

VII. Management Policies & Regulations: Awareness & Agreement

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Denali backpacker survey respondents were asked a variety of questions to assess their awareness of and agreement with various management policies and regulations. In addition to current policies, respondents were asked about possible alternative policies. All of these questions were included in the mail questionnaire and therefore, these data represent all hikers. This section presents the findings from these questions.

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Highlights

- Only about half of hikers were aware of the following four policies: 1) some backcountry areas are permanently closed (42.3%), 2) backcountry campsites should not be visible from road (47.2%), 3) some backcountry areas are temporarily closed (53.8%) and 4) dayhikers do not require permits (55.1%; see Figure 7.1).
- Review of Figures 7.5 through 7.13 indicates that there is general support from hikers for current regulations that govern backcountry use in DENA. Most hikers (77.5%) strongly support that overnight hiking parties must obtain a backcountry travel permit (see Figure 7.5). The regulations receiving the most opposition are that backcountry permits may only be obtained 24 hours in advance of one's trip (28.2%) and that backcountry permits may only be obtained in the Park (14.2%).
- Although unlimited use (no rationing) was opposed by most hikers (87.2%) with 63.5 percent of hikers strongly opposed to unlimited use (see Figure 7.20), there was limited support for the alternate ways of rationing use. Issuing a limited number of permits on a first-come, first-served basis was the only alternate policy for rationing use that was supported by most hikers (83.2%; see Figure 7.14) while most hikers (70.8%) opposed issuing a limited number of permits on a lottery basis (see Figure 7.15). About 80 percent of local-Alaskans opposed a use fee of \$10, and the most support for a use fee of \$10 was from non-Alaskans (42.4%; see Figure 7.19).

To the extent that people perceive that a rationing option reduces the likelihood of their obtaining a permit for their trip, they may reduce their support for that option. People's perceptions of permit availability for any particular option however may have been inaccurate. Therefore, support for any of these rationing options may differ from what we observed if more complete descriptions of each option (including permit availability) are used.

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- The majority of hikers (83.9%) agree with the present policy that hikers should encounter no more than 2 other hiking parties per trip day (see Figure 7.21). Of those who disagreed (13.9%), almost 40 percent thought the maximum number of other hiking parties that hikers should encounter should be more than 2 while 18.2 percent thought hikers should never encounter other hiking parties (see Figure 7.22). These findings are consistent with the findings from the stated choice analysis that indicate that more than 2 encounters (i.e., up to 4 encounters) resulted in negative utility for backpackers (see Figure 10.1a).
- The majority of hikers (80.1%) agree with the present policy of allowing on average 6 hikers to camp per zone (see Figure 7.23). Of those hikers who disagreed with the present policy (14.4%), about 70 percent of them felt that more hikers should be allowed to camp in an average backcountry zone with 38.6 percent of them indicating that 10 or more hikers should be allowed (see Figure 7.24).
- The vast majority of hikers (93.8%) agreed with the present objective that backpackers should be able to camp out of sight or sound of all other parties (see Figure 7.25). These findings are consistent with the stated choice analysis that found that backpackers had positive utility for being able to camp out of sight and sound of others on "most nights" or "all nights" and negative utility when only able to do so on a "minority of nights" (see Figure 10.1b).
- Two-thirds of hikers felt that there should be a maximum party size for hiking parties in DENA (see Figure 7.27). About 40 percent said that the maximum party size should be between four and six and 38.6 percent said that the maximum party size should be between six and eight (see Figure 7.28). Almost 10 percent of hikers felt that the maximum party size should be 10 or more hikers.
- Almost 9 percent of hikers reported that hikers should never encounter park rangers during a backcountry trip while 13.8 percent reported all hikers should encounter park

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rangers once during a backcountry trip (see Figure 7.29). Almost half of hikers (49.4%) feel that hikers need not encounter park rangers, but should not encounter park rangers more than once per backcountry trip.

- Most hikers are opposed to selected additions to DENA's backcountry that increase evidence of human presence (see Figures 7.31-7.39). About 20 percent of hikers supported the following additions: developed hiking trails (see Figure 7.31), bridges over rivers (see Figure 7.37), and food caches for bear protection (see Figure 7.39). These findings suggest that hikers prefer to keep the wilderness in a pristine state. Additional support for this conclusion is the finding of the stated choice model that backpackers have positive utility for little to some signs of human use at campsites, but negative utility for extensive signs of human use at campsites (see Figure 10.1d).

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Awareness of Management Policies and Regulations Prior to Arriving at DENA

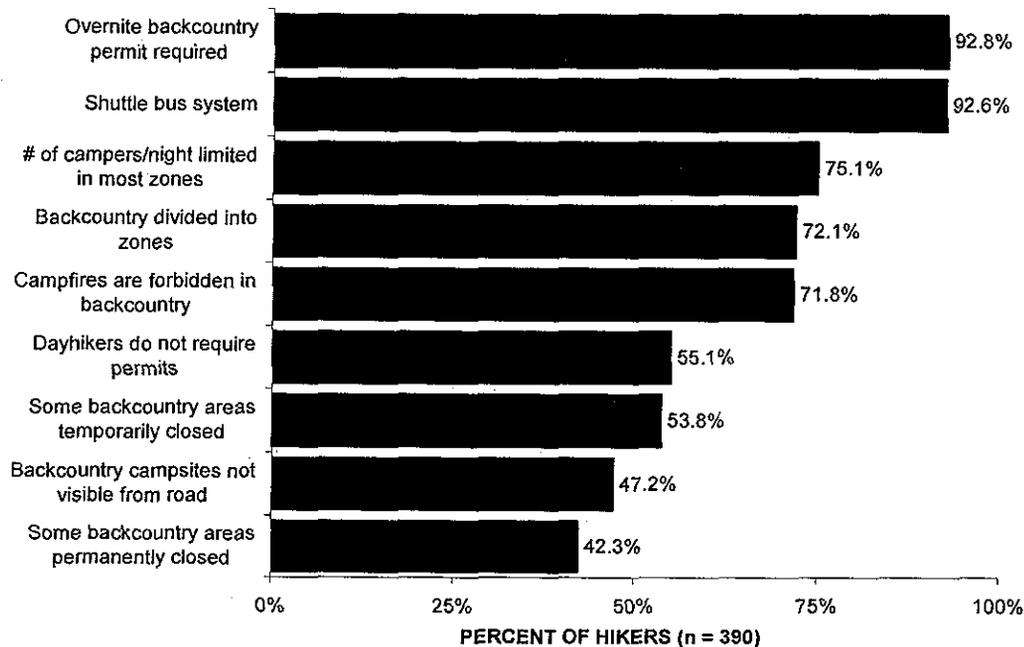
Mail Questionnaire

20. Before arriving at Denali, were you aware of the following management policies and regulations? (Circle one response for each item)

		<u>Was aware?</u>	
a)	That there is a shuttle bus transportation system.....	NO	YES
b)	That the backcountry is divided into travel zones.....	NO	YES
c)	That a permit is required for overnight travel in the backcountry.....	NO	YES
d)	That only a certain number of hikers are permitted to camp in most zones on any given night.....	NO	YES
e)	That day hikers are not required to have travel permits.....	NO	YES
f)	That certain areas of the backcountry are permanently closed to overnight backcountry use.....	NO	YES
g)	That hikers are sometimes prohibited from entering certain backcountry zones.....	NO	YES
h)	That campfires are not allowed in the backcountry.....	NO	YES
i)	That backcountry campsites must not be visible from the park road.....	NO	YES

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FIGURE 7.1: Mail Survey, Q-20
 PERCENTAGE OF HIKERS AWARE OF FOLLOWING MANAGEMENT POLICIES AND REGULATIONS BEFORE ARRIVING AT DENALI

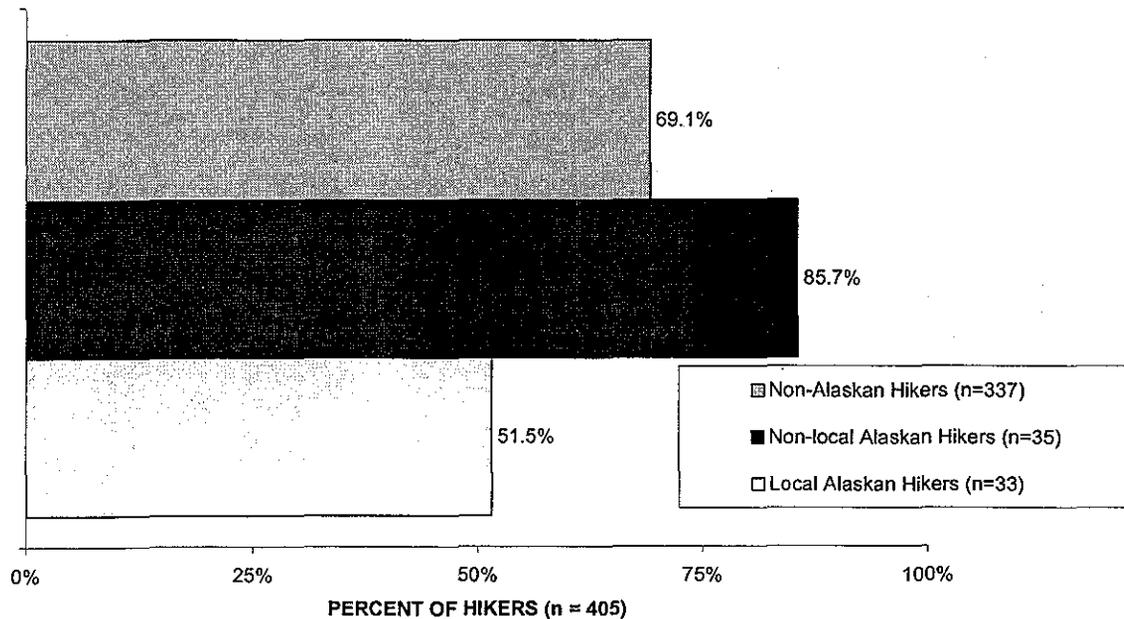


Percentages sum to more than 100 because hikers can be aware of more than one policy or regulation.

The effect of hikers' residence on their awareness (prior to this trip) for each of the management policies and regulations was examined. Hikers' awareness that the backcountry is divided into travel zones depended on hikers' residence, $\chi^2 (2, n = 405) = 9.31, p = .010$. As can be seen in Figure 7.2, local Alaskan hikers were least likely to be aware that the backcountry is divided into travel zones (51.5%) while non-local Alaskan hikers were the most likely to be aware that the backcountry is divided into travel zones (85.7%). The low percentage of local Alaskan hikers being aware of this policy prior to their current trip is most likely because most of these people are young summer employees who are not from Alaska, and we most likely contacted them on their first trip to the DENA wilderness. Additionally, these individuals (compared to those who planned a vacation trip to DENA) were probably less likely to seek information about what was required to take a backcountry trip until they had actually arrived at DENA.

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FIGURE 7.2: Mail Survey, Q-20b
PERCENTAGE OF HIKERS AWARE THAT THE BACKCOUNTRY IS DIVIDED INTO TRAVEL ZONES BY RESIDENCE



Hikers awareness that only a certain number of hikers are permitted to camp in most zones varied significantly by residence, $\chi^2 (2, n = 405) = 9.78, p = .008$. As can be seen in Figure 7.3, local Alaskan hikers were least likely to be aware (54.5%) while non-local Alaskan hikers were most likely to be aware (88.6%). This pattern is consistent with that found for awareness that the backcountry is divided into travel zones.

As can be seen in Figure 7.4, awareness that backcountry campsites must not be visible from the park road differed significantly by hikers' residence, $\chi^2 (2, n = 405) = 6.69, p = .035$. Non-local Alaskan hikers (65.7%) were more likely to be aware of this regulation than either local Alaskan or non-Alaskan hikers (42.4% and 43.0%, respectively).

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FIGURE 7.3: Mail Survey, Q-20d
PERCENTAGE OF HIKERS AWARE THAT ONLY A CERTAIN NUMBER OF HIKERS ARE PERMITTED TO CAMP IN MOST ZONES BY RESIDENCE

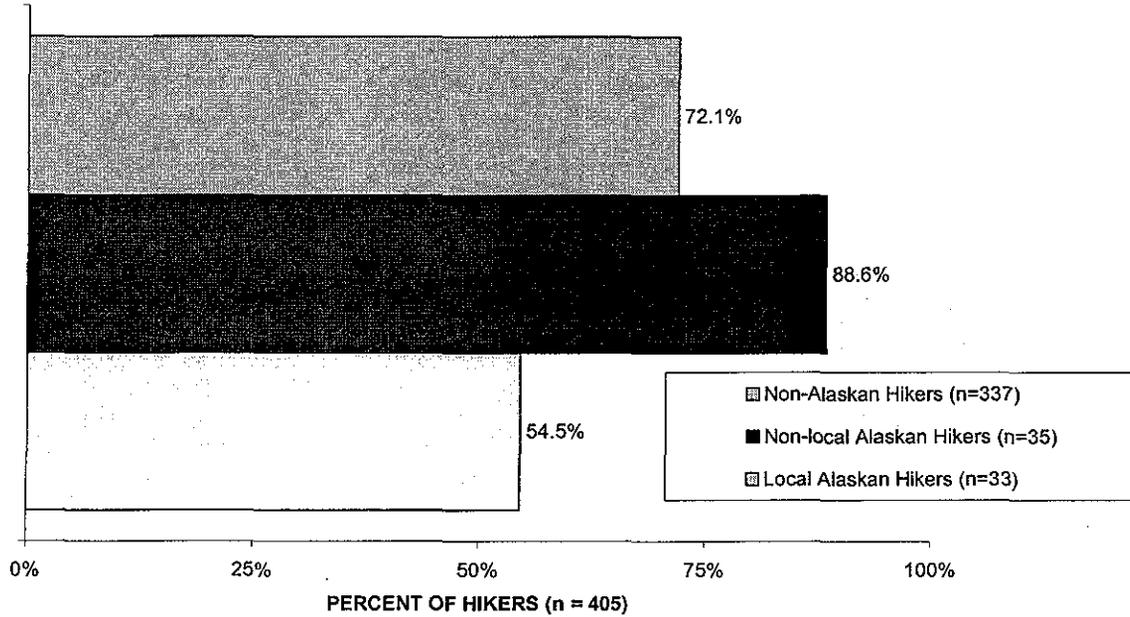
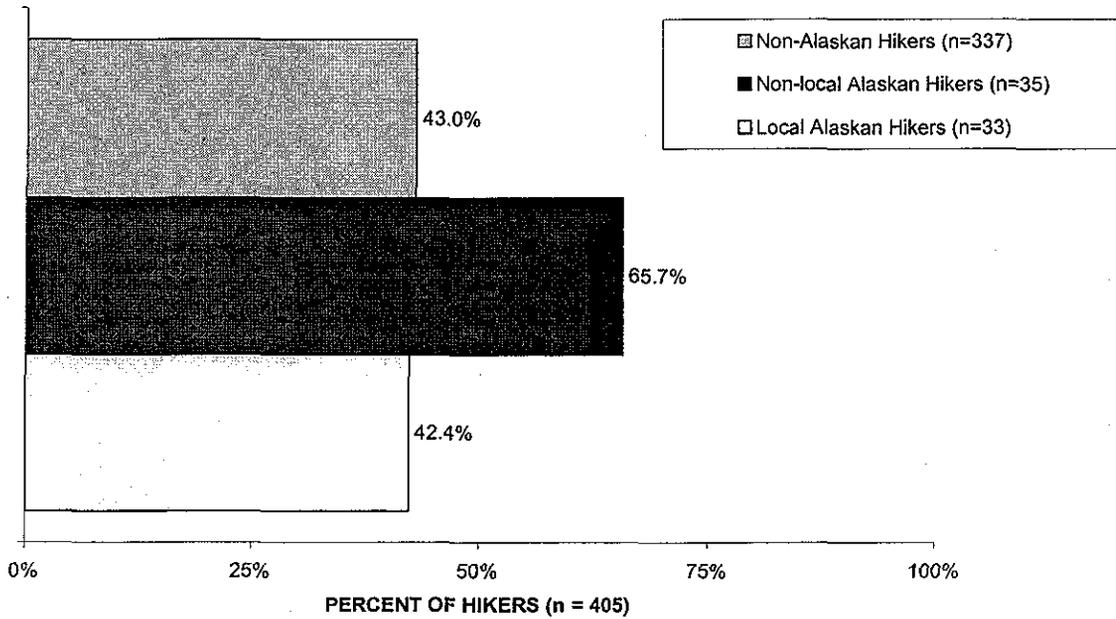


FIGURE 7.4: Mail Survey, Q-20i
PERCENTAGE OF HIKERS AWARE THAT BACKCOUNTRY CAMPSITES MUST NOT BE VISIBLE FROM THE PARK ROAD BY RESIDENCE



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Permit System for Rationing Use

Feelings about Current System for Rationing Use

Mail Questionnaire

24. What are your feelings about each of the following regulations that currently govern backcountry use in Denali National Park?

Please circle one response code for each regulation. The response codes are defined as follows:

SS = Strongly Support
 S = Support
 N = Neutral
 O = Oppose
 SO = Strongly Oppose

- | | | | | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|---|---|----|
| a) | All overnight hiking parties must obtain a backcountry travel permit..... | SS | S | N | O | SO |
| b) | Backcountry travel permits may only be obtained in the Park | SS | S | N | O | SO |
| c) | Backcountry travel permits may only be obtained 24 hours in advance of one's trip..... | SS | S | N | O | SO |
| d) | Overnight hikers may only camp in the backcountry zones specified by their permit..... | SS | S | N | O | SO |
| e) | Overnight hikers may only camp in the backcountry on the nights specified by their permit. | SS | S | N | O | SO |
| f) | Overnight hikers may hike in zones other than those specified by their permit for camping..... | SS | S | N | O | SO |
| g) | Day hikers do not need travel permits..... | SS | S | N | O | SO |
| h) | Hiking parties may camp most anywhere within their scheduled backcountry zones..... | SS | S | N | O | SO |
| : | : | : | : | : | : | : |
| : | : | : | : | : | : | : |
| m) | Capacities (# of hiking parties) for backcountry zones are determined on the basis of individual hikers , rather than by hiking parties | SS | S | N | O | SO |

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FIGURE 7.5: Mail Survey, Q-24a
SUPPORT/OPPOSITION FOR REGULATION THAT ALL OVERNIGHT HIKING PARTIES MUST OBTAIN A BACKCOUNTRY TRAVEL PERMIT

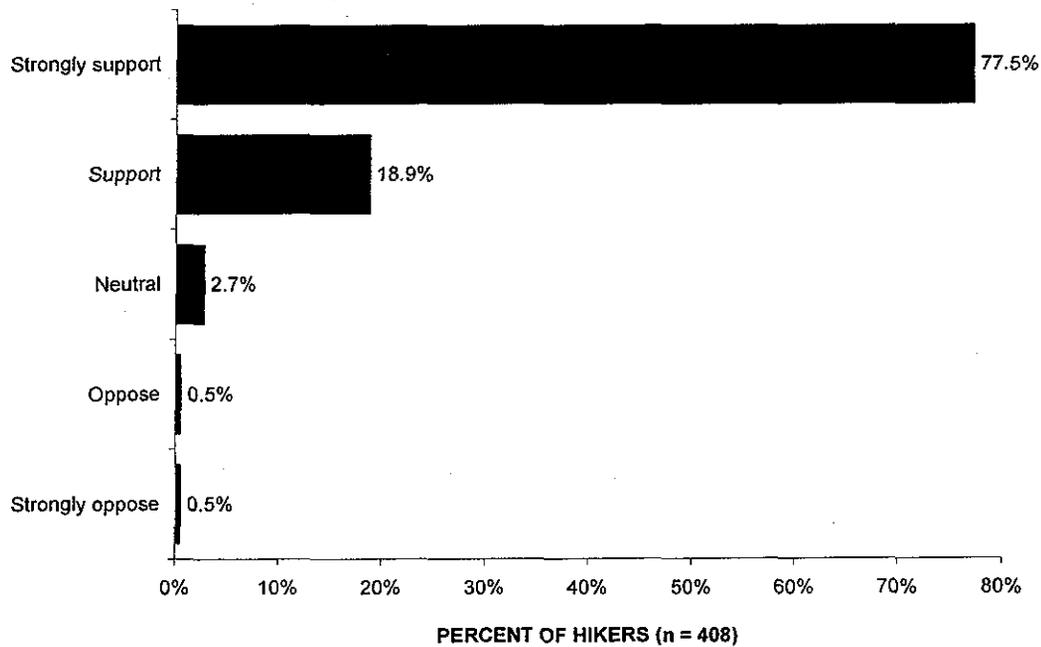
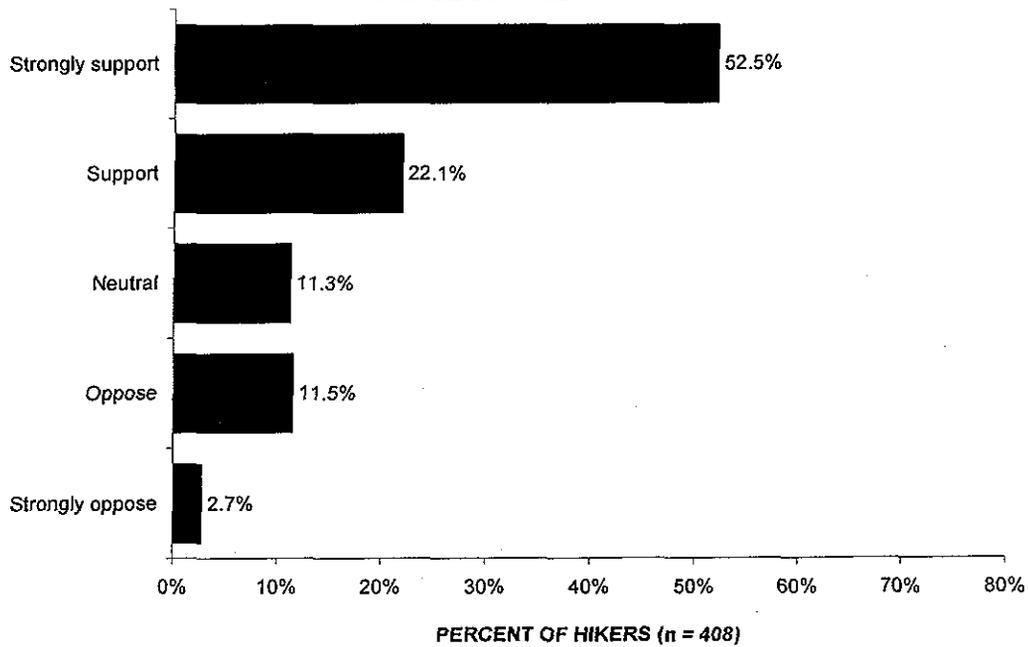


FIGURE 7.6: Mail Survey, Q-24b
SUPPORT/OPPOSITION FOR REGULATION THAT BACKCOUNTRY TRAVEL PERMITS MAY ONLY BE OBTAINED IN THE PARK



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FIGURE 7.7: Mail Survey, Q-24c
SUPPORT/OPPOSITION FOR REGULATION THAT BACKCOUNTRY PERMITS MAY ONLY BE OBTAINED 24 HOURS IN ADVANCE OF ONE'S TRIP

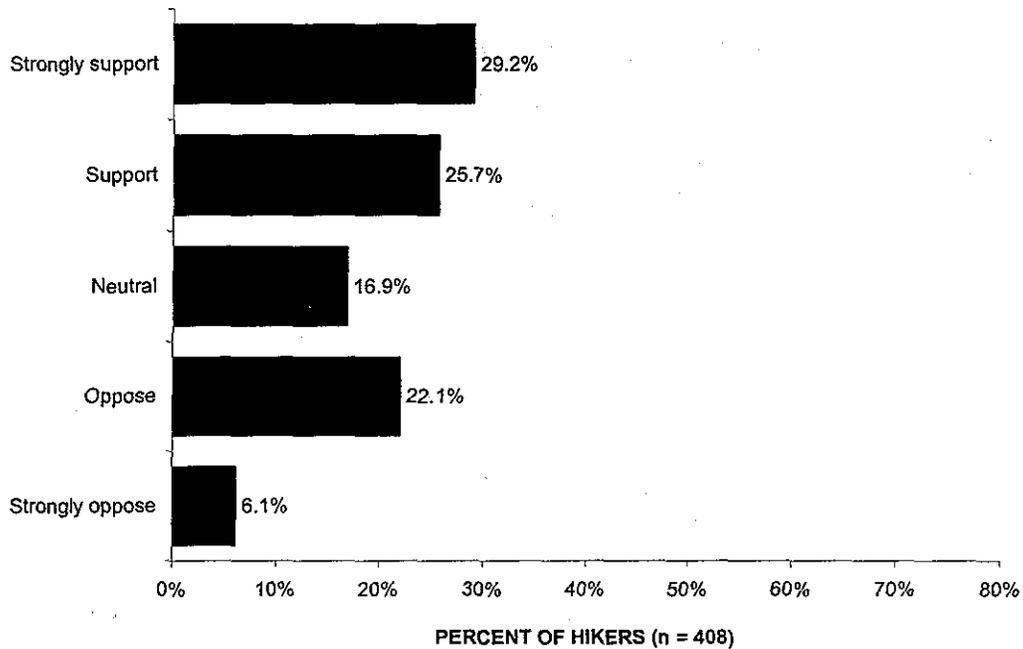
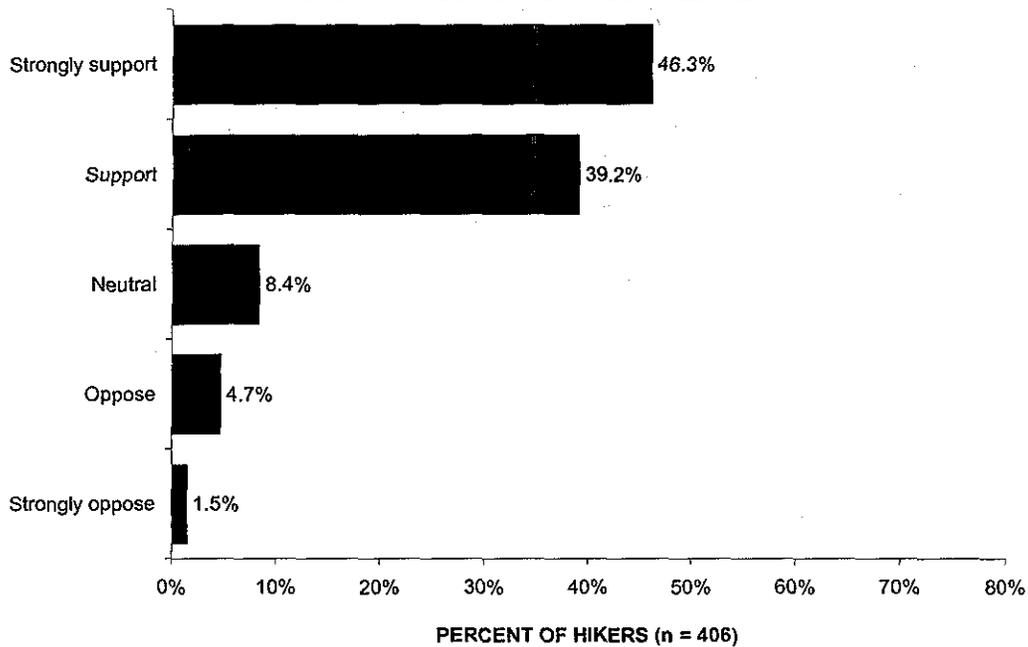


