

DISPLACEMENT AND COPING AT WILDERNESS CLIMBING DESTINATIONS:

A SURVEY OF MOUNTAINEERS IN WASHINGTON AND OREGON

A Thesis

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**AUTHORIZATION TO SUBMIT
THESIS**

This thesis of Adam Barnett, submitted for the degree of Master of Science with a major in Resource Recreation and Tourism and titled “Displacement and Coping at Wilderness Climbing Destinations: A Survey of Mountaineers in Washington and Oregon,” has been reviewed in final form. Permission, as indicated by the signatures and dates given below, is now granted to submit final copies to the College of Graduate Studies for approval.

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Abstract

The purpose of this study was to assess the extent and nature of displacement and coping of mountaineers at the Cascade volcanoes in Washington and Oregon. The project examined displacement and coping at the regional scale, as well as at four peaks of particular concern to Forest Service managers (Mt. Hood, Mt. Baker, Mt. Adams, and Middle Sister).

Displacement was defined as a temporal or spatial change in recreational use of an area due to changes in setting conditions. Using the Recreation Opportunity Spectrum (ROS) typology, setting was conceptualized as the sum of social, resource, and managerial attributes in a recreation area. Coping is a behavioral or cognitive response intended to ameliorate an unacceptable situation. A theoretical model of visitor response to change in setting conditions was developed from the displacement literature. Data to test this model were collected from a systematic random sample of climbers via mailback questionnaire (402 returned, 70% response rate).

Study results indicate that most respondents employed one or more temporal (92%) and spatial (86%) displacement strategies in response to social conditions, particularly crowding, at climbing destinations. Among the other conditions measured, the presence of user fees was the next most often cited reason for displacement (46% of respondents). Furthermore, four of the Cascade volcanoes (Mt. Hood, Mt. Adams, Mt. Rainier, and Mt. St. Helens) accounted for the bulk of displacement of climbers in the region.

Perceived change in setting conditions and cognitive coping variables had a weak to moderate relationship to displacement. Climber experience use history variables, including years climbing, number of peaks climbed, and number of trips to specific peaks, had little relationship to displacement. The exception was climbing skill level, which was significantly related to spatial displacement due to social conditions.

Although perception of change in setting was not a primary determinant of displacement, respondents did react to setting conditions. Since management action or inaction can influence setting conditions, wilderness managers are faced with the challenge of deciding which users will be displaced at a given location, and ensuring that those displaced visitors can find the opportunities that they seek elsewhere in the region.

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Table of Contents

Authorization to Submit Thesis	ii
Abstract	iii
Acknowledgements	v
Table of Contents	vi
List of Figures	viii
List of Tables	xi
Introduction	1
Study Area	1
The Case of Mt. Hood	2
Study Purpose and Justification	4
Research Questions	8
Displacement and Coping Literature	10
Limitations of Previous Research	14
Theories Influencing Displacement and Coping Research	16
A Model of Displacement and Coping	21
Research Methods	26
Overview	26
Survey Instrument	27
Measurement	28
Sampling	31
Data Collection	34

Data Analysis	34
Methodological Limitations	36
Results	39
Description of the Sample Population	39
Research Question One	40
Research Question Two	53
Proposition Two	90
Proposition Five	97
Discussion	100
Magnitude and Causes of Displacement	100
Differences in Displacement at Different Peaks	105
Displacement at the Four Focus Peaks	108
Perceptions of Change in Setting Conditions	109
Cognitive Coping	111
Experience Level and Displacement	112
Skill Level and Displacement	113
Solitude and Displacement	114
Management Implications for Mt. Hood	114
Future Research	115
References Cited	117
Appendix A: Definition of Key Terms	122
Appendix B: Complete Survey Results	124

List of Figures

Figure 1: A model of displacement and coping	22
Figure 2: Reasons climbers were displaced one or more times	42
Figure 3: Reasons climbers were usually or always displaced	44
Figure 4: Peaks from which climbers were displaced	47
Figure 5: Peaks cited by displaced climbers as a percentage of respondents who have climbed that peak	49
Figure 6: Percent of climbers ever displaced from Hood	56
Figure 7: Percent of climbers usually or always displaced from Hood	57
Figure 8: Percent of climbers ever displaced from Baker	60
Figure 9: Percent of climbers usually or always displaced from Baker	62
Figure 10: Percent of climbers ever displaced from Adams	64
Figure 11: Percent of climbers usually or always displaced from Adams	65
Figure 12: Percent of climbers ever displaced from Middle Sister	67
Figure 13: Percent of climbers usually or always displaced from Middle Sister	69
Figure 14: Comparison of causes of displacement at four focus peaks	72
Figure 15: Perceived change in setting conditions	75
Figure 16: Cognitive coping at the four focus peaks	81
Figure 17: Motivations for climbing trips to the focus peaks	87
Figure 18: Variation in displacement by total number of climbs	92
Figure 19: Variation in displacement by number of peaks climbed	93
Figure 20: Variation in displacement by number of years climbing	94

List of Tables

Table 1: Sampling	33
Table 2: Peaks or routes no longer visited	51
Table 3: Factor loadings for social condition displacement items	71
Table 4: Factor loadings for perceived change items	75
Table 5: Bivariate correlation between perceived change and displacement factors	77
Table 6: Multiple regression analysis of perceived changes as predictors of displacement	79
Table 7: Cognitive coping items	80
Table 8: Stepwise regression analysis of cognitive coping as a predictor of displacement	84
Table 9: Correlations between displacement and desire for solitude	89
Table 10: Correlations between experience variables and displacement	95
Table 11: Correlations between number of climbing trips to focus peaks and displacement	97

Introduction

This thesis is divided into five sections. The introduction describes the study area, presents the research questions, develops the justification for the project, reviews the key research literature, presents relevant theories, and develops a model of decision-making and the propositions of the study. The second section describes the methods that were used to collect and analyze data. The third section reports the study results. Section four provides a discussion of results. The final section contains the appendices, including key definitions (Appendix A) and complete survey results (Appendix B).

Study Area

Forest Service Region Six includes the National Forests within the states of Washington and Oregon. The region contains 60 Forest Service wilderness areas. These areas are clustered in the mountainous parts of both states, especially the Cascade Range. West of the Cascades, major metropolitan areas such as Portland and Seattle lie within an hour's drive of wilderness areas, like the Alpine Lakes, that are some of the most heavily visited in the nation. Smaller cities, such as Bend, Oregon, that are near wilderness areas are also growing rapidly (Oregon Parks and Recreation Department, 2003). In addition to growing urban populations, an expanding array of recreational pursuits and the popularity of outdoor recreation amongst the residents of the region have also contributed to the growing number of people visiting wilderness areas (Interagency Commission for Outdoor Recreation, 2002).

Reconciling preservation of wilderness values with increasing use presents an enormous challenge to land managers. Urban growth-related pressures may threaten the

values that define wilderness, such as solitude, freedom, challenge, and natural conditions. Solitude, in particular, continues to be a concern of wilderness managers due to its status as a defining characteristic of wilderness under the Wilderness Act (Public Law 88-577). As popular wilderness destinations become more crowded, managers are compelled to take action in order to protect the range of attributes that define wilderness (Hall, 2001). These actions, or lack of action, may result in displacement as wilderness visitors avoid unacceptable setting conditions.

Mountaineering is a popular recreational activity in the region. Many of the most widely publicized and most accessible climbing destinations are in Forest Service wilderness areas. In the Cascade Range, the 15-20 major volcanic peaks typically have one or two climbing routes that are less challenging and more accessible than the several other routes that these peaks possess. Increasing use on these easier routes has, in some instances, led to crowded conditions, greater environmental impacts, and more regulation (Walker & Slagle, 2000). These changes in conditions are in conflict with the stipulations of the Wilderness Act to maintain attributes such as solitude and natural conditions. Wilderness climbing destinations of special interest to managers include the south side route on Mt. Hood, the Coleman Glacier route on Mt. Baker, the south ridge route on Mt. Adams, and the standard routes on the Middle and South Sisters.

The Case of Mt. Hood

Management decisions to reconcile high use with preservation of wilderness values have often been controversial. Management of the Mt. Hood Wilderness provides a prime example and demonstrates the need for a study of displacement and coping.

Mt. Hood lies in the Cascade Range of Oregon, 50 miles from Portland, the state's largest city. The Mt. Hood Wilderness encompasses 47,100 acres dominated by Mt. Hood, an 11,239 foot glaciated volcano. The mountain is one of a few peaks in the Pacific Northwest over 10,000 feet in elevation that provide easily accessible climbing routes in a range of difficulties. The wilderness receives heavy use, and nearly 85% of visitors are day-users (Walker & Slagle, 2000). Mountaineering is very popular in the region and at Mt. Hood in particular. Due to the accessibility of some of the easier south side climbing routes and the high elevation of some trailheads, these routes can be climbed in a long day, and many people adopt this strategy in their attempt to summit.

In 1998, wilderness managers on the Mt. Hood National Forest proposed reducing the daily number of wilderness visitors by up to 50% in order to bring the area into compliance with established standards for numbers of encounters among wilderness visitors. Managers often use encounters as a measure of the opportunity for solitude in wilderness. The preferred alternative was hotly contested by users and was eventually withdrawn by the Forest (Mt. Hood National Forest, 2000). Managers then developed another alternative that would prioritize visitor education and resource impact reduction while leaving open the option of use limits at a future date (*Overview on the new alternative for the wilderness protection plan*, 2000). Wilderness Watch, a wilderness advocacy group, successfully challenged this proposal on the basis that it did not adhere to the solitude requirement of the Wilderness Act. The Forest was required to withdraw the proposal, and is again facing a new planning process.

While not all of the managers of this project's study sites are currently embroiled in contentious wilderness management planning processes like the Mt. Hood Wilderness, they

all face the same array of issues. Some National Forests, like the Gifford Pinchot, already charge a climbing fee for popular peaks like Mt. Adams. On other forests, like the Mt. Baker-Snoqualmie, managers are closely watching the unfolding of events at Mt. Hood in preparation for their own wilderness plan revisions (Dunphy, 2002).

As the situation at Mt. Hood illustrates, wilderness values like solitude may be compromised at high-use climbing destinations. Climbers seeking solitude at these destinations may be displaced, or may respond to unsatisfactory conditions through cognitive coping. Alternatively, a more restrictive management regime that favors solitude seekers by limiting access or designating campsites may displace climbers who value spontaneity or freedom of choice. Displacement of climbers may result from changes in setting conditions at wilderness climbing destinations. Whether or not these changes are due to management action or inaction, measuring the magnitude of displacement and coping, as well as determining potential predictors of displacement, will help wilderness managers by assessing the effects of current and changing setting conditions on where wilderness visitors decide to climb. This knowledge will aid managers in fulfilling their responsibility to provide quality recreation opportunities for wilderness mountaineers.

Study Purpose and Justification

The purpose of this study was to assess the extent of displacement and coping among mountaineers from the Cascade volcanoes in Washington and Oregon due to perceived changes in setting. The project examined displacement at the regional scale (the Cascade volcanoes), as well as at several climbing destinations of particular concern to Forest Service managers (Hood, Baker, Adams, and Middle Sister). The project will provide

managers with insight into the responses of mountaineers to changes in setting due to management action or inaction and allow the comparison of displacement among four popular climbing destinations to determine how differences in setting affect displacement.

Provision of opportunities for solitude continues to be a concern of wilderness managers due to its status as a defining characteristic of wilderness under the Wilderness Act (Public Law 88-577). Commonly, wilderness encounters are used as a measure of opportunities for solitude. This approach is based on the assumption of a direct relationship between the number and timing of encounters that a wilderness visitor has, the degree of solitude that the visitor experiences, and thus the overall quality of the wilderness experience. Researchers have often hypothesized that fewer encounters will result in more solitude and greater trip satisfaction for those visitors who seek solitude on their wilderness trips. Unfortunately, the results of studies investigating the relationship between encounters, or crowding, and solitude, or experience quality, have been mixed (Manning, 1999).

Researchers have offered displacement and coping as explanations for the lack of correlation between crowding and the self-reported quality of visitors' experiences at wilderness destinations (Nielsen & Endo, 1977). Respondents to on-site wilderness surveys may indicate a high degree of satisfaction, regardless of conditions, because the truly dissatisfied visitors no longer use the area and therefore cannot be included in the survey. Alternatively, visitors may continue to visit, but change their expectations and motivations.

A pilot study conducted in 2002 by the University of Idaho in the Eagle Cap Wilderness found that over 28% of respondents could identify wilderness areas "that have places or times that you avoid because of the amount of use" (Hall & Cole, 2003). Areas that respondents avoided included the Mt. Hood, Three Sisters, and Alpine Lakes Wildernesses.

Furthermore, over 18% of respondents in the study indicated that they intentionally avoided places in the Eagle Cap Wilderness, with most citing crowding as the reason. These data support the contention that displacement is a phenomenon affecting a substantial portion of visitors to the Eagle Cap Wilderness. Not only did preliminary empirical evidence suggest the occurrence of displacement from busy wilderness areas in Washington and Oregon, these data also indicated the importance of a regional perspective when considering recreation displacement.

A regional approach is important because conditions at a few wildernesses accounted for most of the displacement in the study. Therefore, management actions or inaction at one wilderness may be affecting conditions, such as opportunities for solitude, at wilderness areas to which visitors are displaced. A regional perspective would include consideration of these inter-wilderness effects and might improve the effectiveness of wilderness management.

Management of displacement becomes an issue of equity when one considers the potential effects of management actions or inaction on wilderness visitors. Increasing regulation of busy destinations may favor visitors who are tolerant of management restrictions while displacing intolerant visitors (Hall & Cole, 2000). Conversely, failure to manage increasing use at popular destinations may displace solitude-seeking visitors and favor those people who are more tolerant of existing social conditions. Again, a regional perspective on displacement is necessary to assess the impacts of management decisions, or indecision, on the distribution of recreationists between wilderness areas.

Furthermore, cognitive coping responses, like rationalization and product shift, may change the nature of the experience for visitors. A wilderness trip during which a visitor does not have to resolve conflicting emotions about the setting conditions may be more

enjoyable than a trip that triggers a coping response. Thus, a manager who is trying to provide a quality experience for visitors may be concerned with maintaining conditions that users do not have to cope with.

One risk of ignoring a regional perspective on wilderness areas is the homogenization of opportunities across destinations at the expense of certain wilderness values. For example, all busy climbing routes on the Cascade volcanoes could become heavily regulated as managers at individual wildernesses react to perceived problems in their areas.

Homogenization could result in the availability of certain opportunities, like challenge, on popular climbing routes while experiencing freedom or solitude becomes difficult on any of these climbs. The trend toward regulation was evident in river recreational settings in the 1970's when rapidly increasing use led managers to implement use restrictions on many popular rivers (Schreyer & Knopf, 1984). The outcome was protection of solitude at the expense of freedom of choice. Consequently, crowding on rivers stimulated a substantial portion of past research on recreation displacement. Taking a regional-scale look at displacement on the Cascade volcanoes may help managers to avoid the homogenization that occurred on rivers in the 1970's and thus ensure the availability of a range of recreational experiences.

Research Questions

This study had two guiding research questions that addressed displacement and coping at the regional scale (the Cascade volcanoes) as well as in depth at several locations of interest (Hood, Baker, Adams, and Middle Sister). The specific research questions were:

1. To what extent have mountaineers changed their use of any Cascade volcano due to social, managerial, and/or resource conditions?
2. To what extent have mountaineers changed their use, or employed other coping strategies, due to perceived changes in social, managerial, and/or resource conditions at four climbing destinations?

For the purposes of this study, displacement was defined as a temporal or spatial change in recreational use of an area due to changes in setting conditions (Hall & Shelby, 2000; Manning & Valliere, 2001). Although recreation researchers commonly use this definition of displacement, few studies have actually attempted to correlate perceptions of change with displacement. Instead, previous studies have considered displacement to include any change in behavior in response to existing setting conditions. In other words, researchers said that they were using the “perception of change” definition, but then reported displacement as any change in behavior in response to existing setting conditions. In this study, Research Question One considered displacement as a response to existing setting conditions, and Research Question Two addressed the relationship between displacement and perceptions of change in setting conditions. The definition of displacement as a response to change in conditions was retained in this study for two reasons. First, it is still the commonly

used definition in the literature and therefore in need of evaluation. Second, wilderness managers have some control over change in setting conditions. Thus, understanding the relationship between changing conditions and displacement may allow managers to predict the potential effects of management actions, or inaction, on visitors.

Spatial displacement can be further divided into inter-site and intra-site categories, with the distinction being whether or not the visitor has left the recreation area. Using the Recreation Opportunity Spectrum (ROS) typology, setting can be conceptualized as the sum of social, resource, and managerial attributes in a recreation area (Manning, 1999). Changes in any of these attributes may result in displacement. Displacement may also result from a negative initial evaluation of setting conditions. Other possibilities include changing use for reasons unrelated to the setting, such as lifestyle change or the desire for novelty. However, these changes in use are not considered to represent displacement because they are not related to setting conditions.

Other coping responses to change in setting conditions include product shift and rationalization. Product shift refers to a visitor's reevaluation of the experiences that a recreation area has to offer (Shelby, Bregenzer, & Johnson, 1988). Rationalization is the cognitive process of reconciling actual experience with expectations (Manning, 1999). This study also investigated the occurrence of these cognitive coping responses. For easy reference, a glossary of terms can be found in Appendix A.

The concept of use history may include variables such as years of participation in a given activity, number of trips to a certain destination, and the number of different places visited in pursuit of a particular activity (Watson & Niccolucci, 1992). Although displacement and coping were the focus of this study, use history variables were assessed to

determine their relationship to displacement because previous research on this subject has been inconclusive.

Displacement and Coping Literature

The following section reviews research that has addressed displacement and coping in a recreational setting. Previous studies have taken a variety of approaches to measuring displacement and coping, and they have generated a wide range of results. Generally, these studies have investigated the relationship between social conditions, especially crowding, and displacement. These earlier efforts indicated several limitations to measuring displacement that were addressed in this study.

Previous research on recreation displacement and other coping mechanisms, such as rationalization and changing expectations, has not shown a clear connection between increased use and increased displacement (Anderson & Brown, 1984; Hall & Shelby, 2000; Kuentzel & Heberlein, 1992). However, several studies have found evidence that some degree of displacement and/or coping is occurring at many recreation locations (e.g., Anderson & Brown, 1984; Becker, 1981; Hall & Cole, 2000; Hall & Shelby, 2000; Kearsley & Coughlan, 1999; Manning & Valliere, 2001; Shelby et al., 1988).

In an early study, Anderson and Brown (1984) investigated spatial and temporal displacement of boaters within the Boundary Waters Canoe Area. The authors found that over 70% of respondents had changed their use of the area over time. Factors that may have influenced changes in use included seeing other people, litter, and noisy people. The researchers did not address those people who were completely displaced from the Boundary

Waters, or external factors, such as lifestyle changes, that could have contributed to spatial or temporal displacement.

In their longitudinal study of boaters on the Rogue and Illinois Rivers, Shelby, Bregenzer, and Johnson (1988) found that 36% of respondents had been displaced from the Rogue to the Illinois because of crowding, and 24% had been displaced due to environmental impacts. In their assessment of cognitive coping responses, the authors also found that 11% of Rogue users were dissatisfied, and 36% reevaluated the type of experience that the river provided as a result of encounter levels.

Hammitt and Patterson (1991) investigated coping behavior as a means of avoiding encounters among backpackers in Great Smoky Mountains National Park. The authors found that 21% of respondents avoided trails with popular attractions and 27% avoided the park during periods of peak use. Although the researchers did not address rationalization or product shift, they did investigate other means by which visitors avoided interaction with people from other parties. For example, the authors proposed that visitors could engage in “social coping” by not initiating interaction with members of other parties. The authors found that only about five percent of respondents said they purposely avoided talking to backpackers in other parties. However, 31% of respondents seldom or never initiated social interaction.

More recent research has also measured substantial levels of temporal and/or spatial displacement in a variety of recreation settings from a variety of causes. For example, Schneider and Budruk (1999) found that 35% of respondents to a survey of lakeshore recreation areas on a southwestern National Forest had changed their use of the area due to the imposition of a user fee at one of the areas.

Hall and Cole (2000) found evidence of spatial displacement of visitors at a busy wilderness destination after the implementation of use limits there. The authors concluded that the new use restrictions had displaced visitors who were sensitive to regulations. This study provides support for the argument that some portion of visitors will probably be displaced by either management actions or inaction. The challenge for managers is to decide whether and how to manage equitably for all types of users.

Hall and Shelby (2000) found that 42% of respondents at a reservoir with developed recreational facilities used one or more temporal displacement strategies to avoid high use periods, and 26% reported being spatially displaced. Eighteen to thirty-two percent of respondents at three alternate sites stated that they visited the study site less because of negative changes there, including crowding.

In their study of users of the carriage roads of Acadia National Park, Manning and Valliere (2001) examined displacement, rationalization, and product shift in response to crowding and recreation conflict. Results indicated that 65% of respondents used one or more temporal coping strategies, 25% used the area less often, and 7% no longer used the roads as a result of perceived changes in use. With respect to cognitive coping, 50% of participants replied that the type of experience had changed, and 35% were less satisfied with their experience but did not change their use of the area. The authors did not attempt to directly assess rationalization; instead they proposed that some portion of the respondents who continued to express satisfaction and did not change their use of the area were engaged in rationalization in response to increased use on the carriage roads.

Hoss and Brunson (2000) investigated the acceptability of social and environmental conditions to visitors at several western wilderness areas. Using interviews and convenience

sampling, the authors found that 70% of respondents considered the setting conditions that they encountered to be acceptable, but not ideal. The respondents who stated conditional acceptance were asked how they dealt with less-than-ideal conditions. Of all reported adaptations, the authors categorized 50% as rationalization, 36% as intra-site displacement, and 13% as remediative action like picking up litter. The researchers did not report any findings related to product shift.

Finally, Miller and McCool (2003) used structural equation modeling to relate stressful experiences in Glacier National Park to 21 potential coping responses. Fifteen of the items factored into five coping domains: absolute displacement, temporal substitution, resource substitution, cognitive adjustment, and changing the environment. The resulting model indicated that more stressful experiences were more likely to result in coping by means of absolute displacement (e.g., “stop hiking in the park”) or changing the environment (e.g., “talk with park personnel”). Less stressful situations more often led to temporal substitution (e.g., “visit at different time”), resource substitution (e.g., “visit different area”), or cognitive adjustment (e.g., “conditions are as they should be”).

Although only a few studies have attempted to quantify the occurrence of product shift and/or rationalization, the existing empirical evidence suggests that product shift and temporal displacement may be more common than spatial displacement. However, this finding may be due to limitations in the methods used to measure spatial displacement and due to different studies’ focus on selected displacement or coping strategies. Clearly, research is needed to clarify the prevalence and causes of displacement and coping, especially among mountaineers.

Limitations of Previous Research

Measurement of displacement presents a challenge to researchers in part because of the number of variables potentially influencing a person's decision to change his or her pattern of use. While some studies have considered moderating factors such as lifestyle change (Hall & Shelby, 2000), years of experience (Nielsen & Endo, 1977; Vaske, Donnelly, & Heberlein, 1980), and cost (Schneider & Budruk, 1999), other possible variables such as the need for novelty or the desire for social interaction have not been investigated in the context of changing patterns of use. Understanding the extent to which changing use is due to individual tastes may help indicate the relative importance of displacement and coping.

Displacement research has also been limited by the challenge of contacting those people who have been entirely displaced from the study area. Previous studies have addressed this challenge by a variety of methods. Researchers have ignored inter-site displacement (Anderson & Brown, 1984), surveyed two alternate sites (Becker, 1980; Shelby, Bregenzer & Johnson, 1988), sampled at several sites considered to represent alternatives to the study site (Hall & Shelby, 2000; Robertson & Regula, 1994; Schneider & Budruk, 1999), surveyed the surrounding communities (Manning & Valliere, 2001), and conducted panel studies that recontact respondents from an earlier survey (Kuentzel & Heberlein, 1992; Shindler & Shelby, 1995). In each case, except for panel surveys, the proportion of displaced persons was likely undercounted since potential respondents could have shifted their use to another area that was not surveyed. Representative sampling at the regional scale could improve the accuracy of an assessment of inter-site displacement by sampling from a broader range of locations to which climbers could have been displaced.

Measurement of product shift and rationalization may also be improved by a regional sampling approach. Researchers have suggested that there are degrees of displacement (Robertson & Regula, 1994). A person may visit a site less frequently than in the past due to changes in setting. When the person does visit, he or she may rationalize or redefine expectations in order to cope with conditions. Thus, studies that underestimate the magnitude of displacement may also undercount cognitive coping responses because displaced visitors who were not included in the sample may also cope cognitively when they do visit.

In response to the limitations discussed above, this study contributes to an understanding of the consequences of wilderness management actions, and lack of action, in three unique ways. First, the study focused on mountaineers, an overlooked but substantial group of regional users. Second, the project assessed displacement of climbers at the regional scale, including all Forest Service Cascade Volcano wilderness areas in Washington and Oregon. Third, the project attempted to address a spectrum of coping responses to changes in setting, including spatial and temporal displacement, product shift, and rationalization, while investigating a range of possible causes in addition to crowding, such as regulation and environmental impacts. Independent variables that might relate to changing use patterns, such as the desire for novelty and lifestyle changes, were also assessed.

Theories Influencing Displacement and Coping Research

An array of theories has, usually implicitly, influenced studies of displacement and coping. This section presents an overview of five theories and how they may inform our understanding of displacement and other coping behavior. The theories are social norms, perceived control/reactance, expectancy-value/planned behavior, place attachment, and specialization. Place attachment and specialization are emphasized in this discussion. Although these two theories are poorly defined, certain constructs, such as functional place dependence and experience level, may be related to displacement.

Social Norms

Normative theory suggests that wilderness visitors can identify threshold conditions beyond which the setting becomes incompatible with their goals (Manning, Valliere, & Wang, 1999). The logic behind this perspective draws upon the work of psychologists, such as Milgram (1970), who found that people in U.S. cities resorted to coping strategies, like avoidance of contact with other people, in order to avoid cognitive overload. Much of social norms research in the wilderness setting has focused on identifying acceptable levels of encounters for hikers while preserving their sense of solitude (Manning, 1999). In terms of displacement, solitude-seeking visitors may leave an area where perceived changes in use density exceed normative standards. Others may change their expectations or rationalize if use exceeds the low levels necessary to ensure solitude. This body of literature creates the basis for the proposed relationship between use density, encounters, crowding, solitude, and displacement. Specifically, as use density increases, the number of encounters grows,

leading to enhanced perceptions of crowding among visitors and decreased opportunities for solitude in wilderness.

Perceived Control/Reactance

The potential for wilderness visitors to alter their behavior due to changes in the managerial setting draws support from perceived control/reactance theory. This theory proposes that individuals exercise control over their behavior and feel threatened when their perception of control is challenged (Brehm & Brehm, 1981). The individual can react in a variety of ways, including doing the opposite of what they are told, desiring the forbidden behavior, or by becoming angry. Substantial empirical support for this theory can be found in the psychology literature (Propst & Kurtzz, 1989). This theoretical perspective may help explain why many visitors support the regulatory status quo in wilderness areas but generally do not support more behavioral restrictions (Cole, Watson, Hall, & Spildie, 1997). Increasing regulation, such as group size limits, prohibition of campfires, and designated campsites, may challenge a user's perceived freedom of choice. If wilderness visitors perceive that the behaviors that they desire to engage in are being threatened by regulation, they may respond with coping strategies like spatial displacement to regain control, or they may prefer to rationalize rather than accept loss of control.

Expectancy-Value/Planned Behavior

Researchers influenced by expectancy-value and planned behavior theories propose that visitors can and do compare their expectations of setting conditions to their actual experience and alter their subsequent behavior as necessary to achieve expectations (Ajzen &

Driver, 1992). In this view, people are rational actors who have conscious expectations of the outcome of their actions, take action, and then evaluate the results against their expectations. Changes in behavior are then determined by whether or not the expected outcomes are achieved. If expected outcomes occur, the behavior continues or is repeated. With respect to displacement, visitors may evaluate their experience in the context of previous trips to the same place and change their use of the area if their expected outcomes are not realized. Presumably, a visitor could also choose never to return after a single visit if expectations and/or desires are entirely unmet.

Models of recreation choice behavior are often based upon the rational evaluation of expectations and outcomes as proposed by expectancy-value/planned behavior theories (Christensen, 1993; Harris, Driver, & Bergersen, 1984). However, it is important to note that while a rational behavior model is certainly easier to develop and evaluate, recreation choice behavior may have a substantial affective component as well. As Christensen (1993) noted, individuals may make some choices based more on feeling than on deliberate weighing of alternatives. Furthermore, some causes of behavior are entirely unknown to the actor, operating at a subconscious level. Of course, this study assumes that respondents are rational and have the ability to verbalize explanations for behavior.

Place Attachment

Investigators of displacement have explicitly drawn upon the theory of place attachment to explain some of the variance in measurement of the relationship between perceived changes in setting conditions and displacement (Kaae, 2000; Schreyer & Knopf, 1984; Williams, Patterson, & Roggenbuck, 1992). These researchers reason that a

recreational user may perceive that a particular location has unique functional and/or symbolic attributes. Users who are not aware of, or cannot access, other locations with the characteristics that they desire are considered to be functionally place attached. Additionally, a person who has visited a particular wilderness location for several years may develop an emotional attachment to that place. In another example, a person motivated by the desire to ice climb could be functionally attached to locations in Washington that provide easy access to glaciers with big crevasses to climb in.

With respect to displacement, some research suggests that the amount of time spent at a place is positively related to place attachment (Mitchell, Force, Carol & McLaughlin, 1993; Williams et al., 1992). Thus, while long-time visitors to a site may be more sensitive to changes in setting there, they may be less susceptible to spatial displacement due to place attachment. Therefore, logic suggests that place attached individuals may be more likely to choose temporal or cognitive coping strategies that allow continued use of the location in response to negative changes in the social setting.

Specialization

Certain aspects of specialization theory may also contribute to an understanding of recreation displacement. Researchers have identified various constructs in recreation specialization including experience use history, skill level, centrality to lifestyle, economic investment, and enduring involvement (Bricker & Kerstetter, 2000). In general, the theory proposes that as an individual grows more cognitively, emotionally, socially, and economically invested in an activity, the more specialized the person becomes. The logic behind this theory is not well developed.

The closely related concepts of experience level and skill level may be the aspects of specialization that are most relevant to displacement. Some researchers have found that more experienced users have different setting preferences than users with less experience. For example, Hammitt and McDonald (1983) found evidence of increased sensitivity to environmental impacts and less support for regulation among experienced river floaters. Furthermore, Hall and Shelby (2000) measured an increase in displacement due to crowding among very experienced recreational users of a reservoir in Oregon. However, the reasons for different responses to setting among visitors with different levels of experience are not clear.

While some evidence indicates that increasing experience levels may lead to changing site preferences and thus to changes in use, it is important to note that experience is likely related to knowledge of alternative settings as well. For instance, in their study of wilderness hikers in Canada, McFarlane, Boxall, and Watson (1998) found that site choice was associated with both experience level and knowledge of alternative trails. Thus, displacement may be mediated by knowledge of alternatives.

Overall, it is not the questionable logic of specialization theory that is relevant to the study of displacement, but the concepts of experience level and skill level. For reasons discussed above, these two concepts may be positively related to displacement. This study addressed these two variables and assessed their correlation with displacement among wilderness mountaineers.

A Model of Displacement and Coping

For this study, researchers developed a model of decision-making drawing upon the theories and empirical evidence discussed above (Figure 1). The model was used to develop several propositions regarding the relationship between perceived change in recreation setting and displacement. The following section explains the outline of the model and presents the resulting propositions that were tested in this study.

A wilderness user's decision to visit a particular location is influenced by motivations and lifestyle constraints. Driver (1977) and colleagues have developed over 50 motivation items. In this study, emphasis was placed on a subset of motivations, including challenge, solitude, and novelty, that are of particular relevance to wilderness managers and climbers. Lifestyle constraints may include factors such as distance from home, available free time, cost, and health. In this model, motivations and lifestyle constraints are not considered to influence perception of setting, yet they may result in changes in the places or times that one visits. In other words, factors such as the need for novelty and changes in job status are independent variables that must be accounted for when measuring displacement due to negative evaluation of changes in setting.

Having chosen, and visited, a wilderness destination that corresponds to motivations and lifestyle constraints, the user may perceive changes in setting in comparison to past experiences. The degree to which an individual perceives change at a particular location may depend upon how many visits the person has made and over how many years because change may occur gradually over the course of many years. As discussed above, people with higher numbers of visits over more years may be more likely to recognize change in setting. More change may have occurred over a longer period of time and/or more experienced or attached

people or user conflict (Hall & Shelby, 2000). Negative changes in resource conditions such as human impacts (Anderson & Brown, 1984; Vaske et al., 1980), and natural disturbance (Ewert, 1990) may also cause displacement of users. In the management setting, displacement due to limits on the number of users (Hall & Cole, 2000; Shelby et al., 1988), implementation of user fees (Schneider & Budruk, 1999), restrictions on user behavior (Morten, 1996), and deterioration of facilities are all conceivable causes of displacement.

