

IDENTIFICATION OF SOCIAL INDICATORS AND  
STANDARDS FOR ACCEPTABLE CONDITIONS IN THE COHUTTA  
WILDERNESS USING A NORMATIVE SOCIAL JUDGMENT APPROACH

By:

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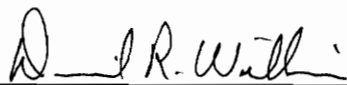
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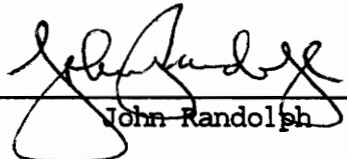
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(ABSTRACT)

The purpose of this research was to: 1) measure the importance Cohutta Wilderness users place upon potential indicators of preferred wilderness experiences, 2) identify the extent to which norms, or standards, exist among these users for a variety of social indicators of the wilderness experience, and 3) to compare these characteristics among a number of different subgroups in order to assess any differences which may exist among users. Social judgment theory was used in the study to develop a more reliable and useful method for achieving these objectives.

Wilderness users tended to place high levels of importance on most of the indicators studied. However, the greatest importance was placed upon a number of the physical/ecological indicators. Subgroups of wilderness users classified according to wilderness involvement, place attachment, and length of stay showed the most significant differences in importance evaluations.

Most of the users sampled were willing to provide personal norms, but these norms were often unstable over time. Users tended to become more restrictive concerning those conditions they found acceptable.

Measures of consensus suggested two different conclusions. Wilderness user subgroups tended to have greater median variation than was the case for the approach using percent agreement for specific encounter norm levels. When users were broken down into subgroups, the wilderness involvement measure appeared to explain the most differences in norms regarding the acceptability of wilderness conditions.

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## INTRODUCTION

Passage of the Wilderness Act (P.L. 88-557) in 1964 gave legal protection to some of our nation's most pristine lands as wilderness. These lands are included in a National Wilderness Preservation System (NWPS) which today encompasses over 90 million acres in size. The 1964 act gave a legal definition to wilderness, and established qualifying characteristics for potential additions to the NWPS. However, as Haas, Driver, Brown, and Lucas (1987) point out, the act provides limited guidance to managers who must maintain acceptable conditions within areas once they are included in the system. These authors note that qualifying words and phrases included within the act, such as "unimpaired", "substantially unnoticeable", "primitive recreation" and "solitude", must be quantified and made operational through planning processes if management efforts are to be successful.

Stankey, Cole, Lucas, Petersen, and Frissell (1985) have proposed the Limits of Acceptable Change (LAC) system as a conceptual framework for planning and managing wilderness areas. The LAC process can be broken down into nine steps, as shown in Figure 1 (Stankey et al. 1985). LAC recognizes that change is an inevitable occurrence in wilderness, and managerial emphasis should be placed upon identifying the degree or amount of change that is acceptable. Implicit in applying LAC under this premise is the assumption that planners and managers will be able to establish acceptable limits of change, and then be able to manage the area in a manner that achieves or maintains the area within these limits. The process is based on a management-by-objectives (MBO) approach (Stankey et al. 1985).

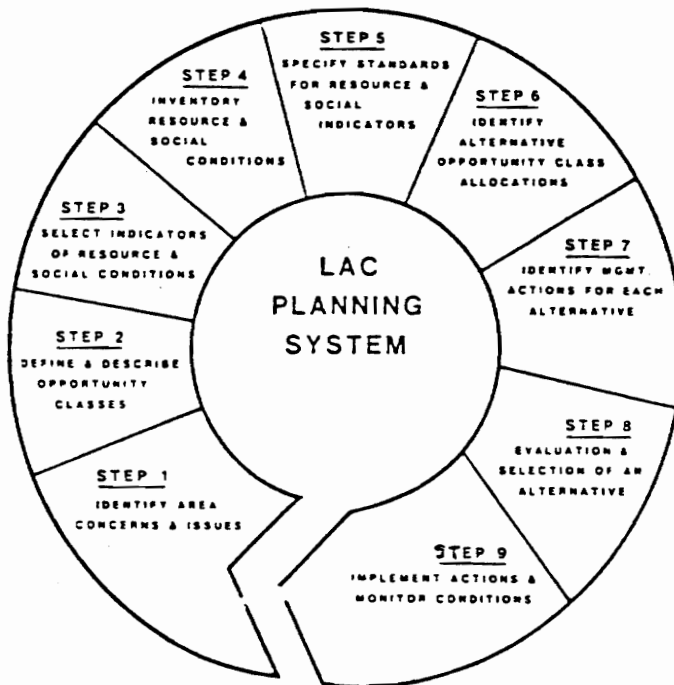


Figure 1 — The Limits of Acceptable Change (LAC) planning system. (Taken from Stankey et al. 1985)

An early step in applying the LAC approach involves identifying social and physical attributes that are important to the wilderness users, are subject to manipulation by wilderness managers, can be measured cost-effectively and accurately, and reflect a relationship to the amount and type of use occurring in the area (Stankey et al. 1985). Such attributes can be used as indicators of important social and physical conditions in the wilderness area. If standards for these indicators are then developed, they can serve as reference points for determining both the acceptability of conditions in an area, and the point at which additional management efforts are necessary to achieve a desired state of conditions (Stankey et al. 1985).

#### Problem Statement

If the LAC process is to be useful, a reliable method is needed for determining which indicators are important to users, what conditions or standards for the indicators are desired by the users, and to what degree there is consensus for these standards among different user groups in the area under consideration. This research project will address these issues in terms of social indicators and standards.

Lucas and Stankey (1985) have noted that research can help in the identification of indicators by assessing the relative importance users place upon different potential indicators. Users likely consider some potential indicators more important than others. In addition, importance evaluations may vary among different subgroups of users.

In a social context the concept of norms has been suggested as a useful method of identifying standards for social indicators (Shelby and

Heberlein 1986). A normative approach to identifying standards seems attractive since it implies that agreement exists on some issue, this agreement remains stable over time, and societal pressures are at work influencing people to behave in accordance with the norm. Thus, if normative standards can be identified among area constituents, much of the management burden involved with the inherently value-laden problem of establishing standards is eased.

Over the last decade, many studies have used a normative approach to measure users' preferences and standards for a variety of social, physical, ecological, and managerial issues (Vaske, Shelby, Graefe, and Heberlein 1986). However, despite the development of a theoretical model for measuring norms (Jackson 1965) and its application to a recreation setting, a number of problems can be identified with many previous attempts to measure recreationists' norms. This research project attempts to point out these problems, and to address a number of them in an applied manner.

#### Study Area

The area chosen for this study was the Cohutta Wilderness, located in northcentral Georgia and extreme southeastern Tennessee. The wilderness lies within both the Chattahoochee and Cherokee National Forests. Comprising an area of 37,042 acres, the Cohutta is one of the largest Forest Service wilderness areas in the Eastern U.S. Most of the area was originally included in the National Wilderness Preservation System with passage of the so-called Eastern Wilderness Act in 1975. In

1987, another 2,940 acres was added to the Cohutta to bring it to its current total acreage.

Though located in a rugged landscape, the area is relatively easily accessible and is within less than a half-day drive of a large population. According to the area's most recent wilderness management plan (U.S.F.S. 1978), 4.6 million people live within a 140 mile radius of the area. The city of Chattanooga, Tennessee is about 1 1/2 hours away, and Atlanta, Georgia is less than a 3 hour drive away.

Current management direction for the Cohutta primarily emphasizes protection of the physical and ecological characteristics of the area. Though the need for protection of solitude for users is recognized in the wilderness management plan (U.S.F.S. 1978), there is a lack of specific quantitative goals relating to social characteristics in the Wilderness. Visitor use of the area has risen from an estimated 28,000 RVD (recreation visitor days) in 1975, to an estimated 70,000 RVD in 1988. Much of this use is believed to be concentrated along a small portion of the area's 90 miles of trails. Jacks River Falls and easily reached sections of the area's two popular trout streams, the Jacks and Conasauga Rivers, seem to be the portions of the wilderness most heavily used. Considering the increasing popularity of this wilderness, along with the lack of clear management goals, managers would seem to benefit from the application of a planning process such as LAC.

## OBJECTIVES

There will be three primary objectives addressed by this study: 1) identify important social indicators for preferred wilderness experiences, 2) identify the extent to which norms, or standards, exist among wilderness users for a variety of social indicators of the wilderness experience, and 3) compare the normative characteristics of different subgroups of the wilderness users. Social judgment theory will be incorporated with normative approaches currently in use by recreation researchers in an attempt to develop a more reliable and useful method for achieving these objectives.



## LITERATURE REVIEW

### Indicator Identification

Stankey et al. (1985) define indicators as "specific variables - that, singly or in combination, are taken as indicative of the condition of the overall opportunity class". These "variables" can be thought of as attributes that represent the specific social, managerial, or physical characteristics associated with a given setting or opportunity class. (The term "opportunity class" comes from the Recreation Opportunity Spectrum (ROS) approach (Clark and Stankey 1979; Driver and Brown 1978) to recreation planning, and consists of descriptive information relating to the kinds of conditions acceptable for a given management area. Opportunity classes are identified in Step 2 of the LAC process.) Taken together, the attributes of an area have a direct effect on the activities available to users and on the experiences they derive from using the area (Driver, Brown, Stankey, and Gregoire 1987).

A number of social attributes may exist for a given setting. In deciding which of these are most useful in applying the LAC system, Stankey et al. (1985) suggest using those attributes directly related to issues and concerns expressed by the managers and constituents of the area. They suggest five common social factors that often relate to the issues and concerns of wilderness users: 1) solitude while traveling, 2) campsite solitude, 3) conflicts between visitors with different travel methods, 4) conflicts regarding party size, and 5) noise (Stankey et al. 1985). These factors can serve as the basis for defining relevant social attributes to use in developing social indicators. In addition, as mentioned previously, in order for a social attribute to

serve as a useful social indicator it should be capable of being measured accurately and cost-effectively, be related to the amount and type of use occurring in the area, relate to the kind of experiences people have in wilderness areas, and be responsive to management control (Stankey et al. 1985).

If social indicators are to be useful in managing an area, standards for the indicators must also be established. This involves assigning measurable, acceptable levels to the indicators (Stankey et al. 1985). Although this involves a value judgment process, the steps involved can be made more acceptable by being rational, following some established method or model, and being open to review by the public.

#### The Concept of Norms

Recreation researchers have used the concept of norms to identify users' standards for various ecological and social conditions in recreation areas (Manning 1985; Shelby 1981; Vaske et al. 1986; Shelby, Vaske, and Harris 1988; Whittaker and Shelby 1988; Patterson and Hammitt 1990). Given the key importance that norms are thought to play in people's evaluation of the acceptability of behaviors and conditions, a thorough understanding of what they are is important if they are to be studied and applied in a manner useful to wilderness management.

Norms are characterized by: 1) shared rules or beliefs about how people should act, 2) a degree of stability over time, and 3) sanctions or rewards which serve to reinforce the norms (Cancian 1975). A related and potentially confusing concept involves attitudes. Attitudes are positive or negative feelings one has toward another person, object, or

issue (Petty and Cacioppo 1981). Norms are more concerned with widely accepted conditions of the way things should be or the way people should act (Rossi and Berk 1985; Blake and Davis 1964), and imply that people feel societal pressure to behave accordingly (Petty and Cacioppo 1981; Cancian 1975).

With these points in mind, Cancian (1975:9) defines what she calls ranking norms as "shared beliefs about what actions and attributes bring respect and approval from oneself and others." Vaske et al. (1986) follow the definition suggested by Blake and Davis (1964:456) that norms are used to "designate any standard or rule that states what human beings should or should not think, say or do under given circumstances". A review of the literature on norms reveals that two kinds of norms are commonly distinguished - personal norms and social norms.

Personal norms. A discussion of personal norms is included in Schwartz's (1977) paper on the effects norms have on influencing helping behavior. Personal norms are related to expectations and self-evaluation on an individual level. Like social norms, personal norms are developed and modified through social interaction, but they tend to be more specific and less stable over long periods of time than social norms. Although an individual's personal norms are often in agreement with existing social norms for a given situation, their more specific nature may cause them to vary among individuals.

In order to measure personal norms, most studies employ a format where respondents are asked to specify their evaluation of some situation. However, it is important to distinguish between temporary, unsanctioned attitudes or preferences and the more stable, sanctioned

normative responses when interpreting the results of the respondents' evaluations. Those responses that do indeed represent personal norms can then be used to determine if a social norm exists for a specific group.

Social norms. Social norms can be thought of as standards that are shared by members of a social group (Vaske et al. 1986). In order for a social norm to exist, there must be some amount of consensus in the group on some issue or condition. This consensus develops because individuals are committed or attracted to the values of the group. According to Rossi and Berk (1985), greater consensus in a group can be expected if a norm is specified in general terms. However, a major problem encountered in measuring social norms involves how to measure consensus (Markoff 1982). A related problem concerns the degree of consensus necessary before a social norm can be considered to exist.

#### A Normative Approach to Measuring User Standards

The problem of measuring user standards for social conditions in wilderness, and the extent to which consensus exists on a given standard is an evaluative issue that can be addressed with a normative approach (Shelby and Heberlein 1986; Vaske et al. 1986). There have been a number of attempts to apply a normative approach to understanding recreationist's behavior. Some studies have focused on depreciative behavior (Wellman, Roggenbuck, and Smith 1982; Noe, Hull, and Wellman 1982). Others have focused on ecological standards (Shelby et al. 1988). Still others have concentrated on encounter norms (Vaske et al. 1986; Patterson and Hammitt 1990; Shelby 1981; Shelby et al. 1988).

What follows is a summary and evaluation of studies concerning recreation encounter norms and their theoretical foundations which are most closely related to this study.

The Return Potential Model. Much of the recent recreation research on encounter norms has focused on the Return Potential Model which was described by Jackson (1965). This model allows one to identify structural characteristics of norms through the use of a "return potential curve". The curve can be shown on a graph with the horizontal axis representing a range of the behavioral dimension, such as the number of encounters, and the vertical axis being an evaluation of the behavior. This curve is typically a graphic representation of the mean response of the study group's personal norms for the range of values at each scale position in the behavioral dimension, and represents the groups' distribution of feelings potentially used to evaluate a particular "actor, situation, and behavior dimension." (Jackson 1965:303).

Applications of the return potential model to recreational settings have primarily concentrated on three of the structural characteristics identified by Jackson (1965): 1) the range of tolerable behavior, 2) norm intensity, and 3) norm crystallization (Vaske et al. 1986; Shelby 1981; Shelby et al. 1988; Whittaker and Shelby 1988). In these studies, the range of tolerable behavior represents the numbers of encounters or amount of impact that is acceptable to the user before a specific experience becomes unacceptable. The intensity of a norm is indicated by the height of the return potential curve both above and below the indifference point (Jackson 1965). It refers to the strength of the

evaluation on the issue. Finally, the crystallization is the amount of agreement about a norm. It can be measured by calculating the dispersion about respondents' evaluations for the behavioral dimensions.

Applying the Return Potential Model. Vaske et al. (1986) report on an early attempt to apply Jackson's model to describe encounter norms in a recreation setting. The study was conducted by Vaske and Heberlein in the late 1970s. In this study, canoers were asked about the pleasantness of encountering 1, 2, 3, 5, 7, 9, 15, 20, and 25 other canoers, fishermen, and tubers on the Brule River in Wisconsin. The experience ratings ranged from "very pleasant", "pleasant", "neutral", "unpleasant", and "very unpleasant".

The researchers found that as the number of encounters with each group increased, the experience rating dropped from near "pleasant" to "very unpleasant". Zero was used as the "optimum" encounter level (an apparent assumption given that canoers were not specifically asked about their experience if they had no encounters), and defined the lower encounter end of the range of tolerable contacts. The point where the return potential curve, based on the mean ratings of the canoeists' personal norms as expressed by their experience ratings, crossed the "neutral" line was defined as the upper limit of the range of tolerable contacts. The researchers found that the range of tolerable contacts was lowest for encounters with tubers (0 - 2.3), and highest for fishermen encounters (0 - 7.2).

The Brule River researchers also measured the intensities of the contact norms. This was defined as the absolute values of the experience ratings summed over the entire range of encounter levels.

They found that intensities were highest when canoers encountered tubers, and lowest for encounters with fishermen.

Finally, an attempt was made to measure crystallization in the Brule River study. Vaske et al. (1986) imply that this was done by using the method described by Jackson (1965) and discussed earlier. They concluded that norm crystallization was similar for each type of group encountered, but was strongest (low standard deviation) for encounters with other canoers and weakest (high standard deviation) for encounters with tubers.

The Brule River study was a significant first attempt to apply Jackson's model to recreation encounter norms, but proved cumbersome due to the large numbers of almost identical questions required to measure encounter norms at each contact level (Shelby 1981). This format required many questions and yielded norms on only a few types of encounters. In addition, the behavioral scale consisted of encounter levels arranged in a discontinuous format, which provided less information than may have been desired. Furthermore, only one experiential situation (i.e. encounters on the Brule River) was studied.

Finally, the researchers' method of measuring consensus was misleading. The researchers implied that they were following the method of measuring consensus suggested by Jackson (1965) when, in fact, this seems not to be the case. As discussed earlier, Jackson (1965) suggested using the variance associated with the mean of each level of the behavioral dimension (not standard deviation as Vaske et al. (1986) suggest) as a measure of consensus. Vaske et al. (1986) list standard deviations as their measure of crystallization, and fail to clarify the nature of these standard deviations.

Shelby (1981) made an attempt to overcome the problem of having a large number of questions, each only varying in the number of encounters for which a norm measurement was being taken. He asked participants at a public meeting concerning the Colorado River in the Grand Canyon, commercial and private users of the Rogue River in Oregon, and users of the Illinois River, also located in Oregon, to indicate the highest number of encounters they could tolerate before their experience changed. An assumption was made that the respondents would tolerate between zero encounters and the maximum number which respondents indicated was acceptable. In this manner, only one question was required for each type of encounter norm measured. Shelby used the median value listed for the personal norms to represent the social norm for the upper limit tolerable, rather than using the mean of the personal norms. This was done in order to minimize the bias due to the skewness of the data (Shelby 1981).

Shelby (1981) also asked users to think of each study area in three different situations: 1) as wilderness, 2) as semi-wilderness, and 3) as an undeveloped area. This gave a comparison of how norms varied depending on the type of experience being sought.

Shelby concluded that norms vary with respect to the type of experience desired within an area. Interestingly, however, norms for a given experience tended to be similar, even across different sites. Shelby also concluded that the amount of crystallization varied from one experience to another. Respondents tended to show higher crystallization for wilderness experiences (based on a lower standard deviation).

As with the study reported by Vaske et al. (1986), the Shelby (1981) study has problems with the manner in which crystallization was



measured. The researchers wisely used the median level of the personal norms as the most appropriate measure of central tendency due to the non-normal nature of the data. However, crystallization was not measured using the median, but rather used the standard deviation around the mean. This could potentially lead to incorrect conclusions regarding the amount of consensus among personal norms.

Whittaker and Shelby (1988) attempted to extend the social norm concept by studying norms for a variety of different impacts, examining the properties of different norms in an effort to derive general types of norms, and examining norms for three different sections of the Deschutes River with varying use densities. In addition, the settings were more developed than those examined in the earlier studies. The authors found that the return potential curves showed three different types of social norms: 1) no tolerance, 2) single tolerance, and 3) multiple tolerance norms (Whittaker and Shelby 1988).

The "no tolerance" norm is characterized by a mode of zero on the behavioral dimension and little tolerance for higher levels. The same pattern seems to hold true for a variety of settings. In addition, there is a high level of crystallization associated with these norms. The authors feel that these consistent characteristics may indicate the lack of a need to collect data on this type of norm. The norms fitting this type included norms for: 1) human waste standards, 2) discourteous behavior, and 3) jet boat encounters (for non-jet boaters).

The "single tolerance" norm has a mode at some behavioral dimension other than zero, after which the tolerance level drops rapidly. This type of norm appears to vary among different settings. Norms fitting

this type included: 1) river encounter standards (time in sight), 2) jet boat encounters for jet boaters, 3) launch waiting time, 4) angling disturbances, 5) fishing competition, 6) camp sharing, and 7) camp competition.

The "multiple tolerance" norm is characterized by a bimodal distribution. The authors feel that this indicates a lack of consensus on any one level on the behavioral dimension. These norms may indicate that different groups desire different standards, and therefore developing a single standard would mean compromising between them (Whittaker and Shelby 1988). Norms fitting this category include: 1) fire ring standards, 2) camp encounters (for some settings), and 3) river encounters (for some settings).

Whittaker and Shelby also felt that norms for different impacts generally varied according to location on the river. The general trend showed that users of more densely populated and developed areas tended to accept greater impacts on their experience.

#### Problems with Current Attempts to Measure Users' Standards for Social Indicators

Approaches taken to measure personal norms in the literature reviewed here have asked the respondent to specify their evaluation of a given level of encounters and impacts. However, little effort has been focused on measuring the stability of the respondents' evaluations, or whether they feel their behaviors will be subject to the sanctions that typically accompany normative situations. In addition, as Roggenbuck, Williams, Bange, and Dean (in press) point out, some of these research efforts focused on measuring users' affective evaluations of

pleasantness or unpleasantness regarding their experiences (Vaske et al. 1986; Whittaker and Shelby 1988). Thus, one may argue that some researchers actually measured attitudes rather than norms.

Another problem involves previous attempts to determine the existence of social norms. There have been a number of techniques used to operationalize an approach for identifying the existence of a social norm. The basic process inherent in most of these approaches has been to first identify the area of central tendency among personal norms, and then look for consensus, or crystallization, about this level. Most of the studies have used the mean as the measure of central tendency and then calculated the standard deviation about the mean in order to measure consensus. Yet, Roggenbuck et al. (1990) have shown that different conclusions regarding consensus among different norms may be achieved using the coefficient of variation, rather than the standard deviation. The coefficient of variation would seem to be a more appropriate statistic for consensus measurement when comparing norms with different means, especially if these means vary to a relatively high degree (Crovelli 1973; Simpson, Roe, and Lewontin 1960). In addition, using the coefficient of variation allows for normative comparisons to be made among items on which conditions are measured on different scales.

However, some authors have pointed out that when faced with non-normal data, the researcher should use the median of the personal norms as the most appropriate measure of central tendency for determining consensus (Roggenbuck et al. 1990; Shelby 1981). This being the case, neither the standard deviation, nor the coefficient of variation would

be justified as appropriate measures of dispersion. Roggenbuck et al. (1990) used the nonparametric Levl:med test for homogeneity of variance as an appropriate measure of dispersion about the median.

Another shortcoming of most of the studies reviewed is the lack of an attempt to see if norms exist among subgroups of the user population. Although a lack of consensus among the entire user population may suggest the lack of a norm, it is possible that norms actually do exist, but may only appear within specific subgroups of the overall population. For example, the degree of involvement one has with an issue may affect that person's evaluations of alternative positions regarding the issue (Sherif et al. 1965). This is significant since the extent to which one cares about an issue will likely affect the norms he or she holds about that issue. One would suspect that users more involved on an issue may have different norms for acceptable wilderness conditions, and would probably show a stronger commitment to that norm.

Yet another problem with the studies reviewed involves incomplete norm articulation. By focusing on measuring just the maximum acceptable level of conditions for an issue, past studies implicitly assume that all values below this maximum are acceptable. Furthermore, all levels beyond the maximum acceptable are implicitly assumed to be unacceptable. However, this may not actually be the case. For example, some people may find zero encounters just as unacceptable as some level beyond their maximum acceptable. In addition, there may be some levels about which users are uncertain, and wish to remain noncommittal. Finally, obtaining information regarding only the maximum level of conditions acceptable tells the researcher little about the ideal, or most

preferred, level of conditions. Thus, in order to fully understand users' normative evaluations for conditions, it would be desirable to have them more specifically indicate what they find acceptable, unacceptable, ideal, or about which they wish to remain noncommittal.

#### Potential Usefulness of Social Judgment Theory in Identifying Users' Standards for Social Indicators

Making evaluative decisions for acceptable levels of social encounters and impacts involves value judgments (Shelby and Heberlein 1986; Shelby et al. 1988). Sherif and Hovland (1961) have described an approach that could be combined with the return potential model to provide more realistic and useful results when addressing normative concepts. This approach is known as the social judgment approach. Using this approach it is possible to identify at least six characteristics of the respondents' value judgments that have not been demonstrated in previous applications of the return potential model in recreational research: 1) the ideal level of acceptability and its relationship to other levels in the acceptable range, 2) a user specified lower boundary for the acceptable range, 3) a user specified unacceptable range, 4) a range of values for which the user is non-committed, 5) an indication of the relative level of involvement one has in an issue, and 6) the relative salience of an issue.

Inherent in the social judgment approach is the assumption that people order stimuli along a psychological dimension in a meaningful manner relative to an internal reference scale (Sherif and Hovland 1961; Petty and Cacioppo 1981). This scale is developed, as are norms, through social interaction, and is also influenced by significant people

in one's life as well as one's own feelings. This reference scale includes an "anchor point", and serves as a reference point from which alternative positions are evaluated, and can be thought of as the ideal level of acceptability for a given situation. A person's judgments of alternative positions on the issue are subject to contrast and assimilation effects relative to the anchor point (Petty and Cacioppo 1981). A contrast effect occurs when one shifts a judgment away from the anchor point. An assimilation effect refers to a judgment shift toward an anchor point. Thus, some alternative positions on an issue will be seen as being more unlike (i.e. contrast) one's anchor point than they actually are, while others will be interpreted as being more similar (i.e. assimilation) to one's anchor point than they actually are.

If a person is highly involved in an issue, that person's attitude will serve as a stronger anchor point, rendering it less susceptible to contrast or assimilation effects and causing the use of relatively fewer "categories" when evaluating alternative positions on the issue (Sherif, Sherif, and Nebergall 1965; Sherif and Hovland 1961; Petty and Cacioppo 1981). As a result, the distance from the ideal position to the point where conditions become unacceptable should be shorter for that person than would be the case for someone less involved.

Sherif et al. (1965) have suggested a method for measuring these categories. Application of this method requires three major assumptions. First, there must be more than one position that can be taken on the issue. Second, alternative positions are distinguishable by the subjects. Third, the subjects must be free to determine which

positions he/she will accept, reject, or be noncommitted (Sherif et al. 1965). The method involves a latitude of acceptance, a latitude of rejection, and a latitude of noncommitment. The latitude of acceptance refers to the range of alternative positions about an object or an issue that one finds acceptable, and includes the anchor point. The latitude of rejection is that range of positions which one finds objectionable. The latitude of noncommitment refers to those positions which one neither accepts nor rejects.

Though primarily developed to measure attitudes, the researchers also recognized the potential of the method to reflect social norms (Sherif et al. 1965). With this approach, these researchers have demonstrated that people's opinions on an issue can be assessed, and that people with similar anchor points often show consistent characteristics as represented by their latitudes of acceptance, noncommitment, and rejection. The approach can also be used to reflect involvement in specific stands on issues, as well as the overall significance of the issue in general. Sherif et al. (1965) suggest using the latitude of rejection to reflect the level of involvement. The larger the latitude of rejection is on an issue position for an individual, the more involved they may be with the issue.

#### Methods of Identifying Managerially Relevant Subgroups

By segmenting the overall user population into subgroups, the opportunity emerges for the identification of characteristics that may not be apparent when considering the entire population. This can be

important to resource managers who must attempt to provide and enhance opportunities for satisfying recreational experiences. As mentioned earlier, most of the past studies using a normative approach to identify users' standards have failed to give appropriate attention to potential subgroup differences. Understanding which subgroups exist and how users compare in their needs, opinions, and norms can help resource managers better understand and manage for their clientele. To be useful, the subgroups should be defined in such a manner as to permit the resource manager to respond to their needs.

A number of approaches that are commonly used in recreation research for specifying managerially relevant subgroups seem potentially useful for exploring possible differences in user evaluations for social indicators and standards for appropriate wilderness conditions. A brief discussion of those approaches used in this study follows.

Subgrouping by Time of Visit. Past wilderness research has consistently shown that the majority of recreational visits occur on weekends (Roggenbuck and Lucas 1987). This undoubtedly results in large part from the nature of most people's job structure. Yet, it would seem reasonable to expect that a significant amount of the use that does occur on weekdays is the result of people purposely managing to break away from their daily routines for a visit in order to avoid encountering the larger number of people present on weekends. To the extent that this is the case, differences may exist among these two subgroups of people in their norms about acceptable encounter levels.



Subgrouping by Experience Use History. Schreyer, Lime, and Williams (1984) note that an individual's experience use history (EUH) with a place represents the frame of reference through which the person perceives and evaluates the environment. These researchers applied the EUH construct to a subset of recreationists using 13 rivers included in the database from the National River Recreation Study carried out from 1977 to 1981. The EUH construct was operationalized by defining six alternative combinations of three variables related to the recreationists past use history on a particular river. The three variables included: 1) the amount of past experience on the study river, 2) the total number of river the respondent had floated, and 3) the total number of previous river trips the respondent had made on any river (Schreyer et al. 1984).

The various combinations of high and low experience levels allowed for comparisons to be made among users who differ in EUH on issues related to behavior, motivations, experience evaluations, perceptions of conflict, and management preferences. The researchers found that many differences existed among river users on these issues, and concluded that "...EUH has the potential to serve as an indicator of the internal states which have resulted in differing patterns of behavior in recreation environments." (Schreyer et al. 1984:47; emphasis added).

Subgrouping by Length of Stay. Another approach to subgrouping recreationists that has intuitive appeal involves length of stay. It might be argued that the longer period of time one spends in an area, the greater and more complex may be the cognitive relationship between

the user and the area. The result may well be different evaluations regarding appropriate attributes for the area. One approach to subgrouping recreationists according to length of stay might be to identify patterns of time-spans which users may spend in an area. For example, one obvious category would be day users. Another might be a one or two night length of stay, which may be common among those users camping for a weekend. Finally, the remaining users might be classified into a group that spends three or more nights in an area.

Subgrouping by Involvement. Subgrouping users according to level of involvement can also be useful to both researchers and wilderness managers in searching for agreement among indicators and normative standards. Involvement can be thought of as "the state of identification existing between an individual and a recreational activity, at one point in time, characterized by some level of enjoyment and self-expression being achieved through the activity" (Selin and Howard 1988:237).

Though much of the past research on involvement has taken place in the area of social psychology (Sherif et al. 1965; Sherif and Cantril 1947; Sherif and Sherif 1967) and consumer behavior (Zaichkowsky 1985; Houston and Rothchild 1978), recent attempts have been made to assess the usefulness of involvement/commitment to the field of recreation (McIntyre 1989; Selin and Howard 1988; Buchanan 1985). (Note: Since the concepts of involvement and commitment appear closely related (McIntyre 1989), and the interest in this study is on the usefulness in subgrouping wilderness users rather than theoretical meanings, the terms

involvement/commitment will be used synonymously in this report.) These recent studies emphasize how a better understanding of the concept of involvement can contribute to such managerially important research areas as recreation conflict, specialization, substitution, and choice behavior.

Many attempts to incorporate a measure of involvement into recreation research have been associated with the concept of specialization (Bryan 1977; Wellman et al. 1982; Virden and Schreyer 1988). Bryan (1977) proposed that as recreationists become more specialized, they will show a higher level of involvement with their chosen activity, equipment, and resource setting. Wellman et. al. (1982) attempted to test Bryan's specialization concept for its applicability for mild whitewater canoeists' norms about depreciative behavior. These authors used measures designed to express the centrality to lifestyle canoeing had for the recreationists sampled as an indicator of involvement.

Selin and Howard (1988) have addressed the need for a better understanding and operationalization of involvement. They suggest measures be used that relate to five important components of involvement: 1) identity, 2) importance, 3) enjoyment, 4) interest, and 5) self-expression users have with the object, issue, or situation in question. McIntyre (1989) recently made a similar recommendation, and attempted to test the conceptual approach by measuring the extent to which campers at three different camping areas varied in their degree of involvement.

In McIntyre's (1989) study, each of the three campgrounds were assumed to characterize different points on a continuum expressing various levels of involvement based on varying levels of self-reliance. It was hypothesized that campers with a higher degree of involvement would chose those campgrounds requiring a higher degree of self-reliance. Using factor analysis to test the combinations of involvement scale items, McIntyre found that three factors explained 54 percent of the variance. These factors were named attraction, self-expression, and centrality. However, of these three only centrality was significantly related to the hypothesis for predicting camping choice. McIntyre notes the importance of the developed scale for measuring involvement and recommends further testing be done to assess its reliability.

Subgrouping by Place Attachment. Williams (1980, 1985) has pointed out that recreationists frequently identify with companions and resource settings in addition to recreational activities. This approach emphasizes users' relationship to the resource through the concept of place attachment. The concept involves the meanings and symbols users may assign to specific geographical areas or types of places (Williams and Roggenbuck 1989).

As discussed by Williams and Roggenbuck (1989), place attachment may have at least two origins - resource dependence and resource identity. Resource dependence involves a functional form of place attachment where a user becomes attached to a place because of such things as the opportunities the setting offers for carrying out activities. Resource identity involves a more cognitive form of

attachment relating to the emotional or symbolic meanings users attach to a place.

Subgrouping by Mode of Experience. Another aspect of the relationship to the resource construct, and closely related to place attachment, involves the mode with which users experience the environment (Williams & Roggenbuck 1990). Mode of experience is related to the focus of attention users have when visiting an area. Three common modes of experience are settings, activities, and social contacts. For example, some people may visit a setting not so much because the area is a beautiful place, but instead, to be with a loved one or to spend time with a friend. Though a setting is necessary, in this case the users would likely be willing to substitute any number of recreation places for their visit.

## RESEARCH QUESTIONS

Based on the previous literature review and study objectives, a number of research questions are of interest. Specifically, this study will address the following research questions:

### Research Question One

Do social indicators vary in the importance which users assign to them?

### Research Question Two

To what extent do subgroups of users vary in the importance assigned to different social indicators according to time of visit, experience use history, length of stay, wilderness involvement, place attachment, and mode of experience?

### Research Question Three

What is the strength of the association between users' relationship to the resource and their importance ratings for social indicators?

### Research Question Four

To what extent are users capable of articulating personal norms for unacceptable, preferred, and acceptable social conditions?

### Research Question Five

To what extent do users' unacceptable, preferred, and acceptable personal norms remain stable over time?

Research Question Six

What is the strength of the association between users' importance evaluations for social indicators and their unacceptable, preferred, and acceptable personal norms?

Research Question Seven

To what extent does consensus exist among users' personal norms for unacceptable, preferred, and acceptable social conditions?

Research Question Eight

To what extent do the personal norms and the degree of norm crystallization vary within subgroups according to time of visit, experience use history, length of stay, wilderness involvement, place attachment and mode of experience.

Research Question Nine

What is the strength of association between users relationship to the resource and their unacceptable, preferred, and acceptable norms?

## METHODOLOGY

Data for this research project was collected from surveys of visitors to the Cohutta Wilderness. This section will describe the sampling time frame, the survey instruments, and the methods used to identify user subgroups of interest.

### Sampling Scheme

Initial on-site contacts with wilderness users was made beginning May 15, 1989 and continued through November 26, 1989 in an effort to obtain a representative sample of Cohutta visitors. Sampling was stratified at three levels to ensure representative coverage: weekday/weekend cluster sampling, trailhead location, and time of day contact was made.

Weekday time blocks included Monday - Thursday and weekend time blocks included Friday - Sunday. Two weekend clusters per month were randomly selected for a total of 39 sampling days. Two weekday clusters were also selected per month for a total of 56 sampling days. Thus, data for this study was collected over a total period of 95 sampling days.

Eleven trailheads or multiple access points to the wilderness were sampled. These included: Beech Bottom Trailhead, Jacks River Trailhead (West end), Horshoe Bend Trailhead, Rice Camp/Hickory Creek (North end)/East Cowpen (North end), Conasauga River Trailhead (North end), Hickory Creek (South end), Tearbitches Trailhead, Chestnut Lead Trailhead, Conasauga River Trailhead (South end), East Cowpen Trailhead (South end), Jacks River (East end)/Big Frog Mountain. In those cases



where an access point had multiple trailheads, users entering any of the trails were contacted from the one access point.

Sampling periods were broken down into three four-hour time blocks. These three time blocks were intended to represent an overall 12-hour sampling day. For most of the sampling period, the first time block began at 8:00 a.m. and ended at noon, the second time block included the period from noon to 4 p.m., and the third time block began at 4 p.m. and ended at 8 p.m.. This sampling scheme continued until September when the morning time blocks began and ended an hour later, and the evening time blocks began and ended an hour earlier due to shorter daylight hours.

### Survey Methods and Instruments

#### On-site Contacts

During the on-site interview, information was collected regarding the users' actual or estimated arrival and departure times, whether the users were entering or leaving the area, location of entry and exit points, wilderness travel routes, camping locations, alternative site considerations, total number of people in group, type of group, age, sex, number of previous visits for up to nine people in the group. In addition, up to nine names and addresses per group were obtained for those visitors age 16 and over (See Appendix A for a copy of the On-site Interview form). These people were asked to participate in a more detailed mailback survey. A sub-sample of the users contacted on-site were also asked to complete a form containing questions designed to measure users' standards for a variety of social and physical

indicators. This was done to allow comparisons with the mailback survey. The questions included on the form will be discussed in greater detail below.

### Mailback Questionnaire

The mailback survey was mailed to those users 16 and over approximately two weeks following the initial on-site contact. The mailback questionnaire was 12 pages in length and contained a range of questions designed to gather information on user characteristics, opinions on a variety of social and physical conditions, and measures of the visitors' relationship to the resource. Due to the more complex nature of the questions included in the measure of normative standards, two forms (Form A and Form B), each containing half the items, were used. The only difference in the two forms was in the standards. Only those questionnaire items relevant to this study will be discussed here; the complete questionnaires used in the study are included in Appendices B and C.

In order to obtain a measure of length of stay, users were asked "On this visit did your group stay out overnight in the Cohutta Wilderness area?" and "How many nights did you stay in the Cohutta Wilderness?". Users were also asked about their previous wilderness use history. The items included in this measure were: 1) "How many times have you visited this wilderness area before?", 2) "How many years ago did you first visit this wilderness area?", 3) "How many times per year do you typically visit this wilderness area?", 4) "How many other wilderness areas have you visited?", 5) "How many years ago did you

first visit a wilderness area?", and 6) "How many times a year to you typically go into wilderness?".

The mailback survey also contained a number of questions designed to measure issues relating to the users' relationship to the resource. Specifically, these issues included wilderness involvement, place attachment, and mode of experience.

Wilderness involvement was measured using a 5 item scale including the following questions: 1) "I get greater satisfaction out of visiting wilderness than other recreation places", 2) "I find that a lot of my life is organized around wilderness use", 3) "One of the major reasons I now live where I do is that it has opportunities for visiting wilderness", 4) "I feel like wilderness is a part of me", and 5) "I seldom take time to visit wilderness areas". Respondents were asked to indicate the extent to which they: 1-"strongly agree", 2-"agree", 3-"neutral", 4-"disagree", 5-"strongly disagree". It is felt that though this list of items may not be as comprehensive as optimally desired, the items nonetheless tap into the critical dimensions of involvement discussed in the literature review, and therefore, should be useful in hypotheses testing.

A measure of place attachment was also obtained using an ordinal scale corresponding to the "strongly agree - strongly disagree" format described for wilderness involvement. The items included on the mailback questionnaire designed to measure place attachment are listed in Table 1.

Mode of experience was measured in two different manners in the mailback questionnaire. The first approach involved a series of fifteen

Table 1. List of items included on the mailback questionnaire used to measure place attachment.

- =====
- 1) This place means a lot to me
  - 2) I wouldn't substitute any other area for doing the type of things I did here
  - 3) I get more satisfaction out of visiting this place than from visiting any other recreation place
  - 4) I enjoy doing the type of things I did here in this area more than in any other area
  - 5) I find that a lot of my life is organized around this place
  - 6) This area is the best place for what I like to do
  - 7) One of the major reasons I now live where I do is that this place is nearby
  - 8) I feel like this place is a part of me
  - 9) The time I spent here could have just as easily been spent somewhere else
  - 10) No other place can compare to this area
  - 11) I am very attached to this place
  - 12) I identify strongly with this place
  - 13) This place makes me feel like no other place can
- =====

questions - five for each of three "modes" corresponding to setting, activity, and social focuses. These items are listed in Table 2. Respondents were asked to indicate the extent to which they "strongly agree", "agree", were "neutral", "disagree", or "strongly disagree" with each item. The second approach involved a simple multiple choice, "forced answer" technique where respondents were asked to choose one of three possible answers: 1) "I came here because I enjoy this place itself", 2) "I came here because this is a good place to do the outdoor activities I enjoy", or 3) "I came here because I wanted to spend more time with my companions". These items correspond to setting, activity, and social modes of experience, respectfully.

Users were also asked to evaluate nineteen social indicators according to the importance of the items in influencing the quality of their experience. The indicators are listed in Table 3. Respondents rated the importance of the indicators on a scale ranging from 1="not at all" important, 2="slightly" important, 3="somewhat" important, 4="moderately" important, 5="very much" important and 6="extremely" important.

Potential standards, or norms, were also measured for fifteen of the indicators listed above, but since the focus of this study is on the social indicators and standards, only nine of them are included in this study. These social indicators are listed in Table 4. The social indicators and standards were also used for the subsample of on-site users mentioned above. Respondents were shown a series of scales corresponding to the appropriate social indicator, and asked if there

Table 2. List of items included in the mailback questionnaire used to measure mode of experience.

