

Substitutability of recreational activities
by Teresa Anne Spencer

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Psychology
Montana State University
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Abstract:
Recreation research, to date, has been problem-specific and scattered among a variety of fields. A unifying theory and an adequate methodology need to be developed. A theory of recreational substitutability (the concept that recreational activities may be substituted for each other under certain conditions) and a model of substitutability (which would define the necessary conditions) could help to fill both the theoretical and the methodological gaps. This thesis explores the concept of recreational substitutability and provides direction for the development of a model of substitutability. Data collected using a preliminary questionnaire exemplify the functioning of such a model. Concrete conclusions based on the data collected are limited, because a small sample and limited population were used and because the questionnaire was in a preliminary form. However, the general conclusions are formed and supported that substitutability is a viable concept and that the direction indicated for the development of the model is potentially fruitful.

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SUBSTITUTABILITY OF RECREATIONAL ACTIVITIES

by

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A thesis submitted in partial fulfillment
of the requirements for the degree

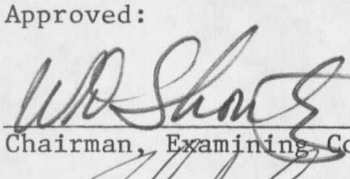
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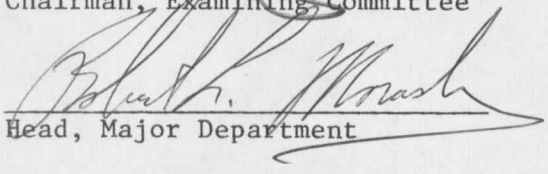
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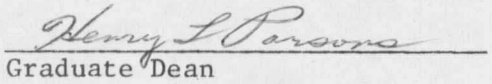
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Bozeman, Montana

December, 1975

Acknowledgements

I would like to thank Dr. William D. Shontz, Dr. M. Paul Willis, and Dr. Richard A. Block for their valuable assistance on the theoretical and methodological portions of this thesis and for the time they spent as members of my examining committee.

I would also like to thank Dr. Patrik Callas, Dr. Ellen Krieghbaum, Dr. Robert Schwartzkopf, the staff at the Beaver Pond, and the many sporting goods sales clerks who so patiently acted as resource people.

My special thanks go to my parents, my brother, Eric Ferguson, Janet Reynolds, Robert Peregoy, and the many other people who have supported me financially, intellectually, morally, and prayerfully for the past year--and to God, who has granted me a small portion of strength and wisdom through this experience.

Research on this thesis was supported in part by NSF-RANN Grant Number GI-39592, "The Impacts of Large Recreational Developments Upon Semi-Primitive Environments."

Table of Contents

	page
Vita	ii
Acknowledgements	iii
Table of Contents	iv
List of Tables	ix
Abstract	xi
Introduction	1
Recreation Research	1
Outdoor Recreation	5
The Idea of Substitutability	11
Substitutability Theory	18
Environmental requirements	21
Skill factors	22
Physiological requirements	25
Resource requirements	26
Demographic patterns of participants	28
Psychological patterns of participants	29
Interdimensional comparisons	32
This Thesis	33
Questions Included in the Questionnaire	33
Question #1: Participation	34
Question #2: Attitudes	34
Question #3: Time commitment	36

page

Question #4: Skill 37

Question #5: Sociability 38

Question #6: Competition 39

Question #7: Equipment 40

Question #8: Overlap of equipment use 40

Question #9: Transportation of equipment 41

Question #10: Combining activities 41

Sex 42

Age 42

Formal education 43

Occupation 44

Marital status 45

Child dependents 45

Hours per week 46

Vacation time 46

Transportation 46

Height, weight, and bone structure 47

Muscle tone, sense of balance, and limberness 47

Physical restrictions 48

Comments 48

Questions Omitted from the Questionnaire 48

Residence 48

page

Income 52

Satisfaction 54

Preferences, expectations, and importance 55

Race 56

Religion 57

Methods 58

Subjects 58

Apparatus 58

Questionnaire Administration 59

Data Analysis: Alternatives and Selection Rationale 60

Results 62

Environment 62

Physiology 63

Skills 64

Resource Requirements 65

Dayhiking 65

Backpacking 65

Mountain climbing 66

Rock climbing 67

Snowshoeing 67

Downhill skiing 68

Crosscountry skiing 69

page

Gun hunting 69

Bow hunting 70

Fishing 70

Day trips on horseback 71

Pack trips on horseback 71

Trail bike driving 72

Snowmobiling 72

Sightseeing and/or photography of landscape 73

Sightseeing and/or photography of wildlife 74

Sightseeing and/or photography of human activity 74

Comparisons 75

Demographic Data 76

Psychological Data 77

Miscellaneous 81

Participation patterns 81

Combining activities 83

Discussion 85

Questionnaire and Procedure 85

Support of Substitutability Model 93

Universality of Substitutability Model 93

Tables 96

Reference Notes 121

page

References 122

Appendices 129

Appendix A: Questionnaire 130

Appendix B: Oral Instructions for Questionnaire 165

List of Tables

	page
Table 1: Possible Analyses Across Activities or Across Participant Groups	97
Table 2: Environmental Comparisons	98
Table 3: Example Winter Environmental Comparison	99
Table 4: Example Summer Environmental Comparison	100
Table 5: Environmental Substitutability	101
Table 6: Physiology Measures	104
Table 7: Hours/Week	104
Table 8: Backpacking Equipment	105
Table 9: Mountain Climbing Equipment	105
Table 10: Rock Climbing Equipment	106
Table 11: Snowshoeing Equipment	106
Table 12: Downhill Skiing Equipment	107
Table 13: Crosscountry Skiing Equipment	107
Table 14: Fishing Equipment	108
Table 15: Equipment for Day Trips on Horseback	109
Table 16: Equipment for Pack Trips on Horseback	109
Table 17: Equipment for Photography of Landscape	110
Table 18: Equipment for Photography of Wildlife	110
Table 19: Equipment for Photography of Human Activity	111
Table 20: Equipment Cost Ranking	112

		page
Table 21:	Age	113
Table 22:	Education	113
Table 23:	Marital Status	113
Table 24:	Discriminant Function Analysis	114
Table 25:	Number of Activities Participated In	115
Table 26:	Number of Participants	116
Table 27:	Participation Patterns	117
Table 28:	Combining Activities	118

Abstract

Recreation research, to date, has been problem-specific and scattered among a variety of fields. A unifying theory and an adequate methodology need to be developed. A theory of recreational substitutability (the concept that recreational activities may be substituted for each other under certain conditions) and a model of substitutability (which would define the necessary conditions) could help to fill both the theoretical and the methodological gaps. This thesis explores the concept of recreational substitutability and provides direction for the development of a model of substitutability. Data collected using a preliminary questionnaire exemplify the functioning of such a model. Concrete conclusions based on the data collected are limited, because a small sample and limited population were used and because the questionnaire was in a preliminary form. However, the general conclusions are formed and supported that substitutability is a viable concept and that the direction indicated for the development of the model is potentially fruitful.

Introduction

Americans are spending an increasing amount of time on recreational activities. As this participation increases, the necessity for understanding and predicting its consequences also increases. Each activity requires certain conditions (physical, monetary, etc.) and attracts certain types of participants. To the extent that two activities overlap in terms of these conditions or participants, they may be viable alternatives for some land-use or participation decisions. This concept that recreational activities may be substituted for each other under certain conditions is the concept of recreational substitutability. A model of substitutability, which would define the conditions necessary for the occurence of substitution, is a potentially useful approach to predicting (and, hopefully, understanding) American recreational participation. This thesis will explore the idea of such a model.

Recreation Research

There is little adequate research available on recreational activities. What has been published is in scattered places under a variety of headings; the Outdoor Recreation Resources Review Commission (ORRRC) made this clear in its survey of outdoor recreation literature (Librarian of Congress, 1962). A recent Bureau of Outdoor Recreation (BOR) workshop (Van Horne, 1974) recognized this situation in its suggestion for a centralized recreation research retrieval system.

Most literature on the subject is strictly philosophical, although

this is certainly not unproductive (cf. Mead, 1962, and Frank, 1962).

Some studies have tried to cover recreational activities without trying to understand them, relying mainly on simple analyses of demographic data on participants (Stuart, 1974).

Some studies have tried to deal with the psychological aspects of recreation, but have used inadequate or inappropriate standardized tests or research designs or have failed to adequately interpret their results. Behrman (1967) has used the Guilford-Zimmerman Temperament Survey as a personality measure for determining differences between nonswimmers and swimmers. However, because the G-Z Survey was normalized on a predominantly college sample, it would be difficult to use on a general population such as that needed by recreation researchers. The G-Z Survey is also aimed at determining personality in a predominantly urban environment; much recreation occurs in a totally different context. More importantly, the aspects of personality tapped by the G-Z Survey tend to leave out many of the aspects important to recreation, such as conservationist and survival aspects. Lamphear (1970) has used the Minnesota Multiphasic Personality Inventory (MMPI) to relate personality characteristics and participation by college males in 43 outdoor recreational activities in terms of activity days per year. Activity days are only a partial measure of participation. Furthermore, the MMPI is less than satisfactory as a personality measure for such a study, being aimed primarily at determining personality abnormalities. Even when used with "normal" subjects, the MMPI is geared to be

interpreted in a non-recreational context. As with the G-Z Survey, the MMPI leaves out several characteristics which could conceivably be of greater use in studying personality in a recreational context. Ibrahim (1971), also, has used the G-Z Survey. His study, like Behrman's, illustrates the inadequacies of a broad measure of personality. He also uses a broad definition of recreation, which includes all leisure-time activities, which means that he compares activities which may not be comparable in terms of the conditions in which they are undertaken. Ferriss (1970) indicates that there are personality-recreational correlates but does not interpret the data he presents.

Even physiologists have neglected individual recreational activities, despite the availability of the necessary methodology (Clarke & Clarke, 1970). Most authors merely highlight problems and weaknesses in the current research (Peterson, 1973).

The ORRRC both talked about and exemplified many of the problems. It drew the obvious conclusions that there is little backlog of quantitative data and no well-formulated, accepted set of measurement units (Commission Staff, 1962); there is not even an adequate or commonly accepted definition of leisure (Frank, 1962). However, the Commission apparently failed to realize that many of its own reports encourage a more serious problem: narrow-mindedness. Its reports on hunting (Department of Conservation, 1962) and fishing (Bureau of Sport Fisheries and Wildlife, 1962) deal mainly with the resource demands made by the two activities and have little to say about hunters and

fishermen, although the reports assume that such participation-related factors as population growth, population age changes, and increased urbanization affect these two activities. The ORRRC's report on prospective demand for outdoor recreation (Commission Staff, 1962) emphasizes the economic aspects almost to the exclusion of any other aspects.

Such weaknesses should be exposed, but an attempt should also be made to remedy them.

Some research has been based on the concept of "user satisfaction" as a predictor of participation in an activity (Hendee & Burdge, 1974; Shontz et al., 1975) or in a recreation area (Department of Resource Development, 1962). Although potentially useful, this concept is more limited than a model of substitutability; it could, in fact, be incorporated in such a model as a psychological measure.

Some writers approximate a substitutability approach. Ferriss (1962) indicates the need for such an approach. Levy (1974), stressing the complexity of human behavior, has tried to develop a mathematical model of leisure--which, unfortunately, is too abstract to be applied in practical situations. Hendee and Burdge (1974) discuss the substitutability concept itself, but define it solely in terms of user satisfaction.

Substitutability of recreational activities is a broad, interdisciplinary concept. Recreational activities are a complex subject. This is why the ORRRC could draw on so many disciplines and

still produce reports with large gaps. This is why definitions in the area of recreation are so difficult to specify: In an attempt to keep them short, most are either too vague or too narrow.

Outdoor Recreation

Recreation is a subdivision of "leisure." Leisure could be defined as ". . . all the time left over after survival activities . . ." (Nash, 1962, p. 158). It could be distinguished from "work" by its goals (Klausner, 1971). Leisure can be destructive, dissipative, or degenerative (Nash, 1962). Leisure, according to the Protestant work ethic, is a basically negative concept: Leisure is not-work.

The more positive concept of "recreation" has developed in contrast to this negative concept. Not all leisure is recreation. Recreation is purposeful; it ". . . is those activities which form an outlet to creativity, both in a physical and a spiritual sense" (Nash, 1962, p. 158). Recreation is complex in its demands; it may require definite plans, skills, or facilities (Stoddard, 1962). Recreation is beneficial to the participant, providing new physical skills, a change of environment, a reduction in tension, satisfaction of social needs, a creative release of energy, a chance for meditation, or satisfaction of other needs or desires (Mead, 1962; Mueller & Gurin, 1962; Nash, 1962).

Recreational activities can be divided into "participant" and "observer" activities. Participant activities involve the individual directly in the activity; they include such activities as hiking and crosscountry skiing. Observer activities--such as attending baseball

games and sightseeing--require little more than visual or oral participation.

Although there are dangers in defining observer activities as recreation (Mead, 1962; Nash, 1962), there are worse dangers in ignoring them. (The observer activity of sightseeing is included in this thesis, although it is coupled with the participant activity of photography.) Limitations in time, equipment, money, skills, and physical capacities may require a commitment to vicarious rather than direct participation in an activity, and may satisfy some of the same needs if the commitment level is high enough. Even when there are no such limitations, observer activities may, for other reasons, compete with direct participation for time, money, and effort. Furthermore, participant and observer activities are ends on a continuum, not a dichotomy.

Another useful distinction is between "natural" and "domesticated" activities. Natural recreation, as defined here, is usually found in rural environments because it requires space or facilities available only in relatively isolated, natural environments; such activities as backpacking, hunting, and crosscountry skiing are natural recreational activities. Domesticated recreation can be found in urban environments and makes few or no demands on nature for facilities; this includes such activities as tennis, bowling, and basketball.

Natural and domesticated activities are also at the ends of a continuum. Domesticated recreation may occur in a supposedly rural environment if the facilities are available, such as at a resort or dude

ranch, or with slight modifications, such as bicycling on smooth hiking trails. A few natural activities, such as dayhiking, can be transplanted, with modifications, to an urban environment. Some activities are natural or domesticated depending on the environment used--such as motorboating, which can be done on a wild lake or on a manmade reservoir, or swimming, which can be done in a natural body of water or an artificial swimming pool.

With increasing development of natural areas, many basic distinctions between natural and domesticated activities are being blurred, and it is becoming harder to find the opportunity to participate in a truly natural activity; an investigation of recreational motives and skills might help redirect area use to maintain a broad range of opportunity (Hendee, 1970).

Stankey (1972) elaborates on this problem of the evolution of recreational activities and areas to suit the "average" participant. He points out that areas such as wilderness are intended for people with certain characteristics and that management should be guided by the needs of only such people:

> Treating wilderness visitor responses in an undiscriminating fashion could lead to both inequitable and inefficient allocations. Only those visitors whose needs and tastes lie "on the average" would be satisfied, and it is precisely this type of visitor who can most easily be accommodated elsewhere. Furthermore, there is probably a high degree of substitutability among alternatives

> associated with this type of visitor's preferences. At the same time, we would fail altogether to allocate opportunities for those who seek an experience associated only with environments of a near-natural state--locations that are of limited availability and beyond our capability at present to produce (pp. 93-94).

Management has to find an alternative to its present policy of bringing all activities and areas to the common level if it is going to please anyone but the fictitious average participant. Furthermore, as population size and urban densities increase, the general public will become less discriminating in its attitudes toward traditional wilderness values. If management guidelines are designed to accommodate these gradually less demanding, average tastes, the unique wilderness experience will eventually be completely destroyed. This is one more example of why research is needed now on alternatives in recreation.

For simplicity in dealing with subjects, this thesis has used the word "outdoor" instead of "natural." An outdoor recreational activity (ORA) is defined here as any activity, commonly viewed as a recreational activity occurring outdoors and pursued in leisure time, which can be subsumed under a single, commonly recognizable name and which is defined so that it has at least one element represented by no other activity considered.

The activities selected for this thesis include only those ORAs found in the Gallatin Canyon, a semi-primitive area in southwestern Montana (although subjects were asked to respond in terms of their total

participation, regardless of whether they had ever engaged in these activities in Gallatin Canyon). Of the activities considered, some were omitted as difficult to define with proper scope (camping, bicycling, swimming, and off-road vehicle use) and some were omitted because it would be difficult to obtain an adequate participant sample (ice climbing, kayaking, canoeing, inner tubing, rafting, rowboating, sailboating, motorboating, water skiing, and ski mountaineering). Seventeen activities were chosen, defined, and numbered (for reference later in this thesis) as follows:

1. Dayhiking: Walking which requires one day or less, no special training, and no special equipment.

2. Backpacking: Walking which requires more than one day and transport of supplies on one's back.

3. Mountain Climbing: Hiking over mountainous terrain (1000' gain per mile, at least 3000' gain overall), usually with little or no trail.

4. Rock Climbing: Hiking or climbing on rocks.

5. Snowshoeing: Use of snowshoes for recreation.

6. Downhill Skiing: Going up hill and skiing down, usually at ski resort.

7. Crosscountry Skiing (Ski Touring): Skiing which includes flat or gently rolling terrain and usually not many long or steep slopes.

8. Gun Hunting: Tracking, stalking, or otherwise looking for game from the ground with intent to shoot it with gun.

9. Bow Hunting: Tracking, stalking, or otherwise looking for game

from the ground with intent to shoot it with bow and arrow.

10. Fishing: Attempt to catch living fish in non-stagnant water.

11. Day Trips on Horseback: Trips on horse which require one day or less.

12. Pack Trips on Horseback: Trips on horse which require more than one day and transport of supplies on own horse, pack horse, or pack mule.

13. Trail Bike Driving: Driving trail bike off main street, highway, or vacant lot. (In other words, driving trail bike somewhere like Forest Service trail.)

14. Snowmobiling: Use of snowmobile for recreation.

15. Sightseeing and/or Photography of Landscape: Going to area with objective of sightseeing and/or photographing landscape and/or vegetation.

16. Sightseeing and/or Photography of Wildlife: Going to area with objective of sightseeing and/or photographing wildlife.

17. Sightseeing and/or Photography of Human Activity: Going to area with objective of sightseeing and/or photographing human activities and/or evidence of human presence.

Ski touring was combined with crosscountry skiing because the differences between them are slight; in common usage the two terms are often interchanged.

Activities #15, #16, and #17 were differentiated because pilot work indicated that they are indeed different activities--occurring under

different conditions, participated in by different people, and viewed differently.

