A SURVEY OF VISITORS TO THE NISQUALLY RIVER-STEVENS CANYON CORRIDOR IN MOUNT RAINER NATIONAL PARK

MARK E. VANDE KAMP
JANE E. SWANSON
DARRYLL R. JOHNSON

Technical Report NPS/CCSOUW/NRTR-2002-01
NPS D-475

CASCADIA FIELD STATION
USGS/BRD/FRESC
COLLEGE OF FOREST RESOURCES
BOX 352100
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195-2100

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June 27, 2002

Memorandum

To: Contracting Officer, Columbia Cascades Support Office

From: Contracting Officer's Technical Representative, Columbia Cascades Support Office

Subject: Report for Subagreement No. 4 to Cooperative Agreement No. CA9000-95-019 with the University of Washington

"A Survey of Visitors To The Nisqually River-Stevens Canyon Corridor in Mount Rainier National Park" has been reviewed and found to be acceptable. The report is submitted as partial fulfillment of the requirements of Subagreement No. 4 to Cooperative Agreement No. CA9000-95-019 with the University of Washington.

Linda Whitson

Enclosures

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October 2001

Subagreement No. 4 to Cooperative Agreement No. 1443-CA-9000-95-019
National Park Service and University of Washington

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CONTENTS

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PREFACE

This document reports the results from a survey of visitors to the Nisqually River-Stevens Canyon Corridor in Mount Rainier National Park (MORA) in the summer of 1995. The questionnaire and on-site contact sheet used in this study are included in Appendix A and B. The questions used in the survey are included in the text of this report. However, readers may benefit by reviewing the questionnaires in order to familiarize themselves with the survey items and the format in which they were originally presented. It is anticipated that this report will be used primarily as a reference document and, therefore, depending on each reader's objective, this report may be used in very different ways. However, any reader not familiar with statistical analysis of survey data is encouraged to refer to Appendix C, "How To Use This Report."

I. SURVEY HIGHLIGHTS

This study was conducted to address information needs identified in 1995 by the Mount Rainer (MORA) General Management Plan (GMP) team. The survey was designed to gather information about peak-season visitors to the corridor between the Nisqually Entrance and the Stevens Canyon Entrance of MORA (the proposed motorized zone). Their were four general objectives: 1) to describe these visitors, 2) to describe selected aspects of their experiences in MORA, 3) to assess how tightly they were tied to their plans to visit either Longmire or Paradise, and 4) to identify possible alternate destinations both inside and outside MORA.

Analyses focus on the two subpopulations of visitors entering the park through the Nisqually Entrance and the Stevens Canyon Entrance. Respondents were limited to visitors over the age of 15 and to parties entering between July 13, 1995 and September 7, 1995. The study design included an on-site questionnaire and a mail survey. This approach allows comparisons between the expectations and planned activities visitors had when entering MORA with the experiences and activities in which they actually participated.

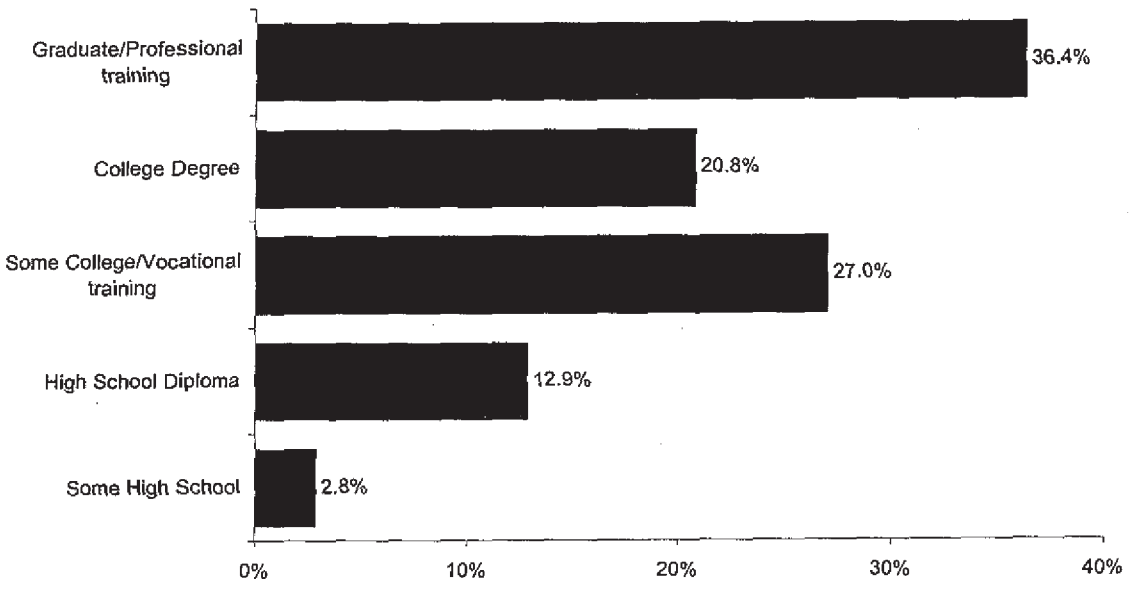
The highlighted findings presented in this section have important implications that will be of particular interest to MORA managers. They do not, however, represent all findings that are likely to be of interest to any single reader. Therefore, readers wishing to make full use of this report should carefully read the sections that are relevant to their particular interests.

Who are peak-season visitors entering Nisqually and Stevens Canyon Entrances?

Visitors entering these gates were comparable in age (Mean[1] = 42 years) to general park visitors (Mean = 43 years, MORA 1990 Visitor Survey[2]). The proportion of male to female visitors (52% vs. 48%) and the relative lack of racial diversity (92.2% Caucasian) were similar to findings for general visitors to MORA in 1990. On average, these gate visitors had completed a higher level of education (see Figure 1.1) than general visitors to MORA (mean = 16 years vs. 15 years, MORA 1990 Visitor Survey). The observed increase is due to a larger percentage of respondents completing post-graduate and professional education (36.4% vs. 29%) and fewer respondents having a high school diploma as their highest educational achievement (12.9% vs. 18%) as compared to general visitors to MORA. Similar to general visitors to MORA in 1990, most of these gate respondents (65%) traveled with family members, and 26% of gate respondents were accompanied by children under the age of 16.

[1] The mean value for a group is equivalent to the average for that group.
[2] Note that the gate survey focused on summer visitors to the Nisqually/Stevens Canyon corridor. In contrast, the MORA 1990 GVS was a year round sample of visitors entering all park gates.

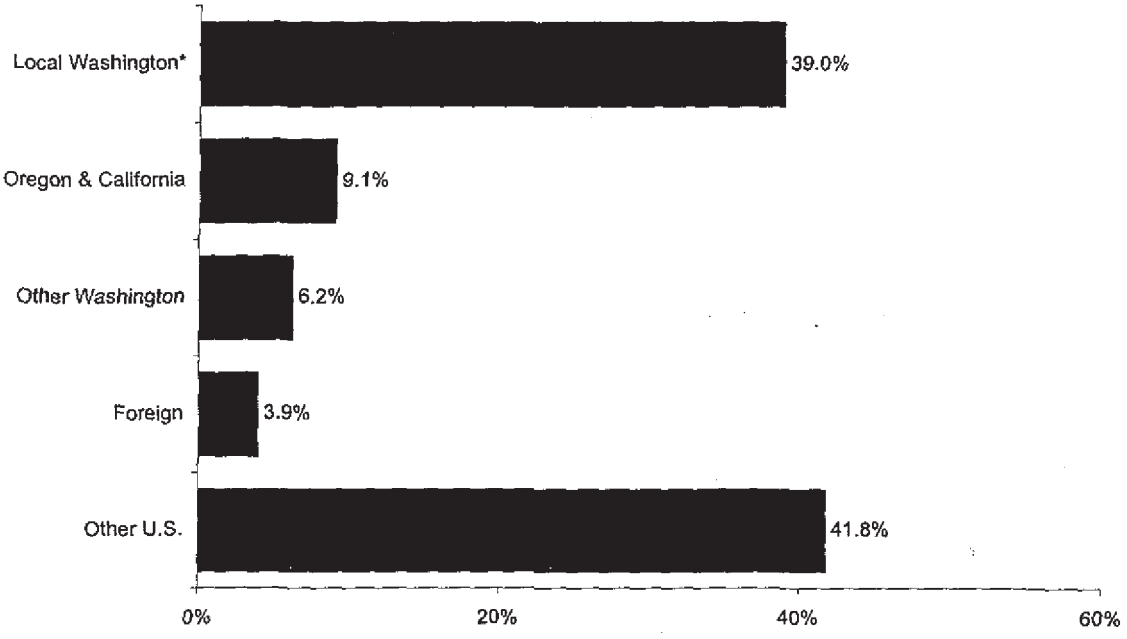
FIGURE 1.1: v.1 Q-21 & v. 2 Q-15
HIGHEST LEVEL OF FORMAL EDUCATION COMPLETED



PERCENT OF RESPONDENTS (n = 917)
Average Years of Education = 16

Although many respondents (42%) were from Washington State, they comprised a smaller proportion than that observed in general visitors to MORA (58%, 1990 Visitor Survey). Respondents from other U.S. states (excluding WA, OR, and CA) and from foreign countries were more common in these gate respondents than in the general visitors to MORA in 1990 (49.3% vs. 33.1%). These observed differences may be because a greater proportion of local visitors enter the park through those entrances not included in the present survey (e.g., White River Entrance, Carbon River Entrance) or come at a different time of year (the 1990 survey was yearlong). These differences may also reflect changes in general park visitor demographics that have occurred since 1990.

FIGURE 1.2: Contact Sheet Q-3
GATE SURVEY RESPONDENTS' PLACE OF RESIDENCE



* Includes gate survey respondents from King, Pierce, Snohomish, Lewis, and Yakima counties.

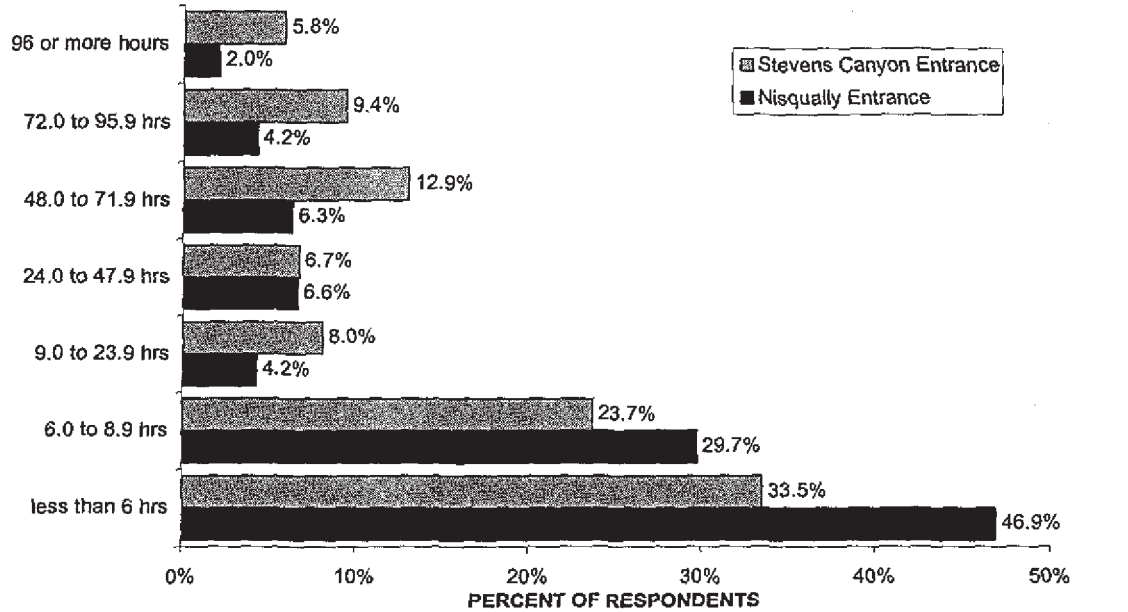
The Nisqually-Stevens Canyon visitors differ by entrance and by length of stay in MORA.

Visitors' responses to each question were examined for differences due to contact point. We looked at contact point because differences across contact points have the potential to be important in understanding park users and in the application of findings to park policy. These tests revealed that visitors entering the Nisqually gate often differed from those visitors entering at Stevens Canyon.

An example of a managerially important contact point difference was obtained when asking respondents how long they stayed at MORA (see Figure 1.3). Although the majority (71.3%) of respondents spent less than 9 hours in MORA, total time spent in MORA differed by contact point. Respondents contacted at the Stevens Canyon

Entrance were more likely to stay more than 1 day while respondents contacted at the Nisqually entrance were more likely to stay less than 9 hours.

FIGURE 1.3: Q-4
TOTAL TIME SPENT IN MORA BY CONTACT POINT



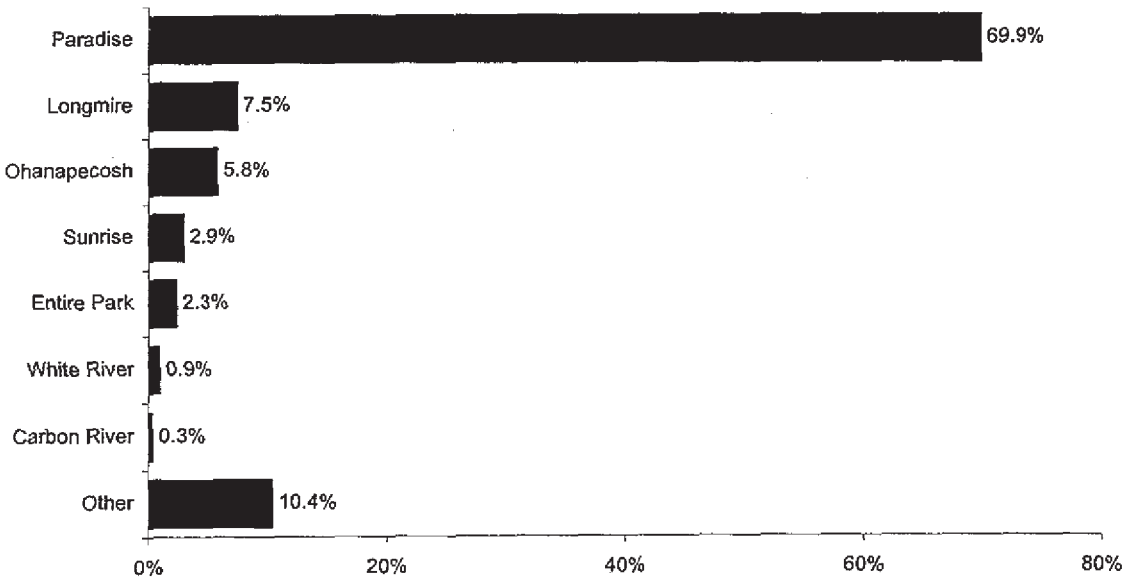
(Stevens Canyon n = 224; Nisqually n = 636)
Average time spent in MORA = 26.1 hrs for Stevens Canyon Entrance & 14.9 hrs for Nisqually Entrance

Because point of contact was found to be strongly related to length of stay in MORA, we analyzed whether observed contact point effects were being driven by length of stay. Analyses revealed that in some cases observed contact point effects were due to length of stay. In other cases, however, contact point effects were independent of length of stay effects. Chapter 9 provides a table summarizing which effects were observed for each question. Taken together these findings indicate that systematically aggregating data from these gate respondents may lead to erroneous conclusions and poor policy.

Paradise is a destination for most gate respondents.

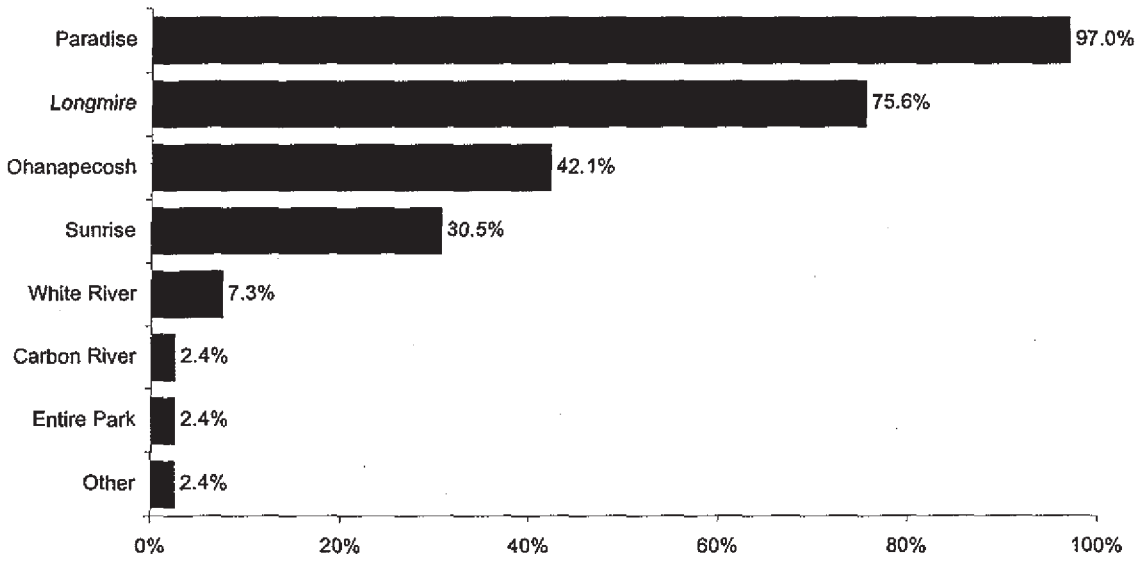
Over half of gate respondents reported having at least one specific destination (55.9%). Of those respondents reporting a single destination, 69.9% listed Paradise as that destination (see Figure 1.4). Of those respondents listing multiple destinations, 97.0% listed Paradise (see Figure 1.5). In contrast, Longmire (which was the second most popular destination) was listed as a destination by 7.5% of respondents with only one destination and by 75.6% of respondents with multiple destinations (see Figures 1.4 and 1.5).

FIGURE 1.4: Q-3
DESTINATIONS FOR GATE SURVEY RESPONDENTS WITH ONE DESTINATION



PERCENT OF RESPONDENTS (n = 345)
Includes only the 38.3% of respondents with one destination

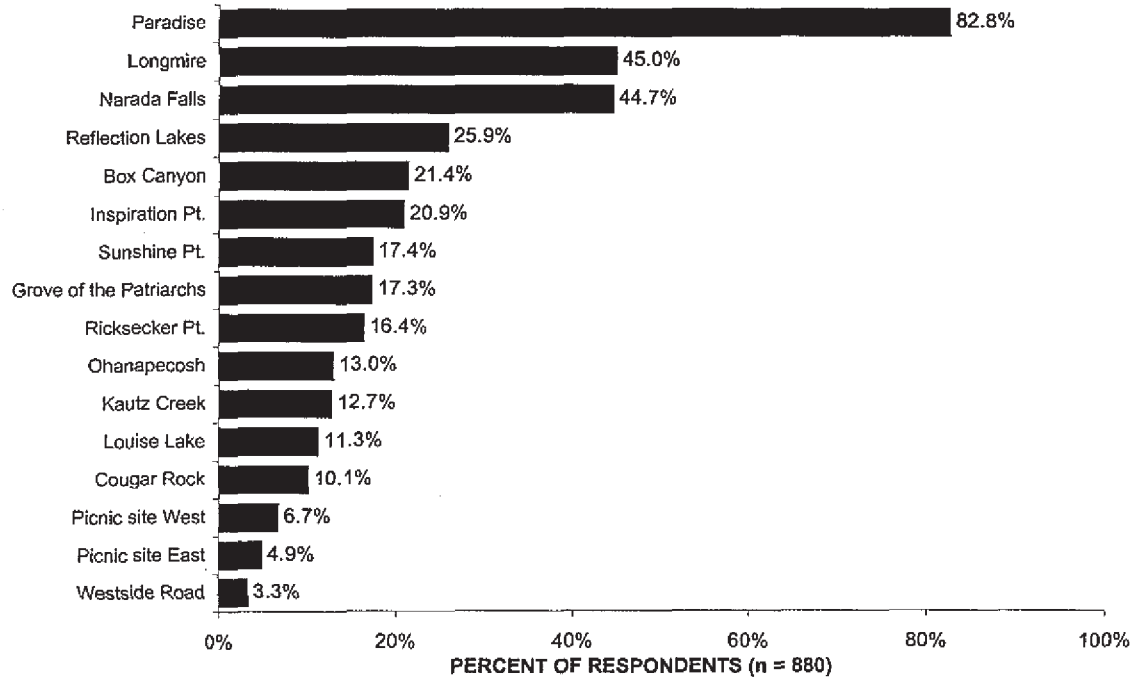
FIGURE 1.5: Q-3
DESTINATIONS FOR GATE SURVEY RESPONDENTS WITH MULTIPLE DESTINATIONS



PERCENT OF RESPONDENTS (n = 164)
Includes only the 17.6% of respondents with multiple destinations
Percentages sum to more than 100 because respondents have multiple destinations

Additionally, 82.8% of all respondents (regardless of number of destinations) reported stopping at Paradise (see Figure 1.6). Longmire (45.0%) and Narada Falls (44.7%) were the distant second and third most frequently visited sites. Further examination of stop patterns revealed that almost 20% of respondents contacted at each gate stopped only at Paradise.

FIGURE 1.6: Q-5
PERCENTAGE OF GATE SURVEY RESPONDENTS STOPPING AT EACH SITE IN MORA



Most gate respondents do the activities they plan to do.

During the initial contact, respondents were asked to indicate what activities they planned to do during their present trip. A list of 23 options (including "Have no plans" and "other activities not described") was provided that included the most common types of experiences (e.g., took walks/hikes, go to Paradise Visitor Center).

As seen in Figure 1.7, "drive around viewing scenery", "take walks/hikes", and "go to Paradise Visitor Center" were planned activities for at least 60% of respondents (71.6%, 65.1%, & 60.2%, respectively). The most frequently listed most important planned activities were "take walks/hikes" (36.7%) and "drive around viewing scenery" (35.7%). On the mail survey, most respondents reported their most important way of experiencing MORA was "took walks/hikes" (40.7% Stevens Canyon Entrance; 47.7% Nisqually

Entrance) followed by "drive around viewing scenery" (26.2% Stevens Canyon Entrance; 26.3% Nisqually Entrance). A comparison of actual and planned trip experiences (see Figures 1.8 and 1.9) revealed that most people did the activities they planned to do. It should be noted that people were more likely to do an unplanned activity than to not do a planned activity. Please see Chapter 4 for more detail.

FIGURE 1.7: Contact Sheet Q-3
PLANNED ACTIVITIES FOR TRIP TO MORA: TOP 11 ACTIVITIES

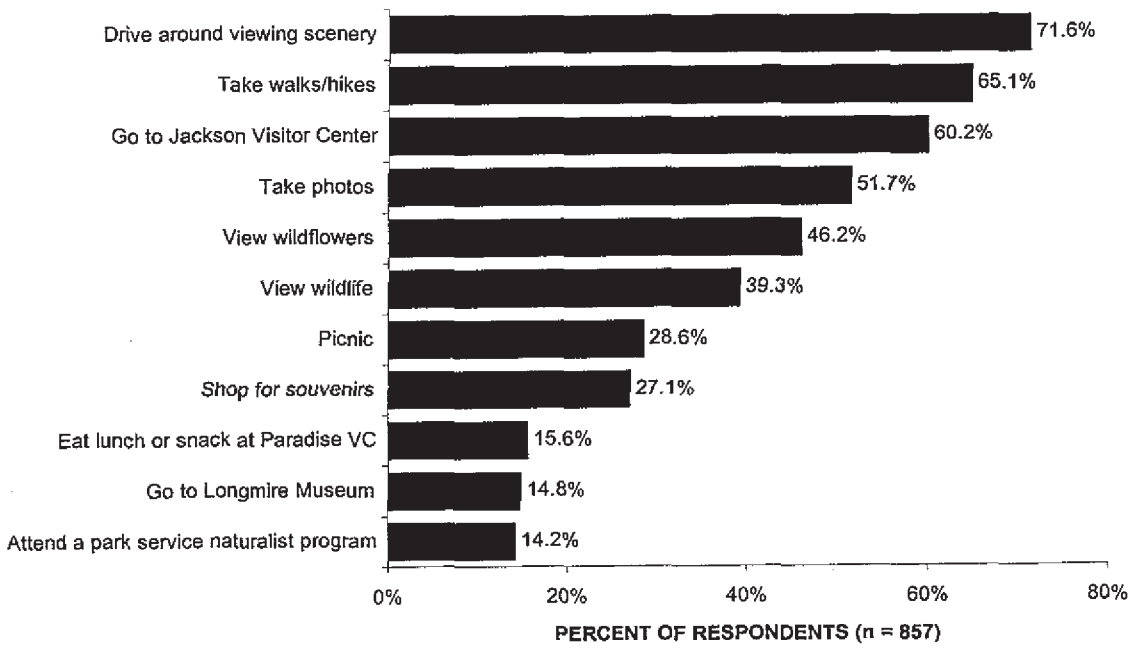
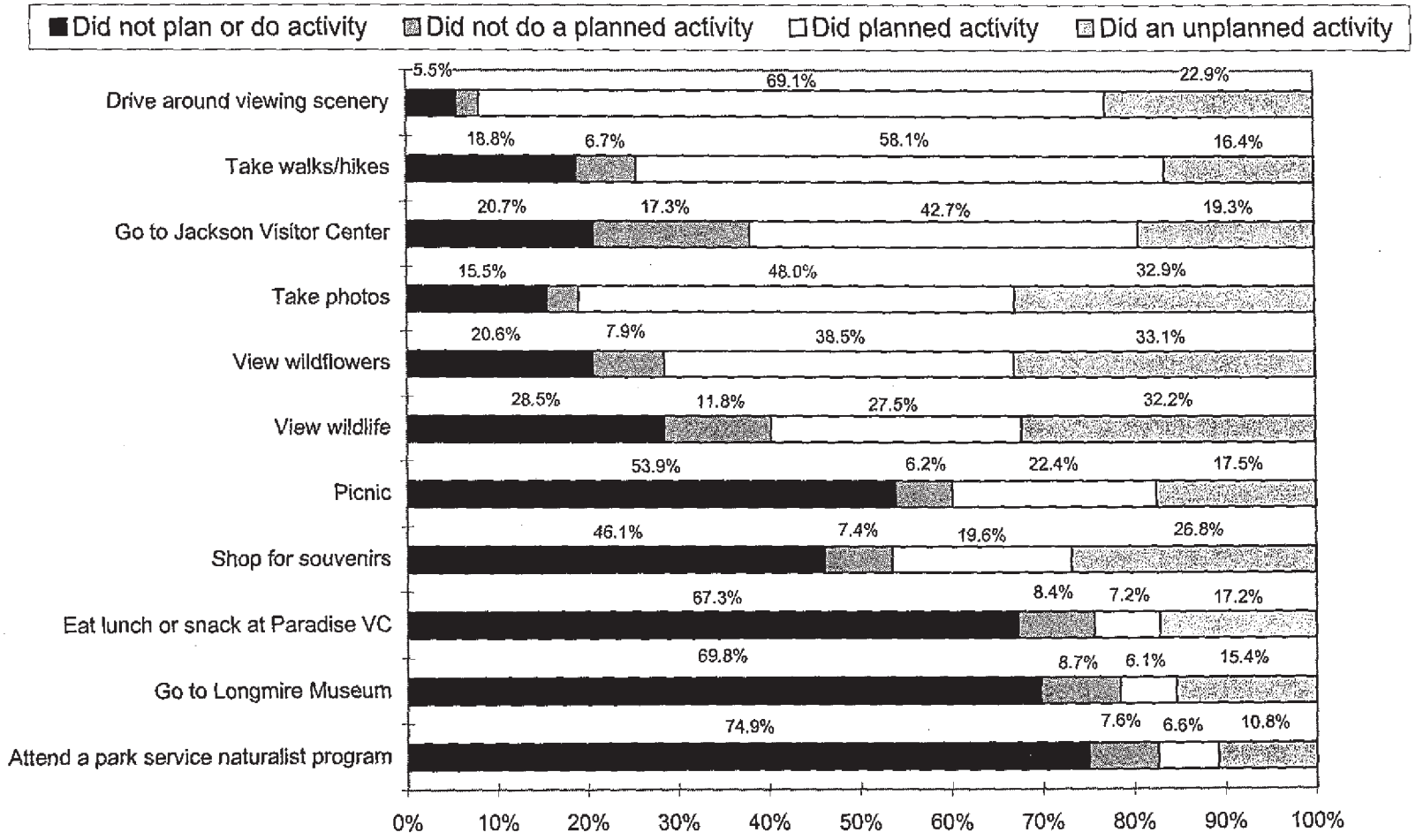
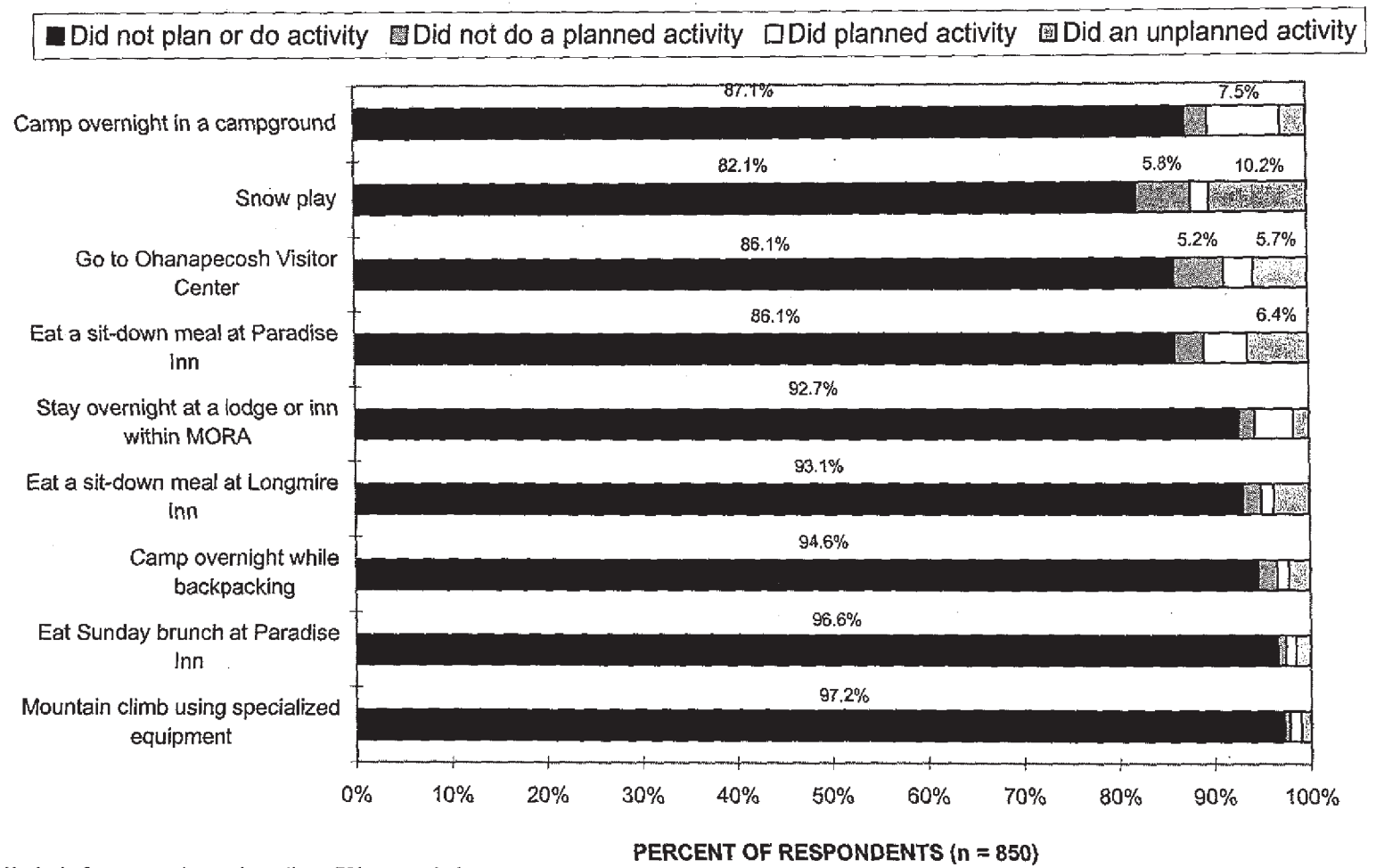


FIGURE 1.8: Q-6a & Contact Sheet Q-3
ACTUAL VERSUS PLANNED ACTIVITIES: TOP 11 ACTIVITIES



*Labels for percentages less than 5% are not shown.

FIGURE 1.9: Q-6a & Contact Sheet Q-3
ACTUAL VERSUS PLANNED ACTIVITIES: BOTTOM 9 ACTIVITIES

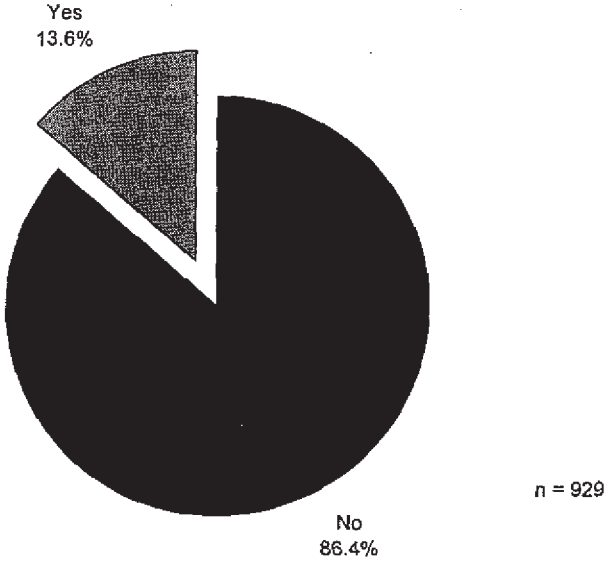


*Labels for percentages less than 5% are not shown.

Most gate respondents did not report seeing unacceptably damaged park resources.

Only 13.6% of gate respondents reported seeing unacceptably damaged park resources (see Figure 1.10). Of those who reported seeing damage, the most common form of damage seen was meadow stomping (51.2%) followed by litter (17.6%) and general erosion (12.8%). The majority of this damage was observed at Paradise (61.5%). Although these data indicate that few gate visitors report seeing unacceptably damaged park resources, these data should not be interpreted as indicating that damaged park resources are actually uncommon. Park visitors may not have the same standards (or knowledge) for judging damaged resources that park managers have and therefore, more (or less) damage may actually exist. If visitors' thresholds for noticing damage is lower than park managers' standards, it may be necessary to educate visitors regarding damaged resources in order to prevent further damage and to increase understanding of (and support for) any policies invoked to reduce damage (which visitors' do not perceive to be a problem, but the park does).

FIGURE 1.10: Q-9
PERCENTAGE OF GATE SURVEY RESPONDENTS WHO SAW UNACCEPTABLY DAMAGED PARK RESOURCES



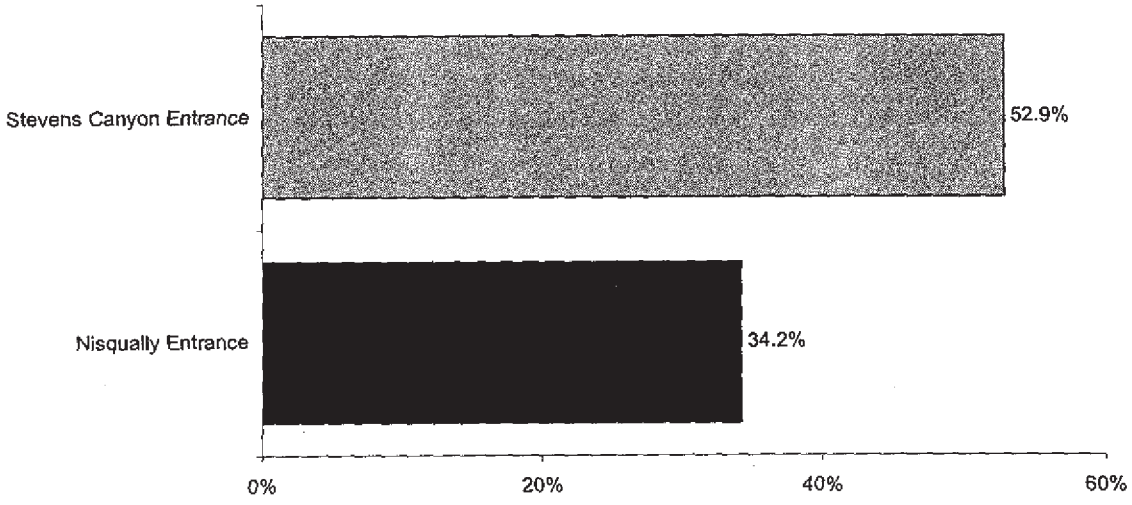
Number of visitors encountered at Paradise and Longmire affect future decisions to visit MORA.

About 40% of respondents said that the number of visitors they encountered at Paradise would affect their future decisions to visit MORA. As can be seen in Figure 1.11, the number of other Paradise visitors had an effect on more people contacted at the Stevens Canyon entrance (52.9%) than on those contacted at the Nisqually entrance (34.2%). In contrast, only about a fourth (26.5%) of respondents indicated that the number of visitors they encountered at Longmire would affect future decisions to visit MORA.

Examination of the graphs for the ways in which future decisions might be affected for Paradise and Longmire suggests that the two locations are very different. Figure 1.12 shows that for Paradise the most frequently listed way in which future decisions might be

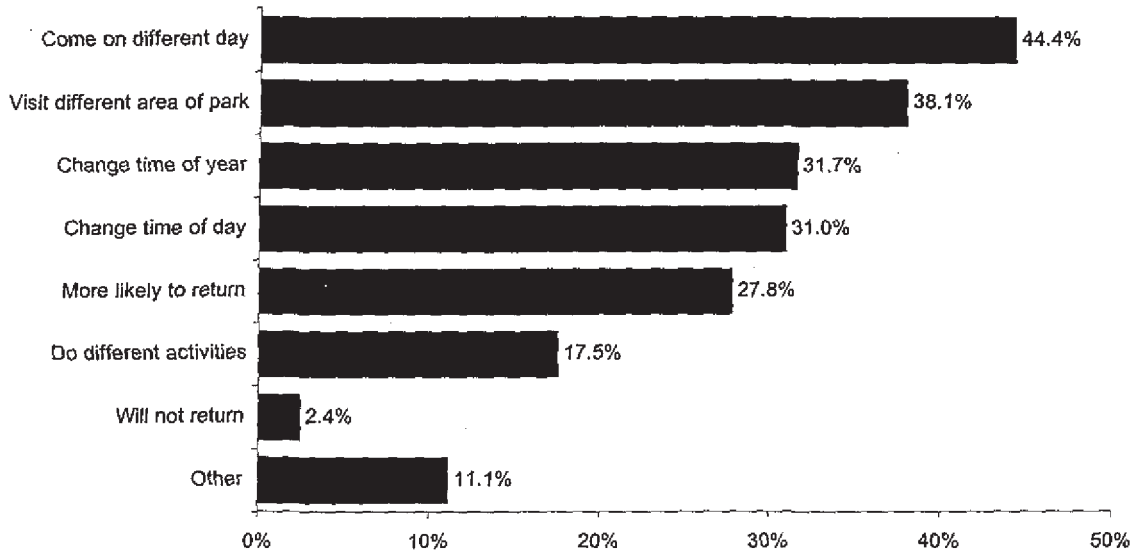
affected was 'come on a different day' (44.4%) followed by 'visit different area of the park' (38.1%) suggesting that people found it more crowded than they preferred. Figure 1.13 shows that for Longmire the most frequent way in which future decisions might be affected was 'more likely to return' (34.9%) suggesting people found Longmire to be less congested. It should be noted that a very low percentage of respondents indicated that they 'will not return' to Paradise (2.4%) or Longmire (4.7%) due to the number of other visitors they encountered.

FIGURE 1.11: v. 1, Q-10
PERCENTAGE OF GATE SURVEY RESPONDENTS FOR WHICH THE NUMBER OF VISITORS ENCOUNTERED AT PARADISE WILL AFFECT FUTURE DECISIONS TO VISIT MORA BY CONTACT POINT



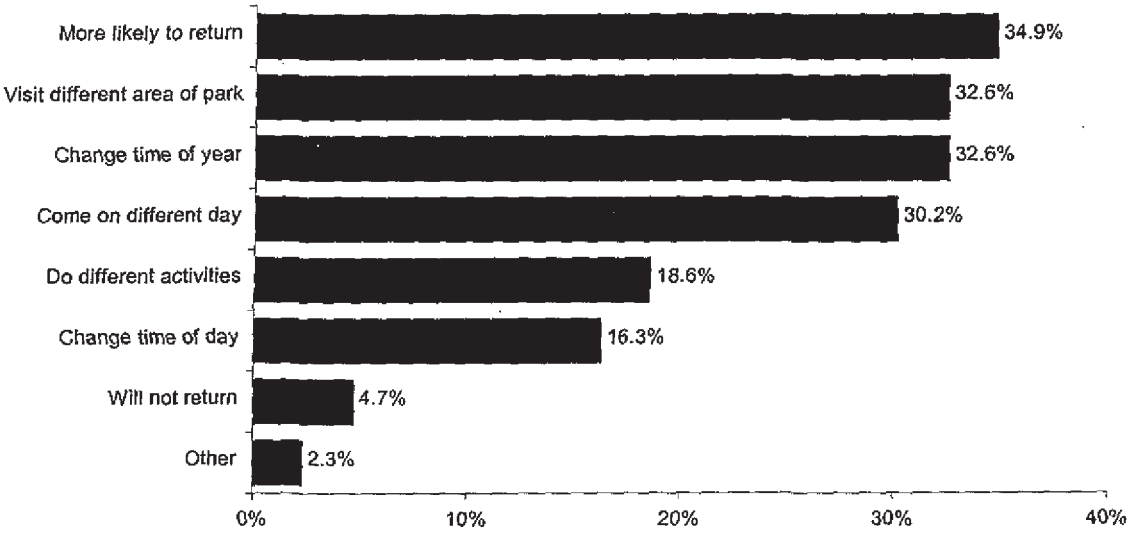
(Stevens Canyon n = 85; Nisqually n = 237)
Includes only the 70.2% of respondents who indicated that they visited the Paradise Visitor Complex

FIGURE 1.12: v. 1, Q-10
WAYS IN WHICH GATE SURVEY RESPONDENTS' DECISIONS ABOUT VISITING PARADISE MIGHT BE AFFECTED



PERCENT OF RESPONDENTS (n = 128)
Includes only the 39.5% of respondents who said future decisions would be affected
Percentages sum to more than 100 because respondents could list multiple ways.

FIGURE 1.13: v. 2, Q-10
WAYS IN WHICH GATE SURVEY RESPONDENTS' DECISIONS ABOUT VISITING LONGMIRE MIGHT BE AFFECTED



PERCENT OF RESPONDENTS (n = 43)
Includes only the 26.5% of respondents who said future decisions would be affected
Percentages sum to more than 100 because respondents could list multiple ways.

There are multiple types of visitor experiences desired.

Based on the rated importance of 18 different factors that could affect the quality of experiences at MORA, analyses identified seven groups or market segments indicating that all visitors did not desire the same visitor experience. Additionally, review of the importance ratings for the seven segments revealed that no single type of factor was important to all segments (see Table 1.1). For example, market segment 1 (14% of respondents) rated hiking conditions as most important (4 on a scale of 1 to 5) and gave educational opportunities an importance rating of 2.5 (on a scale of 1 to 5). In contrast, market segment 3 (13% of respondents) rated hiking conditions a 3.1 and gave educational opportunities an importance rating of 4.0 (their highest). These findings suggest that visitors entering MORA through the Nisqually and Stevens Canyon entrances seek a variety of types of experiences. Because people react very differently to the different factors, changes in one factor may have dramatic effects on only some visitors. It is essential that managers understand the variation in these experiences as they contemplate more intensive visitor management. Chapter 6 describes the analyses and results in greater detail.

Table 1.1. Cluster Analysis of Factor Scores: Mean Factor Score and Number of Cases Per Segment (Importance ratings scale ranges from 1 to 5)

	Segment						
	1	2	3	4	5	6	7
	Mean Factor Score (Importance)						
Visitor Density: Roads & Facilities	3.2	3.7	1.9	3.8	2.4	4.0	4.0
Educational Opportunities	2.5	3.3	4.0	3.9	2.4	2.9	4.3
Shopping & Food Facilities	1.7	2.6	1.9	2.8	1.7	3.7	3.7
Regulatory Presence	2.5	3.7	3.0	2.3	1.8	2.4	3.9
Hiking Conditions	4.0	3.3	3.1	3.9	2.2	2.1	4.0
Number of Respondents	59	69	54	84	44	29	75
Percent of cases	14%	17%	13%	20%	11%	7%	18%

The hypothetical scenarios revealed that traffic and parking conditions are important to park visitors.

Respondents were asked to rate the acceptability and importance of two series of hypothetical scenarios. In one series, five scenarios portrayed different levels of vehicle congestion on the roads. In the other series, four hypothetical scenarios portrayed different levels of congestion in the parking turnouts.

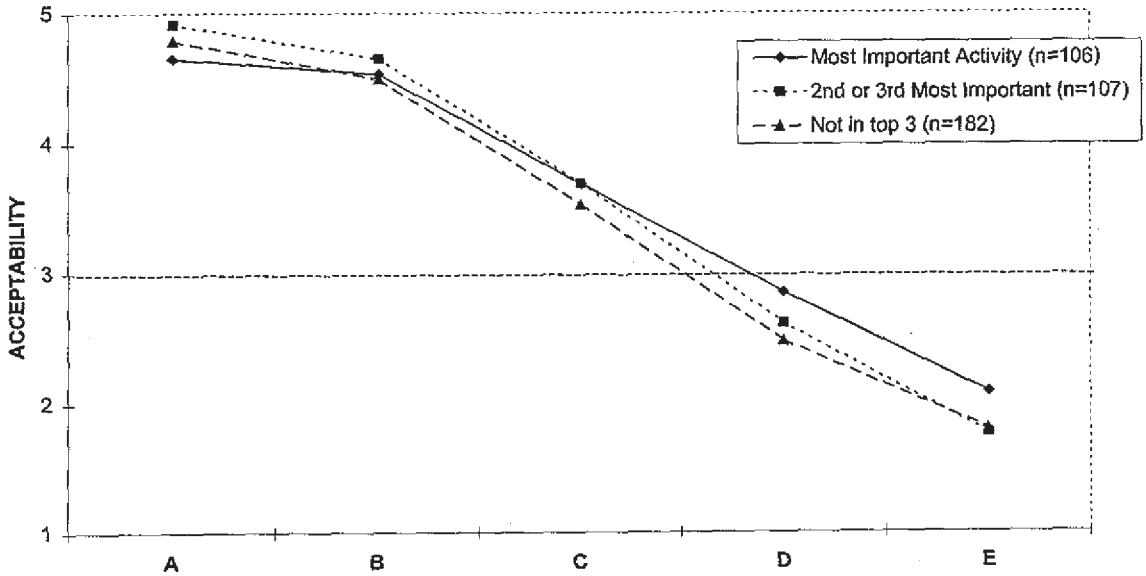
Readers should be aware that there is ongoing scientific debate concerning when and to what degree visitors' reactions to hypothetical scenarios correspond with their reactions to the actual conditions those scenarios represent. Findings based on these hypothetical scenarios should therefore be interpreted with caution.

Both traffic conditions and turnout parking conditions were considered important by respondents. Most respondents rated traffic and turnout parking importance at 3 or higher on 5 point importance scales. In comparison to 16 other factors presumed to be

associated with in park enjoyment, traffic and turnout mean importance ratings were lower than only one other factor. Interestingly, that factor, number of vehicles in visitor center parking lots, is also associated with vehicle density.

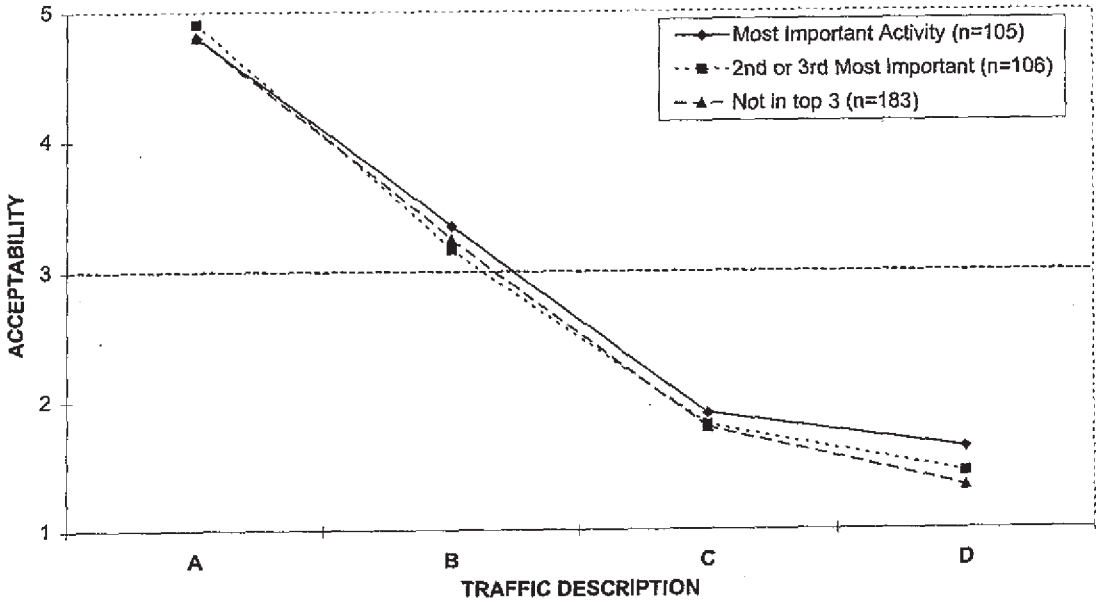
The fact that traffic and turnout congestion is important to visitors does not mean that experiences gained in the motorized sightseeing zone are the most important reasons that people visit MORA. On the contrary, visitors who said driving to view scenery was their most important activity said traffic and turnout congestion were slightly less important than did visitors whose trips focused on other activities (Figure 1.14 and 1.15). One interpretation of these data relies upon the fact that all visitors must use the motorized sightseeing zone, either as the location of their primary activity (motorized sightseeing) or as a means of gaining access to their primary activity (e.g., driving to a trailhead). The desired experiences of motorized sightseers may be degraded slightly by traffic and turnout congestion. However, the desired experiences of visitors who use the roads as a means of access are delayed or even blocked by road and turnout congestion – a negative impact of considerably greater importance.

FIGURE 1.14:
ACCEPTABILITY OF TRAFFIC CONDITIONS
BY IMPORTANCE OF DRIVING TO VIEW SCENERY



MANOVA F(10,778) = 1.93, p = .039

FIGURE 1.15:
ACCEPTABILITY OF TURNOUT PARKING CONDITIONS
BY IMPORTANCE OF DRIVING TO VIEW SCENERY



MANOVA F(8,778) = 2.19;

There was limited consensus among park visitors for the acceptability of different hypothetical traffic and parking congestion scenarios.

Respondents were asked to rate the acceptability and importance of two series of hypothetical scenarios. In one series, five scenarios portrayed different levels of vehicle congestion on the roads. In the other series, four hypothetical scenarios portrayed different levels of congestion in the parking turnouts.

Readers should be aware that there is ongoing scientific debate concerning when and to what degree visitors' reactions to hypothetical scenarios correspond with their reactions to the actual conditions those scenarios represent. Findings based on these hypothetical scenarios should therefore be interpreted with caution.

For both road congestion and parking at turnouts it was clear that respondents agreed about the acceptability and unacceptability of the descriptions of very low and very high congestion levels. However, the consensus was not sufficient to make clear the point at which one description was clearly acceptable and the next was not.

Although the observed differences in the acceptability ratings of tested subgroups were generally too small to directly affect the interpretation of the acceptability ratings themselves, at least one subgroup difference suggests a managerially important insight. Respondents who said driving to view scenery was their most important activity were more tolerant of traffic and turnout congestion than those who said other activities were most important (see Figure 1.14 and Figure 1.15). This finding suggests that slight differences in judgments concerning the management of a zone may indicate qualitative differences between subgroups in the meaning they place on their activities in that zone. For people whose desired experience was not driving to

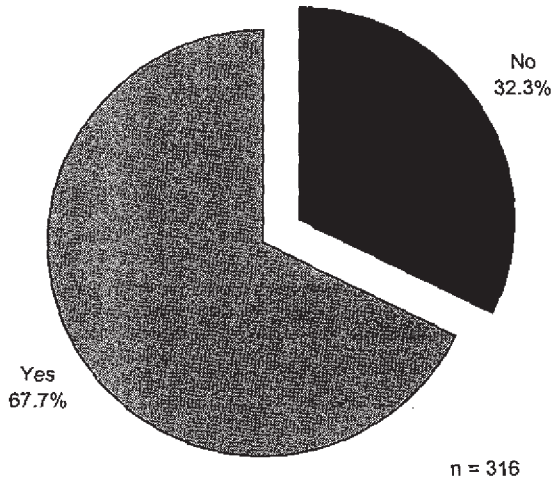
view scenery, the motorized zone may be viewed as simply a means of getting to the desired experience. Increased congestion, therefore, is viewed unacceptably as it delays or blocks progress to their desired experience. In contrast, increased congestion in the motorized zone may degrade the experience of driving viewing scenery, but not prevent or delay sightseers from having that experience. Because such qualitative differences exist for users of the same zone, managers should carefully assess the potential impacts of management actions on the different zone users.

No acceptable substitute exists for Paradise or Longmire for a significant number of visitors.

One-third of respondents reported that no acceptable substitute for Paradise existed (see Figure 1.16), and one-fourth of respondents reported that no acceptable substitute for Longmire existed (see Figure 1.17). These respondents are the visitors most likely to react negatively to limits on the number of visitors to Paradise or Longmire, respectively. If management is able to identify who these visitors are, they will be better able to assess possible impacts and to address these visitors' concerns should limits be invoked.

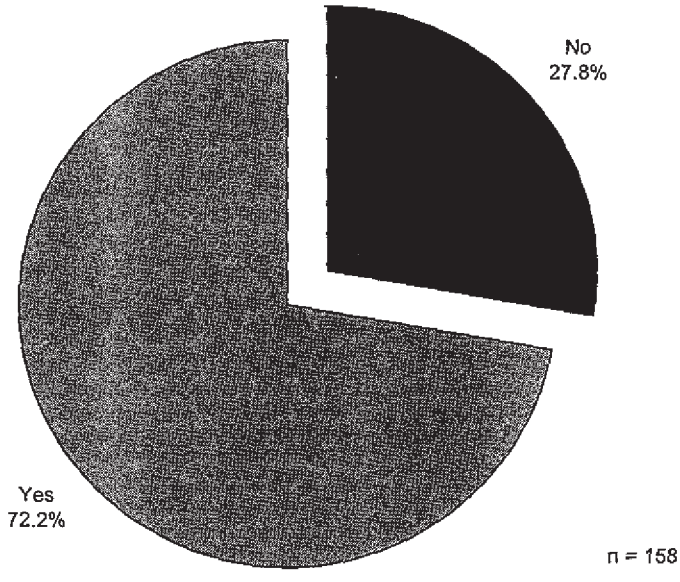
Logistic regression analyses failed to identify variables on which people who said there was no acceptable substitute for Paradise or for Longmire differed from people who said there were acceptable substitutes. If these groups of visitors do differ, however, they differ on characteristics not included in these analyses. Thus, there is not a simple strategy based on the demographic and trip characteristics examined in these analyses for distinguishing between these groups.

FIGURE 1.16: v.1, Q-10
IF NOTIFIED THAT PARADISE VISITOR COMPLEX WAS FILLED TO CAPACITY, WOULD THERE HAVE BEEN AN ACCEPTABLE SUBSTITUTE?



Includes only the 70.2% of respondents who indicated that they visited the Paradise Visitor Complex

FIGURE 1.17: v. 2, Q-10
IF NOTIFIED THAT LONGMIRE VISITOR COMPLEX WAS FILLED TO CAPACITY, WOULD THERE HAVE BEEN AN ACCEPTABLE SUBSTITUTE?

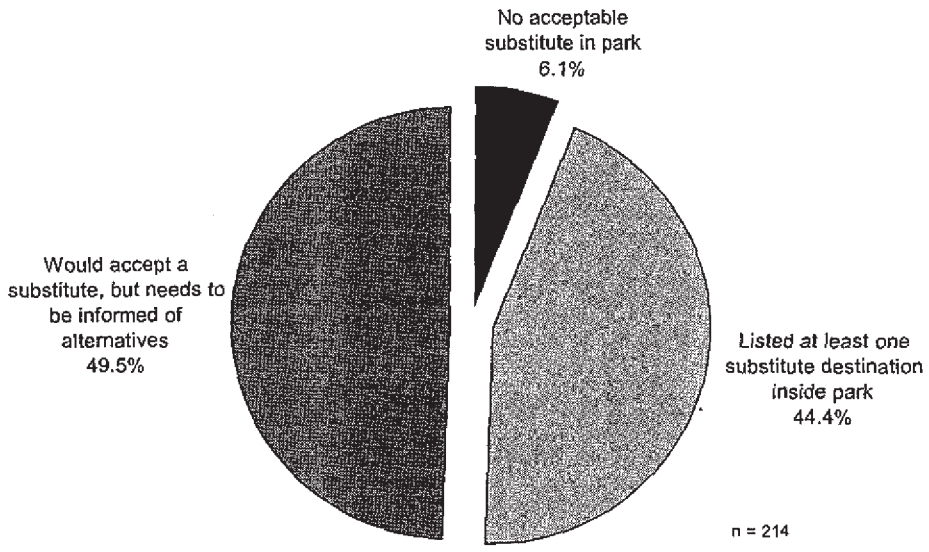


Includes only the 36.9% of respondents who indicated that they visited the Longmire Visitor Complex

Displacing visitors to acceptable substitute destinations is possible, but many visitors would need to be informed of alternatives.

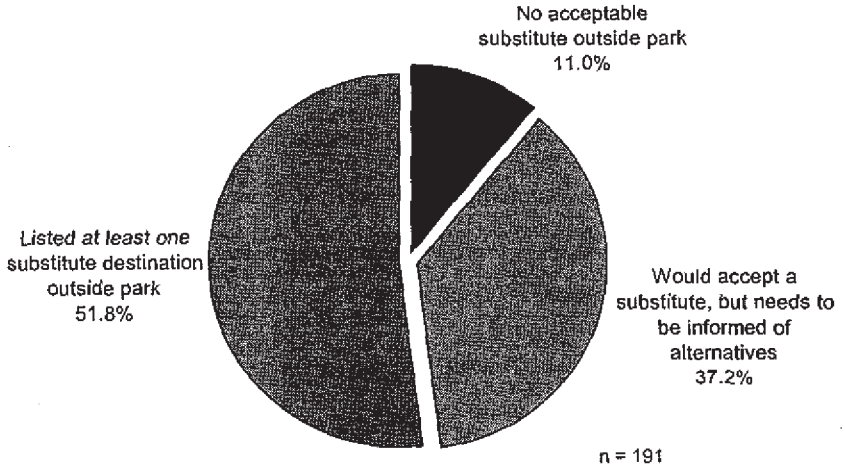
Two-thirds (67.7%) of respondents reported that they would accept a substitute destination for Paradise (see Figure 1.16). Respondents willing to accept a substitute destination for Paradise were then asked about alternative destinations in MORA and outside MORA. Half (49.5%) of these respondents indicated that they would need to be informed of alternatives in MORA (see Figure 1.18) and 37.2% of them indicated that they would need to be informed of alternatives outside of MORA (see Figure 1.19). The proportion of respondents who indicated that no acceptable substitute destination for Paradise was available outside MORA (11.2%) was larger than the proportion of respondents who indicated that no acceptable substitute destination was available in MORA (6.1%) (see Figures 1.18 and 1.19). These findings suggest that for some people the experience at Paradise is specific to Mount Rainier rather than a more general park experience.

FIGURE 1.18: v.1, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR PARADISE EXIST WITHIN MORA?



Includes only the 67.7% of respondents that indicated an acceptable substitution exists.

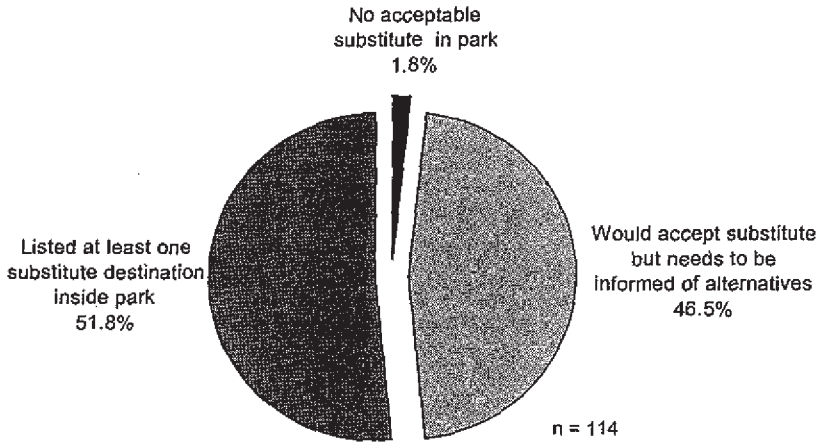
FIGURE 1.19: v. 1, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR PARADISE EXIST OUTSIDE MORA?



Includes only the 67.7% of respondents that indicated an acceptable substitute destination exists.

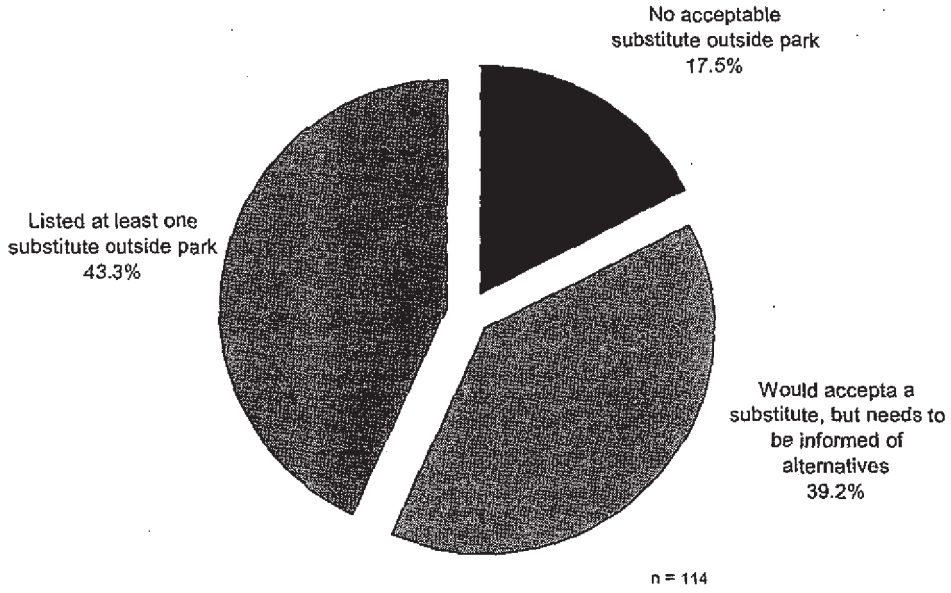
Almost three-fourths (72.2%) of respondents reported that they would accept a substitute destination for Longmire (see Figure 1.17). Respondents willing to accept a substitute destination for Longmire were then asked about alternative destinations in MORA and outside MORA. Slightly less than half (46.5%) of these respondents indicated that they would need to be informed of alternatives in MORA (see Figure 1.20) and 39.2% indicated that they would need to be informed of alternatives outside of MORA (see Figure 1.21). The proportion of respondents who indicated that no acceptable substitute destination for Longmire was available outside MORA (17.5%) was larger than the proportion of respondents who indicated that no acceptable substitute destination was available in MORA (1.8%) (see Figures 1.20 and 1.21).

FIGURE 1.20: v. 2, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR LONGMIRE EXIST WITHIN MORA?



Includes only the 72.2% of respondents who indicated that an acceptable substitution exists

FIGURE 1.21: v. 2, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR LONGMIRE EXIST OUTSIDE MORA?



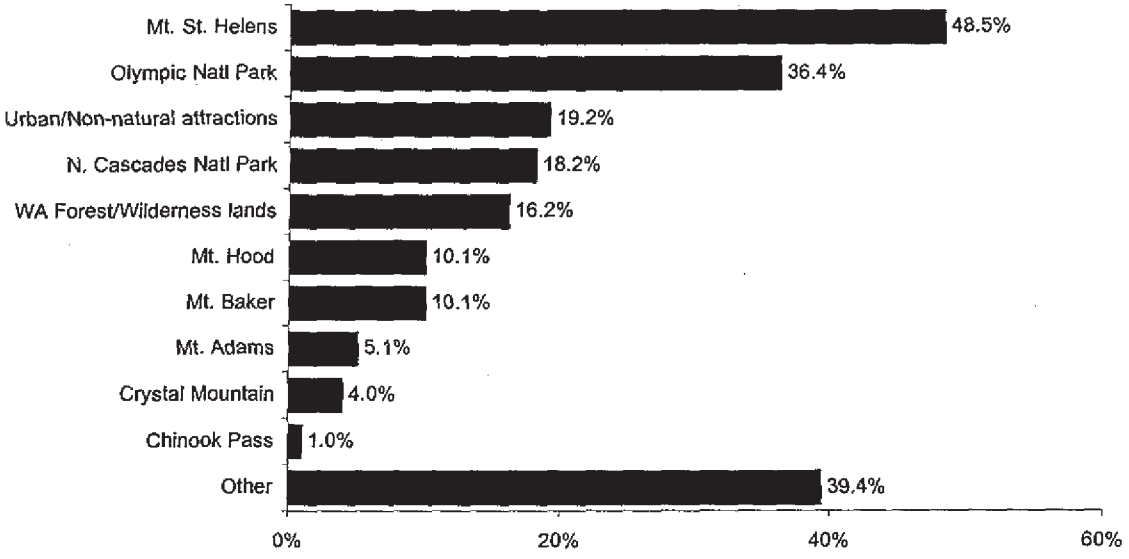
Includes only the 72.2% of respondents who indicated that an acceptable substitution exists

Displacing visitors to alternative destinations inside and outside MORA will be complex and may affect other protected areas (e.g., National Parks and Monuments).