FIGURE 7.8: Mail Survey, Q-24d
SUPPORT/OPPOSITION FOR REGULATION THAT HIKERS MAY ONLY CAMP IN THE BACKCOUNTRY ZONES SPECIFIED BY THEIR PERMIT



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FIGURE 7.9: Mail Survey, Q-24e
SUPPORT/OPPOSITION FOR REGULATION THAT HIKERS MAY ONLY CAMP ON NIGHTS SPECIFIED BY THEIR BACKCOUNTRY PERMIT

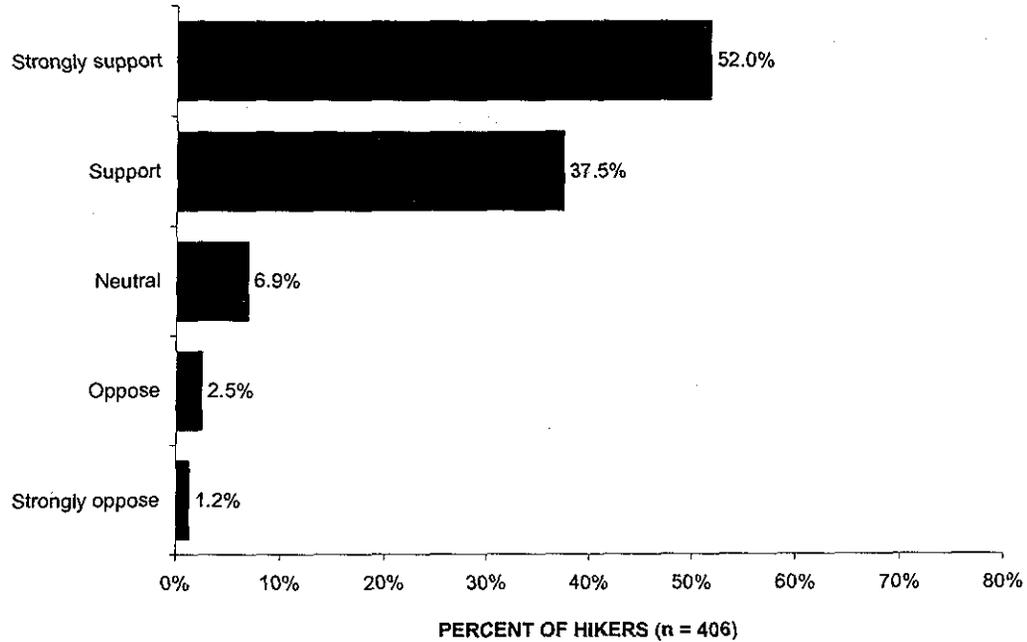
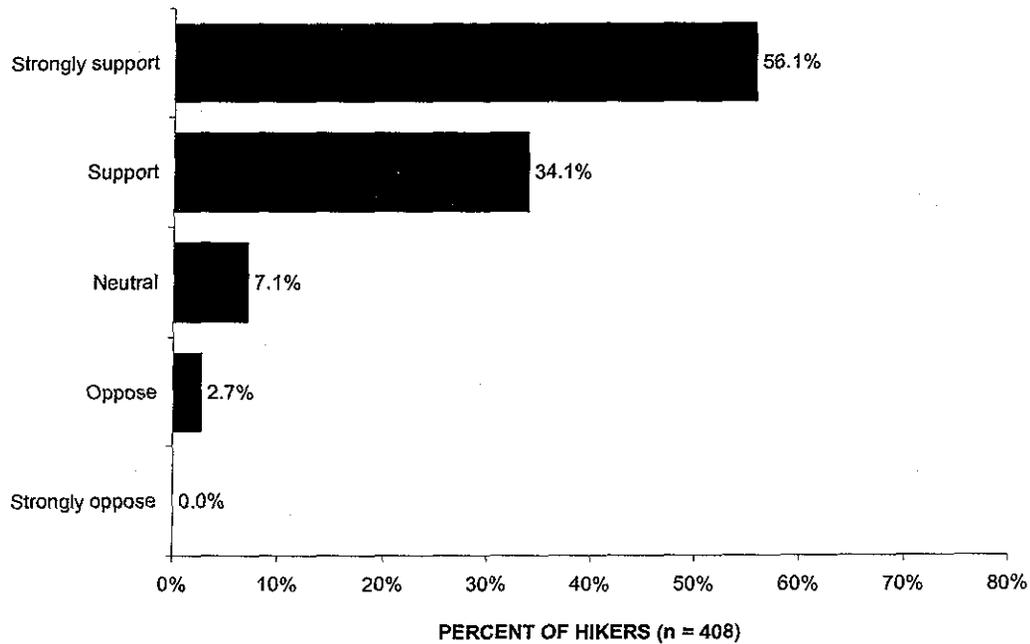


FIGURE 7.10: Mail Survey, Q-24f
SUPPORT/OPPOSITION FOR REGULATION THAT HIKERS MAY HIKE IN ZONES OTHER THAN THOSE SPECIFIED BY THEIR PERMIT



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FIGURE 7.11: Mail Survey, Q-24g
SUPPORT/OPPOSITION FOR REGULATION THAT DAYHIKERS DO NOT NEED TRAVEL PERMITS

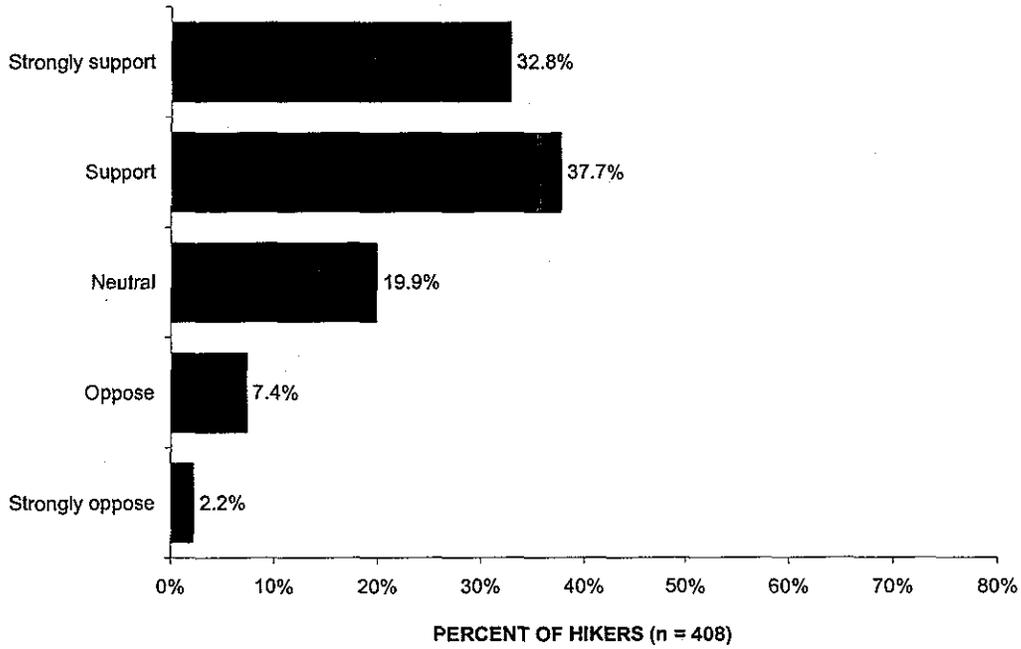
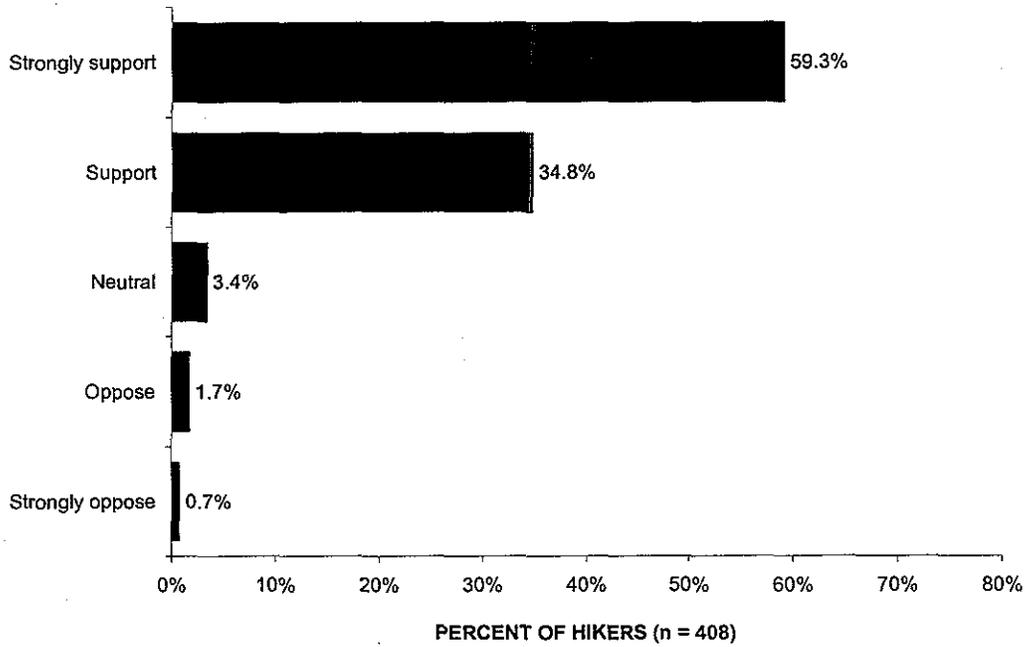
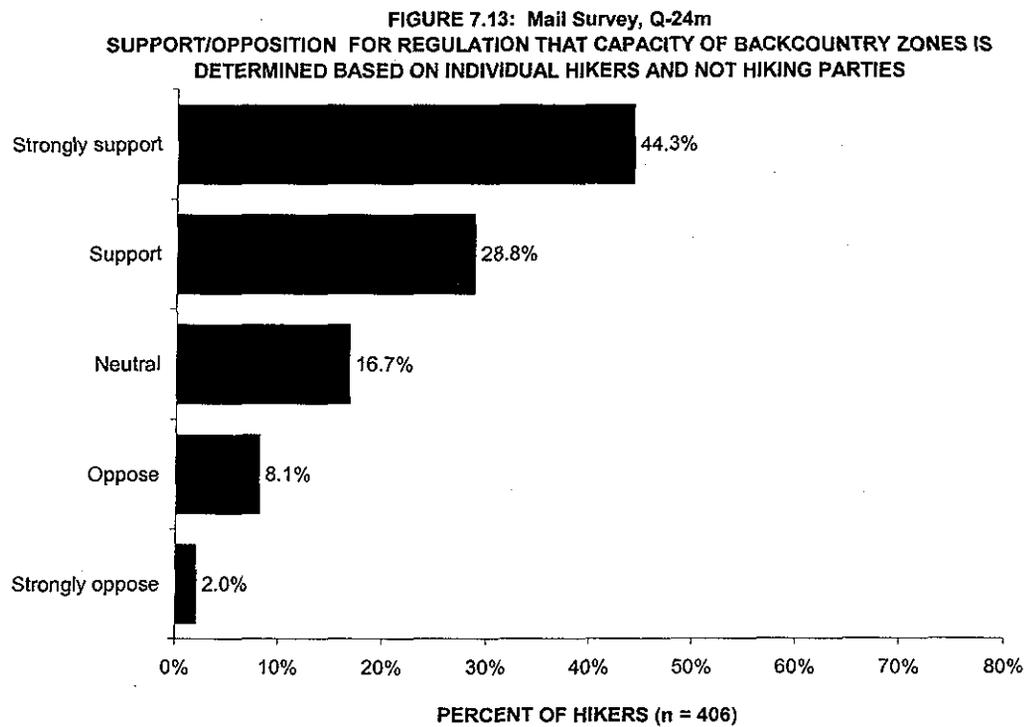


FIGURE 7.12: Mail Survey, Q-24h
SUPPORT/OPPOSITION FOR REGULATION THAT HIKERS MAY CAMP MOST ANYWHERE WITHIN THEIR SCHEDULED ZONES



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Support for Alternate Policies for Rationing Use

Mail Questionnaire

26. Do you support or oppose each of the following possible management policies for rationing use in the Denali backcountry?

Please circle one response code for each regulation. The response codes are defined as follows:

SS = Strongly Support
 S = Support
 N = Neutral
 O = Oppose
 SO = Strongly Oppose

a)	Issue a limited number of permits on a first-come, first-served basis.....	SS	S	N	O	SO
b)	Issue a limited number of permits on a drawing or lottery basis.....	SS	S	N	O	SO
c)	Issue a limited number of permits through an advanced reservation system.....	SS	S	N	O	SO
d)	Issue a limited number of permits to those who can demonstrate a certain level of knowledge and skill..	SS	S	N	O	SO
e)	Charge a use fee of no more than \$10 per trip for backcountry permits.....	SS	S	N	O	SO
f)	Allow use without rationing (i.e., unlimited use)....	SS	S	N	O	SO

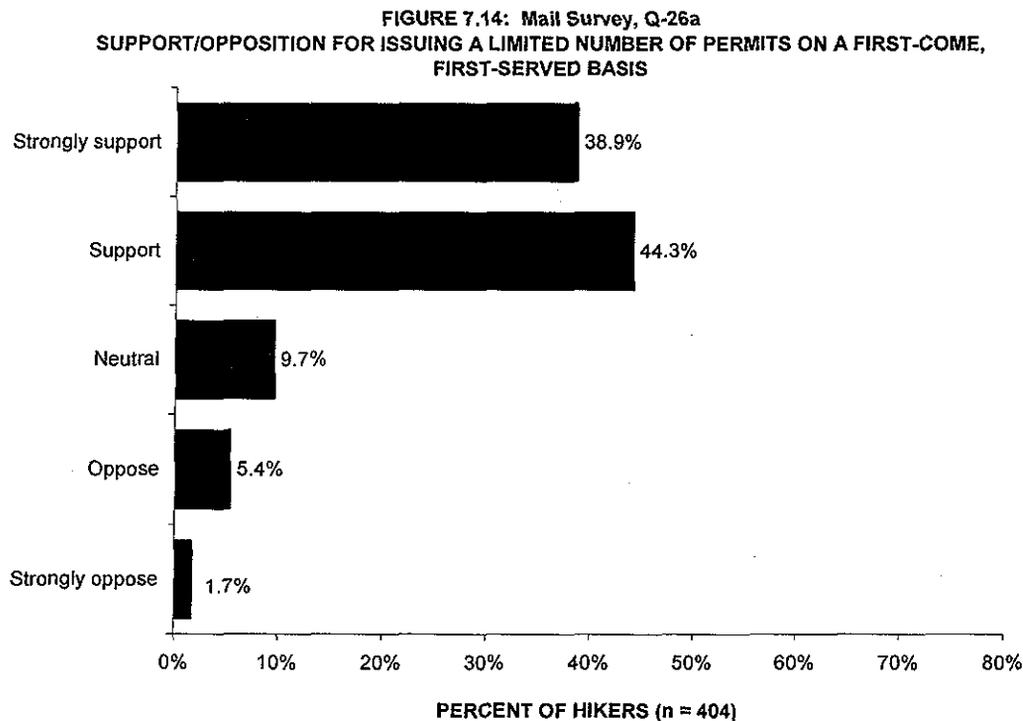
Although unlimited use (no rationing) was opposed by most hikers (87.2%) with 63.5 percent of hikers strongly opposed to unlimited use (see Figure 7.20), there was limited support for the alternate ways of rationing use. Issuing a limited number of permits on a first-come, first-served basis was the only alternate policy for rationing use that was supported by most hikers (83.2%; see Figure 7.14) while most hikers (70.8%) opposed issuing a limited number of permits on a lottery basis (see Figure 7.15). There was less consensus in terms of support for the remaining rationing options.

Although the stated choice analysis did not consider the means by which rationing of permits occurred, it included the availability of permits as one of its attributes. The findings suggested that people were relatively insensitive to changes in permit availability (compared to the other attributes being traded off). Specifically, there was little difference in utility

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whether most people were able to get their preferred versus their second choice trip. However, backpackers had negative utility if only a minority of people were able to get a permit.

To the extent that people perceive that a rationing option reduces the likelihood of their obtaining a permit for their trip, they may reduce their support for that option. People's perceptions of permit availability for any particular option however may have been inaccurate. Therefore, support for any of these rationing options may differ from what we observed if more complete descriptions of each option (including permit availability) are used.



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FIGURE 7.15: Mail Survey, Q-26b
SUPPORT/OPPOSITION FOR ISSUING A LIMITED NUMBER OF PERMITS ON A DRAWING OR LOTTERY BASIS

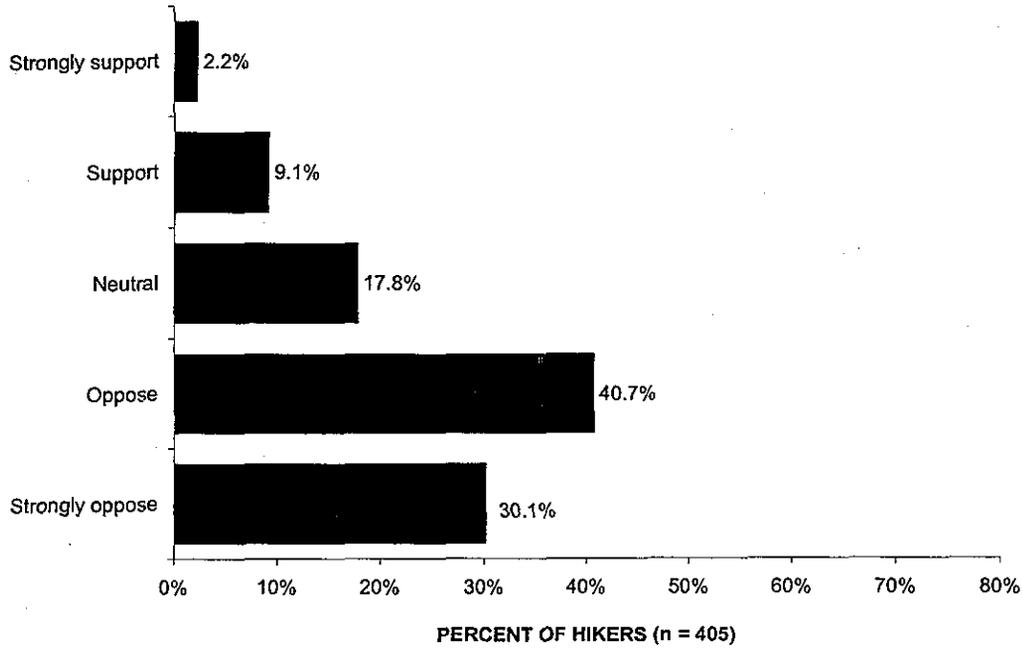
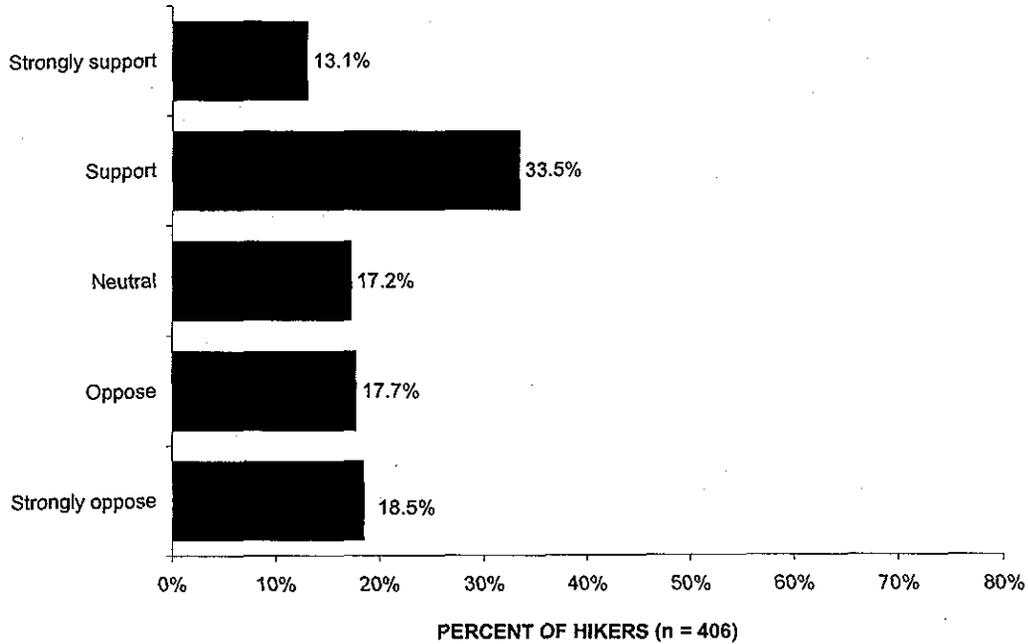


FIGURE 7.16: Mail Survey, Q-26c
SUPPORT/OPPOSITION FOR ISSUING A LIMITED NUMBER OF PERMITS THROUGH AN ADVANCED RESERVATION SYSTEM



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FIGURE 7.17: Mail Survey, Q-26d
SUPPORT/OPPOSITION FOR ISSUING A LIMITED NUMBER OF PERMITS TO THOSE WHO DEMONSTRATE A CERTAIN LEVEL OF SKILL OR KNOWLEDGE

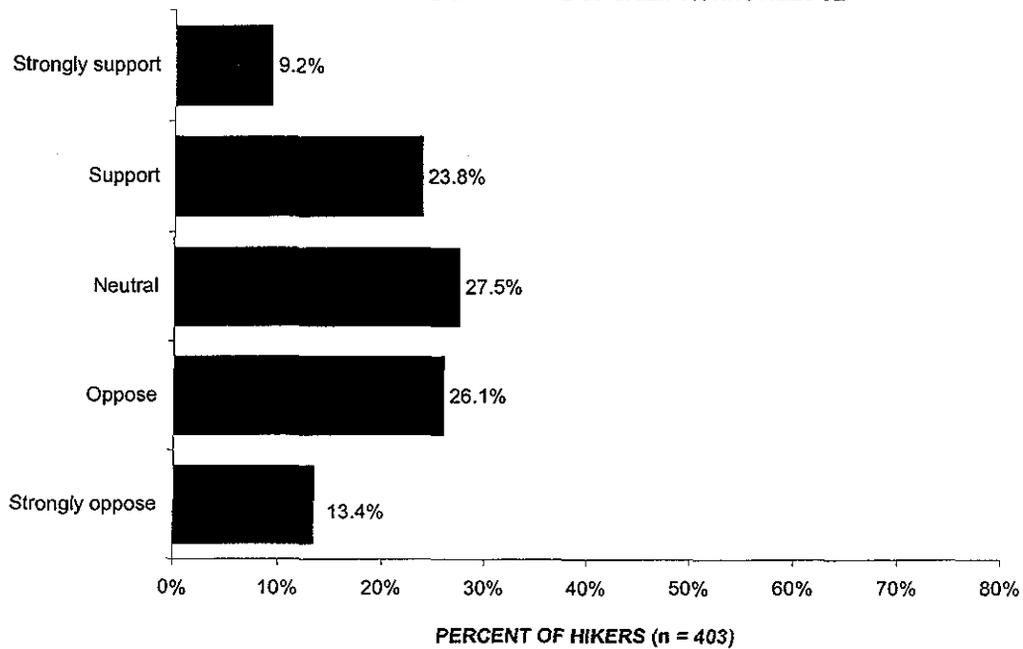
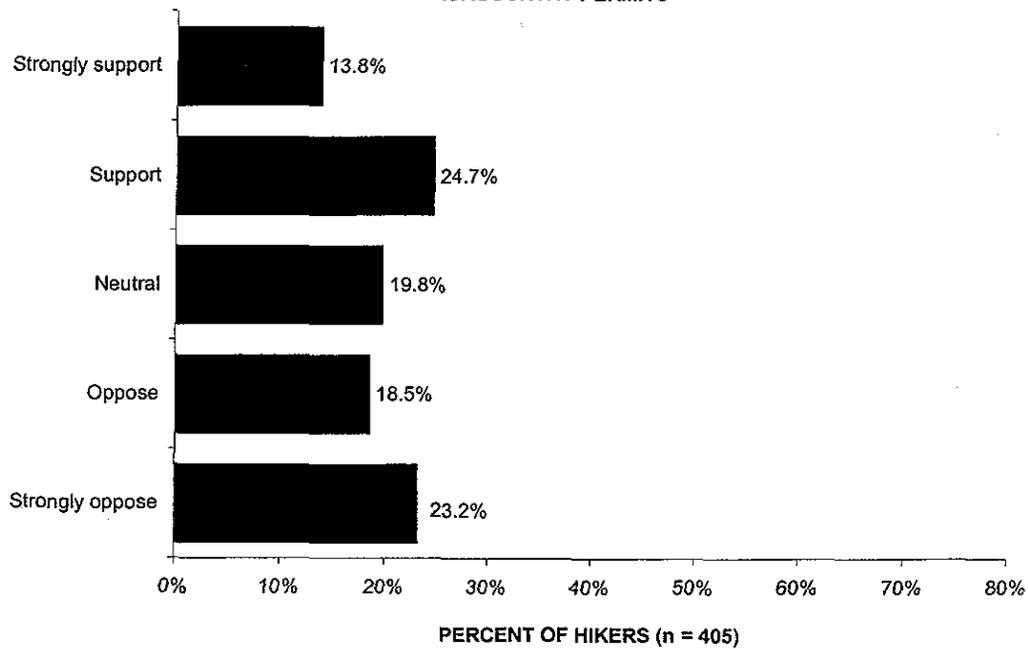
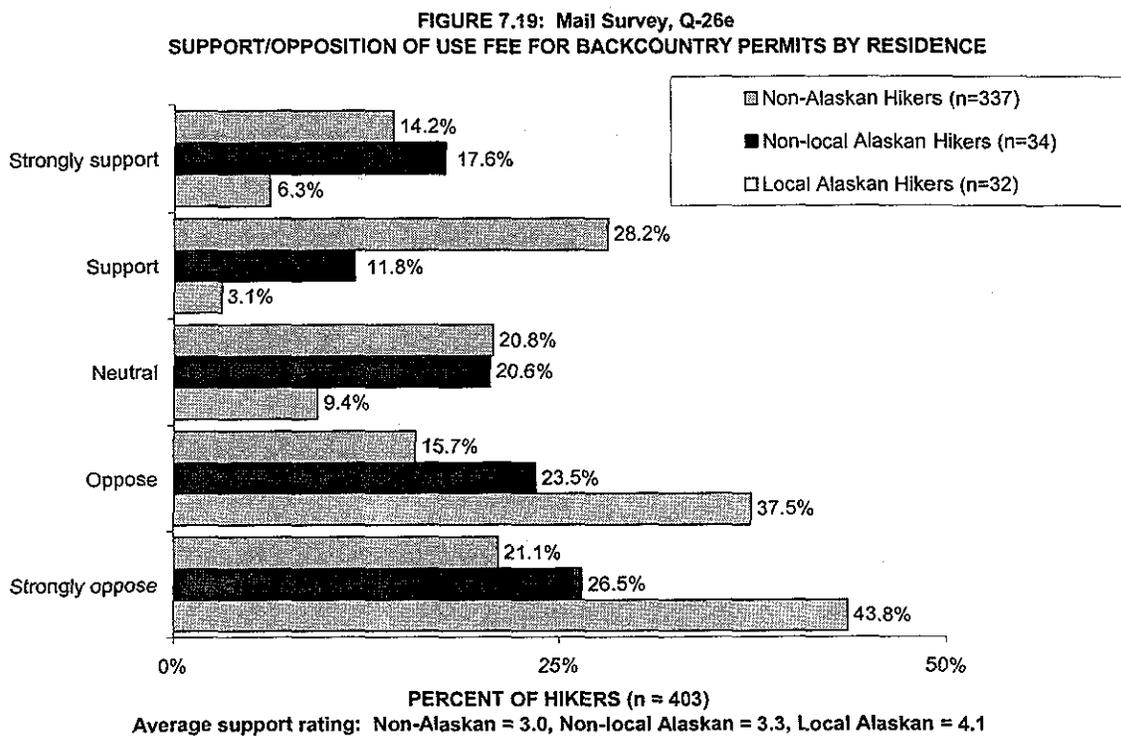