Some of these activities are well-defined in common usage (such as fishing); some even experts do not define consistently (such as mountain climbing). Some are best defined in terms of objective (such as mountain climbing), some in terms of equipment used (such as snowshoeing), and some in terms of necessary skills (such as dayhiking). Some are frequently defined by comparative reference to particular locations (such as downhill skiing or mountain climbing). Complete definitions would include all of these elements for all of the activities, but would be too long and cumbersome for use on a questionnaire aimed at the general public.

The Idea of Substitutability

The available literature indicates an increasing demand for recreation. Increasing availability of fixed vacations and long weekends (Mead, 1962); more and better transportation facilities--leading to greater mobility and decreased perceptual distances--(Goldenthal, 1962; Mueller & Gurin, 1962); increasing urbanization--with its attendant need to escape ever-present urban tensions--(Goode, 1962; Heimstra, 1974); increasing availability, through technological improvements, of good, inexpensive, recreational equipment (Hauser, 1962); increasing leisure time (Commission Staff, 1962): These changes (among others) increase the demand for recreation.

This then is the picture of the future: More people taking more

> vacations, learning more about vacations and recreation, developing a wider range of skills and making more demands on every kind of recreation area, and rearing a generation of outdoor-minded children who will have even more skills and make even more demands (Mead, 1962, p. 22).

Balanced against this increasing demand is a finite--and, in some cases, decreasing--amount of facilities, especially for outdoor recreation. Cicchetti (1972) demonstrates this vividly. Hauser (1962) explains that the increases in population size and concentration and the changes in population composition (such as altered household composition and increased median age, educational level, and white collar labor force) are contributing to an overloading of available recreation areas. As areas become overloaded, motives for using them may no longer be satisfied. For example, city stresses may become part of an area that was sought for release of those very stresses (Heimstra, 1974), perhaps leading, in turn, to a frustration which increases the original stresses. The same may be true of activities--such as skiing--as they evolve from a natural to a domesticated status. Such changes in areas and activities may force changes in participation preferences--and, therefore, in demand patterns. Such changes must be considered in planning.

The situation is particularly acute in those areas classified as wilderness. There is

> . . . an increasing number of people seeking a primitive kind of

> recreational experience in a type of area that is limited in supply and whose reproduction is largely beyond our technical-economic capabilities. The issue is further complicated by the institutional constraints of the Wilderness Act: these preclude the options of either letting use continue unabated or totally restricting use. The objectives of this Act necessitate managerial action; the question confronting us concerns the specific nature of that action (Stankey, 1972, p. 90).

Hendee (1970) and Driver (1972) concur. Because use changes an area, managers need to know why an area is perceived as wilderness (or why an activity is perceived as wildernistic) and what the relationship is between an area's (or activity's) physical characteristics and its users' affective states (Heimstra, 1974).

This is one reason why adequate research on recreation--and on leisure activities in general--is essential: Viable alternatives must be found to relieve overuse of current facilities all along the continuum from wilderness to bowling alleys.

There are two approaches to this problem: (1) Find out what people are doing now and try to help them continue doing it. (2) Also find out why people are doing what they are doing and what else they could be doing to achieve the same goals, and help them to achieve their goals in the best way for everybody.

The first approach could handle some of the current recreation research needs. For instance, it could identify the facilities needed

right now by certain types of people, such as teenagers, whose needs have long been neglected (Mead, 1962). It could also aid educators and the mass media in preparing people for recreation, in terms of attitudes, understanding, knowledge, general skills, and specific skills (Kaplan & Lazarfeld, 1962; Smith, 1962). One problem with this approach is that a limit is soon reached beyond which no more facilities can be provided; wilderness is one example, already mentioned, of such a finite resource. This approach will not solve the problem when the demand for facilities exceeds their supply.

An important advantage of the second approach is that it provides rationale for the channelling of recreational activity away from overcrowded facilities. It also provides for predictable preference changes--as when new roles develop for the various sexes, age levels, and family members (Goode, 1962). Increased education, time, and income lead to an increased range of activities in which an individual can participate (Mead, 1962); because all three factors are increasing in the general population, the second approach could facilitate a shifting of participation to less crowded or more satisfactory activities. Also, as more whole families seek recreation areas, the need for multi-use areas, with a variety of activities available in the same general vicinity, will increase (Goode, 1962; Mead, 1962).

The second approach is a substitutability approach. Klausner (1971) hits the core of the idea of substitutability when he remarks that the demands of a situation may be satisfied by a variety of devices--

that is, a rescue operation in moderate snow might be performed using either a horse or a snowmobile, depending on which is readily available and whether there are any extenuating circumstances.

Romsa (1973) has experimented with clustering activities according to general participation patterns and determining the socioeconomic characteristics of the participants in each of the clusters.

> The value of such an approach is readily seen. Consumption patterns can be clustered into manageable, fairly homogeneous recreational activity groups. The demands of each group can then be inferred and policy formulated on the basis of these demands. Furthermore the relationships between socioeconomic indices and the consumption patterns are shown. Thus, as the indices change, adjustment on the supply can be made as required (p. 35).

However, the scope of his model is limited in terms of the activities and socioeconomic variables used and in the disregard of variables associated with the activities themselves. It would be difficult to adapt Romsa's model to include anything he has omitted.

Hendee and Burdge (1974) also present the substitutability concept. They note four of the possible research questions:

> 1. What are the relationships between different kinds of leisure activities and the settings in which they occur? 2. Are there conceptually related types of leisure activities that are potential trade-offs for one another with minimal loss of satisfaction to the participant? 3. What trade-offs and substitutions among leisure

> activities are made as people grow older and as opportunities change? 4. To what extent and why are trade-offs between activities made and what are the resulting changes in leisure-related satisfactions and benefits? (pp. 157-158).

Hendee and Burdge point out that the time is already at hand for this concept to be used. "When use of recreation opportunities such as campgrounds or wilderness is limited by advance reservations or quotas, the search for substitutes is very real for the person excluded" (p. 161). Furthermore,

> the current concern by recreation managers over excessive crowding, disregard for environmental values, and preference for inappropriate facilities and activities may reflect the selection of outdoor recreation by persons whose leisure interests might reflect other priorities. The popularity and overuse problems in outdoor recreation areas may thus be due in part to the presence of people seeking leisure satisfactions that might be, but are not, met elsewhere (p. 160).

Participants in the BOR workshop on outdoor recreation research needs (Van Horne, 1974) listed substitutability as the highest priority research task, with an emphasis on psychological substitutability among outdoor recreation activities. Also listed as high priority was research on substitutability among recreation sites, resources, and facilities.

Hendee and Burdge (1974) suggest that too much recreation research is aimed at just outdoor recreational activities. Hauser (1962) makes

the same point when he states, "Outdoor recreation behavior must necessarily be analyzed as one form of leisure time activity. As such, any attempt to estimate the future outdoor recreation behavior of the American people must be considered in the context of alternative forms of leisure" (p. 28).

However, in studying recreation a start has to be made somewhere and there are good reasons for starting with outdoor recreation. Hendee himself makes this point:

> If we accept the pessimistic view that natural environment values appeal predominantly to an affluent minority and, for one reason or another, more people are relatively indifferent to nature, one might question the legitimacy of our concern. . . . A good reason may be that recreational activity in the natural environment, by its contrast with other areas altered by man, is stimulating and spearheading political activity by an alarmed minority who are outraged over society's alteration of basic environmental resources such as air, water, vegetation, and open space. Natural areas are also valuable to science as ecological bench marks, but it is only through recreational activity that more than a relative handful of persons see firsthand or experience anything approximating the ecological conditions from which their living environment has deviated. Although it may be a self-righteous position, natural areas providing recreational activity serve the interest of all citizens if they help sustain political efforts to

> control within liveable dimensions the alteration of environmental resources affecting everyone (1970, p. 36).

At stake is much more than recreational desires: At stake is the everyday living and working environment, as well.

Another good reason is found in the very fact that most recreation research to date has been concerned with outdoor recreation. What little usable theory and methodology there is right now is found in that research and needs to be developed so that such research can eventually turn to recreation as a whole.

There is an evident need for recreation research. There is an equally evident lack of appropriate methodology. A practical model of substitutability could fill the methodological gap. Because there is justification for beginning with research on outdoor recreation, this thesis will use outdoor recreational activities in its presentation of such a model. There need by no such limitation placed on the ultimate model.

Substitutability Theory

Substitutability is a concept of viable alternatives. It refers to the possibility of substituting activities for each other under certain conditions. A model of substitutability would define each activity considered; define the conditions required by the activity, the conditions inadmissable by it, and the conditions which facilitate (but are not required by) or hinder (but are not prohibitive for) the activity; and specify the characteristics required of and displayed by

the participants. From this model could be deduced the overlap among activities. To the extent that two activities overlap (barring any definitely incompatible conditions), they may be substituted for each other--under, of course, the proper conditions. Perfect overlap would be quite rare and would probably indicate two activities which would eventually become so closely associated that they would be commonly perceived as one activity.

One assumption on which substitutability theory is based is stated by Ferriss (1962), who voices his expectation to find predictable recreation participation patterns for individuals. If there are no such predictable patterns, the whole model is impractical.

Associated with the substitutability concept are the ideas of compatibility and conflict (Wager, 1964). When two activities have the same environmental requirements and draw from populations of participants which are not grossly different, they may be compatible: That is, they may occur together without loss of satisfaction to the participants. However, when there are any gross or basic discrepancies between two activities, they can be said to be in conflict. For example, crosscountry skiers are noted for having extremely different attitudes about snowmobiling than do snowmobilers, so these two activities are probably in conflict. If the substitutability model is set up correctly, both compatibility and conflict can be predicted with it.

Another related concept is that of recreational succession, the idea

that the kinds of people using an area will change as current users discover that the activities available in that area no longer meet their needs. For instance, as a natural area is developed, wilderness purists will no longer frequent the area; instead, participants in more domesticated activities will be more likely to use it (Stankey, 1972; Shontz et al., 1975). The term "succession" may also refer to changes in individual participation patterns due to any of a number of factors; this usage is also related to the substitutability concept.

In order to determine the amount of substitutability among activities, the activities must be compared. As Hendee and Burdge (1974) point out, this comparison has been attempted in a variety of ways. Klausner (1971) suggests three broad areas of comparison: man's relation to nature, man's relation to other men, and man's relation to himself.

These, however, provide an insufficient basis for a model of substitutability. Ferriss (1962) says that "characteristics of the activity may predetermine or condition participation in the activity. These characteristics are considered in terms of the limits they specify" (p. 5). The characteristics of both the activities and the participants must be considered.

There are at least six dimensions which affect substitutability: environmental requirements, skill factors, physiological requirements, resource requirements, demographic patterns of participants, and psychological patterns of participants. At least these six must be

considered in a substitutability model if it is to be accurate.

Environmental requirements. Every ORA occurs in some kind of physical setting. There are five basic areas of environmental comparison: geography, climate (weather and season), vegetation, wildlife, and constructed facilities. All five areas may have facilitative or prohibitive aspects.

The Department of Resource Development at Michigan State University (1962) has used a 30-block geographical classification of the areas they have studied: topography (flat, rolling and hilly, or mountainous), water (contiguous to or including bodies of water, bordering a stream, no significant water features, or--added for mountainous topography only--no significant water features but emphasis on snow conditions), and vegetation (treeless, mixed tree and open space, or forested).

Litton et al. (1972) have developed a comprehensive water inventory which has possibilities but needs refinement before it can be used effectively in a substitutability model.

There are other ways geography could be inventoried, but at present there is no totally satisfactory way. This is a common complaint in literature dealing with studies of the perceived physical environment.

The Wildland Research Center at the University of California (1962) indicates that seasonal analysis is important, but does not discuss in detail how it can be accomplished.

When constructed facilities (such as boat ramps or ski lifts) are

necessary for an activity, their lack or inaccessibility may be a barrier to participation in that activity (Mueller & Gurin, 1962). It has already been noted that rising participation may lead to overcrowding, which will make existing facilities inaccessible to some potential participants. Obviously, then, the necessity for facilities may be a constraining characteristic for an activity.

The lack of constructed facilities may discourage participation by some individuals, while their presence may encourage others. For instance, hiking purists may shun areas which contain paved trails and outhouses, while less committed hikers may prefer such areas. This indicates the interrelatedness of the dimensions: Environment seems to be highly correlated with demographic, psychological, and physiological factors.

Some activities have more specific needs than others. For instance, it is possible to hike almost anywhere, at any time, under any conditions; but downhill skiing requires a cleared hill covered with snow and fishing requires water in which game fish are able to live.

Skill factors. Each ORA requires or is enhanced by certain general skills--such as adequate visual acuity or walking ability--and certain particular skills--such as the ability to tie a square knot. Some of the skills are learned--such as proper use of a jacknife--but some, although trainable, may be basically innate--such as sense of direction. Each ORA also requires or is enhanced by certain types of knowledge--such as knowledge of first aid or emergency procedures.

Each ORA can be divided into skill categories which are differentiated in terms of skills and knowledge. For instance, a beginning hiker might know nothing except what a trail looks like and might have no skills other than a general ability to walk. A slightly more advanced hiker might, in addition, know how to ford a stream safely and be able to read a compass or trail map.

Objective, although not a skill or knowledge, is frequently closely connected with skill and may be combined with skill categories. For example, a gun hunter whose primary objective in hunting is to provide all his family's meat for the year is probably a fairly knowledgeable, skilled hunter. A beginner who starts a hunt with this objective will soon find (unless he is extremely lucky) that his objective is grossly inappropriate. Objective can be treated in conjunction with skills and knowledge in defining skill level; but it must be treated subordinately, and might, perhaps, be treated better separately, as a psychological factor.

Another possible factor in the definition of skill levels concerns the results of the activity (which may not agree with the objectives). Nash (1962) suggests a continuum of results with six labeled points ranging from acts against society to creative participation. This, like objective, can perhaps be handled more effectively as a psychological factor, although it may be closely tied to skill and knowledge in many cases.

There has been much published commercially about the skills and

knowledge helpful in individual ORAs. This information needs to be compiled in such a way that overlap among activities can be readily seen. Many participants may not realize that they could easily learn a new activity by simply transferring their present skills and knowledge to a new situation and learning anew a small amount. This has important implications for recreational educators: They could conceivably isolate basic skills (such as tying a square knot) which are applicable to a large number of activities and concentrate on teaching these first, emphasizing their use in a variety of activities.

Skill levels are not totally stable. Goode (1962) writes at length about American outdoor skills. He notes that the beginner's natural desire to excel at something immediately and effortlessly, and the equally natural desire to increase satisfaction while decreasing risk, have combined with modern technology to produce good, inexpensive equipment that lets beginners tackle recreational tasks which were previously the realm of the advanced. Yet the main difference here is equipment; the beginners have not really increased their skill level in the old sense. Mead (1962) puts it well:

> Especially in this generation many Americans have learned--and unquestionably many more will learn--to become do-it-yourself amateurs at many things from repairing leaking faucets and drainpipes to building furniture and even houses; but to an increasing extent they are using specially prepared materials and are becoming dependent on a whole new set of experts, on whose

> advice they are drawing for instruction in how to use the new materials for the tasks they have set themselves. So the acquisition of new skills is turning them neither into jacks-of-all-trades nor into craftsmen in the old sense of knowing how to work out new problems by using familiar materials, but rather into new kinds of consumers of materials made ready for some final use (p. 16).

There are more inexpensive, public training classes now that raise the skill and knowledge levels of the general public (Goode, 1962). This forces the top "performers" in an activity to add new skill requirements or objectives to the top of the skill scale. Rock climbing and mountain climbing are two examples of this evolution, forced by a combination of increased popularity, increased availability, and improved equipment.

Mead (1962) differentiates three types of skills: physical (such as ability to swim), practical (such as knowledge of knot tying, trip planning, or proper clothing), and social (such as knowledge of trail or campground etiquette). A wider variety of skills will lead to more varied participation patterns and/or participation in more complex activities.

Physiological requirements. Each ORA makes physiological demands in such areas as static and dynamic balance; muscular strength, endurance (as measured by lactic acid levels), and coordination; and cardiovascular endurance (as measured by heart rate and maximum oxygen uptake).

An individual who cannot meet the demands will have difficulty participating in an activity and will probably not derive from it much satisfaction. For instance, crosscountry skiing demands high maximum oxygen uptake, and an individual whose uptake is very low would probably find this activity too taxing.

General health level, age-related health factors, and physical impairments affect an individual's participation, often necessitating the substitution of more passive activities than those in which he is used to participating or would like to participate (Ferriss, 1962; Mueller & Gurin, 1962).

In addition, recreational activity can change the physical health of a participant in important ways (Frank, 1962), including general physical conditioning; improvement of the functioning of specific muscles, organs, and systems; and impairment due to accidents.

It is a generally accepted assumption that Americans are becoming soft and passive. Participation patterns should indicate this trend, if it is true; increased knowledge of what is involved physiologically in various recreational activities, combined with more aware participation choices, could help change both the patterns and the trend.

Resource requirements. Each ORA requires of its participants a certain amount of available resources, including money (ready cash and available equipment), time (for both training and participation), and transportation. Each person has a maximum of these resources available for recreation in general; their distribution will affect the particular

ORAs chosen. For instance, in terms of his available monetary resources, is the average college student more likely to camp in his own Winnebago or go backpacking? Or, in terms of the time demands of the trip, is a person more likely to plan a thousand-mile vacation trip to the nearest national park if he has a three-week block of vacation time or if he has 21 single-day vacations throughout the year?

Total available leisure time may limit pursuit of an ORA; the percentage of an individual's total available leisure time that he uses in a given ORA may indicate his level of commitment to that ORA. For example, the person who has three full days a week available for recreation and spends six hours a week skiing is probably less committed to the activity than someone who has only six hours a week free for recreation and spends all six on the slopes.

Ferriss (1962) and Lerner (1965) both support this analysis of necessary resources. Mead (1962) lists size and type of car and transportability of large equipment (such as a boat) as important transportation considerations. Mueller and Gurin (1962) list cost and lack of time, car, equipment, and facilities among the factors most often mentioned as preventing participation in a given ORA. Distance to facilities is another factor often listed (Ferriss, 1962; Klausner, 1971; Mueller & Gurin, 1962).

This suggests that those ORAs which require the least resources (the least time, training, skill, preparation, money, equipment, facilities, travel time, travel distance, and effort) will draw the heaviest

participation. This also suggests that those who engage in less popular activities may be more committed (Mueller & Gurin, 1962) or may be seeking greater status (Goode, 1962).

Demographic patterns of participants. Demographic data are not conducive to causal conclusions; however, they may serve as predictors of participation patterns. Demographic data on participants include such items as sex, age, educational background, occupation, marital status, dependents, residence (past and present), religion, race, organizational affiliations, and cultural factors (traditions, customs, and legal restrictions). A statistical treatment of past experience may also be included.