The vast majority (89.8%) of respondents indicated Paradise was an acceptable substitute destination for Longmire whereas Sunrise Meadows was the most frequently listed acceptable substitute destination for Paradise. Mount St. Helens National Monument and Olympic National Park were the two most frequently listed acceptable destinations outside MORA for both Paradise and Longmire (see Figures 1.22 and 1.23). These findings suggest that attempts to redistribute visitors will be a complex and controversial undertaking. Coordination among different destinations in MORA will be necessary in order to maintain desired visitor density levels throughout the park.

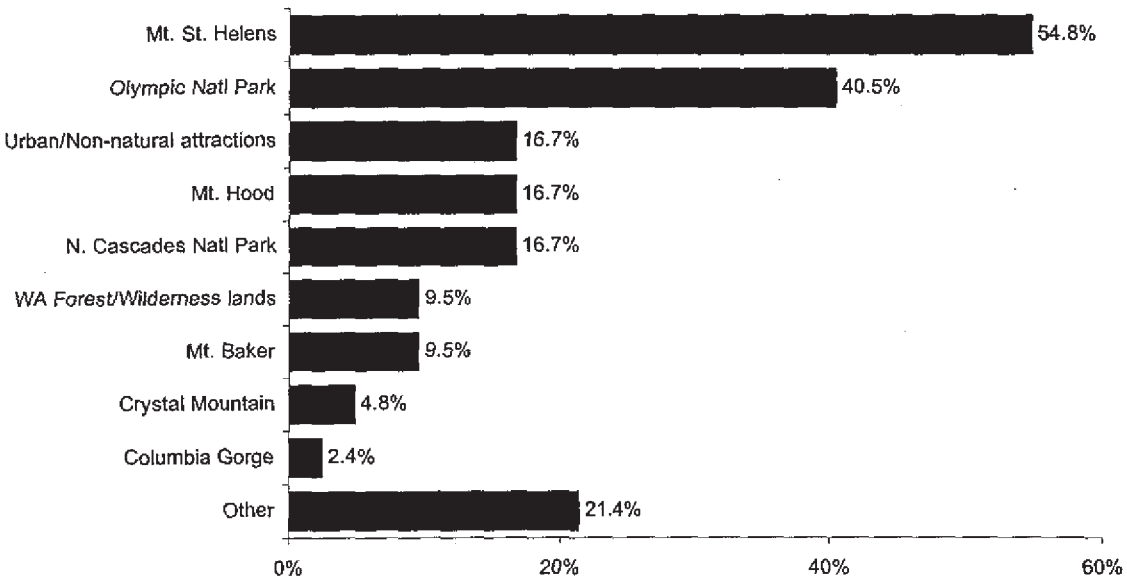
Additionally, limits on visitor use at MORA will impact other protected areas outside MORA (and most likely vice versa, should those areas restrict use). Therefore, dialogue among these various protected areas about how to best meet users' and management's objectives should be considered.

FIGURE 1.22: v. 1, Q-10
SUBSTITUTE DESTINATIONS FOR PARADISE OUTSIDE OF MORA



PERCENT OF RESPONDENTS (n = 99)
Includes only the 51.8% of respondents that listed a specific destination.
Percentages sum to more than 100 because respondents could have multiple substitute destinations.

FIGURE 1.23: v. 2, Q-10
SUBSTITUTE DESTINATIONS FOR LONGMIRE OUTSIDE OF MORA



PERCENT OF RESPONDENTS (n = 41)
Includes only the 43.3% of respondents that listed a specific destination.
Percentages sum to more than 100 because respondents could have multiple substitute destinations.

II. INTRODUCTION

The 1995 Mount Rainier National Park Gate Survey was administered by the National Biological Survey, Cooperative Park Studies Unit (CPSU). The study was proposed and funded by the Planning Division of the National Park Service, Denver Service Center (DSC).

The survey focused on peak-season visitors (July through early September) to the corridor between the Nisqually Entrance and the Stevens Canyon Entrance of Mount Rainier National Park (MORA). This road corridor is the most heavily visited area of MORA. Survey objectives included the following: (1) to assess the demographic characteristics of the visitors who used the road corridor; (2) to gather information about visitors' trips and their use of park facilities; (3) to assess how visitors perceived existing park conditions by asking about resource damage, crowding due to other visitors, and educational and informational services; (4) to assess how tightly visitors were tied to their plans to visit either Paradise or Longmire, and to identify possible alternate destinations; (5) to investigate two factors potentially related to experience quality in the road corridor -- specifically, number of vehicles on park roads and number of vehicles in scenic turnouts; and (6) to gather data concerning other factors that might be related to experience quality .

The Gate Survey was conducted to provide information useful in the process of creating a new Mount Rainier general management plan. In particular, the Gate Survey focused on the proposed *motorized zone*. The MORA general management plan was being developed using the Visitor Experience and Resource Protection (VERP) planning

process (NPS. VERP Handbook. 1997). In this process (as in many systematic planning processes), the area to be managed is divided into conceptually meaningful zones. For each zone, a small number of indicators are selected to represent the quality of the physical or social resources in that zone. Indicators are measurable factors that are closely related to the quality of resources. By systematically selecting and measuring indicators, managers seek to build a continuous set of data concerning the resources that they manage. Managers also use indicators to set standards that unambiguously specify when resources have been unacceptably altered.

One of the primary purposes of the Gate Survey was to aid in the selection of indicators representing social conditions in the motorized zone. To this end, the survey asked questions about a number of factors related to experience quality. The survey also gathered information about two particular factors that were thought likely to serve as indicators of experience quality in the motorized zone – the number of vehicles on park roads and the number of vehicles in scenic turnouts. In Chapter 6 we discuss the degree to which these potential indicators are related to the quality of the recreational experience at MORA, and review visitor responses concerning the appropriate standards that might be set for each indicator.

Although most of the data collected in the Gate Survey are not directly relevant to the selection of indicators and setting of standards, the data are relevant to the planning process in general. When planning the future direction of policy for MORA road corridors, managers can and should make use of information concerning the visitors who use those corridors, the activities accessed via the corridors, visitors' perceptions of the success of

current policies, and the degree to which other experiences may be substituted for those available in the MORA corridor.

Survey Design and Questionnaire Development

The survey methodology including the questionnaires (see Appendices A and B) were developed by CPSU in cooperation with the DSC planning group and the MORA staff. Initial meetings were held in the fall of 1994 to establish general project objectives. Input from park staff was essential in ensuring that the questionnaires addressed management needs. The draft questionnaires were sent to the Office of Management and Budget for review and approval in February 1995.

Visitors were contacted at the Nisqually and Stevens Canyon entrances to MORA and again within a few weeks of their trip via mail questionnaire. The use of the contact point questionnaire was motivated partly by an interest in the possible differences between the expectations and the reality of visitors' trips to the area. In post-trip questionnaires it may be difficult for visitors to accurately recollect the expectations and preferences they held prior to their experience. Therefore, it was important to contact visitors at the entry point before experiences could revise expectations. By comparing visitors' responses to the on-site and mail questionnaires, we can detect differences between the trips visitors expected and the trips they experienced, and form hypotheses about the reasons for such differences.

The use of a mail questionnaire (rather than an on-site interview) for the final set of the questions was motivated primarily by the logistics of contacting people as they left the park. The length of time spent in MORA varies dramatically (including overnight or

longer) and visitors may not leave by the same gate they enter. There was also a concern that an undue burden would be placed on visitors during their trip if they were asked to answer the necessary number of questions on-site.

Sampling and Visitor Contact Procedures

The population to which statistical generalization is intended in the Gate Survey is to all visitors over the age of 15 entering the Nisqually and Stevens Canyon entrances, and is limited to parties entering between July 13, 1995 to September 7, 1995. The study design called for initial visitor contacts to be made by a CPSU survey worker who was located at the entrance gate. The driver of every seventh car was asked to pull over to the side of the entrance road so that the occupants could complete the contact questionnaire. The questionnaire asked that all members of the party over the age of 15 provide their names and addresses. Each eligible party member also completed a question about expected trip activities (see Appendix B). Compliance with the request to complete the contact survey was about 90% and virtually all of those respondents provided names and addresses. It is not possible to assess non-response bias due to the 10 percent of visitors who refused to complete the entrance survey. However, the possible effects of any such bias would be small due to the relatively small number of such visitors. Parties who refused commonly reported that they were in a hurry or were on a tight schedule.

Survey contacts were made randomly between approximately 10:00 A.M. and 6:00 P.M. on a sample of days during the collection period. The goal of the sampling procedure was to make a total of 1200 contacts with 70% of them being respondents entering the Nisqually Entrance and 30% of them being respondents entering the

Stevens Canyon Entrance. The 70%/30% sampling ratio was used to get a representative sample based on the park's electronic counts of vehicles entering MORA at each gate. Commercial tour buses were not stopped at the entrance gate because unacceptable delays to both the bus passengers and survey crew would have resulted. However, several busloads of visitors were contacted at the Paradise Inn parking lot so that bus passengers completed approximately 3% of the contact sheets. The goal of this additional sampling was to represent bus passengers in the survey sample at the same level that they were estimated to be present in the visitor population using existing entrance gate statistics. Inclusion of this sub-sample increases confidence that the survey results will represent all visitors to the road corridor, but the size of the sub-sample is not sufficient to support separate analyses. If tour bus passengers prove to be a focus of sufficient future interest, more survey work will be necessary.

Mail Questionnaire Administration

The names from the contact sheets were compiled into a single list by writing the names from one contact sheet down followed by the names from the next contact sheet. After a random start, every-third name listed on the contact sheets was sampled yielding 1322 names and addresses.

Questionnaires were mailed to participants accompanied by a cover letter from the Cascadia Field Station. Respondents were instructed to complete the questionnaires and return them by mail in postage-paid envelopes. As a follow-up, all respondents were sent a thank-you/reminder letter about ten days after they received the questionnaire. Non-respondents received a second reminder letter and an additional copy of the

questionnaire about 14 days after the first reminder. For those who did not respond to the second reminder, a third letter was sent about 14 days after the second reminder. Of the 1322 questionnaires mailed, 33 were returned due to incorrect or out-of-date addresses or were sent back blank because the respondent refused to fill them out. The final response rate was 73%, with 944 of 1322 questionnaires completed and entered in the data file.

Statistical Considerations

Readers not familiar with statistical analyses of survey data are encouraged to refer to Appendix D, "How to Use This Report". Consistent with convention, statistical significance was set at the .05 level for analyses included in this report. Statistical tests with p-values equal to or less than .05 are interpreted as indicating effects that are reliable or real (observed effects have a 5% or less probability of being due to chance alone). Although the analyses highlight statistically significant effects, they are unable to reveal whether effects have important practical implications. Some effects that fall just short of the .05 significance level may have large practical implications while other effects with high statistical significance may have no practical implications. Thus, it is important to consider both the statistical significance and the practical implications of these data.

Limitations

The Gate Survey has several general limitations that should be kept in mind when interpreting the data. (1) In all surveys it is assumed that respondents provide accurate and honest answers to the questions asked. (2) The data represent visitor attitudes and

opinions at a particular point in time (i.e., the time of the survey) and changes can occur at any time. (3) Statistical inferences can only be made for the subset of Mount Rainier National Park visitors entering the Nisqually and Stevens Canyon Entrances. In addition, there are other limitations noted in the body of the report that are due to the manner in which individual questions were interpreted. Finally, there are limitations that revolve around the issue of non-response (i.e., possible bias in the sample due to differences between the visitors who completed the questionnaires and those who didn't).

Non-response. Although 73 percent of the persons completing the contact sheet questionnaire also completed the mail questionnaire, it is mathematically possible that the remaining 27 percent (the non-respondents) might be sufficiently different from the respondents so as to affect the accuracy with which the sample data represent the population. A wide range of data were available from the contact point questionnaire, allowing the use of statistical tests to search for possible differences between respondents and non-respondents. Specifically, possible differences were assessed using Chi-square tests for independence that determined whether response rates were independent of a particular visitor characteristic (using a .05 significance level). Ten visitor characteristics were selected from the contact point questionnaire and used in assessing possible non-response bias. These characteristics included gender, age, distance between respondent's home and MORA, party size, whether there were children under the age of 16 in the party, number of children in the party, the first and second most important planned activities, contact point, and survey worker.

For the visitor characteristics listed above, statistically significant differences in response rates were found for age, whether there were children under the age of 16 in

the party, contact point and survey worker. Older visitors were more likely to return the mail questionnaire than younger visitors with a 47% non-response rate in the youngest age category (16-25) and only 20% non-response among visitors 55 or older, $\chi^2(4) = 38.26$, $p < .001$ (ages were coded into 10 year categories beginning with the youngest possible respondent's age of 16). Consistent with the effect for age, respondents who had children under the age of 16 had a non-response rate of 34% compared to 27% for respondents who had no children under the age of 16, $\chi^2(1) = 6.53$, $p < .011$. Respondents contacted at the Nisqually Entrance were less likely to return the mail questionnaire than respondents contacted at the Stevens Canyon Entrance (31% vs. 24%), $\chi^2(1) = 6.00$, $p < .014$. Finally, the differences observed for survey worker who contacted the respondent were primarily found when the interviewers were divided into two groups: higher response rates were found for 3 of the 4 interviewers who worked throughout the survey period, and lower response rates were found for 1 of the interviewers who worked all summer and for the supplemental interviewers that worked Labor Day weekend, $\chi^2(5) = 19.26$, $p < .002$

The results of the non-response analysis clearly show that there are detectable differences between the visitors who responded to the mail questionnaire and those that did not. Response differences by age are very common in this type of survey; similar differentials have been observed in previous surveys at MORA and they are generally the largest differences observed. In the contact sheet questionnaire, 38.2 was the average age. For the mail survey respondents, 44.2 was the average age. Thus, the largest non-

response bias that we observed (by far) changed our estimate of Gate Survey visitors' average age by 6.0 years, or 15.7%.

Because this change was larger than normally observed in similar surveys, effects due to age were examined on key variables. Specifically, age differences were examined for the variables related to visitor density, damage, displacement, acceptability of traffic and parking conditions, trip experience factors, and use, importance, and quality of educational and informational facilities. Age was found to differ on 27 of the 118 variables examined. Given the large number of tests performed, this observed effect might be due to chance alone. In fact, none of these effects are significant when the Bonferroni correction for multiple comparisons[1] was used. To get a sense of the magnitude of potential bias, we weighted the sample to reflect the age distribution observed in the contact sheet for the variable found to have the largest observed effect of age (this variable was 'used visitor center exhibits'). This weighted sample's distribution of the percentage of respondents who used visitor center exhibits was compared to the unweighted (observed) distribution (see Table 2.1). As can be seen in Table 2.1, although the age group 20-29 had the largest difference at 1.9%, the overall pattern was comparable and thus, conclusions would not differ for the weighted and unweighted data.

[1] The Bonferroni correction for multiple comparisons corrects for the increased likelihood of obtaining a significant result when many related comparisons are made. The per comparison significance level is obtained by taking .05 divided by the number of comparisons.

Table 2.1. Percentage of Respondents who Used the Visitor Center Exhibits

Sample	19 & under	20-29	30-39	40-49	50-59	60-69	70 or older
Unweighted (observed)	1.6%	9.5%	13.3%	13.5%	9.5%	9.5%	3.2%
Weighted	2.1%	11.4%	14.8%	12.2%	7.8%	8.3%	2.3%

Although we cannot rule out the possibility that undetected examples of non-response bias may have important effects on the results of the Gate mail survey, effects smaller than those associated with age are very unlikely to be large enough to alter the representativeness of the sample in important ways.

In an effort to establish that the intended respondent completed the mail questionnaire, the visitor characteristics of age and gender were compared between the contact sheet and the mail questionnaire. The age and gender indicated on the mail questionnaire agreed with those indicated on the contact sheet for 48.1% of respondents. An additional 25.5% of respondents indicated the same gender and an age of 1 year greater on the mail questionnaire suggesting these individuals had birthdays since completing the contact sheet questionnaire. The finding that the remaining 26.4% of respondents to the mail questionnaire were most likely not the intended respondents raises issues about the appropriateness of including their data in the analyses.

A discriminant function analysis[2] using demographic variables failed to distinguish between the intended and unintended respondents, suggesting that unintended respondents are not a distinct group. To determine whether including these unintended respondents may bias the results, effects of respondent type (intended vs. unintended)

[2] Discriminant function analysis is a statistical procedure that assesses whether respondents' answers to various questions reliably distinguish between members of the different groups.

were examined for key variables including those related to visitor density and displacement. Only five significant effects were observed (see Table 2.2 for summary). These effects, however, fail to reach significance when the Bonferroni correction for multiple comparisons is used.

Table 2.2. Summary of Observed Effects for Intended versus Unintended Respondents

Variable	p-value	Description of Effect
Acceptability of parking scenario D (most congested)	.015	Intended respondents had lower acceptability ratings than unintended respondents
Importance of uniformed employees	.035	Intended respondents had higher importance ratings than unintended respondents.
Importance of availability of self-guided walks	.050	Intended respondents had higher importance ratings than unintended respondents.
Used park brochure/map	.012	Intended respondents were less likely to use the brochure than unintended respondents.
Used roadside exhibits	.015	Intended respondents were less likely to use roadside exhibits than unintended respondents.

Accuracy of the Sample

Subject to the limitations stated previously, the authors generally believe that the data are representative of Mount Rainier National Park visitors who visited during the time of the survey. This confidence is based on the large sample sizes, the small differences in response rates observed for different types of visitors, and the fact that deviations from the sampling plan were relatively minor and/or had little effect on questionnaire data. Therefore, the data should be highly relevant to many park management decisions and planning efforts.

Assuming a random sample and questions of yes/no type in which the true occurrences of these values in the population are 50%/50%, the data from the smallest sample in this survey (the 944 respondents completing the contact sheet and mail questionnaires) can be generalized to the population of visitors to the Nisqually-Stevens Canyon Corridor with a 95 percent assurance that the obtained or observed percentages to any item will vary by no more than ±3.5%. For the largest sample (the 1322 respondents to the contact sheet questionnaire) the same confidence interval is ±2.7%.

Conventions Followed in This Report

As mentioned previously, a contact sheet and a mail questionnaire were used to collect the data presented in this report. These questionnaires are included in this report (see Appendices A and B), and it is recommended that they be reviewed before reading the body of this report. In the body of this report, each question is presented as it appeared on the questionnaire and is followed by corresponding graphs, tables or analyses. The specific questionnaire and question used to collect the data reported in each chart are noted in the chart titles. The number of respondents (n) whose data are represented in each chart is also reported, generally at the bottom of the chart. For questions asked on the contact sheet questionnaire, the maximum number of respondents is 1322. For questions asked on the mail questionnaire, the maximum number of respondents is 944. When a chart reports data for a subset of respondents *c.f., Figure 4.5: Sources from which Information was Sought)*, a note describes the sub-sample included in the chart.

Because visitors entering MORA through different gates may differ in important ways, we looked for differences due to contact point. It was found that a larger proportion of respondents who stayed overnight entered the Stevens Canyon Entrance and a larger proportion of respondents who were day visitors entered the Nisqually Entrance. Thus, for every observed effect of contact point, additional analyses were done to determine if the effect was due to length of stay (overnight/day visitor), contact point, or some combination thereof. When significant effects for these variables were observed, they are reported. When the entrance used and length of stay are not discussed, readers can assume that analyses found no significant effects for these variables. When contact point differences exist they are always reported because the overall sample data may misrepresent both the visitors who use the Stevens Canyon entrance and those who use the Nisqually entrance.

Missing data for up to 10% of respondents to a particular question are generally not considered likely to alter the interpretation of that question. Throughout this report, few questions had more than 10% missing data. Exceptions are noted in the text.

It is neither possible nor desirable that this report describes all possible analyses of the data collected by the survey, or even all analyses that are potentially of interest to MORA managers. However, some analyses that may be of interest are briefly noted throughout this report and described as potential future analyses. Park managers and planners are encouraged to think creatively about potential analyses of the data.

III. VISITOR PROFILE

Entrance gate survey respondents were asked a variety of demographic questions that are used here to describe, or provide a profile of, MORA visitors. Each question is presented as it appeared on the questionnaire and is followed by the corresponding graphs or tables.

Age and Gender

Contact Sheet Q-3

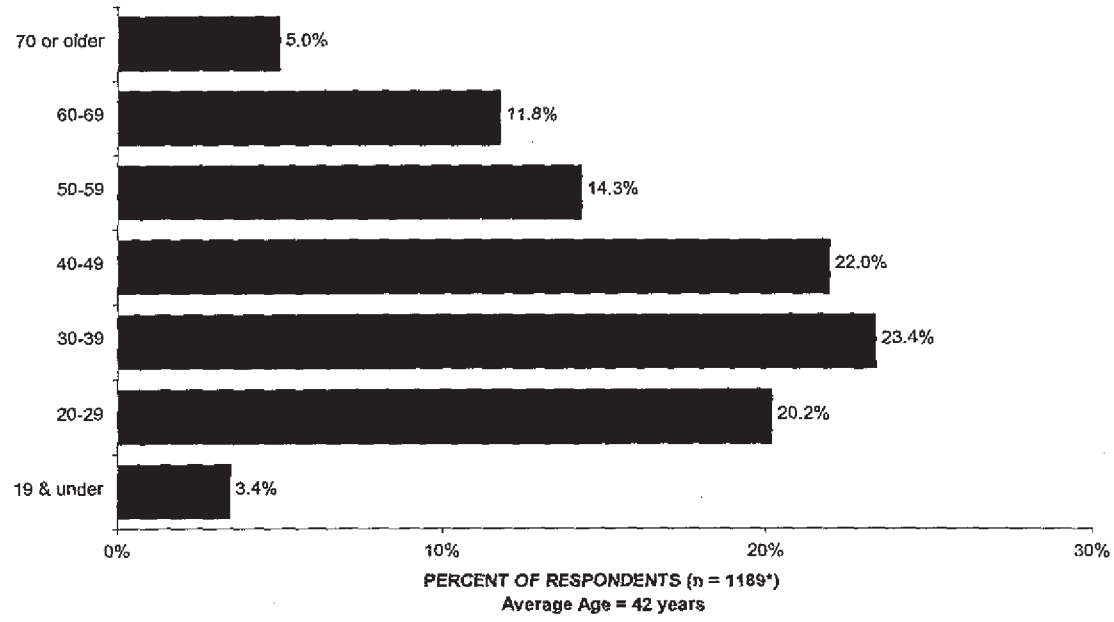
Please have each person in your party who is age 16 or older provide the following information. Not all of the persons in your party will be sent questionnaires.

1) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

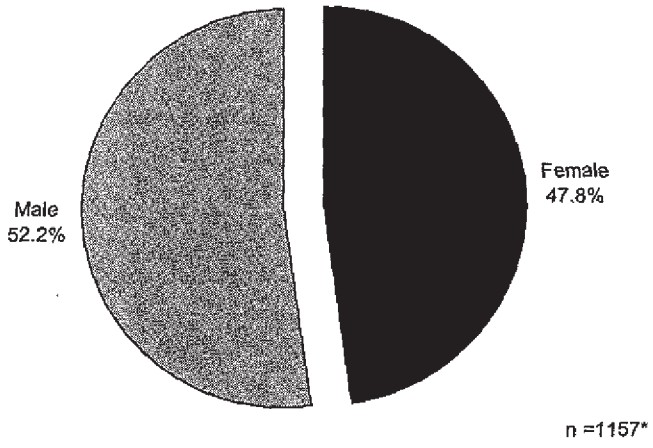
_____
(City, State, Zip Code, Country)

FIGURE 3.1: *Contact Sheet Q-3*
AGE OF GATE SURVEY RESPONDENTS



*10.1% (133/1322) of respondents did not complete this question.

FIGURE 3.2: Contact Sheet Q-3
GENDER OF GATE SURVEY RESPONDENTS



*12.5% (165/1322) of respondents did not complete this question

Race

v. 1, Q-23; v. 2, Q-17.

Are you: (Circle one number)

1 AMERICAN INDIAN/ALASKA NATIVE
2 ASIAN
3 BLACK
4 WHITE
5 OTHER (Specify):_____

Are you: (Circle one number)

1 HISPANIC
2 NON-HISPANIC

FIGURE 3.3: v. 1, Q-23 & v.2, Q-17
RACE OF GATE SURVEY RESPONDENTS

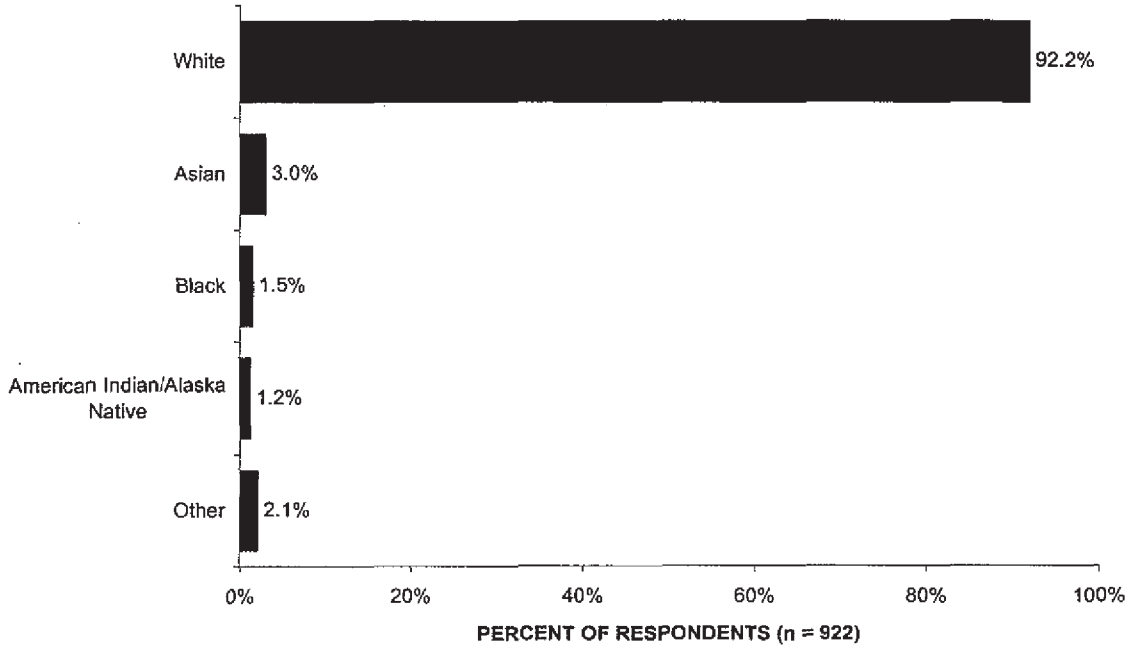
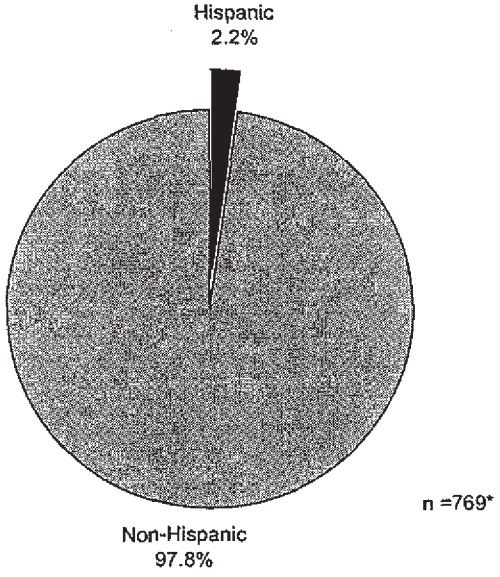


FIGURE 3.4: v. 1, Q-23 & v. 2, Q-17
PROPORTION OF HISPANIC GATE SURVEY RESPONDENTS



*18.5% (175/944) of respondents did not complete this question

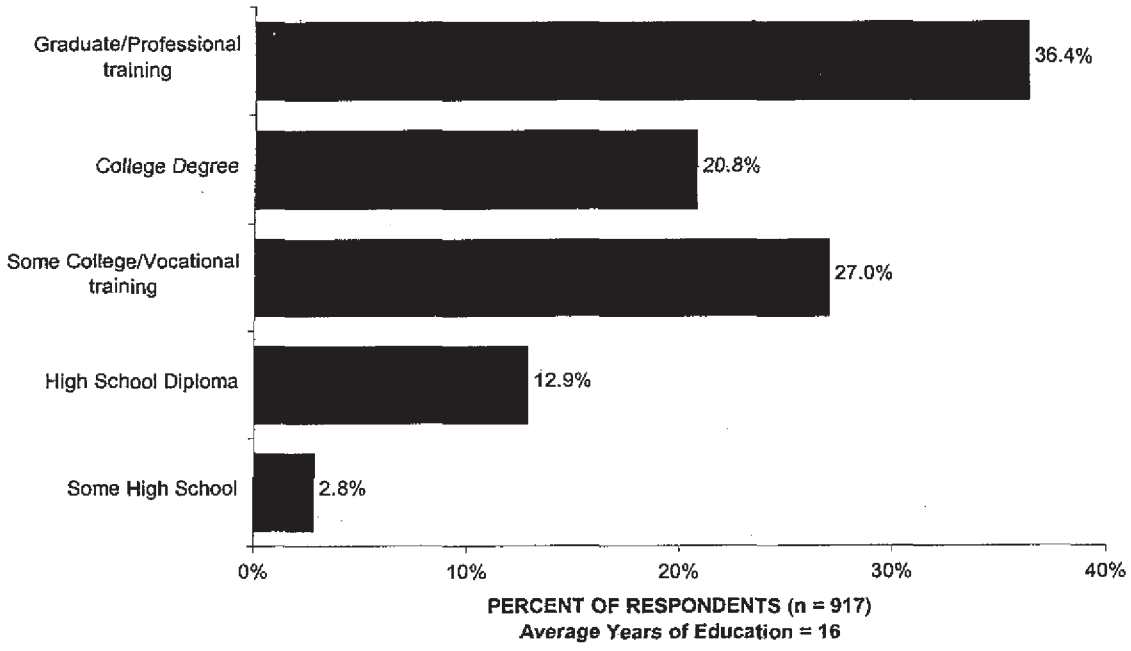
Education

v. 1, Q-21 & v. 2, Q-15

What is the highest level of formal schooling you have completed? *(Circle the appropriate number.)*

1 2 3 4 5 6 7 8 9 10 11 12 (Elementary thru High School) 13 14 15 16 (College/Vocational) 17 18 19 20 21 22 23 24+ (Graduate/Professional)

FIGURE 3.5: v.1 Q-21 & v. 2 Q-15
HIGHEST LEVEL OF FORMAL EDUCATION COMPLETED



Occupation

v. 1, Q-22 & v.2, Q-16

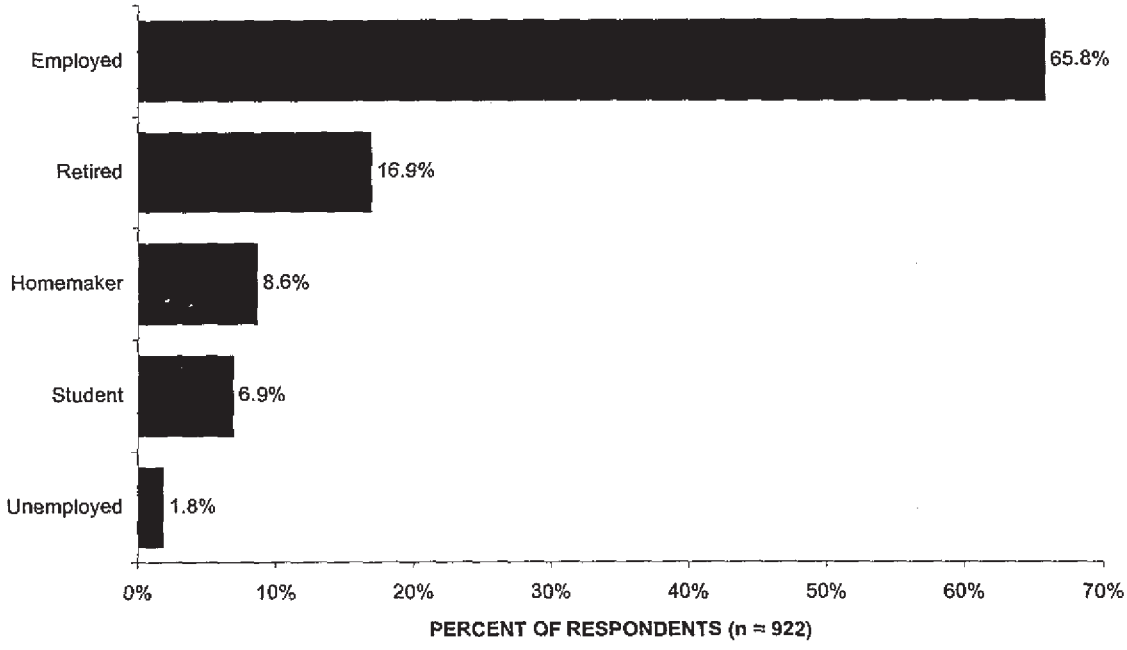
Which of the following best describes your current employment status? *(Circle the appropriate number.)*

1 STUDENT
2 HOMEMAKER
3 RETIRED
4 MILITARY
5 EMPLOYED ----
6 UNEMPLOYED ----

What is your occupation?

_____

FIGURE 3.6: v.1, Q-22 & v.2 Q-16
EMPLOYMENT STATUS OF GATE SURVEY RESPONDENTS



Place of Residence

Contact Sheet Q-3

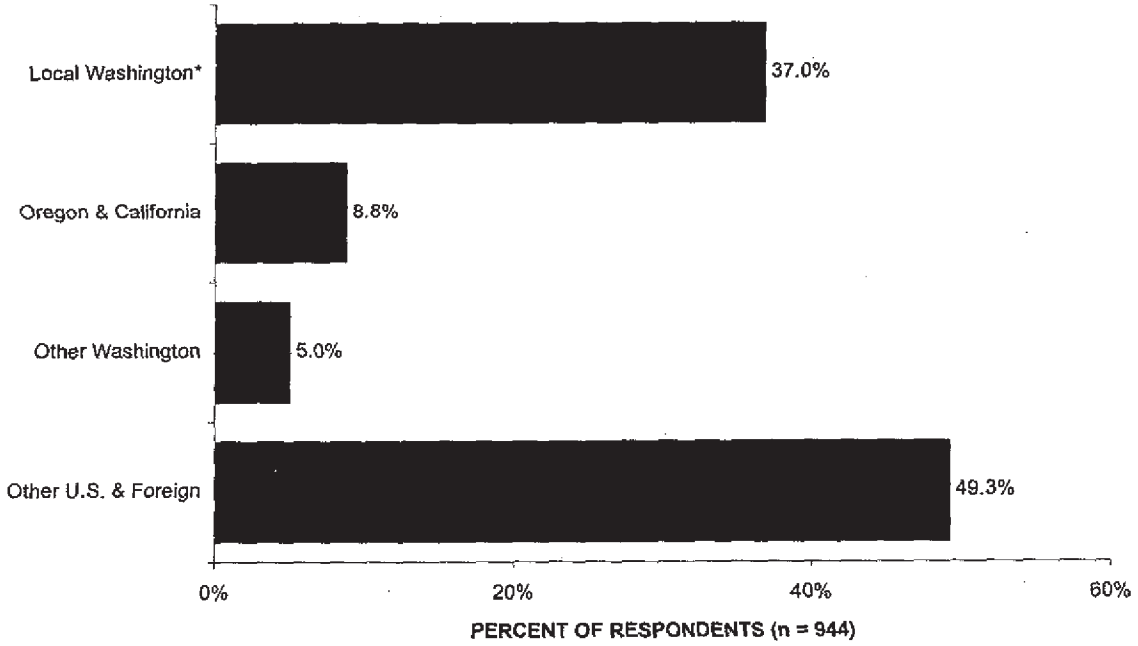
Please have each person in your party who is age 16 or older provide the following information. Not all of the persons in your party will be sent questionnaires.

1) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

_____
(City, State, Zip Code, Country)

FIGURE 3.7: Contact Sheet Q-3
GATE SURVEY RESPONDENTS' PLACE OF RESIDENCE



* Includes gate survey respondents from King, Pierce, Snohomish, Lewis, and Yakima counties.

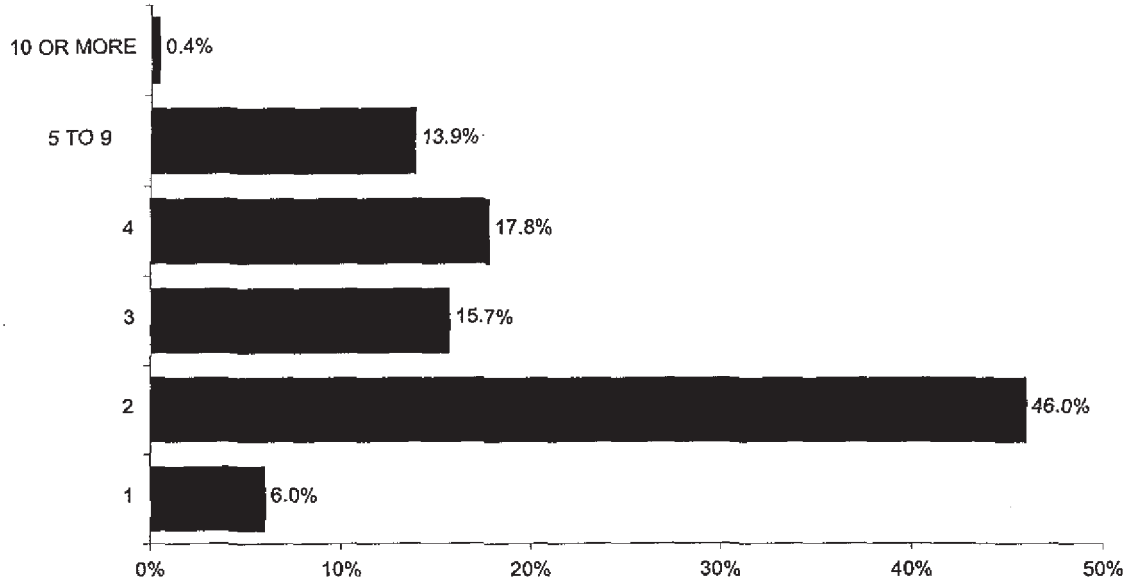
Size and Composition of Group

Contact Sheet Q-1

How many people are in your group today?

_____ PEOPLE

FIGURE 3.8: Contact Sheet Q-1
GROUP SIZE OF GATE SURVEY RESPONDENTS



PERCENT OF RESPONDENTS (n = 922)
Average Group Size = 3.06

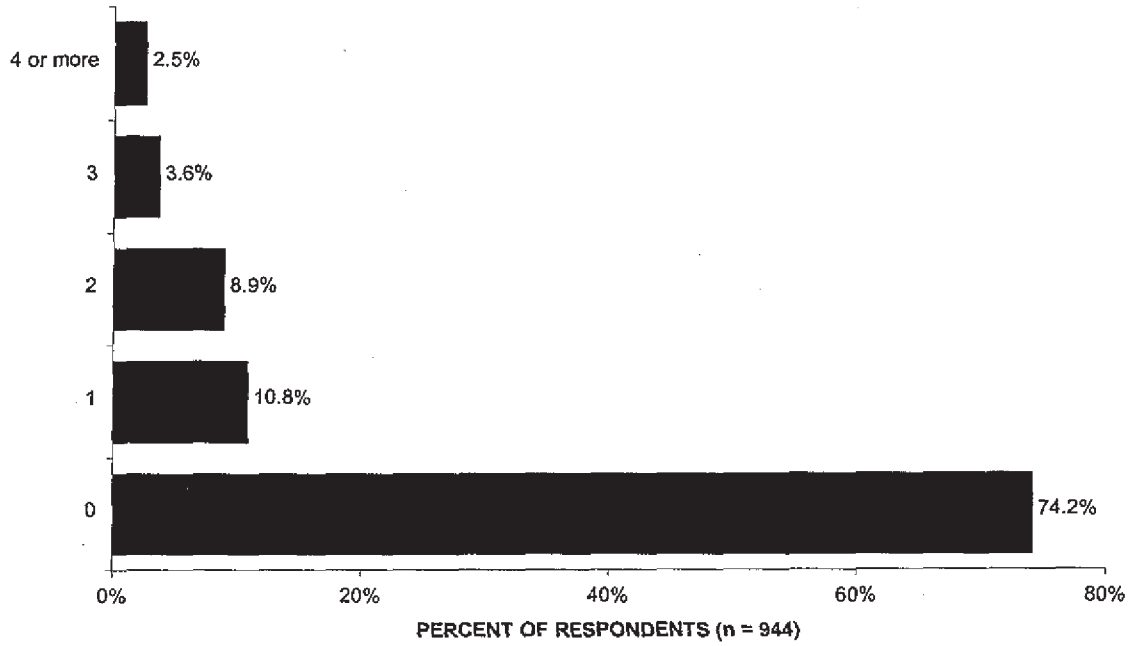
Contact Sheet Q-2

Are there any children under age 16 in your group today? *(Circle one number.)*

1 NO
2 YES - What are the ages of the children under age 16 in your group:

____ ____ ____ ____ ____ ____ ____ ____ ____

FIGURE 3.9: Contact Sheet Q-2
NUMBER OF CHILDREN UNDER AGE 16 IN GROUP



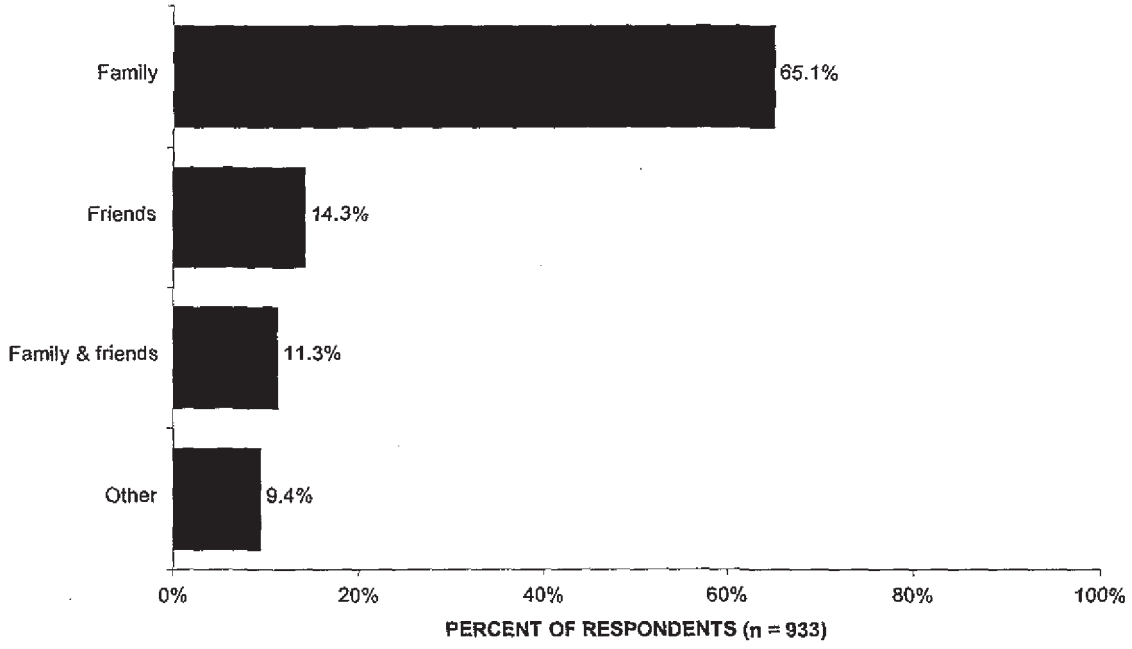
Type of Group

v. 1, Q-25 & v. 2, Q-19

What was the makeup of your group on the trip during which you were contacted for this survey?
(Circle one number.)

1 INDIVIDUAL
2 FAMILY
3 FRIENDS
4 FAMILY & FRIENDS
5 ORGANIZED TOUR GROUP
6 OTHER *(Please specify:* _____*)*

FIGURE 3.10: v. 1, Q-25 & v. 2, Q-19
GATE SURVEY RESPONDENTS' GROUP TYPE



Note: Respondents who came in organized tour groups (2.3% of respondents) and as individuals (5.7% of respondents) were included with other group types (1.4% of respondents). The percentage of respondents coming in organized tour groups may be misrepresentative of the true percentage of visitors who come in organized tour groups due to the sampling methods used (see p. 31).

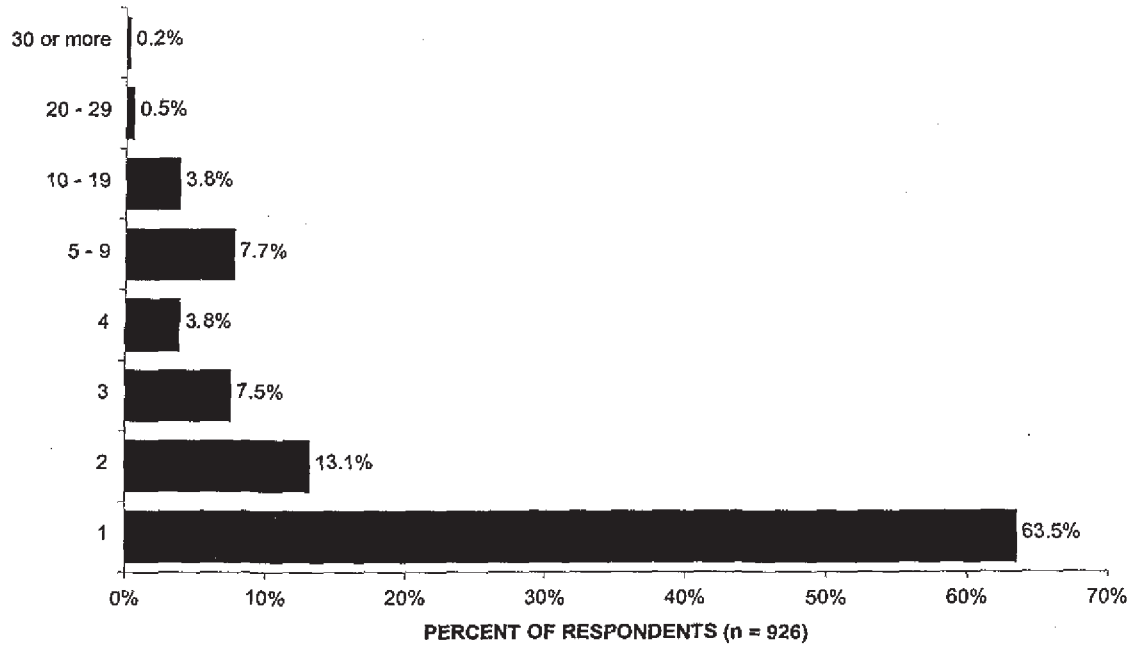
Number of Visits to MORA

v. 1, Q-24 & v. 2, Q-18

INCLUDING THE TRIP DURING WHICH YOU WERE CONTACTED, how many trips have you made to Mt. Rainier National Park in the last three years?

NUMBER OF TRIPS _____

FIGURE 3.11: v. 1, Q-24 & v. 2, Q-18
NUMBER OF TRIPS TO MORA IN LAST 3 YEARS



IV. TRIP CHARACTERISTICS

A wide range of questions in the Entrance Gate Survey asked gate respondents about their trip to MORA. This section reports the data that were collected with these questions. It is organized in the chronological order of most trips, moving from trip planning to a description of the trip. Each question is presented as it appeared on the questionnaire and is followed by the corresponding graphs, tables, or analyses.

Planning the Trip

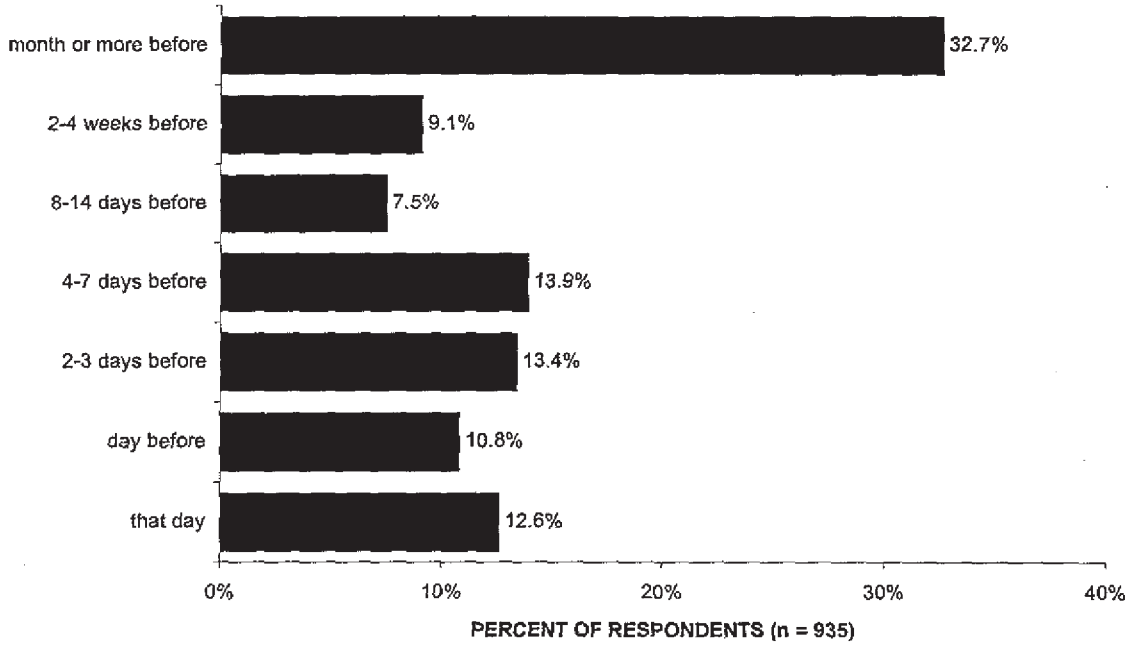
When respondents decided to visit.

v. 1 & 2, Q-1

How long before the visit to Mt. Rainier National Park during which you were contacted did you make the decision to visit the park? *(Circle one number.)*

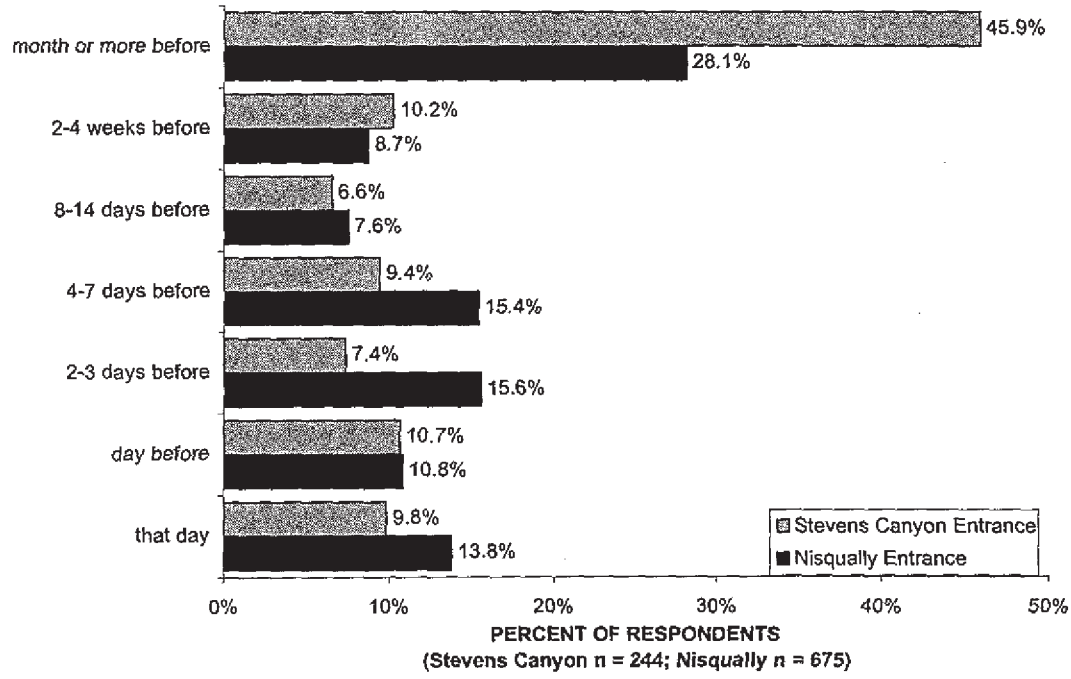
1	THAT DAY
2	THE DAY BEFORE
3	TWO OR THREE DAYS BEFORE
4	FOUR TO SEVEN DAYS BEFORE
5	EIGHT TO 14 DAYS BEFORE
6	MORE THAN TWO WEEKS BUT LESS THAN A MONTH BEFORE
7	A MONTH OR MORE BEFORE THE VISIT

FIGURE 4.1: Q-1
TIME WHEN DECISION TO VISIT MORA WAS MADE



The time elapsed since making the decision to visit MORA varied significantly by contact point, $\chi^2(6) = 33.67$, $p < .001$. As can be seen in Figure 4.2, a larger percentage of respondents contacted at the Stevens Canyon Entrance decided to visit MORA a month or more before than respondents contacted at the Nisqually Entrance (45.9% vs. 28.1%). Further analyses revealed that these differences are due to both contact point and overnight stay. Day-visitor respondents contacted at the Stevens Canyon Entrance were more likely to plan their trip 2 weeks or more in advance than respondents contacted at the Nisqually entrance. In contrast, the time elapsed since making the decision to visit MORA did not differ by contact point for respondents who stayed overnight. Regardless of contact point, respondents who more likely to stay overnight made plans more in advance than respondents who did not stay overnight, $\chi^2(6) = 112.37$, $p < .001$.

FIGURE 4.2: Q-1
TIME WHEN DECISION TO VISIT MORA WAS MADE BY CONTACT POINT



(Stevens Canyon n = 244; Nisqually n = 675)

Information sought prior to visit.

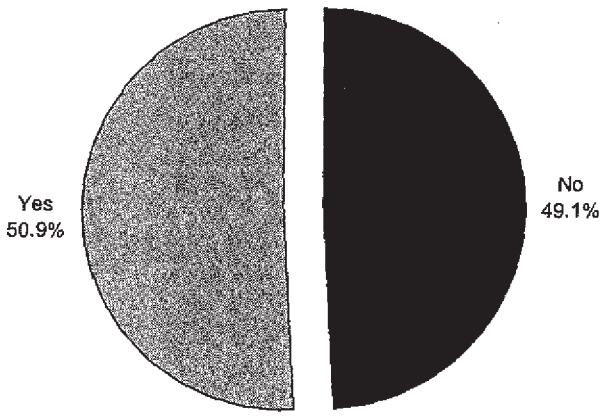
v. 1 & 2, Q-2

PRIOR TO THE VISIT DURING WHICH YOU WERE CONTACTED, did you and your group seek information about Mt. Rainier National Park and/or the attractions that are found within its boundaries? *(Circle one number.)*

1 NO
2 YES - From which sources did you and your group seek to obtain information? *(Circle as many numbers as apply.)*

1 FRIENDS OR RELATIVES
2 TRAVEL GUIDE/TOUR BOOK
3 NEWSPAPER/MAGAZINE
4 MAPS/BROCHURES
5 RADIO/TELEVISION
6 HOTEL/MOTEL
7 CONVENTION/VISITOR BUREAU
8 OTHER *(Please specify:*_____*)*

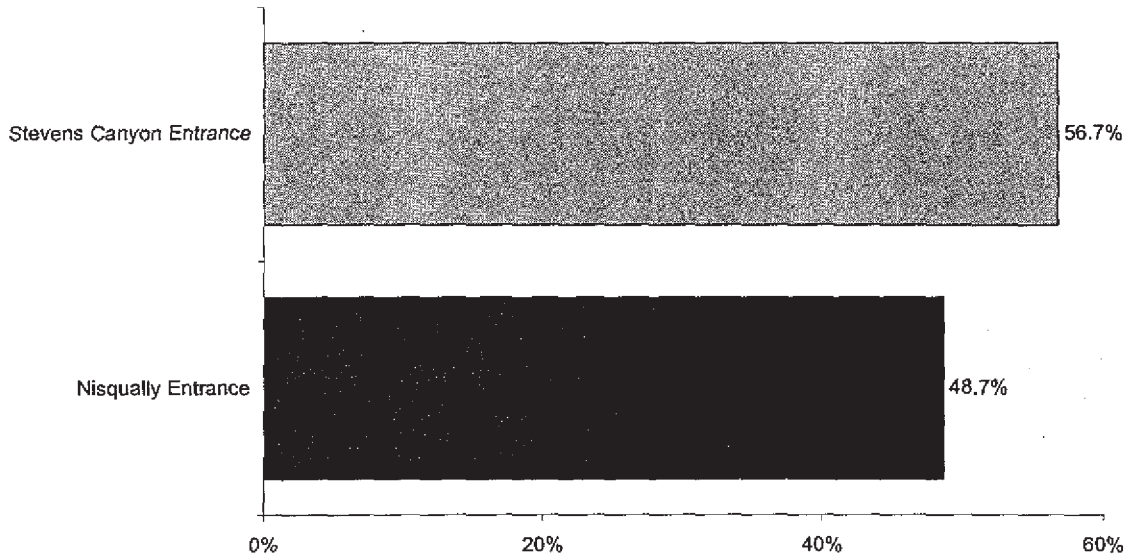
FIGURE 4.3: Q-2
SOUGHT INFORMATION ABOUT MORA PRIOR TO VISIT



n = 930

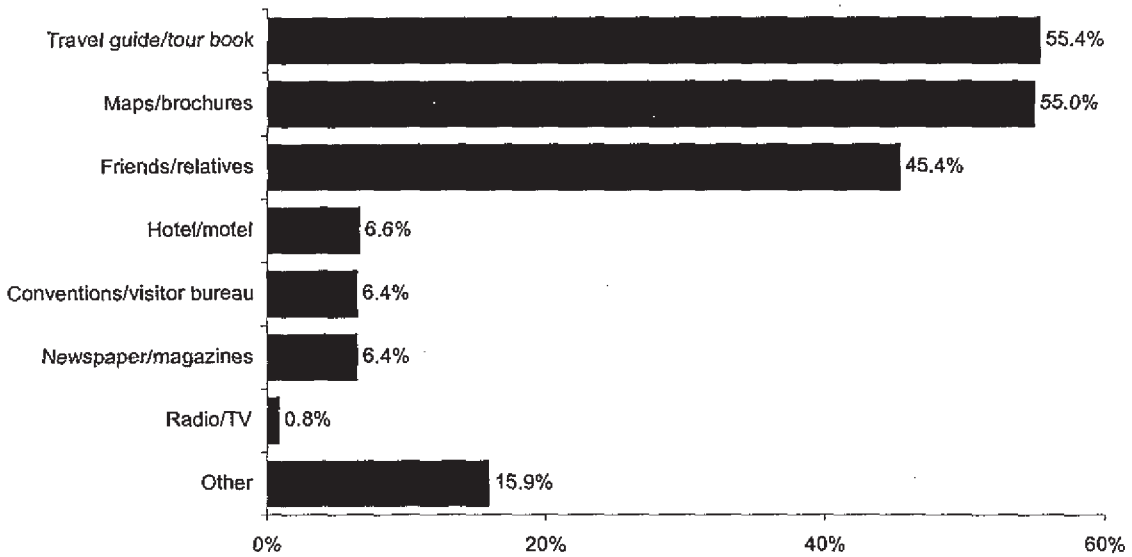
A greater percentage of respondents contacted at Stevens Canyon Entrance (56.7%) sought information prior to their visit than respondents contacted at the Nisqually Entrance (48.7%), $\chi^2(1) = 4.68$, $p = .030$ (See Figure 4.4). Further analyses revealed that this difference was due to overnight stay. A greater proportion of respondents who stayed overnight (74.4%) were more likely to seek information than those who did not stay overnight (44.6%), $\chi^2(1) = 55.04$, $p < .001$.

FIGURE 4.4: Q-2
PERCENT OF GATE SURVEY RESPONDENTS WHO SOUGHT INFORMATION ABOUT MORA
PRIOR TO VISIT BY CONTACT POINT



PERCENT OF RESPONDENTS
(Stevens Canyon n = 245; Nisqually n = 670)

FIGURE 4.5: Q-2
SOURCES FROM WHICH INFORMATION WAS SOUGHT



PERCENT OF RESPONDENTS (n = 471)
Includes only the 50.9% of respondents who sought *information*
Percentages sum to more than 100 because respondents could use multiple sources

Planned destination.

v. 1 & 2, Q-3

In terms of destinations within Mt. Rainier National Park, which of the descriptions below best fits your party during the trip when you were contacted for this survey? (*Circle one number*)

1 We had not determined any specific destinations before entering Mt. Rainier National Park.

2 Before entering the park we had decided on ONE destination that was the focus of our visit to Mt. Rainier.

PLEASE SPECIFY THAT DESTINATION BELOW

_____

3 Before entering the park we had decided on multiple destinations, all of which were important to our satisfaction.

PLEASE LIST THOSE DESTINATIONS BELOW

_____
_____
_____
_____

FIGURE 4.6: Q-3
NUMBER OF DESTINATIONS WITHIN MORA

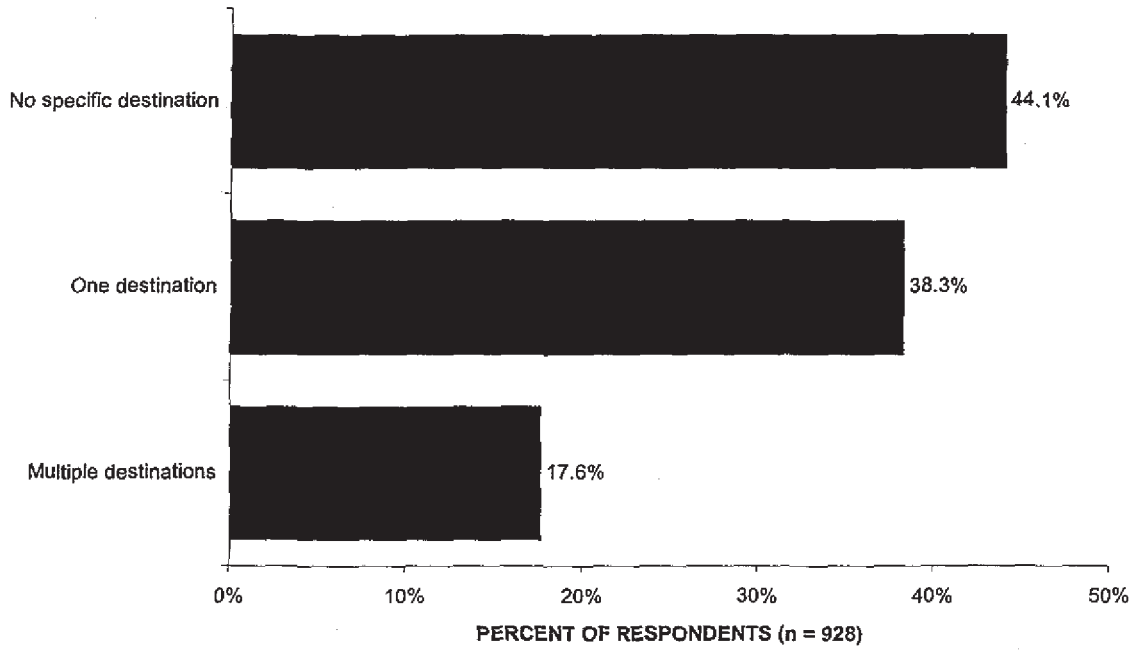
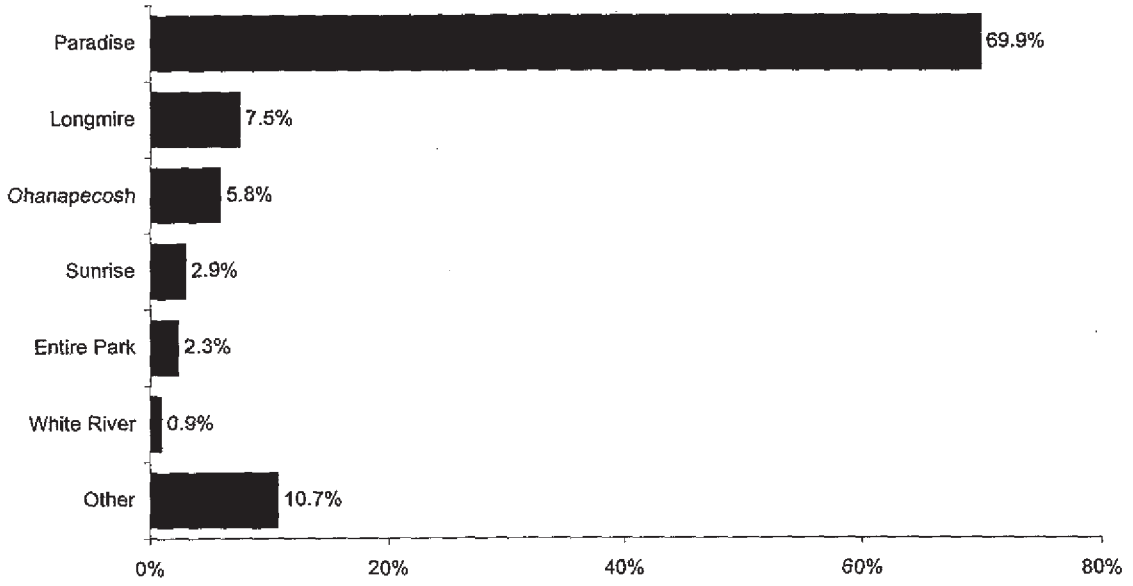
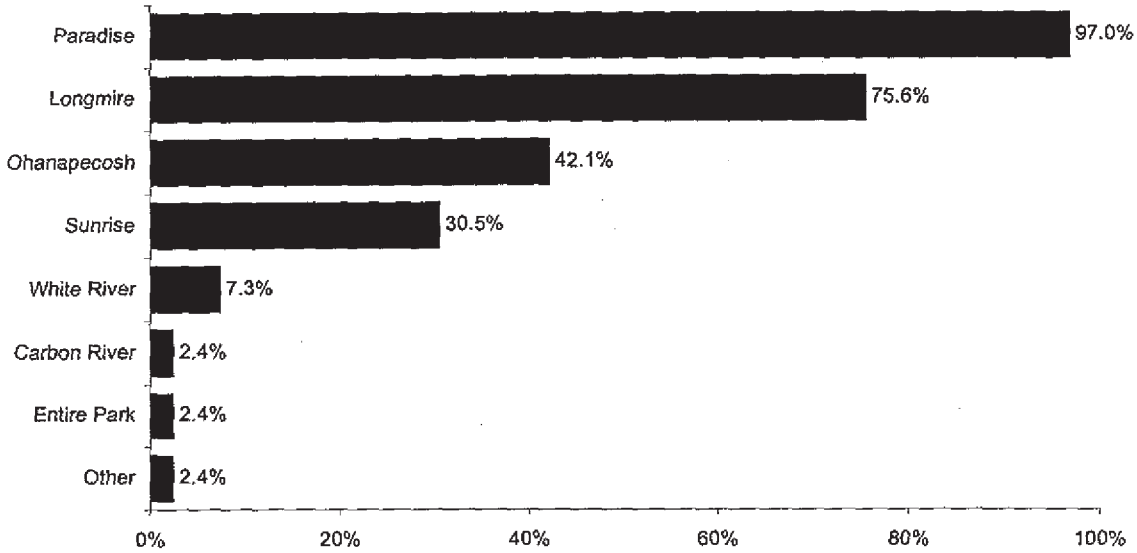


FIGURE 4.7: Q-3
DESTINATIONS FOR GATE SURVEY RESPONDENTS WITH ONE DESTINATION



PERCENT OF RESPONDENTS (n = 345)
Includes only the 38.3% of respondents with one destination

FIGURE 4.8: Q-3
DESTINATIONS FOR GATE SURVEY RESPONDENTS WITH MULTIPLE DESTINATIONS



PERCENT OF RESPONDENTS (n = 164)
Includes only the 17.6% of respondents with multiple destinations
Percentages sum to more than 100 because respondents have multiple destinations

Stayed in Lodging within 20 miles of MORA the Night Before Visit

v. 1 & 2, Q-8

Did you stay overnight outside Mt. Rainier National Park but within 20 miles of the park boundary on the trip during which you were contacted for this survey?