If an individual responds negatively to perceived change in setting, place attachment and experience level may affect the nature of the behavioral response. As noted above, place attachment may limit the availability of alternative destinations. Displacement in response to changes in setting conditions are potentially limited by a person's knowledge of available alternative settings in which to pursue their goals (Nielsen & Endo, 1977; Schreyer & Knopf, 1984; Shelby et al., 1988). This dependence on a particular setting, or place attachment, in order to achieve desired goals or experiences could moderate the relationship between change in setting conditions and displacement. If known alternatives are not available, the user must resort to cognitive coping through product shift and/or rationalization. Otherwise the result is dissatisfaction.

The commonly stated range of coping mechanisms -rationalization, product shift, temporal displacement, and spatial displacement (Kuentzel & Heberlein, 1992; Manning & Valliere, 2001)- may be adopted by visitors depending on availability of alternative settings. Rationalization of the experience, based on the proposition that people act to reduce cognitive dissonance (Festinger, 1957), may result if movement to an alternate setting is impossible or impracticable. Change in expectations and/or goals, also known as product shift, is another possible outcome of change in setting conditions if an alternative setting is

unavailable (Manning & Valliere, 2001; Shelby et al., 1988). Place dependent users who perceive unacceptable changes in setting conditions at specific times may resort to temporal displacement, such as changing the day of the week of visits. To limit the complexity of the model, researchers did not include other coping responses, such as communicating with managers or other visitors to change setting conditions (Miller & McCool, 2003).

Greater skill and experience may broaden the range of destinations to choose from. Years of experience at a given location may also be related to displacement. It is unclear whether users with more years of general or site-specific experience are (1) more sensitive to changes in setting conditions, and thus more prone to displacement, (2) more attached to a location due to repeated use, and thus less likely to find acceptable alternative settings, or (3) more likely to go elsewhere due to the accumulation of knowledge of alternatives that occurs over time. Additionally, as experience and skill level increases, climbers may go elsewhere to test themselves. Studies have correlated increased likelihood of displacement with experience level (Hall & Shelby, 2000; Vaske et al., 1980), as well as finding no relationship (in Hall & Shelby, 2000).

If users can identify other locations that may meet their needs, spatial displacement may occur. Researchers usually divide spatial displacement into intra-site and inter-site movement (Hall & Shelby, 2000). Intra-site displacement refers to movement within the destination location, such as choosing to climb a less crowded route on Mt. Hood, while inter-site displacement indicates movement to a different destination, for example, deciding to climb a more remote peak because it may be less crowded.

Using this model of displacement and coping, researchers developed six propositions:

Proposition One: Desire for novelty, lifestyle change, and change in activity will be correlated with changes in use over time, but not with displacement.

Proposition Two: Increase in experience (number of climbs, number of peaks climbed, and years climbing) will be positively correlated with displacement.

Proposition Three: Negative evaluation of perceived change in social, resource, and/or managerial setting will be positively correlated with spatial displacement, given the perceived availability of alternative settings.

Proposition Four: Negative evaluation of perceived change in social, resource, and/or managerial setting will be positively correlated with temporal displacement, product shift, rationalization, and/or dissatisfaction if alternative settings are not available.

Proposition Five: Increased skill will be correlated with changes in use other than displacement, such as going elsewhere in search of challenge or novelty.

Propositions One, Three, and Four were not addressed in this thesis due to limitations of the survey instrument that precluded the collection of adequate data.

This section developed a model of decision-making that could result in displacement or cognitive coping responses to perceived changes in setting conditions at wilderness areas. The model was used to develop six propositions to supplement the two research questions discussed above. The following section explains the methods that researchers used to address these research questions and propositions.

Research Methods

Overview

The research questions and propositions of this study were primarily addressed using quantitative survey methods. Because the independent variables were not manipulated, respondents were not in preexisting groups, and the relationships among variables were being assessed, a correlational study design was appropriate for the quantitative survey portion of the project (Graziano & Raulin, 2000). The data collection instruments included a mail questionnaire and semi-structured interviews with climbers.

The decision to use primarily quantitative methods was motivated by the need to generalize to the population of regional wilderness climbers. The results of this study may be used to inform controversial wilderness management decisions. Thus, the results must stand up to potentially intense public scrutiny.

Mail questionnaires were chosen for primary data collection over contacting climbers at trailheads to provide a means of including day-use climbers and to efficiently sample from low-use areas. Day-use climbers enter and exit trailheads at odd hours of the day and night. Based on previous experience surveying at Mt. Baker, day climbers are in more of a hurry on entry because they are not prepared to spend the night on the mountain, they are exhausted on exit after 12-15 hours of climbing, and responses are provided during a state of mental fatigue that may affect their ability or willingness to reflect on their past experiences. Furthermore, since the study examined changes in use patterns over time rather than fleeting impressions, it was not necessary to contact climbers upon exit from their latest trip. In addition, trailhead surveying would not have captured those individuals who have been completely displaced from the area. Contacting respondents at trailheads would also have

been an inefficient means of surveying mountaineers who climb very low-use routes. Fortunately, as explained below, a sampling frame was available for a mail survey.

Survey Instrument

The questionnaire addressed both research questions. The first section of the questionnaire addressed climber use history and skill level. The second section assessed region-wide displacement. The third section focused on displacement and coping responses at four climbing destinations that are areas of concern to managers and that represent a range of setting conditions: Mt. Hood, Mt. Baker, Mt. Adams, and Middle Sister. These sites are of concern to managers and provide a range of setting conditions, particularly use density, fees, and other regulations. The final section of the questionnaire assessed sociodemographic characteristics.

Researchers produced two versions of the instrument to reduce its length. Each version focused on two of the four peaks. The “yellow” version contained the Hood and Baker focus sections, and the “green” version included Adams and Middle Sister. Researchers divided the four peaks this way to improve the likelihood that respondents would have been to at least one of the climbing areas in the focus section of the version of the questionnaire that they received. Since Baker and Middle Sister receive substantially less climbing use than Hood and Adams, placing the two lower-use peaks in the same version of the questionnaire would have reduced the number of climbers who could have responded to either focus section in that version. Appendix B contains the questionnaire items.

The purpose of dividing the questionnaire into regional and site-specific sections was to collect regional use history data from all respondents, and then to focus in more depth on a

few key sites of interest (Hood, Baker, Adams, and Middle Sister). Focusing on a few sites improved the ability to generalize about climbers at those locations. However, only respondents who had been to the study sites several times would be able to answer questions about perceived change, place attachment, and product shift. Climbers who were unfamiliar with the study sites could skip to the demographic section at the end of the questionnaire after answering the questions in the regional section. Thus, information on their regional patterns of use was still collected in the first section.

Researchers conducted 23 on-site and phone interviews to help develop the survey instrument and to elaborate upon the meaning of product shift and other concepts that may be difficult to measure (Miles & Huberman, 1994). Interviews were tape recorded after obtaining permission, and transcribed verbatim.

Questionnaire items were pre-tested using the cognitive response method (Bickart & Felcher, 1996) with a convenience sample of 30 climbers at Mt. Baker and Mt. Adams. Respondents were asked to “think aloud” as they responded to survey questions in order to identify points of confusion or misunderstanding. Researchers also revised the survey instrument based on the results of a trailhead pilot test at Mt. Hood using a sample of 138 wilderness visitors.

Measurement

Study variables were measured using questionnaire items adapted from the recreation research literature, a 2002 pilot survey of wilderness visitors conducted by the University of Idaho, and transcripts of interviews with Region Six wilderness users conducted in 2002.

Below are examples of questionnaire items measuring each variable. The instrument employed multiple items to address individual constructs.

Researchers have included questions addressing perceived setting change in several recreation surveys. Examples of items include the ability to find solitude (social setting) (Hall & Shelby, 1994), increase in user fees (managerial setting) (Schneider & Budruk, 1999), and presence of visible human waste (resource setting) (Cronn, Watson, & Cole, 1992). Questions were designed to assess whether climbers had noticed such changes. Both the regional and the site-specific sections of the questionnaire included questions about the setting. In the regional section of the questionnaire, respondents were asked to evaluate the setting conditions at any climbing destination in Washington or Oregon where they had changed their use. In the site-specific section, respondents reported their evaluation of conditions at any of the four specific study sites to which they had been.

As discussed above, researchers have employed a variety of methods for measuring displacement. This study used a direct question approach (Robertson & Regula, 1994). For example, we asked “Have you changed your use because of crowded conditions?” Questions asked about change in response to a variety of social, physical, and management factors. Respondents indicated whether they had changed use and, if so, what types of changes they had made. Among others, answer choices included visit this area less often (inter-site displacement), use different sites within this area (intra-site displacement), and visit on weekdays instead of weekends (temporal displacement) (Hall & Shelby, 2000). In the regional section of the questionnaire, respondents were asked to answer these questions in reference to any Cascade volcano at which they had changed their use due to setting conditions. In the site-specific section, respondents answered the same questions with

respect to the two peaks in that section. Thus, the regional section assessed the extent of displacement everywhere in the region, while the site-specific section ensured that respondents focused on the sites that were important to managers and researchers.

Cognitive coping responses like product shift and rationalization are more difficult to measure because they do not involve conscious acts. Hoss and Brunson (2000) used interviews to identify questionnaire items to address rationalization, for example “Impacts could be worse considering the amount of use.” The questionnaire included several different rationalization items. Measuring product shift may be more difficult. Examples of questionnaire items that were intended to address product shift include “The area feels less like Wilderness than when I first started visiting” (Shindler & Shelby, 1995) and “The type of experience provided by this area has changed” (Manning & Valliere, 2001). Dissatisfaction was assessed with questionnaire items such as “I am not as satisfied with my experiences in this area as I used to be” (Manning & Valliere, 2001). Cognitive coping and dissatisfaction items were only included in the site-specific section of the questionnaire, for reasons mentioned above.

Recreation researchers have extensively studied place attachment. Examples of questionnaire items that were used to address place dependence (lack of alternatives) include “This is the best place for what I like to do” and “I don’t know of another area that offers the same opportunities as this place” (Warzecha & Lime, 2001). Place identity (emotional attachment) items included “I have special memories of this place” and “Visiting this place is a tradition for me.” Place attachment questions were included in the site-specific section.

Measurement of overall experience level (or skill) included items such as the number of years that the respondent had been climbing in wilderness areas in Washington and

Oregon and the number of trips to a certain site. Mountaineering skill level was also reported using a forced-choice item with beginner, intermediate, and advanced categories (Ewert, 1994). These items were included in the initial use history section of the questionnaire because they are less difficult to answer than subsequent questions and are appropriate regardless of which specific peaks a person had climbed.

The items “desire to explore new areas” and “like to climb new routes” assessed the desire for novelty. Other motivations, such as the need for solitude, were also addressed via direct questions. Lifestyle change included items such as “change in the amount of free time you have,” and “change in where you live (moving).” Activity change was addressed by the item “changes in the types of activities you like to do.” Number and timing of prior visits was measured by asking “number of climbs/attempts” for each of 15 peaks, and “year of first visit” and “year of last visit” for the four focus peaks. Questions about motivation were included in both the regional and site-specific sections since motives for visiting different sites may vary. Lifestyle and activity change items were only asked in the regional section because these factors likely affect all decisions.

Sampling

Mountaineers who filled out a permit to climb the Cascade volcanoes in Forest Service wilderness areas in Washington and Oregon were the population for this study. Individual climbers were the unit of analysis since choosing where to climb is an individual decision assumed to be based on personal motivations and perceived constraints.

The sampling frame consisted of Region Six wilderness climbers who included a mailing address on their completed permit or registration form at a wilderness area with

climbing use in 2002. The destination on the permit must also have identified the visitor as a climber. A systematic sample was drawn from the permit list of climbers for each Region Six wilderness with climbing use that had permits available (Henry, 1990). In Oregon, these wilderness areas included Diamond Peak, Mt. Hood, Mt. Jefferson, Mt. Washington, and Three Sisters. The Washington wilderness areas included Glacier Peak, Henry M. Jackson, Lake Chelan-Sawtooth, Mt. Adams, Mt. Baker, and Tatoosh. Although the original intent of this study was to sample climbers at all Forest Service wilderness areas in Region Six, some areas, most importantly the Alpine Lakes Wilderness, do not collect mailing addresses on their permits. The size of the Alpine Lakes and the multitude of climbing destinations within that wilderness may have compromised the goal of generalizing to the climbing population. Focusing only on the Cascade volcanoes in Forest Service wilderness areas preserved representation and generalizability since none of the Cascade volcanoes are in the Alpine Lakes Wilderness. Most of these major peaks in the region have permit systems and the most popular have supplemental climbing registration forms. Table 1 lists the Cascade volcanoes from which permits were collected.

Duplicate permit names at each sampling site were removed to provide equal probability of any one person being drawn. Although the sampling frame was limited to permits with mailing addresses, approximately 80% of permits collected included addresses. However, registration rates are unknown.

Target sample sizes were calculated using the variance from 2002 pilot survey data of Region Six wilderness users (Hall & Cole, 2002). Following convention, the sample size was calculated to detect a 15% variation between groups at the 95% confidence level (Babbie, 1995). Researchers determined that a minimum of 300 respondents would be

necessary to meet these parameters. Conservatively estimating a 50% response rate, we set a mailing target of 600 questionnaires, 300 of each version. Every fifth permit was drawn from the list for each peak from which permits were collected, resulting in 589 addresses. The decision was made not to include permits from the south side climb on the South Sister because this route involves a day hike to the summit on an established trail that attracts large numbers of non-climbers. (People who otherwise do not engage in mountaineering would not be able to complete the questionnaire.) However, other routes on South Sister were included.

Table 1: Sampling

2002 Climbing Permits		
Peak	WA/OR permits with addresses	Permits drawn
Adams	1341	269
Baker	288	58
Diamond	23	4
Glacier	69	14
Hood	787	157
Jefferson	74	16
Middle/North Sisters	150	31
South Sister	624	12*
Three Fingered Jack	35	7
Washington	57	11
Other peaks	45	10
Total	3493	589

*Permits from routes other than the south side trail

Data Collection

The administration of the mail survey followed the methods outlined by Dillman (1978, 2000), modified to include only an initial contact letter and questionnaire, postcard reminder, and follow-up letter with a replacement questionnaire due to financial constraints. Researchers also offered respondents the chance to win one of two \$50 REI gift certificates as an incentive.

Researchers initially mailed 589 questionnaires. Half of the climbers were randomly chosen to receive the “yellow” version of the questionnaire, and the other half was sent the “green” version. Approximately five percent of questionnaires were undeliverable due to incorrect or expired addresses. These addresses were replaced with others randomly chosen from the permit list from the appropriate peak.

Questionnaires were ultimately mailed to a total of 624 permit addresses. Four hundred of these were completed and returned. Fifty-four were sent to invalid addresses. The response rate for useable questionnaires was 70.2%.

Additionally, researchers included a request for phone numbers of those respondents who would be interested in participating in telephone interviews as a supplement to the study. One hundred sixty-nine respondents (42.3%) agreed to this request. Researchers have not conducted these interviews, but may do so as part of a follow-up project.

Data Analysis

Responses to closed-ended survey questions were entered into an Excel spreadsheet. These data were processed using SPSS to calculate descriptive statistics such as measures of central tendency, frequencies, and between-group comparisons using chi-square, t-tests, or

ANOVA (Freedman, Pisani, & Purves, 1998). Comparisons were made between groups such as high and low experience levels or displaced and non-displaced respondents. Tests of propositions were performed through correlational analyses, including simple correlations and regression. Internal validity was addressed through the use of multiple measures, comparison of mail survey and interview data, and pre-testing.

External validity, or generalizability to the sample population, was sought through the use of systematic random sampling (Babbie, 1995). Potential threats to validity included non-response bias, confounding variables, and making causal inferences from correlational data. A limited non-response bias check was performed (see limitations section below). Potential confounding variables were assessed in the survey instrument, and a thorough literature search was done to identify and include known causes of displacement and coping. To a certain extent, concerns about causal inferences were addressed by asking respondents to self-report causes of their behavior.

Methodological Limitations

The potential for non-sampling bias exists since permit registration is voluntary. Individuals declining to complete permits may differ systematically from people who choose to register. Users who are less tolerant of regulation, for example, may be less likely to complete a permit or register.

Measures of permit compliance among climbers at the Cascade volcanoes generally range from 50% to 80%. A 2002 survey of climbers at Baker found that 50% of respondents completed the voluntary climbing register, and 75% filled out the trailhead register (Barnett

& Hall, 2003). A study at Glacier Peak found that 83% of climbers on the most popular route completed the trailhead registration form (Darrington Ranger District, 2001).

While a substantial proportion of climbers probably do not complete permits on a given trip, the argument can be made that few climbers never fill out permits as a matter of principle. It may be just as likely that people are inconsistent about permit compliance based on a variety of factors such as on-site information, enforcement efforts, fees, perception of risk, group composition, or mood. In an open-ended question, the 2002 Baker climber survey found that only 7.1% of respondents did not complete permits as a matter of principle (Barnett & Hall, 2003). Nevertheless, it is important to remember that this study does not represent those climbers who never complete permits, or those who did not fill out a permit in 2002.

Non-response can be a significant source of error in survey research (Fowler, 1993). Typically, researchers compare respondents and non-respondents on demographic variables. This approach is ineffective in the case of climbing populations due to their sociodemographic homogeneity. In the current study, researchers were limited to comparing the results from the Baker focus section to those of a trailhead climbing survey conducted at Baker in 2002 (Barnett & Hall, 2003). This comparison is useful because the Baker study sampled the same population of climbers as the current study, had an 89% response rate, and sampled every climber, not just those who completed permits. Comparison of skill level items found that respondents to the 2003 mail survey more often reported having intermediate or advanced climbing ability than respondents to the 2002 Baker study. While 29.1% of respondents to the 2002 Baker survey considered themselves to be beginner

climbers, only 5.7% of respondents who had climbed Baker reported being beginners in the current study.

The difference in skill level reported in the two surveys is likely due to the sampling methods. Researchers attempted to contact every climber at Baker trailheads in the 2002 study. The present study only sampled the climbers who filled out permits. The person completing the permit may have been the trip leader and one of the more experienced members of the party. Thus, the current study may over represent more skilled climbers.

Previous research has indicated some differences between trip leaders and group members, as well as between permit holders and those without permits. An early study by Jubenville (1971) found that wilderness trip leaders had significantly more “general camping experience” than group members, but similar “wilderness camping experience.” Leaders and group members did not differ significantly on attitudes or on experience at the study area. Furthermore, in a comparison of wilderness visitors with and without permits, Watson (1993) found that the two groups did not differ significantly in the number of years visiting the study site or on attitudes about party size limits, day use limits, or the number of people seen on the trip. Respondents without permits had visited the study area less often, were younger, and had fewer years of education than permit holders.

Overall, it is likely that this study over-represented more experienced or skilled climbers. However, researchers achieved a relatively high response rate for a mail survey, contributing to the representativeness of the sample.

Finally, limitations of the survey instrument prevented assessment of Propositions One, Three, and Four. Proposition One related non-displacement change in use with desire for novelty, lifestyle change, and change in activity. However, non-displacement change in

use was not adequately measured to test this proposition. Propositions Three and Four related evaluation of change in setting conditions to displacement. Although researchers measured the degree to which respondents thought that changes in setting conditions had occurred, the questionnaire did not elicit respondents' evaluation of whether or not the perceived changes were positive, neutral, or negative.

Results

The results section describes the sample population and reports the findings from the survey questionnaire that relate directly to the two research questions and six propositions discussed above. The complete results, including quantitative and qualitative responses to all questionnaire items, can be found in Appendix B.

Description of the Sample Population

In general, the population in this study consisted of middle-aged, well-educated, male climbers with substantial mountaineering experience on the Cascade volcanoes. Respondents were 89.0% male and had a mean age of 39.9 years. With respect to education, 44.3% of respondents reported having a bachelor's degree or equivalent, and 35.4% indicated earning a graduate degree. The average study participant had been mountaineering for 13.2 years, including 17.7 climbing trips to one or more of the 15 Cascade volcanoes listed in the questionnaire. Respondents had climbed or attempted a mean of 5.8 different Cascade volcanoes. Only 1.0% of climbers had climbed or attempted all 15 peaks, and 4.3% had been to only one. Sixty-two percent of respondents reported having an intermediate level of climbing skill. The remainder of the sample was closely divided between beginner (17.7%) and advanced (19.7%) climbers. Finally, the average study participant reported that almost half (49.4%) of his or her wilderness trips in a typical year were mountaineering trips. Of those climbing trips, slightly more than half (52.0%) were overnight trips. Overall, the study sample represents a very homogenous population with substantial climbing experience.

Research Question One:

To what extent have mountaineers changed their use of any Cascade volcano due to social, managerial, or resource conditions?

Climbers Displaced One or More Times

Respondents were first asked to report which of the fifteen peaks in the survey they had climbed or attempted to climb. Researchers then asked participants to respond to three batteries of questions that assessed causes of displacement with respect to those peaks that respondents had indicated climbing. Each battery addressed one of three setting categories: social, resource, or management. For example, the social conditions battery asked, “thinking only about the peaks listed in question 1.4, how often has the amount or type of use caused you to do the following?” This lead question was followed by seven items related to spatial or temporal displacement due to social conditions, such as “visit earlier or later in the season to avoid crowds.” Respondents then indicated the extent to which they had been displaced from the peaks that they had climbed on a seven-point scale where zero represented never and six meant always. Each battery of displacement items was followed by an open-ended question that asked respondents to report “which peaks or routes were you referring to” in the previous questions. Refer to Appendix B for the full text of the questionnaire.

The survey results indicate that it is common for climbers in the study population to have been displaced from a climbing route or destination at least once during their history of mountaineering. Ninety-two percent of respondents had resorted to one or more temporal displacement strategies to avoid crowded conditions at climbing areas (Figure 2). Ninety-

two percent of climbers avoided holidays, 87.1% climbed during the week, and 80.8% visited during the off-season because of user density during peak periods.

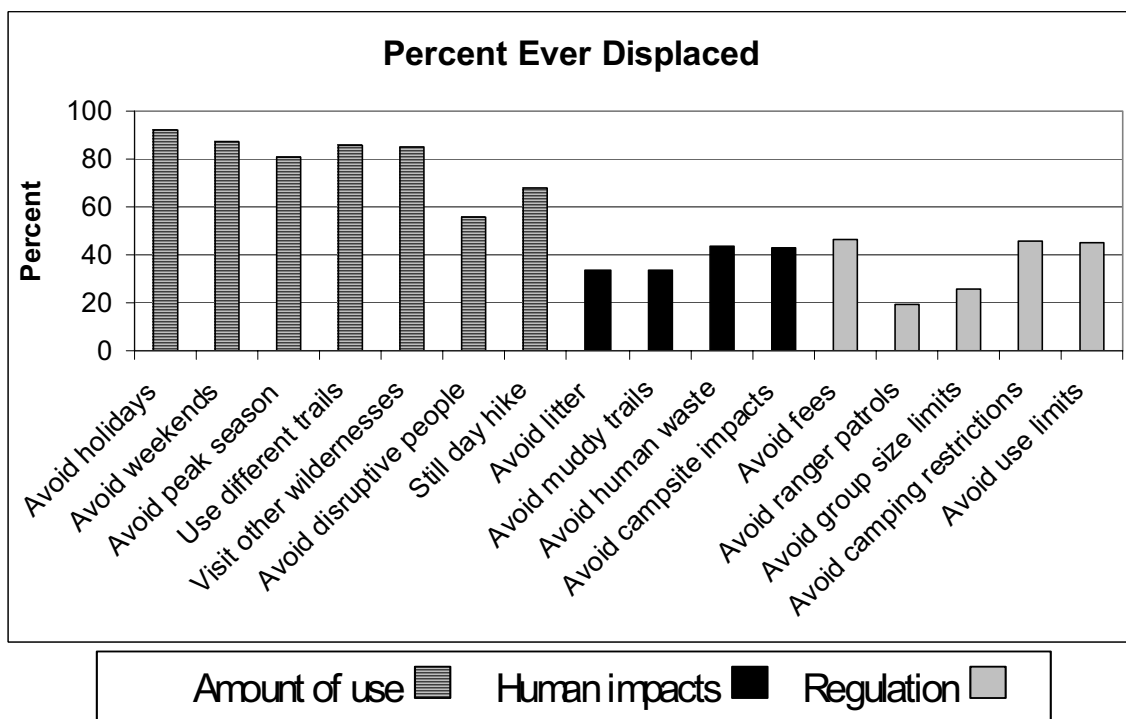
Crowding also resulted in substantial numbers of climbers employing spatial displacement strategies one or more times during their climbing history. Eighty-six percent of climbers used different trails or routes, 85.2% climbed at different wilderness areas, and 67.7% avoided overnight use at crowded climbing destinations. Fifty-five percent of respondents also reported avoiding crowded peaks or routes one or more times due to noisy or disruptive people.

Resource conditions caused considerably less displacement than social conditions. Forty-three percent of respondents did report avoiding climbing areas one or more times because of the presence of human waste, while 43.0% were displaced due to campsite impacts (Figure 2). Litter and muddy or eroded trails also resulted in 33.4% and 33.3% of climbers being spatially displaced, respectively. In general, resource conditions led to spatial displacement for 33% to 43% of climbers, while social conditions resulted in spatial displacement for 56% to 86% of climbers.

When considering the substantially different effects of social and resource conditions on coping responses, it may be important to note differences between mountaineering and other wilderness activities. Unlike backpackers, climbers often camp and travel in snow-covered areas where physical impacts such as vegetation trampling or soil erosion may not be visible. However, human waste buried in snow will eventually melt out. Popular climber camps are also often in alpine areas with little mineral soil to bury or degrade human waste. Thus, the presence of human waste and toilet paper may be the most commonly visible impact at climbing camp areas.

The effect of managerial conditions on displacement of climbers was similar in magnitude to the effect of resource conditions. Forty-six percent of climbers reported being temporally or spatially displaced at least once due to user fees at climbing destinations (Figure 2). Restrictions on where climbers could camp (45.4%) and use limits (44.8%) resulted in substantial percentages of climbers being spatially or temporally displaced at least once. Twenty-six percent of respondents reported being displaced from wilderness climbing destinations because of group size limits. Finally, only 19.3% of climbers were displaced one or more times in order to avoid wilderness ranger patrols.

Figure 2: Reasons climbers were displaced one or more times



Climbers Usually or Always Displaced

Although one can easily imagine occasionally avoiding a popular wilderness destination on busy holidays, a more meaningful measure of displacement may be the percent of climbers who usually or always (5 or 6) avoid certain climbing routes or areas because of setting conditions. Again, social conditions were most likely to be the cause of this level of displacement among wilderness climbers. Similarly, climbers most often relied on temporal, rather than spatial, displacement strategies. However, substantially fewer respondents reported being usually or always displaced. Fifty-seven percent of climbers indicated that they usually or always avoided climbing destinations on holidays (Figure 3). Thirty-six percent of climbers avoided weekends, and 25.3% usually or always avoided peak season because of crowding.

Fewer climbers regularly employed spatial displacement strategies in response to social conditions. Twenty-four percent of climbers usually or always used different trails or routes, and 22.8% went to other wildernesses that were less crowded. Fourteen percent of respondents reported that they avoided certain climbing destinations for overnight trips but still visited on day trips. Only 8.4% of climbers usually or always visited particular climbing areas less frequently to avoid disruptive or inconsiderate people.

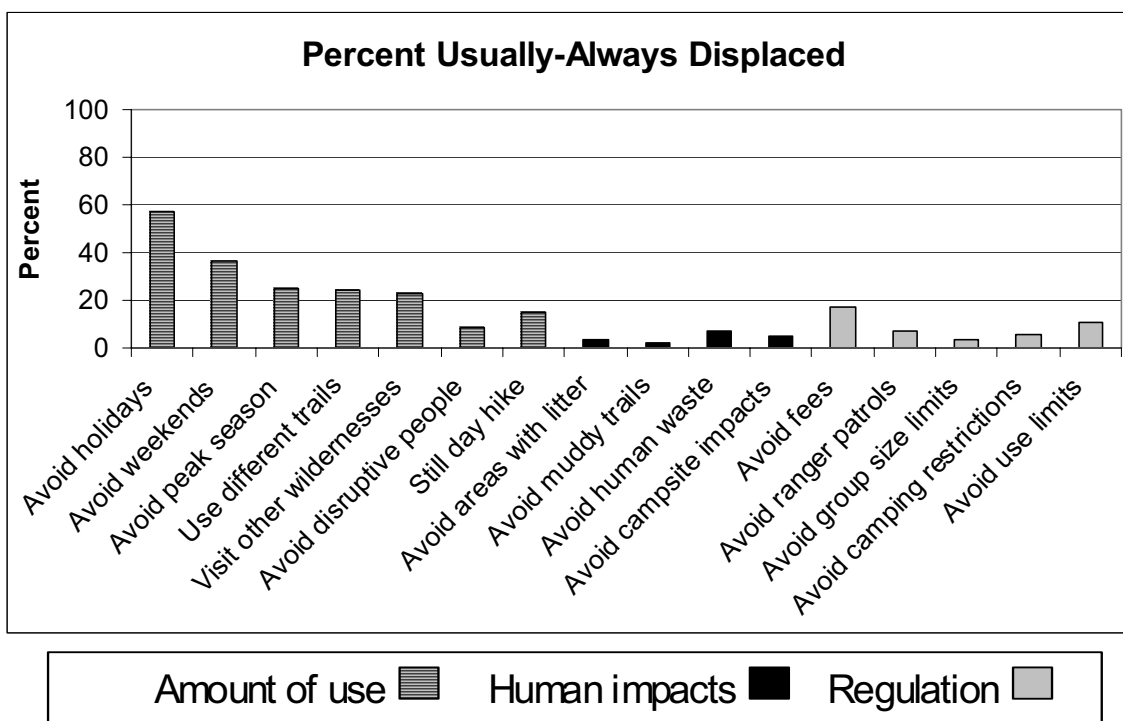
Few climbers were usually or always displaced due to resource conditions. Only six percent of climbers reported that human waste caused this level of displacement. Damage to vegetation or soil at campsites (4.9%), litter (3.4%), and muddy or eroded trails (2.0%) accounted for very little repeat displacement among climbers.

With respect to the managerial setting, user fees were the primary cause of regular displacement, with 17.0% of climbers usually or always avoiding climbing destinations that

charge for access (Figure 3). The effect of user fees on displacement is the only managerial setting condition that approaches the magnitude of displacement caused by some social conditions. Ten percent of respondents reported usually or always avoiding climbing destinations with use limits (there are few such areas). Ranger patrols (7.3%), camping restrictions (5.4%), and group size limits (3.5%) accounted for small percentages of climbers being usually or always displaced.

Overall, temporal displacement due to social conditions was the most common coping response among climbers. Climbers who avoided holidays were also more likely to usually or always avoid them rather than being occasionally displaced. Spatial displacement due to crowding was the second most common coping response. Of the four resource conditions and five managerial conditions included in the survey questionnaire, only user fees approached social conditions in magnitude.

Figure 3: Reasons climbers were usually or always displaced



Comparison of Peaks Cited by Displaced Climbers

Respondents were asked in open-ended questions to specify which peaks they had been displaced from for each of the above batteries of questionnaire items that addressed social, resource, or managerial conditions. Climbers consistently identified seven peaks that were causing displacement due to setting conditions. The peaks were Hood, Adams, Rainier, St. Helens, Baker, South Sister, and Shasta. Climbers most often cited four of the seven peaks: Hood, Adams, Rainier, and St. Helens. Peaks that were noted by less than ten respondents were not included in this discussion but are available in Appendix B.

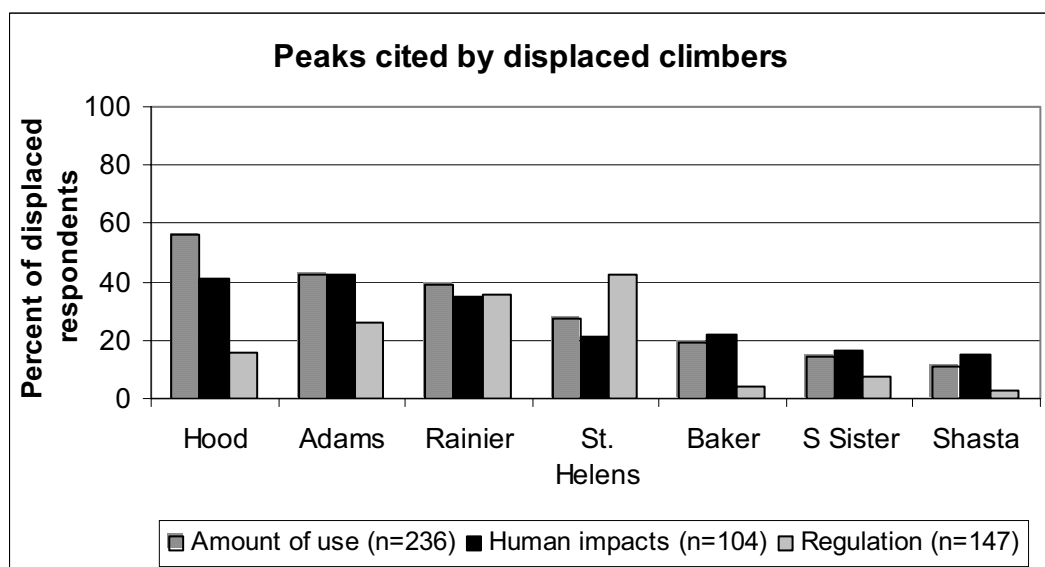
Respondents could cite the same or different peaks in each of the three setting categories.