=====

Setting

- 1) I tried to learn as much as possible about the lay of the land
- 2) I often stopped along the trail to examine the environment in detail
- 3) Exploring the place was the focal point of the trip for me
- 4) I spent a lot of time studying the features of the environment
- 5) I spent a lot of time just exploring the area

Activity

- 1) I spent most of my time improving my skills in outdoor activities that are important to me
- 2) I felt good about how much I was able to use my outdoor skills
- 3) I focused a lot of my attention on outdoor activities and skills
- 4) I spent most of my time doing and thinking about outdoor recreation activities that are important to me
- 5) I thought a lot about how I could apply my outdoor skills

Social

- 1) The solitude of this place helped to bring my companion(s) and me closer together
  - 2) Spending time with my companions was the focal point of the trip for me
  - 3) I spent a lot of time with my companions
  - 4) I really enjoyed sharing the experience with my companions
  - 5) I thought a lot about my relationships with my companions on the trip
- =====

Table 3. List of indicators potentially affecting users' experience included on mailback questionnaire.

- =====
- 1) The number of groups of hikers I see along the trail
  - 2) The total number of people I see hiking along the trail
  - 3) The number of large groups (more than 6 people) that I see along the trail
  - 4) The number of hiker groups that camp within sight or sound of my campsite
  - 5) The number of hiker groups that walk past my campsite
  - 6) The number of horse groups I see along the trails
  - 7) The number of horse groups that camp within sight or sound of my campsite
  - 8) The number of horse groups that travel past my campsite while I am there
  - 9) The amount of noise associated with human activities within the wilderness
  - 10) The amount of manmade noise originating from outside the wilderness
  - 11) The percent of time other people are in sight while I'm along the trail
  - 12) The amount of vegetation loss and bare ground around a campsite
  - 13) The number of trees around a campsite that have been damaged by people
  - 14) The number of campfire rings that people have made
  - 15) The amount of litter I see
  - 16) The amount of time I spend travelling on old roads in the wilderness
  - 17) The visibility of lights originating from outside the wilderness
  - 18) The number of wild animals I see
  - 19) The number of miles of gravel road I travel to get to the wilderness
- =====

Table 4. List of social indicators included in study for which standards were measured on the mailback questionnaire.

- 
- 1) The number of groups of hikers I see along the trail
  - 2) The total number of people I see hiking along the trail
  - 3) The number of large groups (more than 6 people) that I see along the trail
  - 4) The number of hiker groups that camp within sight or sound of my campsite
  - 5) The number of hiker groups that walk past my campsite
  - 6) The number of horse groups I see along the trails
  - 7) The number of horse groups that camp within sight or sound of my campsite
  - 8) The number of horse groups that travel past my campsite while I am there
  - 9) The percent of time other people are in sight while I'm along the trail
-



was a range of values which they found "completely unacceptable", "acceptable", and a point which they "most preferred".

Respondents were asked to indicate an unacceptable range by drawing a line above the scale over those values they found unacceptable. The acceptable range was represented by drawing a line below the scale for those values found acceptable. Finally, the most preferred point on the scale was to be indicated by placing an "X" directly on the scale for the most preferred value. Respondents were reminded that "not drawing a line or placing an X is okay, but this means you are either uncertain or don't care about that item". In order to reduce confusion, the respondents were given an example demonstrating the appropriate format to use in filling out the scales (see Appendices B & C).

The scales ranged from 0 to 25 for most indicators, with the exception of "The total number of people I see hiking along the trails in a day", which ranged from 0 to 50, and "The percent of time other people are in sight while I am on the trail", which ranged from 0 to 100. It was felt that these ranges comprised a reasonable range that might be encountered in the wilderness, about which most people would have some opinion, and would also allow for optimal graphic presentation of the scale on the questionnaire.

### Identification of Subgroups

In order to more thoroughly analyze the data in this study, members of the survey population were broken down into a number of different subgroups. The subgroups of interest can roughly be classified into three major areas of interest: time of visit, length of stay, and involvement/relationship to the resource.

In the case of time-of-visit subgroups, users were separated into one of two subgroups - weekday users and weekend users. The categories were determined by the arrival day of the wilderness visitors. Visitors arriving on Monday thru Thursday were classified as weekday users. Visitors arriving Friday thru Sunday were classified as weekend users.

The decision on how to classify users according to length of stay was based on the intuitive assumptions discussed in the literature review, and on the resulting frequency distributions for the visitors' response on the length of stay questions on the mailback questionnaire. Based on this information, visitors were classified into one of three categories: day users, one or two nights, or three or more nights.

For the involvement/relationship to the resource subgroups, it was recognized that the construct of interest is multi-dimensional and not well understood. Therefore, rather than aggregating the various construct components together into an overall index, the components were analyzed separately. This resulted in five subgroups of interest: 1) previous number of visits to the Cohutta Wilderness, 2) previous number of visits to other wilderness areas, 3) wilderness involvement, 4) place attachment, and 5) mode of experience. For each subgroup, decisions regarding subgroup categories were based on the distribution of

visitors' responses to the appropriate questions on the mailback questionnaire.

For the category of previous visits to the Cohutta, the following subgroups were identified: 1) "none" (no previous visits), 2) "few" (one to four previous visits), and 3) "many" (five or more visits). For the category regarding other wilderness visits, the following classification scheme was used: 1) "few" (zero to one other wilderness visit), 2) "moderate" (two to four other wilderness visits), and 3) "many" (five or more other wilderness visits). In the case of the wilderness involvement and place attachment subgroup classifications, two groups were formed - low and high - based on an approximate fifty-fifty split on scores among respondents' responses to the questions listed above. On the final subgroup classification, i.e. the mode of experience, respondents were classified into setting, activity, or social subgroups, according to their response to the forced choice multiple choice question.

## RESULTS

### General Description

A total of 672 addresses were collected during the on-site portion of this study. Of the 672 people contacted, 444 returned their mailback questionnaire for a response rate of 66 percent. Table 5 shows the number of weekday and weekend contacts by month for those returning the mailback questionnaire. The highest percentage of contacts for any single month among those returning the questionnaire was October, which accounted for 22.2 percent of the total mailback sample. The fewest contacts were made in November, which accounted for 9.2 percent of the mailback sample. The number of weekend contacts far exceeded the number of weekday contacts for every month.

Table 6 shows the group size distribution for the mailback respondents. Large groups were common, with over 26 percent of the groups containing 6 or more people. The most common group size was two people. Nearly 35 percent of the mailback respondents visited the Cohutta in groups of two. Slightly over 6 percent of the mailback respondents visited the Cohutta alone. The most common group type was "friends", making up over 35 percent of the sample (Table 7). Nearly 25 percent of the sample consisted of family member groups. Many of those groups included in the "other" category consisted of some type of organized group, thus combining this group with the "organized club or school group" results in a total of nearly 20 percent in this category.

Table 5. Frequency and percent of weekday and weekend wilderness respondents (based on arrival day), organized by month.

Month	Number Weekday	Percent Weekday	Number Weekend	Percent Weekend	Total Number	Total Percent
May	16	3.6	46	10.4	62	14.0
June	15	3.4	33	7.4	48	10.8
July	11	2.5	52	11.7	63	14.2
August	13	2.9	62	14.0	75	16.9
September	10	2.3	46	10.4	56	12.7
October	7	1.5	92	20.7	99	22.2
November	7	1.5	34	7.7	41	9.2
Total	79	17.7	365	82.3	444	100

Table 6. Group size distribution among mailback respondents.

Group Size	Number in Category	Percent	Cumulative Percent
1	27	6.1	6.1
2	154	34.7	40.8
3	59	13.3	54.1
4	59	13.3	67.4
5	29	6.5	73.9
6 or More	116	26.1	100.0
<b>Total</b>	<b>444</b>	<b>100</b>	<b>100</b>

Table 7. Group type distribution among mailback respondents.

Group Type	Number in Category	Percent	Cumulative Percent
Friends	158	35.6	35.6
Family	109	24.5	60.1
Family and Friends	63	14.2	74.3
Organized Club or School Group	18	4.1	78.4
Alone	27	6.1	84.5
Other	69	15.5	100.0
<b>Total</b>	<b>444</b>	<b>100</b>	<b>100</b>

Table 8 provides information concerning length of stay. Most of the mailback respondents spent at least one night in the Cohutta. The table shows that 37.4 percent of the respondents were day users, with 62.6 percent spending one or more nights. For those staying overnight, respondents were nearly as likely to stay two nights as they were one night, with about 47 percent of the respondents falling into one of these two categories. Nearly 16 percent of the respondents spent three or more nights in the Wilderness. The average length of stay for those staying overnight was 1.99 nights.

The majority of mailback respondents were males, by a ratio of nearly 3 to 1 over females (Table 9). Table 10 shows a breakdown of mailback respondents by age group. The most frequent age group was the 26 to 35 class, which accounted for 38.3 percent of the total mailback sample. The 16 to 25 age group accounted for the second highest age class with 28.4 percent, followed by the 36 to 45 age class with 21.8 percent. Only 2.7 percent of the mailback respondents were over 56 years of age.

Table 11 shows that the respondents were highly educated. Nearly half of the respondents had attained the equivalent of four years of college education. Over 25 percent of the sample had attended graduate school. Overall, 90.8 of the respondents had completed at least 12 years of education.

Nearly 42 percent of the respondents were professional or technical workers (Table 12). The second highest occupational category included managers or administrators, which made up slightly over 18 percent of the mailback sample. Interestingly, though the study area was

Table 8. Length of stay among mailback respondents.

Length of Stay	Number in Category	Percent	Cumulative Percent
Day Use	166	37.4	37.4
One Night	106	23.9	61.3
Two Nights	102	23.0	84.3
Three or More Nights	70	15.7	100.0
Total	444	100	100

Table 9. Frequency and percent of mailback respondents organized by gender.

Gender	Number	Percent
Male	330	74.3
Female	114	25.7
Total	444	100

Table 10. Frequency and percent of mailback respondents organized by age group.

Age Group *	Number	Percent	Cumulative Percent
16 - 25	126	28.4	28.4
26 - 35	170	38.3	66.7
36 - 45	97	21.8	88.5
46 - 55	39	8.8	97.3
56 - 64	12	2.7	100.0
65 +	0	0	100.0
Total	444	100	100

\* Only users over 16 years of age were mailed a questionnaire.



Table 11. Frequency and percent of mailback respondents organized by highest education level attained (years).

Education Level	Number	Percent	Cumulative Percent
Missing	4	0.9	0.9
Less than 8	2	0.5	1.4
8	2	0.5	1.9
9	3	0.7	2.6
10	18	4.1	6.7
11	11	2.5	9.2
12	93	20.8	30.0
13	36	8.1	38.1
14	44	9.9	48.0
15	17	3.8	51.8
16	97	21.8	73.6
Over 16	117	26.4	100.0
Total	444	100	100

Table 12. Frequency and percent of mailback respondents organized by occupation.

Occupation	Number	Percent
Missing	32	7.2
Professional and Technical	185	41.7
Manager, Administrator	81	18.2
Self-employed	22	5.0
Clerical or Sales	21	4.7
Craftsman or Foreman	48	10.8
Operative	15	3.4
Laborer or Service Worker	37	8.3
Farmer or Farm Manager	0	0
Military	3	0.7
Total	444	100

located in a rural area, none of the mailback respondents listed "farmer" or "farm manager" as their primary occupation.

Nearly half of the respondents lived in a city with a population over 25,000 (Table 13). Of these people, 27.7 percent lived in a major city with a population over 1 million, likely reflecting the popularity of the Cohutta among people from the Atlanta metropolitan region. Slightly over 30 percent of the sample came from a rural area with a population of less than 2,500.

Forty-eight percent of the respondents were married (Table 14). Slightly over 42 percent of the respondents had children under 17 years of age living at home (Table 15). Most of this percentage included children over 5 years of age, with only 11.5 percent of the respondents reporting having children less than 5 years of age.

Table 13. Place of residence among mailback respondents.

Kind of Place	Number in Category	Percent	Cumulative Percent
Missing	2	.5	.5
Farm or Ranch	17	3.8	4.3
Country (but not farm or ranch)	89	20.0	24.3
Small Town (pop. < 2,500)	31	7.0	31.3
Town or Small City (2,500<pop.<25,000)	88	19.8	51.1
City (25,000<pop.<100,000)	74	16.7	67.8
Large City (100,000<pop.<1,000,000)	20	4.5	72.3
Major City or Metro. Area (> 1,000,000)	123	27.7	100.0
Total	444	100	100

Table 14. Marital status of mailback respondents.

Married	Percent
Missing	.2
Yes	51.2
No	48.0

Table 15. Percent of mailback respondents with children under age 17 living at home.

Age Category	Percent
Less than 5	11.5
Between 5 and 17	30.9

### Addressing Research Questions

**Research Question 1:** Do social indicators vary in the importance which users assign to them?

In order to assess the importance Cohutta visitors place upon social indicators, mailback respondents were asked to rate the indicators on a scale ranging from 1 = "not at all" important to 6 = "extremely" important. Table 16 shows the importance rating results for the overall sample for each indicator. Though the focus of this study is on the social indicators, results are given for the physical/ecological indicators as well for comparative purposes. Figure 2 displays a graph of the mean importance rating and standard deviation for each of the indicators included in the study.

Five of the six most important indicators fall into the physical/ecological category, with "The amount of noise associated with human activities within the wilderness" being the only social indicator included in the top six with a mean importance rating of 4.86. "The amount of litter I see" was considered the most important indicator by the sample, receiving a mean rating of 5.60. Agreement among the study sample was also greatest for this indicator with a coefficient of variation of .18. "The number of trees around a campsite that have been damaged by people" was the only other indicator to receive a mean rating greater than 5, and this indicator also had the second highest agreement among the sample.

The least important indicators were "The amount of time I spend traveling on old roads in the wilderness" and "The number of miles of

Table 16. Evaluation of indicator ratings among all study participants.

Social Indicator	N	Mean	Importance Ratings *			c.v.
			Median	Mode	s.d.	
A. The amount of litter I see	441	5.60	6	6	1.00	.18
B. The number of trees around a campsite that have been damaged by people	442	5.22	6	6	1.09	.21
C. The amount of noise associated with human activities within the wilderness	440	4.86	5	6	1.41	.29
D. The amount of manmade noise originating from outside the wilderness	441	4.80	5	6	1.52	.32
E. The number of wild animals I see	440	4.68	5	6	1.52	.32
F. The amount of vegetation loss and bare ground around a campsite	442	4.64	5	6	1.39	.30
G. The number of <u>horse groups</u> that camp within sight or sound of my campsite	441	4.57	5	6	1.60	.35
H. The number of <u>hiker groups</u> that camp within sight or sound of my campsite	439	4.53	5	6	1.48	.33
I. The number of <u>horse groups</u> that travel past my campsite while I am there	439	4.36	5	6	1.61	.37
J. The number of camp-fire rings that people have made	442	4.27	4	5	1.45	.34
K. The number of <u>hiker groups</u> that walk past my campsite	441	4.21	4	4	1.45	.34

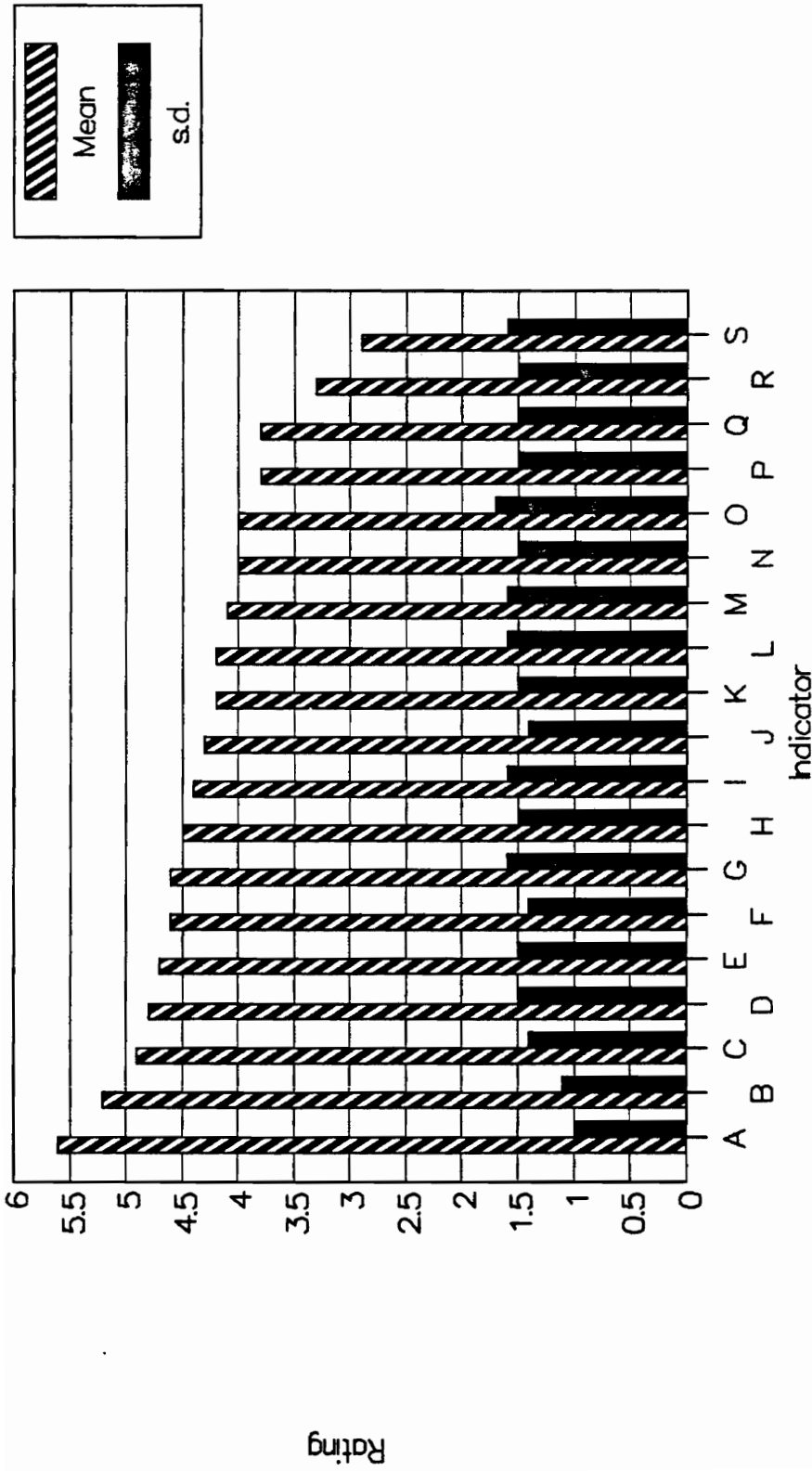
Table 16. (cont)

	<u>N</u>	<u>Mean</u>	<u>Median</u>	<u>Mode</u>	<u>s.d.</u>	<u>c.v.</u>
L. The number of <u>large groups</u> (more than 6 people) that I see along the trail	439	4.19	4	5	1.55	.37
M. The number of <u>horse groups</u> I see along the trails	442	4.12	4	6	1.64	.40
N. The percent of time other people are in sight while I'm along the trail	442	4.02	4	5	1.52	.38
O. The visibility of lights originating from outside the wilderness	440	3.98	4	5	1.65	.41
P. The total <u>number of people</u> I see hiking along the trail	442	3.81	4	5	1.49	.39
Q. The number of <u>groups</u> of hikers I see along the trail	442	3.79	4	5	1.50	.39
R. The amount of time I spend travelling on old roads in the wilderness	441	3.28	4	4	1.50	.46
S. The number of miles of gravel road I travel to get to the wilderness	439	2.93	3	1	1.60	.55

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

Indicator Key for Figures 2-3

- A = "The amount of litter I see".
- B = "The number of trees around a campsite that have been damaged by people".
- C = "The amount of noise associated with human activities within the wilderness".
- D = "The amount of manmade noise originating from outside the wilderness".
- E = "The number of wild animals I see".
- F = "The amount of vegetation loss and bare ground around a campsite".
- G = "The number of horse groups that camp within sight or sound of my campsite".
- H = "The number of hiker groups that camp within sight or sound of my campsite".
- I = "The number of horse groups that travel past my campsite while I am there".
- J = "The number of campfire rings that people have made".
- K = "The number of hiker groups that walk past my campsite".
- L = "The number of large groups (more than 6 people) that I see along the trail".
- M = "The number of horse groups I see along the trails".
- N = "The percent of time other people are in sight while I'm along the trail".
- O = "The visibility of lights originating from outside the wilderness".
- P = "The total number of people I see hiking along the trail".
- Q = "The number of groups or hikers I see along the trail".
- R = "The amount of time I spend travelling on old roads in the wilderness".
- S = "The number of miles of gravel road I travel to get to the wilderness".



(Letters Correspond to Key Shown on Page 53)

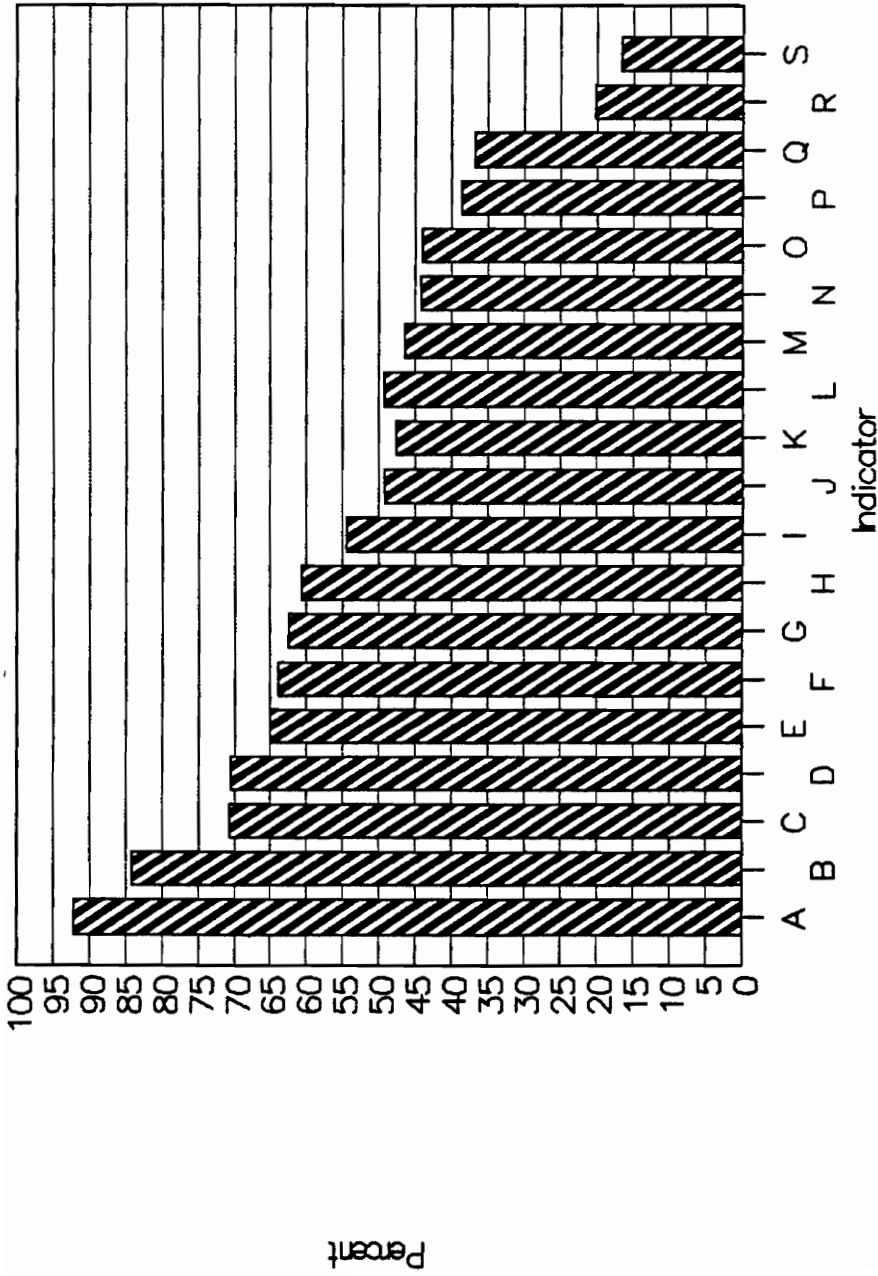
**Figure 2.** Mean indicator importance ratings and standard deviations (s.d.) (1=not at all important, 6=extremely important).



gravel road I travel to get to the wilderness". These indicators were rated 3.28 and 2.93 respectfully. In assessing group agreement for these two items, one obtains mixed results, depending on whether the standard deviation or the coefficient of variation is used. Since the importance ratings of indicators range from 2.93 to 5.60 (relatively large for a scale from 1 to 6), the coefficient of variation will be used as the most appropriate measure of variation. The two least important indicators also have the least group agreement with coefficients of variation of .46 and .55 respectfully.

Figure 3 shows that even more dramatic results are obtained when only the percent that rated the indicators "very much" or "extremely" important are considered. Over 90 percent of the sample cared very much or extremely about "The amount of litter I see", while nearly 85 percent found "The number of trees around a campsite that have been damaged by people" to be very much or extremely important. Twenty percent or less cared very much or extremely about "The amount of time I spend traveling on old roads in the wilderness" and "The number of miles of gravel road I travel to get to the wilderness". The remaining indicators, including all of the social indicators, were considered very much or extremely important by approximately 40 to 70 percent of the sample.

Though it is common to find high importance placed upon finding small amounts of litter in wilderness areas, it is somewhat surprising to learn that users place such low importance upon the presence of old roads within wilderness - a characteristic which has traditionally created much debate regarding the suitability of an area for wilderness



(Letters Correspond to Key Shown on Page 53)

**Figure 3.** Percent of respondents indicating they cared "very much" or "extremely" about study indicators.

designation. In addition, the distance one travels over gravel roads in getting to the Cohutta was a common characteristic mentioned by many of the pre-study respondents when asked about the attributes which made the area a wilderness for them.

**Research Question 2:** To what extent do subgroups of users vary in the importance assigned to different social indicators according to time of visit, experience use history, length of stay, wilderness involvement, place attachment, and mode of experience?

In order to test for differences in importance ratings for social indicators among subgroups, nonparametric statistics were used. In the case of sample groups broken down into two subgroups, the Wilcoxon rank sum test for two samples was used. For sample groups broken down into three or more subgroups, the Kruskal-Wallis one-way analysis of variance by ranks test was employed. The results will be discussed independently by subgroups.

#### **Analysis of Importance Differences for Indicators Among Subgroups**

##### **Time of Visit**

Table 17 shows the mean importance ratings for the social indicators studied and the test statistic results for weekday and weekend users. The results indicate that the importance ratings for the social indicators were not significantly different for any of the ten items studied. Apparently both weekday and weekend users place equal importance upon the social indicators included in this study.

Table 17. Group means and Wilcoxon rank sum test results for importance ratings of social indicators by time of visit to the Cohutta Wilderness.

Social Indicator	Time of Visit		Overall Mean	Level of Significance
	Mean Rank	Score *		
	Weekday	Weekend		
The amount of noise associated with human activities within the wilderness	4.92 (78)	4.84 (362)	4.86 (440)	NS **
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.71 (78)	4.54 (363)	4.57 (441)	NS
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.47 (78)	4.54 (361)	4.53 (439)	NS
The number of <u>horse groups</u> that travel past my campsite while I am there	4.43 (77)	4.35 (362)	4.36 (439)	NS
The number of <u>hiker groups</u> that walk past my campsite	4.18 (78)	4.22 (363)	4.21 (441)	NS
The number of <u>large groups</u> (more than 6 people) that I see along the trail	4.13 (79)	4.20 (360)	4.19 (439)	NS
The number of <u>horse groups</u> I see along the trails	4.33 (79)	4.08 (363)	4.12 (442)	NS
The percent of time other people are in sight while I'm along the trail	4.03 (79)	4.01 (363)	4.02 (442)	NS
The total <u>number of people</u> I see hiking along the trail	3.72 (79)	3.82 (363)	3.81 (442)	NS
The number of <u>groups</u> of hikers I see along the trail	3.78 (79)	3.79 (363)	3.79 (442)	NS

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10

An alternative explanation for the lack of significant differences involves the method used to define the subgroups. For this study, the decision regarding in which subgroup a given user was placed depended upon the arrival date. Thus, users arriving on Monday - Thursday were placed in the "weekday" subgroup, and those arriving on Friday - Sunday were placed in the "weekend" subgroup. This approach assumes that most users will spend the largest portion of their total visit in the time frame within which they arrived. However, some users may have arrived near the end of a given time frame and ultimately spent most of their visit in the alternative time frame. For example, if a user arrived to the Cohutta on Thursday and stayed until Sunday, they would have been classified as weekday users rather than weekend users. To the extent this occurred among the sample, some users may have been "misclassified".

#### Experience Use History

Previous Visits. The importance ratings and test statistic results for social indicators among visitors with "none", "few", and "many" previous visits to the Cohutta are shown in Table 18. Only two of the ten indicators were found to have significant differences among the subgroups.

Importance ratings for "The number of horse groups I see along the trails" were significantly different at the .065 level of significance. Users with no previous visits had a mean rating of 3.92 for this item, those with a "few" previous visits had a mean rating of 4.11, and those with "many" visits had the highest mean rating of 4.34 for this item.

Table 18. Group means and Kruskal-Wallis one-way analysis of variance results for importance ratings of social indicators by previous visits to the Cohutta Wilderness.

Social Indicator	Previous Visits Mean Rank Score*			Overall Mean	Level of Significance
	None	Few	Many		
The amount of noise associated with human activities within the wilderness	4.92 (152)	4.87 (140)	4.78 (148)	4.86 (440)	NS **
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.47 (152)	4.63 (142)	4.61 (147)	4.57 (441)	NS
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.61 (150)	4.51 (142)	4.46 (147)	4.53 (439)	NS
The number of <u>horse groups</u> that travel past my campsite while I am there	4.24 (152)	4.39 (140)	4.46 (147)	4.36 (439)	NS
The number of <u>hiker groups</u> that walk past my campsite	4.19 (152)	4.20 (142)	4.25 (147)	4.21 (441)	NS
The number of <u>large groups</u> (more than 6 people) that I see along the trail	4.09 (152)	4.22 (140)	4.25 (147)	4.19 (439)	NS
The number of <u>horse groups</u> I see along the trails	3.92 (152)	4.11 (142)	4.34 (148)	4.12 (442)	.065
The percent of time other people are in sight while I'm along the trail	3.95 (152)	3.83 (142)	4.26 (148)	4.02 (442)	.025
The total <u>number of people</u> I see hiking along the trail	3.68 (152)	3.80 (142)	3.93 (148)	3.81 (442)	NS
The number of <u>groups</u> of hikers I see along the trail	3.71 (152)	3.75 (142)	3.91 (148)	3.79 (442)	NS

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10

Thus, it appears that with more previous visits to the Cohutta, users place greater importance upon the number of horse groups encountered.

"The percent of time other people are in sight while I'm along the trail" also showed significant differences in importance ratings among the subgroups. The mean importance ratings were different at the .025 level of significance among those with "none", "few" and "many" visits. Means were 3.95, 3.83, and 4.26 respectfully. Again, those users with the greatest number of previous visits had the highest importance rating.

Other Wilderness Visits. The importance ratings for social indicators and test statistic results among subgroups based on the number of other wilderness areas visited are given in Table 19. As was the case for the number of previous visits to the Cohutta, those visitors having "many" other wilderness visits had the highest mean rating for each of the ten social indicators, while those having no other wilderness visits generally had the lowest rating in most cases. Overall, two of the ten indicators studied showed significant differences among subgroups.

Mean importance ratings for "The amount of noise associated with human activities within the wilderness" were significantly different at the .062 level of significance. Users with no other wilderness visits had a mean importance rating of 4.67, those with a "few" other wilderness visits had a mean importance rating 4.87, and those visiting "many" other wilderness areas had a mean importance rating of 5.08.

The social indicator "The number of horse groups that camp within sight or sound of my campsite" had significantly different importance ratings at the .044 level of significance. Mean importance ratings for

Table 19. Group means and Kruskal-Wallis one-way analysis of variance results for importance ratings of social indicators by number of other wilderness areas visited.

Social Indicator	Other Wilderness Visits			Overall Mean	Level of Significance
	Mean Rank Score *				
	Few	Moderate	Many		
The amount of noise associated with human activities within the wilderness	4.67 (150)	4.87 (170)	5.08 (120)	4.86 (440)	.062
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.32 (152)	4.62 (169)	4.83 (120)	4.57 (441)	.044
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.44 (152)	4.40 (167)	4.83 (120)	4.53 (439)	NS **
The number of <u>horse groups</u> that travel past my campsite while I am there	4.16 (152)	4.36 (168)	4.62 (119)	4.36 (439)	NS
The number of <u>hiker groups</u> that walk past my campsite	4.07 (151)	4.17 (170)	4.45 (120)	4.21 (441)	NS
The number of <u>large groups</u> (more than 6 people) that I see along the trail	4.15 (151)	4.14 (168)	4.31 (120)	4.19 (439)	NS
The number of <u>horse groups</u> I see along the trails	3.97 (152)	4.13 (170)	4.31 (120)	4.12 (442)	NS
The percent of time other people are in sight while I'm along the trail	3.92 (152)	4.00 (170)	4.16 (120)	4.02 (442)	NS
The total <u>number of people</u> I see hiking along the trail	3.78 (152)	3.70 (170)	3.99 (120)	3.81 (442)	NS
The number of <u>groups</u> of hikers I see along the trail	3.78 (152)	3.64 (170)	4.01 (120)	3.79 (442)	NS

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10



"none", "few" and "many" other wilderness visits were 4.32, 4.62, and 4.83 respectfully.

### Length of Stay

Table 20 shows the importance ratings and test statistics for the social indicators among length of stay subgroups. Five of the ten indicators studied showed significant differences, with the general trend being those visitors spending one or two nights having the highest indicator ratings, those spending three or more nights the second highest (in most cases), and day users indicating the least importance.

The three overall most important indicators all showed significant differences among length of stay subgroups. These included: "The amount of noise associated with human activities within the the wilderness", "The number of horse groups that camp within sight or sound of my campsite", and "The number of hiker groups that camp within sight or sound of my campsite". In all three cases, day users and those spending three or more nights were similar in their importance ratings, while those spending one or two nights gave the highest ratings.

Those with one or two night visits also rated "The number of large groups (more than 6 people) that I see along the trail" significantly higher in importance than both day users and those spending three or more nights. Finally, the overall least important social indicator - "The number of groups of hikers I see along the trail" - showed significant differences among the subgroups, with visitors spending one or two nights and those spending three or more nights giving similar results and day users indicating the lowest importance rating.

Table 20. Group means and Kruskal-Wallis one-way analysis of variance results for importance ratings of social indicators by length of stay (number of nights camped) during Cohutta Wilderness visit.

Social Indicator	Length of Stay			Overall Mean	Level of Significance
	Day	One/Two	Three +		
The amount of noise associated with human activities within the wilderness	4.64 (164)	5.08 (207)	4.70 (69)	4.86 (440)	.021
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.37 (163)	4.79 (208)	4.39 (70)	4.57 (441)	.046
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.22 (163)	4.81 (206)	4.41 (70)	4.53 (439)	.001
The number of <u>horse groups</u> that travel past my campsite while I am there	4.25 (163)	4.49 (207)	4.26 (69)	4.36 (439)	NS **
The number of <u>hiker groups</u> that walk past my campsite	4.10 (164)	4.35 (207)	4.09 (70)	4.21 (441)	NS
The number of <u>large groups</u> (more than 6 people) that I see along the trail	3.94 (163)	4.43 (206)	4.04 (70)	4.19 (439)	.015
The number of <u>horse groups</u> I see along the trails	3.97 (164)	4.21 (208)	4.23 (70)	4.12 (442)	NS
The percent of time other people are in sight while I'm along the trail	3.88 (164)	4.12 (208)	4.01 (70)	4.02 (442)	NS
The total <u>number of people</u> I see hiking along the trail	3.64 (164)	3.97 (208)	3.71 (70)	3.81 (442)	NS
The number of <u>groups</u> of hikers I see along the trail	3.55 (164)	3.98 (208)	3.80 (70)	3.79 (442)	.038

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10

### Wilderness Involvement

As shown in Table 21, highly significant differences in importance ratings were found among participants with low versus high wilderness involvement for all of the ten social indicators. In all cases, participants with high wilderness involvement placed greater importance on the social indicators than those with low wilderness involvement.

In no case did the mean importance rating for highly wilderness involved participants fall below 4 in importance. For this group, importance ratings ranged from 5.13 for "The amount of noise associated with human activities within the wilderness" to 4.08 for "The total number of people I see hiking along the trail".

For those in the low wilderness involvement group, none of the mean importance ratings exceeded 5 in importance. Importance values ranged from 4.62 for "The amount of noise associated with human activities within the wilderness" to 3.53 for "The number of groups of hikers I see along the trail".

### Place Attachment

Table 22 shows the mean importance ratings and test statistics for participants with low versus high place attachment. Five of the ten social indicators showed significant differences among the two subgroups. These included: "The amount of noise associated with human activities within the wilderness", "The number of large groups that I see along the trail", "The number of horse groups I see along the trails", "The percent of time other people are in sight while I'm along

Table 21. Group means and Wilcoxon rank sum test results for importance ratings of social indicators by wilderness involvement.

Social Indicator	Wilderness Involvement		Overall Mean	Level of Significance
	Mean Rank Score *			
	Low	High		
The amount of noise associated with human activities within the wilderness	4.62 (234)	5.13 (206)	4.86 (440)	.0001
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.39 (235)	4.78 (206)	4.57 (441)	.008
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.30 (234)	4.79 (205)	4.53 (439)	.0002
The number of <u>horse groups</u> that travel past my campsite while I am there	4.24 (234)	4.51 (205)	4.36 (439)	.036
The number of <u>hiker groups</u> that walk past my campsite	4.02 (235)	4.44 (206)	4.21 (441)	.002
The number of <u>large groups</u> (more than 6 people) that I see along the trail	3.94 (234)	4.46 (205)	4.19 (439)	.0002
The number of <u>horse groups</u> I see along the trails	3.90 (236)	4.38 (206)	4.12 (442)	.001
The percent of time other people are in sight while I'm along the trail	3.72 (236)	4.35 (206)	4.02 (442)	.0001
The total <u>number of people</u> I see hiking along the trail	3.57 (236)	4.08 (206)	3.81 (442)	.0002
The number of <u>groups</u> of hikers I see along the trail	3.53 (236)	4.09 (206)	3.79 (442)	.0001

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10

Table 22. Group means and Wilcoxon rank sum test results for importance ratings of social indicators by place attachment.

Social Indicator	Place Attachment Mean Rank Score *		Overall Mean	Level of Significance
	Low	High		
The amount of noise associated with human activities within the wilderness	4.77 (224)	4.95 (216)	4.86 (440)	.012
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.48 (225)	4.66 (216)	4.57 (441)	NS **
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.52 (223)	4.54 (216)	4.53 (439)	NS
The number of <u>horse groups</u> that travel past my campsite while I am there	4.28 (224)	4.46 (215)	4.36 (439)	NS
The number of <u>hiker groups</u> that walk past my campsite	4.18 (226)	4.25 (215)	4.21 (441)	NS
The number of <u>large groups</u> (more than 6 people) that I see along the trail	4.09 (224)	4.28 (215)	4.19 (439)	.081
The number of <u>horse groups</u> I see along the trails	3.99 (226)	4.27 (216)	4.12 (442)	.046
The percent of time other people are in sight while I'm along the trail	3.81 (226)	4.23 (216)	4.02 (442)	.001
The total <u>number of people</u> I see hiking along the trail	3.71 (226)	3.90 (216)	3.81 (442)	NS
The number of <u>groups</u> of hikers I see along the trail	3.67 (226)	3.91 (216)	3.79 (442)	.043

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10

the trail", and "The number of groups of hikers I see along the trail". In all cases, participants with high place attachment had higher importance ratings than those in the low place attachment group.

### Mode of Experience

Mean importance ratings and test statistic results for participants with "setting", "activity", and "social" modes of experience are shown in Table 23. Mode of experience subgroups were identified according to the respondent's answer to the three-item multiple choice question discussed in the methodology section. Results showed that for all indicators, those visiting the Cohutta primarily because of the setting had the highest importance ratings, those visiting primarily to participate in an activity had the second highest importance ratings, and those visiting for social reasons rated the indicators least important. Of these subgroup ratings, significant differences were found for five of the ten indicators. These included: "The amount of noise associated with human activities within the wilderness", "The number of horse groups that camp within sight or sound of my campsite", "The number of horse groups that travel past my campsite while I am there", "The number of large groups that I see along the trail", "The number of horse groups I see along the trails", and "The percent of time other people are in sight while I am along the trail".

Table 23. Group means and Kruskal-Wallis one-way analysis of variance results for importance ratings of social indicators by mode of experience.

Social Indicator	Mode of Experience			Overall Mean	Level of Significance
	Setting	Activity	Social		
The amount of noise associated with human activities within the wilderness	5.06 (142)	4.87 (232)	4.45 (53)	4.88 (427)	.014
The number of <u>horse groups</u> that camp within sight or sound of my campsite	4.87 (142)	4.46 (232)	4.39 (54)	4.59 (428)	.014
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	4.65 (142)	4.49 (230)	4.39 (54)	4.53 (426)	NS **
The number of <u>horse groups</u> that travel past my campsite while I am there	4.67 (141)	4.23 (231)	4.22 (54)	4.37 (426)	.019
The number of <u>hiker groups</u> that walk past my campsite	4.38 (141)	4.16 (233)	4.04 (54)	4.22 (428)	NS
The number of <u>large groups</u> (more than 6 people) that I see along the trail	4.35 (141)	4.16 (231)	3.81 (54)	4.18 (426)	NS
The number of <u>horse groups</u> I see along the trails	4.50 (142)	4.01 (233)	3.85 (54)	4.15 (429)	.005
The percent of time other people are in sight while I'm along the trail	4.33 (142)	4.01 (233)	3.33 (54)	4.03 (429)	.0004
The total <u>number of people</u> I see hiking along the trail	3.96 (142)	3.76 (233)	3.59 (54)	3.80 (429)	NS
The number of <u>groups</u> of hikers I see along the trail	3.94 (142)	3.78 (233)	3.46 (54)	3.79 (429)	NS

\* Based on an importance scale ranging from 1=Not at all to 6=Extremely

\*\* NS = Significance level greater than .10

### Summary of Importance Ratings Among Subgroups

Of the seven different subgroups studied, the wilderness involvement subgroups showed the most significant differences, and the time of visit subgroups the least. Respondents high in wilderness involvement rated all of the social indicators more important than those with low wilderness involvement. In the case of the time of visit subgroups, no differences were found between weekday and weekend users.

