c,e,f |

Finally, respondents were asked to indicate the extent to which they attained each of the 22 experiences mentioned in Table 21, during their day hike in Grand Canyon (Table 5-7). Respondents were asked to indicate whether each experience was “Not At All Attained”, “Somewhat Attained”, “Moderately Attained”, or “Highly Attained”.

The majority of all types of Grand Canyon day hikers reported that they either moderately attained or highly attained several of the experiences. These experiences include being with members of their group, learning more about things in Grand Canyon,

relaxing physically, and reducing built-up tension. In addition, the majority of all types of Grand Canyon day hikers reported that enjoying views of the canyon, being close to nature, and getting exercise were all highly attained.

A number of experiences were only somewhat attained or not attained at all by the majority of any type of Grand Canyon day hiker. These experiences include taking risks, meeting new people, being away from the family for a while, sharing their skill and knowledge with others, and showing others they can do it. Being creative was, on average, somewhat to moderately attained by all types of Grand Canyon day hikers.

The majority of individuals who hiked on a primitive trail reported that being on their own was highly attained, compared with all types of summertime day hikers who, on average, reported somewhat to moderately attaining this experience. Half of all primitive trail hikers indicated that doing something with the family was not at all attained, whereas the majority of fall rim trail day hikers, and the majority of all types of day hikers in the summer reported that this experience was highly attained. In addition, during the fall, nearly half of all threshold trail (48%) and corridor trail (46.2%) day hikers indicated that doing something with their family was a highly attained experience.

During the fall, half of all threshold trail day hikers indicated that during their day hike in Grand Canyon, pleasant memories were highly attained. About one-third of all rim trail day hikers – 34.8% during summer and 33.3% during fall - and one-third of all primitive trail day hikers (33.3%) indicated pleasant memories of prior visits to the Grand Canyon were highly attained. In addition, during the summer, about one-quarter of threshold (25%) and corridor (29.2%) trail day hikers reported that this experience was highly attained.

The majority of all types of Grand Canyon day hikers, except corridor and rim trail hikers during the summer, moderately or highly attained an experience of solitude. During the summer, more than one-third of corridor (41.8%) and rim (34.5%) trail day hikers did not attain an experience of solitude at all.

During the fall, the majority of threshold trail (62.5%) and rim trail (62.5%) day hikers did not experience a hike to the bottom of the Grand Canyon at all. In addition, during the summer, the majority of corridor trail (52.7%) and rim trail (75.4%) day hikers did not experience a hike to the bottom of the Grand Canyon. However, nearly half of all primitive trail day hikers (43.2%) and more than one-quarter of threshold trail day hikers during the summer (28.6%) reported that experiencing a hike to the bottom of the Grand Canyon was highly attained.

Table 5-7. Whether experiences were attained during your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|-----------------|-------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|----------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To be on my own | Not at all attained (1) | 13.33 | 14.81 | 37.16 | 25.00 | 33.33 | 18.75 | 5.41 |
| | Somewhat attained (2) | 40.00 | 22.22 | 22.97 | 17.86 | 24.00 | 25.00 | 2.70 |
| | Moderately attained (3) | 13.33 | 25.93 | 20.27 | 17.86 | 18.67 | 50.00 | 27.03 |
| | Highly attained (4) | 33.33 | 37.04 | 19.59 | 39.29 | 24.00 | 6.25 | 64.86 |
| | Mean | 2.67 | 2.85 | 2.22 | 2.71 | 2.33 | 2.44 | 3.51 |
| | Differences | g | none | g | none | g | g | a,c,e,f |
| take risks | Not at all attained (1) | 41.38 | 38.46 | 46.26 | 66.67 | 51.02 | 73.33 | 35.14 |
| | Somewhat attained (2) | 24.14 | 26.92 | 18.37 | 11.11 | 16.33 | 6.67 | 21.62 |
| | Moderately attained (3) | 17.24 | 23.08 | 18.37 | 14.81 | 9.52 | 20.00 | 24.32 |
| | Highly attained (4) | 17.24 | 11.54 | 17.01 | 7.41 | 23.13 | 0.00 | 18.92 |
| | | | | | | | | |
| | Mean | 2.10 | 2.08 | 2.06 | 1.63 | 2.05 | 1.47 | 2.27 |
| | Differences | none | none | none | none | none | none | none |

| | | User Type (Percent) | | | | | | |
|--------------------------------|-------------------------|---------------------------------------|-------------------------------------|--------------------------------------|------------------------------------|---------------------------------|-------------------------------|-------------------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To use my equipment | Not at all attained (1) | 28.57 | 26.92 | 34.72 | 44.44 | 28.97 | 41.18 | 20.00 |
| | Somewhat attained (2) | 21.43 | 19.23 | 16.67 | 14.81 | 20.69 | 17.65 | 20.00 |
| | Moderately attained (3) | 32.14 | 30.77 | 18.75 | 18.52 | 20.69 | 29.41 | 8.57 |
| | Highly attained (4) | 17.86 | 23.08 | 29.86 | 22.22 | 29.66 | 11.76 | 51.43 |
| | Mean | 2.39 | 2.50 | 2.44 | 2.19 | 2.51 | 2.12 | 2.91 |
| | Differences | none | none | none | none | none | none | none |
| To do something with my family | Not at all attained (1) | 18.52 | 28.00 | 14.57 | 30.77 | 16.22 | 5.88 | 50.00 |
| | Somewhat attained (2) | 3.70 | 12.00 | 5.96 | 7.69 | 3.38 | 11.76 | 2.78 |
| | Moderately attained (3) | 11.11 | 12.00 | 13.91 | 15.38 | 10.81 | 5.88 | 16.67 |
| | Highly attained (4) | 66.67 | 48.00 | 65.56 | 46.15 | 69.59 | 76.47 | 30.56 |
| | Mean | 3.26 | 2.80 | 3.30 | 2.77 | 3.34 | 3.53 | 2.28 |
| | Differences | g | none | g | none | g | g | a,c,e,f |
| To be with members of my group | Not at all attained (1) | 17.24 | 16.00 | 16.67 | 28.00 | 20.90 | 26.67 | 44.44 |
| | Somewhat attained (2) | 10.34 | 8.00 | 7.97 | 12.00 | 4.48 | 6.67 | 5.56 |
| | Moderately attained (3) | 20.69 | 12.00 | 13.04 | 28.00 | 13.43 | 13.33 | 16.67 |
| | Highly attained (4) | 51.72 | 64.00 | 62.32 | 32.00 | 61.19 | 53.33 | 33.33 |
| | Mean | 3.07 | 3.24 | 3.21 | 2.64 | 3.15 | 2.93 | 2.39 |
| | Differences | none | none | g | none | g | none | c,e |
| To meet new people | Not at all attained (1) | 27.59 | 57.69 | 36.99 | 40.00 | 36.81 | 47.06 | 57.89 |
| | Somewhat attained (2) | 41.38 | 23.08 | 25.34 | 36.00 | 28.47 | 29.41 | 15.79 |
| | Moderately attained (3) | 17.24 | 7.69 | 25.34 | 12.00 | 14.58 | 11.76 | 10.53 |
| | Highly attained (4) | 13.79 | 11.54 | 12.33 | 12.00 | 20.14 | 11.76 | 15.79 |
| | Mean | 2.17 | 1.73 | 2.13 | 1.96 | 2.18 | 1.88 | 1.84 |
| | Differences | none | none | none | none | none | none | none |

Table 5-7. Whether experiences were attained during your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|-----------------------------------|-------------------------|----------------------------|--------------------------|---------------------------|-------------------------|----------------------|--------------------|--------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To learn more about things there | Not at all attained (1) | 6.90 | 11.11 | 5.30 | 3.57 | 4.52 | 0.00 | 5.41 |
| | Somewhat attained (2) | 31.03 | 11.11 | 28.48 | 32.14 | 18.71 | 0.00 | 16.22 |
| | Moderately attained (3) | 37.93 | 55.56 | 43.71 | 50.00 | 47.74 | 41.18 | 37.84 |
| | Highly attained (4) | 24.14 | 22.22 | 22.52 | 14.29 | 29.03 | 58.82 | 40.54 |
| | Mean | 2.79 | 2.89 | 2.83 | 2.75 | 3.01 | 3.59 | 3.14 |
| | Differences | f | none | f | f | none | a,c,d | none |
| To enjoy views of the canyon | Not at all attained (1) | 0.00 | 0.00 | 0.66 | 0.00 | 0.63 | 0.00 | 0.00 |
| | Somewhat attained (2) | 3.33 | 0.00 | 1.32 | 0.00 | 2.53 | 0.00 | 2.63 |
| | Moderately attained (3) | 16.67 | 7.41 | 19.08 | 14.29 | 15.19 | 0.00 | 10.53 |
| | Highly attained (4) | 80.00 | 92.59 | 78.95 | 85.71 | 81.65 | 100.00 | 86.84 |
| | Mean | 3.77 | 3.93 | 3.76 | 3.86 | 3.78 | 4.00 | 3.84 |
| | Differences | none | none | none | none | none | none | none |
| To think about my personal values | Not at all attained (1) | 13.33 | 18.52 | 19.86 | 16.00 | 16.67 | 11.11 | 10.53 |
| | Somewhat attained (2) | 23.33 | 25.93 | 31.51 | 24.00 | 27.78 | 44.44 | 18.42 |
| | Moderately attained (3) | 40.00 | 18.52 | 29.45 | 36.00 | 27.08 | 27.78 | 26.32 |
| | Highly attained (4) | 23.33 | 37.04 | 19.18 | 24.00 | 28.47 | 16.67 | 44.74 |
| | Mean | 2.73 | 2.74 | 2.48 | 2.68 | 2.67 | 2.50 | 3.05 |
| | Differences | none | none | g | none | none | none | c |
| To be close to nature | Not at all attained (1) | 0.00 | 0.00 | 2.65 | 3.57 | 1.90 | 0.00 | 0.00 |
| | Somewhat attained (2) | 3.33 | 3.70 | 9.27 | 0.00 | 13.92 | 11.11 | 7.89 |
| | Moderately attained (3) | 23.33 | 40.74 | 35.10 | 35.71 | 30.38 | 16.67 | 7.89 |
| | Highly attained (4) | 73.33 | 55.56 | 52.98 | 60.71 | 53.80 | 72.22 | 84.21 |
| | Mean | 3.70 | 3.52 | 3.38 | 3.54 | 3.36 | 3.61 | 3.76 |
| | Differences | none | none | none | none | g | none | e |

| | | User Type (Percent) | | | | | | |
|---|-------------------------|-------------------------------------|-----------------------------------|------------------------------------|----------------------------------|-------------------------------|-----------------------------|-----------------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To be creative | Not at all attained (1) | 32.14 | 25.93 | 31.76 | 25.93 | 24.67 | 23.53 | 30.56 |
| | Somewhat attained (2) | 28.57 | 22.22 | 20.27 | 7.41 | 11.33 | 5.88 | 27.78 |
| | Moderately attained (3) | 17.86 | 22.22 | 26.35 | 29.63 | 31.33 | 35.29 | 16.67 |
| | Highly attained (4) | 21.43 | 29.63 | 21.62 | 37.04 | 32.67 | 35.29 | 25.00 |
| | Mean | 2.29 | 2.56 | 2.38 | 2.78 | 2.72 | 2.82 | 2.36 |
| | Differences | none | none | none | none | none | none | none |
| To bring back pleasant memories of prior visits | Not at all attained (1) | 39.29 | 16.67 | 45.83 | 70.83 | 34.78 | 33.33 | 14.29 |
| | Somewhat attained (2) | 10.71 | 4.17 | 8.33 | 4.17 | 10.14 | 0.00 | 25.71 |
| | Moderately attained (3) | 25.00 | 29.17 | 16.67 | 4.17 | 22.46 | 33.33 | 25.71 |
| | Highly attained (4) | 25.00 | 50.00 | 29.17 | 20.83 | 32.61 | 33.33 | 34.29 |
| | Mean | 2.36 | 3.13 | 2.29 | 1.75 | 2.53 | 2.67 | 2.80 |
| | Differences | none | c,d | b | b,g | none | none | d |
| To get exercise | Not at all attained (1) | 0.00 | 3.70 | 0.66 | 0.00 | 5.26 | 5.56 | 0.00 |
| | Somewhat attained (2) | 3.33 | 3.70 | 5.26 | 7.14 | 11.84 | 5.56 | 0.00 |
| | Moderately attained (3) | 36.67 | 25.93 | 32.24 | 21.43 | 32.24 | 27.78 | 18.92 |
| | Highly attained (4) | 60.00 | 66.67 | 61.84 | 71.43 | 50.66 | 61.11 | 81.08 |
| | Mean | 3.57 | 3.56 | 3.55 | 3.64 | 3.28 | 3.44 | 3.81 |
| | Differences | none | none | e | none | c,g | none | e |
| To relax physically | Not at all attained (1) | 11.11 | 11.11 | 15.75 | 15.38 | 13.16 | 0.00 | 10.81 |
| | Somewhat attained (2) | 18.52 | 0.00 | 21.92 | 23.08 | 19.74 | 11.11 | 8.11 |
| | Moderately attained (3) | 33.33 | 40.74 | 32.19 | 38.46 | 34.21 | 38.89 | 32.43 |
| | Highly attained (4) | 37.04 | 48.15 | 30.14 | 23.08 | 32.89 | 50.00 | 48.65 |
| | Mean | 2.96 | 3.26 | 2.77 | 2.69 | 2.87 | 3.39 | 3.19 |
| | Differences | none | none | none | none | none | none | none |