Age can be treated as a physiological factor, because its physiological components strongly affect participation. However, age has status, experience, and image components which suggest that it must also be handled as a demographic and psychological variable.

Family ties (such as a need to care for older people or children during times of recreation, or a need to satisfy differing recreational desires within a family) are often mentioned as a deterrent to participation in desired ORAs (Mueller & Gurin, 1962).

Women seem to have lower participation rates than men (Mueller & Gurin, 1962). Sex could conceivably affect both overall outdoor participation and choice of specific ORAs.

Klausner (1971) considers residence, occupation, and race to be related to outdoor recreation as factors of class culture and education

rather than as independent variables.

Mueller and Gurin (1962), the Wildland Research Center (1962), and Heimstra (1974) suggest that higher income is correlated with increased outdoor recreation. The Wildland Research Center also found a slight and complicated relationship between income and commitment to wilderness recreation. Klausner (1971), however, notes that this varies with the ORA: Picnicking and nature walking increase with income, hunting decreases, and camping increases to a certain income ($9,000 or $15,000, depending on whose data are used) and then decreases. This information is difficult to interpret. Klausner points to the high correlations of income with class culture and education (which also correlate with participation patterns). Mueller and Gurin point to the correlations of participation with educational and occupational status. The Department of Resource Development (1962) points to the income levels of the areas surrounding the sites of surveys and the high correlation between education and income. Heimstra points to the correlations among education, occupation, and income. Harry (1972) also points to the education-income correlations. Income may be a predictor, but it is a complex item and may be derived from other predictors. (See section on "Questions Omitted from the Questionnaire.")

Psychological patterns of participants. Each ORA attracts participants with certain patterns of psychological characteristics, and may encourage or discourage the formation of certain such patterns. If data on these matters can be collected, management can plan for

facilities which will best suit potential users, educators can better encourage selective participation, and participants can better choose activities which will suit their needs and bring them into contact with compatible fellow participants.

On a practical level, psychological data should lead to accurate predictions. However, unlike demographic data, the ultimate goal of psychological data is an understanding of hows and whys--causes, not just effects and correlations. It is in this realm that such things as motivations, goals, values, fears, needs, and desires must be studied.

This is a difficult area to tackle. Most writers avoid it altogether; a few mention it briefly. For instance, Margaret Mead (1962) suggests that special preferences for the sea, mountains, desert, or lake (which usually have a largely psychological basis) can be a determining factor in recreational choice.

Frank (1962) states that personality (especially likes, dislikes, aspirations, and driving ambitions) is important in recreational choice. He then mentions the greatest methodological snag:

> Even the reports of what people say they like and do may fail to reveal what the individual personality may genuinely desire and might truly enjoy. People need outdoor recreation but . . . may fail to discover what would be individually beneficial and, for a variety of reasons, may give up the search for what would be more appropriate and fulfilling of their own needs and desires (p. 221).

He also suggests that recreational activity has great significance for

mental health, but he makes few concrete statements on exactly how or why this is true.

Ferriss (1962) isolates prestige, status level, and a need for continuous learning as important motives in recreational choice; all three are psychological factors. He also states the common methodological assumption ". . . that the unfulfilled demand for an outdoor recreation activity is reflected in preferences for that activity, even though the person may not participate" (p. 4).

Mueller and Gurin (1962) allude to the importance of psychological factors, but their major emphasis is on demographic factors.

Goode (1962) mentions that "people prefer certain areas for outdoor recreation, in order to be with others of similar tastes and income, as well as to avoid still other people" (p. 109). This could help explain some of the demographic trends noted by researchers. Other psychological bases for the demographic data could undoubtedly be found, if proper research were undertaken.

Heimstra (1974) lists as psychological factors the development, maintenance, satisfaction, or protection of self-image, social identities, esteem, skills, achievement, power, exploration, curiosity, self-fulfillment, and problem-need states.

The Wildland Research Center (1962) mentions the need for a psychological approach in regard to a specific problem:

> In the formulation of policies to be followed in management of wilderness areas of the United States, many factors must be

> considered. Not the least of these are the needs and opinions of that part of the American population who actually use and enjoy wilderness reserves. Who are these people? What do they do in the wilderness? What do they get out of their experience? What do they know and think about wilderness preservation problems and policies? Answers to these questions are important in the reservation and management of wilderness areas (p. 126).

Interdimensional comparisons. It has already been indicated that these six dimensions are interrelated. For instance, purists in an activity may avoid some environmental factors (such as ski lifts or outhouses on hiking trails) or require others (such as wildlife) to which other participants in the same activity may react differently.

Because of this interrelatedness, a quantitative substitutability index can ideally be developed whereby every ORA can be compared with every other on a combination of these six dimensions. The model as currently presented has not reached this degree of statistical sophistication.

In the meantime, every ORA may be assigned to a group of similar ORAs on each dimension. Crude interdimensional comparisons may then be made. The dimensions which make the most rigid demands on an activity should be considered first, because what is not absolutely required or prohibited can usually be omitted or allowed (respectively)--although usually with a difference in the level of the participants' satisfaction (as a function of their objectives for participating in the first place).

This Thesis

The purposes of this thesis are to lay the conceptual foundation for a model of substitutability and to present a brief, sample analysis (mainly descriptive) of data concerning some selected activities. As with all work on the frontiers of a field, this is only pilot work, with the main thrust in the area of theory. The data are based on a first-run questionnaire which has as its main purpose the illustration of the types of questions and comparative data collection necessary to support a substitutability model. The sample is inadequate for conclusive analyses, so the analyses have been selected as examples of necessary analyses and, in some cases, as indicators of possible trends and areas for fruitful research.

The six suggested dimensions will be handled as follows: physiological requirements--with crude measures of general physical fitness; skill factors--determined on the basis of comments by expert participants and not studied in their own right; environmental requirements--non-quantitatively (mainly with commonsense observations); resource requirements and demographic patterns--mainly with descriptive statistics based on respondent data and on local sporting goods stores' price quotations; and psychological patterns--descriptively, with some inferential work, based on data collected from the questionnaire.

Questions Included in the Questionnaire

A copy of the questionnaire is included as Appendix A.

Six questions are asked about every activity; up to four additional

questions are asked in some cases. The first two questions for each activity are answered by all subjects; the remaining questions for each activity are answered by only participants in that activity.

Question #1: Participation. The purpose of this question is to determine whether the individual considers himself a participant in the activity. "Participation" is not defined for the subjects; it is assumed that individuals will answer in terms of current (within a couple of years) participation. An individual's participation patterns will be determined by his pattern of answers to this question across the 17 ORAs.

Question #2: Attitudes. Mueller and Gurin (1962) and the Wildland Research Center (1962) point out the importance of psychological motivations and meanings in recreation. Hendee (1970) suggests that the committed natural recreationists (the ones whose participation can be switched least easily to other types of areas or activities) are those with the strongest attitude and value orientation toward nature. He also notes that direct confrontation with an attitude survey leads to results confounded by the halo effect of the current popularity of an "ecologically sound" attitude. Only the dedicated natural recreationist, the "purist," will agree with mandates such as the Wilderness Act, which seek primarily the preservation of the natural resource and only secondarily the utilization of that resource for recreation.

How can the purist be identified? Stankey (1972) says that "there are certain dimensions of the wilderness experience to which purists ascribe a significantly different set of values than others do . . ."

(p. 113). This is true of wilderness purists, snowmobiling purists, and other diehard participants: What sets them apart are their attitudes and values concerning what they do and where they do it. Non-participants and participants should also show marked attitude differences toward an activity.

According to Stankey (1972), "theorists commonly recognize three components of attitude: how a person feels about some object (affective component); what he knows about the object (cognitive component); and how he might actually behave in regard to an object (behavioral component)" (p. 97). Other parts of the questionnaire are geared to tap cognition and behavior; question #2 is designed to tap affective attitudes and values.

The two primary orientations considered are wildernism and urbanism, a complex continuum. The 17 scales comprise the Wildernism Scale developed by Willis (1975a, 1975b). Willis points out that such semantic differential scales are proving to be more dependable measures of attitudes and values than are more straightforward measures. The Wildernism Scale was chosen because, of the few such instruments currently available, it is the shortest one with good reliability and because it can be applied, if necessary, to all three of the crucial foci in recreation research: the recreationists, the activities, and the recreation sites. Furthermore, it provides a concise profile with great face validity, which makes it easier for a psychology layman (such as most land-use managers) to understand and interpret. The

purpose of this question is to determine, for each activity, areas of significant attitude discrepancies between different groups--such as participants versus non-participants; participants with low commitment or skill versus participants with high commitment or skill; or mutually-exclusive participants in two activities.

Hendee (1970) says that the users with the most wildernistic attitudes are urbanites, belong to conservation groups and outdoor clubs, have the most education, and have more close friends who are also wilderness recreationists. Such claims can be readily tested using a measure such as Willis' Wildernism Scale.

Stankey (1972) suggests that mode of travel, especially in wilderness areas, can be a bone of contention among recreationists. His research focuses on the attitudes of canoeists toward motorboatists, but the same perspective can be applied to such potential conflicts as crosscountry skiing and snowmobiling or backpacking and pack trips on horseback. Conflicts such as these should show up in the results of this question.

Question #3: Time commitment. This question concerns the number of times per year the individual participates in the activity. It is intended as a measure of time commitment, to be used in comparing participants.

Klausner (1971) and Mueller and Gurin (1962) suggest that time allocated to recreation might be a good measure of participation. If desired, an individual's participation in a given ORA could be

determined by his response to this question. (For instance, if most participants hike at least five times a year, participation could be redefined as "hiking at least four times a year" and anyone who hikes less than that could be considered a non-participant.)

A further potential of this question is to help determine the importance to the individual of each activity in which he participates. An individual is likely to devote more time to an activity which he considers important than to one in which he participates but to which he attaches little importance.

Question #4: Skill. The purpose of this question is to determine the skill level of each participant. An 11-point scale is provided for each activity, with a minimum of three points labeled on each. Although the responses are largely subjective, points are labeled in an attempt to loosely anchor responses to a scale relatively uniform across respondents. Labels such as "beginning," "intermediate," and "advanced," which are ill-defined in common usage, are not used (except in the case of downhill skiing, where slopes are commonly defined with such terms).

Some ORAs (such as rock climbing) already have relatively well-defined, commonly accepted skill level delineations; for others even experts disagree. The skill levels on the questionnaire are based on comments and suggestions by participants of at least moderate skill and knowledge.

The skill levels for rock climbing were condensed from a 16-point scale and those for mountain climbing were expanded from a 6-point

scale (Callas, Note 1). Downhill skiing uses the only other relatively standardized scale.

An 11-point scale is used because it is broad enough to cover those activities with a large range of necessary or potential skills (such as rock climbing) without being ridiculously broad for less complex ORAs (such as hiking). An odd-numbered scale allows for an "intermediate" answer.

The skill levels, as defined, have little comparability across activities. However, there is some rationale for keeping a standard number of levels per activity. Because the writer of such a questionnaire has preferences among and differential knowledge of the ORAs involved, a set number of levels helps him in standardizing his presentation of the ORAs. Such standardization, in turn, helps eliminate extraneous, questionnaire-induced biases on the part of the respondents.

Question #5: Sociability. Klausner (1971), Stankey (1972), and the Wildland Research Center (1962) suggest that there is a large social factor in ORA participation. The Bureau of Sport Fisheries and Wildlife (1962) considered sociability potentially important, although they found it to be irrelevant in the case of fishermen. Hendee (1970) views sociability as a vital element in wilderness recreation, in terms of renewing close personal ties with a few selected people. He claims that wilderness visits are made almost always by groups of two or more. The Wildland Research Center (1962) suggests that commitment to wilderness

recreation is ". . . greater where it is socially reinforced" (p. 135).

Pilot work revealed that respondents perceive a difference between participating alone and participating with one other person, so these are separate categories on the questionnaire.

For many activities or skill levels (such as direct aid rock climbing and beginning downhill skiing), safety may require the presence of at least one other person. This must be considered in interpreting the results of this question.

Another interpretive consideration is mentioned by Stankey (1972). He cautions that contacts within the group may be much different from contacts with other groups in the same area. "The strengthening of feelings of camaraderie and the sharing of a special kind of experience with members of one's own party probably do not infringe greatly upon an individual's search for solitude" (p. 102). The location of encounters with other groups is another important factor, according to Stankey. Furthermore, the mere evidence of man's presence can affect satisfaction with the experience. Stankey's work indicates that expectation of the presence of others and familiarity with them tend to breed tolerance and acceptance.

Question #6: Competition. This question is asked about only crosscountry skiing. The major difference between crosscountry skiing and ski touring is that the former may include formal competition while the latter does not. Because both of these activities are considered here under the label of crosscountry skiing, this question is included

to differentiate the respondents if this seems desirable.

Question #7: Equipment. This question is asked for all activities except hiking (which is defined as requiring no special equipment). It is basically an equipment checklist, with several purposes. From it can be derived a list of equipment used by all or most participants; such a list could be considered a list of equipment basic to (essential for) an ORA. From the checklist can also be derived a frequency count for the use of equipment which is often (but not always) used. By comparing the checklist to the skill level marked by the participant, it may be possible to determine equipment-use differences (for type of equipment and frequency of use) among skill levels for later research. Because average equipment costs are known, the checklist can also be used to estimate the cost of participating in each ORA. It is possible that the checklist (especially the spontaneous additions by respondents) can be used to indicate when a variety of devices can be used to satisfy the demands of a given activity.

This question does not take into account the use of equipment of better quality or fancier design than is absolutely necessary, which Goode (1962) mentions as a common status-seeking device.

In the case of skiing, there is the extra purpose of determining whether there is much overlap of equipment between downhill and crosscountry skiing, which will affect estimates of cost (and commitment, because there are distinct differences in the equipment).

Question #8: Overlap of equipment use. This question is asked

about snowshoeing, downhill skiing, crosscountry skiing, day trips on horseback, pack trips on horseback, trail bike driving, and snowmobiling. A given piece of equipment may be used in a variety of situations (Klausner, 1971). These seven activities use equipment which is also commonly used for necessary transportation, work, and rescue operations. The purpose of this question is to determine the overlap between recreational and other use of such equipment. Such overlap would affect estimates of recreation cost. It could also affect data interpretation; for instance, a rancher who buys a snowmobile for use on his ranch might then take up snowmobiling as a recreational activity because he already has the necessary equipment and skills, or he may shun snowmobiling as a form of recreation because he views it in only a work context.

Question #9: Transportation of equipment. This question is asked for only snowmobiling, to determine the possible additional cost of transporting a bulky piece of equipment.

Question #10: Combining activities. This question is asked about all the activities to determine which ORAs commonly occur concurrently or adjacently. This is a commonsense indication of compatibility, and notable absences could point to areas of conflict. It also suggests subordinate activities (activities which are not usually the primary activity when they occur in conjunction with another activity), isolated activities (which usually occur alone), and companion activities (which rarely occur alone).

Sex. Mueller and Gurin (1962) found that, on the whole, more men than women participate in outdoor recreation. However, as with most demographic variables, they found that it varies with the activity considered.

The Wildland Research Center (1962) suggests that men tend to be slightly more committed as wilderness recreationists than are women.

This question is included in the questionnaire mainly for comparison of participation patterns, although it can also be used to compare the results of any of the other questions.

Age. The Bureau of Sport Fisheries and Wildlife (1962) found no age factor among fishermen. However, the Wildland Research Center (1962) found that general participation increases with age. Mueller and Gurin (1962) found a strong relationship between age and both general and specific outdoor recreation. They suggest that physical capacity, life style, life cycle, and the ages of a person's children are factors contributing to the age correlation. Klausner (1971) cites the ages of children as an important factor in the type of camping a family does; because an individual's age and the ages of his children are usually correlated, this could contribute to the age effect.

The Wildland Research Center (1962) found no stable relationship between age and commitment to wilderness recreation.

This questionnaire is intended for administration to individuals aged 15 or older. Individuals younger than 15 usually are poor subjects for such a questionnaire because of limited attention span, lack of

attention to or understanding of instructions, or lack of seriousness in responding (Shontz, Note 2). Also, the minimum licensing age for such activities as hunting and driving is 15. An "under 15" category is included to catch any questionnaires accidentally given to such an individual.

Between 15 and 25, ages are grouped by five years instead of ten because a more rapid change occurs during those years than during adulthood. All ages past 65 are grouped because very little change is expected past that time.

Formal education. In the United States some amount of formal schooling is required, and there is an emphasis on receiving as much as possible. Because of the accessibility of a formal education, most Americans who desire an education seek it in a formal setting. Therefore, formal education is a reasonable measure of general education level.

Mueller and Gurin (1962) found that the level of education is positively correlated with the level of ORA participation. The Wildland Research Center (1962) also found such a correlation. The Bureau of Sport Fisheries and Wildlife (1962) speculates that education creates interests and develops skills helpful to outdoor recreation. Harry (1972) goes even further when he states that "education . . . increases interest in outdoor recreation, but particularly in pristine, wilderness-types of outdoor recreation. Thus, education acts as a positively facilitative cause, rather than simply as a permissive condition" (p. 218). (This contrasts with his view on income, which he maintains is

merely permissive.)

Hendee (1970) claims that people in the upper middle social class are the primary wilderness visitors and that ". . . high education seems most strongly related to the ability to appreciate and capture values and benefits of nature" (p. 36).

Contrary to traditional categorization, this questionnaire treats education in college (pre-bachelor's degree) and post-graduate work (after college graduation) in the same way, instead of combining all post-graduate work into one category. If Harry is right, there is no reason to believe that the interest level ceases to change after post-graduate work commences. Furthermore, many occupations require certain levels of post-graduate work (such as a doctorate), and many researchers claim that occupation correlates with ORA participation. The differing stress levels at the various levels of post-graduate education may also affect interest and participation in ORAs, especially the more wilderness oriented ones.

Non-formal education can also be important, but is more difficult to measure. Goode (1962) points out that ". . . training for outdoor leisure must be partly a matter of family tradition" (p. 105).

Occupation. Mueller and Gurin (1962) found that occupation and participation are definitely correlated. This is an expectable finding: Occupation is related to motives (such as stress levels and status seeking), time and money available for recreation, residence, and sex, all of which correlate with participation. These expectations are

further supported by the Wildland Research Center's (1962) findings that professional, semi-professional, and white collar workers have higher participation rates.

An open-ended question is used here because the best categorization schemes, which adequately cover current occupational variations, are too long to be included in a questionnaire which is already so long.

Marital status. The Wildland Research Center (1962) found no correlation between marital status and participation. However, this question is included as a measure of a major restriction on an individual's actions.