Length of stay, place attachment, and mode of experience subgroups also showed significant differences, with each class of subgroups varying in importance evaluation on half of the social indicators. For the length of stay subgroups, people spending short-term overnight visits tended to place greatest importance on the indicators, and day users the least. In the case of high and low place attached respondents, those with higher place attachment placed greater importance on the indicators than those low in place attachment. Mode of experience subgroups showed that respondents with a setting focus place the highest importance on the significantly different indicators, and those with a social focus placed the least importance on the indicators. The experience use history subgroups were comparatively low in significant differences, each varying on only two of the social indicators. In both cases, respondents with a higher use history rated indicators higher in importance.

Overall, the most important indicator identified by all respondents, "The amount of noise associated with human activities within the wilderness", was significant among more subgroups than any other social indicator. Five of the seven subgroups showed variation on



this item. The indicators, "The number of hiker groups that walk past my campsite", and "The total number of people I see hiking along the trail", showed significant differences among only one of the subgroups.

**Research Question 3:** What is the strength of the association between users' relationship to the resource and their importance ratings for social indicators?

Pearson's correlation analysis was used to determine the strength of the association between relationship to the resource items (i.e. wilderness involvement, place attachment, and mode of experience) and the importance users place upon social indicators (Table 24). The results showed that wilderness involvement was positively associated with indicator importance in all cases except for the indicator, "The number of horse groups that travel past my campsite while I am there".

Conversely, place attachment was significantly associated with only one indicator, "The percent of time other people are in sight while I am along the trail". As was the case for wilderness involvement, the relationship was positive.

Two of the mode of experience categories (i.e., setting and activity) also showed significant positive relationships with indicator importance. In this case, mode of experience was measured using the item set shown in Table 4. Significant relationships were found among five of the indicators for a setting-based mode of experience. These included: "The amount of noise associated with human activities within the wilderness", The number of large groups that I see along the trail",

Table 24. Pearson correlation coefficients between relationship to resource items and the importance ratings for social indicators.

Social Indicator	Relationship to Resource Items				
	Wilderness Involvement	Place Attachment	Mode of Experience		
			Setting	Activity	Social
The amount of noise associated with human activities within the wilderness	.177 ** (436)	.020 (431)	.155 ** (429)	.076 (437)	.053 (432)
The number of <u>horse groups</u> that camp within sight or sound of my campsite	.113 ** (437)	.026 (431)	.056 (430)	.068 (438)	-.030 (433)
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	.128 ** (435)	-.038 (429)	.061 (428)	.058 (436)	-.002 (431)
The number of <u>horse groups</u> that travel past my campsite while I am there	.069 (435)	.011 (429)	.046 (428)	.070 (436)	-.015 (431)
The number of <u>hiker groups</u> that walk past my campsite	.120 ** (437)	-.025 (431)	.060 (430)	.070 (438)	-.014 (433)
The number of <u>large groups</u> (more than 6 people) that I see along the trail	.159 ** (435)	-.038 (429)	.105 * (429)	.110 * (436)	-.015 (431)
The number of <u>horse groups</u> I see along the trails	.156 ** (438)	.062 (432)	.048 (431)	.092 * (439)	-.064 (434)
The percent of time other people are in sight while I am along the trail	.226 ** (438)	.113 ** (432)	.167 ** (431)	.141 ** (439)	.012 (434)
The total <u>number of people</u> I see hiking along the trail	.170 ** (438)	-.039 (432)	.129 ** (431)	.086 (439)	-.027 (434)
The number of <u>groups</u> of hikers I see along the trail	.208 ** (438)	.051 (432)	.168 ** (431)	.149** (439)	-.026 (434)

\* Significant at  $p \leq .05$

\*\* Significant at  $p \leq .01$

"The percent of time other people are in sight while I am along the trail", The total number of people I see hiking along the trail", and "The number of groups of hikers I see along the trail".

An activity-based mode of experience also showed significant relationships for four of the nine indicators. Significant relationships were found for the following indicators: "The number of large groups that I see along the trail", "The number of horse groups I see along the trails", "The percent of time other people are in sight while I am along the trail", and "The number of groups of hikers I see along the trail".

Overall, the indicators, "The number of large groups (more than 6 people) that I see along the trail", "The percent of time other people are in sight while I am along the trail", and "The number of groups of hikers I see along the trail", seem to show the most consistent significant correlations among the relationship to resource measures. The wilderness involvement subgroups showed the greatest number of significant correlations, and would appear to be the most relevant category for separating wilderness users to assess importance differences for social indicators.

**Research Question 4:** To what extent are users capable of articulating personal norms for unacceptable, preferred, and acceptable social conditions?

Appendix D contains graphs presenting the results of the norm articulation analyses. Interestingly, although respondents were given the option of not specifying personal norms, Figure D.1. shows that in

no case did more than 7.5 percent of the respondents fail to give at least one of the three norm types (unacceptable, preferred, or acceptable) for a given social indicator. Even more surprising was the finding that for each indicator at least half of all respondents gave completely articulated personal norms (Figure D.2.). In order to be considered as having provided a completely articulated norm for a given indicator, the respondents had to indicate all three norm types, or a preferred and either an unacceptable or acceptable personal norm, provided that all impact levels were covered by one of these two (i.e. unacceptable or acceptable) norm categories. (This latter prerequisite allowed those failing to list either an acceptable or unacceptable norm, simply because they either accepted or did not accept all the impact levels included on the scale, to be included in the category of complete articulation.)

The graph in Figure D.3. shows the percentage of respondents that provided only one of the three norm types. In general, the percentages were low, usually below 6 percent. For the indicator "The number of horse groups that camp within sight or sound of my campsite", about 13 percent of the respondents provided only an unacceptable norm.

Some of the respondents provided only two norm types, and the resulting combinations are shown as percentages in Figure D.4.. The percentage of respondents indicating only an unacceptable and preferred norm tended to vary among the indicators, while both the percentage providing only an unacceptable and acceptable norm, and those providing only a preferred and acceptable norm were relatively similar among all the indicators. For the indicator "The number of horse groups that camp

within sight or sound of my campsite", about 27 percent of the respondents provided only an unacceptable and preferred norm. This contrasts with only .4 percent providing only an unacceptable and preferred norm for "The number of groups of hikers I see along the trails in a day.

Figure D.5. shows the percent of respondents missing each of the three norm types for all of the indicators. As would be expected from the data already presented in Figure D.2., the percentage of respondents not providing one of the three norm types was relatively low - generally ranging from about 15 percent to near 30 percent in most cases. One exception to this trend was found among participants' acceptable norms for "The number of horse groups that camp within sight or sound of my campsite", where 50 percent of the respondents failed to give an acceptable norm. Of the three norm types, missing norms for unacceptable conditions had lower percentages than was the case for preferred and acceptable conditions for all but the least important indicators.

**Research Question 5:** To what extent do users unacceptable, preferred, and acceptable personal norms remain stable over time?

Appendix E contains figures pertaining to the issue of norm stability. The subsample of respondents included in the analyses were those asked to provide personal norms on-site, in addition to the mailback questionnaire. Two basic approaches were taken to determine if and how the respondents' personal norms changed over time. First,

comparisons were made to determine the percent of respondents who either gave personal norms both on-site and on the mailback questionnaire, did not give personal norms both on-site and on the mailback questionnaire, or gave personal norms in one case but not the other (Figures E.1.-E.6.). Second, for those who gave personal norms both on-site and on the mailback questionnaire, comparisons were made to determine the amount and direction of change that occurred over time (Figures E.7.-E.15.).

Indicators A-I shown on Figures E.1.-E.6. correspond to those listed in the key on page 168. Figure E.1. shows that for all social indicators, at least 85 percent of the respondents provided an unacceptable norm both on-site and on the mailback questionnaire. Furthermore, for those respondents that failed to provide unacceptable personal norms, in no case did more than 4 percent fail to provide this norm category on both the on-site form and the mailback questionnaire. When a respondent provided an unacceptable norm at one point in time but not at the other, in most cases (within a few percent) they were just as likely to give, or fail to give, a norm on-site as they were on the mailback questionnaire (Figure E.2.). The greatest exception to this involved the indicator, "The number of horse groups that travel past my campsite while I am there", in which case respondents tended to be less likely to provide unacceptable norms on-site than on the mailback questionnaire.

The situation for preferred personal norms was similar to the previous case, with at least 75 percent of the respondents giving a norm for all social indicators both on-site and on the mailback questionnaire

(Figure E.3.). The percentage of respondents failing to provide a personal norm both on-site and on the mailback questionnaire reached as high as 5 percent on only one indicator - "The number of horse groups that camp within sight or sound of my campsite". As shown in Figure E.4., for those respondents failing to provide a preferred norm at one location, but not the other, the tendency was for a respondent to provide a norm on-site and not on the mailback questionnaire.

The percentage of respondents providing an acceptable norm for social indicators both on-site and on the mailback questionnaire varied to a much greater extent than was the case for the other two norm types (Figure E.5.). For the indicator "The number of horse groups that camp within sight or sound of my campsite", only 30 percent of the respondents provided an acceptable norm both on-site and on the mailback questionnaire, while a similar percentage failed to provide a norm on both forms. This contrasts with 92 percent of the respondents providing an acceptable norm, and only about 1 percent failing to provide a norm, on both forms for the indicator "The number of groups of hikers I see along the trails in a day". These two indicators represent the most important and least important, respectively. The remaining indicators fail to show a pattern with respect to respondents providing, or not providing, acceptable norms on both forms. Figure E.6. shows that in those cases where respondents provided an acceptable norm on one form but not on the other, no clear pattern emerges with respect to which users were more or less likely to demonstrate a norm.

Figures E.7.-E.15. show the percent change in each of the three norm types from the on-site form to the mailback questionnaire for those

respondents giving a norm at both locations. A separate graph is used for each of the nine indicators and are arranged in order of the most to least important as rated by respondents. In order to facilitate comparisons, and to allow for statistical analysis, comparisons for acceptable personal norms were based on the respondents' upper limit acceptable values, and the lower limit unacceptable values were used for unacceptable personal norms.

The percent change was calculated relative to the upper limit of the measurement scale for each particular indicator. For example, if a respondent's preferred personal norm changed by 3 on an indicator for which standards were measured on a scale ranging from 0 to 25, the change was 12 percent (i.e.  $3/25$ ). In developing the stability graphs, the percent change from on-site to mailback was organized into nine categories, according to whether the norms became more, or less, restrictive. Norms showing a decrease from on-site to mailback are included in categories: less than -20, "-11-20", "-6-10", and "-1-5". Increasing norms from on-site to mailback include the following categories: "1-5", "6-10", "11-20", and greater than 20. The "0" represents no change from on-site to mailback.

Statistical tests were done using a paired comparison t-test to determine which indicators had norm change significantly different from zero. An asterisk in the legend indicates that a particular norm category had changes from the on-site contact to the mailback questionnaire using a .05 level of significance.

In the case of preferred norms, only three indicators showed significant differences between the on-site form and the mailback



questionnaire. However, a close look at the graphs shown in Figures E.7.-E.15. reveal that there was roughly equal amounts of change for preferred norms in both the positive and negative direction for some of the indicators. This may have resulted in a "balancing" effect, thus implying little norm change among the overall group.

The number of significant norm differences among indicators increased to 5 for upper limit acceptable norms, and 7 for lower limit unacceptable norms. In each case where significant differences occurred, the mean change was in the negative direction. This negative change tended to be greater for lower limit unacceptable norms, and smaller for preferred norms. Thus, respondents' norms tended to decrease from the on-site to the mailback questionnaire, and they appeared to be least consistent with regards to their unacceptable norms.

Respondents were most consistent in articulating norms for the indicators "The percent of time other people are in sight while I am on the trail" (Figure E.13.) and "The total number of people I see hiking along the trails in a day" (Figure E.14.), both of which showed no differences on all three norm types at the .05 level of significance. Both the indicator considered most important by respondents, i.e. "The number of horse groups that camp within sight or sound of my campsite" (Figure E.7.), and the least important indicator, i.e. "The number of groups of hikers I see along the trail" (Figure E.15.), had the least consistent results, with all three norm types showing significant change in each case.

### Summary of Norm Stability Analyses

The results of the norm stability analyses indicate that most respondents were willing to provide personal norms both on-site and on the mailback questionnaire. In those cases where norms were more likely to be given on one form than the other, respondents generally appeared most likely to provide norms on the on-site form than on the mailback questionnaire, especially in the case of preferred norms.

When consideration was given to the amount of norm change among respondents, a number of significant differences in the negative direction were found from on-site to the mailback questionnaire. Thus, norms tended to become more restrictive over time. The number of significant differences was greatest for lower limit unacceptable norms, and lowest for preferred norms. The results would seem to indicate that stability was relatively low for most norm types for many of the social indicators. These findings imply that from the standpoint of stability, Cohutta Wilderness visitors have personal norms that are inconsistent (i.e. tend to decrease) over relatively short periods of time.

**Research Question 6:** What is the strength of the association between users' importance evaluations for social indicators and their unacceptable, preferred, and acceptable personal norms?

Pearson's correlation analysis was used to test the strength of the relationship between all respondents' importance evaluations for social indicators, and their unacceptable, preferred, and acceptable norms for these indicators. Table 25 shows the results of the analyses.

Table 25. Pearson correlation coefficients between the degree to which respondents' importance evaluations for specific social indicators were associated with their evaluations of lower limit unacceptable, preferred, and upper limit acceptable conditions (sample size in parenthesis).

Social Indicator	LLU	PRE	ULA
The number of <u>horse groups</u> that camp within sight or sound of my campsite	-.396 ** (179)	-.377 ** (151)	-.200 * (104)
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	-.264 ** (185)	-.296 ** (176)	-.148 * (166)
The number of <u>horse groups</u> that travel past my campsite while I am there	-.304 ** (181)	-.364 ** (160)	-.305 ** (158)
The number of <u>hiker groups</u> that walk past my campsite	-.400 ** (176)	-.297 ** (164)	-.419 ** (170)
The number of <u>large groups</u> (more than 6 people) that I see along the trail	-.290 ** (178)	-.300 ** (166)	-.405 ** (168)
The number of <u>horse groups</u> I see along the trails	-.490 ** (178)	-.419 ** (147)	-.304 ** (141)
The percent of time other people are in sight while I am along the trail	-.315 ** (179)	-.281 ** (166)	-.329 ** (181)
The total <u>number of people</u> I see hiking along the trail	-.247 ** (179)	-.300 ** (168)	-.223 ** (186)
The number of <u>groups</u> of hikers I see along the trail	-.164 * (174)	-.276 ** (173)	-.250 ** (198)

\* = Significant at  $p \leq .05$

\*\* = Significant at  $p \leq .01$

The results indicate that, in all cases, higher importance ratings for social indicators were associated with lower norms for all three norm types. The strongest relationship among all three norm types for a single indicator involved "The number of horse groups I see along the trails". The weakest relationships among all three norm types for a single indicator involved "The number of groups of hikers I see along the trail". The remaining indicators were relatively similar in the strength with which indicator importance was associated with personal norms. Although the direction of norm evaluation is consistent with regard to indicator importance, the results do not appear to form any specific pattern with regard to the strength of association and order of indicator importance.

Research Question 7: To what extent does consensus exist among users' personal norms for unacceptable, preferred, and acceptable social conditions?

As discussed in the literature review section of this report, social norms require consensus, or crystallization, among personal norms. However, an unresolved problem concerns the amount of consensus necessary before one can conclude that a social norm exists. Thus, whatever method is used for measuring consensus, it is important that the relative amount of agreement among personal norms is shown in a manner that will enable readers to make their own judgment as to whether or not "enough" consensus exists to conclude the existence of a social norm. For the purpose of this report, two alternative methods were used in the search for consensus. In the first approach, variation around

the medians of the lower limit unacceptable, the preferred, and the upper limit acceptable personal norms was used. The second approach focused on the percent of agreement for unacceptable, preferred, and acceptable conditions for each impact level on the conditional scale for the indicators.

### Variation Around the Median

This approach incorporated the median as the most appropriate measure of central tendency among the sample's personal norms, and the average variation around the median as the most appropriate measure of crystallization. The median seems justified as the most appropriate measure of central tendency due to the non-normal nature of the data. In measuring the crystallization, it was discovered that by using interquartile ranges - one commonly used method of measuring median variation - different results were obtained, depending upon the quartile used for comparison. This resulted from the multi-modal nature of the data.

For example, Table 26 shows that the median lower limit unacceptable for number of large groups encountered among Cohutta users was five. Thus, fifty percent of the users would find five or more encounters unacceptable. The interquartile ranges for this indicator appear to show that 25% of the users would find 4 encounters with large groups unacceptable, while 75% would find 10 encounters unacceptable. However, in reality, perhaps 30 percent of the users find 4 encounters with large groups unacceptable. This could happen if a disproportionate number of people listed 4 encounters as their lower limit unacceptable.

Table 26. Lower limit unacceptable for conditions regarding social indicators among all study participants.

Social Indicator	N	<u>Lower Limit Unacceptable Ratings</u>						Var/ Med
		Mean	s.d.	c.v.	Median	Q1 - Q3	Avg. Med.Var.	Ratio
The number of <u>horse groups</u> that camp within sight or sound of my campsite *	180	3.75	4.64	1.24	2	0 - 5	3.35	1.7
The number of <u>hiker groups</u> that camp within sight or sound of my campsite *	187	5.44	4.46	.82	5	2 - 8	3.29	.66
The number of <u>horse groups</u> that travel past my campsite while I am there *	183	5.25	4.67	.89	5	2 - 8	3.40	.68
The number of <u>hiker groups</u> that walk past my campsite *	178	7.55	5.01	.66	6	4.75-10	3.96	.66
The number of <u>large groups</u> (more than 6 people) that I see along the trails in a day *	180	7.14	4.94	.69	5	4 - 10	3.53	.71
The number of <u>horse groups</u> I see along the trails in a day *	179	5.12	4.75	.93	4	1 - 8	3.63	.91
The percent of time <u>other people</u> are in sight while I am on the trail **	180	27.72	19.14	.69	24.5	10 - 40	15.37	.63
The total <u>number of people</u> I see hiking along the trails in a day ***	180	23.06	9.85	.43	22	15.25-30	7.49	.34
The number of <u>groups</u> of hikers I see along the trails in a day *	175	10.47	4.82	.46	10	7 - 15	3.63	.36

\* Based on a continuous scale ranging from 0 - 25.

\*\* Based on a continuous percentage scale ranging from 0 - 100.

\*\*\* Based on a continuous scale ranging from 0 - 50.

The quartile approach is based on a count of the sample, and does not consider the actual values listed by respondents.

Using the average median variation among the sample has the advantage of considering the actual norm values listed by respondents, and does so for the entire sample. This approach would seem especially useful when analyzing data that is unevenly distributed around the median, and thus, was the method used in this report.

Tables 26-28 show the results of calculating the central tendency and dispersion of the lower limit unacceptable, preferred, and upper limit acceptable personal norms of all study participants. The mean, standard deviation, and coefficient of variation are included for comparative purposes, and because they have frequently been included in previous research on norms.

In interpreting the results, care must be taken to consider the context of the indicators in question when comparing the different standards and their crystallization. Furthermore, it should be noted that what constitutes high versus low crystallization will often be determined only by personal preference. Consideration of the ratio of the median and the average median variation for the sample provides one way of looking at crystallization that, by standardizing the scores, also allows for comparisons to be made among different standards. In this case, a lower ratio indicates higher crystallization as there is less dispersion around the median among personal norms.

The data shown in Table 26 reveal that of the nine indicators for which lower limit unacceptable standards were measured, only two had an average median variation / median ratio less than .50. These included

"The total number of people I see hiking along the trails in a day", and "The number of groups of hikers I see along the trails in a day".

In the case of lower limit unacceptable personal norms for the indicator "The number of horse groups that camp within sight or sound of my campsite", the average median variation was nearly 1.7 times the value of the median. Lower limit unacceptable standards for the remaining six indicators had a median variation / median ratio between .63 and .91.

Table 27 shows the central tendencies and dispersion measures for the preferred personal norms. The median variation / median ratios are generally higher than those for both the lower limit unacceptable and the upper limit acceptable, thus indicating there is less crystallization among preferred standards than for the other cases. Two of the preferred personal norm medians were 0, thus preventing ratio calculation.

None of the indicators had preferred norms with an average median deviation of less than half the median. However, since most of the personal norms had medians at or near 0, perhaps this is not surprising. If only a few individuals gave a preferred personal norm that was significantly different from 0, the average median deviation may also rise significantly. Another issue that arises concerns the relevance of distinguishing between normative standards that vary by only a few numbers. Do people really distinguish between three and five hiker groups that walk past their campsite? The answer to this question will affect the interpretation of norm crystallization.



Table 27. Preferred conditions for social indicators among all study participants.

Social Indicator	N	Preferred Level Ratings						Avg. Med.Var.	Var/ Med Ratio
		Mean	s.d.	c.v.	Median	Q1 - Q3			
The number of <u>horse groups</u> that camp within sight or sound of my campsite *	152	1.39	2.85	2.05	0	0 - 2	1.36	--	
The number of <u>hiker groups</u> that camp within sight or sound of my campsite *	178	1.99	3.36	1.69	0	0 - 3	1.99	--	
The number of <u>horse groups</u> that travel past my campsite while I am there *	162	2.28	4.27	1.87	1	0-3.25	2.24	2.24	
The number of <u>hiker groups</u> that walk past my campsite *	165	3.51	3.82	1.09	3	0 - 5	2.72	.91	
The number of <u>large groups</u> (more than 6 people) that I see along the trails in a day *	168	2.98	2.98	1.00	2	1 - 5	2.14	1.07	
The number of <u>horse groups</u> I see along the trails in a day *	148	2.13	2.92	1.37	1	0 - 3	2.02	2.02	
The percent of time <u>other people</u> are in sight while I am on the trail **	167	13.59	13.79	1.01	10	4 - 20	9.57	.96	
The total number of <u>people</u> I see hiking along the trails in a day ***	169	10.91	7.56	.69	10	5 - 15	5.69	.57	
The number of <u>groups</u> of hikers I see along the trails in a day *	174	4.59	4.11	.90	5	2 - 5	2.82	.56	

\* Based on a continuous scale ranging from 0 - 25.

\*\* Based on a continuous percentage scale ranging from 0 - 100.

\*\*\* Based on a continuous scale ranging from 0 - 50.

The median variation / median ratios of upper limit acceptable personal norms for the social indicators shown in Table 28 are generally similar to those found for the lower limit unacceptable norms. Again, only personal norms for "The total number of people I see hiking along the trails in a day", and "The number of groups of hikers I see along the trails in a day" had median variation / median ratios below .50. The median variation / median ratio for "The number of horse groups that camp within sight or sound of my campsite" was 1.6, while the remaining six indicators had ratios between .64 and .78.

As has been previously noted, personal preference plays a large role in deciding whether or not the median variation / median ratios indicate high or low crystallization. The findings here indicate that Cohutta users provided personal norms that varied by over 50% around the medians for many of the indicators. This would generally seem to indicate low consensus. However, as the issue of norm crystallization is both hard to measure, and critical to determining the existence of a social norm, another alternative approach seemed justified.

#### Percent Agreement for Impact Levels

For the second method of measuring crystallization, the percent of agreement among study participants for unacceptable, preferred, and acceptable norms for each level of the indicators was determined and plotted as norm response curves on the graphs shown in Figures 4-12. In forming the response curves, respondents that indicated any of the three norm types (unacceptable, preferred, or acceptable) for an indicator on

Table 28. Upper limit acceptable for conditions regarding social indicators among all study participants.

Social Indicator	N	Mean	s.d.	c.v.	Upper Limit Acceptable Ratings		Avg. Med.Var.	Var/ Med Ratio
					Median	Q1 - Q3		
The number of <u>horse groups</u> that camp within sight or sound of my campsite *	105	4.24	4.91	1.16	2	1 - 5	3.13	1.57
The number of <u>hiker groups</u> that camp within sight or sound of my campsite *	168	4.96	4.93	.99	4	2 - 6	3.11	.78
The number of <u>horse groups</u> that travel past my campsite while I am there *	159	5.23	5.11	.98	5	2 - 5	3.01	.60
The number of <u>hiker groups</u> that walk past my campsite *	172	6.71	5.11	.76	5	4 - 10	3.34	.67
The number of <u>large groups</u> (more than 6 people) that I see along the trails in a day *	170	5.53	4.53	.82	5	3 - 6	2.62	.52
The number of <u>horse groups</u> I see along the trails in a day *	142	4.68	4.55	.97	4.5	2 - 5	2.94	.65
The percent of time <u>other people</u> are in sight while I am on the trail **	182	21.85	18.55	.85	20	10 - 30	12.76	.64
The total number of <u>people</u> I see hiking along the trails in a day ***	187	18.42	9.56	.52	18	10 - 25	7.52	.42
The number of <u>groups</u> of hikers I see along the trails in a day	199	8.68	5.33	.61	8	5 - 10	3.91	.49

\* Based on a continuous scale ranging from 0 - 25.

\*\* Based on a continuous percentage scale ranging from 0 - 100.

\*\*\* Based on a continuous scale ranging from 0 - 50.

the mailback questionnaire were included in the overall sample size from which the percentages were calculated. Those study participants failing to indicate any norm for a given indicator were not included in the sample size from which the percentages were calculated.

The norm response curves reveal several interesting characteristics about the study participants' personal norms. First, assuming most managers would likely try to satisfy at least 75 percent of their constituents, and that this percentage of agreement would constitute an acceptable degree of consensus for determining that a social norm may exist, one finds group agreement on a number of unacceptable impact levels for many of the personal norms. This contrasts sharply with the implied findings of little consensus when using the median variation approach.

Second, the degree of consensus about preferred levels among the indicators never exceeded 50 percent. Furthermore, norms about preferred levels tended to shift from high agreement at low levels for the more important indicators to less agreement for indicators of less importance.

Third, with the exception of the two least important indicators - "The total number of people I see hiking along the trail", and "The number of groups of hikers I see along the trail" - the number of levels showing a sufficiently high degree (i.e. 75%) of consensus for acceptable conditions were much fewer than was found for unacceptable conditions.

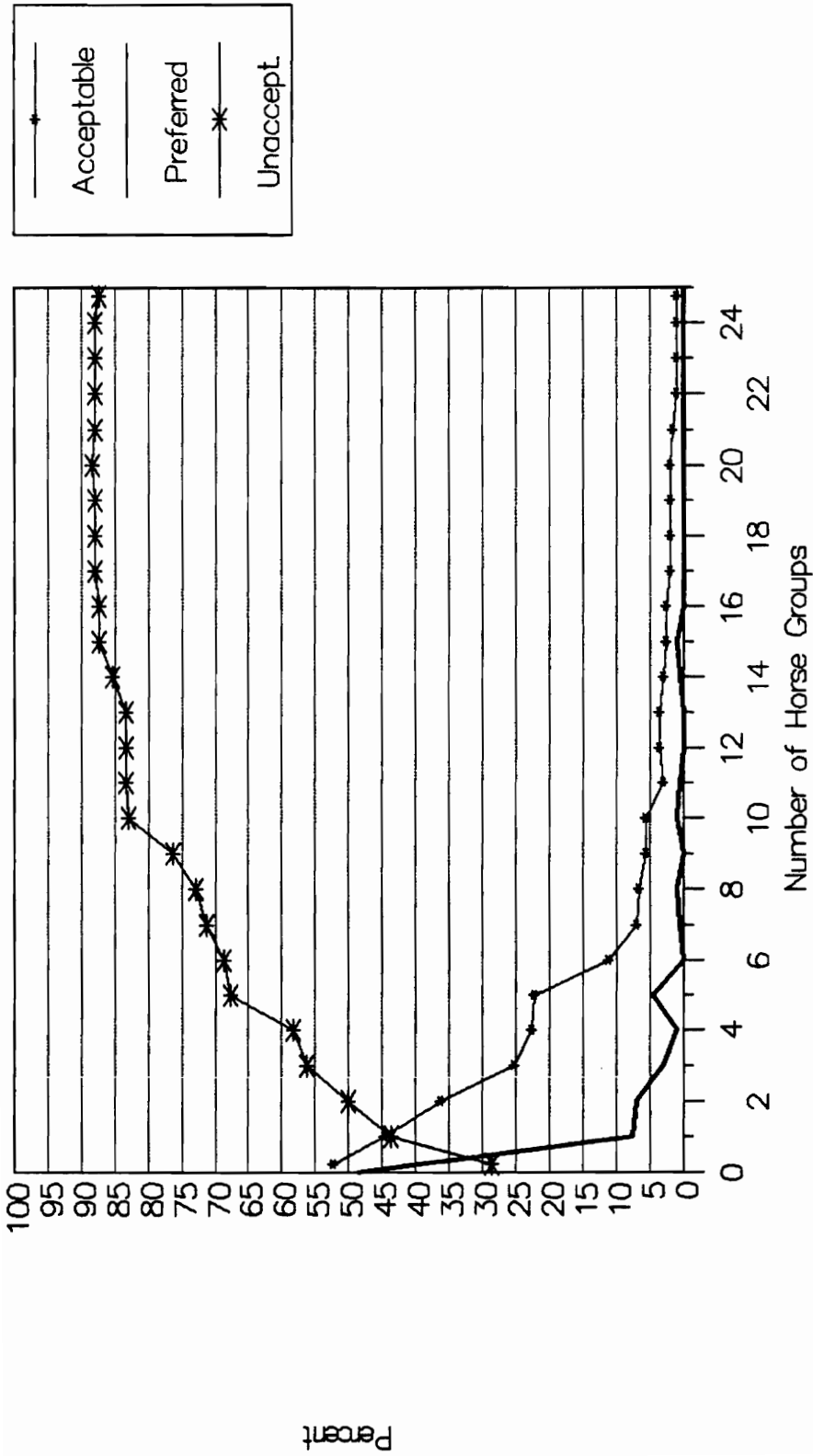


Figure 4. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of horse groups that camp within sight or sound of my campsite".

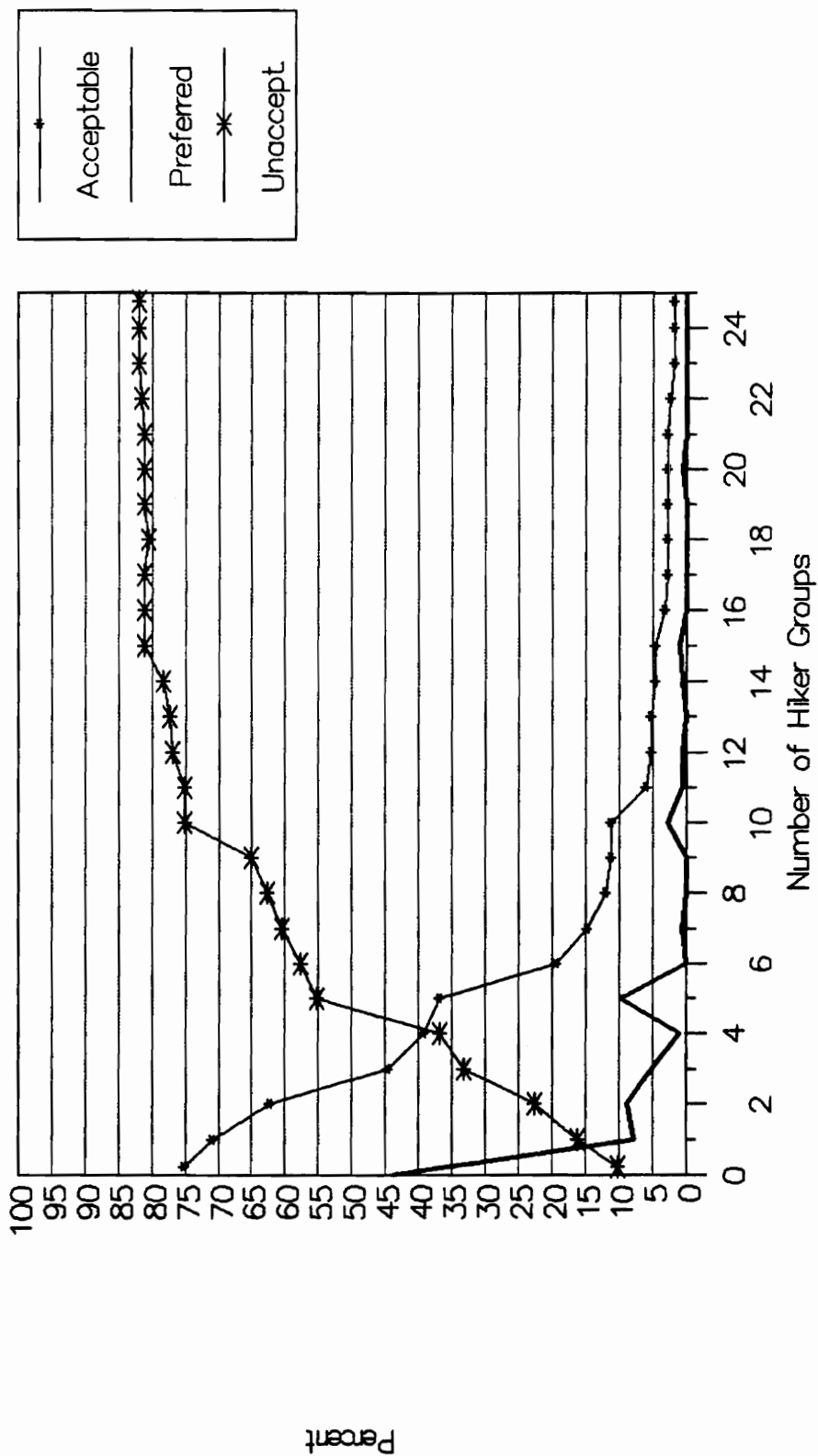


Figure 5. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of hiker groups that camp within sight or sound of my campsite".

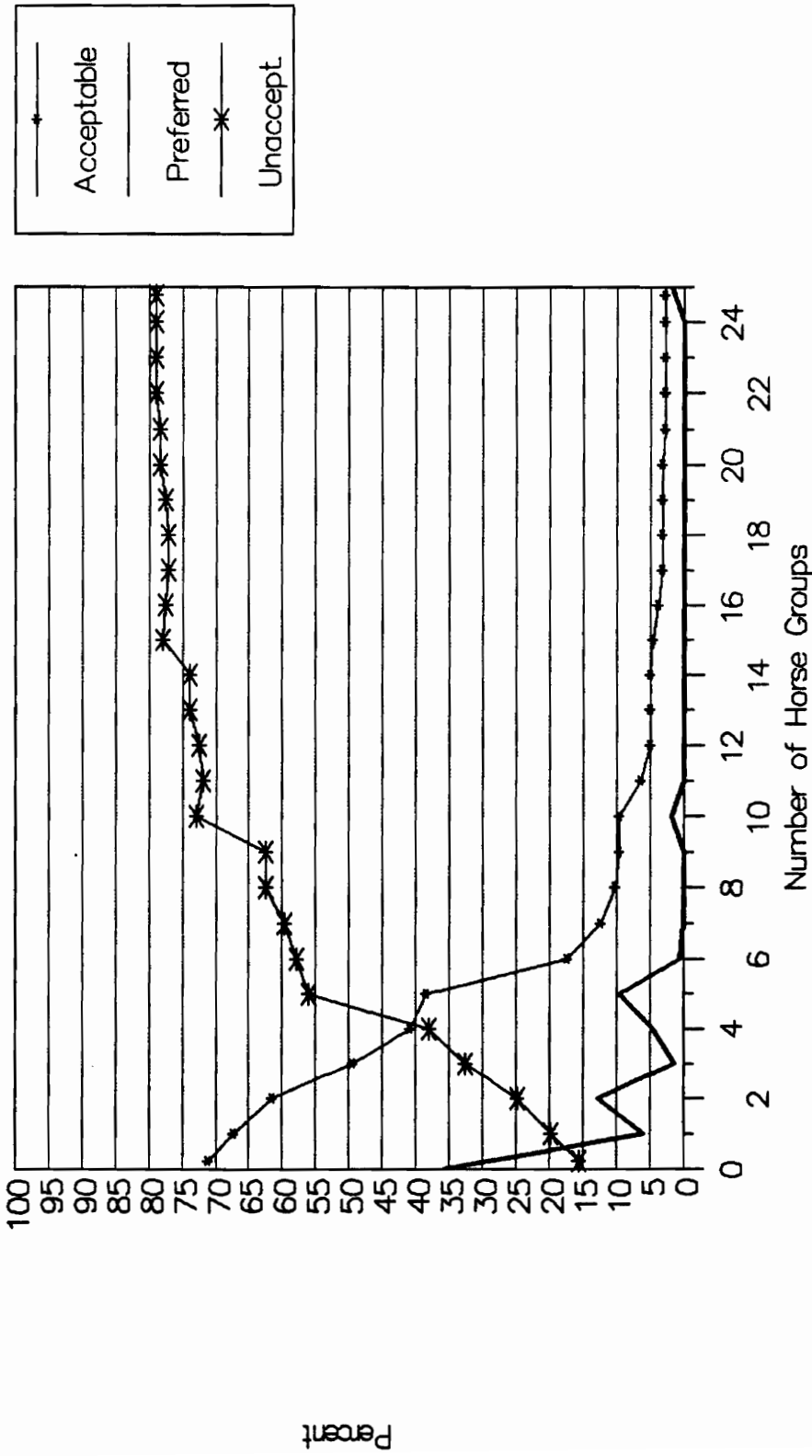


Figure 6. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of horse groups that travel past my campsite while I am there".

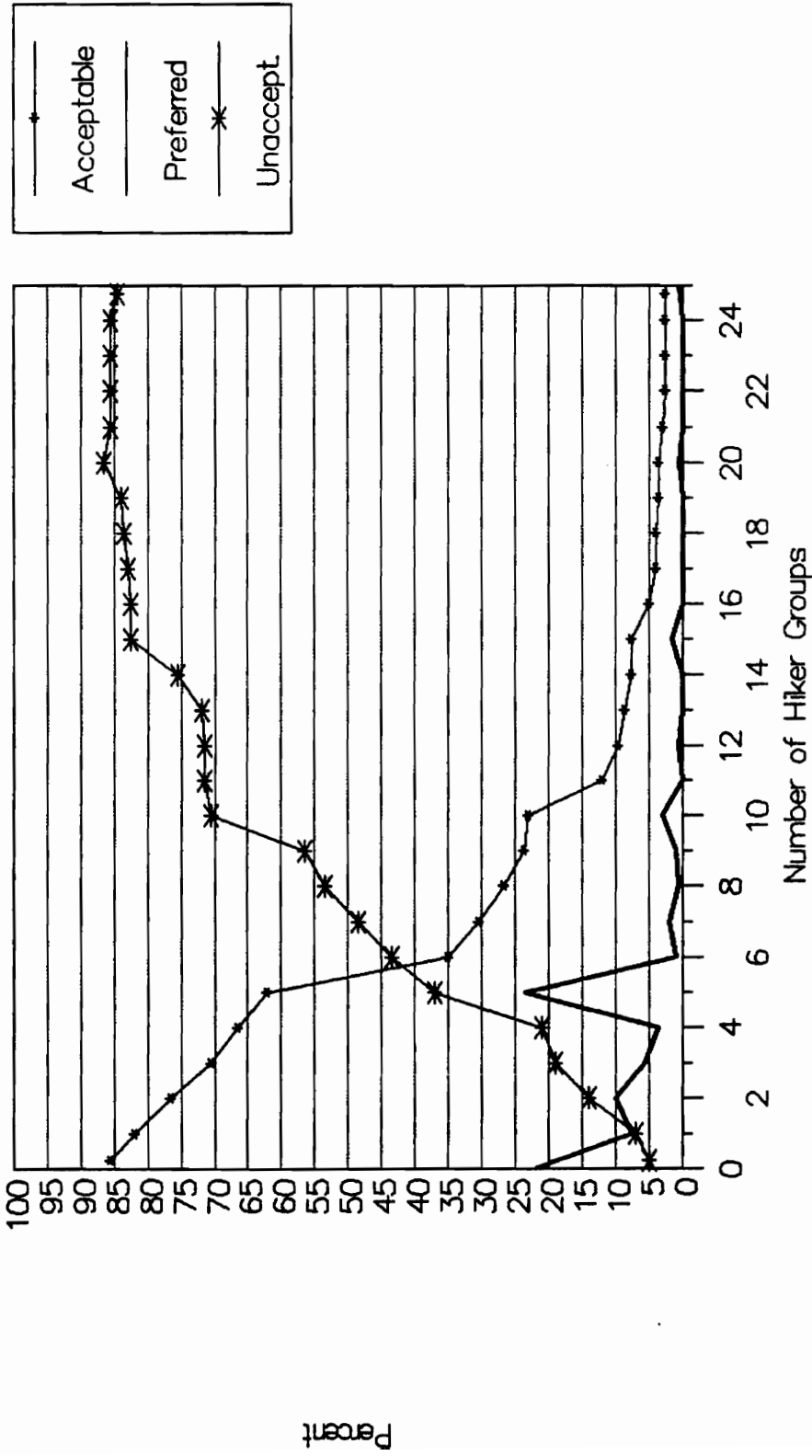


Figure 7. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of hiker groups that walk past my campsite".