FIGURE 7.18: Mail Survey, Q-26e
SUPPORT/OPPOSITION FOR CHARGING A USE FEE OF NO MORE THAN \$10 PER TRIP FOR BACKCOUNTRY PERMITS



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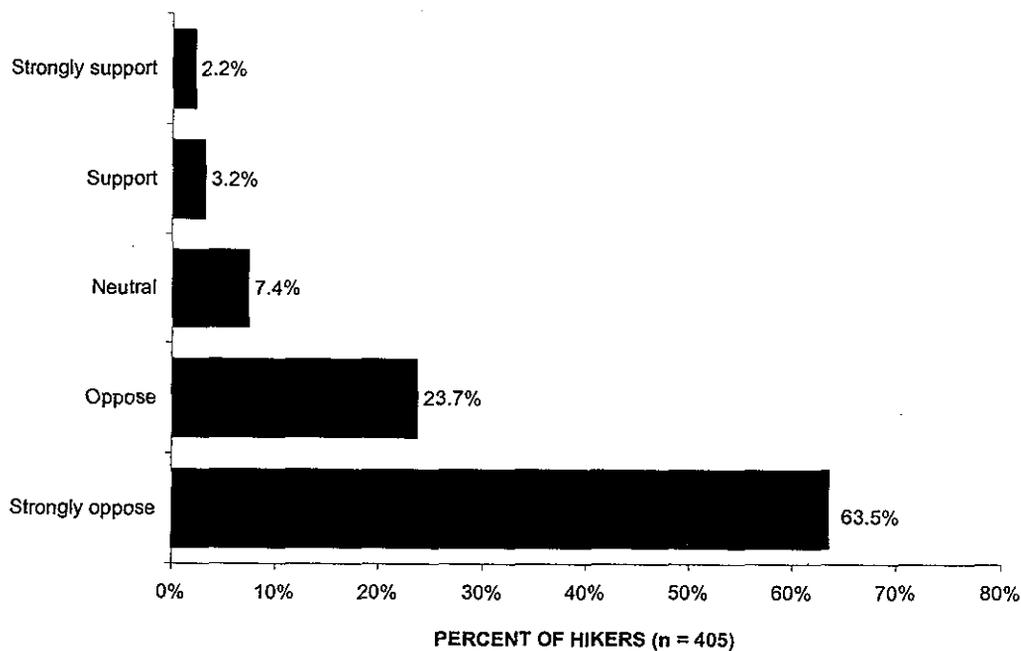
Support for a use fee for backcountry permits varied significantly by hikers' residence, $\chi^2 (6, n = 403) = 25.86, p < .001$ ¹². As can be seen in Figure 7.19, 81.3 percent of local Alaskan hikers either "Strongly opposed" or "Opposed" a use fee compared to 36.8 percent of non-Alaskan hikers and 50.0 percent of non-local Alaskan hikers. This increasing opposition toward a use fee for backcountry permits corresponds positively with use and thus, the cost to the user. Figure 2.14 shows that local Alaskan hikers had obtained the most backcountry permits ($M = 7.8$ permits) followed by non-local Alaskan hikers ($M = 5.4$ permits) and then non-Alaskan hikers ($M = 1.3$ permits).



¹² The categories "Strongly Support" and "Support" were combined to eliminate cells with expected frequencies less than 5.

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FIGURE 7.20: Mail Survey, Q-26f
SUPPORT/OPPOSITION FOR ALLOWING USE WITHOUT RATIONING (UNLIMITED USE)



User Density

Encounters with Other Hiking Parties

22a. Generally speaking, do you agree or disagree with park managers' present objective that backpackers should encounter no more than two other hiking parties per day? (Circle one number)

1 DON'T KNOW OR DON'T CARE → GO TO QUESTION 23a

2 I AGREE → GO TO QUESTION 23a

3 I DISAGREE →

22b. Generally speaking, what is the maximum number of other hiking parties that backpackers should encounter on any given day?

(Check one blank)

_____ Backpackers should encounter no other hiking parties	_____ 12-16
_____ 1	_____ 17-22
_____ 3-4	_____ 23 or more
_____ 5-7	_____ Unlimited use should be allowed
_____ 8-11	_____ Don't know

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FIGURE 7.21: Mail Survey, Q-22a
AGREEMENT WITH THE PRESENT OBJECTIVE THAT BACKPACKERS SHOULD ENCOUNTER NO MORE THAN 2 OTHER HIKING PARTIES PER DAY

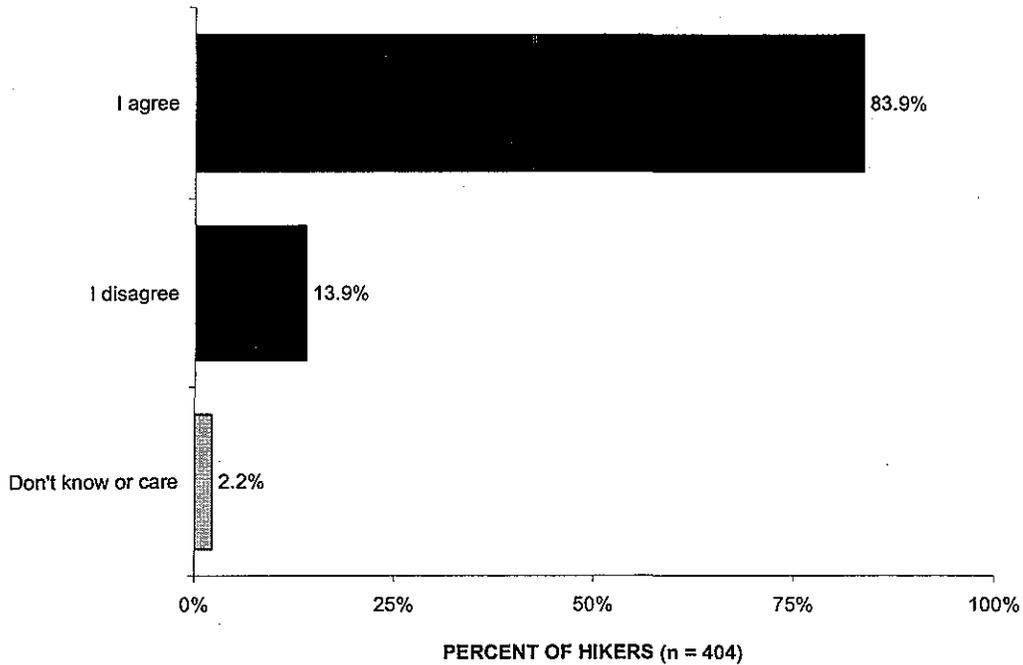
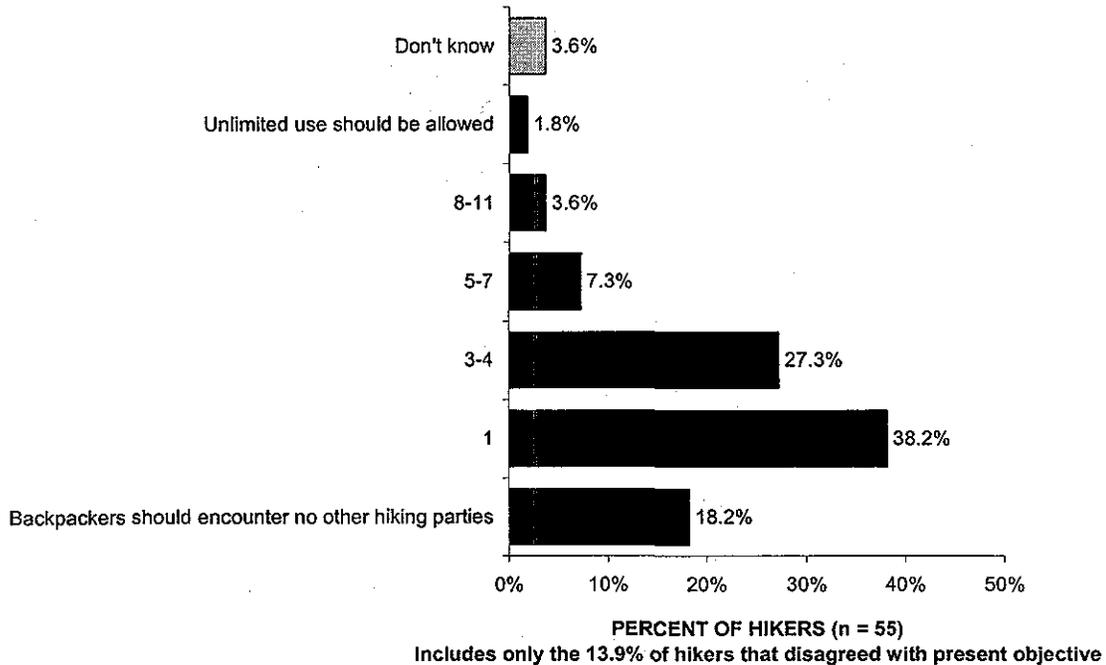


FIGURE 7.22: Mail Survey, Q-22b
MAXIMUM NUMBER OF OTHER HIKING PARTIES THAT SHOULD BE ENCOUNTERED ON ANY GIVEN DAY



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Camping

Mail Questionnaire

21a. Generally speaking, do you agree or disagree with the present policy of allowing, on the average, about 6 hikers to **camp** in most Denali backcountry zones on any given night? (*Circle one number*)

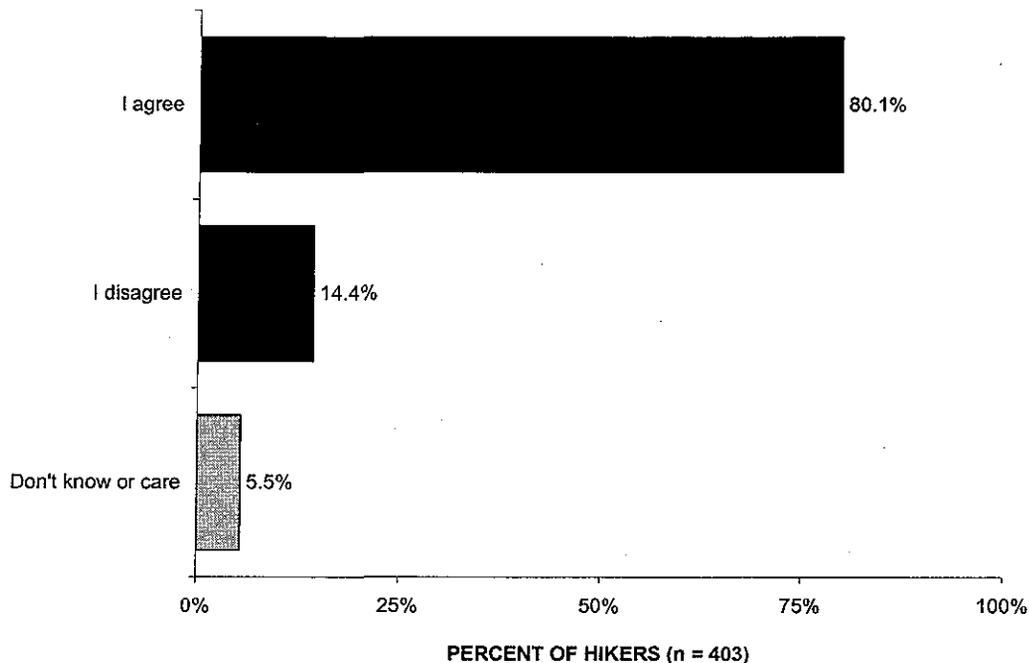
1 DON'T KNOW OR DON'T CARE → **GO TO QUESTION 22a**

2 I AGREE → **GO TO QUESTION 22a**

3 I DISAGREE → **21b.** Generally speaking, about how many hikers should be allowed to **camp** in an average backcountry zone on any given night?
(*Check one blank*)

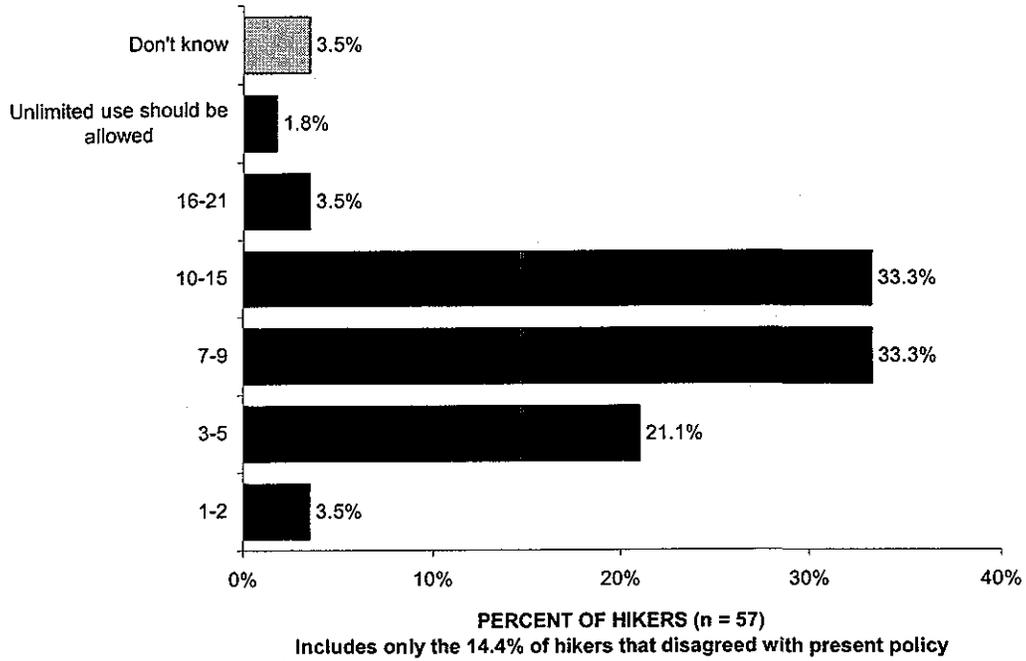
_____	No overnight use should be allowed	_____	16-21
_____	1-2	_____	22-27
_____	3-5	_____	28 or more
_____	7-9	_____	Unlimited use should be allowed
_____	10-15	_____	Don't know

FIGURE 7.23: Mail Survey, Q-21a
AGREEMENT WITH THE PRESENT POLICY OF ALLOWING ON AVERAGE 6 HIKERS TO CAMP PER ZONE



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FIGURE 7.24: Mail Survey, Q-21b
NUMBER OF HIKERS THAT SHOULD BE ALLOWED TO CAMP IN AN AVERAGE
BACKCOUNTRY ZONE



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Mail Questionnaire

23a. Generally speaking, do you agree or disagree with park managers' present objective that backpackers should be able to camp out of sight and sound of **all** other hiking parties? (*Circle one number*)

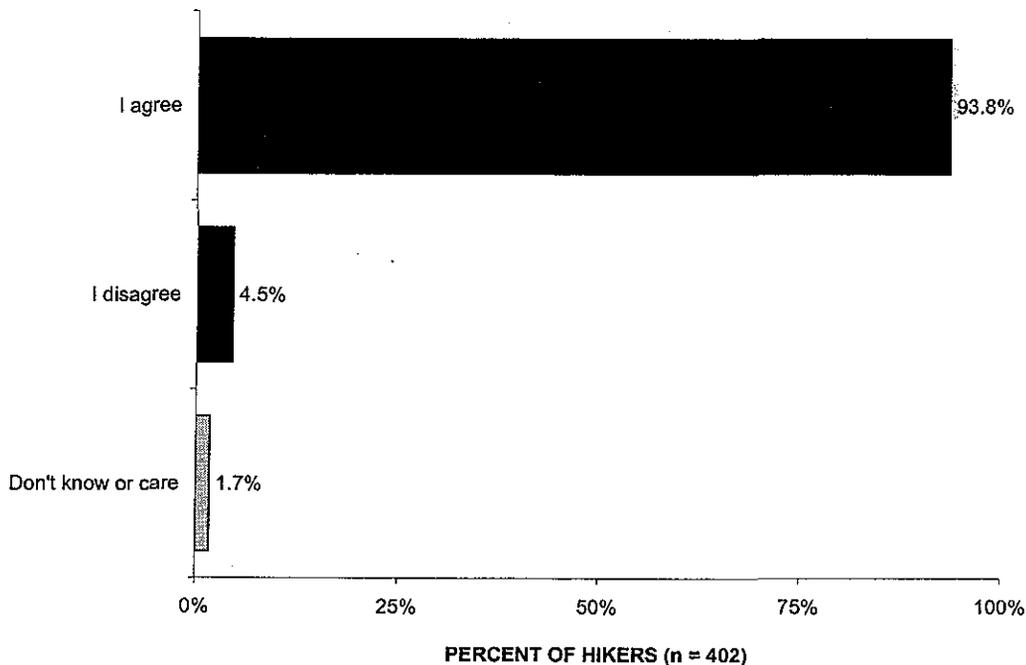
1 DON'T KNOW OR DON'T CARE → **GO TO QUESTION 24**

2 I AGREE → **GO TO QUESTION 24**

3 I DISAGREE → **23b.** Generally speaking, what is the **maximum** number of other hiking parties that should be camped within sight and/or sound of a given camp? (*Check one blank*)

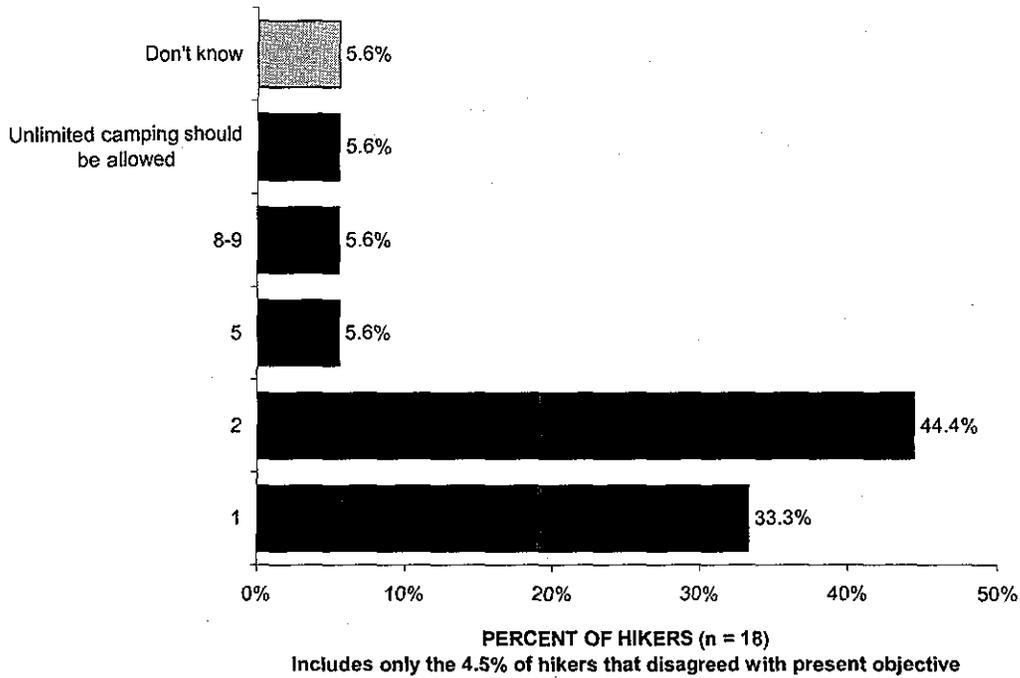
_____ 1	_____ 6-7
_____ 2	_____ 8-9
_____ 3	_____ 10 or more
_____ 4	_____ Unlimited camping should be allowed
_____ 5	_____ Don't know

FIGURE 7.25: Mail Survey, Q-23a
AGREEMENT WITH PRESENT OBJECTIVE THAT BACKPACKERS SHOULD BE ABLE TO
CAMP OUT OF SIGHT OR SOUND OF ALL OTHER PARTIES



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FIGURE 7.26: Mail Survey, Q-23b
MAXIMUM NUMBER OF OTHER HIKING PARTIES THAT SHOULD BE CAMPED WITHIN SIGHT
OR SOUND OF A GIVEN CAMP



Size of Hiking Parties

Mail Questionnaire

25a. Generally speaking, do you feel there should be a maximum party size for the Denali backcountry?
(Circle one number)

- 1 DON'T KNOW OR DON'T CARE → GO TO QUESTION 26
- 2 NO → GO TO QUESTION 26
- 3 YES → 25b. What should be the maximum party size?

MAXIMUM PARTY SIZE: _____

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FIGURE 7.27: Mail Survey, Q-25a
FEEL THERE SHOULD BE A MAXIMUM PARTY SIZE FOR DENALI BACKCOUNTRY

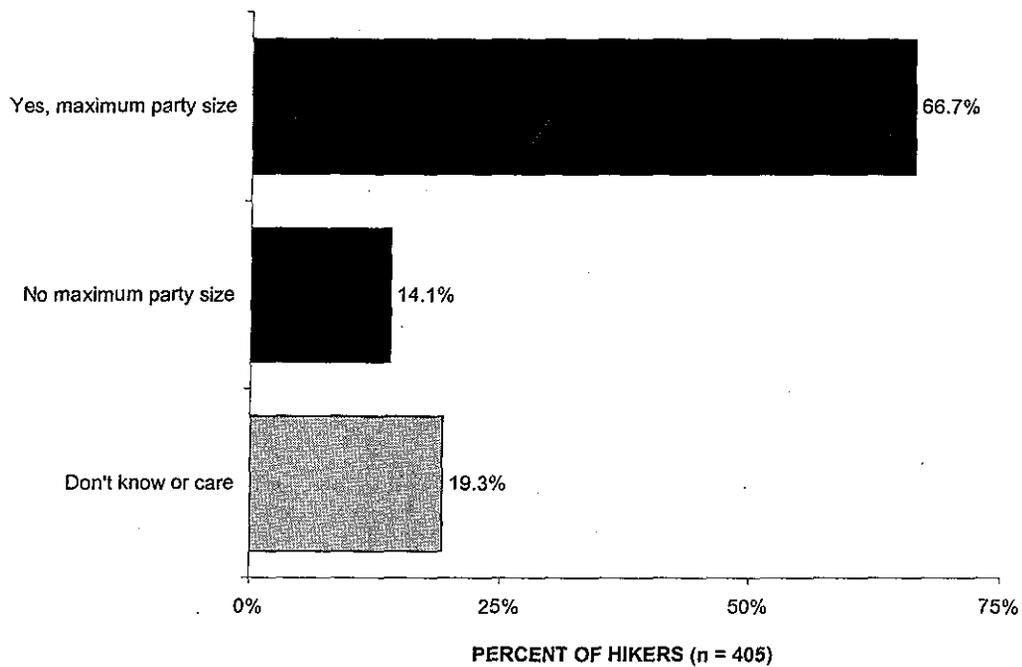
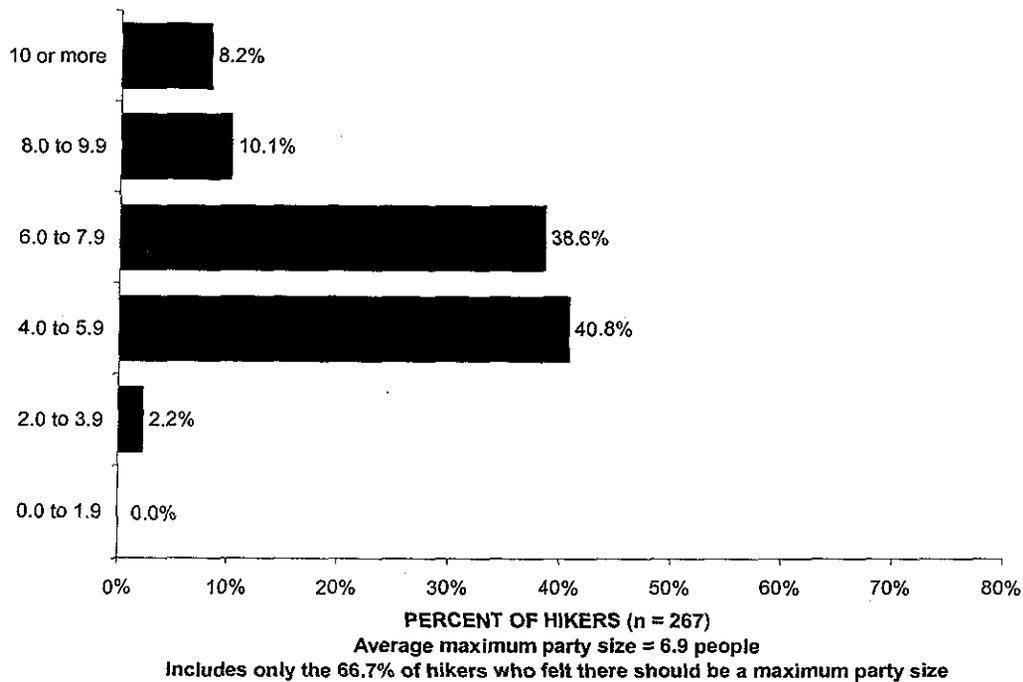


FIGURE 7.28: Mail Survey, Q-25b
MAXIMUM PARTY SIZE FOR DENALI BACKCOUNTRY



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Park rangers

Mail Questionnaires

27a. Generally speaking, do you agree or disagree with park managers' present objective that backpackers should encounter **park rangers** no more than **once** during a backpacking trip? (*Circle one number*)

- 1 DON'T KNOW OR DON'T CARE → GO TO QUESTION 28
- 2 I AGREE →
- 3 I DISAGREE →

27b. Do you think **all** backpackers should encounter park rangers at some point during a backpacking trip? (*Circle one number.*)

- 1 YES → GO TO QUESTION 27d

2 NO → 27c. Do you think that backpackers should **never** encounter park rangers during a backpacking trip? (*Circle one number.*)

- 1 YES → GO TO QUESTION 28

2 NO → 27d. What is the maximum number of park rangers that backpackers should encounter during a backpacking trip?
(*Enter a question mark "?" if you don't know.*)

MAXIMUM RANGER
ENCOUNTERS: _____

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FIGURE 7.27: Mail Survey, Q-29a-c
PREFERRED FREQUENCY BACKPACKERS SHOULD ENCOUNTER PARK RANGERS DURING A BACKPACKING TRIP