A break is made with survey tradition by the inclusion of the category "cohabiting." Although two (or more) individuals who are cohabiting are legally single, their freedom of movement is usually as restricted as that of a married couple; therefore, they are expected to yield results different from those of single people. It is assumed that this category will be used by individuals who are living together and who are having sexual (or otherwise binding) relationships--heterosexual or homosexual--with their living partners. It is further assumed that individuals who are merely occupying the same living space, such as college roommates, will restrict each other's ORA participation only as friends, because there is minimal sharing of such resources as time and money.

Child dependents. This question is included as a measure of another major restriction on an individual's actions. (See explanation of age

question.)

Hours per week. This question is intended as a direct measure of total available leisure time available for recreation. It could be correlated with several other demographic variables (including occupation, age, marital status, and dependents) and could affect both participation patterns and skill levels. By relating this measure to the number of activities in which the individual participates and the number of times per year per activity, a measure of commitment to each activity may be obtained.

Vacation time. Mueller and Gurin (1962) suggest that as available vacation time increases, so does overall outdoor recreation participation. Klausner (1971) suggests that the location in social time (such as Labor Day or winter) of a block of time free for outdoor recreation is influential to participation choices. The Wildland Research Center (1962) found that wilderness recreationists tend to have a paid vacation of at least two weeks a year. The Department of Conservation (1962) found that hunting is not primarily a vacation activity, though it is a camping activity.

This question is a measure of time potentially available for recreation in a large block. Vacation time is highly correlated with occupation and may be correlated with participation in specific ORAs which require large blocks of time, such as pack trips.

Transportation. As has been explained, transportation is a vital factor in ORA participation. The more convenient the transportation to

an activity, the more likely the individual is to participate. Public transportation in Montana is almost non-existent, so the last category is not truly a viable alternative for the population sampled for this thesis.

Height, weight, and bone structure. These three questions can be combined into a crude measure of physical fitness, using a standard chart of proper weight range per height and bone structure. (It is assumed that no respondents are pregnant, or that any who are will indicate the fact.) This derived measure is expected to correlate with participation patterns--in terms of number and kinds of activities--and with skill levels within activities. Height and bone structure--except at the extremes--are not expected to correlate, although weight as a lone measure may relate to specific activities.

Muscle tone, sense of balance, and limberness. These questions are included to provide three more crude measures of physical fitness. Sense of balance and limberness are of particular importance for certain ORAs, while muscle tone is of more general importance.

These questions could also serve as a check on respondent honesty. For instance, a subject who says he has poor balance but classifies himself as an advanced skier is of questionable honesty because balance is crucial to skiing. The questions on muscle tone, sense of balance, limberness, height, weight, and bone structure and the derived measure on proper weight are all crude measures of physical fitness. A doctor or other expert on physiology can more accurately determine fitness by

actually measuring the height, weight, and blood pressure of the subject. Muscle tone, sense of balance, and limberness can all be determined by available medical tests; although the semantic differential scales used here may correlate well with such tests, they have not been tested to determine this. Other tests, all of which are a part of a normal physical examination, could also be used to obtain more accurate data on physical fitness for given activities.

Physical restrictions. This question is included to provide additional interpretive material. A physical characteristic such as poor vision or an amputated leg would be expected to affect participation choices.

Comments. This section is included to allow subjects to blow off steam, add additional information, criticize the questionnaire or administration procedures, or otherwise provide feedback or input.

Questions Omitted from the Questionnaire

Residence. A review of the literature on recreationist surveys indicates that, while it is commonly believed that urban versus rural residence affects recreation patterns, no one agrees on why, on what can therefore be predicted, or on what the actual pattern differences are.

There are two major classes of theories: opportunity theory and motivation theory. Lindsay and Ogle (1972) represent an extreme in opportunity theory, stating that where there is opportunity to participate, factors such as income, education, and residence are irrelevant. Ferriss (1962) takes a milder stand. He considers residence to be a

component of opportunity, implying that rural residence lends itself to more active participation in natural activities because distance traveled (presumably greater for a resident of a more urban area) represents a cost factor in terms of time and money; however, he overlooks the fact that, in general, the urbanite may have more time and money to spend in recreation than would a farmer or small town resident. His idea, furthermore, explains neither the Wildland Research Center's (1962) finding that more urban than rural residents participate in wilderness recreation nor their finding that greater urbanization during any stage of life correlates with a higher commitment to wilderness recreation.

Klausner (1971) is a motivation theorist. He states that the degree of acculturation to urban life, not the strict urban-rural split, is what affects the experience of the outdoors.

Most writers use elements from both theories.

Mueller and Gurin (1962) suggest that income, education, and occupation are purer predictors than residence because they correlate highly with (and may, in part, cause) the urban-rural effects. They also suggest that availability and status should be considered as possible causal factors for urban relationships. The urban relationships are very weak anyway for recreational activity as a whole, when other factors are controled. There are only slightly better relationships when individual activities are compared; furthermore, these relationships are very weak when compared with those shown by

other demographic variables. Mueller and Gurin also predict that as our national culture continues to become more homogeneous the urban-rural differences will decrease.

One potentially fruitful line of questioning concerns residence during childhood rather than at the time of questioning. Frank (1962), Heimstra (1974), Hendee (1970), and the Wildland Research Center (1962) indicate that childhood residence and/or childhood experience are important in determining adult commitment to outdoor recreation. This may be due to the fact that many adult attitudes are molded and many basic skills are learned during childhood.

The Department of Resource Development (1962) laid the groundwork for some important analyses of this question by asking, in their survey, for residence during most of the subject's childhood, most of his adult life, and at the time of the survey. They used five residence categories: farm; rural non-farm; village or city under 10,000; city of 10,000-99,999; city of 100,000-499,999; and city of 500,000 or over. However, their results were inconclusive.

Furthermore, if attitude and motivation are crucial components in the residential question, more residence categories are needed to differentiate among people living in apartments and private homes, suburbs and downtown areas, compact and sprawling housing areas, or megalopolises (such as cities within the sphere of Los Angeles) and isolated cities (such as Albuquerque). Population density may be more important than population size (because, after all, it is one basic

differnce between "urban" and "rural"). Length of stay is another important factor. Life on an Indian reservation or in a ghetto may be another crucial distinction.

Hendee (1969) concludes that the documented results are inconclusive and that the theories are ambiguous. He observes that even where differences are found, they are considerably smaller than differences in other demographic factors--and therefore are considerably less useful. He summarizes:

> Since ORRRC studies reveal little and sometimes conflicting variations in outdoor recreation participation by rural versus urban residence, the importance of the rural-urban variable and the validity of numerous small studies reporting rural-urban recreation differences is called into question. In addition to other methodological problems, most recreation studies are based on small samples of recreationists from specific sites and cannot be generalized to the population at large. Most include little, if any, speculation about why urban or rural residence might be associated with outdoor recreation activities. Finally, the relationships between urban versus rural residence and other key variables such as age, education, occupation, and income, are rarely analyzed simultaneously, yet rural-urban differences may be masking the effects of these other variables (p. 335).

Hauser (1962) makes the same points that urbanism is a way of life composed of many factors and that in the ORRRC studies these factors

were confounded.

It is commonly assumed that residence is a relevant variable in participation in outdoor recreation. However, the literature does not seem to support this assumption--and, indeed, seems to question its validity. What is needed is a full-scale study of this single variable.

Therefore, the residence variable has been omitted from consideration in this thesis. Until urban-rural data are shown to be a necessary or better variable for predicting participation (in which case they could be easily inserted into this model), they should be neglected in a study such as this in favor of data on such variables as age, income, education, and occupation. (Urban-rural attitudes, however, are considered to some extent here in terms of the Wildernism Scale incorporated in the questionnaire.)

From the standpoint of current residence, the population sampled here would be of little use anyway: Montana is a predominantly rural region and would give little basis for comparisons between urban and rural groups.

Income. Income, as indicated previously, is another complex item which seems to be composed primarily of elements which are better treated as separate variables. Status, education, occupation, availability of a paid vacation, age (most old people being in lower income brackets), social class, and place of residence are all elements relating to the income effect (Ferriss, 1962; Mueller & Gurin, 1962). Harry contends that

> income serves only as a permissive condition for outdoor recreation use. A moderate level of income permits the acquisition of the equipment deemed necessary for outdoor recreation and allows the costs of travel to be borne. But, beyond some moderate level, additional increases in income could not be expected to give rise to substantial increases in outdoor recreation use (p. 218).

Because money is a necessary resource for recreational participation, income itself would logically have an effect. The most popular recreational activities tend to be the least expensive (as indicated in the section on "Resource requirements" under "Substitutability Theory"). However, relevant income information is more difficult to obtain than it might seem to be. As was pointed out earlier, data from questions which ask for straight income information have led to conflicting results. Furthermore, such a question runs into problems in determining the unit whose income will be considered when the family unit consists of more than one person: the father's? the individual's own (but what about an unemployed dependent)? the family's as a whole? Goode (1962) says that "it is the family, not the individual earner, that is the consuming unit. Income is divided within it according to the values and goals of the parents and children" (p. 105). Because this differs from family to family, the relevant distribution information would have to be gathered in addition to the straight income information.

One way around this problem is to speak in terms of disposable

income--the income each individual has fully available for his use. A further consideration--crucial in the context of recreation research--is disposable income available for recreation. The relationship between disposable income available for recreation and total disposable income may, in turn, provide a valid measure of commitment to recreation.

There is the further problem of how much is actually spent on recreation and on particular recreational activities. This may differ from the amount available for recreation. Information on small expenses incurred over scattered occasions for a variety of items is difficult to obtain in household surveys (Mueller & Gurin, 1962). Even on a single occasion an individual may participate in several activities and may find it difficult to provide accurate cost estimates for each (Ferriss, 1962).

Because the survey methodology does not currently exist to collect accurate, relevant income and expenditure data, this question has been omitted from the questionnaire. It, like residence, should be explored independently before being inserted into a substitutability model.

Satisfaction. A traditional formula for determining satisfaction with recreation is to correlate goals and objectives, activities, and conditions of participation. Traditionally this is done on a face value level: Subjects are asked about their goals and their satisfaction with various conditions.

It is well known in the field of psychological testing that straightforward questions on motivation and preference are usually

confounded by variables such as halo effects, desire for the experimenter's approval, and ideals versus realities. This is a major problem with the traditional formula for measuring satisfaction: The types of questions it requires probably do not obtain the necessary information.

Furthermore, stated goals may be neither the only nor the most important motivations for participating in an activity. There may be goals the individual is unwilling or unable to state. There may be motivations which are not goals, such as habit or preference. Enjoyment (which is basically another word for a high degree of satisfaction) is frequently stated as a goal--which leads to circular reasoning in the traditional formula.

There are other elements affecting satisfaction. Expectations or unexpected conditions may drastically affect satisfaction.

Therefore, the traditional formula is an inadequate model for studying recreational substitutability.

Preferences, expectations, and importance. Preferences, expectations, and importance affect choice among participation alternatives and satisfaction with participation. As with satisfaction, these are difficult to measure. Straightforward questions often yield inaccurate or incomplete answers. How the three concepts are related is unclear. They deal with abstractions, and how the abstractions relate to actual participation choices is unclear.

All three require a concrete frame of reference (Important or

preferable as compared to what? Expected in terms of what condition parameters?) if they are to have any meaning, but it is difficult to accurately specify a respondent's frame of reference--and a researcher who defines the frame of reference in advance may alienate many of his subjects.

There is no adequate current model to handle these three concepts. Perhaps their effects can be predicted from other measures, such as commitment of time and money to measure the effects of importance; if so, concrete measures are usually preferable to abstract ones.

Furthermore, these concepts may be of peripheral value in developing a model of substitutability. Knowledge of reasons for preferences will give such a model more stability and flexibility than will knowledge of preferences alone. Commitment is more readily incorporated in such a model than is importance. Expectation is only one of the components of attitude which must be considered.

Therefore, preferences, expectations, and importance (as such) have been omitted here.

Race. At the moment race is a touchy question. In Montana the two dominant races are white and Indian; most questionnaires stress the white-black distinction.

Ferriss (1962) hypothesizes that the racial question is more accurately a matter of region, income, and residence.

Since the major causal difference here is probably cultural or social, other measures might be used to determine distinctions of not

only racial but also national origin (such as Irish or Jewish in addition to Indian, Mexican, Chinese, or black patterns). Racial or cultural measures could be added to this model when it is more diplomatic to do so.

Religion. Although Ferriss (1962) suggests that religion may be a factor in ORA participation, it is neglected here in the hope of finding more direct predictors.

Methods

Subjects

Questionnaire respondents were from Montana, predominantly from the Gallatin Valley. Most were students at Montana State University in Bozeman or were of college age. However, as with most college communities, it was discovered that many subjects did not consider the area to be home; some came from states as far away as Texas, Florida, and New York. It was assumed that being in the Gallatin Valley had provided every subject with the opportunity to participate in the 17 ORAs considered. No attempt was made to screen for home residence.

Although no attempt was made to screen for race, it was observed that the sample was almost entirely white.

Because Montana State University is a large school in a basically rural area and because the sample was drawn during Summer Quarter, 1975, the sample covers a variety of ages and occupations (rather than merely "college age" and "student").

The only criteria used in selecting subjects were willingness to complete the questionnaire and an age of 15 or over.

Out of 105 questionnaires collected, five were discarded because of failure to follow instructions or blatantly questionable validity of answers.

Apparatus

A 28-page questionnaire (see Appendix A), mimeographed in black ink on both sides of white paper, was used.

Along with the instructions printed on the first page of the questionnaire there was one page of instructions which were read to the subjects (or, in a few cases, were included with a questionnaire left with a subject). A copy of the final form of the oral instructions is included as Appendix B.

Questionnaire Administration

In most cases the questionnaire was completed in the presence of the investigator, usually by more than one subject at once. The questionnaire was distributed, the subjects read the written instructions silently, and then the investigator read the oral instructions. At no time were talking or asking questions discouraged, unless the subjects began to blatantly compare and change answers. The investigator informally noted comments and questions. When a question occurred frequently, the answer was incorporated in the oral instructions for future subjects.

No time limit was placed on completion of the questionnaire. However, in a few cases external time constraints developed. In these cases the questionnaire and a copy of the oral instructions were left with the subjects involved; they were encouraged to note any questions they had so the matters could be clarified when the questionnaires were collected.

Each questionnaire was numbered as it was collected. No record was kept of the subjects' names or of the correspondence between names and numbers. This was done so that all answers could be kept in the

strictest confidence.

As mentioned, all members of the sample had access to the 17 ORAs considered. This acted as a control for the physical opportunity variable, eliminating the necessity for considering it in interpreting the results.

Data Analysis: Alternatives and Selection Rationale

There are hundreds of analyses possible for the questionnaire data. Because this has been the first run of the questionnaire and because the sample was chosen in a rather haphazard way from an extremely limited population, any results derived from the current data are inconclusive, at best. Although the data are of little worth as data, they are valuable in providing a hypothetical example of the functioning of the model. Therefore, the analyses were chosen to cover areas of immediate interest to the researcher and to provide examples of some possible uses of the data; no extensive analyses have been run.

Table 1 shows some of the possible analyses across activities or across participant groups. Multivariate analyses could be run with question #5 and with any of the questions on the last two pages of the questionnaire. Questions #1 and #2 could be considered in terms of the rating of each activity by its participants, the rating of each activity by its non-participants, and the rating, by participants of each activity, of all activities in which they do not participate. Question #3 could be compared to both ratings and skill levels. Question #4 could be compared with the ratings. Question #5 could be checked for

correlations with the ratings and the skill levels; it could also be checked to see if respondents usually mark the same option across activities or if the same option is usually marked for an ORA across subjects. Question #7 could be checked for a correlation with skill level and to see what equipment overlaps across activities.

A profile could be determined for each activity by determining (where it is statistically appropriate) the percentage of participants per category, the range, the mean, and the mode for each question per activity, for the questions on the last two pages, and for the derived measures of proper weight and commitment.

The sample characteristics could be studied by determining (where it is statistically appropriate) the percentage of participants per category, the range, the mean, and the mode for the questions on the last two pages, for the proper weight measure, and for the number of activities participated in.

Results

Environment

(For previous discussion of this dimension, see the section on "Environmental requirements" under "Substitutability Theory.")

After informally consulting participants and/or experts in the 17 ORAs, a list of constraints and necessities was developed for each activity in the areas of geography, climate, vegetation, and wildlife. These lists were compiled into Table 2. The activity numbers correspond to those used in the earlier presentation of activities used in this thesis; these numbers are standard throughout this thesis.

Each recreational site has a set of prevalent environmental conditions; each person has preferences for the environmental conditions under which he would like to participate in outdoor recreation. To use the information in Table 2, list the appropriate conditions for the site or preferences; then find in the table the ORAs which can be performed under these conditions.

For instance, which activities could be pursued in winter at a site with the characteristics listed in Table 3? The five activities which meet all of the characteristics are #1 (dayhiking), #11 (day trips on horseback), and #15, #16, and #17 (the three types of sightseeing and/or photography). As Table 4 shows, the same area in summer is also suitable for #4 (rock climbing) and #10 (fishing). If the geographical factors are the only consideration, these five ORAs (in winter) or seven ORAs (in summer) are substitutable.

Table 5 lists for each ORA the constraints, the environmental areas in which they are substitutable for all the other activities, and the activities for which they are substitutable as long as their own demands are met. Table 5 is based on a combination of the four environmental elements presented in Table 2. For instance, ORAs #1, #11, #15, and #17 can occur under any environmental conditions (as column 3 of Table 5 indicates) and can therefore be substituted (environmentally) for any of the other ORAs. ORA #3 can be substituted for any of the other ORAs in terms of the vegetation and wildlife it requires, but at least one of its constraining conditions (as listed for it in column 2 of Table 5) keeps it from being substitutable for any other ORA when all four environmental elements are considered.

The Bureau of Sport Fisheries and Wildlife (1962) found that, on a national level, fishing is a year-round activity. This fact is accommodated in this model: Sites which will allow year-round fishing will show up on a site analysis.

Physiology

(For previous discussions of this dimension, see the section on "Physiological requirements" under "Substitutability Theory" and the section on "Questions Included in the Questionnaire.")

Height and weight covered the normal adult range; the mean height was 5'8" and the mean weight was 157 lbs. Medium bone structure was reported by 78% of the respondents; fine bone structure was reported by 8%. According to a chart of desirable weights (Smith Kline and French

Laboratories, 1968, p. 8), 52% of the sample was overweight, 6% was underweight, and 42% was at the correct weight. The mean muscle tone (Table 6) was 4.9; the mode was 4. The mean sense of balance was 5.6; the mode was 6. The mean limberness was 4.9; the mode was 5. The most commonly listed physical restrictions were glasses (or contacts) and allergies; the most serious were bad knees and weak ankles.