In response to the questions about social conditions, 55% of 236 climbers answering this question reported being displaced from Mt. Hood due to the amount of use there (Figure 4). The other peaks cited by more than 20% of respondents were Adams (42.8%), Rainier (39.0%), and St. Helens (27.1%). Less than 20% of climbers responding to this question indicated being displaced by social conditions from Baker (19.5%), South Sister (14.4%), or Shasta (11.0%).

About half as many respondents (n=104) answered the open-ended question about peaks that they were displaced from due to resource conditions (Figure 4). Climbers displaced by human impacts most often cited Hood (41.3%), Adams (42.3%), and Rainier (34.6%) as the peaks that they were displaced from. Notably, Hood and Adams were almost equal in the amount of displacement due to resource conditions, yet 13.1% more respondents cited Hood than Adams when asked about social conditions. Respondents to this question cited St. Helens (21.2%), Baker (22.1%), South Sister (16.3%), and Shasta (15.4%) as the other peaks causing substantial displacement due to human impacts.

Although Hood, Adams, Rainier, and St. Helens were again the four most frequently cited peaks in the open-ended question about displacement due to managerial conditions at climbing destinations, a different pattern of displacement emerged. St. Helens was cited by 42.2% of 147 respondents to this question (Figure 4). Rainier (35.4%) and Adams (25.7%) displaced fewer climbers due to regulations. Hood was cited by notably fewer respondents (15.6%) as a peak causing displacement due to management conditions. Less than 10% of respondents to this question cited Baker (4.1%), South Sister (7.5%), and Shasta (2.7%) as climbing destinations that they avoided due to rules and regulations.

An interesting pattern emerged when comparing the causes of displacement noted by climbers at different peaks. While Hood had the most displacement due to crowding and the least displacement due to regulation of the four main displacing peaks, St. Helens had the least displacement due to crowding of the four peaks, and the most displacement due to regulation of any peak cited by respondents to this question. This pattern highlights the relationship between regulation and crowding. Hood has no limit on the number of climbers on the mountain at a time, no user fees on the most popular route, and a relatively short climbing season that temporally concentrates use. St. Helens limits climbers to 100 per day by lottery during the peak season, charges \$15 per climber, and is climbed year-round. Thus, most displacement at Hood occurs due to crowding, and most displacement at St. Helens occurs because of regulations.

Figure 4: Peaks from which climbers were displaced^a

^aOpen-ended question

Although Figure 4 (above) reports the results from the open-ended questionnaire items related to causes of displacement, it does not indicate the magnitude of displacement as a percentage of all respondents who have climbed a given peak. For example, it is possible that the large percentage of respondents citing Hood may simply reflect respondents' extensive experience on that peak, while the smaller number citing Shasta indicates less overall experience with that peak. Figure 5 (below) presents responses to these items as a percentage of all those respondents who have climbed that peak.

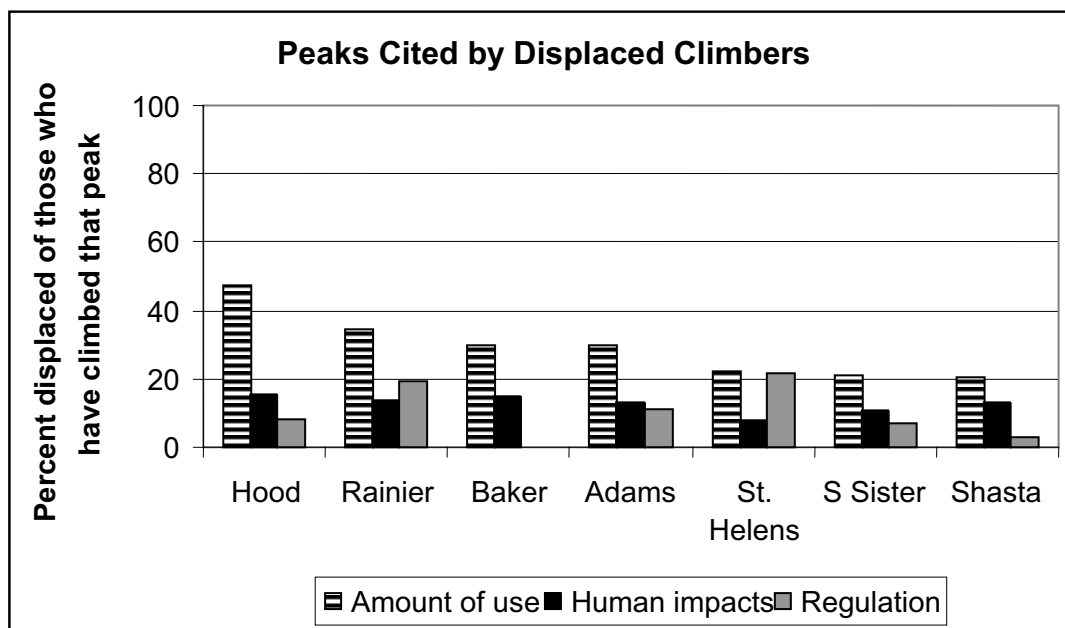
A somewhat different pattern of displacement emerged when respondents to the open-ended displacement questions were represented as a percentage of respondents who have climbed that peak. In the case of displacement due to the amount of use at a particular peak, Hood still accounted for the most displacement (47.3%) of the Cascade volcanoes in

this study. The next three peaks generating the most displacement due to social conditions were Rainier (34.5%), Baker (29.9%), and Adams (29.7%). At least 20% of climbers in this study were also displaced from St. Helens (22.3%), South Sister (21.0%), and Shasta (20.5%) due to the amount of use at those peaks.

Climbers at five of the seven most often cited peaks were consistently displaced by human impacts. Displacement due to human impacts varied by only 2.8% between Hood (15.4%), Baker (14.9%), Rainier (13.5%), Adams (12.9%), and Shasta (12.6%). Only 10.5% of respondents who had climbed South Sister, and 7.7% of those who had climbed St. Helens, reported being displaced by human impacts at those peaks.

Respondents who reported being displaced due to regulations or management most often cited St. Helens (21.6%) and Rainier (19.5%). St. Helens has a quota of 100 climbers per day during the high-use season and Rainier restricts the number of climbers who can spend the night at the two most popular high camps on the mountain. Substantially fewer respondents indicated being displaced from Adams (11.1%), Hood (8.2%), South Sister (6.8%), Shasta (3.1%), and Baker (0.04%) due to regulations or management at those peaks.

Figure 5: Peaks cited by displaced climbers as a percentage of respondents who have climbed that peak



Peaks No Longer Visited by Displaced Climbers

As noted in the methods section, one of the challenges of displacement research is to determine the number of people who no longer visit a particular destination, that is, people who have been completely spatially displaced. To address this issue, respondents were asked in an open-ended question to identify any peaks or climbing routes that they no longer visit and the reasons why. Eleven percent of respondents to this survey identified one or more peaks that they completely avoid for a variety of reasons.

Hood, Adams, Rainier, and St. Helens were most often cited by respondents to this question. Reasons for no longer visiting these peaks fell into five categories that were relevant to this study: crowds (53.8%), challenge/variety (17.5%), safety (13.8%), fees/rules

(11.3%), and human impacts (3.4%). While crowds, fees/rules, and human impacts refer directly to the social, managerial, and resource setting conditions discussed above, safety and challenge/variety require further explanation.

Safety, in this case, refers to the perceived risk of sharing a climbing route with many other climbers, particularly ones with less climbing experience, who may have slowed down the respondent, exposed the respondent to falling rocks, or made the respondent nervous in some other way. Thus, in this case, safety is an inverse function of crowding.

Responses in the challenge/variety category are related to the desire to climb a new peak or route that is more difficult, to see someplace new, or to check off another peak on the list of Cascade volcanoes that the respondent has climbed. Thus, cessation of use due to the desire for challenge or novelty may not relate to social, managerial, or resource setting conditions.

Respondents to this question who were completely displaced due to crowds most often cited Hood (18.8%) and Rainier (16.3%), two of the most frequently climbed volcanoes in the region (Table 2). Thus, five percent of all respondents who have climbed Hood no longer visit that peak. Fewer than ten percent of respondents to this question indicated that they no longer climbed at Adams (7.5%), St. Helens (3.8%), South Sister (3.8%), Baker (2.5%), or Shasta (1.3%) because of social conditions at those peaks.

Table 2: Peaks or routes no longer visited

	Reason for no longer visiting (% of respondents to this question, n=80)				
	Crowds	Safety	Fees/Rules	Challenge/Variety	Human Impacts
Hood	18.8	11.3	0	3.8	0
Adams	7.5	0	0	5.0	0
Rainier	16.3	3.4	2.5	5.0	1.3
St. Helens	3.8	0	8.8	1.3	1.3
Baker	2.5	0	0	2.5	0
South Sister	3.8	0	0	0	1.3
Shasta	1.3	0	1.3	0	0

Respondents to this question also reported being completely displaced from Hood (11.3%) and Rainier (3.4%) due to safety concerns related to crowding and inexperienced climbers. Safety was not a factor contributing to complete displacement at Adams, St. Helens, Baker, South Sister, or Shasta. However, three respondents (3.8%) did mention that they no longer climb the North Sister due to the objective hazard of falling rock, unrelated to the presence of other climbers.

Eight percent of respondents to this question (2.4% of 287 respondents who had climbed St. Helens) indicated that they no longer climb St. Helens because of user fees or other regulations. This finding is consistent with the results presented in Figure 5 (above), which indicate that St. Helens is the primary displacer due to managerial conditions in the region. The only other peaks cited by climbers completely displaced due to managerial

conditions were Rainier (2.5%) and Shasta (1.3%). St. Helens and Rainier are the most heavily regulated of the Cascade volcanoes. Both peaks have use limits and climbing fees.

No more than five percent of respondents to this question reported completely avoiding any of the Cascade volcanoes due to the desire for challenge or variety (Table 2). Climbers most often avoided Adams (5.0%), Rainier (5.0%), Hood (3.8%), Baker (2.5%), and St. Helens (1.3%) for this reason.

Respondents to this question seldom cited resource conditions as a reason to no longer climb a particular peak or route (Table 2). Climbers reported being completely displaced from Rainier (1.3%), St. Helens (1.3%), and South Sister (1.3%) due to human impacts. These results are consistent with those reported in Figure 3 (usually-always displaced), which indicated that few climbers are often displaced from any of the Cascade volcanoes due to resource conditions. Again, resource conditions may have the least influence over climbers' decisions to avoid certain peaks or climbing routes.

Research Question Two:

To what extent have mountaineers changed their use, or employed other coping strategies, due to perceived changes in social, managerial, or resource conditions at four climbing destinations?

Research Question Two focused on four of the Cascade volcanoes that are of concern to Forest Service wilderness managers and that represent a range of setting conditions. Hood, Baker, Adams, and Middle Sister were the four peaks selected by researchers for this project. As noted in the methods section, researchers developed the second research question

to address displacement, coping, and associated variables at a few specific wilderness climbing destinations.

Respondents who indicated that they had climbed Hood, Baker, Adams, and/or Middle Sister were asked to respond to the same set of displacement items that were used to address Research Question One, the difference being that this time the respondents would be referring only to one particular peak instead of any of the Cascade volcanoes that they had ever climbed. Researchers added or deleted a few questionnaire items to more accurately reflect conditions and management concerns at particular peaks. For example, the item about displacement due to use limits was removed from the Hood section of the questionnaire because there are no use limits on that peak.

Researchers measured displacement at the four focus peaks using the same three batteries of questions as those used in the regional section of the questionnaire. Each battery addressed one of three setting categories: social, resource, or management. For example, the social conditions battery asked “Please indicate how often the amount or type of use has caused you to do each of the following at climbing areas on Mt. Hood?” This lead question was followed by nine items related to spatial or temporal displacement due to social conditions, such as “visit earlier or later in the season to avoid crowds.” Respondents then indicated the extent to which they had been displaced from the focus peak on a seven-point scale where zero represented never displaced and six meant always displaced.

Because this survey used a regional sample of climbers, fewer respondents had climbed less popular peaks like Baker and Middle Sister than had climbed Hood or Adams. As a result, only 63 climbers in the survey completed the Baker and Middle Sister focus

sections, while 126 respondents filled out the Hood section and 161 completed the Adams focus section.

The following subsections include the descriptive displacement results for each of the four peaks, a comparison of causes of displacement among the climbing areas, the relationship between displacement and perceived change, and the correlation of displacement with cognitive coping. The final subsection of Research Question Two describes the motivations of respondents and the relationship between displacement and the desire for solitude.

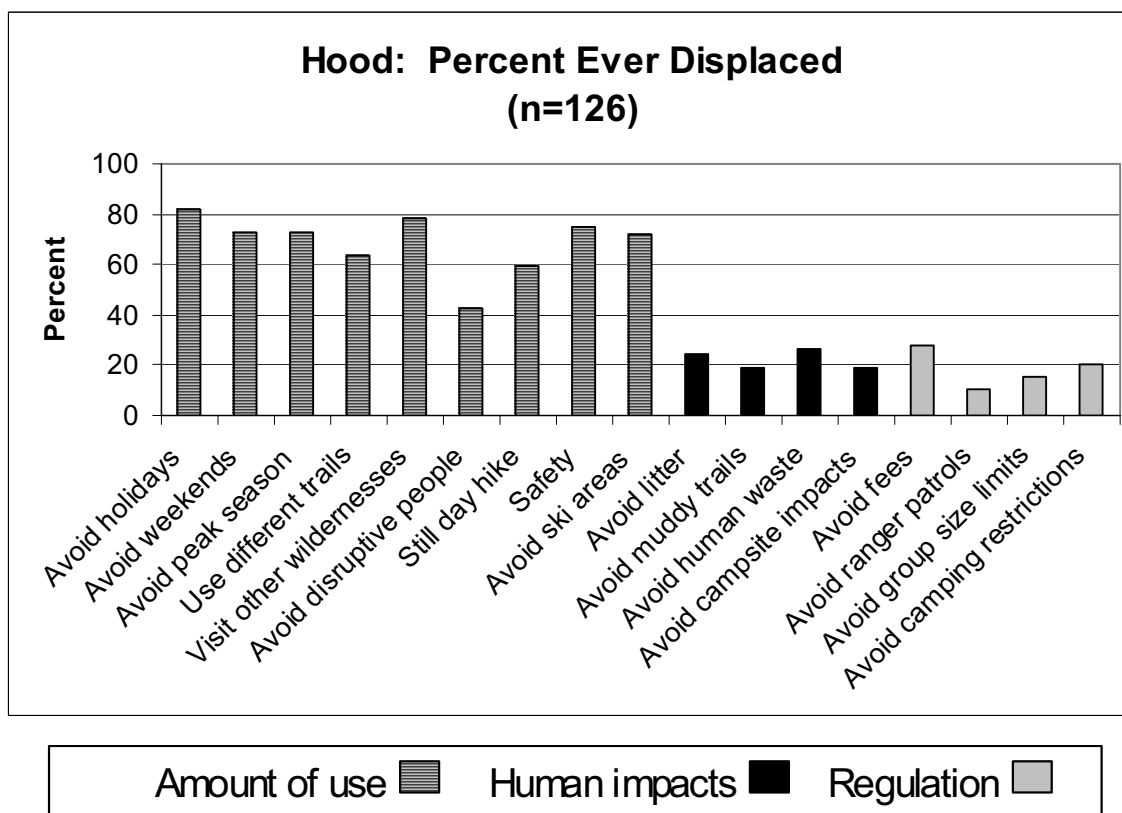
Mt. Hood

At Hood, respondents who reported being displaced one or more times due to social conditions avoided holidays (82.0%), avoided weekends (72.8%), avoided the peak climbing season (72.6%), climbed other peaks (78.5%), avoided crowded routes due to safety concerns (75.1%), or avoided climbing near developed ski areas (72.1%) (Figure 6). The ski area item was added to address the potential impact to the climbing experience of two alpine ski areas that abut the Mt. Hood Wilderness and cover the approaches to some of the popular climbing routes on the mountain. Sixty-three percent of climbers also reported using different trails or routes because of the amount or type of use at Hood. Fifty-nine percent of respondents reported still taking day trips to the mountain, but going elsewhere for overnight climbing trips. Respondents were least likely (42.5%) to have been displaced one or more times due to disruptive or inconsiderate people. Overall, 91.3% of all respondents to the Hood focus section indicated being displaced one or more times due to social conditions at Hood.

Resource conditions did not figure prominently among the factors driving displacement at Hood. Twenty-six percent of respondents indicated being displaced one or more times from climbing areas because of visible human waste or toilet paper (Figure 6). Other displacing resource conditions included litter (24.2%), damage to soil or vegetation at campsites (19.0%), and muddy or eroded trails (18.8%). In total, 34.1% of respondents to the Hood focus section reported being displaced one or more times due to resource conditions.

With respect to managerial conditions, respondents who had climbed Hood cited fees (28.2%) as the most common reason for being displaced one or more times (Figure 6). Although there is no fee to climb the popular south side routes on Hood, fees do apply to the other trailheads in the Mt. Hood Wilderness. Other managerial conditions were among the least often cited of all setting conditions in the survey. Twenty percent of respondents to this question reported avoiding climbing areas on Hood one or more times because of camping restrictions, 15.7% cited group size limits, and 10.2% indicated that ranger patrols were a cause of displacement. Overall, 39.7% of respondents to the Hood focus section reported being displaced one or more times due to some aspect of managerial conditions at that peak.

Figure 6: Percent of climbers ever displaced from Hood

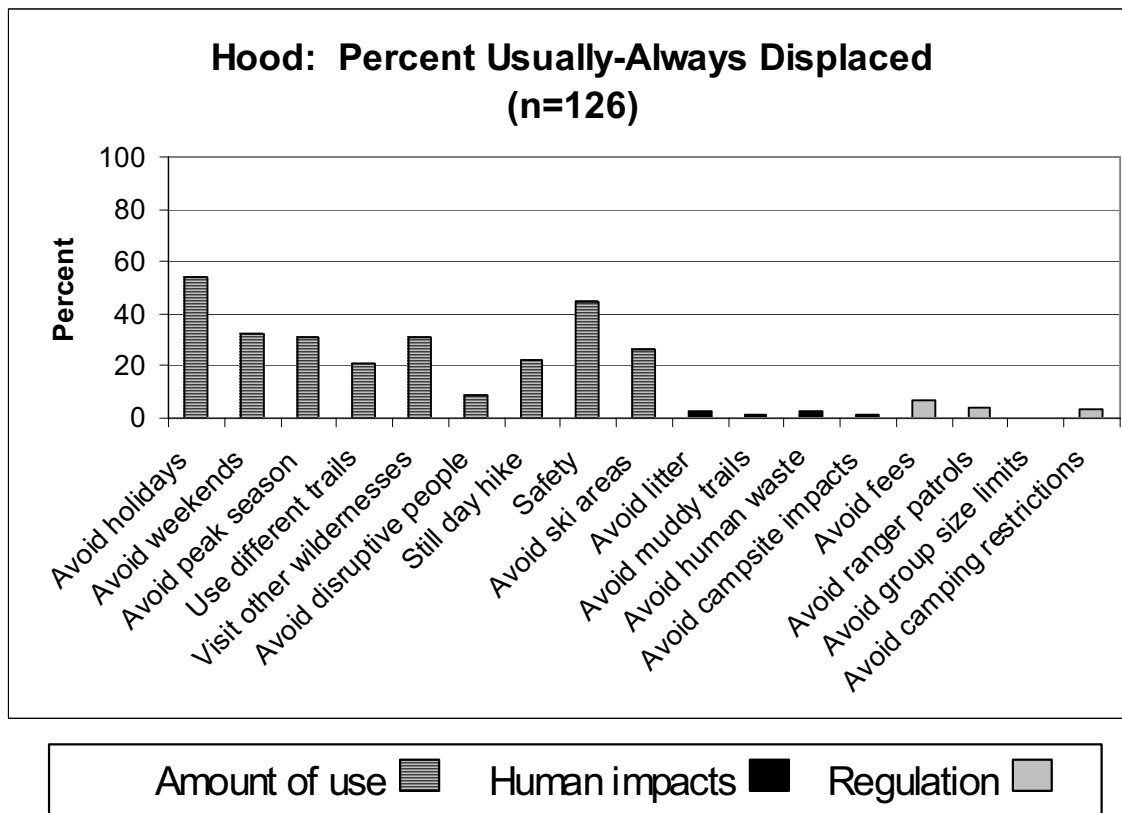


For those climbers from Hood, the primary social factors listed as usually or always causing displacement were crowding on holidays (53.9%) and safety concerns due to the number of climbers on popular routes (44.6%) (Figure 7). Approximately 20%-30% of respondents who had climbed Hood reported usually or always avoiding weekends (32.1%), avoiding peak climbing season (31.2%), climbing at other wildernesses (31.1%), avoiding developed ski areas (26.3%), avoiding overnight trips (22.1%), or using different trails or routes (21.2%) due to the number of people on Hood. Hood climbers infrequently (8.7%) cited noisy or disruptive people as a reason for usually or always avoiding climbing areas on the mountain.

Less than 3% of respondents who had climbed Hood cited resource conditions as reasons for usually or always being displaced from Hood. Few respondents indicated that litter (2.4%), human waste (2.4%), muddy trails (1.6%), or campsite impacts (1.6%) usually or always had a negative effect on their decision to climb Hood (Figure 7).

Similarly, managerial conditions did not result in many climbers being usually or always displaced from climbing areas on Hood. Seven percent of respondents cited fees, 3.9% cited ranger patrols, and 3.2% indicated that camping restrictions resulted in being usually or always displaced (Figure 7). No climbers reported regularly avoiding Hood because of group size limits.

Figure 7: Percent of climbers usually or always displaced from Hood



Mt. Baker

Researchers asked survey respondents who had climbed Baker to indicate to what extent they had been displaced from that peak due to a range of social, resource, and managerial conditions. These questionnaire items were largely the same as those asked of respondents who had climbed Hood one or more times. Because this survey used a regional sample of climbers, fewer respondents had climbed less popular peaks like Baker and Middle Sister than had climbed Hood or Adams. As a result, only 63 climbers (15.8%) in the survey completed the Baker focus section.

Approximately 60%-70% of respondents who had climbed Baker reported that they had been displaced one or more times due to social conditions. These climbers avoided holidays (72.9%), climbed in other wildernesses (66.8%), avoided crowded routes on Baker due to safety concerns (66.6%), avoided weekends (64.0%), sought different trails or routes (62.5%), avoided areas near the Mt. Baker National Recreation Area (NRA) because of snowmobile use there (62.2%), and avoided climbing Baker during the peak season (60.9%) (Figure 8). Researchers replaced the ski area item from the Hood battery of questions with the NRA item to try to assess the displacing effect on climbers of snowmobile use adjacent to the Mt. Baker Wilderness. Although there is a Mt. Baker developed ski area, it is not adjacent to the Mt. Baker Wilderness or climbing approaches to Baker.

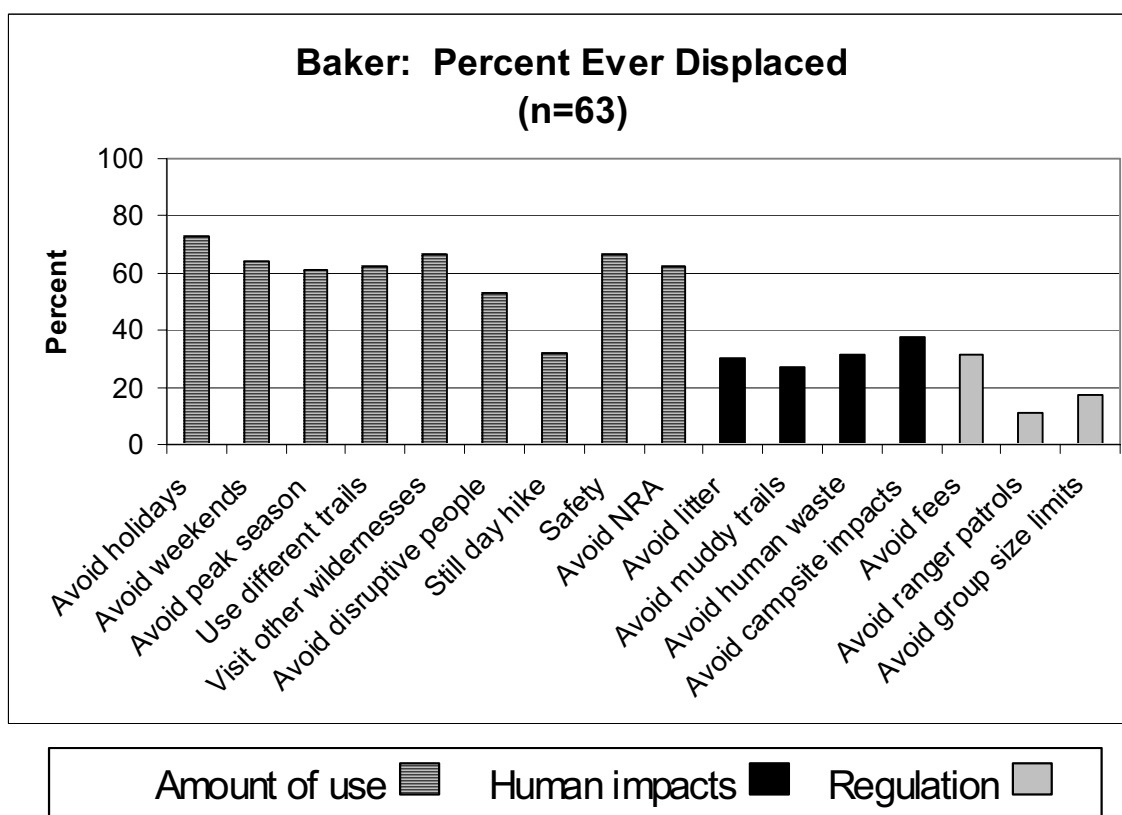
To a lesser degree, respondents who had climbed Baker reported being displaced on that peak one or more times due to noisy or disruptive people (52.9%). Thirty-two percent of respondents to the Baker focus section indicated that they had at least once made a day climb on Baker instead of an overnight trip because of the number of people there. Overall, 87.3%

of respondents to the Baker focus section indicated being displaced one or more times due to social conditions at Baker.

Resource conditions were cited by approximately 27%-37% of respondents who had climbed Baker and been displaced one or more times (Figure 8). Interestingly, campsite impacts were the most common (37.6%) resource condition causing displacement. Results from the regional and other focus sections of this study indicate that human waste and litter usually are the most important resource conditions with respect to displacement. Substantial percentages of climbers did report that human waste (31.7%), litter (30.3%), and muddy or eroded trails (27.3%) resulted in avoiding climbing areas at Baker one or more times. Of all respondents who completed the Baker focus section, 39.7% had been displaced one or more times due to resource conditions.

Because the Mt. Baker Wilderness does not have use limits or restrictions on where people may camp, the only applicable managerial conditions were fees, group size limits, and ranger patrols. Thirty-one percent of respondents reported avoiding climbing areas on Baker one or more times due to fees, in this case the \$5 Northwest Forest Pass daily trailhead parking fee (Figure 8). Seventeen percent of respondents were displaced at least once by group size limits, and 11.4% of climbers completing the Baker focus section of the questionnaire avoided climbing areas because of ranger patrols. Overall, 50.8% of respondents to the Baker focus section reported being displaced one or more times due to some aspect of managerial conditions.

Figure 8: Percent of climbers ever displaced from Baker



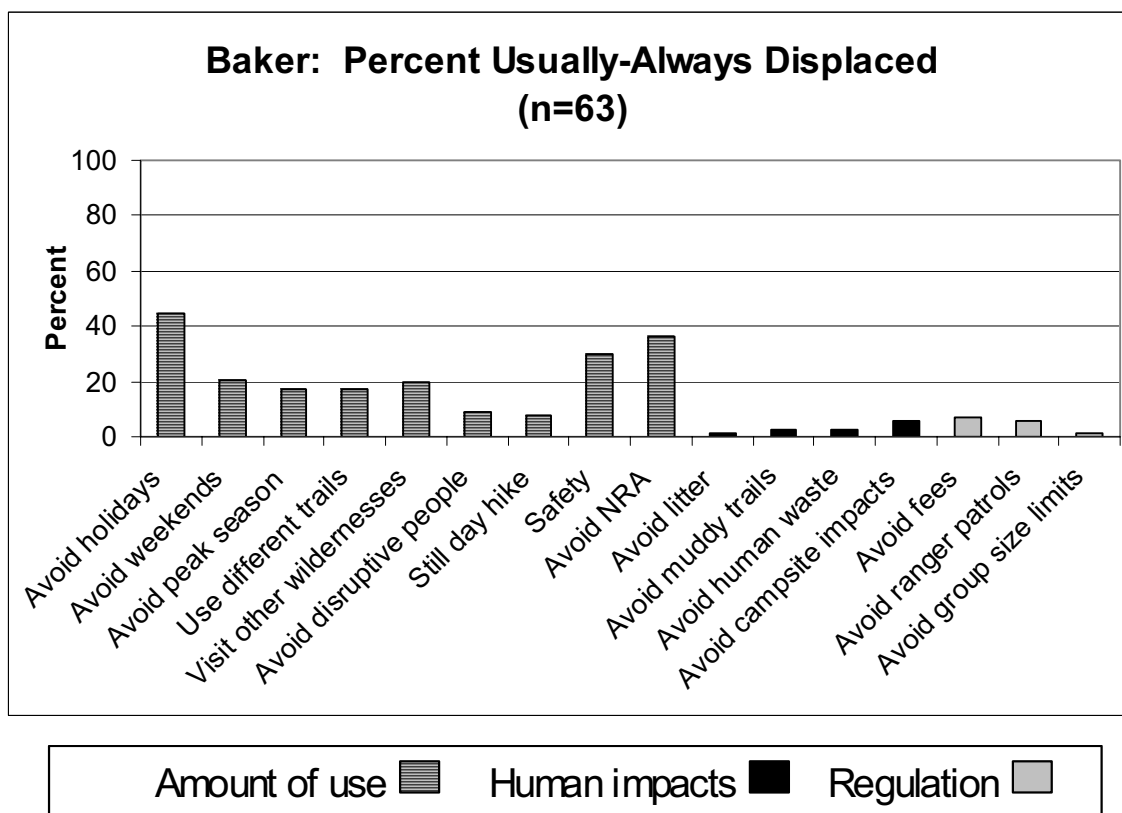
For those climbers from Baker, the primary social factors listed as usually or always causing displacement were crowding on holidays (44.4%) and snowmobiles in the adjacent Mt. Baker NRA (36.4%) (Figure 9). The third most common (30.2%) factor was concern for personal safety because of the number of other climbers on the route.

Approximately 15%-20% of respondents who had climbed Baker usually or always avoided weekends (20.3%), climbed in other wildernesses (19.7%), avoided the peak climbing season (17.2%), or used different trails or routes (17.2%) due to crowding at climbing areas on Baker. Consistent with results discussed above, climbers on Baker were least likely to report being regularly displaced by disruptive or noisy people (9.0%) or to avoid overnight trips on Baker because of social conditions (7.6%).

Regarding resource conditions, 5.8% of respondents to the Baker focus section indicated usually or always being displaced due to campsite impacts to soil or vegetation (Figure 9). Less than 3% of climbers who completed this section of the questionnaire cited human waste (2.8%), muddy or eroded trails (2.8%), or litter (1.4%) as factors causing them to usually or always avoid climbing areas on Baker.

Seven percent of respondents who had climbed Baker before indicated that they usually or always avoided Baker, or certain routes on Baker, because of user fees (Figure 9). Avoiding ranger patrols (5.7%) and group size limits (1.4%) did not figure prominently in the decision-making process for most climbers who reported being usually or always displaced due to managerial conditions on Baker.