Table 5-7. Whether experiences were attained during your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|---|-------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To help reduce built up tension | Not at all attained (1) | 13.33 | 11.11 | 23.29 | 20.00 | 13.79 | 5.56 | 5.56 |
| | Somewhat attained (2) | 23.33 | 7.41 | 17.81 | 20.00 | 19.31 | 16.67 | 11.11 |
| | Moderately attained (3) | 36.67 | 33.33 | 30.82 | 36.00 | 33.10 | 44.44 | 19.44 |
| | Highly attained (4) | 26.67 | 48.15 | 28.08 | 24.00 | 33.79 | 33.33 | 63.89 |
| | Mean | 2.77 | 3.19 | 2.64 | 2.64 | 2.87 | 3.06 | 3.42 |
| | Differences | none | none | g | none | none | none | c |
| To experience solitude | Not at all attained (1) | 10.00 | 12.00 | 41.78 | 30.77 | 34.46 | 17.65 | 0.00 |
| | Somewhat attained (2) | 33.33 | 12.00 | 26.71 | 15.38 | 30.41 | 11.76 | 7.89 |
| | Moderately attained (3) | 20.00 | 40.00 | 18.49 | 38.46 | 21.62 | 41.18 | 23.68 |
| | Highly attained (4) | 36.67 | 36.00 | 13.01 | 15.38 | 13.51 | 29.41 | 68.42 |
| | Mean | 2.83 | 3.00 | 2.03 | 2.38 | 2.14 | 2.82 | 3.61 |
| | Differences | c,e,g | c,e | a,b,f,g | g | a,b,g | c | a,c,d,e,f |
| To be away from family for a while | Not at all attained (1) | 41.38 | 50.00 | 70.42 | 56.00 | 66.91 | 62.50 | 44.44 |
| | Somewhat attained (2) | 17.24 | 12.50 | 7.75 | 0.00 | 7.35 | 12.50 | 11.11 |
| | Moderately attained (3) | 10.34 | 8.33 | 6.34 | 16.00 | 7.35 | 18.75 | 11.11 |
| | Highly attained (4) | 31.03 | 29.17 | 15.79 | 28.00 | 18.38 | 6.25 | 33.33 |
| | Mean | 2.31 | 2.17 | 1.67 | 2.16 | 1.77 | 1.69 | 2.33 |
| | Differences | none | none | none | none | none | none | none |
| To share my skill and knowledge with others | Not at all attained (1) | 48.28 | 40.74 | 57.24 | 64.00 | 58.04 | 50.00 | 45.95 |
| | Somewhat attained (2) | 24.14 | 29.63 | 21.38 | 24.00 | 20.28 | 37.50 | 21.62 |
| | Moderately attained (3) | 10.34 | 18.52 | 14.48 | 4.00 | 11.19 | 12.50 | 21.62 |
| | Highly attained (4) | 17.24 | 11.11 | 6.90 | 8.00 | 10.49 | 0.00 | 10.81 |
| | Mean | 1.97 | 2.00 | 1.71 | 1.56 | 1.74 | 1.63 | 1.97 |
| | Differences | none | none | none | none | none | none | none |

Table 5-7. Whether experiences were attained during your day hike at Grand Canyon (mailback q19)

| | | User Type (Percent) | | | | | | |
|--|-------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|--------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Fall Primitive (g) |
| To experience a nicer temperature | Not at all attained (1) | 41.38 | 30.77 | 62.33 | 32.00 | 40.43 | 43.75 | 32.43 |
| | Somewhat attained (2) | 24.14 | 26.92 | 15.07 | 16.00 | 22.70 | 18.75 | 37.84 |
| | Moderately attained (3) | 20.69 | 19.23 | 13.70 | 32.00 | 19.86 | 18.75 | 13.51 |
| | Highly attained (4) | 13.79 | 23.08 | 8.90 | 20.00 | 17.02 | 18.75 | 16.22 |
| | Mean | 2.07 | 2.35 | 1.69 | 2.40 | 2.13 | 2.13 | 2.14 |
| | Differences | none | none | d,e | c | c | none | none |
| To show others I can do it | Not at all attained (1) | 39.29 | 48.00 | 37.67 | 30.77 | 46.53 | 56.25 | 43.24 |
| | Somewhat attained (2) | 17.86 | 8.00 | 23.97 | 23.08 | 14.58 | 25.00 | 21.62 |
| | Moderately attained (3) | 21.43 | 16.00 | 13.01 | 26.92 | 20.83 | 18.75 | 10.81 |
| | Highly attained (4) | 21.43 | 28.00 | 25.34 | 19.23 | 18.06 | 0.00 | 24.32 |
| | Mean | 2.25 | 2.24 | 2.26 | 2.35 | 2.10 | 1.63 | 2.16 |
| | Differences | none | none | none | none | none | none | none |
| To test my endurance | Not at all attained (1) | 17.86 | 11.54 | 14.86 | 11.54 | 33.56 | 31.25 | 10.53 |
| | Somewhat attained (2) | 25.00 | 23.08 | 27.70 | 15.38 | 22.60 | 31.25 | 5.26 |
| | Moderately attained (3) | 28.57 | 38.46 | 28.38 | 30.77 | 24.66 | 31.25 | 26.32 |
| | Highly attained (4) | 28.57 | 26.92 | 29.05 | 42.31 | 19.18 | 6.25 | 57.89 |
| | Mean | 2.68 | 2.81 | 2.72 | 3.04 | 2.29 | 2.13 | 3.32 |
| | Differences | none | none | e,g | e | c,d,g | g | c,e,f |
| To experience a hike to the bottom of the Grand Canyon | Not at all attained (1) | 32.14 | 62.50 | 52.74 | 42.31 | 75.35 | 62.50 | 24.32 |
| | Somewhat attained (2) | 32.14 | 16.67 | 15.07 | 30.77 | 7.75 | 12.50 | 10.81 |
| | Moderately attained (3) | 7.14 | 4.17 | 13.01 | 7.69 | 7.75 | 12.50 | 21.62 |
| | Highly attained (4) | 28.57 | 16.67 | 19.18 | 19.23 | 9.15 | 12.50 | 43.24 |
| | Mean | 2.32 | 1.75 | 1.99 | 2.04 | 1.51 | 1.75 | 2.84 |
| | Differences | e | g | e,g | none | a,c,g | g | b,c,e,f |

VI. Study Findings: Crowding on Trails

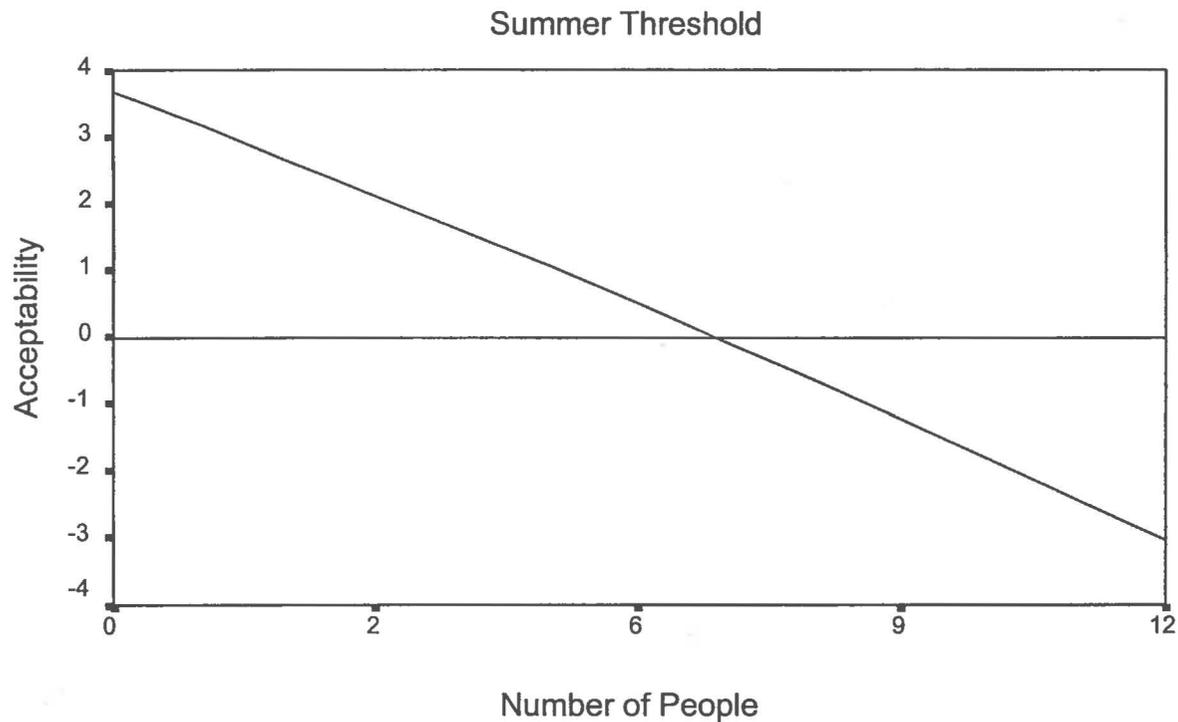
Respondents were presented with a series of questions about their standards of quality with respect to the number of visitors along the type of trail they hiked on during the day they were contacted for this survey. As described in Chapter 2, respondents who had hiked on a threshold trail were shown a series of five photographs depicting a range of visitors along an approximately 50 meter section of a threshold trail. Respondents who had hiked on a corridor trail or rim trail were shown a series of six photographs depicting a range of visitors along a corridor trail or rim trail, respectively. The levels of use depicted in the photographs ranged from 0 to 12 people on the threshold trail, 0 to 16 people on the corridor trail, and 0 to 18 people on the rim trail. Respondents were asked to rate the acceptability of each photograph on a scale from +4 ("Very Acceptable") to -4 ("Very Unacceptable").