1 LIVE WITHIN 20 MILES OF PARK BOUNDARY
2 NO
3 YES

FIGURE 4.9: Q-8
STAYED OVERNIGHT OUTSIDE MORA WITHIN 20 MILES OF THE PARK BOUNDARY

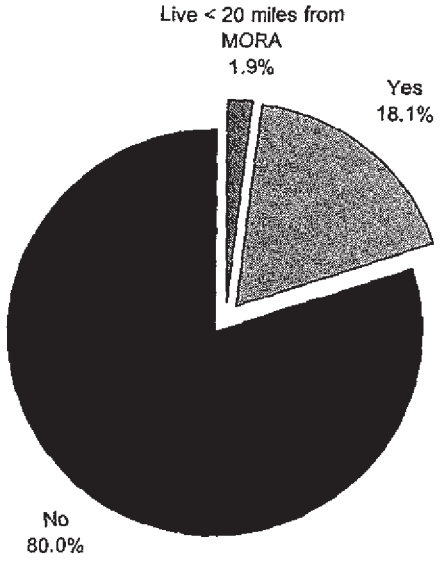
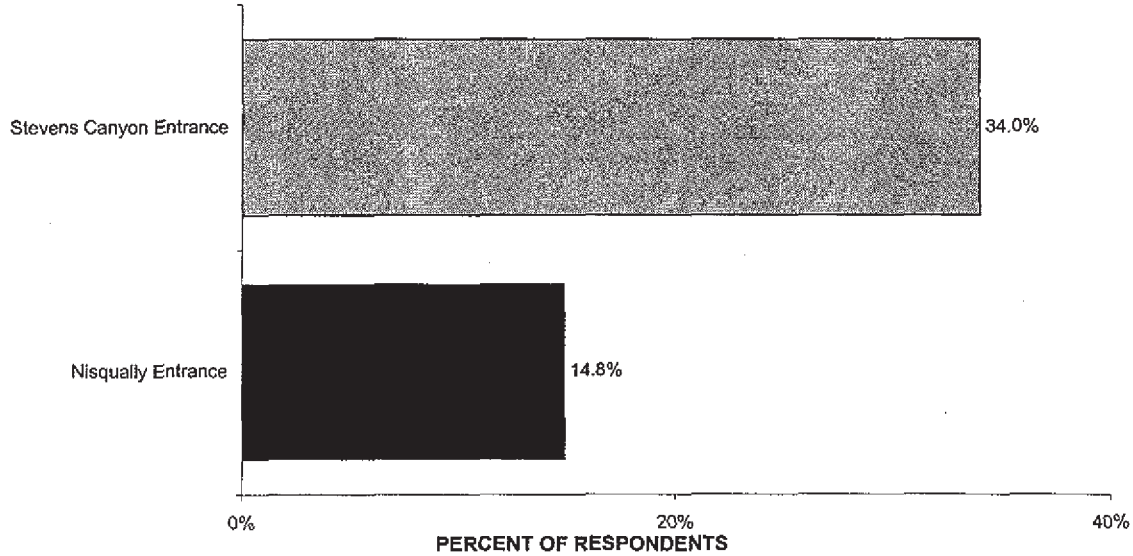


FIGURE 4.10: Q-8
PROPORTION OF GATE SURVEY RESPONDENTS WHO STAYED OUTSIDE MORA WITHIN 20 MILES OF PARK BOUNDARY BY CONTACT POINT*



(Stevens Canyon n = 241; Nisqually n = 667)
***Includes the 1.3% and 3.3% of respondents contacted at Nisqually & Stevens Canyon Entrances, respectively who lived within 20 miles of the park boundary**

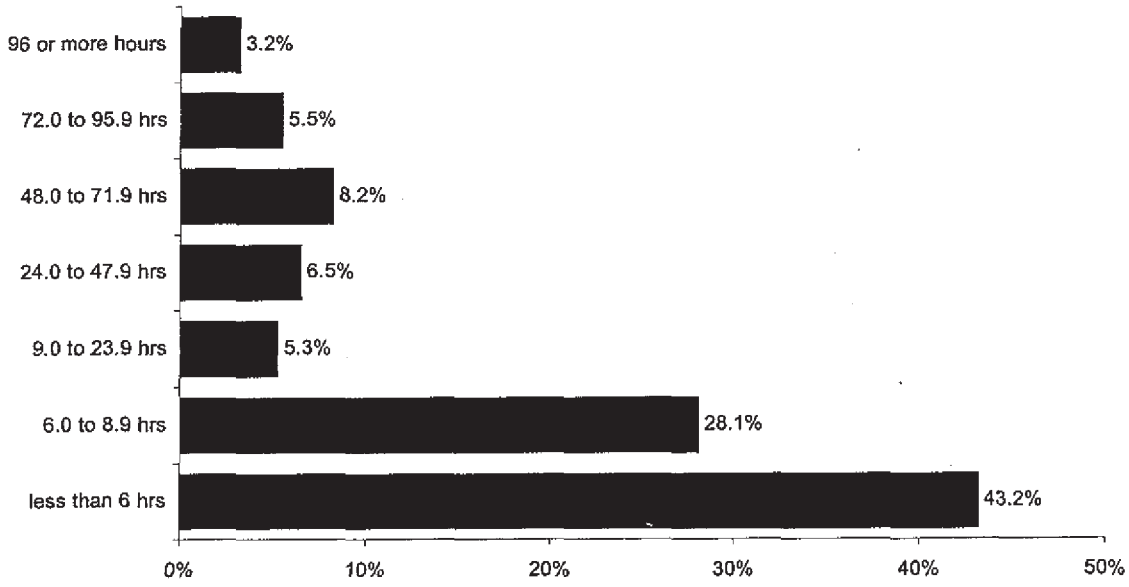
Time in MORA

v. 1 & 2, Q-4

On the trip during which you were contacted, how long were you inside Mt. Rainier National Park?
(Please specify the number of days and/or hours. If you did not stay overnight in the area write "0" for the number of "DAYS".)

_____ DAYS _____ HOURS

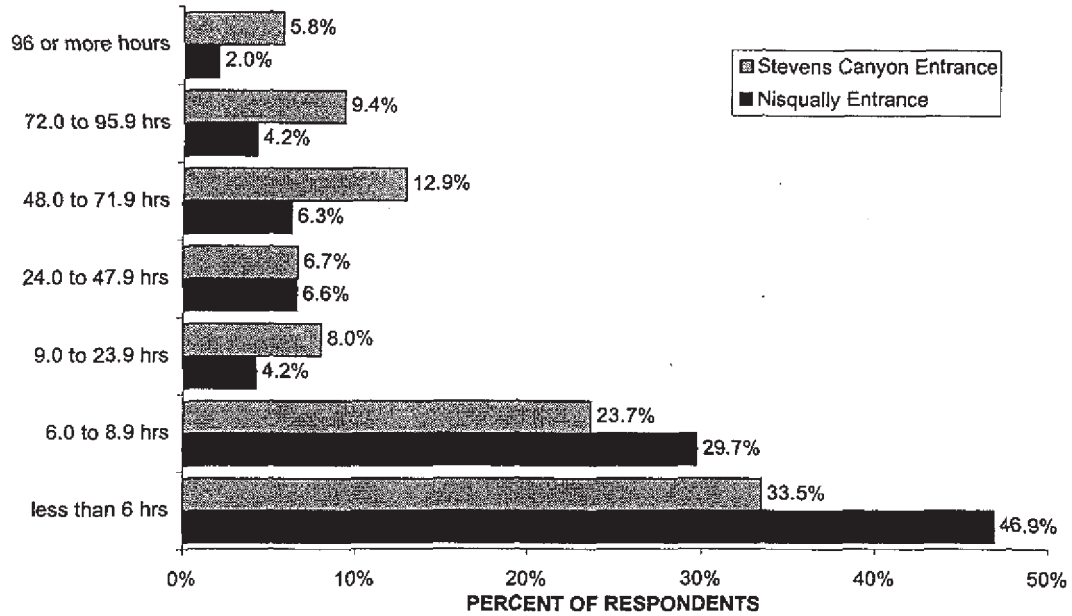
FIGURE 4.11: Q-4
TOTAL TIME SPENT IN MORA



PERCENT OF RESPONDENTS (n = 875)
Average time spent in MORA = 18.0 hrs

Total time spent in MORA varied significantly by contact point, $\chi^2(6) = 38.25$, $p < .001$. As can be seen in Figure 4.12, respondents contacted at the Stevens Canyon Entrance were more likely to stay more than 1 day while respondents contacted at the Nisqually Entrance were more likely to stay less than 8 hours.

FIGURE 4.12: Q-4
TOTAL TIME SPENT IN MORA BY CONTACT POINT



(Stevens Canyon n = 224; Nisqually n = 636)
Average time spent in MORA = 26.1 hrs for Stevens Canyon Entrance & 14.9 hrs for Nisqually Entrance

Sites visited in MORA

v. 1 & 2, Q-5

The map on this page and the next shows the southern portion of Mt. Rainier National Park and also includes detail panels showing the Longmire and Paradise areas. Marked on the main map are 16 sites and facilities where you might have stopped and gotten out of your vehicle.

Please review the **main map**, recalling the DAY during which you were contacted for this survey. **At the first site where you stopped, write the number "1" in the box. At the second site, write "2". Continue until you have written numbers in the boxes for all the places you visited that day at Mt. Rainier.**

If you visited Longmire and/or Paradise, please review the detail panels and place a check mark at the facilities you used in those areas. (**You do NOT need to number the boxes in the detail panels -- only number the boxes on the main map.**)

Map accompanying Q. 5

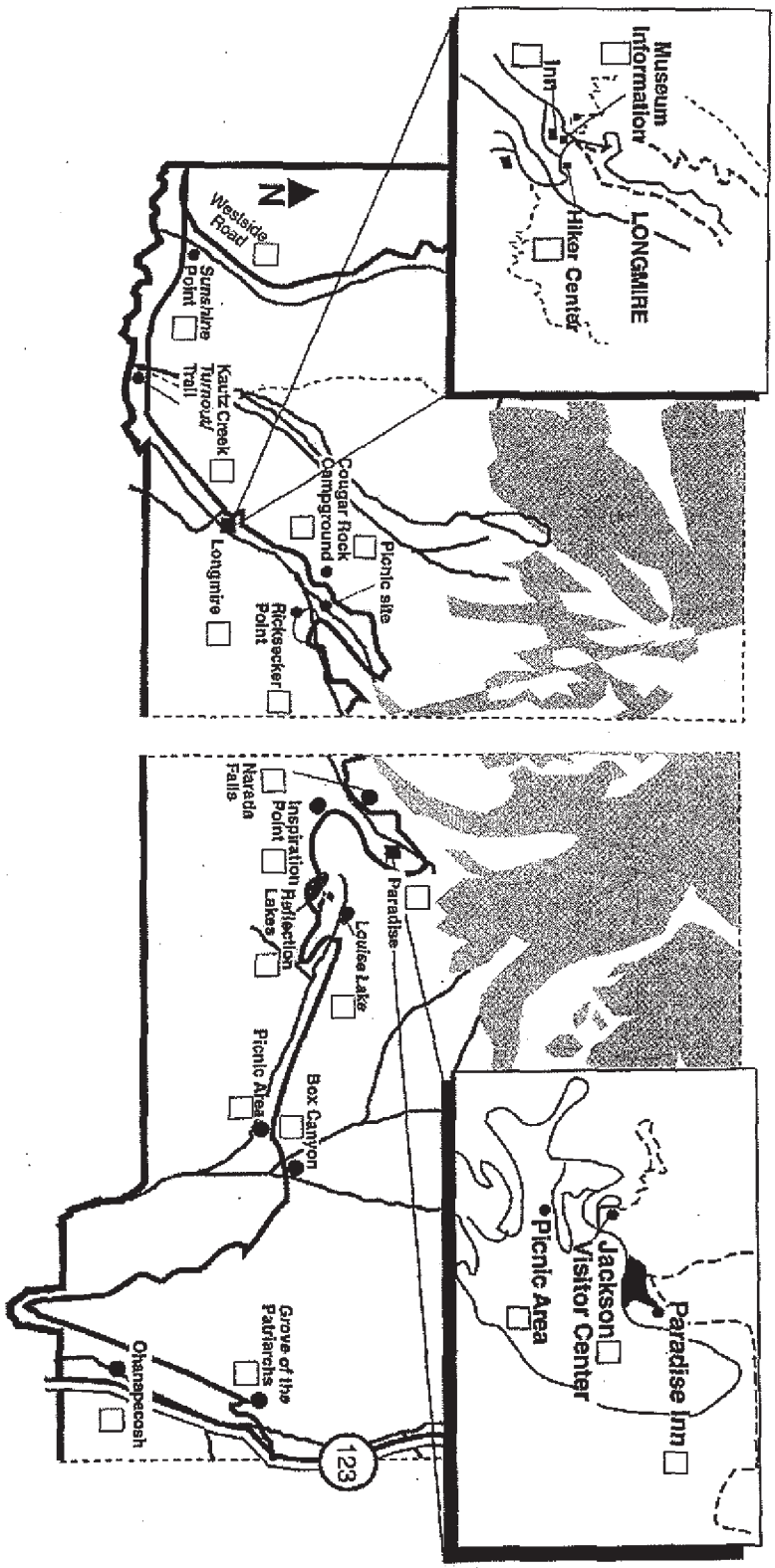


FIGURE 4.13: Q-5
PERCENTAGE OF GATE SURVEY RESPONDENTS STOPPING AT EACH SITE IN MORA

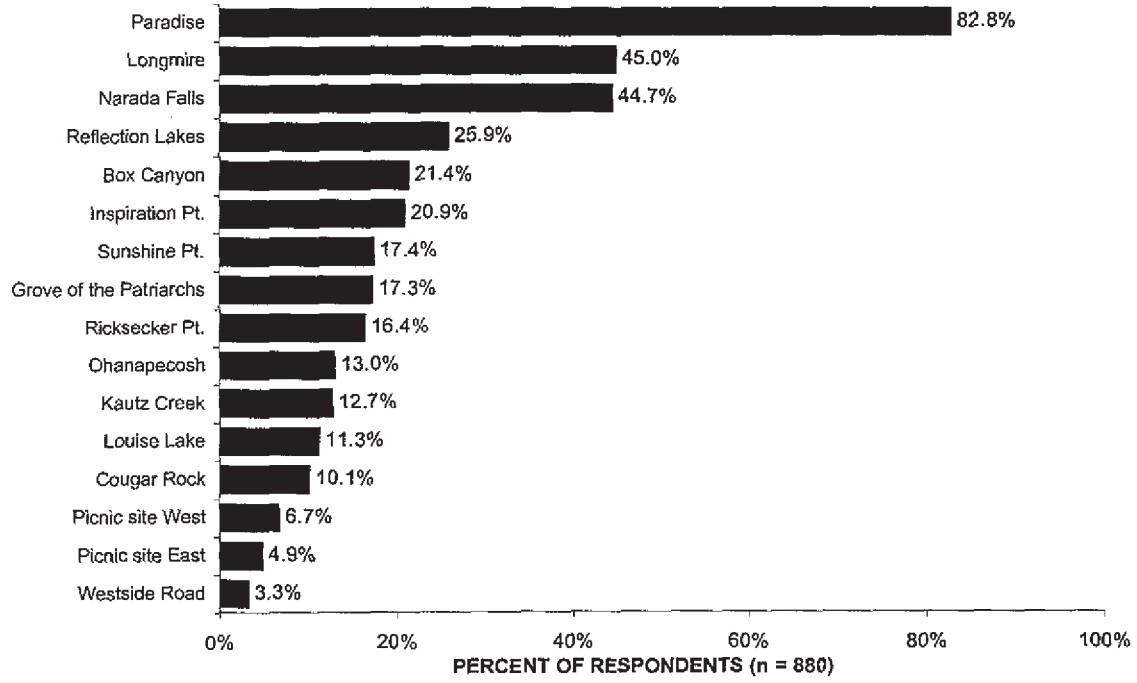


FIGURE 4.14: Q-5
PERCENTAGE OF GATE SURVEY RESPONDENTS CONTACTED AT THE NISQUALLY ENTRANCE STOPPING AT EACH SITE IN MORA

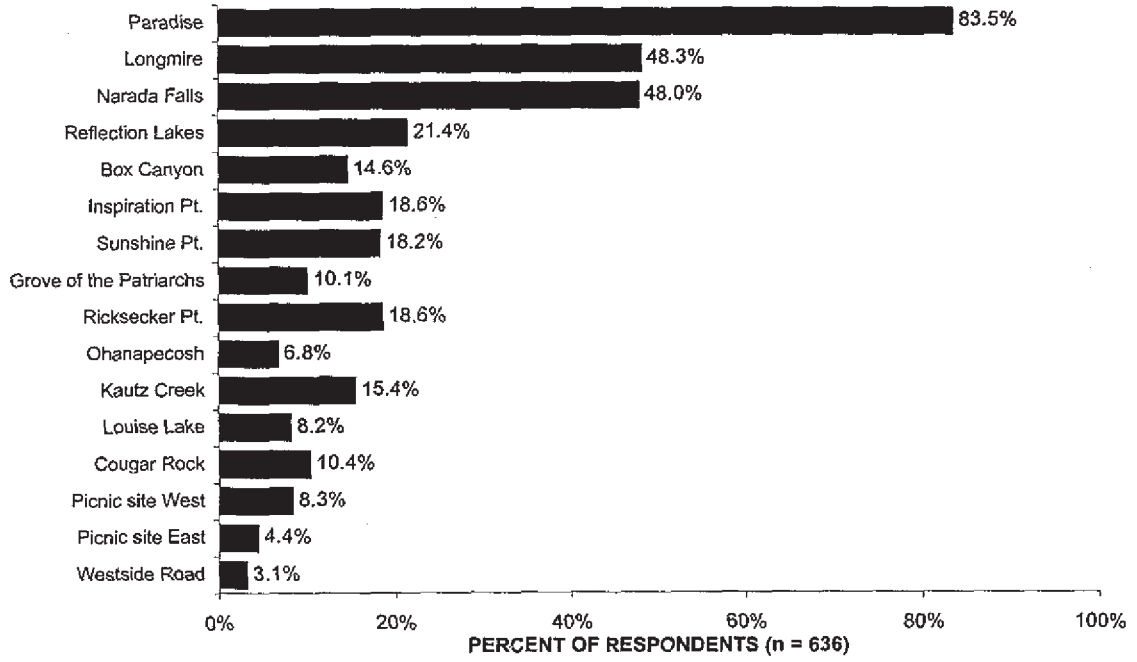


FIGURE 4.15: Q-5
PERCENTAGE OF GATE SURVEY RESPONDENTS CONTACTED AT THE STEVENS CANYON ENTRANCE STOPPING AT EACH SITE IN MORA

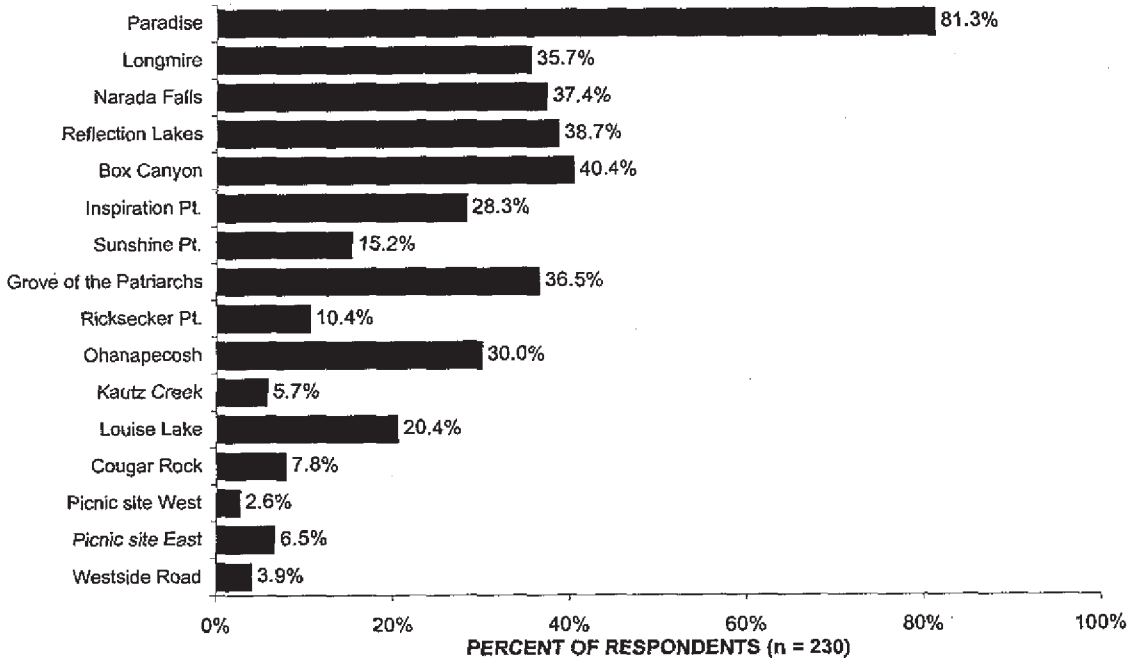
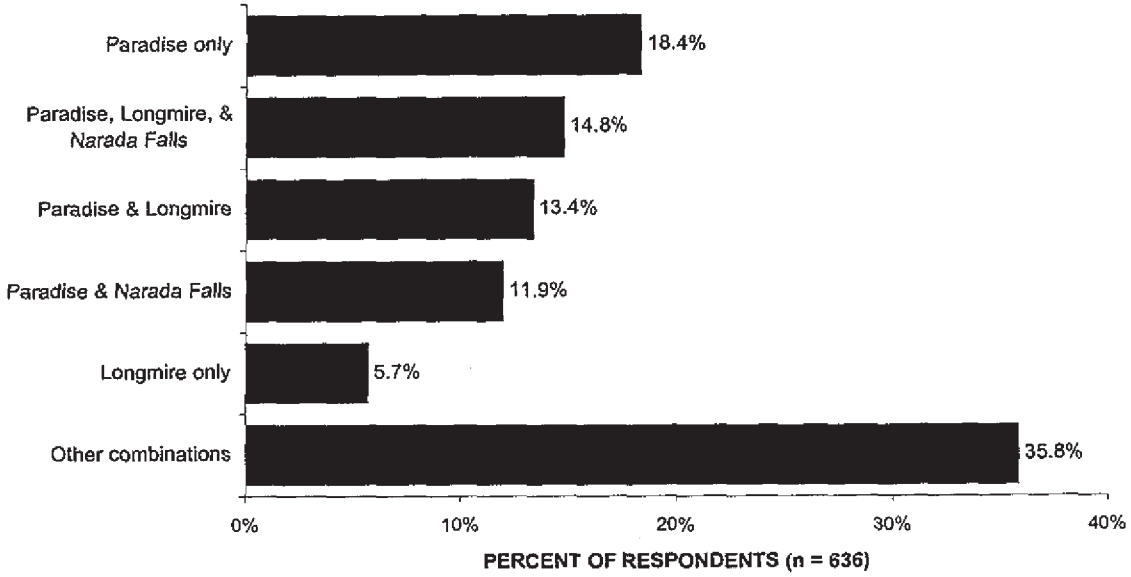
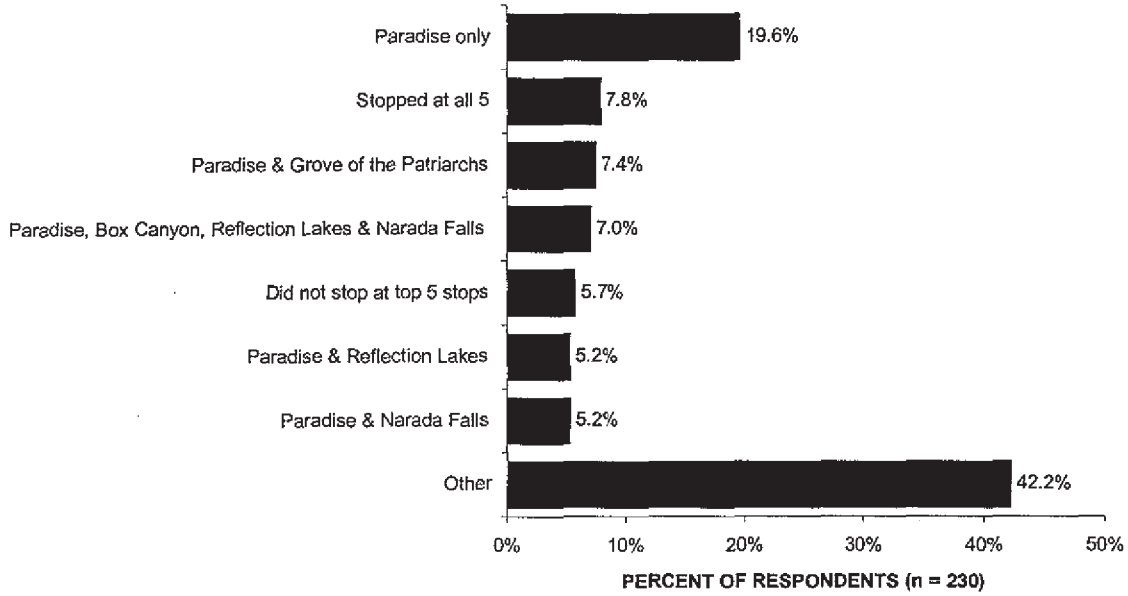


FIGURE 4.16: Q-5
COMBINATIONS OF 5 MOST FREQUENT STOPS* FOR GATE SURVEY RESPONDENTS CONTACTED AT THE NISQUALLY ENTRANCE



*5 most frequent stops were Paradise, Longmire, Narada Falls, Reflection Lakes, & Inspiration Point

FIGURE 4.17: Q-5
COMBINATIONS OF 5 MOST FREQUENT STOPS* FOR GATE SURVEY RESPONDENTS
CONTACTED AT THE STEVENS CANYON ENTRANCE



*5 most frequent stops were Paradise, Box Canyon, Reflection Lakes, Narada Falls, & Grove of the Patriarchs

Ways of Experiencing MORA

This section addresses the variety of ways in which one might experience MORA. In the first part, respondents reported ways they planned to experience MORA as they entered the park. In the second part, the actual ways respondents experienced MORA are presented. Finally, the third part provides an actual versus planned experience comparison.

Ways of Experiencing MORA: Planned

Contact Sheet Q-3.1

While you are in Mt. Rainier National Park do you plan to *(circle as many as apply)*:

1 Have no plans/Completely following plans of other party member

2 Drive around viewing scenery from road and turnouts
3 Take walks or hikes
4 Camp overnight while backpacking
5 Mountain climb using specialized equipment
6 Ride Bicycle

7 Attend a park service naturalist program or activity
8 Shop for curios or souvenirs
9 Camp overnight in a campground
10 Stay overnight at a lodge or inn within the park
11 Go to Paradise Visitor Center
12 Go to Ohanapecosh Visitor Center
13 Go to Longmire Museum
14 Eat lunch or snack at Paradise Visitor Center (fast food)
15 Eat Sunday brunch at Paradise Lodge
16 Eat a sit-down meal at Paradise Lodge other than Sunday brunch
17 Eat a sit-down meal at Longmire Inn

18 Picnic
19 View wildflowers
20 View wildlife
21 Take photographs
22 Snow play
23 Do any other activities not described

PLANNED ACTIVITIES ____ ____ ____ ____ ____ ____ ____ ____

In the 1990 MORA Visitor Survey, 44% of respondents indicated that they did self-led day hiking. As can be seen in Figure 4.18, 65.1% of respondents indicated that they took walks/hikes. Because the format of the present question was not specific, it is unclear how respondents interpreted walks/hikes. Thus, a direct comparison between the 1990 findings and the present ones may be inappropriate.

FIGURE 4.18: Contact Sheet Q-3
PLANNED ACTIVITIES FOR TRIP TO MORA: TOP 11 ACTIVITIES

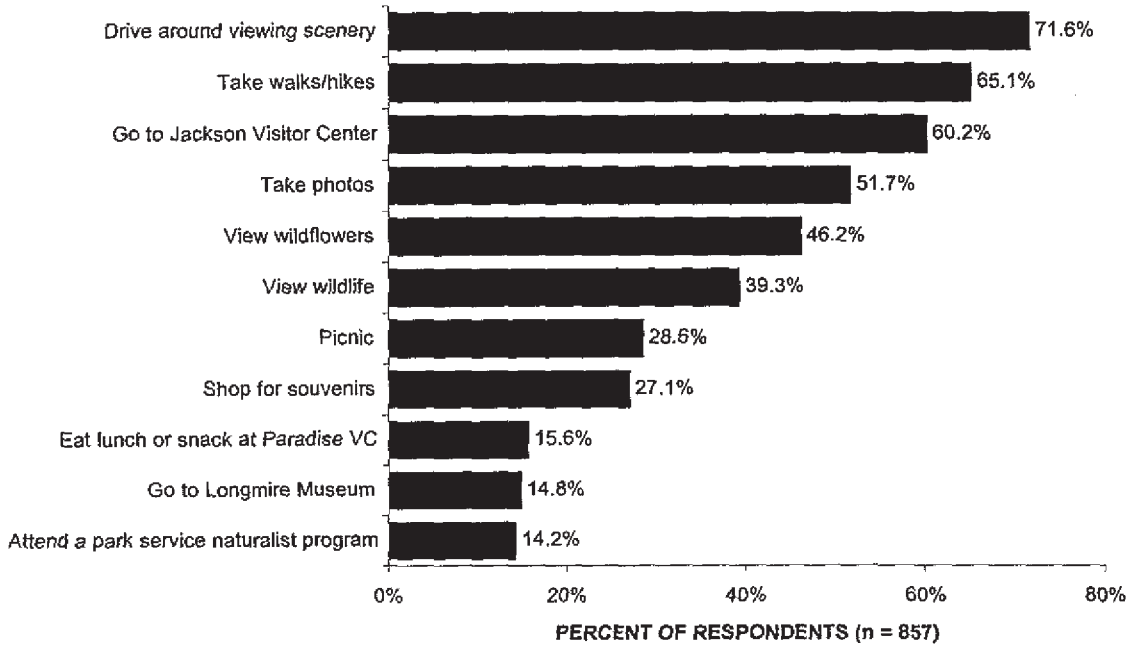
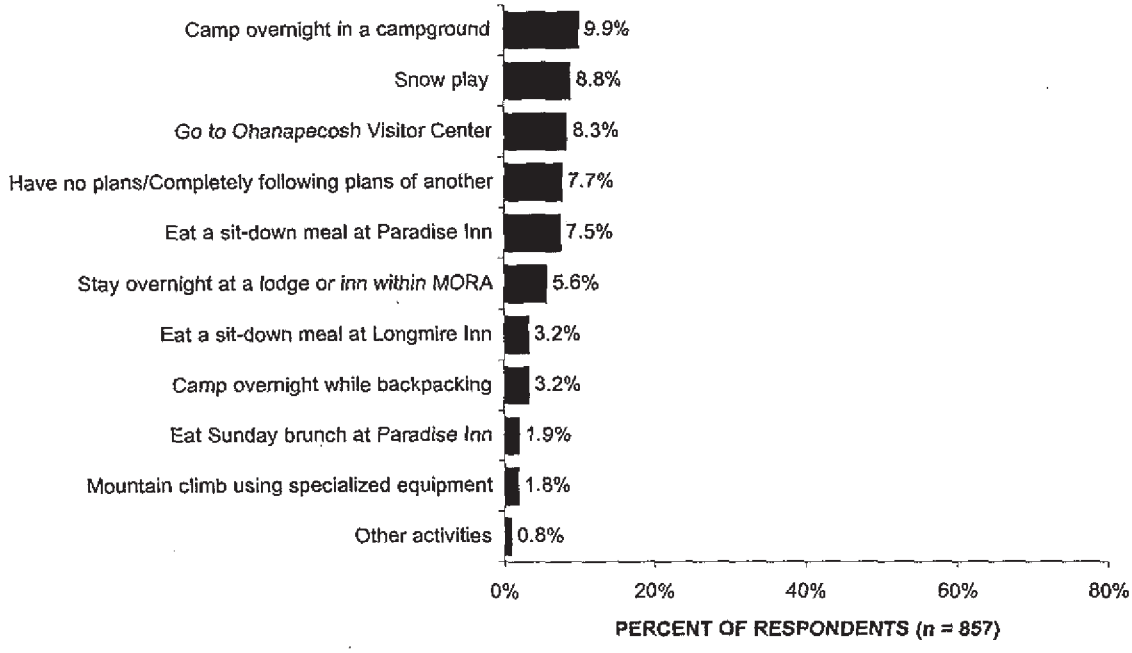


FIGURE 4.19: Contact Sheet Q-3
PLANNED ACTIVITIES FOR TRIP TO MORA: BOTTOM 11 ACTIVITIES



Contact Sheet Q-3.2

Which of these activities are most important to your enjoyment of the park?

MOST IMPORTANT activity _____ SECOND MOST IMPORTANT activity _____

FIGURE 4.20: Contact Sheet Q-3
MOST IMPORTANT PLANNED ACTIVITY FOR TRIP TO MORA

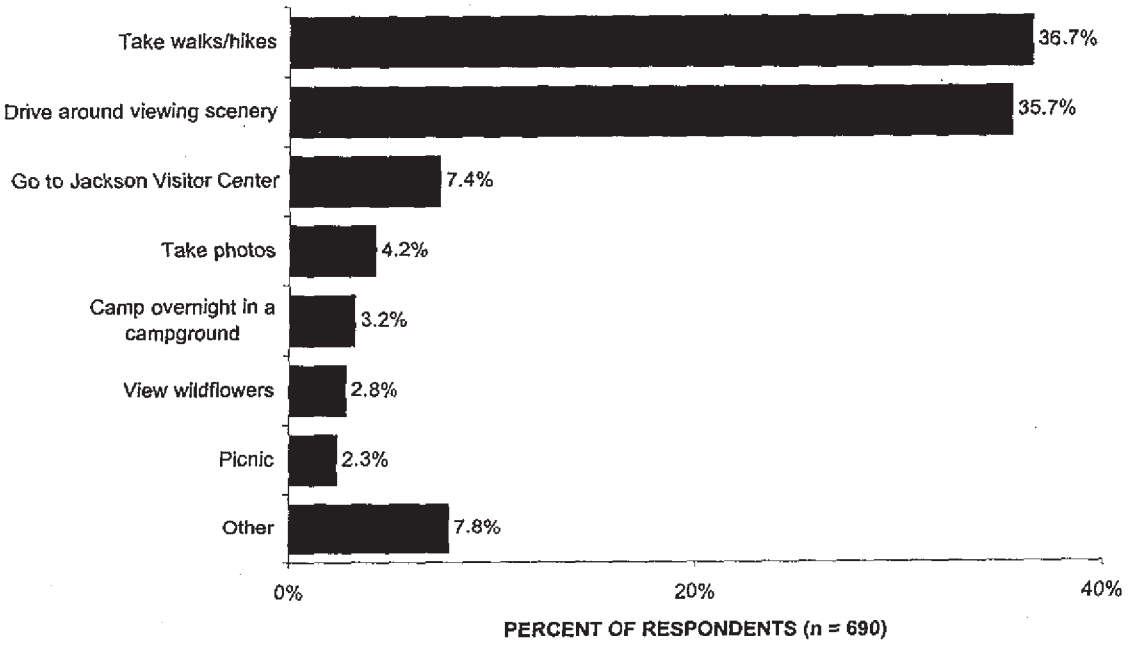
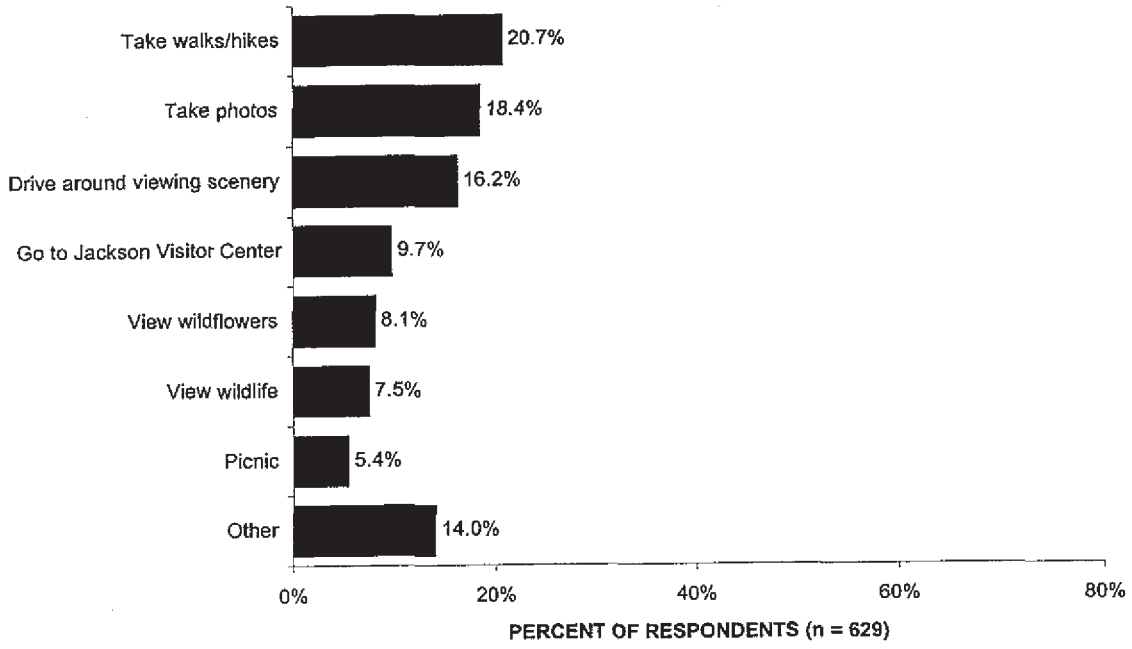


FIGURE 4.21: Contact Sheet Q-3
SECOND MOST IMPORTANT PLANNED ACTIVITY FOR TRIP TO MORA



Ways of Experiencing MORA: Actual

Ways of moving through and experiencing the park.

v. 1 & 2, Q-6a

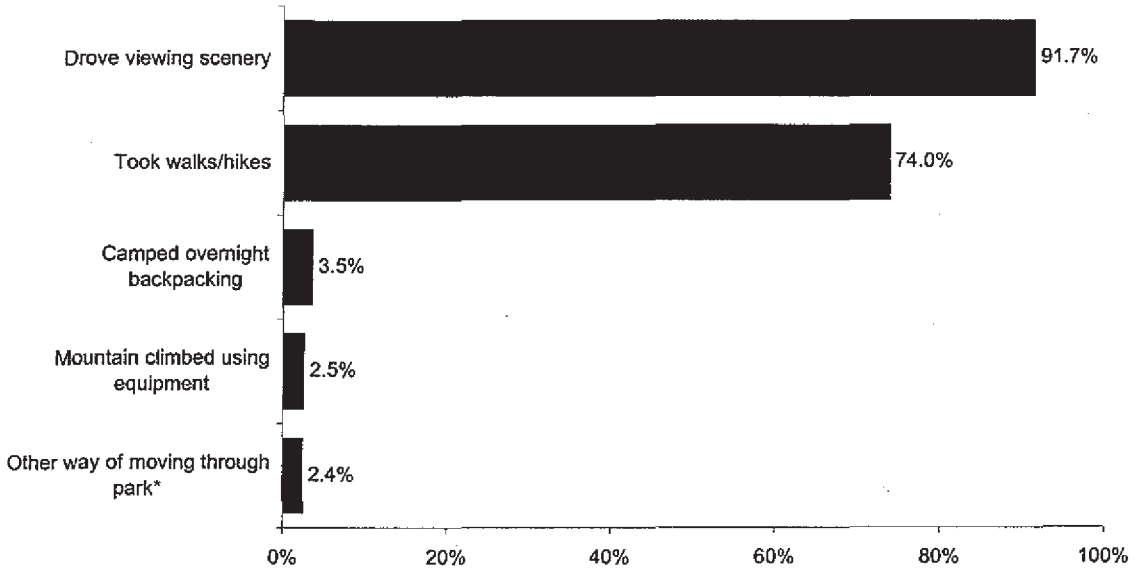
On the trip to Mt. Rainier National Park during which you were contacted for this survey how did you move through and experience the park environment? ***(Circle as many numbers as apply.)***

1 Driving around viewing scenery from road and turnouts
2 Taking walks or hikes
3 Camping overnight while backpacking
4 Mountain climbing using specialized equipment
5 Other (e.g., skiing, bicycling, etc.; *Please specify:* _____)

If you circled 2 or more of these five ways of experiencing the park, which was most important to your enjoyment of the park environment? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT way of experiencing the park
_____ SECOND MOST IMPORTANT way of experiencing the park

FIGURE 4.22: Q-6a
WAYS GATE SURVEY RESPONDENTS MOVED THROUGH AND EXPERIENCED MORA



PERCENT OF RESPONDENTS (n = 931)
Percentages sum to more than 100 because respondents could have multiple ways of experiencing MORA.

*Includes other ways of moving such as bicycling, skiing, etc.

Figure 4.23 shows that a greater percentage of respondents contacted at the Stevens Canyon Entrance (95.8%) drove viewing scenery than respondents contacted at the Nisqually Entrance (90.4%), $\chi^2(1) = 7.02$, $p = .008$.

FIGURE 4.23: Q-6a
PERCENTAGE OF GATE SUREY RESPONDENTS WHO DROVE AROUND VIEWING SCENERY BY CONTACT POINT

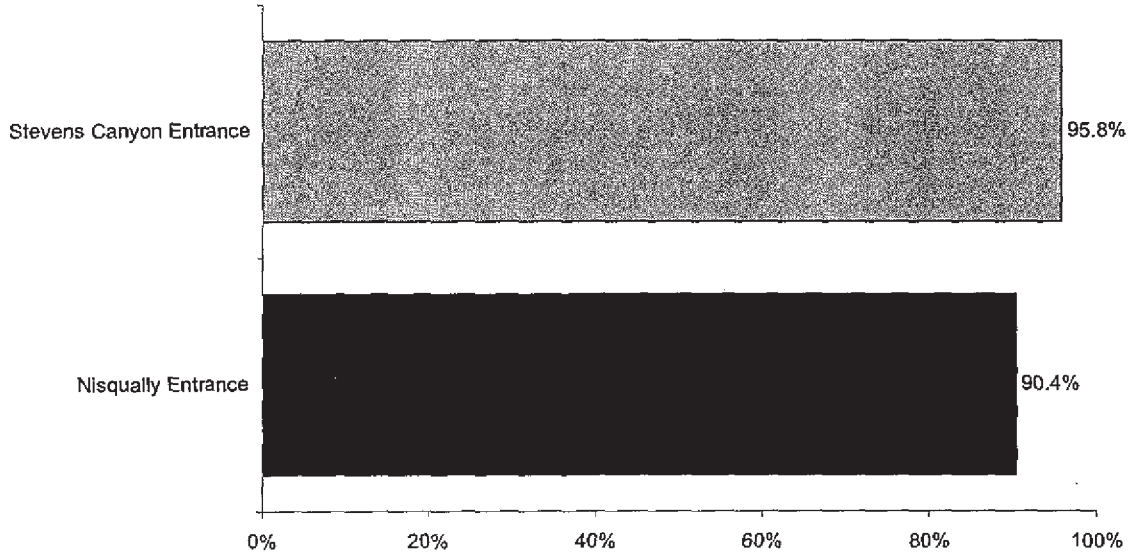
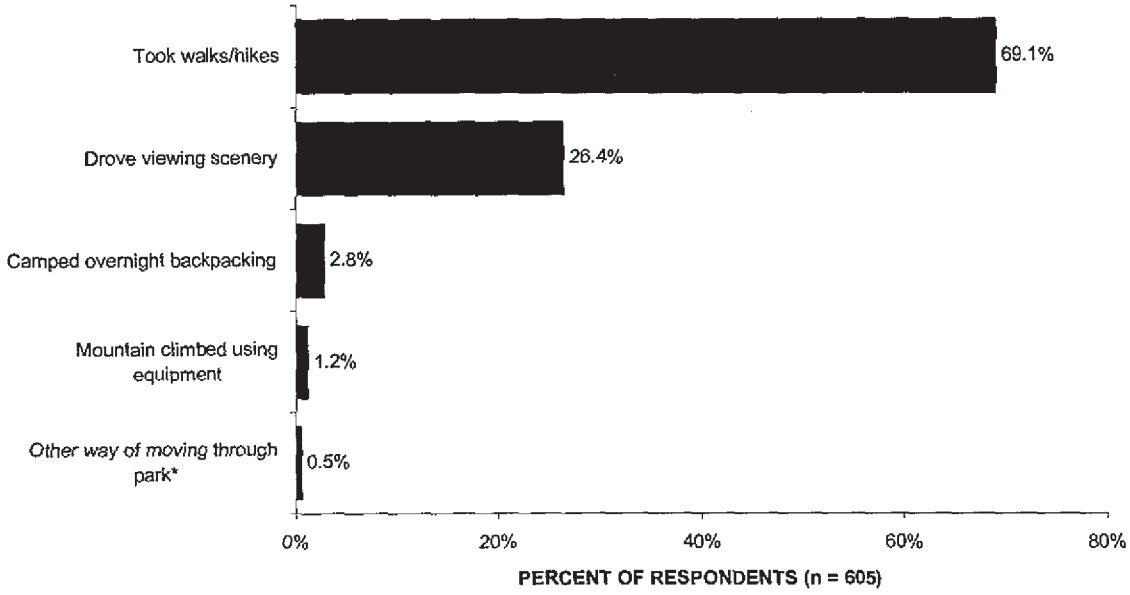
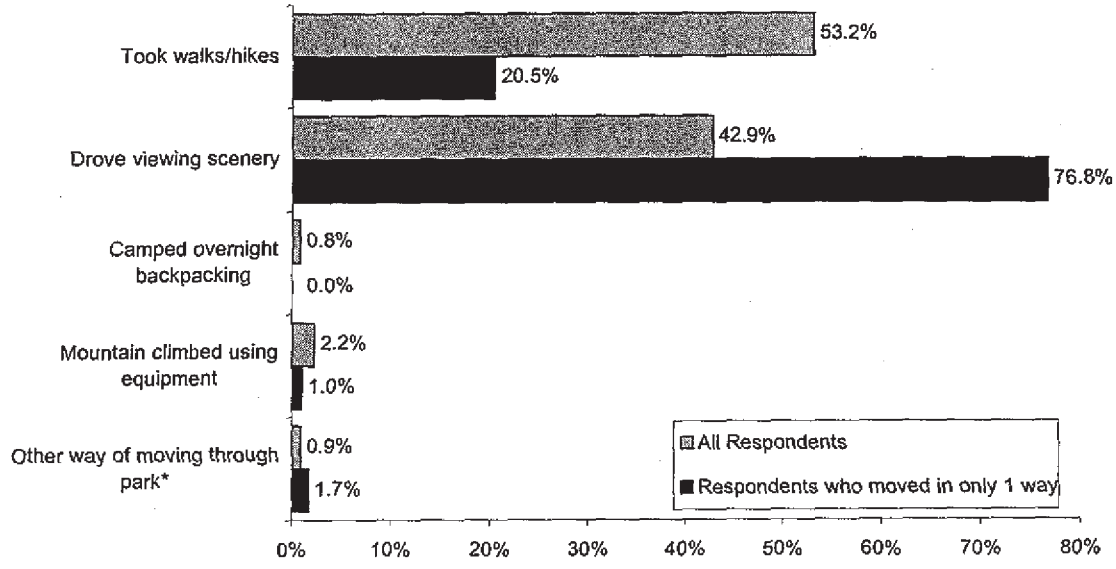


FIGURE 4.24: Q-6a
THE MOST IMPORTANT WAY OF MOVING THROUGH AND EXPERIENCING MORA FOR GATE SURVEY RESPONDENTS WHO HAD MULTIPLE WAYS OF MOVING



*Includes other ways of moving such as bicycling, skiing, etc.

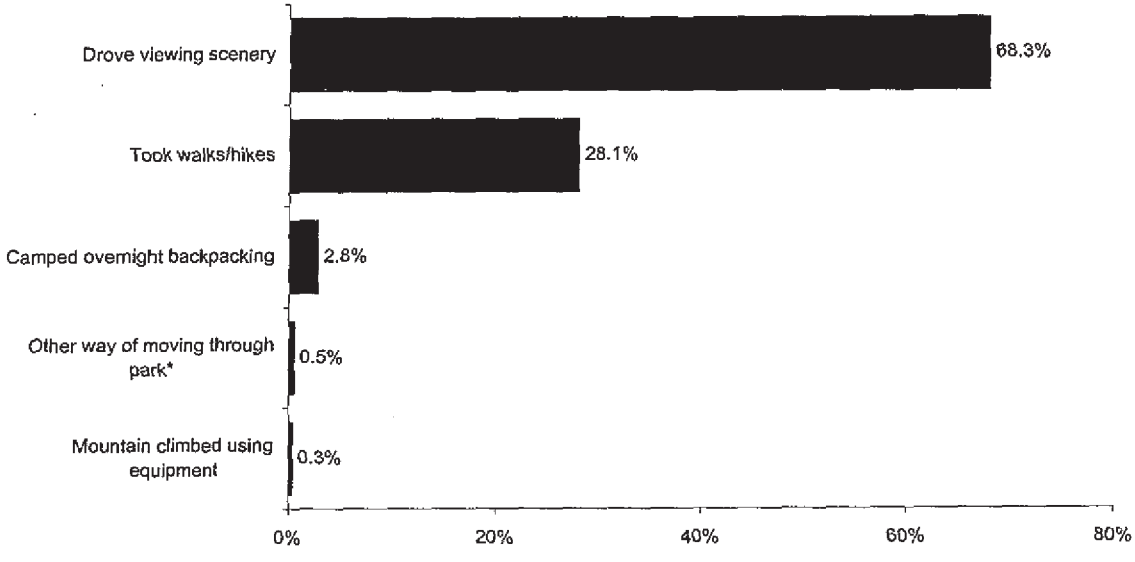
FIGURE 4.25: Q-6a
MOST IMPORTANT WAY OF MOVING THROUGH AND EXPERIENCING MORA FOR ALL GATE SURVEY RESPONDENTS AND FOR THOSE WHO MOVED IN ONLY 1 WAY



PERCENT OF RESPONDENTS
(All respondents, n = 919; Respondents who moved in only 1 way, n = 314)

*Includes other ways of moving such as bicycling, skiing, etc.

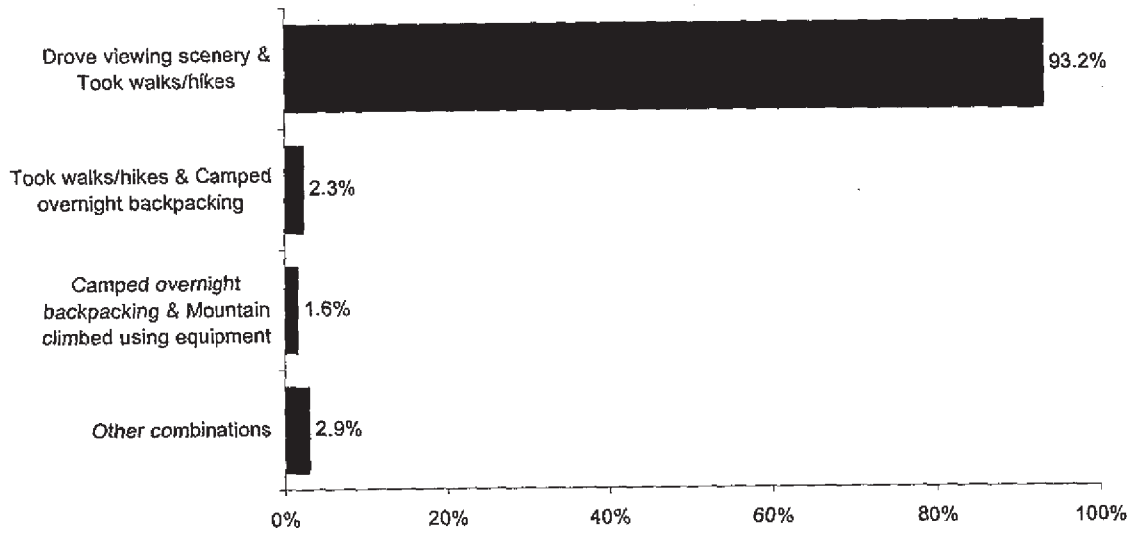
FIGURE 4.26: Q-6a
SECOND MOST IMPORTANT WAY OF MOVING AND EXPERIENCING MORA



PERCENT OF RESPONDENTS (n = 577)
Includes only those respondents who moved through and experienced MORA in multiple ways

*Includes other ways of moving such as bicycling, skiing, etc.

FIGURE 4.27: Q-6a
COMBINATIONS OF MOST AND SECOND MOST IMPORTANT WAY OF MOVING THROUGH MORA*



Includes only the 61.1% of respondents that listed a most and 2nd most important way.
*The combinations include when the activities were listed 1-2 or 2-1.

Outdoor activities.

v. 1 & 2, Q-6b

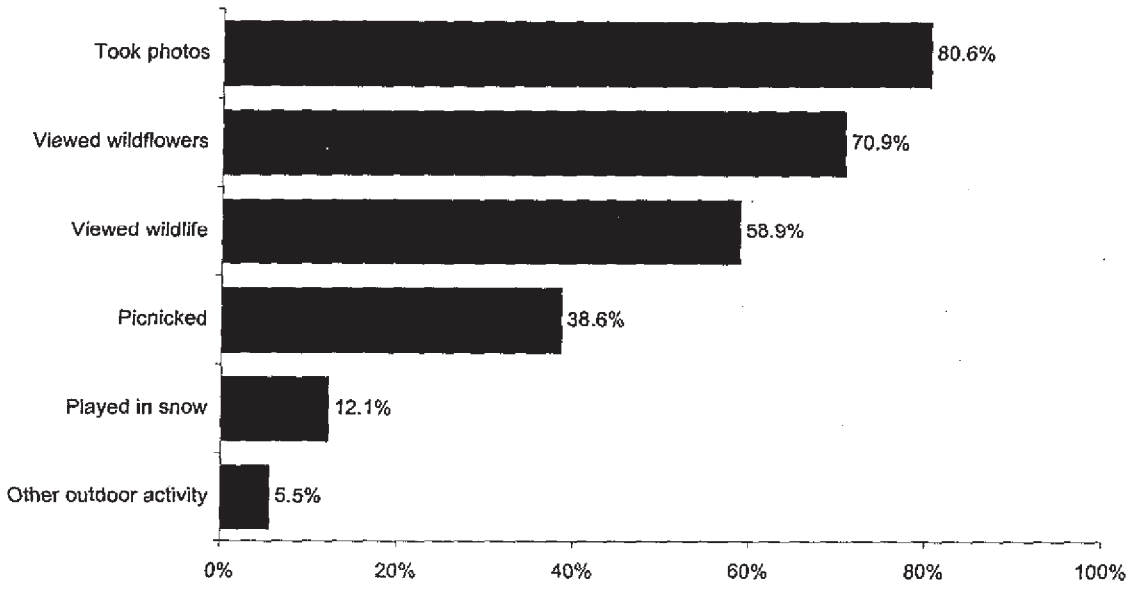
During the same trip, in which of the following outdoor activities did you and your party participate? ***(Circle as many numbers as apply.)***

6 Picnicking
7 Viewing wildflowers
8 Viewing wildlife
9 Taking photographs
10 Snow play
11 Other activities not described by items **1** to **10** in question **6a** or **6b** above
(Please specify: _____)

If you circled 2 or more of the outdoor activities numbered 6 through 11 above, which was most important to your enjoyment of the park? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT activity
_____ SECOND MOST IMPORTANT activity

FIGURE 4.28: Q-6b
OUTDOOR ACTIVITIES IN WHICH YOUR PARTY PARTICIPATED



PERCENT OF RESPONDENTS (n = 935)
Percentages sum to more than 100 because respondents could participate in multiple activities.

As can be seen in Figure 4.29, more respondents contacted at the Stevens Canyon Entrance viewed wildflowers than respondents contacted at the Nisqually Entrance, $\chi^2(1) = 5.19$, $p = .023$. Further analyses revealed that these contact point effects were due to whether respondents stayed overnight or not. A greater proportion of respondents who stayed overnight (84.1%) viewed wildflowers than respondents who were day visitors (67.0%), $\chi^2(1) = 22.39$, $p = .001$.

FIGURE 4.29: Q-6b
PROPORTION OF GATE SURVEY RESPONDENTS WHO VIEWED WILDFLOWERS BY CONTACT POINT

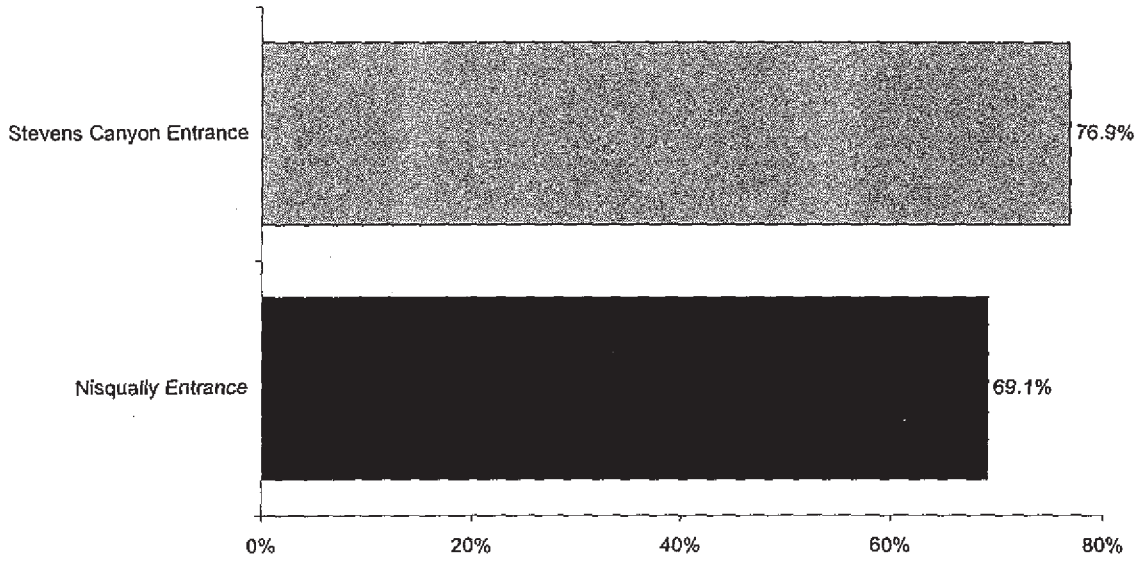
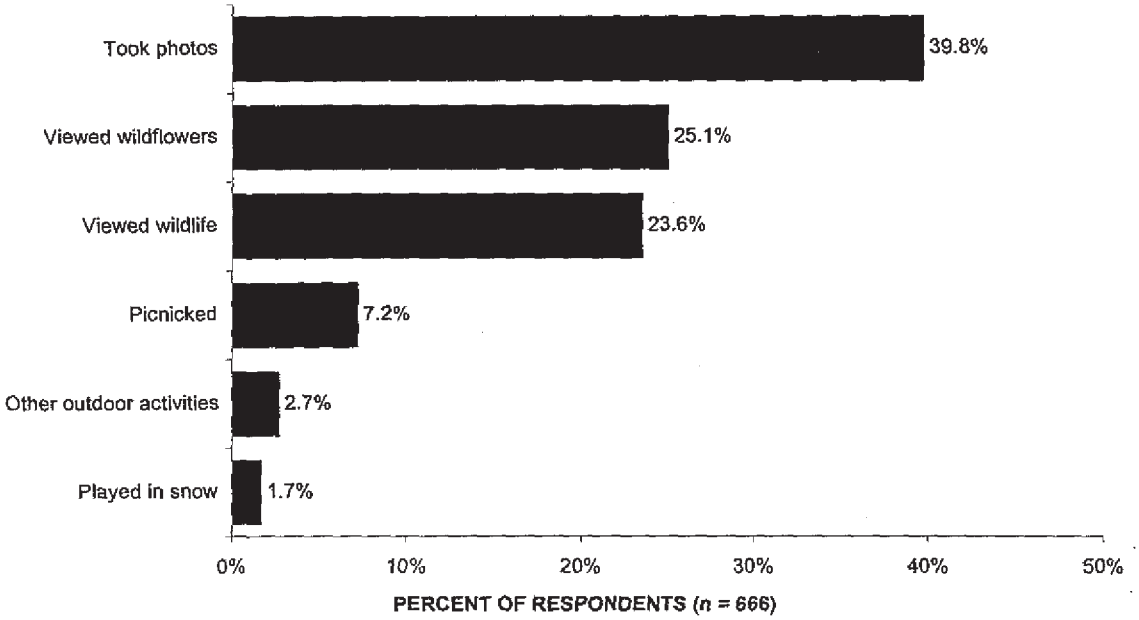
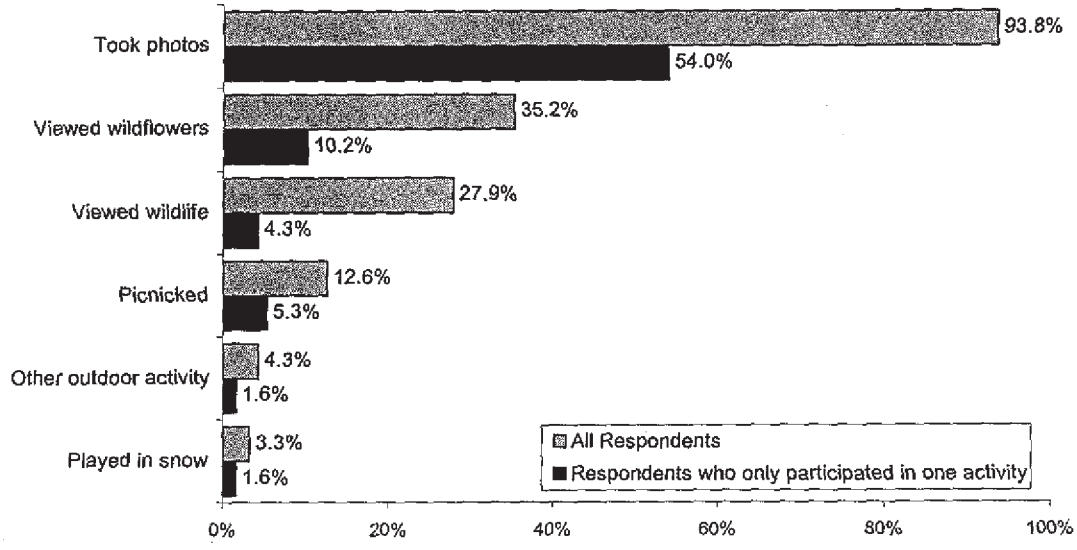


FIGURE 4.30: Q-6b
MOST IMPORTANT OUTDOOR ACTIVITY



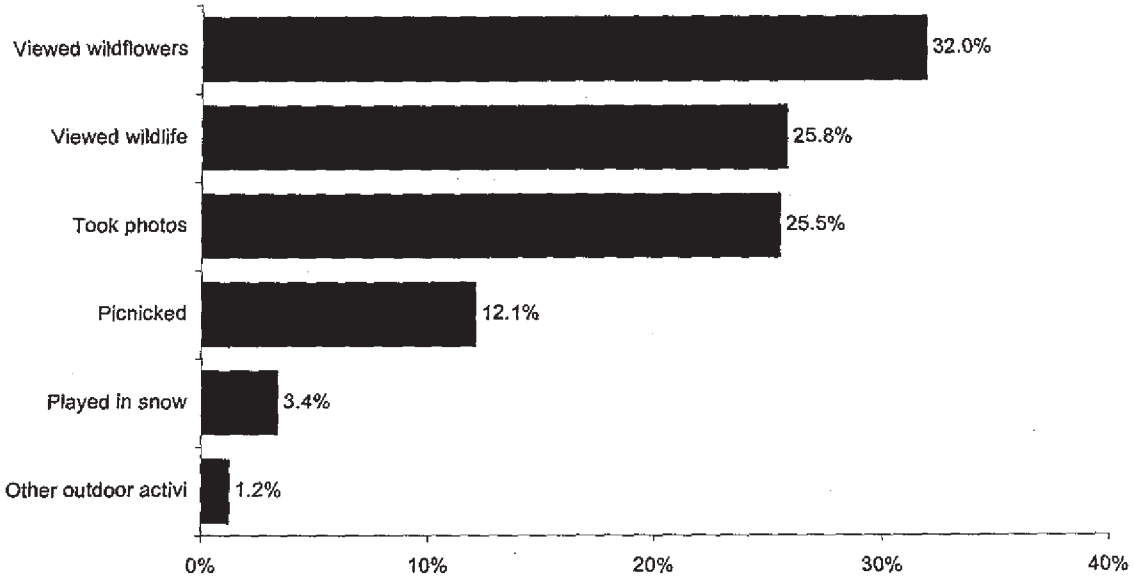
Excludes the 48 respondents who listed a way of moving *through* MORA as their most important outdoor activity.