Figure 9: Percent of climbers usually or always displaced from Baker



Mt. Adams

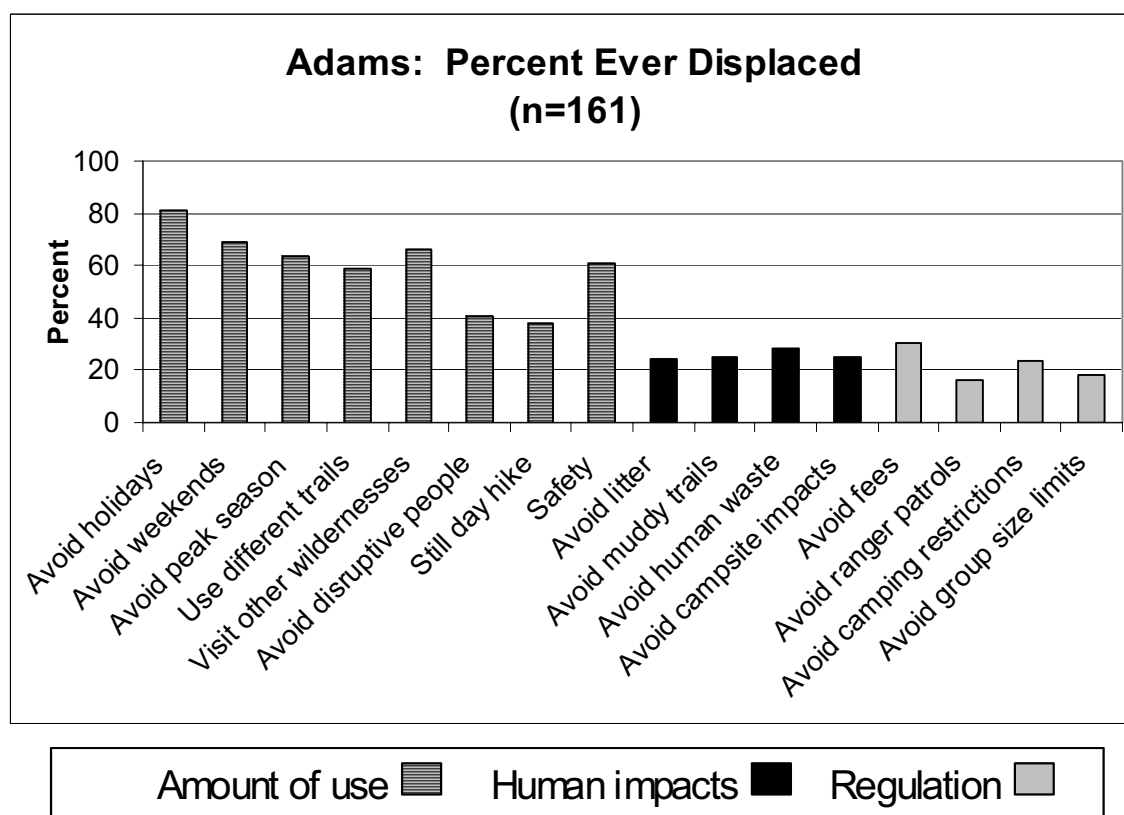
Respondents to the Adams focus section most often (80.9%) reported avoiding climbing Adams on holidays one or more times because of the amount of use (Figure 10). Approximately 60%-70% of Adams climbers indicated that they avoided weekends (68.8%), climbed at other wildernesses (66.0%), avoided the peak season (63.7%), or sought different trails or routes (58.9%) one or more times due to crowding on Adams. Sixty-one percent of respondents reported avoiding routes on Adams one or more times because of crowding-related safety concerns. Disruptive or inconsiderate people resulted in 40.5% of respondents to this question being displaced one or more times at Adams. Thirty-eight percent of Adams climbers reported taking day trips instead of overnight trips one or more times due to the

amount of people at climbing areas on the mountain. Overall, 88.2% of respondents to the Adams focus section indicated being displaced one or more times due to social conditions at Adams.

Turning to resource conditions, study results indicate that the presence of visible human waste or toilet paper is the resource factor generating the most displacement at Adams. Twenty-eight percent of respondents to the Adams focus section reported avoiding climbing areas one or more times because of human waste (Figure 10). Approximately 25% of Adams climbers who completed the focus section were displaced one or more times by muddy or eroded trails (25%), campsite impacts (24.9%), or litter (24.4%). Thirty-two percent of respondents to the Adams focus section reported being displaced one or more times due to resource conditions.

User fees were the primary displacing factor among managerial conditions at Adams. Thirty percent of respondents cited user fees (Figure 10). Interestingly, this percentage is very close to those reported at Hood and Baker, despite a \$15 climbing fee at Adams, a \$5 parking fee at Baker, and no fee for the most popular route on Hood. Respondents to the Adams focus section also reported avoiding climbing areas on Adams one or more times because of camping restrictions (23.6%), group size limits (18.1%), and ranger patrols (16.4%). Overall, 37.9% of respondents to the Adams focus section reported being displaced one or more times due to managerial setting conditions.

Figure 10: Percent of climbers ever displaced from Adams

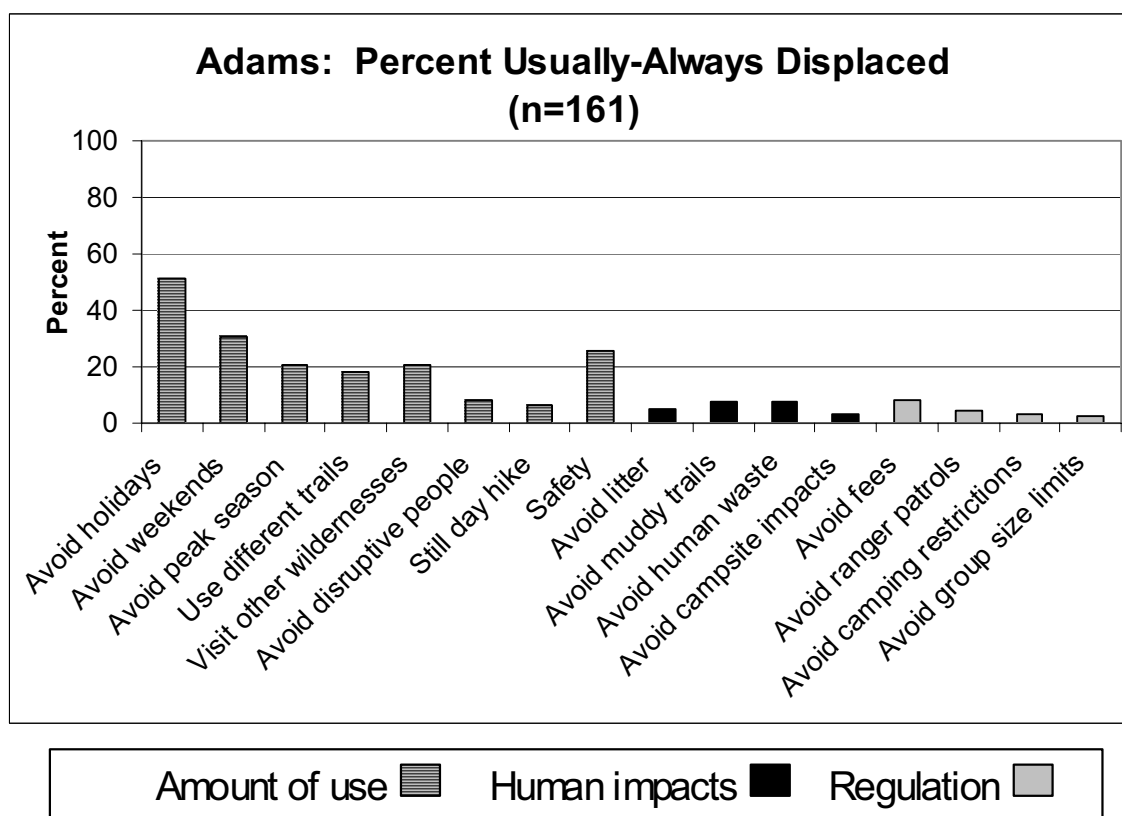


Slightly more than half (51.1%) of Adams climbers reported being usually or always displaced from climbing areas on the mountain during holidays (Figure 11). Approximately 20%-30% of respondents to the Adams focus section usually or always avoided weekends (30.4%), avoided the peak season (20.8%), climbed at other wildernesses (20.6%), or used different trails or routes (18.4%) due to crowding at Adams. Twenty-five percent of Adams climbers also cited safety concerns as a reason for usually or always avoiding crowded climbing areas on the mountain. Consistent with previous results, few respondents to the Adams focus section reported being regularly displaced because of disruptive people (8.0%) or avoiding overnight trips due to the amount of use on Adams (6.1%).

Less than 10% of respondents to this section indicated that resource conditions were a regular displacing factor (Figure 11). Again, human waste was one of the most commonly cited resource conditions by climbers who were usually or always displaced from Adams, but the magnitude of impact was small (7.3%). A small number of Adams climbers also identified muddy trails (7.3%), litter (4.8%), and campsite impacts (3.0%) as reasons for usually or always avoiding climbing areas on Adams.

With respect to managerial conditions, respondents to the Adams focus section reported being usually or always displaced due to fees (8.4%), ranger patrols (4.2%), camping restrictions (3.0%), and group size limits (2.4%) (Figure 11). Again, fees had the largest impact of the four managerial conditions assessed in this section of the questionnaire.

Figure 11: Percent of climbers usually or always displaced from Adams



Middle Sister

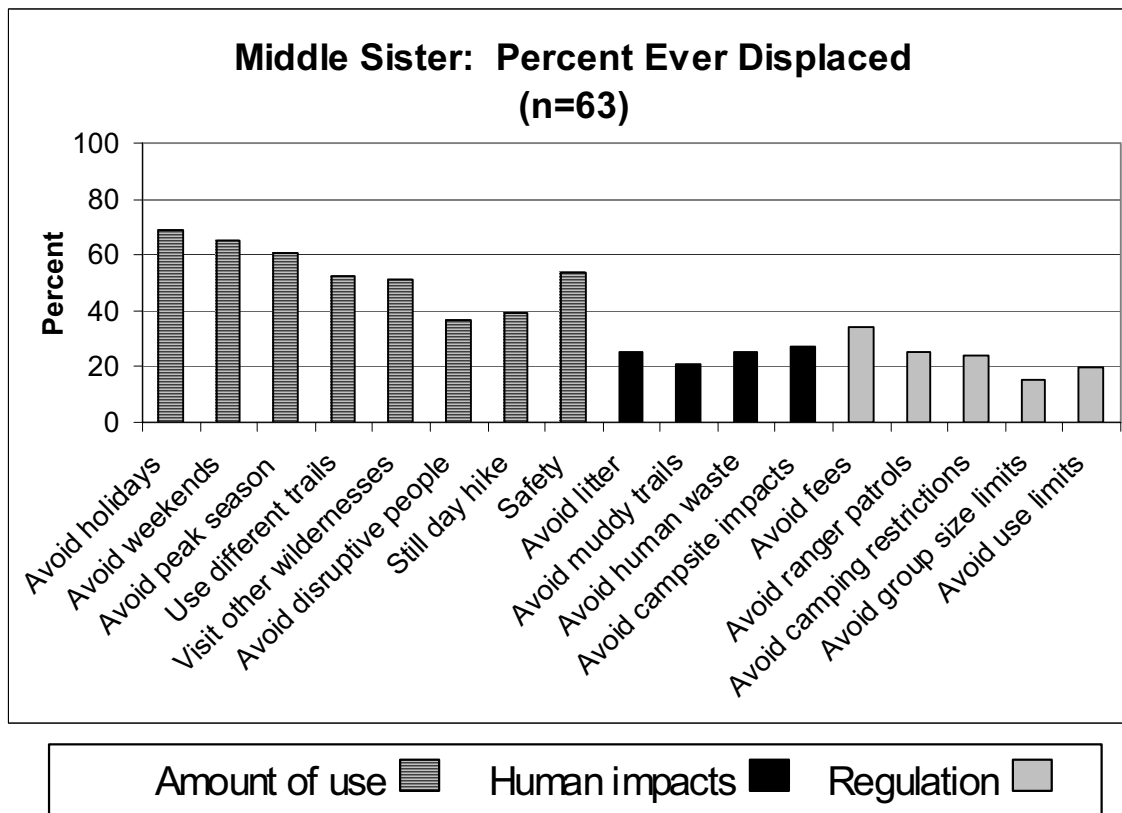
As noted in the discussion of results from the Baker focus section, the regional scale of the study sample resulted in a smaller number of respondents who had climbed less popular peaks.

In response to questions about social conditions on Middle Sister, climbers most often reported avoiding holidays (69.2%), avoiding weekends (65.2%), and avoiding the peak season (60.6%) one or more times due to the amount of use on the mountain (Figure 12). Approximately half of respondents to the Middle Sister focus section reported being displaced one or more times because of crowding-related safety concerns (53.9%), sought different routes (52.3%), or climbed in other wilderness areas (51.4%). Thirty-nine percent of Middle Sister climbers completing this section of the questionnaire indicated that they have avoided overnight trips one or more times due to social conditions on the mountain. Thirty-six percent of respondents reported being displaced one or more times in response to disruptive or inconsiderate people at Middle Sister climbing areas. Overall, 76.2% of respondents to the Middle Sister focus section indicated being displaced one or more times due to social conditions on that peak.

Middle Sister climbers most often (26.9%) cited damage to vegetation or soil at campsites as the resource condition resulting in them being displaced one or more times (Figure 12). Respondents cited visible human waste (25.5%) and litter (25.3%) almost as frequently. Twenty-one percent of Middle Sister climbers avoided the peak one or more times because of muddy or eroded trails. Twenty-seven percent of respondents to the Middle Sister focus section indicated being displaced one or more times due to resource setting conditions.

Of the five managerial conditions addressed in the Middle Sister focus section, climbers most often cited user fees (34.4%) as a reason for being displaced from Middle Sister one or more times (Figure 12). Trailheads in the Three Sisters Wilderness are subject to a \$5 daily parking fee under the Northwest Forest Pass program. Approximately 20%-25% of respondents reported avoiding Middle Sister one or more times due to ranger patrols (25.5%), camping restrictions (24.0%), and use limits (19.5%). Fifteen percent of Middle Sister climbers were displaced because of limits on group size. Overall, 47.6% of respondents to the Middle Sister focus section indicated being displaced one or more times due to managerial setting conditions.

Figure 12: Percent of climbers ever displaced from Middle Sister

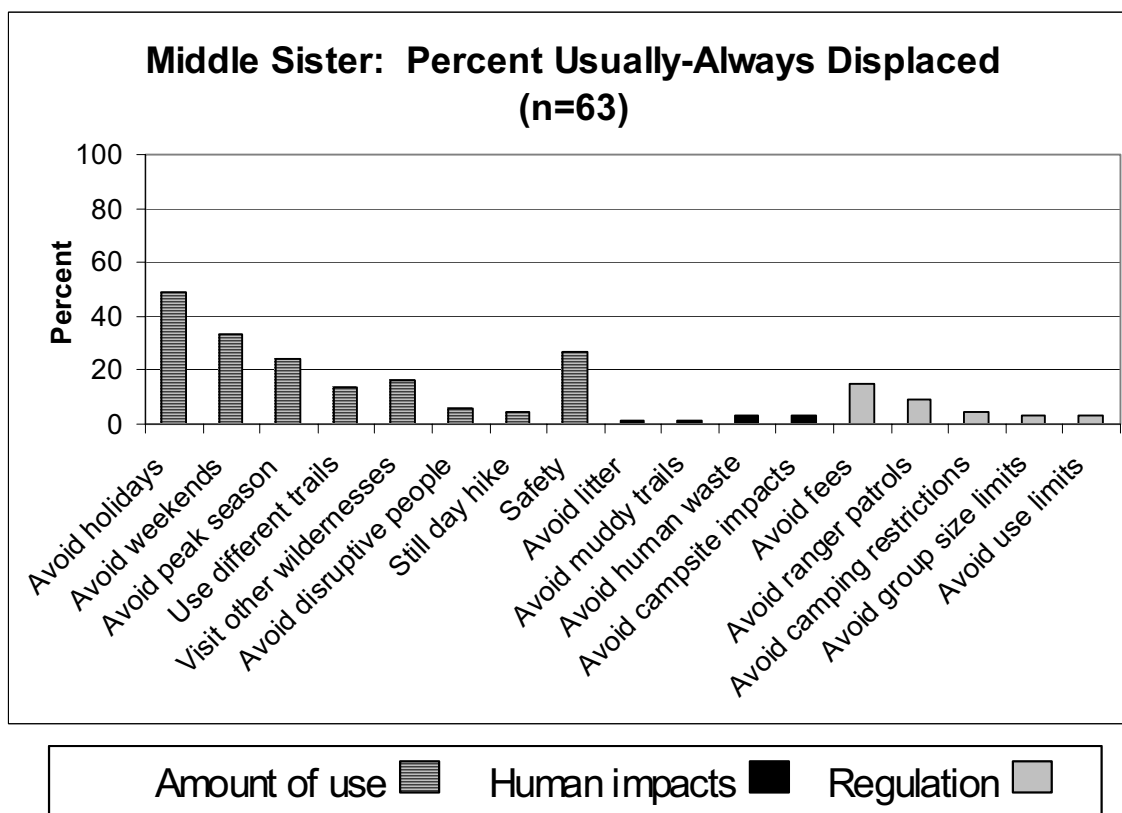


Forty-nine percent of respondents to the Middle Sister focus section reported usually or always avoiding the peak on holidays due to the amount of use there (Figure 13). Thirty-three percent of Middle Sister climbers usually or always avoided weekends, and 24.2% avoided the high use season because of crowding. Again, safety concerns due to crowding on climbing routes had a substantial impact on respondents' decision about where to climb, with 26.9% of Middle Sister respondents reporting usually or always avoiding the peak for this reason. Climbers who completed the Middle Sister focus section indicated that they usually or always visited other wildernesses (16.6%), used different trails or routes (13.9%), avoided climbing areas because of disruptive people there (6.1%), or made day trips instead of overnight trips (4.5%) due to the amount or type of use on the mountain.

Consistent with the previous focus sections, resource conditions had little effect on climbers' decisions to climb Middle Sister. No more than three percent of respondents to the Middle Sister focus section reported being usually or always displaced by human waste (3%), campsite impacts (3%), muddy or eroded trails (1.5%), or litter (1.5%) (Figure 13).

Regarding managerial conditions at Middle Sister, climbers there were approximately twice as likely to report being usually or always displaced by user fees or ranger patrols as the respondents to the Hood, Baker, or Adams focus sections. Fifteen percent of Middle Sister climbers indicated that they usually or always avoid fees, and 9.0% avoid ranger patrols (Figure 13). This difference may be due to an over representation of off-season climbers or may reflect local opposition to the Fee Demonstration Program. One of the most outspoken opponents of the program lives near the Three Sisters Wilderness. Camping restrictions (4.5%), limits on group size (3.0%), and use limits (3.0%) did not figure prominently as factors usually or always displacing Middle Sister climbers.

Figure 13: Percent of climbers usually or always displaced from Middle Sister



Comparing displacement at the four focus peaks

Researchers used factor analysis to group and compare the causes of displacement at the four peaks addressed in the focus sections. Factor analysis is a data reduction method that identifies sets of correlated variables representing underlying concepts, or factors, which explain a large portion of the variance between several observed variables (Journal of Consumer Psychology, 2001). The questionnaire items assessing social conditions loaded on two factors, which corresponded to temporal and spatial displacement strategies (Table 3). All of the resource condition items loaded on a single factor, as did all of the managerial conditions. Figure 14 displays the mean response for each factor across all four of the peaks

in the focus sections of the questionnaire. The means are reported on a 0-6 scale with zero meaning never displaced and six meaning always displaced. Human waste was reported to represent resource setting because the other four items in this factor accounted for a fraction of displacement due to resource conditions. Similarly, user fees were used as a proxy for managerial conditions so that the magnitude of displacement due to this condition would not be subsumed by the very low means of the other 2-4 items comprising this factor.

The temporal displacement factor included avoiding holidays, weekends, and the peak season due to crowding. All of the other social condition questionnaire items loaded together in the spatial displacement factor. These items included avoiding trails or routes, avoiding wildernesses, avoiding routes due to crowding-related safety concerns, avoiding places with disruptive or inconsiderate people, and going elsewhere for overnight trips due to crowding. No items were dropped from the analysis. However, all of the Middle Sister social items loaded on a single factor. These items were divided into temporal and spatial factors for analysis (Table 3).

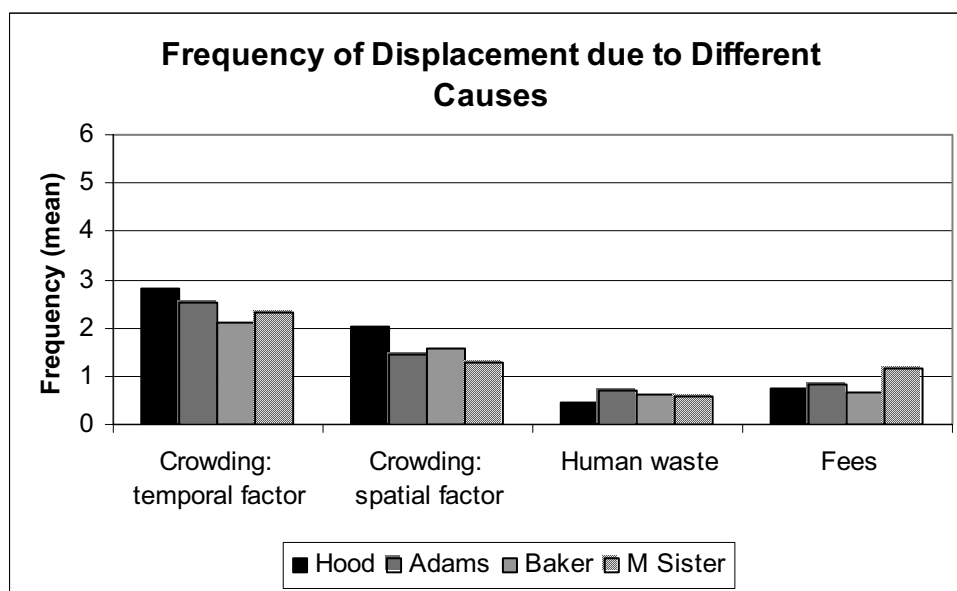
Table 3: Factor loadings for social condition displacement items^a

	Hood		Adams		Baker		Middle Sister ^b	
	Temporal	Spatial	Temporal	Spatial	Temporal	Spatial	Temporal	Spatial
Change season	.815	.269	.644	.411	.604	.563	.794	
Avoid weekends	.868	.182	.879	.106	.901	.098	.871	
Avoid holidays	.864	.253	.849	.290	.886	.202	.875	
Different trails	.240	.618	.419	.557	.536	.640		.811
Other peaks	.463	.653	.365	.714	.298	.763		.768
Visit less: noisy people	.238	.737	.147	.803	.043	.848		.742
Other peaks for overnight	.067	.772	.109	.755	.120	.715		.471
Avoid routes for safety	.362	.680	.445	.678	.307	.812		.718
Alpha	.86	.82	.82	.82	.82	.86	.87	.78
% Variance Explained	13.8	51.2	12.7	52.8	13.9	53.1		
Cumulative %	65.0		65.5		67.0		58.7	

^aPrincipal Components Analysis, Varimax Rotation

^bSingle factor split for analysis

Consistent with the results discussed in Research Question One, respondents to all four focus sections of the questionnaire most often reported being displaced due to social conditions at climbing areas on Hood, Baker, Adams, and Middle Sister (Figure 14). Furthermore, these climbers were more likely to employ temporal coping strategies rather than being spatially displaced. Respondents to the Hood focus section reported significantly (ANOVA, $F = 5.724$, $df = 424$, $p = .001$) higher mean temporal displacement than climbers of Middle Sister. Researchers found no other statistically significant differences among the mean displacement values within each of the four displacement categories in Figure 14.

Figure 14: Comparison of causes of displacement at four focus peaks^a

^a7-point scale: 0 (never displaced), 6 (always displaced)

Again, respondents to all four sections were less likely to be displaced due to resource or managerial conditions, with the exception of Middle Sister, where displacement due to fees was similar to spatial displacement from social conditions (Figure 14). As noted above, the presence of human waste was the dominant displacement-causing resource condition. However, the average respondent at all four peaks was at most occasionally displaced from climbing areas due to human waste. User fees were the dominant managerial condition related to displacement at Hood, Baker, Adams, and Middle Sister. Yet, the average respondent only occasionally avoided climbing areas on one of these peaks because of fees. User fees were not substantially more important than human waste as displacing factors, except at Middle Sister. Respondents to the Middle Sister focus section indicated that fees were almost as influential as crowding on their choice of climbing destination. Overall, these

results indicate that respondents did not consider the focus peaks to substantially differ from one another in terms of setting conditions.

Perceived change at the four focus peaks

As discussed above, the conventional definition of displacement in the context of public lands recreation characterizes the coping response to perceived *change* in setting conditions. Previous research, while embracing this definition of displacement, has not included perceptions of change in the measurement of displacement. Of course, the relationship between displacement and perceived change may be an academic one. Several studies have convincingly measured changes in use whether or not perceptions of change in setting were addressed. Although one could logically assume that displacement due to crowding will likely increase as use density increases, measuring perceived change may strengthen the argument.

Respondents to the four focus sections of the questionnaire were asked a battery of eight questions about perceived changes in social, resource, and managerial conditions at the focus peak. Respondents replied on a seven-point scale ranging from +3 (increased a lot) to -3 (decreased a lot). A response of 0 indicated no change. The complete text of the questionnaire items is available in Appendix B.

A human impact factor and a use level factor emerged from factor analysis of the battery of items (Table 4). The impact factor included the items “number of unofficial side trails,” “amount of litter or trash,” and “amount of human waste/toilet paper visible.” However, the alpha for this factor was substantially higher at all four peaks when the side trails item was not included in the factor, thus this item was dropped from the analysis. The

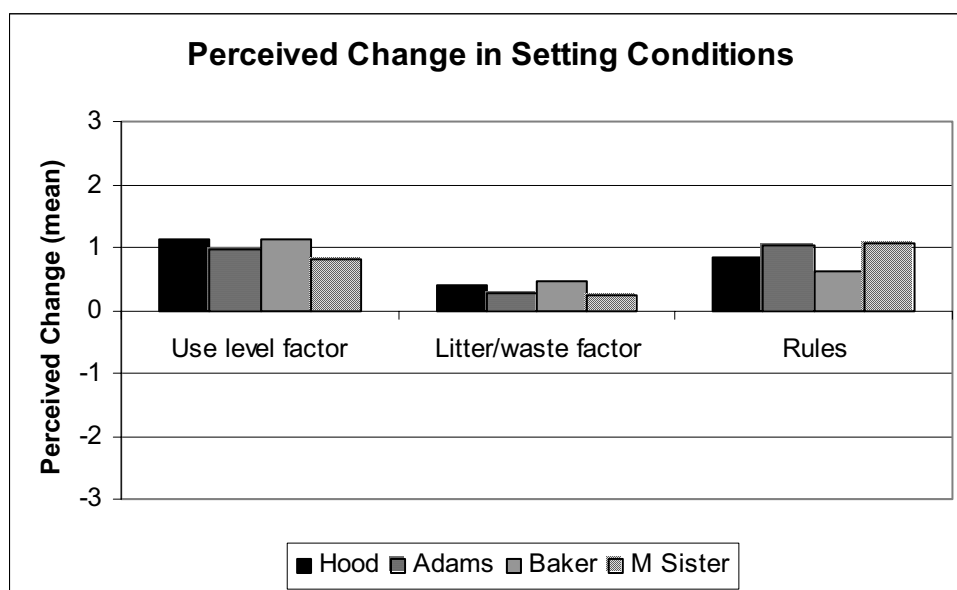
use level factor included the items “number of other users in the area,” and “number of climbers.” The item “number of rules and regulations” did not load consistently on one factor but was included as a separate category as the only item representing the managerial setting. The questionnaire item “evidence of human impact at wilderness campsites” did not load cleanly on a single factor and thus was dropped from the analysis. The item “amount of wildlife you see” was also dropped because it did not load consistently across the four peaks and may not have directly reflected a social, managerial, or resource condition.

Overall, respondents to the four focus sections of the questionnaire reported increases in use and regulation since their earlier climbing trips to the focus destinations. The mean perceived increase in use ranged from 0.8 to 1.1 on a –3 to +3 scale at Hood, Adams, Baker, and Middle Sister (Figure 15). Respondents perceived a slightly smaller increase in rules and regulation, with means ranging from 0.6 to 1.1. Climbers at the four focus peaks indicated that they perceived that change in resource conditions was of the smallest magnitude of the three categories of setting condition. Mean increase in litter and human waste ranged from 0.2 to 0.5. Using ANOVA, researchers found no significant differences between the four peaks within each of the three categories of perceived change in Figure 15.

Table 4: Factor loadings for perceived change items^a

	Hood		Adams		Baker		Middle Sister		
	Use	Impact	Use	Impact	Use	Impact	Use	Impact	Rules
# Users	.917	.196	.879	.222	.789	.365	.913	.213	.126
# Climbers	.880	.317	.902	.195	.795	.284	.919	.174	.050
Rules	.580	.186	.579	.092	.731	-.044	.358	.113	.786
Litter	.457	.715	.161	.882	.404	.773	.013	.947	.023
Human Waste	.335	.647	.090	.884	.445	.627	.177	.903	-.026
Social Trails	.027	.793	.321	.493	.418	.623	.486	.628	.269
Campsite Impact	.327	.799	.523	.656	.712	.404	.356	.860	-.094
Wildlife	-.267	-.718	-.527	-.241	.090	-.820	-.519	-.207	.620
Alpha	.95	.78	.93	.81	.92	.84	.95	.90	
% Variance Explained	13.4	53.4	47.2	15.2	52.4	13.4	50.6	18.1	13.8
Cumulative %	66.7		62.5		65.9		81.9		

^aRetained items are in black boxes, Principal Components Analysis, Varimax Rotation

Figure 15: Perceived change in setting conditions^a

^a7-point scale: +3 (increased a lot), 0 (no change), -3 (decreased a lot)

Perceived change and displacement

Several correlations exist between perceived change in setting conditions and causes of displacement as measured in this study. Researchers found consistently significant ($p < .01$) but weak relationships between displacement due to crowding and perceived change in use levels and human impacts, with the exception of Middle Sister, where perceived change in use was not significantly correlated with displacement due to crowding (Table 5).

Focus section respondents who reported increased use density at Baker and Adams were also significantly ($p < .01$) likely to be displaced due to the presence of visible human waste at those peaks. Perceived change in resource conditions was also significantly correlated with displacement due to human waste at Baker and Adams ($p < .01$) as well as at Hood ($p < .05$). The relationship between perceived change in social and resource conditions and displacement because of human waste are supported by the results of a recent survey of climbers at Baker where respondents indicated that waste management was a problem (Barnett & Hall, 2003). Concentrated overnight use at Baker and Adams climber camps and the lack of waste disposal facilities on either mountain may also have contributed to these findings.

The relationship between perceived change in managerial conditions (rules) and displacement was less consistent across the four focus peaks. At Adams, one of the most regulated climbing destinations in the region, analysis revealed a consistent, but weak, correlation between perceived change in rules and displacement due to both crowding and fees. The results from the Hood, Adams, and Middle Sister focus sections all indicated a weak relationship between change in managerial setting and displacement because of user fees.

Table 5: Bivariate correlation between perceived change and displacement factors

		Perceived Change											
		Use Level				Litter/Waste				Rules			
		H ^a	B	A	MS	H	B	A	MS	H	B	A	MS
Cause of Displacement	Crowds												
	<i>Temporal</i>	.293^b	.534^b	.223^b	.214	.196^b	.513^b	.349^b	.357^b	.002	.250	.173^c	.258
	<i>Spatial</i>	.305^b	.350^b	.366^b	.199	.286^b	.371^b	.327^b	.392^b	.095	.067	.205^c	.141
	Fees	-.056	.152	.141	.106	-.085	-.051	.130	.149	.259^b	.242	.315^b	.404^b
	Human Waste	.120	.421^b	.235^b	.196	.255^c	.588^b	.466^b	.442	-.063	.185	.064	.205

^aH=Hood, B=Baker, A=Adams, MS=Middle Sister

^bPearson Correlation, significant at $p < .01$

^cPearson Correlation, significant at $p < .05$

Researchers used multiple regression to assess the relationship between perceptions of change and displacement. Bivariate correlation was used to identify significantly correlated variables that could be entered into multiple regression models for the focus peaks. Displacement factors were regressed on the perception of change factors discussed above. The regression model included the cause of displacement (i.e., crowds, rules, or human waste) as the dependent variable and perceived changes (i.e., use level, litter/waste, and rules) as the independent variables. Models were tested separately for each peak.

Overall, the relationship between perceived change in setting conditions and displacement was weak. The multiple correlation coefficients ranged from .08 to .10 for Hood and .12 to .21 for Adams (Table 6), depending on the cause of displacement. The results for Baker were somewhat stronger, with R^2 values between .14 and .34. In the case of Hood, the perceived change in use level factor was the sole significant predictor of both temporal and spatial displacement due to social conditions. At Baker, the use level and litter/waste factors were both significant predictors of temporal and spatial displacement due to crowds, but not of displacement due to the presence of human waste. Surprisingly, the litter/waste factor was a better predictor of temporal displacement due to crowding at Adams than the perceived change in use level factor. The connection between perceived change in use and perceived change in litter/waste at Adams and Baker may be a result of predominately overnight climbing use of those peaks. As discussed earlier, increase in use and increase in human waste may not be strongly related at Hood where most climbs only last one day.

Table 6: Multiple regression analysis of perceived changes as predictors of displacement

Cause of displacement (dependent variable)	Peak	Perceived change factors (independent variables)	Adjusted R ²	F	Model <i>p</i>	β	<i>p</i>
Crowds (temporal displacement)	Hood	Use level Litter/waste	.08	5.801	.004	.268 .059	.011 .574
	Baker	Use level Litter/waste	.34	15.661	.000	.367 .325	.005 .012
	Adams	Use level Litter/waste Rules	.12	7.139	.000	.093 .305 .055	.304 .000 .521
Crowds (spatial displacement)	Hood	Use level Litter/waste	.10	7.745	.001	.219 .175	.035 .091
	Baker	Use level Litter/waste	.14	5.807	.005	.259 .216	.073 .133
	Adams	Use level Litter/waste Rules	.16	9.920	.000	.274 .224 .029	.002 .008 .728
Human waste	Baker	Use level Litter/waste	.34	16.347	.000	.158 .506	.206 .000
	Adams	Use level Litter/waste	.21	19.205	.000	.081 .438	.318 .000

Cognitive coping at the four focus peaks

Climbers who are not displaced may employ cognitive coping strategies when they experience setting conditions that are less than ideal. In this study, the attempt to assess cognitive coping was limited by the need for respondents with enough climbing experience at one of the focus peaks to have developed a cognitive coping response to conditions there. Researchers decided that respondents with five or more trips to one of the focus destinations would be qualified to answer the battery of coping items. Due to the size of the survey

sample, this resulted in a small number of respondents (19-64) to the coping questions in any of the focus sections.