Table 6-1 reports the mean acceptability rating for each photograph along a threshold trail at Grand Canyon. In the summer, the mean acceptability rating given to the photographs by threshold trail day hikers ranged from 3.6 for the photograph depicting 0 people on the trail to -3.04 for the photograph depicting 12 people on the trail. During the fall, threshold trail day hikers' mean acceptability rating of the photographs ranged from 3.87 for the photograph depicting 0 people on the trail to -3.52 for the photograph depicting 12 people on the trail.

| Use level | Summer Threshold Mean acceptability rating | Fall Threshold Mean acceptability rating | Comparison of means |
|---------------------|---|---|--------------------------------|
| Photo 1 – 0 people | 3.68 | 3.87 | t = -1.48; p = 0.142 |
| Photo 2 – 2 people | 2.11 | 1.79 | t = 0.90; p = 0.369 |
| Photo 3 – 6 people | 0.49 | -0.30 | t = 1.84; p = 0.068 |
| Photo 4 – 9 people | -1.25 | -2.18 | t = 2.35; p = 0.020 |
| Photo 5 – 12 people | -3.04 | -3.52 | t = 1.73; p = 0.086 |

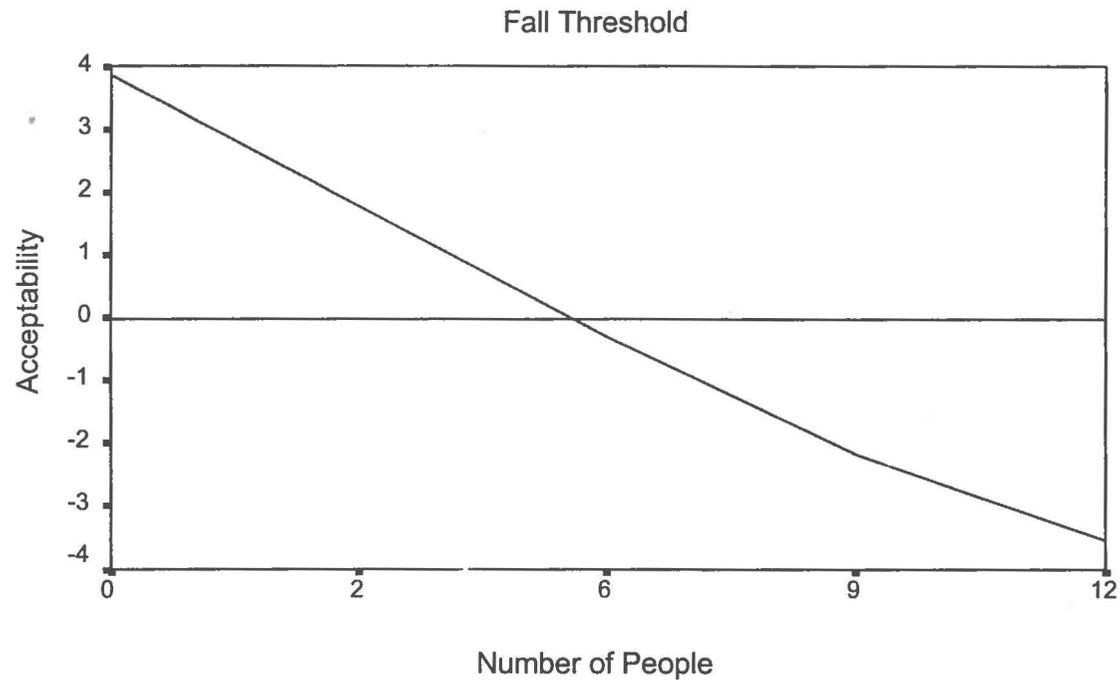
Figures 6-1 and 6-2 present the social standards of quality curves derived from the summer threshold trail day hikers' mean acceptability rating for each photograph and the 'all threshold day hikers' mean acceptability rating for each photograph, respectively. The social standards of quality curves are constructed by plotting the mean acceptability rating by the use level depicted in the corresponding photograph. As Figure 6-1 illustrates, in the summer, threshold trail day hikers, on average, consider a use level of approximately seven people on the trail to be the threshold of acceptability – use levels of less than seven people are, on average, considered acceptable, and use levels of greater than seven people are, on average, considered unacceptable.

Figure 6-1. Social Standards of Quality Curve



The social standards of quality curve in Figure 6-2 indicates threshold trail day hikers in the fall, on average, consider a use level of approximately six people on the trail to be the threshold of acceptability – use levels of less than six people are, on average, considered acceptable, and use levels of greater than six people are, on average, considered unacceptable.

Figure 6-2. Social Standards of Quality Curve



The social standards of quality curves for threshold trail day hikers during summer and during fall are plotted together in Figure 6-3. Despite the statistically significant difference in the mean acceptability rating for the photograph depicting 9 people, the

social standards of quality curves for summer and fall threshold trail hikers are similar. The mean acceptability rating equals zero at a use level of 6.5 for summer threshold trail day hikers, compared with 5.7 for the fall hikers.

Figure 6-3. Social Standards of Quality Curves

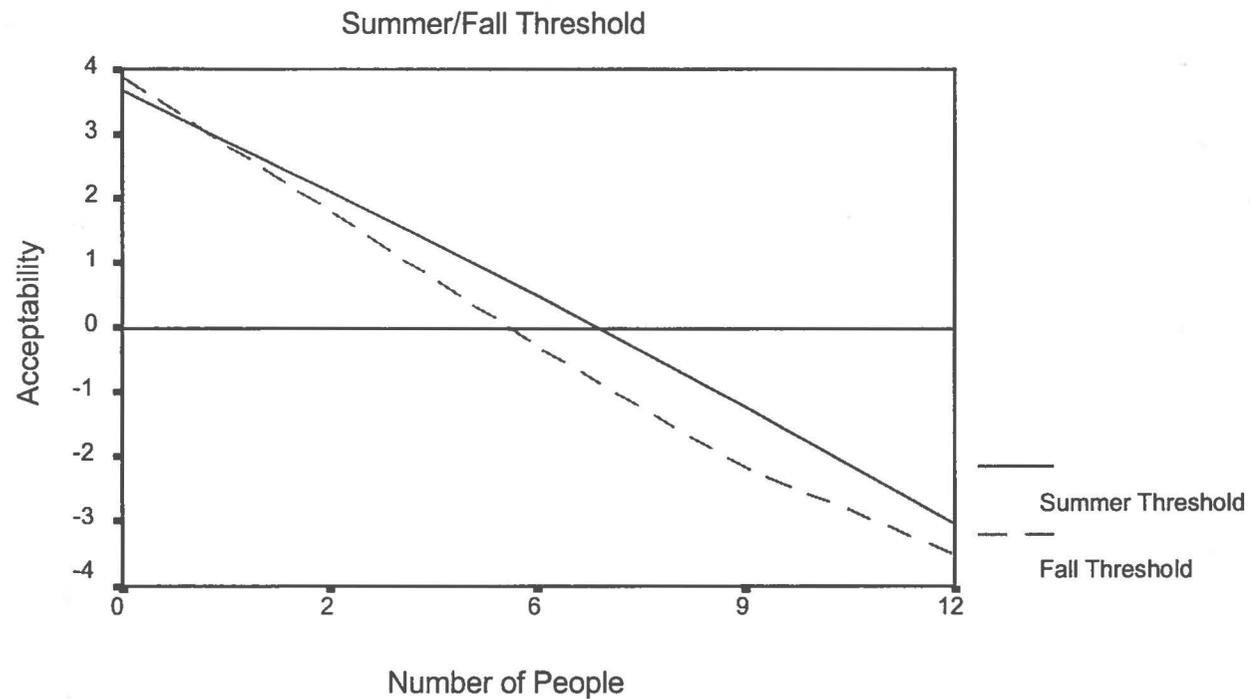


Table 6-2 reports the mean acceptability rating for each photograph along a corridor trail at Grand Canyon. The mean acceptability rating given to the photographs by summer corridor trail day hikers ranged from 3.54 for the photograph depicting 0

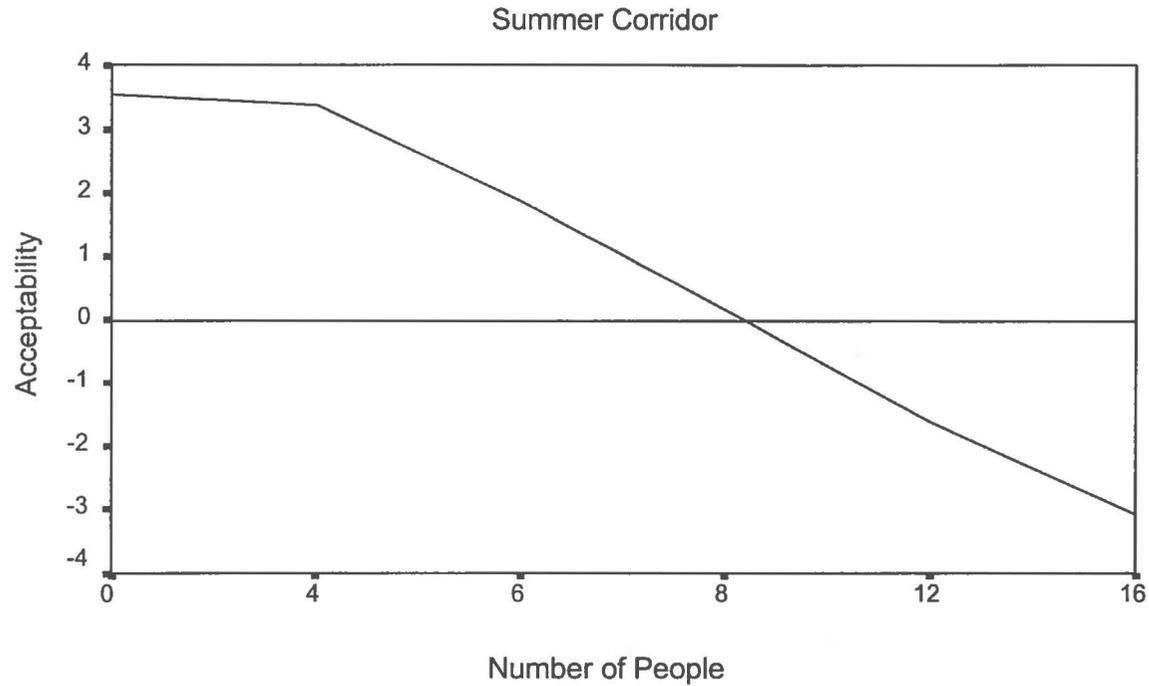
people on the trail to -3.07 for the photograph depicting 16 people on the trail. In the fall, corridor trail day hikers' mean acceptability rating of the photographs ranged from 3.50 for the photograph depicting 0 people on the trail to -3.32 for the photograph depicting 16 people on the trail.