FIGURE 4.31: Q-6b
MOST IMPORTANT OUTDOOR ACTIVITY FOR ALL GATE SURVEY RESPONDENTS AND FOR THOSE WHO ONLY PARTICIPATED IN ONE OUTDOOR ACTIVITY



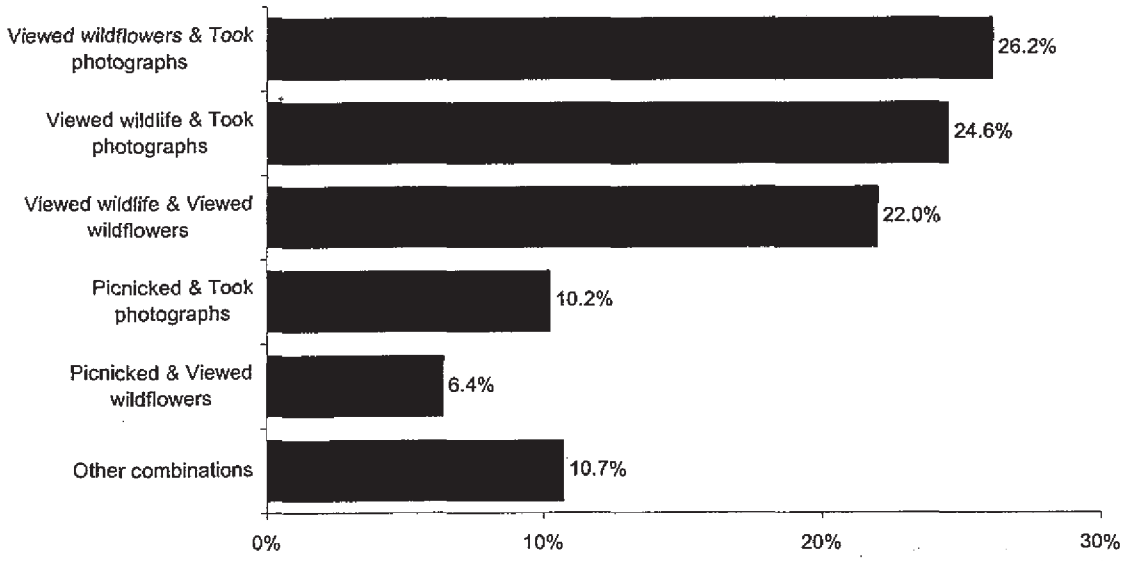
(All respondents n = 853, Respondents who participated in only 1 activity n = 187)
Excludes the 48 respondents who listed a way of moving through MORA as their most important outdoor activity.

FIGURE 4.32: Q-6b
SECOND MOST IMPORTANT OUTDOOR ACTIVITY



Excludes 11 respondents who listed a way of moving through MORA as their 2nd most important outdoor activity.

FIGURE 4.33: Q-6b
COMBINATIONS OF MOST AND SECOND MOST IMPORTANT OUTDOOR ACTIVITY



PERCENT OF RESPONDENTS (n = 627)
Includes only the 69.3% of respondents that listed a most and second most important outdoor activity
***The combinations include when the activities were listed 1-2 and 2-1.**

Note: As can be seen photography is an important activity at MORA. Photography for most respondents, however, represents the taking of pictures to document their experiences at MORA and not the more formal craft of photography.

Park facilities activities.

v. 1 & 2, Q-6c

On the trip to Mt. Rainier National Park during which you were contacted for this survey, in which of the following park activities did you and your party participate? ***(Circle as many numbers as apply.)***

12 Attending a park service naturalist program or activity
(*Circle the site(s) of the program:* Longmire / Paradise / Ohanapecosh)

13 Shopping for curios or souvenirs
(*Circle the shop(s):* Longmire / Paradise / Ohanapecosh)

14 Camping overnight in a campground
(*Circle your campground(s):* Sunshine Pt. / Cougar Rock / Ohanapecosh)

15 Staying overnight within the park
(*Circle your lodging(s):* Longmire Inn / Paradise Lodge)

16 Going to Paradise Visitor Center
17 Going to Ohanapecosh Visitor Center
18 Going to Longmire Museum
19 Eating lunch or snack at Paradise Visitor Center (fast food)
20 Eating Sunday brunch at Paradise Lodge
21 Eating a sit-down meal at Paradise Lodge other than Sunday brunch
22 Eating a sit-down meal at Longmire Inn

If you circled 2 or more of the activities numbered 12 through 22 above, which was most important to your enjoyment of the park? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT activity
_____ SECOND MOST IMPORTANT activity

FIGURE 4.34: Q-6c
PARK FACILITY ACTIVITIES IN WHICH GATE SURVEY RESPONDENTS PARTICIPATED

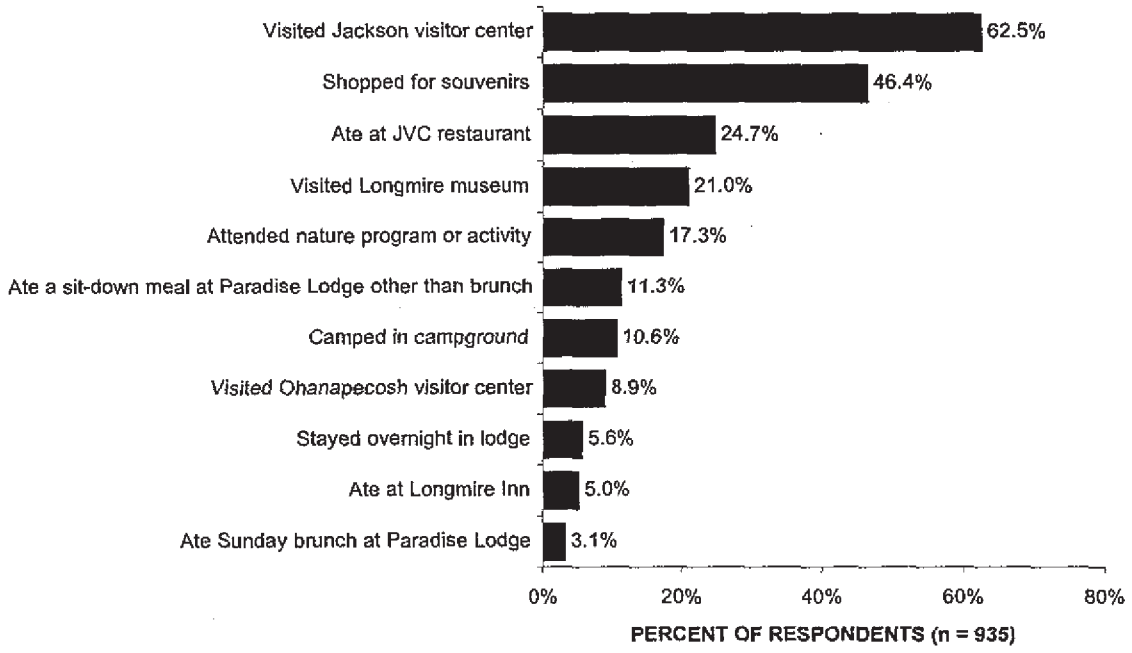
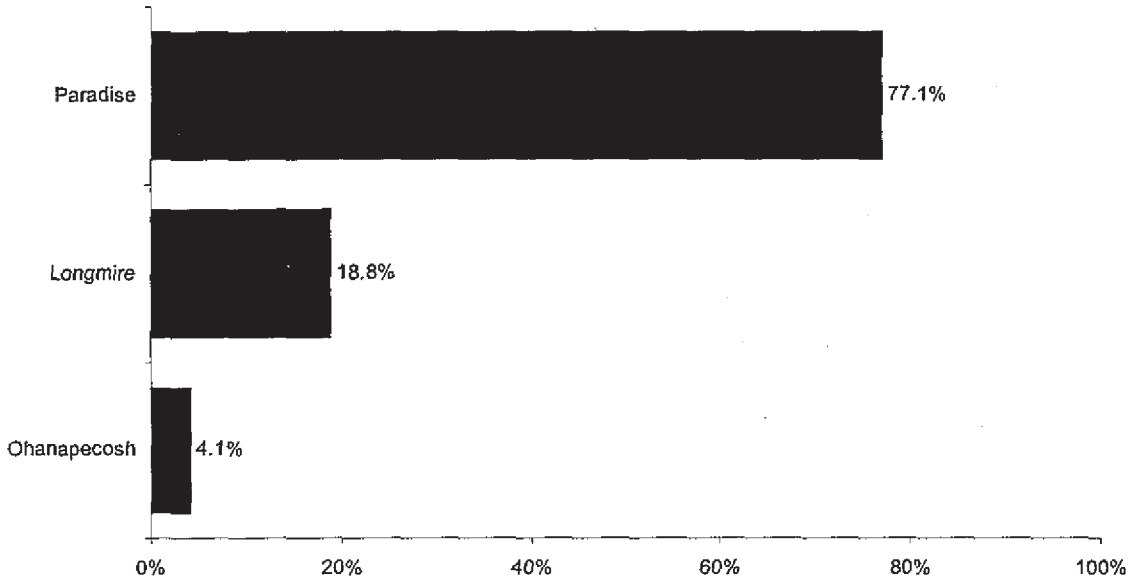


FIGURE 4.35: Q-6c
WHERE GATE SURVEY RESPONDENTS SHOPPED FOR SOUVENIRS



Includes only the 46.4% of respondents who shopped for souvenirs

FIGURE 4.36: Q-6c
WHERE GATE SURVEY RESPONDENTS LODGED OVERNIGHT IN MORA

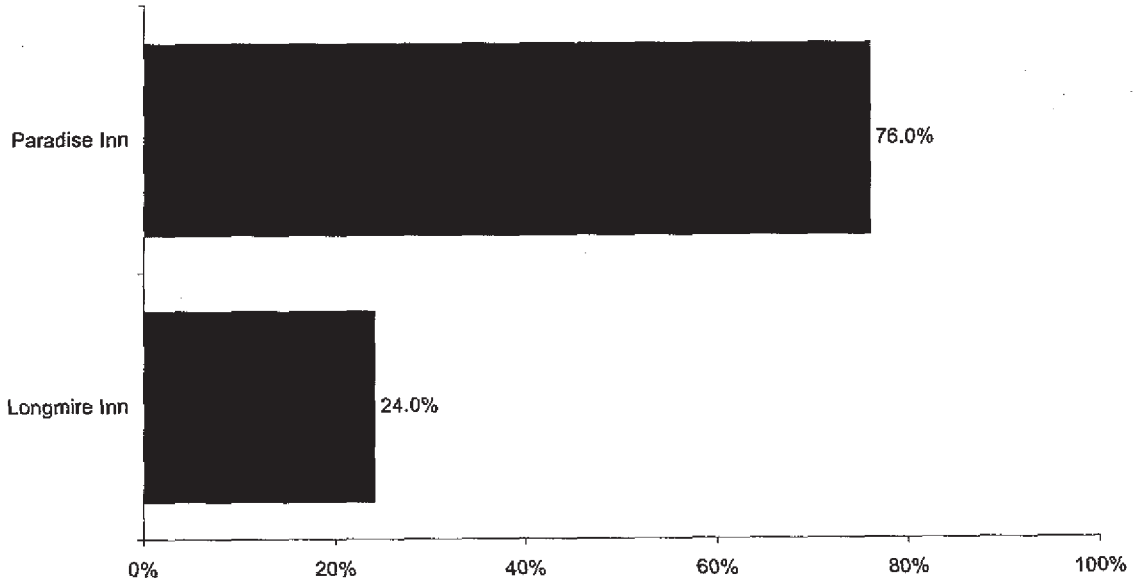


Figure 4.37 shows that a greater percentage of respondents contacted at the Nisqually Entrance (26.1%) visited Longmire Museum than respondents contacted at the Stevens Canyon Entrance (19.6%), $\chi^2(1) = 3.92$, $p = .048$.

FIGURE 4.37: Q-6c
PERCENTAGE OF GATE SURVEY RESPONDENTS WHO STOPPED AT LONGMIRE MUSEUM BY CONTACT POINT

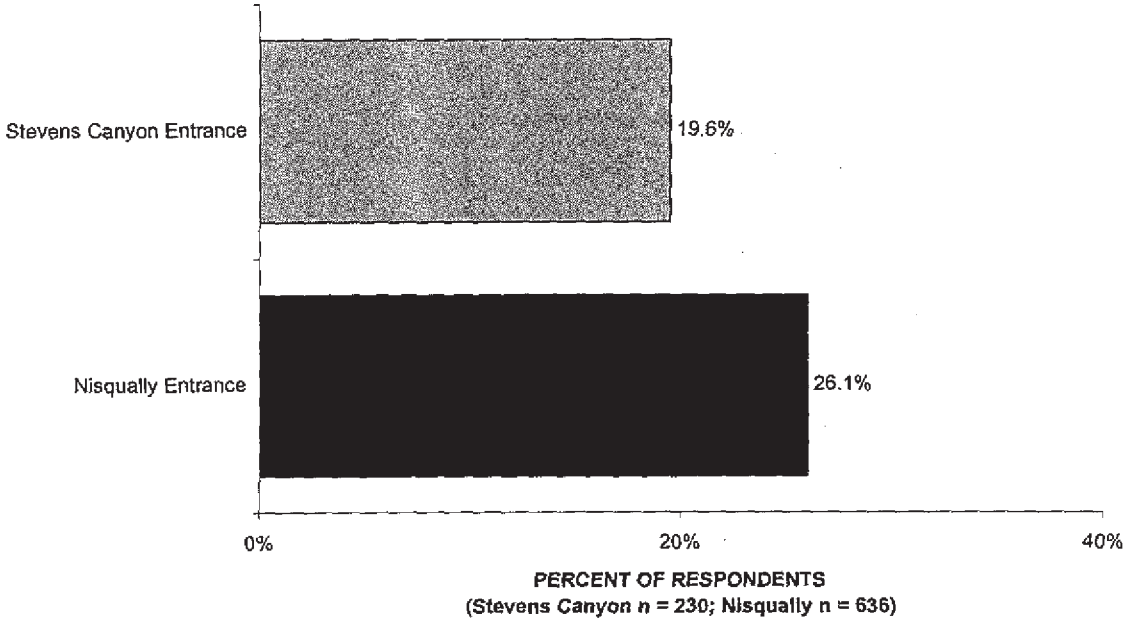
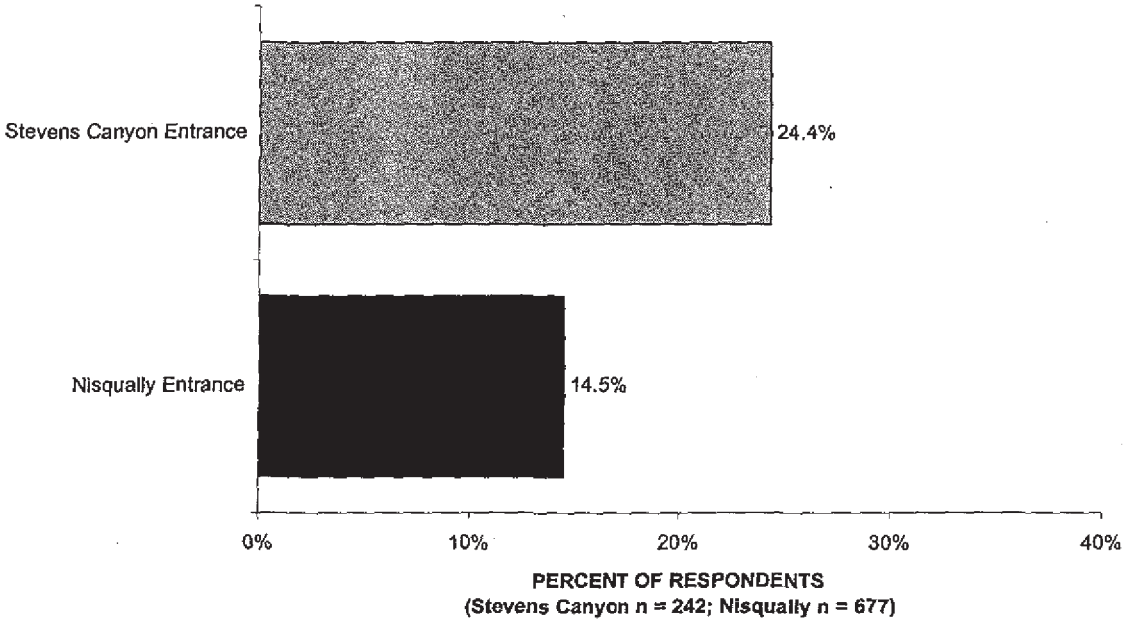


Figure 4.38 shows that more respondents contacted at the Stevens Canyon Entrance (24.4%) attended a nature program or activity than respondents contacted at the Nisqually Entrance (14.5%), $\chi^2(1) = 12.35$, $p < .001$. Further analyses revealed that these effects were due to both contact point and whether respondents stayed overnight. Of respondents who stayed overnight, a greater proportion of them contacted at the Stevens Canyon Entrance attended a nature program or activity than respondents contacted at the Nisqually Entrance. No contact point differences were found for respondents who had a day visit. Regardless of contact point, a greater percentage of overnight respondents attended a nature program or activity than respondents who spent the day (37.2% vs. 11.2%), $\chi^2(1) = 74.55$, $p < .001$.

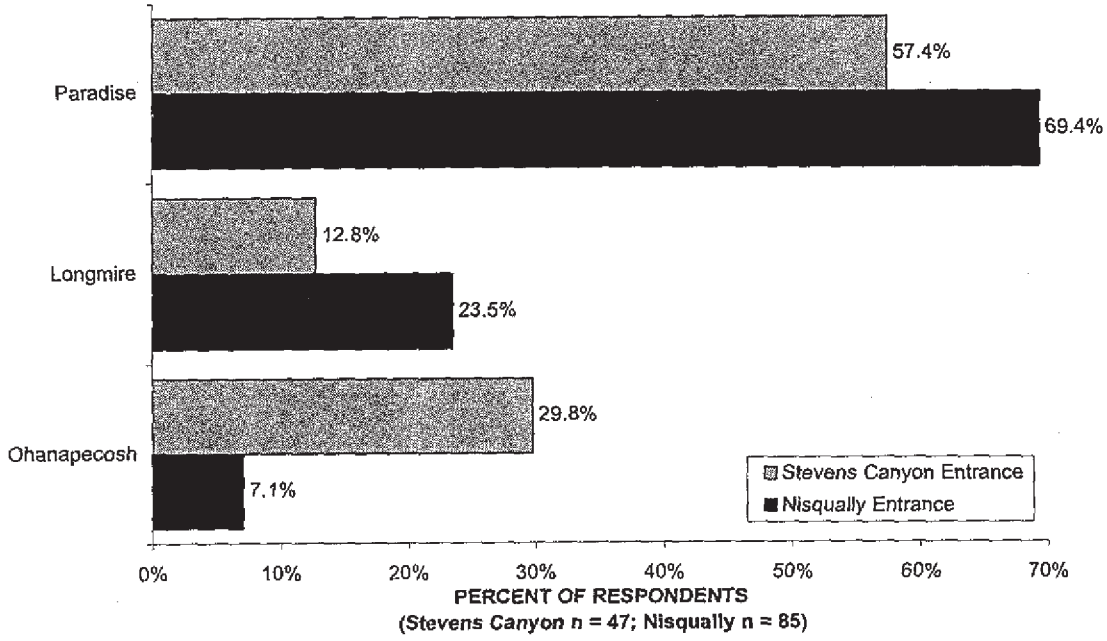
FIGURE 4.38: Q-6c
PROPORTION OF GATE SURVEY RESPONDENTS WHO ATTENDED A NATURE PROGRAM OR ACTIVITY BY CONTACT POINT



The location of the nature program attended also varied by contact point, $\chi^2(2) = 12.76$, $p = .002$. As can be seen in Figure 4.39, respondents contacted at the Stevens Canyon Entrance were more likely to go to a program at Ohanapecosh than respondents contacted at the Nisqually Entrance. Additionally, respondents contacted at the Stevens Canyon Entrance were less likely to go to a program at Longmire than respondents contacted at the Nisqually Entrance. Further analyses revealed that these effects were due to both contact point and whether respondents stayed overnight. Of respondents who stayed overnight, respondents contacted at the Nisqually Entrance were more likely to attend a program at Paradise (60.0%) followed by Longmire (28.6%) while respondents contacted at the Stevens Canyon Entrance were almost equally likely to go to Paradise (45. 2%) or Ohanapecosh (41.9%). No contact point differences were found for

respondents who had a day visit. Regardless of contact point, compared to respondents who stayed overnight, a greater percentage of respondents who spent the day at MORA attended a nature program or activity at Paradise (78.% vs. 52.9%) while fewer of them attended a program at Ohanapecosh (25.0% vs. 1.7%), $\chi^2(2) = 15.21$, $p < .001$.

FIGURE 4.39: Q-6c
LOCATION OF NATURE PROGRAM OR ACTIVITY *ATTENDED* BY CONTACT POINT



Respondents contacted at the Stevens Canyon Entrance (18.6%) were also more likely to camp in a campground than respondents contacted at the Nisqually Entrance (7.7%), $\chi^2(1) = 22.49$, $p < .001$ (see Figure 4.40). Further analyses revealed that these effects were due to both contact point and whether respondents stayed overnight. Of respondents who stayed overnight, a greater proportion of them contacted at the Stevens

Canyon Entrance camped in a campground than respondents contacted at the Nisqually Entrance. No contact point differences were found for respondents who had a day visit.

The location of the campground varied by contact point, $\chi^2(1) = 35.89$, $p < .001$; east side vs. west side. Respondents contacted at the Stevens Canyon Entrance were more likely to camp at Ohanapecosh or White River while respondents contacted at the Nisqually Entrance were more likely to camp at Cougar Rock or Sunshine Point (see Figure 4.41).

FIGURE 4.40: Q-6c
PROPORTION OF GATE SURVEY RESPONDENTS WHO CAMPED IN CAMPGROUND BY CONTACT POINT

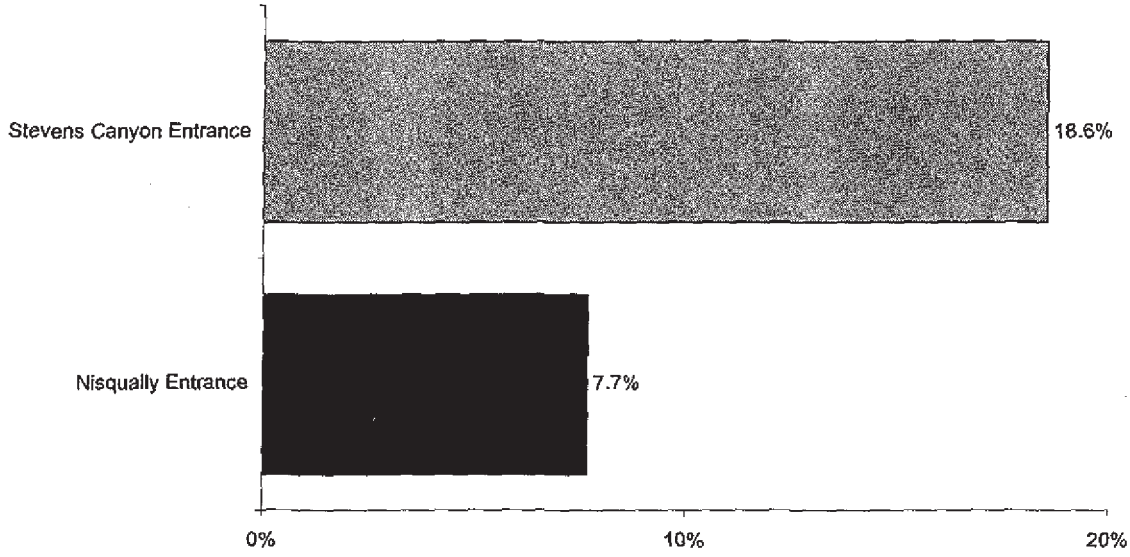
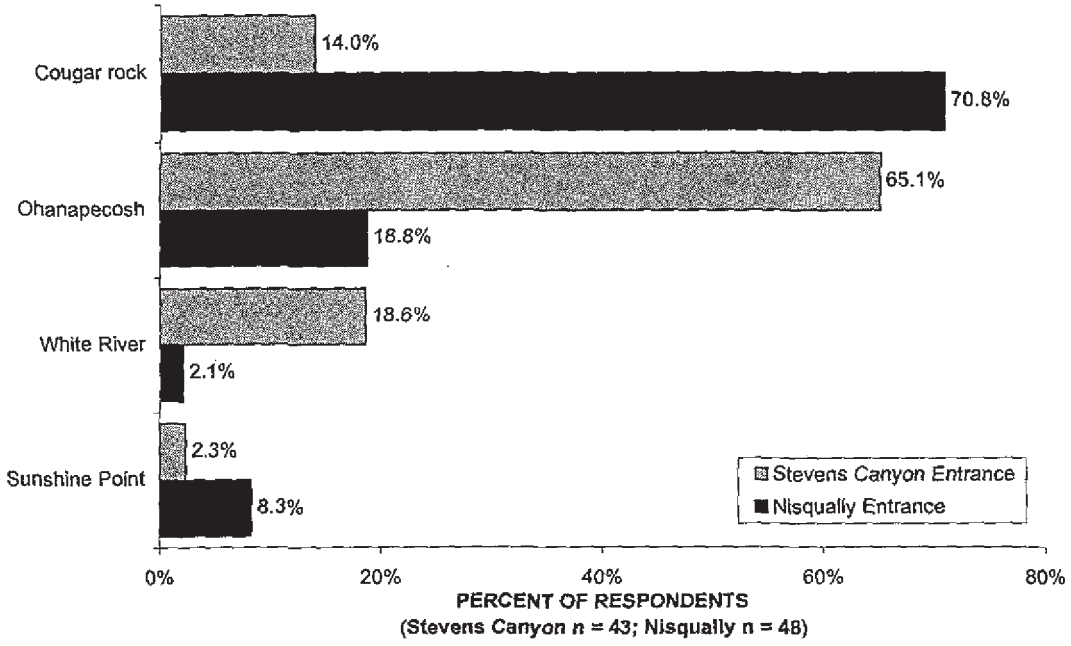
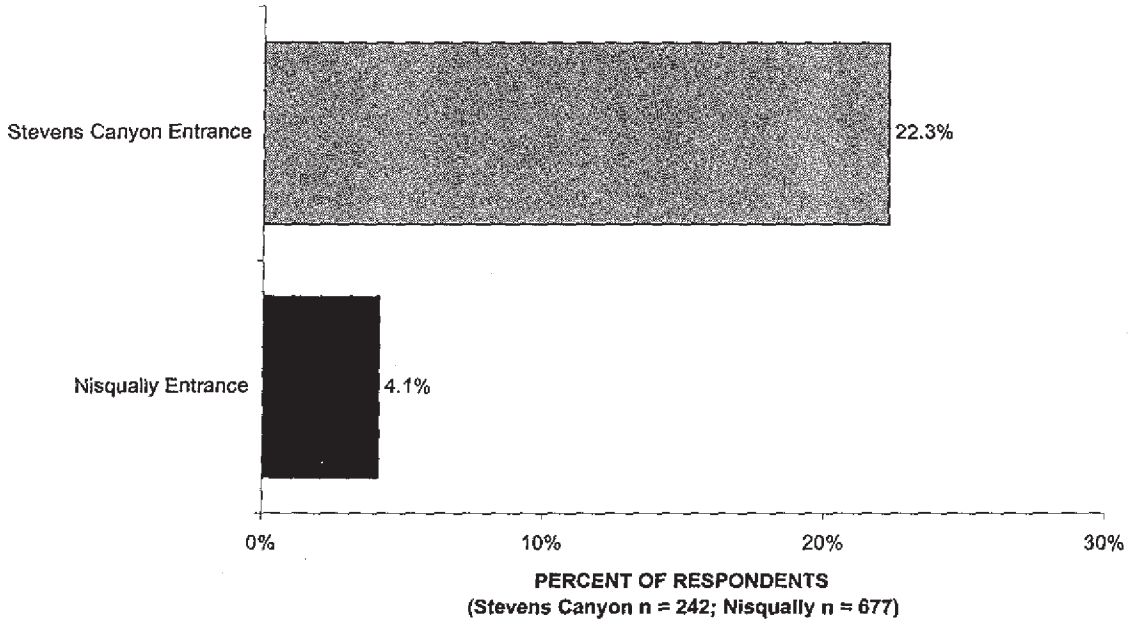


FIGURE 4.41: Q-6c
LOCATION WHERE CAMPED IN CAMPGROUND BY CONTACT POINT



Finally, as can be seen in Figure 4.42, a larger proportion of respondents contacted at the Stevens Canyon Entrance (22.3%) visited the Ohanapecosh Visitor Center than respondents contacted at the Nisqually Entrance (4.1%), $\chi^2(1) = 72.49$, $p < .001$. Further analyses revealed that these effects were due to contact point and whether respondents stayed overnight. The observed contact point difference for respondents stopping at Ohanapecosh Visitor Center was greater for respondents who stayed overnight (48.1% vs. 10.6%) than respondents who had a day visit (10.6% vs. 2.5%). Regardless of contact point, a greater percentage of respondents who stayed overnight visited the Ohanapecosh Visitor Center than did respondents who had a day visit (25.1% vs 4.2%), $\chi^2(1) = 82.50$, $p < .001$.

FIGURE 4.42: Q-6c
PROPORTION OF GATE SURVEY RESPONDENTS WHO VISITED OHANAPECOSH VISITOR CENTER BY CONTACT POINT



Most important facility activity varied by contact point (see Figure 4.43), $\chi^2(7) = 29.98$, $p < .001$. Respondents contacted at the Stevens Canyon Entrance were more likely to list 'camped in campground' as their most important facility activity than respondents contacted at the Nisqually Entrance (24.6% vs. 8.4%). In addition, respondents contacted at the Nisqually Entrance were more likely to list 'visited Jackson Visitor Center' as their most important facility activity than respondents contacted at the Stevens Canyon Entrance (42.3% vs. 32.4%).

FIGURE 4.43: Q-6c
MOST IMPORTANT PARK FACILITIES ACTIVITY BY CONTACT POINT

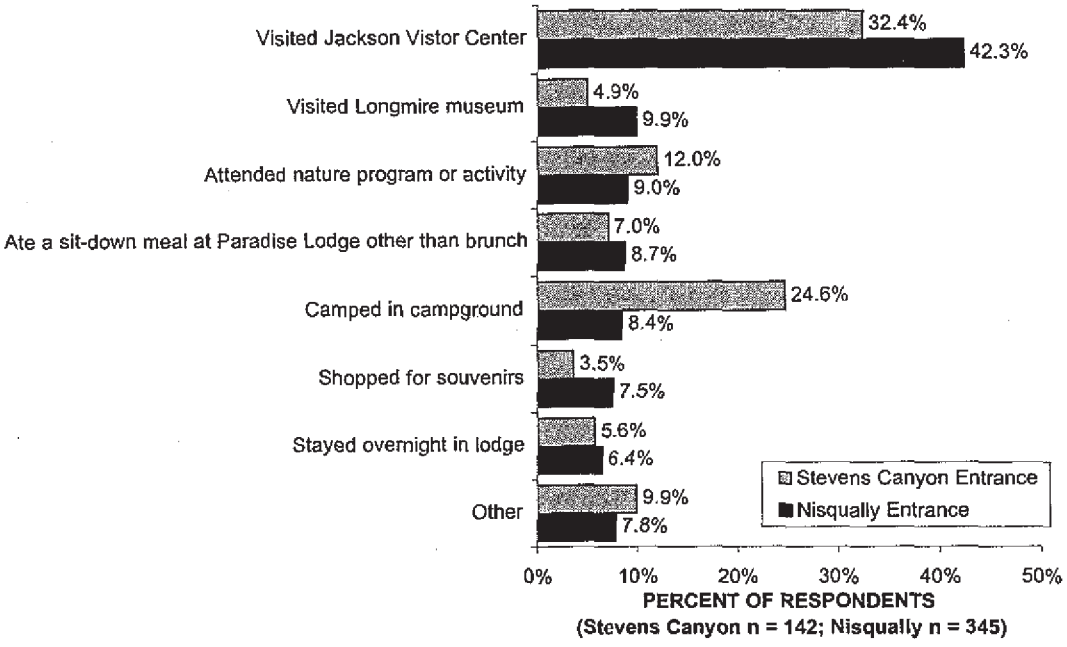


FIGURE 4.44: Q-6c
SECOND MOST IMPORTANT FACILITY ACTIITY BY CONTACT POINT

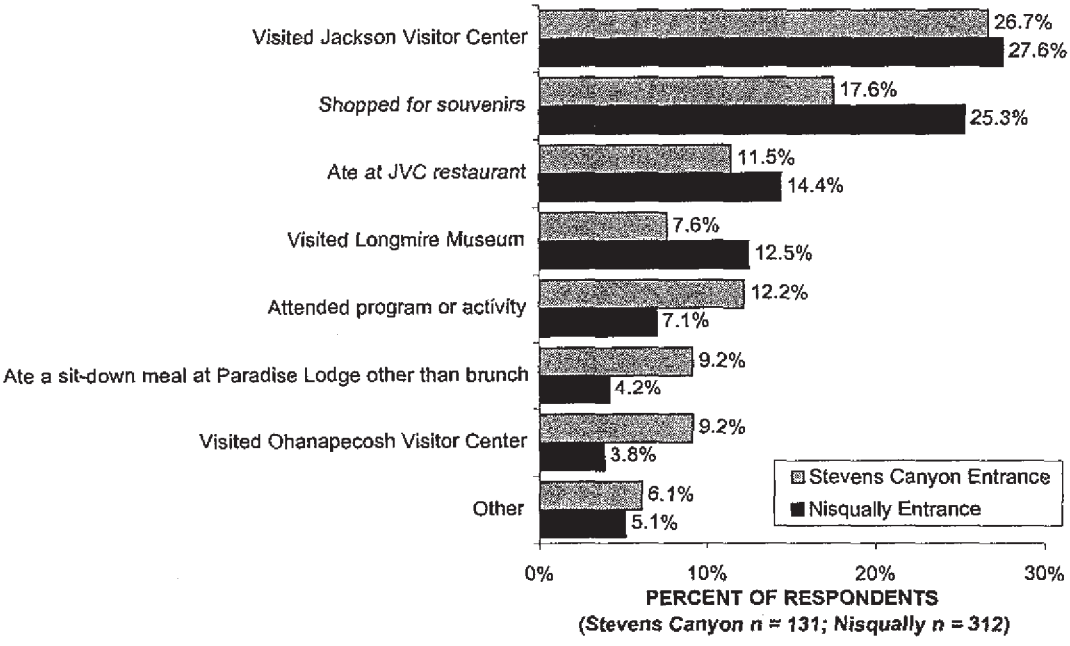


FIGURE 4.45: Q-6c
MOST IMPORTANT PARK FACILITY ACTIVITY FOR ALL GATE SURVEY RESPONDENTS AND FOR THOSE WHO ONLY PARTICIPATED IN ONE FACILITY ACTIVITY

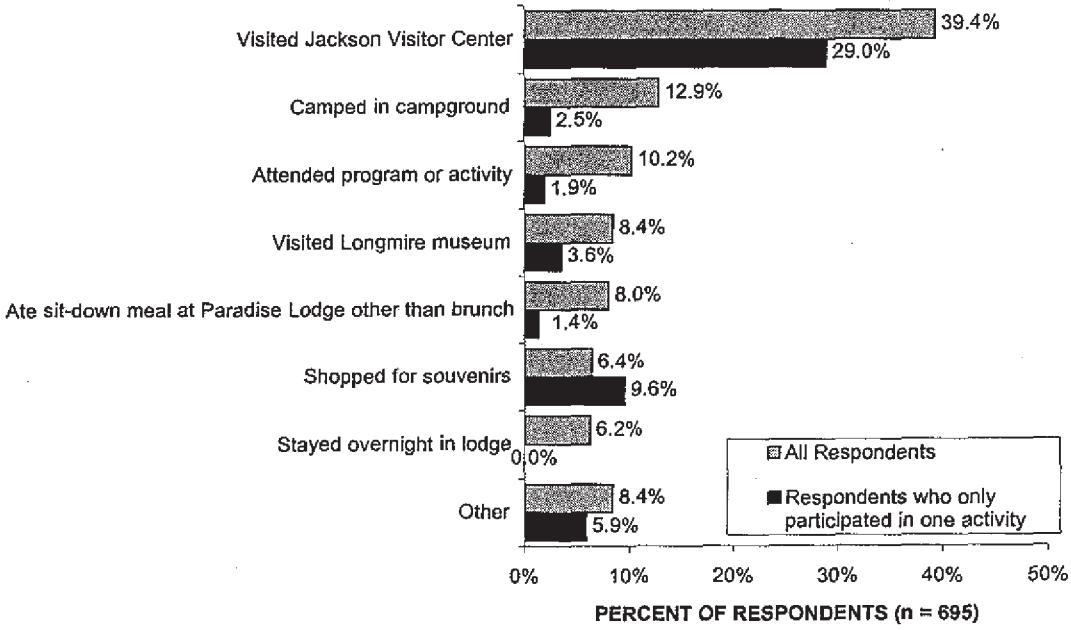
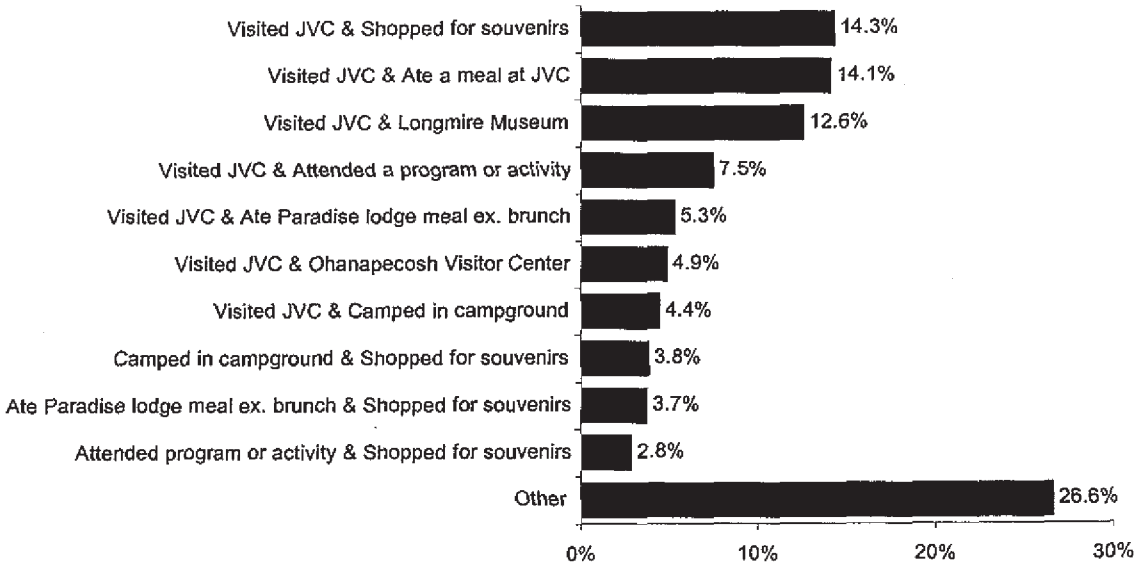


FIGURE 4.46: Q-6c
COMBINATIONS OF MOST AND SECOND MOST IMPORTANT PARK FACILITIES ACTIVITIES*



PERCENT OF RESPONDENTS (n = 453)
Includes only the 48.0% of respondents who listed a most and second most important facility activity
***The combinations include when the activities were listed 1-2 and 2-1.**

Overall most important activities to visitors' enjoyment of MORA.

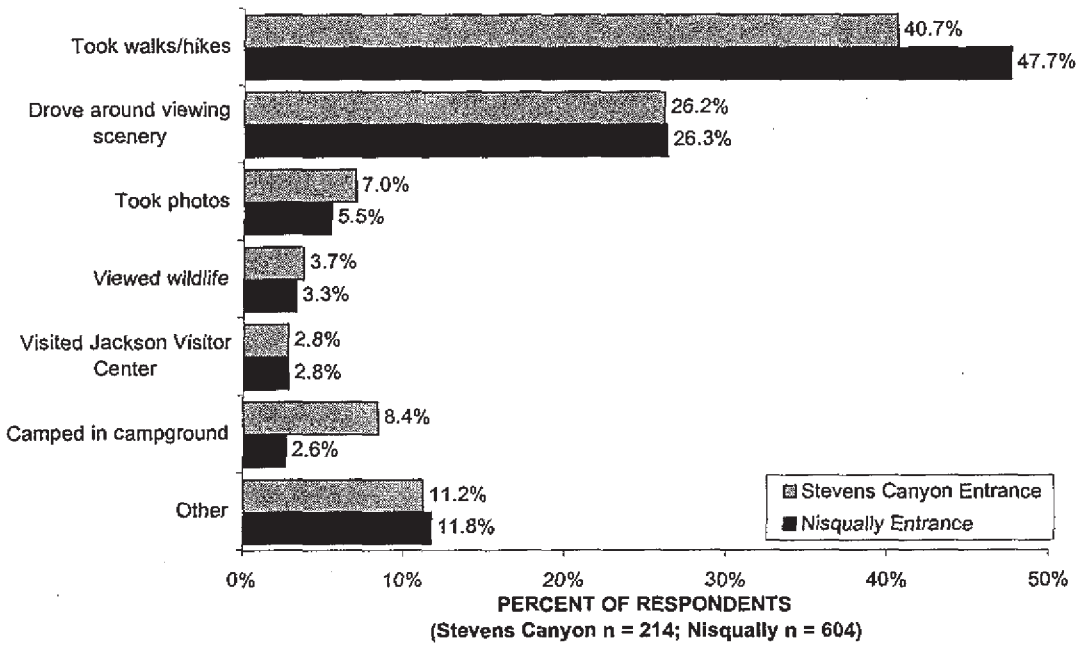
v. 1 & 2, Q-6d

Considering **ALL** of the 22 activities and ways of experiencing the park listed in 6a, 6b and 6c, which would you say were most important to your enjoyment of Mt. Rainier National Park? (Enter the appropriate number in each of the blanks.)

_____MOST IMPORTANT activity or way of experiencing the park
_____2nd MOST IMPORTANT activity or way of experiencing the park
_____3rd MOST IMPORTANT activity or way of experiencing the park

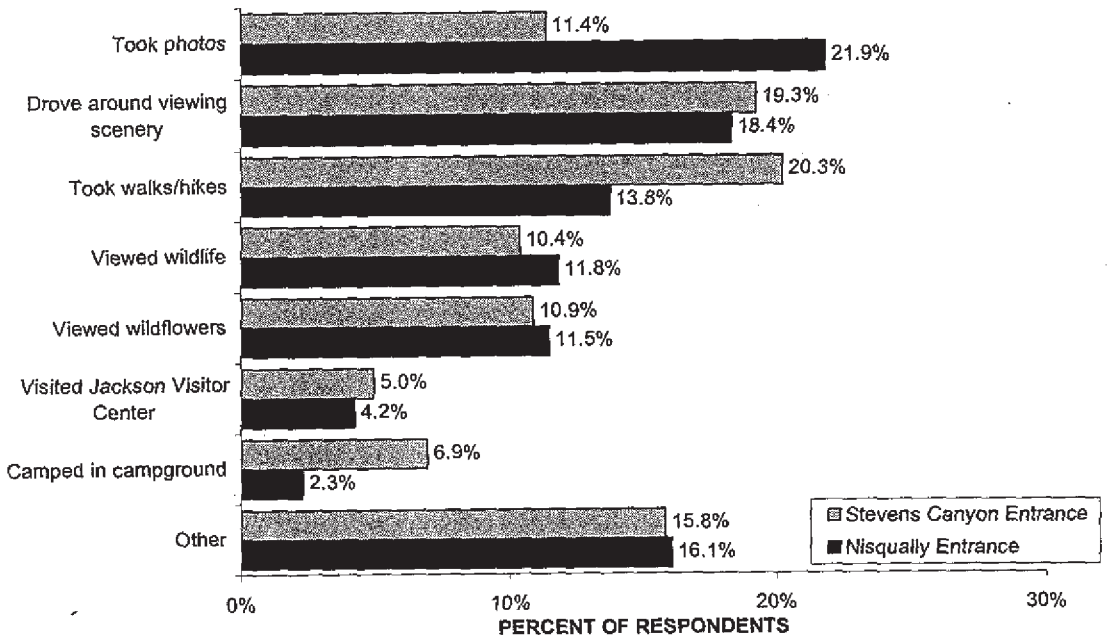
Respondents' most important activity or way of experiencing MORA varied by contact point (see Figure 4.47), $\chi^2(6) = 15.09$, $p = .020$. A greater percentage of respondents contacted at the Nisqually Entrance listed 'took walk/hikes' as their most important activity or way of experiencing MORA than respondents contacted at the Stevens Canyon Entrance (47.7% vs. 40.7%). In addition, respondents contacted at the Stevens Canyon Entrance were more likely to list 'camped in campground' as their most important activity or way of experiencing MORA than respondents contacted at the Nisqually Entrance (8.4% vs. 2.6%).

FIGURE 4.47: Q-6d
MOST IMPORTANT ACTIVITY OR WAY OF EXPERIENCING MORA BY CONTACT POINT



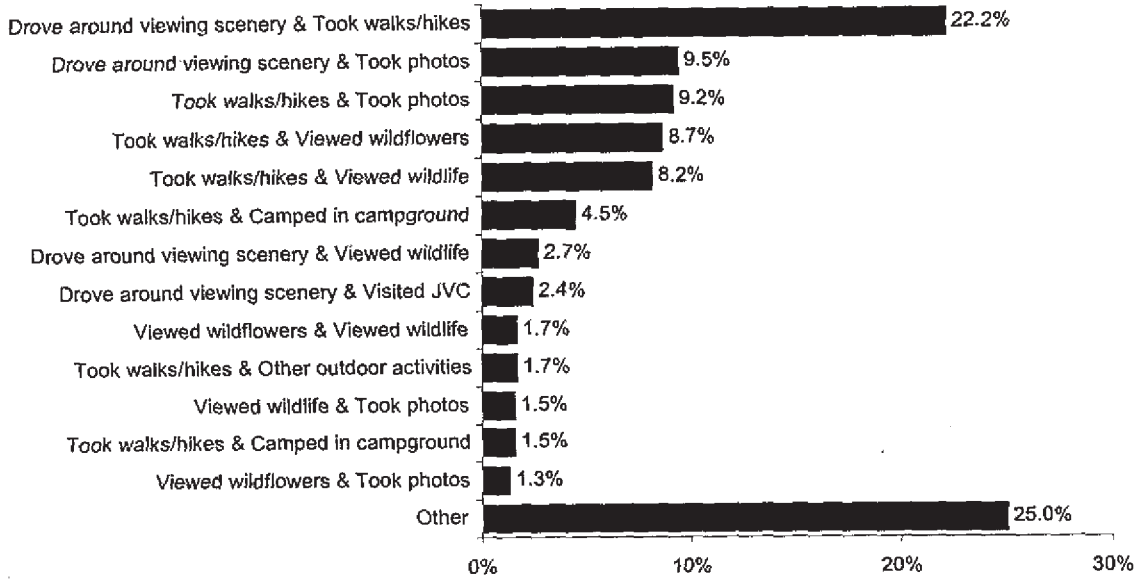
Respondents' second most important activity or way of experiencing MORA varied by contact point (see Figure 4.48), $\chi^2(7) = 22.34$, p = .002. A greater percentage of respondents contacted at the Nisqually Entrance listed 'took photos' as their second most important activity or way of experiencing MORA than respondents contacted at the Stevens Canyon Entrance (21.9% vs. 11.4%). In addition, a greater percentage of respondents contacted at the Stevens Canyon Entrance than those contacted at the Nisqually Entrance were more likely to list 'took walks/hikes' or 'camped in campground' as their second most important activity or way of experiencing MORA (20.3% vs. 13.8% and 6.9% vs. 2.3%, respectively).

FIGURE 4.48: Q-6d
SECOND MOST IMPORTANT ACTIVITY OR WAY OF EXPERIENCING MORA BY CONTACT POINT



(Stevens Canyon n = 202; Nisqually n = 566)

FIGURE 4.49: Q-6d
COMBINATIONS OF MOST AND SECOND MOST IMPORTANT OVERALL ACTIVITY*

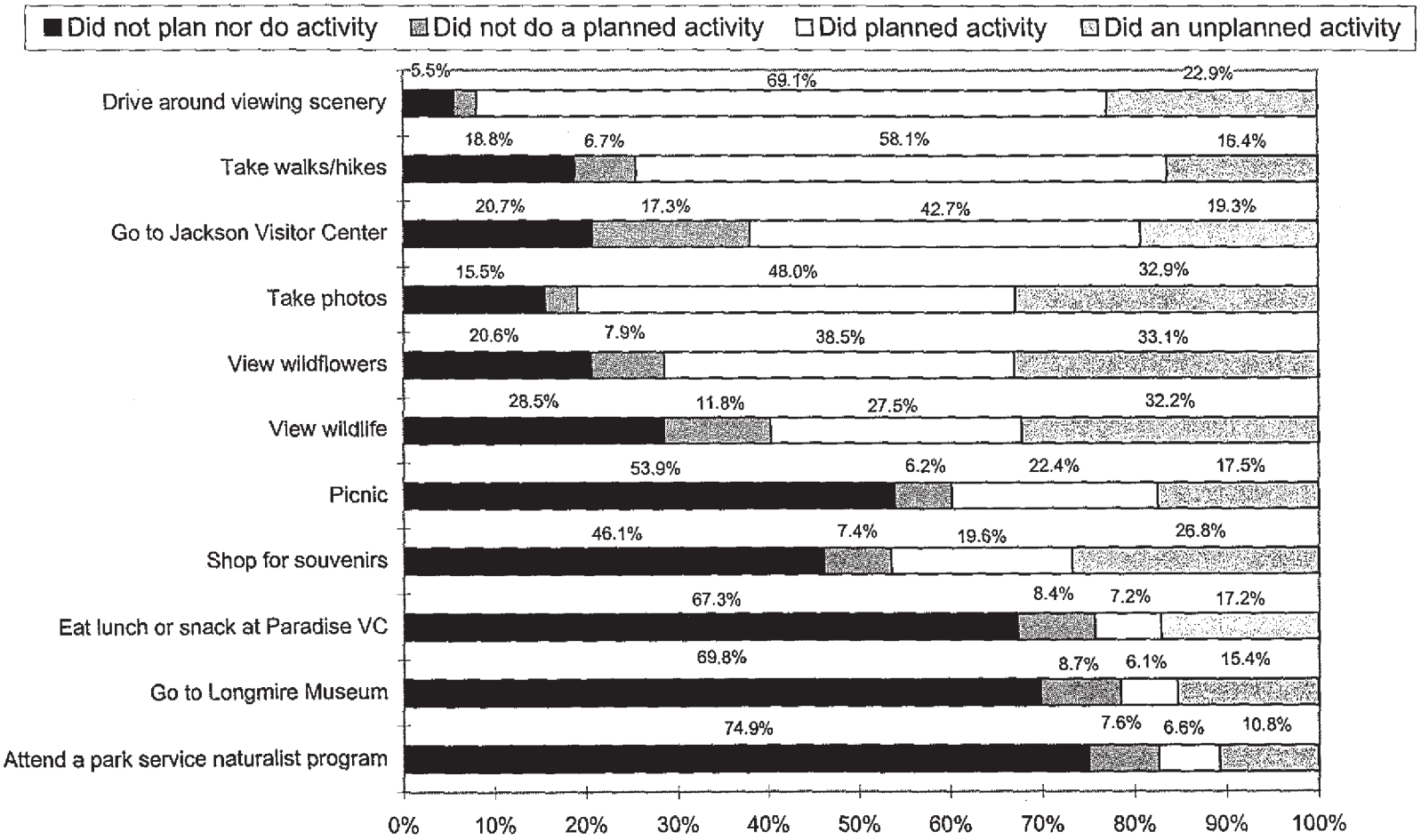


Includes the 81.4% of respondents who listed a most and second most important activity
*The combinations include when the activities were listed 1-2 and 2-1.

Ways of Experiencing MORA: Planned versus Actual

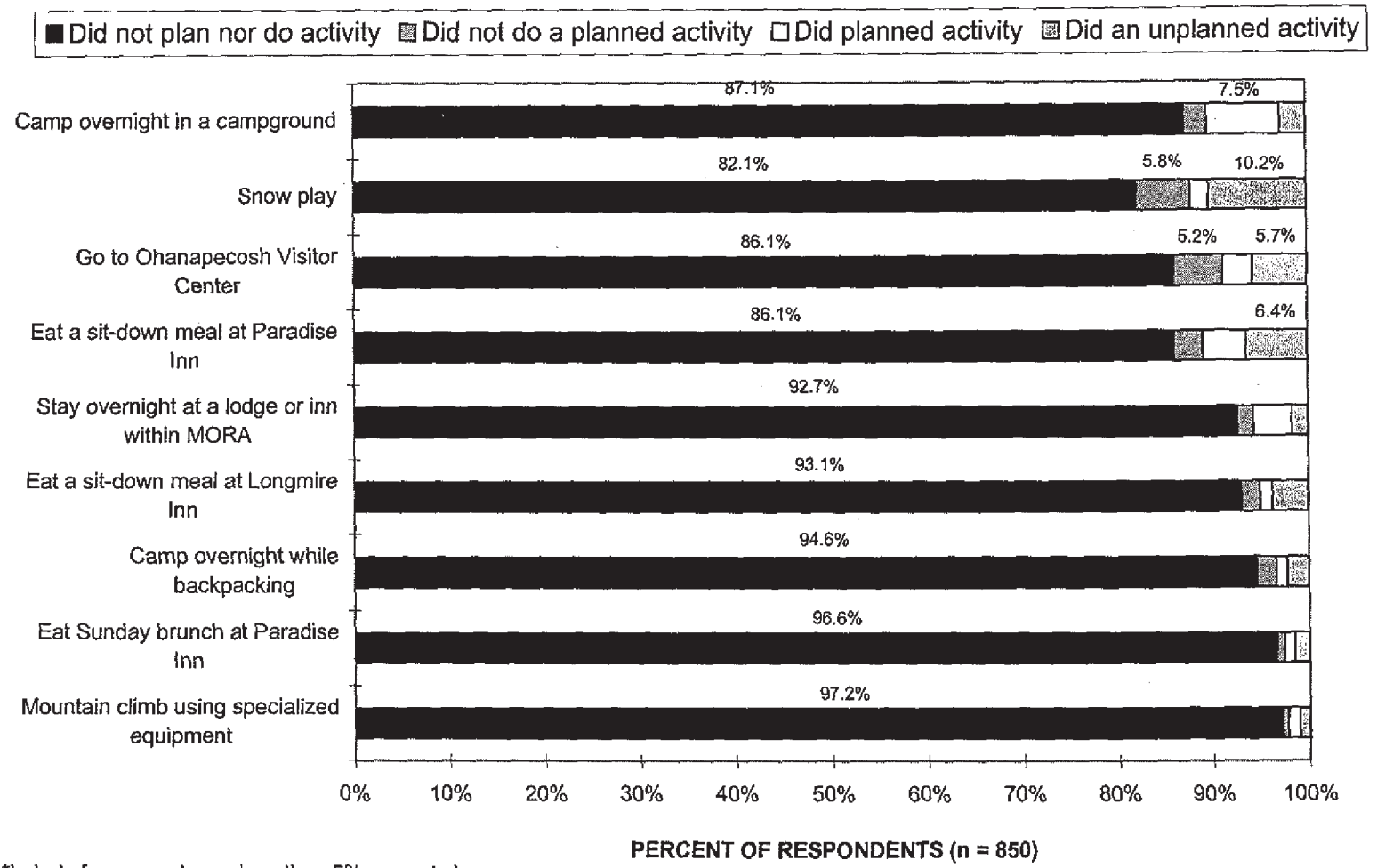
To determine if people did the activities they planned, a comparison between planned activities (contact sheet Q3-1) and actual activities (v. 1 & 2, Q-6) was done. As can be seen in Figures 4.50 and 4.51, most respondents did the activities they planned to do.

FIGURE 4.50: Q-6a & Contact Sheet Q-3
ACTUAL VERSUS PLANNED ACTIVITIES: TOP 11 ACTIVITIES



*Labels for percentages less than 5% are not shown.

FIGURE 4.51: Q-6a & Contact Sheet Q-3
ACTUAL VERSUS PLANNED ACTIVITIES: BOTTOM 9 ACTIVITIES



*Labels for percentages less than 5% are not shown.

Walks and Hikes

v. 1 & 2, Q-7

Did you take one or more walks or hikes in Mt. Rainier National Park on the trip during which you were contacted for this survey?

1 NO -> **GO TO QUESTION 8 ON NEXT PAGE**
2 YES-> How many walks or hikes did you take? _____

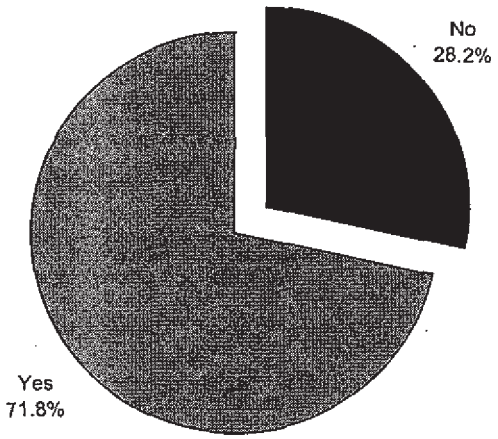
On your longest walk or hike:

where did you begin your walk or hike?_____
(*Please be as specific as possible.*)

about how many miles did you walk? _____ miles
(*Round trip. Use fractions for distances under 1 mile*)

about how long did the walk take? ___ Hrs ___ Min

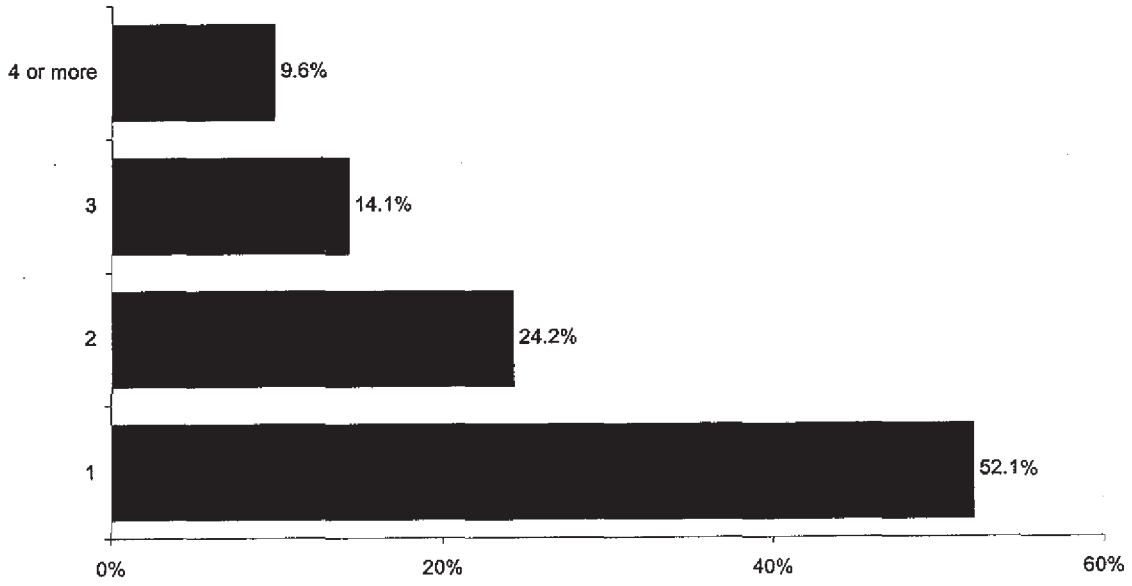
FIGURE 4.52: Q-7
PERCENT OF GATE SURVEY RESPONDENTS WHO TOOK ONE OR MORE WALKS/HIKES



n = 920

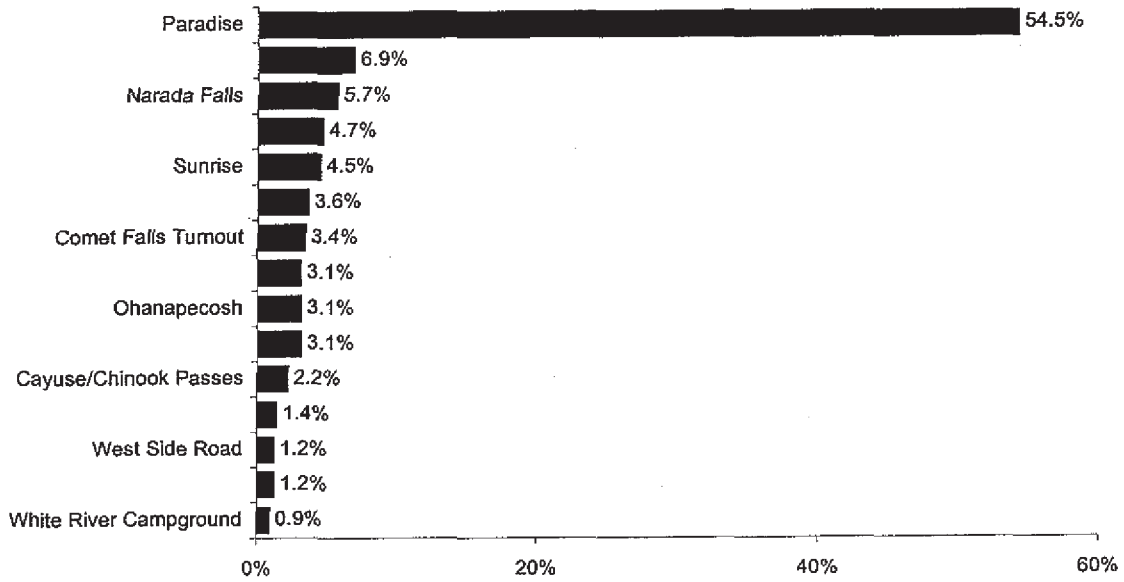
As was noted earlier, it is unclear how respondents interpreted walks/hikes and thus, caution should be exercised in interpreting these data.