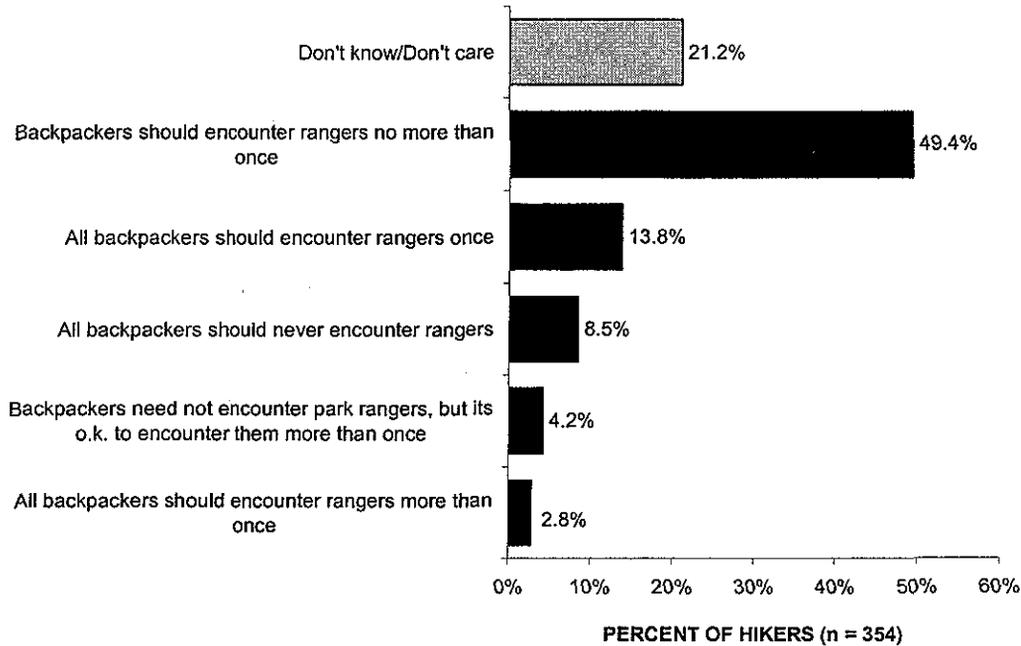
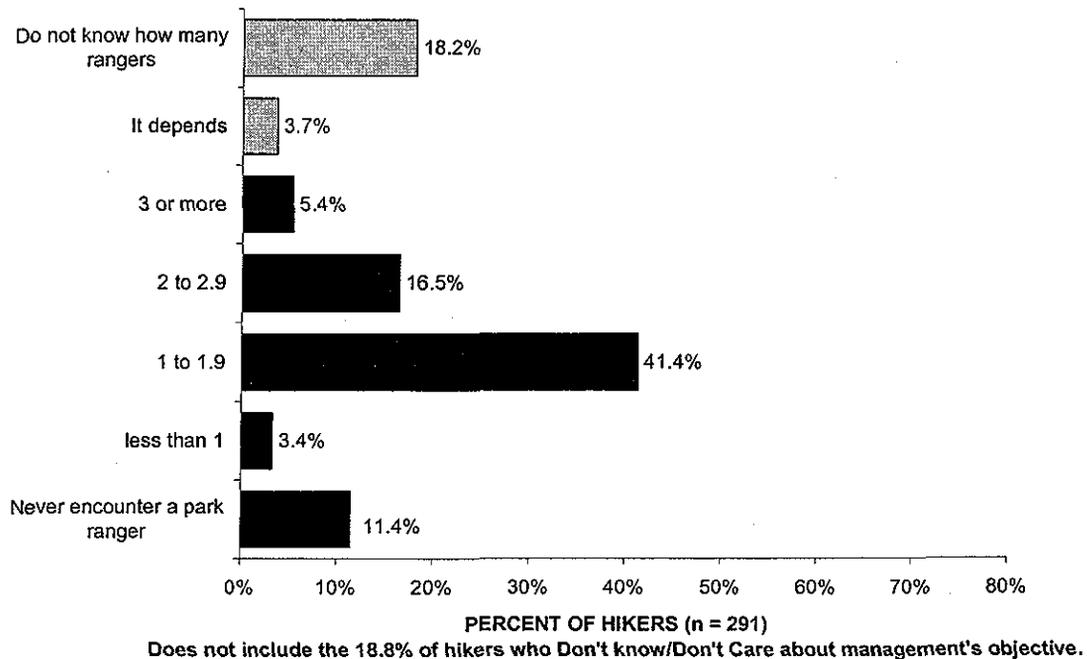


FIGURE 7.30: Mail Survey, Q-27d
MAXIMUM NUMBER OF TIMES A BACKPACKER SHOULD ENCOUNTER PARK RANGERS DURING A BACKPACKING TRIP



VII. Management Policies & Regulations

Potential Additions to the Backcountry

Mail Questionnaire

28. Do you support or oppose each of the following potential additions to the Denali backcountry?

Please circle one response code for each regulation. The response codes are defined as follows:

SS = Strongly Support
S = Support
N = Neutral
O = Oppose
SO = Strongly Oppose

- | | | | | | |
|-----------------------------------------|----|---|---|---|----|
| a) Developed hiking trails..... | SS | S | N | O | SO |
| b) Designated campsites..... | SS | S | N | O | SO |
| c) Tables..... | SS | S | N | O | SO |
| d) Shelters..... | SS | S | N | O | SO |
| e) Toilets..... | SS | S | N | O | SO |
| f) Fire rings..... | SS | S | N | O | SO |
| g) Bridges over rivers..... | SS | S | N | O | SO |
| h) Interpretive signs..... | SS | S | N | O | SO |
| i) Food caches for bear protection..... | SS | S | N | O | SO |

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FIGURE 7.31: Mail Survey, Q-28a
SUPPORT/OPPOSITION FOR THE ADDITION OF DEVELOPED HIKING TRAILS TO DENALI BACKCOUNTRY

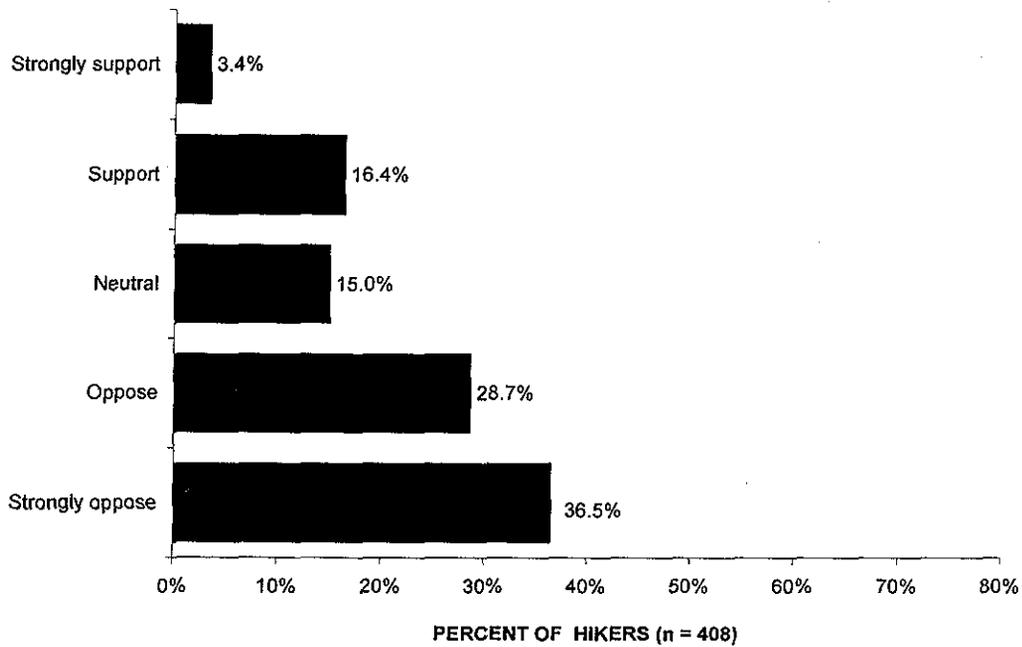
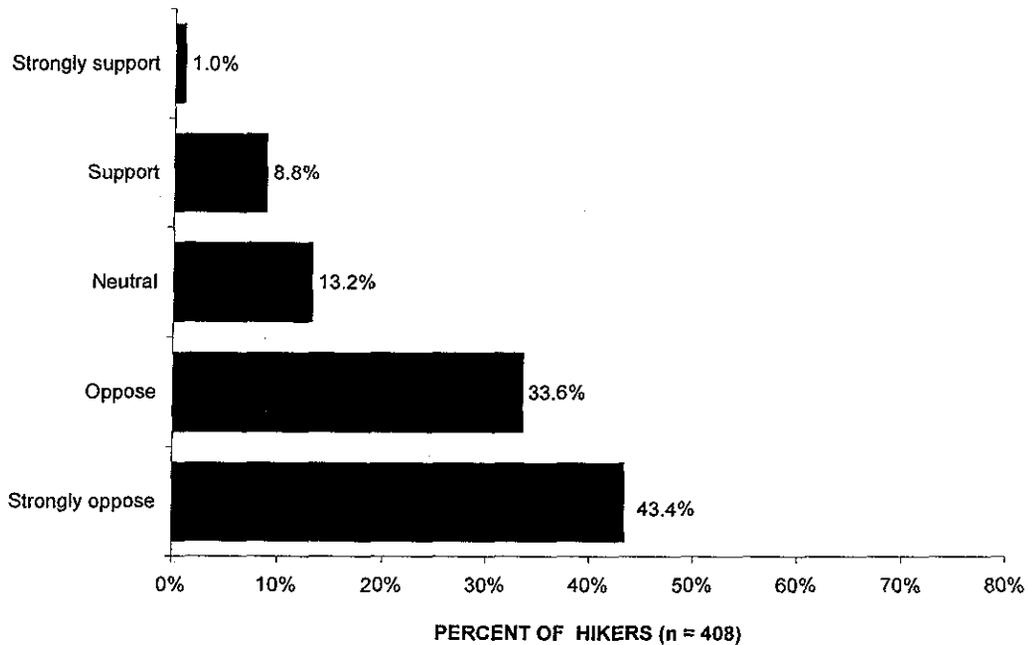


FIGURE 7.32: Mail Survey, Q-28b
SUPPORT/OPPOSITION FOR THE ADDITION OF DESIGNATED CAMPSITES TO DENALI BACKCOUNTRY



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FIGURE 7.33: Mail Survey, Q-28c
SUPPORT/OPPOSITION FOR THE ADDITION OF TABLES TO DENALI BACKCOUNTRY

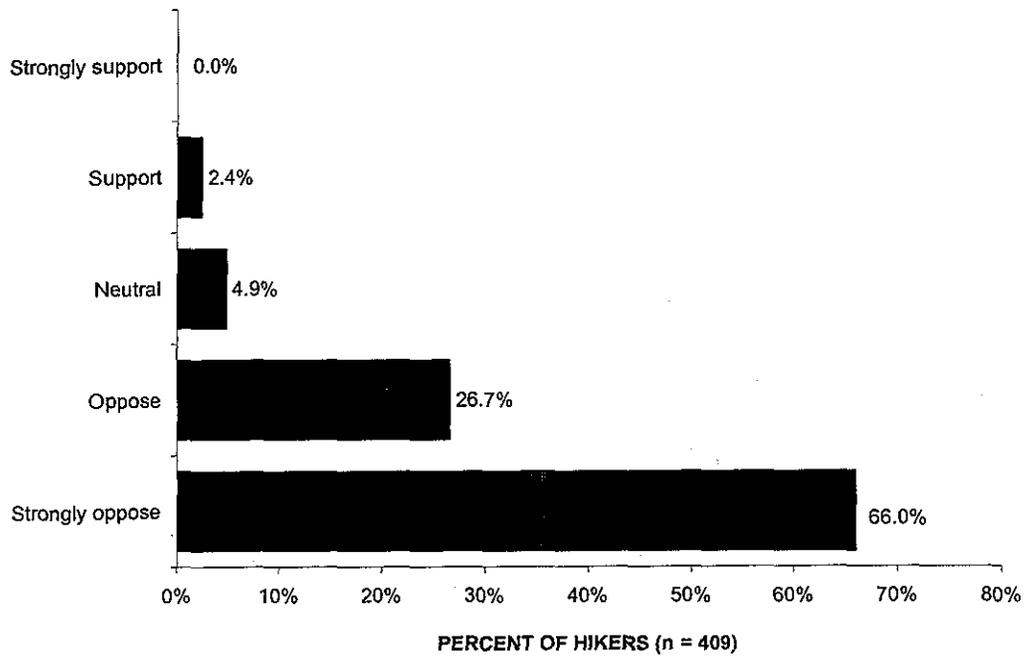
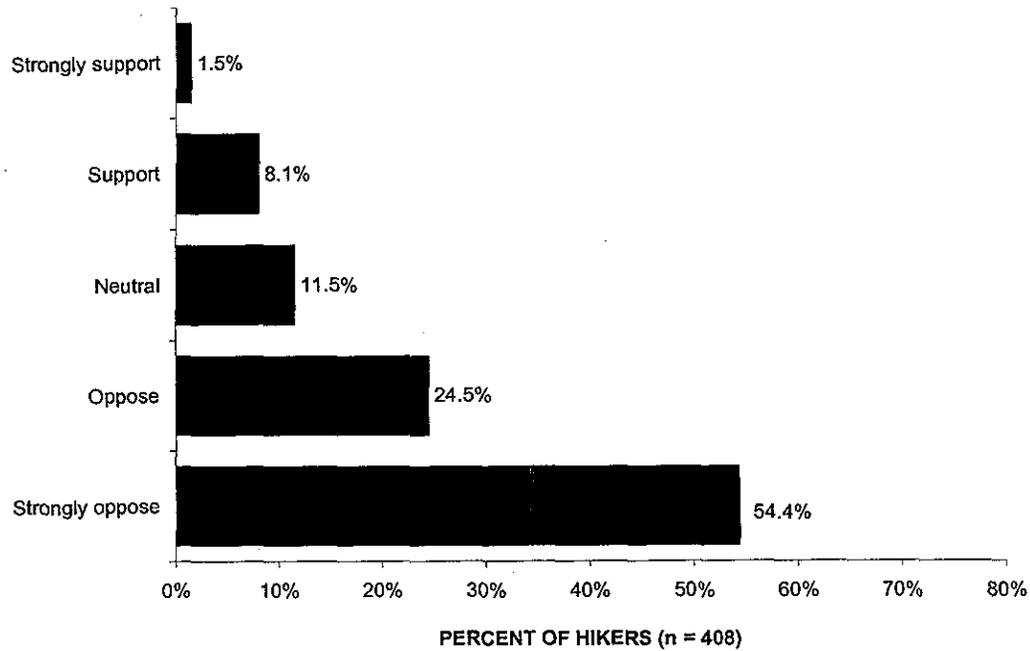


FIGURE 7.34: Mail Survey, Q-28d
SUPPORT/OPPOSITION FOR THE ADDITION OF SHELTERS TO DENALI BACKCOUNTRY



VII. Management Policies & Regulations

FIGURE 7.35: Mail Survey, Q-28e
SUPPORT/OPPPOSITION FOR THE ADDITION OF TOILETS TO DENALI BACKCOUNTRY

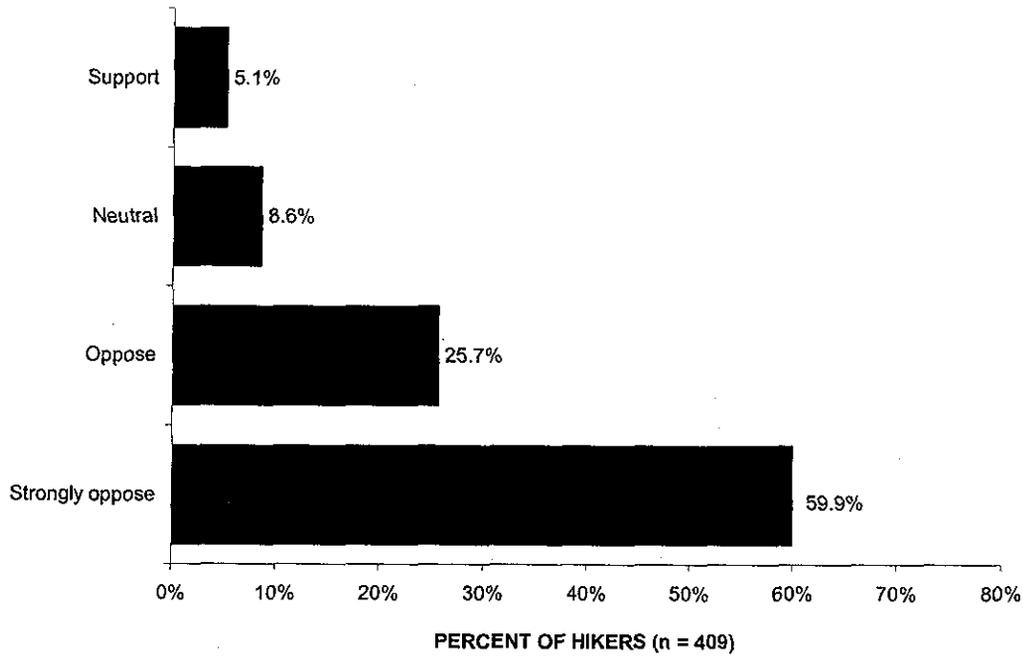
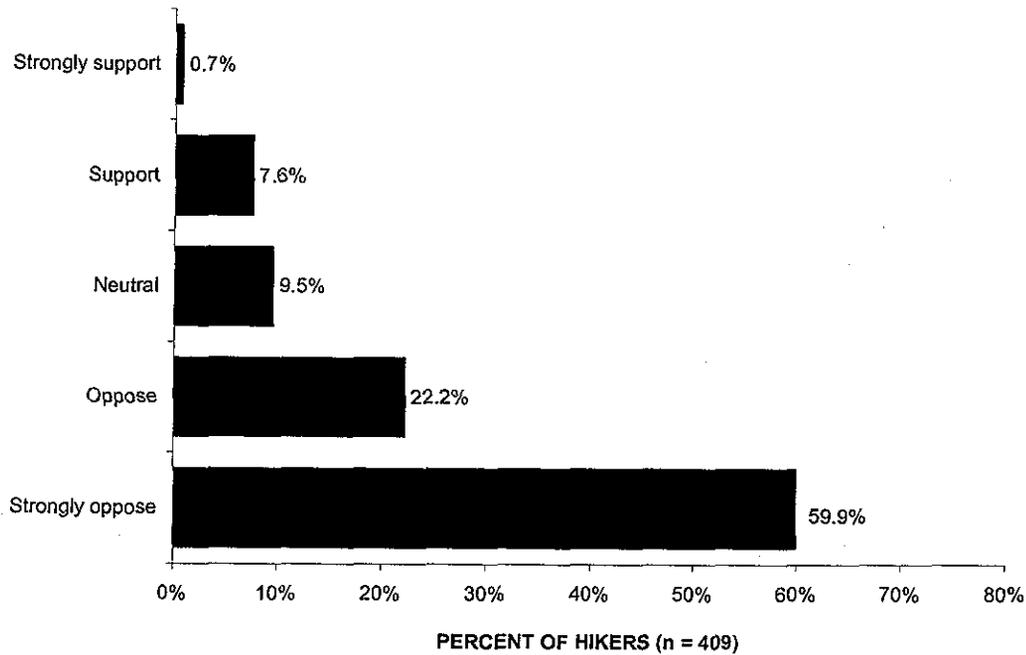


FIGURE 7.36: Mail Survey, Q-28f
SUPPORT/OPPPOSITION FOR THE ADDITION OF FIRE RINGS TO DENALI BACKCOUNTRY



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FIGURE 7.37: Mail Survey, Q-28g
SUPPORT/OPPOSITION FOR THE ADDITION OF BRIDGES OVER RIVERS TO DENALI
BACKCOUNTRY

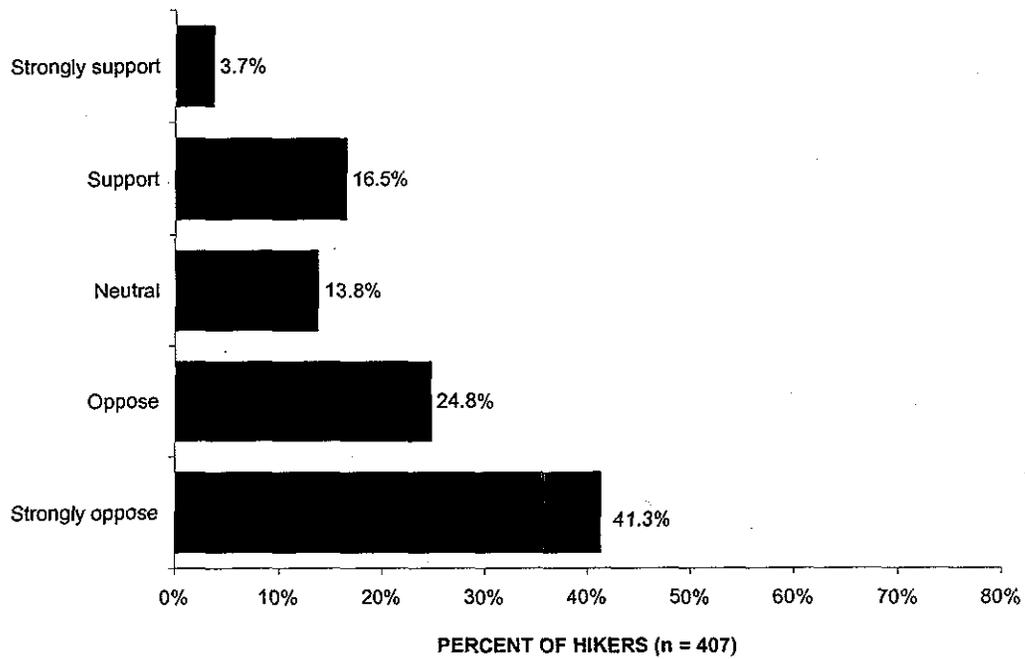
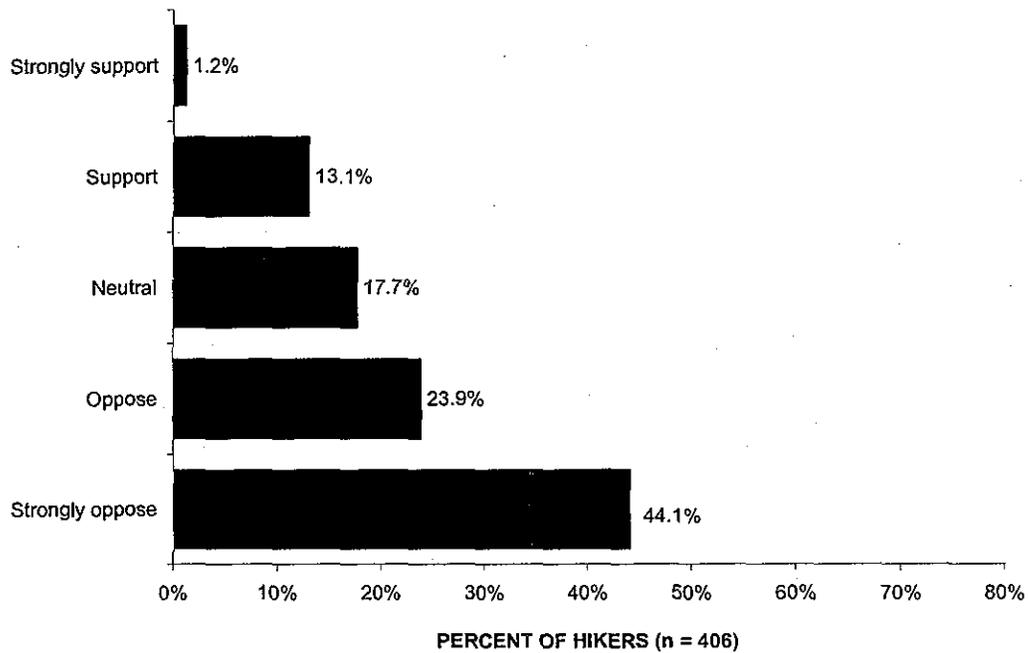
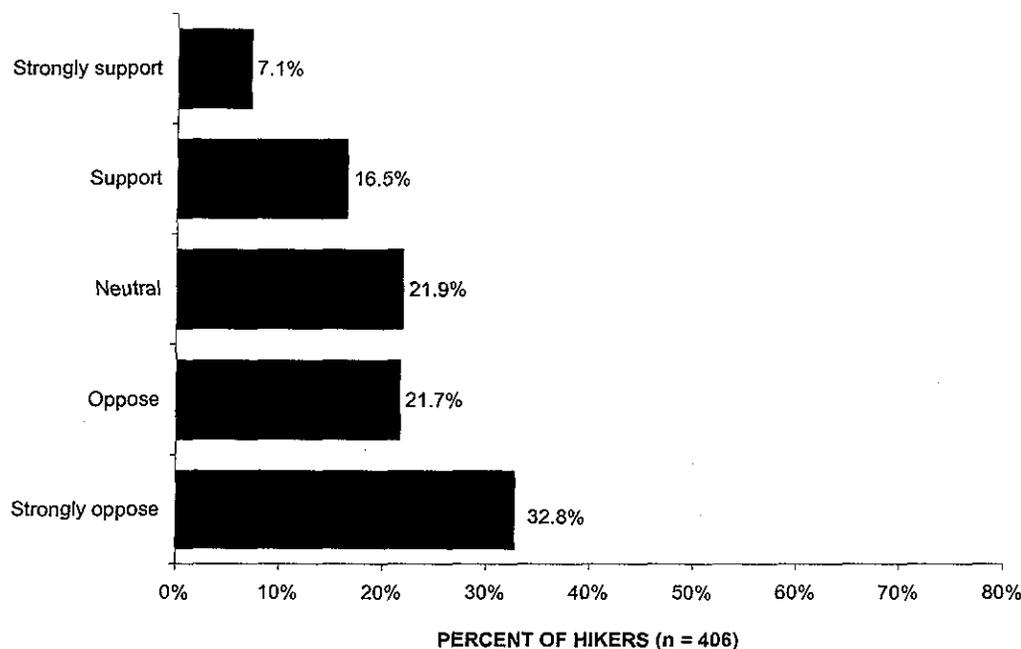


FIGURE 7.38: Mail Survey, Q-28h
SUPPORT/OPPOSITION FOR THE ADDITION OF INTERPRETIVE SIGNS TO DENALI
BACKCOUNTRY



VII. Management Policies & Regulations

FIGURE 7.39: Mail Survey, Q-28i
SUPPORT/OPPPOSITION FOR THE ADDITION OF FOOD CACHES FOR BEAR PROTECTION TO
DENALI BACKCOUNTRY

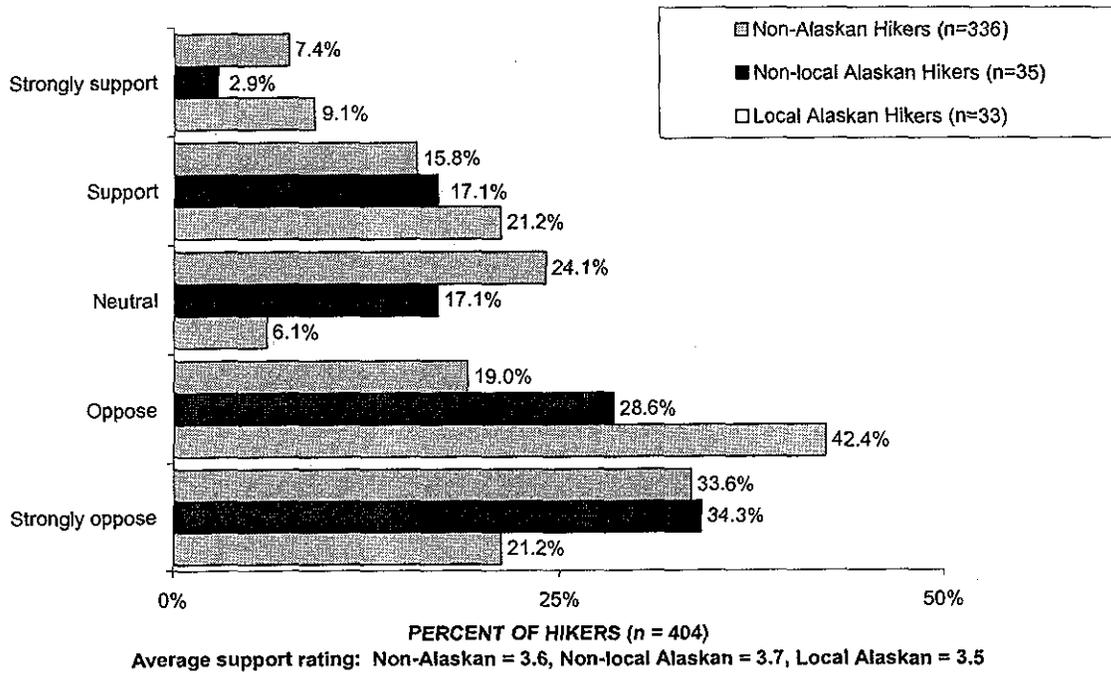


Support for the addition of food caches for bear protection varied by hikers' residence, $\chi^2(6, n = 404) = 15.50, p < .017^{13}$. As can be seen in Figure 7.40, local Alaskan hikers were least likely to be neutral in their support for food caches (6.1% vs. 24.1% and 17.1%). Although more local Alaskan hikers "Oppose" food caches than non-Alaskan or non-local Alaskan hikers (42.4% vs. 19.0% and 28.6%, respectively), fewer local Alaskan hikers "Strongly oppose" food caches than the other two groups (21.2% vs. 33.6% and 34.3%).