The results of the derived measure on proper weight indicate that there might be truth in the common belief that Americans are becoming soft and passive. The results of the muscle tone and limberness scales also suggest this. Further investigation, using a larger, more diverse sample and more specific measures, should be undertaken to corroborate these results.

Chi squares were run to test for a relationship between limberness and participation in each activity. Independence was found for all ORAs except #11, which was dependent at the .01 level; apparently, great limberness is required for satisfaction in horseback riding.

Independence was also found when a chi square was run to test for a relationship between limberness and number of activities participated in.

Skills

(For previous discussions of this dimension, see the section on "Skill factors" under "Substitutability Theory" and the section on "Questions Included in the Questionnaire.")

No analyses have been run using the skills data.

Resource Requirements

(For previous discussions of this dimension, see the section on "Resource requirements" under "Substitutability Theory" and the section on "Questions Included in the Questionnaire.")

The mean number of hours available for recreation per week (Table 7) was 27. The question on vacation time yielded ambiguous answers which were inadequate for proper categorization. No respondents reported reliance on public transportation (which, as stated earlier, is almost non-existent in Montana); 79% reported unlimited use of a car or motorcycle, 14% reported limited use of a car or motorcycle, and 7% reported reliance on friends.

Dayhiking. Each trip lasts one day or less. No money is required, unless a fee is required for access to a desired site. Comfortable clothes (especially shoes) and basic first aid supplies are desirable, but they are not necessary and are commonly available in the home. Some people desire special hiking boots; but they are not necessary for most hikes, and around Montana State University they are such a common item of apparel that they are not considered an extra recreational cost. There is no training time required.

Backpacking. (See Table 8.) No training time is necessary, although many participants devote some time to reading, workshops, and classes to improve their technique and equipment choices. Each trip requires more than one day.

All respondents listed hiking boots, a sleeping bag, and a backpack;

therefore, these three items can be considered essential to backpacking. They have an estimated minimum cost of $50. All three have extensive use overlap, especially among college students, so that their actual cost for backpacking may be less; however, most people pay considerably more for their equipment, anyway.

Well over 75% of the respondents listed mess kit, canteen, and tent, although 33% said they borrow the tent. These total about $27. These can be considered "high use" items.

A portable stove was spontaneously listed by 14% and should be added to the main list. Tarp and sleeping bag pad should also be added.

No one mentioned renting equipment, so this is apparently an uncommon practice, at least in Montana.

Basic first aid equipment (such as is commonly found around the house) and basic emergency equipment, heavy socks, food, and comfortable clothing are also recommended for backpacking; due to use overlap, their cost is undeterminable.

Mountain climbing. (See Table 9.) No training time is required at the lower skill levels. The higher skill levels require greater experience time and may--where technical climbing is called for--require formal training. Each trip may range from half a day to several days.

The only equipment listed by all respondents--and therefore classifiable as essential--is hiking boots (estimated minimum cost: $30). High use items are a mess kit, canteen, backpack, compass, and

maps (estimated minimum cost: $21). Most respondents own their own equipment.

Approximately half the respondents use technical climbing gear, but only a third own the gear.

No one mentioned renting the equipment.

Basic first aid and emergency equipment, heavy socks, food, and comfortable clothing sufficient for exposure to weather are common mountain climbing needs whose costs are undeterminable.

Rock climbing. (See Table 10.) No training is required for free climbing, but some formal training is advisable for direct aid climbing. Each trip usually lasts no more than one day, although rock climbing may be incorporated in mountain climbing and backpacking trips of more than one day.

No equipment was listed by 100% of the respondents. Hiking boots (about $30) are the only high use item, although about half listed backpack and climbing rope. Technical gear was listed by less than a third of the respondents, and is owned by only a third who listed it.

Gloves were added by one respondent and should be added to the main list.

Basic first aid and emergency supplies and comfortable, protective clothing are common, but their costs cannot be determined due to use overlap.

Snowshoeing. (See Table 11.) No training time is necessary. Each trip can last from an hour or two to several days.

The three essential items appear to be hiking boots, bindings, and snowshoes. These cost a minimum of $60.

About half the respondents use gaiters. Packs, special clothing, and a staff (or ski poles) were mentioned; the latter should be added to the main list.

Basic first aid and emergency supplies are also helpful. Warm clothing (not necessarily specially designed) is essential.

The necessary equipment can be rented (for about $3/day), but only a small percentage indicated that they do so.

Downhill skiing. (See Table 12.) Training time is required (if risk is to be minimized). Most skiers pay for lessons sometime; this may cost from $5 on. Trips last a minimum of a couple of hours.

The essential items are skis, ski poles, ski boots, and bindings (a minimum of $65). Waxes (about $5) are a high use item.

Special clothing was mentioned by several respondents and should be added to the main list. Although special ski clothes are not essential, they are a popular, high cost item for skiers. Goggles and gloves were also mentioned specifically and should be added to the list.

One respondent mentioned racing gear (helmet and files), which should be added to the list if competition is ever studied.

Ski equipment can be rented (for about $6/day).

Most downhill skiers use commercial slopes, which charge for use of the facilities. Around Bozeman, Montana, the going rates are approximately $5/half-day and $90 for a season pass.

Skin protection (such as creams or caps and mittens) is an important incidental cost.

Crosscountry skiing. (See Table 13.) Less formal training time is typical for crosscountry than for downhill skiing. Trips range from an hour or two to several days.

Respondents listed as essential crosscountry skis (only one respondent uses his downhill equipment for crosscountry), ski boots, bindings, ski poles, and waxes (estimated minimum cost: $55). Half own their own equipment and a third rent it (about $5/day).

Special clothing is less popular for crosscountry than for downhill skiing; the emphasis is on protection for long exposure. Goggles, heavy gloves or mittens, facial protection, and basic first aid and emergency supplies are recommended (adding about $18).

There are usually no site costs.

Gun hunting. State laws require firearm training and/or a hunter's safety course before minors (under 18 in Montana) can be licensed, and many adult hunters acquire some formal firearm training. Hunting trips themselves rarely take less than half a day and may last several days.

Gun rental is not a common practice, and 90% of the respondents own their own guns. A .22 rifle starts at about $30, a shotgun at about $50, and a big game rifle at about $70. Ammunition is about $3/trip. Comfortable and highly visible clothing is common; in Montana, a large amount of "hunter's orange" is required by law to be worn by all hunters. All states require a hunting license, the price of which varies

according to the state, the hunter's residency status, and the type of game covered. (For instance, a Montana deer and elk license for a resident costs $6, while a deer, elk, bear, bird, and fish license costs $30. Non-resident licenses are considerably higher.) Basic first aid and emergency supplies are also advisable.

Bow hunting. Some formal archery training may be obtained. Some states require a hunter's safety course for minors (under 18 in Montana) before they can be licensed. Trips may last from one to several days.

All respondents said they own their own equipment. Hunting bows start at $30; hunting arrows are $8/dozen. Comfortable and highly visible clothing ("hunter's orange" required in Montana) is standard. An armguard, a quiver, and basic first aid and emergency supplies are also typical equipment. The hunting license is the same as for gun hunting but may require a special archery stamp ($3 extra in Montana).

Fishing. (See Table 14.) Fishing requires no formal training and may take any amount of time, starting at a few minutes.

The three essential items are fishing line, a fishing pole, and a reel (estimated minimum cost: $29). If the one respondent who likes to fish but has no desire to harm the fish is discounted, hooks and a knife (another $5) can also be listed as essential.

High use items include sinkers, floats, a tackle box, lures, bait, and flies (about $10).

About half the respondents also use a net, a fishing bag, waders (or rubber boots), and a measure.

Rental of fishing equipment is not a common practice.

Most states require a fishing license for non-children (above 15 in Montana), which ranges from free to $20 or more, depending on location and residency status.

Day trips on horseback. (See Table 15.) No formal training time is required, although it is common for an individual to take riding lessons unless he has grown up around horses. Trips take one day or less.

The essential items are a horse, a saddle, a saddle blanket, and a bridle (estimated minimum cost: $120). Grooming tools, a halter, and riding boots are high use items (minimum: $40). The maintenance of a horse adds a minimum of $20/month.

The horse and equipment can be rented for about $3/hour. Only about half the respondents own their own horse and equipment; about a third borrow them. (Riding boots are rarely borrowed--and never rented--and a horse trailer is borrowed two thirds of the time.)

Spurs were mentioned by one respondent and should be added to the main list. Rodeo and training equipment were also mentioned and should be added to the main list if competition and training are ever considered.

Pack trips on horseback. (See Table 16.) No training time is required, although experience with horses is important. Each trip requires more than one day.

Essential items are horses and/or mules, halters, bridles, saddles,

saddle blankets, saddle bags, cooking equipment, hobbles, and ropes (estimated minimum for one set each: $190). High use items are sleeping bags and horse trailers (minimum: $320).

Renting equipment seems to be almost as popular as borrowing it. Animals can be rented for $10/day/animal. Completely guided and outfitted pack trips start at about $200.

When the animals are owned, an extra $20/month/animal (minimum) is necessary for maintenance. Additional trip supplies include basic first aid and emergency equipment, canteens, food, and (required at some sites) additional horse feed.

Trail bike driving. Licenses are required for driving any kind of motorcycle. Most states require formal driving instruction if the licensee is under a certain age (16 in Montana). No other training time is required. Trips may take any amount of time.

No respondents mentioned renting a trail bike. Two thirds said they own the bike they use. Trail bikes start at $430. The vehicle must be licensed annually; costs vary, depending on the state (some, like Montana, using a property tax assessment). The driver's license is a multi-use item. Fuel and maintenance costs vary with the driver. Some states require the use of a helmet (an extra $5 minimum). Some drivers use special trailers or racks for transporting their bikes (a minimum $18).

Snowmobiling. No training time is required. Each trip can take any amount of time.

Only a small percentage of snowmobilers, apparently, own their own machines: 28% own, 17% rent, and 55% borrow. A snowmobile costs a minimum of $900, and special trailers for them retail at $200 minimum. Gas and maintenance is comparable to that for a car. Montana requires a license for the snowmobile (although not for the driver) which is based on a property tax assessment plus $10.

Warm clothing, warm gloves or mittens, goggles, and basic first aid and emergency supplies are desirable.

Snowmobile rentals cost an estimated $25/day plus a $25 breakage deposit.

Sightseeing and/or photography of landscape. (See Table 17.) There is no required training time and a trip can take any amount of time.

There is no essential equipment for sightseeing, although binoculars are a high use item (used by 74%; owned by 75% of these; estimated minimum cost: $15).

Some type of camera is essential for photography. About 53% of the respondents reported use of more than one kind of camera. About 82% use an instamatic (minimum: $10); about half use a 35mm (minimum: $40). Also mentioned were 4x5 cameras, movie cameras, polaroids, a brownie, and a twin lens reflex.

A little over a third use special accessories.

Film developing and printing start at about $2/roll. The amount of film used per trip varies widely among and within individuals.

A case and/or special backpack may be used. This should be added

to the main list.

Equipment rental is apparently not a common practice.

An entrance fee (usually less than $5) may be required, depending on the site chosen.

Sightseeing and/or photography of wildlife. (See Table 18.) There is no training time required and a trip can take any amount of time.

There is no essential equipment for sightseeing, although binoculars are a high use item (used by 81%; owned by 72% of these; estimated minimum: $15).

Some type of camera is essential for photography. About 59% of the respondents reported use of more than one kind of camera. About 78% use an instamatic (minimum: $10); about 65% use a 35mm (minimum: $40). Also mentioned were 4x5 cameras, polaroids, twin lens reflex cameras, movie cameras, and a brownie.

Almost half use special accessories.

Film, developing, and printing start at about $2/roll. The amount of film used per trip varies widely among and within individuals.

Some subjects mentioned using a case and/or special backpack. These should be added to the main list.

Equipment rental is apparently not a common practice.

An entrance fee (usually less than $5) may be required, depending on the site chosen.

Sightseeing and/or photography of human activity. (See Table 19.)

There is no training time required and a trip can take any amount of time.

There is no essential equipment for sightseeing, although binoculars are a high use item (used by 62%; owned by 82% of these; estimated minimum cost: $15).

Some type of camera is essential for photography. About 58% of the respondents reported use of more than one kind of camera. About 77% use an instamatic (minimum: $10); about 63% use a 35mm (minimum: $40). Also mentioned were 4x5 cameras, polaroids, movie cameras, and a brownie.

A little less than half use special accessories.

Film, developing, and printing start at about $2/roll. The amount of film used per trip varies among and within individuals.

Some subjects mentioned using a case and/or a special backpack. These should be added to the main list. One subject mentioned the use of reflectors, slave units, and backgrounds; however, these are seldom used in an outdoor setting.

Equipment rental is apparently not a common practice.

An entrance fee (usually less than $5) may be required, depending on the site chosen.

Comparisons. The only ORAs requiring some training time are downhill skiing, gun hunting, bow hunting, and trail bike driving.

Fishing, trail bike driving, snowmobiling, and all three types of sightseeing and/or photography can take any amount of time per trip.

Backpacking and pack trips on horseback require more than one day. The rest require at least two or three hours. The less time an ORA requires, the more substitutable it is for other ORAs (in terms of necessary time resources).

The less money an ORA requires, the more substitutable it is for other ORAs. (See Table 20.) Dayhiking, rock climbing, and sightseeing are substitutable for any other activity in terms of money required. Pack trips on horseback, trail bike driving, and snowmobiling require a large amount of money for equipment.

More landscape photographers use instamatics, although this comparison did not yield a significant chi square. Wildlife photographers tend to use slightly more special accessories (wildlife: 43%; human activity: 41%; landscape: 37%), although this also did not yield a significant chi square. Of the special accessories listed, special lenses ranked most popular (except for human activity photography, where flash ranked first), flash second, tripod third, and special filters fourth.

Demographic Data

(For previous discussions of this dimension, see the section on "Demographic patterns of participants" under "Substitutability Theory" and the section on "Questions Included in the Questionnaire.")

There were 100 respondents: 48 males and 52 females. All were between 15 and 65 years old; the mean age was 25.5. (See Table 21.) All had received some high school education; the mode was "some college."

(See Table 22.) No respondents were legally separated from their spouses; 48% were single. (See Table 23.) Children were reported by 18 respondents, but the numbers per category were too small to allow any analyses. Occupation yielded ambiguous answers which were inadequate for proper categorization.

Chi squares were run on sex and participation per ORA. Dependence was found at the .05 level for trail bike driving (more males than expected) and for sightseeing and/or photography of human activity (more females than expected). Dependence was found at the .01 level for gun hunting (less females than expected), for bow hunting (less females than expected), and for day trips on horseback (less males than expected). No dependence was found for the other 71% of the ORAs.

A chi square was run on sex and number of activities participated in. No dependence was found. This suggests that sex does not affect the overall participation rate for ORAs.

Chi squares were run on age and participation per ORA. The only dependence found was at the .10 level for hiking (more 21-25 than expected and less 56-65 than expected).

Chi squares were run on education and participation per ORA. No dependence was found, contrary to the many studies which have shown education-participation correlations. This is a good indication of the need for further studies of the areas touched on in this thesis.

Psychological Data

(For previous discussions of this dimension, see the section on

"Psychological patterns of participants" under "Substitutability Theory" and the section on "Questions Included in the Questionnaire.")

A simple discriminant function analysis was run for each ORA using participation as the dependent variable and each of the 17 attitude scales as a predictor. Table 24 shows the significant F values for the ORAs. A significant F value indicates that a regression using each of the 17 attitude scales is significant in predicting participation in that ORA. For the ORA F values significance is 1.77 at the .05 level and 2.24 at the .01 level.

Table 24 also shows the low, high, and significant predictors for each of the ORAs which has a significant F value. A predictor is significant at the .05 level if its F value is above 3.96 and at the .01 level if its F value is above 6.96. A significant predictor is one which accounts for a significant amount of the variance which makes that ORA's F value significant. Because the number of subjects is so low for an analysis of this type, the results are probably not totally reliable; therefore, predictors with F values above 3.0 were designated as high predictors. If, on the basis of these data, the scales were to be reduced in number, the high predictors should be retained along with the significant predictors. On the other hand, the low predictors--the ones with F values below 0.1--should be the first to be dropped. The scales with no status designation in Table 24 have F values between 0.1 and 3.0 and may contribute jointly to the variance; they should not be dropped arbitrarily.

Table 24 also shows the yes and no means for the high and significant predictors and the overall means for all the predictors. The yes means are the mean ratings by participants. The no means are the mean ratings by non-participants. The overall means are the mean ratings by all respondents.

All 17 attitude scales were scored with 1 representing the urbanistic end and 7 representing the wildernistic end.

By comparing the yes and no means it can be seen that there is apparently a significant difference between snowshoers (ORA #5) and non-snowshoers on how wonderful and good snowshoeing is, with snowshoers rating it more wonderful and less good than do non-snowshoers. Gun hunters (ORA #8) consider their activity less risk-taking, more natural, considerably more peaceful, and considerably more pleasant than do non-gun hunters--although none of these scales was significant as a single predictor. Bow hunters (ORA #9) consider their activity considerably more challenging, more rugged, more energetic, and considerably more wildlife-supporting than do non-bow hunters; they also consider it considerably more footloose and considerably more peaceful--although neither scale was significant as a single predictor. Fishermen (ORA #10) consider their activity considerably more footloose, less quiet, more peaceful, and considerably more pleasant than do non-fishermen. Trail bike drivers (ORA #13) consider their activity more individualistic and considerably more pleasant than do non-participants; they also consider it slightly more natural and considerably more wonderful--

although neither scale was significant as a single predictor.

The overall means are of interest in noting the general rating profile of these ORAs. For instance, ORA #5 has only two ratings below 5.00, while ORA #13 has only one above that level--indicating that ORA #5 is generally viewed as more wildernistic than is ORA #13.

Considering all 17 ORAs, the individuality scale had low F values 41.2% of the time, although it was significant at the .01 level for ORA #13. The quietness scale had low F values 35.3% of the time, although it was significant at the .05 level for ORA #10. The wildlife-supportiveness scale had low F values 29.4% of the time, although it was significant at the .01 level for ORA #9. The freedom and wildlife-preservation scales were notable for their lack of highs and lows; each had only three low F values over the 17 ORAs and only one of these is reflected in Table 24.

Only 5.5% of the predictors' F values were significant; of these, 75% accompanied significant ORA F values. An additional 6.2% of the predictors' F values were high; of these, 55% accompanied significant ORA F values. About 22.5% of the predictors' F values were low; of these, 21% accompanied significant ORA F values. Only 29% of the ORAs had significant F values.