FIGURE 4.53: Q-7
NUMBER OF WALKS/HIKES TAKEN BY GATE SURVEY RESPONDENTS



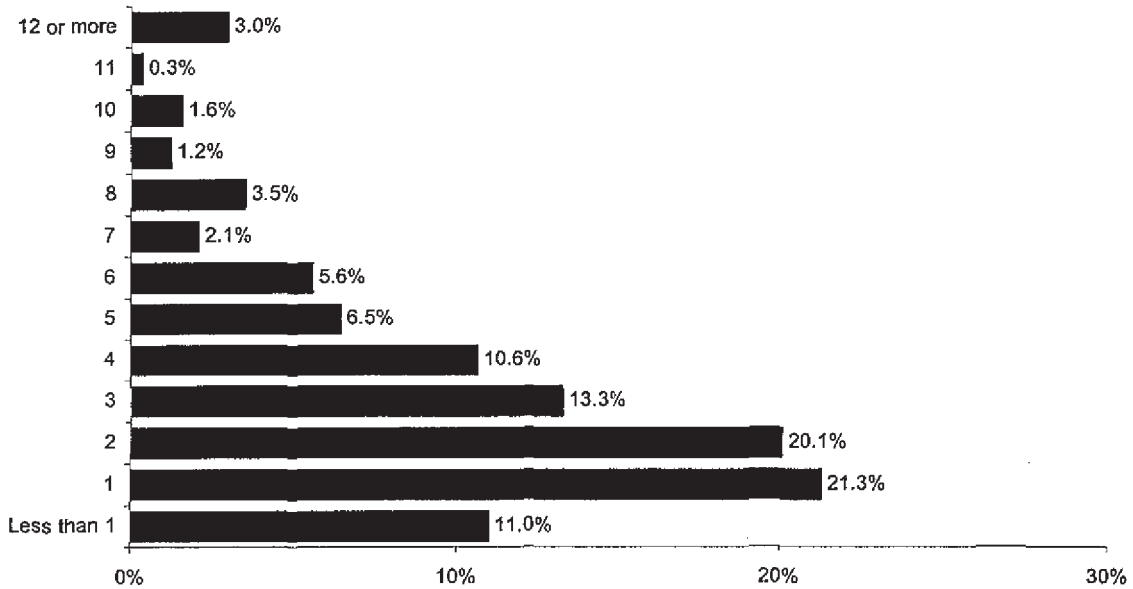
PERCENT OF RESPONDENTS (n = 624)
Includes only the 71.8% of respondents who walked/hiked

FIGURE 4.54: Q-7
WHERE GATE SURVEY RESPONDENTS BEGAN LONGEST HIKE



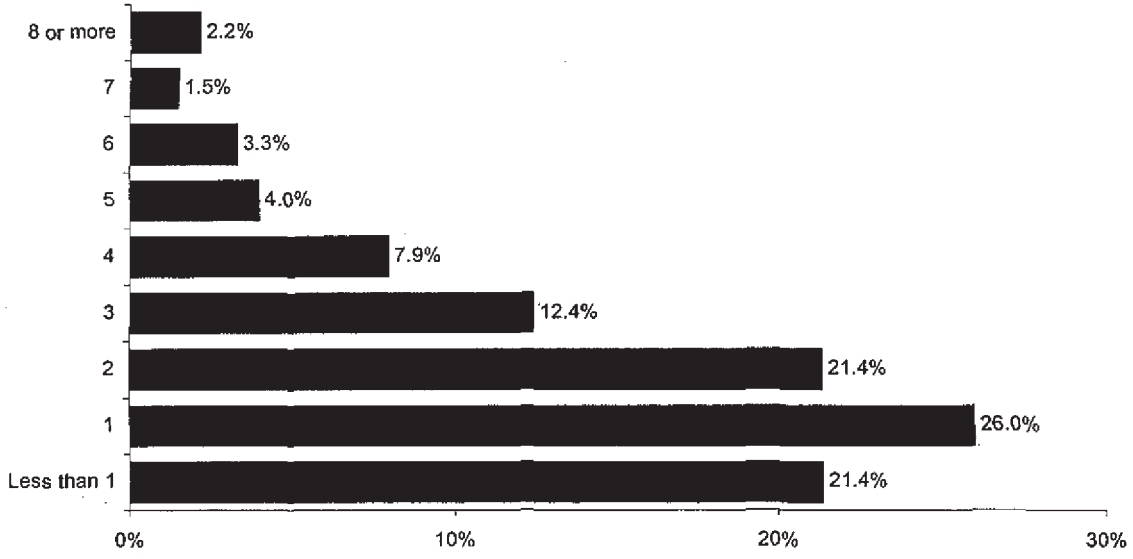
PERCENT OF RESPONDENTS (n = 614)
Included only the 71.8% of respondents who walked/hiked

FIGURE 4.55: Q-7
MILES WALKED/HIKED BY GATE RESPONDENTS



PERCENT OF RESPONDENTS (n = 573)
Average miles walked/hiked = 3.5 miles
Includes only the 71.8% of respondents who hiked/walked

FIGURE 4.56: Q-7
TOTAL HOURS HIKED BY GATE SURVEY RESPONDENTS



PERCENT OF RESPONDENTS (n = 604)
Average hours hiked = 2.2 hours
Includes only the 71.8% of respondents who hiked/walked

V. TRIP EXPERIENCES AND EVALUATION

The Gate Survey asked respondents a variety of questions concerning the condition of park resources that they experienced during their trip to MORA. This section reports the conditions they described and their evaluations of those conditions. Each question is presented as it appeared on the questionnaire and is followed by the corresponding graphs, tables, or analyses.

Unacceptable Visitor-caused Damage

v. 1 & 2, Q-9

Did you see any evidence that other visitors had unacceptably damaged park resources in the places you visited at Mt. Rainier National Park? *(Circle one number.)*

1 NO -> **GO TO QUESTION 10**
2 YES -> What was the damage?

_____

Where did you see it?

_____

Did the damage you saw detract from your enjoyment of the park? *(Circle one number.)*

1 NO, DID NOT DETRACT FROM EXPERIENCE
2 YES, DETRACTED SOMEWHAT
3 YES, DETRACTED MODERATELY
4 YES, DETRACTED GREATLY

FIGURE 5.1: Q-9
PERCENTAGE OF GATE SURVEY RESPONDENTS WHO SAW UNACCEPTABLY DAMAGED PARK RESOURCES

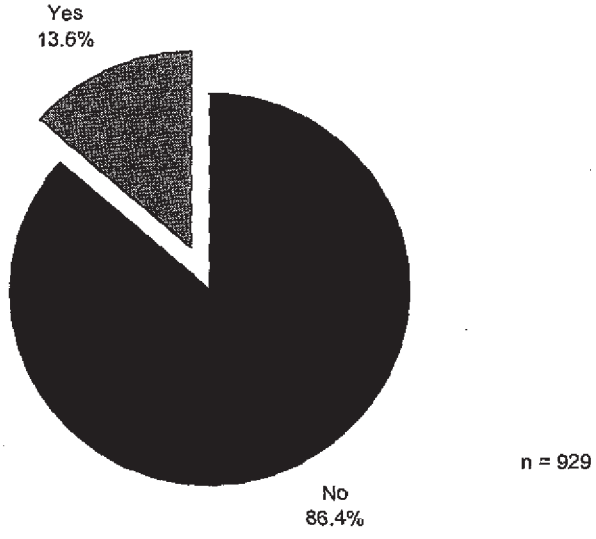
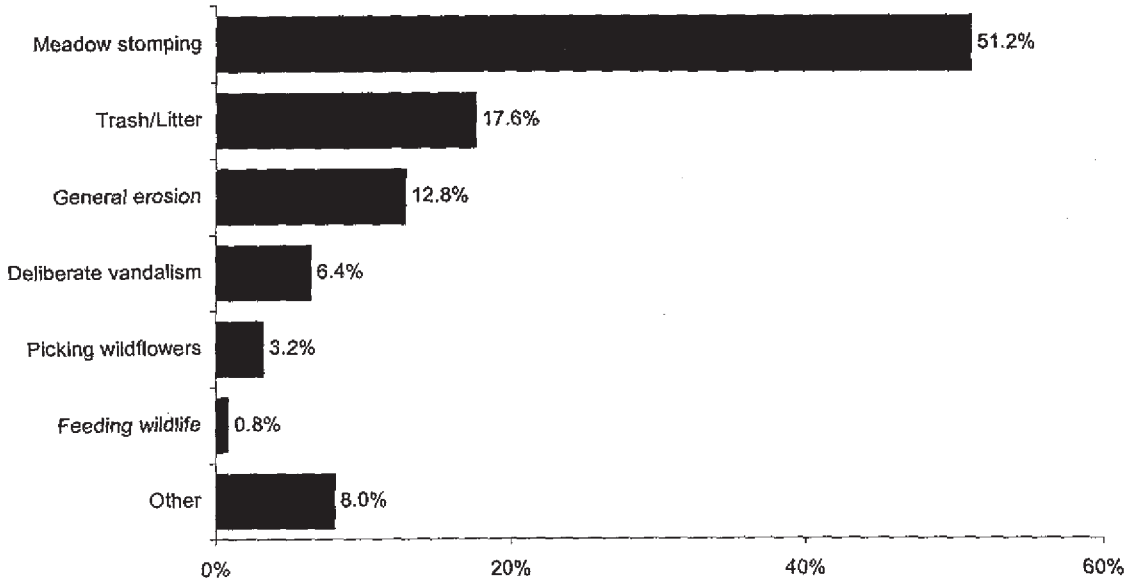
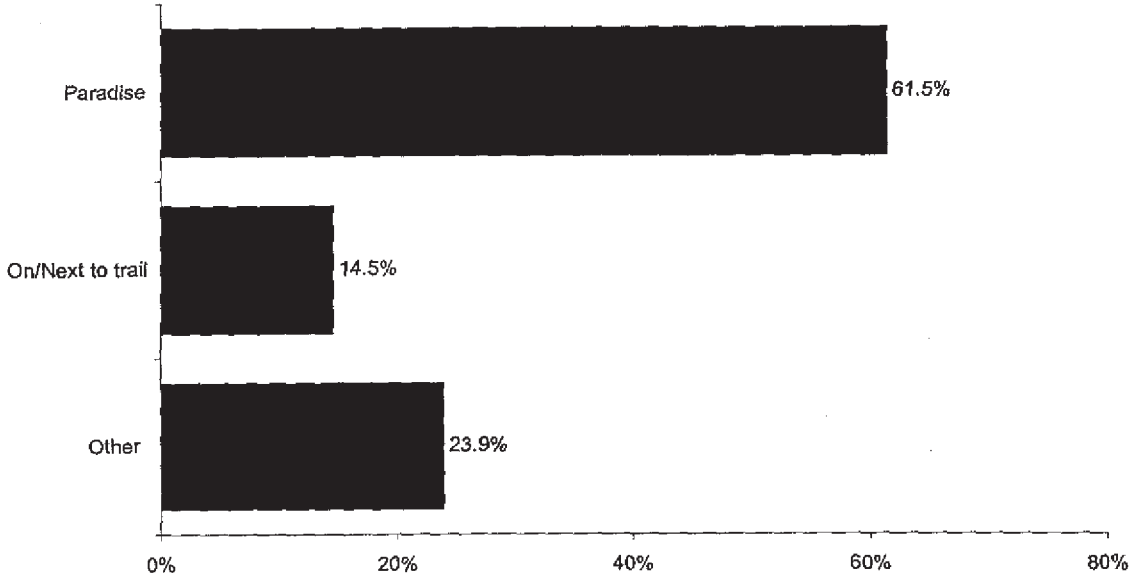


FIGURE 5.2: Q-9
TYPE OF DAMAGE OBSERVED



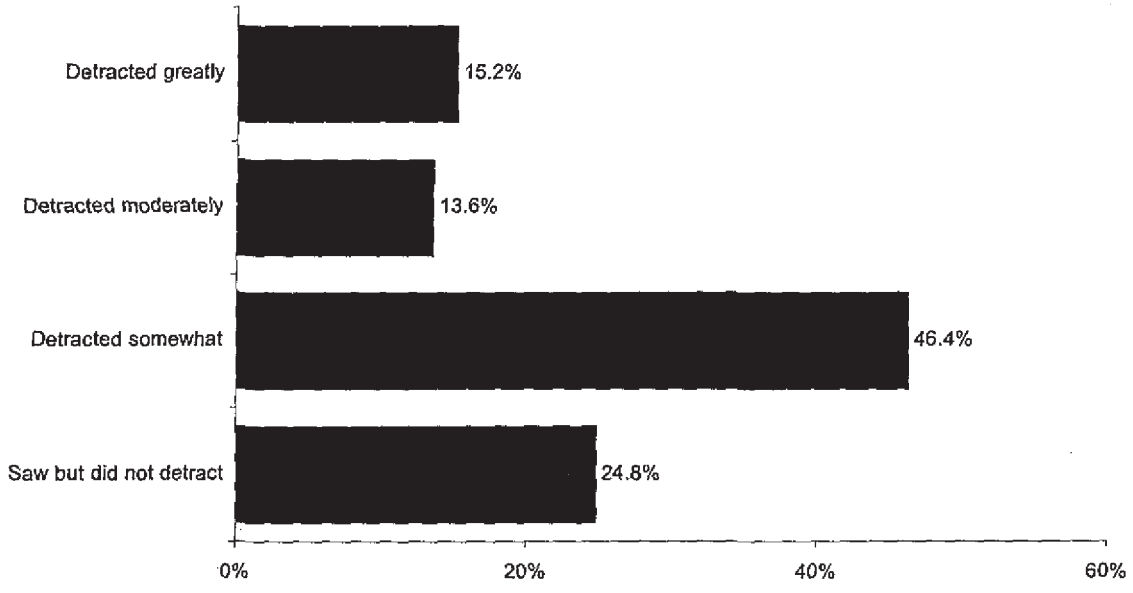
PERCENT OF RESPONDENTS (n = 125)
Includes only the 13.6% of respondents who say unacceptably damaged resources

FIGURE 5.3: Q-9
WHERE DAMAGE WAS OBSERVED



PERCENT OF RESPONDENTS (*n* = 117)
Includes only the 13.6% of respondents who saw unacceptably damaged resources

FIGURE 5.4: Q-9
DEGREE TO WHICH DAMAGE DETRACTED FROM EXPERIENCE



PERCENT OF RESPONDENTS (n = 125)
Includes only the 13.6% of respondents who saw unacceptably damaged park resources

Degree to which Other Visitors Detracted: Paradise

v. 1, last part of Q-10

Please recall the number of other visitors who were present at Paradise on the trip during which you were contacted. Will the number of other visitors that you encountered on this trip affect your future decisions concerning visits to Paradise in Mt. Rainier National Park? *(Circle one number.)*

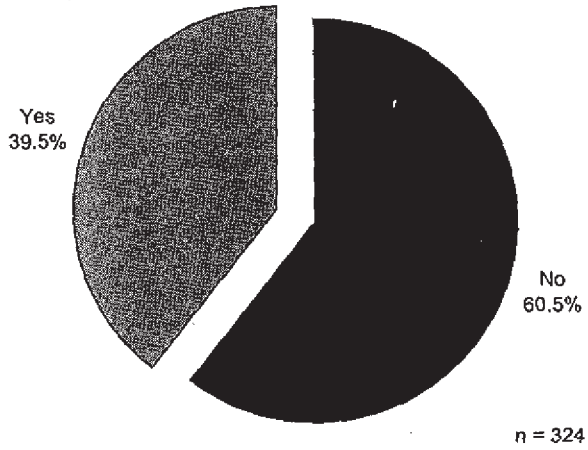
1 NO -> **GO TO QUESTION 11**
2 YES -> Which of the following describe ways in which other visitors might affect your decision? *(Circle as many numbers as apply.)*

1	Will be more likely to return to Mt. Rainier
2	Will come at a different time of day
3	Will come on a different day of the week
4	Will come at a different time of year
5	Will plan to do different activities
6	Will visit a different area of the park
7	Will not return to Mt. Rainier
8	Other effects not described *(Please specify below.)*

_____

Please use the space below to describe the conditions involving other visitors that will affect your future decisions concerning visits to Paradise.

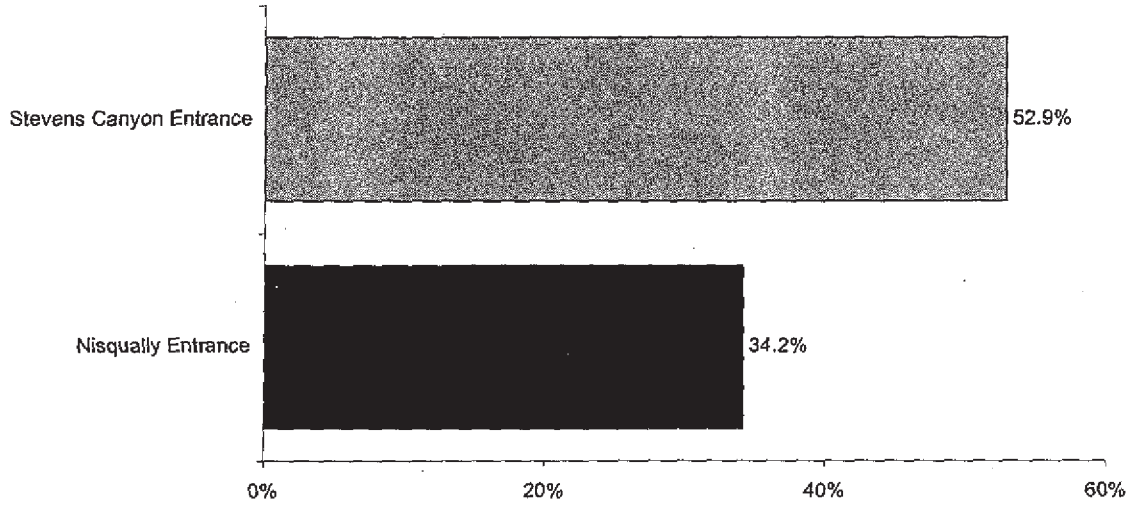
FIGURE 5.5: v. 1, Q-10
WILL THE NUMBER OF VISITORS ENCOUNTERED AT PARADISE AFFECT FUTURE DECISIONS TO VISIT MORA?



Includes only the 70.2% of respondents who indicated that they visited the Paradise Visitor Complex

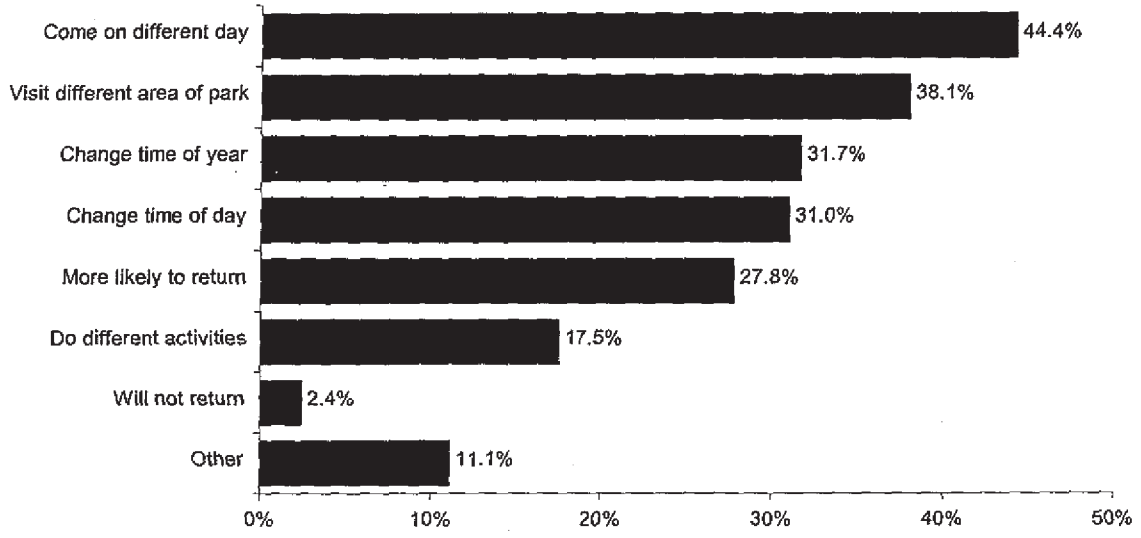
The percentage of respondents who said that the number of visitors encountered at Paradise will affect future decisions to visit MORA differed by contact point, $\chi^2(1) = 9.25$, $p = .002$ (see Figure 5.6). A larger percentage of respondents contacted at the Stevens Canyon Entrance than those contacted at the Nisqually Entrance (52.9% vs. 32.4%) indicated that the number of visitors encountered at Paradise would affect their future decisions to visit MORA.

FIGURE 5.6: v. 1, Q-10
PERCENTAGE OF GATE SURVEY RESPONDENTS FOR WHICH THE NUMBER OF VISITORS ENCOUNTERED AT PARADISE WILL AFFECT FUTURE DECISIONS TO VISIT MORA BY CONTACT POINT



PERCENT OF RESPONDENTS
(Stevens Canyon n = 85; Nisqually n = 237)
Includes only the 70.2% of respondents who indicated that they visited the Paradise Visitor Complex

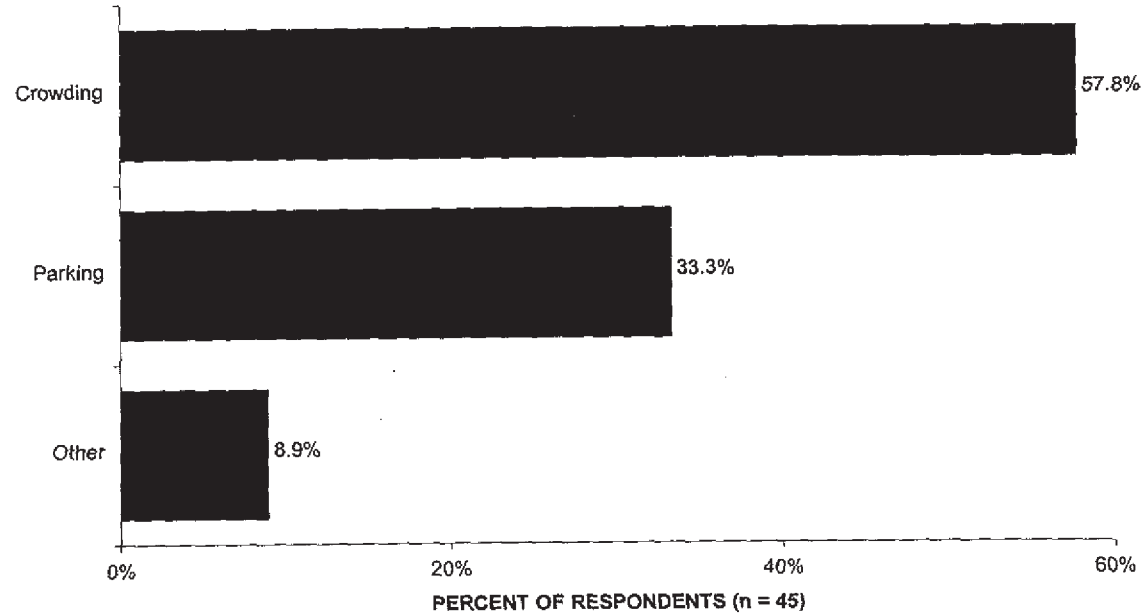
FIGURE 5.7: v. 1, Q-10
WAYS IN WHICH GATE SURVEY RESPONDENTS' DECISIONS ABOUT VISITING PARADISE MIGHT BE AFFECTED



PERCENT OF RESPONDENTS (n = 128)
Includes only the 39.5% of respondents who said future decisions would be affected
Percentages sum to more than 100 because respondents could list multiple ways.

Slightly more than one quarter of respondents who said future decisions would be affected by the number of other visitors indicated that they would be more likely to return to Paradise. Almost 60% (20 out of 35) of these respondents also circled another way in which future decisions to Paradise might be affected. Because all the other ways listed are most easily interpreted as means of avoiding other visitors, it is unclear how to interpret the "more likely to return" response when circled in conjunction with another possible effect. For the 42.8% of respondents who circled only "more likely to return", one interpretation is that the number of other visitors present were within their desirable range increasing the likelihood of future visits to Paradise.

FIGURE 5.8: v.1, Q-10
OTHER CONDITIONS INVOLVING OTHER VISITORS THAT WILL AFFECT FUTURE DECISIONS TO VISIT PARADISE



Degree to which Other Visitors Detracted: Longmire

v. 2, last part of Q-10

Please recall the number of other visitors who were present at Longmire on the trip during which you were contacted. Will the number of other visitors that you encountered on this trip affect your future decisions concerning visits to Longmire in Mt. Rainier National Park? *(Circle one number.)*

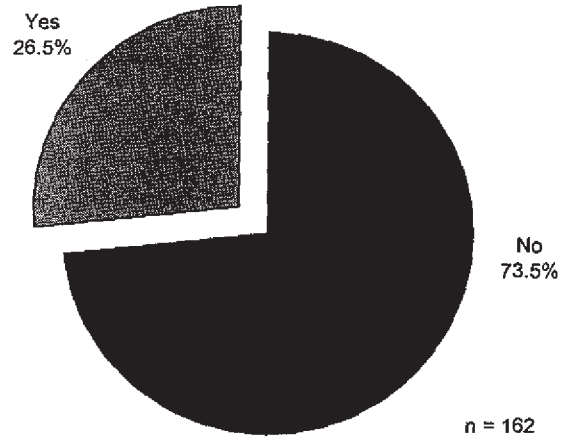
1 NO
2 YES - Which of the following describe ways in which other visitors ight affect your decision? *(Circle as many numbers as apply.)*

1	Will come at a different time of day
2	Will come on a different day of the week
3	Will come at a different time of year
4	Will plan to do different activities
5	Will visit a different area of the park
6	Will not return to Mt. Rainier
7	Other effects not described *(Please specify below.)*

_____

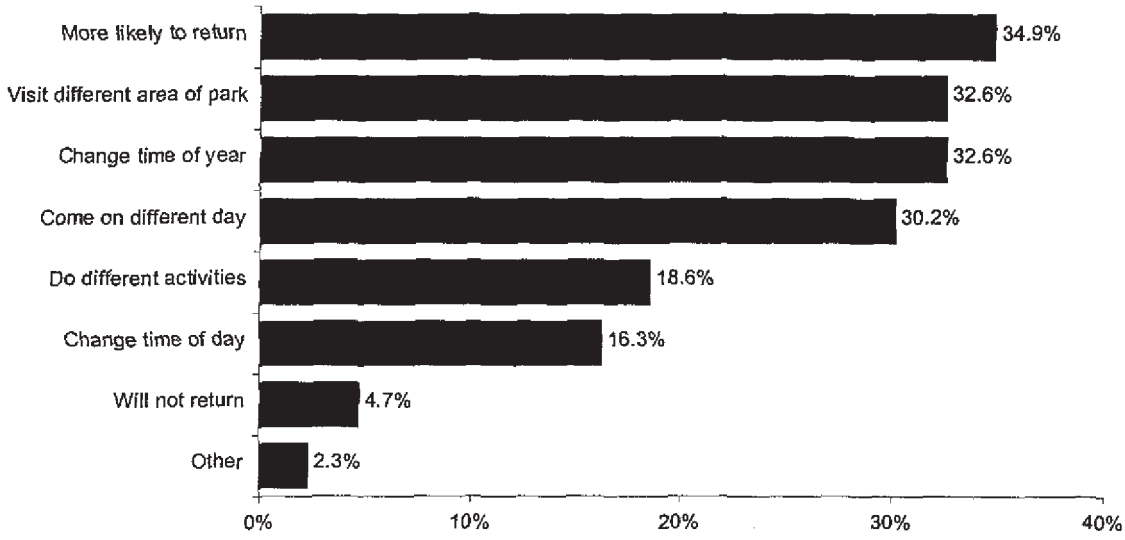
Please use the space below to describe the conditions involving other visitors that will affect your future decisions concerning visits to Longmire.

FIGURE 5.9: v. 2, Q-10
WILL THE NUMBER OF VISITORS ENCOUNTERED AT LONGMIRE AFFECT FUTURE DECISIONS TO VISIT MORA?



Includes only the 63% of respondents who indicated that they visited the Longmire Visitor Complex

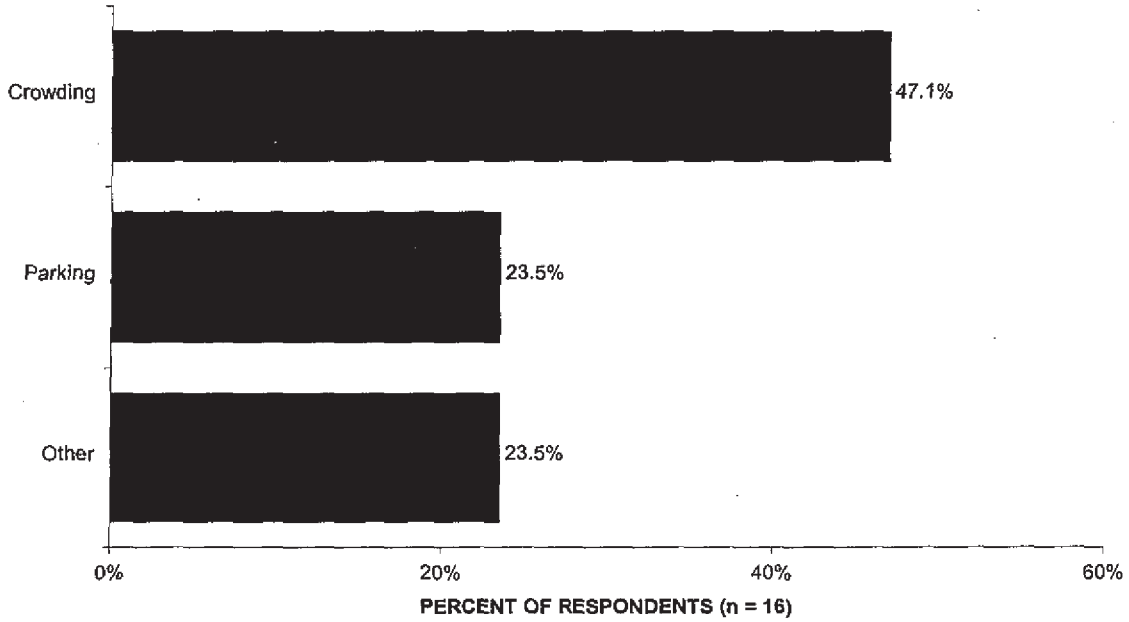
FIGURE 5.10: v. 2, Q-10
WAYS IN WHICH GATE SURVEY RESPONDENTS' DECISIONS ABOUT VISITING LONGMIRE MIGHT BE AFFECTED



PERCENT OF RESPONDENTS (n = 43)
Includes only the 26.5% of respondents who said future decisions would be affected
Percentages sum to more than 100 because respondents could list multiple ways.

About 35% of respondents who said future decisions would be affected by the number of other visitors indicated that they would be more likely to return to Longmire. Forty percent (6 out of 15) of these respondents also circled another way in which future decisions to Longmire might be affected. Because all the other ways listed are most easily interpreted as means of avoiding other visitors, it is unclear how to interpret the "more likely to return" response when circled in conjunction with another possible effect. For the 60.0% of respondents who circled only "more likely to return", one interpretation is that the number of other visitors present were within their desirable range increasing the likelihood of future visits to Longmire.

FIGURE 5.11: v. 2, Q-10
OTHER CONDITIONS INVOLVING OTHER VISITORS THAT WILL AFFECT FUTURE DECISIONS TO VISIT LONGMIRE



Educational and Informational Services Used in MORA

v. 2, Q-12

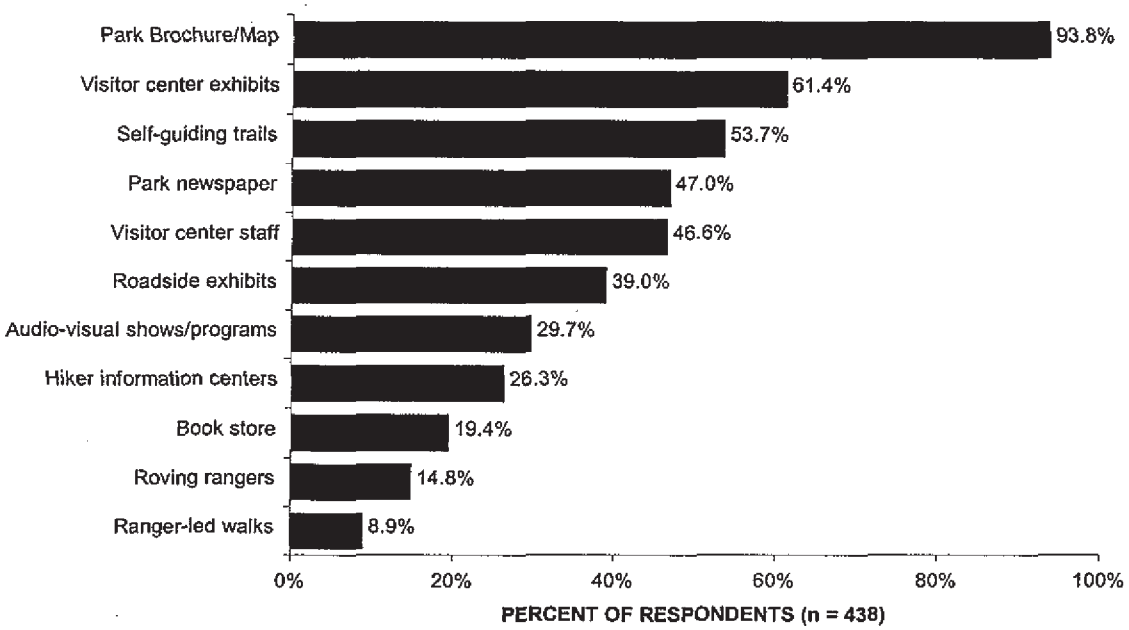
a) Please check ( ) the educational and informational services and facilities at Mount Rainier National Park which you and your group used during this visit, in the left column.

b) Next, for only those services and facilities which you and your group used, please rate their importance from 1-5.

c) Finally, for only those services and facilities which you and your group used, please rate their quality from 1-5.

Use service? Check ( )	Importance? Very Important 1 2 3 4 5 Not Important	Quality? Very Good 1 2 3 4 5 Very Poor
____ PARK BROCHURE/MAP	____	____
____ PARK NEWSPAPER	____	____
____ VISITOR CENTER EXHIBITS	____	____
____ VISITOR CENTER STAFF	____	____
____ VISITOR/HIKER CENTER BOOK SALES	____	____
____ HIKER INFORMATION CENTERS	____	____
____ AUDIO-VISUAL SHOWS/PROGRAMS	____	____
____ RANGER-LED WALKS	____	____
____ ROADSIDE EXHIBITS	____	____
____ SELFGUIDING TRAILS	____	____
____ ROVING RANGERS	____	____

FIGURE 5.12: v. 2, Q-12a
PERCENTAGE OF GATE SURVEY RESPONDENTS WHO USED EDUCATIONAL AND INFORMATIONAL SERVICES AND FACILITIES AT MORA



As can be seen in Figures 5.13 – 5.17, a greater percentage of the respondents who entered MORA at the Stevens Canyon Entrance than the Nisqually Entrance used the park brochure/map, $\chi^2(1) = 3.87$, $p = .049$; the visitor center exhibits, $\chi^2(1) = 9.15$, $p = .002$; the visitor center staff, $\chi^2(1) = 9.37$, $p = .002$; and the ranger-led walks, $\chi^2(1) = 3.96$, $p = .047$.

Further analyses revealed that the observed difference in contact points was due to overnight versus day visitors for brochure use and for using the visitor center staff. Specifically, a greater proportion of overnight visitors (98.1%) than day visitors (92.1%) reported using the park brochure/map, $\chi^2(1) = 4.88$, $p = .027$. Additionally, overnight respondents were more likely to report using the visitor center staff than day visitors (62.6% vs. 41.3%), $\chi^2(1) = 14.49$, $p < .001$.

Further analyses revealed that the observed effect of contact point for ranger-led walks varied by length of stay. For visitors staying overnight, a greater proportion of visitors contacted at the Stevens Canyon Entrance used ranger-led walks than respondents contacted at the Nisqually Entrance. No contact point differences were found for day visitors. Regardless of contact point, a greater percentage of respondents who stayed overnight (14.0%) than those who were day visitors (6.6%) used ranger-led walks, $\chi^2(1) = 5.57$, $p < .001$.

FIGURE 5.13: v. 2, Q-12a
PERCENTAGE OF RESPONDENTS WHO USED A PARK BROCHURE/MAP BY CONTACT POINT

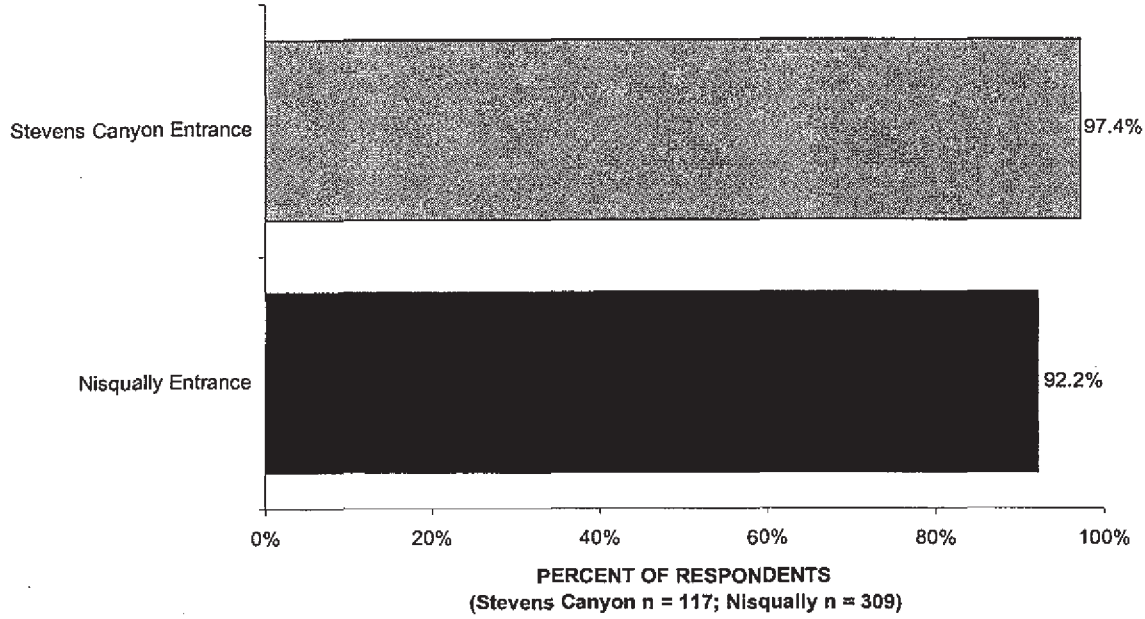


FIGURE 5.14: v. 2, Q-12a
PERCENTAGE OF RESPONDENTS WHO USED VISITOR CENTER EXHIBITS BY CONTACT POINT

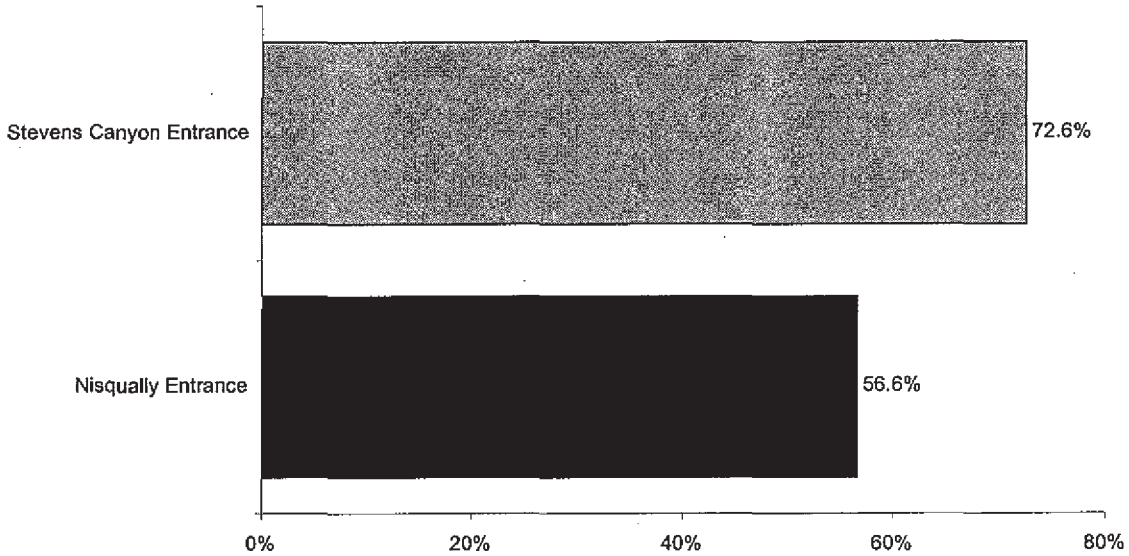


FIGURE 5.15: v. 2, Q-12a
PERCENTAGE OF RESPONDENTS WHO USED VISITOR CENTER STAFF BY CONTACT POINT

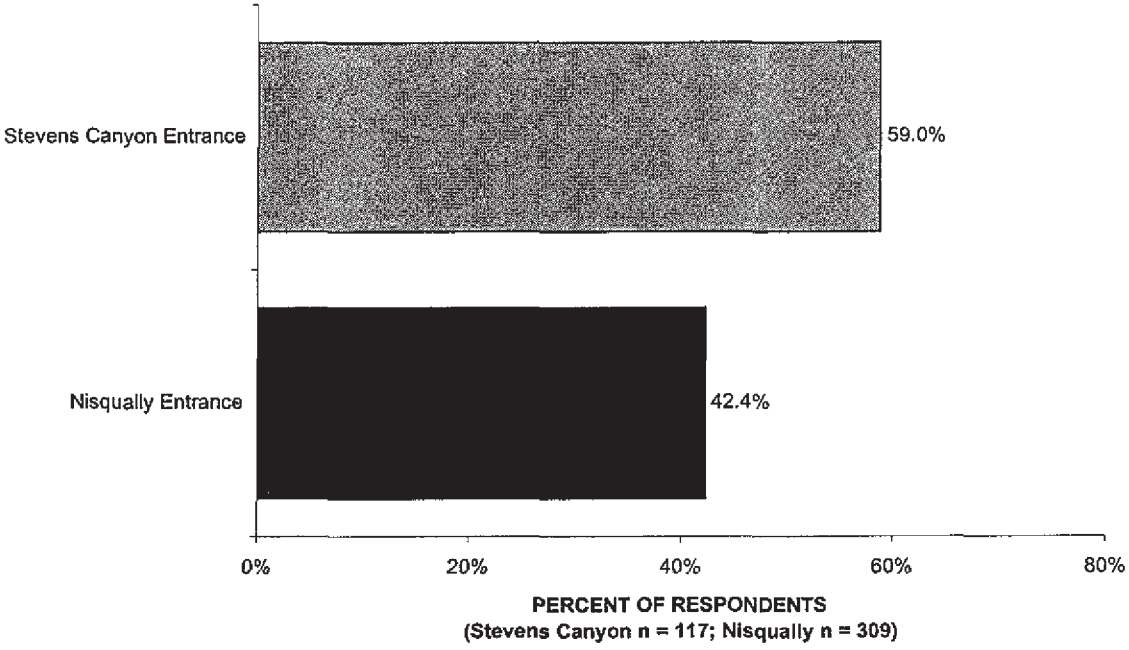


FIGURE 5.16: v. 2, Q-12a
PERCENTAGE OF RESPONDENTS WHO USED RANGER LED WALKS BY CONTACT POINT

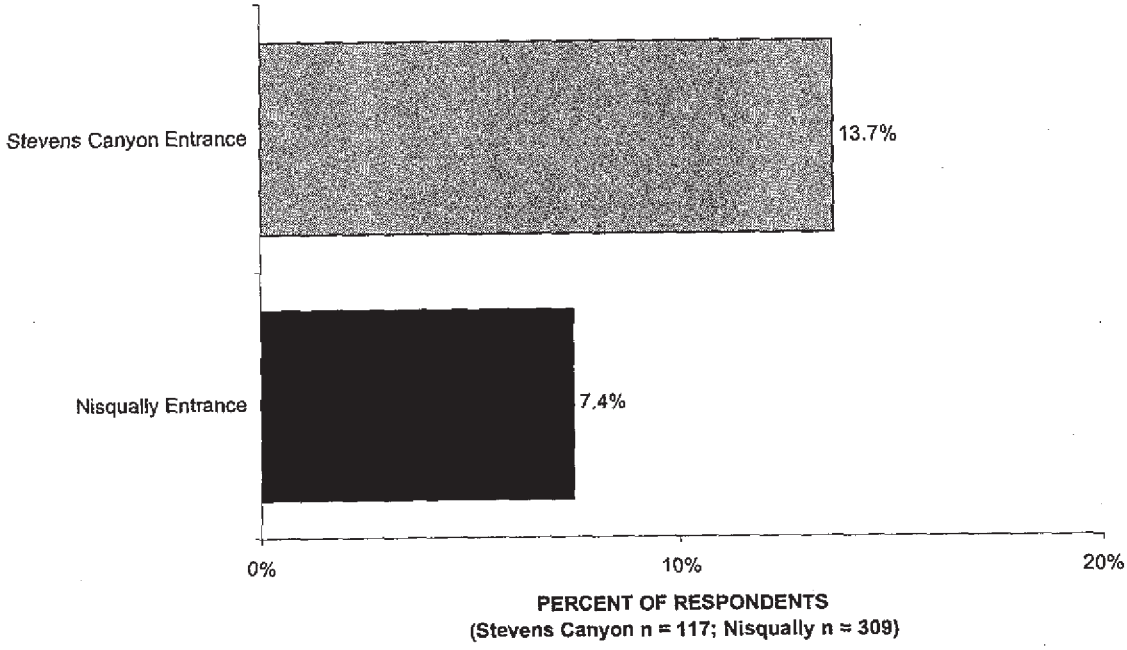
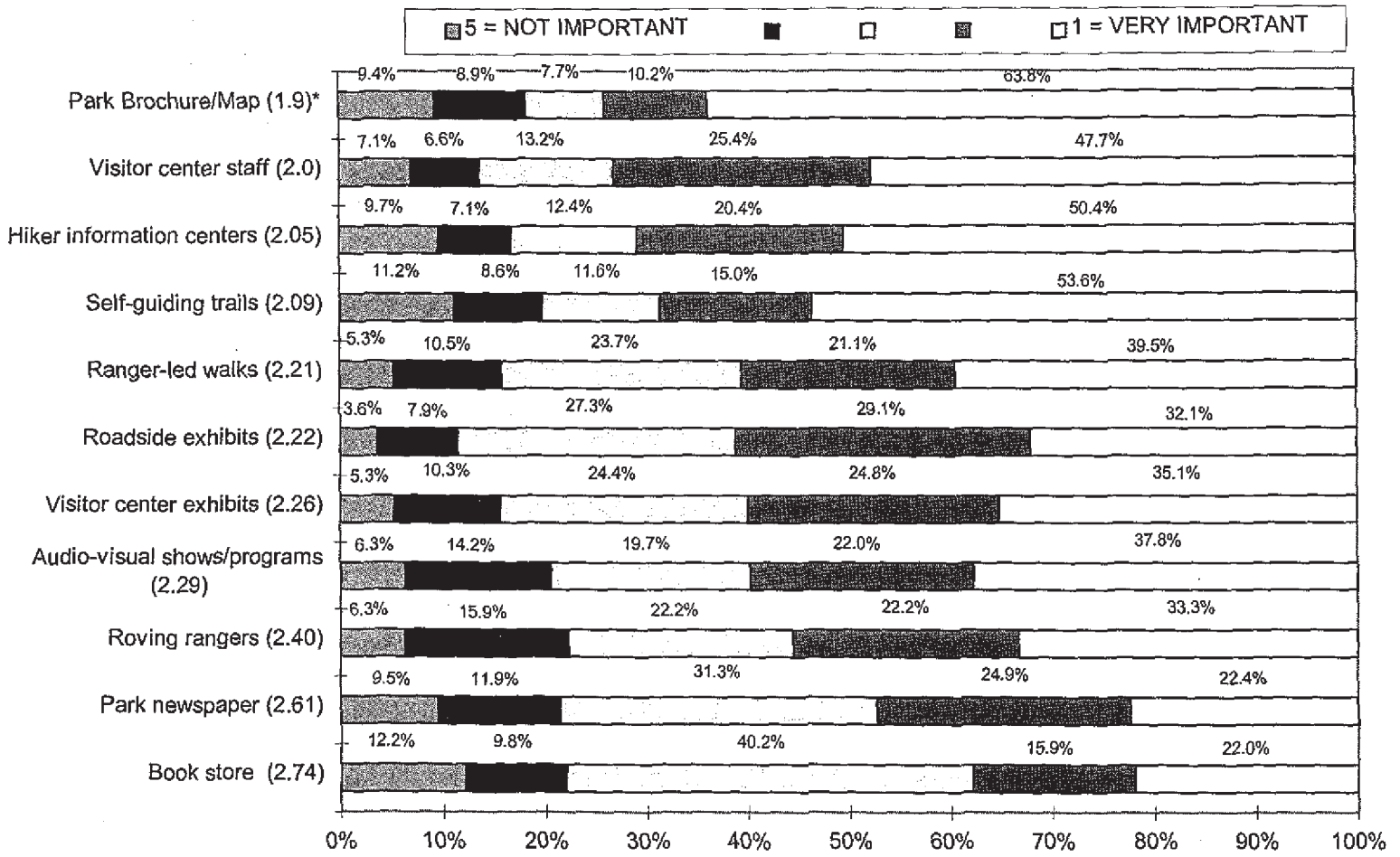
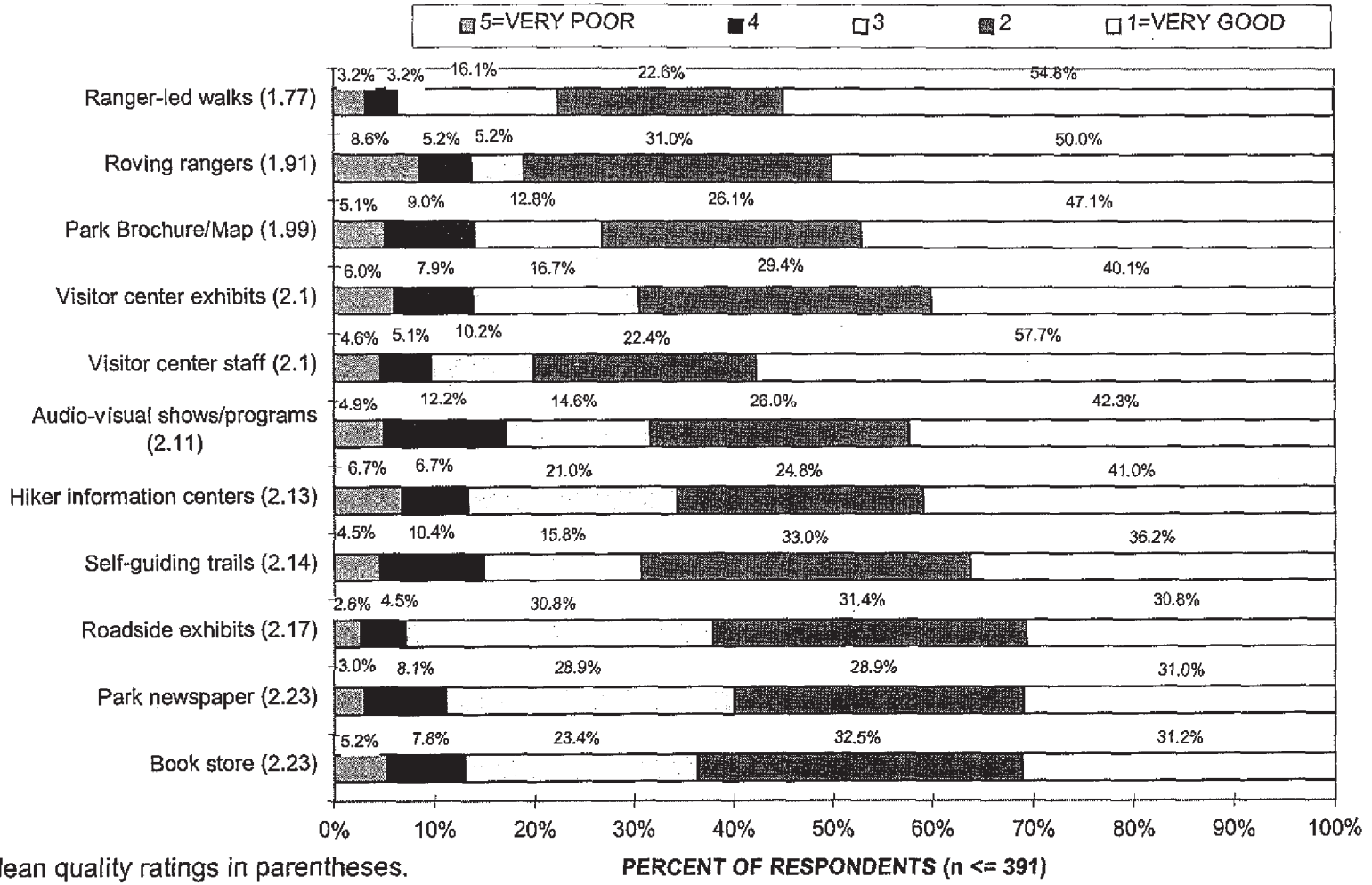


FIGURE 5.17: v. 2, Q-12b
IMPORTANCE OF EDUCATIONAL AND INFORMATIONAL SERVICES AND FACILITIES USED AT MORA



* Mean importance ratings in parentheses.

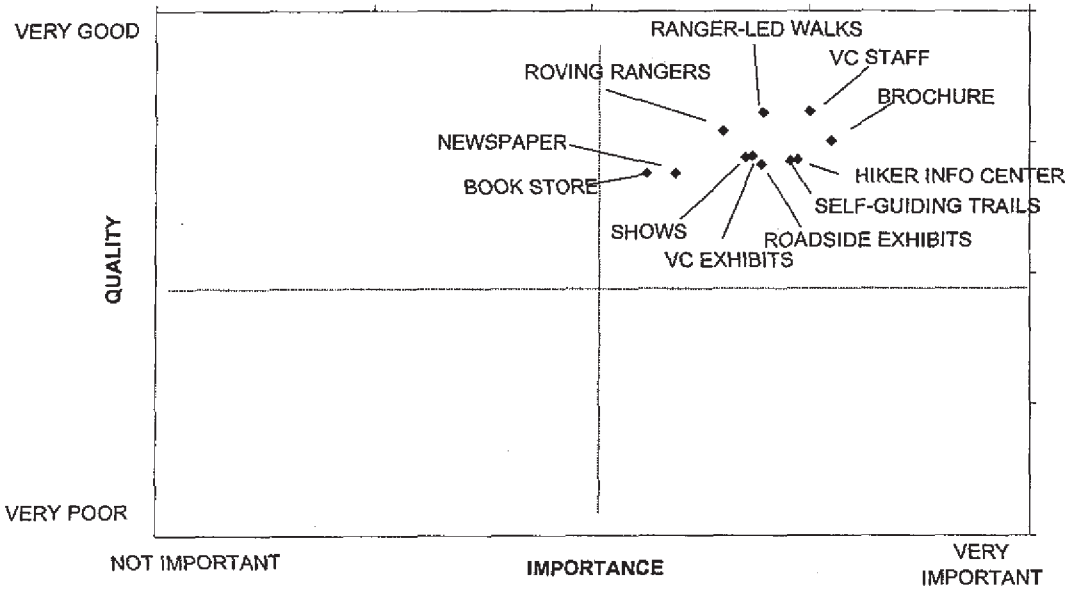
FIGURE 5.18: v. 2, Q-12c
QUALITY OF EDUCATIONAL AND INFORMATIONAL SERVICES AND FACILITIES USED AT MORA



* Mean quality ratings in parentheses.

As can be seen in Figure 5.19, all of the educational and informational services and facilities asked about in the Gate Survey were perceived as being above the midpoint of the scale in terms of both importance and quality (all points are in the upper right hand quadrant).

FIGURE 5.19: v.2, Q-12b & 12c
IMPORTANCE VS QUALITY OF EDUCATIONAL AND INFORMATIONAL SERVICES AND FACILITIES AT MORA



VI. TRIP EXPERIENCE FACTORS

The Gate Survey asked respondents about various factors that could affect the quality of their experience at MORA. In this section, readers will first find a description of a factor analysis used to derive the underlying dimensions most important to Gate Survey respondents overall enjoyment of MORA. Next, ratings for individual items are presented (grouped in accordance with the results of the factor analysis). Finally, results of a cluster analysis used to group respondents based on their responses to the trip experience factors are reported. These clusters or groups of respondents correspond to market segments—groups of people who are similar in the importance of different trip experiences.

Factors Affecting the Quality of Visitor Experience at MORA

v.2, Q-11a

Below are some factors that could affect the quality of your experience at Mt. Rainier National Park. Please rate the importance of each of these factors to your overall enjoyment of the park.

Factor	Not Important				Very Important
a) Type of Trails (wide vs. narrow, paved vs. dirt)	1	2	3	4	5
b) Presence of Signs Announcing Fines for Breaking Park Rules	1	2	3	4	5
c) Number of Hikers on Trails	1	2	3	4	5
d) Number of Regulatory Signs along Trails	1	2	3	4	5
e) Number of Uniformed Park Personnel on Trails	1	2	3	4	5
f) Number of Vehicles in Visitor Center Parking Lots	1	2	3	4	5
g) Number of Vehicles at Scenic Turnouts	1	2	3	4	5
h) Number of Vehicles Driving on Park Roads	1	2	3	4	5
i) Number of Visitors at Food Service Facilities	1	2	3	4	5
j) Number of Visitors at Gift Shops and Book Stores	1	2	3	4	5
k) General Number of Visitors in Facilities	1	2	3	4	5
l) Availability of Park Orientation Information	1	2	3	4	5
m) Availability of Hiker Information	1	2	3	4	5
n) Availability of Guided Walks	1	2	3	4	5
o) Availability of Educational Shows and Presentations	1	2	3	4	5
p) Availability of Self-guided Trails with Informational Panels	1	2	3	4	5
q) Quality/Value of Food Services	1	2	3	4	5
r) Quality/Value of Souvenirs and Other Goods	1	2	3	4	5

Determining Underlying Dimensions of Trip Experience Factors: Factor Analysis

Question 11a was included as a means of exploring the relative importance of these 18 potential indicators of experience quality for possible use in the planning process. To determine whether the importance ratings of these 18 potential indicators reflect fewer dimensions, a principal components factor analysis with varimax rotation was performed. The factor analysis revealed five independent factors with eigenvalues greater than one that explained a total of 66.1% of the variance. The first factor explained 26.8% of the variance, the second factor explained 14.9%, the third factor explained 10.4%, the fourth factor explained 8.2%, and the fifth factor explained 5.8%.

Examination of the loadings of each question on each factor provided a basis for interpreting the underlying dimension that unifies the group of variables loading onto it. Variables loading[3] onto the first factor were a) number of vehicles at scenic turnouts (.85), b) number of vehicles on roads (.84), c) number of vehicles in parking lots (.81), and d) general number of people in facilities (.74). A common element among the first three variables is the vehicle density and the fourth variable deals with visitor density in facilities. This factor seems to correspond to the concept "Visitor Density: Roads & Facilities".

Variables loading onto the second factor were a) availability of guided walks (.79), b) availability of educational shows (.78), c) availability of sign-

[3] Factor loadings less than .5 were not interpreted.

guided trails (.64) and d) availability of park orientation information (.64). This factor was interpreted as "Educational opportunities".

Table 6.1. Factor Analysis of Trip Experience Factors

	Factor				
	1	2	3	4	5
Factor 1: Visitor Density: Roads & Facilities					
Q11g: Importance of vehicles at turnouts	**0.846**	0.132	0.037	0.135	-0.006
Q11h: Importance of vehicles on roads	**0.839**	0.031	0.064	0.045	0.103
Q11f: Importance of vehicles in parking lots	**0.810**	0.029	-0.032	0.098	-0.038
Q11k: Importance of number of people in facilities	**0.736**	-0.001	0.206	-0.027	0.271
Factor 2: Educational opportunities					
Q11n: Importance of availability of guided walks	0.041	**0.791**	0.115	0.109	0.014
Q11o: Importance of availability of educational shows	0.027	**0.775**	0.210	0.150	-0.146
Q11p: Importance of availability of s.g. trails	0.042	**0.644**	0.082	0.057	0.313
Q11l: Importance of availability of orientation info.	0.080	**0.637**	0.100	0.113	0.157
Factor 3: Shopping & Food Facilities					
Q11q: Importance of quality/value of food	0.033	0.240	**0.833**	0.127	0.033
Q11r: Importance of quality/value of souvenirs/goods	0.011	0.192	**0.785**	0.205	-0.091
Q11j: Importance of number of people in shops	0.571	0.056	**0.628**	0.059	0.011
Q11i: Importance of number of people at restaurants	0.588	0.025	**0.591**	-0.047	0.105
Factor 4: Regulatory Presence					
Q11d: Importance of number of signs	0.059	0.060	0.049	**0.869**	0.127
Q11b: Importance of regulatory sign presence	-0.009	0.104	0.187	**0.809**	0.088
Q11e: Importance of number of uniformed employees	0.196	0.282	0.075	**0.652**	-0.041
Factor 5: Hiking conditions					
Q11a: Importance of type of trails	0.054	0.081	0.121	0.029	**0.684**
Q11c: Importance of number of hikers	0.404	-0.044	-0.129	0.184	**0.684**
Q11m: Importance of hiker information	-0.081	0.454	-0.163	0.033	**0.632**

Variables loading onto the third factor were a) quality/value of food (.83), b) quality/value of souvenirs/goods (.79), c) number of people in shops (.63) and d) number of people in restaurants (.59). This factor was interpreted as "Shopping & Food Facilities".

Variables loading onto the fourth factor were a) number of regulatory signs (.87), b) presence of regulatory signs (.81), and c) number of uniformed employees (.65). This factor was interpreted as "Regulatory Presence".

Variables loading onto the fifth factor were a) type of trails (.68), b) number of hikers (.68), and c) hiker information (.63). This factor was interpreted as "Hiking Conditions".

Table 6.2. Summary Statistics of Factor Scores

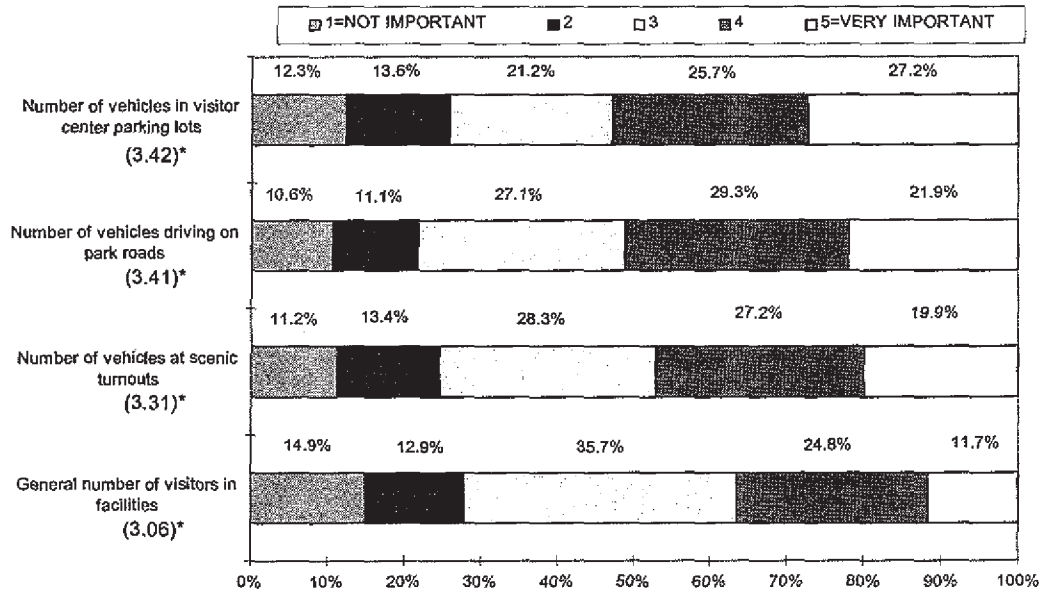
Factor	Mean	SD	N
Visitor Density: Roads & Facilities	3.29	1.05	437
Educational Opportunities	3.43	.91	437
Shopping & Food Facilities	2.60	1.00	438
Regulatory Presence	2.92	1.01	426
Hiking Conditions	3.39	.96	432

Scale ranged from 1 (not at all important) to 5 (very important). Mean scores for each factor were calculated by averaging the importance ratings for each dimension that loaded onto the factor.

The relative importance of the five underlying factors across all respondents is shown in Table 6.2. "Educational Opportunities" and "Hiking Conditions" were generally considered the most important, with "Visitor Density: Roads & Facilities" being nearly as important. However, the cluster analysis described later in this chapter suggests that readers should take care when interpreting these aggregated scores because different groups of respondents differed greatly in rating the importance of the five factors.