Researchers chose questionnaire items that had been used to measure the concepts of rationalization and product shift in previous studies. Table 7 includes the six cognitive coping items used in the questionnaire and indicates whether the item was intended to represent rationalization or product shift.

Table 7: Cognitive coping items

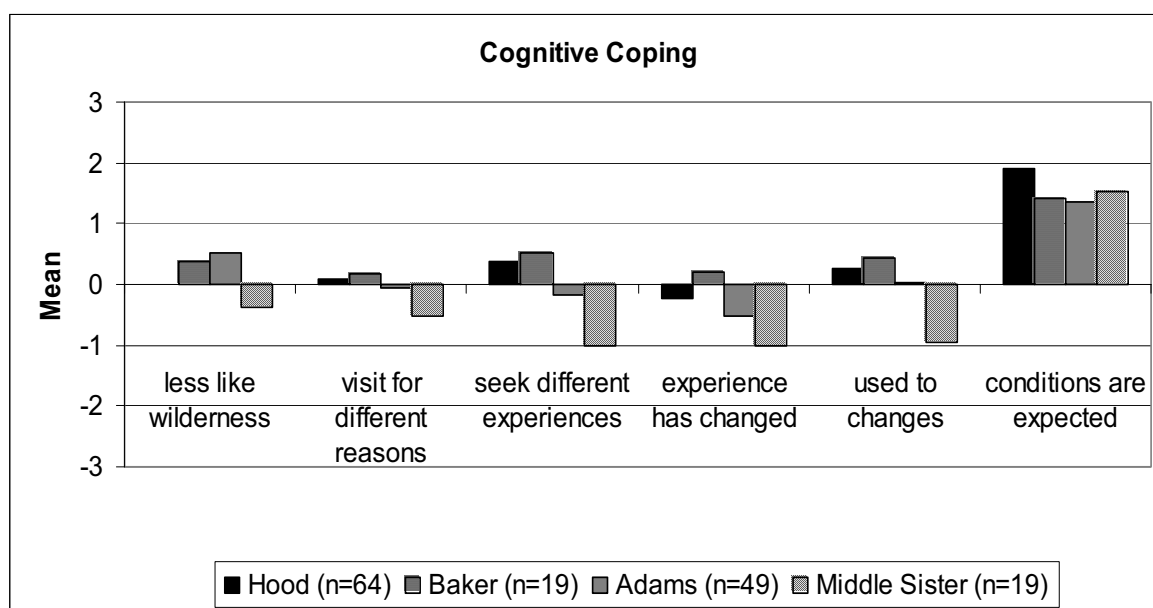
Questionnaire Item	Coping Category
The area feels less like Wilderness than when I first started visiting.	Product Shift
I Still visit the area, but for different reasons than in the past.	Product Shift
I seek different experiences here than I used to.	Product Shift
The type of experience provided by this area has changed.	Product Shift
The area has changed, but I've gotten used to it.	Rationalization
Conditions in the area are usually about what I expect.	Rationalization

Factor analysis resulted in a factor consisting of three cognitive coping items at all four focus peaks. The items included two representing product shift and one intended to measure rationalization. However, examining coping items individually revealed inconsistencies among items at certain peaks. Aggregating these differences as a single factor would therefore have been inappropriate. The mean values for individual coping items have been presented instead.

Figure 16 presents the mean response to each of the six cognitive coping items at Hood, Baker, Adams, and Middle Sister. In general, the average respondent to the Hood,

Baker, and Adams focus sections did not feel strongly about the cognitive coping questions. The mean values for five of the six items for these three peaks are within 0.5 points of zero (neutral). This variation is below the resolution of the study sampling design, which was intended to identify variations of 15% (one point on a seven-point scale) or more. The mean values from the Middle Sister focus section differed substantially from the results of Hood, Baker, and Adams. This difference may be related to the presence of use limits in part of the Three Sisters Wilderness. However, only 19 climbers completed the Middle Sister focus section. One item, “conditions in the area are usually about what I expect,” received considerably stronger agreement from respondents than the other five items.

Figure 16: Cognitive coping at the four focus peaks^a



^a7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree).

The results also indicate the lack of a clear distinction between rationalization and product shift using these items. Although the mean values of one rationalization item (“the area has changed, but I’ve gotten used to it”) differed markedly from the product shift results, the other rationalization item (“conditions in the area are usually about what I expect”) corresponded closely with three of the product shift questions. The implications of this finding will be addressed in the discussion.

Overall, between 46% (Hood) and 49% (Adams) of respondents agreed with one or more of the first five questions. It is important to remember that these results only represent those respondents who had made at least five climbing trips to the focus peaks. Also, the percentage of respondents possibly engaged in cognitive coping does not include the item “conditions in the area are usually about what I expect.” The percentage of respondents agreeing with this statement (as many as 87.7% at Adams) was so large that researchers were skeptical that the responses to this item only represented rationalization.

Relationship between cognitive coping and displacement

Researchers used multiple regression to assess the relationship between cognitive coping and displacement. Data from the Baker and Middle Sister focus sections were not sufficiently normal to be included in this portion of the analysis. The sample size for these two peaks was also small (n=19). Bivariate correlation was used to identify significantly correlated variables that could be entered into multiple regression models for Hood and Adams. Displacement factors were regressed by individual cognitive coping items in the focus section. The regression model included the cause of displacement (i.e., crowding,

human waste, or fees) as the dependent variable and the six cognitive coping items in Table 7 as the independent variables. These models were then tested for Hood and Adams.

Overall, the relationship between cognitive coping and displacement was weak. The multiple correlation coefficients for Hood ranged from .10 to .19 (Table 8). The results for Adams were somewhat stronger, with R^2 values between .27 and .37. However, the models with moderate correlations also included more variables than the weaker models.

Researchers found no significant relationship between cognitive coping and displacement due to fees at either peak. Since Hood does not have a climbing or parking fee on the standard route, this finding is not entirely unwelcome.

Table 8: Stepwise regression analysis of cognitive coping as a predictor of displacement

Cause of displacement (dependent variable)	Peak	Cognitive coping items (independent variables)	Adj. R ²	F	Model <i>p</i>	β	<i>p</i>
Crowds (temporal displacement)	Hood	Used to changes	.19	5.897	.001	-.497	.000
		Seek different experiences				.320	.019
		Less like Wilderness				.297	.059
	Adams	Conditions are expected	.36	6.219	.000	-.305	.020
Visit for different reasons	-.447	.059					
Used to changes	-.224	.143					
Seek different experiences	.746	.003					
Less like Wilderness	.310	.058					
Crowds (spatial displacement)	Hood	Used to changes	.20	6.209	.001	-.431	.002
		Seek different experiences				.330	.015
		Less like Wilderness				.319	.015
	Adams	Conditions are expected	.34	7.096	.000	-.249	.055
Used to changes	-.338	.030					
Seek different experiences	.545	.000					
Less like Wilderness	.203	.199					
Human waste	Hood	Used to changes	.10	3.217	.029	-.220	.114
		Visit for different reasons				-.190	.152
		Type of experience has changed				.376	.008
	Adams	Used to changes	.27	6.650	.001	-.439	.008
Seek different experiences	.490	.002					
Less like Wilderness	.320	.044					
Fees	Hood	No significant relationship					
	Adams	No significant relationship					

The most common predictors of displacement were “The area has changed, but I’ve gotten used to it,” “I seek different experiences here than I used to,” and “The area feels less like Wilderness than when I first started visiting.” These items were intended to represent both rationalization and product shift. The lack of a clear distinction between these two cognitive coping concepts is consistent with the results reported above. The items “I still visit this area, but for different reasons than in the past,” “Conditions in the area are usually about what I expect,” and “The type of experience provided by this area has changed” were retained in only one or two of the eight models.

Interestingly, in the Adams temporal displacement model, the product shift item “I still visit this area, but for different reasons than in the past” had a negative standardized regression coefficient (beta), while the beta was positive for the product shift item “I seek different experiences here than I used to.” This finding may indicate that respondents who reported visiting for different reasons continued to visit as often as they used to, while respondents who sought different experiences were visiting less often and seeking experiences elsewhere. In any case, respondents made a distinction between visiting for different reasons and seeking different experiences at Adams.

Although the correlations were not strong, the results do indicate that some climbers engage in a combination of cognitive and behavioral coping (displacement) responses to social and resource setting conditions. Yet, the relationship between the two categories of coping is not particularly strong. The contention that climbers either cope cognitively or are displaced is therefore likely inaccurate. However, the rationalization item “The area has changed, but I’ve gotten used to it” was negatively related to displacement at Hood and Adams. This finding may indicate that some respondents are displaced and do not engage in cognitive coping. Alternatively, those who “get used to it” may be less likely to be displaced.

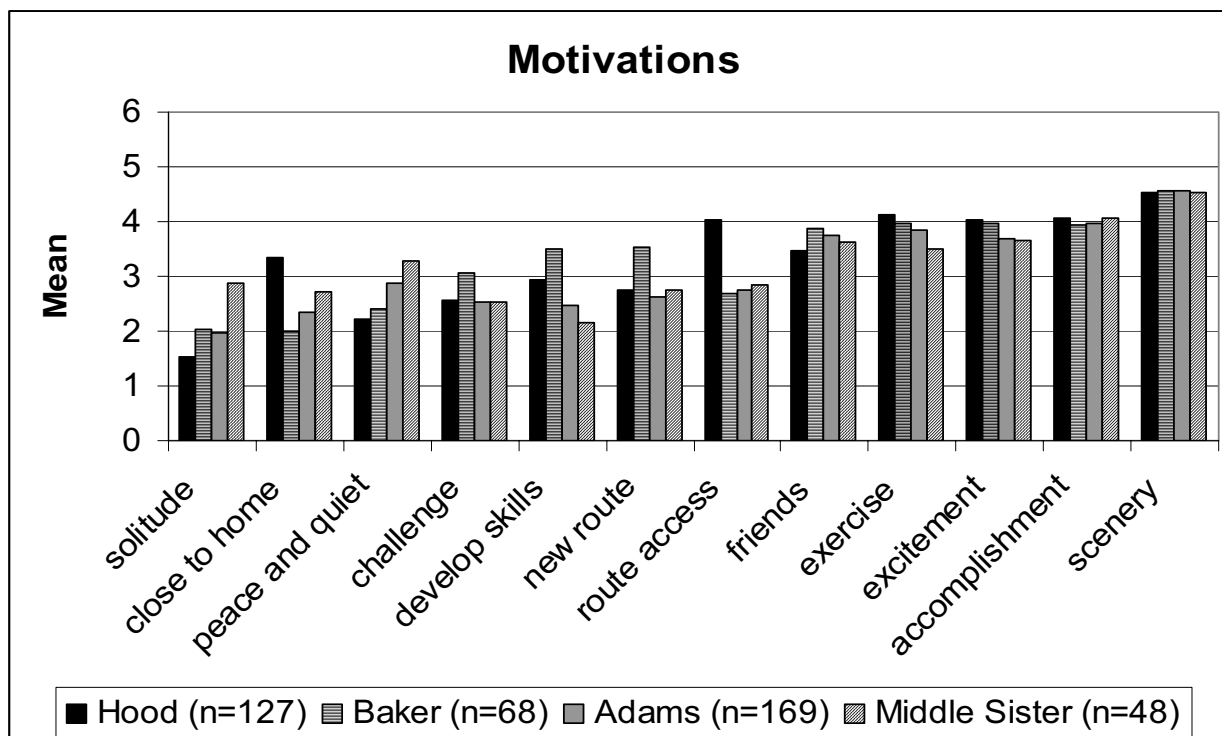
Climber motivations at the four focus peaks

Although climber motivations were not specifically addressed in the research questions and propositions of this study, they were included in the questionnaire to develop the model of displacement presented in the introduction. We have chosen to present the

results of the motivation items because of their potential importance in relation to displacement. Motivations may also help to distinguish among climbing opportunities provided by different peaks.

Respondents to the four questionnaire focus sections were asked a battery of 12 motivation items developed from the research literature and from interviews with climbers. Climbers responded on a seven-point scale ranging from zero (not a reason) to six (important reason) in relation to climbing that specific peak. The full text of the motivation questions is in sections 3.4 and 4.4 of the questionnaires in Appendix B.

Overall, respondents indicated that solitude was one of the least important of the twelve reasons for taking climbing trips to Hood, Baker, and Adams (Figure 17). Respondents to the Middle Sister focus section were substantially more likely to be seeking solitude on their trips to that peak. Peace and quiet, possibly related to solitude, was also among the less important motivations, yet substantially greater than solitude at all four peaks. Again, peace and quiet was most important for Middle Sister climbers. This finding may be due to lower use density at Middle Sister as a result of use limits.

Figure 17: Motivations for climbing trips to the focus peaks^a

^a7-point scale: 0 (not a reason), 6 (important reason).

Hood also ranked substantially higher than the other three peaks on two motivation items: “it’s close to home” and “easy access to climbing routes.” Besides being the closest of the four peaks to a major city, Hood’s primary climbing route is accessed via paved road to a ski area above treeline. Thus, accessibility may be a more important component of a climber’s decision to visit Hood.

Baker ranked substantially higher than the other three focus peaks on three motivation items: “The challenge of the climbing route,” “climb a new route,” and “develop climbing skills” (Figure 17). The standard routes on Baker may be more challenging than the most popular routes on the other three peaks due to extensive glacier travel and steep snow. Baker would thus be a peak at which to seek challenge and to develop climbing skills.

Surprisingly, Adams did not stand out on any motivation (Figure 17). Although the standard route requires no technical climbing skills, the peak is over 12,000 feet high, and therefore physically challenging. Perhaps the most interesting result with respect to Adams is the substantial difference in the importance of finding solitude versus finding peace and quiet among respondents to this section.

Finally, five motivations were consistently important across all four peaks. The items were “spend time with friends or family,” “exercise,” “excitement or exhilaration,” “feel a sense of accomplishment,” and “enjoy the scenery.” Scenery was the most important reason cited by the average climber for visiting any of the focus peaks.

Relationship between solitude-seeking and displacement

Assuming that there is a relationship between solitude and crowding, respondents motivated by the desire for solitude would choose not to visit climbing destinations with high use density. Thus, solitude-seeking may be related to displacement. However, a simple bivariate correlation only found significant, and weak, relationships between solitude and displacement at Adams and Middle Sister (Table 9). These results may reflect the complexity of the solitude construct.

Table 9: Significant correlations between displacement and desire for solitude^a

Cause of displacement	Peak	Motivation	R
Crowds (temporal displacement)	Adams	Solitude	.265
	Middle Sister	Solitude	.316
Crowds (spatial displacement)	Adams	Solitude	.200

^aPearson Correlation, $p < .01$

Propositions

This section of the thesis reports the results from the five research propositions that were developed in the introduction. These proposed relationships were formed from the linkages in the model of displacement discussed in the introduction. Due to limitations of the survey instrument, three of these propositions cannot be assessed here. These relationships involve the respondent's evaluation of change in setting conditions and how that evaluation relates to displacement. Although we measured perceptions of change, we did not directly measure respondents' evaluation of whether or not perceived changes were positive, neutral, or negative.

Proposition Two: Increase in experience (number of climbs, number of peaks climbed, and years climbing) will be positively correlated with displacement.

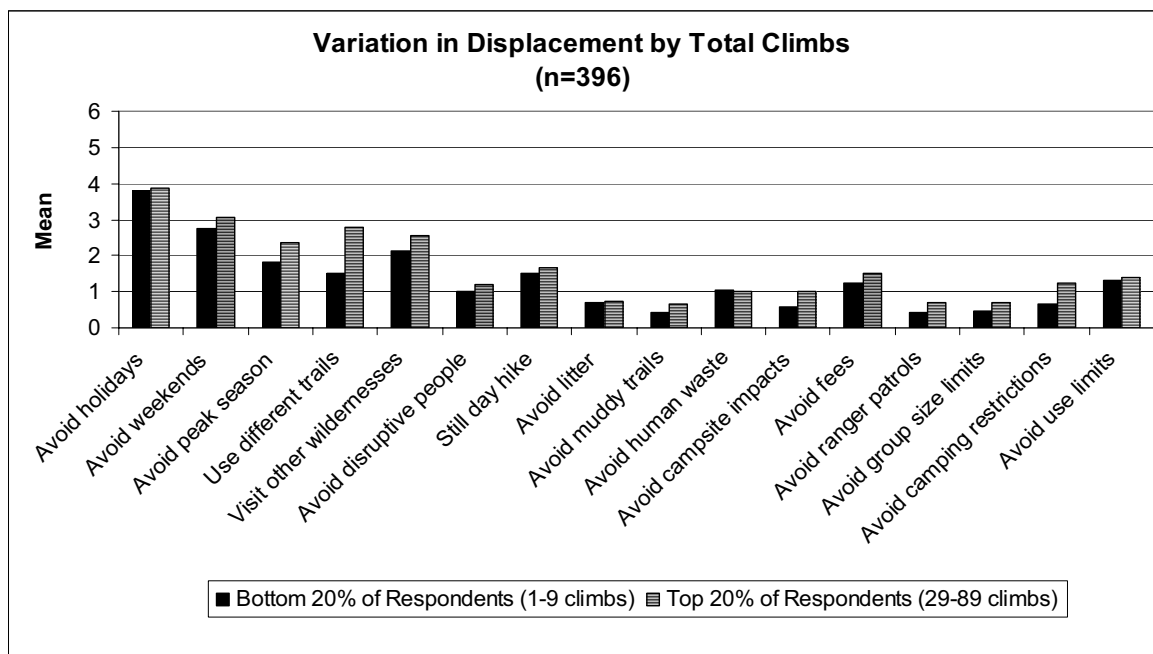
Number of years climbing was measured using the open-ended question "How many years have you been mountaineering?" Researchers determined the number of climbing trips that respondents had made to the 15 Cascade volcanoes listed in the questionnaire. For each

peak, respondents first marked if they had climbed, or attempted to climb, the peak before. Next, they checked a box indicating that they had climbed the peak once, 2-3 times, 4-5 times, 6-8 times, or 9+ times. Researchers created an index of the total number of climbs that respondents had made on all of the 15 peaks in the study. Responses that represented a range of climbs were assigned the midpoint. For example, a respondent who indicated having climbed or attempted Mt. Jefferson 6-8 times was assigned the value seven to construct the index. Respondents who had climbed a peak “9+” times were given the value 10. The number of climbs at each peak was then summed to create a measure of total climbs per respondent at the Cascade volcanoes.

Researchers also created an index of diversity to evaluate the number of Cascade volcanoes that a given respondent had climbed or attempted to climb. Each peak that a respondent had climbed or attempted was assigned a value of one, and unclimbed peaks were represented with zeros. Summing the “ones” resulted in an index of the number of different peaks that each respondent had climbed. Researchers chose years mountaineering, number of climbing trips to the 15 Cascade volcanoes, and the number of different peaks climbed to represent the concept of experience level. Climbing skill level was addressed separately in Proposition Six because researchers proposed that skill level may be more closely related to change in use based on the desire for challenge, rather than aversion to perceived changes in setting condition.

For the purposes of this analysis, researchers compared the difference in displacement between the top and bottom 20% of respondents for each of the three experience variables. These two groups of respondents were intended to represent the two extremes of the range of experience levels. Comparison of respondents with the least number of climbing trips (1-9

climbs) to the study peaks with respondents with the most climbing trips (29-89 climbs) to the study peaks found few meaningful differences across the sixteen displacement variables in the questionnaire. Respondents who had made more climbs of the study peaks were substantially more likely to use different trails or routes due to crowding at the Cascade volcanoes than were respondents with few climbs (Figure 18). The strength of the relationship between total number of climbs and displacement is addressed below. Except for this single item, the magnitude of displacement and the use of various displacement strategies did not differ substantially between the two groups. Interestingly, Figure 18 does reveal a pattern in which respondents in the top 20% by number of climbs were consistently slightly more likely to be displaced than were respondents in the bottom 20%. However, this difference was not statistically significant. Overall, comparison of respondents with many climbs and those with few climbs on the Cascade volcanoes found little difference in displacement.

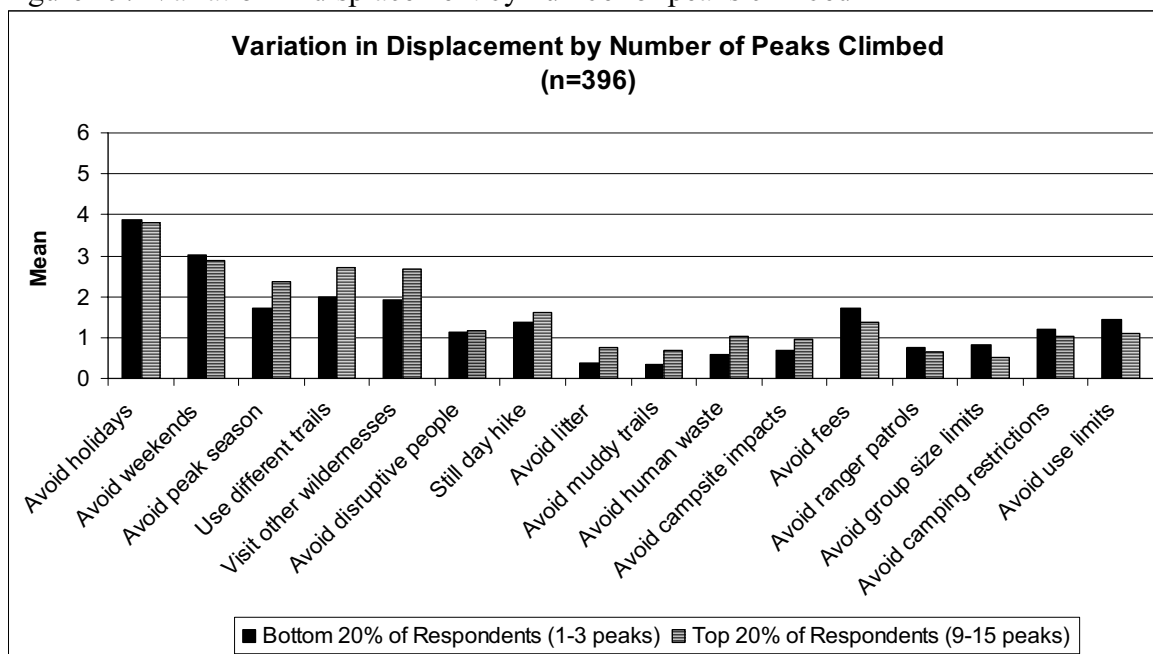
Figure 18: Variation in displacement by total number of climbs at study peaks^a

^a7-point scale: 0 (never displaced), 6 (always displaced)

Comparison of the 20% of respondents who had climbed the most Cascade volcanoes (9-15 peaks) with the 20% of respondents who had climbed the fewest (1-3 peaks) revealed few differences in displacement. The most experienced climbers were substantially more likely to report avoiding the busy season, using different trails, or visiting other wilderness peaks due to social conditions at the Cascade volcanoes (Figure 19). The strength of this relationship is addressed below in Table 10. Figure 19 also reveals that respondents who had climbed the most study peaks were *less* likely to be displaced due to managerial setting conditions (i.e., fees, ranger patrols, group size limits, camping restrictions, and use limits) than were respondents who had climbed the fewest peaks. While this difference was not statistically significant, it is the opposite of that found in Figure 18, which shows that climbers with the greatest number of climbs were consistently *more* likely to be displaced

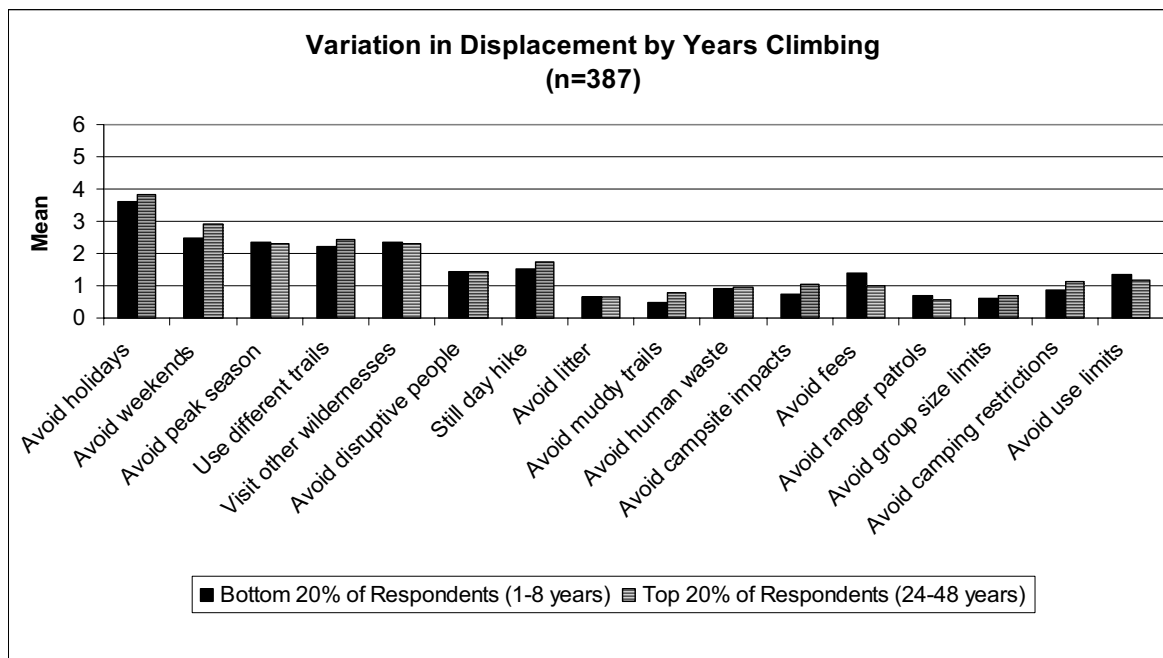
due to managerial conditions than respondents with the fewest climbs. Random error may be an explanation for this difference.

Figure 19: Variation in displacement by number of peaks climbed^a



^a7-point scale: 0 (never displaced), 6 (always displaced)

Comparison of the top and bottom 20% of respondents by number of years climbing found no substantial differences in causes of displacement or displacement strategies. Furthermore, no consistent pattern of variation in displacement between these two groups was apparent (Figure 20).

Figure 20: Variation in displacement by number of years climbing^a

^a7-point scale: 0 (never displaced), 6 (always displaced)

Bivariate correlation revealed a weak significant relationship between the number of climbing trips that respondents had taken to any of the 15 Cascade volcanoes in the study and the spatial displacement item “go to different trails or routes” because of the amount or type of use at the peaks listed in the questionnaire (Table 10). This same item was also correlated with the number of different study peaks that respondents had climbed. Additionally, the number of peaks climbed correlated weakly with two other displacement items, which were also responses to social conditions at climbing destinations at the study peaks. The item “go to other Wilderness peaks” represented a spatial displacement strategy, while the item “visit earlier or later in the season to avoid crowds” was a method of temporal displacement. Experience variables were not significantly correlated with any other displacement strategies.

Table 10: Significant correlations between experience variables and displacement

Experience variable	Displacement strategy	T^a	<i>p</i>
Number of climbs	Go to different trails or routes	.139	.002
Number of peaks climbed	Go to different trails or routes	.128	.007
	Go to other Wilderness peaks	.106	.023
	Visit earlier or later in the season	.093	.045
Number of years climbing	NS		

^aKendall's Tau

Number of years mountaineering was not significantly correlated with any cause of displacement or displacement strategy. The lack of a significant relationship between years climbing and displacement may be due to the influence of other variables that were not measured in this study, such as the temporal distribution of climbing trips during a respondent's climbing career, or the proportion of total trips that were made to peaks other than the Cascade volcanoes. For example, a climber with twenty years of mountaineering experience could have made most of his or her climbs on the Cascade volcanoes during the span of a few years. This respondent would have had less opportunity to observe change over time at the study peaks, and thus be less likely to be displaced. Conversely, a climber with twenty years of mountaineering experience could have climbed one or more of the study peaks every year during that time period. This respondent would have had more opportunity to observe change in setting conditions, and thus would be more likely to be displaced.

Due to the high degree of correlation between number of climbs and number of peaks climbed ($R = .827$), researchers did not combine these variables with the "go to different

trails or routes” item in a regression equation since this would violate the threshold for collinearity (Tabachnick & Fidell, 2001).

Researchers also evaluated the relationship between displacement at each of the four focus peaks and the number of climbs that respondents had made of that particular peak. Bivariate correlation indicated a few relationships between displacement strategies and the number of climbing trips taken to Hood, Baker, and Adams. Again, spatial displacement due to social conditions was the most common response among the focus peaks.

At Hood and Adams, number of trips was weakly related to the displacement item “go to different trails or routes” (Table 11). Results from Baker respondents indicated that number of trips was related to the item “avoid places near the Mt. Baker National Recreation Area because of snowmobile use.” Displacement due to two resource conditions items was negatively correlated with number of climbing trips at Hood. The items indicated that more experienced respondents were less likely to be displaced because of “muddy or eroded trails” and “damage to vegetation or soil at campsites.”

The final pair of displacement items that were significantly correlated with number of climbing trips represented managerial conditions at Adams. Number of climbing trips to Adams was positively related to both visiting less often to “avoid fees or parking passes,” and visiting less often to “avoid ranger patrols.” This finding may indicate that respondents that have made more trips to Adams are more likely to avoid the more regulated south side climbing route in favor of less regulated routes on Adams. There are several alternate routes on Adams for intermediate climbers where the climbing fee is not enforced because those routes are not frequented by rangers. Researchers found no significant relationship between number of trips and displacement at Middle Sister.

Table 11: Significant correlations between number of climbing trips to focus peaks and displacement

Cause of displacement	Peak	Displacement strategy	T^a	p
Social conditions	Hood	Go to different trails or routes	.200	.006
	Baker	Avoid places near NRA	.231	.026
	Adams	Go to different trails or routes	.157	.015
Resource conditions	Hood	Visit less due to muddy or eroded trails	-.226	.004
	Hood	Visit less due to damage to soil or vegetation at campsites	-.156	.047
Managerial conditions	Adams	Avoid fees or parking passes	.180	.007
	Adams	Avoid ranger patrols	.136	.050

^aKendall's Tau

Proposition Five: Increased skill will be correlated with changes in use other than displacement.

Proposition Five addressed the relationship between climber skill level and displacement. As discussed in the introduction, researchers proposed that climbers with an advanced level of climbing ability would seek out new climbing destinations that provided routes commensurate with their skill level. Thus, advanced climbers would change their use of the Cascade volcanoes, but not necessarily in response to changes in setting conditions.

Researchers assessed climbing skill level by asking respondents to choose one of three categories: beginner, intermediate, or advanced. Researchers found no significant differences between skill levels and change in use due to factors other than displacement, such as “desire to explore new areas.” However, advanced skill level was related to three social condition displacement items. The three items were “go to different trails or routes”

(ANOVA, $F = 10.489$, $df = 253$, $p < .000$), “go to other Wilderness areas that are less crowded” (ANOVA, $F = 4.051$, $df = 258$, $p = .019$), and “visit less often to avoid disruptive or inconsiderate people” (ANOVA, $F = 4.215$, $df = 260$, $p = .016$). These three items also all represent spatial displacement strategies in response to the amount or type of use at any of the 15 Cascade volcanoes in the study. This comparison used the data from the region-wide section of the questionnaire.

Post-hoc comparison revealed a significant difference between respondents with an advanced level of climbing ability and those who were of intermediate or beginner skill on the item “go to different trails or routes.” Advanced climbers differed from beginners, but not from intermediate climbers, on the other two items (“go to other Wilderness areas that are less crowded” and “visit less often to avoid disruptive or inconsiderate people”).

Comparison of skill level and displacement at each of the four focus peaks resulted in no significant relationships, except at Adams. Respondents to the Adams focus section with an advanced skill level differed significantly from beginner climbers on the item “go to different trails or routes” in response to social conditions at Adams (ANOVA, $F = 3.100$, $df = 161$, $p = .048$).

Overall, the results from evaluation of Proposition Five indicate a significant relationship between skill level and displacement. This relationship exists at the regional scale and, in the case of Adams, at the site-specific scale. Furthermore, skill level was specifically related to three spatial displacement items in the regional section of the questionnaire. The one significant item at Adams also measured spatial displacement. However, skill level was not significantly related to displacement at Hood, Baker, or Middle Sister. These findings suggest that advanced climbers were more likely to resort to spatial

displacement in response to social conditions than were beginner climbers. Skilled climbers may be aware of, and have the ability to climb, a wider variety of routes. Thus, avoiding climbing areas with unacceptable social conditions could be a more feasible option for advanced climbers while beginner climbers may have to stay and cope with conditions.

This concludes the reporting of study results. The following section provides a discussion of the importance of these findings in relation to previous research and presents management implications.

Discussion

Magnitude and Causes of Displacement

This study found substantial temporal and spatial displacement of mountaineers due to social conditions at wilderness climbing destinations. Ninety-two percent of respondents had resorted to one or more temporal displacement strategies to avoid crowded conditions at climbing areas. Positive responses to three temporal displacement items ranged from 81%-92%. Avoiding holiday weekends was the most common temporal coping strategy.