There is no single scale which is consistently high or consistently low across more than half of the ORAs, suggesting that none can (on the basis of these data) be dropped from the questionnaire. Both a larger sample and a factor analysis are needed to help refine these scales to

extract from them a sound psychological profile of the participants in each ORA. A much larger sample might yield significant discriminant function F values for more of the ORAs, too.

In developing the Wildernism Scale, Willis (1975a, 1975b) indicated that the scales--used here as individual predictors--can be grouped into stable factors. By using such factors (which require a factor analysis run on data collected from a much larger sample) it will be easier to compare ORAs and much chance fluctuation will be avoided. For instance, using the overall means for the wildlife-supportiveness scales, it can be said that ORAs #5 and #10 are substitutable. For the wildlife-preservation scale, ORAs #9 and #10 are substitutable, but ORAs #5, #8, and #13 stand alone. For the ecological-desirability scale, ORAs #8, #9, and #10 are substitutable and ORAs #5 and #13 stand alone. However, there is some apparent overlap among these three scales, and there is thus a strong possibility that they are all part of what might be called a conservationist factor. By combining them into such a factor and then comparing activities, individual variations in conservationist attitudes will have a minimized effect, while obviously strong effects (such as the non-substitutability of ORA #13) will be retained. Such substitutability comparisons are likely to be more stable than those based on single-scale prediction.

Miscellaneous

Participation patterns. The number of ORAs participated in per respondent ranged from 0 to 14; the mean number was 6. (See Table 25.)

Table 26 shows the number of participants per activity and each activity's popularity rank (in terms of number of participants).

Of the 15 crosscountry skiers, 47% also participate in trail bike driving and/or snowmobiling; 17% snowmobile and 40% drive trail bikes.

Of the 87 sightseers and/or photographers, 13% checked only one of the three kinds, 31% checked two of the three, and 56% checked all three.

Sightseeing and/or photography of landscape and dayhiking were the most popular (in terms of number of participants). Pack trips on horseback and bow hunting were the least popular.

At least 78% of the participants in a given ORA also participate in at least one kind of sightseeing and/or photography. Snowmobilers reported the lowest such participation (78%). Mountain climbers and snowshoers reported 100% of such participation. All sightseers and/or photographers of wildlife checked activity #15 and/or #17; 96% of the sightseers and/or photographers of human activity marked activity #15 and/or #16; and 89% of the sightseers and/or photographers of landscape marked activity #16 and/or #17.

Table 27 shows the respondents' participation patterns. All of the backpackers also dayhike (although only 43% of the dayhikers also backpack). All of the mountain climbers also dayhike and sightsee and/or photograph landscape. All of the snowshoers also sightsee and/or photograph landscape. All of the bow hunters also gun hunt. All of the sightseers and/or photographers of wildlife also sightsee and/or

photograph landscape.

Only 8% of the backpackers, 5% of the rock climbers, 6% of the snowshoers, 9% of the fishermen, 8% of the trail bike drivers, and 7-8% of the sightseers and/or photographers also take pack trips on horseback. Only 9% of the bow hunters also take day trips on horseback, while only 4% of the day horsemen also bow hunt. Only 7% of the day horsemen drive trail bikes. Only 8% of the sightseers and/or photographers of wildlife also ride trail bikes.

Anything below 25% can be considered low participation overlap. Anything above 75% can be considered high participation overlap. Both sets of overlap should be investigated further.

Combining activities. Table 28 shows the combining activities reported by respondents, in terms of both mutual and one-way combinations. For instance, 33% (11% + 22%) of the dayhikers who also backpack listed backpacking as a combining activity for dayhiking; however, only 30% (22% + 8%) of the dayhikers who also backpack listed dayhiking as a combining activity for backpacking--and of these, 8% did not list backpacking as a combining activity for dayhiking. Of the dayhikers, 25% (8% + 14%) listed no combining activities for dayhiking, although 14% of those listed dayhiking as a combining activity for at least one other activity.

Four activities (#1, #15, #16, and #17) had all the other activities listed as combining activities. Fourteen activities were listed for #2; thirteen for #4, #5, and #8; twelve for #9 and #10; eleven for #3; ten

for #7; nine for #6; eight for #12; seven for #13; six for #14; and five for #11.

Only sightseeing and/or photography was listed by more than 75% of the participants in any given ORA as a combining activity.

Day trips on horseback apparently do not combine well with other ORAs; the percentages of the five ORAs listed are low, with sightseeing of landscape and wildlife most popular. Snowmobiling is another low-combination ORA; bow hunting and sightseeing of wildlife are the ORAs with the highest number of combinations.

Discussion

Questionnaire and Procedure

The questionnaire needs to be refined before it can be used to gather reliable data.

It was assumed that subjects would answer in terms of their participation in the last couple of years. However, many subjects accompanied their "no" answers with comments such as "I haven't this year," "I tried it once," "Not enough to consider it a sport," or "I used to." This indicates that a simple "yes/no" choice might be profitably replaced by "no" choices which indicate past participation, in addition to a "yes" choice for current participation. This and spontaneous questions to the investigator also indicate that a clearer definition of "participation"--such as a minimum number of times plus the possibility of future participation--needs to be specified by the investigator.

The Wildernism Scale, as mentioned, has been previously tested. However, it met with respondent resistance when incorporated in this questionnaire. Some subjects skipped individual scales which they considered irrelevant to the ORA being rated. Subjects frequently complained of redundancy among the scales. The greatest complaint was that 17 sets of scales (one set of 17 per ORA) is too many to complete if interest and alertness are to be maintained.

Indeed, the most frequent complaint was that the questionnaire was too long. Many potential subjects refused to complete the questionnaire

because of its length. Most of the actual subjects were obviously rushing, which undoubtedly decreased the accuracy of many of their replies.

One possible solution to the length of the questionnaire would be to divide it into shorter questionnaires, each designed to test a small number of questions. For instance, attitudes and equipment use probably have little or no correlation, so equipment use could be determined with a different sample from the same population.

Another possibility which could be explored is the use of special interest groups--such as snowmobiling clubs and conservation groups--in order to obtain more willing subjects. (It was observed that subjects were more willing and cooperative when they were interested in the purpose of the questionnaire than when they responded only as a favor or at the request of a professor. Groups with a special interest in outdoor recreation, therefore, should yield more willing subjects.) Because members of such groups may be assumed to be highly commited to the activities sponsored by their groups, this would also yield data on commitment correlations with other items in the model.

Question #3, on times per year, is awkward to analyze as it is currently worded. Because of the differences in time required by ORAs (such as an afternoon being suitable for a good hike, which allows the possibility of 365 hikes per year, versus a minimum requirement of two full days for a good pack trip, which allows the possibility of only 182 pack trips per year), a more precise, weighted measure of

participation needs to be developed. The amount of time per trip often varies among skills within a single activity, too. Furthermore, a single participant may vary the length of trips considerably.

Many subjects refused to answer question #3 for the sightseeing and/or photography ORAs on the grounds that it is impossible to count such trips, especially for those who marked themselves at the higher skill levels. Spontaneous comments also indicated great difficulty in defining the bounds of a "sightseeing trip" or a "photography trip." (Photography trips seemed easier to define for subjects who marked photography but not sightseeing for an ORA.) A multiple-choice format might help subjects anchor their responses better.

Question #3 was included as a measure of commitment. The estimated average time for a trip can be multiplied by the response for each ORA to allow a ranking of ORAs by time allocated. As mentioned earlier, a better measure of time commitment is time allocated to a given ORA as a proportion of total time available for recreation. This would involve a computation of the hours per year available for recreation (from the "hours per week" question in the demographic section) plus vacation time to determine the total amount of time available for outdoor recreation. Some account must also be made for the climatic restraints on time available for certain ORAs; for instance, the length of a Montana winter suggests that summer activities are available a shorter amount of time than winter ones. Legal seasons for hunting and fishing also restrict the number of times these ORAs are available for

participation. The necessary complex computation needs to be developed before this question can be analyzed.

Question #4, on skill level, needs refinement by experts on each ORA. The levels need to be defined more specifically, in terms of the definition elements discussed in the section on the skills factor. Perhaps subjects could be asked if they have specific skills and the researcher could derive the subjects' skill levels according to a predetermined scale of skill necessities and alternatives.

Question #5, on sociability, seems adequate. The main problem (which is probably unavoidable) is that some subjects refuse to choose just one option. This supports an important assumption in recreation research: There is a multiplicity of motives involved in each recreational choice. Sometimes sociability may be a motive, and sometimes privacy may be a motive; sometimes the whole sociability factor may be irrelevant.

Question #6 also seems adequate. Some subjects commented that they compete in downhill skiing, day trips on horseback, trail bike driving, or snowmobiling. However, the issue of competition seems tangential to the substitutability model at this point.

Question #7 should be asked also for dayhiking to determine whether there is any equipment which is commonly used, even though it was defined as not requiring any. Spontaneous additions by subjects suggest that certain items should be added to some of the lists, and experts could possibly suggest further additions. One problem is that equipment

ownership and use need to be better defined. Ferriss (1962) mentions the differences between "used" and "present in the household" and between "use" and "operation." When the family unit consists of more than one person, the distinction between "own" and "borrow" becomes blurred. The terms need to be defined so that the subjects and the investigator thoroughly understand one another.

Question #8, on overlap of equipment use, seems adequate.

Question #9 should be asked also of day trips on horseback, pack trips on horseback, and trail bike driving--all ORAs with a bulky piece of equipment which may require a special trailer for transportation. Some subjects did not understand the question, so the words ". . . to the recreational site" should be added.

Question #10 seems adequate. A multiple-choice format listing the other ORAs could be used, but an open-ended question seems to yield mainly the most closely connected activities, which is the purpose of the question. The main problem is that many of the subjects left this question blank, suggesting that they either do not combine activities or could not be bothered by this question. This is an apparently unavoidable problem.

The questions on sex, age, and formal education seem adequate.

The question on occupation is inadequate. It encourages both flippant and ambiguous answers. College students seem prone to give such unhelpful answers as "bum" and "child of God"--which, although possibly highly descriptive, are states rather than occupations.

Ambiguity arises when a subject calls himself something like an engineer (which could include running a train, cleaning offices, and designing spacecraft) or a teacher (which could range from Sunday School to college). The solution appears to be a multiple-choice format. A separate study needs to be run to develop a satisfactory classification scheme.

There are additional considerations necessary to the occupation question. In a period of high unemployment such as the United States is currently experiencing, there are many people doing jobs other than their "real" occupations--the occupations for which their training and preferences suit them. How should a man be classified when he is a photographer by training and preference but a factory worker by necessity? There are subjects who hold more than one job. There are subjects who are working at a second, third, or fourth career--especially retired military men and ex-farmers. There are students who are in training for specific occupations and who may strongly resemble their future recreational selves. Such problems may alter the results of straight occupational data--and may, if taken into consideration in the design of the occupational question, yield profitable, predictive data.

The question on marital status seems adequate.

The question on child dependents seems adequate. However, it might be profitable to broaden it to cover the entire family structure affecting the subjects' immediate movements--including children, invalids, senior citizens, and pets.

The question on hours per week seems adequate.

The question on vacation time seemed to stump many subjects, especially students, housewives, farmers, and others whose vacation times are ill-defined. A multiple-choice format should be designed for this question.

The question on transportation presents an awkward problem. As many subjects pointed out by marking more than one of the options, transportation is not an either/or question. Because of the energy crisis, many people with unlimited use of a car or motorcycle are turning to carpools (reliance on friends) and public transportation or are imposing other limits on their own use of that car or motorcycle. This is causing the actual availability of transportation for recreation to differ increasingly from the apparent availability. The question itself is adequate, but a new method of analysis for it must be developed.

As indicated earlier, the physiological questions need to be refined to yield more accurate data. The question on bone structure, especially, was apparently unclear to many respondents. Physiologists and other experts on physical data should tackle this area of the model.

Because glasses or contacts are a frequent physical restriction, a question should be included to ask about them specifically. Otherwise, the question on physical restrictions seems adequate.

The section for comments proved helpful for both the researcher

(in terms of comments and suggestions) and the subjects (in terms of airing complaints).

The instructions need to be rewritten to include the information eventually worked into the oral instructions. At the same time, the instructions need to be shortened in order to aid attention and retention.

The instructions most frequently neglected were the instruction to read the ORA definitions carefully and the instruction to complete the attitude scales for all the ORAs. The definition for ORA #17 seemed to cause the most confusion and the attitude scales for that ORA seem (on the basis of spontaneous comments and the differences between ratings for it and for ORAs #15 and #16) to have been frequently completed on the basis of a reaction to human activity in outdoor recreational sites rather than to the ORA itself.

Mueller and Gurin (1962) used a measure of interest in increased future activity. A longitudinal study needs to be run to determine how accurate such a predictor is.

Hendee (1970) points out that ". . . learning about nature has become a popular recreation activity with millions of people" (p. 37). Perhaps this aspect should be incorporated in the concept of sightseeing as it is presented in the questionnaire. Rock collecting and the gathering of flowers and other vegetation often accompany sightseeing and should be taken into account somehow.

Sightseeing and photography should be entirely separated, making

six activities instead of three. However, they could be made a separate, comparative study; the inclusion in the questionnaire of the three used here created restlessness among respondents, and the inclusion of six would probably arouse open resistance.

Support of Substitutability Model

The assumption was stated earlier that there are predictable recreation patterns. The results with the Wildernism Scale indicate that participation in at least some ORAs can be predicted from attitudes. There is also some possibility that the participation patterns found here could be found to be relatively stable when checked on new samples. There is no reason to believe that this assumption is unwarranted.

Tables 27 and 28 support the idea that compatible and incompatible activities can be found by analyses done within the scope of a substitutability model. Activities with high percentages of participation combination and joint participation are good places to look for psychological compatibility and substitutability; those with low percentages are good places to look for lack of psychological substitutability and for conflict.

Universality of Substitutability Model

The key to the substitutability model is that it transcends specific groups of individuals, activities, and sites, while being applicable to these same groups, activities, and sites.

Earlier studies have dwelt on specific activities or sites, and they have been criticized for their lack of universality. For instance,

the Wildland Research Center (1962) used a questionnaire which asked for demographic characteristics; type of trip, size of party, length of stay, type of transportation, and activities for which the site was entered; psychological benefits of the site and the experience; and knowledge of and attitude toward management policies of the site. The questionnaire is site-specific and cannot be transferred to another site without drastic modifications.

The questionnaire presented here, however, is geared for application to any activities; the only modifications necessary are in the equipment lists and the labels for the skill levels. The Wildernism Scale is applicable to individuals and sites as well as activities. Furthermore, this type of questionnaire can be used for all types of leisure activities--natural and domesticated, participant and observer.

This substitutability model can potentially provide the key to answering such questions as: Under what circumstances would an individual be likely to take up an activity conflicting with his preferences? How would his preferences or behavior patterns change?

This model recognizes the needs emphasized in the BOR workshop on recreation research needs (Van Horne, 1974): the need for close interaction among administrators, users, and researchers; the need for interdisciplinary cooperation among researchers; the need for an emphasis on "why" instead of "what"; the need for an emphasis on a human focus; the need for objective research models which are independent of the models of policy and action organizations; the need for a

universal model; the need for a model which can incorporate both past and future methodologies and recreation patterns, both short-term and long-term goals; the need for a model to bridge the gap between theory and application.

"The use of leisure, intelligently and profitably, is a final test of civilization. No great one has yet developed leisure on a large scale, as a social pattern, and survived" (Nash, 1962, p. 158). Leisure in the United States is now reaching this crisis stage and some rationale has to be developed to allow intelligent participation and land-use decisions. It is hoped that the substitutability model presented here will be the seed for the development of such a rationale.

Tables

Table 1

Possible Analyses Across Activities or Across Participant Groups

check relationship with	Question																
	sex	age	education	occupation	marital status	children	hours/week	vacation	transportation	height	weight	bone structure	proper weight	muscle tone	balance	limberness	commitment
# ORAs engaged in	X[a]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Question #4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Question #2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Question #1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	N[b]
sex		N	X	X	N	N	X	X	X	R[c]	R	X	X	X	X	X	X
age			X	X	X	X	X	X	X	X	X	X	X	X	X	R	X
education				R	X	X	X	X	X	N	N	N	X	X	X	X	X
occupation					X	X	R	R	X	N	N	N	X	X	X	X	X
marital status						X	X	X	X	N	N	N	X	X	X	X	X
children							X	X	X	N	N	N	X	X	X	X	X
hours/week								X	X	N	N	N	X	X	X	X	X
vacation									X	N	N	N	X	X	X	X	X
transportation										N	N	N	X	X	X	X	X
height											R	N	R	X	X	X	N
weight												R	R	X	X	X	N
bone structure													R	X	X	X	N
proper weight														R	X	R	N
muscle tone															X	X	X
balance																X	X
limberness																	X

[a] perform analysis [b] assumed relationship [c] assumed non-relationship

Table 2

Environmental Comparisons

	Activity																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Geography:																	
can be done anyplace with unlimited space	X	X									X				X		X
needs mountainous terrain			X			X											
needs rocky terrain				X													
needs moderately rockless, non-steep terrain					X		X						X	X			
needs moderately rockless, steep terrain						X											
needs habitat specific to wildlife species								X	X	X							
needs non-stagnant water								X	X	X		X				X	
can be done in limited space	X			X		X				X	X				X	X	X
Climate:																	
can be done anytime	X	X									X	X			X	X	X
needs snow covering ground					X	X	X							X			
needs legal season								X	X	X							
needs moderately dry terrain				X									X				
cannot be done during storms or high winds			X	X		X			X	X			X				
Vegetation:																	
can be done in anything	X	X	X	X						X	X	X			X	X	X
can be done in anything not extremely dense					X	X	X						X	X			
usually needs cleared slope					X												
needs habitat specific to wildlife species								X	X								
Wildlife:																	
can be done around anything (or nothing)	X	X	X	X	X	X	X				X	X	X	X	X		X
can be done around anything (but needs something)																X	
needs specific wildlife species								X	X	X							

Table 3

Example Winter Environmental Comparison

Site Characteristics	Activity																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
steep, mountainous terrain	X	X	X	X		X		X	X	X	X	X			X	X	X
rocky, with some steep cliffs	X	X	X	X				X	X	X	X	X			X	X	X
relatively limited area between 2 towns	X			X		X				X	X				X	X	X
one large, fresh stream (iced over in winter)	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
heavy snow cover in winter	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X
covered by evergreen forest; little brush	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
no straight cleared slopes	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
proper habitat for much large game	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
most likely activities:	X										X				X	X	X