Table 6-2. Mean acceptability rating of use levels on a corridor trail (onsite q11)

| Use level | Summer Corridor Mean acceptability rating | Fall Corridor Mean acceptability rating | Comparison of means |
|---------------------|--|--|---------------------|
| Photo 1 – 0 people | 3.54 | 3.50 | t = 0.20; p = 0.842 |
| Photo 2 – 4 people | 3.37 | 3.17 | t = 1.07; p = 0.287 |
| Photo 3 – 6 people | 1.86 | 1.53 | t = 1.34; p = 0.180 |
| Photo 4 – 8 people | 0.16 | -0.20 | t = 1.27; p = 0.204 |
| Photo 5 – 12 people | -1.62 | -2.17 | t = 1.99; p = 0.047 |
| Photo 6 – 16 people | -3.07 | -3.32 | t = 1.22; p = 0.223 |

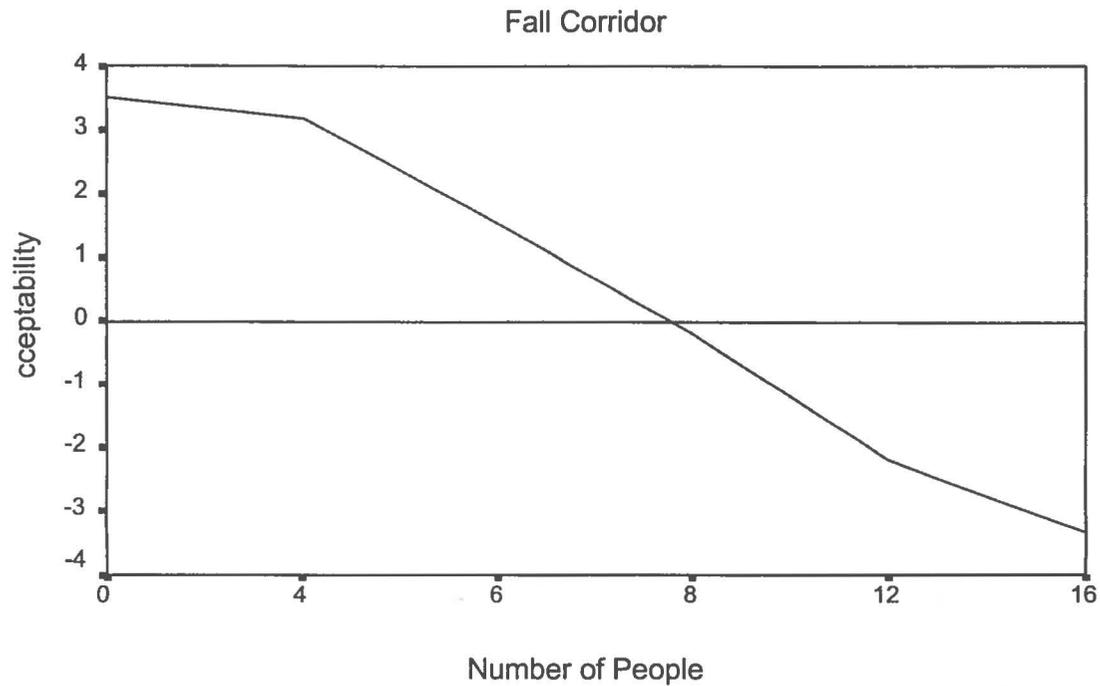
Figures 6-4 and 6-5 present the social standards of quality curves derived from summer corridor trail day hikers' mean acceptability rating for each photograph and the fall corridor day hikers' mean acceptability rating for each photograph, respectively. The social standards of quality curves are constructed by plotting the mean acceptability rating by the use level depicted in the corresponding photograph. As Figure 6-4 illustrates, during the summer, corridor trail day hikers, on average, consider a use level of approximately nine people on the trail to be the threshold of acceptability – use levels of less than nine people are, on average, considered acceptable, and use levels of greater than nine people are, on average, considered unacceptable.

Figure 6-4. Social Standards of Quality Curve



As the social standards of quality curve in Figure 6-5 indicates, in the fall, corridor trail day hikers, on average, consider a use level of approximately eight people on the trail to be the threshold of acceptability – use levels of less than eight people are, on average, considered acceptable, and use levels of greater than eight people are, on average, considered unacceptable.

Figure 6-5. Social Standards of Quality Curve



The social standards of quality curves for corridor trail day hikers during the summer and during fall are plotted together in Figure 6-6. Despite the statistically significant difference in the mean acceptability rating for the photograph depicting 12 people, the social standards of quality curves for summer and fall corridor trail day hikers are nearly identical. The mean acceptability rating equals zero at a use level of 9.1 for summer hikers, compared with 8.5 for fall hikers.

Figure 6-6. Social Standards of Quality Curves

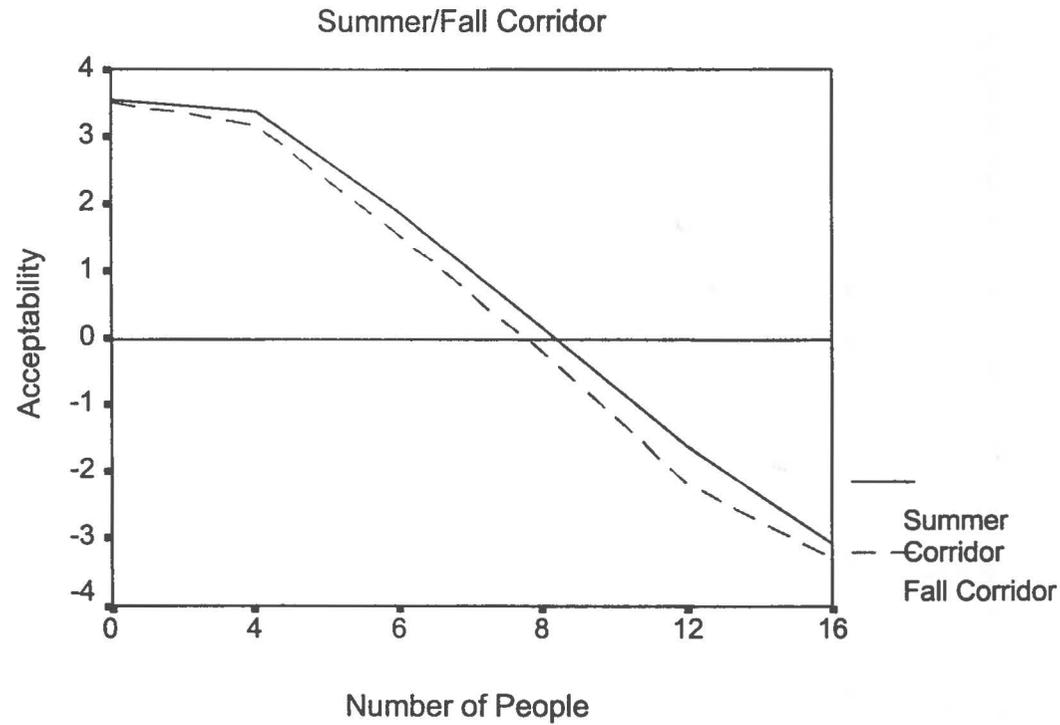
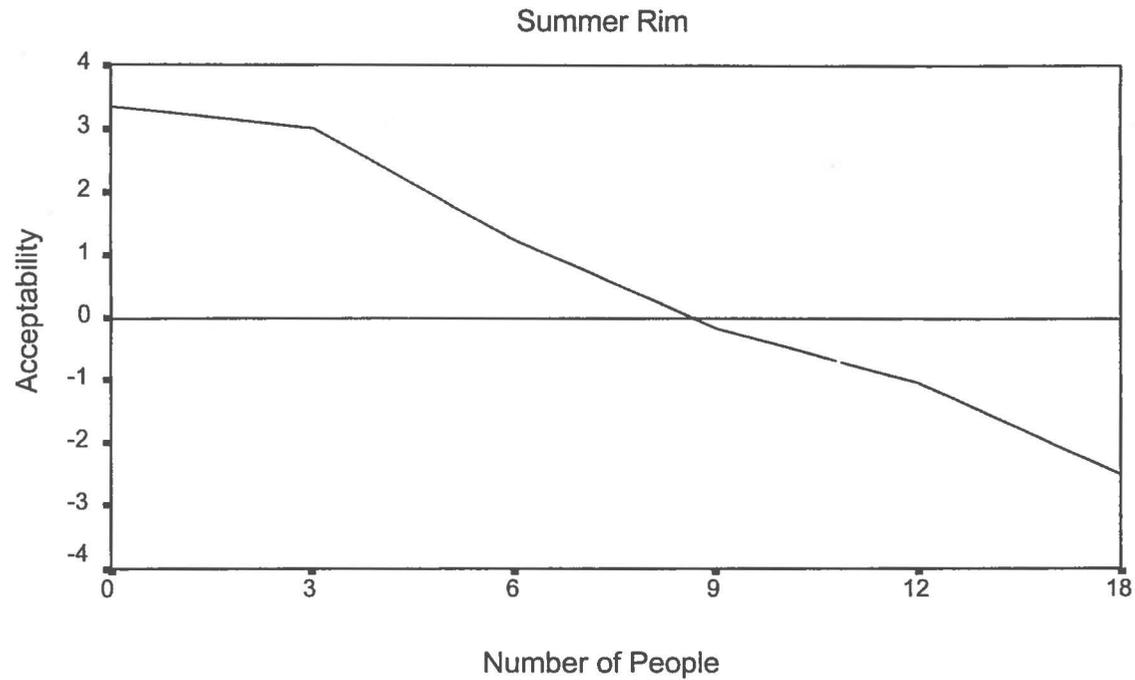


Table 6-3 reports the mean acceptability rating for each photograph along a rim trail at Grand Canyon. The mean acceptability rating given to the photographs by summer hikers ranged from 3.54 for the photograph depicting 0 people on the trail to -3.07 for the photograph depicting 16 people on the trail. Fall hikers' mean acceptability rating of the photographs ranged from 3.50 for the photograph depicting 0 people on the trail to -3.32 for the photograph depicting 16 people on the trail.

| Use level | Summer Rim Mean acceptability rating | Fall Rim Mean acceptability rating | Comparison of means |
|---------------------|---|---|----------------------------|
| Photo 1 – 0 people | 3.34 | 3.45 | t = -0.39; p = 0.699 |
| Photo 2 – 3 people | 3.02 | 3.17 | t = -0.73; p = 0.464 |
| Photo 3 – 6 people | 1.25 | 1.67 | t = -1.35; p = 0.180 |
| Photo 4 – 9 people | -0.19 | 0.12 | t = -0.85; p = 0.396 |
| Photo 5 – 12 people | -1.04 | -0.60 | t = -1.21; p = 0.229 |
| Photo 6 – 18 people | -2.50 | -2.14 | t = -1.08; p = 0.279 |

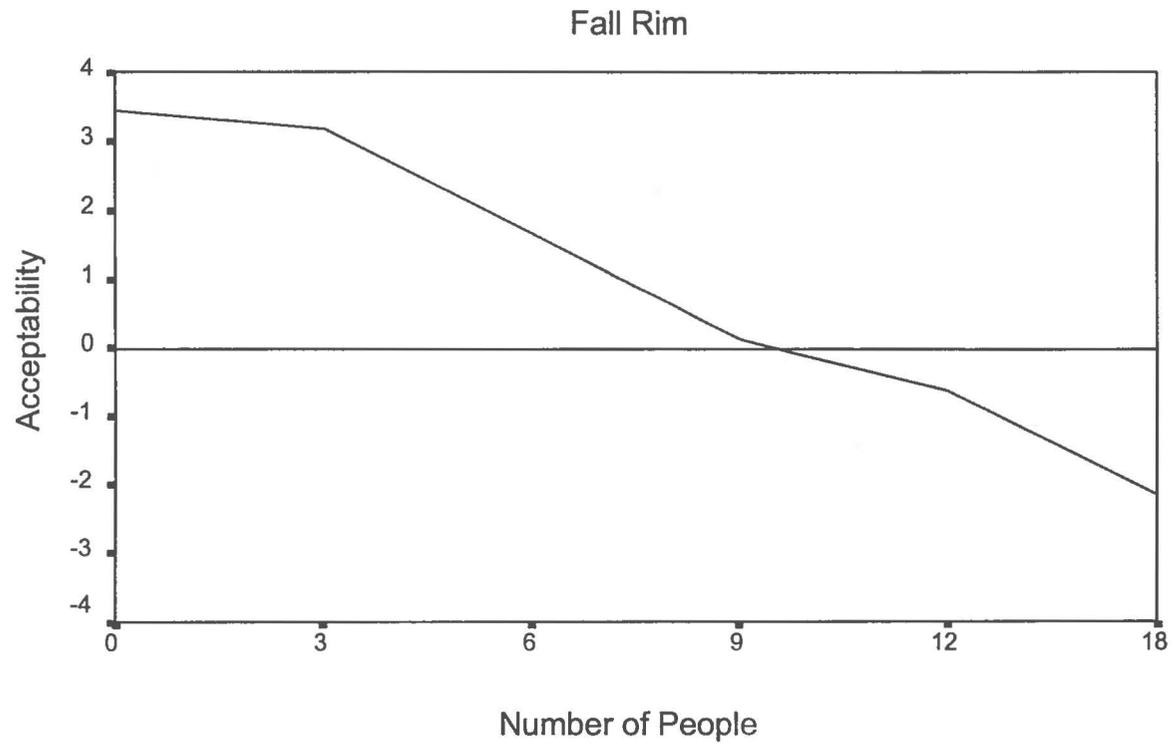
Figures 6-7 and 6-8 present the social standards of quality curves derived from summer rim trail day hikers' mean acceptability rating for each photograph and the fall rim day hikers' mean acceptability rating for each photograph, respectively. The social standards of quality curves are constructed by plotting the mean acceptability rating by the use level depicted in the corresponding photograph. As Figure 6-7 illustrates, summer rim trail day hikers, on average, consider a use level of approximately ten people on the trail to be the threshold of acceptability – use levels of less than ten people are, on average, considered acceptable, and use levels of greater than ten people are, on average, considered unacceptable.