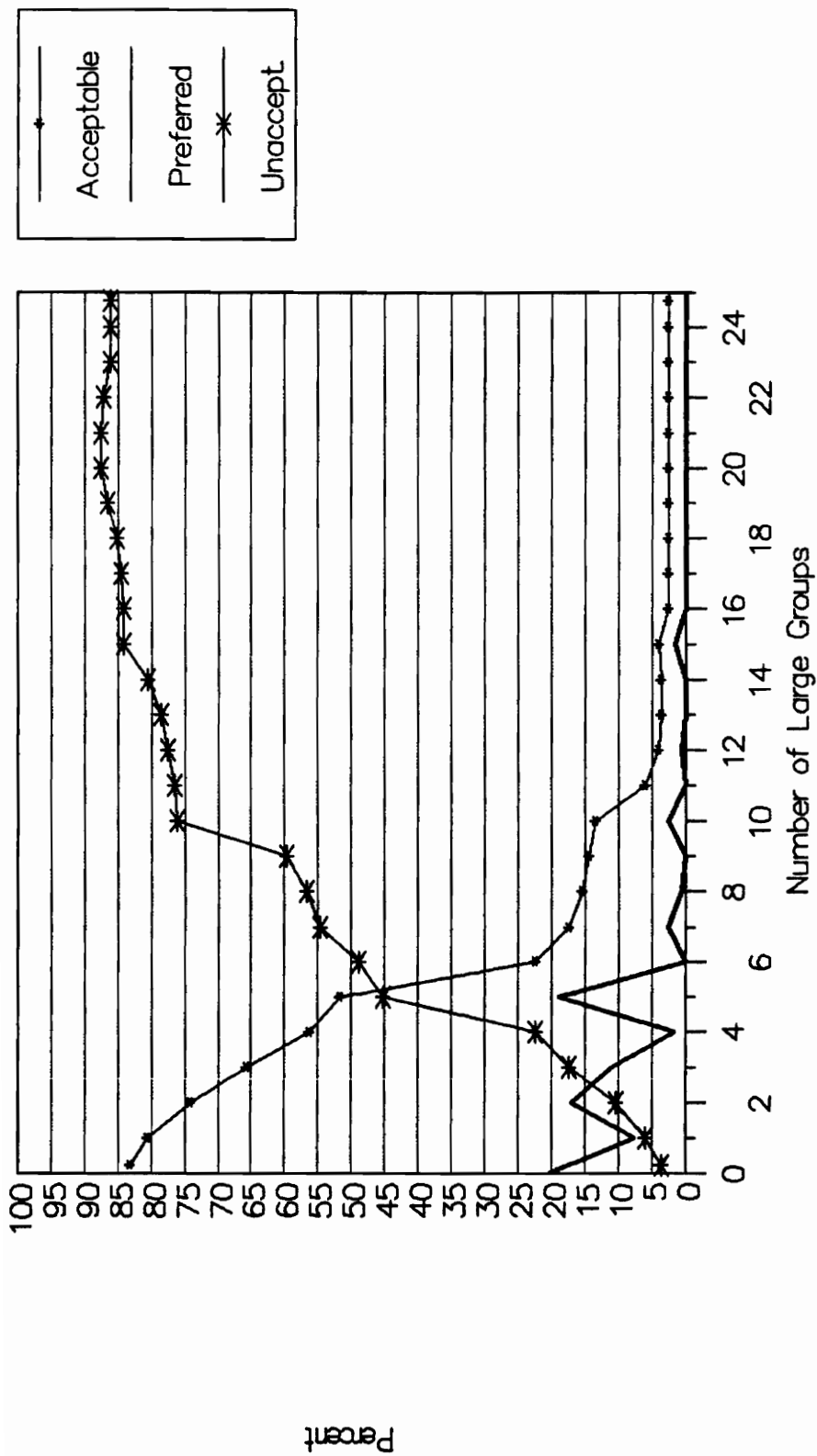


Figure 8. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of large groups (more than 6 people) that I see along the trail".

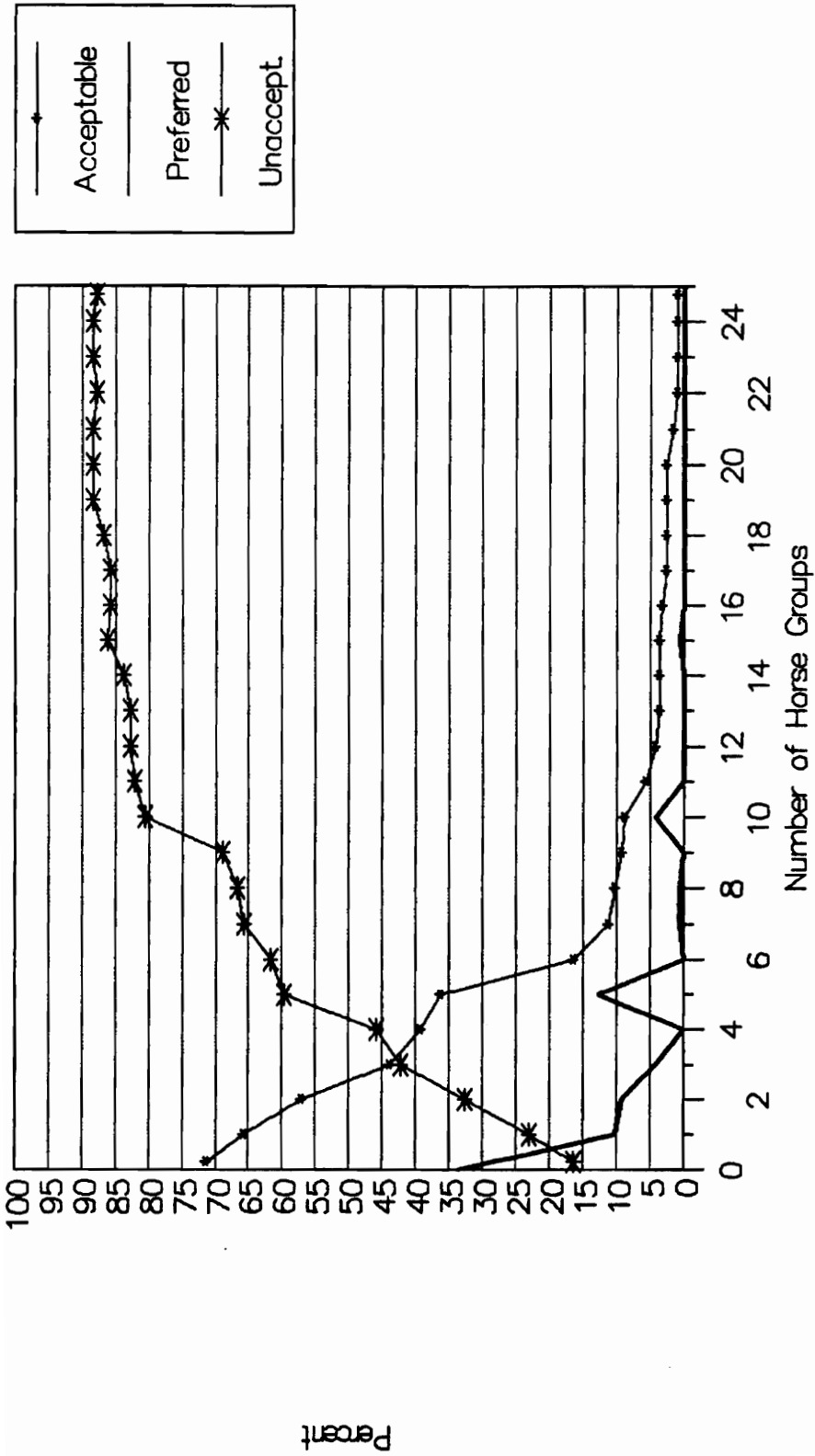
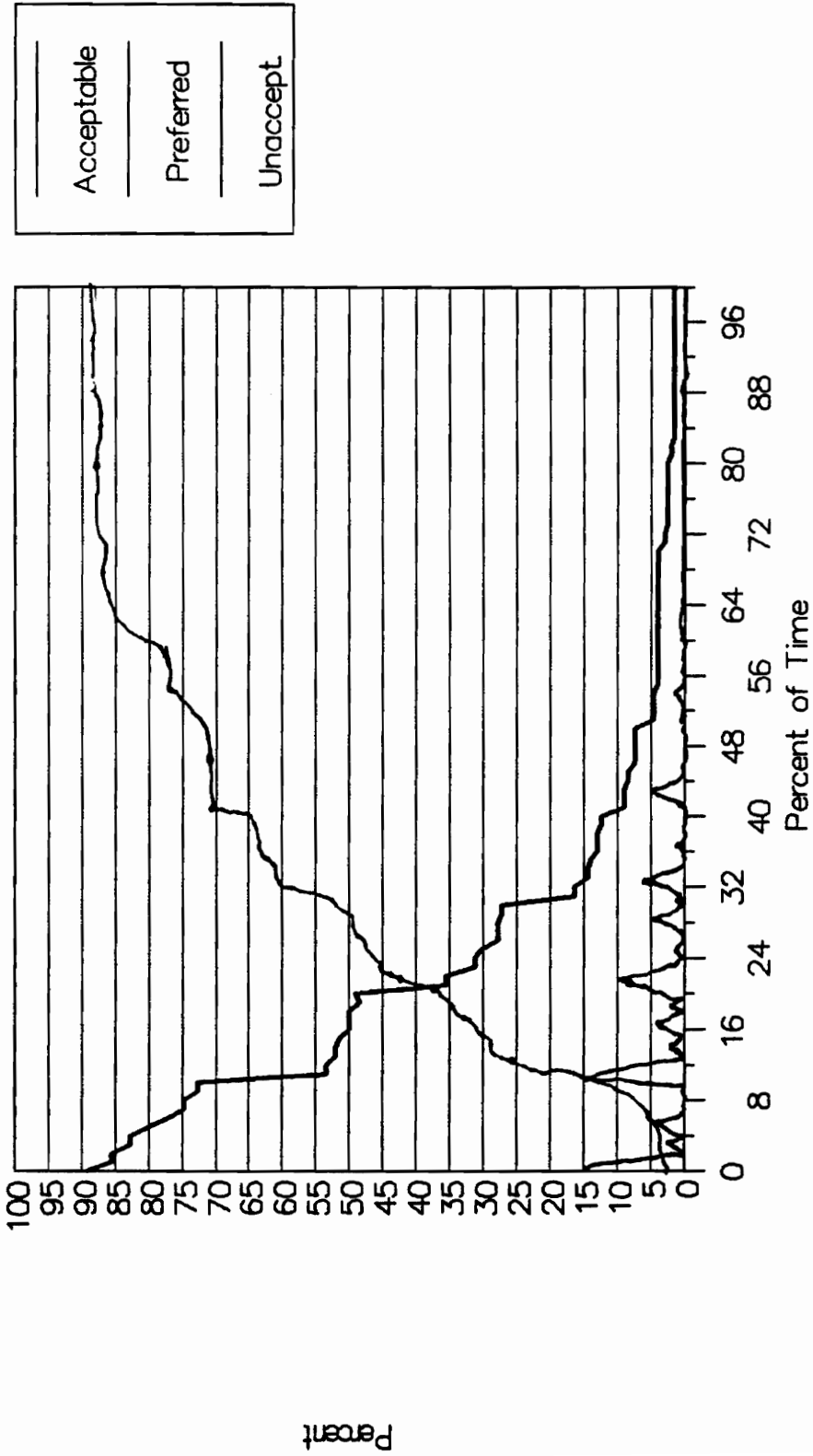


Figure 9. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of horse groups I see along the trails".



**Figure 10.** Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The percent of time other people are in sight while I am along the trail".

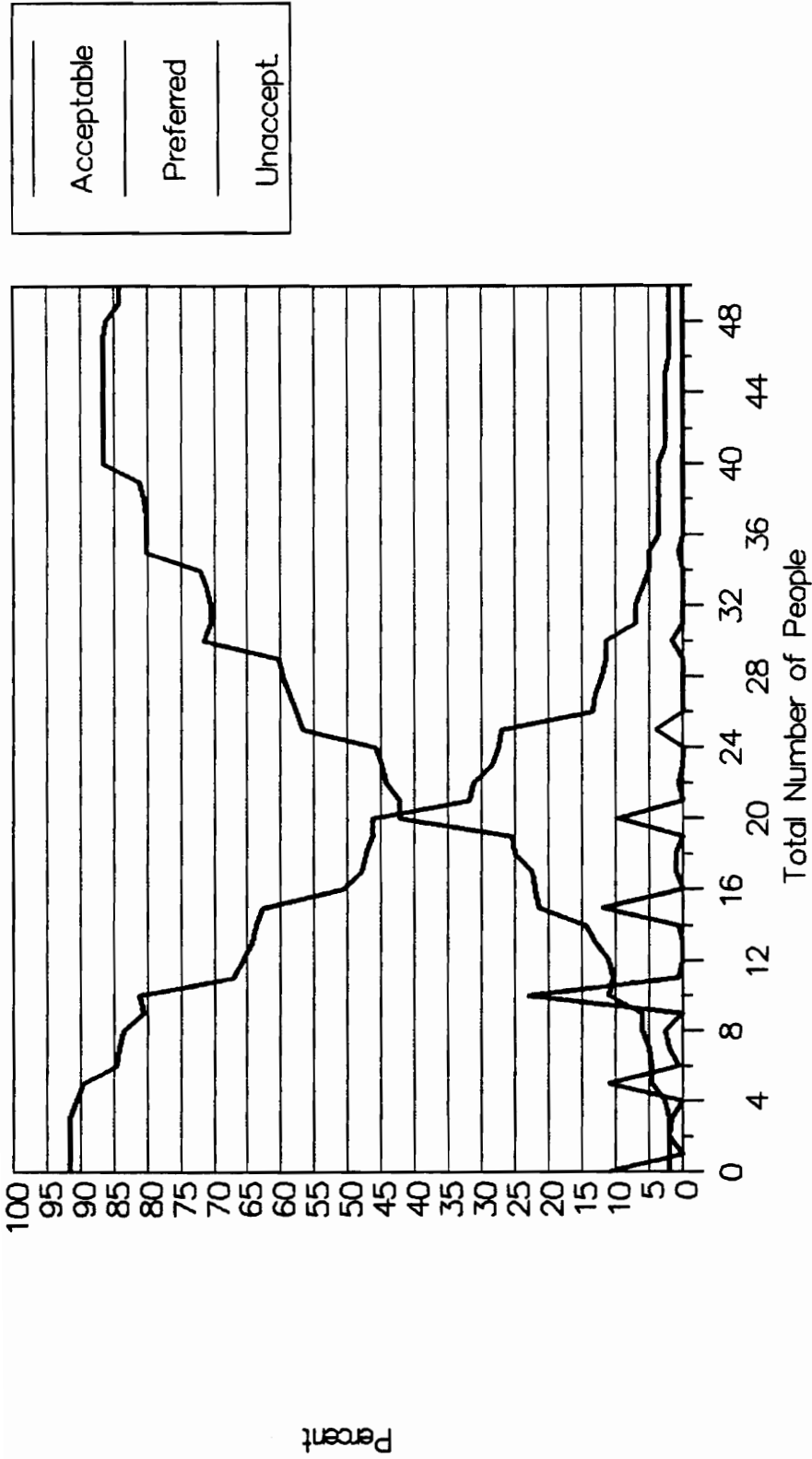


Figure 11. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The total number of people I see hiking along the trail".

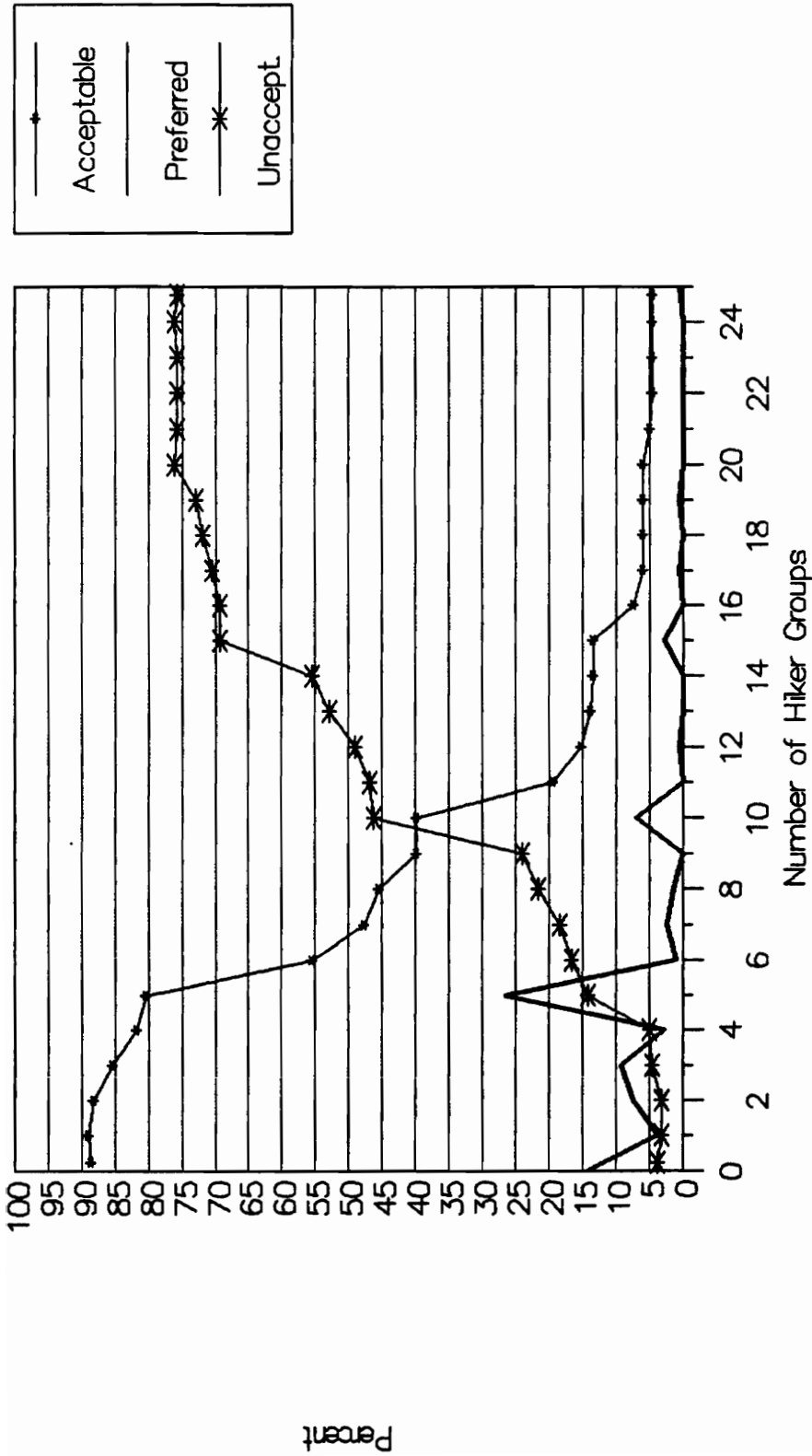


Figure 12. Norm response curves showing the percent of respondents with normative responses to alternative encounter levels for the indicator, "The number of groups of hikers I see along the trail".

Finally, with the exception of "The number of horse groups I see along the trails", the percent of agreement for acceptable conditions was generally higher for most levels among less important indicators than was the case for the most important indicators. Thus, it seems that people tend to find it easier to agree on acceptable conditions concerning issues about which they care less.

The findings using this second approach to the measurement of consensus provides more information than resulted from the previous approach. The results seem to indicate that consensus does exist for some specific levels of encounters among some of the indicators. This is especially the case for unacceptable norms. The first approach tended to mask this agreement by focusing on the overall median response among the personal norms provided by the respondents. By shifting the focus to specific levels of encounters for a given indicator, the second approach overcomes this deficiency.

**Research Question 8:** To what extent do the personal norms and the degree of norm crystallization vary within subgroups according to time of visit, experience use history, length of stay, wilderness involvement, place attachment, and mode of experience.

Appendix F contains the results of the median and crystallization analyses carried out on the seven different categories of subgroups. Tables F.1.-F.27. show the measures of central tendency, dispersion, and statistical significance results among different subgroups for the three types of personal norms measured for each of the nine social indicators. In order to facilitate norm comparisons, and allow for statistical

testing, the lower limit unacceptable, preferred, and upper limit acceptable personal norms were used in the analyses. The median values were used as the most appropriate measure of central tendency, and the median variation was used as a measure of crystallization. Tests for statistical differences between medians were carried out using the Kruskal-Wallis one-way analysis of variance test for identical population distribution functions. Differences among median variations were tested using the Levl:med test for homogeneity of variance for populations with non-normal distributions suggested by Conover, Johnson, and Johnson (1981). The results will first be discussed by subgroup category, followed by an aggregated summary.

#### **Analyses for Personal Norm and Norm Crystallization Differences Among Subgroups Based on Medians and Median Variation**

##### **Time of Visit**

Norms for weekday and weekend users tended to be similar for most of the indicators. Statistical analyses showed the subgroups had significantly different lower limit unacceptable medians for only one indicator - "The total number of people I see along the trails in a day" - in which case the median was 20 for weekday users and 25 for weekend users (Table F.22.). This same indicator was the only one to also show significantly different medians for preferred norms, with a median of 7.5 for weekday users and 10 for weekend users (Table F.23.).

Medians for upper limit acceptable norms varied significantly between weekday and weekend users for the indicators "The number of

horse groups that camp within sight or sound of my campsite" (Table F.3.), and "The number of hiker groups that walk past my campsite" (Table F.12.). In both cases, the median was lower for weekend users than weekday users.

A significant difference in crystallization was found only in the case of upper limit acceptable norms for the indicator "The number of horse groups that travel past my campsite while I am there" (Table F.9.). For this indicator, the average median variation was greater for weekend users than weekday users. None of the other two norm types showed significant differences for any of the nine indicators.

#### **Experience Use History**

Previous Cohutta Visits. Almost no differences were found for both norm medians and crystallization among subgroups with varying numbers of previous visits to the Cohutta Wilderness. The only case where differences were found was among upper limit acceptable norms for the indicator "The number of horse groups that camp within sight or sound of my campsite" (Table F.3.). For the upper limit acceptable norms for this indicator, respondents with one to four previous visits had a median of 2, those with no previous visits a median of 3, and those with 5 or more visits the highest median of 5. However, since these subgroups also showed significant differences among median variances, the exact level of significance for median differences is unknown. In addition to these findings, those users with the most previous visits also had the lowest crystallization.



Other Wilderness Visits. Few differences were also found among subgroups with varying amounts of experience in other wilderness areas. No significant differences were found among the indicators between either medians or crystallization for lower limit unacceptable norms.

In the case of preferred norms, only the indicator, "The number of large groups that I see along the trails in a day" had significant median differences among the subgroups (Table F.14.). For this indicator, those with 0-1 other wilderness visits had a median of 2, those with 2-4 other wilderness visits a median of 2.5, and those with 5 or more visits a median of 3. None of the indicators had preferred norms with significant differences in crystallization.

Significant differences between upper limit acceptable norm medians were found only for the indicator "The number of horse groups that travel past my campsite while I am there" (Table F.9.). In this case, the median for those with 5 or more other wilderness visits was lowest at 3.5, while medians for the other two groups were identical at 5. The indicator "The number of hiker groups that camp within sight or sound of my campsite" was the only one with significant crystallization differences among upper limit acceptable norms. For this indicator, crystallization was highest for those with five or more other wilderness visits, and lower for both other subgroups.

#### Length of Stay

Differences among lower limit unacceptable norm medians were found for the social indicators "The number of horse groups that camp within sight or sound of my campsite" (Table F.1.) and "The number of horse

groups I see along the trails in a day" (Table F.16.). In both cases, day users had the highest medians, with a median of 2.5 for the former indicator and a median of 5 for the latter. The indicator "The number of horse groups that camp within sight or sound of my campsite" also had significant crystallization differences among length of stay subgroups. For this indicator, those spending 1 or 2 nights had the highest crystallization and those spending 3 or more nights the lowest. Again, because this indicator showed significant differences in median variation among the subgroups tested, the exact level of significance for median differences is unknown.

Norms for preferred conditions showed only one indicator - "The number of hiker groups that walk past my campsite" - with significant differences among subgroup medians (Table F.11.). Respondents spending 3 or more nights had the highest median, while day users had the lowest. Crystallization differences among preferred norms were found on two indicators - "The number of horse groups I see along the trails in a day" and "The total number of people I see hiking along the trails in a day". In the former case, day users had less crystallization than either of the other two subgroups. For the latter indicator, those spending 3 or more nights had the highest crystallization, and those spending 1 or 2 nights the lowest.

Upper limit acceptable norm medians were significantly different for the two most important indicators - "The number of horse groups that camp within sight or sound of my campsite" (Table F.3.) and "The number of hiker groups that camp within sight or sound of my campsite" (Table F.6.). In both cases, those spending 1 or 2 nights had the lowest norm median. The only indicator showing significant crystallization

differences among upper limit acceptable norms was "The number of large groups that I see along the trails in a day". In this case, respondents spending 3 or more nights had the highest crystallization, and those spending 1 or 2 nights had the lowest.

### Wilderness Involvement

The wilderness involvement subgroups showed significant median differences on a number of lower limit unacceptable norms. For this norm type, four of the nine indicators had significant median differences. These included: "The number of hiker groups that walk past my campsite" (Table F.10.), "The number of large groups that I see along the trails in a day" (Table F.13.), "The percent of time other people are in sight while I am on the trail" (Table F.19.), and "The total number of people I see hiking along the trails in a day" (Table F.22.). In all cases, respondents showing high wilderness involvement had significantly lower norms than those low in wilderness involvement.

Two of the indicators - "The number of horse groups I see along the trails in a day" (Table F.16.), and "The percent of time other people are in sight while I am on the trail" (Table F.19.) - also had significant crystallization differences for lower limit unacceptable norms. In both cases, those respondents showing high wilderness involvement had higher crystallization than those with low wilderness involvement.

Significant differences between preferred norm medians were also found among four of the nine indicators. These included: "The number of horse groups that camp within sight or sound of my campsite" (Table

F.2.), "The number of large groups that I see along the trails in a day" (Table F.14.), "The number of horse groups I see along the trails in a day" (Table F.17.), and "The percent of time other people are in sight while I am on the trail" (Table F.20.). Three of these four indicators also showed significant crystallization differences, with highly involved wilderness users showing higher crystallization than those low in wilderness involvement. Thus, once again three of the median differences (see Tables F.2., F.17., and F.20.) for preferred norms cannot be determined to an exact level of significance, and the fourth (see Table F.14.) appears to be the result of a Type I statistical error as the medians were actually identical.

Differences among upper limit acceptable norm medians were again significant on four out of the nine indicators. These included: "The number of hiker groups that walk past my campsite" (Table F.12.), "The number of large groups that I see along the trails in a day" (Table F.15.), "The percent of time other people are in sight while I am on the trail" (Table F.21.), and "The total number of people I see hiking along the trails in a day" (Table F.24.). Two of the nine indicators - "The percent of time other people are in sight while I am on the trail" (Table F.21.), and "The number of groups of hikers I see along the trails in a day" (Table F.27.) - had significant crystallization differences, with crystallization once again greatest for those highly involved with wilderness and lowest for those with low wilderness involvement.

## Place Attachment

Medians for lower limit unacceptable norms among individuals who differ in place attachment were significantly different for two indicators - "The number of hiker groups that walk past my campsite" (Table F.10.), and "The number of large groups that I see along the trails in a day" (Table F.13.). In both cases, norm medians were lower for respondents with high place attachment than those with low place attachment. Only one indicator - "The number of hiker groups that camp within sight or sound of my campsite" (Table F.4.) - showed significant crystallization differences for lower limit unacceptable norms. In this case, respondents with low place attachment had higher norm crystallization than those with high place attachment.

Significant differences in preferred norm medians were also found for two of the nine indicators. These included: "The number of hiker groups that camp within sight or sound of my campsite" (Table F.5.), and "The number of horse groups that travel past my campsite while I am there" (Table F.8.). These indicators were also the only two with significant crystallization differences for preferred norms. For both indicators, those respondents low on the place attachment scale had lower norm medians and higher crystallization than those with high place attachment. Once again, it should be noted that because the median variances among the two subgroups were significantly different, the median differences cannot be assigned an exact level of significance.

Indicators with significant median differences by place attachment for upper limit acceptable norms were found in only one case - "The number of hiker groups that walk past my campsite" (Table F.12.).

However, as Table F.12. shows, the medians were actually identical, and thus, the difference was attributed to a Type I error. Similarly, only one indicator - "The number of hiker groups that camp within sight or sound of my campsite" (Table F.6.) - had significant crystallization differences among subgroups. In this case, users lower in place attachment had the highest crystallization.

### Mode of Experience

Two of the nine indicators among individuals who differed on mode of experience showed significant median differences for lower limit unacceptable norms. These included: "The percent of time other people are in sight while I am on the trail" (Table F.19.), and "The total number of people I see hiking along the trails in a day" (Table F.22.). In both cases, those respondents visiting the Cohutta primarily for social reasons had higher norm medians than those visiting primarily due to the setting or activity participation. None of the nine indicators were significantly different in terms of norm crystallization.

Only one of the nine indicators had significant preferred norm median differences among the mode of experience subgroups - "The total number of people I see hiking along the trails in a day" (Table F.23.). In addition, only one indicator had significant crystallization differences - "The number of hiker groups that walk past my campsite" (Table F.11.). Once again, those visiting the Cohutta primarily for social reasons had the highest norm medians, in addition to the highest crystallization.

The three least important indicators - "The percent of time other people are in sight while I am on the trail" (Table F.21.), "The total number of people I see hiking along the trails in a day" (Table F.24.), and "The number of groups of hikers I see along the trails in a day" (Table F.27.) - all showed significant differences for upper limit acceptable norm medians among mode of experience subgroups. In all three cases, norm medians were highest for those visiting the Cohutta primarily for social reasons, and lowest for those visiting due to the setting. None of the indicators had significant norm crystallization differences.

#### **Summary of Analyses for Personal Norm and Norm Crystallization Differences Among Subgroups**

Overall, the subgroups associated with varying levels of wilderness involvement tended to show the greatest number of significant differences in personal norms and crystallization among each of the norm types. This was especially the case for differences among norm medians. The experience use history subgroups tended to show the least significant differences in personal norms and crystallization. Weekday and weekend users also had few differences, except weekend users had significantly lower upper limit acceptable personal norms for three indicators.

However, in no case did any of the subgroups have significant differences for half of the indicators on either personal norm medians or norm crystallization. Furthermore, no obvious trends appeared with respect to more, or less, important indicators having greater, or fewer,

significant norms or norm crystallization. Finally, as was pointed out previously, several of the median differences can be attributed to Type I errors. By using a .10 level of significance as a basis for deciding when subgroups differ, there is one chance out of ten test that a Type I error will occur. However, as Gregoire and Driver (1987) point out, it is also important to consider the likelihood of committing a Type II error when deciding upon the most appropriate level of significance to use for a particular test. In this case, it was felt that using a .10 level of significance constituted an appropriate balance between the chances of committing a Type I error or a Type II error.

**Research Question 9:** What is the strength of the association between users' relationship to the resource and their unacceptable, preferred, and acceptable norms?

In order to test the association between users' relationship to the resource and their personal norms, Pearson's correlation analyses were conducted. Tables 29-31 show the resulting correlation coefficients and significance test results for the .05 and .01 level of significance.

In the case of lower limit unacceptable norms, wilderness involvement showed a significant association for more indicators than any of the other measures of relationship to the resource (Table 29). Though the relationships were not particularly strong, higher levels of wilderness involvement were associated with lower personal norms for the lower limit unacceptable conditions on three of the nine indicators. These included: "The number of hiker groups that walk past my campsite", "The percent of time other people are in sight while I am on



Table 29. Pearson correlation coefficients between relationship to resource items and the lower limit unacceptable norms for conditions regarding social indicators.

Social Indicator	Relationship to Resource Items				
	Wilderness Involvement	Place Attachment	Mode of Experience		
			Setting	Activity	Social
The number of <u>horse groups</u> that camp within sight or sound of my campsite	-.059 (177)	-.143 * (177)	.023 (177)	-.055 (180)	-.078 (178)
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	.065 (185)	.067 (183)	.091 (182)	.104 (184)	.101 (183)
The number of <u>horse groups</u> that travel past my campsite while I am there	.025 (181)	-.002 (179)	-.016 (178)	.029 (180)	-.045 (179)
The number of <u>hiker groups</u> that walk past my campsite	-.175 * (175)	-.087 (174)	-.004 (176)	-.020 (178)	.023 (175)
The number of <u>large groups</u> (more than 6 people) that I see along the trail	-.141 (177)	-.073 (176)	-.025 (176)	.074 (180)	.054 (177)
The number of <u>horse groups</u> I see along the trails	-.111 (176)	-.062 (175)	.067 (176)	-.036 (179)	-.050 (176)
The percent of time other people are in sight while I am along the trail	-.328 ** (177)	-.121 (176)	-.058 (177)	-.081 (180)	.090 (178)
The total <u>number of people</u> I see hiking along the trail	-.179 ** (177)	-.069 (176)	-.105 (176)	-.135 (180)	.054 (177)
The number of <u>groups</u> of hikers I see along the trail	.043 (173)	.027 (171)	-.040 (171)	.053 (172)	.089 (171)

\* Significant at  $p \leq .05$

\*\* Significant at  $p \leq .01$

the trail", and "The total number of people I see hiking along the trail".

The only other relationship to the resource item showing any significant association with lower limit unacceptable norms was place attachment. In this case, only one significant relationship was found; higher levels of place attachment was negatively associated with the indicator, "The number of horse groups that camp within sight or sound of my campsite".

Preferred personal norms showed significant relationships on four indicators for wilderness involvement (Table 30). These items consisted of the four least important among the indicators - "The number of horse groups I see along the trails", "The percent of time other people are in sight while I am along the trail", "The total number of people I see hiking along the trail", and "The number of groups of hikers I see along the trail". For each indicator, higher levels of wilderness involvement was associated with lower preferred personal norms. As was the case with lower limit unacceptable norms, all relationships were not very strong.

Only two other relationship to resource measures had significant relationships with preferred personal norms, and both involved only one indicator. Higher levels of an activity mode of experience was significantly associated with lower preferred scores for the indicator, "The number of horse groups I see along the trails". In the second case, higher levels of a social mode of experience were positively associated with higher preferred norms for the indicator, "The total number of people I see hiking along the trail".

Table 30. Pearson correlation coefficients between relationship to resource items and the preferred level norms for conditions regarding social indicators.

Social Indicator	Relationship to Resource Items				
	Wilderness Involvement	Place Attachment	Mode of Experience		
			Setting	Activity	Social
The number of <u>horse groups</u> that camp within sight or sound of my campsite	-.140 (150)	.000 (151)	-.100 (149)	-.128 (152)	-.049 (150)
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	.001 (177)	.067 (174)	.024 (174)	.056 (175)	.121 (174)
The number of <u>horse groups</u> that travel past my campsite while I am there	-.140 (161)	.142 (158)	.070 (158)	.057 (159)	.054 (159)
The number of <u>hiker groups</u> that walk past my campsite	-.117 (163)	-.045 (164)	-.012 (162)	.008 (165)	.037 (163)
The number of <u>large groups</u> (more than 6 people) that I see along the trail	-.133 (166)	-.006 (167)	-.046 (165)	.015 (168)	.108 (166)
The number of <u>horse groups</u> I see along the trails	-.207 ** (146)	-.061 (147)	-.044 (145)	-.162 * (148)	.009 (146)
The percent of time other people are in sight while I am along the trail	-.271 ** (165)	-.092 (166)	-.072 (164)	-.024 (167)	.128 (165)
The total <u>number of people</u> I see hiking along the trail	-.165 * (167)	-.078 (168)	-.121 (166)	-.049 (169)	.232** (167)
The number of <u>groups</u> of hikers I see along the trail	-.135 * (173)	.038 (170)	-.069 (170)	-.073 (171)	.136 (170)

\* Significant at  $p \leq .05$

\*\* Significant at  $p \leq .01$

Wilderness involvement scores showed significant relationships with upper limit acceptable norms on two of the less important indicators (Table 31). These included: "The percent of time other people are in sight while I am along the trail", and "The total number of people I see hiking along the trail". In both cases, greater levels of wilderness involvement were associated with lower upper limit acceptable norms.

Two of the mode of experience items also had significant relationships with upper limit acceptable norms. A setting mode of experience was negatively associated with the indicator, "The total number of people I see hiking along the trail". In addition to having significance on this same indicator, a social mode of experience was also significantly associated with the indicator, "The number of groups of hikers I see along the trail", except in these cases the relationship involved a positive association.

Table 31. Pearson correlation coefficients between relationship to resource items and the upper limit acceptable norms for conditions regarding social indicators.

Social Indicator	Relationship to Resource Items				
	Wilderness Involvement	Place Attachment	Mode of Experience Setting	Activity	Social
The number of <u>horse groups</u> that camp within sight or sound of my campsite	.014 (103)	.099 (102)	-.058 (101)	-.054 (105)	.054 (102)
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	-.055 (167)	.047 (166)	.032 (164)	-.064 (165)	.049 (164)
The number of <u>horse groups</u> that travel past my campsite while I am there	-.087 (157)	-.012 (155)	-.014 (155)	-.075 (156)	-.099 (154)
The number of <u>hiker groups</u> that walk past my campsite	-.107 (169)	-.062 (168)	-.051 (169)	-.006 (172)	.002 (170)
The number of <u>large groups</u> (more than 6 people) that I see along the trail	-.127 (167)	.002 (165)	-.059 (167)	-.022 (170)	.018 (168)
The number of <u>horse groups</u> I see along the trails	-.042 (139)	.071 (138)	-.044 (138)	-.081 (142)	-.003 (140)
The percent of time other people are in sight while I am along the trail	-.229 ** (179)	.001 (178)	-.081 (178)	-.032 (182)	.103 (179)
The total <u>number of people</u> I see hiking along the trail	-.169 * (184)	-.055 (182)	-.158 * (184)	-.109 (187)	.140 * (185)
The number of <u>groups</u> of hikers I see along the trail	-.108 (197)	.018 (194)	.001 (193)	-.092 (196)	.205** (194)

\* Significant at  $p \leq .05$

\*\* Significant at  $p \leq .01$

## DISCUSSION

### Summary

The primary goals of this research project were to assess the importance visitors to the Cohutta Wilderness place on a variety of social indicators, identify the extent to which norms exist for these indicators, and compare the normative characteristics among a variety of subgroups. This information should be helpful in attempts to apply such planning frameworks as LAC to wilderness areas. After determining the relative importance users place upon a range of potential indicators, measurement techniques should be applied to determine the acceptability of alternative levels of the indicators. The results can help managers in their efforts to establish standards for the indicators that will help quantify management objectives, and through monitoring efforts, serve to evaluate management effectiveness.

In this study, nineteen potential indicators were evaluated by wilderness visitors and rated on an importance scale ranging from "not at all" important, to "extremely" important. Results showed users place slightly greater importance on a number of physical/ecological indicators than on social indicators. However, this does not imply that social indicators are not important to Cohutta visitors. In fact, nearly all of the social indicators were rated between "moderately" important and "very much" important by the overall sample.

When the user population was broken down into different subgroups, a number of significant differences were found among indicator

evaluations. The most managerially relevant categories of subgroups appear to be the relationship to the resource groups (i.e. wilderness involvement, place attachment, and mode of experience), and length of stay. Users with higher degrees of wilderness involvement and place attachment both tended to place greater importance on the indicators; this was also the case among users with a setting focus for the mode of experience items. Users with moderate lengths of stay tended to place greater importance on the indicators than either day users or those with long visits to the area.

When analyses were conducted to determine the strength of association between the relationship to resource groups and indicator importance, the category of wilderness involvement greatly exceeded the other categories in number of significant associations. All of the significant associations were in the positive direction, indicating greater degrees of wilderness involvement tend to result in higher importance evaluations for potential indicators. However, none of the associations were very strong. In addition, no particular pattern was found regarding overall indicator importance and strength of association. It might have been expected that indicators showing greater importance among the overall sample may have also had stronger associations with the relationship to resource items. However, this was not the case.

In order to identify users' standards for the indicators, this study followed a normative social judgment approach. This approach recognizes that making evaluative decisions involves value judgments,

and these judgments about wilderness conditions may fall within an unacceptable, acceptable, preferred, and noncommittal range.

In order for norms to exist, a majority of respondents must be willing to express an evaluation for some condition or behavior, and these evaluations should be relatively stable over at least moderate periods of time. If there is agreement by some social group for a personal norm, an important prerequisite for determining the existence of a social norm is met. In addition to these prerequisites, norms are generally associated with some type of sanctions whereby people feel societal pressure to comply with the norm. This study examined the extent to which users were willing to provide three norms - unacceptable, preferred, and acceptable - for potential wilderness conditions. Identification of these three norm types is consistent with methods of studying users' opinions using a social judgment approach.

Norm articulation analyses were conducted in order to assess the extent to which Cohutta users were willing to provide personal norms for potential social indicators. Results showed that for all indicators, a majority of users provided some type of norm, and that in no case did fewer than half of the respondents fail to completely articulate their personal norms.

Norm stability was addressed in this study by examining the extent to which a subsample of wilderness users varied in the provision of their personal norms from the on-site contact to the mailback questionnaire. Results showed that, with the exception of acceptable personal norms, most respondents provided a personal norm both on-site and on the mailback questionnaire for all of the social indicators



studied. However, when the amount of norm change was examined for those respondents providing a personal norm at both periods of time, significant differences were discovered for many indicators among the norm categories. This finding implies that Cohutta users may not have strong personal norms.

In addition to addressing the issue of norm stability, it is also necessary to also examine the extent to which there is shared agreement among the norms. This information may indicate the existence of social norms among the visitors. It is this type of norm that has the most relevance for wilderness managers and planners. A critical issue in the measurement process for social norms involves determining the appropriate technique to be used to measure consensus. Since consensus may be measured in a number of different ways, and no one approach has been identified as superior over all others, Labovitz and Hagedorn (1973) have proposed using multiple approaches for consensus measurement. In this study, two approaches were used to measure agreement among all study participants.