Table 4

Example Summer Environmental Comparison

Site Characteristics	Activity																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
steep, mountainous terrain	X	X	X	X		X		X	X	X	X	X			X	X	X
rocky, with some steep cliffs	X	X	X	X				X	X	X	X	X			X	X	X
relatively limited area between 2 towns	X			X		X				X	X				X	X	X
one large, fresh stream	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ground relatively dry all summer	X	X	X	X				X	X	X	X	X	X		X	X	X
covered by evergreen forest; little brush	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
no straight cleared slopes	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
proper habitat for much large game	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
most likely activities:	X			X						X	X				X	X	X

Table 5

Environmental Substitutability

ORA	Constraints	Substitutable In Terms Of[a]	Substitutable For[b]
These activities have no constraining environmental conditions:			
1		g,c,v,w	all others
11		g,c,v,w	all others
15		g,c,v,w	all others
17		g,c,v,w	all others
These activities have one constraining environmental condition:			
2	cannot be done in limited space	c,v,w	5,7,13,14
These activities have two constraining environmental conditions:			
12	needs non-stagnant water cannot be done in limited space	c,v,w	8,9
16	needs non-stagnant water needs some kind of wildlife	c,v	8,9,10
These activities have three constraining environmental conditions:			
3	needs mountainous terrain cannot be done in limited space cannot be done in storms or high winds	v,w	nothing
These activities have four constraining environmental conditions:			
4	needs rocky terrain cannot be done with snow covering ground cannot be done with very wet ground cannot be done in storms or high winds	v,w	nothing
These activities have five constraining environmental conditions:			
5, 7, and 14	needs non-rocky terrain cannot be done in limited space needs snow covering ground cannot be done in rain cannot be done in dense vegetation	w	5,7,14

Table 5 (cont'd)

ORA	Constraints	Substitutable In Terms Of[a]	Substitutable For[b]
These activities have six constraining environmental conditions:			
6	needs mountainous terrain needs snow covering ground cannot be done in rain cannot be done in storms or high winds cannot be done in dense vegetation needs a cleared slope	w	nothing
10	needs non-stagnant water needs specific wildlife habitat needs proper legal season cannot be done in storms or high winds needs some kind of wildlife needs specific kind of wildlife	v	9
13	needs non-rocky terrain cannot be done in limited space cannot be done with snow covering ground cannot be done in rain cannot be done in storms or high winds cannot be done in dense vegetation	w	nothing
These activities have seven constraining environmental conditions:			
8	needs non-stagnant water cannot be done in limited space needs specific wildlife habitat needs proper legal season needs proper wildlife habitat (vegetation) needs some kind of wildlife needs specific kind of wildlife	nothing	9

Table 5 (cont'd)

ORA	Constraints	Substitutable In Terms Of[a]	Substitutable For[b]
These activities have eight constraining environmental conditions:			
9	needs non-stagnant water cannot be done in limited space needs specific wildlife habitat needs proper legal season cannot be done in storms or high winds needs proper wildlife habitat (vegetation) needs some kind of wildlife needs specific kind of wildlife	nothing	nothing

[a] totally substitutable in terms of these aspects:
- g - geography
- c - climate
- v - vegetation
- w - wildlife

[b] substitutable for these ORAs

Table 6

Physiology Measures

Measure		Scale Markings							
		1	2	3	4	5	6	7	
muscle tone	flabby	1	6	9	26	19	26	13	firm
sense of balance	poor	3	1	10	10	12	37	27	good
limberness	not very	5	3	7	14	36	28	7	very

Note. Numbers represent % of subjects.

Table 7

Hours/Week

hours/week	0-3	3-6	7-12	13-24	25-48	49-72	72+
% of Ss	6	14	16	24	22	12	6

Table 8

Backpacking Equipment

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
hiking boots	100	100	0	30
sleeping bag	100	89	11	20
backpack	100	81	19	10
mess kit	97	89	11	5
canteen	92	85	15	2
tent	83	67	33	20
(stove	14	100	0	15)
(special clothing	11	100	0	--)
(tarps	3	100	0	5)
(sleeping bag pad	3	100	0	5)

Table 9

Mountain Climbing Equipment

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
hiking boots	100	100	0	30
mess kit	88	93	7	5
canteen	88	93	7	2
backpack	88	87	13	10
compass	88	87	13	2
maps	88	73	27	2
climbing rope	65	27	73	40
pitons (set of 10)	59	20	80	20
slings (set of 10)	53	33	67	10
carabiner (set of 10)	53	33	67	25
chocks (set of 10)	53	22	78	20
ice ax	41	43	57	30
crampons	41	29	71	30

Table 10

Rock Climbing Equipment

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
hiking boots	92	100	0	30
backpack	58	91	9	10
climbing rope	45	29	71	40
slings (set of 10)	21	38	62	10
carabiner (set of 10)	21	38	62	25
pitons (set of 10)	21	25	75	20
chocks (set of 10)	21	25	75	20
(gloves	3	100	0	5)

Table 11

Snowshoeing Equipment

Equipment	Use (%)	Own (%)	Rent (%)	Borrow (%)	Estimated Cost ($)
hiking boots	100	100	0	0	30
bindings	100	75	0	25	35
snowshoes	100	69	6	25	
gaiters	56	78	11	11	3
(packs	6	100	0	0	5)
(staff	6	100	0	0	0)
(special clothing	6	100	0	0	--)

Table 12

Downhill Skiing Equipment

Equipment	Use (%)	Own (%)	Rent (%)	Borrow (%)	Estimated Cost ($)
downhill skis	100	82	13	5	30
ski poles	100	84	16	0	10
ski boots	100	86	11	3	15
bindings	100	83	14	3	10
waxes	78	78	15	7	5
(special clothing	11	100	0	0	--)
(goggles	8	100	0	0	3)
(gloves	5	100	0	0	10)
(helmet	3	100	0	0	30)
(files	3	100	0	0	2)

Table 13

Crosscountry Skiing Equipment

Equipment	Use (%)	Own (%)	Rent (%)	Borrow (%)	Estimated Cost ($)
crosscountry skis	100	47	33	20	20
ski boots	100	47	33	20	15
bindings	100	47	33	20	10
ski poles	100	47	33	20	5
waxes	100	47	20	33	5
(special clothing	7	100	0	0	--)
(torch	7	100	0	0	15)
(scraper	7	100	0	0	2)

Table 14

Fishing Equipment

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
fishing line	100	91	9	2
fishing pole	100	88	12	12
reel	100	88	12	15
hooks (pkg.)	98	90	10	1
knife	98	86	14	0
sinkers (pkg.)	94	90	10	0.5
floats	89	88	12	0.1
bait	88	93	14	0.5
lures	88	88	12	1.5
tackle box	88	86	7	5
flies	80	82	18	0.5
net	59	74	26	5
creel (fishing bag)	48	43	57	3
waders (&/or boots)	42	89	11	20
measure	41	81	19	4
scale	36	78	22	

Table 15

Equipment for Day Trips on Horseback

Equipment	Use (%)	Own (%)	Rent (%)	Borrow (%)	Estimated Cost ($)
horse	100	56	11	83	75 or 3/hr
saddle	100	63	11	26	30
saddle blanket	100	63	11	26	5
bridle	100	59	11	30	10
grooming tools	96	62	19	19	10
halter	96	58	12	30	10
riding boots	81	95	0	5	20
horse trailer	56	33	7	60	300
bareback pad	48	46	15	39	15
(rodeo rigging	7	100	0	0	--)
(spurs	4	100	0	0	10)
(training equipment	4	100	0	0	300)

Table 16

Equipment for Pack Trips on Horseback

Equipment	Use (%)	Own (%)	Rent (%)	Borrow (%)	Estimated Cost ($)
horses/mules	100	74	13	13	75
halters	100	74	13	13	10
bridles	100	74	13	13	10
saddles	100	74	13	13	30
saddle blankets	100	74	13	13	5
saddle bags	100	74	13	13	25
cooking equipment	100	74	13	13	5
hobbles	100	50	13	37	5
ropes	100	87	0	13	5
sleeping bags	88	100	0	0	20
horse trailer	88	43	0	57	300

Table 17

Equipment for Photography of Landscape

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
instamatic camera	82	96	4	10
35mm camera	53	90	10	40
special lenses	40	87	13	20
strobe or flash	37	86	14	5
tripod	37	81	19	15
special filters	33	89	11	5
4x5 camera	5	100	0	200
movie camera	5	67	33	40
polaroid camera	4	100	0	25
brownie	2	100	0	10
twin lens reflex	2	100	0	100

Table 18

Equipment for Photography of Wildlife

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
instamatic camera	78	94	6	10
35mm camera	65	90	10	40
special lenses	48	86	14	20
strobe or flash	46	86	14	5
tripod	41	79	21	15
special filters	37	88	12	5
4x5 camera	4	100	0	200
polaroid camera	4	100	0	25
twin lens reflex	4	100	0	100
movie camera	2	100	0	40
brownie	2	100	0	10
(case	4	100	0	5)
(special backpack	4	100	0	15)

Table 19

Equipment for Photography of Human Activity

Equipment	Use (%)	Own (%)	Borrow (%)	Estimated Cost ($)
instamatic camera	77	93	7	10
35mm camera	63	82	18	40
strobe or flash	46	81	19	5
special lenses	43	80	20	20
tripod	40	71	29	15
special filters	34	83	17	5
4x5 camera	6	100	0	200
polaroid camera	6	100	0	25
movie camera	3	100	0	40
brownie camera	3	100	0	10
(case	6	100	0	5)
(special backpack	3	100	0	15)
(reflectors	3	100	0	5)

Table 20

Equipment Cost Ranking

ORA	Essential Cost ($)	Essential Cost Rank	High Use Cost ($)	Essential + High Use Cost Rank
1	0	1	0	1
2	50	9	30	11
3	30	5	20	6
4	0	1	30	3
5	60	12	0	9
6	90	13	5	12
7	55	11	0	8
8	40	18	0	4
9	50	9	0	6
10	35	7	10	5
11	30	5	140	13
12	190	15	320	15
13	430	16	0	14
14	175	14	900	16
15, 16, 17 sightseeing	0	1	15	2
15, 16, 17 photography	20	4	40	9

Table 21

Age

age	0-14	15-20	21-25	26-35	36-45	46-55	56-65	65+
% of Ss	0	21	50	16	3	7	3	0

Table 22

Education

education level	some school	eighth grade	some high school	high school	some college	college	some post-graduate	post-graduate
% of Ss	0	0	1	10	44	14	22	9

Table 23

Marital Status

marital status	single	cohabiting	married	separated	divorced	widowed
% of Ss	48	5	39	0	6	2

Table 24

Discriminant Function Analysis

ORA	F		Scale[a] chal	indi	foot	free	reg	ener	ri-t	quie	nat	peac	unme	sup	pres	des	plea	wond	good
5	2.09*	status	low	low	low						low					low		**	**
		yes mean																5.94	5.94
		no mean																5.18	6.64
		mean	5.27	5.68	5.20	5.62	5.39	6.00	4.47	5.89	5.87	5.88	5.16	4.99	5.17	5.23	5.71	5.31	5.51
8	4.28*	status							high		high	high	low		low	low	high		
		yes mean							4.73		4.57	4.80					5.60		
		no mean							5.43		3.61	2.66					2.91		
		mean	5.09	4.95	4.54	4.32	4.97	5.13	5.22	3.17	3.90	3.30	2.88	3.34	3.62	4.04	3/72	3.65	3.97
9	3.27**	status	**	low	high		**	*				high		**					
		yes mean	5.82		6.09		5.64	5.82				6.27		5.82					
		no mean	5.66		4.94		5.17	5.36				4.47		3.75					
		mean	5.79	5.60	5.07	5.15	5.22	5.41	4.97	5.76	5.12	4.67	4.61	3.98	4.29	4.55	4.53	4.30	4.53
10	3.66**	status	low	low	*				low	*	low	*					*		
		yes mean			5.75					5.98		6.06					5.97		
		no mean			3.17					6.46		5.29					4.34		
		mean	5.06	5.39	4.85	5.09	3.73	4.24	3.28	6.15	5.60	5.79	4.32	4.27	4.40	4.96	5.40	4.99	5.39
13	3.51**	status		**				low			high	low		low			*	high	
		yes mean		5.50							2.42						6.08	5.25	
		no mean		4.78							2.08						3.00	3.01	
		mean	4.40	4.87	4.30	4.62	4.46	4.56	5.32	1.75	2.12	2.41	1.57	2.25	2.46	2.33	3.37	3.37	3.28

[a]See Appendix A for fuller scale labels.

*$p < .05$.

**$p < .01$.

Table 25

Number of Activities Participated In

number	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
% of Ss	4	2	2	6	9	14	16	20	10	7	1	5	2	1	1	0	0	0

Table 26

Number of Participants

ORA	Number of Participants	Popularity Rank
1	83	2
2	36	8
3	17	12
4	38	6
5	16	13
6	38	6
7	15	14
8	29	9
9	11	16
10	64	4
11	27	10
12	8	17
13	12	15
14	18	11
15	85	1
sightseeing	85	
photography	57	
both	57	
16	71	3
sightseeing	70	
photography	46	
both	45	
17	57	5
sightseeing	53	
photography	35	
both	31	

Note. Out of 100 respondents.

Participation Patterns

Activity$_1$ Number	Activity$_2$ Number																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	100	43	20	45	18	40	14	30	11	67	28	14	14	18	90	76	64
2	100	100	42	58	36	67	19	31	11	83	16	8	16	19	89	72	56
3	100	88	100	82	53	71	29	41	18	76	35	18	18	18	100	82	59
4	97	55	37	100	26	47	18	34	16	74	26	5	18	13	95	87	61
5	94	81	56	63	100	75	25	44	19	81	19	6	31	31	100	88	63
6	87	63	32	47	32	100	29	37	11	79	34	13	13	24	89	79	61
7	80	47	33	47	27	73	100	27	13	73	26	13	40	26	87	60	47
8	86	38	24	45	24	48	14	100	38	83	21	10	17	21	90	76	41
9	82	36	27	55	27	36	18	100	100	82	9	18	18	36	82	82	36
10	88	47	20	44	20	47	17	38	14	100	23	9	14	17	91	75	50
11	85	22	22	37	11	48	15	22	4	56	100	22	7	33	81	74	74
12	75	38	38	25	16	63	25	38	25	75	75	100	13	38	88	63	50
13	83	50	25	58	42	42	50	42	17	75	17	8	100	33	92	50	50
14	83	39	17	28	28	50	22	33	22	61	50	17	22	100	78	56	44
15	88	38	20	42	19	40	15	31	11	68	26	8	13	16	100	84	65
16	89	37	20	46	20	42	13	31	13	68	28	7	8	14	100	100	70
17	93	35	18	40	18	40	12	21	7	56	35	7	11	14	96	88	100

Note. Numbers represent % of participants in Activity$_1$ who also participate in Activity$_2$.

Table 28

Combining Activities

Activity$_1$	Listing	Activity$_2$																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	none
1	yes[a]	-	11	12	16	0	3	25	8	0	14	0	17	0	0	15	13	6	8[b]
	both[c]	-	22	12	22	0	3	8	32	22	27	0	17	0	0	40	40	19	-
	no[d]	-	8	24	35	20	0	25	12	22	14	4	0	10	7	27	32	25	14[e]
	total	-	31	48	73	20	6	58	52	44	55	4	34	10	7	82	85	50	22
2	yes	8	-	0	5	0	4	14	0	0	20	0	0	0	0	19	12	15	11
	both	25	-	10	10	15	0	19	0	0	20	0	33	0	0	44	50	10	-
	no	11	-	17	19	0	0	0	18	50	10	0	0	17	0	16	19	15	8
	total	44	-	47	34	15	4	43	18	50	50	0	33	17	0	79	81	40	19
3	yes	24	27	-	14	0	0	0	14	33	0	0	0	0	0	12	14	10	12
	both	12	20	-	7	0	8	20	0	0	0	0	0	0	0	29	29	20	-
	no	12	0	-	0	11	8	0	0	0	0	0	0	0	0	18	21	10	6
	total	48	47	-	21	11	16	20	14	33	0	0	0	0	0	59	64	50	18
4	yes	35	19	0	-	0	0	0	31	33	11	0	0	0	0	22	30	17	11
	both	19	10	7	-	0	0	0	8	0	4	0	0	0	0	28	24	9	-
	no	16	5	14	-	10	6	14	0	0	4	0	0	14	0	6	6	9	5
	total	70	34	21	-	10	6	14	39	33	19	0	0	14	0	56	60	35	16
5	yes	20	0	11	10	-	8	25	14	33	8	0	0	0	0	19	29	20	19
	both	7	15	0	0	-	0	25	0	0	0	0	0	0	0	31	29	10	-
	no	0	0	0	0	-	0	0	14	33	8	0	0	0	20	19	14	10	6
	total	27	15	11	10	-	8	50	28	66	16	0	0	0	20	69	72	50	25
6	yes	0	0	8	6	0	-	9	0	0	0	0	0	0	0	15	7	13	53
	both	3	0	8	0	0	-	9	0	0	0	0	0	0	0	15	7	17	-
	no	3	4	0	0	8	-	0	0	0	0	0	0	0	0	12	17	13	11
	total	6	4	16	6	8	-	18	0	0	0	0	0	0	0	42	31	43	64

Table 28 (cont'd)

Activity$_1$	Listing	Activity$_2$																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	none
7	yes	25	0	0	14	0	0	–	0	0	9	0	0	0	0	15	22	0	13
	both	8	29	20	0	25	9	–	0	0	0	0	0	0	0	38	44	14	–
	no	25	14	0	0	25	9	–	0	0	9	0	0	0	0	23	33	29	7
	total	58	43	20	14	50	18	–	0	0	18	0	0	0	0	76	99	43	20
8	yes	12	18	0	0	14	0	0	–	0	0	0	0	0	0	4	0	8	38
	both	32	0	0	8	0	0	0	–	9	17	17	0	0	17	12	14	8	–
	no	8	0	14	31	14	0	0	–	0	4	0	33	0	0	12	14	0	7
	total	52	18	14	39	28	0	0	–	9	21	17	33	0	17	38	28	16	45
9	yes	22	50	0	0	33	0	0	0	–	0	0	0	0	0	0	0	0	36
	both	22	0	0	0	0	0	0	9	–	11	0	0	0	0	50	22	25	–
	no	0	0	33	33	33	0	0	0	–	11	0	50	0	50	0	11	0	0
	total	44	50	33	33	66	0	0	9	–	22	0	50	0	50	50	33	25	36
10	yes	14	10	0	4	8	0	9	4	11	–	0	0	0	0	9	17	6	31
	both	27	23	0	4	0	0	0	17	11	–	0	0	0	0	16	15	6	–
	no	14	20	0	7	8	0	9	0	0	–	0	17	11	0	14	17	16	13
	total	55	53	0	15	16	0	18	21	22	–	0	17	11	0	39	49	28	44
11	yes	4	0	0	0	0	0	0	0	0	0	–	0	0	0	5	20	0	37
	both	0	0	0	0	0	0	0	17	0	0	–	0	0	0	27	15	5	–
	no	0	0	0	0	0	0	0	0	0	0	–	0	0	0	18	20	15	19
	total	4	0	0	0	0	0	0	17	0	0	–	0	0	0	50	55	20	56
12	yes	0	0	0	0	0	0	0	33	50	17	0	–	0	0	0	0	0	25
	both	17	33	0	0	0	0	0	0	0	0	0	–	0	0	43	60	25	–
	no	17	0	0	0	0	0	0	0	0	0	0	–	0	0	29	20	25	25
	total	34	33	0	0	0	0	0	33	50	17	0	–	0	0	72	80	50	50
13	yes	10	17	0	14	0	0	0	0	0	11	0	0	–	0	27	33	33	42
	both	0	0	0	0	0	0	0	0	0	0	0	0	–	0	18	17	33	–
	no	0	0	0	0	0	0	0	0	0	0	0	0	–	0	0	17	0	0
	total	10	17	0	14	0	0	0	0	0	11	0	0	–	0	45	67	66	42