Figure 6-7. Social Standards of Quality Curve



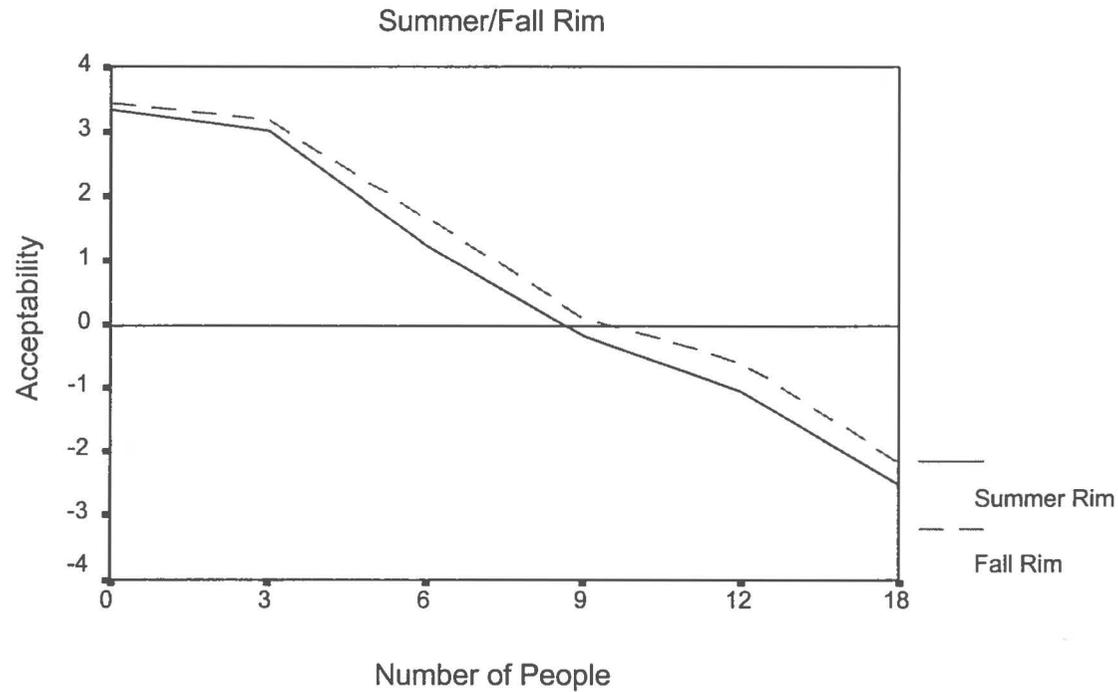
As the social standards of quality curve in Figure 6-8 indicates, fall rim trail day hikers, on average, consider a use level of approximately eleven people on the trail to be the threshold of acceptability – use levels of less than eleven people are, on average, considered acceptable, and use levels of greater than eleven people are, on average, considered unacceptable.

Figure 6-8. Social Standards of Quality Curve



The social standards of quality curves for rim trail day hikers during summer and during fall are plotted together in Figure 6-9. As Figure 6-9 illustrates the social standards of quality curves for summer and fall rim trail day hikers are very similar. The mean acceptability rating equals zero at a use level of 9.8 for summer hikers, compared with 10.7 for fall hikers.

Figure 6-9. Social Standards of Quality Curves



Respondents who had hiked on a threshold trail on the day they were contacted for the survey were asked a series of other questions about the photographs described above to explore alternative dimensions of standards of quality with respect to the number of people on a threshold trail. First, respondents were asked to select the photograph showing the highest level of use they considered acceptable on a threshold trail. Threshold trail day hikers were also given an option to indicate that all of the photographs were acceptable. On average, during both summer and fall, individuals who had hiked on a threshold trail considered 5 visitors to be

the maximum number of people acceptable (Table 6-4). No respondents during the summer or fall indicated that the use levels depicted in all five threshold trail photographs were acceptable.

Second, respondents who had hiked on a threshold trail the day they were contacted for the survey were asked to identify the photograph showing the level of use along a threshold trail they would prefer to see (Table 6-4). Both summer and fall respondents indicated that, on average, they would prefer to see a use level of 1 person.

Third, threshold trail day hikers were asked to select the photograph showing the level of use that would be so unacceptable they would no longer use the trail (Table 6-4). Respondents were also given an option to indicate that none of the photographs showed a use level that would keep them from using the trail. In the summer and in the fall, the level of use that would be so unacceptable that respondents would not use the trail averaged 10 people. However, this number is slightly underestimated in both summer and fall to some degree because 3 summer threshold trail day hikers and 5 fall threshold trail day hikers indicated that none of the photographs depicted a use level that would keep them from using the trail.

Fourth, threshold trail day hikers were asked to select the photograph showing the highest level of use the NPS should allow on a threshold trail (Table 6-4). Respondents were given an option to indicate that the number of people on a threshold trail should be restricted, but that none of the photographs represent this condition. Respondents were also given an option to indicate that the NPS should not limit use on a threshold trail in the Grand Canyon. In the summer, the maximum number of visitors threshold trail day hikers reported the NPS should allow averaged 7 people, compared with 8 people in the fall. The number for the summer is underestimated to a slight degree because one respondent reported the NPS should not limit use on a threshold trail. However, no respondents during the summer indicated that hiking should be restricted on a threshold trail, but that none of the photographs

represent this condition. The number for the fall is underestimated to a small degree because 13 respondents stated hiking should be restricted on a threshold trail, but none of the photographs represent this condition. In addition, 13 respondents in the fall reported that the NPS should not limit use on a threshold trail.

Fifth, respondents were asked to indicate which photograph showed the number of people they typically saw during their day hike on a threshold trail (Table 6-4). The number of visitors typically seen on a threshold trail averaged 1 in the summer and in the fall.

Finally, respondents were asked to select the photograph showing the highest number of people they saw at any one time during their day hike on a threshold trail (Table 6-4). Both summer and fall respondents reported that the highest number of people they saw at any one time was, on average, 5 people.

Table 6-4. Summer and fall threshold crowding standards of quality (onsite q12-q17)

| | | Number of visitors in photographs (percent) | | | | | Mean | Median | Comparison of means |
|---|------------------|---|-------|-------|-------|-------|-------|--------|---------------------|
| | | 0 | 2 | 6 | 9 | 12 | | | |
| Highest use level respondents find acceptable to see ¹ | Summer Threshold | 0.00 | 40.35 | 40.35 | 17.54 | 1.75 | 5.02 | 6.00 | t = 0.58; p = 0.564 |
| | Fall Threshold | 3.28 | 39.34 | 40.98 | 14.75 | 1.64 | 4.77 | 6.00 | |
| Use level respondents find preferable to see | Summer Threshold | 56.10 | 33.30 | 8.80 | 1.80 | 0.00 | 1.35 | 0.00 | t = 2.66; p = 0.009 |
| | Fall Threshold | 73.80 | 26.20 | 0.00 | 0.00 | 0.00 | 0.52 | 0.00 | |
| Use level respondents find so unacceptable they would no longer use the trail ² | Summer Threshold | 0.00 | 0.00 | 8.80 | 36.80 | 49.10 | 10.28 | 12.00 | t = 2.29; p = 0.024 |
| | Fall Threshold | 0.00 | 1.80 | 12.50 | 46.40 | 39.30 | 9.68 | 9.00 | |

Table 6-4. Summer and fall threshold crowding standards of quality (onsite q12-q17) continued

| | | Number of visitors in photographs (percent) | | | | | Mean | Median | Comparison of means |
|---|------------------|---|-------|-------|-------|-------|------|--------|----------------------|
| | | 0 | 2 | 6 | 9 | 12 | | | |
| Use level that respondents feel the NPS should allow ^{3,4} | Summer Threshold | 0.00 | 12.30 | 42.10 | 31.60 | 12.30 | 7.21 | 6.00 | |
| | Fall Threshold | 0.00 | 8.30 | 29.20 | 43.80 | 18.80 | 8.10 | 9.00 | t = -0.93; p = 0.357 |
| Use level that respondents typically saw | Summer Threshold | 64.90 | 33.30 | 0.00 | 1.80 | 0.00 | 0.82 | 0.00 | |
| | Fall Threshold | 62.3 | 32.80 | 3.30 | 1.60 | 0.00 | 1.00 | 0.00 | t = -0.50; p = 0.621 |
| Highest number of people that respondents saw at any one time | Summer Threshold | 10.50 | 35.10 | 29.80 | 19.30 | 3.50 | 4.73 | 6.00 | |
| | Fall Threshold | 6.60 | 39.30 | 39.30 | 13.10 | 1.60 | 4.52 | 6.00 | t = 0.63; p = 0.527 |

¹Number of summer/fall threshold respondents who stated all photographs were acceptable=0/0;

²Number of summer/fall threshold respondents who stated none of the photographs were so unacceptable they would no longer use the trail=3/5

³Number of summer/fall threshold respondents who stated hiking should be restricted, but none of the photographs represent this condition=0/13

⁴Number of summer/fall threshold respondents who stated the NPS should not limit use=1/13

Respondents who had hiked on a corridor trail on the day they were contacted for the survey were asked the series of questions about the photographs described above to explore alternative dimensions of standards of quality with respect to the number of people on a corridor trail. First, respondents were asked to select the photograph showing the highest level of use they considered acceptable on a corridor trail. Corridor trail day hikers were also given an option to indicate that all of the photographs were acceptable. On average, during both summer and fall, individuals who had hiked on a corridor trail considered 7 visitors to be the maximum number of people acceptable (Table 6-5). No respondents during the summer or fall indicated that the use levels depicted in all six corridor trail photographs were acceptable.

Second, respondents who had hiked on a corridor trail the day they were contacted for the survey were asked to identify the photograph showing the level of use along a corridor trail they would prefer to see (Table 6-5). Both summer and fall respondents indicated that, on average, they would prefer to see a use level of 3 people.

Third, corridor trail hikers were asked to select the photograph showing the level of use that would be so unacceptable they would no longer use the trail (Table 6-5). Respondents were also given an option to indicate that none of the photographs showed a use level that would keep them from using the trail. In the summer, the level of use that would be so unacceptable that respondents would not use the trail averaged 13 people, compared with 12 people in the fall. However, these numbers are underestimated to some degree because 11 summer hikers and 9 fall hikers indicated that none of the photographs depicted a use level that would keep them from using the trail.

Fourth, corridor trail day hikers were asked to select the photograph showing the highest level of use the NPS should allow on a corridor trail (Table 6-5). Respondents were given an option to indicate that the number of people on a corridor trail should be restricted, but that none of the photographs represent this condition. Respondents were also given an option to indicate that the NPS should not limit use on a corridor trail in the Grand Canyon. In the summer, the maximum number of visitors corridor trail day hikers reported the NPS should allow averaged 9 people, compared with 10 people in the fall. The number for the summer is underestimated to some degree because 6 respondents stated hiking should be restricted on a corridor trail, but none of the photographs represent this condition. In addition, 10 respondents in the summer reported that the NPS should not limit use on a corridor trail. The number for the fall is underestimated to some degree because 10 respondents stated hiking should be restricted

on a corridor trail, but none of the photographs represent this condition. In addition, 10 respondents in the fall reported that the NPS should not limit use on a corridor trail.