The first approach involved the use of median variation. With this method, a median variation/median ratio was calculated by dividing the sample's median preferred, lower limit unacceptable, and upper limit acceptable personal norms by the average norm variation about that median among the sample. This essentially resulted in a coefficient of variation for the median, and allowed comparisons to be made among the social indicators regarding the relative amount of agreement among the overall sample. The results appeared to show little consensus since the sample's personal norms tended to vary around the median by fifty

percent, or more, for most of the indicators. When statistical analyses were conducted to see if personal norms for the social indicators showed different amounts of consensus among a number of subgroups, wilderness involvement seemed to stand out as the category with the greatest number of significant differences.

The second approach used to measure norm consensus involved the percent of agreement for specific encounter levels among the sample for each of the three norm types studied (i.e. unacceptable, acceptable, or preferred). In using this approach, respondents providing any of the three norm types were included in the sample from which the percentages were calculated. The results from this approach showed that norm consensus does indeed exist for some encounter levels among the social indicators studied. This was especially the case for unacceptable norms. Analyses were not conducted using this method to determine if various subgroups showed different levels of agreement.

### Management Implications

The results of this study have a number of implications for managers in a position of applying planning processes, such as LAC, to wilderness areas. First, as visitors consider many potential indicators to be important, a broad range of indicators is necessary to sufficiently ensure that users obtain maximum satisfaction from their visits. It should also be noted that Cohutta users placed greater importance upon some of the physical/ecological indicators than upon the social indicators used in this study.

Second, as shown in the norm response curves (Figures 4-12), it is possible to find majority agreement among users for a range of conditions. However, for many encounter levels for the indicators, a majority of users are apparently better able to articulate unacceptable standards than they are acceptable standards. This could pose a problem for managers trying to apply such planning process as LAC, where the focus is placed on identifying acceptable conditions. The situation poses two important implications for the manager. First, managers should exercise caution when establishing the percentage of respondents they wish to satisfy - only a few of the indicators had over 75 percent agreement among acceptable alternative encounter levels. Second, for most indicators a number of the levels on the lower end of the encounter scale that have relatively low agreement on acceptable norms, also have low agreement on unacceptable norms for these levels. This implies that respondents are noncommittal in their feelings for these encounter levels. While it is not suggested that managers should necessarily use

these levels as standards for the indicators, it does indicate that users would not likely complain about encounters at these levels. These noncommittal situations also offer the best opportunity for managers to try to effectively influence the type of norms users hold for these encounter levels.

### Research Implications

The high importance scores on most of the indicators in this study may have been due to an inadequate selection of a variety of different types of indicators. Alternatively, the high scores may reflect the multi-dimensional nature of users' experiences, and justify the need for a number of different indicators in order to manage for acceptable wilderness experiences. For example, after studying researchers' evaluations of 76 wilderness indicators, Merigliano (1987) also concluded there was a need to consider many different indicators to ensure that unacceptable wilderness conditions did not occur. In addition to a number of indicators included in the current study, Merigliano (1987) found that such indicators as the number and distribution of campsites, and fire ring density, were considered important wilderness indicators by other researchers. Her study also revealed the need to develop a number of different criteria, each weighted appropriately, when evaluating potential indicators of appropriate wilderness conditions.

In conducting the norm stability analyses, a number of conceptual problems were discovered. The method used in this study involved

calculating a percent change in respondents' norms over time that was relative to the upper limit of the measurement scale for each particular indicator. This approach to stability measurement can be misleading since it does not consider respondents' original norms. For example, using this approach, respondents may show similar percent change in their norms even if their original norms were very different.

Ideally, the percent norm change based upon the respondents' original norm would seem most appropriate. This would indicate an absolute measure of norm change. However, for many respondents the original norm was zero (this was especially the case for preferred norms), making it impossible to calculate a percent change in norms. Problems such as this emphasize the need for new and creative approaches to the measurement of norm stability.

Of the two approaches used in this study to measure consensus, the one using percent agreement for impact levels on the indicators has significant advantages over the approach using median dispersion. The percent agreement approach focuses directly upon each impact level along the range of values for the indicator in question. As such, this approach incorporates both upper and lower limits for acceptable and unacceptable conditions, is not negatively influenced by the multi-modal nature of the data, and allows for consideration of noncommittal responses (those failing to give unacceptable, preferred, or acceptable norms) in determining group consensus. In addition to these advantages, this approach results in more information and is conceptually easier to understand. For example, it may be easier for managers to specify the

percent of agreement they would consider necessary before considering a social norm to exist among respondents than trying to understand the more complicated statistical processes involved with alternative approaches to identifying social norms. In addition, by using the percentage approach in a manner such as is used in this study, managers can easily see how agreement changes with different levels of the indicator under consideration.

The approach using the median variation for the lower limit unacceptable, preferred, and upper limit acceptable personal norms does have some advantages over the percent agreement approach. This approach involves much less time and effort to produce results. In addition, this approach allows for statistical comparison of norms among different subgroups. Finally, if the nature of the data is such that the upper limit unacceptable and the lower limit acceptable personal norms are anchored at the endpoints of the conditional scale among the sample participants, and if the data is smoothly (though not necessarily evenly) distributed about the median, then this approach should yield similar results as the percent agreement approach.

One weakness of this study was a lack of an attempt to measure any sanctions that may be associated with norms thought to exist. However, as pointed out by Williams, Roggenbuck, and Bange (1990), most measurements of encounter norms focus on acceptable conditions rather than behavior, and since all visitors contribute to encounter situations simply by virtue of their presence, sanctions within the overall user group may be irrelevant for this situation. In such cases, it may be of

interest to focus upon the sanctions, in the form of rules and regulations, imposed upon the users by managers of the area.

The number of significant differences among the wilderness involvement subgroups for indicator importance and normative standards deserves further research. A more thoroughly developed measurement scale that taps the relevant dimensions of the involvement construct is needed. However, before this can occur, some important issues should be addressed. For example, how is involvement different from other relationship to resource concepts used by recreation researchers, such as specialization and place attachment? Selin and Howard (1988) suggest that involvement may provide the broader theoretical framework that can tie such similar concepts together.

Finally, the use of social judgment theory in identification of indicators and standards for wilderness conditions deserves further research. The number of different significant results among preferred, acceptable, and unacceptable norms demonstrates only one area of potential usefulness of this concept. The concept of social judgment theory should also be used to test for norm differences among users with varying levels of involvement. For example, using this theory one would expect users showing higher levels of involvement would also have smaller acceptable ranges. This might result from the clearer understanding of what is acceptable, unacceptable, and preferred one would expect to find among users with higher levels of wilderness involvement.

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Appendix A  
(On-site Contact Sheet)

On-site Interview

OMB 0596-0102  
EXP. 5/90

## WILDERNESS IN THE SOUTH

## The Relationship Between the Visitor and the Resource

Group No. \_\_\_\_\_

	jan	jul			
	feb	aug			
DAY _____	mar	sep	YR _____	:TIME _____	: _____ (24 hour clock) Interviewer: _____
	apr	oct			
	may	nov			
	jun	dec			

Area: COHUTTA-1	CANEY CREEK-2	Entry	Exit
UP. ISL-3	RATTLESNAKE-4	Point: _____	Point: _____

Interviewer will introduce himself/herself and explain that he/she would like to talk to the group for a few minutes. He/she will explain that the Forest Service is conducting a study of wilderness visitors to find out who is visiting the wilderness and to learn more about the types of experiences that visitors are expecting and getting on their wilderness trips. The interviewer will get permission from the group to ask a few questions. After agreement is obtained, the interviewer will make the following statement to the group:

"This survey is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. You may be assured that in the analysis and publication of the results your answers will not be connected with you individually."

1. "Are you entering or leaving the wilderness area?" \_\_\_\_\_ ENTERING(1)  
\_\_\_\_\_ LEAVING(2)

If leaving -- "when did you enter?"

Day \_\_\_ Mon \_\_\_ YR \_\_\_ :Time \_\_\_ : \_\_\_ (24 hour)

If entering, -- "when do you anticipate leaving?"

Day \_\_\_ Mon \_\_\_ YR \_\_\_ :Time \_\_\_ : \_\_\_ (24 hour)

2. "Please show me your route through the wilderness on the attached map. Show us your entry point, your travel route, and your exit point. On the map, consecutively number each place you camped or will camp." (For example, the first night should be number 1; the second night number 2, etc.)

3. "If you would have found out at home that this area was temporarily closed, would you have most likely gone somewhere else on this trip?"

- (1)  NO, I would have stayed home
- (2)  YES -- If yes, Name of area \_\_\_\_\_  
                                     Nearest town or city \_\_\_\_\_  
                                     Type of area (For example: Wilderness, State Park, etc.) \_\_\_\_\_

4. "How many people are in your group (including yourself)?" \_\_\_\_\_

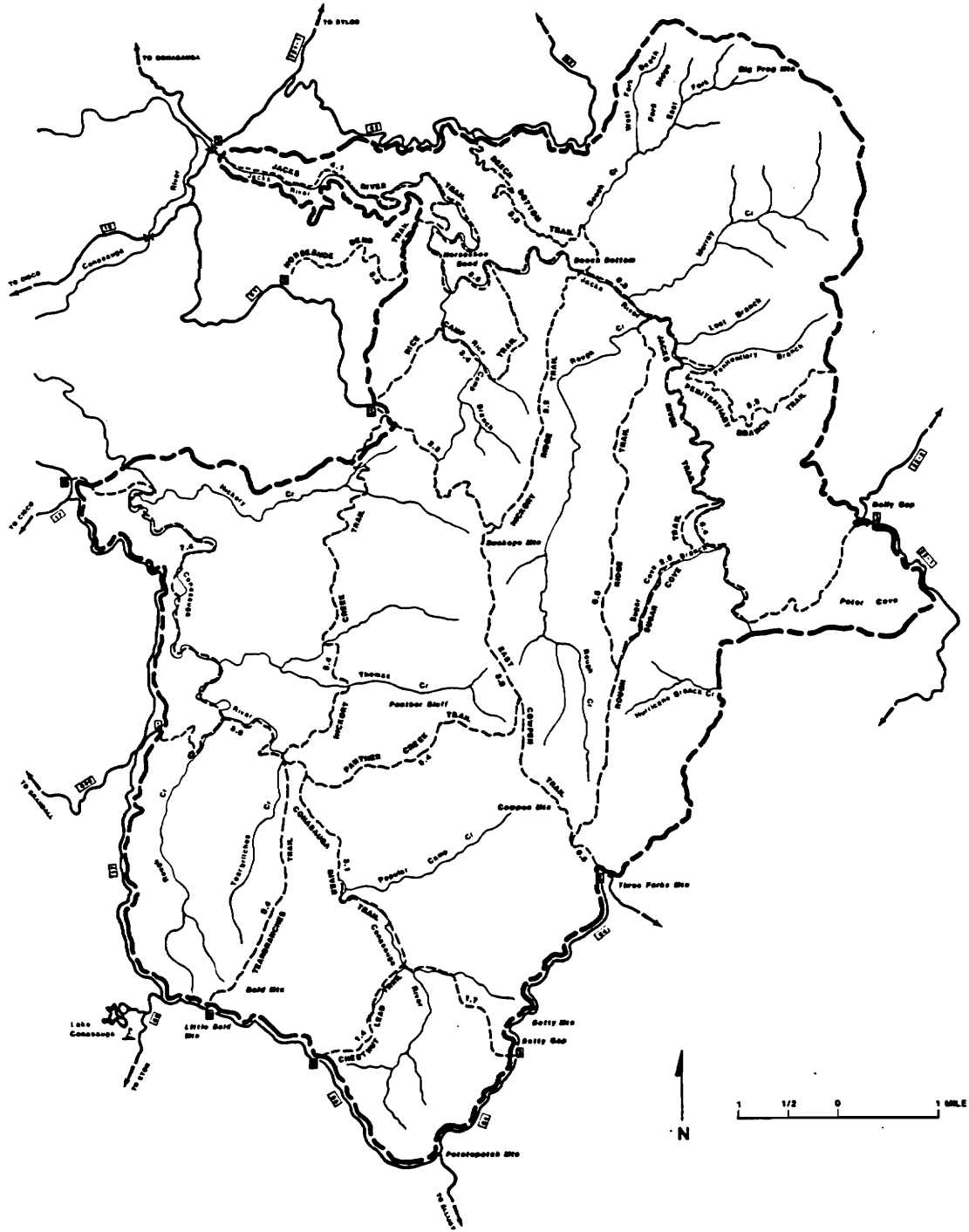
5. "How would you describe your group?" (Read group categories to visitor.)

- (1)  FRIENDS
- (2)  FAMILY (IMMEDIATE FAMILY AND RELATIVES)
- (3)  FAMILY AND FRIENDS
- (4)  ORGANIZED CLUB OR SCHOOL GROUP
- (5)  ALONE
- (6)  OTHER \_\_\_\_\_

6. "I would like to get some information about each person in the group. We would like to know the age and the number of times each group member has come here before. In addition, I would also like to know if it would be okay to send a questionnaire to your home in order to get your views about several aspects of management of wilderness areas."

Age	Sex 1-F 2-M	No. Previous Visits (0=Never Visited Before)	Name	Address	
				Street/P.O. Box City, State	ZIP
1	_____	_____	_____	_____	_____
2	_____	_____	_____	_____	_____
3	_____	_____	_____	_____	_____
4	_____	_____	_____	_____	_____
5	_____	_____	_____	_____	_____
6	_____	_____	_____	_____	_____
7	_____	_____	_____	_____	_____
8	_____	_____	_____	_____	_____
9	_____	_____	_____	_____	_____

### COHUTTA WILDERNESS





Appendices B & C  
(Mailback Questionnaire - Forms A & B)

FORM A

OMB # 0596-0102 EXP. 5/31/90

This survey is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. You may be assured that in the analysis and reporting of the results your answers will not be connected with you.

-----  
 YOUR USE OF COHUTTA WILDERNESS  
 -----

1. On this visit did your group stay out overnight in the Cohutta wilderness area?

YES: If Yes, GO TO QUESTION 2.  
 NO: If No, GO TO QUESTION 4.

2. How many nights did you stay in the Cohutta Wilderness?  
 NIGHTS.

3. For each of the first three nights you camped in the wilderness, please estimate:

	NIGHT 1	NIGHT 2	NIGHT 3
a. the number of hiker groups that camped within sight or sound of your campsite	_____	_____	_____
b. the number of hiker groups that walked past your campsite	_____	_____	_____
c. the number of horse groups that camped within sight or sound of your campsite	_____	_____	_____
d. the number of horse groups that travelled past your campsite	_____	_____	_____

4. For each of the first three days you spent in the wilderness (day users respond only to Day 1), please estimate:

	DAY 1	DAY 2	DAY 3
a. the number of <u>groups</u> of hikers you saw along the trails	_____	_____	_____

- |  | DAY 1 | DAY 2 | DAY 3 |
|--|-------|-------|-------|
| b. the total number of <u>hikers</u> you saw along the trails                      | _____ | _____ | _____ |
| c. the number of <u>large groups</u> (more than 6 people) you saw along the trails | _____ | _____ | _____ |
| d. the number of <u>horse groups</u> that you saw along the trails                 | _____ | _____ | _____ |
| e. the total number of <u>horse users</u> you saw along the trails                 | _____ | _____ | _____ |
5. Please indicate which of the following activities you participated in while on this visit to the wilderness. (Check all those that apply)
- [ ] FISHING  
 [ ] HUNTING  
 [ ] CHECKING OUT PLACES TO HUNT IN THE FUTURE  
 [ ] HIKING ON TRAILS  
 [ ] HIKING OFF TRAILS  
 [ ] ROCK CLIMBING  
 [ ] NATURE STUDY  
 [ ] TAKING PICTURES  
 [ ] SWIMMING OR SUNBATHING  
 [ ] BIRDWATCHING  
 [ ] TALKING TO OTHERS IN OTHER GROUPS  
 [ ] SPENDING TIME ALL ALONE  
 [ ] CAMPING  
 [ ] PICNICKING  
 [ ] COLLECTING BERRIES, MUSHROOMS, OR OTHER  
 [ ] HORSEBACK RIDING  
 [ ] OTHER, PLEASE SPECIFY: \_\_\_\_\_
6. Which activity was your primary reason for choosing this area for this particular trip?  
 \_\_\_\_\_
7. Which of the following best describes the typical length of your visits into wilderness areas such as this one? (Check one)
- [ ] USUALLY STAY ONLY A FEW HOURS  
 [ ] USUALLY STAY A FULL DAY  
 [ ] USUALLY STAY ONE OR TWO NIGHTS  
 [ ] USUALLY STAY MORE THAN TWO NIGHTS
8. Previous wilderness use
- How many times have you visited \_\_\_\_\_ VISITS  
this wilderness area before?

How many years ago did you first visit this wilderness area? \_\_\_\_\_ YEARS

How many times per year do you typically visit this wilderness area? \_\_\_\_\_ VISITS

How many other wilderness areas have you visited? \_\_\_\_\_ AREAS

How many years ago did you first visit a wilderness area? \_\_\_\_\_ YEARS

How many times a year do you typically go into wilderness? \_\_\_\_\_ VISITS

-----  
 YOUR FEELINGS ABOUT WILDERNESS  
 -----

9. We would like to have an understanding of your general feelings about wilderness. Please indicate the extent to which each statement below describes your feelings.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I get greater satisfaction out of visiting wilderness than other recreation places	( )	( )	( )	( )	( )
I find that a lot of my life is organized around wilderness use	( )	( )	( )	( )	( )
One of the major reasons I now live where I do is that it has opportunities for visiting wilderness	( )	( )	( )	( )	( )
I feel like wilderness is a part of me	( )	( )	( )	( )	( )
I seldom take time to visit wilderness areas	( )	( )	( )	( )	( )



	N O T  A T  A L L	S L I G H T L Y	S O M E W H A T	M O D E R A T E L Y	V E R Y  M U C H	E X T R E M E L Y
The number of trees around a campsite that have been damaged by people	( )	( )	( )	( )	( )	( )
The number of campfire rings that people have made	( )	( )	( )	( )	( )	( )
The amount of litter I see	( )	( )	( )	( )	( )	( )
The amount of time I spend travelling on old roads in the wilderness	( )	( )	( )	( )	( )	( )
The visibility of lights originating from outside the wilderness	( )	( )	( )	( )	( )	( )
The number of wild animals I see	( )	( )	( )	( )	( )	( )
The number of miles of gravel road I travel to get to the wilderness	( )	( )	( )	( )	( )	( )

11. Are there any other items that influence the quality of your wilderness experience in the Cohutta wilderness?

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B. The number of large groups (more than 6 people) that I see along the trails in a day.

1 - - - - 1 - - - - 1 - - - - 1 - - - - 1 - - - - 1  
 0        5        10        15        20        25

C. The number of hiker groups that camp within sight or sound of my campsite.

1 - - - - 1 - - - - 1 - - - - 1 - - - - 1 - - - - 1  
 0        5        10        15        20        25

D. The number of hiker groups that walk past my campsite.

1 - - - - 1 - - - - 1 - - - - 1 - - - - 1 - - - - 1  
 0        5        10        15        20        25

E. The number of horse groups I see along the trails in a day.

1 - - - - 1 - - - - 1 - - - - 1 - - - - 1 - - - - 1  
 0        5        10        15        20        25

F. The number of horse groups that camp within sight or sound of my campsite.

1 - - - - 1 - - - - 1 - - - - 1 - - - - 1 - - - - 1  
 0        5        10        15        20        25

G. The percent of time other people are in sight while I am on the trail.

1----1----1----1----1----1----1----1----1----1  
 0 10 20 30 40 50 60 70 80 90 100

H. The percent of vegetation loss and bare ground around the campsite.

1----1----1----1----1----1----1----1----1----1  
 0 10 20 30 40 50 60 70 80 90 100



-----  
 YOUR FEELINGS ABOUT THE COHUTTA WILDERNESS AREA  
 -----

13. Please indicate the extent to which each statement below describes your general feelings about the Cohutta wilderness.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
This place means a lot to me	( )	( )	( )	( )	( )
I wouldn't substitute any other area for doing the type of things I did here	( )	( )	( )	( )	( )
I get more satisfaction out of visiting this place than from visiting any other recreation place	( )	( )	( )	( )	( )
I enjoy doing the type of things I did here in this area more than in any other area	( )	( )	( )	( )	( )
I find that a lot of my life is organized around this place	( )	( )	( )	( )	( )
This area is the best place for what I like to do	( )	( )	( )	( )	( )
One of the major reasons I now live where I do is that this place is nearby	( )	( )	( )	( )	( )
I feel no commitment to this place	( )	( )	( )	( )	( )
I feel like this place is a part of me	( )	( )	( )	( )	( )
The time I spent here could have just as easily been spent somewhere else	( )	( )	( )	( )	( )
No other place can compare to this area	( )	( )	( )	( )	( )
I am very attached to this place	( )	( )	( )	( )	( )
I identify strongly with this place	( )	( )	( )	( )	( )
This place makes me feel like no other place can	( )	( )	( )	( )	( )

14. Please indicate the extent to which each statement below describes your recent visit to the Cohutta wilderness.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I tried to learn as much as possible about the lay of the land	( )	( )	( )	( )	( )
The solitude of this place helped to bring my companion(s) and me closer together	( )	( )	( )	( )	( )
I spent most of my time improving my skills in outdoor activities that are important to me	( )	( )	( )	( )	( )
Spending time with my companions was the focal point of the trip for me	( )	( )	( )	( )	( )
I felt good about how much I was able to use my outdoor skills	( )	( )	( )	( )	( )
I often stopped along the trail to examine the environment in detail	( )	( )	( )	( )	( )
I focused a lot of my attention on outdoor activities and skills	( )	( )	( )	( )	( )
Exploring the place was the focal point of the trip for me	( )	( )	( )	( )	( )
I spent most of my time doing and thinking about outdoor recreation activities that are important to me	( )	( )	( )	( )	( )
I spent a lot of time with my companions	( )	( )	( )	( )	( )
I spent a lot of time studying the features of the environment	( )	( )	( )	( )	( )
I really enjoyed sharing the experience with my companions	( )	( )	( )	( )	( )
I spent a lot of time just exploring the area	( )	( )	( )	( )	( )
I thought a lot about my relationships with my companions on the trip	( )	( )	( )	( )	( )
I thought a lot about how I could apply my outdoor skills	( )	( )	( )	( )	( )

15. Which statement below most closely reflects the value you assign to the Cohutta Wilderness?

Do you value the Cohutta because: (CHOOSE A or B)

- A.  You are interested primarily in recreating in a forest environment, and being in the Appalachian mountain landscapes is not particularly important to you. GO TO 16.
- B.  You are interested primarily in recreating in the Appalachian mountain landscapes, as opposed to just any forested environment. GO TO 17.

16. If you checked 15 A, do you value the Cohutta because: (CHOOSE A or B)

- A.  You are interested primarily in recreating in a forested environment, and being in wild, remote wilderness is not particularly important to you.
- B.  You are interested primarily in recreating in a forested environment, and being in wild, remote wilderness is important to you.

GO TO 18

17. If you checked 15 B, do you value the Cohutta because: (CHOOSE A or B)

- A.  You are interested primarily in recreating in Appalachian mountain landscapes, and being in wild, remote wilderness is not particularly important to you.
- B.  You are interested primarily in recreating in Appalachian mountain landscapes, and being in wild, remote wilderness is important to you.

18. Which of the following was the most important reason for making this wilderness visit? (Check only one category)

- I CAME HERE BECAUSE I ENJOY THIS PLACE ITSELF
- I CAME HERE BECAUSE THIS IS A GOOD PLACE TO DO THE OUTDOOR ACTIVITIES I ENJOY
- I CAME HERE BECAUSE I WANTED TO SPEND MORE TIME WITH MY COMPANIONS

19. Please tell us how you felt about the trail markings (blazings) in the Cohutta (Check one):

- SAW NO BLAZES, AND NONE ARE NEEDED
- SAW NO BLAZES, AND MORE ARE NEEDED
- SAW VERY FEW BLAZES, AND THE NUMBER IS ABOUT RIGHT
- SAW VERY FEW BLAZES, AND MORE ARE NEEDED
- SAW MANY FEW BLAZES, AND THERE WERE TOO MANY
- SAW MANY BLAZES, AND THE NUMBER WAS ABOUT RIGHT
- SAW MANY BLAZES, AND MORE ARE NEEDED
- SAW MANY BLAZES, AND THERE WERE TOO MANY

-----  
 SOME INFORMATION ABOUT YOU  
 -----

20. Do you belong to any organizations that are primarily concerned with conservation or outdoor recreation? If yes, please list them.
- \_\_\_\_\_
- \_\_\_\_\_

21. What is the highest level of education you have attained? (CIRCLE ONE NUMBER)

ELEMENTARY SCHOOL	HIGH SCHOOL	COLLEGE
LESS THAN 8 8	9 10 11 12	13 14 15 16 MORE THAN 16

22. In which of the following kinds of places did you spend the most time while growing up (to age 18)? (Please mark only one answer)

ON A FARM OR RANCH

IN THE COUNTRY BUT NOT ON A FARM OR RANCH

IN A SMALL TOWN (2,500 OR FEWER PEOPLE)

IN A TOWN OR SMALL CITY (BETWEEN 2,500 AND 25,000 PEOPLE)

IN A CITY (BETWEEN 25,000 AND 100,000 PEOPLE)

IN A LARGE CITY (100,000 TO ONE MILLION PEOPLE)

IN A MAJOR CITY OR METROPOLITAN AREA (OVER ONE MILLION PEOPLE)

23. Are you currently married?

YES

NO

24. Do you have children under 5 years old living with you?

YES

NO

25. Do you have children between 5 and 17 years old living with you?

YES

NO

26. In what type of community do you now live?

ON A FARM OR RANCH

IN THE COUNTRY BUT NOT ON A FARM OR RANCH

IN A SMALL TOWN (2,500 OR FEWER PEOPLE)

IN A TOWN OR SMALL CITY (BETWEEN 2,500 AND 25,000 PEOPLE)

IN A CITY (BETWEEN 25,000 AND 100,000 PEOPLE)

IN A LARGE CITY (100,000 TO ONE MILLION PEOPLE)

IN A MAJOR CITY OR METROPOLITAN AREA (OVER ONE MILLION PEOPLE)

27. Are you presently:

- EMPLOYED OUTSIDE THE HOME
- UNEMPLOYED
- RETIRED
- FULL-TIME HOMEMAKER
- STUDENT

28. Please describe the usual occupation of the main wage earner in your household. If retired, describe the usual occupation before retirement.

TITLE: \_\_\_\_\_  
 KIND OF WORK: \_\_\_\_\_  
 KIND OF COMPANY OR BUSINESS: \_\_\_\_\_

29. Which of the following categories best describes your annual household income?

- |   |  |
|---|--|
| <input type="checkbox"/> LESS THAN \$5,000    | <input type="checkbox"/> \$25,000 to \$34,999  |
| <input type="checkbox"/> \$5,000 to \$9,999   | <input type="checkbox"/> \$35,000 to \$49,999  |
| <input type="checkbox"/> \$10,000 to \$14,999 | <input type="checkbox"/> \$50,000 to \$74,999  |
| <input type="checkbox"/> \$15,000 to \$19,999 | <input type="checkbox"/> \$75,000 to \$100,000 |
| <input type="checkbox"/> \$20,000 to \$24,999 | <input type="checkbox"/> OVER \$100,000        |

30. If you would like to receive a summary of the results of this survey, PLEASE WRITE YOUR NAME AND ADDRESS ON THE BACK OF THE RETURN ENVELOPE.

31. PLEASE USE THE REMAINING SPACE TO MAKE ANY FURTHER COMMENTS.

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB#0596-0102), Washington, D.C. 20503.

FORM B

OMB #0596-0102 EXP. 5/31/90

This survey is voluntary. While you are not required to respond, your cooperation is needed to make the survey results comprehensive, accurate, and timely. You may be assured that in the analysis and reporting of the results your answers will not be connected with you.

-----  
 YOUR USE OF COHUTTA WILDERNESS  
 -----

1. On this visit did your group stay out overnight in the Cohutta wilderness area?

[ ] YES: If Yes, GO TO QUESTION 2.  
 [ ] NO: If No, GO TO QUESTION 4.

2. How many nights did you stay in the Cohutta Wilderness?  
 [ ] NIGHTS.

3. For each of the first three nights you camped in the wilderness, please estimate:

	NIGHT 1	NIGHT 2	NIGHT 3
a. the number of hiker groups that camped within sight or sound of your campsite	_____	_____	_____
b. the number of hiker groups that walked past your campsite	_____	_____	_____
c. the number of horse groups that camped within sight or sound of your campsite	_____	_____	_____
d. the number of horse groups that travelled past your campsite	_____	_____	_____

4. For each of the first three days you spent in the wilderness (day users respond only to Day 1), please estimate:

	DAY 1	DAY 2	DAY 3
a. the number of <u>groups</u> of hikers you saw along the trails	_____	_____	_____

	DAY 1	DAY 2	DAY 3
b. the total number of <u>hikers</u> you saw along the trails	_____	_____	_____
c. the number of <u>large groups</u> (more than 6 people) you saw along the trails	_____	_____	_____
d. the number of <u>horse groups</u> that you saw along the trails	_____	_____	_____
e. the total number of <u>horse users</u> you saw along the trails	_____	_____	_____

5. Please indicate which of the following activities you participated in while on this visit to the wilderness. (Check all those that apply)

- ] FISHING
- ] HUNTING
- ] CHECKING OUT PLACES TO HUNT IN THE FUTURE
- ] HIKING ON TRAILS
- ] HIKING OFF TRAILS
- ] ROCK CLIMBING
- ] NATURE STUDY
- ] TAKING PICTURES
- ] SWIMMING OR SUNBATHING
- ] BIRDWATCHING
- ] TALKING TO OTHERS IN OTHER GROUPS
- ] SPENDING TIME ALL ALONE
- ] CAMPING
- ] PICNICKING
- ] COLLECTING BERRIES, MUSHROOMS, OR OTHER
- ] HORSEBACK RIDING
- ] OTHER, PLEASE SPECIFY: \_\_\_\_\_

6. Which activity was your primary reason for choosing this area for this particular trip?
- \_\_\_\_\_

7. Which of the following best describes the typical length of your visits into wilderness areas such as this one? (Check one)

- ] USUALLY STAY ONLY A FEW HOURS
- ] USUALLY STAY A FULL DAY
- ] USUALLY STAY ONE OR TWO NIGHTS
- ] USUALLY STAY MORE THAN TWO NIGHTS

8. Previous wilderness use

How many times have you visited  
this wilderness area before?

\_\_\_\_\_ VISITS

How many years ago did you first visit this wilderness area? \_\_\_\_\_ YEARS

How many times per year do you typically visit this wilderness area? \_\_\_\_\_ VISITS

How many other wilderness areas have you visited? \_\_\_\_\_ AREAS

How many years ago did you first visit a wilderness area? \_\_\_\_\_ YEARS

How many times a year do you typically go into wilderness? \_\_\_\_\_ VISITS

-----  
 YOUR FEELINGS ABOUT WILDERNESS  
 -----

9. We would like to have an understanding of your general feelings about wilderness. Please indicate the extent to which each statement below describes your feelings.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I get greater satisfaction out of visiting wilderness than other recreation places	( )	( )	( )	( )	( )
I find that a lot of my life is organized around wilderness use	( )	( )	( )	( )	( )
One of the major reasons I now live where I do is that it has opportunities for visiting wilderness	( )	( )	( )	( )	( )
I feel like wilderness is a part of me	( )	( )	( )	( )	( )
I seldom take time to visit wilderness areas	( )	( )	( )	( )	( )



## FACTORS INFLUENCING WILDERNESS EXPERIENCE QUALITY

10. We are interested in finding out what types of things influence the quality of your wilderness experience in Cohutta. For the items listed below, tell us how much each matters to you.

	N O T  A T  A L L	S L I G H T L Y	S O M E W H A T	M O D E R A T E L Y	V E R Y  M U C H	E X T R E M E L Y
I care about:						
The number of <u>groups</u> of hikers I see along the trail	( )	( )	( )	( )	( )	( )
The total <u>number of people</u> I see hiking along the trail	( )	( )	( )	( )	( )	( )
The number of <u>large groups</u> (more than 6 people) that I see along the trail	( )	( )	( )	( )	( )	( )
The number of <u>hiker groups</u> that camp within sight or sound of my campsite	( )	( )	( )	( )	( )	( )
The number of <u>hiker groups</u> that walk past my campsite	( )	( )	( )	( )	( )	( )
The number of <u>horse groups</u> I see along the trails	( )	( )	( )	( )	( )	( )
The number of <u>horse groups</u> that camp within sight or sound of my campsite	( )	( )	( )	( )	( )	( )
The number of <u>horse groups</u> that travel past my campsite while I am there	( )	( )	( )	( )	( )	( )
The amount of noise associated with human activities within the wilderness	( )	( )	( )	( )	( )	( )
The amount of manmade noise originating from outside the wilderness	( )	( )	( )	( )	( )	( )
The percent of time other people are in sight while I'm along the trail	( )	( )	( )	( )	( )	( )
The amount of vegetation loss and bare ground around a campsite	( )	( )	( )	( )	( )	( )

	N O T  A T  A L L	S L I G H T L Y	S O M E W H A T	M O D E R A T E L Y	V E R Y  M U C H	E X T R E M E L Y
The number of trees around a campsite that have been damaged by people	( )	( )	( )	( )	( )	( )
The number of campfire rings that people have made	( )	( )	( )	( )	( )	( )
The amount of litter I see	( )	( )	( )	( )	( )	( )
The amount of time I spend travelling on old roads in the wilderness	( )	( )	( )	( )	( )	( )
The visibility of lights originating from outside the wilderness	( )	( )	( )	( )	( )	( )
The number of wild animals I see	( )	( )	( )	( )	( )	( )
The number of miles of gravel road I travel to get to the wilderness	( )	( )	( )	( )	( )	( )

11. Are there any other items that influence the quality of your wilderness experience in the Cohutta wilderness?

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PREFERENCE FOR WILDERNESS CONDITIONS IN COHUTTA

12. We would now like to explore your specific evaluations of wilderness conditions in the Cohutta wilderness. Different people desire different things from wilderness and managers need to know what things you find acceptable and what things you find unacceptable. Managers can use this information to enhance your wilderness experience.

For each characteristic below, we want you to make three types of judgments:

- a. Is there a range of values along the scale provided that is completely unacceptable? If so, please indicate the unacceptable range by drawing a line above it, as shown in the example.
- b. Is there a range of values that would also be acceptable? If so, please indicate with a line below the scale, as shown in the example.
- c. Is there a point on this scale that is most preferred? If so, please indicate by placing an x on that point, as shown in the example.

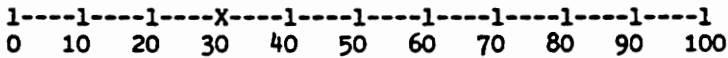
PLEASE REMEMBER: NOT DRAWING A LINE OR PLACING AN X IS OKAY, BUT THIS MEANS YOU ARE EITHER UNCERTAIN OR DON'T CARE ABOUT THAT ITEM.

////////////////////////////////////

EXAMPLE

The percent of time I spend travelling on old roads in the wilderness.

UNACCEPTABLE

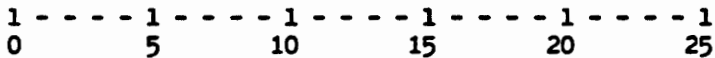


ACCEPTABLE

(In this example this person prefers to travel on old roads 30% of the time, but 0 to 40% is acceptable; travelling on old roads more than 60% of the time is unacceptable; this person is uncertain about the acceptability between 40 and 60% and therefore the acceptable and unacceptable lines do not meet.)

////////////////////////////////////

A. The number of groups of hikers I see along the trails in a day.



B. The number of hiker groups that camp within sight or sound of my campsite.





-----  
 YOUR FEELINGS ABOUT THE COHUTTA WILDERNESS AREA  
 -----

13. Please indicate the extent to which each statement below describes your general feelings about the Cohutta wilderness.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
This place means a lot to me	( )	( )	( )	( )	( )
I wouldn't substitute any other area for doing the type of things I did here	( )	( )	( )	( )	( )
I get more satisfaction out of visiting this place than from visiting any other recreation place	( )	( )	( )	( )	( )
I enjoy doing the type of things I did here in this area more than in any other area	( )	( )	( )	( )	( )
I find that a lot of my life is organized around this place	( )	( )	( )	( )	( )
This area is the best place for what I like to do	( )	( )	( )	( )	( )
One of the major reasons I now live where I do is that this place is nearby	( )	( )	( )	( )	( )
I feel no commitment to this place	( )	( )	( )	( )	( )
I feel like this place is a part of me	( )	( )	( )	( )	( )
The time I spent here could have just as easily been spent somewhere else	( )	( )	( )	( )	( )
No other place can compare to this area	( )	( )	( )	( )	( )
I am very attached to this place	( )	( )	( )	( )	( )
I identify strongly with this place	( )	( )	( )	( )	( )
This place makes me feel like no other place can	( )	( )	( )	( )	( )

14. Please indicate the extent to which each statement below describes your recent visit to the Cohutta wilderness.

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
I tried to learn as much as possible about the lay of the land	( )	( )	( )	( )	( )
The solitude of this place helped to bring my companion(s) and me closer together	( )	( )	( )	( )	( )
I spent most of my time improving my skills in outdoor activities that are important to me	( )	( )	( )	( )	( )
Spending time with my companions was the focal point of the trip for me	( )	( )	( )	( )	( )
I felt good about how much I was able to use my outdoor skills	( )	( )	( )	( )	( )
I often stopped along the trail to examine the environment in detail	( )	( )	( )	( )	( )
I focused a lot of my attention on outdoor activities and skills	( )	( )	( )	( )	( )
Exploring the place was the focal point of the trip for me	( )	( )	( )	( )	( )
I spent most of my time doing and thinking about outdoor recreation activities that are important to me	( )	( )	( )	( )	( )
I spent a lot of time with my companions	( )	( )	( )	( )	( )
I spent a lot of time studying the features of the environment	( )	( )	( )	( )	( )
I really enjoyed sharing the experience with my companions	( )	( )	( )	( )	( )
I spent a lot of time just exploring the area	( )	( )	( )	( )	( )
I thought a lot about my relationships with my companions on the trip	( )	( )	( )	( )	( )
I thought a lot about how I could apply my outdoor skills	( )	( )	( )	( )	( )

15. Which statement below most closely reflects the value you assign to the Cohutta Wilderness?

Do you value the Cohutta because: (CHOOSE A or B)

- A.  You are interested primarily in recreating in a forest environment, and being in the Appalachian mountain landscapes is not particularly important to you. GO TO 16.
- B.  You are interested primarily in recreating in the Appalachian mountain landscapes, as opposed to just any forested environment. GO TO 17.

16. If you checked 15 A, do you value the Cohutta because: (CHOOSE A or B)

- A.  You are interested primarily in recreating in a forested environment, and being in wild, remote wilderness is not particularly important to you.
- B.  You are interested primarily in recreating in a forested environment, and being in wild, remote wilderness is important to you.

GO TO 18

17. If you checked 15 B, do you value the Cohutta because: (CHOOSE A or B)

- A.  You are interested primarily in recreating in Appalachian mountain landscapes, and being in wild, remote wilderness is not particularly important to you.
- B.  You are interested primarily in recreating in Appalachian mountain landscapes, and being in wild, remote wilderness is important to you.

18. Which of the following was the most important reason for making this wilderness visit? (Check only one category)

- I CAME HERE BECAUSE I ENJOY THIS PLACE ITSELF
- I CAME HERE BECAUSE THIS IS A GOOD PLACE TO DO THE OUTDOOR ACTIVITIES I ENJOY
- I CAME HERE BECAUSE I WANTED TO SPEND MORE TIME WITH MY COMPANIONS

19. Please tell us how you felt about the trail markings (blazings) in the Cohutta (Check one):

- SAW NO BLAZES, AND NONE ARE NEEDED
- SAW NO BLAZES, AND MORE ARE NEEDED
- SAW VERY FEW BLAZES, AND THE NUMBER IS ABOUT RIGHT
- SAW VERY FEW BLAZES, AND MORE ARE NEEDED
- SAW VERY FEW BLAZES, AND THERE WERE TOO MANY
- SAW MANY BLAZES, AND THE NUMBER WAS ABOUT RIGHT
- SAW MANY BLAZES, AND MORE ARE NEEDED
- SAW MANY BLAZES, AND THERE WERE TOO MANY

-----  
 SOME INFORMATION ABOUT YOU  
 -----

20. Do you belong to any organizations that are primarily concerned with conservation or outdoor recreation? If yes, please list them.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

21. What is the highest level of education you have attained? (CIRCLE ONE NUMBER)

ELEMENTARY SCHOOL	HIGH SCHOOL	COLLEGE
LESS THAN 8 8	9 10 11 12	13 14 15 16 MORE THAN 16

22. In which of the following kinds of places did you spend the most time while growing up (to age 18)? (Please mark only one answer)

- ON A FARM OR RANCH  
 IN THE COUNTRY BUT NOT ON A FARM OR RANCH  
 IN A SMALL TOWN (2,500 OR FEWER PEOPLE)  
 IN A TOWN OR SMALL CITY (BETWEEN 2,500 AND 25,000 PEOPLE)  
 IN A CITY (BETWEEN 25,000 AND 100,000 PEOPLE)  
 IN A LARGE CITY (100,000 TO ONE MILLION PEOPLE)  
 IN A MAJOR CITY OR METROPOLITAN AREA (OVER ONE MILLION PEOPLE)

23. Are you currently married?

- YES  
 NO

24. Do you have children under 5 years old living with you?

- YES  
 NO

25. Do you have children between 5 and 17 years old living with you?

- YES  
 NO

26. In what type of community do you now live?

- ON A FARM OR RANCH  
 IN THE COUNTRY BUT NOT ON A FARM OR RANCH  
 IN A SMALL TOWN (2,500 OR FEWER PEOPLE)  
 IN A TOWN OR SMALL CITY (BETWEEN 2,500 AND 25,000 PEOPLE)  
 IN A CITY (BETWEEN 25,000 AND 100,000 PEOPLE)  
 IN A LARGE CITY (100,000 TO ONE MILLION PEOPLE)  
 IN A MAJOR CITY OR METROPOLITAN AREA (OVER ONE MILLION PEOPLE)



27. Are you presently:

- EMPLOYED OUTSIDE THE HOME
- UNEMPLOYED
- RETIRED
- FULL-TIME HOMEMAKER
- STUDENT

28. Please describe the usual occupation of the main wage earner in your household. If retired, describe the usual occupation before retirement.