This study found notably more temporal displacement in comparison to previous work that has measured temporal displacement due to social conditions. In general, earlier recreation research found a range of 12% to 66% of respondents engaging in temporal coping strategies to avoid unacceptable social conditions at a variety of locations (Gramann, 2002; Hall & Shelby, 2000; Hammitt & Patterson, 1991; Kearsley & Coughlan, 1999; Manning & Valliere, 2001; Robertson & Regula, 1994). Although most of these studies did not address wilderness specifically, and researchers used a variety of means to measure temporal displacement, the difference in the range of magnitude of displacement between these earlier studies and the current one is remarkable.

Eighty-six percent of respondents reported being spatially displaced one or more times due to social conditions at the study peaks. Respondents were equally likely to avoid trails or routes (intra-site displacement) or to go to different wilderness areas that were less crowded (inter-site displacement). Positive responses to four spatial displacement items ranged from 55%-86%.

The magnitude of spatial displacement due to social conditions was notably larger in this study than in previous ones. While our results indicated that 55%-86% of respondents

employed spatial coping strategies at Cascade volcano climbing destinations, earlier recreation research found a range of 6%-53% of respondents employing spatial coping strategies in response to social conditions at a variety of recreation settings (Gramann, 2002; Hall & Shelby, 2000; Hammitt & Patterson, 1991; Hoss & Brunson, 1999; Kearsley & Coughlan, 1999; Manning & Valliere, 2001; Shelby et al., 1988).

A possible explanation lies in the unique approach taken by this study. While previous research measured displacement at one site, or at a small set of alternative sites, this study took a regional approach. Respondents could indicate whether or not they had avoided any of a set of 15 climbing destinations that represented nearly all of the major Cascade volcanoes in Washington and Oregon. As a result, any respondent who had ever resorted to a temporal or spatial coping strategy to avoid unacceptable social conditions at any of these climbing areas would be counted in the survey. Thus, while previous work indicated a range of temporal and spatial displacement at various recreation areas, this study revealed that almost every respondent has relied on temporal displacement, and most respondents have employed spatial strategies, to avoid social conditions at one or more of the Cascade volcanoes one or more times.

Resource conditions generated considerably less displacement at the study peaks than did social conditions. Responses to four resource conditions resulted in displacement ranging from 33%-44%. Forty-four percent of respondents indicated being displaced from climbing destinations one or more times due to the presence of human waste. Climbers were almost as likely to be displaced due to damage to vegetation or soil at campsites.

Consistent with previous displacement research, this study found a relatively narrow range (33%-44%) of respondents who reported being displaced due to resource conditions.

The few earlier projects that measured displacement in response to resource conditions found that 24%-36% of respondents were displaced for this reason (Hall & Shelby, 2000; Hoss & Brunson, 1999; Shelby et al., 1988). The current study found somewhat more displacement due to resource conditions among climbers at the Cascade volcanoes, which may again be due to the regional scale of the project. Interestingly, although respondents to wilderness surveys generally report that resource conditions are a more valid justification for intensive management, like limiting use, than are social conditions (Cole et al., 1997), displacement research consistently indicates that respondents are more likely to avoid wilderness destinations because of social conditions rather than resource impacts.

The magnitude of displacement due to managerial conditions was also substantially less than that due to social conditions, but similar to displacement because of resource conditions. Between 19% and 46% of respondents reported being displaced due to one of five managerial conditions. The climbers most often cited user fees, but regulation of where people can camp and use limits generated nearly as much displacement.

Previous recreation research that measured displacement due to managerial conditions found that a range of 8%-37% of respondents avoided certain areas as a result of a variety of regulations (Hall & Shelby, 2000; Schneider & Budruk, 1999; Shelby et al., 1988). Fees, camping restrictions, and use limits were common causes of displacement in earlier studies that addressed these factors. As was the case with displacement due to resource conditions, our study reported a range of displacement due to managerial conditions that was about 10% higher than previous studies. This difference may be due to the regional scale of the current study.

In summary, this study found that the vast majority of respondents have resorted to temporal or spatial displacement strategies at least once to avoid crowded conditions at Cascade volcano climbing areas. Respondents were substantially less likely to have been displaced due to resource or managerial conditions, although close to half of climbers in the study reported being displaced at least once because of one or more of these conditions. Additionally, results indicate that measuring displacement at a regional scale may yield consistently higher levels of displacement for all three setting categories than studies that focus on a single site or on a small set of alternative locations.

It is important to point out that the magnitude of displacement measured in this study may also have been increased by the method of measurement. For example, the phenomenon of endpoint avoidance, in which respondents avoid marking the highest or lowest value on a questionnaire item scale, may have increased the percentage of respondents who indicated being displaced one or more times (Fowler, 1993). Additionally, respondents may have intentionally overstated frequency of displacement in order to protest managerial conditions that they disagreed with. A possible example is the finding that 28% of respondents to the Hood focus section reported avoiding climbing areas on Hood one or more times because of fees. This number seems large considering the absence of a climbing or parking fee to access the popular south side routes on the mountain. Differences in questionnaire wording between studies also likely affected the magnitude of displacement measured by different researchers.

In addition to assessing the proportion of respondents who had ever been displaced from one of the Cascade volcanoes, this study also permitted an assessment of degrees of displacement, the frequency with which a respondent resorted to displacement strategies in response to setting conditions. Although previous research has acknowledged the concept of

degrees of displacement, no published studies have reported results in these terms (Robertson & Regula, 1994). This study found that substantially fewer respondents reported being frequently displaced from climbing destinations in comparison to the proportion of climbers who were displaced one or more times. Among climbers who participated in this study, 25%-58% usually or always employed temporal coping strategies in response to social conditions at the Cascade volcanoes. Between 8% and 24% of respondents were usually or always spatially displaced due to social conditions. Resource conditions (2%-7%), and managerial conditions (4%-17%) accounted for a smaller proportion of respondents who reported being usually or always displaced due to these conditions.

In some instances, the magnitude of displacement for those climbers who were frequently displaced is still substantial. Social conditions at the study peaks are causing more than one quarter of survey participants to routinely resort to temporal coping strategies at one or more peaks. Spatial displacement due to social conditions and substantial reduction in the number of visits to avoid user fees are also notable. From a management perspective, a value judgment is required to decide what frequency of displacement is acceptable and for which reasons.

This study also measured the magnitude of “total” displacement, which refers to those climbers who no longer visit a certain Cascade volcano because of setting conditions there. In response to an open-ended question, 11% of the survey sample indicated one or more peaks that they no longer visited specifically as a result of crowded conditions. However, no more than 5% of study participants who had climbed a given peak no longer visited that particular peak. In comparison, three previous non-wilderness recreation studies found that 4%-7% of respondents had ceased visiting the study sites due to crowding (Gramann, 2002;

Hall & Shelby, 2000; Manning & Valliere, 2001). Thus, existing recreation research reports a consistently low level of total displacement from a given study site due to crowding. This finding is important from a methodological perspective because it indicates that studies that survey the surrounding counties (Gramann, 2002), communities (Manning & Valliere, 2001), or alternative sites (Hall & Shelby, 2000) may be capturing the vast majority of displacement.

Differences in Displacement at Different Peaks

In addition to assessing the magnitude and causes of displacement region-wide, this study compared displacement at several of the Cascade volcanoes. Researchers found that four peaks -Hood, Adams, Rainier, and St. Helens- were generating most of the displacement among the 15 Cascade volcanoes in this study. However, the magnitude of displacement attributed to social, resource, and managerial setting conditions varied somewhat among these four peaks. In other words, different peaks displace climbers for different reasons. For example, respondents to an open-ended question most often cited Hood as a peak from which they were displaced due to crowding, while St. Helens was most commonly noted as a the peak generating displacement due to managerial conditions.

Social and managerial conditions are quite different at these two Cascade volcanoes. The south side climbing route on Hood can receive more than 200 climbers on a holiday weekend, there are no limits on the number of climbers, and the Forest Service does not charge a fee (Walker & Slagle, 2000). Logically, the large number of climbers and the lack of intensive regulation would result in more climbers being displaced due to unacceptable social conditions, and fewer avoiding Hood due to management restrictions. Conversely, St.

Helens has a 100 climber daily limit during the summer, holds a daily lottery to issue climbing permits, and charges \$15 per climber. Since use levels are limited by the more restrictive management regime at St. Helens, climbers are more likely to be displaced due to managerial conditions than by crowding.

Displacement at Adams and Rainier was most often the result of social conditions at these popular peaks. However, Rainier also generated nearly as much displacement due to managerial conditions as St. Helens. Management at Rainier includes quotas on overnight stays at popular high camps and a \$30 climbing fee. Although Adams charges a \$15 fee, there are no use limits or camping restrictions. Again, the peaks with more restrictive management practices also generated more displacement due to managerial conditions.

Despite the regional section findings, the results of the focus sections did not support the relationship between managerial conditions and displacement. Respondents to the Hood, Baker, and Adams focus sections reported similar frequencies of displacement due to managerial conditions, despite differences in management of these peaks. Survey participants who completed the Middle Sister focus section were substantially more likely to report being displaced due to user fees and ranger patrols, although Adams charges a higher fee and has frequent ranger patrols on the popular south side route during weekends. This difference may reflect local opposition to the Fee Demonstration Program. One of the most outspoken opponents of the program lives in Bend, near the Three Sisters Wilderness. Middle Sister climbers who wished to avoid paying fees may also avoid areas with frequent ranger patrols, since rangers would enforce the fee requirement. The differences in results between the regional and focus sections may indicate that setting conditions at the four focus

peaks are not as different from each other as we expected and that the peaks in the regional section represent a wider range of conditions.

These findings lend support to the argument made by Hall and Cole (2000) for a regional perspective on displacement. Conceptualizing the fifteen Cascade volcanoes as a system of peaks offering a variety of climbing opportunities reveals the potential effects that management practices at one peak can have on use at other peaks in the region. As management regimes become more restrictive at the Cascade volcanoes, climbers sensitive to crowding, but tolerant of regulation, find more acceptable setting conditions if use is limited. Conversely, climbers tolerant of crowding, but sensitive to regulation, may be more likely to be displaced to a peak with more favorable setting conditions.

In addition to considering the Cascade volcanoes as a regional system, it may be useful to consider certain sets of climbing routes as subsystems. For example, most of the peaks in this study have one or two standard, less difficult routes that are more accessible, the most popular, and thus the most crowded on the mountain. This set of routes provides climbing opportunities for less skilled climbers. Yet, a climber who is content to attempt the easier routes must also be tolerant of use levels on those routes. Thus, climbers on these routes who value solitude must resort to temporal displacement strategies in order to have their desired experience. Considering the easier climbing routes as a regional subsystem would help to ensure that these routes offer a range of opportunities to climbers because management actions affecting one of these routes would be considered in the context of the conditions at the other routes in the subsystem.

Displacement at the Four Focus Peaks

Researchers investigated displacement in-depth at four of the Cascade volcanoes: Hood, Baker, Adams, and Middle Sister. In general, the relative importance of social, resource, and managerial setting conditions was consistent across the four peaks. Social conditions drove most displacement, with temporal strategies more often employed than spatial responses. Displacement due to resource and managerial conditions was consistently of a substantially smaller magnitude than displacement due to social conditions. However, the importance of some causes of displacement varied between peaks. For example, while the overwhelming majority of displacement at Hood and Adams fell into the social condition category, Hood respondents were more likely to be displaced due to crowding-related safety concerns than were Adams climbers. The concern for safety among Hood climbers may have been influenced by a major climbing accident that occurred on the standard route the summer before this study was conducted. In addition, respondents to the Middle Sister focus section were twice as likely as Baker respondents to be displaced to avoid user fees. These findings indicate that while social conditions were the driving force behind most displacement at the four focus peaks, differences in setting conditions at these peaks resulted in some variation in the amount of displacement caused by specific conditions. However, results were not consistent in the case of respondents to the Adams focus section, who did not report more displacement due to higher fees there.

Another noteworthy finding from the focus sections was the impact of “edge effects” of non-wilderness recreation activities on wilderness climbers. This study found substantial displacement of climbers from wilderness climbing areas on Hood and Baker in order to avoid the resource and/or experiential impacts of adjacent non-wilderness recreation

activities. Ski areas on Hood and snowmobile use on Baker may be displacing wilderness climbers to more remote areas. The Baker results are consistent with the 2002 Baker climber survey, which found that snowmobile use in the Mt. Baker National Recreation Area was negatively affecting the experiences of wilderness climbers and skiers (Barnett & Hall, 2002).

The results of the current study have important implications for management of wilderness climbing destinations adjacent to non-wilderness recreation areas. Continued development of lands adjacent to wilderness, such as the proposed ski area expansion on Hood, may displace wilderness visitors away from the edge areas adjacent to non-wilderness recreation areas. Possible management responses could include trying to include buffer areas in development plans to protect the wilderness quality of edge areas, or managing edge areas for experiences that are not in conflict with the effects of adjacent non-wilderness recreation activities.

Perceptions of Change in Setting Conditions

Our study assessed perceptions of change at four focus peaks: Hood, Baker, Adams, and Middle Sister. Respondents consistently perceived small increases (+1 on a scale of -3 to +3) in the amount of use and in the number of rules and regulations. Climbers in this study also perceived a slight increase in the presence of litter and human waste at the focus peaks. Using multiple regression, researchers found a weak relationship between perceived change in setting conditions and displacement, with coefficients of multiple determination (R^2) between .08 and .34.

The weak correlation between displacement and perceptions of change in setting conditions indicates that a definition of displacement based on this relationship may be inaccurate or incomplete. As our results show, many respondents reported avoiding certain climbing destinations due to setting conditions, independent of perceived changes in those conditions. A broader definition of displacement such as “a move away from an unacceptable situation” may be more appropriate (Becker, 1981, p. 262). Displacement should still be defined in terms of setting conditions since those are the elements of the recreation experience that managers can influence through action or inaction. Perhaps the evaluation of existing conditions has a stronger relationship to displacement than does change in conditions. Presumably, some visitor motivations and setting preferences change over time. Thus, evaluation of change could vary over time, potentially making perceived change less important than evaluation of present setting conditions. This study did not adequately address evaluation of change to test its relationship with displacement, although evaluations of conditions were made.

Change in behavior due to negative evaluation of setting conditions may be a more complete definition of displacement. This definition would not include visitors who visited less often because of factors, like desire for novelty, unrelated to setting. However, visitors who made one trip to a place, found conditions there unacceptable, and decided never to return would be considered displaced. Devising a definition of displacement that includes repeat users and excludes first-time visitors may be a semantic exercise. What is important is to be able to distinguish between these two groups when measuring displacement, since long-time visitors who are driven away may be more important to managers than first-time visitors who may not return simply because they had inaccurate expectations of setting conditions.

Finally, some recent research has conceptualized displacement as one of a variety of responses to stressful experiences in outdoor recreational settings (Miller & McCool, 2003; Schuster, Hammitt, & Moore, 2003). Although this line of thought considers stress to be the result of less-than-ideal setting conditions, causes of stress include factors over which managers have no control, such as weather and encounters with wildlife. Therefore, defining displacement as a reaction to stressful situations is too general.

Cognitive Coping

This study found that 46%-49% of respondents to a battery of cognitive coping items indicated agreement with one or more of these questions. Researchers intended that agreement with coping items represent the concepts of rationalization and/or product shift. Only respondents who had made five or more climbing trips to one of the focus peaks were asked to answer the cognitive coping questions. Other studies that have addressed cognitive coping have found that 20%-50% of respondents may have engaged in cognitive coping in response to setting conditions at a variety of recreation areas (Hoss & Brunson, 1999; Kearsley & Coughlan, 1999; Manning & Valliere, 2001; Shelby et al., 1988). It is difficult to compare the results of these studies since prior experience of respondents at study sites was treated differently among the various studies of cognitive coping.

Multiple regression of cognitive coping items on social condition displacement factors generated R^2 values between .19 and .37 for Hood and Adams. (Researchers did not include Baker and Middle Sister in this analysis because of the small number of respondents to the cognitive coping battery for those peaks.) Displacement due to managerial or resource conditions had little or no significant relationship to cognitive coping.

The study results indicate that respondents who were sometimes, but not always, displaced may be relying on cognitive coping strategies while climbing at peaks where the social setting conditions would otherwise be unacceptable. In other words, displacement and cognitive coping are not mutually exclusive. Climbers use spatial and temporal strategies to avoid intolerable social conditions on certain occasions and employ cognitive coping at other times. This finding is consistent with Manning and Valliere (2001) who discovered that carriage road users at Acadia National Park engaged in a combination of behavioral and cognitive coping in response to social conditions.

In this study, cognitive coping was a slightly better predictor of displacement due to social conditions at Hood and Adams than were perceptions of change. Logically, there would be a more linear relationship between cognitive coping and displacement if a substantial proportion of respondents relied on both strategies while climbing on the Cascade volcanoes. Perception of change may have a less linear relationship to displacement because of the mediating effects of evaluation of change and cognitive coping.

Experience level and displacement

Researchers have proposed that visitors with more experience at a given recreation area will be more sensitive to changes there, and thus more likely to be displaced as conditions change (Manning, 1999). However, empirical evidence of a relationship between past experience and displacement is inconclusive. While Hall and Shelby (2000) found that visitors with more experience at the study site were more likely to be displaced, Hammitt and Patterson (1991) concluded that past experience had little relationship to displacement.

This study found almost no relationship between four past experience variables (number of climbing trips to the focus peaks, total climbs of the Cascade volcanoes, number of different peaks climbed, and years climbing) and displacement. Previous studies have proposed that place attachment may be mediating the impact of setting conditions on experienced visitors (Hoss & Brunson, 2000). Long-time visitors to a particular destination may become emotionally attached or functionally dependent on that place for the experiences that they desire (Bricker & Kerstetter, 2000). Alternatively, more experienced visitors may be more aware of other places that offer desired opportunities (McFarlane, Boxall, & Watson, 1998). Clearly, the potential interaction between past experience, place attachment, and knowledge of alternatives indicates that the proposed linear relationship between displacement and experience level is an oversimplification.

Skill Level and Displacement

Although past experience and displacement were not related in this study, researchers did find that climbing skill level was significantly related to spatial displacement due to social conditions. Advanced climbers were more likely than beginners to avoid crowded climbing routes or areas on the Cascade volcanoes.

Previous displacement research has not directly addressed skill level. Yet, the same arguments related to past experience may apply. In the context of mountaineering, it is possible that advanced climbers would be able to choose from a wider variety of routes, be aware of more route options, and have more experience on peaks besides the Cascade volcanoes. Furthermore, since more challenging routes are generally less crowded than

easier routes, advanced climbers may be more accustomed to climbing in less crowded conditions, and therefore more likely to be displaced from crowded routes.

Solitude and Displacement

This study found that desire for solitude was one of the least important motivations for climbing Hood, Baker, and Adams among respondents to those focus sections. Solitude was more important to Middle Sister climbers. Since Middle Sister is the only one of the four peaks with use limits in effect, thus having lower use density, these results may indicate that respondents' motivations reflect expected social conditions at the focus peaks. However, at all sites, those respondents who were seeking solitude were no more likely to be displaced than other climbers. Although this study found little or no relationship between desire for solitude and displacement at the focus peaks, all of those peaks generated substantial amounts of displacement due to social conditions. This apparent contradiction reflects the complexity of concepts like solitude and crowding.

Management Implications for Mt. Hood

Returning to the case of Mt. Hood that began this thesis, some management choices are apparent. This study found that solitude is neither a primary motivation for Hood climbers, nor related to displacement. Nevertheless, substantial numbers of climbers avoided routes on Hood due to social conditions, including crowding-related safety concerns. However, the popularity of the south side routes implies that they offer desired opportunities for many climbers, such as accessibility and social interaction. This contention is supported by the motivation results from this survey.

The amount of displacement due to crowding-related safety concerns does present a problem. Mt. Hood managers could use this finding as an argument for limiting use on the south climb. But, this action might displace still more climbers to other, less crowded, areas on Hood. Perhaps the best option regarding safety is to acknowledge that risk is inherent in wilderness recreation, and ensure that climbers who avoid crowded routes due to safety concerns have other routes available that are not crowded. As Hall and Cole (2000), conclude, managers should make explicit choices regarding which recreation opportunities to provide, where to provide them, and which visitors will be displaced as a result.

Future Research

The results of this study did not reveal variables that were strong predictors of displacement, despite its widespread occurrence. Although researchers developed a model of displacement that was intended to be comprehensive, some of the variables were not adequately measured in this study. Future work could address evaluation of setting conditions, place attachment, and measures of cognitive coping. In addition, the apparent complexity of the decision-making process may be better addressed through the use of path analysis so that the relative influence of the many variables in the displacement model could be assessed together.

Testing the relationships between variables in the displacement model requires understanding the sequence of decisions that result in a respondent being displaced. In-depth interviews in which climbers talk through their choices of climbing destinations may permit a better understanding of the decision-making process leading to displacement. For example, we assume that a visitor who has more knowledge of alternative areas will be more likely to

be displaced if conditions at a site change. Correlational analysis cannot answer this question, but interviews would allow visitors to explain their decision-making process.

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Appendix A: Definitions of Key Terms

- Activity change: Voluntary change in the recreational activities that one chooses to engage in.
- Available alternatives: Locations that an individual knows about and considers to offer similar recreational opportunities within the constraints of lifestyle.
- Changing use: Change in the places and/or times that one visits due to any factor including, but not limited to, lifestyle change, change in motivations, and negative evaluation of setting.
- Coping: Behavioral (displacement) or cognitive (product shift, rationalization) response intended to ameliorate an unacceptable situation.
- Displacement: A temporal or spatial change in recreational use of an area due to perceived changes in setting conditions. (Hall & Shelby, 2000; Manning & Valliere, 2001)
- Dissatisfaction: The affective result of a negative evaluation of an experience.
- Increased skill level: Development of the ability to successfully engage in a recreational activity at a higher level of difficulty.
- Inter-site displacement: Spatial displacement between wilderness areas.
- Intra-site displacement: Spatial displacement within a wilderness area.
- Lifestyle change: Change in personal factors, such as health, income, work schedule, or residence, that influence where and/or when one can recreate.
- Managerial setting: The attributes of a recreation area related to management practices, such as use limits, permit fees, regulatory signage, and campsite restoration.
- Motivations: The reasons that compel one to visit a particular recreation area.
- Need for novelty: The desire to visit new places for the sake of variety.
- Number of prior visits: How often one has visited a recreation area.

Product shift:	Reevaluation of the experiences that a recreational area has to offer. For example, changing one's primary motivation for taking a certain hike from quiet contemplation of nature to getting some exercise as the area becomes more crowded.
Rationalization:	The cognitive process of reconciling actual experience with expectations.
Resource setting:	The attributes of a recreation area related to biophysical conditions, such as mature forest, muddy trails, and campsite size.
Setting:	The sum of social, resource, and managerial attributes of a recreation area (Manning, 1999).
Social setting:	The attributes of a recreation area related to users and their interactions, such as user density and user conflicts.
Specialization:	A "continuum of behavior from the general to the particular, reflected by equipment and skills used in the sport and activity setting preferences" (Bryan, 1977).

Appendix B: Complete Survey Results

SECTION ONE

These questions ask about your mountaineering experience in general.

1.1 How many years have you been mountaineering?

Mean: 13.2 Standard Deviation (SD): 10.8 # of respondents (n)=390

1.2 What mountaineering skill level do you consider yourself to have?

Beginner 17.7% Intermediate 62.6% Advanced 19.7%

1.3 What is the most difficult mountaineering route that you have attempted?

Route: _____ Peak: _____

Responses to this question can be found at the end of this appendix.

1.4 For each of the Cascade peaks listed below, please indicate whether you have attempted to climb that mountain. If you have, please indicate how many times you have attempted or completed any route.

	<i>%Climbed</i>	<i>#Climbs:</i>	1	2-3	4-5	6-8	9+
Mt. Adams	86.5%		28.8%	29.5%	16.5%	5.9%	5.9%
Mt. Baker	39.4		17.4	10.5	5.9	2.6	3.1
Diamond Peak	9.2		5.1	2.3	1.0	0.0	0.8
Glacier Peak	32.1		20.9	8.1	2.0	0.5	0.5
Mt. Hood	71.4		18.7	16.9	9.2	7.9	18.7
Mt. Jefferson	27.6		16.4	8.4	0.8	1.8	0.3
Mt. McLoughlin	11.8		8.4	1.3	1.0	1.0	0.0
Middle Sister	33.5		18.4	7.9	4.3	1.3	1.5
North Sister	21.0		12.3	5.6	1.3	1.8	0.0
Mt. Rainier	68.1		24.0	19.9	11.2	7.1	5.9
Mt. Shasta	32.5		16.9	11.8	3.3	0.3	0.3
South Sister	41.4		18.2	12.5	6.1	1.5	3.1
Mt. St. Helens	73.6		25.4	22.8	9.7	7.7	7.9
Mt. Thielsen	18.9		12.3	3.6	1.8	0.8	0.5
Three Fingered Jack	21.7		13.5	4.3	1.8	1.0	1.0

1.5 What percent of your wilderness trips in a typical year are mountaineering trips?

Mean: 49.4% SD: 30.0%

1.6 What percent of your mountaineering trips in a typical year are overnight trips, where you camp on the mountain?

Mean: 52.0% SD: 31.9%

SECTION TWO

The following questions are designed to help us understand how climbers' use of Wildernesses in Oregon and Washington has changed over time.

2.1 Did you take your first mountaineering trip in Washington or Oregon before 1998?

No. 29.9% *n*=118 Yes. 70.1% *n*=276

2.2 Have you made at least 5 mountaineering trips in Oregon and/or Washington?

No. 5.5% *n*=16 Yes. 94.5% *n*=274

Respondents who answered "yes" to questions 2.1 and 2.2 continued to question 2.3.

2.3 Compared to your earlier mountaineering trips in Washington and/or Oregon, how have the following aspects changed? Please indicate how strongly you agree or disagree with each statement.

7 point scale: +3 (strongly agree), 0 (neither agree nor disagree), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
I climb more with friends and family these days	0.7	1.6
I choose routes that are easy to get to	0.0	1.7
I am more likely to climb a popular route now	-0.3	1.7
Getting away from crowds is more important these days	1.2	1.5
The challenge of the route is less important to me now	0.1	1.8
I am less likely to climb to develop climbing skills now	-0.2	1.9
I climb routes that are more technically difficult these days	0.0	1.8
I am less likely to climb a popular route	0.1	1.5
I climb peaks that are more remote these days	0.1	1.4
Getting to the summit is less important to me now	0.2	1.7
I am more likely to climb for exercise these days	0.6	1.5
I climb less with organized groups than I used to	0.5	1.7
I am more likely to climb for the scenery now	0.7	1.3
I climb new routes less often than I used to	-0.1	1.7
Finding solitude is less important to me now	-1.2	1.5

2.4 Thinking only about the **peaks listed in question 1.4**, how often has **the amount or type of use** caused you to do the following?

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
Visit earlier or later in the season to avoid crowds	19.2	4.9	2.4	1.8
Visit on weekdays to avoid weekend crowds	12.9	5.3	2.8	1.8
Go to different trails or routes	14.0	1.6	2.4	1.6
Avoid holiday or peak weekends	8.0	24.5	3.8	2.0
Go to other Wilderness areas that are less crowded	14.8	2.3	2.4	1.6
Visit less often to avoid disruptive or inconsiderate people	44.2	0.8	1.3	1.5
Still go for day trips, but go elsewhere for overnight trips	32.3	1.9	1.6	1.6

2.4A Which peaks or routes were you referring to in question 2.4? (Please list specific destinations or routes within Wilderness areas, if appropriate.)

See Figure 4 in the results section above.

2.5 Various **human impacts** may cause people to visit climbing areas less often. Please indicate how often you have done the following at any **peaks listed in question 1.4**.

7-point scale: 0 (*never*), 6 (*always*)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN BECAUSE OF...				
Presence of litter or trash	66.5	1.1	0.7	1.2
Muddy or eroded trails	66.8	0.4	0.6	1.0
Visible human waste or toilet paper	56.5	1.1	0.9	1.4
Damage to vegetation or soil at campsites	56.9	1.1	0.9	1.3

2.5A Which peaks or routes were you referring to in question 2.5? (Please list specific destinations or routes within Wilderness areas, if appropriate.)

See figure 4 in the results section above.

2.6 Various factors may cause people to visit climbing areas less often or at different times. Please indicate how often the following **regulations or management** have caused you to change your behavior at any **peaks listed in question 1.4**.

7-point scale: 0 (*never*), 6 (*always*)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN OR AT DIFFERENT TIMES...				
To avoid fees or parking passes	53.7	5.0	1.4	1.9
To avoid ranger patrols	80.6	2.7	0.6	1.4
Because of regulations on group size	74.0	1.9	0.6	1.2
Because of regulations on where people can camp	55.0	2.3	1.0	1.4
Because of restrictions on the number of people who can go (use limits)	55.2	3.9	1.1	1.7

2.6A Which peaks or routes were you referring to in question 2.6? (Please list specific destinations or routes within Wilderness areas, if appropriate.)

See Figure 4 in the results section above.

2.7 How has each of the following factors affected the number of climbing trips to peaks in Washington or Oregon that you take now, compared to when you first started climbing those peaks?

7-point scale: +3 (increase in # of trips), 0 (no effect), -3 (decrease in # of trips)

	<i>Mean</i>	<i>SD</i>
The amount of free time you have	-0.9	1.6
Family obligations	-0.9	1.1
Change in where you live (moving)	0.0	1.2
Aging or health	-0.2	0.9
Changes in the types of activities you like to do	0.0	1.3
Cost of visiting	-0.3	0.8
Desire to explore new areas	0.7	1.4

2.8 Are there peaks, or routes on peaks, listed in QUESTION 1.4 that you have visited in the past but **no longer visit at all**? If so, please name each peak below and explain why you no longer visit it.

See Table 2 in the results section above.

SECTION THREE

(yellow version)

Your perceptions of Mt. Hood

3.1 Have you ever tried to climb **Mt. Hood**?

No: 31.4% *n*=61 Yes: 68.6% *n*=133

3.2 In what year was your first attempt?

Mean: 1980 Median: 1997 Mode: 2002

3.3 In what year was your most recent climbing trip to Mt. Hood?

Mean: 2000 Median: 2002 Mode: 2003

3.4 What were your reasons for going to **Mt. Hood** on your more recent climbing trips?

7-point scale: 0 (not a reason), 6 (important reason)

	<i>Mean</i>	<i>SD</i>
The challenge of the climbing route	2.6	2.1
To find solitude	1.5	1.8
Easy access to climbing routes	4.0	1.8
Feel a sense of accomplishment	4.1	1.7
Spend time with friends or family	3.5	2.1
Excitement or exhilaration	4.0	1.6
Find peace and quiet	2.2	1.9
Enjoy the scenery	4.5	1.5
Climb a new route	2.8	2.3
Exercise	4.1	1.7
Develop climbing skills	2.9	2.0
It's close to home	3.3	2.2

3.5 How much do you agree or disagree with the following statements about climbing areas on **Mt. Hood**? Please consider only climbing areas that are actually in the Mt. Hood Wilderness.

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area seems crowded	1.7	1.4
I don't know of another area that offers the same opportunities as this place	-0.1	2.0
Everyone should have a right to visit this area, even if it means use is high	1.0	1.7
Other places are just as good for what I like to do	0.8	1.7
High use is OK because it means people are enjoying this area	0.4	1.7
The climbing is so good that I want to come in spite of high numbers of people	0.0	1.6
There is no place like this one	-0.2	1.8
Impacts could be worse considering the amount of use	1.5	1.1
This is the best place for what I like to do	-0.5	1.6

3.6 Please indicate whether you feel that conditions at climbing areas on **Mt. Hood** have changed in any of the following ways since your first visits. Please consider only climbing areas that are actually in the Mt. Hood Wilderness.

7-point scale: +3 (increased a lot), 0 (no change), -3 (decreased a lot)

	<i>Mean</i>	<i>SD</i>
Evidence of human impact at wilderness campsites	0.5	0.9
Number of rules and regulations	0.8	1.0
The number of unofficial side trails	0.4	0.7
The amount of litter or trash	0.4	0.9
The amount of human waste/toilet paper visible	0.3	0.8
Number of other users in the area	1.1	1.0
Number of climbers	1.2	1.0
The amount of wildlife you see	-0.4	0.8

3.7 Please indicate how often **the amount or type of use** has caused you to do each of the following at climbing areas on **Mt. Hood**. Please consider only climbing areas that are actually in the Mt. Hood Wilderness.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
Visit earlier or later in the season to avoid crowds	27.3	7.0	2.4	2.0
Visit on weekdays to avoid weekend crowds	12.5	9.4	2.4	2.1
Go to different trails or routes	36.2	3.1	1.9	1.9
Avoid holiday or peak weekends	18.0	32.8	3.6	2.3
Go to other Wilderness areas that are less crowded	21.7	6.2	2.5	1.9
Visit less often to avoid disruptive or inconsiderate people	57.5	0.8	1.1	1.5
Still go for day trips, but go elsewhere for overnight trips	40.5	6.3	1.7	2.0
Avoid climbing routes where large numbers of people can be a safety concern	25.0	16.4	2.8	2.2
Visit places farther from developed ski areas	27.9	8.5	2.2	2.0

- 3.8** Various factors may cause people to visit climbing areas less often or at different times. Please indicate how often the following **regulations or management** have caused you to change your use of climbing areas on **Mt. Hood**. Please consider only climbing areas that are actually in the Mt. Hood Wilderness.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN OR AT DIFFERENT TIMES...				
To avoid fees or parking passes	71.9	3.9	0.8	1.5
To avoid ranger patrols	89.8	1.6	0.3	1.1
Because of regulations on where people can camp	79.7	0.8	0.4	0.9
Because of regulations on group size	84.4	0.0	0.3	0.8

- 3.9** Various human impacts may cause people to visit climbing areas less often. Please indicate how often the following **human impacts** have affected your trips to climbing areas on **Mt. Hood**. Please consider only climbing areas that are actually in the Mt. Hood Wilderness.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN BECAUSE OF...				
Presence of litter or trash	75.8	0.8	0.4	1.0
Muddy or eroded trails	81.3	0.0	0.3	0.8
Visible human waste or toilet paper	73.4	0.8	0.5	1.0
Damage to vegetation or soil at campsites	81.1	0.8	0.4	0.9

- 3.10** Have you taken **five** or more climbing trips to **Mt. Hood**?