Fifth, respondents were asked to indicate which photograph showed the number of people they typically saw during their day hike on a corridor trail (Table 6-5). The number of visitors typically seen on a corridor trail averaged 6 in the summer, compared with 5 in the fall.

Finally, respondents were asked to select the photograph showing the highest number of people they saw at any one time during their day hike on a corridor trail (Table 6-5). Summer respondents reported that the highest number of people they saw at any one time was, on average, 11 people, compared with 8 people in the fall.

Table 6-5. Summer and fall corridor crowding standards of quality (onsite q12-q17)

| | | Number of visitors in photographs (percent) | | | | | | Mean | Median | Comparison of means |
|---|-----------------|---|-------|-------|-------|-------|-------|-------|--------|----------------------|
| | | 0 | 4 | 6 | 8 | 12 | 16 | | | |
| Highest use level respondents find acceptable to see ¹ | Summer Corridor | 0.00 | 12.20 | 48.90 | 30.70 | 7.2 | 0.9 | 6.90 | 6.00 | |
| | Fall Corridor | 1.70 | 1.70 | 48.30 | 35.00 | 11.70 | 1.70 | 7.43 | 6.00 | t = -1.94; p = 0.053 |
| Use level respondents find preferable to see | Summer Corridor | 30.40 | 45.10 | 18.50 | 6.00 | 0.00 | 0.00 | 3.39 | 4.00 | |
| | Fall Corridor | 45.00 | 38.30 | 11.70 | 5.00 | 0.00 | 0.00 | 2.63 | 4.00 | t = 1.94; p = 0.053 |
| Use level respondents find so unacceptable they would no longer use the trail ² | Summer Corridor | 0.00 | 0.00 | 0.30 | 18.80 | 37.90 | 38.90 | 12.82 | 12.00 | |
| | Fall Corridor | 2.00 | 0.00 | 5.90 | 13.70 | 43.10 | 35.30 | 12.27 | 12.00 | t = 2.13; p = 0.034 |
| Use level that respondents feel the NPS should allow ^{3,4} | Summer Corridor | 0.00 | 0.60 | 16.30 | 48.60 | 24.10 | 4.70 | 9.05 | 8.00 | |
| | Fall Corridor | 0.00 | 0.00 | 6.00 | 44.00 | 36.00 | 14.00 | 10.44 | 10.00 | t = -0.70; p = 0.485 |
| Use level that respondents typically saw | Summer Corridor | 1.90 | 31.70 | 45.10 | 18.20 | 3.10 | 0.00 | 5.81 | 6.00 | |
| | Fall Corridor | 11.70 | 45.00 | 35.00 | 8.30 | 0.00 | 0.00 | 4.57 | 4.00 | t = 4.22; p = 0.000 |
| Highest number of people that respondents saw at any one time | Summer Corridor | 0.00 | 0.60 | 14.40 | 32.60 | 30.70 | 21.60 | 10.65 | 12.00 | |
| | Fall Corridor | 0.00 | 6.70 | 33.30 | 43.30 | 15.00 | 1.70 | 7.80 | 8.00 | t = 6.93; p = 0.000 |

¹Number of summer/fall corridor respondents who stated all photographs were acceptable=0/0;

²Number of summer/fall corridor respondents who stated none of the photographs were so unacceptable they would no longer use the trail=11/9

³Number of summer/fall corridor respondents who stated hiking should be restricted, but none of the photographs represent this condition=6/10

⁴Number of summer/fall corridor respondents who stated the NPS should not limit use=10/10

Respondents who had hiked on a rim trail on the day they were contacted for the survey were asked the series of questions about the photographs described above to explore alternative dimensions of standards of quality with respect to the number of people on a rim trail at Grand Canyon. First, respondents were asked to select the photograph showing the highest level of use they considered acceptable on a rim trail. Rim trail day hikers were also given an option to indicate that all of the photographs were acceptable. On average, during the summer, individuals who had hiked on a rim trail considered 7 visitors to be the maximum number of people acceptable, compared with 8 during the fall (Table 6-6). However, these numbers are underestimated to a slight degree because two summer respondents and one fall respondent indicated that all six photographs were acceptable.

Second, respondents who had hiked on a rim trail the day they were contacted for the survey were asked to identify the photograph showing the level of use along a rim trail they would prefer to see (Table 6-6). Both summer and fall respondents indicated that, on average, they would prefer to see a use level of 3 people.

Third, rim trail day hikers were asked to select the photograph showing the level of use that would be so unacceptable they would no longer use the trail (Table 6-6). Respondents were also given an option to indicate that none of the photographs showed a use level that would keep them from using the trail. In both summer and fall, the level of use that would be so unacceptable that respondents would not use the trail averaged 15 people. However, these numbers are underestimated to some degree because 33 summer hikers and 11 fall hikers indicated that none of the photographs depicted a use level that would keep them from using the trail.

Fourth, rim trail day hikers were asked to select the photograph showing the highest level of use the NPS should allow on a rim trail (Table 6-6). Respondents were given an option to indicate that the number of people on a rim trail should be restricted, but

that none of the photographs represent this condition. Respondents were also given an option to indicate that the NPS should not limit use on a rim trail in the Grand Canyon. In the summer, the maximum number of visitors rim trail day hikers reported the NPS should allow averaged 11 people, compared with 12 people in the fall. The number for the summer is underestimated to some degree because 19 respondents stated hiking should be restricted on a rim trail, but none of the photographs represent this condition. In addition, 30 respondents in the summer reported that the NPS should not limit use on a rim trail. The number for the fall is underestimated to some degree because 16 respondents stated hiking should be restricted on a rim trail, but none of the photographs represent this condition. In addition, 16 respondents in the fall reported that the NPS should not limit use on a rim trail.

Fifth, respondents were asked to indicate which photograph showed the number of people they typically saw during their day hike on a rim trail (Table 6-6). The number of visitors typically seen on a rim trail averaged 5 in the summer, compared with 4 in the fall.

Finally, respondents were asked to select the photograph showing the highest number of people they saw at any one time during their day hike on a rim trail (Table 6-6). Summer respondents reported that the highest number of people they saw at any one time was, on average, 9 people, compared with 6 people in the fall.

Table 6-6. Summer and fall rim crowding standards of quality (onsite q12-q17)

| | | Number of visitors in photographs (percent) | | | | | | Mean | Median | Comparison of means |
|--|------------|---|-------|-------|-------|-------|-------|-------|--------|----------------------|
| | | 0 | 3 | 6 | 9 | 12 | 18 | | | |
| Highest use level respondents find acceptable to see ¹ | Summer Rim | 0.30 | 15.70 | 50.60 | 23.60 | 6.90 | 2.20 | 6.90 | 6.00 | |
| | Fall Rim | 0.00 | 7.30 | 46.30 | 22.00 | 17.10 | 7.30 | 8.34 | 6.00 | t = -2.34; p = 0.020 |
| Use level respondents find preferable to see | Summer Rim | 29.30 | 50.50 | 15.80 | 3.20 | 0.90 | 0.30 | 2.91 | 3.00 | |
| | Fall Rim | 33.30 | 42.90 | 14.30 | 7.10 | 2.40 | 0.00 | 3.07 | 3.00 | t = -0.39; p = 0.697 |
| Use level respondents find so unacceptable they would no longer use the trail ² | Summer Rim | 0.60 | 0.00 | 3.10 | 12.30 | 25.50 | 48.40 | 14.53 | 18.00 | |
| | Fall Rim | 3.20 | 0.00 | 3.20 | 9.70 | 25.80 | 58.10 | 14.61 | 18.00 | t = 1.48; p = 0.141 |
| Use level that respondents feel the NPS should allow ^{3,4} | Summer Rim | 0.00 | 0.30 | 16.40 | 32.70 | 23.00 | 12.30 | 10.52 | 9.00 | |
| | Fall Rim | 0.00 | 0.00 | 11.50 | 38.50 | 26.90 | 23.10 | 11.54 | 10.50 | t = 2.09; p = 0.043 |
| Use level that respondents typically saw | Summer Rim | 4.40 | 41.00 | 43.80 | 8.20 | 2.50 | 0.00 | 4.90 | 6.00 | |
| | Fall Rim | 0.00 | 88.10 | 7.10 | 2.40 | 2.40 | 0.00 | 3.57 | 3.00 | t = 4.35; p = 0.000 |
| Highest number of people that respondents saw at any one time | Summer Rim | 0.00 | 8.80 | 33.10 | 28.10 | 13.90 | 16.10 | 9.34 | 9.00 | |
| | Fall Rim | 0.00 | 38.10 | 40.50 | 19.00 | 0.00 | 2.40 | 5.71 | 6.00 | t = 7.00; p = 0.000 |

¹Number of summer/fall rim respondents who stated all photographs were acceptable=2/1;

²Number of summer/fall rim respondents who stated none of the photographs were so unacceptable they would no longer use the trail=33/11

³Number of summer/fall rim respondents who stated hiking should be restricted, but none of the photographs represent this condition=19/16

⁴Number of summer/fall rim respondents who stated the NPS should not limit use=30/16

Respondents were asked a series of questions to investigate how well they thought the questions about their standards of quality with respect to the number of people on trails in the Grand Canyon worked (Table 6-7). Respondents were asked to state whether they “strongly agree”, “agree”, “disagree”, or “strongly disagree” with a number of statements about the questions investigating standards of quality. A “neutral” option was also provided.

The first question in the series asked respondents whether they understood the questions they were asked (Table 6-7). The majority of Grand Canyon day hikers strongly agree that they understood the questions about their standards of quality.

Second, respondents were asked whether the photographs accompanying the standards of quality questions realistically represent the different levels of use along the trail they hiked (Table 6-7). Although there were some statistical differences in the mean value of responses among user types, all user types surveyed, on average, agree that the photographs realistically represent different use levels along the trail they hiked.

The third question in the series asked respondents whether it was very difficult to rate the acceptability of the photographs (Table 6-7). During summer and fall, threshold, corridor, and rim trail day hikers all disagree, on average, that it is very difficult to rate the acceptability of the photographs.

The fourth question asked respondents whether the answers they gave to the questions about standards of quality accurately represent their feelings about acceptable use levels on the trail they hiked (Table 6-7). During the summer, more than three-quarters of threshold (75.4%), corridor (84.2%), and rim (78.3%) trail day hikers strongly agree the answers accurately represent their feelings. In the fall, just over half of all threshold trail day hikers (52.46%) strongly agree the answers accurately represent their feelings, while about 60 percent of corridor (59.3%) and rim (64.3%) trail day hikers strongly agree with the statement.

The fifth question in the series asked respondents whether the NPS should manage trail use levels based on the kind of information collected in studies like these (Table 6-7). On average, each Grand Canyon day hike user type group agrees the NPS should use this type of information to manage use levels. However, respondents during the summer were more likely to strongly agree with this statement than respondents during the fall.

Sixth, respondents were asked whether the photographs realistically represent the trail environment of their day hike (Table 6-7). On average, all Grand Canyon day hike user types agree the photos realistically represent the trail environment. During the summer, more than half of all corridor (56.6%) and rim (68%) trail hikers strongly agree with this statement. In addition, more than one-third of summer threshold (39.3%), fall corridor (35.6%), and fall rim (42.9%) day hikers strongly agree that the photographs realistically represent the trail environment.