TITLE: \_\_\_\_\_  
 KIND OF WORK: \_\_\_\_\_  
 KIND OF COMPANY OR BUSINESS: \_\_\_\_\_

29. Which of the following categories best describes your annual household income?

- |   |  |
|---|--|
| <input type="checkbox"/> LESS THAN \$5,000    | <input type="checkbox"/> \$25,000 to \$34,999  |
| <input type="checkbox"/> \$5,000 to \$9,999   | <input type="checkbox"/> \$35,000 to \$49,999  |
| <input type="checkbox"/> \$10,000 to \$14,999 | <input type="checkbox"/> \$50,000 to \$74,999  |
| <input type="checkbox"/> \$15,000 to \$19,999 | <input type="checkbox"/> \$75,000 to \$100,000 |
| <input type="checkbox"/> \$20,000 to \$24,999 | <input type="checkbox"/> OVER \$100,000        |

30. If you would like to receive a summary of the results of this survey, PLEASE WRITE YOUR NAME AND ADDRESS ON THE BACK OF THE RETURN ENVELOPE.

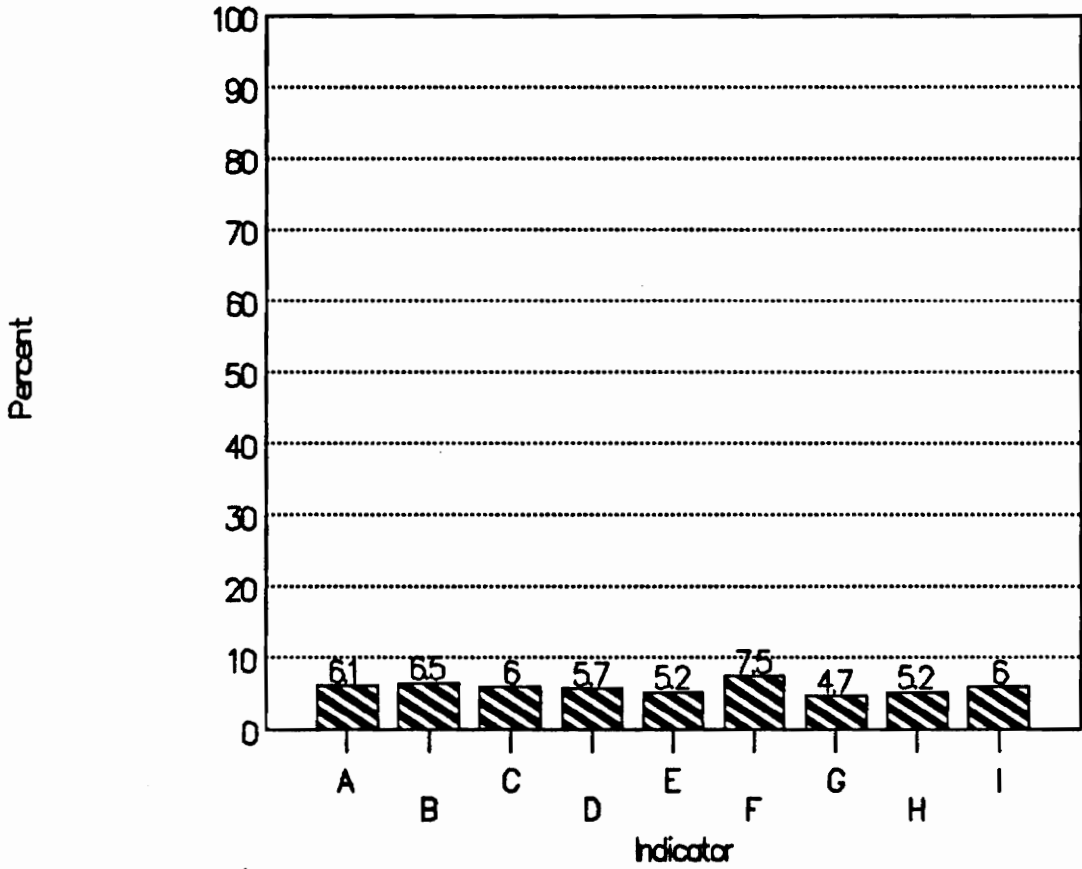
31. PLEASE USE THE REMAINING SPACE TO MAKE ANY FURTHER COMMENTS.

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB#0596-0102), Washington, D.C. 20503.

**Appendix D**  
**(Norm Articulation Analyses Results)**

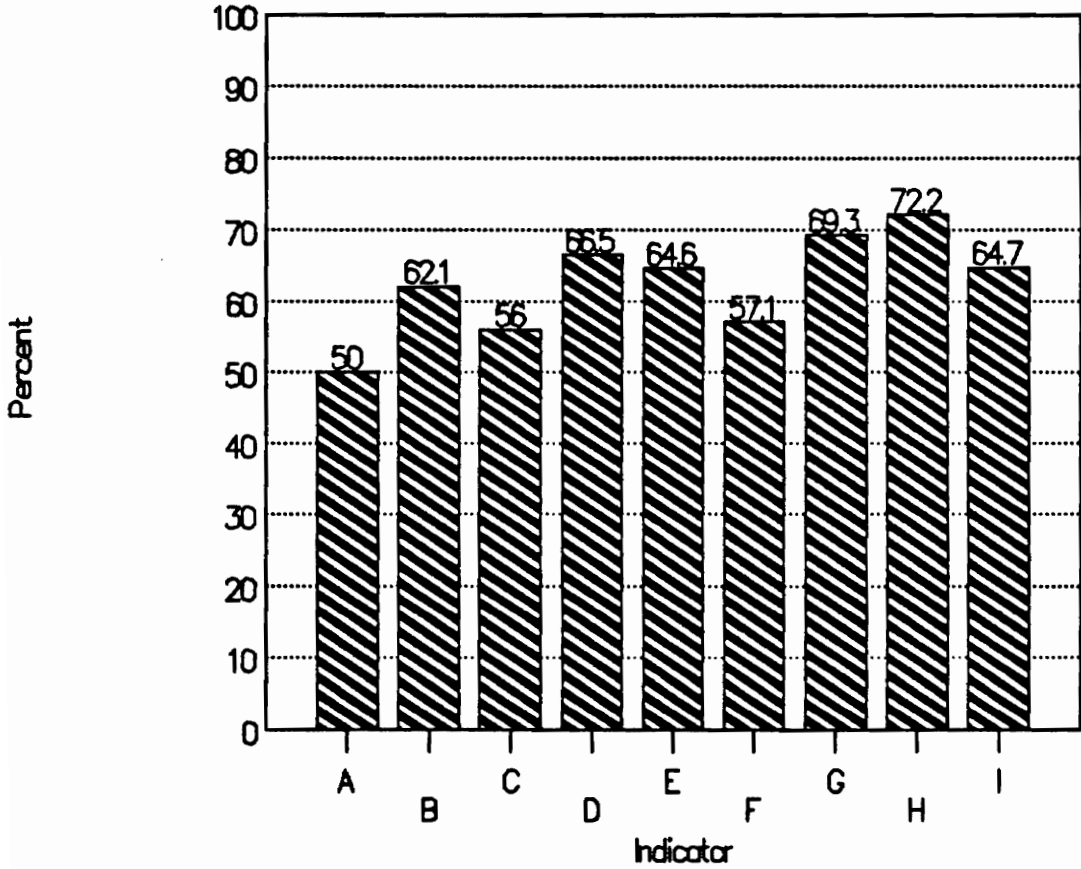
Indicator Key for Figures D.1-D.5.

- A = "The number of horse groups that camp within sight or sound of my campsite".
- B = "The number of hiker groups that camp within sight or sound of my campsite".
- C = "The number of horse groups that travel past my campsite while I am there".
- D = "The number of hiker groups that walk past my campsite".
- E = "The number of large groups (more than 6 people) that I see along the trail".
- F = "The number of horse groups I see along the trails".
- G = "The percent of time other people are in sight while I am along the trail".
- H = "The total number of people I see hiking along the trail".
- I = "The number of groups of hikers I see along the trail".



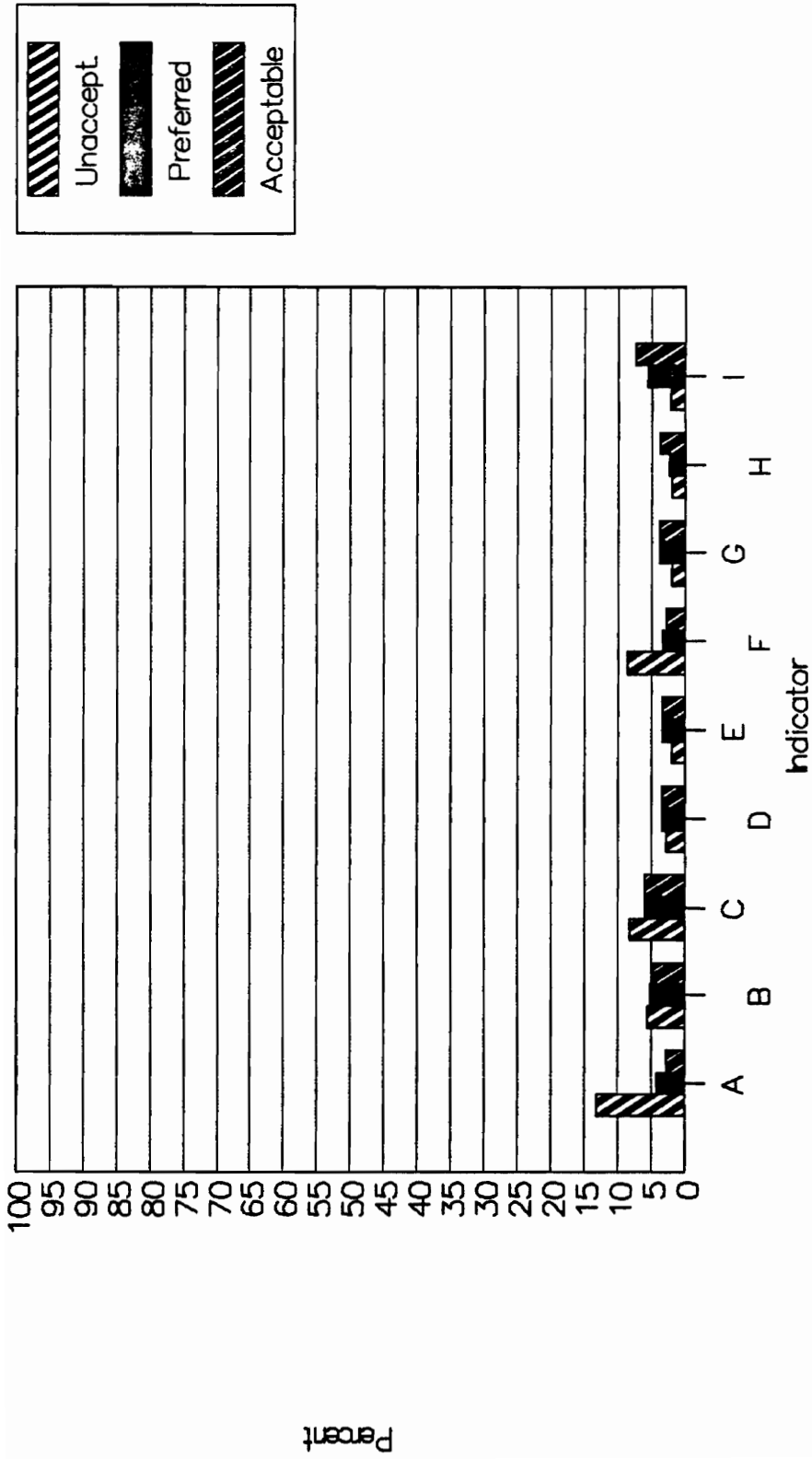
(Letters Correspond to Key Shown on Page 161)

**Figure D.1.** Norm articulation - percent of mailback respondents with no personal norm.



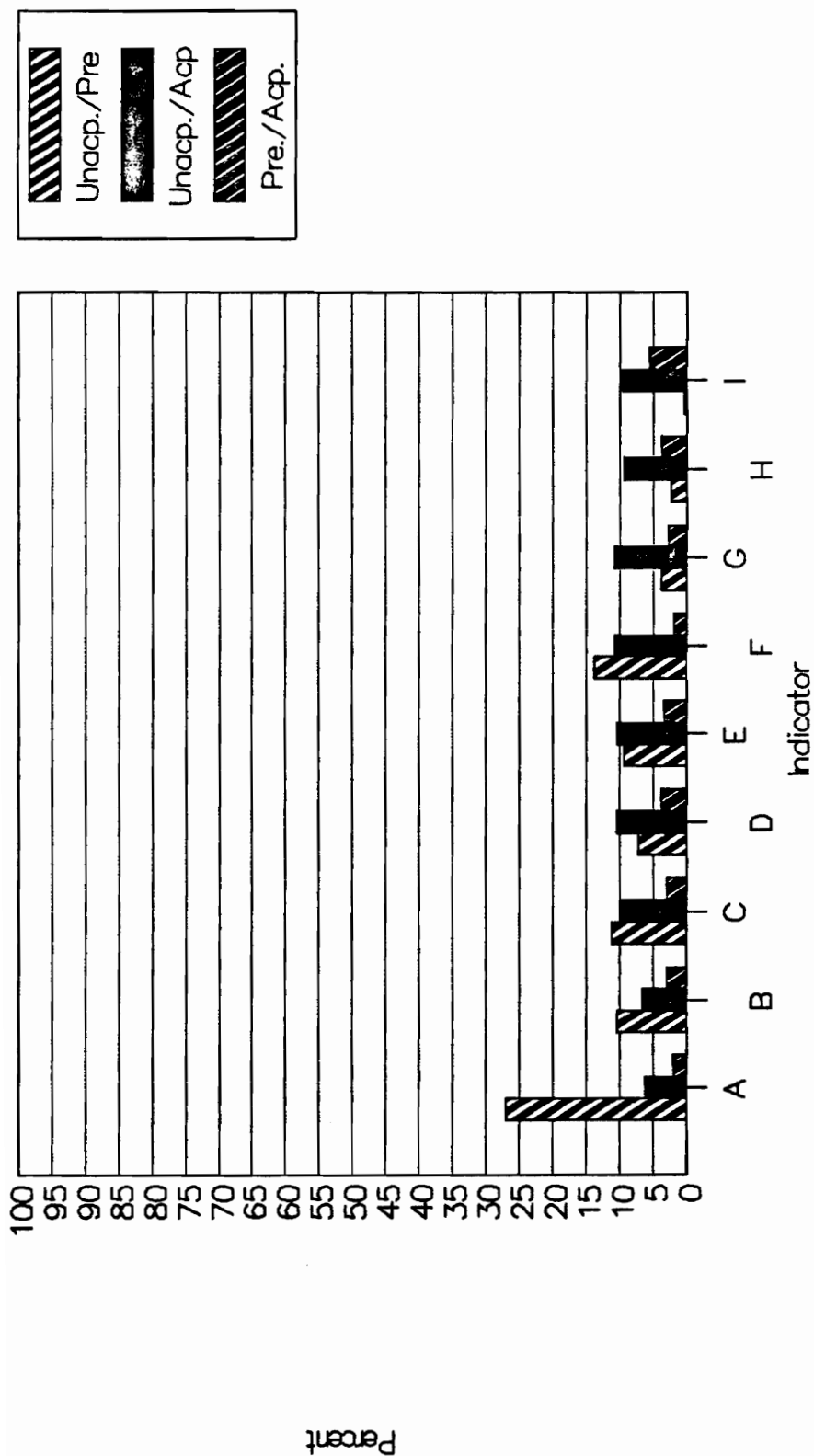
(Letters Correspond to Key Shown on Page 161)

**Figure D.2.** Norm articulation - percent of mailback respondents with all three norm types.



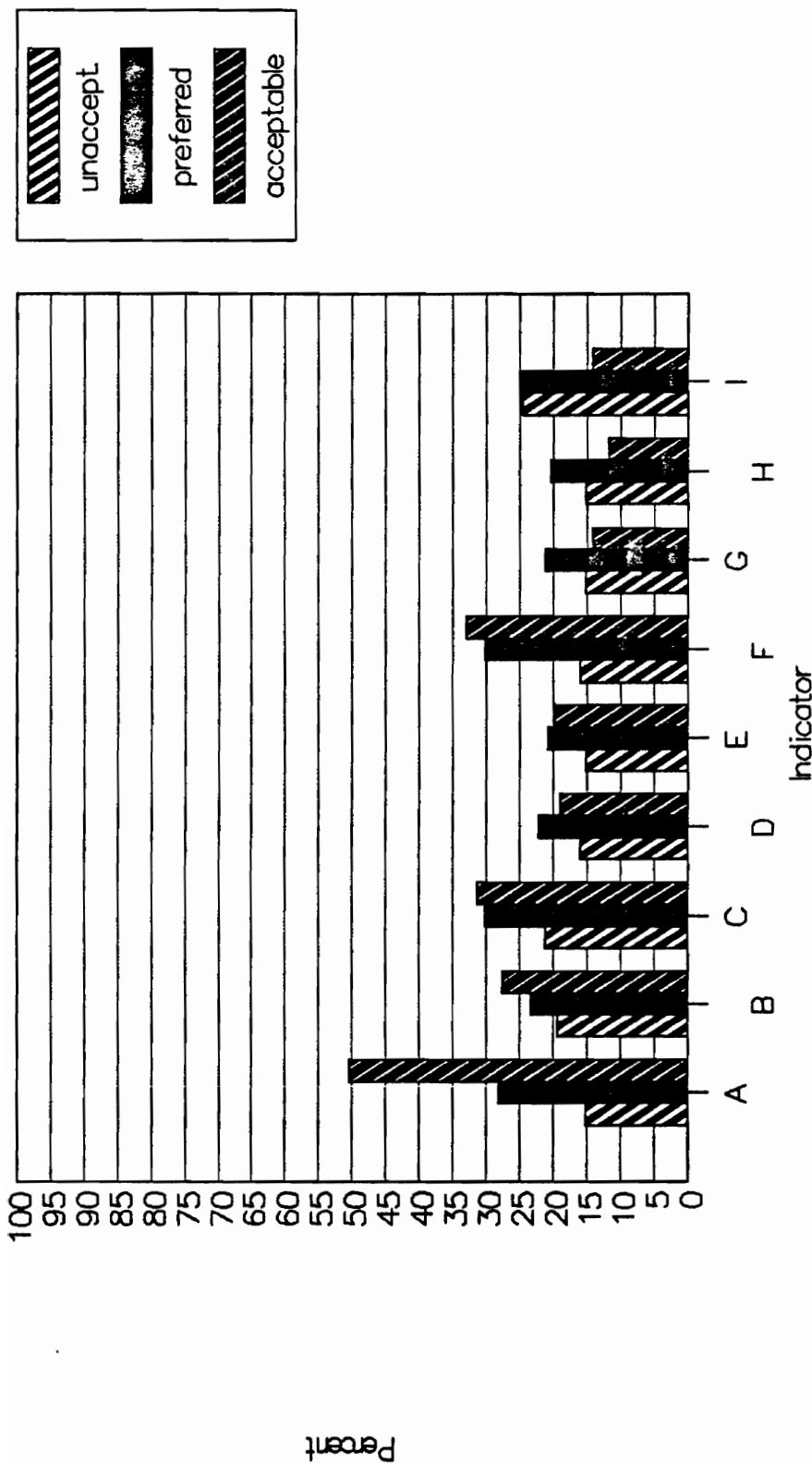
(Letters Correspond to Key Shown on Page 161)

Figure D.3. Norm articulation - Percent of respondents providing only one personal norm type.



**Figure D.4.** Norm articulation - percent of respondents providing only two personal norm types.

(Letters Correspond to Key Shown on Page 161)



(Letters Correspond to Key Shown on Page 161)

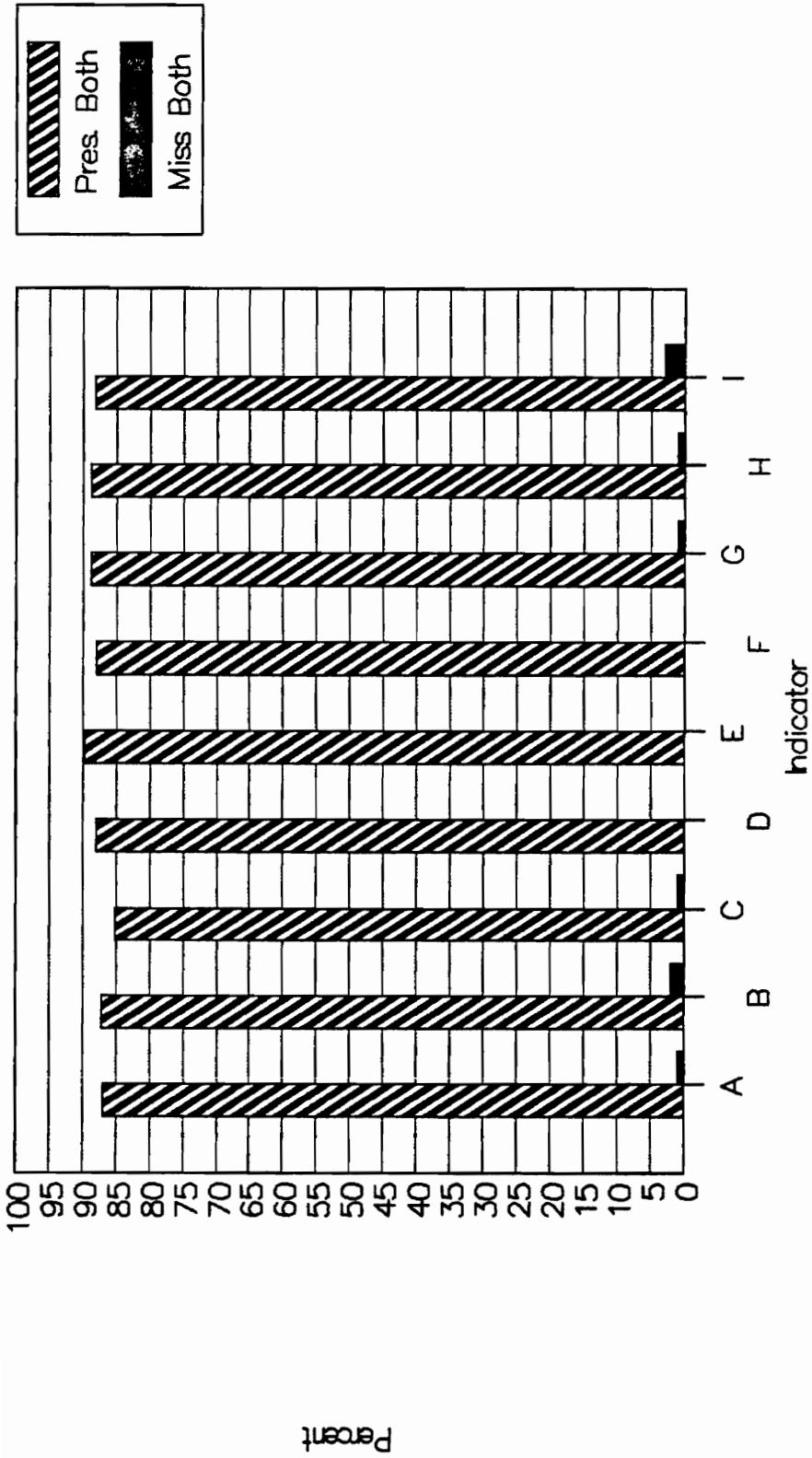
Figure D.5. Norm articulation - percent of respondents with missing norms.



**Appendix E**  
**(Norm Stability Analyses Results)**

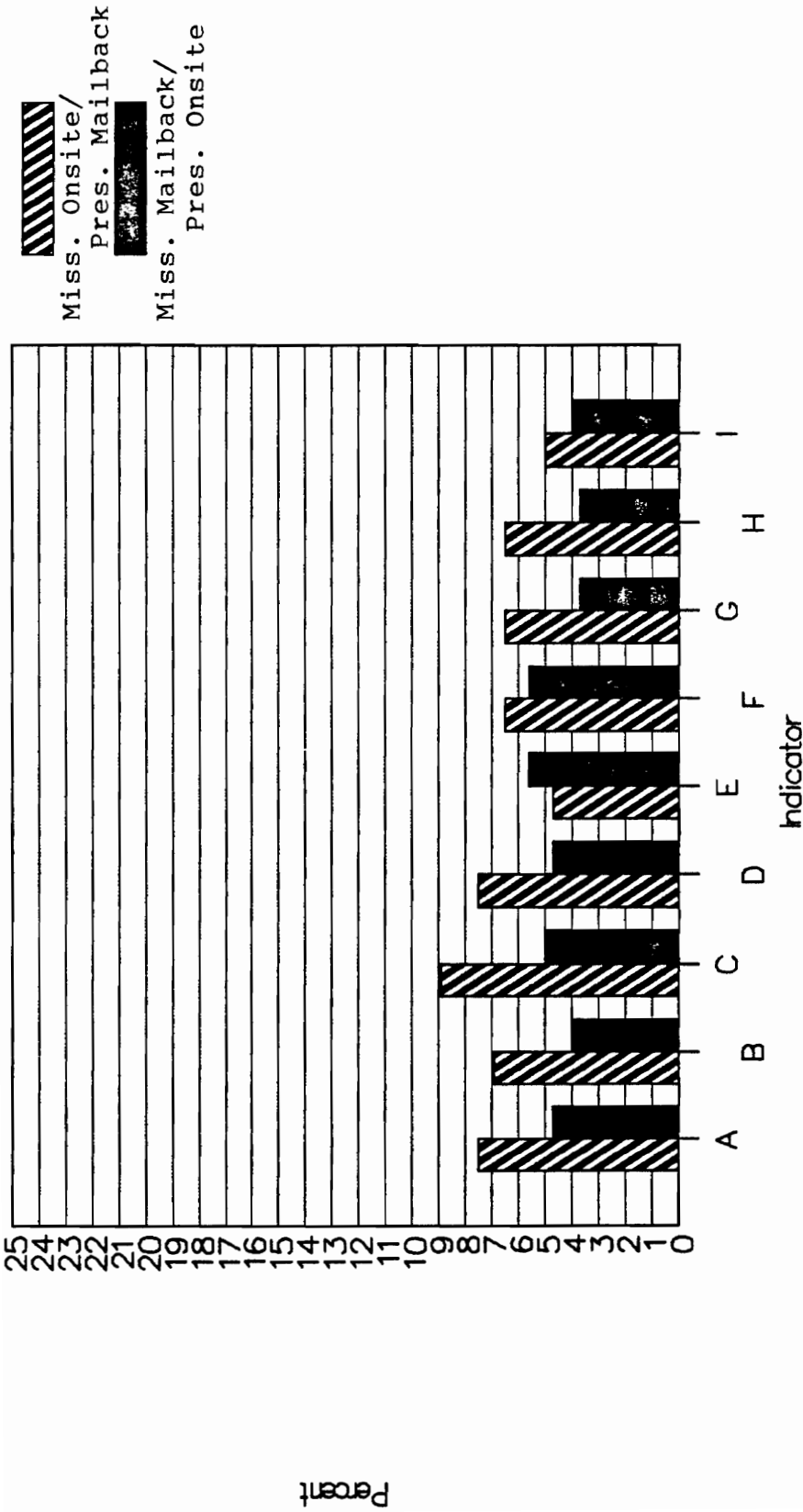
Indicator Key for Figures E.1.-E.6.

- A = "The number of horse groups that camp within sight or sound of my campsite".
- B = "The number of hiker groups that camp within sight or sound of my campsite".
- C = "The number of horse groups that travel past my campsite while I am there".
- D = "The number of hiker groups that walk past my campsite".
- E = "The number of large groups (more than 6 people) that I see along the trail".
- F = "The number of horse groups I see along the trails".
- G = "The percent of time other people are in sight while I am along the trail".
- H = "The total number of people I see hiking along the trail".
- I = "The number of groups of hikers I see along the trail".



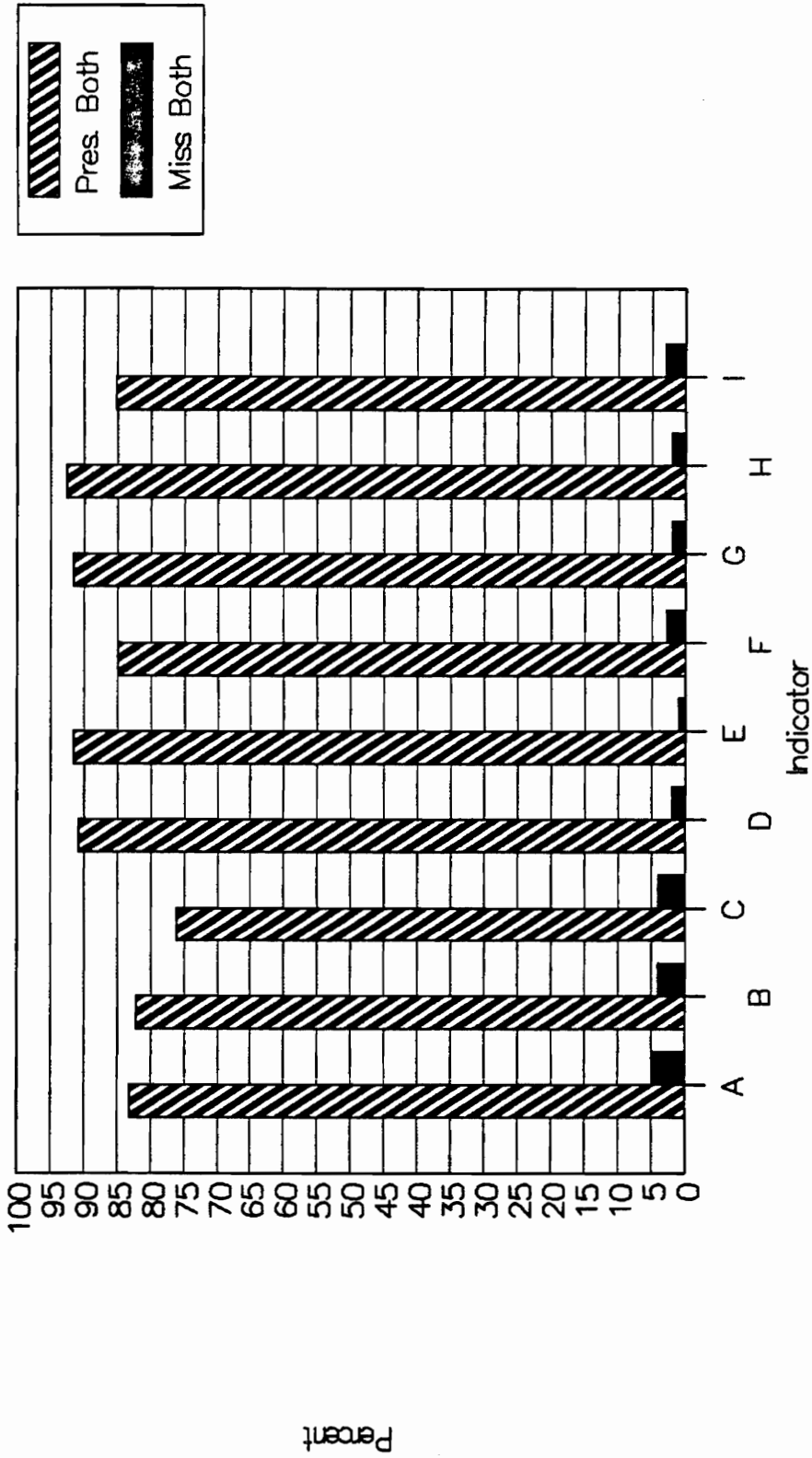
(Letters Correspond to Key Shown on Page 168)

**Figure E.1.** Percentage of respondents giving unacceptable norms on both on-site and mailback forms.



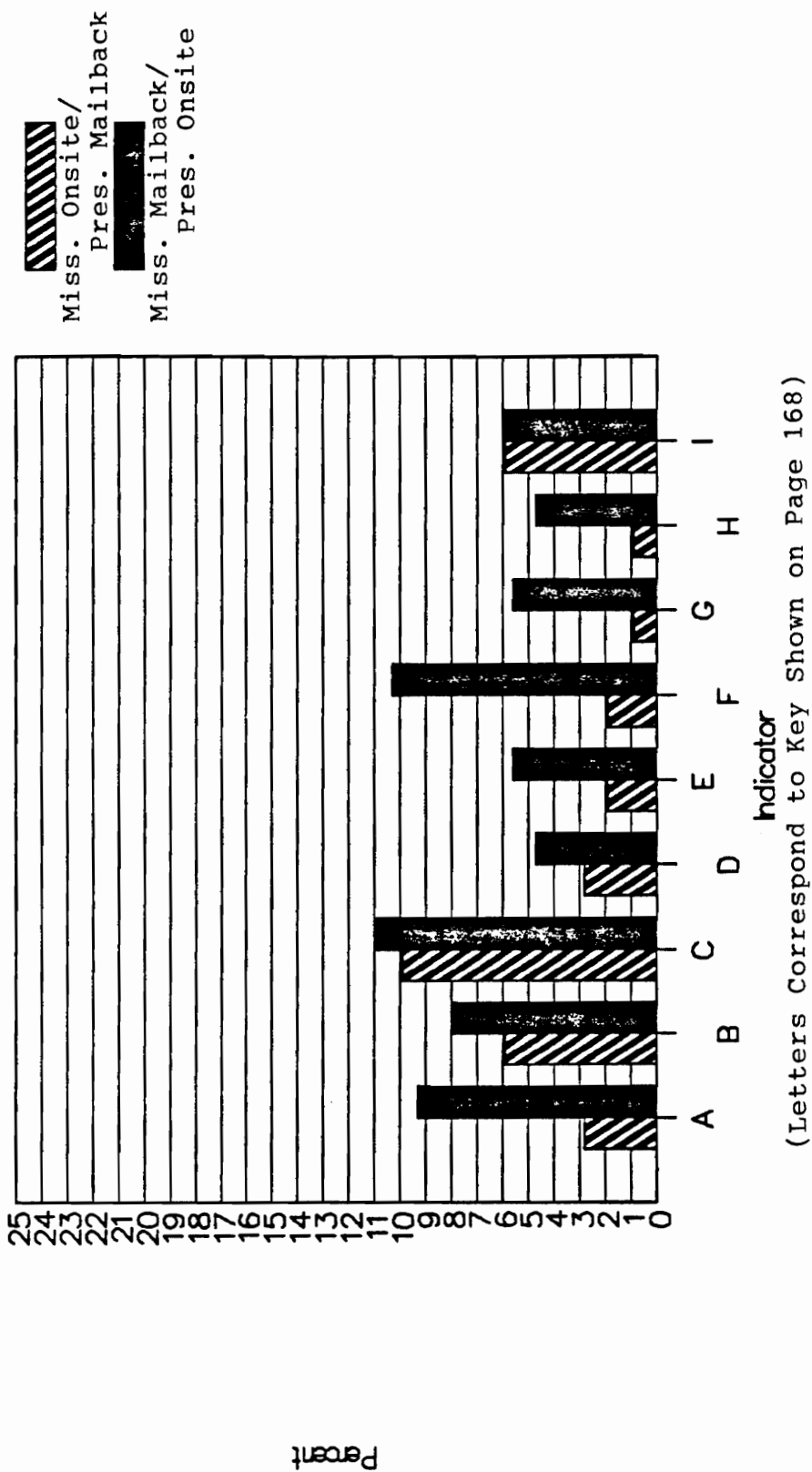
(Letters Correspond to Key Shown on Page 168)

**Figure E.2.** Comparison of respondents' unacceptable norms present on one form, but not the other.

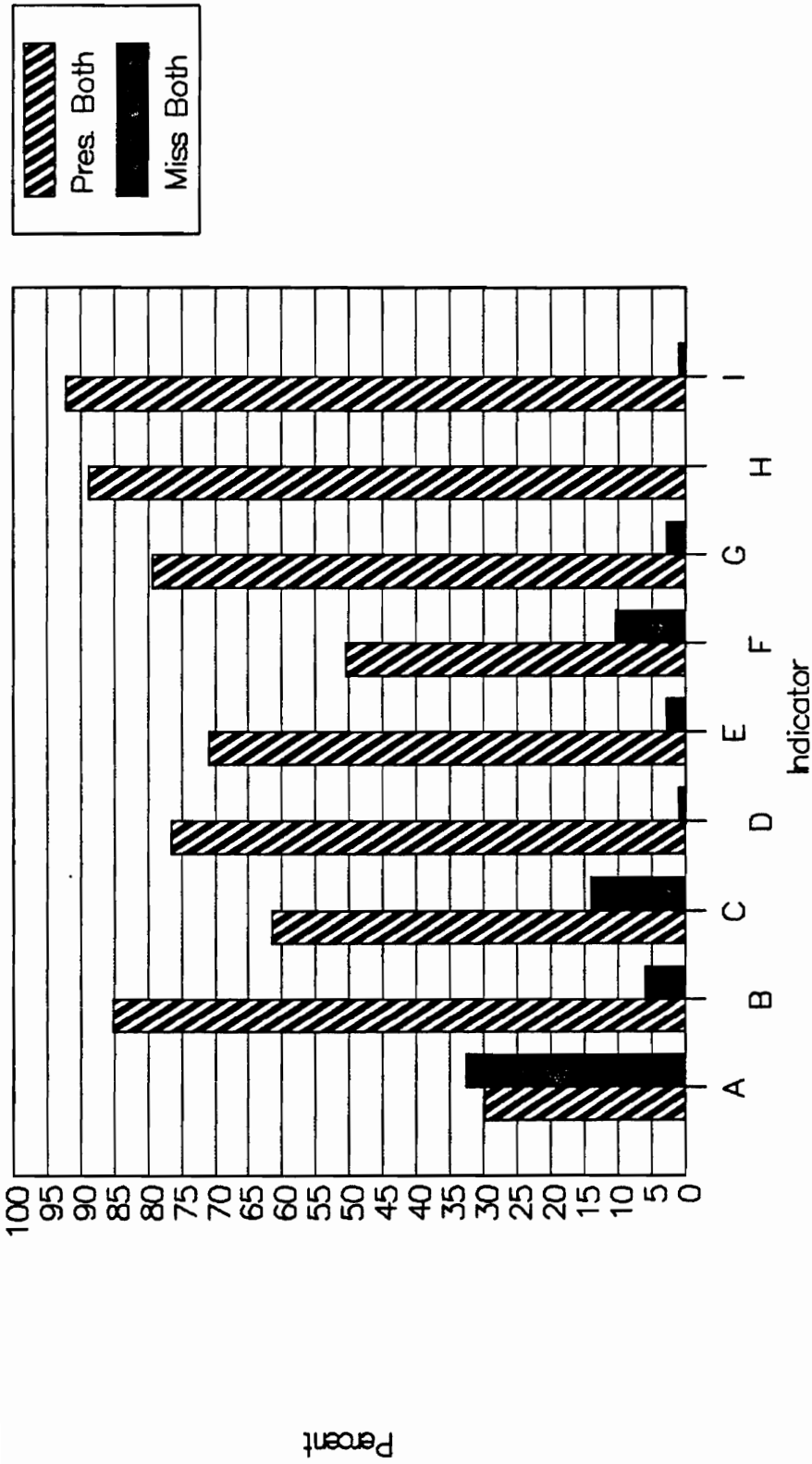


(Letters Correspond to Key Shown on Page 168)

Figure E.3. Percentage of respondents giving preferred norms on both on-site and mailback forms.