¹³ The categories "Strongly support" and "Support" were combined to eliminate cells with expected frequencies less than five.

VII. Management Policies & Regulations

FIGURE 7.40: Mail Survey, Q-28i
SUPPORT/OPPOSITION FOR FOOD CACHES FOR BEAR PROTECTION BY RESIDENCE



VII. Management Policies & Regulations

Other Current Backcountry Regulations

Mail Questionnaire

24. What are your feelings about each of the following regulations that currently govern backcountry use in Denali National Park?

Please circle one response code for each regulation. The response codes are defined as follows:

SS = Strongly Support
 S = Support
 N = Neutral
 O = Oppose
 SO = Strongly Oppose

:	:	:	:	:	:	
:	:	:	:	:	:	
i)	Backcountry campsites must not be visible from the park road.....	SS	S	N	O	SO
j)	Campfires are not allowed in the backcountry.....	SS	S	N	O	SO
k)	Some areas of the backcountry are permanently closed to overnight hikers in order to protect fragile wildlife habitats.....	SS	S	N	O	SO
l)	Some backcountry zones are temporarily closed to hikers in order to protect hikers from unpredictable wildlife.....	SS	S	N	O	SO
:	:	:	:	:	:	
:	:	:	:	:	:	

VII. Management Policies & Regulations

FIGURE 7.41: Mail Survey, Q-24i
SUPPORT/OPPPOSITION FOR REGULATION THAT BACKCOUNTRY CAMPSITES MUST NOT BE VISIBLE FROM ROAD

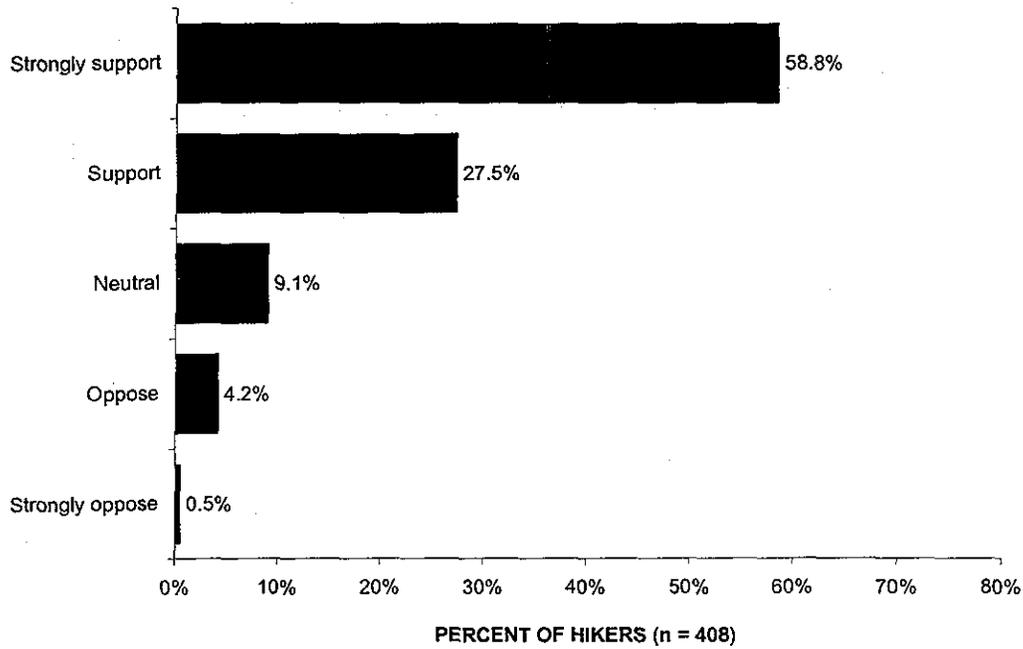
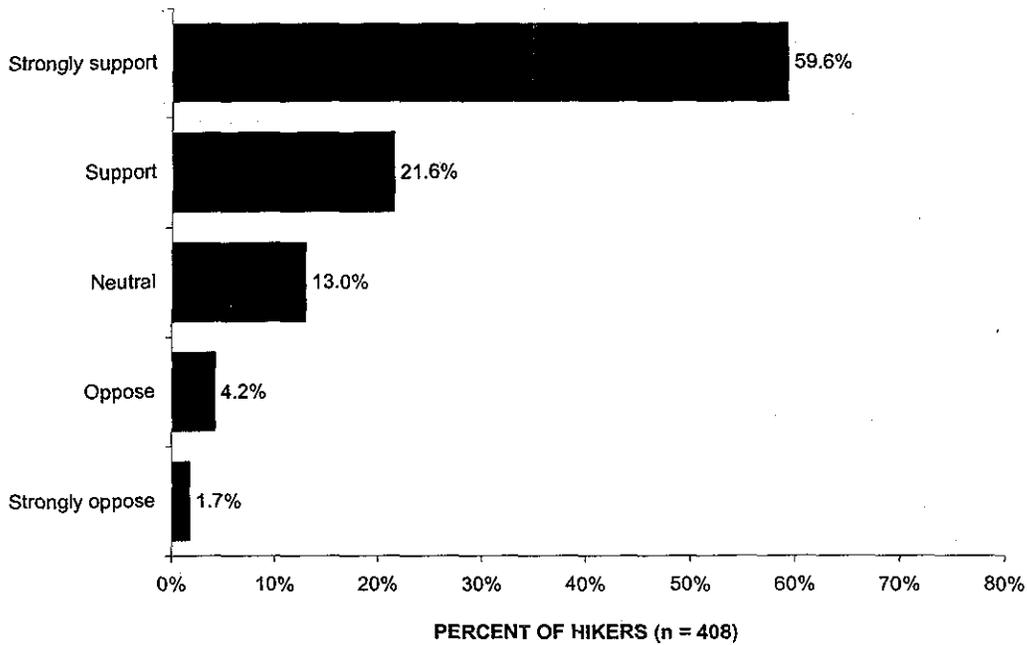


FIGURE 7.42: Mail Survey, Q-24j
SUPPORT/OPPPOSITION FOR REGULATION THAT CAMPFIRES ARE NOT ALLOWED IN BACKCOUNTRY



VII. Management Policies & Regulations

FIGURE 7.43: Mail Survey, Q-24k
SUPPORT/OPPOSITION FOR REGULATION THAT SOME AREAS ARE PERMANENTLY CLOSED TO PROTECT WILDLIFE HABITAT

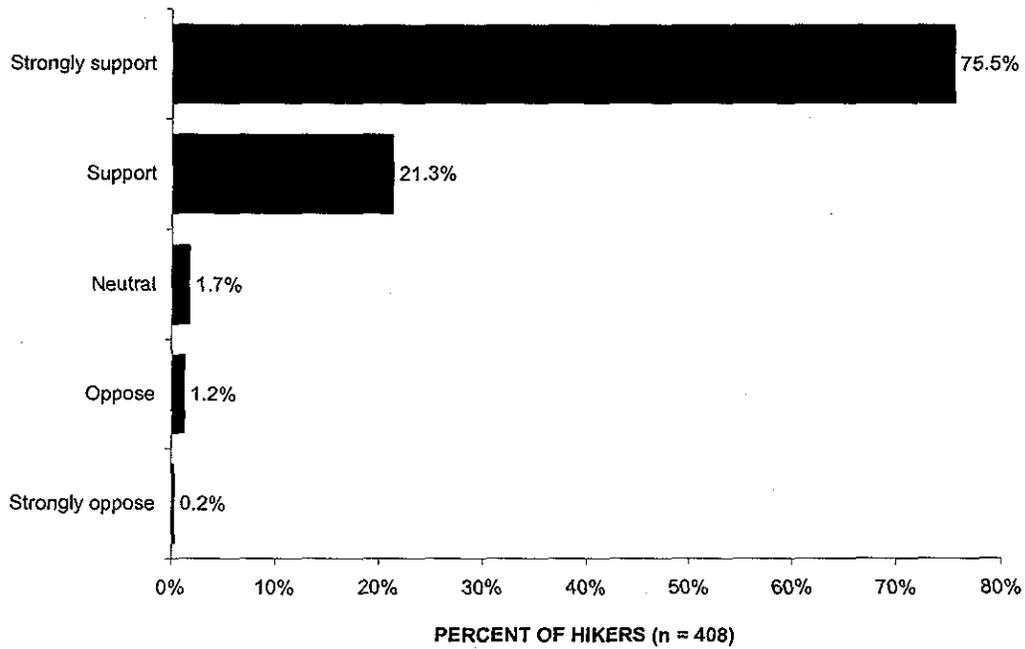
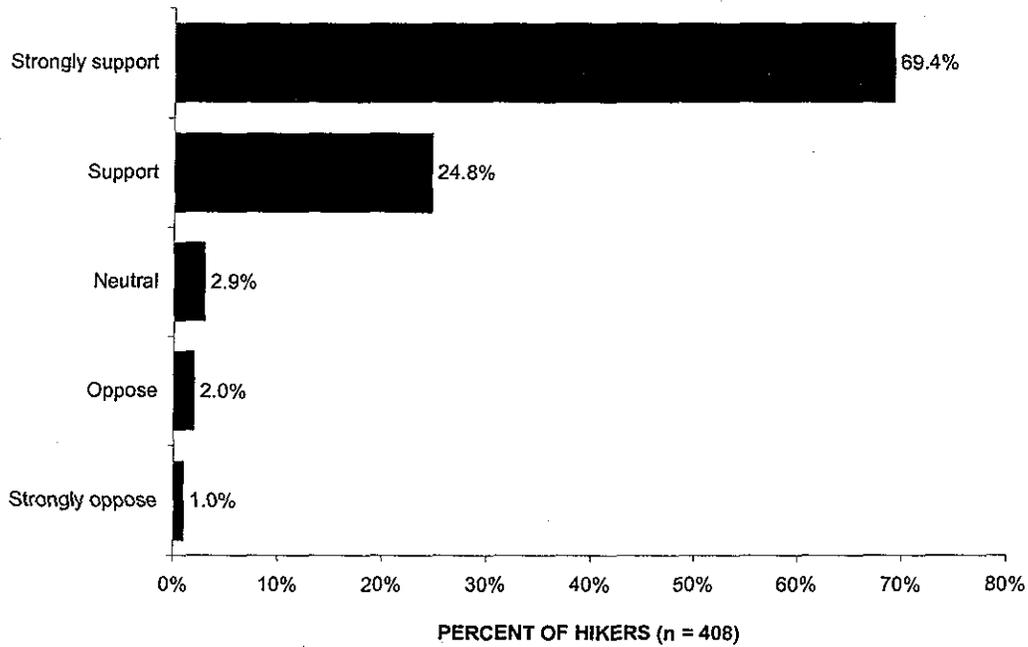


FIGURE 7.44: Mail Survey, Q-24l
SUPPORT/OPPOSITION FOR REGULATION THAT SOME AREAS ARE TEMPORARILY CLOSED TO PROTECT HIKERS FROM UNPREDICTABLE WILDLIFE



VIII. Trip Motivations

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Denali backpacker survey respondents were asked a variety of questions to assess the relative importance of different reasons or motivations for their overnight backcountry trip and the opportunity to satisfy those reasons. In this chapter, readers will first find the ratings for individual items. Next, readers will encounter a description of a factor analysis that was done to derive the underlying dimensions of the importance of the different motivations for this trip. Scale scores for each underlying trip motivation dimension were then calculated and used as a basis for grouping respondents in a cluster analysis. These clusters or groups of respondents correspond to market segments—groups of people who are similar in the importance of different trip motivations. Finally, these clusters were compared on a variety of variables including individual differences and trip satisfaction.

VIII. Trip Motivation Factors

VIII. Trip Motivation Factors

Highlights

- *Individual items indicated most hikers' trips were motivated by a desire to get away from their everyday lives and experience tranquility.* Review of Figures 8.1 through 8.12 indicates that the two individual trip motivation items that were most important for this backcountry trip were 1) get away from the usual demands of life and 2) experience tranquility. For each item, over half of respondents indicated that it was "Extremely important" and about another 30 percent indicated that it was "Very important" (see Figures 8.7 & 8.11). The individual trip motivation item that was least important was observing other people in the area with 95.4 percent of backpackers rating it as "not important" as a trip motivation for this trip to DENA (see Figure 8.3).
- *Factor analyses revealed three primary trip motivations to underlie hikers' overnight backcountry trips in DENA.* A factor analysis of the individual trip motivation items revealed three interpretable trip motivation dimensions: 1) wilderness derived experiences, 2) experiences with friends/similar others, and 3) experiences with family. As seen in Table 8.2, across all hikers, wilderness derived experiences were the most important trip motivation with an average rating of 3.7 (4 = Very important). The next most important motivation was "Experiences with Friends/Similar Others" (M = 3.33, 3 = Moderately Important). "Experiences with Family" (M = 2.06, 2 = Somewhat Important) was the least important of the three motivations for this group as a whole.
- *Six different groups of people emphasize different motivations for their overnight backcountry trip to DENA.* Six different groups (segments) of people defined by similar trip motivations for their overnight backcountry trip in DENA were identified through cluster analysis. As can be seen in Table 8.3, the groups differed in the relative importance of the 12 trip motivations asked about in Question 29. Although four of the six market segments varied in the importance of wilderness derived experiences as a motivation for their trip, this motivation was still at least "very important" for all four groups. These groups differed more in their motivations for sharing this experience with different social groups (e.g., family, friends, family and friends, or no one). The other

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two segments revealed different patterns of importance for the wilderness derived experiences. In each segment, a different set of two wilderness derived experiences were relatively more important motivations for their trip than the remaining wilderness derived experiences.

- *Respondents in the six segments that differed in trip motivations were more similar than different.* Comparing the six segments on a variety of individual difference variables revealed that although the groups can be characterized as being made up of different types of people, the differences were small, and there was considerable overlap in the groups (see pages 212 –214 for detailed description).
- *Two of the six segments differed in their overall trip satisfaction, and none of the segments differed in their feelings of crowding.* Comparing the six segments on overall trip satisfaction measures revealed that Segments 5 and 6 differed in their overall trip satisfaction (see page 214). Segment 5 had the highest overall trip satisfaction of any segment. Although Segment 6 respondents had the lowest overall trip satisfaction of any segment, they still rated their trips as better than "Good" ($M = 1.75$, 1 = Very Good, 2 = Good). The six segments did not differ in their feelings of crowding with an average for all respondents indicating people felt mostly "Not at all crowded" ($M = 1.27$, 1 = Not at all crowded, 2 = Slightly crowded).

VIII. Trip Motivation Factors

Importance of & Opportunity to Satisfy Different Motivations for Backcountry Trip

Although all people in this survey took an overnight backcountry trip, different people may have had different reasons or motivations for taking this trip. Expectancy theory “suggests that people engage in activities in specific settings to realize a group of psychological outcomes that are known, expected, and valued” (Manning, 1999, p. 159). Trip motivations can be conceptualized as these anticipated psychological outcomes associated with engaging in a particular activity in a specific setting.

Using the above framework, Driver and associates (see Driver, 1976) developed the Recreation Experience Preference (REP) scales to measure motivations for recreational experiences. Given the constraints of this mail survey, one drawback of using Driver’s REP scales as originally developed was the large number of items. Instead, a subset of twelve items was used based on research by Johnson, Foster, & Kerr (1990) that found six different recreational experience factors underlying 31 REP items in a sample of visitors contacted at the gate to Mount Rainier National Park. We included in the DBS the two items with the highest loadings on each factor in order to examine a range of experiences. Although in retrospect, it may have been better to select only items that we would expect to be related to a wilderness experience, including a few items that were more likely to be unrelated such as “observe other people” and finding low importance ratings (as will be seen) provides some assurance of the validity of the REP items. Instructions and response options were consistent with Driver’s work and asked the respondent to indicate how important it was for them to do each of the twelve items on their overnight backcountry trip to DENA (see Question 29 below).

In addition to assessing respondents trip motivations for their overnight backcountry trip, we were interested in assessing perceived opportunity in DENA for satisfying the different trip motivations. To do this, we used the same twelve REP items, but asked respondents to indicate how much opportunity there was on their overnight backcountry trip in DENA to do each of the twelve items (see Question 30 below).

VIII. Trip Motivation Factors

Mail Questionnaire

29. Below are 12 reasons that people might make overnight hiking trips in the Denali backcountry. To the right of each reason is a scale of how important each reason was in motivating your visit.

On your overnight trip in the Denali backcountry, how IMPORTANT was it for you to...
(Circle one response for each reason. Circle 'Not Important' if a reason is not relevant to you.)

Example:

a Relaxing physically	NOT IMPORTANT	<input checked="" type="radio"/> SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
-----------------------	------------------	--------------------------------------------------------	-------------------------	-------------------	------------------------

For this person, relaxing physically was a somewhat important reason why they chose to visit.

a Develop your skills and abilities	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
b Do something with your family	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
c Observe other people in the area	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
d Bring your family closer together	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
e Experience new and different things	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
f Learn more about nature	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
g Get away from the usual demands of life	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
h Be with others who enjoy the same things you do	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
i Talk to new and varied people	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
j Be with friends	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
k Experience tranquility	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT
l Learn what you are capable of	NOT IMPORTANT	SOMEWHAT IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT

VIII. Trip Motivation Factors

Mail Questionnaire

30. Below are the same 12 reasons that people might take overnight hikes in Denali, but this time the scale on the right concerns how much opportunity there was to satisfy each reason for the trip.

On your overnight trip in the Denali backcountry, how much **OPPORTUNITY** was there for you to...
(Circle one response for each reason. If a reason is not relevant to you, indicate the general opportunity available.)

Example:

a Relaxing physically	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
-----------------------	-------------------	---------------------	---------------------	--------------------------	--------------------------

This person felt that on their trip they had a good opportunity to relax physically.

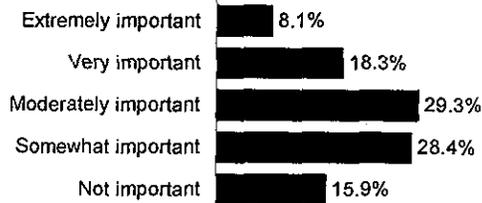
a Develop your skills and abilities	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
b Do something with your family	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
c Observe other people in the area	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
d Bring your family closer together	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
e Experience new and different things	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
f Learn more about nature	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
g Get away from the usual demands of life	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
h Be with others who enjoy the same things you do	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
i Talk to new and varied people	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
j Be with friends	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
k Experience tranquility	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY
l Learn what you are capable of	NO OPPORTUNITY	POOR OPPORTUNITY	GOOD OPPORTUNITY	VERY GOOD OPPORTUNITY	EXCELLENT OPPORTUNITY

VIII. Trip Motivation Factors

**FIGURE 8.1: Mail Survey, Q-29 & Q-30
DEVELOP YOUR SKILLS AND ABILITIES**

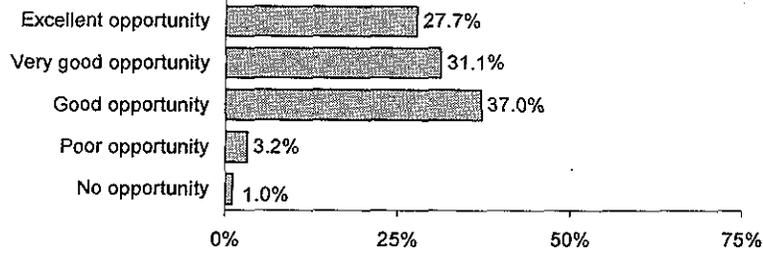
How important to trip? (n = 409)

Average rating = 2.7



How much opportunity was there? (n = 408)

Average rating = 3.8



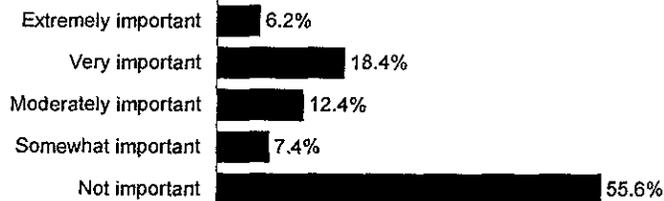
NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

PERCENT OF HIKERS

**FIGURE 8.2: Mail Survey, Q-29 & Q-30
DO SOMETHING WITH YOUR FAMILY**

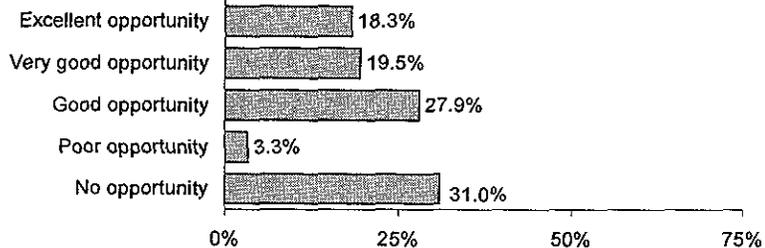
How important to trip? (n = 403)

Average rating = 2.1



How much opportunity was there? (n = 394)

Average rating = 2.9



NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

PERCENT OF HIKERS

VIII. Trip Motivation Factors

**FIGURE 8.3: Mail Survey, Q-29 & Q-30
OBSERVE OTHER PEOPLE IN THE AREA**

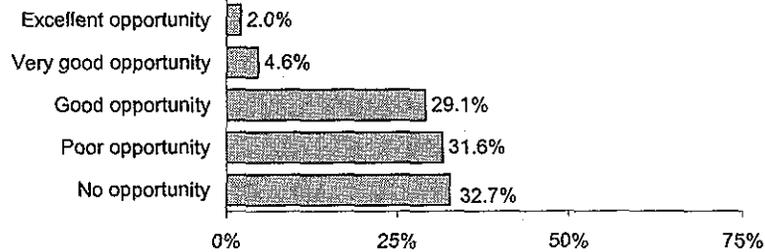
How important to trip? (n = 409)

Average rating = 1.1



How much opportunity was there? (n = 395)

Average rating = 2.1



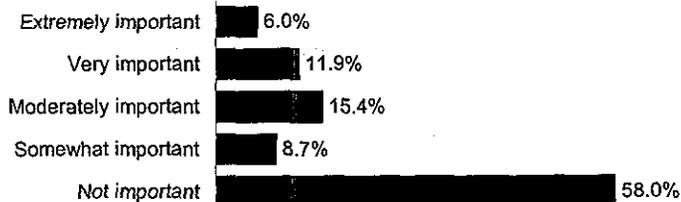
NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

PERCENT OF HIKERS

**FIGURE 8.4: Mail Survey, Q-29 & Q-30
BRING YOUR FAMILY CLOSER TOGETHER**

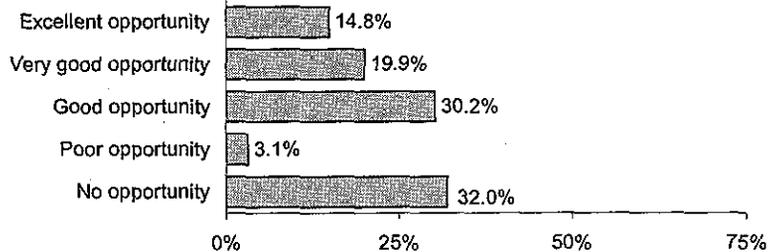
How important to trip? (n = 402)

Average rating = 2.0



How much opportunity was there? (n = 391)

Average rating = 2.8



NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

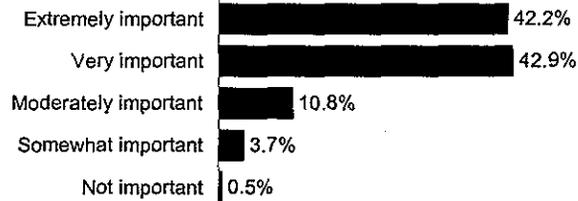
PERCENT OF HIKERS

VIII. Trip Motivation Factors

**FIGURE 8.5: Mail Survey, Q-29 & Q-30
EXPERIENCE NEW AND DIFFERENT THINGS**

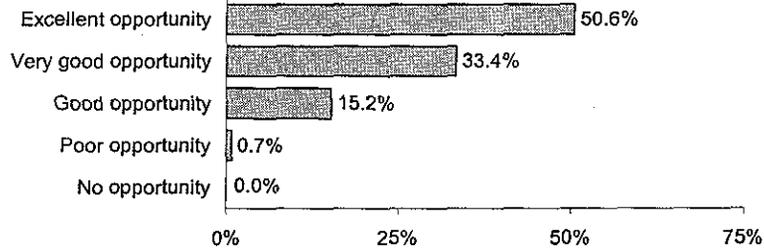
How important to trip? (n = 408)

Average rating = 4.2



How much opportunity was there? (n = 407)

Average rating = 4.3



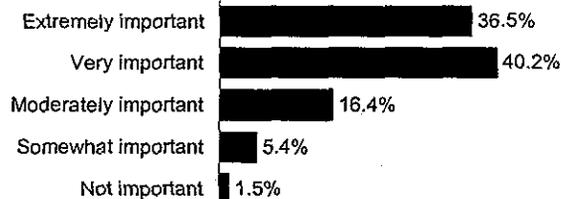
NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