No: 52.6% *n*=70 Yes: 47.4% *n*=63

Respondents answering "yes" also answered question 3.11.

3.11 How much do you agree or disagree with the following statements about climbing areas on **Mt. Hood**? Please consider only climbing areas that are actually in the Mt. Hood Wilderness.

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area has changed, but I've gotten used to it	0.3	1.3
The area feels less like Wilderness than when I first started visiting	0.0	1.5
I still visit this area, but for different reasons than in the past	0.1	1.6
I seek different experiences here than I used to	0.4	1.5
The type of experience provided by this area has changed	-0.2	1.5
I am not as satisfied with my experiences in this area as I used to be	-0.9	1.5
I have special memories of this place	2.0	1.3
I enjoy my visits here just as much as I used to	1.9	1.2
Conditions in the area are usually about what I expect	1.9	1.1
There are so few places like this that I go in spite of the amount of use	0.7	1.9
Visiting this place is a tradition for me	1.5	1.6

SECTION THREE

(green version)

Your perceptions of Mt. Adams

3.1 Have you ever tried to climb **Mt. Adams**?

No: 14.4% *n*=29 Yes: 85.6% *n*=173

3.2 In what year was your first attempt?

Mean: 1994 Median: 1999 Mode: 2002

3.3 In what year was your most recent climbing trip to Mt. Adams?

Mean: 2001 Median: 2002 Mode: 2002

3.4 What were your reasons for going to **Mt. Adams** on your more recent climbing trips?

7-point scale: 0 (not a reason), 6 (important reason)

	<i>Mean</i>	<i>SD</i>
The challenge of the climbing route	2.5	2.0
To find solitude	2.0	1.9
Easy access to climbing routes	2.8	1.9
Feel a sense of accomplishment	4.0	1.8
Spend time with friends or family	3.8	2.0
Excitement or exhilaration	3.7	1.8
Find peace and quiet	2.9	1.9
Enjoy the scenery	4.6	1.5
Climb a new route	2.6	2.4
Exercise	3.8	1.7
Develop climbing skills	2.5	2.1
It's close to home	2.3	2.1

3.5 How much do you agree or disagree with the following statements about climbing areas on **Mt. Adams**?

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area seems crowded	0.6	1.8
I don't know of another area that offers the same opportunities as this place	-0.6	1.8
Everyone should have a right to visit this area, even if it means use is high	0.7	1.8
Other places are just as good for what I like to do	0.6	1.6
High use is OK because it means people are enjoying this area	0.0	1.8
The climbing is so good that I want to come in spite of high numbers of people	-0.1	1.8
There is no place like this one	-0.2	1.8
Impacts could be worse considering the amount of use	1.2	1.2
This is the best place for what I like to do	-0.5	1.6

3.6 Please indicate whether you feel that conditions at climbing areas on **Mt. Adams** have changed in any of the following ways since your first visits:

7-point scale: +3 (increased a lot), 0 (no change), -3 (decreased a lot)

	<i>Mean</i>	<i>SD</i>
Evidence of human impact at wilderness campsites	0.6	1.0
Number of rules and regulations	1.0	1.2
The number of unofficial side trails	0.3	0.8
The amount of litter or trash	0.3	0.8
The amount of human waste/toilet paper visible	0.3	0.9
Number of other users in the area	0.9	1.1
Number of climbers	1.0	1.1
The amount of wildlife you see	-0.3	0.8

3.7 Please indicate how often **the amount or type of use** has caused you to do each of the following at climbing areas on **Mt. Adams**.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
Visit earlier or later in the season to avoid crowds	36.2	6.1	1.9	1.9
Visit on weekdays to avoid weekend crowds	31.1	8.5	2.3	2.1
Go to different trails or routes	41.1	4.3	1.6	1.9
Avoid holiday or peak weekends	19.0	28.8	3.4	2.3
Go to other Wilderness areas that are less crowded	34.2	1.9	1.8	1.8
Visit less often to avoid disruptive or inconsiderate people	59.5	1.2	1.0	1.5
Still go for day trips, but go elsewhere for overnight trips	62.0	1.2	0.8	1.3
Avoid climbing routes where large numbers of people can be a safety concern	39.0	11.0	2.0	2.1

3.8 Various factors may cause people to visit climbing areas less often or at different times. Please indicate how often the following **regulations or management** have caused you to change your use of climbing areas on **Mt. Adams**.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN OR AT DIFFERENT TIMES...				
To avoid fees or parking passes	69.7	1.8	0.8	1.5
To avoid ranger patrols	83.6	1.2	0.4	1.1
Because of regulations on where people can camp	76.4	0.6	0.4	1.0
Because of regulations on group size	81.8	0.6	0.4	1.0

3.9 Various human impacts may cause people to visit climbing areas less often.

Please indicate how often the following **human impacts** have affected your trips to climbing areas on **Mt. Adams**.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN BECAUSE OF...				
Presence of litter or trash	75.6	0.6	0.6	1.2
Muddy or eroded trails	75.0	0.0	0.5	1.1
Visible human waste or toilet paper	71.3	0.6	0.7	1.4
Damage to vegetation or soil at campsites	75.0	0.6	0.6	1.2

3.10 Have you taken **five** or more climbing trips to **Mt. Adams**?

No: 71.5% *n*=123 Yes: 24.3% *n*=49

Respondents answering “yes” also answered question 3.11.

3.11 How much do you agree or disagree with the following statements about climbing areas on **Mt. Adams**?

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area has changed, but I’ve gotten used to it	0.0	1.3
The area feels less like Wilderness than when I first started visiting	0.5	1.9
I still visit this area, but for different reasons than in the past	-0.1	1.9
I seek different experiences here than I used to	-0.2	2.0
The type of experience provided by this area has changed	-0.5	1.8
I am not as satisfied with my experiences in this area as I used to be	-1.0	1.8
I have special memories of this place	2.0	1.4
I enjoy my visits here just as much as I used to	1.5	1.6
Conditions in the area are usually about what I expect	1.4	1.6
There are so few places like this that I go in spite of the amount of use	0.5	1.7
Visiting this place is a tradition for me	1.2	1.7

SECTION FOUR
(yellow version)
 Your perceptions of Mt. Baker

4.1 Have you ever tried to climb **Mt. Baker**?

No: 62.9% *n*=122 Yes: 37.1% *n*=72

4.2 In what year was your first attempt?

Mean: 1993 Median: 1998 Mode: 2002

4.3 In what year was your most recent climbing trip to Mt. Baker?

Mean: 1999 Median: 2002 Mode: 2002

4.4 What were your reasons for going to **Mt. Baker** on your more recent climbing trips?

7-point scale: 0 (not a reason), 6 (important reason)

	<i>Mean</i>	<i>SD</i>
The challenge of the climbing route	3.1	2.0
To find solitude	2.0	1.9
Easy access to climbing routes	2.7	1.9
Feel a sense of accomplishment	3.9	1.9
Spend time with friends or family	3.9	1.9
Excitement or exhilaration	4.0	1.7
Find peace and quiet	2.4	1.8
Enjoy the scenery	4.6	1.5
Climb a new route	3.5	2.2
Exercise	4.0	1.6
Develop climbing skills	3.5	2.0
It's close to home	2.0	2.1

4.5 How much do you agree or disagree with the following statements about climbing areas on **Mt. Baker**? Please consider only climbing areas that are actually in the Mt. Baker Wilderness.

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area seems crowded	0.5	1.5
I don't know of another area that offers the same opportunities as this place	0.0	1.6
Everyone should have a right to visit this area, even if it means use is high	0.6	1.6
Other places are just as good for what I like to do	0.5	1.5
High use is OK because it means people are enjoying this area	0.1	1.6
The climbing is so good that I want to come in spite of high numbers of people	0.1	1.5
There is no place like this one	0.0	1.8
Impacts could be worse considering the amount of use	1.1	1.2
This is the best place for what I like to do	-0.4	1.4

4.6 Please indicate whether you feel that conditions at climbing areas on **Mt. Baker** have changed in any of the following ways since your first visits. Please consider only climbing areas that are actually in the Mt. Baker Wilderness.

7-point scale: +3 (increased a lot), 0 (no change), -3 (decreased a lot)

	<i>Mean</i>	<i>SD</i>
Evidence of human impact at wilderness campsites	0.8	1.0
Number of rules and regulations	0.6	0.9
The number of unofficial side trails	0.4	0.7
The amount of litter or trash	0.4	0.9
The amount of human waste/toilet paper visible	0.5	1.0
Number of other users in the area	1.1	1.1
Number of climbers	1.2	1.0
The amount of wildlife you see	-0.2	0.8

4.7 Please indicate how often **the amount or type of use** has caused you to do each of the following when climbing **Mt. Baker**. Please consider only climbing areas that are actually in the Mt. Baker Wilderness.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
Visit earlier or later in the season to avoid crowds	39.1	1.6	1.5	1.7
Visit on weekdays to avoid weekend crowds	35.9	3.1	1.8	1.8
Go to different trails or routes	37.5	3.1	1.7	1.7
Avoid holiday or peak weekends	27.0	23.8	3.0	2.3
Go to other Wilderness areas that are less crowded	33.3	3.0	2.0	1.8
Visit less often to avoid disruptive or inconsiderate people	47.0	4.5	1.3	1.6
Still go for day trips, but go elsewhere for overnight trips	67.7	1.5	0.8	1.4
Avoid climbing routes where large numbers of people can be a safety concern	33.3	4.5	2.1	2.0
Avoid places near the Mt. Baker National Recreation Area because of snowmobile use	37.9	19.7	2.4	2.4

4.8 Various factors may cause people to visit climbing areas less often or at different times. Please indicate how often the following **regulations or management** have caused you to change your use of climbing areas on **Mt. Baker**. Please consider only climbing areas that are actually in the Mt. Baker Wilderness.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN OR AT DIFFERENT TIMES...				
To avoid fees or parking passes	68.1	1.4	0.7	1.2
To avoid ranger patrols	88.4	1.4	0.3	1.1
Because of regulations on group size	82.6	0.0	0.3	0.8

4.9 Various human impacts may cause people to visit climbing areas less often. Please indicate how often the following **human impacts** have affected your trips to climbing areas on **Mt. Baker**. Please consider only climbing areas that are actually in the Mt. Baker Wilderness.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN BECAUSE OF...				
Presence of litter or trash	69.6	0.0	0.5	0.9
Muddy or eroded trails	72.5	1.4	0.5	1.0
Visible human waste or toilet paper	68.1	0.0	0.6	1.1
Damage to vegetation or soil at campsites	62.3	0.0	0.7	1.2

4.10 Have you taken **five** or more climbing trips to **Mt. Baker**?

No: 73.6% *n*=53 Yes: 26.4% *n*=19

Respondents answering “yes” also answered question 4.11.

4.11 How much do you agree or disagree with the following statements about climbing areas on **Mt. Baker**? Please consider only climbing areas that are actually in the Mt. Baker Wilderness.

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area has changed, but I’ve gotten used to it	0.4	1.1
The area feels less like Wilderness than when I first started visiting	0.4	1.9
I still visit this area, but for different reasons than in the past	0.2	1.8
I seek different experiences here than I used to	0.5	1.5
The type of experience provided by this area has changed	0.2	1.2
I am not as satisfied with my experiences in this area as I used to be	-1.2	1.8
I have special memories of this place	2.1	1.5
I enjoy my visits here just as much as I used to	1.8	1.3
Conditions in the area are usually about what I expect	1.4	1.2
There are so few places like this that I go in spite of the amount of use	0.9	1.3
Visiting this place is a tradition for me	0.8	1.8

SECTION FOUR**(green version)**

Your perceptions of Middle Sister

4.1 Have you ever tried to climb **Middle Sister**?

No: 63.5% *n*=127 Yes: 36.5% *n*=73

4.2 In what year was your first attempt?

Mean: 1992 Median: 1997 Mode: 2002

4.3 In what year was your most recent climbing trip to Middle Sister?

Mean: 1998 Median: 2001 Mode: 2002

4.4 What were your reasons for going to **Middle Sister** on your more recent climbing trips?

7-point scale: 0 (not a reason), 6 (important reason)

	<i>Mean</i>	<i>SD</i>
The challenge of the climbing route	2.5	2.0
To find solitude	2.3	1.8
Easy access to climbing routes	2.8	1.9
Feel a sense of accomplishment	4.1	1.7
Spend time with friends or family	3.6	2.2
Excitement or exhilaration	3.7	1.8
Find peace and quiet	3.3	1.7
Enjoy the scenery	4.5	1.3
Climb a new route	2.8	2.5
Exercise	3.5	1.9
Develop climbing skills	2.2	2.0
It's close to home	2.7	2.1

4.5 How much do you agree or disagree with the following statements about climbing areas on the **Middle Sister**?

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area seems crowded	-1.0	1.6
I don't know of another area that offers the same opportunities as this place	-0.5	1.6
Everyone should have a right to visit this area, even if it means use is high	0.2	1.8
Other places are just as good for what I like to do	0.7	1.5
High use is OK because it means people are enjoying this area	-0.3	1.8
The climbing is so good that I want to come in spite of high numbers of people	-0.4	1.5
There is no place like this one	-0.4	1.7
Impacts could be worse considering the amount of use	1.0	1.2
This is the best place for what I like to do	-0.6	1.5

4.6 Please indicate whether you feel that conditions at climbing areas on the **Middle Sister** have changed in any of the following ways since your first visits.

7-point scale: +3 (increased a lot), 0 (no change), -3 (decreased a lot)

	<i>Mean</i>	<i>SD</i>
Evidence of human impact at wilderness campsites	0.4	0.9
Number of rules and regulations	1.1	1.2
The number of unofficial side trails	0.4	0.8
The amount of litter or trash	0.2	0.8
The amount of human waste/toilet paper visible	0.3	0.8
Number of other users in the area	0.8	1.1
Number of climbers	0.8	1.0
The amount of wildlife you see	-0.1	0.6

4.7 Please indicate how often **the amount or type of use** has caused you to do each of the following when climbing the **Middle Sister**.

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
Visit earlier or later in the season to avoid crowds	39.4	3.0	1.8	2.0
Visit on weekdays to avoid weekend crowds	34.8	6.1	2.2	2.1
Go to different trails or routes	47.7	6.2	1.4	1.6
Avoid holiday or peak weekends	30.8	18.5	2.9	2.4
Go to other Wilderness areas that are less crowded	48.5	12.1	1.4	1.8
Visit less often to avoid disruptive or inconsiderate people	63.1	4.6	0.8	1.3
Still go for day trips, but go elsewhere for overnight trips	60.6	4.5	0.9	1.5
Avoid climbing routes where large numbers of people can be a safety concern	46.0	6.3	1.9	2.1

4.8 Various factors may cause people to visit climbing areas less often or at different times. Please indicate how often the following **regulations or management** have caused you to change your use of climbing areas on the **Middle Sister**:

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN OR AT DIFFERENT TIMES...				
To avoid fees or parking passes	65.7	6.0	1.2	1.9
To avoid ranger patrols	74.6	4.5	1.2	1.9
Because of regulations on group size	85.1	1.5	0.3	1.0
Because of regulations on where people can camp	76.1	3.0	0.6	1.3
Because of restrictions on the number of people who can go (use limits)	80.6	1.5	0.5	1.1

4.9 Various human impacts may cause people to visit climbing areas less often.

Please indicate how often the following **human impacts** have affected your trips to climbing areas on the **Middle Sister**:

7-point scale: 0 (never), 6 (always)

	<i>%Never</i>	<i>%Always</i>	<i>Mean</i>	<i>SD</i>
I VISIT LESS OFTEN BECAUSE OF...				
Presence of litter or trash	74.6	0.0	0.5	1.0
Muddy or eroded trails	79.1	0.0	0.4	0.9
Visible human waste or toilet paper	74.6	0.0	0.6	1.1
Damage to vegetation or soil at campsites	73.1	0.0	0.5	1.1

4.10 Have you taken **five** or more climbing trips to **Middle Sister**?

No: 74.7% *n*=56 Yes: 25.3% *n*=19

Respondents answering "yes" also answered question 4.11.

4.11 How much do you agree or disagree with the following statements about climbing areas on **Middle Sister**?

7-point scale: +3 (strongly agree), 0 (neutral), -3 (strongly disagree)

	<i>Mean</i>	<i>SD</i>
The area has changed, but I've gotten used to it	-1.0	1.6
The area feels less like Wilderness than when I first started visiting	-0.4	2.1
I still visit this area, but for different reasons than in the past	-0.5	2.1
I seek different experiences here than I used to	-1.0	1.9
The type of experience provided by this area has changed	-1.0	1.8
I am not as satisfied with my experiences in this area as I used to be	-1.4	1.9
I have special memories of this place	2.0	1.3
I enjoy my visits here just as much as I used to	1.4	2.0
Conditions in the area are usually about what I expect	1.5	1.7
There are so few places like this that I go in spite of the amount of use	-0.3	1.9
Visiting this place is a tradition for me	0.6	1.8

SECTION FIVE
Some information about you

5.1 What is your age? *Mean: 39.9 years SD: 11.1*

5.2 What is your zip code?

5.3 Are you male or female? *Male: 89.0% Female: 11.0%*

5.4 What is your highest level of education? (Mark one.)

Some high school	<i>0.0%</i>
High school diploma	<i>2.3%</i>
Some college	<i>18.1%</i>
Bachelor's degree or equivalent	<i>44.3%</i>
Master's degree	<i>24.2%</i>
Ph.D., M.D., J.D., or equivalent	<i>11.2%</i>

Comments

While I am opposed to user fees for general wilderness access, I support fees for high use areas -volcanos, popular peaks.

Thank you!

I try to climb new peaks instead of doing the same routes over and over. As long as blue bag use is enforced, seems like these routes are ok. I don't support limiting the number of people on these routes.

I climb Mt. Hood every year. Sometimes the south side, to ski it. Often other routs. I've not noticed over use except on the south side. The main issue there for climbers is the traffic jam in the final 1000ft. This could be solved if a 1-way route were signed - i.e. one set of steps for ascending, and a different path for descending. I don't think the amount of use on that route should be regulated -it's just about 6 wks. when it's safe and good to climb it! Re other Mt. Hood routes -in the wilderness area- limiting party size to 8 or so would be good. Thanks for studying this! (signed)

Most all my experience is on 9,000 feet or less. Big mountain is ok -but it's a ball game I'm still working on. I prefer mid mountain.

I don't consider myself a mountaineer

I am a huge opponent of the N.W. Forest Pass and other such fees. I certainly understand the need to fund trail maintenance, blue bag programs, and other efforts associated with climbing and entering the wilderness in general. What I don't understand is why I have to pay up to \$30 for a climb of some NW peaks (Rainier), on public lands, while the defense department gets \$400 billion a year to make war and destruction. Please use your survey to help rectify this discrepancy.

I am not a climber, but an avid hiker -I have done numerous hikes over the past 20 years on Mt. Baker Mt. Hood Mt. Rainier. I have only completed 2 nontechnical climbs 1 being Mt. Adams the other Glacier Peak. I am not sure I should be included in your survey pool as a "climber."

I have noticed far less garbage in the wilderness these days than when I first started going there in the mid 1950's. Education takes time but does pay off. Rather than more and more use fees, how about alternative and/or mandatory trail maintenance activities for wilderness users?

I feel strongly all of the Cascade peaks need to implement a "blue-bag" or its' equivalent fecal matter removal program. I also feel very strongly that more accurate usage numbers need to be generated for all glacial peaks. It is truly hilarious that Mt. Hood has the highest traffic of any peak, save Mt. Fuji, on the planet. Great survey. I would also like to state that I wish Rec+Tourism were the most rigorous of all natural resource majors, instead of the traditional weakest.

Since I started climbing in the Northwest, the number of climbers has seemed to increase dramatically while skill level has dropped and routes I enjoyed overcrowded. My wife, sister and I now climb more remote routes but still enjoy these peaks. We used to climb harder routes to develop skills and for the challenge. Now we climb for enjoyment, scenery, solitude. Once in a while for a challenge.

Most of my outdoor activities are scrambles, day hikes, backpacking and mountain biking, with half being solo trips. I tend to avoid the crowds. Although I know regulations and management are necessary, I prefer less.

I like OR and WA, litter makes me irritated at people -pack out what you pack in. Hope all goes well!

Let me know if there is anything else I can do. I have begun climbing in the last few years, but go out to a different peak just about every weekend. (contact info deleted)

Keep up the good work! We need you!

I believe the climbs on the south side of Mt. Hood do not provide a "wilderness" experience in the true sense of the word. I believe this is compromised by the high use. I also think that people can easily find "wilderness" experiences if they so choose on almost any of the other climbs on the Mt. I feel the same goes for the D.C. and Emmons routes on Mt. Rainier.

High use on Mt. Hood is to be expected given its proximity to Portland. Other mountains offer solitude. Other climbs suit other needs. No snowmobiles!

Thank you, I'm not very into this but it's encouraging that somebody's into improving the mtn. Thank you!

I climbed Baker just once.

I changed Baker to Rainier because most of my climbing has been there and there wasn't a questionnaire for it. Hope it doesn't taint results. I first climbed Rainier when I was 12, and started guiding there at 16. I've seen some changes by park officials and many more climbers attempt it now than in the 70's. With more people in the park, it means more trash, meadow trampling and human waste on the upper mt. If people are conscientious, the impact can be minimized.

Mt. St. Helens is the only area with unreasonable restrictions, i.e. the quota system after May 15. Problems are: 1. It is not route specific (only 2 routes are heavily used ever -Monitor Ridge and the Worm Flows). 2. When snow covered (prior to July) it can handle many skiers.

I am concerned that this information will only be used by USFS and NPS regulators and managers to control the areas even more. It will be interesting to see what happens with future climbing regulations in these areas. Thank you. (name and phone # deleted)

I believe that the fees charged to hikers, climbers, and campers have become very excessive in the last couple of years. I have been up to Mount St. Helens three times and paid for day snow park permits which have proved useless due to improper maintenance of winter road conditions. I was not able to summit this easily climbable mountain because I had to park a few miles back. I am not going to climb Rainier this year because it costs \$30.00 for a permit. When I have been up to Mt. Adams three times and paid \$15.00 each trip I have noticed the sheer number of people signed up to climb the mountain. The revenue generated from these excessive fees must be going somewhere, but I am not seeing it!!! Not to mention the \$30.00 Northwest trail pass I have to buy every year. The Forest Service may as well give the rangers guns and police uniforms.

Most of my outdoor time was spent in Utah until move to WA 10 years ago. I climb Adams and St. Helens with 20 people each time for most it was their first or second climb with half saying they want to climb more each year. Good luck. (name deleted)

In my view, the fees for parking, camping and climbing at the areas I've visited are excessive and ideally should be eliminated.

I am not in favor of restricting access to these areas, or increasing fees. Especially for climbers and backpackers who represent a small fraction of the number of people who visit wild areas (what's the stat -- less than 5% of visitors to Yosemite venture more than 1 mile off a paved road?) I support good communication/education on site with self-policing community volunteers. (with ranger support)

Trails are maintained great and the work to do so is appreciated.

Sorry I can't be much help -I've only been to Hood twice and Adams twice -very limited experience.

Why is U of I doing a study on N.C. as opposed to the Sawtooths or Rockies? I am strongly against monopolies like RMI, Exum, Mountain Savvy, etc. Reasons: AAI can only guide on Rainier once a year because RMI's monopoly. Exum for the Tetons. When I took my avalanche course on Mt. Hood I took it through OMA, but now Glen Kessler, operator of Mountain Savvy, kick off all other avalanche course providers. I've sent e-mails to senators mentioning that the gov't broke up AT&T when they got to be so why don't they break up these guiding groups? I once wanted to be a guide but I found out about and decided against that and climb for myself. I even asked Steve House about this but he had no comment. Well that's my 2 cents.

Having to pay a parking fee (e.g. Northwest Forest Pass), a fee to climb, and a fee to use developed campgrounds is too much. One should not have to pay a fee to access public lands. In general, the planet is becoming overcrowded and what is happening in our wilderness areas is merely a microcosm of what is happening to the entire world. My basic problem with climbing in WA is the parking, climbing, user, trail fees. It's confusing and difficult to get. All the mountains seem to have different regulations and restrictions. I want to be able to buy a WA or OR climbing pass for the state, not mountain to mountain. Thanks.

A permit system for Hood south side may be necessary. The accident last year -(one with helicopter crash during rescue) was just "a matter of time" and will probably occur again. On weekends, you have to "take a number" on hogsback and there are many inexperienced climbers. Yet, it's a great place for new climbers to gain experience and access is easy.

We do a lot more winter climbing on all peaks in 1.4 to avoid people, get a ski descent and, to some extent, get away from the bugs.

I backpack/climb for the exercise and solitude. I'm from Alaska, so I've given up on solitude around here and I'm fine dealing with people.

Parking fee going from 3 to 5 dollars upset me, but I did see improvements to Green Lake and Devil's Lake parking areas. Before restrooms were so gross I wouldn't use them. Last trip to South Sister, Devil's Lake parking had all new bathrooms. Very nice! Good use of parking fees. Middle Sister trail signs very confusing, need upgrades.

I have only been on Mt. Baker 3 times, each time it was a different route (Easton, Coleman-Deming, and Boulder). So I don't have a lot of perspective.

Like many climbers, I climb a peak because of the desire to see new places and attain a new summit. For this reason, a return trip to a mountain or wilderness area is often unlikely, especially given the number of areas in the Northwest. This may skew answers to questions about "return" visits, to the extent that this rationale for not returning is not an available answer. I am a strong believer in the principles of solitude and wildness for Wilderness areas, and would gladly accept the restrictions necessary to achieve that fundamental goal. While I am tolerant of high access areas, and will climb there, I am disappointed to see our Wilderness areas over-used, even though solitude may not have been the reason for my visit.

I am opposed to quotas on Hood. Those who want solitude can visit other peaks. Quotas will cause climbers to climb on routes or times (weather) that are more dangerous.

I have no problem with fees for use.

Seems useful to conduct this survey. An observation I would like to convey is that over the years, the level of preparation in skill and standard equipment/gear carried by a growing number of climbers is inadequate. This leads to injury and, in some instances, death. Don't have the solution, but it is a growing concern.

Enough regulations and fees. Keep Mt. Hood free and open. Accidents will happen, but chances are more likely on the road driving there. Eliminate the Volcano Pass on Mt. Adams. Amounts to a double fee. Wrong! Time to ease/eliminate use limits for Mt. St. Helens. Nearly 25 years! Long enough. The public won't mob the place.

I just love being outdoors -anywhere, anytime, and doing anything!
Mt. Hood Meadows Corp's plan to add a resort to the N. side of Mt. Hood is a shame. The area should remain remote! Outdoor recreation is becoming unaffordable. I pay for a National Park pass, State Park pass, day use fees at County Parks, BLM use and other user fees. The new Forest Service trailhead pass is ridiculous. Can we have a reasonable fee for outdoor rec?

I hope someone is looking into these types of issues for rivers -whitewater kayaking rivers. These are great questions!

I'm glad people are taking the effort to address this issue.

I hate the NW Forest Pass.

Most decisions are made in regards to days off, so most people, unfortunately, climb on weekends. My preference would be mid-week as would most of the people I climb with, but days off are the main factor. Thank you for taking the time to make the mountains a better place to be, if that's possible!

Number of climbers on Mt. Hood south side route should be limited.

I would be interested in the results or impact of this study

I have much more experience climbing in Colorado than in the NW. I have only been mountaineering here for 1 1/2 years.

If Hood begins a lottery, our climbing will decrease. Rainier's regulations are better and easier to make plans for. I don't mind the Rangers, permits, and regulations, but I will hate to see increased lotteries or "reservations." We enjoy climbing Hood spontaneously. I believe individuals should pay fees to help with rescues and clean up of wilderness areas.

Thank you for the opportunity to help.

I am currently a wilderness ranger working for the Burns District BLM on Steens Mountain and am very interested in your results. Thank you. (contact info deleted)

Requiring people to pack out (human) waste is very helpful to maintaining the mountain in good condition. Even though Mt. Hood had a lot of traffic, I appreciate more people showing good wilderness ethics. I encourage this instruction though guides, ranger patrols, etc. to keep our wilderness areas in good condition, for our children! (contact info deleted)

As I have aged, getting to the top has become a low priority. The past couple years, though, I have been motivated to try just to prove I can still make it. I find just being out in the mountains and seeing the wilderness and the beauty of flowers is much more important to me. I don't like quotas, but I like the crowds less. I don't like the fees, but I hate to see everything deteriorating so badly recently. I try to do my fair share.

User fees are probably the best approach to leaving these trails/parks/destinations open for public use and well maintained in light of the uncertain future of public funds. Of course, the more enforceable and predictable the better. I might also add I tend to frequent the seasonal fee areas during non-fee seasons.

Want to do more climbing, but with groups. Personally, I prefer to go during the week to avoid crowds.

Most of my climbing is done in order to ski the route I've climbed. Our motto: "If you can't ski it, why climb it?" It is also done during months where bugs and people volume are low.

Now I always climb to tele ski, so often only go as high as snow conditions allow. Early years I just climbed. If the Cooper Spur area of Mt. Hood is developed as planned, it will ruin one of the most beautiful areas on Hood that I now often enjoy all year round!

Mountains are more frequently visited than previously, this does negatively impact the experience and the demand for easily accessible quality peaks is increasing due to reduced available leisure time. I'd like less emphasis on trying to dissuade people to use more popular areas (through user restrictions, fees, etc.) and more emphasis on easing access to hard to get to but quality peaks. This can be done by opening or repairing locked or damaged logging roads, paving roads, repairing and adding new trails. An excellent example is the closure of the West Side road on Mt. Rainier.

I was born in Moscow. I used to climb to climb -did technical routes- in my 20's. Now I climb to ski down (telmark). Don't understand why there are restrictions on Mt. St. Helens on numbers/day.

I'm sorry I really couldn't answer many questions. If you do a study on Rainier, Adams, or St. Helens, I'd be able to help you more. Thanks for considering me. Mount Hood south side route should consider climbing restrictions. As much as I don't agree with them, on busy weekends during prime season, it is a matter of safety. Too many inexperienced climbers (easy access to route) in too small a space will lead to more accidents. Shouldn't be as restrictive as St. Helens, but some reasonable quota is a price to pay for safety.

The United States is becoming home of the fees, not home of the free! I do not like having to pay for summit attempts on Shasta, Adams, and Helens: they belong to the public. I also believe there should be no restrictions on the amount of people climbing a summit. I can't always match my schedule to this, so I choose an alternate destination. I am proud that Oregon does not charge money like Washington and California to summit wilderness peaks on public lands!

Getting out is always better than staying home. The number of people on these peaks doesn't bother me as much as lack of experience that you see. (contact info deleted)

I'm more of a hiker than a climber. I'll only try easy non-technical climbs.

One preface to my comments: my mountaineering is driven primarily by my desire to ski down after climbing. Thus, I recognize that climbing from developed areas such as

Timberline or Mt. Hood Meadows may actually facilitate my experience. I don't have any illusions of finding solitude as in a true wilderness area, but the illusion of solitude is enjoyable!

Climb (illegible)! Climb hard!

Usage has increased, no doubt, it is not critical, yet! Fees: they are horrible! I believe that fees are completely unassociated with use, impact or user experience. They are solely tied to political, budgetary and, what's worse, hidden business agendas.

Nice survey -hope you find what you want!

I never expect to get away from other climbing parties on the Cascade volcanoes. I enjoy people I have met in the mountains -some of them are now my good friends. I'm usually on Hood and Baker with people (friends) who have never been there before. Due to informing people to remove human waste, our mountains are much more pleasant than places I have been in other countries. I do go to other peaks for solitude, a different place, and for a more challenging route. I pay over \$200 per year in fees. It would be nice to have one pass at \$250-300 so you can go anywhere and park anywhere.

Self issued permits are the way to go. Some of the permit routines are excessive (St. Helens). I resent the trail and parking fees around here. They say the money goes into the trails and facilities, but as far as I can see you are using the money to make super highways out of single tracks. I for one do not enjoy hiking on a graveled, railed, four foot wide trail. Leave the trails alone, with rocks and roots and even some mud!

I have been a mountain guide for ten years. I stopped guiding last year. A majority of my visits to Mt. Bakr were guided trips. All but one to Rainier was a guided trip. I have been with large groups for years and access to groups is critical. There are plenty of places for folks to camp and spread out, but inexperience prevents people from doing so.

Most of my climbing has been in other states and countries. Mt. Hood is a great close mountaineering area that I think is crowded but well taken care of.