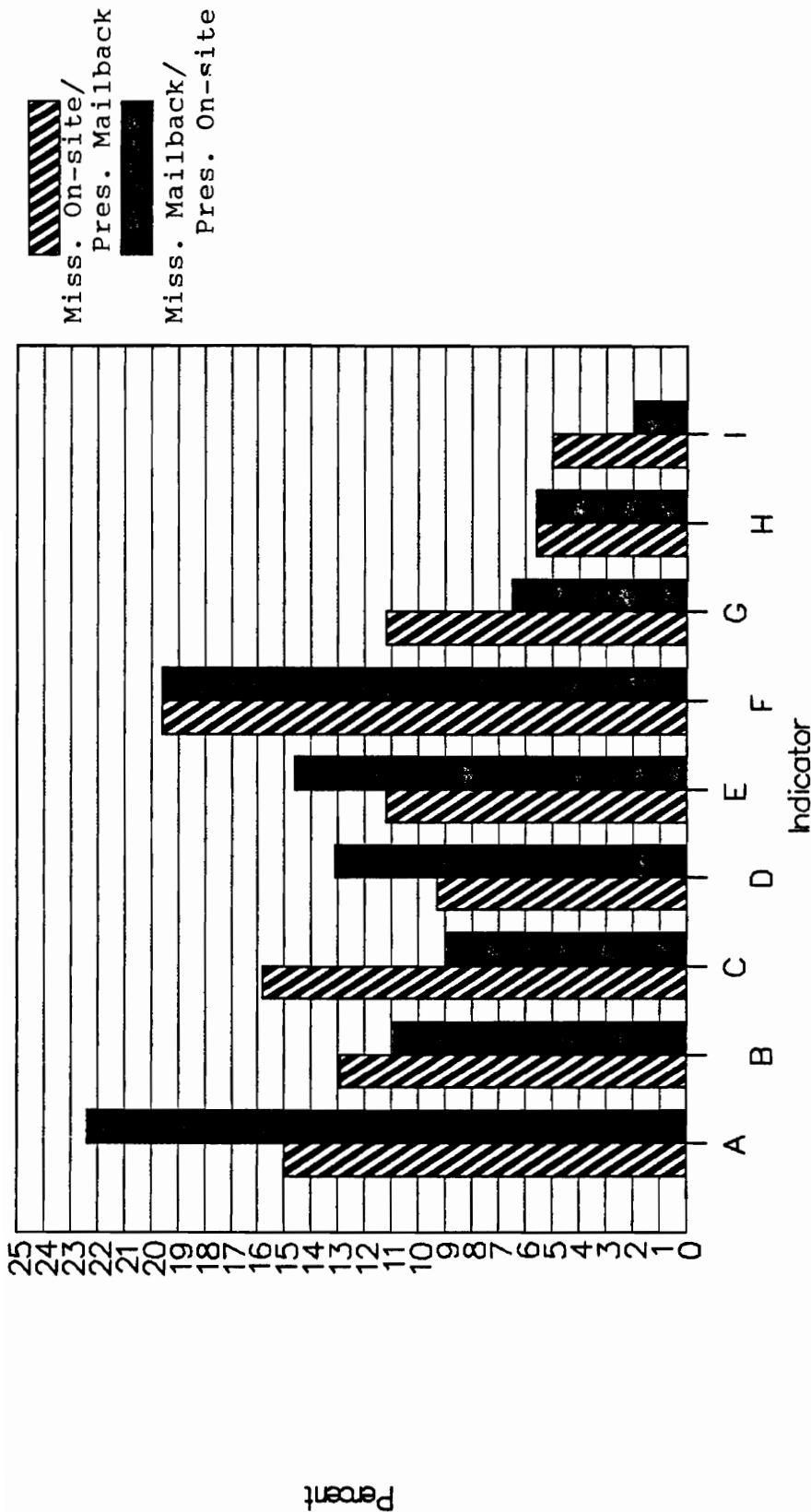


**Figure E.4.** Comparison of respondents' preferred norms present on one form, but not the other.



(Letters Correspond to Key Shown on Page 168)

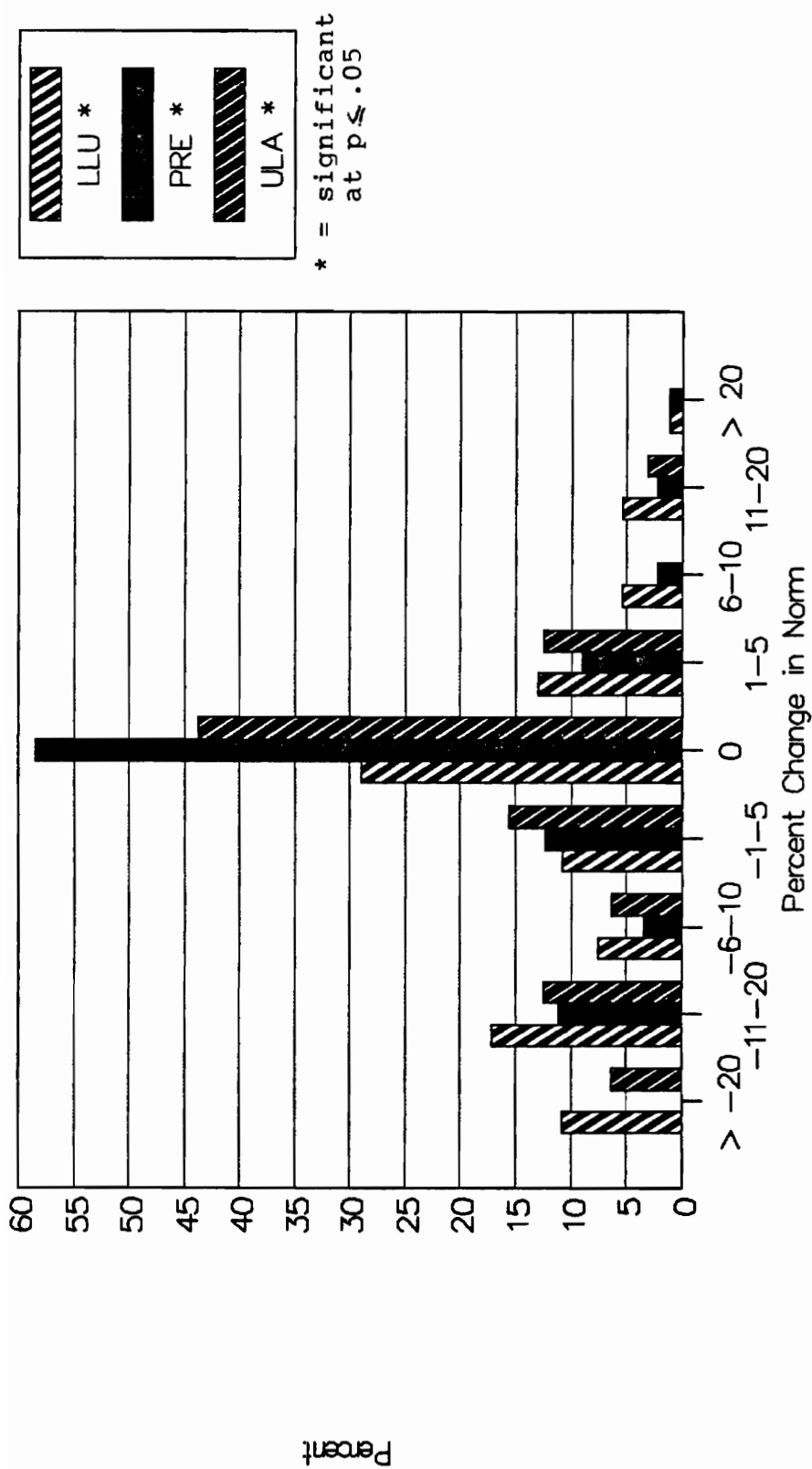
**Figure E.5.** Percentage of respondents giving acceptable norms on both on-site and mailback forms.



(Letters Correspond to Key Shown on Page 168)

**Figure E.6.** Comparison of respondents' acceptable norms present on one form, but not the other.





Percent

\* = significant at  $p \leq .05$

Figure E.7. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of horse groups that camp within sight or sound of my campsite".

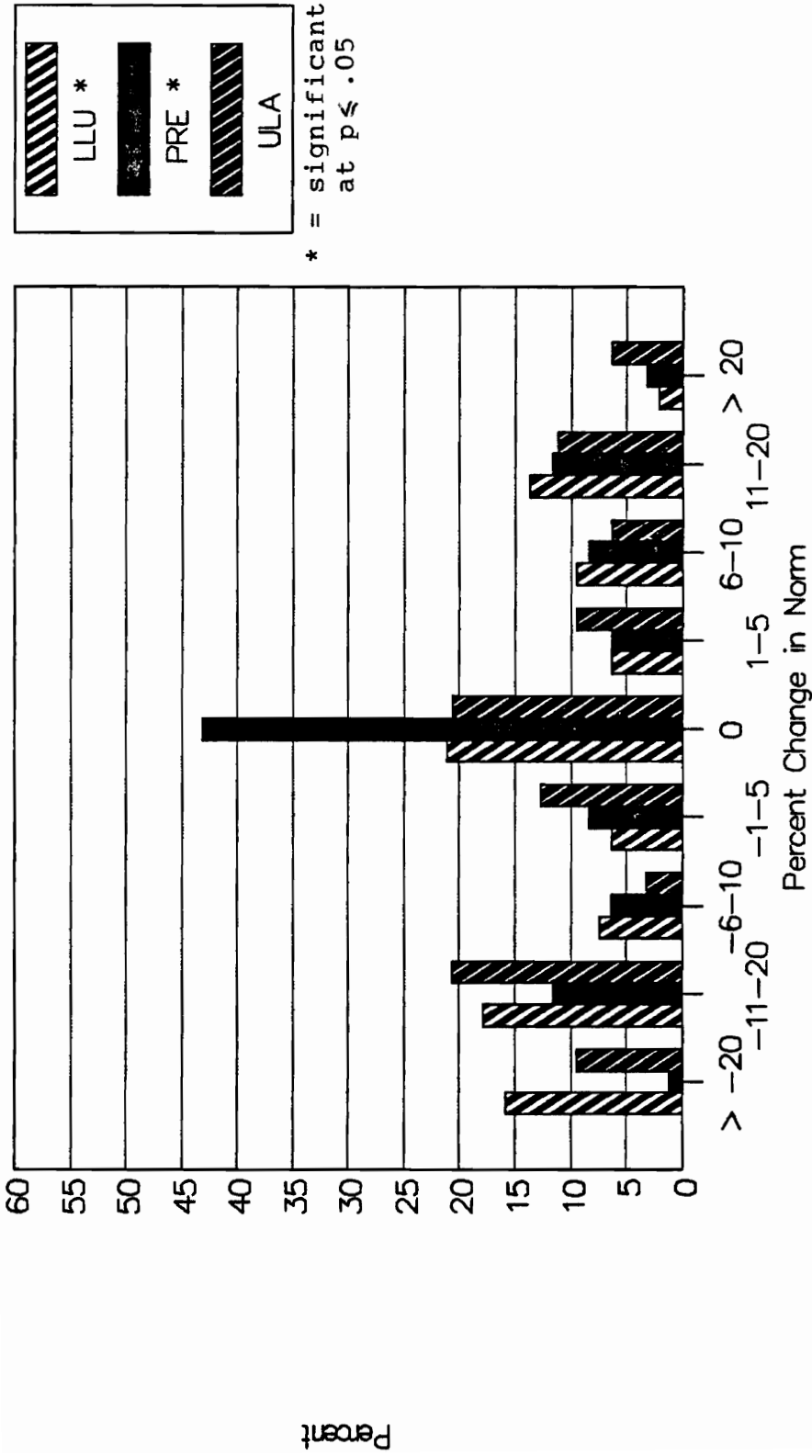
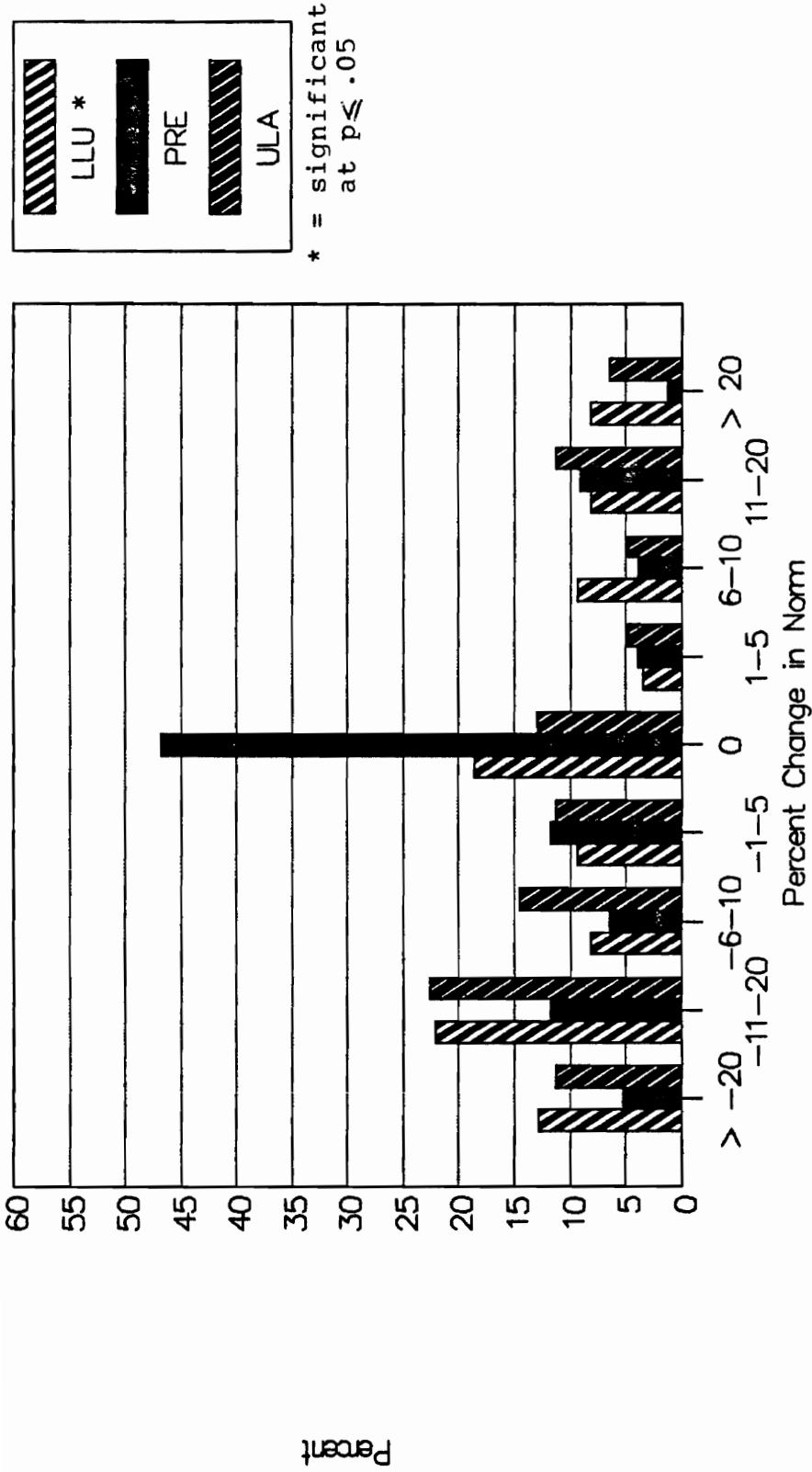


Figure E.8. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of hiker groups that camp within sight or sound of my campsite".



**Figure E.9.** Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of horse groups that travel past my campsite while I am there".

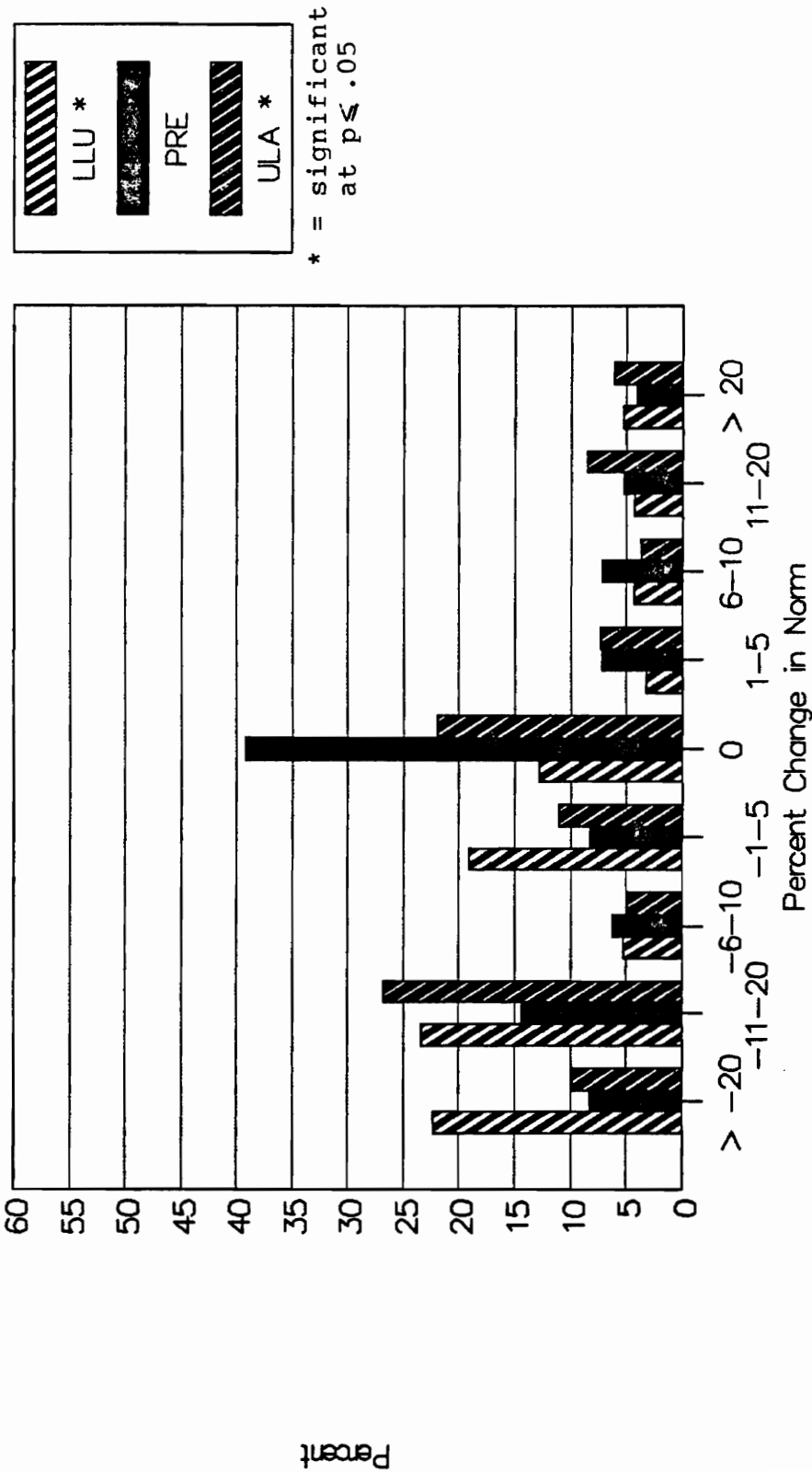


Figure E.10. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of hiker groups that walk past my campsite".

Percent

\* = significant at  $p \leq .05$

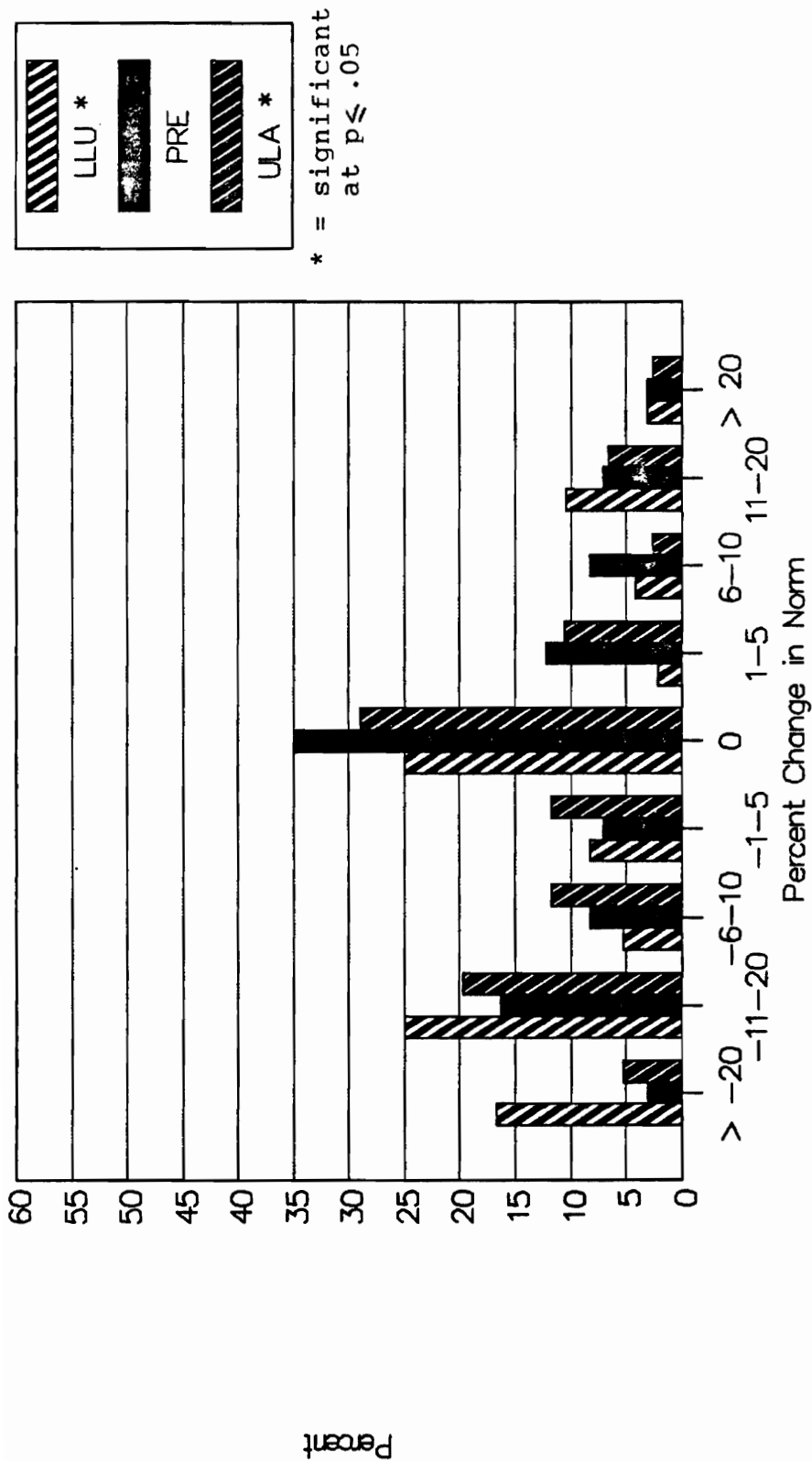


Figure E.11. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of large groups (more than 6 people) that I see along the trail".

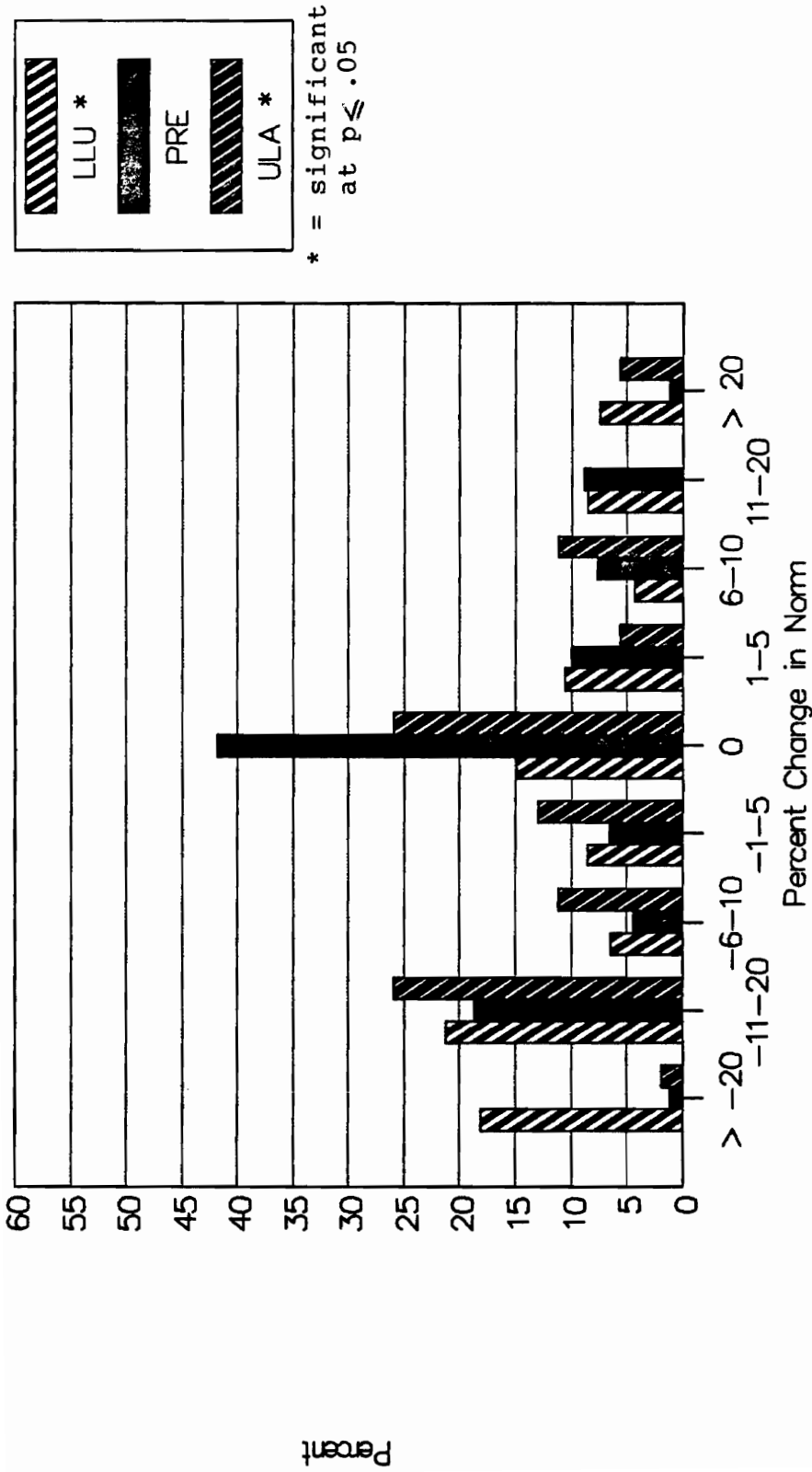


Figure E.12. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of horse groups I see along the trails".

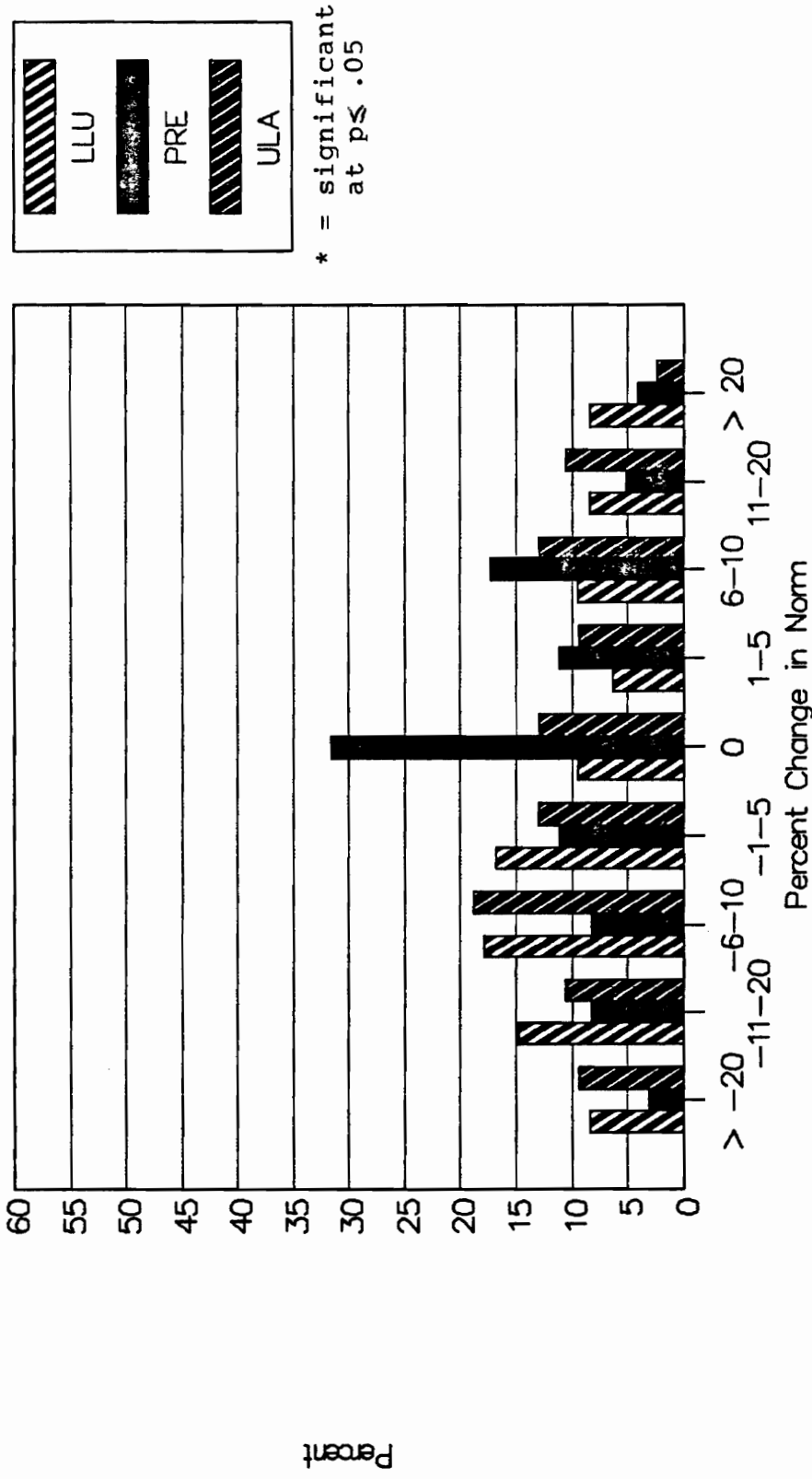
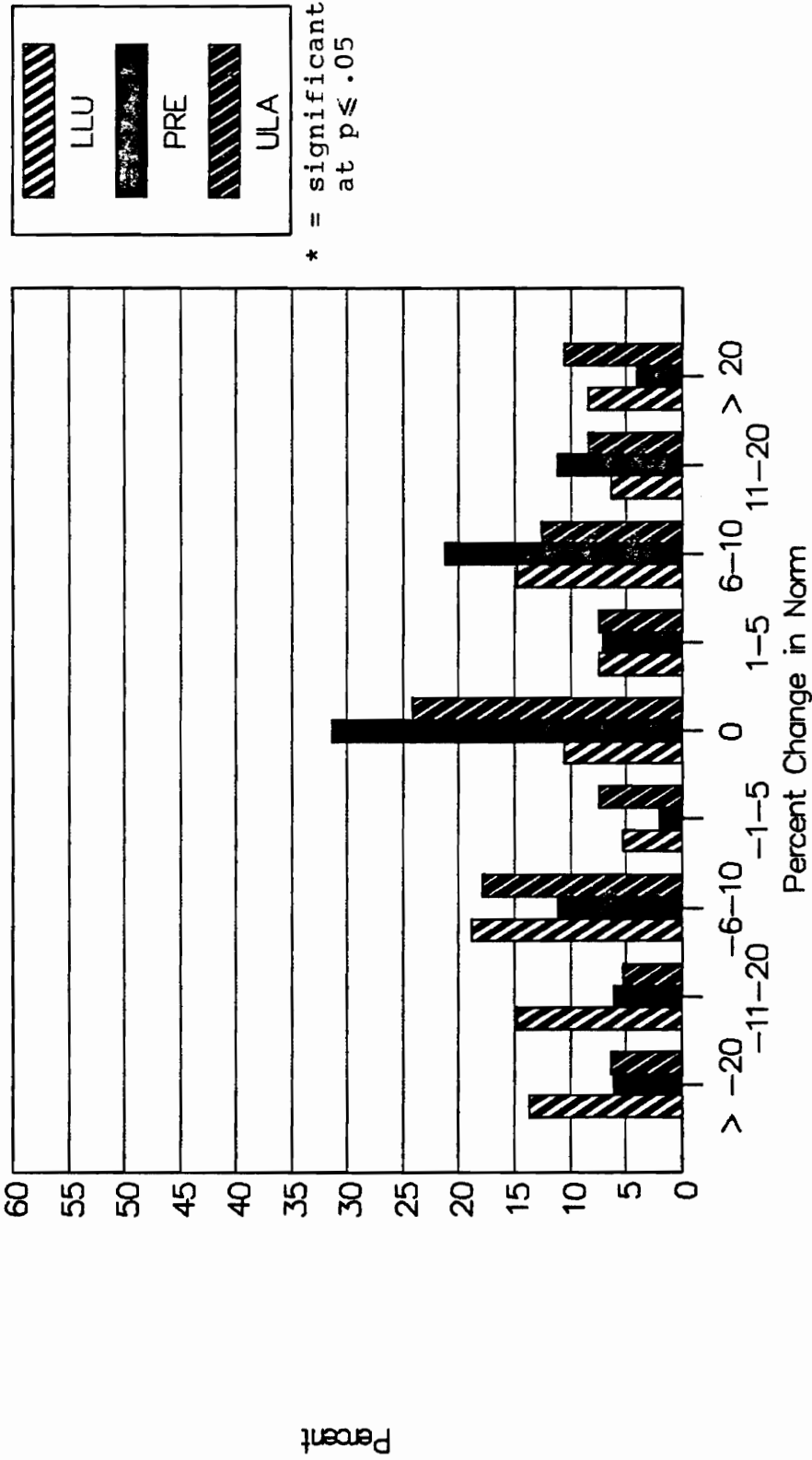
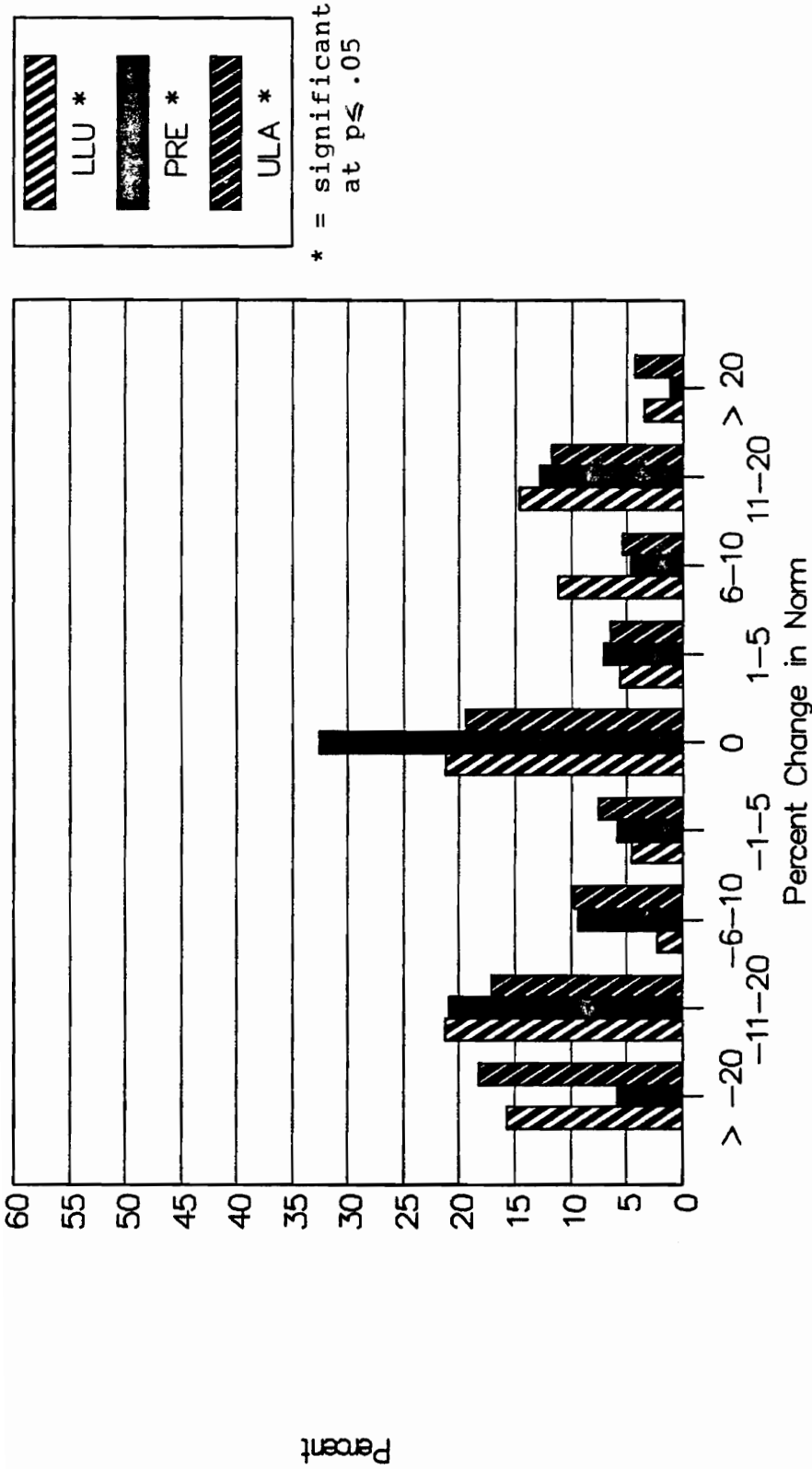


Figure E.13. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The percent of time other people are in sight while I am along the trail".



**Figure E.14.** Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The total number of people I see hiking along the trail".





Percent

\* = significant at  $p \leq .05$

Figure E.15. Percent of respondents showing norm change from on-site to mailback questionnaire for the indicator, "The number of groups of hikers I see along the trail".

**Appendix F**

**(Results From Personal Norm and Norm Crystallization Analyses for Subgroups)**

Table F.1. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of horse groups that camp within sight or sound of my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	180	3.75	4.64	1.24	2	0 - 5	3.35
Time of Visit							
Weekday	26	3.73	5.03	1.35	1	0 - 6	3.65
Weekend	154	3.75	4.59	1.22	2	0- 5.25	3.36
Previous Cohutta Visits							
0	50	4.64	4.85	1.05	3	0 - 9	4.00
1 - 4	67	3.01	4.24	1.41	2	0 - 5	2.69
5 or More	63	3.83	4.81	1.26	1	0 - 6	3.46
Other Wilderness Visits							
0 - 1	58	3.22	4.54	1.41	1	0 - 5	3.09
2 - 4	80	3.56	4.25	1.19	2	0 - 5	3.06
5 or More	42	4.83	5.38	1.11	2.5	0.75-9	4.17
Length of Stay							
Day Use	70	4.50	4.74	1.05	2.5	.75-8.25	3.84
1 - 2 Nights	86	2.88	3.85	1.33	1	0-4.25	2.63
3 or More Nights <sup>a, b</sup>	24	4.67	6.32	1.35	1	0- 7.5	4.33
Wilderness Involvement							
Low	104	4.13	5.11	1.24	2	0-5.75	3.61
High	76	3.24	3.88	1.20	1	0 - 5	2.87
Place Attachment							
Low	86	4.29	5.07	1.18	2	0 - 7	3.69
High	94	3.26	4.17	1.28	1	0 - 5	2.96
Mode of Experience							
Setting	65	3.55	4.66	1.31	2	0 - 5	3.15
Activity	87	4.06	4.90	1.21	1	0 - 9	3.66
Social	24	3.42	3.81	1.12	3	0 - 5	2.75

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.2. Norms and crystallization measures for the preferred condition of the social indicator "The number of horse groups that camp within sight or sound of my campsite" by subgroups.\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	152	1.39	2.85	2.05	0	0 - 2	1.36
Time of Visit							
Weekday	19	1.21	2.53	2.09	0	0 - 2	1.21
Weekend	133	1.42	2.91	2.04	0	0 - 2	1.42
Previous Cohutta Visits							
0	46	1.35	2.55	1.89	0	0 - 2	1.35
1 - 4	56	0.89	2.16	2.42	0	0 - 1	0.89
5 or More	50	2.00	3.64	1.82	0	0 - 3	2.00
Other Wilderness Visits							
0 - 1	47	1.21	2.93	2.41	0	0 - 1	1.21
2 - 4	65	1.54	2.83	1.84	0	0 - 2	1.54
5 or More	40	1.38	2.87	2.09	0	0 - 2	1.38
Length of Stay							
Day Use	60	1.85	3.45	1.87	0	0 - 2	1.85
1 - 2 Nights	75	0.82	1.75	2.12	0	0 - 1	1.24
3 or More Nights	17	2.29	3.95	1.35	0	0 - 5	2.29
Wilderness Involvement							
Low	88	1.72	3.22	1.88	0	0 - 2	1.72
High a,b	64	0.95	2.21	2.32	0	0-0.75	0.95
Place Attachment							
Low	71	1.52	3.18	2.09	0	0 - 2	1.52
High	81	1.28	2.55	1.98	0	0 - 2	1.28
Mode of Experience							
Setting	54	1.22	2.54	2.08	0	0 - 1	1.22
Activity	75	1.39	2.88	2.07	0	0 - 2	1.39
Social	21	1.67	3.47	2.08	0	0-1.5	1.67

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.3. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of horse groups that camp within sight or sound of my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	105	4.24	4.91	1.16	2	1 - 5	3.13
Time of Visit							
Weekday <sup>a</sup>	16	6.00	6.02	1.00	5	2 - 6	4.25
Weekend	89	3.92	4.65	1.19	2	1 - 5	3.01
Previous Cohutta Visits							
0	31	4.00	3.44	.86	3	1 - 5	2.61
1 - 4	35	2.54	2.45	.96	2	1 - 5	1.74
5 or More <sup>a,b</sup>	39	5.95	6.75	1.13	5	1 - 7	4.38
Other Wilderness Visits							
0 - 1	35	3.51	4.86	1.38	2	1 - 5	2.71
2 - 4	48	4.17	4.57	1.10	2	1 - 5	2.96
5 or More	22	5.55	5.63	1.02	5	1.75-6.5	3.64
Length of Stay							
Day Use	44	5.20	5.15	.99	5	2 - 6	3.34
1 - 2 Nights	48	3.29	4.94	1.50	2	1- 4.5	2.50
3 or More Nights <sup>a</sup>	13	4.46	3.36	.75	5	1.5 -5	1.92
Wilderness Involvement							
Low	61	4.62	5.44	1.88	2	1.5 -5	3.34
High	44	3.70	4.07	1.10	2.5	1 - 5	2.84
Place Attachment							
Low	49	4.00	4.33	1.08	2	1 - 5	2.94
High	56	4.45	5.40	1.21	3	1 - 5	3.27
Mode of Experience							
Setting	32	3.91	4.75	1.22	2	1.25 -5	2.78
Activity	55	4.58	5.10	1.11	3	1 - 6	3.40
Social	16	3.94	4.97	1.26	2	1 - 5	2.69

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.4. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of hiker groups that camp within sight or sound of my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	187	5.44	4.46	.82	5	2 - 8	3.29
Time of Visit							
Weekday	36	5.36	4.22	.79	5	2- 9.5	3.25
Weekend	151	5.46	4.53	.83	5	2 - 8	3.30
Previous Cohutta Visits							
0	82	5.54	4.34	.78	5	2.75-8.25	3.20
1 - 4	46	5.39	4.32	.80	5	2 - 9	3.26
5 or More	59	5.36	4.79	.89	4	2 - 8	3.39
Other Wilderness Visits							
0 - 1	58	5.41	4.94	.91	5	2- 7.25	3.45
2 - 4	66	5.03	4.54	.90	4.5	1.75-7.25	3.33
5 or More	63	5.90	3.89	.66	5	3 - 10	3.10
Length of Stay							
Day Use	64	6.20	4.74	.76	5	2.25-10	3.58
1 - 2 Nights	97	4.99	4.21	.84	4	2 - 6	2.99
3 or More Nights	26	5.27	4.56	.86	5	.75-9.25	3.50
Wilderness Involvement							
Low	94	5.15	4.45	.86	5	2-6.25	3.04
High	93	5.74	4.47	.78	5	2 - 10	3.54
Place Attachment							
Low <sup>b</sup>	100	4.98	4.02	.81	5	2 - 6	2.80
High <sup>b</sup>	87	5.98	4.89	.82	5	2 - 10	3.85
Mode of Experience							
Setting	58	5.31	4.77	.90	5	2-7.25	3.38
Activity	103	5.28	4.29	.81	5	2 - 8	3.23
Social	21	5.62	3.75	.67	5	3 - 9	2.71

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.5. Norms and crystallization measures for the preferred condition of the social indicator "The number of hiker groups that camp within sight or sound of my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	178	1.99	3.36	1.69	0	0 - 3	1.99
Time of Visit							
Weekday	34	2.91	4.56	1.57	0	0 - 5	2.91
Weekend	144	1.78	2.99	1.68	0	0 - 2	1.78
Previous Cohutta Visits							
0	72	1.57	2.63	1.67	0	0 - 2	1.57
1 - 4	52	2.77	4.33	1.56	1	0-4.75	2.65
5 or More	54	1.81	3.10	1.71	0	0 - 3	1.81
Other Wilderness Visits							
0 - 1	54	2.11	3.20	1.51	1	0 - 3	2.04
2 - 4	61	2.00	4.07	2.04	0	0 - 2	2.00
5 or More	63	1.89	2.74	1.45	0	0 - 3	1.89
Length of Stay							
Day Use	62	2.44	3.60	1.48	1	0 - 5	2.40
1 - 2 Nights	97	1.85	3.36	1.82	0	0 - 3	1.85
3 or More Nights	19	1.32	2.38	1.81	0	0 - 2	1.32
Wilderness Involvement							
Low	88	2.01	3.20	1.59	0	0 - 3	2.01
High	90	1.98	3.53	1.79	0	0 - 3	1.98
Place Attachment							
Low	97	1.56	3.07	1.97	0	0 - 2	1.56
High <sup>a,b</sup>	81	2.52	3.63	1.44	1	0 - 5	2.48
Mode of Experience							
Setting	59	2.02	3.21	1.59	0	0 - 2	2.02
Activity	96	1.97	3.50	1.78	0	0 - 3	1.97
Social	17	1.47	1.77	1.20	1	0 - 3	1.41

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.6. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of hiker groups that camp within sight or sound of my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	168	4.96	4.93	.99	4	2 - 6	3.11
Time of Visit							
Weekday	32	5.22	4.24	.81	5	2 - 7	3.16
Weekend	136	4.90	5.10	1.04	3.5	2 - 5	3.31
Previous Cohutta Visits							
0	72	5.06	5.11	1.01	4	2 - 5	3.06
1 - 4	43	5.14	5.29	1.03	5	2 - 6	3.53
5 or More	53	4.68	4.45	.95	3	2- 5.5	3.00
Other Wilderness Visits							
0 - 1	56	5.68	6.36	1.12	3	2-6.75	4.07
2 - 4	56	4.59	4.09	.89	3.5	2 - 5	2.73
5 or More <sup>b</sup>	56	4.61	3.98	.86	5	2-5.75	2.57
Length of Stay							
Day Use	56	5.52	4.75	.86	5	2 - 6	2.70
1 - 2 Nights	88	4.47	5.06	1.13	2	2 - 5	3.06
3 or More Nights <sup>a</sup>	24	5.46	4.87	.89	5	2-6.75	3.29
Wilderness Involvement							
Low	82	5.10	5.03	.99	5	2 - 6	3.05
High	86	4.83	4.87	1.01	3.5	2 - 6	3.24
Place Attachment							
Low <sup>b</sup>	89	4.27	3.98	.93	4	2 - 5	2.54
High	79	5.73	5.75	1.00	5	2 - 7	3.85
Mode of Experience							
Setting	50	4.58	4.58	1.00	3	2-5.25	3.10
Activity	92	4.87	4.61	.95	5	2 - 6	2.93
Social	18	3.83	2.38	.62	3	2 - 5	1.61

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.