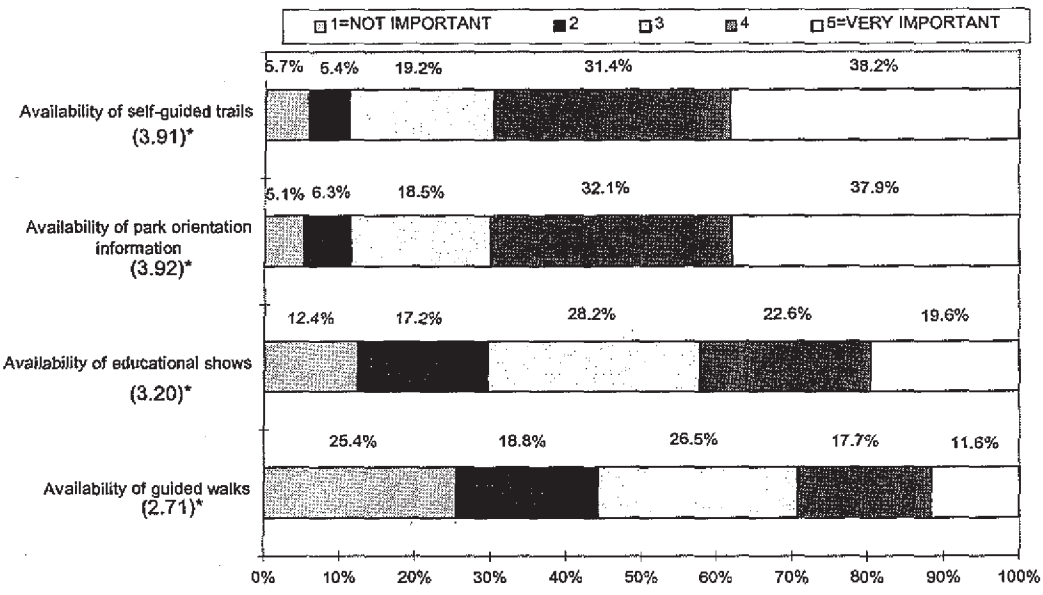
Importance ratings for individual items are presented in groups corresponding to the five factors derived in the factor analysis.

FIGURE 6.1: v. 2, Q-11a
IMPORTANCE OF VISITOR DENSITY FACTORS THAT COULD AFFECT EXPERIENCE AT MORA



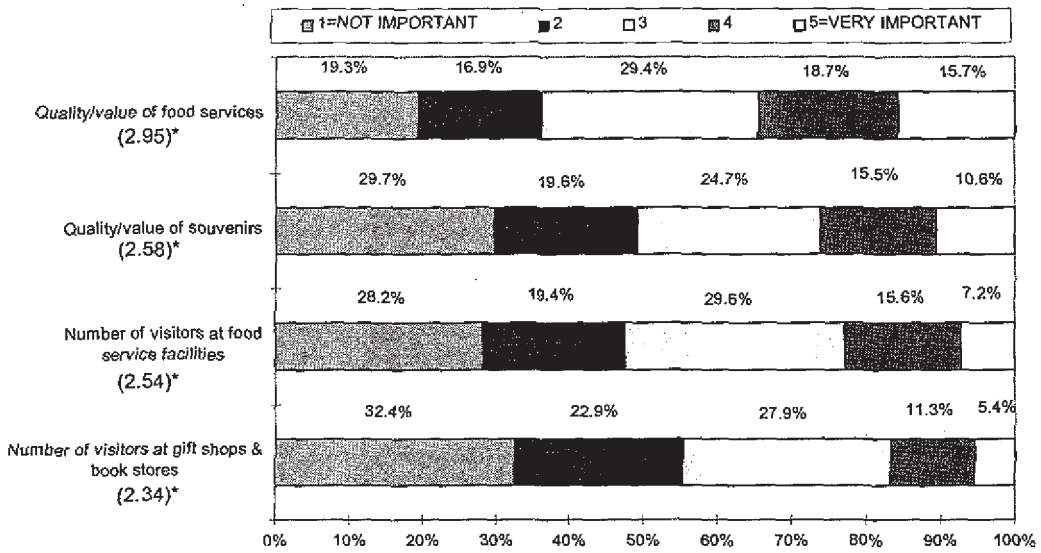
* Mean importance ratings in parentheses.

FIGURE 6.2: v. 2, Q-11a
IMPORTANCE OF EDUCATIONAL OPPORTUNITY FACTORS THAT COULD AFFECT EXPERIENCE AT MORA



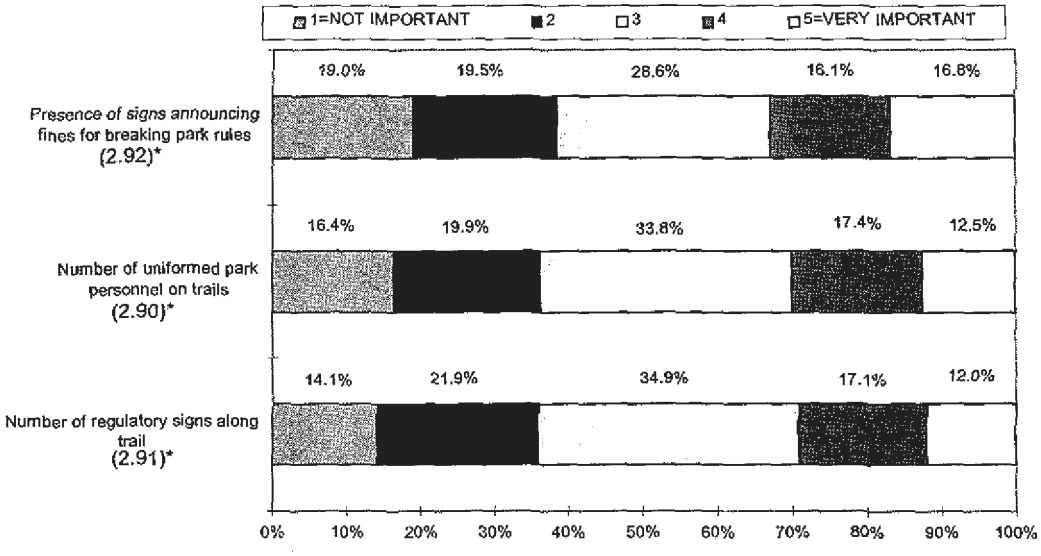
* Mean importance ratings in parentheses.

FIGURE 6.3: v. 2, Q-11a
IMPORTANCE OF PARK FACILITY FACTORS THAT COULD AFFECT EXPERIENCE AT MORA



* Mean importance ratings in parentheses.

FIGURE 6.4: v. 2, Q-11a
IMPORTANCE OF REGULATORY PRESENCE FACTORS THAT COULD AFFECT EXPERIENCE AT MORA



* Mean importance ratings in parentheses.

The importance of the presence of regulatory signs varied by contact point, $\chi^2(4) = 11.60$, $p = .021$. As seen in Figure 6.5, respondents entering the Nisqually Entrance rated regulatory signs as more important than respondents entering the Stevens Canyon Entrance.

FIGURE 6.5: v. 2, Q-11
IMPORTANCE RATINGS OF PRESENCE OF REGULATORY SIGNS BY CONTACT POINT

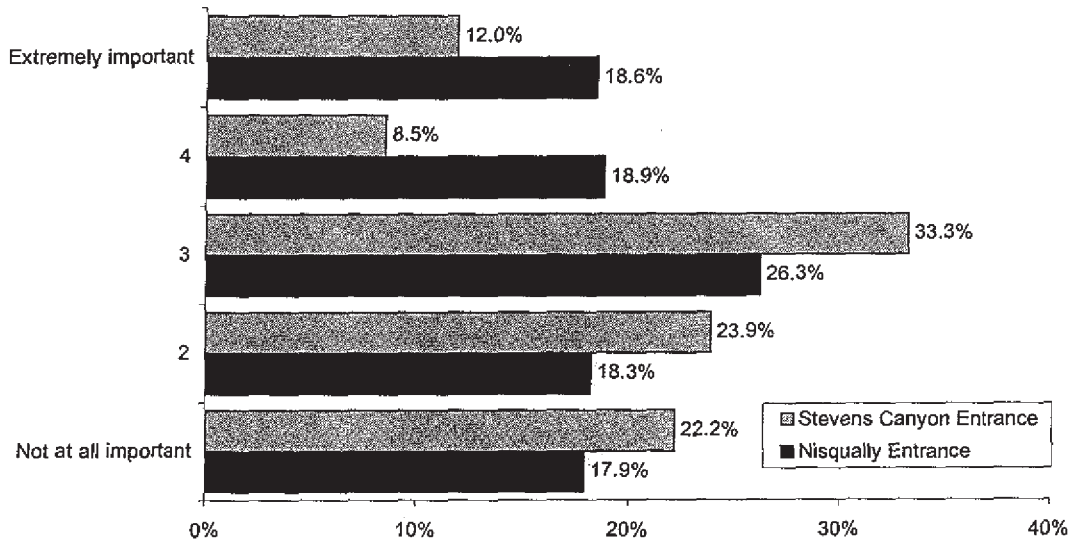
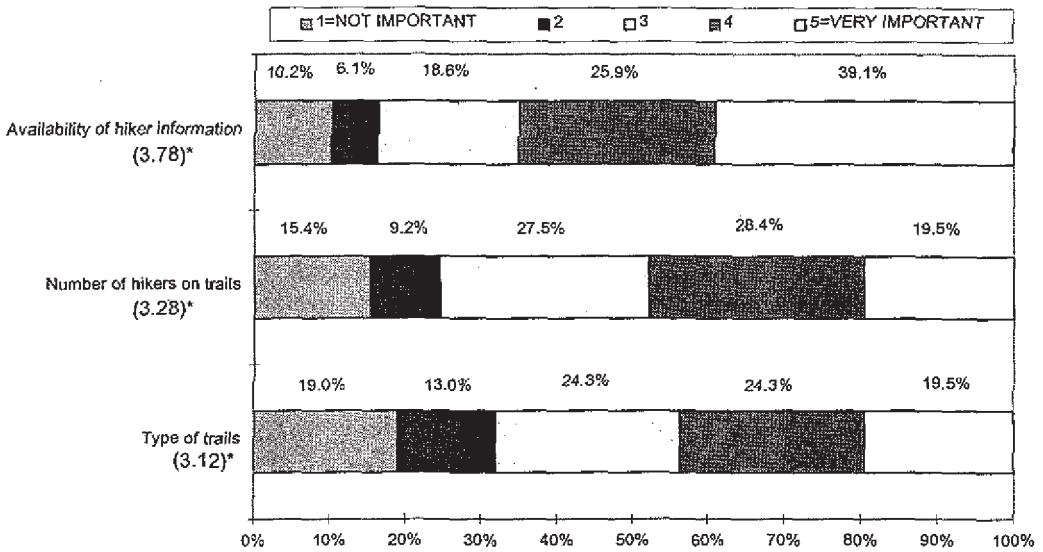


FIGURE 6.6: v. 2, Q-11a
IMPORTANCE OF HIKING CONDITION FACTORS THAT COULD AFFECT EXPERIENCE AT MORA

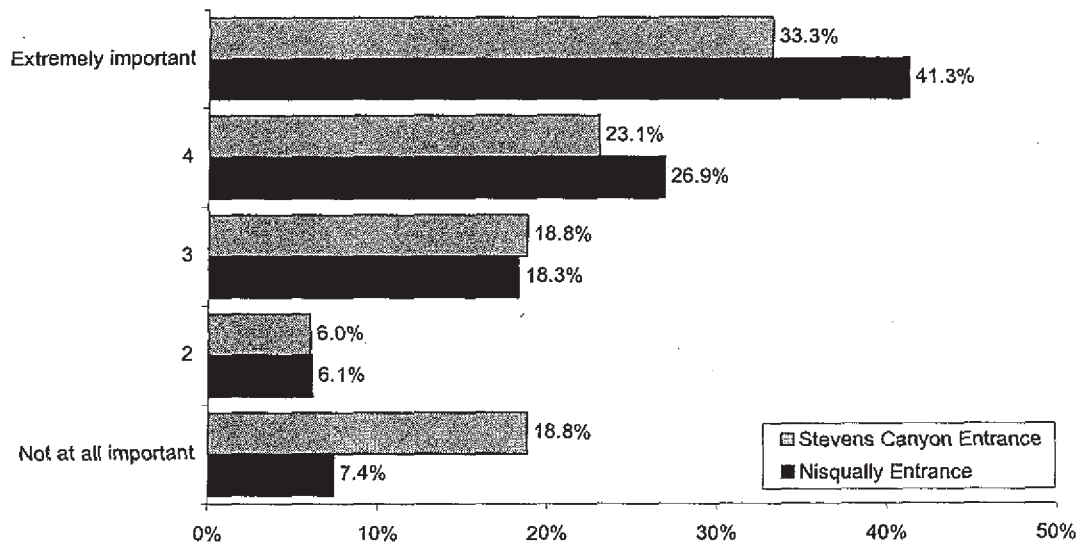


* Mean importance ratings in parentheses.

As can be seen in Figure 6.7, the importance of the availability of hiker information varied by contact point, $\chi^2(4) = 12.50$, $p = .014$. A greater percentage of respondents entering the Stevens Canyon Entrance rated the availability of hiker information as 'Not at all important' than respondents entering the Nisqually Entrance (18.8% vs. 7.4%). Additionally, a larger percentage of respondents contacted at the Nisqually Entrance rated the availability of hiker information as 'Extremely important' than respondents contacted at the Stevens Canyon Entrance (41.3% vs. 33.3%). Further analyses revealed that these effects were due to both contact point and whether respondents stayed overnight. Of respondents who spent the day at MORA, respondents contacted at the Nisqually Entrance compared to those contacted at the Stevens Canyon Entrance were more likely to rate hiker information as 'extremely important'

(38.8% vs. 20.6%) and less likely to rate hiker information as 'not at all important' (8.6% vs. 27.9%). No differences were found for respondents who stayed overnight. Regardless of contact point, respondents who stayed overnight were more likely to rate hiker information as 'extremely important' (53.8% vs. 34.3%) and less likely to rate it as 'not at all important' (8.6% vs. 27.9%), $\chi^2(4) = 17.74$, $p = .001$.

FIGURE 6.7: v. 2, Q-11
IMPORTANCE RATINGS OF AVAILABILITY OF HIKING INFORMATION BY CONTACT POINT

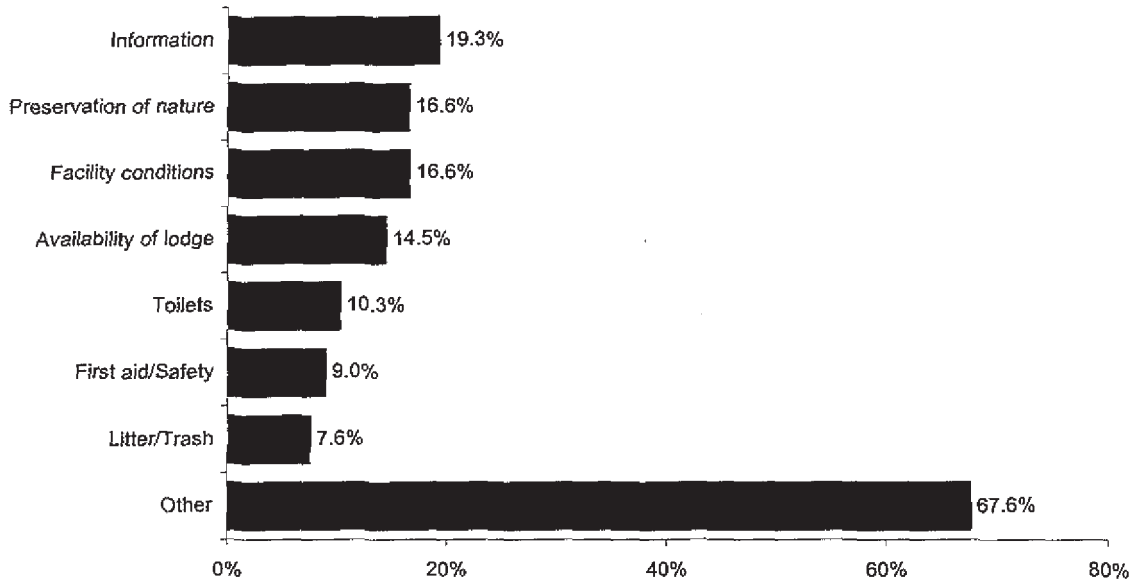


v. 2, Q-11b

Please write down and rate the importance of other factors that could have an effect on the quality of your experience in the park. Please include only factors that park managers can alter (i.e., NOT 'the weather').

Other factors	Not at all Important				Extremely Important
s) _____	1	2	3	4	5
t) _____	1	2	3	4	5
u) _____	1	2	3	4	5

FIGURE 6.8: v.2, Q-11b
OTHER FACTORS THAT COULD AFFECT QUALITY OF EXPERIENCE AT MORA



PERCENT OF RESPONDENTS (n = 145)
Percentages sum to more than 100 because respondents could list multiple other factors.

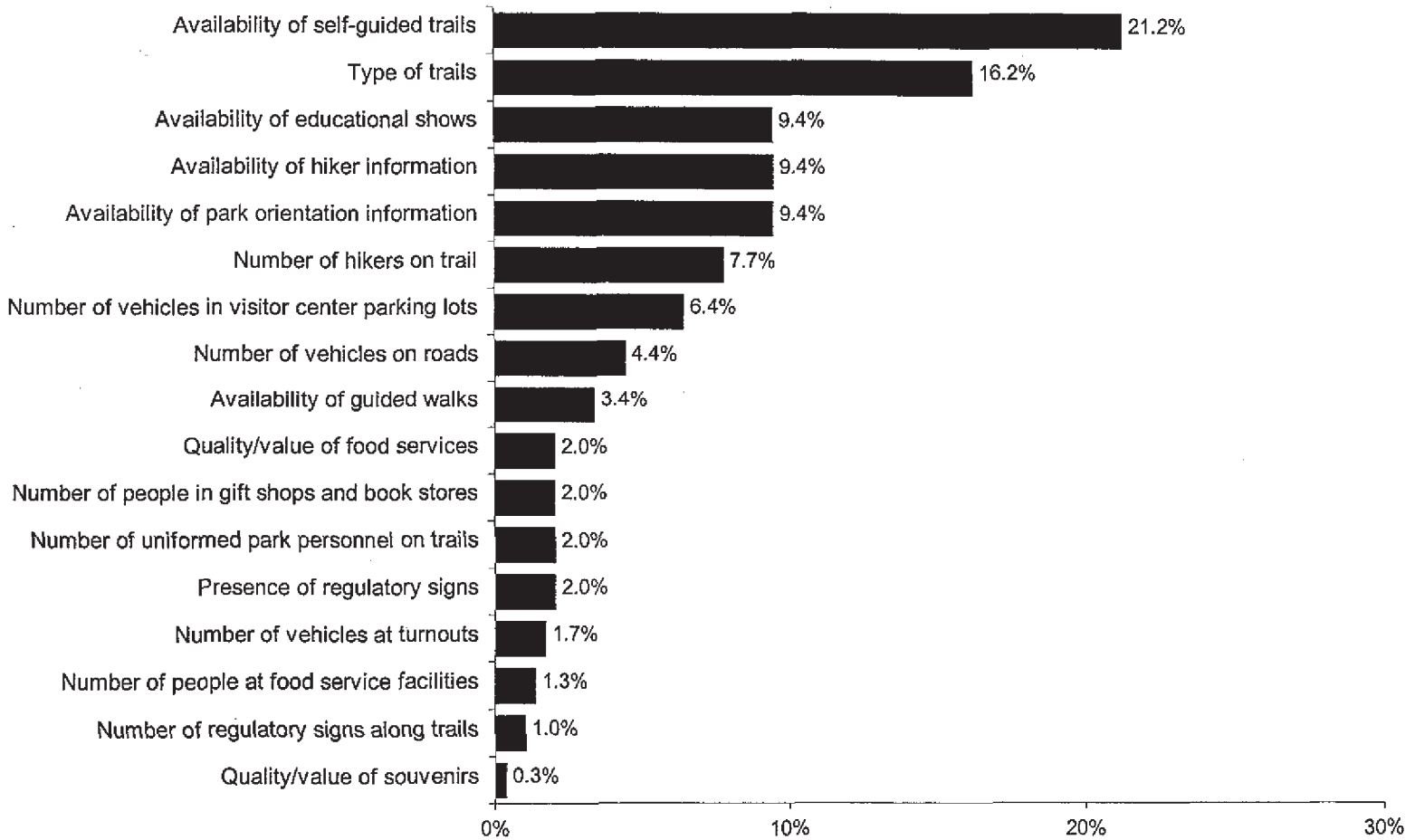
v.2, Q-11c

Which two factors listed in questions 11a and 11b were most important to your enjoyment of the park environment? *(Enter the appropriate letter in each blank.)*

_____ MOST IMPORTANT factor
_____ SECOND MOST IMPORTANT factor

A large number of missing values were present for both most important factor (26%) and the second most important factor (28%). Review of the questionnaire shows that the placement of this question at the bottom of a page may have resulted in people accidentally skipping the question.

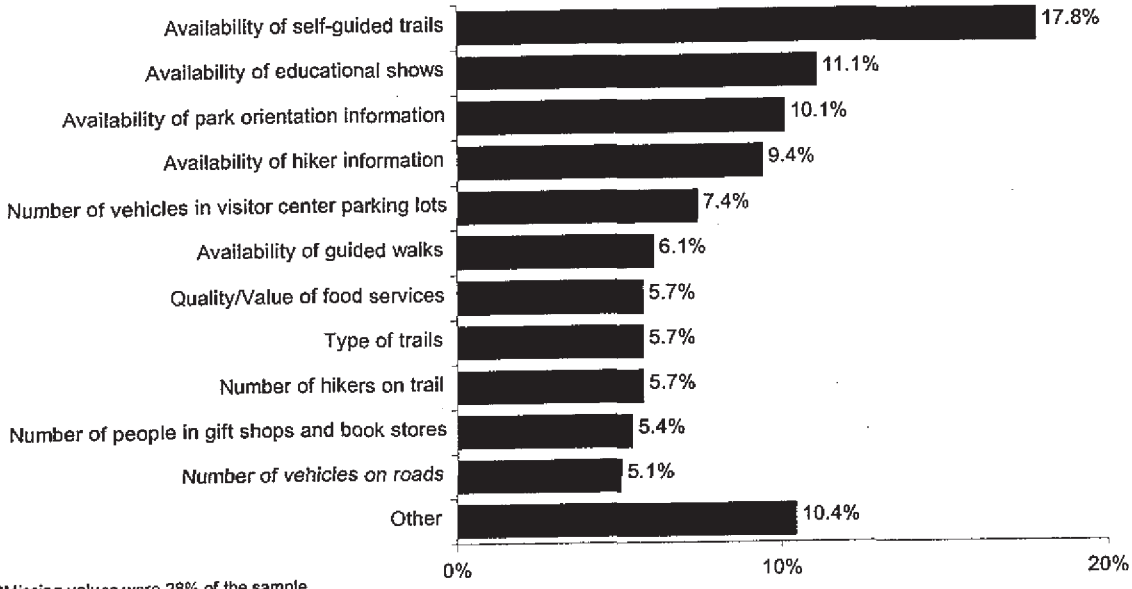
FIGURE 6.9: v.2, Q-11c
MOST IMPORTANT FACTOR TO ENJOYMENT OF THE PARK ENVIRONMENT*



*Missing values were 26% of the sample.

PERCENT OF RESPONDENTS (n = 297)
Excludes the 14.1% (n = 49) respondents who specified an "other" factor

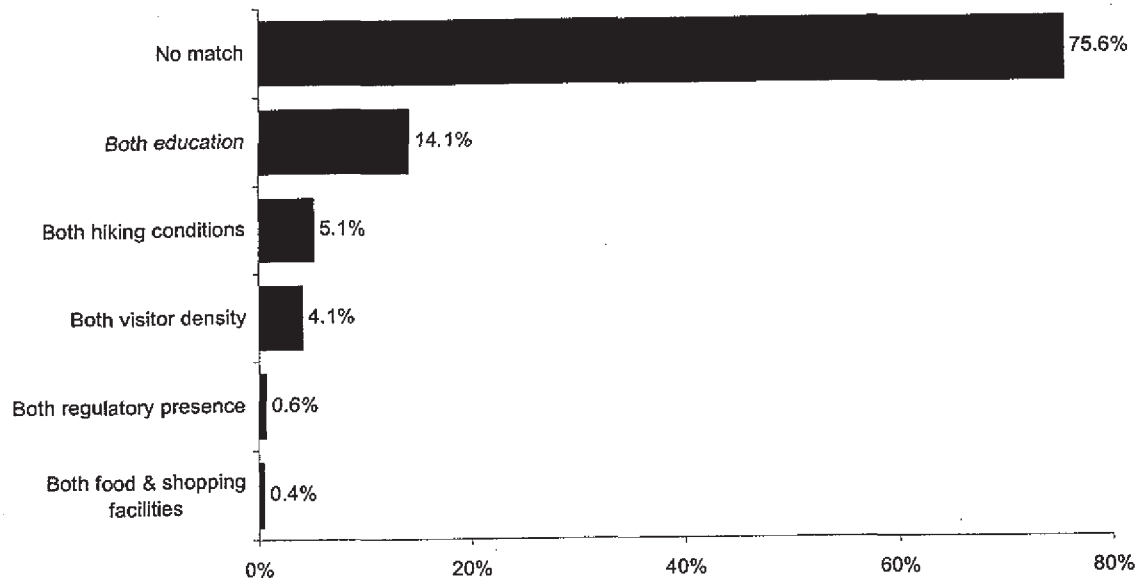
FIGURE 6.10: v.2, Q-11c
SECOND MOST IMPORTANT FACTOR TO ENJOYMENT OF MORA*



*Missing values were 28% of the sample.

PERCENT OF RESPONDENTS (n = 297)
Excludes the 11.4% (n = 38) of respondents who specified an "other" factor.

FIGURE 6.11: v. 2, Q-11c
ARE THE MOST AND SECOND MOST IMPORTANT FACTORS FROM THE SAME UNDERLYING DIMENSION?



PERCENT OF RESPONDENTS (n = 467)

Review of the "no match" category revealed that the most common pairing of factors was hiking conditions and educational opportunities (37%, 58 out of 158). The next most common pairing of factors was hiking conditions and visitor density (15.8%, 25 out of 158) followed by visitor density and educational opportunities (13.9%, 22 out of 158).

Group Respondents Based on Factor Scores: Cluster Analyses

For planning purposes it may be useful to understand how groups looking for different types of trip experiences differ. For example, respondents who are primarily looking for a hiking experience may be more likely to be local visitors. To determine if respondents could be meaningfully grouped based on their trip experience factor scores, a cluster analysis was done.

Cluster analysis is an exploratory statistical technique[4] that considers a range of characteristics and searches for groups of similar objects within them. In this case, the objects are respondents and the characteristics under consideration are the five trip experience factor scores.

Even for an exploratory statistical technique, cluster analysis involves a relatively large subjective component. In particular, the analyst must determine the number of clusters in which objects will be grouped. A variety of techniques

[4] Exploratory techniques are used to examine data and generate reasonable hypotheses. In contrast, confirmatory statistical techniques test specific hypotheses to determine whether they can be rejected based on relevant data. In general, a greater degree of confidence can be placed upon the results of confirmatory rather than exploratory statistical analyses.

come into play when selecting the number of clusters, but there are no strict conventions defining the "best" solution.

To examine the data in question (the five trip experience factor scores), cluster analyses specifying three through nine cluster solutions were conducted. We reviewed the graphical representation (called a dendrogram) of the nine cluster results and determined that there was no period during which a smaller number of clusters remained stable through a long portion of the clustering process. We then compared the mean trip experience factor scores for each cluster in the three to nine cluster solutions. Based on these comparisons, we determined that the seven-cluster solution consisted of interpretable clusters and that several of these clusters were also found in solutions with other numbers of clusters. Accordingly, the seven-cluster solution is discussed in detail below.

The seven clusters identified in the analysis are shown in Table 6.3. These clusters can be thought of as groups of people who seek similar trip experiences from visiting MORA. The mean scores for each trip experience factor are also presented in Table 6.3. They range from 1.7 to 4.3 out of a possible range of 1 for "not important" and 5 for "very important". It should be noted that there is considerable variability within each segment. Although the average cluster 1 trip experience factor score for the *facilities* factor is quite low, not every respondent in cluster 1 can be assumed to have given the same low rating. Thus, in the following discussion of the clusters, readers should not assume that descriptions of the clusters *on average* apply to every respondent classed in that segment or cluster.

One of the primary objectives of this question was to provide information about appropriate indicators for use in protecting the quality of visitors' experiences (i.e., for use in the VERP process). The simplest (or ideal) solutions would be that all visitors clustered into a single group or that if multiple groups, one factor was most important for all groups. As can be seen in Table 6.3, respondents clustered into 7 segments. Review of the mean factor scores for the 7 segments reveal that no one factor is important to all segments. These findings suggest that there is not just one visitor experience. Because people react very differently to the different factors, changes in one factor may have dramatic effects on only some visitors.

Table 6.3. Cluster Analysis of Factor Scores: Mean Factor Score and Number of Cases Per Segment

	Segment						
	1	2	3	4	5	6	7
	Mean Factor Score						
Visitor Density: Roads & Facilities	3.2	3.7	1.9	3.8	2.4	4.0	4.0
Educational Opportunities	2.5	3.3	4.0	3.9	2.4	2.9	4.3
Shopping & Food Facilities	1.7	2.6	1.9	2.8	1.7	3.7	3.7
Regulatory Presence	2.5	3.7	3.0	2.3	1.8	2.4	3.9
Hiking Conditions	4.0	3.3	3.1	3.9	2.2	2.1	4.0
Number of Respondents	59	69	54	84	44	29	75
Percent of cases	14%	17%	13%	20%	11%	7%	18%

Table 6.4 summarizes how the different segments differ on selected variables. These findings are discussed in more detail by segment below.

Table 6.4. Comparing Segments on Selected Variables.

	Segment						
	1	2	3	4	5	6	7
	Mean Score[1]						
Age (p=.011, n=356)	38[a]	42[a,b]	39[a,b]	42[a,b]	41[a,b]	48[b]	46[b]
Hike distance (p=.001, n=262)	5.5[a]	3.5[a,b]	2.9[b]	3.0[b]	2.5[b]	2.4[a,b]	3.4[b]
Trips to MORA in past 3 yrs (p=.001, n=411)	4.4[a]	2.2[b]	2.5[a,b]	2.2[b]	2.1[b]	1.8[b]	1.9[b]
Total hours spent in MORA (p=.056, n=388)	29.7	15.6	15.4	21.7	15.0	14.3	18.3
	Percent of Respondents[2]						
Local Residence (p=.029, n=414)	54.2	49.3	33.3	28.6	34.1	34.5	38.7
Type of Destination (p=.045, n=403)							
No specific destination	20.3	48.5	43.4	41.5	45.2	58.6	50.0
One destination	52.5	31.8	41.5	34.1	35.7	31.0	37.5
Multiple destinations	27.1	19.7	15.1	24.4	19.0	10.3	12.5
Most Important Activity[3] (n=375)							
Drove viewing scenery	9.1	30.6	24.0	14.1	31.4	50.0	23.2
Took walks/hikes	67.3	41.9	46.0	62.8	31.4	15.4	40.6
Type of Group (n=414)							
Individual	6.8	4.3	5.6	4.8	11.4	6.9	2.7
Family	55.9	68.1	59.3	65.5	63.6	69.0	74.7
Friends	28.8	14.5	14.8	17.9	15.9	13.8	12.0
Family & Friends	8.5	8.7	18.5	9.5	9.1	3.4	8.0
How long in advance planned trip (n=408)							
1 week or less	48.3	54.4	59.3	34.9	53.5	44.8	50.7
1 week to 1 month	25.9	14.7	14.8	20.5	20.9	20.7	15.1
More than 1 month	25.9	30.9	25.9	44.6	25.6	34.5	34.2
Parties with children < 16 yrs old (n=390)	24.6	28.4	40.0	27.5	28.6	23.1	24.7
Female respondents (n=357)	50.9	42.6	50.0	55.6	40.5	32.0	52.9
Sought Information (n=406)	57.6	50.0	54.7	59.0	42.9	58.6	55.6

Note: The p-value for significant omnibus tests are in parentheses. Absence of a p-value indicates groups did not differ significantly at the .05 level.

[1]For each variable, groups with same superscript means did not differ (e.g., Segment 2's mean age of 42 does not differ significantly from the mean age of Segment 1 nor the mean age of Segment 6, although the mean age of Segments 1 and 6 differ significantly).

[2]A chi-square test was done for each variable to see if the percent of respondents reporting each response differed by clusters.

[3]The omnibus test including all reported most important activities had cells with expected frequencies > 5 that may have inflated the significance level below .05. A chi-square test for the two activities listed in the table was significant indicating that one's most important activity differs depending on the cluster they fall in.

Market Segment 1. Segment 1 comprises 14% of the respondents. These visitors might be referred to as local overnight hikers. The hiking conditions factor had the highest importance rating (4.0 out of a possible 5) of any factor for segment one (visitor density was second at 3.2). Although segments 4 and 7 placed comparable importance on hiking conditions to segment one (3.9 and 4.0, respectively), these segments placed higher importance on other factors as well.

Respondents in segment one hiked the greatest distance (5.5) and spent the greatest number of hours in MORA (29.7) of any group. Taking walks or hikes was rated as the most important activity of 67.3% of respondents in this segment, and this segment had the greatest number of people with a single destination (52.5%) and the greatest number of people with multiple destinations (27.1%) of any group. This group also had the greatest percentage of local visitors (54.2%) of any group and had made the most number of trips to MORA in the past three years (4.4). Respondents in segment one were the youngest (38) and were the most likely to be travelling with friends (28.8%) and least likely to be travelling with family (55.5%).

Market Segment 2. Segment 2 comprises 17% of respondents. Segment two respondents placed the greatest importance on the visitor density and regulatory presence factors of the five factors. Only segment seven respondents placed greater importance on regulatory presence (3.9 vs. 3.7), however, this segment placed greater importance on all five factors.

Almost half (49.3%) of segment two's respondents were local residents, although they had not visited MORA as frequently in the past three years as segment one respondents (2.2 vs. 4.4 trips). Respondents of segment two were comprised primarily of family groups (68.1%) who had planned their trip in the last week (54.4%) and didn't have a specific destination (48.5%). Respondents in segment two were more equally split as to their most important activity with 41.9% indicating taking walks or hikes and 30.6% indicating driving viewing scenery.

Market Segment 3. Segment three respondents comprised 13% of respondents. Of the five factors, the educational opportunities factor had the greatest importance (4.0). Only segment seven respondents placed greater importance on educational opportunities (4.3) while respondents in segment four placed comparable importance on education (3.9). Segment three differed from these other two segments in that education was the only factor that received an importance rating greater than 3.0.

Although only a third (33.3%) of respondents in segment three were local residents, 59.3% of segment three respondents planned their trip in the week before. This segment had relatively fewer family groups (59.3%), but had the most groups of family and friends (18.5%) of any segment.

Market Segment 4. Segment four comprised 20% of respondents. These respondents might be referred to as non-local overnight hikers. Respondents in segment four rated hiking conditions (3.9), educational opportunities (3.9), and visitor density (3.8) as having the greatest importance of the five factors.

Although segments one and seven place equal importance on hiking conditions, segment four differs from segment one in placing greater importance on educational opportunities and visitor density and segment four differs from segment seven in that it does not place importance on shopping and food facilities nor regulatory presence.

Respondents in segment four had the lowest percentage of local residents (28.6%) of any group and were more likely to have planned their trip a month or more in advance (44.6%). These respondents were more likely to rate taking walks or hikes as their most important activity (62.8%) although the average hike distance was only 3.0 miles (compared to 5.5 for segment one's local hikers). These respondents were more likely to be in family groups (65.5%), to spend a longer time in MORA (21.7 hours, second to segment one), and to have multiple destinations (24.4%, second to segment one).

Market Segment 5. Segment five comprised 11% of respondents. What is most striking about this segment is the lack of importance placed on any of the five factors (2.4 out of 5.0 is the highest rating).

Respondents in segment five are primarily comprised of non-local (34.1% local residents) family groups (63.6%) who planned their trip in the past week (53.5%). These respondents were the least likely of any segment to have sought information (42.9%).

Market Segment 6. Segment six comprised 7% of respondents. Respondents of segment six rated visitor density on the roads and at facilities to have the greatest importance (4.0). These respondents' importance ratings of

shopping and food facilities (3.7) were tied with segment seven for being the highest ratings given to this factor by any segment.

Respondents in segment six traveled with their family (69.0%), were the oldest (48) and most likely to be male (32.0% female). These respondents spent the least amount of time in MORA on this trip (14.3 hours) and in the past three years (only 1.8 trips to MORA). Drove viewing scenery was most likely to be indicated by these respondents as their most important activity (50%) of any segment, and these respondents were the most likely of any segment to not have a specific destination (58.6%). This segment was more likely to contain respondents travelling with organized tours (6.9%). The reliability of this finding is questionable because of the low number of observations involved. There were a total of seven respondents from organized tours in the whole sample (2 of which are in segment six), and segment six was comprised of only 7% (29 respondents) of the whole sample.

Market Segment 7. Segment seven comprised 18% of respondents. In contrast to segment five where no factors were rated as important, respondents in segment seven rated all factors as important (3.7 being the lowest).

Respondents in segment seven were most likely to be travelling with family (74.7%). They also tended to be older (46), planned their trip the week before (50.7%), and to have no specific destination (50.0%).

The findings of the combined factor and cluster analysis demonstrate the complexity of planning at MORA. There are a variety of desired visitor experiences that differ in managerially significant ways. For example, all visitors

spend time in the motorized vehicle zone, but the importance of visitor density in that zone differs widely among the market segments shown in Table 6.3. The pictures is complicated further because some visitors' most important activity is driving through the motorized vehicle zone, while other groups see the zone primarily as a transition area to their primary destination (see Chapter VII). Therefore, management policy in the motorized vehicle zone must protect the experiences of the motorized sightseers while also preventing interference with other visitors' access to their desired experiences.

The VERP process focuses primarily on the management of visitor density, which is only one of the experience factors used to define the seven market segments. This focus limits the potential complicating impact of multiple desired visitor experiences on the selection of indicators and standards. However, the example discussed above illustrates that even for visitor density alone, managers cannot assume that identical indicators and standards will protect the desired experiences of all visitors.

The presence of disparate types of desired visitor experiences (i.e., multiple market segments) suggests that managers should take care not to over-generalize when setting policy concerning the whole range of trip experience factors. This problem will be minimized if visitors who desire a particular experience are concentrated in particular management zones that are managed independently. However, management zones boundaries would have to reflect experiential dimensions and policies in one zone could not be assumed to protect the desired experiences of visitors in other zones.

VII. Reactions to Hypothetical Traffic and Parking Scenarios

The Gate Survey asked respondents about traffic and turnout parking congestion on the road between Longmire and Paradise using hypothetical scenarios. This section reports the findings associated with these factors, focusing on their possible use as social indicators (i.e., measures that indicate the quality of the social experience in a management zone at MORA).

Readers of this section should be aware that there is ongoing scientific debate concerning when and to what degree visitors' reactions to hypothetical scenarios correspond with their reactions to the actual conditions those scenarios represent. A survey of visitors to Spray Park at MORA (Vande Kamp, Johnson, & Swanson 1998) showed that the hypothetical scenarios used in that survey yielded data of questionable validity. Although the Gate Survey uses a different type of hypothetical question with a different population, the results presented in this section should be interpreted with caution.

One of the purposes of the Gate Survey was to investigate possible social indicators of experience quality for use in the motorized sightseeing zone (i.e., the roads and turnouts) at MORA. Social indicators are measurable aspects of the environment that are indicative of experience quality and are responsive to management action. Indicators are critical components of planning and ongoing management. During the 1995 Mt. Rainier Visitor Experience Surveys, considerable information was gathered concerning two possible social indicators. These were: 1) Traffic conditions on the park road; and 2) Parking congestion at scenic turnouts. (Note that we use the term "traffic conditions" to refer specifically to traffic density and congestion on the roadway itself.) Likewise, discussion of vehicular congestion at parking areas in this chapter focuses specifically on parking at scenic turnouts along the park road and not on parking congestion in parking lots serving developed areas such as Longmire and Sunrise.

Much of the information in this chapter was gathered by presenting Gate Survey respondents with hypothetical scenarios. Accordingly, those data represent responses from the broadest possible sample of park visitors.

Questions concerning the two potential social indicators focused on three separate issues:

- To what extent is the indicator important to the quality of visitors' experiences?

- Is there consensus among visitors concerning an acceptable level of the indicator (i.e., a standard or acceptable condition)?
- How well do visitor perceptions of the conditions they encountered correspond to more objective measurements of those conditions?

Each of these issues will be discussed below for the two potential social indicators.

One of the limitations of the analyses presented in this section arises from the hypothetical scenarios used to describe traffic and turnout congestion. A variety of factors vary together across the range of scenarios. For example, the traffic scenarios describe the variability in traffic flow, the groupings of vehicles, and the average speed of travel. Accordingly, when assessing responses to the scenarios, we can not be sure which of the described factors are most responsible for the acceptability ratings. This limitation was accepted in the research design in order to retain a manageable number of questions and because the various factors are, in reality, correlated.

Importance of Traffic Conditions

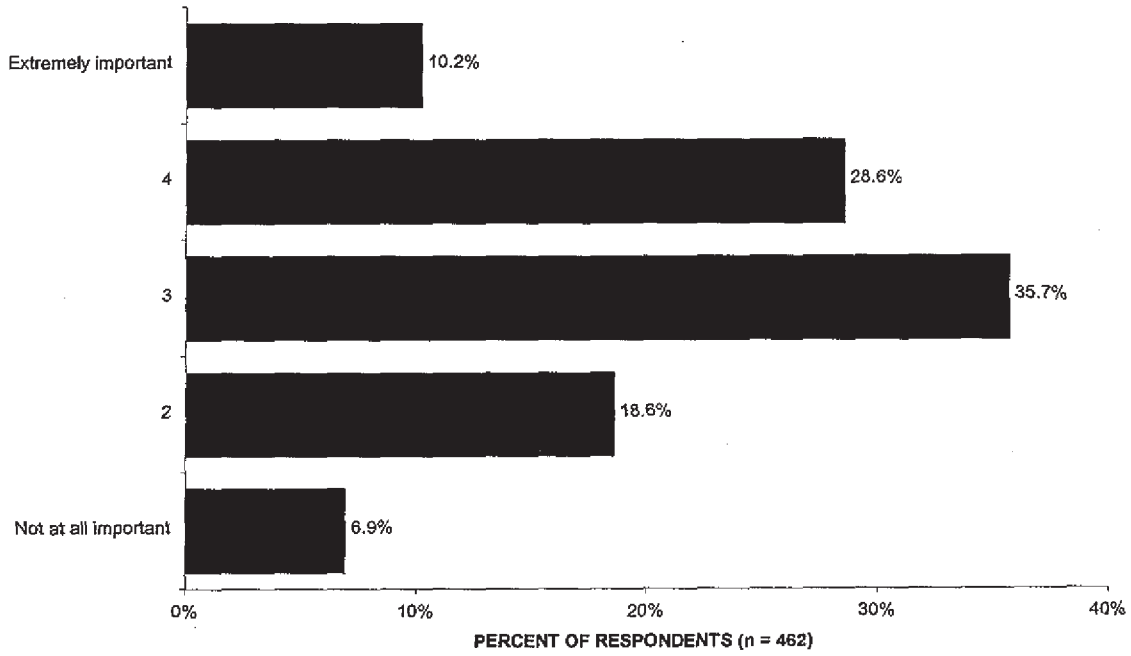
v. 1, Q-14

Please rate the importance of traffic conditions to your overall enjoyment of Mount Rainier National Park. *(Please circle the appropriate number in the scale below.)*

Not at all Important				Extremely Important
1	2	3	4	5

As can be seen in Figure 7.1, over 75% of respondents rated the importance of traffic conditions as 3 or higher on the scale in Q-14.

FIGURE 7.1: v.1, Q-14
IMPORTANCE OF TRAFFIC CONDITIONS TO OVERALL ENJOYMENT OF MORA



The importance of traffic conditions was also addressed in v.2, Q-11. This question presented respondents with a list of 18 factors, including traffic conditions, that could affect visitors' park experiences (see Chapter 6). For traffic conditions, almost 80% of respondents rated the importance of vehicles on park roads at 3 or higher on a scale of 1 = not important to 5 = very important (see Figure 6.1). A sense of the comparative importance of traffic conditions to other factors can be gained by examining the mean importance ratings of all 18 factors (see Figures 6.1 - 6.4). Only three factors received higher mean importance ratings. Two of those factors ("availability of self-guided trails" and "availability of

park orientation information") are dimensions of experience quality that are not directly related to visitor density, while the third ("number of vehicles in visitor center parking lots"), is an aspect of vehicular congestion closely related to traffic conditions. Slightly more than 4% of respondents listed the number of vehicles on park roads as the most important factor to their enjoyment of MORA. In addition, 5.1% of respondents listed it as their second most important factor (see Figure 6.9 and 6.10). These findings in conjunction with those from Q-14, indicate that, in general, traffic conditions are considered important to the broad cross-section of visitors sampled in the Gate Survey. Respondents also considered traffic conditions to be important in relation to other factors that could have affected their park experience.

Consensus Concerning Acceptable Traffic Conditions

Visitor consensus concerning acceptable levels (i.e., standards) for traffic conditions was assessed in three ways (all based on version 1 of the Gate Survey). First, responses to Q-11 were examined.

V1, Q-11

Imagine that you are passing Longmire in your vehicle and are driving along the 9-mile stretch of road that curves up the mountain to Paradise. You are looking forward to visiting Paradise, but are taking time to enjoy your drive, stopping at some of the turnouts to take photographs and view the scenery.

Listed below are five descriptions of traffic conditions on the road to Paradise. **For each description, please imagine making the drive from Longmire to Paradise and then indicate how acceptable you would find the described traffic conditions.**

INDICATE YOUR RATING OF DESCRIPTIONS A THROUGH E BELOW

A. *Free-flowing traffic conditions with few vehicles.* You can can generally drive at the speed-limit. Few delays due to slower vehicles and almost no groups of three or more vehicles. Average speeds are about 34 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

B. *Stable flow of traffic with brief periods where you must slow down due to other vehicles.* Most vehicles are independent or in groups of less than three vehicles. Average speeds are about 32 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

C. *Slightly less stable traffic flow where your speeds are determined by other vehicles more than half the time.* Most vehicles have collected in groups of three or more. Average speeds are about 29 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

D. *Fluctuating flow of traffic with vehicles slowing and then returning to speed limits.* Vehicles are nearly all collected in groups, with many groups of more than ten vehicles. Major slowdowns are associated with areas of turning vehicles or roadside attractions. Average speeds are about 20 mph.

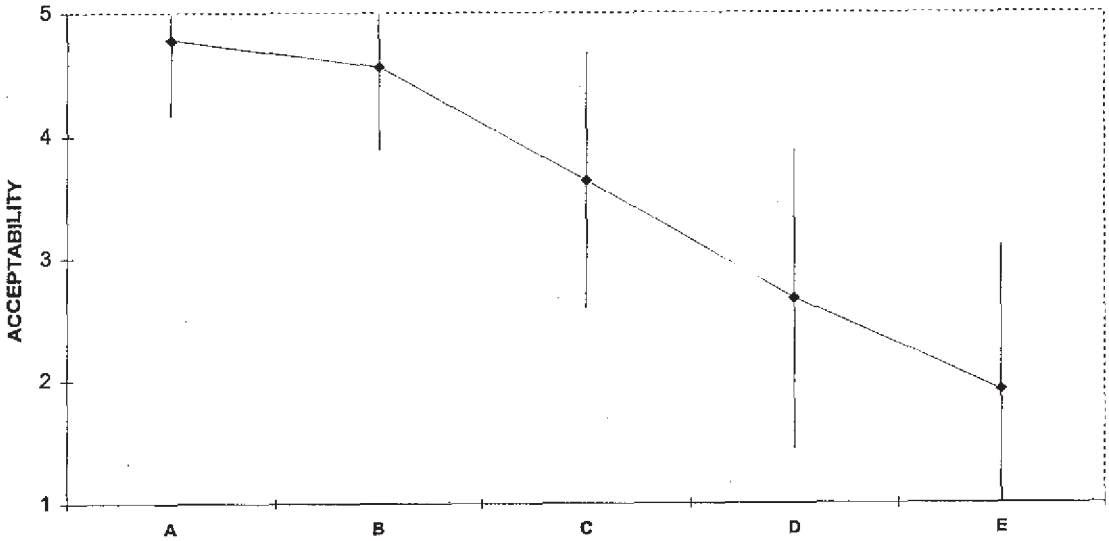
Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

E. *Greatly fluctuating traffic flows, with some momentary stoppages.* The road is full of vehicles. Your speeds are determined entirely by the flow of traffic. Average speeds are less than 15 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

In this question high consensus would be indicated if most respondents selected the same acceptability ratings for each description and low consensus would be shown by a broad range of acceptability ratings. Statistically, this degree of similarity in the ratings can be assessed by calculating the standard deviation of the ratings for each description. Figure 7.2 shows the mean acceptability ratings of the five descriptions of traffic density with vertical lines extending one standard deviation above and one standard deviation below the means. A rule of thumb for using the standard deviations states that about two-thirds of responses fall on the response categories overlapped by the vertical lines. For example, traffic description C was rated by about two-thirds of the sample as "neither" or "somewhat acceptable" (points 3 and 4 on Acceptability). Although the standard deviation lines indicate considerable disagreement, the shift from acceptable to unacceptable traffic conditions appears to fall between traffic description C and D.

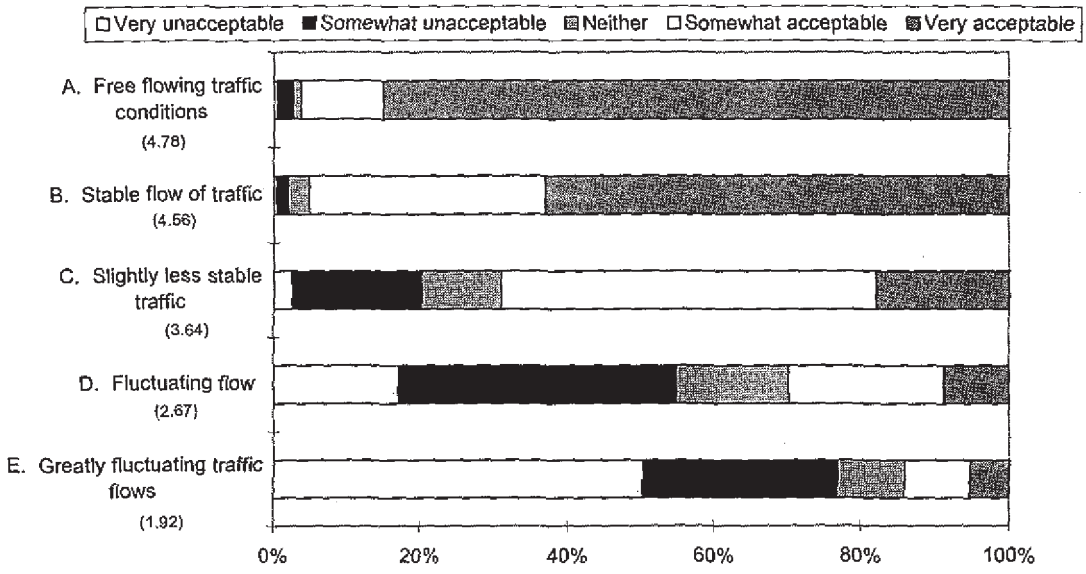
FIGURE 7.2: Q-11
ACCEPTABILITY OF TRAFFIC CONDITIONS



(n = 182)
Bars represent 1 standard deviation on each side of the mean

In order to represent the degree of consensus in a different way, Figure 7.3 shows the actual distribution of responses for each traffic description. Note that, as one might expect, there is a higher degree of agreement about the extreme traffic descriptions than about descriptions C and D. Also, note that about 20% of respondents rated description C as very or somewhat unacceptable, but that 55% rated D as very or somewhat unacceptable.

FIGURE 7.3: v. 1, Q-11
TRAFFIC ACCEPTABILITY RATINGS ON THE ROAD FROM LONGMIRE TO PARADISE



* Mean acceptability ratings in parentheses.

Consensus was also assessed with regard to maximum acceptable traffic congestion as asked about in v.1, Q-12.

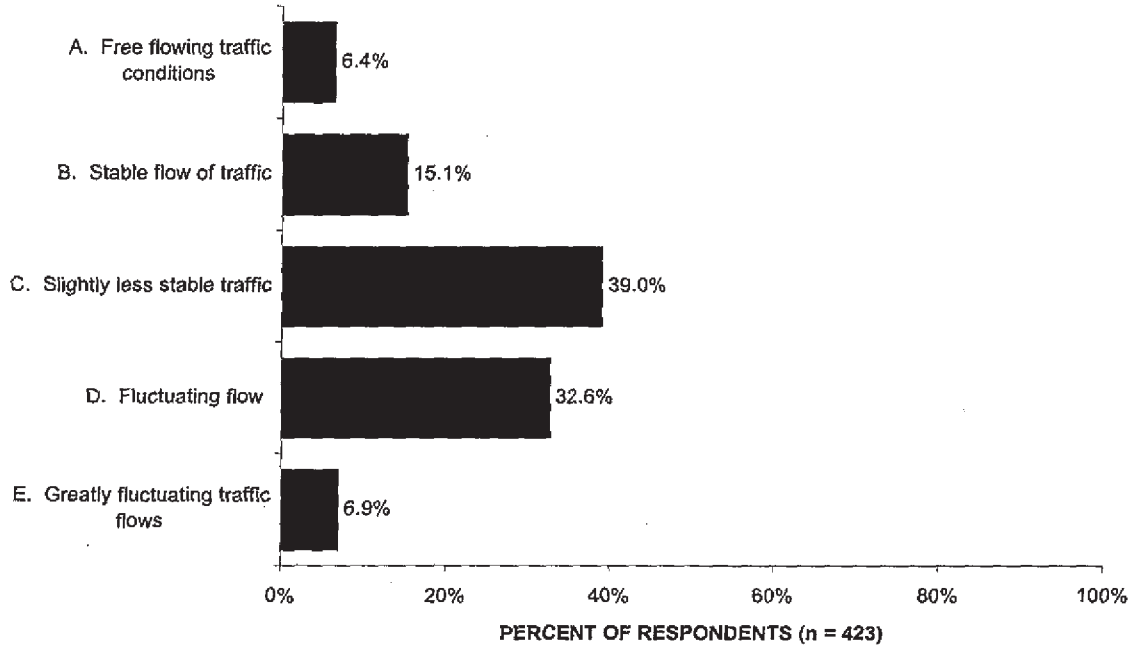
v1, Q-12

Imagine that you are a manager of Mt. Rainier National Park and you have to make a decision about the number of vehicles that can drive through the park. On busy summer weekends at Mt. Rainier, which of the descriptions in question 11 describes the **MAXIMUM** amount of traffic congestion that **SHOULD** be present on the road from Paradise to Longmire?

DESCRIPTION _____ *(Enter the appropriate letter from question 11.)*

Responses to Q-12 correspond quite closely with the results of the acceptability ratings. Some respondents selected each option, but about 72% of respondents chose description C or D as the maximum that should be present (39.0% and 32.6%, respectively; see Figure 7.4).

FIGURE 7.4: Q-12
MAXIMUM ACCEPTABLE AMOUNT OF TRAFFIC CONGESTION



Although neither Q-11 nor Q-12 show consensus concerning the acceptability of the traffic conditions in description C and D, it is clear that almost all visitors find description E unacceptable, and most find description A and B acceptable.

Consensus can also be assessed by comparing acceptability ratings of the hypothetical scenarios across subgroups within the sample that might be expected to differ based on theory. For example, persons for whom driving to view scenery was very important would seem likely to differ from other visitors in their acceptability ratings of traffic conditions. In such cases, subgroup analysis is important because it can account for some of the variability in the acceptability ratings of the whole sample and thus explain low degrees of consensus and increase the usefulness of the data. In other cases, the subgroups can be

defined by theoretical differences that decrease the usefulness of the data. For example, persons who experienced traffic congestion during their visit might rate the acceptability of hypothetical traffic scenarios differently than those who experienced no congestion. In such a case we would conclude that the acceptability ratings are affected by the respondents' recent experiences and may not be stable, well-formed measures of their reactions to traffic conditions.

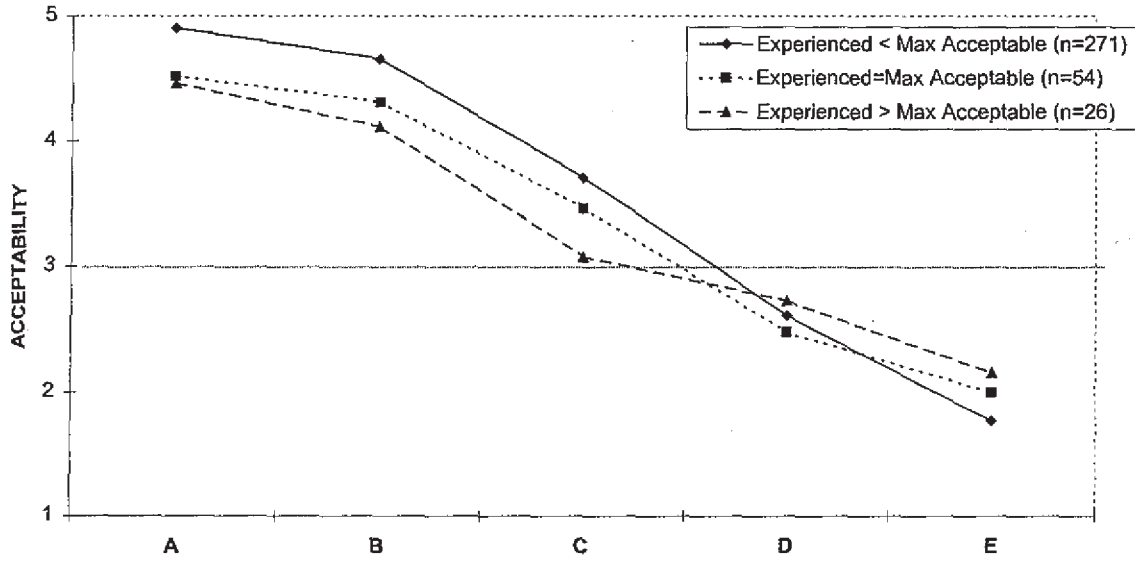
The analysis of subgroups reported below used Multivariate Analysis of Variance (MANOVA) to test for differences in subgroup acceptability ratings across all five traffic descriptions in Q-11. Three different sets of subgroups were tested. The first subgroup analysis has the potential to raise questions about the validity of the acceptability ratings, while the last two concern differences that may more usefully account for some of the variability in acceptability. By no means is this an exhaustive analysis of all possible subgroups in the sample. Instead, the analyses consider a range of subgroups for which acceptability ratings might plausibly differ.

1) Respondents who visited on days when varying numbers of vehicles entered the Nisqually/Steven's Canyon corridor (Busiest 1/3, Middle 1/3, and Lowest 1/3).

The analysis found no significant difference between the groups (see Figure 7.5). This negative finding provides a small measure of support for the use of the acceptability ratings in setting management policy. Such use of survey data (in this case, ratings of traffic descriptions) is based on the assumption that the ratings tell us something about the conditions that will actually have negative impacts on visitor experiences. Our confidence in that

assumption would have been weakened if the ratings were affected by the conditions the visitors encountered, but such an effect was not observed.

FIGURE 7.5:
ACCEPTABILITY OF TRAFFIC CONGESTION
BY EXPERIENCED vs. MAXIMUM ACCEPTABLE
TRAFFIC CONGESTION



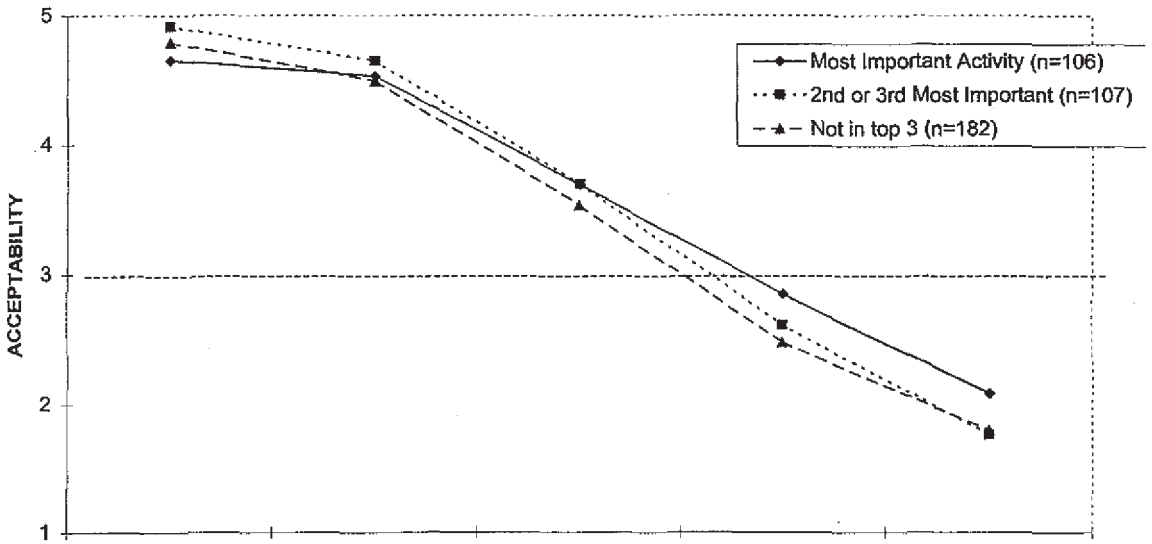
MANOVA F(10,690) = 5.32, p<.001

2) Visitors for whom driving to view scenery was the most important activity, was the 2nd or 3rd most important activity, or was not a most important activity.

There was a statistically significant difference in the acceptability ratings of these three groups, F(10,778)=1.93, p=.039. The mean acceptability ratings of all five traffic descriptions for the groups show that respondents for whom driving was most important rate the higher congestion levels to be slightly *more* acceptable than do persons for whom driving was less important (see Figure 7.6). One possible explanation for this finding is that the goals of the respondents for whom driving was less important would be frustrated by slower speeds and congestion (i.e., they would take longer to reach their destination)

whereas the goals of the driving sightseers would not be as heavily affected. Although the lines differ statistically, it should be noted that they are very similar for all groups, and that they all cross the neutral point between description C and D. Thus, these differences would be unlikely to alter management decisions.

FIGURE 7.6:
ACCEPTABILITY OF TRAFFIC CONDITIONS
BY IMPORTANCE OF DRIVING TO VIEW SCENERY



MANOVA F(10,778) = 1.93, p = .039

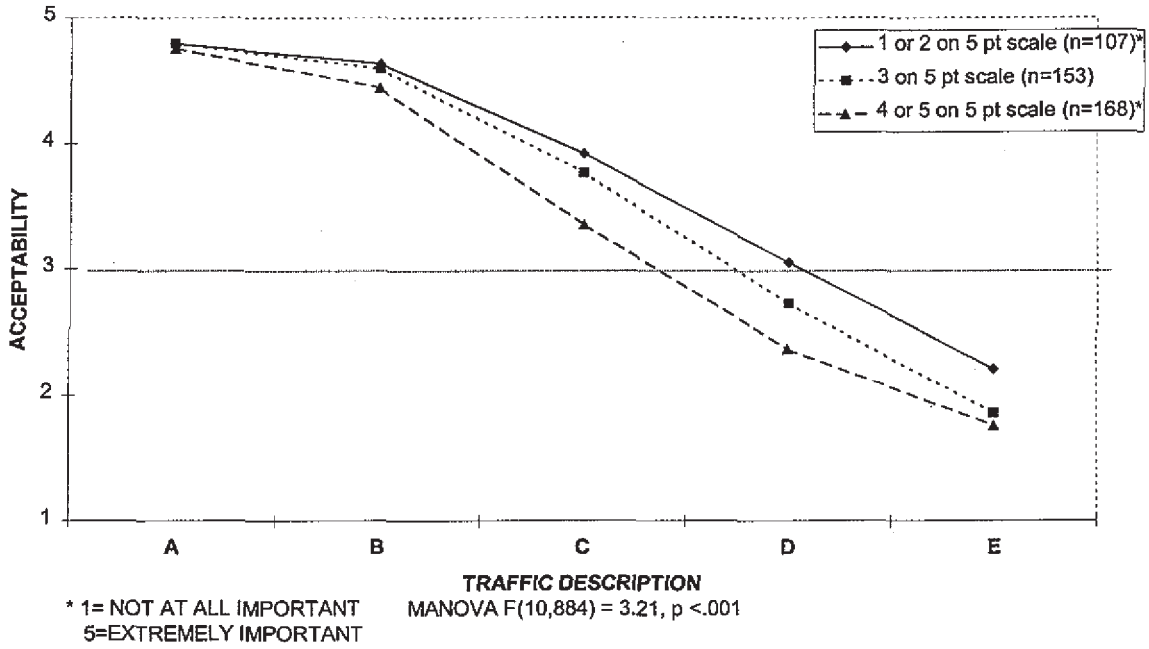
3) Visitors who differed in the importance they assigned to the traffic conditions on the roads. Three groups were defined, those rating importance as 1 or 2, those with ratings of 3, and those with ratings of 4 or 5.