I've been a part of the Mountain Stewards program for the past two years on Mt. Baker. The North Cascades Institute and Forest are sponsors of this. This is a program that is designed to help these high impact areas and educate the general public about our fragile mountahin environments. This is a great program that should be at all our hurting beautiful places.

I don't climb much anymore at my age. I would possibly climb S Sister again, but nothing of a technical nature.

There are a lot more mountains besides the 15 listed in question 1.4 and more concerns about those others than Mt. Hood and Mt. Baker.

Convenience of Mt. Hood Wilderness is a significant factor. Sisters is incredible, but too far away for day trips.

The Forest Service is doing a good job of managing climbing access. Other users cause more significant impact: snowmobile, motorcycle, horses, etc.

This makes me realize that I want to do more climbing.

For a mountain such as Mt. Hood which is close to an urban area and has very easily accessed routes, it may be better to accommodate usage rather than regulate usage. Perhaps usage can be concentrated and contained on such areas by providing additional facilities for waste disposal such as the latrine system at Camp Muir on Mt. Rainier, and other such facilities to mitigate impact. Mt. Hood is already impacted by ski resorts and access roads which temper the wilderness experience as compared to more remote areas like the North Cascades National Park. Mt. Hood could remain as a higher impact zone which might prevent some dispersion of use into more remote areas, leaving those areas more pristine as a trade-off to the increased impact on Mt. Hood.

I don't like the fee system on Mt. Rainier, it keeps me and my friends from climbing there.

Am struck every year by shrinking glaciers on Mt. Hood and early snow melt on Mt. Rainier.

Get rid of the Northwest Forest Pass!

Thanks for all your tireless efforts to study wilderness impacts and in informing users of this unique resource. It seems to me certain high use areas should not undergo draconian restrictions in order to protect (indirectly) these "unknown" areas that currently see few visitors and consequently have very little visible impact. I'm curious how you decided to send me a survey form.

We mostly just hike around in the wilderness. We're not necessarily always there to climb the mountains. Most people out there are very responsible. I do get annoyed by irresponsible ATV'rs and other people who don't respect the land/wildlife. Please try to restrict/limit motorized vehicles in these areas. Thanks.

I don't feel that fees really effect the number of people, unless they are large enough to make climbing elitist. Fees may be needed to offset cleanup and maintenance costs. To regulate the number of people can only be done on a permit or lottery system similar to Mt. Whitney or the Colorado and Rogue Rivers.

I dislike the trend of increasing restrictions on the use of our wilderness areas. Especially bothersome is the argument that access must be limited in order that the fortunate few who obtain permits far in advance (or don't work Monday thru Friday) can enjoy a sense of isolation. Those who truly want to get away from other people can do so by searching out less popular areas or getting off the trails and devising their own backcountry routes. Most of us who travel and climb in the wilderness do so partly to escape the bureaucratic strictures of our urban existence. Enough regulations already!

I strongly feel that regulations, restrictions and fees will increase the number of people in other areas that are solitude right now. Please don't restrict use.

I'd be interested to hear about the results of the survey. Thanks.

If you need some help with research on recreation or the wilderness, I'm available. I am also an exceptional tourist. Cheers. Sorry I couldn't be much help, but I just moved out here a year ago. (contact info deleted)

Long survey!

I will reject any area to avoid snowmobiles. They violate and are incompatible with my outdoor goals. Loss of pure drinking water in mountains is the most irritating change over my lifetime. St. Helens the most dramatic change. Ban domestic animals from all backcountry.

I just got back from hiking the Pacific Crest Trail, which is why I didn't respond sooner.

Thanks for doing this! I don't have a complete opposition to fees, but they are higher than the services received. If I climb all three volcanoes near Portland per year, that is \$30/year in fees for 3 or 4 days of use. Same cost as seeing 4 movies and all that I get is an access road plus a couple blue bags for my waste. What about ranching fees or off-road vehicle fees or logging fees for users who have a larger impact on a larger area? Our fees are totally disproportionate. Still, the mountains are special places. I don't like to see TP at my campsite, so we have to do something to help keep them clean.

Please mail me the results of this study. Although at times the "dog routes" do attract a lot of folks, these (mountain) wildernesses offer alternative routes and places to camp that are extremely beautiful and well worth the extra effort to experience.

I think this survey shows the bias of the designer. I don't think you appreciate the reasons why I climb. Several questions are poorly stated/confusing. The biggest issue I have with management you do not address. They are much worse about plowing/opening roads up, making many good routes inaccessible when they are in prime condition.

I would like to see the results of the study. (contact info deleted)

I don't mind paying a little to climb, but if I do, I want to see how that money is used on the mountain.

Somebody needs to audit the books at Mt. Adams area to determine where the revenue for climbing passes and parking permits is going. Considering the thousands of dollars collected over the last few years, there has been little improvement. Two new bathrooms to replace the porta potties at the ranger station. Repaired the terminal 1.7 miles of road to Cold Springs campground. What percentage of the revenue is being used outside the Mt. Adams area. Also, why is it that nobody there can give an answer? Why isn't the info documented and available at the ranger station? I'll bet that it would be available if my U.S. House Rep. Doc Hastings checked it out there would be an answer. Yes, you can contact me, I am #182.

I am very appreciative of living so close to the Cascade mountain range. I also appreciate the fact that most mountains are non-technical climbs. I feel all wilderness areas must become regulated, or soon we will not have wilderness to enjoy.

Some impact questions are hard to address because I usually visit to mountaineer early season (spring) when there is a lot of snow cover. Fees suck! Public lands should be public and free. Use quotas are perhaps a necessary evil. I used to live in Eugene, now I live in northern California since April.

There should be a limit to the number of climbers on Mount Hood, just like there is on St. Helens. More guides should be issued permits since Timberline Mountain Guides is the only (illegible) guide service. Guides are good because too many novices climb in jeans, get exhausted, and then depend on others for help.

I now climb at Yosemite and in the High Sierra given my present location in Palo Alto, CA. I have found the quota system used for Mt. Whitney to be overly restrictive. I hope the same types of systems aren't put in place in the Pacific Northwest.

My only trip to Mt. Adams was in August 2003. On that trip I did notice more human waste than in other wilderness areas I visit. These include fecal matter and toilet paper "hidden" in the rocks and latrine melt out on the snow fields. Education and blue bags at the trailhead might improve this situation. Horse manure was also on the trail.

At this time, I rarely skip a climb at a certain place because of crowds or regulations. However, I am less happy about these developments. In the future, if fees go up or regulations are more odious, I would change where I climb.

National Park and Forest Service rangers have always been polite and helpful. Permits and fees are fine and, in many cases, critical to maintaining the mountain environment and safety.

Keep up the good work. Your efforts to manage all this is welcome. Rules and regulations are not always fun, but necessary. I look forward to many more years of climbing. Thank you. (name deleted)

This survey is very narrow minded. I visit these peaks for skiing and this survey is targeted at the "traditional" mountaineer, doesn't really apply to me.

This survey is funny because I climb about two peaks a month during summer and one a month during winter and couldn't even fill half of it out. Why would I want to climb stuff like Adams where I have to deal with crowds, annoying permits, and only get sub-par views?

Having only been to Adams twice, in consecutive years, it made it hard for me to notice any change in conditions. I will say that I don't like crowds, signs of human waste, and other impacts to the environment. But I didn't change my plans on the second trip because I found any of the negative things excessive on the first trip. If restrictions are made to limit people/impact, then I'll have to reassess the situation. My next rip to Adams will probably be to do a different, less popular route as well which will be a new experience altogether.

I worked as a climbing ranger on Mt. Rainier last summer and found that fees often made people lazy. Some people, because they paid their climbing permit fees, felt that they should be able to leave their garbage/human waste to give the National Park Service "something to do." Restricting use, I believe, causes more risky behavior. If someone applies for a permit a year in advance, come hell or high water, he/she is going to do that climb, when normally they might turn around. Thanks for your research!

I hope this info is useful. I only lived in the area for 1.5 years, but I went climbing every weekend.

I did not have a "crowded" or "filthy" experience on either mountain, they are two of my favorites. There are plenty of mountains in the NW that offer isolation if that's what you desire most of all. If you are experienced, you can do them. If you are not experienced, you'll appreciate having some other climbers on the mountain.

Related to Mt. Adams, the crowds have increased, the number of overnight camping sites have increased on the mountain itself, the Crescent crossing route has changed. People seem better about carrying out human waste, except at the day use level (6000ft), but this year I saw two plastic water bottles left on the false summit. All the people I talked to were still friendly. I would like to try the east route. I just try to climb every few years to see if I can still do it. The road up to the trailhead had improved, probably a good thing, but I wholeheartedly hope this road is kept as primitive as possible to discourage larger crowds. The F.S. had done an exceptional job

of minimizing damage. I hope we do not need to restrict numbers of permits yet.

I agree with the concept of a user fee. But, I do expect something for this. (toilets, parking, rangers, illegible) Maintenance of lower trails and some presence of rangers for property protection in parking lots.

This took me a little longer than expected. Possibly because I tried to be very precise and thorough. You frequently asked about the impact of litter, human waste etc. and how that might impact our choices. The two that you did not ask about, which are more degrading are snowmobiles and horses (erosion and waste). I know that I am not alone on these issues. Unfortunately, those industries have better organization and deeper pockets than the climbing community when it comes to influencing policy making and government decisions. P.S. Sorry for the delay. I was travelling, climbing, and very busy. Glad I had a chance to participate.

It was hard to give you an accurate answer to some questions when you limit the peaks. Very little of my time is spent on the "popular" peaks listed.

All outdoor activities have an increased profile in the last ten years. Parking permits for Gorge day hikes disturbs me more than the crowds and pending regulation on Mt. Hood south side. With respect to climbing, you have missed the most critical issue that will eventually affect climbing. That is location vs. density (rate of use). If you scatter plot activity on Hood, most is concentrated in a slice from the summit to Timberline. I never see people on Yokum Ridge. But if the NFS regulates, they will likely apply the rules evenly across the wilderness area. See Mt. Whitney for a better model of regulation.

Travelling in South America has led me to believe that our mountaineering routes and trail systems here in the Pacific NW are in excellent condition. Nevertheless, there is always room for improvement. Presently, the most important issue on my mind is the protection of wild places from urban sprawl, commercial development, etc.

I have always enjoyed my climbing experiences in WA and OR. The only places I have experienced crowds is on south side routes of Hood and Adams. I typically try to climb more remote and more difficult routes.

My main emphasis is ski mountaineering. Usually early in the season as soon as roads open up.

The wilderness is my backyard. It has been discouraging to me to have to pay fee after fee to hike and park in the wilderness. I have lived and worked in various high use areas including Mt. Rainier National Park (2 years), Denali NP (1 year), Crystal Mountain Resort (8 years), and currently Rattlesnake Lake recreation area (part of City of Seattle Cedar River watershed). It seems to me that "city folk" don't understand or respect nature, or the effects that they have on it. User fees should go towards educating the uneducated land users. (name deleted)

I've pretty much moved on in my climbing career from the classic heavy use areas. I'll take novices up Hood south side and Monitor Ridge St. Helens, but never on a weekend and early in the season (April - mid-May on Hood and while there's still snow on St. Helens.)

Did not complete Middle Sister because have not returned in so long.

Good luck with your survey. (name deleted)

Good luck. You are asking an over-the-hill mountaineer questions for an in-their-prime mountaineer.

I like to climb very hard alpine routes. The Cascades are where I cut my teeth, but I now go elsewhere for the hard stuff. So over the past two years I mainly climb easier Cascade routes with family/girlfriends as a way to introduce them into the sport. One more note. I love climbing in the dead of winter, but not so much in spring and summer. This isn't to avoid the crowds (although that is a nice bonus), but because the conditions are harsher, days shorter, and approaches longer.

Thanks for the opportunity to do this survey; the first I have been asked to do in 40 years of mountaineering! The mountains are still beautiful! I have always been surprised by the difference between my first and second visits to Mt. Adams. First time, quiet and peaceful; second time, a zoo. It was a full moon, maybe even a blue moon weekend. Three groups we met in the second time were having altitude or disorientation issues on the common routes. Nothing I have witnessed equals this differentiation. Thank goodness. Climbing Mt. Hood from Timberline is a fairly ugly experience, at least upon returning to the craziness of a ski resort. The climbing itself is ok. All routes I avoid crowds if safety is an issue.

Mt. Adams South Spur is crowded, and a somewhat dull climbing experience. Other routes seem to be more scenic and challenging. Middle Sister does not seem crowded for climbers. Particularly early season. Lots of backpackers in the lower elevations though. Not necessarily a bad thing or deterrent.

Why did you skip Broken Top and Mt. Washington? These both have huge usage. The biggest changes in the Middle Sister area has been the USFS patrols, trailhead volunteers, and the use of cell phones for rescue. Each of these are more invasive than the factors you listed in the survey.

Thanks for protecting the outdoors. A noble, if not impossible cause! Let me know results of your survey. Use more "built from climbing permit fees" signs. Enforce blue bag use on more peaks in Cascades.

I climb and ski on the Cascade volcanoes and have noticed a great increase in ski mountaineers, especially on Adams. My own trips can be separated into three types: Ski trips, minimal impact, on snow, 1-day climbs where we camp at trailhead. Classes where we/I am teaching climbing skills, overnighing on mountain is dependent on regulations. Technical climbing trips with friends and family, combo of one to multiple day trips. Most of my Cascade experiences are on snow, so I notice less of any impacts.

Your survey is too damn long! Short is better and your advisors should know this.

Cost to climbers/hikers in any way should not be present. Rescue cost for experienced climbers should not take place. Greater increase of personnel in our outdoors should be present, as well as trail maintenance, trail/climb route information.

Make use fees to take in large areas. Limit number of climbers on popular routes. I am angry at the misuse of the Wilderness Act by government officials. The Act clearly states "solitude or a primitive wilderness experience." I believe that excessive restriction of climbers on glaciers (where there is virtually no ecological impact) is completely unjustified. Reducing usage of wilderness through restrictive permitting policies reduces public support for wilderness over time and will eventually destroy the very thing the Wilderness Act intended to protect.

Do not improve the roads. Spend money on public education about "leave no trace" hiking, climbing, and camping.

I love the mountains.

Fees for climbing St. Helens are ridiculous when snowmobilers can go above 4000ft. for free.

Do not allow the wilderness areas to become the domain of only those who can afford to "pay to play/park, etc." Do not allow privatization to occur.

20 years ago, I started climbing in the North Cascades and other areas other than those in 1.4. The Cascade volcanos were just getting too crowded and I liked the variety and challenge up north. Now I climb whenever I can find a partner not buried in honey-doo's, and when my back/hip/knee says it'll hump into a base camp. In other words, kayaking, cycling, or day hiking. But still almost always in the N.C. or Olympics or other areas less crowded. (name deleted) P.S. I would of got this back sooner, but I was on Middle Sister.

I think you, the Forest Service etc., are doing a good job of managing our wilderness areas. Thank you!

In the last few years, my focus has changed to ski mountaineering. As a result, I avoid the big three (Hood, Adams, St. Helens) for most of the summer when most impact is evident. I really love Mt. Adams, especially since access in spring is challenging. I am strongly opposed to fee demonstration project. I don't mind paying, but find it ludicrous that this fee is only applied in the NW.

Mt. Adams was a great trip due to the combo of climbing/summiting and overnight backpacking. I would do it again even though there were quite a few people on the mountain. Albeit there are other peaks to climb before revisiting Mt. Adams. And yes, I did pack out my poo! Yuck! Hope this helps! Keep climbing!

Thank you for taking the time to do this kind of work. I look forward to receiving the results of this survey.

While I enjoy the solitude and wilderness feel of the mountains, I find it unrealistic to expect popular climbing routes to be vacant on weekends or holidays. I would rather see people on these routes than have quotas or lotteries implemented. As I have gained more mountaineering skills and confidence, I have begun climbing harder and less popular routes. The Cascades are big enough that if you want solitude, you can find it.

You never asked if we had ever climbed at different times of day to avoid large crowds. We have begun climbing earlier so as to avoid the "standard crowd," which on some peaks can be overwhelming.

I climb for the adventure and challenge. I haven't stayed away from any mountain in the Cascades because of human encounters. The older I get, the more family and friends I take to experience the Cascades and have an enjoyable time. I seek fewer thrills or difficult ascents.

I am in favor of regulating traffic to overcrowded peaks. However, I am not in favor of paying extra fees to climb them. I have yet to climb Rainier this year due to a spike in climber's fees. Also, when I do climb, I park far from the trailhead to avoid parking fees. Cost and crowds are my biggest consideration when choosing a peak/route. Fortunately, as my skill increases, my desire for harder routes does as well. Thus, the routes I climb now are less prone to be crowded. Thanks guys!

Yes. Public lands, including wilderness, should be freely open to all without fees in excess of federal income tax. Instead of imposing restrictive permit systems or regressive user fees that unduly impact low income users, usage should be reduced simply by removing roads into remote areas. If you can't drive to it, people won't go.

Limiting permits doesn't reduce the number of visitors (see Mt. Whitney CA, Mt. St. Helens). Making access more difficult (Middle, South Sister in winter) does.

Keep trailhead areas accessible via car. The trend toward closing roads to make areas more remote increases impacts because what used to be day trips now require overnight backcountry stays which result in more impact. European-type armoring should be considered for high impact areas such as Cascade Pass.

I think limiting the number of people on a mountain such as Mt. Adams would be beneficial to us all.

I've been climbing for nine years and have noticed a lot of changes. There has been a huge increase in people climbing. Due to that, I tend to do more off season and lesser climbed routes. Human waste has diminished since the use of more blue bags. Trash hasn't seemed to change since most mountaineers will pick up and haul out trash found on the trail (at least I do). Thank you for including me in your survey.

I have felt hurt and abused by the large change in charges and regulations and I don't like the road improvements to Cold Springs. It encourages more day traffic. I don't believe that higher fees should go to better roads. We lived in Kentucky for 90-99 and hiked all over the state with the Boy Scouts and they have nothing that compares to even simple Mt. Adams south climb!

I love the Cascade volcanoes. I don't think people should have to limit their use. Instead, I would attempt to educate the public, promote other areas or improve access to other areas, promote trail maintenance parties. There are so many beautiful places people don't know about. Education is key! Also, the vast majority of people on the trail are friendly and trying to do the right thing.

I tend to visit less crowded areas in the Olympics and Cascades rather than attempt the volcanoes. I also have been leaning toward alpine rock climbs, partly for solitude, and partly for the challenge.

I'm climbing less but snowboarding more these days. Really only climb a few times per year, early in season when I can snowboard down.

Personally, once I climb a peak, I go look for something different. I also tend to avoid crowded routes.

Choice of peaks in 1.4 seemed a bit odd. Diamond Peak and McLoughlin? What about Mt. Stuart and the Stuart Range? What about the entire North Cascades? I spend most of my climbing time on more remote peaks like Logan, Chiwawa, Sloan, Snowking, Black, etc.

Yes, regarding the Recreation Fee Demonstration Program. This "program" raises serious questions about tax payer supported public access to public lands. The lands managed by the USFS and the BLM are already publicly owned and American citizens should have free and open access to them. Our taxes already support, among many other things, the professional management and upkeep of these lands. The fee demo program burdens too many that can least afford to pay, such as young families, high school and college age people who should be given every opportunity to use the wholesome recreational opportunities provided by our National Forests and Parks.

Re: 2.6 I Never pay the user fees that are essentially parking permits. I find them highly objectionable on public land.

I think that the popular routes on peaks such as Baker, Adams, Hood, etc. should not have limits put on the number of climbers.

I have mixed feelings and conflicting ideas about limited use. Unlimited access allows people to experience what we're so rapidly losing. I also don't want added restrictions on my use. Yet, I miss the days when we had the lake all to ourselves.

To summarize, as well as place in perspective, my mountaineering objectives have changed over time, most notably, that I gravitate toward more challenging routes currently, and I try to complete them in single push efforts. And while this means that I am not seeing most of the routes I climbed in the early years, I still see the human impacts, the other people at the summits, the cars at the trailheads, etc. To be quite honest, I think the human impacts at rock climbing crags are far and away more visible than on the volcanoes. And, no, I do not like the parking fees and peak fees, but I'm still climbing the volcanoes and paying the fees.

I have climbed in areas where the number of climbers allowed a day are pre-determined (ie. Mt. St. Helens). I have no problem with this and would entertain the idea of having this on other mountains.

Much of my climbing is now in the remote North Cascades of Washington

I know use has increased, but most areas are better protected than in the past.

Climbing has been a part of my family all my life. The Cascades are beautiful mountains and I've enjoyed all my trips into them. I feel very fortunate to have them in my back yard. Climbing has become more and more popular, but I've only noticed it on Rainier and the south side of Hood. I've found I can usually find a time to avoid the crowds.

I hope any information you obtain leads to improved relations between users, tourists, and rangers. Not all of us climbers are dirtbags who leave their stuff everywhere. Some of us still practice no impact camping/climbing.

I love the Mt. Adams peak and wilderness area. It seems more remote, more wild, and consequently more beautiful than St. Helens or Hood. Unfortunately, I do not like having to pay for a Cascade climbing pass. Although the South Spur route can be overcrowded in the high season, it's wonderful late in the season (go on a weekday in late Sept. or Oct.). If anything, I'd like to see more regulations (e.g. restricted numbers as on St. Helens) on the popular routes (Hogsback, Dissappointment Cleaver, South Spur, etc.) and less on the intermediate or advanced routes except, of course, where it is absolutely necessary for safety or impact (e.g. Yocum Ridge on Hood).

There are many many different routes on different mountains that a climber can choose from. If a person does not want to climb the most popular routes at the most popular times, then they can opt to choose a less popular route at a less popular time. I am strongly opposed to excessive restrictions to climbing routes such has been done to wilderness river whitewater trips such as the Selway.

I enjoy climbing enough that I will take trips to either the popular aeas or more remote locations. Though I follow the rules and get all required permits. I feel the loss of freedom to just pack up and go. I am reconciled to the necessity for more regulation as use multiplies.

Although I climbed Mt. Shasta in 1979 and Mt. St. Helens in 1987, all my other climbs have been in the last 18 months, so I'm a relatively new person to mountaineering. Curious as to why your survey doesn't include Mt. Washington or Broken Top in the Oregon Cascades. Broken Top is my only multiple ascent (3 climbs in the past year) and favorite mountain currently.

In the last 10 years, I've done more backcountry skiing than climbing. My use of wildernss areas in the summer and fall have been mostly backpack trips with climbs of non-technical summits.

Most Difficult Route Attempted

<i>Route</i>	<i>Peak</i>
Palmer Glacier	Hood
Liberty Ridge	Rainier
Adams Glacier	Adams
Kautz	Rainier
winter route	St. Helens
	Adams
south climb	Adams
south ridge/sitkum spire	Glacier
camp muir	Rainier
Mary Green Glacier	Bonanza (North Cascades)

Coleman-Deming	Baker
N Ridge	Jack Mtn
Price Glacier/Liberty Ridge	Shuksan/Rainier
West Buttress	Denali
Central Couloir	Maroon Bells, Co
	Rainier
West Ridge Couloir?	Stuart
South Spur	Adams
N Ridge	Baker
N side	Adams
Diamond	Longs Peak
Disappointment Cleaver	Rainier
South	Rainier
Disappointment Cleaver	Rainier
South Face	The Tooth, WA
Hogsback	Hood
Mazama Glacier	Adams
Liberty Ridge	Rainier
NW Ridge	Gspaltenhorn (Switzerland)
Hogsback	Hood
West Face	Whitney
Liberty Ridge	Rainier
E Ridge	Doldenham, CH
Cassin Ridge	Denali
Sunshine	Rainier
Gibraltar Ledges	Rainier
SE Guide Tour Rt.	Rainier
East Side	Shasta
North Side	Orizaba, Mex
	Aconcagua
West Ridge Couloir?	Forbidden
Polish Direct	Aconcagua
Sunshine	Hood
South Spur	Adams
South	Glacier
South Spur	Adams
	Adams
Gibraltar Ledges	Rainier
standard route?	Glacier
Disappointment Cleaver	Rainier
	Cotopaxi, Ecuador
North Face	Middle Sister
South Spur	Adams
Disappointment Cleaver	Rainier
Disappointment Cleaver	Rainier

normal route	El Misti, Peru
Khumbu Ice Fall	Everest
Fisher Chimneys	Shuksan
South Spur	Adams
West Rib	Denali
East Arete	Middle Sister
	Rainier
Emmons Glacier	Rainier
Collier Glacier	Middle Sister
Klickitat Icefall	Adams
Tahoma Glacier	Rainier
Liberty Ridge	Rainier
Reid Headwall	Hood
SW	Shasta
N from Jefferson Park	Jefferson
Emmons Glacier	Rainier
Liberty Ridge	Rainier
Becky Route	Liberty Bell
	Glacier
N Ridge	Stuart
Standard route	Huarascaran Sur, Peru
Cooper Spur	Hood
normal route	3 Fingered Jack
Kautz	Rainier
North Side	Shasta
West Buttress	Eiger
Disappointment Cleaver	Rainier
Sunshine	Hood
S Spur	Adams
	Rainier
	Washington
Liberty Ridge	Rainier
West Ridge	Pusik Peak
Liberty Ridge	Rainier
Emmons Glacier	Rainier
Emmons Glacier	Rainier
Hogsback	Hood
Ayoloco Glacier	Iztacihuatl, Mexico
Willis Wall	Rainier
Hogsback	Hood
Cathedral Ridge	Hood
Disappointment Cleaver	Rainier
	Rainier
SE Ridge	Jack Mtn
	Glacier

S Spur	Adams
Kautz	Rainier
Emmons Glacier	Rainier
Emmons Glacier	Rainier
S Spur	Adams
Hogsback	Hood
S Spur	Adams
Sunshine	Hood
	Rainier
Adams Glacier	Adams
Frostbite Ridge	Glacier
West Rib	Denali
South Ridge	Constance
N Face	Grand Teton
Ingraham Glacier	Rainier
Emmons Glacier	Rainier
Fryingpan Glacier	Little Tahoma
Emmons Glacier	Rainier
Bowling Alley	North Sister
standard	Orizaba, Mex
unknown	unknown peak in Yellowstone
Sunshine	Hood
Blue Glacier	Olympus
Emmons Glacier	Rainier
	Adams
Kautz	Rainier
NW Buttress	Slesse
NW Ridge	Adams
W Face	Leaning Tower
Emmons Glacier	Rainier
NE Ridge	Everest
made my own	S Sister
N Face	Index
Hogsback	Hood
N Face	Big Four
E Face	Grand Teton
Ingraham Direct	Rainier
Liberty Ridge	Rainier
Elliot Headwall	Hood
Hogsback	Hood
California ice	Beartooth Mountains
Disappointment Cleaver	Rainier
SE Ridge	Ama Dablam, Nepal
Avalanche Gulch	Shasta
Easton	Baker

Hogsback	Hood
Sunshine	Hood
Gibraltar Ledges	Rainier
Kennedy Glacier	Glacier
Cooper Spur	Hood
North Couloir	El Dorado, North Cascades
Emmons Glacier	Rainier
Disappointment Cleaver	Rainier
SW	North Sister
Cooper Spur	Hood
Liberty Crack	Liberty Bell
	Middle Sister
	Rainier
Leuthold Couloir	Hood
N Face	Hood
West Buttress	Denali
	Glacier
N side	Jefferson
West Crater Rim	Hood
	Adams
S Spur	Adams
S	3 Fingered Jack
S Side	Jefferson
S Spur	Adams
Hogsback	Hood
S Face	North Twin
S Spur	Adams
Pico International	Tronador, Argentina
NE Buttress	Slesse, BC
Czech Direct	Denali
West Buttress	Denali
Elliot Glacier	Hood
U-notch	North Palisade, CA
Fuhrer Finger	Rainier
Kautz Glacier	Rainier
Hogsback	Hood
South Spur	Adams
South Spur	Adams
North Face	Shuksan
Exum Ridge	Grand Teton
Ellingwood Arete	Crestone Needle, CO
Jefferson Park Glacier	Jefferson
South Spur	Adams
Hogsback	Hood
Kautz Glacier	Rainier

West Face	(illegible), Peru
Kautz Glacier	Rainier
Muldrow Glacier	Denali
South Spur	Adams
Gibraltar Ledges	Rainier
Gibraltar Ledges	Rainier
	Baker
Castle Crag	Hood
Disappointment Cleaver	Rainier
Cooper Spur	Hood
Emmons Glacier	Rainier
East Face	Lefory, Canadian Rockies
Kautz Glacier	Rainier
Liberty Ridge	Rainier
Emmons Glacier	Rainier
Disappointment Cleaver	Rainier
Avalanche Gulch	Shasta
Hogsback	Hood
Hogsback	Hood
Hogsback	Hood
Cooper Spur	Hood
Ptarmigan Ridge	Rainier
Emmons Glacier	Rainier
West Ridge	Forbidden
North Ridge	Washington
South Spur	Adams
Kautz Glacier	Rainier
Sunshine	Hood
Ingraham Glacier	Rainier
Fisher Chimneys	Shuksan
South Arete	Early Winter Spire
Exum Direct	Grand Teton
Disappointment Cleaver	Rainier
Jefferson Park Glacier	Jefferson
NE Buttress	Goode
Elliot Glacier	Hood
North Face Cleaver	Hood
	Huayna Potosi, Bolivia
Adams Glacier	Adams
Kings Trench	Logan
East Face	Shasta
	Thielsen
Emmons Glacier	Rainier
Whitehorse Glacier	Whitehorse
East Face	Whitney

Elliot Glacier	Hood
Diamond Face	Longs Peak
Sunshine	Hood
N Side	Adams
Liberty Ridge	Rainier
Liberty Ridge	Rainier
Yocum Ridge	Hood
Kautz Glacier	Rainier
ridge	Mt. Blanca, CO
Disappointment Cleaver	Rainier
Hogsback	Hood
North Face	Hood
S Ridge	Mt. Green, NZ
Leuthold Couloir	Hood
Disappointment Cleaver	Rainier
Frostbite Ridge	Glacier
Wilson Glacier	Rainier
SE Ridge	Despair
El Dorado Glacier	El Dorado
standard route	Aconcagua, Argentina
Hogsback	Hood
Polish Glacier	Aconcagua, Argentina
Disappointment Cleaver	Rainier
Yocum Ridge	Hood
West Buttress	Denali
Emmons Glacier	Rainier
West Face	El Capitan
Dry Creek	Big Four
Liberty Ridge	Rainier
S Ridge	Cutthroat Peak
West Buttress Direct	Denali
Frostbite Ridge	Glacier
Tahoma Glacier	Rainier
Disappointment Cleaver	Rainier
Cathedral Ridge	Hood
Liberty Ridge	Rainier
Jefferson Park Glacier	Jefferson
	Baker
SW Ridge	Washington
Kautz Glacier	Rainier
North Ridge	Stuart
Ingraham Glacier	Rainier
Kautz Glacier	Rainier
S Spur	Adams
Jefferson Park Glacier	Jefferson

East Ridge	Pico Bonito, Honduras
SE Ridge	Stuart
Disappointment Cleaver	Rainier
	Rainier
Hogsback	Hood
West Crater Rim	Hood
Ingraham Glacier	Rainier
Cooper Spur	Hood
Disappointment Cleaver	Rainier
S Spur	Adams
	Adams
S Spur	Adams
S Spur	Adams
Ingraham Glacier	Rainier
S Spur	Adams
Willis Wall	Rainier
S Spur	Adams
Frying Pan Glacier	Little Tahoma
East Ridge	El Dorado
West Ridge	Jefferson
Emmons Glacier	Rainier
Disappointment Cleaver	Rainier
West Ridge	Stuart
Kautz Glacier	Rainier
standard route	Olympus
	Adams
	Ford Ranges, Antarctica
Emmons Glacier	Baker
North Face	Shuksan
Emmons Glacier	Rainier
Fuhrer Finger	Rainier
South Spur	Adams
Columbia Glacier	Mt. Columbia, Canada
	El Dorado
Easton Glacier	Baker
North Face	Mt. Athabasca, Canada
Northeast Ridge	Bugaboo Spire
Disappointment Cleaver	Rainier
	Rainier
South Spur	Adams
Ptarmigan Ridge	Rainier
Kautz Glacier	Rainier
south side	North Sister
South Face	Prussik Peak
	Rainier

SE Ridge	Adams
Emmons Glacier	Daniel
	Rainier
	Three Fingered Jack
North Ridge	Foraker
Fuhrer Finger	Rainier
West Buttress	Denali
Fisher Chimneys	Shuksan
Tahoma Glacier	Rainier
SW Summit	Salsbury, AK
West Buttress	Denali
Serpentine Arete	Dragontail
North Face	Hood
North Ridge	Stuart
Disappointment Cleaver	Rainier
Sunshine	Hood
Reid Headwall	Hood
Disappointment Cleaver	Rainier
Disappointment Cleaver	Rainier
Exum Ridge	Grand Teton
Emmons Glacier	Rainier
Dinner Plate	North Sister
Disappointment Cleaver	Rainier
Emmons Glacier	Rainier
SW Ridge	Ama Dablam, Nepal
N Ridge	Baker
Leuthold Couloir	Hood
Disappointment Cleaver	Rainier
Beckey Route	Liberty Bell
Disappointment Cleaver	Rainier
Owens-Spaulding	Grand Teton
south route	Middle Sister
Emmons Glacier	Rainier
north side	Shasta
Ingraham Glacier	Rainier
	Three Fingered Jack
Fisher Chimneys	Shuksan
Emmons Glacier	Rainier