PERCENT OF HIKERS

**FIGURE 8.6: Mail Survey, Q-29 & Q-30
LEARN MORE ABOUT NATURE**

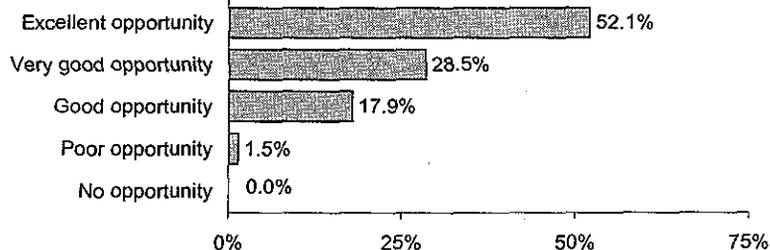
How important to trip? (n = 408)

Average rating = 4.0



How much opportunity was there? (n = 407)

Average rating = 4.3

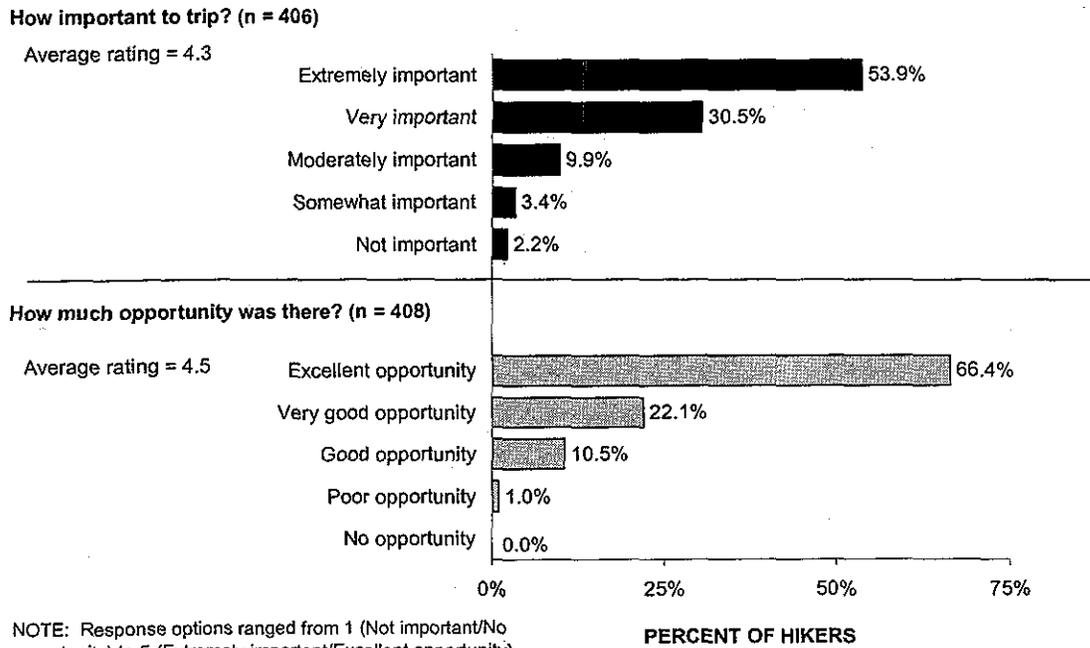


NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

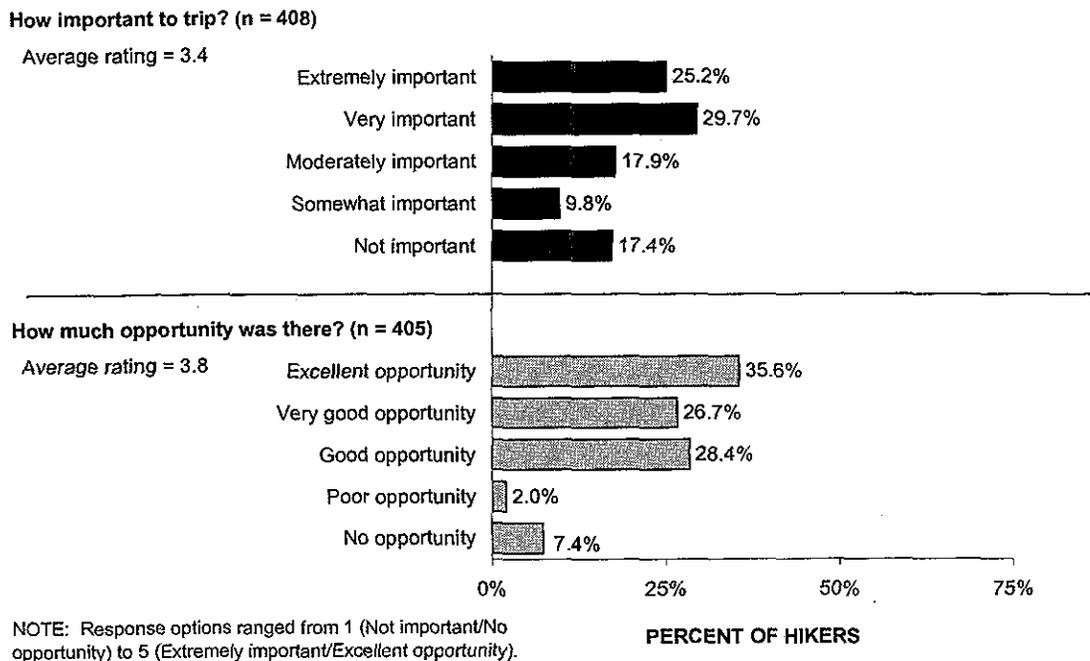
PERCENT OF HIKERS

VIII. Trip Motivation Factors

**FIGURE 8.7: Mail Survey, Q-29 & Q-30
GET AWAY FROM THE USUAL DEMANDS OF LIFE**

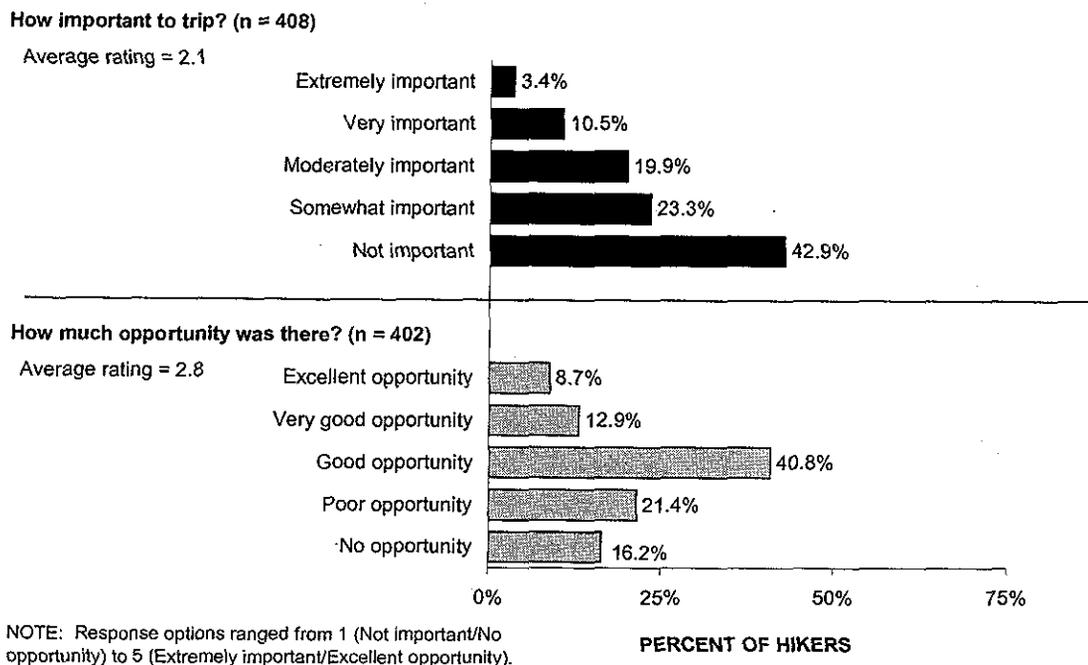


**FIGURE 8.8: Mail Survey, Q-29 & Q-30
BE WITH OTHERS WHO ENJOY THE SAME THINGS YOU DO**

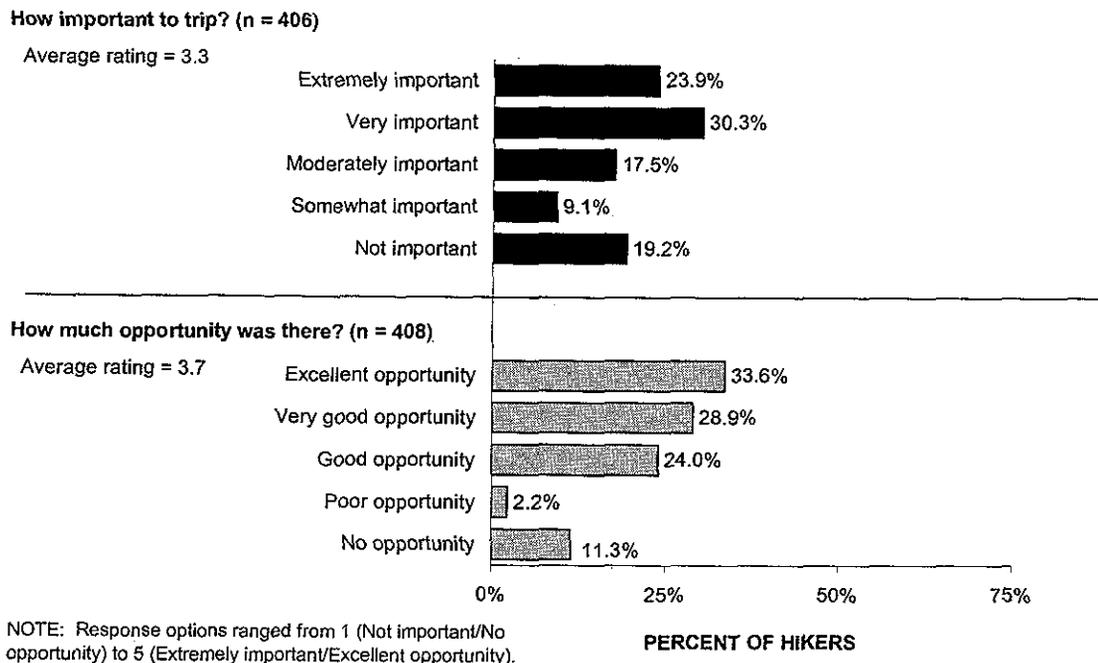


VIII. Trip Motivation Factors

**FIGURE 8.9: Mail Survey, Q-29 & Q-30
TALK TO NEW AND VARIED PEOPLE**



**FIGURE 8.10: Mail Survey, Q-29 & Q-30
BE WITH FRIENDS**

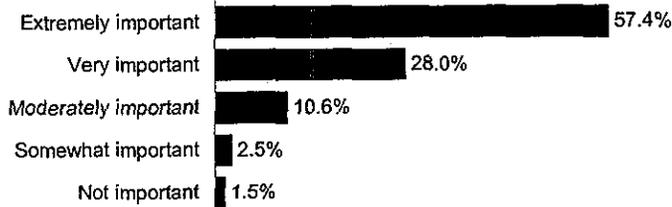


VIII. Trip Motivation Factors

**FIGURE 8.11: Mail Survey, Q-29 & Q-30
EXPERIENCE TRANQUILITY**

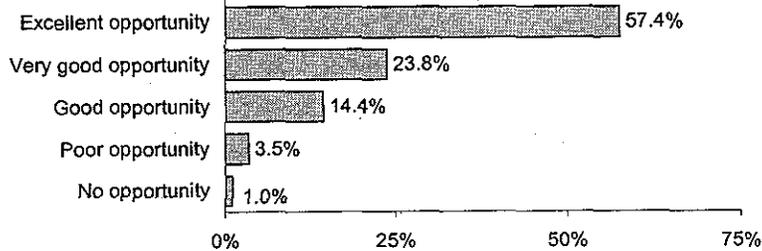
How important to trip? (n = 404)

Average rating ≈ 4.4



How much opportunity was there? (n = 404)

Average rating ≈ 4.3



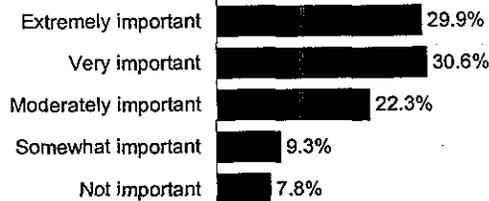
NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

PERCENT OF HIKERS

**FIGURE 8.12: Mail Survey, Q-29 & Q-30
LEARN WHAT YOU ARE CAPABLE OF**

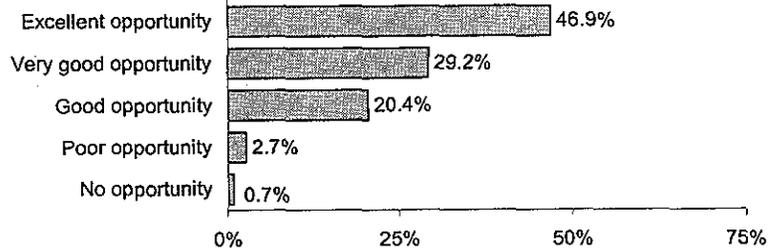
How important to trip? (n = 408)

Average rating ≈ 3.7



How much opportunity was there? (n = 407)

Average rating ≈ 4.2



NOTE: Response options ranged from 1 (Not important/No opportunity) to 5 (Extremely important/Excellent opportunity).

PERCENT OF HIKERS

VIII. Trip Motivation Factors

Determining Underlying Dimensions of Importance of Reasons Motivating Backcountry Trip: Factor Analyses

Question 29 was included as a means of exploring the importance of these 12 potential motivations for taking an overnight backcountry trip. To determine whether the importance ratings of these 12 items reflect fewer dimensions, a principal components factor analysis with varimax rotation was performed. The factor analysis revealed four independent factors with eigenvalues greater than one that explained a total of 63.8 percent of the variance. The first factor explained 20.9 percent of the variance, the second factor explained 16.0 percent, the third factor explained 14.7 percent, and the fourth factor explained 12.1 percent.

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 on it (see Table 8.1). Variables loading¹² onto the first factor were a) experience new and different things (.69), b) learn more about nature (.69), c) experience tranquility (.65), d) learn what you are capable of (.64), and e) get away from the usual demands of life (.62). These items all correspond to activities or benefits directly flowing from being in the wilderness. This factor seems to correspond to the concept "Wilderness Derived Experiences".

Variables loading on the second factor were a) do something with your family (.94) and b) bring your family closer together (.93). As both of these variables involve family, this factor seems to correspond to the concept of "Experiences with Family".

Variables loading on the third factor were a) be with friends (.82), b) be with others who enjoy the same things you do (.79), and c) talk to new and varied people (.52)¹³. This factor seems to correspond to the concept of "Experiences with Friends/Similar others".

Variables loading on the fourth factor were a) observe other people in the area (.70), b) develop your skills and abilities (.60), and c) talk to new and varied people (.57)¹⁴. The item "talk to new and varied people" had a loading of over .5 on two factors. It is unclear how to interpret the dimension underlying the remaining two items based on the face validity of the items. Additionally, these items had low mean importance ratings and low variability

¹² Factor loadings less than .5 were not interpreted.

¹³ This variable also loaded on the fourth factor with a slightly greater loading (.57).

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suggesting that these motivations were not important for overnight backpackers in Denali. For these reasons, this factor was not interpreted.

Table 8.1 Factor Loadings of Importance Ratings of Reasons for Backcountry Trip

	Factor			
	1	2	3	4
1. Wilderness Experiences				
Q29e Experience new and different things	0.689	0.271	0.130	-0.048
Q29f Learn more about nature	0.686	0.187	-0.025	0.196
Q29k Experience tranquility	0.653	-0.062	0.167	-0.162
Q29l Learn what you are capable of	0.640	-0.103	-0.004	0.449
Q29g Get away from the usual demands of life	0.617	0.033	0.282	-0.033
2. Experiences with Family				
Q29b Do something with your family	0.075	0.944	0.024	0.036
Q29d Bring your family closer together	0.124	0.929	0.063	0.093
3. Experiences with Friends/Similar Others				
Q29j Be with friends	0.097	0.052	0.823	0.028
Q29h Be with others who enjoy the same things you do	0.193	0.059	0.786	0.059
<i>Not interpreted (see text for explanation)</i>				
Q29c Observe other people in the area	-0.140	0.181	0.128	0.698
Q29a Develop your skills and abilities	0.508	-0.010	-0.230	0.601
Q29i Talk to new and varied people	0.056	-0.056	0.523	0.568

For each respondent, scale scores corresponding to the first three factors were computed by averaging the ratings for the items loading on that factor. The relative importance of the three underlying motivation dimensions across all respondents is shown in Table 8.2. Overall, the most important reason motivating Denali backpackers overnight backcountry trips was "Wilderness Derived Experiences" with an average rating of 4.13 (4 = Very Important). The next most important motivation was "Experiences with Friends/Similar Others" (M = 3.33, 3 = Moderately Important). "Experiences with Family" (M = 2.06, 2 = Somewhat Important) was the least important of the three motivations for this group as a whole. Examination of the standard deviations for the three scales indicate that there is less variability in the importance of wilderness experiences in motivating this overnight backcountry trip than experiences with either friends/similar others or family. These findings are consistent with the idea that all respondents were at DENA to take a wilderness trip, however, not all respondents would be sharing that trip with the same types of people (e.g., friends, family), if anyone at all. It is possible that there are distinct groups of

¹⁴ This variable also loaded on the third factor with a slight small loading (.52).

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people who have similar motivations for their wilderness trip. We explore this possibility in the next section using cluster analysis.

Table 8.2. Summary Statistics of Importance of Motivations Scale Scores

Scale	Mean	SD	N
Wilderness Derived Experiences	4.13	.66	401
Experiences with Family	2.06	1.31	402
Experiences with Friends/Similar Others	3.33	1.24	405

Grouping Respondents Based on Importance of Motivations: Cluster Analyses

For planning purposes, it may be useful to understand how groups of people who have similar motivations for their trip differ from each other. For example, respondents whose primary reason for their trip was to take a wilderness trip with family may be more likely to be older. To determine if respondents could be meaningfully grouped based on their importance of different motivations, a cluster analysis was done.

Cluster analysis is an exploratory statistical technique 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 twelve REP item scores that measure the importance of different motivations for people's trips.

Even for an exploratory statistical technique, cluster analysis is very subjective. In particular, the analyst must determine the number of clusters in which objects will be grouped. A variety of techniques 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 REP item scores), cluster analyses specifying three through nine clusters were conducted. We compared the mean REP item scores for each cluster in the three to nine cluster solutions. Based on these comparisons, we determined that the six-cluster solution consisted of interpretable clusters and that several of these clusters were also found in solutions with other numbers of clusters. Accordingly, the six-cluster solution is discussed in detail below.

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The six clusters identified in the analysis are shown in Table 8.3. These clusters can be thought of as groups of people who had similar trip motivations for their overnight backcountry trip in Denali. The mean scores for each REP item are also presented in Table 8.3. They range from 1.00 to 4.70 out of a possible range of 1 for "Not important" and 5 "Extremely important". It should be noted that there is considerable variability within each segment. Although cluster 2's average score for importance of being with family is quite low, not every respondent in cluster 2 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.

As can be seen in Table 8.3, respondents clustered into six segments. Review of the mean REP item scores for the six segments reveal that the different segments have different mean item scores. These findings suggest that overnight backpackers in DENA have different motivations and that changes that affect the opportunities to satisfy a particular motivation may have dramatic effects on only some visitors.

Table 8.4 summarizes how the different segments differ on selected individual difference variables. First, it should be noted that the segments had more in common than they differed. As can be seen in Table 8.4, the six segments did not differ on 12 of the 16 individual difference variables, and for those variables in which group differences were found, it was often the case that the segments spanned a range and only segments on the low or high end differed from each other.

Below we described by segment the findings contained in Tables 8.3 and 8.4.

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Table 8.3. Cluster Analysis of REP Items: Mean Item Scores and Number of Cases Per Segment

Importance of ...	Segment					
	1	2	3	4	5	6
	<u>Mean Scale Score¹</u>					
Experience tranquility	4.59 ^{ab}	4.52 ^{ab}	4.24 ^b	4.68 ^a	4.57 ^{ab}	2.76 ^c
Get away from the usual demands of life	4.63 ^{ab}	4.26 ^c	4.26 ^{bc}	4.70 ^a	4.36 ^{abc}	2.86 ^d
Experience new and different things	4.55 ^a	3.80 ^{bc}	4.41 ^{ab}	4.66 ^a	4.12 ^b	3.43 ^c
Learn more about nature	4.50 ^a	3.31 ^c	4.06 ^b	4.54 ^a	4.21 ^{ab}	3.41 ^c
Learn what you are capable of	4.28 ^a	2.98 ^b	3.07 ^b	4.48 ^a	4.03 ^a	2.27 ^c
Develop your skills and abilities	3.22 ^a	1.94 ^b	2.43 ^b	3.28 ^a	3.19 ^a	1.84 ^b
Do something with your family	3.81 ^a	1.29 ^b	3.89 ^a	1.22 ^b	1.10 ^b	1.41 ^b
Bring your family closer together	3.77 ^a	1.13 ^b	3.30 ^c	1.30 ^b	1.10 ^b	1.22 ^b
Be with friends	4.09 ^a	4.03 ^a	2.52 ^b	4.13 ^a	1.66 ^c	2.19 ^{bc}
Be with others who enjoy the same things you do	4.05 ^a	3.57 ^b	2.87 ^c	4.51 ^a	1.59 ^d	2.43 ^c
Talk with new and varied people	2.72 ^a	1.82 ^b	1.33 ^b	2.86 ^a	1.47 ^b	1.78 ^b
Observe other people in the area	1.24 ^a	1.02 ^b	1.02 ^b	1.05 ^b	1.00 ^b	1.03 ^b
Number of Respondents	78	87	54	79	58	37
Percent of cases	19.8%	22.2%	13.7%	20.1%	14.8%	9.4%

Note: All p-values for the omnibus test of significance for each item were less than .001.

¹For each variable, groups with same superscript means did not differ based on results of a post hoc Tukey test (e.g., Segment 2's mean importance rating for Experience tranquility of 4.24 differs significantly from the mean importance rating of Experience Tranquility for Segment 4 and Segment 6, although the mean importance rating for Experience Tranquility for Segments 1 and 2 do not differ from each other or from the mean rating for Segment 3 or Segment 4).

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Table 8.4. Comparing Segments on Selected Individual Difference Variables.

	Segment					
	1	2	3	4	5	6
	<u>Mean Score¹</u>					
Age (p<.001, n=391)	28.9 ^{bc}	28.5 ^{bc}	34.0 ^a	26.5 ^c	31.1 ^{ab}	29.9 ^{abc}
Number of nights spent in backcountry (p=.027, n=387)	2.6 ^b	3.5 ^{ab}	2.6 ^b	3.1 ^{ab}	4.5 ^a	3.3 ^{ab}
Level of Education (p=.037, n=392)	16.7 ^{ab}	16.1 ^a	17.6 ^b	16.3 ^{ab}	16.9 ^{ab}	16.6 ^{ab}
	<u>Percent of Respondents²</u>					
Employment (p=.003, n=390)						
Employed/Military	68.0	64.4	78.8	49.4	64.9	44.4
Unemployed	2.7	6.9	5.8	13.9	17.5	19.4
Student/Homemaker/Retired	29.3	28.7	15.4	36.7	17.5	36.1
Residence (p < .001, n = 391)						
Alaska residents	19.5	17.2	13.0	17.7	14.0	13.5
Other U.S. residents	64.9	60.9	75.9	65.8	64.9	29.7
Foreign residents	15.6	21.8	11.1	16.5	21.1	56.8
<u>Segments did not differ significantly on the following variables:</u>						
Male respondents (p = .121, n =391)						
Race (p = .130, n = 388)						
Party size (p=.778, n=274)						
Trips to Denali (p=.276, n=381)						
Number of Denali backcountry permits issued in lifetime (p=.363, n=380)						
Number of hiking parties prefer to see in a day (p = .303, n = 391)						
Number of hiking parties prefer camped nearby (p = .055, n = 391)						
When first decided to take trip (p=.213, n=387)						
Number of nights spent in park (p=.282, n=385)						
Number of backcountry day hikes (p=.149, n=389)						
Party behaved in a way to avoid others (p=.217, n=383)						

Note: The p-values for significant omnibus tests are in parentheses.

¹For each variable, groups with same superscript means did not differ based on results of a post hoc Tukey test (e.g., Segment 2's mean number of nights spent in backcountry of 3.31 does not differ significantly from the mean number of nights spent in the backcountry by Segment 1 or Segment 3, although the mean number of nights spent in the backcountry by Segment 1 differs from Segment 3).

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

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Market Segment 1. Segment 1 comprises 19.8 percent (78 out of 393) of the mail survey respondents. The most important motivations for Segment 1 were getting away from the usual demands of life, experiencing tranquility, experiencing new and different things, learning more about nature, and learning what you are capable of (M's between 4.28 and 4.63). Motivations associated with friends and similar others were rated as the most important social motivations (M = 4.09 and M = 4.05, 4 = Very important) followed closely by motivations associated with family (M = 3.81 and M = 3.77). Although motivations associated with family were second in importance of the social motivations, this segment rated the motivations associated with family as important or more important than any of the other segments (Segment 3 rated the motivation of doing something with your family slightly more important than Segment 1). Segment 1 had the most Alaska residents of any segment, and Segment 1 respondents spent the fewest nights in the backcountry.

Market Segment 2. Segment 2 comprises 22.2 percent (87 out of 393) mail survey respondents, the most of any cluster. The most important motivation for Segment 2 was to experience tranquility (M = 4.52, 5 = Extremely Important) followed by getting away from the usual demands of life (M = 4.26, 4 = Very Important) and being with friends (M = 4.03, 4 = Very Important). Motivations associated with family and developing skills and abilities were all rated as low in importance (all M's < 1.95, 2 = Somewhat Important). Respondents in this segment differ from those in other segments in that they have the fewest years of schooling (see Table 8.4).

Market Segment 3. Segment 3 comprises 13.7 percent (54 out of 393) of mail survey respondents. The most important motivation for Segment 3 was experiencing new and different things (M = 4.41, 4 = Very Important) followed by getting away from the usual demands of life, experiencing tranquility, and learning more about nature (M = 4.26, M = 4.24, and M = 4.09, respectively; 4 = Very Important). Segment 3 had the highest importance rating of any segment for the motivation of doing something with your family (M = 3.89, 4 = Very important), and motivations associated with family were more important than other social motivations (i.e., friends, other or new people) for this segment.

Segment 3 respondents differed from the other segments in that they were the oldest group, had the most schooling, and were the most likely to be employed or in the military.

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Additionally, they had the fewest Alaska residents and spent the fewest nights in the backcountry of any segment.

Market Segment 4. Segment 4 comprises 20.1 percent (79 out of 393) of mail survey respondents. The seven motivations that were most important to Segment 4 were the same as those for Segment 1. Segment 4 however rated the motivation of being with others who enjoy the same things as you do as more important than Segment 1 ($M = 4.51$ vs. $M = 4.05$, respectively). Additionally, motivations associated with family were not at all important to Segment 4 ($M = 1.22$ and $M = 1.30$) while they were moderately to very important for Segment 1 ($M = 3.81$ and $M = 3.77$). Segment 4 respondents differed from the other segments in that they were the youngest cluster and had the largest number of students¹⁵.