The last question in the series asked respondents if they were confused by the questions that asked them to choose between photographs (Table 6-7). The majority of all types of Grand Canyon day hikers in summer and fall strongly disagree that they were confused by the questions.

| Table 6-7. How well questions worked (onsite q18a-q18h) | | | | | | | |
|--|------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|------------------------|----------------------|
| | | User Type (Percent) | | | | | |
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) |
| Understood the questions | Strongly Disagree (-2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Disagree (-1) | 0.00 | 0.00 | 0.63 | 0.00 | 0.00 | 0.00 |
| | Neutral (0) | 1.75 | 0.00 | 0.94 | 1.69 | 0.31 | 0.00 |
| | Agree (1) | 15.79 | 21.31 | 12.23 | 28.81 | 13.84 | 26.19 |
| | Strongly Agree (2) | 82.46 | 78.69 | 86.21 | 69.49 | 85.85 | 0.00 |
| | Mean | 1.81 | 1.79 | 1.84 | 1.68 | 1.86 | 1.74 |
| | Differences | none | none | none | e | d | none |
| Photographs realistically represent use levels | Strongly Disagree (-2) | 0.00 | 3.30 | 0.30 | 0.00 | 0.00 | 0.00 |
| | Disagree (-1) | 15.79 | 14.75 | 3.13 | 3.39 | 1.89 | 0.00 |
| | Neutral (0) | 10.53 | 8.20 | 2.82 | 11.86 | 5.99 | 4.76 |
| | Agree (1) | 24.56 | 44.26 | 36.68 | 47.46 | 30.28 | 59.52 |
| | Strongly Agree (2) | 49.12 | 29.51 | 57.05 | 37.29 | 61.83 | 35.71 |
| | Mean | 1.07 | 0.82 | 1.47 | 1.19 | 1.52 | 1.31 |
| | Differences | c,e | c,e,f | a,b | e | a,b,d | b |
| Difficult to rate the acceptability of photographs | Strongly Disagree (-2) | 49.09 | 21.31 | 47.02 | 27.12 | 47.47 | 28.57 |
| | Disagree (-1) | 29.09 | 57.38 | 28.21 | 54.24 | 32.28 | 54.76 |
| | Neutral (0) | 9.09 | 14.75 | 13.17 | 15.25 | 9.81 | 9.52 |
| | Agree (1) | 12.73 | 6.56 | 11.29 | 3.39 | 9.18 | 7.14 |
| | Strongly Agree (2) | 0.00 | 0.00 | 0.30 | 0.00 | 1.30 | 0.00 |
| | Mean | -1.15 | -0.93 | -1.10 | -1.05 | -1.16 | -1.05 |
| | Difference | none | none | none | none | none | none |

Table 6-7. How well questions worked (onsite q18a-q18h)

| | | User Type (Percent) | | | | | |
|--|------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) |
| Answers accurately represent my feelings | Strongly Disagree (-2) | 0.00 | 0.00 | 0.00 | 0.00 | 0.30 | 0.00 |
| | Disagree (-1) | 0.00 | 0.00 | 0.00 | 1.69 | 0.94 | 0.00 |
| | Neutral (0) | 1.75 | 3.28 | 1.90 | 5.08 | 1.26 | 0.00 |
| | Agree (1) | 22.81 | 44.26 | 13.92 | 33.90 | 19.18 | 35.71 |
| | Strongly Agree (2) | 75.44 | 52.46 | 84.18 | 59.32 | 78.30 | 64.29 |
| | Mean | 1.74 | 1.49 | 1.82 | 1.51 | 1.74 | 1.64 |
| | Differences | none | c,e | b,d | c,e | b,d | none |
| NPS should use this kind of information | Strongly Disagree (-2) | 3.51 | 0.00 | 1.89 | 0.00 | 2.21 | 4.76 |
| | Disagree (-1) | 1.75 | 13.11 | 3.14 | 6.78 | 2.84 | 0.00 |
| | Neutral (0) | 14.04 | 24.59 | 11.32 | 23.73 | 15.14 | 23.81 |
| | Agree (1) | 38.60 | 42.62 | 38.99 | 49.15 | 36.59 | 40.48 |
| | Strongly Agree (2) | 42.11 | 19.67 | 44.65 | 20.34 | 43.22 | 30.95 |
| | Mean | 1.14 | 0.69 | 1.21 | 0.83 | 1.16 | 0.93 |
| | Differences | none | c,e | b,d | c | b | none |
| Photos realistically represent trail environment | Strongly Disagree (-2) | 3.57 | 1.64 | 1.57 | 0.00 | 1.27 | 0.00 |
| | Disagree (-1) | 19.64 | 11.48 | 4.09 | 3.39 | 0.95 | 4.76 |
| | Neutral (0) | 10.71 | 14.75 | 5.35 | 11.86 | 2.85 | 2.38 |
| | Agree (1) | 26.79 | 42.62 | 32.39 | 49.15 | 26.90 | 50.00 |
| | Strongly Agree (2) | 39.29 | 29.51 | 56.60 | 35.59 | 68.04 | 42.86 |
| | Mean | 0.79 | 0.87 | 1.38 | 1.17 | 1.59 | 1.31 |
| | Differences | c,e,f | c,e | a,b,e | e | a,b,c,d | a |
| Confused by questions | Strongly Disagree (-2) | 59.65 | 54.10 | 73.35 | 57.63 | 68.77 | 54.76 |
| | Disagree (-1) | 24.56 | 42.62 | 19.12 | 35.59 | 19.87 | 33.33 |
| | Neutral (0) | 10.53 | 0.00 | 3.13 | 3.39 | 4.73 | 9.52 |
| | Agree (1) | 5.26 | 1.64 | 4.39 | 3.39 | 6.31 | 2.38 |
| | Strongly Agree (2) | 0.00 | 1.64 | 0.00 | 0.00 | 0.32 | 0.00 |
| | Mean | -1.39 | -1.46 | -1.61 | -1.47 | -1.50 | -1.40 |
| | Differences | none | none | none | none | none | none |

VII. Study Findings: Attitudes Toward Management

Grand Canyon day hikers were asked to indicate their level of support for nine management actions related to day hiking in Grand Canyon (Table 7-1). Respondents were asked to rate their support for each management action on a scale from - 2 ("Strongly Oppose") to +2 ("Strongly Support"). A "Neither Oppose Nor Support" option was also provided.

The majority of all types of Grand Canyon day hikers support requiring all hikers to stay on the trail. Two management actions - providing information on appropriate trail use, and requiring all hikers to have minimum equipment and supplies - were supported by the majority of all types of Grand Canyon day hikers, except primitive trail hikers. Providing more signs along the trail about appropriate trail use and safety were, on average, favored by rim and corridor hikers in summer and fall. However, this management action was opposed by the majority of threshold trail (53.6%) and primitive trail (80.0%) day hikers during the fall.

The majority of all types of Grand Canyon day hikers oppose charging a day hiking fee to pay for hiker education and safety. On average, only fall rim trail day hikers supported the use of a permit system to limit the number of day hikers along the trail. Two management actions - requiring first time hikers to attend an orientation about appropriate trail use and hiking safety, and putting more rangers along the trail to enforce rules and regulations - were opposed by all types of Grand Canyon day hikers, except fall corridor trail day hikers and summer rim trail day hikers.

Table 7-1. Management actions for day hiking (mailback q17a-l)

| | | User Type (Percent) | | | | | | |
|---|-------------------------------|----------------------|--------------------|---------------------|-------------------|----------------|--------------|---------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| More Info on appropriate use of trail | Strongly oppose(-2) | 0.00 | 0.00 | 1.20 | 0.00 | 0.00 | 5.88 | 5.26 |
| | Oppose(-1) | 13.80 | 7.14 | 3.10 | 0.00 | 9.10 | 5.88 | 15.79 |
| | Neither oppose nor support(0) | 24.10 | 35.71 | 27.80 | 31.25 | 24.20 | 35.29 | 34.21 |
| | Support(1) | 37.90 | 35.71 | 53.10 | 53.13 | 49.70 | 41.18 | 34.21 |
| | Strongly Support(2) | 24.10 | 21.43 | 14.80 | 15.63 | 17.00 | 11.76 | 10.53 |
| | Mean | .72 | .71 | .77 | .84 | .75 | .47 | .29 |
| | Differences | none | none | g | none | g | none | c,e |
| More signs about appropriate use of trail | Strongly oppose(-2) | 13.80 | 21.43 | 3.70 | 3.13 | 2.40 | 11.76 | 39.47 |
| | Oppose(-1) | 13.80 | 32.14 | 23.60 | 12.50 | 23.60 | 17.65 | 31.58 |
| | Neither oppose nor support(0) | 24.10 | 32.14 | 31.10 | 31.25 | 24.20 | 11.76 | 18.42 |
| | Support(1) | 24.10 | 7.14 | 33.50 | 37.50 | 41.80 | 52.94 | 7.89 |
| | Strongly Support(2) | 24.10 | 7.14 | 8.10 | 15.63 | 7.90 | 5.88 | 2.63 |
| | Mean | .31 | -.54 | .19 | .50 | .29 | .24 | -.97 |
| | Differences | b,g | a,c,d,e | b,g | b,g | b,g | g | a,c,d,e,f |
| Require orientation for first time hikers | Strongly oppose(-2) | 13.80 | 35.71 | 9.30 | 6.25 | 10.40 | 11.76 | 31.58 |
| | Oppose(-1) | 37.90 | 28.57 | 31.70 | 34.38 | 29.90 | 35.29 | 34.21 |
| | Neither oppose nor support(0) | 20.70 | 17.86 | 23.00 | 21.88 | 21.30 | 17.65 | 10.53 |
| | Support(1) | 20.70 | 14.29 | 26.10 | 18.75 | 27.40 | 23.53 | 13.16 |
| | Strongly Support(2) | 6.90 | 3.57 | 9.90 | 18.75 | 11.00 | 11.76 | 10.53 |
| | Mean | -.31 | -.79 | -.04 | .09 | .00 | -.12 | -.63 |
| | Differences | none | c,e | b | none | b | none | none |
| Require hikers to stay on trail | Strongly oppose(-2) | 3.40 | 0.00 | 0.00 | 0.00 | 1.20 | 0.00 | 5.26 |
| | Oppose(-1) | 6.90 | 3.57 | 3.70 | 0.00 | 7.30 | 5.88 | 23.68 |
| | Neither oppose nor support(0) | 13.80 | 17.86 | 7.40 | 12.50 | 12.20 | 5.88 | 10.53 |
| | Support(1) | 48.30 | 42.86 | 42.00 | 37.50 | 41.50 | 35.29 | 23.68 |
| | Strongly Support(2) | 27.60 | 35.71 | 46.90 | 50.00 | 37.80 | 52.94 | 36.84 |
| | Mean | .90 | 1.11 | 1.32 | 1.38 | 1.10 | 1.35 | .63 |
| | Differences | none | none | g | g | none | none | c,d |