As the importance ratings of traffic conditions increased, respondents were more likely to rate the higher levels of congestion as unacceptable,[4]

[4] Initially this effect was suspected to result because some respondents may simply have been more willing to use the extremes of the scales. However, this artifactual explanation is unlikely given that ratings for all groups were very similar for description A and B and because the reasoning would also predict that persons using the low end of the scale for importance would use the extreme high end of the acceptability scale for descriptions D and E (which they did not do).

F(10,884)=3.21, p<.001 (see Figure 7.7). Although is may seem obvious that visitors for whom traffic conditions are important should rate high vehicle densities as less acceptable than do other visitors, there is no readily apparent theoretical reason to expect such a pattern. Once again, however, the curves are similar in their implications for management.

FIGURE 7.7:
ACCEPTABILITY OF TRAFFIC CONDITIONS
BY IMPORTANCE OF TRAFFIC CONDITIONS



* 1= NOT AT ALL IMPORTANT
5=EXTREMELY IMPORTANT

MANOVA F(10,884) = 3.21, p <.001

Together these subgroup analyses show that although respondents differ statistically in their acceptability ratings of the traffic descriptions, all subgroups generally found descriptions A and B to be acceptable and description E to be unacceptable. The distinction between the acceptability of descriptions C and D was not agreed upon by subjects in general, nor by those in the tested subgroups.

Perceptions vs. Objective Measures of Traffic Conditions

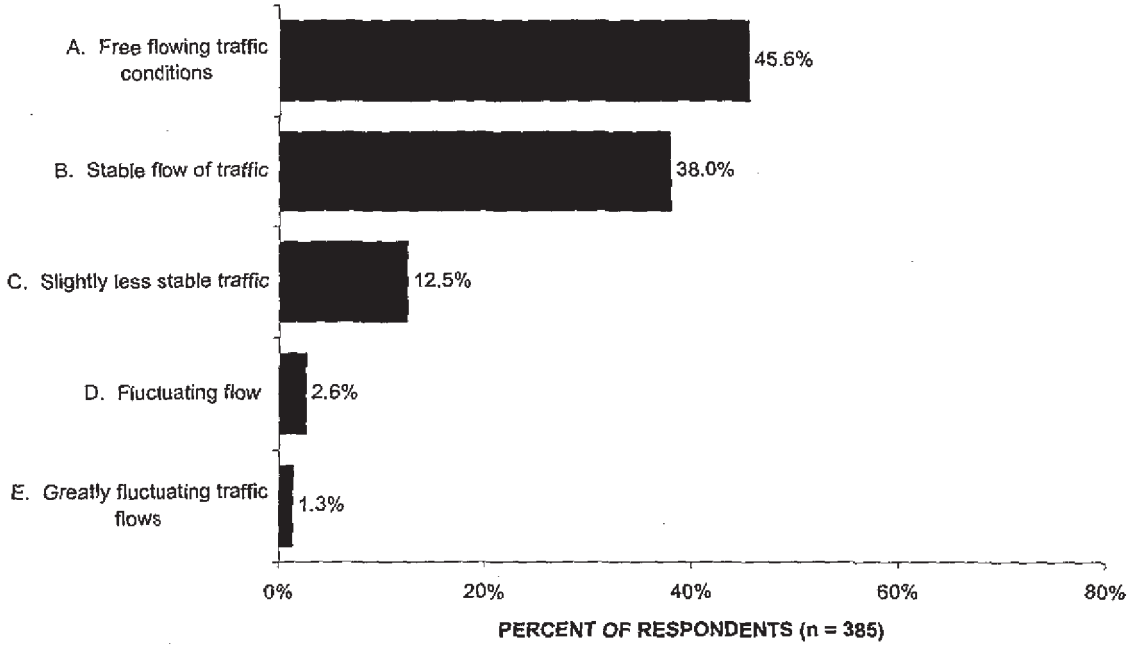
After rating the acceptability of the five traffic descriptions, respondents to Version 1 of the Gate Survey were asked Q-13 (see Figure 7.8).

v1, Q-13

If you traveled on the road from Paradise to Longmire on the trip during which you were contacted for this survey, try to recall traffic conditions during your drive. Which of the descriptions in question 11 best describes traffic conditions when you drove from Paradise to Longmire? *(Please circle one number below.)*

1 DESCRIPTION _____ *(Enter the appropriate letter from question 11.)*
2 DID NOT TRAVEL ON ROAD FROM PARADISE TO LONGMIRE

FIGURE 7.8: v.1, Q-13
ACTUAL TRAFFIC CONDITIONS ON ROAD FROM PARADISE TO LONGMIRE



The actual traffic conditions encountered could reasonably be assumed to be roughly correlated with the number of vehicles in the park. Thus, if respondent perceptions of traffic conditions are accurate, they too should be correlated with the number of vehicles in the park on the survey date. This relationship would not be perfect, given that even on busy days some

respondents may have arrived early in the day, before traffic built up, or some pattern in the clumping of vehicles (perhaps a slow RV preceding or following them) may have altered the conditions they encountered. However, if respondent perceptions are accurate, the obtained samples of over 200 should allow detection of a relationship between perceived traffic conditions and the number of vehicles that entered the park.

The Spearman rho rank order correlation between the reported conditions encountered and the sum of the vehicle counts at the Nisqually and Steven's Canyon entrances on the day when visitors were contacted was .116 ($p = .055$). This result suggests that respondents' ratings of the traffic congestion they encountered were related to vehicle counts, but only very weakly. It is not clear whether this weak correlation should be seen as evidence for the accuracy or inaccuracy of visitor perceptions of traffic conditions. The variability in traffic conditions on even busy days (described above) would be expected to limit the correlation even if visitors were very accurate, and other factors also come into play. Most visitors completed the Gate Survey at least two weeks after their trip, making the accuracy of their memory as important a factor as the accuracy of their initial perception. In addition, visitors may have encountered a variety of traffic conditions that the response options in Q-13 did not allow them to

[5] The Spearman rho rank order correlation is a measure parallel to Pearson's r that is used when one or both of the variable being correlated is ordinal. The interpretation of the coefficient is the same as for Pearson's r.

accurately describe. Further research would be necessary to determine whether the weakness of the observed correlation should be attributed to the inaccuracy of visitor perceptions or to the weaknesses of the present analysis.

Importance of Turnout Parking Conditions

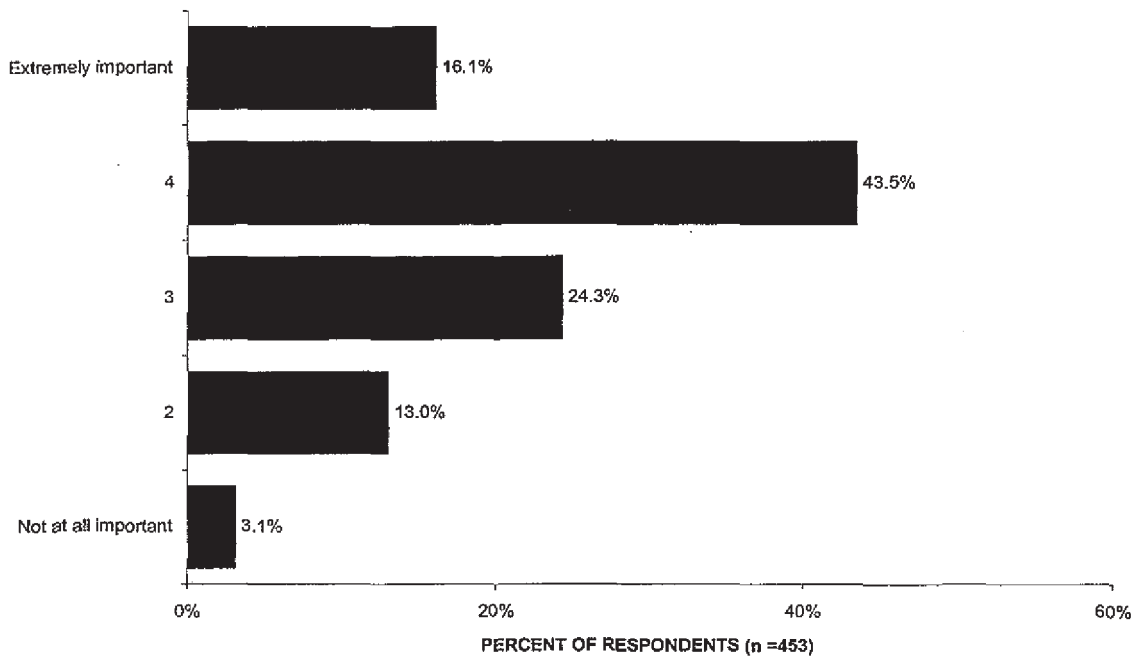
v.1, Q-18

Please rate the importance of parking conditions at turnouts to your overall enjoyment of Mount Rainier National Park. *(Please circle the appropriate number in the scale below.)*

Not at all Important				Extremely Important
1	2	3	4	5

As can be seen in Figure 7.9, almost 85% of respondents rated the importance of turnout parking conditions at 3 or higher on the scale in Q-18.

FIGURE 7.9: v.1, Q-18
IMPORTANCE OF PARKING CONDITIONS TO ENJOYMENT OF MORA



In v. 2, Q-11, the list of 18 factors that could affect visitors' park experiences also included turnout parking conditions. For the number of vehicles at scenic turnouts, about 75% of respondents rated the importance of vehicles at turnouts at 3 or higher on the scale 1 = not important to 5 = very important (see Figure 6.1). A sense of the comparative importance of turnout parking conditions to other factors can also be gained by examining the mean importance ratings of all 18 factors (see Figures 6.1 - 6.4). The number of vehicles at scenic turnouts had the fourth highest mean importance ratings just behind traffic conditions in the park. About 1.5% of respondents listed the number of vehicles at scenic turnouts as the most important factor to their enjoyment of MORA, and 3.2% of respondents listed it as their first or second most important factor. These findings in conjunction with those from Q-18, indicate that, in general, the broad cross-section of visitors sampled in the Gate Survey rated turnout parking conditions similar to traffic conditions in importance to their park experiences. However, turnout parking conditions were less often considered a 'most important' factor in determining visitors' enjoyment of the park.

Consensus Concerning Acceptable Turnout Parking Conditions

Visitor consensus concerning acceptable levels (i.e., standards) for turnout parking conditions was assessed in three ways (all based on version1 of the Gate Survey). First, responses to Q-15 were examined.

v1, Q-15

Please imagine again that you are passing Longmire in your vehicle and are headed up the mountain to Paradise. You are looking forward to visiting Paradise, but are taking time to enjoy your drive and are looking for scenic views and turnouts where you can stop to stretch your legs and take photographs.

Listed below are four descriptions of use levels at turnouts along the road to Paradise. **For each description, please imagine making the drive from Longmire to Paradise and then indicate how acceptable you would find the described conditions at turnouts.**

INDICATE YOUR RATING OF DESCRIPTIONS A THROUGH D BELOW

A. Parking is available at all turnouts. You can stop and immediately park at any turnout you select.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

B. Parking is available at many turnouts but the designated lots at more popular areas such as Narada Falls or Christine Falls are full. To visit these sites you must either wait for a spot or park in undesignated areas.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

C. Designated parking lots are full at all turnouts and the more popular areas such as Narada Falls or Christine Falls are over capacity with traffic congestion due to waiting cars and cars parked in all available undesignated areas. Waiting or parking in undesignated areas is required to find parking at any site and long waits in congested areas are likely at popular sites.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

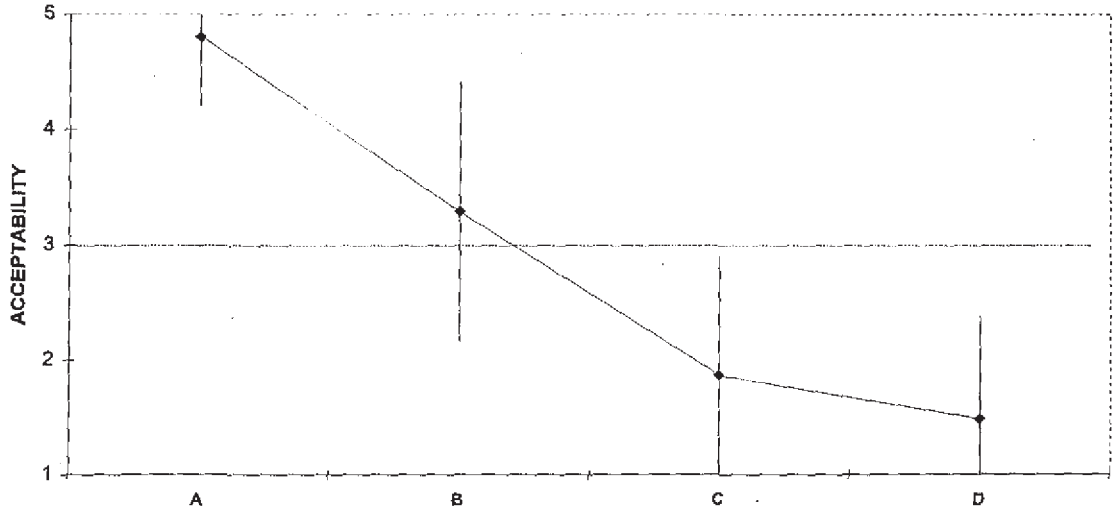
D. Parking lots at all turnouts are over capacity with traffic congestion due to waiting cars and cars parked in all available undesignated areas. Long waits in congested areas are likely before finding parking at any turnout.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

Figure 7.10 shows the mean acceptability ratings of the four descriptions of congestion at scenic turnouts with vertical lines extending one standard deviation above and below the means. Similar to the ratings of traffic conditions, the standard deviation lines indicate considerable disagreement. Nonetheless,

the shift from acceptable to unacceptable turnout parking conditions appears to fall between description B and C.

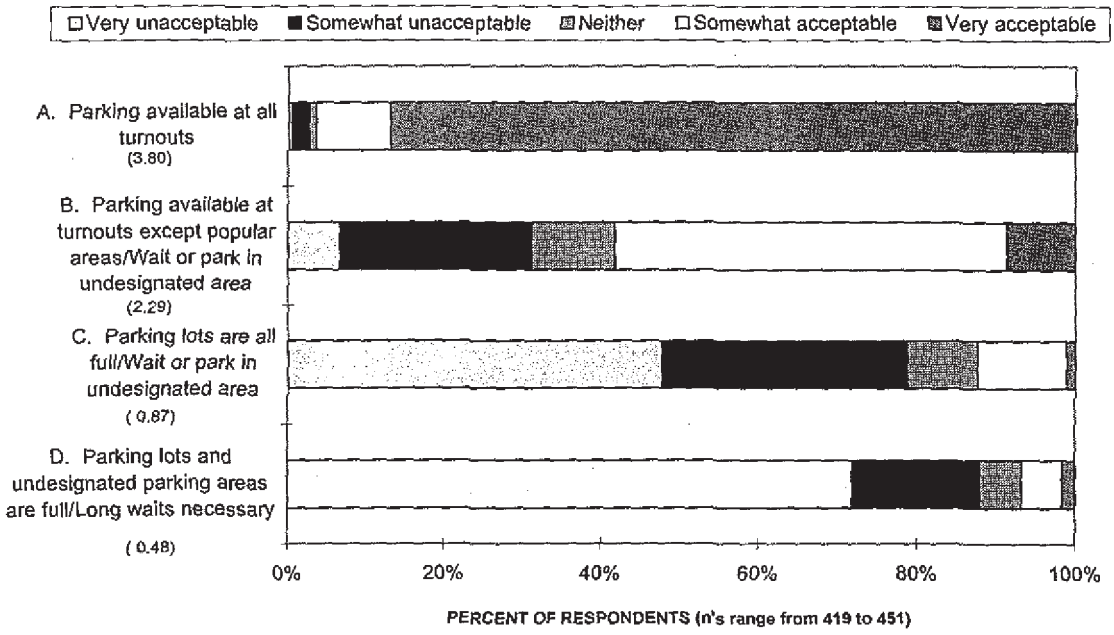
FIGURE 7.10: Q-11
ACCEPTABILITY OF TURNOUT PARKING CONDITIONS



(n = 433)
Bars represent 1 standard deviation on each side of the mean

In order to represent the degree of consensus in a different way, Figure 7.11 presents the actual distribution of responses for each description of turnout parking. Note that about 32% of respondents rated description B as very or somewhat unacceptable but that 79% rated C as very or somewhat unacceptable.

FIGURE 7.11: v.1, Q-15
ACCEPTABILITY OF PARKING CONDITIONS ON ROAD FROM LONGMIRE TO PARADISE



Consensus was also assessed with regard to maximum acceptable traffic congestion as asked about in v.1, Q-16.

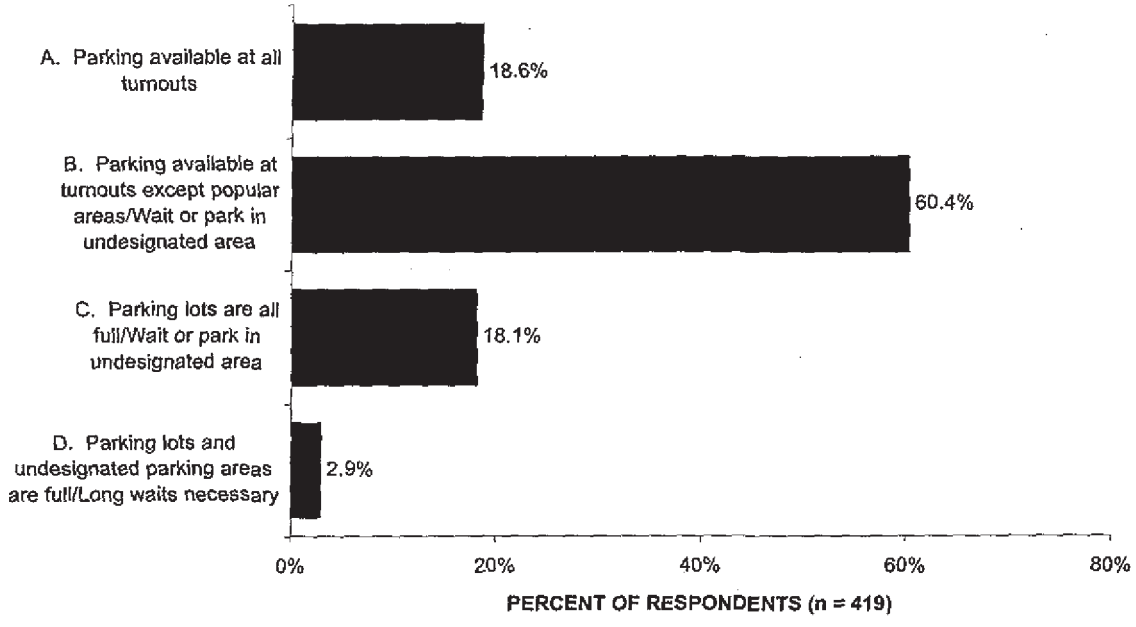
v1, Q-16

Imagine that you are a manager of Mt. Rainier National Park and you have to make a decision about the number of vehicles that could use turnouts in the park. On busy summer weekends at Mt. Rainier, which of the descriptions in question 15 describes the **MAXIMUM** number of vehicles that **SHOULD** be present at turnouts on the road from Paradise to Longmire?

DESCRIPTION _____ *(Enter the appropriate letter from question 15.)*

Responses to the question about the maximum vehicles that should be present at turnouts correspond quite closely with the results of the acceptability ratings. Figure 7.12 shows that about 60% of the sample chose description B. Most visitors find description A and B acceptable, and nearly all find description C and D unacceptable.

FIGURE 7.12: v.1, Q-16
MAXIMUM AMOUNT OF PARKING CONGESTION THAT GATE SURVEY RESPONDENTS FEEL SHOULD BE PRESENT ON ROAD FROM LONGMIRE TO PARADISE



Consensus concerning acceptable turnout parking conditions was also assessed by comparing acceptability ratings of the hypothetical scenarios across subgroups within the sample that might be expected to differ based on theory. The same subgroups were used as for traffic conditions.

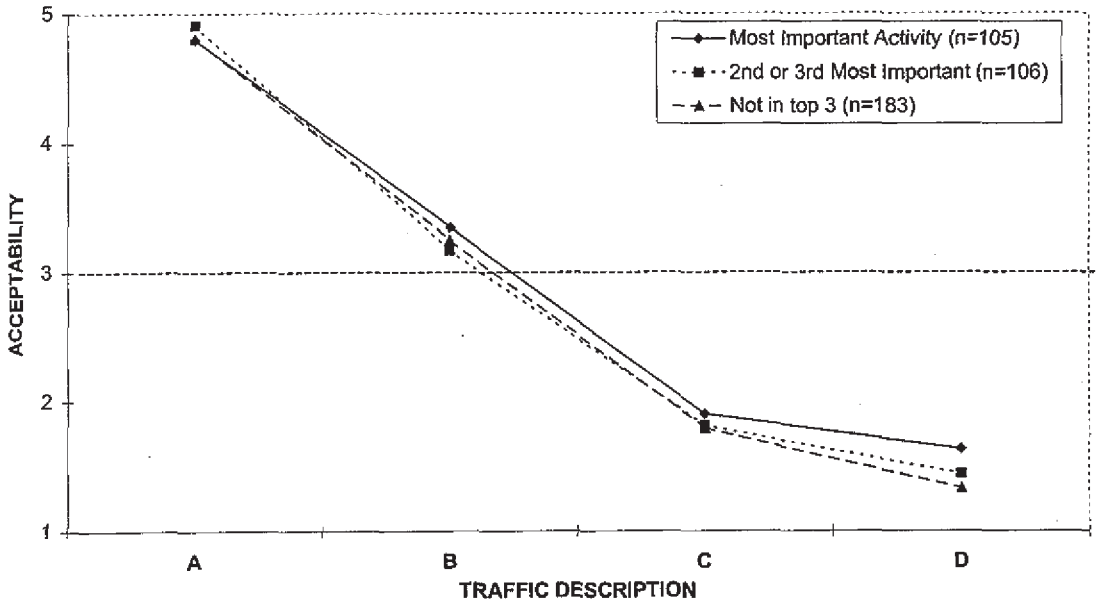
1) Visitors who visited on days when varying numbers of vehicles entered the Nisqually/Steven's Canyon corridor (Busiest 1/3, Middle 1/3, and Lowest 1/3).

The analysis found no significant difference between the groups (see Figure 7.13). As with the analysis of traffic conditions, this finding that recent experience does not significantly affect acceptability ratings provides a small measure of support for the assumption that the ratings reflect acceptability

judgements that are consistent across time rather than short-term impressions generated as a product of the hypothetical scenarios and recent experiences in MORA.

2) Visitors for whom driving to view scenery was the most important activity, was the 2nd or 3rd most important activity, or was not a most important activity.

FIGURE 7.13:
ACCEPTABILITY OF TURNOUT PARKING CONDITIONS
BY IMPORTANCE OF DRIVING TO VIEW SCENERY



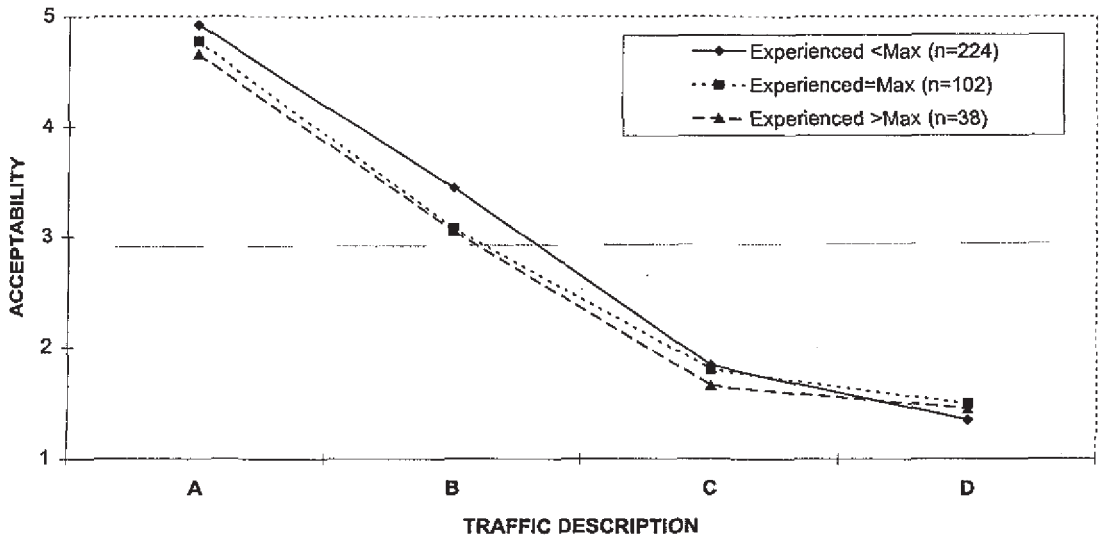
MANOVA F(8,778) = 2.19; P=.026

There was a statistically significant difference in the acceptability ratings of these three groups, F(8,778)=2.19, p=.026. The mean acceptability ratings of all four turnout descriptions for the groups show that respondents for whom driving was most important rate the highest congestion level to be slightly *more* acceptable than do persons for whom driving was less important (see Figure 7.13). The same explanation applied to traffic conditions may also apply to this difference. Turnout description D describes congestion that will affect traffic on

the road. Under such conditions, the goals of the respondents for whom driving was less important would be frustrated by slower speeds and congestion (i.e., they would take longer to reach their destination) whereas the goals of the driving sightseers would not be as heavily affected. Once again, the lines differ statistically but are very similar for all groups. All lines cross the neutral point between description B and C and show differences that would be unlikely to alter management decisions.

3) Visitors who differed in the importance they assigned to the traffic conditions on the roads. Four groups were defined, those rating importance as 1 or 2, and those with ratings of 3, 4, and 5.

FIGURE 7.14:
ACCEPTABILITY OF TURNOUT PARKING CONDITIONS
BY EXPERIENCED vs. MAXIMUM ACCEPTABLE
TRAFFIC CONGESTION



MANOVA F(8,718) = 3.53; P=.001

As the importance ratings of turnout parking conditions increased, respondents were more likely to rate the higher levels of congestion as unacceptable, $F(12,1272)=7.94$, $p<.001$ (see Figure 7.14). The differences

revealed by this analysis are the largest found in any of the subgroup comparisons with the mean acceptability ratings of description B and C differing by more than 1 scale point across the groups. This difference could prove important if the importance of turnout parking is closely related to some demographic or activity-based characteristic of visitors, but this seems unlikely given the weak differences in ratings based on the importance of driving to view scenery (see above). Even if importance is not related to some other visitor characteristic, it may prove helpful to management to know that about 15% of visitors feel turnout parking conditions are extremely important and find turnout congestion considerably less acceptable than do other visitors.

Together these subgroup analyses show that although they differ statistically in their acceptability ratings of the turnout descriptions, all subgroups generally found description A to be acceptable and descriptions C and D to be unacceptable. Most groups also tended to agree that description B illustrated the highest acceptable level of congestion at turnouts. However, among respondents who felt turnout parking conditions were extremely important, more thought description B was unacceptable rather than acceptable.

Perceptions vs. Objective Measures of Turnout Parking Conditions

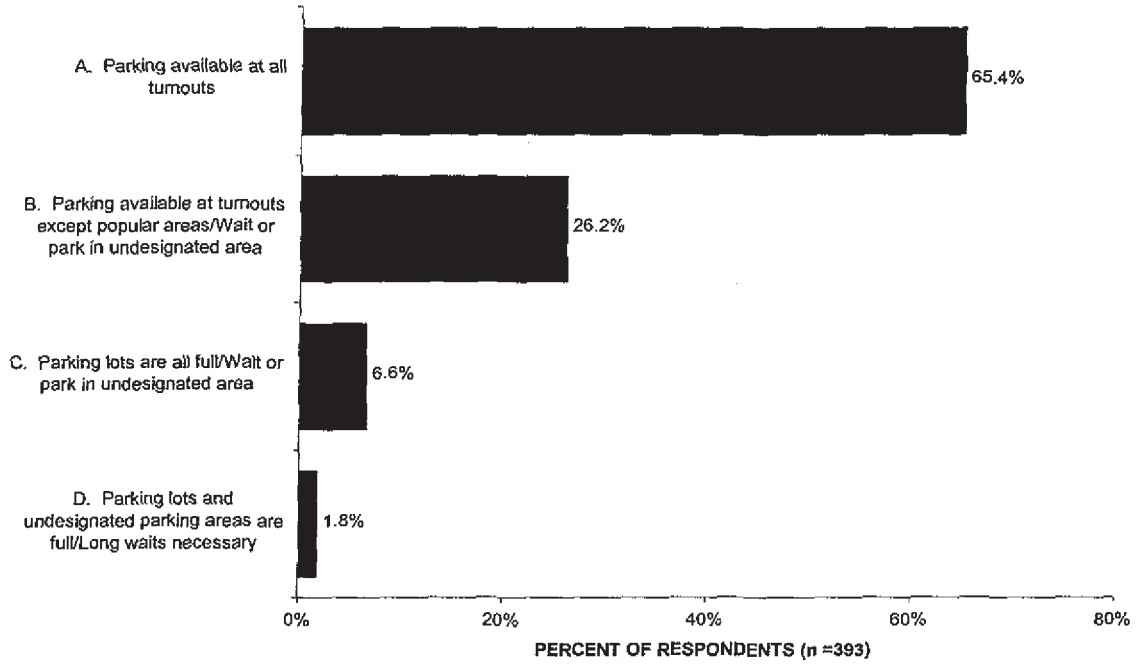
After rating the acceptability of the four turnout descriptions, respondents with Version 1 of the Gate Survey were asked Q-17 (see Figure 7.15):

v1, Q-17

If you traveled on the road from Paradise to Longmire on the trip during which you were contacted for this survey, try to recall parking conditions at turnouts during your drive. Which of the descriptions in question 15 best describes parking conditions when you drove from Paradise to Longmire? *(Please circle one number below.)*

1 DESCRIPTION _____ *(Enter the appropriate letter from question 15.)*
2 DID NOT TRAVEL ON ROAD FROM PARADISE TO LONGMIRE

FIGURE 7.15: v.1, Q-17
ACTUAL PARKING CONDITIONS ON ROAD FROM LONGMIRE TO PARADISE



The Spearman rho rank order correlation between the reported conditions encountered at turnouts and the summed daily vehicle counts was .190 (p = .001). This result is considerably stronger than the relationship between perceptions of traffic conditions and vehicle counts described above and is highly significant statistically, but it still represents a relatively weak relationship. It is difficult to interpret this result because it is not clear whether the observed

relationship represents a low degree of accuracy in visitors' recollections of turnout parking conditions, or a high degree of accuracy that is obscured by the weakness of daily vehicle counts as a surrogate measure of turnout crowding. The only unequivocal statement is that visitor perceptions were weakly related to daily vehicle counts.

Conclusion

The results of all these analyses can best be considered in relation to the three questions that motivated them.

Importance: Both traffic conditions and turnout parking conditions were considered important by respondents. Most respondents rated traffic and turnout importance at 3 or higher on 5 point importance scales, and in comparison to 16 other factors in park enjoyment, traffic and turnout mean importance ratings were lower than only one other factor that was directly related to visitor density. Interestingly, that factor -- number of vehicles in visitor center parking lots (as opposed to vehicles in turnout parking lots) -- is also associated with vehicle density, suggesting that general vehicular congestion is a major concern of MORA visitors.

Consensus: For both possible indicators it was clear that respondents agreed about the acceptability and unacceptability of the descriptions of very low and very high congestion levels for roads and turnouts. However, the consensus was not sufficient to make clear the point at which one description was clearly acceptable and the next was not.

The analysis of subgroups showed that although several groups differed statistically in their acceptability ratings of traffic and turnout parking conditions, only one of those differences was likely to have implications for management decisions concerning the selection of appropriate indicators or the standards associated with them. That particular difference (i.e., differing acceptability of turnout congestion for visitors who varied in the degree to which parking at turnouts was important to their trip enjoyment) is of limited use to managers unless demographic or activity-based differences can be found that correspond to the differences in importance ratings.

The subgroup analysis also provided a small measure of support for the use of the acceptability ratings in setting management policy. Such use of survey data based on hypothetical scenarios relies on the assumption that the ratings tell us something about the conditions that will actually have negative impacts on visitor experiences. Our confidence in that assumption would have been weakened if the ratings of the hypothetical scenarios were affected by the conditions the visitors encountered at MORA, but such an effect was not observed.

Although the observed differences in the acceptability ratings of tested subgroups were generally too small to directly affect the interpretation of the acceptability ratings themselves, at least one subgroup difference suggests a managerially important insight. Recall that respondents who said driving to view scenery was their most important activity were more tolerant of traffic and turnout congestion than those who said other activities were most important, suggesting

that slight differences in judgements concerning the management of a zone may indicate qualitative differences between subgroups in the meaning they place on their activities in that zone. Managers should be vigilant for such qualitative differences and should carefully assess impacts on the different zone users before taking action.

Perceptions vs. Objective Measures of Conditions: Only weak statistical analyses could be brought to bear on this question (due largely to the fact that the survey was not designed to address this question) and perceptions of traffic conditions and turnout parking conditions were shown to be only weakly related to the number of vehicles entering the park on the day each respondent visited. Thus, it is not possible to determine whether visitor perceptions are inaccurate or whether other factors are masking a relatively high degree of perceptual accuracy.

If it were obtained, strong research evidence of inaccuracy in visitor perceptions of the number of other visitors and vehicles around them would certainly call into question any monitoring plan based on the measurement of visitor perceptions. However, such evidence would not necessarily invalidate the use of survey methodology to determine what visitors consider to be acceptable park conditions. The validity of such methods, that is, the degree to which survey responses accurately describe the conditions that have positive and negative effects on visitor experiences, may or may not be determined by visitor accuracy in describing the conditions they actually encounter. For example, a survey of visitors to Spray Park showed great variability in their estimated

encounters, even among members of the same party. Nonetheless, the percentage of visitors who reported feeling crowded on a particular day was very highly correlated with the number of hikers entering the area (Vande Kamp, Johnson, and Swanson 1998).

From a practical standpoint, the question of visitors' perceptual accuracy may be moot. Taking a hypothetical scenario to an extreme may help illustrate this point. If visitors were completely unable to detect the effects of policy changes that substantially affected visitor density, it would appear foolish to base decisions on what those visitors say they find acceptable. However, even in this extreme case, could any resource manager make policy decisions that included no visitor input, and justify such decisions by saying, "The research says that visitors can't tell the difference so we don't consider what they have to say." The likely repercussions of such a message seem daunting even if research were to clearly show no accuracy in visitor perceptions of social conditions. How much more serious are the implications in the current case where the research supports at least some level of visitor perceptual accuracy? It may be politically essential to consider what visitors think about social issues in the park.

In summary, the analyses described above demonstrate that both traffic conditions and turnout parking conditions have considerable promise as social indicators in the motorized sightseeing zone. Visitors considered both potential indicators to be important determinants of their enjoyment of the park and analyses provided evidence concerning the range of conditions that most visitors find acceptable. Neither potential indicator was shown to be clearly preferable

for selection and use in the VERP process. The comparative ease with which monitoring plans could be implemented for traffic conditions vs. turnout parking conditions might be considered next as a means of deciding which indicator will prove most useful in ongoing planning and management.

VIII. DISPLACEMENT

The Gate Survey asked respondents a variety of questions concerning acceptable substitute destinations for the Paradise Visitor Complex and the Longmire Visitor Complex. This section reports whether acceptable substitute destinations existed and what they were. Each question is presented first, followed by appropriate graphs and analyses.

Availability of an Acceptable Substitute Destination: Paradise

v. 1, Q-10

On the trip during which you were contacted, did your party stop to visit any facilities or outdoor attractions at the Paradise Visitor Complex? (Paradise is the most popular visitor complex in the park and is located at 5,400' altitude on the South side of the mountain.)

1 NO ->**GO TO QUESTION 11**

2 YES --> If, prior to your trip, you were told that the Paradise Visitor Complex (including all the trails in Paradise Meadows and other outdoor areas in the vicinity) was filled to capacity and closed to further visitors, would there have been an acceptable substitute destination for you to visit instead? (*Circle one number*)

1 NO, THERE WOULD NOT HAVE BEEN AN ACCEPTABLE SUBSTITUTE DESTINATION

2 YES, A SUBSTITUTE DESTINATION WOULD HAVE BEEN ACCEPTABLE

List acceptable substitute destinations **INSIDE** Mt. Rainier National Park (list in order of preference, or circle #1 or #5).

1 None of the acceptable substitutes are in Mt. Rainier National Park

2 _____

3 _____

4 _____

5 Would accept a substitute but would need to be informed of alternatives.

Please list acceptable substitute destinations **OUTSIDE** Mt. Rainier National Park but in the Northwestern US (list in order of preference, or circle #1 or #5).

1 None of the acceptable substitutes are outside Mt. Rainier National Park

2 _____

3 _____

4 _____

5 Would accept a substitute but would need to be informed of alternatives.

FIGURE 8.1: v.1, Q-10
PERCENTAGE OF GATE SURVEY RESPONDENTS WHO STOPPED AT THE PARADISE VISITOR COMPLEX

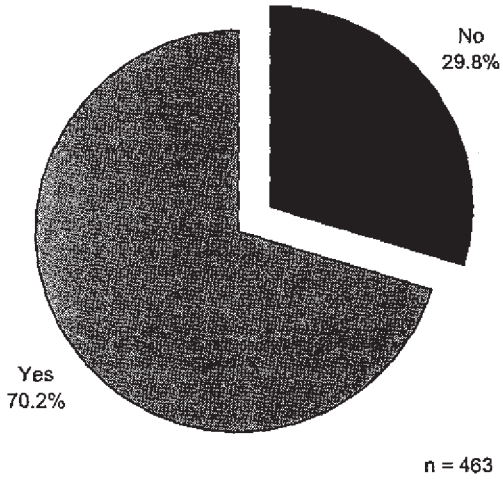
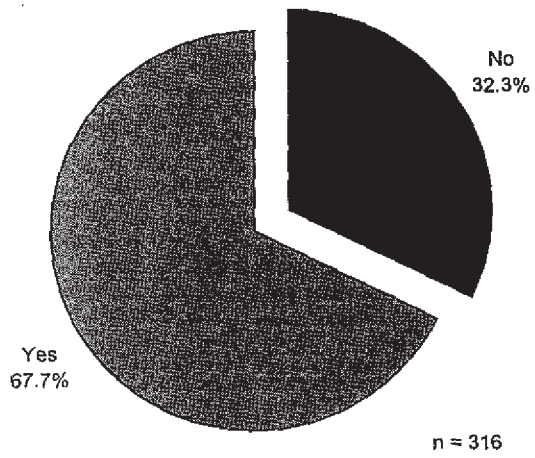
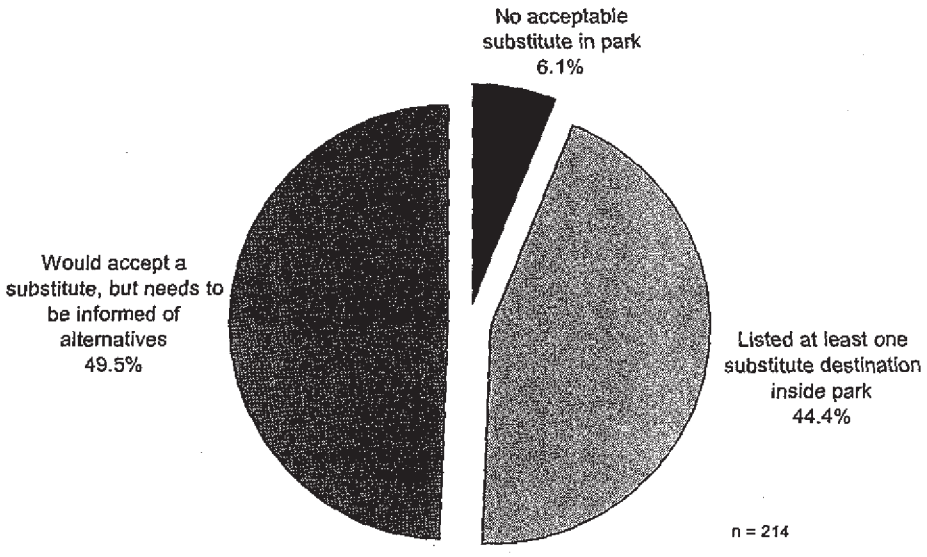


FIGURE 8.2: v.1, Q-10
IF NOTIFIED THAT PARADISE VISITOR COMPLEX WAS FILLED TO CAPACITY, WOULD THERE HAVE BEEN AN ACCEPTABLE SUBSTITUTE?



Includes only the 70.2% of respondents who indicated that they visited the Paradise Visitor Complex

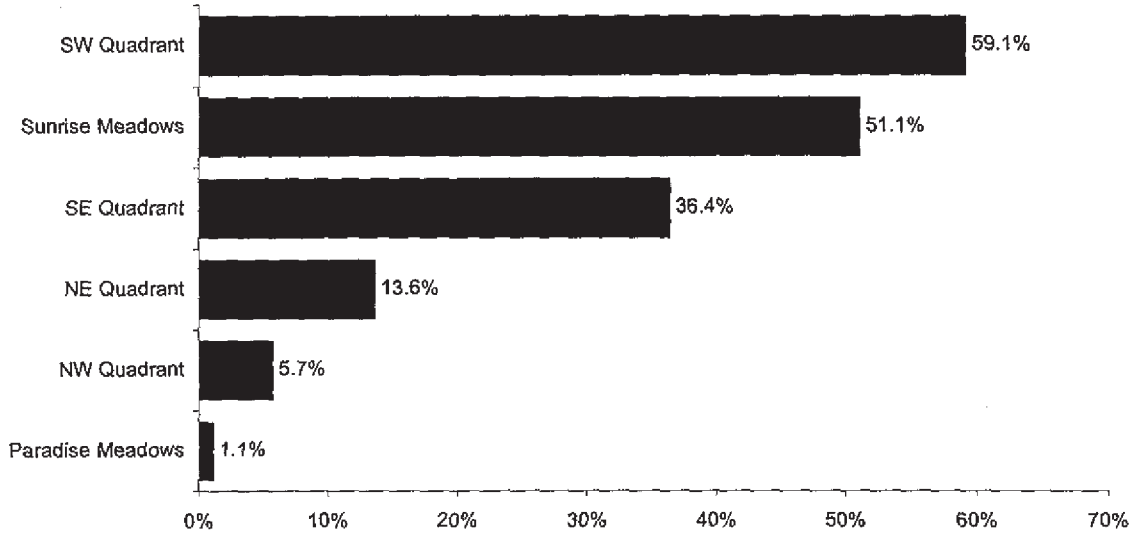
FIGURE 8.3: v.1, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR PARADISE EXIST WITHIN MORA?



Includes only the 67.7% of respondents that indicated an acceptable substitution exists.

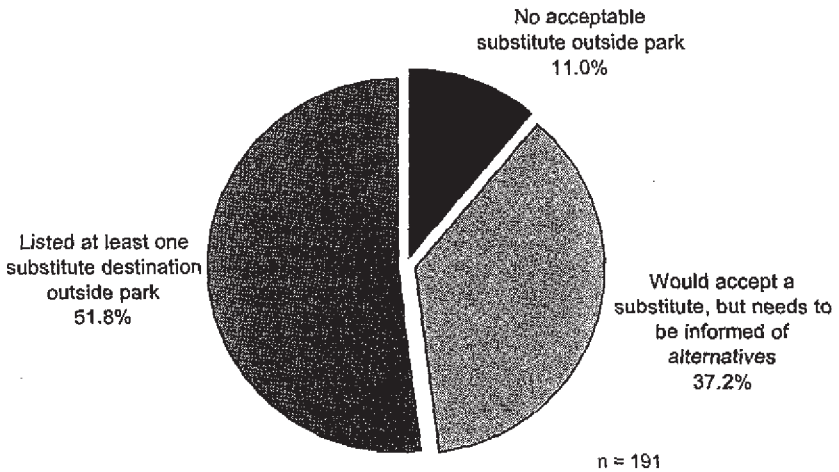
Respondents were asked to list up to 3 substitute destinations in MORA for Paradise. Because a large number of options were given by a small number of people (with the exclusion of Sunrise Meadows), these responses were then grouped by location in the park (SW quadrant, SE quadrant, NE quadrant and NW quadrant). As can be seen in Figure 8.4, 1.1% of the respondents listed Paradise meadows as a substitute destination for Paradise. It is unclear how these people are differentiating Paradise from Paradise meadows.

FIGURE 8.4: v. 1, Q-10
SUBSTITUTE DESTINATIONS FOR PARADISE IN MORA



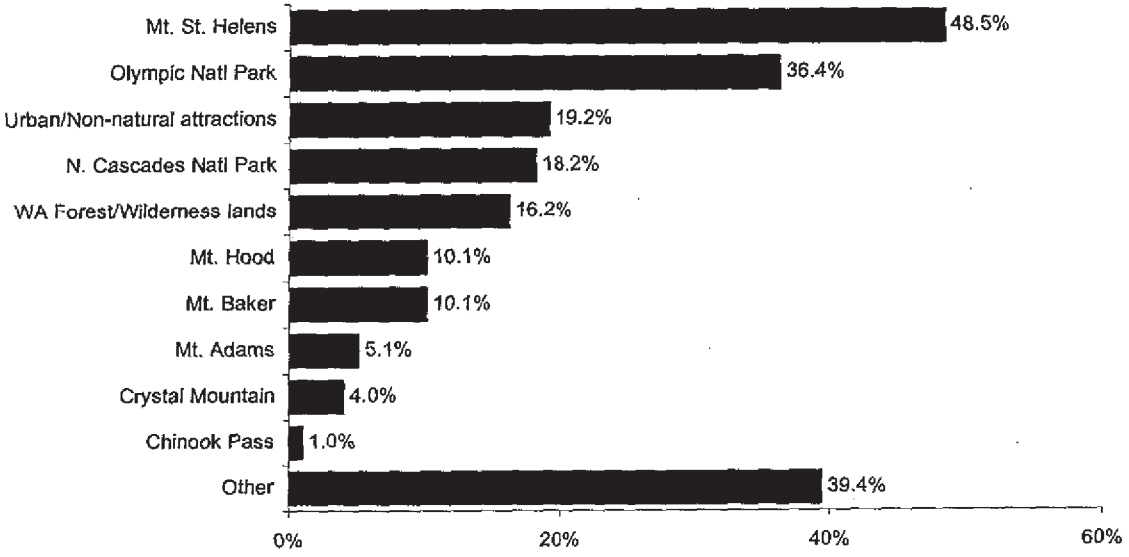
PERCENT OF RESPONDENTS (n = 88)
Includes only the respondents who listed a specific destination.
Percentages sum to more than 100 because respondents could have *multiple substitute* destinations

FIGURE 8.5: v. 1, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR PARADISE EXIST OUTSIDE MORA?



Includes only the 67.7% of respondents that indicated an acceptable *substitute destination* exists.

FIGURE 8.6: v. 1, Q-10
SUBSTITUTE DESTINATIONS FOR PARADISE OUTSIDE OF MORA



PERCENT OF RESPONDENTS (n = 99)
Includes only the 51.8% of respondents that listed a specific destination.
Percentages sum to more than 100 because respondents could have multiple substitute destinations.

Availability of an Acceptable Substitute Destination: Longmire

v. 2, Q-10

On the trip during which you were contacted, did your party stop to visit any facilities or outdoor attractions at the Longmire Visitor Complex? (Longmire is the visitor complex 7 miles from the Southwest entrance, located just off the park road across from Longmire meadow.)

1 NO ->**GO TO QUESTION 10**

2 YES --> If, prior to your trip, you were told that the Longmire Visitor Complex and surrounding area (including all the trails in Longmire Meadow and other outdoor areas in the vicinity) was closed to visitors, would there have been an acceptable substitute destination for you to visit instead? (*Circle one number*)

1 NO, THERE WOULD NOT BE AN ACCEPTABLE SUBSTITUTE DESTINATION

2 YES, A SUBSTITUTE DESTINATION WOULD HAVE BEEN ACCEPTABLE

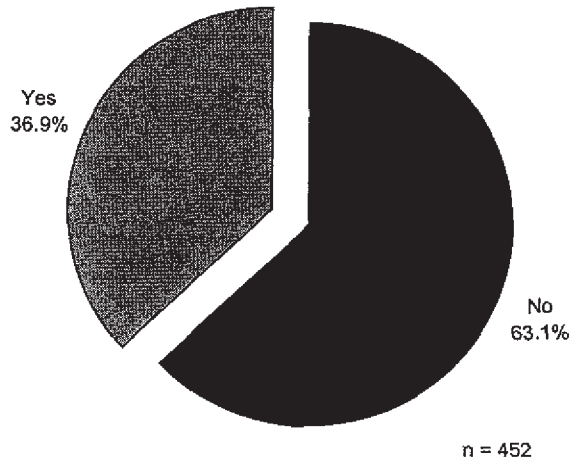
Please list acceptable substitute destinations inside Mt. Rainier National Park (list in order of preference), or circle #5.

1 _____
2 _____
3 _____
4 _____
5 Would accept a substitute but would need to be informed of alternatives.

Please list acceptable substitute destinations outside Mt. Rainier National Park but in the Northwestern US (list in order of preference), or circle #5.

1 _____
2 _____
3 _____
4 _____
5 Would accept a substitute but would need to be informed of alternatives.

FIGURE 8.7: v. 2, Q-10
PERCENTAGE OF RESPONDENTS WHO STOPPED AT THE LONGMIRE VISITOR COMPLEX



As can be seen in Figure 8.8, a greater percentage of gate respondents entering the Nisqually Entrance (39.8%) than the Stevens Canyon Entrance (29.3%) stopped at the Longmire Visitor Complex, $\chi^2(1) = 4.04$, $p = .044$. Further analyses revealed that these effects were due to both contact point and whether respondents stayed overnight. Of respondents who had a day visit, a greater proportion of respondents contacted at the Nisqually Entrance stopped at Longmire than respondents contacted at the Stevens Canyon Entrance. No contact point difference was found for respondents who stayed overnight.

FIGURE 8.8: v. 2, Q-10
PERCENTAGE OF RESPONDENTS WHO STOPPED AT LONGMIRE VISITOR COMPLEX BY CONTACT POINT

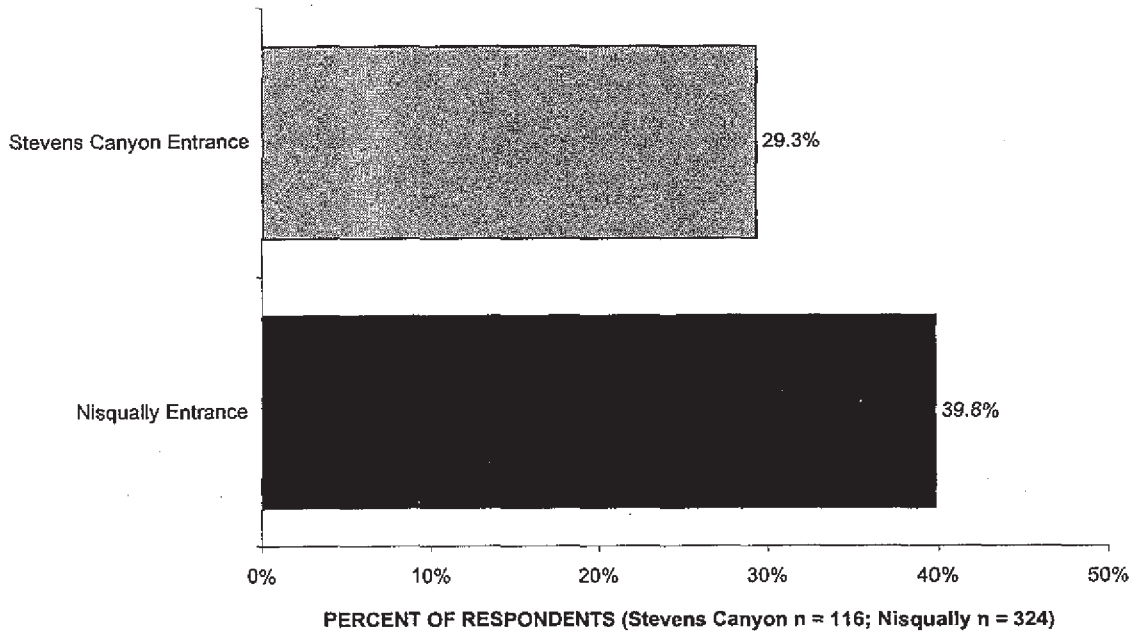
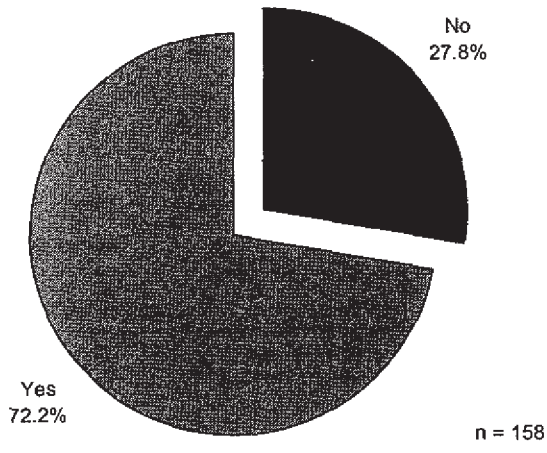
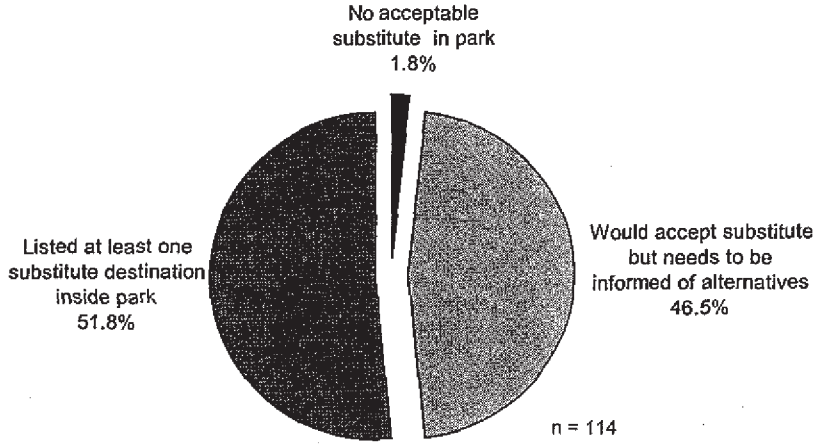


FIGURE 8.9: v. 2, Q-10
IF NOTIFIED THAT LONGMIRE VISITOR COMPLEX WAS FILLED TO CAPACITY, WOULD THERE HAVE BEEN AN ACCEPTABLE SUBSTITUTE?



Includes only the 36.9% of respondents who indicated that they visited the Longmire Visitor Complex

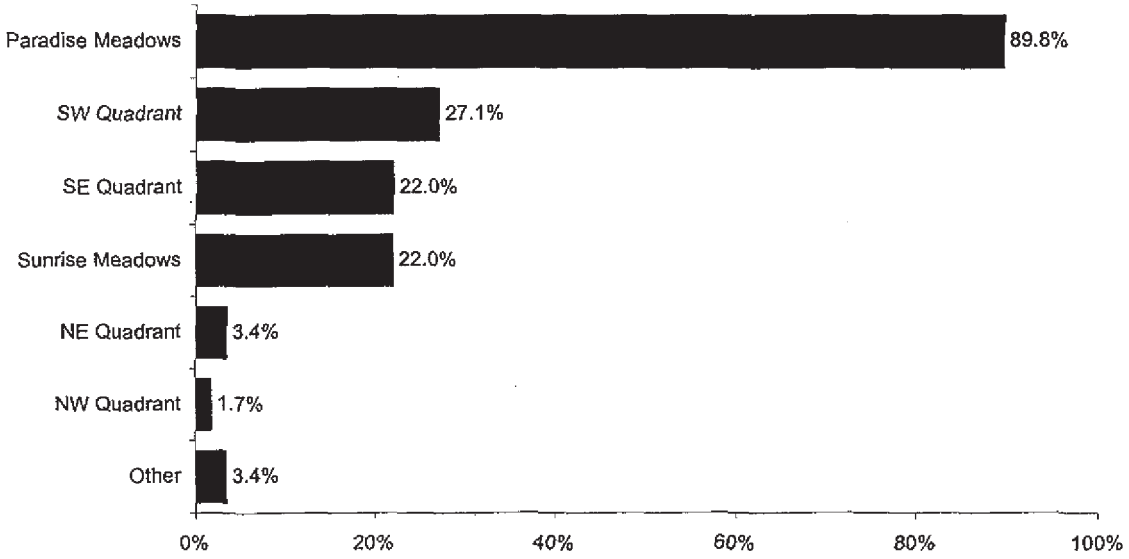
FIGURE 8.10: v. 2, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR LONGMIRE EXIST WITHIN MORA?



Includes only the 72.2% of respondents who indicated that an acceptable substitution exists

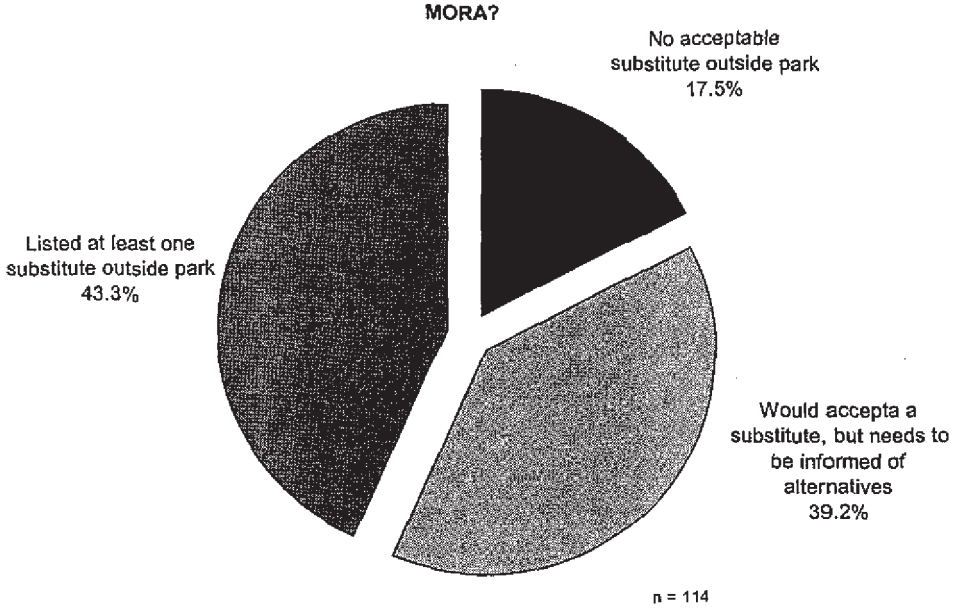
Respondents were asked to list up to 3 substitute destinations in MORA for Longmire. Because a large number of options were given by a small number of people (with the exclusion of Paradise Meadows and Sunrise Meadows), these responses were then grouped by location in the park (SW quadrant, SE quadrant, NE quadrant and NW quadrant).

FIGURE 8.11: v. 2, Q-10
SUBSTITUTE DESTINATIONS FOR LONGMIRE IN MORA



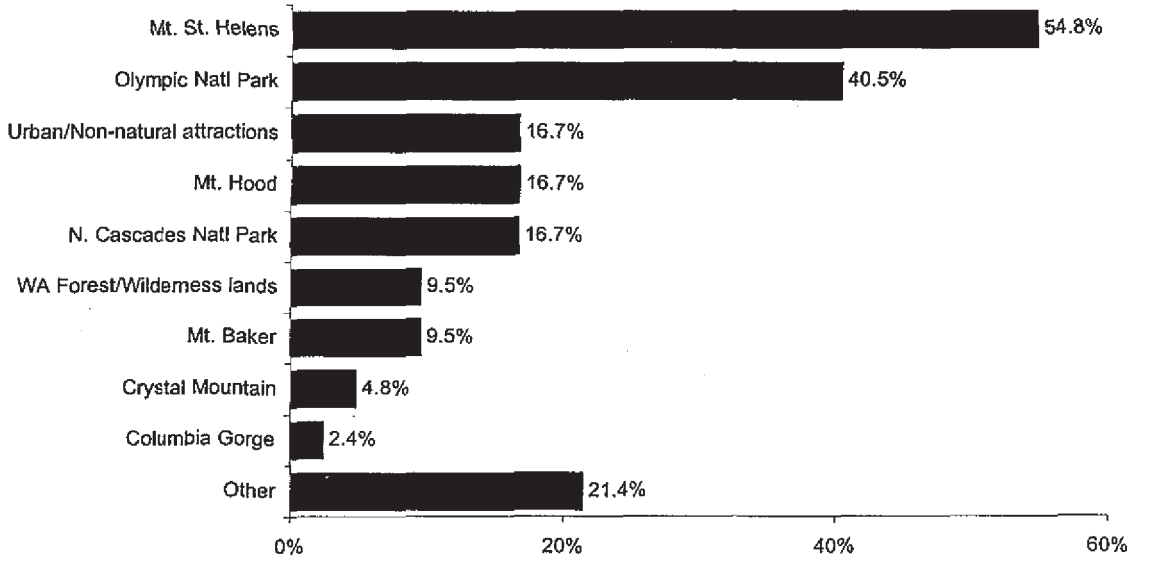
PERCENT OF RESPONDENTS (n = 58)
Includes only the respondents who listed a specific destination.
Percentages sum to more than 100 because respondents could have multiple substitute destinations

FIGURE 8.12: v. 2, Q-10
DOES AN ACCEPTABLE SUBSTITUTE DESTINATION FOR LONGMIRE EXIST OUTSIDE MORA?



Includes only the 72.2% of respondents who indicated that an *acceptable substitution exists*

FIGURE 8.13: v. 2, Q-10
SUBSTITUTE DESTINATIONS FOR LONGMIRE OUTSIDE OF MORA



PERCENT OF RESPONDENTS (n = 41)
Includes only the 43.3% of respondents that listed a specific destination.
Percentages sum to more than 100 because respondents could have multiple substitute destinations.

Who reports that there is no acceptable substitute?

A substantial number of respondents indicated that there would be no substitute destination for Paradise (32.3%). An analogous pattern held for Longmire (27.8%). These respondents are the visitors most likely to react negatively to limits on the number of visitors to Paradise or Longmire, respectively. If management is able to identify who these visitors are, they will be better able to assess possible impacts and to address these visitors' concerns should limits be invoked.

Logistic regression analysis was used to select characteristics that predict visitors for whom there would not be an alternative to Paradise. Logistic regression is a form of linear regression used when your dependent variable is

dichotomous (e.g., acceptable alternative?: yes or no). In logistic regression, predictor variables may be either categorical (e.g., sex: male or female) or continuous (e.g., number of visits to MORA in the past 3 years: 0, 1, 2,...). Like linear regression, a stepwise procedure[4] can be adopted to determine the best fitting model.

In each analysis, the set of predictors included demographic characteristics and trip characteristics (see Table 8.1 for complete list), and a stepwise procedure was used.

Logistic Regression Analysis: No acceptable substitute for Paradise

A stepwise logistic regression analysis was performed to determine which of the predictive variables listed in Table 8.1 result in the best model for predicting visitors for whom there was no substitute for Paradise. Of the original 316 cases, 72 were excluded due to missing data. The remaining 244 cases

[4] Stepwise regression technique instructs the computer to find the "best" set of predictor variables by entering independent variables in various combinations and orders. It combines the methods of backward elimination and forward selection. The variables are in turn subject first to the inclusion criterion of forward selection and then to the exclusion procedures of backward elimination. Variables are selected and eliminated until there are none left that meet the criteria for removal. In forward selection, the computer estimates one simple regression for each independent variable and chooses the "best" variable (i.e., the one with the highest R-square [R^2] or that explains the largest percentage of the variance in the dependent variable.) Then this variable is tried in combination with each of the remaining variables to find a second that produced the largest R-square. It then continues until adding more variables no longer leads to a significant increase in the R-square. (The level of statistical significance is arbitrarily established prior to the analysis). Backward elimination begins the analysis with all the variables in the equation and removes them one at a time according to whether they meet specific criteria (levels of significance of their F-ratios). The variable with the smallest partial correlation is examined first. If it does not meet the criteria, it is eliminated; then the variable with the second smallest partial correlation is examined, and so on until no more variables are eliminated. The F ratio is the ratio of explained to unexplained variance. In these analyses, the maximum significance of F to enter was .05 and the minimum significance of F to remove was .10.

included 82 respondents who reported there was no substitute for Paradise and 162 respondents who reported there would be an acceptable substitute. A log transformation was performed on the variables party size and trips to MORA in the past three years so they would better meet assumptions of normality.

Table 8.1. Predictive Variables Used in Logistic Regression

Age	Type of group	Had destination?
Gender	Log party size	Sought information prior to trip
Residence	Any child < 16 in group?	How long in advance planned trip
	Gate contacted	Log # trips to MORA in past 3 years

The stepwise logistic regression produced a model consisting of three variables for predicting respondents who say there is no acceptable substitute for Paradise, $\chi^2(6) = 24.22$, $p < .001$. These variables were whether they had any children under the age of 16, type of destination, and residence. A total of 69.7% of cases were correctly classified (see Table 8.2). This model was better at predicting those respondents for whom there was an acceptable substitute for Paradise (91.4% correctly classified) than predicting respondents for whom there was not an acceptable substitute for Paradise (26.8% correctly classified; see Table 8.2).