Market Segment 5. Segment 5 comprises 14.8 percent (58 out of 393) of mail survey respondents. Segment 5 is distinguished from the other segments in that it has the lowest importance ratings of any group for all the social motivations (i.e., family, friends, others). Segment 5 does rate the motivations experiencing tranquility, getting away from the usual demands, learning more about nature, experiencing new and different things, and learning what you are capable of as very to extremely important (M 's range from 4.03 to 4.57, 4 = Very important). Segment 5 respondents differed from other respondents in that they spent the most nights in the backcountry.

Market Segment 6. Segment 6 comprises 9.4 percent (37 out of 393) of mail survey respondents, and is the smallest cluster. The primary distinguishing characteristic of Segment 6 is that no motivation was rated higher than 3.43 (3 = Moderately important, 4 = Very important). The two most important motivations were experiencing new and different things and learning more about nature ($M = 3.43$ and $M = 3.41$, respectively). Motivations associated with friends and similar others were more important than other social motivations (family or others), although they were only rated as somewhat important ($M = 2.19$ and $M = 2.43$, respectively; 2 = Somewhat important). It may be that Segment 6 respondents are

¹⁵ Table 8.4 indicates that Segment 4 had the largest number of students, homemakers, and retired individuals combined. Further review indicated that these differences were being driven by differences in the percentage of students across segments.

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motivated by experience outcomes not represented in the selection of REP items included in the DBS.

Segment 6 had the greatest percentage of foreign residents and the smallest percentage of non-Alaskan residents. Additionally, it had a high number of students and a low number of employed or military people.

Summary. These results suggest that backpackers who take overnight backcountry trips in Denali differ in their motivations for the trip. Although Segments 1, 3, 4 and 5 varied in the importance of the motivations associated with wilderness derived experiences (tranquility, get away from the usual demands, experience new and different things, learn more about nature, learn what you are capable of), these motivations were at least very important for all groups. These groups differed more in their motivations for sharing this experience with different social groups (e.g., family, friends, family and friends, or no one). In contrast, Segments 2 and 6 revealed different patterns of importance for the wilderness derived experiences. In each segment, a different set of two wilderness derived experiences were relatively more important motivations for their trip than the remaining wilderness derived experiences. Specifically, tranquility and getting away from the usual demands were important motivations for Segment 2 while experiencing new and different things and learning more about nature were important motivations for Segment 6. Thus, some groups of backpackers are motivated by or are seeking a larger number of experiences from their overnight backcountry trip in Denali than other groups.

Comparing the six segments on a variety of individual difference variables revealed that although the groups can be characterized as being made up of different types of people, the differences were small, and there was considerable overlap in the groups. These groups were more similar than different.

Comparing Market Segments on Trip Satisfaction

It is possible that segments that differed in their trip motivations may have differed in their trip satisfaction. Specifically, we examined whether the segments differed on overall trip satisfaction and feelings of crowding. The segments differed significantly on overall trip satisfaction, $F(5, 383) = 2.42, p = .035$. Post hoc Tukey tests revealed that respondents in Segment 5 ($M = 1.36$; Scale ranged from 1 to 5) had significantly greater overall trip

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satisfaction than respondents in Segment 6 ($M = 1.76$). Segment 5 had the highest overall trip satisfaction of any segment. Although Segment 6 respondents had the lowest overall trip satisfaction of any segment, they still rated their trips as better than "Good" ($M = 1.75$, 1 = Very Good, 2 = Good). The six segments did not differ in their feelings of crowding, $F(5, 380) = 1.012$, $p = .407$, with an average for all respondents indicating people felt mostly "Not at all crowded" ($M = 1.27$, 1 = Not at all crowded, 2 = Slightly crowded).

IX. Daily Diary Information For Each Hiking Zone

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The information presented in the tables below was gathered using the Daily Diary of the Denali Backpacker Survey (see Appendices B and C). A total of 1309 days of diary information was collected. Figures summarizing this information for all respondents are presented and discussed in Chapters IV and V of this report. These tables present the same information, but summarized for each of the numbered hiking zones in DENA so that it represents the reported experiences of all backpackers who hiked in each zone.

A wide variety of insights can be gained by examining the tables. Examples of several questions and discussions concerning their answers in the tables include:

- **Q:** In which zones did backpackers most commonly hike?
A: The first data column in the table gives the percentage of reported days (i.e., cases) that backpackers in the sample spent in each zone. The second column gives the ranking from most to least commonly visited. Zone 8 was most commonly visited (at 8.3 percent of all reported days).
- **Q:** In which zone did backpackers encounter the most other hikers?
A: The data column titled "Number of Hiking Parties Seen" gives the mean (average) number for each zone. Zone 24 had the highest reported number of other hiking parties seen at 3.5 per day. It is important to note that this estimate is based on only 12 reported days (zone 24 was only the 31st most visited zone). Estimates based on such a small sample of hiking days are likely to vary widely. One might note that the zones where backpackers encountered the most other hikers (zones 24, 15, 26, 36) were not the same zones in which backpackers most commonly hiked (zones 8, 31, 5, 10). This suggests that day-hikers account for many of the hiking parties seen by backpackers.
- **Q:** In which zone did backpackers report the most minutes of audible aircraft?

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A: The data column titled "Total Time Heard Aircraft (minutes)" gives the mean minutes for each zone. Zone 17 had the highest reported minutes of aircraft sound at 22.5 minutes per day. It is particularly important to note that this estimate is based on only 4 reported days. Such small sample sizes are particularly common in the information about aircraft because only half the backpackers completed the version of the diary that asked questions about aircraft. One strategy to alleviate problems with small samples would be to compare groups of zones. For example, one might compare the reported minutes of aircraft sound in zones under common flight corridors to the reported minutes in all other zones.

These are only a few examples of questions that might be answered using these tables. The three example questions were answered directly from the information in the table, but other questions might require additional analysis. For example, one might wish to know if the zones in which backpackers most commonly hike are also the zones in which aircraft are most commonly heard or seen. This question could be answered by calculating the correlation between the appropriate columns of data. Such analyses could be readily conducted upon request.

Zone	Hiked in Zone		Camped in Zone		Number of Hiking Parties Seen				Number of Hiking Parties Interacted With				Feel about Number of Hikers Seen			
	% of all		% of all		M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank
	cases	Rank	cases	Rank												
1	2.0%	25	1.2%	25	1.48	3.42	23	7	0.61	1.16	23	9	2.91	0.51	23	20
2	1.0%	34	0.8%	31	0.44	1.01	9	31	0.33	1.00	9	20	3.00	0.00	9	4
3	1.3%	31	0.8%	31	1.00	1.71	16	13	0.56	1.09	16	10	3.13	0.50	16	1
4	4.3%	13	2.7%	11	0.26	0.44	46	34	0.23	0.79	47	29	2.96	0.70	46	16
5	6.2%	3	4.6%	3	0.54	1.27	69	27	0.29	0.79	69	25	2.91	0.60	66	21
6	5.5%	6	3.5%	6	0.94	1.29	63	15	0.38	0.68	63	18	2.68	0.62	60	33
7	3.2%	17	2.0%	18	0.71	0.95	24	22	0.33	0.70	24	20	2.75	0.68	24	29
8	8.3%	1	5.2%	1	0.60	0.85	84	26	0.33	0.81	83	22	2.93	0.59	81	18
9	5.9%	5	3.5%	6	0.95	1.04	59	14	0.54	0.72	54	11	2.81	0.56	53	27
10	6.0%	4	4.0%	4	0.76	0.88	62	21	0.44	0.67	62	16	2.89	0.55	62	22
11	1.3%	31	0.8%	31	0.70	1.06	10	23	0.10	0.32	10	34	2.40	0.97	10	39
12	5.0%	10	2.8%	9	0.80	1.27	44	18	0.43	0.79	44	17	2.98	0.26	45	13
13	5.5%	6	2.4%	12	1.23	1.34	47	9	0.51	0.72	47	13	2.87	0.58	47	25
14	2.2%	22	1.3%	23	1.14	2.03	21	12	0.86	1.85	21	7	2.95	0.67	21	17
15	2.9%	18	1.7%	21	2.93	5.68	27	2	1.74	3.84	27	3	2.68	0.77	28	34
16	1.6%	29	0.9%	30	0.11	0.32	18	36	0.11	0.32	18	33	3.00	0.00	18	4
17	0.4%	39	0.3%	38	0.00	0.00	4	37	0.00	0.00	4	35	3.00	0.00	4	4
18	2.2%	22	1.5%	22	1.44	1.31	16	8	0.81	0.83	16	8	2.38	0.89	16	40
19	0.6%	35	0.6%	35	0.33	0.82	6	33	0.00	0.00	6	35	2.80	0.45	5	28
20	0.1%	41	0.0%	41	--	--	--	--	--	--	--	--	--	--	--	--
23	0.6%	35	0.4%	37	0.00	0.00	5	37	0.00	0.00	5	35	3.00	0.00	5	4
24	1.3%	31	0.9%	29	3.50	3.71	12	1	3.00	3.59	12	1	2.85	0.55	13	26
25	1.7%	28	1.0%	26	1.89	4.61	18	6	0.89	1.49	19	6	3.12	0.49	17	2
26	2.1%	24	1.3%	24	2.05	2.42	22	3	1.86	3.54	22	2	2.67	0.73	21	35
27	2.9%	18	1.9%	20	0.35	0.59	37	32	0.14	0.42	37	32	2.92	0.44	36	19
28	2.7%	21	2.0%	18	0.50	0.83	24	28	0.25	0.68	24	26	2.96	0.20	24	15
29	4.6%	12	2.4%	12	1.15	4.22	47	11	0.30	0.51	47	24	2.69	0.67	45	32
30	2.9%	18	2.1%	16	0.78	0.75	32	19	0.25	0.44	32	26	2.88	0.66	32	24
31	7.8%	2	5.0%	2	0.78	0.94	77	20	0.24	0.59	76	28	3.01	0.53	76	3
32	4.0%	15	2.4%	12	0.90	1.36	41	16	0.44	0.67	41	15	2.73	0.63	41	30
33	4.7%	11	2.4%	15	0.64	0.93	45	25	0.31	0.79	45	23	2.88	0.54	43	23
34	5.1%	9	3.2%	8	0.47	0.90	55	30	0.35	0.95	55	19	2.98	0.56	55	12
35	3.4%	16	2.1%	16	0.24	0.50	33	35	0.15	0.36	33	31	2.97	0.64	33	14
36	1.9%	26	0.7%	34	2.00	3.83	13	4	1.18	2.14	11	5	2.69	0.63	13	31
37	0.5%	38	0.2%	39	0.50	0.58	4	28	0.00	0.00	4	35	3.00	0.00	4	4
38	0.2%	40	0.1%	40	0.00	*	1	37	0.00	*	1	35	3.00	*	1	4
39	1.4%	30	1.0%	26	0.67	0.71	9	24	0.22	0.44	9	30	3.00	0.00	7	4
40	0.6%	35	0.5%	36	0.00	0.00	4	37	0.00	0.00	4	35	3.00	0.00	3	4
41	1.8%	27	1.0%	26	1.19	1.94	16	10	0.50	1.10	16	14	2.47	0.83	15	38
42	5.5%	6	3.6%	5	1.90	3.13	59	5	1.47	2.82	59	4	2.65	0.62	55	36
43	4.2%	14	2.8%	9	0.88	1.37	43	17	0.52	0.93	44	12	2.64	0.73	42	37
Mean	3.1%		1.9%		0.92				0.52				2.85			
Median	2.7%		1.7%		0.77				0.33				2.91			

Zone	Number of Park Rangers Seen				Number of Park Rangers Interacted with				Number of Parties Camped in Sight or Sound				Feel about Number of Parties Camped Nearby			
	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank
1	0.20	0.56	15	15	0.07	0.26	15	22	0.42	1.43	19	2	2.84	0.50	19	32
2	0.13	0.35	8	22	0.13	0.35	8	15	0.00	0.00	7	29	3.00	0.00	6	8
3	0.60	1.58	10	6	0.60	1.58	10	3	0.00	0.00	13	29	3.23	0.44	13	1
4	0.23	0.87	22	14	0.05	0.21	22	27	0.11	0.39	38	15	2.95	0.61	38	26
5	0.07	0.33	54	26	0.06	0.30	54	24	0.05	0.40	55	26	2.96	0.43	54	24
6	0.16	0.69	43	20	0.05	0.31	41	26	0.04	0.20	51	28	2.80	0.58	46	34
7	0.00	0.00	7	30	0.00	0.00	7	29	0.06	0.24	18	25	2.82	0.73	17	33
8	0.28	0.70	29	12	0.21	0.56	29	10	0.05	0.27	66	27	3.03	0.18	64	6
9	0.06	0.25	31	28	0.03	0.18	31	28	0.28	0.86	39	6	2.48	1.09	44	40
10	0.17	0.51	36	19	0.08	0.28	36	21	0.13	0.40	47	13	2.77	0.70	47	35
11	0.00	0.00	4	30	0.00	0.00	4	29	0.00	0.00	9	29	3.00	0.00	9	8
12	0.43	0.98	21	9	0.29	0.72	21	7	0.07	0.26	28	20	3.00	0.00	28	8
13	0.19	0.62	27	18	0.11	0.32	27	18	0.14	0.35	37	12	3.00	0.42	35	8
14	0.29	0.49	7	11	0.29	0.49	7	7	0.00	0.00	19	29	3.17	0.38	18	2
15	0.85	1.34	13	4	0.23	0.60	13	9	1.17	3.83	24	1	2.92	0.28	24	27
16	0.00	0.00	13	30	0.00	0.00	13	29	0.00	0.00	14	29	3.00	0.00	14	8
17	--	--	--	--	--	--	--	--	0.00	0.00	3	29	3.00	0.00	3	8
18	0.00	0.00	11	30	0.00	0.00	11	29	0.07	0.27	14	20	2.69	1.03	13	38
19	0.00	0.00	4	30	0.00	0.00	4	29	0.00	0.00	6	29	3.00	0.00	6	8
20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23	0.00	0.00	5	30	0.00	0.00	5	29	0.00	0.00	5	29	3.00	0.00	5	8
24	1.67	1.37	6	1	1.00	0.89	6	1	0.25	0.71	8	7	3.00	0.71	5	8
25	0.67	1.15	12	5	0.50	0.67	12	4	0.21	0.80	14	8	3.07	0.47	14	4
26	1.44	1.59	9	2	0.78	0.83	9	2	0.07	0.26	15	23	3.00	0.00	13	8
27	0.07	0.26	15	27	0.07	0.26	15	22	0.32	1.19	31	4	2.90	0.40	30	28
28	0.19	0.54	16	17	0.19	0.54	16	12	0.10	0.30	21	17	2.95	0.22	21	25
29	0.20	0.55	30	15	0.11	0.31	28	20	0.09	0.38	34	18	2.74	0.77	31	36
30	0.06	0.24	18	29	0.06	0.24	18	24	0.07	0.27	27	19	3.11	0.32	27	3
31	0.13	0.40	47	21	0.13	0.40	46	14	0.10	0.30	61	16	2.97	0.41	61	23
32	0.50	1.28	20	8	0.35	0.81	20	5	0.06	0.24	33	24	2.85	0.51	33	31
33	0.00	0.00	27	30	0.00	0.00	27	29	0.21	0.73	34	9	3.03	0.18	31	5
34	0.10	0.41	29	25	0.14	0.58	29	13	0.07	0.26	43	22	3.02	0.47	41	7
35	0.11	0.47	18	23	0.00	0.00	18	29	0.17	0.48	24	11	2.88	0.68	24	29
36	1.40	2.61	5	3	0.20	0.45	5	11	0.18	0.40	11	10	2.64	0.81	11	39
37	0.00	0.00	3	30	0.00	0.00	3	29	0.00	0.00	3	29	3.00	0.00	3	8
38	--	--	--	--	--	--	--	--	0.00	*	1	29	3.00	*	1	8
39	0.25	0.71	8	13	0.13	0.35	8	15	0.13	0.35	8	14	3.00	0.00	6	8
40	0.00	*	1	30	0.00	*	1	29	0.00	0.00	4	29	3.00	0.00	3	8
41	0.11	0.33	9	23	0.11	0.33	9	18	0.00	0.00	10	29	3.00	0.00	9	8
42	0.36	1.15	25	10	0.12	0.44	25	17	0.39	1.50	46	3	2.86	0.47	43	30
43	0.55	1.15	20	7	0.30	0.73	20	6	0.31	0.59	32	5	2.70	0.84	30	37
Mean	0.30				0.17				0.13				2.93			
Median	0.16				0.11				0.07				3.00			

Zone	Number of Times Heard Aircraft				Total Time Heard Aircraft (minutes)				Loudness of Loudest Aircraft that Day			
	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank
1	3.50	3.74	8	32	4.13	4.97	8	35	2.57	1.13	7	6
2	5.00	*	1	18	10.00	*	1	15	2.00	*	1	28
3	5.17	3.71	6	17	8.83	8.23	6	21	2.50	0.55	6	7
4	8.00	5.32	25	6	13.26	10.66	25	5	2.48	0.65	25	9
5	9.27	8.00	15	3	15.46	20.66	13	3	2.29	0.61	14	14
6	8.70	6.45	20	4	6.25	7.57	20	28	2.40	0.75	20	11
7	5.44	5.44	18	16	8.08	13.78	18	23	2.69	0.95	16	3
8	7.27	9.42	55	7	9.47	12.83	51	19	2.31	0.73	45	13
9	6.14	5.45	28	12	10.72	12.18	25	12	2.19	0.49	26	19
10	6.35	8.33	26	9	10.13	16.26	26	14	2.42	0.69	19	10
11	15.00	12.18	6	1	13.80	9.26	5	4	2.50	0.84	6	7
12	3.14	3.06	22	35	6.25	9.62	22	28	2.00	0.61	17	28
13	5.75	6.12	20	14	12.40	21.69	20	8	2.27	0.59	15	16
14	5.93	4.46	14	13	19.07	24.52	14	2	2.18	0.40	11	21
15	4.07	4.57	15	25	8.25	11.42	15	22	2.08	0.29	12	27
16	3.80	3.03	5	29	7.60	4.93	5	25	2.00	0.00	5	28
17	4.75	5.50	4	20	22.50	28.72	4	1	3.50	0.71	2	1
18	8.20	10.85	5	5	11.10	13.82	5	10	2.60	0.89	5	5
19	10.00	7.07	2	2	12.00	*	1	9	2.00	0.00	2	28
20	--	--	--	--	--	--	--	--	--	--	--	--
23	--	--	--	--	--	--	--	--	--	--	--	--
24	2.83	2.14	6	37	1.17	0.41	6	38	1.86	0.38	7	39
25	3.43	4.47	7	33	6.71	10.84	7	27	2.20	0.45	5	18
26	2.75	4.35	12	38	3.54	5.51	12	36	2.00	0.00	9	28
27	3.64	4.23	22	31	9.00	19.18	22	20	2.19	0.40	16	20
28	4.63	3.85	8	21	9.75	8.19	8	17	2.00	0.00	7	28
29	3.69	3.52	16	30	5.63	7.17	16	32	2.00	0.00	11	28
30	3.23	4.36	13	34	3.21	4.42	14	37	2.13	0.35	8	24
31	5.57	6.31	30	15	10.84	16.78	28	11	2.13	0.34	23	23
32	4.29	4.56	21	24	5.82	6.78	17	31	2.18	0.39	17	22
33	4.39	3.97	18	23	13.06	13.18	18	6	2.31	0.60	16	12
34	4.04	3.31	25	26	7.41	8.43	23	26	2.10	0.30	21	25
35	4.60	6.75	15	22	4.50	5.27	14	34	2.09	0.54	11	26
36	7.00	7.60	8	8	9.75	13.40	8	17	2.00	0.63	6	28
37	4.00	*	1	27	6.00	*	1	30	2.00	*	1	28
38	4.00	*	1	27	10.00	*	1	15	3.00	*	1	2
39	1.00	*	1	39	1.00	*	1	39	2.00	*	1	28
40	6.33	5.51	3	10	12.67	4.04	3	7	2.67	0.58	3	4
41	6.29	5.96	7	11	10.14	10.93	7	13	2.29	0.49	7	14
42	3.09	3.64	34	36	4.59	5.89	33	33	2.24	0.51	29	17
43	4.88	5.16	24	19	7.79	10.75	24	24	2.00	0.33	19	28
Mean	5.36				9.02				2.27			
Median	4.75				9.00				2.19			

Zone	Proportion of People Who Saw Prop Planes				Average Number of Prop Planes Seen Each Day				Proportion of People Who Saw Helicopters				Average Number of Helicopters Seen Each Day			
	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank
1	0.38	0.52	8	29	1.75	3.06	8	24	0.13	0.35	8	20	0.25	0.71	8	11
2	0.00	*	1	40	0.00	*	1	40	0.00	*	1	35	0.00	*	1	34
3	0.67	0.52	6	8	0.67	1.15	3	37	0.50	0.55	6	4	0.00	0.00	3	34
4	0.74	0.45	27	6	4.92	5.18	25	5	0.33	0.48	27	7	0.74	1.32	27	6
5	0.47	0.52	15	18	4.80	7.49	15	6	0.07	0.26	15	28	0.07	0.26	15	29
6	0.60	0.50	20	10	4.95	6.07	20	4	0.40	0.50	20	6	1.30	1.81	20	3
7	0.37	0.50	19	30	0.94	1.47	18	32	0.16	0.37	19	14	0.33	1.19	18	9
8	0.48	0.50	56	17	2.93	4.58	55	13	0.29	0.46	56	8	1.29	2.87	55	4
9	0.41	0.50	29	23	1.93	3.59	28	21	0.21	0.41	29	11	0.18	0.39	28	17
10	0.38	0.50	26	26	3.42	6.84	26	10	0.15	0.37	26	15	0.62	2.04	26	7
11	0.83	0.41	6	5	7.00	6.42	6	1	0.00	0.00	6	35	0.00	0.00	6	34
12	0.35	0.49	23	31	1.52	2.54	23	26	0.04	0.21	23	32	0.04	0.21	23	32
13	0.38	0.50	21	27	1.90	3.35	21	22	0.10	0.30	21	25	0.10	0.30	21	26
14	0.47	0.52	15	18	2.36	3.77	14	15	0.07	0.26	15	28	0.07	0.26	15	29
15	0.47	0.52	15	18	0.80	1.08	15	34	0.00	0.00	15	35	0.00	0.00	15	34
16	0.60	0.55	5	10	2.20	2.28	5	18	0.20	0.45	5	12	0.20	0.45	5	16
17	0.00	0.00	4	40	0.00	0.00	4	40	0.00	0.00	4	35	0.00	0.00	4	34
18	0.60	0.55	5	10	6.40	10.26	5	2	0.20	0.45	5	12	0.40	0.89	5	8
19	0.50	0.71	2	14	6.00	8.49	2	3	0.50	0.71	2	4	1.00	1.41	2	5
20	0.50	0.53	8	14	0.75	1.04	8	35	0.25	0.46	8	9	0.25	0.46	8	11
23	0.43	0.53	7	21	1.86	3.29	7	23	0.14	0.38	7	17	0.14	0.38	7	20
24	0.25	0.45	12	37	0.67	1.23	12	37	0.08	0.29	12	26	0.08	0.29	12	27
25	0.42	0.50	24	22	1.38	2.20	24	28	0.04	0.20	24	33	0.04	0.20	24	33
26	0.25	0.46	8	37	0.75	1.49	8	35	0.13	0.35	8	20	0.13	0.35	8	23
27	0.13	0.34	16	39	0.63	1.75	16	39	0.06	0.25	16	31	0.25	1.00	16	11
28	0.29	0.47	14	36	0.93	2.16	14	33	0.07	0.27	14	27	0.07	0.27	14	28
29	0.40	0.50	30	24	1.93	3.31	29	20	0.03	0.18	30	34	0.07	0.37	30	29
30	0.33	0.48	21	32	2.14	4.49	21	19	0.00	0.00	21	35	0.00	0.00	21	34
31	0.39	0.50	18	25	1.28	2.67	18	30	0.11	0.32	18	24	0.17	0.51	18	18
32	0.31	0.47	26	35	1.35	2.61	26	29	0.15	0.37	26	15	0.15	0.37	26	19
33	0.33	0.49	15	32	2.87	6.38	15	14	0.07	0.26	15	28	0.13	0.52	15	22
34	0.50	0.53	8	14	3.63	4.93	8	9	0.00	0.00	8	35	0.00	0.00	8	34
35	1.00	*	1	1	1.00	*	1	31	1.00	*	1	1	0.00	*	1	34
36	1.00	*	1	1	3.33	3.21	3	11	1.00	*	1	1	2.33	2.08	3	1
37	1.00	*	1	1	2.29	2.21	7	16	0.00	*	1	35	1.43	3.78	7	2
38	1.00	0.00	3	1	1.38	3.39	34	27	0.67	0.58	3	3	0.32	1.39	34	10
39	0.71	0.49	7	7	4.13	5.30	24	8	0.14	0.38	7	17	0.21	0.66	24	15
40	0.32	0.47	34	34	3.33	3.21	3	11	0.12	0.33	34	23	0.12	0.33	34	25
41	0.54	0.51	24	13	2.29	2.21	7	16	0.13	0.34	24	20	0.13	0.34	24	23
42	0.38	0.49	29	28	1.62	3.63	29	25	0.14	0.35	29	19	0.14	0.35	29	21
43	0.63	0.50	19	9	4.53	5.25	19	7	0.21	0.42	19	10	0.21	0.42	19	14
Mean	0.48				2.40				0.19				0.32			
Median	0.43				1.93				0.13				0.14			