Table F.7. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of horse groups that travel past my campsite while I am there" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	183	5.25	4.67	.89	5	2 - 8	3.40
Time of Visit							
Weekday	35	5.49	4.02	.73	5	3 - 10	3.37
Weekend	148	5.20	4.82	.93	4.5	2-7.75	3.55
Previous Cohutta Visits							
0	79	5.35	4.74	.88	5	2 - 9	3.62
1 - 4	46	5.13	4.95	.96	5	1 - 6	3.43
5 or More	58	5.21	4.41	.85	5	2.75-8	3.24
Other Wilderness Visits							
0 - 1	56	5.64	5.23	.93	5	1.25-10	3.82
2 - 4	63	5.63	4.86	.86	5	2 - 10	3.71
5 or More	64	4.53	3.87	.85	5	1 - 5	2.88
Length of Stay							
Day Use	64	5.33	4.86	.91	5	2-9.75	3.61
1 - 2 Nights	93	5.37	4.33	.81	5	2 - 8	3.08
3 or More Nights	26	4.65	5.45	1.17	2.5	0-7.75	4.19
Wilderness Involvement							
Low	91	5.21	4.76	.91	4	2 - 8	3.49
High	92	5.29	4.60	.87	5	1.25-8	3.40
Place Attachment							
Low	101	5.10	4.50	.88	5	2 - 6	3.21
High	82	5.44	4.88	.90	5	1 - 10	3.76
Mode of Experience							
Setting	56	5.09	5.04	.99	4	1-7.75	3.70
Activity	102	5.60	4.63	.83	5	2 - 10	3.48
Social	20	4.30	4.21	.98	4.5	0.5-5	3.00

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.8. Norms and crystallization measures for the preferred condition of the social indicator "The number of horse groups that travel past my campsite while I am there" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	162	2.28	4.27	1.87	1	0-3.25	2.24
Time of Visit							
Weekday	32	1.88	4.56	2.43	0	0 - 2	1.88
Weekend	130	2.38	4.20	1.77	1	0 - 4	2.28
Previous Cohutta Visits							
0	62	2.03	3.65	1.80	1	0 - 2	1.97
1 - 4	47	2.57	5.11	1.99	1	0 - 4	2.47
5 or More	53	2.30	4.18	1.82	0	0- 3.5	2.30
Other Wilderness Visits							
0 - 1	50	2.52	3.93	1.56	2	0 - 4	2.20
2 - 4	54	2.56	5.08	1.99	0	0-3.25	2.56
5 or More	58	1.81	3.72	2.05	0	0 - 2	1.81
Length of Stay							
Day Use	57	2.88	5.86	2.04	0	0 - 4	2.88
1 - 2 Nights	85	1.95	3.24	1.66	1	0- 2.5	1.80
3 or More Nights	20	1.95	2.31	1.18	0.5	0-4.75	1.95
Wilderness Involvement							
Low	78	2.05	3.36	1.64	1	0-3.25	1.92
High	84	2.49	4.98	2.00	0	0-3.75	2.49
Place Attachment							
Low	86	1.66	3.21	1.93	0	0 - 2	1.66
High a,b	76	2.97	5.15	1.73	2	0-4.75	2.84
Mode of Experience							
Setting	54	1.83	3.87	2.11	0	0-2.25	1.83
Activity	87	2.41	4.24	1.76	1	0 - 4	2.31
Social	15	1.33	1.72	1.29	1	0 - 2	1.27

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.9. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of horse groups that travel past my campsite while I am there" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	159	5.23	5.11	.98	5	2 - 5	3.01
Time of Visit							
Weekday <sup>b</sup>	33	4.30	2.60	.61	5	2 - 5	1.91
Weekend <sup>b</sup>	126	5.47	5.56	1.02	5	2 - 6	3.29
Previous Cohutta Visits							
0	67	5.06	5.20	1.03	5	2 - 5	2.99
1 - 4	41	5.41	5.08	.94	5	2-6.5	3.34
5 or More	51	5.29	5.10	.96	5	2 - 6	2.76
Other Wilderness Visits							
0 - 1	54	5.89	5.64	.96	5	3 - 6	3.19
2 - 4	53	5.81	5.52	.95	5	2- 6.5	3.38
5 or More <sup>a</sup>	52	3.94	3.76	.95	3.5	2 - 5	2.29
Length of Stay							
Day Use	57	5.86	5.74	.98	5	3 - 6	3.18
1 - 2 Nights	83	4.75	4.85	1.02	4	2 - 5	2.87
3 or More Nights	19	5.42	4.14	.76	5	2 - 7	2.74
Wilderness Involvement							
Low	80	5.75	5.94	1.03	5	2 - 6	3.38
High	79	4.70	4.07	.87	5	2 - 5	2.63
Place Attachment							
Low	87	5.02	4.78	.95	5	2 - 5	2.76
High	72	5.47	5.50	1.01	5	2 - 6	3.31
Mode of Experience							
Setting	45	5.29	5.74	1.09	5	2 - 5	3.27
Activity	95	4.99	4.72	.95	5	2 - 6	2.83
Social	12	4.58	3.20	.70	5	2 - 5	2.25

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.10. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of hiker groups that walk past my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	178	7.55	5.01	.66	6	4.75- 10	3.96
Time of Visit							
Weekday	25	8.20	4.91	.60	8	5- 10.5	4.04
Weekend	153	7.44	5.04	.68	6	4 - 10	4.14
Previous Cohutta Visits							
0	51	7.76	4.76	.61	7	5 - 10	3.86
1 - 4	64	7.94	5.34	.67	6	5 - 10	4.09
5 or More	63	6.98	4.90	.70	6	3 - 10	3.78
Other Wilderness Visits							
0 - 1	57	7.23	5.57	.77	5	3 - 10	4.19
2 - 4	79	8.16	4.85	.59	7	5 - 11	3.82
5 or More	42	6.83	4.47	.65	6	2.75 -10	3.69
Length of Stay							
Day Use	67	6.70	4.69	.70	6	3 - 10	3.84
1 - 2 Nights	86	7.71	4.91	.64	7	5 - 10	3.80
3 or More Nights	25	9.28	5.85	.63	6	5- 12.5	4.40
Wilderness Involvement							
Low <sup>a</sup>	101	8.23	5.17	.63	7	5 - 10	4.10
High <sup>a</sup>	77	6.66	4.68	.70	6	3 - 10	3.62
Place Attachment							
Low <sup>a</sup>	83	8.36	5.16	.62	8	5 - 10	4.12
High <sup>a</sup>	95	6.84	4.80	.70	6	3 - 10	3.68
Mode of Experience							
Setting	65	7.32	4.91	.67	6	5 - 10	3.69
Activity	84	8.10	5.33	.66	8	4.25 -10	4.26
Social	25	6.28	4.35	.69	5	2.5- 9.5	3.28

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.11. Norms and crystallization measures for the preferred condition of the social indicator "The number of hiker groups that walk past my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	165	3.51	3.82	1.09	3	0 - 5	2.72
Time of Visit							
Weekday	23	4.04	3.98	.98	5	0 - 5	3.13
Weekend	142	3.42	3.79	1.11	3	0 - 5	2.65
Previous Cohutta Visits							
0	52	3.56	4.02	1.13	3	0 - 5	2.90
1 - 4	60	3.45	3.51	1.02	2.5	1 - 5	2.52
5 or More	53	3.53	4.01	1.14	4	0 - 5	2.70
Other Wilderness Visits							
0 - 1	51	3.29	4.51	1.37	2	0 - 5	2.63
2 - 4	72	3.65	3.32	.91	3.5	0.25- 5	2.65
5 or More	42	3.52	3.77	1.07	4	0 - 5	2.71
Length of Stay							
Day Use	64	3.02	3.97	1.32	2	0 - 5	2.55
1 - 2 Nights	80	3.58	3.67	1.03	3	0.25- 5	2.68
3 or More Nights <sup>a</sup>	21	4.76	3.77	.79	5	2 - 5	2.52
Wilderness Involvement							
Low	96	3.93	4.29	1.09	3	1 - 5	2.84
High	69	2.93	2.97	1.02	2	0 - 5	2.46
Place Attachment							
Low	81	3.95	4.42	1.12	3	0.5- 5	2.95
High	84	3.08	3.09	1.00	2	0 - 5	2.44
Mode of Experience							
Setting	58	3.40	3.38	1.00	3	0 - 5	2.60
Activity	79	3.92	4.50	1.15	3	0 - 5	3.13
Social <sup>b</sup>	25	2.32	1.95	.84	2	0- 4.5	1.68

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.12. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of hiker groups that walk past my campsite" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	172	6.71	5.11	.76	5	4 - 10	3.34
Time of Visit							
Weekday	27	7.89	4.96	.63	6	5 - 11	3.63
Weekend <sup>a</sup>	145	6.49	5.12	.79	5	3.5- 9.5	3.28
Previous Cohutta Visits							
0	50	6.72	3.97	.59	5	4 - 10	3.04
1 - 4	62	6.71	5.45	.81	5	3- 9.25	3.32
5 or More	60	6.70	5.63	.84	5	4 - 10	3.60
Other Wilderness Visits							
0 - 1	53	6.64	5.74	.86	5	3 - 10	3.60
2 - 4	79	7.05	5.12	.73	5	5 - 10	3.37
5 or More	40	6.13	4.16	.68	5	4- 9.75	2.93
Length of Stay							
Day Use	63	6.06	5.15	.85	5	2 - 9	3.44
1 - 2 Nights	86	7.06	5.10	.72	5	5 - 10	3.29
3 or More Nights	23	7.17	5.05	.70	5	5 - 10	3.22
Wilderness Involvement							
Low	102	7.48	5.75	.77	5	5 - 10	3.75
High <sup>a</sup>	70	5.59	3.74	.67	5	3- 8.25	2.73
Place Attachment							
Low	84	7.39	5.44	.74	5	5 - 10	3.58
High <sup>a</sup>	88	6.06	4.71	.78	5	3 - 8	3.10
Mode of Experience							
Setting	56	6.39	4.47	.70	5	5 - 8	2.64
Activity	89	7.25	5.70	.79	5	4 - 10	3.93
Social	23	5.61	4.30	.77	5	2 - 9	2.96

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.13. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of large groups (more than 6 people) that I see along the trail" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	180	7.14	4.94	.69	5	4 - 10	3.53
Time of Visit							
Weekday	26	7.12	4.80	.67	5	4.75-10	3.35
Weekend	154	7.14	4.98	.70	5	4 - 10	3.57
Previous Cohutta Visits							
0	53	8.19	6.01	.73	7	5 - 10	3.91
1 - 4	62	6.29	3.64	.58	5	3.75 -10	2.81
5 or More	65	7.09	4.96	.70	5	4 - 10	3.72
Other Wilderness Visits							
0 - 1	59	7.00	5.14	.73	5	4 - 10	3.76
2 - 4	78	6.77	3.85	.57	5	4 - 10	2.97
5 or More	43	8.00	6.28	.78	6	5 - 10	4.09
Length of Stay							
Day Use	67	6.82	4.06	.60	5	4 - 10	3.22
1 - 2 Nights	88	7.05	5.39	.77	5	4 - 10	3.61
3 or More Nights	25	8.32	5.43	.65	5	5 - 10	4.04
Wilderness Involvement							
Low	102	7.76	4.71	.61	6	5 - 10	3.76
High <sup>a</sup>	78	6.32	5.14	.81	5	3 - 9	3.09
Place Attachment							
Low	83	7.78	5.39	.69	6	5 - 10	3.66
High <sup>a</sup>	97	6.59	4.47	.68	5	3 - 10	3.38
Mode of Experience							
Setting	66	6.38	4.20	.66	5	3 - 10	3.17
Activity	87	7.75	5.63	.73	6	4 - 10	3.98
Social	23	7.17	4.12	.57	5	5 - 10	2.87

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.14. Norms and crystallization measures for the preferred condition of the social indicator "The number of large groups (more than 6 people) that I see along the trail" by subgroups\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	168	2.98	2.98	1.00	2	1 - 5	2.14
Time of Visit							
Weekday	24	3.17	3.24	1.02	2	0 - 5	2.42
Weekend	144	2.95	2.94	1.00	2	1 - 5	2.09
Previous Cohutta Visits							
0	52	2.92	3.03	1.04	2	0 - 5	2.12
1 - 4	63	2.94	2.97	1.01	2	1 - 5	2.08
5 or More	53	3.09	2.99	.97	3	0.5 - 5	2.17
Other Wilderness Visits							
0 - 1	54	2.37	2.90	1.22	2	0 - 3.5	2.00
2 - 4	74	3.09	2.64	.85	2.5	1 - 5	2.01
5 or More <sup>a</sup>	40	3.60	3.54	.98	3	1 - 5	2.45
Length of Stay							
Day Use	66	3.15	3.10	.98	3	0.75 - 5	2.21
1 - 2 Nights	82	2.67	2.84	1.06	2	0 - 5	1.99
3 or More Nights	20	3.70	3.11	.84	3	2 - 5	2.20
Wilderness Involvement							
Low	99	3.32	3.22	.97	2	1 - 5	2.31
High <sup>a</sup>	69	2.49	2.53	1.01	2	0 - 4.5	1.88
Place Attachment							
Low	83	3.04	3.08	1.01	2	1 - 5	2.12
High	85	2.93	2.89	.99	2	0 - 5	2.15
Mode of Experience							
Setting	59	2.71	2.64	.97	2	0 - 5	1.97
Activity	82	3.12	3.35	1.07	2	0 - 5	2.34
Social	24	3.08	2.52	.82	2.5	1 - 5	1.92

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.



Table F.15. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of large groups (more than 6 people) that I see along the trail" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	170	5.53	4.53	.82	5	3 - 6	2.62
Time of Visit							
Weekday <sup>a</sup>	25	6.72	4.83	.72	5	4.5 - 10	2.84
Weekend <sup>a</sup>	145	5.32	4.47	.84	5	3 - 5.5	2.59
Previous Cohutta Visits							
0	51	5.45	3.76	.69	5	3 - 6	2.10
1 - 4	61	5.38	4.75	.88	5	2 - 5.5	2.80
5 or More	58	5.76	4.97	.86	5	3- 6.25	2.90
Other Wilderness Visits							
0 - 1	55	5.35	4.86	.91	5	2 - 6	2.85
2 - 4	74	5.62	4.89	.87	5	3- 5.25	2.68
5 or More	41	5.61	3.34	.60	5	3 - 6.5	2.22
Length of Stay							
Day Use	62	5.31	3.86	.73	5	3 - 5	2.05
1 - 2 Nights	84	5.70	5.38	.94	5	2 - 6	3.30
3 or More Nights <sup>b</sup>	24	5.50	2.62	.48	5	4.25-7.5	1.75
Wilderness Involvement							
Low	99	6.26	5.26	.84	5	3 - 7	3.00
High <sup>a</sup>	71	4.51	3.01	.67	5	2 - 5	2.10
Place Attachment							
Low	83	5.80	4.86	.84	5	3 - 6	2.87
High	87	5.28	4.21	.80	5	3 - 5	2.39
Mode of Experience							
Setting	54	4.72	3.95	.84	5	2 - 5	2.39
Activity	87	6.10	5.17	.85	5	3 - 7	2.94
Social	25	5.48	3.38	.62	5	3 - 7.5	2.32

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.16. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of horse groups I see along the trails" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	179	5.12	4.75	.93	4	1 - 8	3.63
Time of Visit							
Weekday	25	4.40	4.26	.97	5	0- 7.5	3.56
Weekend	154	5.24	4.83	.92	4	2- 8.25	3.69
Previous Cohutta Visits							
0	50	6.00	4.80	.80	5	2 - 10	3.92
1 - 4	67	4.52	3.97	.88	4	1 - 6	3.00
5 or More	62	5.06	5.41	1.07	3	1- 7.75	3.84
Other Wilderness Visits							
0 - 1	59	4.63	4.77	1.03	3	1 - 7	3.39
2 - 4	79	5.04	4.96	.99	4	1 - 7	3.72
5 or More	41	6.00	4.28	.71	5	3 - 10	3.54
Length of Stay							
Day Use	67	6.13	5.18	.84	5	2 - 10	3.85
1 - 2 Nights	88	4.44	4.05	.91	3	1 - 7	3.13
3 or More Nights <sup>a</sup>	24	4.79	5.55	1.16	4	0 - 6	4.04
Wilderness Involvement							
Low <sup>b</sup>	101	5.70	5.21	.91	5	2 - 10	3.95
High <sup>b</sup>	78	4.37	3.99	.91	3	1- 6.25	3.04
Place Attachment							
Low	87	5.52	4.95	.90	5	2 - 9	3.67
High	92	4.75	4.55	.96	3	1 - 7	3.40
Mode of Experience							
Setting	63	4.33	4.06	.94	3	1 - 6	3.08
Activity	88	5.59	5.00	.89	5	2 - 10	3.95
Social	24	5.38	5.52	1.03	3.5	1.5-6.5	3.71

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.17. Norms and crystallization measures for the preferred condition of the social indicator "The number of horse groups I see along the trails" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	148	2.13	2.92	1.37	1	0 - 3	2.02
Time of Visit							
Weekday	19	1.47	2.61	1.77	0	0 - 2	1.47
Weekend	129	2.22	2.96	1.33	1	0 - 5	2.08
Previous Cohutta Visits							
0	45	2.04	2.02	.99	1	0 - 4	1.62
1 - 4	54	1.96	2.84	1.45	0	0 - 3.5	1.96
5 or More	49	2.39	3.66	1.53	0	0 - 4	2.39
Other Wilderness Visits							
0 - 1	45	1.60	2.87	1.79	0	0 - 2	1.60
2 - 4	65	2.31	2.89	1.25	1	0 - 5	2.14
5 or More	38	2.45	3.04	1.24	1.5	0 - 5	2.29
Length of Stay							
Day Use	57	2.86	3.60	1.26	1	0 - 5	2.60
1 - 2 Nights	74	1.65	2.34	1.42	1	0 - 2	1.62
3 or More Nights <sup>b</sup>	17	1.76	2.25	1.28	0	0 - 5	1.76
Wilderness Involvement							
Low	85	2.61	3.23	1.24	1	0 - 5	2.39
High <sup>a,b</sup>	63	1.48	2.33	1.58	0	0 - 2	1.48
Place Attachment							
Low	68	2.40	3.08	1.29	1	0 - 5	2.19
High	80	1.90	2.78	1.46	1	0 - 2	1.88
Mode of Experience							
Setting	53	2.08	2.93	1.41	0	0 - 5	2.08
Activity	72	1.82	2.72	1.50	1	0 - 2	1.71
Social	20	3.10	3.51	1.13	1.5	0 - 5	2.70

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.18. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of horse groups I see along the trails" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	142	4.68	4.55	.97	4.5	2 - 5	2.94
Time of Visit							
Weekday	19	6.21	6.29	1.01	5	2 - 6	3.42
Weekend	123	4.45	4.21	.95	4	2 - 5	2.86
Previous Cohutta Visits							
0	44	4.75	4.00	.84	5	2- 5.75	2.70
1 - 4	52	3.85	3.30	.86	3	1.25 -5	2.50
5 or More	46	5.57	5.97	1.07	5	1.75-5.25	3.74
Other Wilderness Visits							
0 - 1	45	4.27	4.80	1.13	4	1 - 5	2.89
2 - 4	62	5.08	4.96	.98	5	2 - 6	3.24
5 or More	35	4.51	3.37	.75	5	2 - 5	2.37
Length of Stay							
Day Use	57	5.53	5.18	.94	5	2 - 6	3.26
1 - 2 Nights	71	4.04	4.24	1.05	3	2 - 5	2.62
3 or More Nights	14	4.50	2.59	.58	5	2.5-5.25	1.64
Wilderness Involvement							
Low	83	5.12	5.04	.98	5	2 - 5	3.08
High	59	4.07	3.71	.91	4	1 - 5	2.64
Place Attachment							
Low	70	4.66	4.05	.87	5	2 - 5	2.63
High	72	4.71	5.02	1.07	4	1 - 5	3.21
Mode of Experience							
Setting	45	4.13	4.24	1.03	5	1.5 -5	2.73
Activity	76	4.79	4.67	.97	5	2- 5.75	3.03
Social	17	6.00	5.18	.86	4	2.5 -8	3.29

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.19. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The percent of time other people are in sight while I'm along the trail" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	180	27.72	19.14	.69	24.5	10 - 40	15.37
Time of Visit							
Weekday	26	29.38	21.32	.73	30	10- 42.5	17.77
Weekend	154	27.44	18.81	.69	22	10 - 40	15.73
Previous Cohutta Visits							
0	52	31.12	19.05	.61	30	18.5-48.75	15.50
1 - 4	65	28.48	20.72	.73	26	10 - 40	15.99
5 or More	63	24.14	17.12	.71	20	10 - 38	14.05
Other Wilderness Visits							
0 - 1	58	25.98	19.59	.75	21	10 - 40	15.53
2 - 4	80	28.83	20.24	.70	23	10 - 40	16.53
5 or More	42	28.02	16.46	.59	28	13.5 -41	13.60
Length of Stay							
Day Use	68	25.38	16.79	.66	20	10.5-39.5	13.21
1 - 2 Nights	88	28.73	20.54	.71	30	10 - 40	16.32
3 or More Nights	24	30.67	20.15	.66	25.5	12.5-49.5	17.25
Wilderness Involvement							
Low	105	32.19	20.37	.63	30	15 - 49	16.53
High <sup>a,b</sup>	75	21.47	15.33	.71	20	10 - 30	12.24
Place Attachment							
Low	86	29.53	19.16	.65	28	15 - 40	15.70
High	94	26.06	19.08	.73	21	10 - 40	15.34
Mode of Experience							
Setting	63	24.63	19.71	.80	20	10 - 32	14.67
Activity	89	28.62	18.90	.66	30	11.5-40	15.45
Social <sup>a</sup>	24	32.75	19.35	.59	35.5	18.5-50	16.75

\* Based on a continuous percentage scale ranging from 0 - 100.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.20. Norms and crystallization measures for the preferred condition of the social indicator "The percent of time other people are in sight while I'm along the trail" by subgroups.\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	167	13.59	13.79	1.01	10	4 - 20	9.57
Time of Visit							
Weekday	22	15.86	13.12	.83	10	8.75-24.25	9.50
Weekend	145	13.25	13.90	1.05	10	4 - 20	9.58
Previous Cohutta Visits							
0	53	14.36	13.07	.91	10	4 - 25	10.62
1 - 4	59	13.80	16.02	1.16	10	4 - 20	9.90
5 or More	55	12.64	11.94	.95	10	4 - 20	8.20
Other Wilderness Visits							
0 - 1	52	14.17	15.98	1.13	10	4 - 20	10.44
2 - 4	73	13.33	13.14	.99	10	3 - 20	9.25
5 or More	42	13.33	12.18	.91	10	5 - 20	9.05
Length of Stay							
Day Use	65	12.45	13.49	1.08	10	2 - 20	8.91
1 - 2 Nights	81	13.69	14.29	1.04	10	4 - 20	9.94
3 or More Nights	21	16.76	12.79	.76	10	7- 29.5	10.19
Wilderness Involvement							
Low	98	15.89	15.32	.96	10	4-24.25	11.17
High a,b	69	10.33	10.52	1.02	10	3- 12.5	7.29
Place Attachment							
Low	81	14.79	13.88	.94	10	4.5 -25	10.62
High	86	12.47	13.69	1.10	10	3.5 -20	8.58
Mode of Experience							
Setting	58	11.26	14.54	1.29	10	2 - 10	8.36
Activity	81	14.16	12.51	.88	10	5 - 20	9.67
Social	25	17.00	16.05	.94	10	4 - 25	12.60

\* Based on a continuous percentage scale ranging from 0 - 100.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.21. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The percent of time other people are in sight while I'm along the trail" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	182	21.85	18.55	.85	20	10 - 30	12.76
Time of Visit							
Weekday	27	25.48	21.50	.84	20	10 - 32	16.59
Weekend	155	21.22	17.99	.85	20	10 - 30	12.45
Previous Cohutta Visits							
0	53	20.11	14.04	.70	20	10 - 30	11.70
1 - 4	65	22.88	20.23	.88	20	10 - 30	13.00
5 or More	64	22.25	20.15	.91	17.5	10 - 30	13.41
Other Wilderness Visits							
0 - 1	59	20.51	17.42	.85	20	10 - 30	11.53
2 - 4	80	22.96	20.82	.91	20	10 - 30	14.39
5 or More	43	21.63	15.61	.72	20	10 - 30	11.44
Length of Stay							
Day Use	70	20.39	17.69	.87	16.5	10-24.25	11.73
1 - 2 Nights	87	23.07	20.09	.87	20	8 - 30	14.06
3 or More Nights	25	21.72	15.40	.71	20	10 - 30	11.00
Wilderness Involvement							
Low	107	25.41	21.05	.83	20	10 - 30	14.12
High <sup>a,b</sup>	75	16.77	12.73	.76	10	10 - 24	9.65
Place Attachment							
Low	89	21.72	18.06	.83	20	10 - 30	12.30
High	93	21.98	19.10	.87	20	10 - 30	13.20
Mode of Experience							
Setting	61	18.87	18.59	.99	10	10 - 21	11.20
Activity	92	22.46	18.46	.82	20	10 - 30	12.74
Social <sup>a</sup>	25	27.16	19.26	.71	22	10 - 40	14.36

\* Based on a continuous percentage scale ranging from 0 - 100.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.22. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The total number of people I see hiking along the trail" by subgroups.\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	180	23.06	9.85	.43	22	15.25-30	7.49
Time of Visit							
Weekday <sup>a</sup>	25	19.60	9.35	.48	20	14 - 26.5	7.20
Weekend <sup>a</sup>	155	23.62	9.85	.42	25	18 - 30	8.19
Previous Cohutta Visits							
0	50	23.98	9.75	.41	25	16.5 - 30	7.58
1 - 4	64	22.83	10.16	.45	20	15 - 30	7.86
5 or More	66	22.59	9.73	.43	20	18 - 30	7.83
Other Wilderness Visits							
0 - 1	60	22.18	9.77	.44	23	15.75-30	7.65
2 - 4	78	23.64	9.43	.40	22	17.5-30	7.72
5 or More	42	23.24	10.86	.47	22.5	15-34.25	8.95
Length of Stay							
Day Use	68	22.87	8.96	.39	23	18 - 30	7.31
1 - 2 Nights	86	23.86	10.64	.45	25	15 - 30	8.54
3 or More Nights	26	20.92	9.40	.45	20	14.75-26	6.39
Wilderness Involvement							
Low <sup>a</sup>	101	24.39	9.97	.41	25	19.5-30	7.82
High <sup>a</sup>	79	21.37	9.50	.44	20	15 - 30	7.34
Place Attachment							
Low	84	23.93	10.26	.43	25	18.5-30	8.07
High	96	22.30	9.48	.42	20	15 - 30	7.66
Mode of Experience							
Setting	65	22.55	10.37	.46	20	15 - 30	8.52
Activity <sup>a</sup>	87	22.53	9.54	.42	20	15 - 30	7.38
Social	24	27.17	9.41	.35	27.5	24.25-35	7.00

\* Based on a continuous scale ranging from 0 - 50.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.



Table F.23. Norms and crystallization measures for the preferred condition of the social indicator "The total number of people I see hiking along the trail" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	169	10.91	7.56	.69	10	5 - 15	5.69
Time of Visit							
Weekday <sup>a</sup>	24	8.17	7.75	.95	7.5	0-13.75	6.33
Weekend <sup>a</sup>	145	11.36	7.46	.66	10	5 - 15	5.65
Previous Cohutta Visits							
0	51	11.37	7.91	.70	10	5 - 20	6.35
1 - 4	61	10.38	6.83	.66	10	5 - 15	4.84
5 or More	57	11.05	8.07	.73	10	5 - 15	6.18
Other Wilderness Visits							
0 - 1	54	9.13	6.75	.74	10	4.25 - 15	5.20
2 - 4	73	11.67	7.51	.64	10	5 - 15	5.59
5 or More	42	11.86	8.37	.71	10	5 - 18.5	6.71
Length of Stay							
Day Use	67	11.36	6.68	.59	10	5 - 15	5.33
1 - 2 Nights <sup>b</sup>	82	10.70	8.51	.80	10	5 - 17.25	6.52
3 or More Nights <sup>b</sup>	20	10.25	6.29	.61	10	5 - 10	3.95
Wilderness Involvement							
Low	97	11.31	7.66	.68	10	5 - 15	5.66
High	72	10.36	7.44	.72	10	5 - 15	5.86
Place Attachment							
Low	81	11.67	7.60	.65	10	5 - 16	5.84
High	88	10.20	7.49	.73	10	5 - 15	5.66
Mode of Experience							
Setting	61	9.07	7.12	.79	10	2.5-14.5	5.49
Activity <sup>a</sup>	81	11.11	7.62	.69	10	5 - 15	5.58
Social <sup>a</sup>	24	14.67	7.43	.51	15	10 - 20	5.50

\* Based on a continuous scale ranging from 0 - 50.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.24. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The total number of people I see hiking along the trail" by subgroups.\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	187	18.42	9.56	.52	18	10 - 25	7.52
Time of Visit							
Weekday	26	17.81	9.60	.54	17	10 - 25	7.35
Weekend	161	18.52	9.57	.52	20	10 - 25	7.56
Previous Cohutta Visits							
0	54	18.57	8.59	.46	20	10.75-25	6.69
1 - 4	70	18.33	10.01	.55	16	10 - 25	7.47
5 or More	63	18.38	9.97	.54	20	10 - 25	7.91
Other Wilderness Visits							
0 - 1	62	17.21	9.48	.55	15	10-21.25	6.98
2 - 4	81	19.33	9.99	.52	20	10.5-25	7.53
5 or More	44	18.43	8.83	.48	19	10 - 25	7.57
Length of Stay							
Day Use	71	18.24	9.36	.51	20	10 - 25	7.31
1 - 2 Nights	92	18.77	9.95	.53	16.5	10 - 25	7.73
3 or More Nights	24	17.58	8.85	.50	16	10-24.25	6.67
Wilderness Involvement							
Low	106	19.96	10.20	.51	20	11.75-25	7.55
High <sup>a</sup>	81	16.40	8.27	.50	15	10 - 25	7.05
Place Attachment							
Low	91	19.43	9.83	.51	20	10 - 25	7.36
High	96	17.46	9.23	.53	16	10 - 25	7.44
Mode of Experience							
Setting	64	16.75	9.96	.59	15	10 - 23	7.59
Activity	92	18.43	9.08	.49	20	10 - 25	6.89
Social <sup>a</sup>	27	23.22	9.33	.40	25	15 - 30	7.33

\* Based on a continuous scale ranging from 0 - 50.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.25. Norms and crystallization measures for the lower limit unacceptable condition of the social indicator "The number of groups of hikers I see along the trail" by subgroups.\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	175	10.47	4.82	.46	10	7 - 15	3.63
Time of Visit							
Weekday	33	9.79	4.72	.48	10	6.5-11.5	3.24
Weekend	142	10.63	4.84	.46	10	7 - 15	3.73
Previous Cohutta Visits							
0	80	10.45	5.26	.50	10	7.25 - 15	3.95
1 - 4	42	9.86	4.23	.43	10	5.75 - 14	3.29
5 or More	53	10.98	4.58	.42	10	8.5 - 15	3.43
Other Wilderness Visits							
0 - 1	53	10.62	5.31	.50	10	8 - 15	3.87
2 - 4	61	9.80	4.47	.46	10	6.5 - 13	3.25
5 or More	61	11.00	4.71	.43	10	7 - 15	3.82
Length of Stay							
Day Use	62	10.37	4.67	.45	10	7 - 14	3.34
1 - 2 Nights	88	10.75	4.54	.42	10	8 - 15	3.52
3 or More Nights	25	9.72	6.09	.63	10	5 - 15	4.76
Wilderness Involvement							
Low	86	10.38	4.63	.45	10	8 - 15	3.24
High	89	10.55	5.02	.48	10	6 - 15	4.01
Place Attachment							
Low	94	10.49	4.58	.44	10	7 - 15	3.40
High	81	10.44	5.10	.49	10	6 - 15	3.90
Mode of Experience							
Setting	53	10.67	4.60	.73	10	7.5 - 15	3.55
Activity	99	10.28	4.75	.46	10	6 - 15	3.62
Social	19	11.32	5.68	.50	10	10 - 15	3.95

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.26. Norms and crystallization measures for the preferred condition of the social indicator "The number of groups of hikers I see along the trail" by subgroups. \*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	174	4.59	4.11	.90	5	2 - 5	2.82
Time of Visit							
Weekday	35	4.77	4.33	.91	5	2 - 7	3.29
Weekend	139	4.54	4.06	.89	5	2 - 5	2.72
Previous Cohutta Visits							
0	72	4.56	4.24	.93	5	1.25 - 5	2.86
1 - 4	52	4.90	4.00	.82	5	2 - 5	2.67
5 or More	50	4.30	4.07	.95	5	0 - 5	2.90
Other Wilderness Visits							
0 - 1	53	4.74	3.85	.81	5	2 - 5	2.75
2 - 4	59	4.78	4.72	.99	5	2 - 5	2.90
5 or More	62	4.27	3.72	.87	5	1 - 5	2.79
Length of Stay							
Day Use	63	4.37	3.92	.90	5	2 - 5	2.83
1 - 2 Nights	92	4.70	4.44	.95	5	2 - 5	2.96
3 or More Nights	19	4.79	3.01	.63	5	3 - 5	2.11
Wilderness Involvement							
Low	87	5.18	4.60	.89	5	2 - 5	2.99
High	87	3.99	3.47	.87	5	1 - 5	2.64
Place Attachment							
Low	98	4.35	4.16	.96	4.5	1.75 - 5	2.88
High	76	4.89	4.04	.82	5	2 - 5	2.74
Mode of Experience							
Setting	57	4.44	3.97	.89	4	2 - 5	2.68
Activity	96	4.54	3.98	.88	5	1 - 5	2.96
Social	16	5.75	5.70	.99	5	3 - 5	2.75

\* Based on a continuous scale ranging from 0 - 25.

a = Medians significantly different at  $p =$  or  $< .10$  based on the Kruskal-Wallis test for equality of medians. (The exact significance of the Kruskal-Wallis test is unknown in cases where the variances differ among the groups tested.)

b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

Table F.27. Norms and crystallization measures for the upper limit acceptable condition of the social indicator "The number of groups of hikers I see along the trail" by subgroups.\*

Subgroup	N	Mean	S.D.	C.V.	Median	Q1 - Q3	Avg. Med.Var.
All Users	199	8.68	5.33	.61	8	5 - 10	3.91
Time of Visit							
Weekday	41	7.90	4.43	.56	6	5 - 10	3.27
Weekend	158	8.89	5.53	.62	8	5 - 10	4.08
Previous Cohutta Visits							
0	82	8.98	5.80	.65	8	5 - 10	4.15
1 - 4	53	7.96	4.58	.57	6	5 - 10	3.36
5 or More	64	8.91	5.30	.59	8	5 - 10	3.91
Other Wilderness Visits							
0 - 1	65	8.94	5.70	.64	8	5 - 10.5	4.35
2 - 4	70	8.90	5.58	.63	8	5 - 10	3.84
5 or More	64	8.19	4.67	.57	6	5 - 10	3.44
Length of Stay							
Day Use	71	8.42	5.13	.61	6	5 - 10	3.83
1 - 2 Nights	99	8.94	5.55	.62	8	5 - 10	3.87
3 or More Nights	29	8.45	5.18	.61	7	5 - 11	4.00
Wilderness Involvement							
Low	99	9.33	6.02	.65	8	5 - 10	4.36
High <sup>b</sup>	100	8.04	4.47	.56	6.5	5 - 10	3.40
Place Attachment							
Low	110	8.53	5.20	.61	7.5	5 - 10	3.67
High	89	8.88	5.51	.62	8	5 - 10.5	4.20
Mode of Experience							
Setting	57	8.70	4.64	.58	6	5 - 10	3.47
Activity <sup>a</sup>	115	8.17	4.83	.59	7	5 - 10	3.59
Social	20	11.85	6.89	.58	10	6.5-15.75	4.75

\* Based on a continuous scale ranging from 0 - 25.

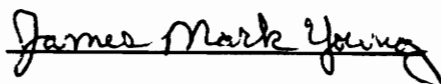
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b = Variances significantly different at  $p =$  or  $< .10$  based on the Levl:med test for homogeneity of variance for populations with non-normal distributions.

## VITA

James Mark Young was born in Lorain, Ohio on August 13, 1962. He graduated from Cumberland County High School, in Crossville, Tennessee, in 1980. In 1983, Mark began his study of Forest Recreation at the University of Tennessee in Knoxville, TN, and received a Bachelor of Science Degree in 1987. From 1988-1990 Mark attended Virginia Polytechnic Institute & State University, where he continued his studies of outdoor recreation planning as a graduate student in the School of Forestry.

Mark's professional work experience has included a variety of jobs in the fields of outdoor interpretation and research. He has worked in two Forest Service wilderness areas - the Gila in New Mexico, and the Cohutta in Georgia/Tennessee - and one National Park - Crater Lake in Oregon. He has worked at a state park in Tennessee - Pickett State Park - and also for a private timber company - Hiwassee Land Company. Mark currently is working for the U.S.D.A. Forest Service's Southeastern Forest Experiment Station in Athens, Georgia as an Outdoor Recreation Planner.



James Mark Young