Table 8.2 Observed and Predicted Classification: No Acceptable Substitute Destination for Paradise

	Predicted		% Correctly
	No Substitute	Substitute	Classified
Observed:			
No Substitute	22	60	26.8%
Substitute	14	148	91.4%
Overall			69.7%

Table 8.3 summarizes the final model derived by the logistic regression. Respondents who had children less than age 16 in their party were more likely to say that there was no acceptable substitute for Paradise, b = .85, p = .012. Respondents with one destination were more likely to say there was no acceptable substitute for Paradise (36.9%) than respondents with no specific destination (31.7%) or those with multiple respondents (25.7%), b = -.78, p =.018. Other US and Foreign (39.5%) were more likely to say that there was no acceptable substitute for Paradise than Local people (22.0%), Other Washington residents (30.0%), and residents of Oregon and California (33.3%), b = -0.94, p = .004.

Table 8.3. Summary of Model Predicting Who Reports Acceptable Substitute for Paradise

Variable	b*	S.E.	Wald	df	p-value	R
Child < 16 yrs old in group	0.85	0.34	6.28	1	.012	.12
Type of destination			7.87	2	.020	.11
One vs. No specific or multiple destinations	-0.78	0.33	5.60	1	.018	-.11
No Specific vs. One or Multiple destinations	0.10	0.40	0.06	1	.808	.00
Residence			9.21	3	.027	.10
Other US & Foreign vs. All others	-0.94	0.32	8.50	1	.004	-.14
Oregon & California vs. All others	-0.14	0.56	0.06	1	.801	.00
Other WA vs. All others	-0.59	0.58	1.04	1	.308	.00
Constant	1.05	0.22	23.36	1	<.001	

* In logistic regression the regression coefficients are interpreted as the amount of change in the log odds of the event occurring for a 1 unit change in the predictor variable. Because the dependent variable being predicted is the log odds of the event and not the probability of the event occurring, interpreting the regression coefficient as the amount of change in the likelihood that an event will happen for a 1 unit change in the predictor variable is incorrect.

When a predictive model is derived, the model can be biased to irregularities in the sample that may not be found in the population. Thus, the model may not be as effective at predicting membership for new cases as it was for predicting cases in the sample used to derive the model. One way to get a sense of the predictive validity of the model is to take random samples from the total dataset and develop a model for each sample. If these models include the same variables as the model based on the whole sample, it suggests that variations in these variables are distributed throughout the sample and not due to some small subset of cases. Thus, these variables should be effective at predicting new cases.

Table 8.4. Summary of Models Predicting Who Reports Acceptable Substitute for Paradise

	Full Sample	Sub-Sample				
		1	2	3	4	5
Total N of sample	316	148	160	176	169	155
N after accounting for missing data	244	117	121	137	129	119
Child < 16 yrs old in group	X			X		
Type of destination	X			X		X
Residence	X					X
Percent of cases classified correctly	69.7%	67.5%	68.6%	67.9%	66.7%	71.4%
Acceptable substitute	91.4%	100.0%	100.0%	82.0%	100.0%	90.0%
No acceptable substitute	26.8%	0.0%	0.0%	41.7%	0.0%	33.0%

Five sub-samples, each consisting of approximately 50% of the total cases, were randomly generated from the total sample and a logistic regression was run on each. The resultant models were then compared to see the frequency with which variables were included as predictors and how effective each model was at classifying cases correctly. As shown in Table 8.4, three sub-samples did not result in any of the possible predictor variables being able to significantly predict for whom there would not be an acceptable substitute for Paradise. The two remaining models included type of destination which was in the full sample model. One of the models included whether there were children under age 16 and the other model included residence, again variables in the full model. These random samples suggest that the model derived using the whole sample may be unreliable.

Logistic Regression Analysis: No acceptable substitute for Longmire

A stepwise logistic regression analysis was performed to determine which of the predictive variables listed in Table 8.1 result in the best model for predicting visitors for whom there was no substitute for Longmire. Of the original 158 cases, 44 were excluded due to missing data. The remaining 114 cases included 24 respondents who reported there was no substitute for Longmire and 90 respondents who reported there would be an acceptable substitute. A log transformation was performed on the variables party size and trips to MORA in the past three years so they would better meet assumptions of normality.

Table 8.5 Observed and Predicted Classification: No Acceptable Substitute Destination for Longmire

	Predicted		% Correctly
	No Substitute	Substitute	Classified
Observed:			
No Substitute	9	15	37.5%
Substitute	3	87	96.7%
		Overall	84.2%

The stepwise logistic regression produced a model consisting of three variables for predicting respondents who say there is no acceptable substitute for Longmire, $\chi^2(10) = 31.87$, $p < .001$. These variables were type of group and how long in advance planned trip. A total of 84.2% of cases were correctly classified (see Table 8.5). This model was better at predicting those respondents for whom there was an acceptable substitute for Longmire (96.7% correctly

classified) than predicting respondents for whom there was not an acceptable substitute for Longmire (37.5% correctly classified; see Table 8.5).

Table 8.6. Summary of Model Predicting Who Reports Acceptable Substitute for Longmire

Variable	b	S.E.	Wald	df	p-value	R
Type of Group			3.97	4	.409	.00
Family vs. All others	1.55	0.98	2.49	1	.114	.06
Friends vs. All others	10.98	49.52	0.05	1	.825	.00
Family & Friends vs. All others	2.50	1.28	3.79	1	.052	.12
Other vs. All others	-7.74	46.38	0.03	1	.867	.00
Time since planned trip			6.42	6	.378	.00
day before vs. All others	16.41	66.97	0.06	1	.806	.00
2-3 days before vs. All others	0.84	1.02	0.68	1	.410	.00
4-7 days before vs. All others	0.31	0.88	0.12	1	.727	.00
8-14 days before vs. All others	-1.05	1.00	1.12	1	.290	.00
2-4 weeks before vs. All others	9.57	54.76	0.03	1	.861	.00
Month or more before vs. All others	1.03	0.79	1.71	1	.192	.00
Constant	4.42	14.63	0.09	1	.763	

* In logistic regression the regression coefficients are interpreted as the amount of change in the log odds of the event occurring for a 1 unit change in the predictor variable. Because the dependent variable being predicted is the log odds of the event and not the probability of the event occurring, interpreting the regression coefficient as the amount of change in the likelihood that an event will happen for a 1 unit change in the predictor variable is incorrect.

Table 8.6 summarizes the final model derived by the logistic regression. The fact that the significance level for the beta for these variables was not significant although the variables were included in the model suggests that these variables are minimally qualified to be in the model. Thus, these variables were not interpreted further.

When a predictive model is derived, the model can be biased to irregularities in the sample that may not be found in the population. Thus, the model may not be as effective at predicting membership for new cases as it was for predicting cases in the sample used to derive the model. One way to get a

sense of the predictive validity of the model is to take random samples from the total dataset and develop a model for each sample. If these models include the same variables as the model based on the whole sample, it suggests that variations in these variables are distributed throughout the sample and not due to some small subset of cases. Thus, these variables should be effective at predicting new cases.

Five sub-samples, each consisting of approximately 50% of the total cases, were randomly generated from the total sample and a logistic regression was run on each. The resultant models were then compared to see the frequency with which variables were included as predictors and how effective each model was at classifying cases correctly. None of the five sub-samples produced a model that was able to predict for whom there was an acceptable substitute for Longmire. The failure to find any significant variables in these sub-samples may be due to the reduced power given the smaller sample sizes. The model based on the full sample, however, revealed only weak relations. Taken together, these findings suggest that the model derived with the whole sample is unreliable.

Summary

Neither of the logistic regression analyses resulted in a reliable model for predicting respondents that reported no substitute destination existed for Paradise or for Longmire. These analyses do not necessarily mean that visitors who report there is no acceptable substitute for Paradise or for Longmire do not

differ from visitors for whom there is an acceptable substitute. If these groups of visitors do differ, however, they differ on characteristics not included in these analyses. Thus, there is not a simple strategy based on the examined variables for distinguishing between these groups.

Who needs information about acceptable substitutes?

A substantial number of respondents who indicated that they would accept an alternative destination for Paradise either in MORA (49.5%) or outside of MORA (37.5%) but would need to be informed of alternatives. An analogous pattern was found for respondents who indicated that they would accept an alternative destination for Longmire either in MORA (46.5%) or outside of MORA (39.2%) but would need to be informed of alternatives. For successful visitor redistribution, park management will need to be sure that these visitors obtain the necessary information to select alternatives. If park management is able to predict which visitors will need information about acceptable substitutes, it will be able to tailor the distribution of this information to most effectively reach these visitors.

Logistic regression analysis was used to select characteristics that predict whether visitors would need information. Logistic regression is a form of linear regression used when your dependent variable is dichotomous (e.g., needs information?: yes or no). In logistic regression, predictor variables may be either categorical (e.g., sex: male or female) or continuous (e.g., number of visits to

MORA in the past 3 years: 0, 1, 2,...). Like linear regression, a stepwise procedure can be adopted to determine the best fitting model.

Respondents who need information about substitutes in MORA may be the same respondents indicating that they need information about substitutes outside MORA. If sufficient (at least 75%) overlap exists between respondents who need information for an acceptable substitute in MORA and respondents who need information for an acceptable substitute outside MORA, then groups can be defined as those needing information about substitutes and those who do not. If the overlap is insufficient, then two separate logistic regression analyses would be necessary; one for groups defined as needing information about substitutes in MORA or not and one for groups defined as needing information about substitutes outside MORA. This comparison was made for respondents asked about substitutes for Paradise and the observed overlap was 70.6% (60 out of 85). The same comparison was made for respondents asked about substitutes for Longmire and the observed overlap was 70.9% (34 out of 48). Therefore, for each location (e.g., Paradise and Longmire), two separate logistic regression analyses were performed.

In each analysis, the set of predictors included demographic characteristics and trip characteristics (see Table 8.1 for complete list), and a stepwise procedure was used.

Logistic Regression Analysis: Needs information about substitutes in MORA for Paradise

A stepwise logistic regression analysis was performed to determine which of the predictive variables listed in Table 8.1 result in the best model for predicting if a visitor needed information about acceptable substitute destinations in MORA for Paradise. Of the original 194 cases, 46 were excluded due to missing data. The remaining 148 cases included 87 respondents who needed information about substitute destinations and 61 respondents who did not need information about substitute destinations. A log transformation was performed on the variables party size and trips to MORA in the past three years so they would better meet assumptions of normality.

Table 8.7 Observed and Predicted Classification: Needs Information for Acceptable Substitutes in MORA for Paradise

Observed:	Predicted		% Correctly Classified
	No info needed	Info needed	
No info needed	25	36	41.0%
Info needed	15	72	82.7%
		Overall	65.5%

The stepwise logistic regression produced a model consisting of one variable for predicting respondents who need information about acceptable substitutes in MORA, $\chi^2(1) = 13.14$, $p < .001$. This variable was the log number of trips to MORA in past 3 years. A total of 65.5% of cases were correctly classified (see Table 8.7). Thus, log number of trips to MORA in past 3 years

was better at predicting those respondents who need information about substitutes in MORA (82.8% correctly classified) than predicting respondents who do not need information (41.0% correctly classified; see Table 8.7).

The fewer trips respondents had made to MORA in the past three years the more likely they were to need information about acceptable substitutes in MORA, $b = -1.88$, $p < .001$.

When a predictive model is derived, the model can be biased to irregularities in the sample that may not be found in the population. Thus, the model may not be as effective at predicting membership for new cases as it was for predicting cases in the sample used to derive the model. One way to get a sense of the predictive validity of the model is to take random samples from the total dataset and develop a model for each sample. If these models include the same variables as the model based on the whole sample, it suggests that variations in these variables are distributed throughout the sample and not due to some small subset of cases. Thus, these variables should be effective at predicting new cases.

Five sub-samples, each consisting of approximately 50% of the total cases, were randomly generated from the total sample and a logistic regression was run on each. The resultant models were then compared to see the frequency with which variables were included as predictors and how effective each model was at classifying cases correctly. As shown in Table 8.8, all but one of the models derived for the sub-samples included log number of trips to MORA in past three years. Two of the models also included age as a significant

predictor, and one model did not find any of the variables to significantly predict who needed information. With the exception of the sample that did not find any variables to predict, the models were fairly comparable to each other and to the model based on the total sample in their ability to correctly classify respondents (% correctly classified ranged from 65.4% to 78.1%).

Table 8.8. Summary of Models Predicting Needs Information about Substitutes in MORA

	Full Sample	Sub-Sample				
		1	2	3	4	5
Total N of sample	194	93	113	87	87	106
N after accounting for missing data	148	72	89	64	62	78
Log # of trips to MORA in past 3 years	X	X	X	X		X
Age		X		X		
Percentage of cases classified correctly	65.5%	72.2%	66.3%	78.1%	55.1%	65.4%

In sum, although the number of prior trips to MORA in the past 3 years predicts who needs information, it is a relatively weak predictor (classifying only 65% of the respondents correctly). Thus, these findings suggest that there is not a reliable strategy for identifying individuals who need information about substitute destinations inside MORA for Paradise.

Logistic Regression Analysis: Needs Information about Substitutes Outside MORA for Paradise

A stepwise logistic regression analysis was performed to determine which of the predictive variables listed in Table 8.1 result in the best model for predicting if a visitor needed information about acceptable substitute destinations outside MORA for Paradise. Of the original 185 cases, 42 were excluded due to missing data. The remaining 143 cases included 56 respondents who needed

information about substitute destinations and 87 respondents who did not need information about substitute destinations. A log transformation was performed on the variables party size and trips to MORA in the past three years so they would better meet assumptions of normality.

The stepwise logistic regression did not find any of the variables to be significant predictors of respondents who need information about substitutes outside MORA for Paradise versus respondents who do not need information.

Logistic Regression Analysis: Needs Information about Substitutes In MORA for Longmire

A stepwise logistic regression analysis was performed to determine which of the predictive variables listed in Table 8.1 result in the best model for predicting if a visitor needed information about acceptable substitute destinations inside MORA for Longmire. Of the original 108 cases, 24 were excluded due to missing data. The remaining 84 cases included 42 respondents who needed information about substitute destinations and 42 respondents who did not need information about substitute destinations. A log transformation was performed on the variables party size and trips to MORA in the past three years so they would better meet assumptions of normality.

The stepwise logistic regression did not find any of the variables to be significant predictors of respondents who need information about substitutes inside MORA for Longmire versus respondents who do not need information.

Logistic Regression Analysis: Needs Information about Substitutes Outside MORA for Longmire

A stepwise logistic regression analysis was performed to determine which of the predictive variables listed in Table 8.1 result in the best model for predicting if a visitor needed information about acceptable substitute destinations outside MORA for Longmire. Of the original 93 cases, 18 were excluded due to missing data. The remaining 75 cases included 31 respondents who needed information about substitute destinations and 44 respondents who did not need information about substitute destinations. A log transformation was performed on the variables party size and trips to MORA in the past three years so they would better meet assumptions of normality.

The stepwise logistic regression produced a model consisting of two variables for predicting respondents who need information about acceptable substitutes outside MORA for Longmire, $\chi^2(1)=13.14$, $p<.001$. These variables were respondents' age and residence. A total of 72.0% of cases were correctly classified (see Table 8.9). This model was better at predicting those respondents who do not need information about substitutes outside MORA for Longmire (77.3% correctly classified) than predicting respondents who need information (64.5% correctly classified; see Table 8.9).

Table 8.9 Observed and Predicted Classification: Needs Information for Acceptable Substitutes in MORA for Paradise

Observed:	Predicted		% Correctly Classified
	No info needed	Info needed	
No info needed	34	10	77.3%
Info needed	11	20	64.5%
		Overall	72.0%

In the final model derived by the logistic regression, the younger respondents were the more likely they were to need information about acceptable substitutes outside MORA, b=-.06, p=.009. Also, likelihood of needing information varied by respondents' residence, p=.729. The fact that the significance level for the beta for respondents' residence was not significant although the variable was included in the model suggests that this variable is minimally qualified to be in the model. Thus, respondents' residence is not interpreted further.

When a predictive model is derived, the model can be biased to irregularities in the sample that may not be found in the population. Thus, the model may not be as effective at predicting membership for new cases as it was for predicting cases in the sample used to derive the model. One way to get a sense of the predictive validity of the model is to take random samples from the total dataset and develop a model for each sample. If these models include the same variables as the model based on the whole sample, it suggests that variations in these variables are distributed throughout the sample and not due

to some small subset of cases. Thus, these variables should be effective at predicting new cases.

Five sub-samples, each consisting of approximately 50% of the total cases, were randomly generated from the total sample and a logistic regression was run on each. The resultant models were then compared to see the frequency with which variables were included as predictors and how effective each model was at classifying cases correctly. As shown in Table 8.10., three of the five sub-samples' models included age. The other two models did not find any of the variables to significantly predict who needed information. With the exception of the samples that did not find any variables to predict, the models were fairly comparable to each other and to the model based on the total sample in their ability to correctly classify respondents (% correctly classified ranged from 66.7% to 76.3%). These findings suggest that neither age nor residence were strong or reliable predictors of who needs information about substitutes outside MORA.

Table 8.10. Summary of Models Predicting Needs Information about Substitutes Outside MORA

	Full Sample	Sub-Sample				
		1	2	3	4	5
Total N of sample	93	46	38	48	57	49
N after accounting for missing data	75	38	30	40	12	37
Age	X	X			X	X
Residence	X					
Percentage of cases classified correctly	72.0%	76.3%	60.0%	60.0%	66.7%	70.3%

Summary

The four logistic regression analyses attempting to identify visitors who need information about substitute destinations for Paradise and Longmire failed to reveal reliable predictors. These analyses do not necessarily mean that visitors who need information about acceptable substitutions do not differ from visitors who do not need information. If these groups of visitors do differ, however, they differ on characteristics not included in these analyses. Thus, there is not a simple strategy based on the examined variables for distinguishing between these groups.

IX. CONTACT POINT EFFECTS

Respondents for the Gate Survey were contacted at two different gates to MORA: the Nisqually Entrance and the Stevens Canyon Entrance. As noted in the Introduction, effects of contact point were examined for each variable. It was found that a greater proportion of respondents contacted at Stevens Canyon Entrance stayed more than 1 day in the park and a greater proportion of respondents contacted at the Nisqually Entrance stayed less than 9 hours in MORA. Thus, for every observed effect of contact point, additional analyses were done to determine if the effect was due to respondents' length of stay (overnight –more than 20 hours in park, day visitor—less than 20 hours in park), contact point, or some combination. The following table indicates for each variable if there was an effect for 1) contact point, 2) length of stay[1], and 3) whether there was an interaction between contact point and length of stay. If a significant effect was observed, there is a 'Yes' in the table (blank cells indicate no effect). The table also provides a cross-reference to the section of the report that discusses the effect in detail.

[1] If a contact point effect was found to be due to length of stay, then there is a Yes for length of stay and nothing in the contact point column.

Question Number	Description	Significant Effects?			Cross-reference (page #)
		Contact Point	Length of Stay	Contact Point by Length of Stay	
III. Visitor Profile					
Q3-C	Age				
Q3-C	Gender				
v1, Q23; v2, Q17	Race				
v1, Q23; v2, Q17	Hispanic				
v1, Q21; v2, Q15	Education				
v1, Q22; v2, Q16	Employment				
Q3-C	Residence				
Q1-C	Party size				
Q2-C	# of children <16				
v1, Q25; v2, Q19	Group Types				
v1, Q24; v2, Q18	# trips to MORA in last 3 years				
IV. Trip Characteristics					
Q1	When decided to visit MORA	Yes	Yes	Yes	59-61
Q2	Sought info		Yes		61-63
Q2b	Sources where info was sought				
Q3a	# of planned destinations				
Q3b	Destinations				
Q8	Stayed overnight within 20 miles	Yes			66-67
Q4	Time spent in MORA	Yes			67-69
Q5	Sites visited in MORA	Yes			69-73
Q3.1-C	Planned activities				
Q3.2-C	Most important planned activity				
Q3.2-C	2nd most important planned activity				
Q6a	Ways of moving through MORA				
	Drive viewing scenery	Yes			78-79
	Taking walks/hikes				
	Camping while backpacking				
	Mountain climbing				
	Other activities				
Q5a	Most important way of moving				
Q5a	2nd most important way of moving				
Q5b	Outdoor Activities				
	Picnicking				
	Viewing wildflowers		Yes		82-83
	Viewing wildlife				
	Taking photos				
	Snow play				
	Other activities				
Q5b	Most important outdoor activity				
Q5b	2nd most important outdoor activity				
Q5c	Facility activities				

	Nature Program	Yes	Yes	Yes	89-90
	Location of nature program	Yes	Yes	Yes	90-91
	Shop for souvenirs				
	Camp in campground	Yes	Yes	Yes	91-92
	Location of campground	Yes			92-93
	Stay overnight in park (Inn or Lodge)				
	Jackson Visitor Center				
	Ohanapecosh visitor center	Yes	Yes		93-94
	Longmire museum	Yes			88-89
	Eat lunch/snack at Jackson Visitor Center				
	Eat Sun. brunch at Paradise Lodge				
	Eat a sit-down meal (ex. Brunch) at Paradise Lodge				
	Eat a sit down meal at Longmire Inn				
Q6c	Most important facility activity	Yes			94-95
Q6c	2nd most important facility activity				
Q5d	Overall most important activity	Yes			97-98
Q5d	Overall 2nd most important activity	Yes			98-99
Q7	# of walks/hikes				
Q7	Point began hike				
Q7	# of miles hiked				
Q7	Time spent hiking				
V. Trip Experiences and Evaluation					
Q9	Visitor damage				
Q9	Type of damage				
Q9	Degree damage detracted				
v1, Q10	# of Paradise visitors affect future decisions	Yes			111-112
v1, Q10	More likely to return to MORA				
	Come at different time of day				
	Come on different day of week				
	Come at different time of year				
	Plan to do different activities				
	Visit different area of MORA				
	Not return to MORA				
	Other effects				
v2, Q10	# of Longmire visitors affect future decisions				
v2, Q10	More likely to return to MORA				
	Come at different time of day				
	Come on different day of week				
	Come at different time of year				
	Plan to do different activities				
	Visit different area of MORA				
	Not return to MORA				

	Other effects				
v2, Q12	Used park brochure/map	Yes	Yes		118-119
	Used park newspaper				
	Used visitor center exhibits	Yes			118-120
	Used visitor center staff	Yes	Yes		118-120
	Used visitor/hiker center book sales				
	Used hiker information centers				
	Used audio-visual shows/programs				
	Used ranger-led walks	Yes	Yes	Yes	118-120
	Used roadside exhibits				
	Used self-guiding trails				
	Used roving rangers				
	Importance of park brochure/map				
	Importance of park newspaper				
	Importance of visitor center exhibits				
	Importance of visitor center staff				
	Importance of visitor/hiker center book sales				
	Importance of hiker information centers				
	Importance of audio-visual shows/programs				
	Importance of ranger-led walks				
	Importance of roadside exhibits				
	Importance of self-guiding trails				
	Importance of roving rangers				
VI. Trip Experience Factors					
v2, Q11a	Importance of type of trails				
	Importance of presence of regulatory signs	Yes			131-132
	Importance of # of hikers on trails				
	Importance of # of regulatory signs				
	Importance of # of uniformed park personnel				
	Importance of # of vehicles in VC parking lots				
	Importance of # of vehicles in scenic turnouts				
	Importance of # of vehicles driving on park roads				
	Importance of # of visitors at food service facilities				
	Importance of # of visitors at gift shops				
	Importance of general # of visitors in facilities				

	Importance of availability of park orientation information				
	Importance of availability of hiker information	Yes	Yes	Yes	133-134
	Importance of availability of guided walks				
	Importance of availability of educational shows				
	Importance of availability of self-guided trails				
	Importance of quality/value of food services				
	Importance of quality/value of souvenirs and other goods				
v2, Q11c	Most important factor				
	2nd most important factor				
VII. Reactions to Hypothetical Traffic and Parking Scenarios					
VIII. Displacement					
v1, Q10	# of people who stopped at Paradise visitor complex				
	Acceptable substitute for Paradise				
	Acceptable substitute for Paradise exists in MORA				
	Substitute destinations in MORA				
	Acceptable substitute for Paradise exists outside MORA				
	Substitute destinations outside MORA				
v2, Q10	# of people who stopped at Longmire visitor complex	Yes	Yes	Yes	188-189
	Acceptable substitute for Longmire meadow				
	Acceptable substitute for Longmire exists in MORA				
	Substitute destinations in MORA				
	Acceptable substitute for Longmire exists outside MORA				
	Substitute destinations outside MORA				

APPENDIX A

OMB Approval 1024-0182

1995 Mount Rainier National Park
Entrance Gate Survey

Version 1

Cooperative Park Studies Unit
College of Forest Resources
University of Washington, Box 352100
Seattle, Washington 98195-2100

"Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Cooperative Park Studies Unit, University of Washington, College of Forest Resources, 15 Anderson Hall, Box 352100, Seattle, Washington, 98195-2100, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503."

On a recent trip to Mount Rainier National Park you agreed to participate in a survey by filling out this mail questionnaire. Thank you for your cooperation.

While filling out this questionnaire please remember that **all questions ask about the trip to Mt. Rainier during which you were contacted for this survey**. Also, please be sure to read each question carefully before answering it.

First, we would like to ask you some questions about your trip.

1. How long before the visit to Mt. Rainier National Park during which you were contacted did you make the decision to visit the park? *(Circle one number.)*

   1 THAT DAY
   2 THE DAY BEFORE
   3 TWO OR THREE DAYS BEFORE
   4 FOUR TO SEVEN DAYS BEFORE
   5 EIGHT TO 14 DAYS BEFORE
   6 MORE THAN TWO WEEKS BUT LESS THAN A MONTH BEFORE
   7 A MONTH OR MORE BEFORE THE VISIT

2. **PRIOR TO THE VISIT DURING WHICH YOU WERE CONTACTED**, did you and your group seek information about Mt. Rainier National Park and/or the attractions that are found within its boundaries? *(Circle one number.)*

   1 NO -> **GO TO QUESTION 3**
   2 YES - From which sources did you and your group seek to obtain information? *(Circle as many numbers as apply.)*

      1 FRIENDS OR RELATIVES
      2 TRAVEL GUIDE/TOUR BOOK
      3 NEWSPAPER/MAGAZINE
      4 MAPS/BROCHURES
      5 RADIO/TELEVISION
      6 HOTEL/MOTEL
      7 CONVENTION/VISITOR BUREAU
      8 OTHER *(Please specify:* _____*)*

3. In terms of destinations within Mt. Rainier National Park, which of the descriptions below best fits your party during the trip when you were contacted for this survey? (*Circle one number*)

1 We had not determined any specific destinations before entering Mt. Rainier National Park --> **GO TO QUESTION 4**

2 Before entering the park we had decided on ONE destination that was the focus of our visit to Mt. Rainier.

PLEASE SPECIFY THAT DESTINATION BELOW

_____

3 Before entering the park we had decided on multiple destinations, all of which were important to our satisfaction.

PLEASE LIST THOSE DESTINATIONS BELOW

_____

_____

_____

_____

4. On the trip during which you were contacted, how long were you inside Mt. Rainier National Park?
(Please specify the number of days and/or hours. If you did not stay overnight in the area write "0" for the number of "DAYS".)

_____ DAYS _____ HOURS

5. The map on this page and the next shows the southern portion of Mt. Rainier National Park and also includes detail panels showing the Longmire and Paradise areas. Marked on the main map are 16 sites and facilities where you might have stopped and gotten out of your vehicle.

Please review the **main map**, recalling the DAY during which you were contacted for this survey. **At the first site where you stopped, write the number "1" in the box. At the second site, write "2". Continue until you have written numbers in the boxes for all the places you visited that day at Mt. Rainier.**

If you visited Longmire and/or Paradise, please review the detail panels and place a check mark at the facilities you used in those areas. (***You do* NOT need to number the boxes in the detail panels -- only number the boxes on the main map.**)

6a. On the trip to Mt. Rainier National Park during which you were contacted for this survey how did you move through and experience the park environment? *(Circle as many numbers as apply.)*

1 Driving around viewing scenery from road and turnouts
2 Taking walks or hikes
3 Camping overnight while backpacking
4 Mountain climbing using specialized equipment
5 Other (e.g., skiing, bicycling, etc.; *Please specify:* _____)

If you circled 2 or more of these five ways of experiencing the park, which was most important to your enjoyment of the park environment? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT way of experiencing the park
_____ SECOND MOST IMPORTANT way of experiencing the park

6b. During the same trip, in which of the following outdoor activities did you and your party participate? *(Circle as many numbers as apply.)*

6 Picnicking
7 Viewing wildflowers
8 Viewing wildlife
9 Taking photographs
10 Snow play
11 Other activities not described by items **1** to **10** in question **6a** or **6b** above
(Please specify: _____)

If you circled 2 or more of the outdoor activities numbered 6 through 11 above, which was most important to your enjoyment of the park? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT activity
_____ SECOND MOST IMPORTANT activity

6c. On the trip to Mt. Rainier National Park during which you were contacted for this survey, in which of the following park activities did you and your party participate? *(Circle as many numbers as apply.)*

12 Attending a park service naturalist program or activity
(*Circle the site(s) of the program:* Longmire / Paradise / Ohanapecosh)

13 Shopping for curios or souvenirs
(*Circle the shop(s):* Longmire / Paradise / Ohanapecosh)

14 Camping overnight in a campground
(*Circle your campground(s):* Sunshine Pt. / Cougar Rock / Ohanapecosh / White River)

15 Staying overnight within the park
(*Circle your lodging(s):* Longmire Inn / Paradise Lodge)

16 Going to Paradise Visitor Center
17 Going to Ohanapecosh Visitor Center
18 Going to Longmire Museum
19 Eating lunch or snack at Paradise Visitor Center (fast food)
20 Eating Sunday brunch at Paradise Lodge
21 Eating a sit-down meal at Paradise Lodge other than Sunday brunch
22 Eating a sit-down meal at Longmire Inn

If you circled 2 or more of the activities numbered 12 through 22 above, which was most important to your enjoyment of the park? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT activity
_____ SECOND MOST IMPORTANT activity

6d. Considering **ALL** of the 22 activities and ways of experiencing the park listed in 6a, 6b and 6c, which would you say were most important to your enjoyment of Mt. Rainier National Park? (Enter the appropriate number in each of the blanks.)

_____ MOST IMPORTANT activity or way of experiencing the park
_____ 2nd MOST IMPORTANT activity or way of experiencing the park
_____ 3rd MOST IMPORTANT activity or way of experiencing the park

7. Did you take one or more walks or hikes in Mt. Rainier National Park on the trip during which you were contacted for this survey?

1 NO -> **GO TO QUESTION 8**
2 YES-> How many walks or hikes did you take? _____

On your longest walk or hike:

where did you begin your walk or hike? _____
(*Please be as specific as possible.*)

about how many miles did you walk? _____ miles
(*Round trip. Use fractions for distances under 1 mile*)

about how long did the walk take? _____ Hrs _____ Min
(*Round trip.*)

8. Did you stay overnight outside Mt. Rainier National Park but within 20 miles of the park boundary on the trip during which you were contacted for this survey?

1 LIVE WITHIN 20 MILES OF PARK BOUNDARY
2 NO
3 YES

Next, we would like to ask you some questions about how park conditions affected your experience. Again, all questions pertain to the trip during which you were contacted for this survey.

9. Did you see any evidence that other visitors had unacceptably damaged park resources in the places you visited at Mt. Rainier National Park? *(Circle one number.)*

1 NO -> **GO TO QUESTION 10**
2 YES ->What was the damage?

_____

Where did you see it?

_____

Did the damage you saw detract from your enjoyment of the park? *(Circle one number.)*

1 NO, DID NOT DETRACT FROM EXPERIENCE
2 YES, DETRACTED SOMEWHAT
3 YES, DETRACTED MODERATELY
4 YES, DETRACTED GREATLY

10. On the trip during which you were contacted, did your party stop to visit any facilities or outdoor attractions at the Paradise Visitor Complex? (Paradise is the most popular visitor complex in the park and is located at 5,400' altitude on the South side of the mountain.)

1 NO -> **GO TO QUESTION 11**

2 YES --> If, prior to your trip, you were told that the Paradise Visitor Complex (including all the trails in Paradise Meadows and other outdoor areas in the vicinity) was filled to capacity and closed to further visitors, would there have been an acceptable substitute destination for you to visit instead? (*Circle one number*)

1 NO, THERE WOULD NOT HAVE BEEN AN ACCEPTABLE SUBSTITUTE DESTINATION

2 YES, A SUBSTITUTE DESTINATION WOULD HAVE BEEN ACCEPTABLE

List acceptable substitute destinations **INSIDE** Mt. Rainier National Park (list in order of preference, or circle #1 or #5).

1 None of the acceptable substitutes are in Mt. Rainier National Park

2 _____

3 _____

4 _____

5 Would accept a substitute but would need to be informed of alternatives.

Please list acceptable substitute destinations **OUTSIDE** Mt. Rainier National Park but in the Northwestern US (list in order of preference, or circle #1 or #5).

1 None of the acceptable substitutes are outside Mt. Rainier National Park

2 _____

3 _____

4 _____

5 Would accept a substitute but would need to be informed of alternatives.

10. **(Continued from previous page. Answer only if you visited facilities or outdoor attractions at the Paradise visitor complex.)**

Please recall the number of other visitors who were present at Paradise on the trip during which you were contacted. Will the number of other visitors that you encountered on this trip affect your future decisions concerning visits to Paradise in Mt. Rainier National Park? *(Circle one number.)*

1 NO -> **GO TO QUESTION 11**
2 YES -> Which of the following describe ways in which other visitors might affect your decision? *(Circle as many numbers as apply.)*

1 Will be more likely to return to Mt. Rainier

2 Will come at a different time of day

3 Will come on a different day of the week

4 Will come at a different time of year

5 Will plan to do different activities

6 Will visit a different area of the park

7 Will not return to Mt. Rainier

8 Other effects not described *(Please specify below.)*

_____

Please use the space below to describe the conditions involving other visitors that will affect your future decisions concerning visits to Paradise.

11. Imagine that you are passing Longmire in your vehicle and are driving along the 9-mile stretch of road that curves up the mountain to Paradise. You are looking forward to visiting Paradise, but are taking time to enjoy your drive, stopping at some of the turnouts to take photographs and view the scenery.

Listed below are five descriptions of traffic conditions on the road to Paradise. **For each description, please imagine making the drive from Longmire to Paradise and then indicate how acceptable you would find the described traffic conditions.**

INDICATE YOUR RATING OF DESCRIPTIONS A THROUGH E BELOW

A. *Free-flowing traffic conditions with few vehicles.* You can can generally drive at the speed-limit. Few delays due to slower vehicles and almost no groups of three or more vehicles. Average speeds are about 34 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

B. *Stable flow of traffic with brief periods where you must slow down due to other vehicles.* Most vehicles are independent or in groups of less than three vehicles. Average speeds are about 32 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

C. *Slightly less stable traffic flow where your speeds are determined by other vehicles more than half the time.* Most vehicles have collected in groups of three or more. Average speeds are about 29 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

D. *Fluctuating flow of traffic with vehicles slowing and then returning to speed limits.* Vehicles are nearly all collected in groups, with many groups of more than ten vehicles. Major slowdowns are associated with areas of turning vehicles or roadside attractions. Average speeds are about 20 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

E. *Greatly fluctuating traffic flows, with some momentary stoppages.* The road is full of vehicles. Your speeds are determined entirely by the flow of traffic. Average speeds are less than 15 mph.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

12. Imagine that you are a manager of Mt. Rainier National Park and you have to make a decision about the number of vehicles that can drive through the park. On busy summer weekends at Mt. Rainier, which of the descriptions in question 11 describes the **MAXIMUM** amount of traffic congestion that **SHOULD** be present on the road from Paradise to Longmire?

DESCRIPTION _____ *(Enter the appropriate letter from question 11.)*

13. If you traveled on the road from Paradise to Longmire on the trip during which you were contacted for this survey, try to recall traffic conditions during your drive. Which of the descriptions in question 11 best describes traffic conditions when you drove from Paradise to Longmire? *(Please circle one number below.)*

1 DESCRIPTION _____ *(Enter the appropriate letter from question 11.)*
2 DID NOT TRAVEL ON ROAD FROM PARADISE TO LONGMIRE

14. Please rate the importance of traffic conditions to your overall enjoyment of Mount Rainier National Park. *(Please circle the appropriate number in the scale below.)*

Not at all Important				Extremely Important
1	2	3	4	5

15. Please imagine again that you are passing Longmire in your vehicle and are headed up the mountain to Paradise. You are looking forward to visiting Paradise, but are taking time to enjoy your drive and are looking for scenic views and turnouts where you can stop to stretch your legs and take photographs.

Listed below are four descriptions of use levels at turnouts along the road to Paradise. **For each description, please imagine making the drive from Longmire to Paradise and then indicate how acceptable you would find the described conditions at turnouts.**

INDICATE YOUR RATING OF DESCRIPTIONS A THROUGH D BELOW

A. Parking is available at all turnouts. You can stop and immediately park at any turnout you select.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

B. Parking is available at many turnouts but the designated lots at more popular areas such as Narada Falls or Christine Falls are full. To visit these sites you must either wait for a spot or park in undesignated areas.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

C. Designated parking lots are full at all turnouts and the more popular areas such as Narada Falls or Christine Falls are over capacity with traffic congestion due to waiting cars and cars parked in all available undesignated areas. Waiting or parking in undesignated areas is required to find parking at any site and long waits in congested areas are likely at popular sites.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

D. Parking lots at all turnouts are over capacity with traffic congestion due to waiting cars and cars parked in all available undesignated areas. Long waits in congested areas are likely before finding parking at any turnout.

Very Acceptable	Somewhat Acceptable	Neither	Somewhat Unacceptable	Very Unacceptable

16. Imagine that you are a manager of Mt. Rainier National Park and you have to make a decision about the number of vehicles that could use turnouts in the park. On busy summer weekends at Mt. Rainier, which of the descriptions in question 15 describes the **MAXIMUM** number of vehicles that **SHOULD** be present at turnouts on the road from Paradise to Longmire?

DESCRIPTION _____ *(Enter the appropriate letter from question 15.)*

17. If you traveled on the road from Longmire to Paradise on the trip during which you were contacted for this survey, try to recall parking conditions at turnouts during your drive. Which of the descriptions in question 15 best describes parking conditions when you drove from Paradise to Longmire?

1 DESCRIPTION _____ *(Enter the appropriate letter from question 15.)*
2 DID NOT TRAVEL ON ROAD FROM LONGMIRE TO PARADISE

18. Please rate the importance of parking conditions at turnouts to your overall enjoyment of Mount Rainier National Park. *(Please circle the appropriate number in the scale below.)*

Not at all Important				Extremely Important
1	2	3	4	5

Finally, we would like to ask a few background questions.
The information provided will be used for statistical purposes only.

19. Are you: *(Circle one number.)*

1 FEMALE
2 MALE

20. What year were you born?

19 __ __

21. What is the highest level of formal schooling you have completed? *(Circle the appropriate number.)*

1 2 3 4 5 6 7 8 9 10 11 12 (Elementary thru High School) 13 14 15 16 (College/Vocational) 17 18 19 20 21 22 23 24+ (Graduate/Professional)

22. Which of the following best describes your current employment status? *(Circle the appropriate number.)*

1 STUDENT
2 HOMEMAKER
3 RETIRED
4 MILITARY
5 EMPLOYED
6 UNEMPLOYED ----

What is your occupation?

_____

23. Are you: (Circle one number)

1 AMERICAN INDIAN/ALASKA NATIVE
2 ASIAN
3 BLACK
4 WHITE
5 OTHER (Specify):_____

Are you: (Circle one number)

1 HISPANIC
2 NON-HISPANIC

24. **INCLUDING THE TRIP DURING WHICH YOU WERE CONTACTED**, how many trips have you made to Mt. Rainier National Park in the last three years?

NUMBER OF TRIPS _____

25. What was the makeup of your group on the trip during which you were contacted for this survey?
(Circle one number.)

1 INDIVIDUAL
2 FAMILY
3 FRIENDS
4 FAMILY & FRIENDS
5 ORGANIZED TOUR GROUP
6 OTHER *(Please specify:* _____*)*

26. Is there anything else you would like to tell us about your visit to Mt. Rainier National Park? Please use this space for any comments you would like to make.

Thank you for your contribution to this project.

APPENDIX B

OMB Approval 1024-0182

1995 Mount Rainier National Park
Entrance Gate Survey

Version 2

Cooperative Park Studies Unit
College of Forest Resources
University of Washington, Box 352100
Seattle, Washington 98195-2100

"Public reporting burden for this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Cooperative Park Studies Unit, University of Washington, College of Forest Resources, 15 Anderson Hall, Box 352100, Seattle, Washington, 98195-2100, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503."

On a recent trip to Mount Rainier National Park you agreed to participate in a survey by filling out this mail questionnaire. Thank you for your cooperation.

While filling out this questionnaire please remember that **all questions ask about the trip to Mt. Rainier during which you were contacted for this survey**. Also, please be sure to read each question carefully before answering it.

First, we would like to ask you some questions about your trip.

1. How long before the visit to Mt. Rainier National Park during which you were contacted did you make the decision to visit the park? *(Circle one number.)*

   1 THAT DAY
   2 THE DAY BEFORE
   3 TWO OR THREE DAYS BEFORE
   4 FOUR TO SEVEN DAYS BEFORE
   5 EIGHT TO 14 DAYS BEFORE
   6 MORE THAN TWO WEEKS BUT LESS THAN A MONTH BEFORE
   7 A MONTH OR MORE BEFORE THE VISIT

2. **PRIOR TO THE VISIT DURING WHICH YOU WERE CONTACTED,** did you and your group seek information about Mt. Rainier National Park and/or the attractions that are found within its boundaries? *(Circle one number.)*

   1 NO -> **GO TO QUESTION 3**
   2 YES - From which sources did you and your group seek to obtain information? *(Circle as many numbers as apply.)*

      1 FRIENDS OR RELATIVES
      2 TRAVEL GUIDE/TOUR BOOK
      3 NEWSPAPER/MAGAZINE
      4 MAPS/BROCHURES
      5 RADIO/TELEVISION
      6 HOTEL/MOTEL
      7 CONVENTION/VISITOR BUREAU
      8 OTHER *(Please specify:* _____*)*

3. In terms of destinations within Mt. Rainier National Park, which of the descriptions below best fits your party during the trip when you were contacted for this survey? (*Circle one number*)

1 We had not determined any specific destinations before entering Mt. Rainier National Park --> **GO TO QUESTION 4**

2 Before entering the park we had decided on ONE destination that was the focus of our visit to Mt. Rainier.

PLEASE SPECIFY THAT DESTINATION BELOW

_____

3 Before entering the park we had decided on multiple destinations, all of which were important to our satisfaction.

PLEASE LIST THOSE DESTINATIONS BELOW

_____

_____

_____

_____

4. On the trip during which you were contacted, how long were you inside Mt. Rainier National Park?
(Please specify the number of days and/or hours. If you did not stay overnight in the area write "0" for the number of "DAYS".)

_____ DAYS _____ HOURS

5. The map on this page and the next shows the southern portion of Mt. Rainier National Park and also includes detail panels showing the Longmire and Paradise areas. Marked on the main map are 16 sites and facilities where you might have stopped and gotten out of your vehicle.

Please review the **main map**, recalling the DAY during which you were contacted for this survey. **At the first site where you stopped, write the number "1" in the box. At the second site, write "2". Continue until you have written numbers in the boxes for all the places you visited that day at Mt. Rainier.**

If you visited Longmire and/or Paradise, please review the detail panels and place a check mark at the facilities you used in those areas. (**You do NOT need to number the boxes in the detail panels -- only number the boxes on the main map**.)

6a. On the trip to Mt. Rainier National Park during which you were contacted for this survey how did you move through and experience the park environment? *(Circle as many numbers as apply.)*

1 Driving around viewing scenery from road and turnouts
2 Taking walks or hikes
3 Camping overnight while backpacking
4 Mountain climbing using specialized equipment
5 Other (e.g., skiing, bicycling, etc.; *Please specify:* _____)

If you circled 2 or more of these five ways of experiencing the park, which was most important to your enjoyment of the park environment? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT way of experiencing the park
_____ SECOND MOST IMPORTANT way of experiencing the park

6b. During the same trip, in which of the following outdoor activities did you and your party participate? *(Circle as many numbers as apply.)*

6 Picnicking
7 Viewing wildflowers
8 Viewing wildlife
9 Taking photographs
10 Snow play
11 Other activities not described by items **1** to **10** in question **6a** or **6b** above
(Please specify: _____)

If you circled 2 or more of the outdoor activities numbered 6 through 11 above, which was most important to your enjoyment of the park? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT activity
_____ SECOND MOST IMPORTANT activity

6c. On the trip to Mt. Rainier National Park during which you were contacted for this survey, in which of the following park activities did you and your party participate? *(Circle as many numbers as apply.)*

12 Attending a park service naturalist program or activity
(*Circle the site(s) of the program:* Longmire / Paradise / Ohanapecosh)

13 Shopping for curios or souvenirs
(*Circle the shop(s):* Longmire / Paradise / Ohanapecosh)

14 Camping overnight in a campground
(*Circle your campground(s):* Sunshine Pt. / Cougar Rock / Ohanapecosh / White River)

15 Staying overnight within the park
(*Circle your lodging(s):* Longmire Inn / Paradise Lodge)

16 Going to Paradise Visitor Center
17 Going to Ohanapecosh Visitor Center
18 Going to Longmire Museum
19 Eating lunch or snack at Paradise Visitor Center (fast food)
20 Eating Sunday brunch at Paradise Lodge
21 Eating a sit-down meal at Paradise Lodge other than Sunday brunch
22 Eating a sit-down meal at Longmire Inn

If you circled 2 or more of the activities numbered 12 through 22 above, which was most important to your enjoyment of the park? *(Enter the appropriate number in each of the blanks.)*

_____ MOST IMPORTANT activity
_____ SECOND MOST IMPORTANT activity

6d. Considering **ALL** of the 22 activities and ways of experiencing the park listed in 6a, 6b and 6c, which would you say were most important to your enjoyment of Mt. Rainier National Park? (Enter the appropriate number in each of the blanks.)

_____ MOST IMPORTANT activity or way of experiencing the park
_____ 2nd MOST IMPORTANT activity or way of experiencing the park
_____ 3rd MOST IMPORTANT activity or way of experiencing the park

7. Did you take one or more walks or hikes in Mt. Rainier National Park on the trip during which you were contacted for this survey?

1 NO -> **GO TO QUESTION 8**
2 YES-> How many walks or hikes did you take? _____

On your longest walk or hike:

where did you begin your walk or hike? _____
(*Please be as specific as possible.*)

about how many miles did you walk? _____ miles
(*Round trip. Use fractions for distances under 1 mile*)

about how long did the walk take? _____ Hrs _____ Min
(*Round trip.*)

8. Did you stay overnight outside Mt. Rainier National Park but within 20 miles of the park boundary on the trip during which you were contacted for this survey?

1 LIVE WITHIN 20 MILES OF PARK BOUNDARY
2 NO
3 YES

Next, we would like to ask you some questions about how park conditions affected your experience. Again, all questions pertain to the trip during which you were contacted for this survey.

9. Did you see any evidence that other visitors had unacceptably damaged park resources in the places you visited at Mt. Rainier National Park? *(Circle one number.)*

1 NO -> **GO TO QUESTION 10**
2 YES ->What was the damage?

_____

Where did you see it?

_____

Did the damage you saw detract from your enjoyment of the park? *(Circle one number.)*

1 NO, DID NOT DETRACT FROM EXPERIENCE
2 YES, DETRACTED SOMEWHAT
3 YES, DETRACTED MODERATELY
4 YES, DETRACTED GREATLY

10. On the trip during which you were contacted, did your party stop to visit any facilities or outdoor attractions at the Longmire Visitor Complex? (Longmire is the visitor complex 7 miles from the Southwest entrance, located just off the park road across from Longmire meadow.)

1 NO -> **GO TO QUESTION 11**

2 YES --> If, prior to your trip, you were told that the Longmire Visitor Complex and surrounding area (including all the trails in Longmire Meadow and other outdoor areas in the vicinity) was closed to visitors, would there have been an acceptable substitute destination for you to visit instead? (*Circle one number*)

1 NO, THERE WOULD NOT BE AN ACCEPTABLE SUBSTITUTE DESTINATION

2 YES, A SUBSTITUTE DESTINATION WOULD HAVE BEEN ACCEPTABLE

List acceptable substitute destinations **INSIDE** Mt. Rainier National Park (list in order of preference, or circle #1 or #5).

1 None of the acceptable substitutes are in Mt. Rainier National Park

2 _____

3 _____

4 _____

5 Would accept a substitute but would need to be informed of alternatives.

Please list acceptable substitute destinations **OUTSIDE** Mt. Rainier National Park but in the Northwestern US (list in order of preference, or circle #1 or #5).

1 None of the acceptable substitutes are outside Mt. Rainier National Park

2 _____

3 _____

4 _____

5 Would accept a substitute but would need to be informed of alternatives.

10. **(Continued from previous page. Answer only if you visited facilities or outdoor attractions at the Longmire Visitor Complex.)**

Please recall the number of other visitors who were present at Longmire on the trip during which you were contacted. Will the number of other visitors that you encountered on this trip affect your future decisions concerning visits to Longmire in Mt. Rainier National Park? *(Circle one number.)*

1 NO -> **GO TO QUESTION 11**

2 YES -> Which of the following describe ways in which other visitors might affect your decision? *(Circle as many numbers as apply.)*

1 Will be more likely to return to Mt. Rainier

2 Will come at a different time of day

3 Will come on a different day of the week

4 Will come at a different time of year

5 Will plan to do different activities

6 Will visit a different area of the park

7 Will not return to Mt. Rainier

8 Other effects not described *(Please specify below.)*

_____

Please use the space below to describe the conditions involving other visitors that will affect your future decisions concerning visits to Longmire.

11a. Below are some factors that could affect the quality of your experience at Mt. Rainier National Park. Please rate the importance of each of these factors to your overall enjoyment of the park.

Factor	Not Important				Very Important
a) Type of Trails (wide vs. narrow, paved vs. dirt)	1	2	3	4	5
b) Presence of Signs Announcing Fines for Breaking Park Rules	1	2	3	4	5
c) Number of Hikers on Trails	1	2	3	4	5
d) Number of Regulatory Signs along Trails	1	2	3	4	5
e) Number of Uniformed Park Personnel on Trails	1	2	3	4	5
f) Number of Vehicles in Visitor Center Parking Lots	1	2	3	4	5
g) Number of Vehicles at Scenic Turnouts	1	2	3	4	5
h) Number of Vehicles Driving on Park Roads	1	2	3	4	5
i) Number of Visitors at Food Service Facilities	1	2	3	4	5
j) Number of Visitors at Gift Shops and Book Stores	1	2	3	4	5
k) General Number of Visitors in Facilities	1	2	3	4	5
l) Availability of Park Orientation Information	1	2	3	4	5
m) Availability of Hiker Information	1	2	3	4	5

11a. **(Continued from previous page.)** Please rate the importance of each of these factors to your overall enjoyment of the park.

Factor	Not Important				Very Important
n) Availability of Guided Walks	1	2	3	4	5
o) Availability of Educational Shows and Presentations	1	2	3	4	5
p) Availability of Self-guided Trails with Informational Panels	1	2	3	4	5
q) Quality/Value of Food Services	1	2	3	4	5
r) Quality/Value of Souvenirs and Other Goods	1	2	3	4	5

11b. Please write down and rate the importance of other factors that could have an effect on the quality of your experience in the park. Please include only factors that park managers can alter (i.e., NOT 'the weather').

Other factors	Not at all Important				Extremely Important
	1	2	3	4	5
s) _____	1	2	3	4	5
t) _____	1	2	3	4	5
u) _____					

11c. Which two factors listed in questions 11a and 11b were most important to your enjoyment of the park environment? *(Enter the appropriate letter in each blank.)*

_____ MOST IMPORTANT factor
_____ SECOND MOST IMPORTANT factor

12. **a)** Please check ( ) the educational and informational services and facilities at Mount Rainier National Park which you and your group **used** during this visit, in the left column.

b) Next, for only those services and facilities which you and your group **used**, please rate their **importance** from 1-5.

c) Finally, for only those services and facilities which you and your group **used**, please rate their **quality** from 1-5.

Use service? Check ( )	**Importance?** Very Important 1 2 3 4 5 Not Important	**Quality?** Very Good 1 2 3 4 5 Very Poor
____ PARK BROCHURE/MAP	____	____
____ PARK NEWSPAPER	____	____
____ VISITOR CENTER EXHIBITS	____	____
____ VISITOR CENTER STAFF	____	____
____ VISITOR/HIKER CENTER BOOK SALES	____	____
____ HIKER INFORMATION CENTERS	____	____
____ AUDIO-VISUAL SHOWS/PROGRAMS	____	____
____ RANGER-LED WALKS	____	____
____ ROADSIDE EXHIBITS	____	____
____ SELFGUIDING TRAILS	____	____
____ ROVING RANGERS	____	____

Finally, we would like to ask a few background questions.
The information provided will be used for statistical purposes only.

13. Are you: *(Circle one number.)*

1 FEMALE
2 MALE

14. What year were you born?

19 ___ ___

15. What is the highest level of formal schooling you have completed? *(Circle the appropriate number.)*

1 2 3 4 5 6 7 8 9 10 11 12 (Elementary thru High School) 13 14 15 16 (College/Vocational) 17 18 19 20 21 22 23 24+ (Graduate/Professional)

16. Which of the following best describes your current employment status? *(Circle the appropriate number.)*

1 STUDENT
2 HOMEMAKER
3 RETIRED
4 MILITARY
5 EMPLOYED
6 UNEMPLOYED ----

What is your occupation?

_____

17. Are you: (Circle one number)

1 AMERICAN INDIAN/ALASKA NATIVE
2 ASIAN
3 BLACK
4 WHITE
5 OTHER (Specify):_____

Are you: (Circle one number)

1 HISPANIC
2 NON-HISPANIC

18. **INCLUDING THE TRIP DURING WHICH YOU WERE CONTACTED,** how many trips have you made to Mt. Rainier National Park in the last three years?

NUMBER OF TRIPS _____

19. What was the makeup of your group on the trip during which you were contacted for this survey?
(Circle one number.)

1 INDIVIDUAL
2 FAMILY
3 FRIENDS
4 FAMILY & FRIENDS
5 ORGANIZED TOUR GROUP
6 OTHER *(Please specify:* _____*)*

20. Is there anything else you would like to tell us about your visit to Mt. Rainier National Park? Please use this space for any comments you would like to make.

Thank you for your contribution to this project.

APPENDIX C

Date:
Time:
Contact point:
Survey worker:

OMB Approval 1024-0182

1995 Mount Rainier National Park
Entrance Gate Survey Contact Sheet

The National Park Service would like to send you a brief questionnaire regarding your current visit to Mt. Rainier National Park. Your participation in this survey will help us to better meet the needs of visitors to the reserve. Thank you for your time.

1. How many people are in your group today?

_____ PEOPLE

2. Are there any children under age 16 in your group today? *(Circle one number.)*

1 NO
2 YES - What are the ages of the children under age 16 in your group:

___ ___ ___ ___ ___ ___ ___ ___ ___

3. Please have each person in your party who is age 16 or older provide the following information. Not all of the persons in your party will be sent questionnaires.

1) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

_____
(City, State, Zip Code, Country)

PLANNED ACTIVITIES ___ ___ ___ ___ ___ ___ ___ ___

MOST IMPORTANT activity _____ SECOND MOST IMPORTANT activity _____

TURN PAGE OVER TO WRITE INFORMATION FOR OTHER PARTY MEMBERS

2) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

_____
(City, State, Zip Code, Country)

PLANNED ACTIVITIES ____ ____ ____ ____ ____ ____ ____ ____

MOST IMPORTANT activity _____ SECOND MOST IMPORTANT activity _____

3) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

_____
(City, State, Zip Code, Country)

PLANNED ACTIVITIES ____ ____ ____ ____ ____ ____ ____ ____

MOST IMPORTANT activity _____ SECOND MOST IMPORTANT activity _____

4) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

_____
(City, State, Zip Code, Country)

PLANNED ACTIVITIES ____ ____ ____ ____ ____ ____ ____ ____

MOST IMPORTANT activity _____ SECOND MOST IMPORTANT activity _____

5) Name _____ Age_____

Mailing Address _____ Sex: F M
(Number and Street)

_____
(City, State, Zip Code, Country)

PLANNED ACTIVITIES ____ ____ ____ ____ ____ ____ ____ ____

MOST IMPORTANT activity _____ SECOND MOST IMPORTANT activity _____

DO NOT WRITE ON THIS SHEET
WRITE YOUR RESPONSES ON THE BLUE CONTACT SHEET

1. While you are in Mt. Rainier National Park do you plan to:

1 Have no plans/Completely following plans of other party member

2 Drive around viewing scenery from road and turnouts
3 Take walks or hikes
4 Camp overnight while backpacking
5 Mountain climb using specialized equipment
6 Ride Bicycle

7 Attend a park service naturalist program or activity
8 Shop for curios or souvenirs
9 Camp overnight in a campground
10 Stay overnight at a lodge or inn within the park
11 Go to Paradise Visitor Center
12 Go to Ohanapecosh Visitor Center
13 Go to Longmire Museum
14 Eat lunch or snack at Paradise Visitor Center (fast food)
15 Eat Sunday brunch at Paradise Lodge
16 Eat a sit-down meal at Paradise Lodge other than Sunday brunch
17 Eat a sit-down meal at Longmire Inn

18 Picnic
19 View wildflowers
20 View wildlife
21 Take photographs
22 Snow play
23 Do any other activities not described

WRITE YOUR PLANNED ACTIVITIES IN THE SPACE
PROVIDED ON THE CONTACT SHEET

2. Which of these activities are most important to your enjoyment ofthe park?

WRITE YOUR MOST IMPORTANT ACTIVITIES IN THE SPACES
PROVIDED ON THE CONTACT SHEET
If you had no planned activities leave the spaces blank

APPENDIX D

HOW TO USE THIS REPORT

This section is a brief introduction to the basic statistical methods included in this report. It defines some key terms and illustrates the ways in which the statistical tables and graphs have been prepared.

The main tool used in statistics is data--those observations and measurements that are recorded in a study. As commonly used, the word "data" is plural. For example, all of the visitors' ages comprise data. A single unit of data -- for example, the age of a single visitor -- is a datum.

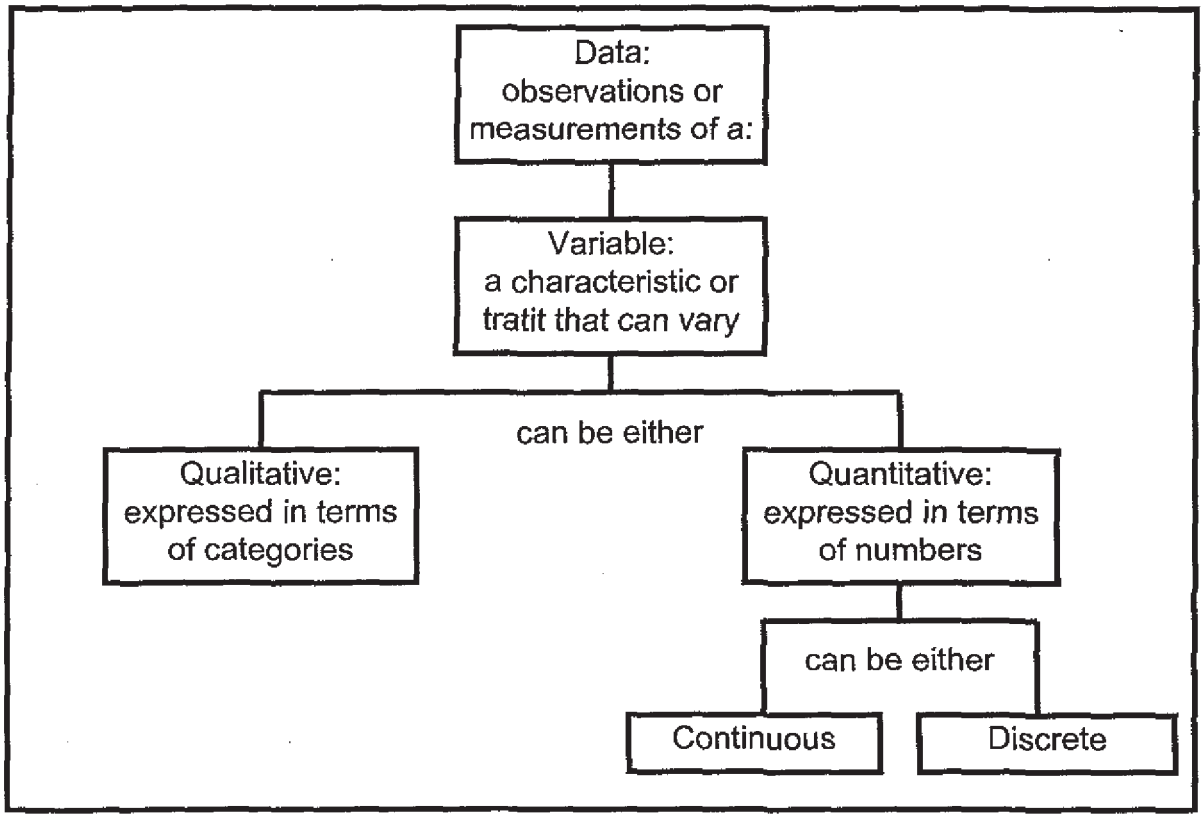
Data are collected about relevant variables. A variable is simply a characteristic or trait of interest that can vary. For example, the ages of visitors, their party characteristics, or their satisfaction with wildlife sightings at MORA can all be considered variables: Each of these traits or characteristics varies from person to person in the study sample.

Variables can be of two types: Qualitative variables are expressed in terms of categories, such as whether or not a visitor has been to the Visitor Center. Quantitative variables are expressed in terms of numbers, such as the size of a visitor party.

Discrete quantitative variables have distinct and separate units. There are no values possible between the units of a discrete variable. For example, the number of visitors in a single party consists only of whole numbers of people. One cannot talk about a party of 1 1/2 persons.

Figure D.1 illustrates these concepts.

FIGURE D.1. FLOW CHART OF STATISTICAL CONCEPTS AND TERMINOLOGY



Often data for more than one variable are collected. The data for the unit of analysis under consideration (an individual visitor, a single party, a specific park) are a case. Statistical analyses are done on groups of cases to form a data set. The number of cases in a data set is usually referred to as "n." For example, if 1000 visitors answered a question, n = 1000.

In many instances, respondents do not answer all of the questions in a survey. They either inadvertently skip a question or are asked to skip question because it does not apply to them. When a respondent does not answer a

question that they should have answered, he/she is a "missing case" for that question. If the number of missing cases exceeds 10 percent of those who should have answered the question, a corresponding footnote or statement in the text will indicate this fact.

Data can be collected for all of the possible cases such as on every visitor to MORA. This is a census. Alternately, data can be collected for a sample of the total population. There are many ways to choose a sample. One common approach is a random probability sample, in which each individual has an equal chance of being included in the data set. In the strictest mathematical sense, the WTVS sample is not random due to the possibility of bias through non-response. However, the authors believe that the potential bias is so minimal that, for ordinary management purposes, the sample can be considered random and therefore, representative of the population of visitors to the studied wilderness trails.

The data from this survey are reported as descriptive statistics. Descriptive statistics are used to summarize a large group of numbers and to describe general characteristics of the data set. For example, there might be a long list of each visitor's age. Descriptive statistics can be used to quickly summarize this long list. The average (mean) age would be the total of all the cases' ages divided by the number of cases. The modal age (mode) would be the most frequently reported age. The range would be the spread of ages from the youngest to the oldest.

In addition to descriptive statistics, inferential statistical procedures have been used to determine the likelihood that observed relationships among the different variables are due to chance. The smaller the likelihood that an observed effect is due to chance the more confident one can be that the effect is due to systematic variation. The p-value is the probability of obtaining the observed result due to chance alone and is directly related to the results of the statistical test. By convention, when the probability of obtaining a result due to chance is very small ($p < .05$), then it is concluded that the observed effect is due to systematic variation or a "real" effect. Results with p-values less than .05 are also referred to as significant. In this report, you will see the value of the statistic and its corresponding p-value (e.g., $\chi^2(1)=3.44$, $p < .01$). The important thing to remember is that effects that have p-values less than .05 are considered real effects.

The most common statistical procedure used in this report is the chi-square test for independence. This statistical test determines if the pattern of responses for one categorical variable differs across different categories of the second categorical variable. For example, suppose a chi-square test examining the relationship between sex of respondent and day of week contacted was significant. This means that the proportion of males and females among respondents contacted on weekdays (e.g., 50% males, 50% females) differed significantly from that of respondents contacted on the weekend (e.g., 60% males, 40% females).

When one of the variables is measured on a continuous (e.g., age) rather than categorical (e.g., gender) basis, the statistical procedure used to examine differences across groups is Analysis of Variance (F-test). A significant F-value indicates that there is a significant difference among the groups. If there are more than 2 groups, follow-up tests (e.g., post hoc Tukey tests) can be performed to determine which groups differ from each other. Additional statistical procedures used in this report are explained briefly either in the text or a footnote when they are first introduced.

Statistics can be presented in several formats. Tables simply organize the data into horizontal and vertical columns and sometimes include brief explanations. Graphs or figures illustrate the data through a visual presentation. All of these formats are present in this report.

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural and cultural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environment and cultural values of our national parks and historical places, and providing for enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interest of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under US administration.

Technical Report NPS/CCSOUW/NRTR-2002-01
NPS D-475 October 2001