Zone	Proportion of People Who Saw Jets				Average Number of Jets Seen Each Day				Proportion of People Who Saw Other Aircraft				Average Number of Other Aircraft Seen Each Day			
	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank	M	SD	N	Rank
1	0.13	0.35	8	30	0.25	0.71	8	28	0.13	0.35	8	4	0.25	0.71	8	9
2	0.00	*	1	37	0.00	*	1	36	0.00	*	1	18	0.00	*	1	17
3	0.33	0.52	6	10	0.00	0.00	4	36	0.00	0.00	6	18	0.00	0.00	6	17
4	0.30	0.47	27	13	0.56	1.19	25	12	0.07	0.27	27	9	0.11	0.42	27	11
5	0.27	0.46	15	16	1.07	1.94	15	2	0.07	0.26	15	11	0.47	1.81	15	4
6	0.35	0.49	20	9	0.75	1.29	20	6	0.20	0.41	20	2	0.40	0.99	20	6
7	0.16	0.37	19	26	0.11	0.32	18	34	0.26	0.45	19	1	0.58	1.07	19	3
8	0.20	0.40	56	23	0.27	0.62	55	27	0.07	0.26	56	10	0.04	0.27	53	16
9	0.10	0.31	29	35	0.24	0.79	29	30	0.00	0.00	29	18	0.00	0.00	29	17
10	0.23	0.43	26	19	0.54	1.21	26	13	0.04	0.20	26	17	0.04	0.20	26	15
11	0.67	0.52	6	3	1.83	1.60	6	1	0.00	0.00	6	18	0.00	0.00	6	17
12	0.13	0.34	23	29	0.30	0.93	23	24	0.04	0.21	23	16	0.09	0.42	23	12
13	0.19	0.40	21	24	0.29	0.64	21	26	0.05	0.22	21	15	0.62	2.84	21	2
14	0.20	0.41	15	22	0.36	0.93	14	22	0.00	0.00	15	18	0.00	0.00	15	17
15	0.07	0.26	15	36	0.07	0.26	15	35	0.00	0.00	15	18	0.00	0.00	15	17
16	0.40	0.55	5	6	0.80	1.10	5	4	0.00	0.00	5	18	0.00	0.00	5	17
17	0.00	0.00	4	37	0.00	0.00	4	36	0.00	0.00	4	18	0.00	0.00	4	17
18	0.80	0.45	5	2	0.80	0.45	5	4	0.00	0.00	5	18	0.00	0.00	5	17
19	0.50	0.71	2	5	0.50	0.71	2	14	0.00	0.00	2	18	0.00	0.00	2	17
20	0.38	0.52	8	7	0.38	0.52	8	19	0.13	0.35	8	4	0.00	0.00	7	17
23	0.14	0.38	7	27	0.43	1.13	7	15	0.14	0.38	7	3	0.43	1.13	7	5
24	0.00	0.00	12	37	0.00	0.00	12	36	0.08	0.29	12	7	0.08	0.29	12	13
25	0.13	0.34	24	30	0.29	0.81	24	25	0.00	0.00	24	18	0.00	0.00	24	17
26	0.38	0.52	8	7	0.63	1.06	8	8	0.00	0.00	8	18	0.00	0.00	8	17
27	0.19	0.40	16	25	0.25	0.58	16	28	0.06	0.25	16	14	0.19	0.75	16	10
28	0.29	0.47	14	14	0.43	0.85	14	15	0.00	0.00	14	18	0.00	0.00	14	17
29	0.33	0.48	30	10	0.61	1.31	28	9	0.07	0.25	30	11	0.27	1.14	30	8
30	0.33	0.48	21	10	0.43	0.68	21	15	0.00	0.00	21	18	0.00	0.00	21	17
31	0.11	0.32	18	34	0.33	1.03	18	23	0.00	0.00	18	18	0.00	0.00	18	17
32	0.12	0.33	26	33	0.15	0.46	26	31	0.08	0.27	26	8	0.31	1.09	26	7
33	0.27	0.46	15	16	0.40	0.74	15	18	0.07	0.26	15	11	0.07	0.26	15	14
34	0.25	0.46	8	18	0.88	2.10	8	3	0.13	0.35	8	4	1.13	3.18	8	1
35	0.00	*	1	37	0.00	*	1	36	0.00	*	1	18	0.00	*	1	17
36	1.00	*	1	1	0.00	*	1	36	0.00	*	1	18	0.00	*	1	17
37	0.00	*	1	37	0.67	0.58	3	7	0.00	*	1	18	0.00	*	1	17
38	0.67	0.58	3	3	0.57	0.98	7	10	0.00	0.00	3	18	0.00	0.00	3	17
39	0.29	0.49	7	14	0.12	0.33	34	33	0.00	0.00	7	18	0.00	0.00	7	17
40	0.12	0.33	34	32	0.38	0.82	24	19	0.00	0.00	34	18	0.00	0.00	34	17
41	0.21	0.41	24	21	0.57	0.98	7	10	0.00	0.00	24	18	0.00	0.00	24	17
42	0.14	0.35	29	28	0.14	0.35	29	32	0.00	0.00	29	18	0.00	0.00	29	17
43	0.21	0.42	19	20	0.37	0.83	19	21	0.00	0.00	19	18	0.00	0.00	19	17
Mean	0.26				0.41				0.04				0.12			
Median	0.21				0.37				0.00				0.00			

X. STATED CHOICE ANALYSIS OF TRADEOFFS AMONG SOCIAL, RESOURCE, AND MANAGEMENT ATTRIBUTES OF THE DENALI WILDERNESS EXPERIENCE

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Current efforts to revise the wilderness management plan for Denali include decisions concerning whether to maintain, reduce, or increase the number of permits issued for each of the park's wilderness management units. Previous research (Bultena, Albrecht, & Womble, 1981) concluded that Denali visitors supported use limitations, but also suggested that future decisions will have to weigh the importance of protecting park resources and the quality of visitors' experiences against the benefit of granting more visitors access to the Denali wilderness. Backpackers were asked a series of questions regarding such tradeoffs using a question format and method of statistical analysis referred to as stated choice analysis. This chapter reports the findings of this analysis and the implications for management.

Chapter Overview

This chapter begins with a brief description of stated choice analysis and the methods used to apply it in this study. The next section of this chapter reports potential limitations of the stated choice analysis. The last section of the chapter summarizes the results of the stated choice survey and their implications. Included in this section is information about the relative importance Denali backpackers place on opportunities for hiking and camping solitude, the degree of impact to trails and campsites, and the degree of freedom visitors have from management restrictions. The findings reported in this section also include a decision-making model that can be used to estimate the degree of Denali backpackers' support for various Denali wilderness management alternatives.

A Limitation for the Generalizability of the Sample

Participants in the stated choice survey were selected to represent all Denali wilderness backpackers. However, only individuals who did not participate in the multi-

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stage & mail only components were asked to participate in the stated choice survey. Therefore, it is possible that the responses of study participants do not accurately represent the attitudes and preferences of all Denali wilderness backpackers. Several questions from the visitor profile section of the mail survey questionnaire were included in the stated choice questionnaire and can be used to test for differences between the two samples. Analyses showed that the stated choice sample did not differ from the mail survey sample on these visitor profile questions. Although we have no indication that our sample differs from Denali wilderness backpacker in general, strictly speaking, the extent (if at all) to which their tradeoff preferences revealed in the stated choice analysis might differ from Denali wilderness backpackers in general can not be determined from these data. Therefore, throughout this chapter data are reported as representing *backpackers selected to represent overnight Denali wilderness visitors*. Readers should note this limitation.

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Highlights and Implications

- Results of the stated choice analysis provide insight into the relative importance that backpackers place on selected wilderness attributes within the context of tradeoffs associated with Denali wilderness management. Although all study attributes provided utility to backpackers, backpackers were more sensitive to different levels of evidence of human use at campsites followed by solitude-related attributes. In contrast, backpackers were relatively insensitive to the different levels of camping regulations and permit availability examined in this study. Together, these findings suggest that respondents would prefer to trade away some freedoms (due to increased management) in order to improve opportunities for a quality wilderness experience.
- The decision-making model derived from the stated choice analysis provides a tool for predicting the extent to which backpackers might support various management scenarios proposed in the wilderness management plan. Results of a hypothetical referendum analyzed using the decision-making model suggest that respondents would prefer (by a margin of three to one) a wilderness setting that emphasizes solitude through relatively restrictive management actions over a more congested wilderness setting with limited management restrictions. This finding suggests that Denali overnight wilderness visitors are at least somewhat diverse in their attitudes concerning the management of the Denali wilderness. Continuing to manage the Denali wilderness using a zoning approach to provide a spectrum of opportunities for visitors may be an effective method to address this diversity.

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The Stated Choice Survey

In stated choice analysis, respondents are asked to make choices among alternative configurations of a multi-attribute good. Each alternative configuration is defined by varying levels of selected attributes of the good. For example, respondents may be asked to choose between alternative recreation settings that vary in the number of other groups encountered, the quality of the natural environment, and the intensity of management regulations imposed on visitors. Respondents' choices among the alternatives are evaluated to estimate the relative importance of the condition of each attribute to the respondents and to predict public support for different configurations of the attributes (i.e., management alternatives) not directly presented to respondents.

In this project, respondents were asked to choose between different pairs of hypothetical Denali wilderness settings. A review of the literature and discussion with park management resulted in a set of six wilderness setting attributes, each with three possible levels (or conditions), being selected to describe the hypothetical settings. Table 10.1 presents the Denali wilderness setting attributes used in this project and their corresponding levels. Combining the six study attributes at varying levels produced a series of pairs of hypothetical Denali wilderness setting descriptions. Four versions of the stated choice questionnaire were developed such that each version of the questionnaire included a series of nine paired comparison questions. In each question, respondents were asked to read descriptions of two hypothetical Denali wilderness settings and indicate which of the two settings they preferred. A copy of one version of the questionnaire is included in Appendix M.

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Table 10.1. Denali Wilderness Setting Attributes and Levels

<p><u><i>Social conditions</i></u></p> <p>Number of other groups encountered per day while hiking: Encounter 0 other groups per day while hiking Encounter up to 2 other groups per day while hiking Encounter up to 4 other groups per day while hiking</p> <p>Opportunity to camp out of sight and sound of other groups: Able to camp out of sight and sound of other groups all nights Able to camp out of sight and sound of other groups most nights Able to camp out of sight and sound of other groups a minority of nights</p> <p><u><i>Resource conditions</i></u></p> <p>Extent and character of hiking trails: Hiking is along intermittent, animal like trails Hiking is along continuous single track trails developed from prior human use Hiking is along continuous trails with multiple tracks developed from prior human use</p> <p>Signs of human use at camping sites: Camping sites have little or no signs of human use Camping sites have some signs of human use – light vegetation damage, a few moved rocks Camping sites have extensive signs of human use – bare soil, many rocks moved for wind protection and cooking</p> <p><u><i>Management conditions</i></u></p> <p>Regulation of camping: Allowed to camp in any zone on any night Required to camp in specified zones Required to camp in designated sites</p> <p>Chance of receiving an overnight backcountry permit: Most visitors are able to get a permit for their preferred trip Most visitors are able to get a permit for at least their second choice trip Only a minority of visitors are able to get a backcountry permit</p>

Sampling & Visitor Contacts

The population to which generalizability was desired was the population of all Denali backpackers over the age of 17 who camped overnight in the backcountry between July 24, 2000 and September 2, 2000. The procedure used to allocate visitors to the three survey components, however, did not result in a random sample of visitors to the stated choice survey component (see Visitor Contacts p. 5 for more detail on how visitors were approached and allocated between different survey components).

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Specifically, only visitors who had not participated in the multi-stage survey component or the mail-only survey component were asked to participate in the stated choice survey component. Because respondents to the stated choice survey component were not randomly selected, their tradeoff preferences captured in this survey cannot a priori be assumed to be representative of all Denali backpackers over the age of 17 who camped overnight in the backcountry, and strictly speaking, the extent to which they may differ cannot be determined from these data. Comparison of this sample to backpackers completing the mail questionnaire on several questions asked in both surveys, however, revealed no differences between the two samples. Nonetheless, the data reported in this chapter will be reported as representing *backpackers selected to represent overnight Denali wilderness visitors*.

People were contacted for the stated choice survey upon their return from the backcountry. When the hiking party came to the backcountry desk at the conclusion of their trip to return their food canister, park personnel asked them to speak with the survey workers. At this time, hiking party members who were not participating in the other survey components were asked to participate in the stated choice survey. A total of 383 visitors were contacted specifically for the stated choice survey with 311 (81.2%) visitors agreeing to participate and completing a questionnaire. Participants were randomly assigned to complete one of the four versions of the questionnaire on the laptop resulting in approximately 78 completed questionnaires for each version and a total of 2,799 pairwise comparisons.

Limitations of the Stated Choice Analysis

A potential limitation of this study is that the relative importance of the Denali wilderness setting attributes considered are influenced by the levels of the attributes selected. Our findings may have varied if we had used different levels to represent the range of conditions for each attribute. For example, we may have found the relative importance Denali overnight wilderness visitors place on the chance of receiving an overnight backcountry permit to be greater if we had used "Visitors have a 5% chance of receiving a backcountry permit" rather than "Only a minority of visitors are able to get a backcountry permit". However, the levels of the Denali wilderness setting attributes

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were selected to represent a realistic range of conditions for each of the Denali wilderness setting attributes, based on current conditions in the Park. As a result, it seems reasonable to conclude that the results of this study realistically represent respondents' attitudes and preferences concerning contemporary conditions of social, resource, and managerial attributes of the Denali wilderness experience.

The six attributes selected for this study do not constitute a comprehensive list of variables related to the wilderness experience. As a result, it is likely that there are variables that would significantly affect respondents' choices among Denali wilderness setting scenarios that were left out of this model. Again, a choice was made to limit the number of attributes included in the model in order to control the level of respondent burden. The attributes that were used to define the Denali wilderness settings purposely span the social, resource, and managerial dimensions of the wilderness experience. Further, the study attributes used to represent these three dimensions of the wilderness experience were selected because of their importance to the wilderness experience, as suggested by research on indicators of quality for the wilderness experience.

While there are potential interactions among the wilderness setting attributes selected for the stated choice model, the study only tested main effects of the attributes. The decision to exclude interaction effects was made to avoid excessive respondent burden. That is, had the stated choice experiment been designed to test interaction effects, the number of comparisons each respondent would have had to evaluate would have increased to a potentially unmanageable level.

Local Alaskan residents are under-represented in the stated choice sample. The percentage of local Alaskan *hiking parties* obtaining permits per the Park's data was 28.6% while the percentage of local Alaskan *hikers* participating in our study was 1.9%. It is possible that the tradeoff preferences of local Alaskan hikers differ from those of other Denali backpackers. However, there are an insufficient number of local Alaskan respondents in the sample to test this hypothesis. (See pages 8, 11, and 13-17 in the Introduction for more detail about issues related to local Alaskan respondents.)

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Stated Choice Analysis Results

The responses to the stated choice survey were analyzed using logistic regression analysis. The overall fit of the model was supported by the results of the Hosmer and Lemeshow goodness of fit test, $\chi^2 = 3.492, p = 0.836$. The regression coefficients, together with their standard errors, Wald Chi-Square values, and p values are presented in Table 10.2. All coefficients were significantly different than zero at the $<.001\%$ level, except the coefficients on "Up to 2 other groups" and "Intermittent animal like trails". The absolute magnitude of the coefficients reflects the relative importance of the corresponding level of the attribute to wilderness visitors. The greater the relative importance of an attribute, the more it adds to or detracts from respondents' preference (i.e., utility) for the wilderness setting. Levels of attributes with high coefficient values are preferred to levels of attributes with lower coefficient values. A large negative coefficient suggests that the corresponding level of the attribute detracts substantially from respondents' utility associated with the wilderness setting. A large positive coefficient suggests that the corresponding level of the attribute substantially increases respondents' utility associated with the wilderness setting.

Figures 10.1a through 10.1f plot the level of utility respondents associate with the levels of each wilderness setting attribute. Values on the x-axis represent the level of the corresponding Denali wilderness setting attribute. Values on the y-axis represent the level of utility corresponding to level of the attribute. The plots provide graphic insight into the relative importance of the wilderness setting attributes in determining respondents' preference for alternative wilderness settings. For example, utility (i.e., preference) drops sharply as campsites change from having "Some signs of human use" (+0.207) to "Extensive signs of human use" (-0.790) (Figure 10.1d), whereas the loss of utility is less dramatic as the opportunity to camp out of sight and sound of other groups changes from "All nights" (0.295) to "Most nights" (0.145) (Figure 10.1b).

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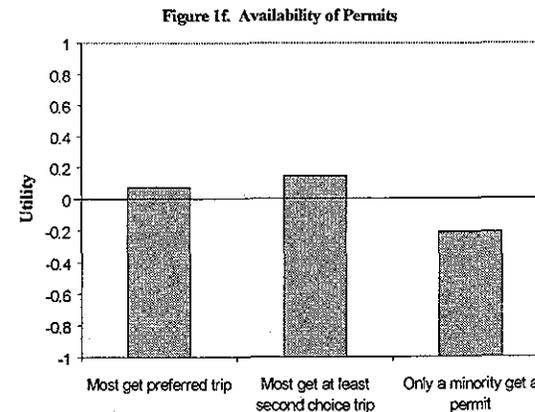
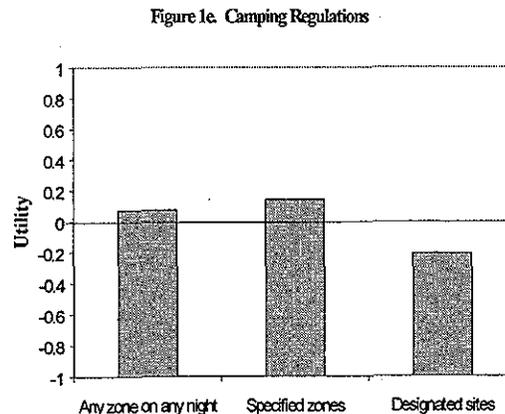
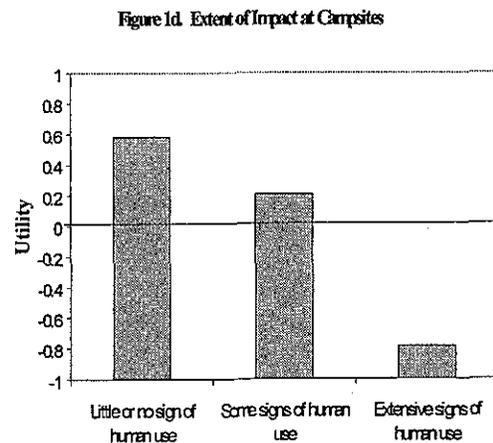
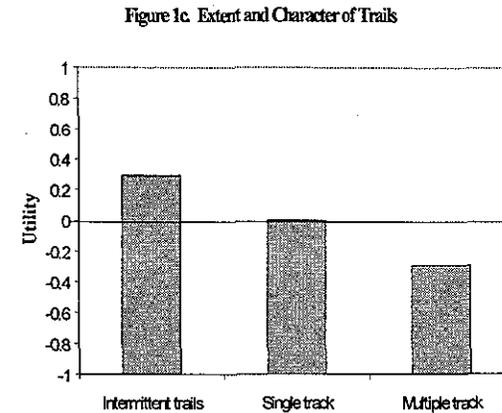
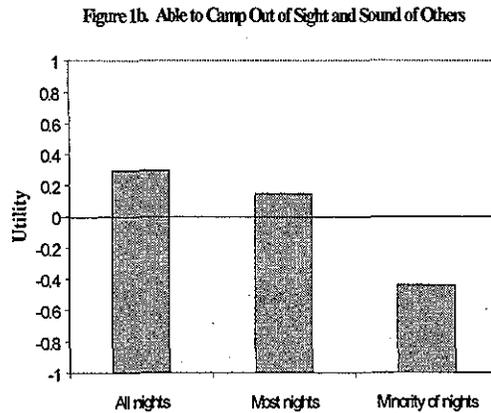
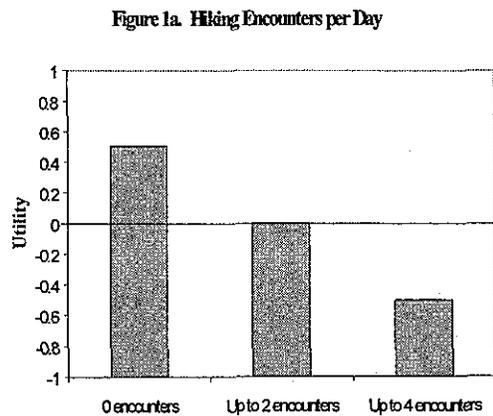
Table 10.2. Coefficient Estimates for Wilderness Setting Attributes

Variable	Coefficient	Standard Error	Wald Chi-Square	P Value
Encounters with other groups per day while hiking:				
0 other groups	0.440*	-	-	-
Up to 2 other groups	0.065	0.043	2.246	0.134
Up to 4 other groups	-0.504	0.044	132.826	<0.001
Able to camp out of sight and sound of other groups:				
All nights	0.295*	-	-	-
Most nights	0.145	0.044	11.148	<0.001
A minority of nights	-0.440	0.045	94.814	<0.001
Hiking is along:				
Intermittent, animal like trails	0.319*	-	-	-
Single track trails developed from human use	-0.028	0.044	0.403	0.526
Multiple track trails developed from human use	-0.291	0.043	46.340	<0.001
Camping sites have:				
Little or no signs of human use	0.582*	-	-	-
Some signs of human use	0.207	0.044	22.151	<0.001
Extensive signs of human use	-0.790	0.049	264.972	<0.001
Regulation of camping:				
Allowed to camp in any zone on any night	0.072*	-	-	-
Required to camp in specified zones	0.140	0.048	8.620	0.003
Required to camp in designated sites	-0.212	0.045	21.948	<0.001
Chance visitors have of receiving a permit:				
Most get a permit for their preferred trip	0.073*	-	-	-
Most get a permit for at least their second choice	0.143	0.044	10.424	0.001
Only a minority get a permit	-0.216	0.043	24.656	<0.001

*Coefficients for the excluded level of the attribute were not estimated by the statistical model. They were calculated as the negative sum of the coefficients on the other two levels of the corresponding attribute.

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Figure 10.1a-10.1f. Denali Wilderness Setting Attribute Levels and Corresponding Utility



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Predicting Visitor Preferences Using the Decision-Making Model

The regression model can serve as a decision-making model to predict visitor preferences for alternative wilderness management scenarios¹. For example, consider two hypothetical Denali wilderness management alternatives; one emphasizing “Solitude” and one emphasizing “Freedom” (see Table 10.3). Under the “Solitude Alternative”, overnight wilderness visitors would encounter zero other groups per day while hiking and be able to camp out of sight and sound of other groups all nights. However, visitors would be required to camp in designated sites and only a minority of visitors would be able to get a backcountry permit. Under the “Freedom Alternative”, overnight wilderness visitors would be able to camp in any zone on any night, and most visitors would be able to get a permit for their preferred trip. However, visitors would encounter up to four other groups per day while hiking, and they would be able to camp out of sight and sound of other groups only a minority of nights. In both alternatives, the extent of social trails and the amount of impact to campsites would be fixed at the intermediate level. At the heart of the comparison between the “Solitude Alternative” and the “Freedom Alternative” are respondents’ evaluations of the tradeoff between freedom of access to the Denali wilderness and the opportunity to experience solitude.

The model predicts that in a hypothetical referendum, 75% of respondents would choose the “Solitude Alternative” and only 25% would choose the “Freedom Alternative” (Table 10.3). This result suggests that backpackers selected to represent hiking parties would prefer to forgo some freedom from management to improve opportunities to experience solitude. These findings are suggestive of the balance respondents think ought to be struck between the conditions of social, and managerial attributes of the Denali wilderness experience.

¹ The decision-making model is only appropriate to evaluate alternative management scenarios that use the attributes and their designated levels that were included in the stated choice analysis (see Table 10.1).

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Table 10.3. Scores for Two Hypothetical Denali Wilderness Management Alternatives

	Solitude Alternative	Freedom Alternative
Hiking Encounters:	0 other groups per day	Up to 4 other groups per day
Campsite Solitude:	All nights	A minority of nights
Hiking Trails:	Single track trails	Single track trails
Campsite Impacts:	Some signs of human use	Some signs of human use
Camping Regulations:	Designated sites	Any zone on any night
Availability of permits:	Only a minority of visitors receive a permit	Most get a permit for their preferred trip
Voting Proportion	75%	25%

Discussion and Implications

RELATIVE IMPORTANCE OF WILDERNESS ATTRIBUTES

Study findings provide information about the relative importance backpackers who were selected to represent overnight Denali wilderness visitors place on the attributes of the Denali wilderness experience selected for this study. For example, study results suggest that visitors would be willing to tolerate, and in fact support, management restrictions, including use limits, to achieve desired social and resource setting attribute conditions. Managers should consider the relative importance that backpackers place on the attributes included in this study when formulating policy that prioritizes the relationships and inherent tradeoffs among these attributes.

Signs of human use at campsites influenced respondents' satisfaction more than any other wilderness setting attribute considered. Campsite conditions characterized as having "Extensive signs of human use" were evaluated less favorably than any other level of the wilderness setting attributes. Campsite conditions characterized by "Little or

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no signs of human use" were preferred more than any level of any other wilderness setting attribute included in the study.

Solitude-related attributes represented a second tier of importance to backpackers selected to represent overnight Denali wilderness visitors. While the number of encounters with other groups per day while hiking and opportunities to camp out of sight and sound of other groups were less important than campsite impacts, they demonstrated a relatively large influence on respondents' satisfaction.

The remaining attributes (i.e., extent and character of trails, regulations concerning where visitors are allowed to camp in the Denali wilderness, and the availability of backcountry permits) were less important to backpackers selected to represent overnight Denali wilderness visitors, relative to campsite impacts and solitude-related attributes of the Denali wilderness. This does not mean that these attributes of the Denali wilderness were not important to respondents, rather they were less important relative to the other wilderness attributes.

The findings suggested that backpackers selected to represent overnight Denali wilderness visitors will tolerate some level of management over where visitors may camp and a certain degree of visitor use limits. Respondents' satisfaction remained unchanged as regulations over where visitors may camp increases from "Allowed to camp in any zone on any night" to "Required to camp in specified zones". However, satisfaction decreased to its lowest point with respect to camping regulations when visitors are "Required to camp in designated sites". Respondents' satisfaction associated with overnight wilderness use limits remained the same whether use limits were at their least restrictive level (i.e., "Most get a permit for their preferred trip") or at the intermediate level (i.e., "Most get a permit for at least their second choice trip"). Use limits that result in only a minority of visitors receiving a permit led to the lowest satisfaction related to this attribute (i.e., the chance visitors have of receiving a permit). A possible explanation for these results is that Denali overnight wilderness visitors may realize that without certain management restrictions, the resource and social setting attributes are likely to deteriorate beyond acceptable conditions.

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DECISION-MAKING MODEL

The decision-making model developed in this study can be used to evaluate the attitudes of backpackers selected to represent overnight Denali wilderness visitors toward alternative management scenarios. In particular, this model can be used to predict current users' level of support for different scenarios being considered under the new wilderness management plan. As an example, two hypothetical management alternatives were evaluated using the stated choice model. The first alternative emphasized opportunities for solitude while the second alternative emphasized freedom from management restrictions.

The results of the example application of the choice model provide evidence that backpackers selected to represent overnight Denali wilderness visitors are willing to trade-off freedom from management restrictions for desired social conditions. Specifically, the results demonstrated that in a hypothetical referendum, respondents would prefer (by a margin of three to one) a wilderness setting that emphasizes solitude through relatively restrictive management actions over a more congested wilderness setting with limited management restrictions.

These results suggest that the majority of respondents support backcountry permit quotas at Denali to protect the primitive character of the wilderness. Further, the results suggest that a moderately restrictive quota system that is designed to enhance overnight wilderness visitors' opportunities to experience solitude and to maintain relatively undisturbed campsite and trail conditions would receive the greatest support from Denali overnight wilderness visitors.

The results of the example application of the choice model also suggest that there is a substantial proportion of respondents (25.0%) that place high importance on freedom from management restrictions despite reduced opportunities to experience limited contact with other groups while hiking and camping. This finding suggests that Denali overnight wilderness visitors are at least somewhat diverse in their attitudes concerning the management of the Denali wilderness. Continuing to manage the Denali wilderness using a zoning approach to provide a spectrum of opportunities for visitors may be an effective method to address this diversity. This could be achieved by managing the quota system in such a way that quotas for most zones within the Denali wilderness are set at

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levels that emphasize opportunities for visitors to experience solitude, while quotas for a few zones of the wilderness are set at levels that provide greater visitor access.

References

- Bultena, G., Albrecht, D., & Womble, P. (1981). Freedom Versus Control: A Study of Backpackers' Preferences for Wilderness Management. Leisure Sciences, 4(3), 297-310.