| | | User Type (Percent) | | | | | | |
|---|-------------------------------|-------------------------------------|-----------------------------------|------------------------------------|----------------------------------|-------------------------------|-----------------------------|--------------------------|
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| Limit use with permit | Strongly oppose(-2) | 17.20 | 14.29 | 11.80 | 15.63 | 14.50 | 17.65 | 44.74 |
| | Oppose(-1) | 51.70 | 35.71 | 31.70 | 25.00 | 30.90 | 17.65 | 39.47 |
| | Neither oppose nor support(0) | 10.30 | 17.86 | 20.50 | 15.63 | 18.20 | 23.53 | 5.26 |
| | Support(1) | 20.70 | 25.00 | 24.80 | 31.25 | 27.90 | 17.65 | 5.26 |
| | Strongly Support(2) | 0.00 | 7.14 | 11.20 | 12.50 | 8.50 | 23.53 | 5.26 |
| | Mean | -.66 | -.25 | -.08 | 0.00 | -.15 | .12 | -1.13 |
| | Differences | none | none | g | g | g | g | c,d,e,f |
| Require minimum equipment and supplies | Strongly oppose(-2) | 6.90 | 7.14 | 4.30 | 0.00 | 4.90 | 11.76 | 18.42 |
| | Oppose(-1) | 10.30 | 21.43 | 12.30 | 9.38 | 18.30 | 11.76 | 21.05 |
| | Neither oppose nor support(0) | 17.20 | 14.29 | 16.70 | 15.63 | 17.70 | 17.65 | 23.68 |
| | Support(1) | 44.80 | 42.86 | 43.80 | 53.13 | 37.20 | 29.41 | 26.32 |
| | Strongly Support(2) | 20.70 | 14.29 | 22.80 | 21.88 | 22.00 | 29.41 | 10.53 |
| | Mean | .62 | .36 | .69 | .88 | .53 | .53 | -.11 |
| | Differences | none | none | g | g | g | none | c,d,e |
| Charge fee to pay for safety education | Strongly oppose(-2) | 48.30 | 32.14 | 29.60 | 31.25 | 24.80 | 29.41 | 60.53 |
| | Oppose(-1) | 34.50 | 35.71 | 29.60 | 25.00 | 29.70 | 23.53 | 28.95 |
| | Neither oppose nor support(0) | 10.30 | 25.00 | 19.80 | 18.75 | 18.80 | 23.53 | 7.89 |
| | Support(1) | 6.90 | 7.14 | 15.40 | 21.88 | 21.80 | 11.76 | 0.00 |
| | Strongly Support(2) | 0.00 | 0.00 | 5.60 | 3.13 | 4.80 | 11.76 | 2.63 |
| | Mean | -1.24 | -.93 | -.62 | -.59 | -.48 | -.47 | -1.45 |
| | Differences | e | none | g | g | a,g | none | c,d,e |

| Table 7-1. Management actions for day hiking (mailback q17a-l) | | | | | | | | |
|--|-------------------------------|----------------------------|--------------------------|---------------------------|-------------------------|----------------------|--------------------|------------------|
| | | User Type (Percent) | | | | | | |
| | | Summer Threshold (a) | Fall Threshold (b) | Summer Corridor (c) | Fall Corridor (d) | Summer Rim (e) | Fall Rim (f) | Primitive (g) |
| Put more rangers along trails to educate | Strongly oppose(-2) | 10.30 | 17.86 | 6.80 | 3.13 | 7.30 | 11.76 | 34.21 |
| | Oppose(-1) | 41.40 | 46.43 | 20.50 | 15.63 | 25.60 | 23.53 | 28.95 |
| | Neither oppose nor support(0) | 20.70 | 21.43 | 36.00 | 40.63 | 28.70 | 17.65 | 34.21 |
| | Support(1) | 24.10 | 14.29 | 29.80 | 37.50 | 29.30 | 35.29 | 2.63 |
| | Strongly Support(2) | 3.40 | 0.00 | 6.80 | 3.13 | 9.10 | 11.76 | 0.00 |
| | Mean | -.31 | -.68 | .09 | .22 | .07 | .12 | -.95 |
| | Differences | none | c,d,e | b,g | b,g | b,g | g | c,d,e,f |
| More park rangers to enforce rules | Strongly oppose(-2) | 17.20 | 28.57 | 12.40 | 12.50 | 4.90 | 5.88 | 40.54 |
| | Oppose(-1) | 31.00 | 35.71 | 19.30 | 15.63 | 27.00 | 29.41 | 24.32 |
| | Neither oppose nor support(0) | 31.00 | 17.86 | 37.90 | 40.63 | 27.60 | 35.29 | 32.43 |
| | Support(1) | 13.80 | 17.86 | 26.10 | 18.75 | 30.10 | 23.53 | 2.70 |
| | Strongly Support(2) | 6.90 | 0.00 | 4.30 | 12.50 | 10.40 | 5.88 | 0.00 |
| | Mean | -.38 | -.75 | -.09 | .03 | .14 | -.06 | -1.03 |
| | Differences | none | c,e | b,g | g | b,g | g | c,d,e,f |

During both summer and fall, corridor trail day hikers were asked to indicate their level of support for three additional management actions concerning mules and horses on the trails (Table 7-2). Corridor trail day hikers were asked to rate their level of support for each of the three management actions on a scale from -2 ("Strongly Oppose") to +2 ("Strongly Support"). A "Neither Oppose or Support" option was also provided. The majority of corridor trail day hikers in both summer and fall support restricting the number of mules and horses allowed to use the trail each day. In addition, all corridor trail day hikers support a management action to restrict horses and mules on the trail to certain times of the day. However, the majority of corridor trail day hikers during the fall

(77.3%), and one-fifth of corridor trail day hikers in the summer (20.4%) oppose complete prohibition of mules and horses from the trail.

| Table 7-2. Management actions for day hiking (mailback q17a-l) continued. | | | |
|--|-------------------------------|--------------------------------|------------------------------|
| | | User Type (Percent) | |
| | | Summer Corridor (c) | Fall Corridor (d) |
| Limit use by horses/Mules | Strongly oppose(-2) | 4.60 | 3.23 |
| | Oppose(-1) | 7.80 | 3.23 |
| | Neither oppose nor support(0) | 29.40 | 25.81 |
| | Support(1) | 38.60 | 45.16 |
| | Strongly Support(2) | 19.60 | 22.58 |
| | Mean | .61 | .81 |
| | Differences | none | none |
| Restrict mules/horses to certain times of day | Strongly oppose(-2) | 3.90 | 3.23 |
| | Oppose(-1) | 9.80 | 6.45 |
| | Neither oppose nor support(0) | 32.00 | 51.61 |
| | Support(1) | 31.00 | 22.58 |
| | Strongly Support(2) | 20.30 | 16.13 |
| | Mean | .57 | .42 |
| | Differences | none | none |
| Prohibit mules/horses | Strongly oppose(-2) | 3.40 | 29.03 |
| | Oppose(-1) | 17.00 | 48.39 |
| | Neither oppose nor support(0) | 31.80 | 22.58 |
| | Support(1) | 28.40 | 0.00 |
| | Strongly Support(2) | 19.30 | 0.00 |
| | Mean | -.56 | -1.06 |
| | Differences | none | none |

Two distinct patterns emerge from these data. First, there is a pattern among the day-use trail hikers that is consistent with a standard ROS continuum. The more primitive the hike setting and experience, the fewer restrictions were tolerated; the less primitive the trail, the more restrictions were tolerated. Primitive trail hiker majorities opposed 6 of the 9 proposed management actions and fall threshold trail hikers opposed 5; threshold hiker majorities supported 3 actions, the primitive trail hikers only one by majority (60%) and one by plurality (45%). These groups frequently were significantly different from rim and corridor hikers on management action measures. Both the rim hikers and corridor hikers supported 4 of the actions by majority (53% to 89%) and one by plurality (36% to 47%), their preferences were mixed for 2 of the management actions, and majorities opposed only one management action – “charging fees for education and safety.”

The second pattern is the ordering of management actions themselves. The more immediate or serious the restriction, the greater the opposition, calculated by use of the mean of means. “Charging fees” was uniformly opposed ($X = -.83$), then “use permits” and “rangers to enforce” ($X = -.31$), “required orientation” ($X = -.26$) and “more rangers to educate” ($X = -.21$). Positives range from “signs” ($X = +.02$), “minimum equipment” ($X = +.50$), and “trail use information” ($X = +.65$). The one exception to the rule of immediacy or severity might be “Require all hikers . . . to stay on the trails,” which averages $+1.11$. Fees, required permits or orientations, and more rules enforcement are opposed by five to seven of the hiker groups, while providing more information or requiring minimum equipment are supported by 6 to 7 groups. Apparently, the lesson of not short-cutting trails has been well instilled in Grand Canyon hikers.

Grand Canyon day hikers were asked to indicate their willingness to accept each of five management actions designed to deal with health and safety issues for hikers, on a scale from 1 (“accept willingly”) to 3 (“cannot accept”) (Table 7-3). The majority of

all types of Grand Canyon day hikers, except primitive trail day hikers, indicated that they would accept a management action to restrict the starting time of hikes to before 7:00 a.m. or after 4:00 p.m. when the temperature is predicted to be extreme. However, the majority of all types of Grand Canyon day hikers, except fall corridor and summer rim trail day hikers, indicated that they cannot accept a management action to restrict the starting time of hikes to before 7:00 a.m. or after 4:00 p.m. on all days from Memorial Day to Labor Day.

The majority of primitive trail day hikers indicated that they cannot accept any of the hypothetical management actions, except eliminating search and rescue activity by park personnel. During the summer, the majority of threshold trail day hikers indicated that they cannot accept three of the five management actions – restricting the length of hikes depending on the hiker’s experience and physical fitness, restricting the length of hikes when the temperature is predicted to be extreme, and eliminating search and rescue activity by park personnel. The majority of rim trail hikers in the summer, and at least half of all rim trail hikers during the fall, indicated that they would accept all of the management actions, except eliminating search and rescue activity by park personnel.

| Table 7-3. Acceptance of management actions dealing with hiker preparedness and safety (mailback q18a-e) | | | | | | | | | |
|---|-------------------|-------------------------|-----------------------|--------------------|------------------|---------------|-------------|---------------|--------------------------|
| | | User Type (Percent) | | | | | | | |
| | | Summer Threshol d | Fall Threshol d | Summer Corridor | Fall Corridor | Summer Rim | Fall Rim | Primitiv e | |
| Restrict the time of starting a hike to before 7:00am or after 4:00pm on days when the temperature is predicted to be extreme | Accept Willingly | 36.67 | 26.92 | 35.80 | 43.75 | 43.56 | 70.59 | 18.92 | |
| | Accept Grudgingly | 26.67 | 34.62 | 30.86 | 40.63 | 31.29 | 11.76 | 29.73 | |
| | Cannot Accept | 36.67 | 38.46 | 33.33 | 15.63 | 25.15 | 17.65 | 51.35 | Chi-squared=25.42;p=.013 |
| Restrict time of starting a hike to before 7:00 am or after 4:00pm on all days from Memorial Day to Labor Day | Accept Willingly | 16.67 | 11.54 | 17.50 | 28.13 | 24.69 | 33.33 | 8.11 | |
| | Accept Grudgingly | 33.33 | 30.77 | 24.38 | 40.63 | 27.16 | 16.67 | 24.32 | |
| | Cannot Accept | 50.00 | 57.69 | 58.13 | 31.25 | 48.15 | 50.00 | 67.57 | Chi-squared=18.60;p=.099 |
| Restrict the length of hikes depending on the hiker's experience and physical fitness | Accept Willingly | 23.33 | 11.11 | 25.79 | 21.88 | 34.97 | 50.00 | 8.33 | |
| | Accept Grudgingly | 20.00 | 40.74 | 37.11 | 28.13 | 30.67 | 22.22 | 22.22 | |
| | Cannot Accept | 56.67 | 48.15 | 37.11 | 50.00 | 34.36 | 27.78 | 69.44 | Chi-squared=33.03;p=.001 |
| Restrict the length of hikes when the temperature is predicted to be extreme | Accept Willingly | 20.00 | 18.52 | 39.75 | 40.63 | 45.73 | 61.11 | 8.11 | |
| | Accept Grudgingly | 26.67 | 40.74 | 32.30 | 46.88 | 31.10 | 22.22 | 21.62 | |
| | Cannot Accept | 53.33 | 40.74 | 27.95 | 12.50 | 23.17 | 16.67 | 70.27 | Chi-squared=57.37;p=.000 |
| Eliminate search and rescue activity by park personnel – hikers are responsible for their own health and safety | Accept Willingly | 13.33 | 18.52 | 8.13 | 9.38 | 7.32 | 5.56 | 34.21 | |
| | Accept Grudgingly | 16.67 | 18.52 | 13.75 | 6.25 | 10.98 | 5.56 | 42.11 | |
| | Cannot Accept | 70.00 | 62.96 | 78.13 | 84.38 | 81.71 | 88.89 | 23.68 | Chi-squared=64.27;p=.000 |

VIII. Conclusions and Recommendations

[Study conclusions and recommendations are to be developed at the workshop on July 8.]

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Appendix A: Study Questionnaires

On-Site Interview