Table 28 (cont'd)

Activity$_1$	Listing	Activity$_2$																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	none
14	yes	7	0	0	0	20	0	0	0	25	0	0	0	0	-	0	10	12	67
	both	0	0	0	0	0	0	0	0	25	0	0	0	0	-	7	0	0	-
	no	0	0	0	0	0	0	0	0	0	0	0	0	0	-	14	40	12	6
	total	7	0	0	0	20	0	0	0	50	0	0	0	0	-	21	50	24	73
15	yes	27	16	18	6	19	12	23	12	0	14	18	29	0	14	-	3	4	16
	both	40	44	29	25	31	15	38	12	22	16	27	19	18	7	-	15	13	-
	no	13	19	12	22	19	12	15	4	0	10	9	0	27	0	-	13	4	13
	total	80	79	59	53	69	39	76	28	22	40	54	58	45	21	-	31	21	29
16	yes	32	19	21	6	14	17	33	14	11	17	20	20	17	40	13	-	8	15
	both	41	42	29	24	21	7	44	14	22	15	15	60	17	0	15	-	8	-
	no	16	12	14	30	29	7	22	0	0	15	20	0	33	10	1	-	2	7
	total	89	73	64	60	64	31	99	28	33	47	55	80	67	50	29	-	18	22
17	yes	25	15	10	9	10	13	29	0	0	16	15	25	0	13	4	2	-	33
	both	19	15	20	9	20	17	0	8	25	6	5	25	33	0	13	10	-	-
	no	11	15	10	17	20	13	29	8	0	9	0	0	33	13	5	4	-	16
	total	55	45	50	35	50	43	58	16	25	31	20	50	66	26	22	16	-	49

Note. Numbers represent % of participants in Activity$_1$.

[a]yes - Activity$_2$ listed as a combining activity for Activity$_1$.

[b]none yes - No combining activities listed for Activity$_1$; Activity$_1$ not listed as a combining activity for any Activity$_2$.

[c]both - Activity$_2$ listed as a combining activity for Activity$_1$; Activity$_1$ listed as a combining activity for Activity$_2$.

[d]no - Activity$_1$ listed as a combining activity for Activity$_2$.

[e]none no - No combining activities listed for Activity$_1$; Activity$_1$ listed as a combining activity for at least one Activity$_2$.

Reference Notes

1. Callas, P. Personal communication, Montana State University, April 1975.

2. Shontz, W. D. Personal communication, Montana State University, May, 1975.

References

Behrman, R. M. Personality differences between nonswimmers and swimmers. Research Quarterly, 1967, 38(2), 163-171.

Bureau of Sport Fisheries and Wildlife. Sport fishing--Today and tomorrow (ORRRC Report #7). Washington, D.C.: U.S. Government Printing Office, 1962.

Cicchetti, C. J. A multivariate statistical analysis of wilderness users in the United States. In J. V. Krutilla (Ed.), Natural environments: Studies in theoretical and applied analysis. Baltimore: Johns Hopkins University Press, 1972.

Clarke, D. H., & Clarke, H. H. Research processes in physical education, recreation, and health. Englewood Cliffs, New Jersey: Prentice-Hall, 1970.

Commission Staff. Prospective demand for outdoor recreation (ORRRC Report #26). Washington, D.C.: U.S. Government Printing Office, 1962.

Department of Conservation, School of Natural Resources, University of Michigan. Hunting in the United States--Its present and future role (ORRRC Report #6). Washington, D.C.: U.S. Government Printing Office, 1962.

Driver, B. L. Potential contributions of psychology to recreation resource management. In J. F. Wohlwill & D. H. Carson (Eds.), Environment and the social sciences: Perspectives and applications. Washington, D.C.: American Psychological Association, 1972.

Ferriss, A. L. National recreation survey (ORRRC Report #19). Washington, D.C.: U.S. Government Printing Office, 1962.

Ferriss, A. L. The social and personality correlates of outdoor recreation. Annals of the American Academy of Political and Social Science, 1970, 389, 46-55.

Frank, L. K. Outdoor recreation in relation to physical and mental health. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Goldenthal, A. J. Projections to the years 1976 and 2000: Economic growth, population, labor force and leisure, and transportation (ORRRC Report #23). Washington, D.C.: U.S. Government Printing Office, 1962.

Goode, W. J. Outdoor recreation and the family to the year 2000. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Harry, J. Socioeconomic patterns of outdoor recreation use near urban areas. Journal of Leisure Research, 1972, 4(3), 218-219.

Hauser, P. M. Demographic and ecological changes as factors in outdoor recreation. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Heimstra, N. W., & McFarling, L. H. Environmental psychology. Monterey, California: Brooks/Cole, 1974.

Hendee, J. C. Rural-urban differences reflected in outdoor recreation participation. Journal of Leisure Research, 1969, 1(4), 333-341.

Hendee, J. C. Recreational values, use and management of natural areas. In W. J. Dittrich & J. M. Trappe (Eds.), Natural areas--Needs and opportunities. Corvallis, Oregon: Continuing Education Publications, 1970.

Hendee, J. C., & Burdge, R. J. The substitutability concept: Implications for recreation research and management. Journal of Leisure Research, 1974, 6(2), 157-162.

Ibrahim, H. Recreation preference and temperament. Research Quarterly, 1971, 41(2), 145-154.

Kaplan, M., & Lazarfeld, P. The mass media and man's orientation to nature. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Klausner, S. Z. On man in his environment. San Fransisco: Jossey-Bass, 1971.

Lamphear, S. C. Personality and recreation: A study of participant behavior in selected outdoor recreation activities. Dissertation Abstracts International, 1970, 30(12-B), 5314.

Lerner, L. J. The demand-value structure of recreation. In Western resources papers, 1964: New horizons for resources research: Issues and methodology. Boulder, Colorado: University of Colorado Press, 1965.

Levy, J. An applied intersystem congruence model of play, recreation, and leisure. Human Factors, 1974, 15(5), 545-557.

Librarian of Congress. Outdoor recreation literature (ORRRC Report #27). Washington, D.C.: U.S. Government Printing Office, 1962.

Lindsay, J. J., & Ogle, R. A. Socioeconomic patterns of outdoor recreation use near urban areas. Journal of Leisure Research, 1972, 4(1), 19-24.

Litton, R. B., Tetlow, R. J., Sorenson, J., & Beatty, R. A. An aesthetic overview of the role of water in the landscape. In Background studies of the National Water Commission (Vol. III, Part 2). Arlington, Virginia: National Water Commission, 1972.

Mead, M. Outdoor recreation in the context of emerging American cultural values. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Mueller, E., & Gurin, G. Participation in outdoor recreation: Factors affecting demand among American adults (ORRRC Report #20). Washington, D.C.: U.S. Government Printing Office, 1962.

Nash, J. B. The enlarging role of voluntary leisure-time associations in outdoor recreation and education. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Peterson, G. L. Psychology and environmental management for outdoor recreation. In W. F. E. Preiser (Ed.), Environmental design research, Vol. 1: Selected papers (EDRA 4). Stroudsburg, Pennsylvania: Dowden, Hutchinson, and Ross, 1973.

Romsa, G. H. A method of deriving outdoor recreational activity packages. Journal of Leisure Research, 1973, 5(4), 34-46.

Shontz, W. D., Williams, A. S., Johnson, L. R., Dorfman, P. W., Faulkner, L. G., McCulloch, J. F., & Willis, M. P. User satisfaction as a function of recreation management: A model of recreation succession (Research Monograph No. 11). Bozeman, Montana: Montana State University, Institute for Applied Research, MSU-NSF Gallatin Canyon Study, April, 1975.

Smith, J. W. Developments in the field of education affecting outdoor recreation resources. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Smith Kline & French Laboratories. Pocket book of medical tables (18th edition). Philadelphia: Author, 1968.

Stankey, G. H. A strategy for the definition and management of wilderness quality. In J. V. Krutilla (Ed.), Natural environments: Studies in theoretical and applied analysis. Baltimore: Johns Hopkins University Press, 1972.

Stoddard, G. D. The emerging pattern of outdoor recreation and education--Problems, trends, and implications. In L. K. Frank (Ed.), Trends in American living and outdoor recreation (ORRRC Report #22). Washington, D.C.: U.S. Government Printing Office, 1962.

Stuart, D. G. (Ed.). Impacts of large recreational developments upon semi-primitive environments: The Gallatin Canyon case study. Bozeman, Montana: Montana State University, 1974.

Van Horne, M. J. (Ed.). Proceedings of the outdoor recreation research needs workshop. Washington, D.C.: U.S. Department of the Interior, 1974.

Wager, J. A. Management of multiple-use resources for recreation. In Western resources papers, 1974: New horizons for resources research: Issues and methodology. Boulder, Colorado: University of Colorado Press, 1965.

Wildland Research Center, University of California. Wilderness and recreation--A report on resources, values, and problems. Washington, D.C.: U.S. Government Printing Office, 1962.

Willis, M. P., Shontz, W. D., Dorfman, P. W., & Williams, A. S. Attitudes and behavior in outdoor recreation and the wildernism scale concept (Research Monograph No. 22). Bozeman, Montana: Montana State

University, Institute for Applied Research, MSU-NSF Gallatin Canyon Study, April, 1975a.

Willis, M. P., Shontz, W. D., Dorfman, P. W., & Williams, A. S. A short multi-purpose wildernism scale: Development, evaluation and potential use in outdoor recreation research (Research Monograph No. 21). Bozeman, Montana: Montana State University, Institute for Applied Research, MSU-NSF Gallatin Canyon Study, April 1975b.

Appendices

Appendix A

Outdoor Recreational Activities

Questionnaire

(All information on individual questionnaires will be kept confidential.)

This survey concerns the following 17 outdoor recreational activities:

- dayhiking
- backpacking
- mountain climbing
- rock climbing
- snowshoeing
- downhill skiing
- crosscountry skiing (ski touring)
- gun hunting
- bow hunting
- fishing
- day trips on horseback
- pack trips on horseback
- trail bike driving
- snowmobiling
- sightseeing &/or photography of landscape
- sightseeing &/or photography of wildlife
- sightseeing &/or photography of human activity

Please answer all the questions, but don't spend a lot of time on any of them. Each activity is defined at the beginning of the questions related to it; please consider these definitions when answering the questions.

One of the questions for each activity is a set of 17 rating scales. Please indicate your feelings, or impressions, about the indicated activity on each of the rating scales. To do this, simply place a check or an X in one of the spaces between the two words defining the opposite ends of each scale. There's no need to struggle over any particular scale--just respond to each one according to your first impression.

EXAMPLE:

I feel that Fishing is:

restful __:__:__:__:__:__:__ tiresome

If your first impression is that this outdoor activity is extremely tiresome, you should check the space at the extreme right, toward "tiresome." If your first impression is that this activity is fairly restful, then you should check one of the spaces toward "restful." If your first impression is that this activity is neither restful nor tiresome, then you should mark the middle of the scale.

If you participate in an activity, please answer all the questions for

that activity.

If you do not participate in an activity, please complete only the first question (on whether you participate) and the rating scales for that activity.

Please complete all 17 rating scales for each activity, regardless of whether you personally engage in the activity.

Dayhiking

Definition: Walking which requires one day or less, no special training, & no special equipment.

Do you dayhike? yes _____ no _____

I feel that Dayhiking is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not dayhike, please go to next activity.)

If you dayhike, how many times a year? _____

If you dayhike, in which skill level do you classify yourself?

____	1 uses relatively smooth paths with easy grades; trips of
____	2 less than 5 miles.
____	3
____	4
____	5
____	6 able to tackle trips of at least 5 miles, rough paths, &
____	7 occasional steep grades.
____	8
____	9
____	10 able to tackle trips longer than 10 miles, trailless
____	11 terrain, frequent steep grades, & emergency conditions (includes first aid & rescue procedures).

If you dayhike, do you usually do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you dayhike, with which (if any) of the other 16 recreational activities in this survey do you often combine dayhiking?

Backpacking

Definition: Walking which requires more than one day & transport of supplies on one's back.

Do you backpack? yes _____ no _____

I feel that Backpacking is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not backpack, please go to next activity.)

If you backpack, how many times a year? _____

If you backpack, in which skill level do you classify yourself?

____	1	requires light pack, smooth trails, & gentle grades; knows
____	2	few emergency procedures.
____	3	
____	4	
____	5	able to tackle rough trails & at least one of requirements
____	6	for advanced level; knows what & how to pack; knows
____	7	some emergency procedures (includes first aid, rescue
____	8	procedures, & equipment improvisations).
____	9	
____	10	knows emergency procedures; knows proper carrying
____	11	techniques; & is able to tackle trailless terrain, steep or rocky terrain, trips longer than 3 days, packs over 40 lb., & trips in very stormy weather.

If you backpack, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you backpack, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
hiking boots	___	___	___	___
backpack	___	___	___	___
sleeping bag	___	___	___	___
tent	___	___	___	___
mess kit	___	___	___	___
canteen	___	___	___	___
other (specify)	___	___	___	___

If you backpack, with which (if any) of the other 16 recreational activities in this survey do you often combine backpacking?

Mountain Climbing

Definition: Hiking over mountainous terrain (1000' gain per mile, at least 3000' gain overall), usually with little or no trail.

Do you mountain climb? yes _____ no _____

I feel that Mountain Climbing is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not mountain climb, please go to next activity.)

If you mountain climb, how many times a year? _____

If you mountain climb, in which skill level do you classify yourself?

___	1 uses only simple hiking skills & no special equipment.
___	2
___	3 able to tackle steep hiking or some technical climbing.
___	4
___	5 able to tackle several hundred feet of technical climbing
___	6 or long, high mountain with some technical climbing;
___	7 has some knowledge of emergency procedures (includes
___	8 first aid, rescue procedures, & equipment improvisa-
___	9 tion).
___	10
___	11 able to tackle several days of hiking, a lot of technical climbing, & emergency conditions.

If you mountain climb, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you mountain climb, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
hiking boots	___	___	___	___
backpack	___	___	___	___
mess kit	___	___	___	___
canteen	___	___	___	___
compass	___	___	___	___
maps	___	___	___	___
climbing rope	___	___	___	___
pitons	___	___	___	___
slings	___	___	___	___
chocks	___	___	___	___
carabiner	___	___	___	___
ice ax	___	___	___	___
crampons	___	___	___	___
other (specify)	___	___	___	___

If you mountain climb, with which (if any) of the other 16 recreational activities in this survey do you often combine mountain climbing?

<u>Rock Climbing</u>

Definition: Hiking or climbing on rocks.

Do you rock climb? yes _____ no _____

I feel that Rock Climbing is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not rock climb, please go to next activity.)

If you rock climb, how many times a year? _____

If you rock climb, in which skill level do you classify yourself? (Please check only one.)

___ 1 free climbing - scrambling.

___ 2 free climbing - some use of hands; obvious footholds.

___ 3 free climbing - level of average, athletically inclined, cautious person.

___ 4 free climbing - use of ropes & pitons for safety; more concern with technique & style; knows some emergency procedures (includes first aid, rescue proc., & equip. imp).

___ 5 free climbing - safety ropes & pitons; increasing skill, style, & knowledge of emergency procedures.

___ 6 free climbing - safety ropes & pitons; "fingernail climbing"; great free climb. skill & knowledge; knows emer. proc.

___ 7 direct aid climbing - obvious, firm cracks for pitons.

___ 8 direct aid climbing

___ 9 direct aid climbing - knows emergency procedures.

___ 10 direct aid climbing

___ 11 direct aid climbing - hairline, highly unstable cracks for pitons.

If you rock climb, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you rock climb, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
hiking boots	___	___	___	___
climbing rope	___	___	___	___
pitons	___	___	___	___
slings	___	___	___	___
chocks	___	___	___	___
carabiner	___	___	___	___
backpack	___	___	___	___
other (specify)	___	___	___	___

If you rock climb, with which (if any) of the other 16 recreational activities in this survey do you often combine rock climbing?

Snowshoeing

Definition: Use of snowshoes for recreation.

Do you snowshoe? yes _____ no _____

I feel that Snowshoeing is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not snowshoe, please go to next activity.)

If you snowshoe, how many times a year? _____

If you snowshoe, in which skill level do you classify yourself?

___	1	meets no requirements for advanced level; trips less than ½ day.
___	2	
___	3	
___	4	
___	5	
___	6	meets at least one requirement for advanced level; capable of full-day trips.
___	7	
___	8	
___	9	
___	10	able to tackle adverse snow conditions, trips over 1 day, & emergency conditions (includes first aid, rescue operations, & equipment improvisation).
___	11	

If you snowshoe, do you usually do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you snowshoe, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
hiking boots	___	___	___	___
snowshoes	___	___	___	___
bindings	___	___	___	___
gaiters	___	___	___	___
other (specify)	___	___	___	___

If you snowshoe, do you use your snowshoes for such things as rescue operations? If so, what percentage of the use of your snowshoes is for recreation? _____%

If you snowshoe, with which (if any) of the other 16 recreational activities in this survey do you often combine snowshoeing?

Downhill Skiing

Definition: Going up hill & skiing down, usually at ski resort.

Do you downhill ski? yes _____ no _____

I feel that Downhill Skiing is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not downhill ski, please go to next activity.)

If you downhill ski, how many times a year? _____

If you downhill ski, in which skill level do you classify yourself?

____	1 beginning	(Use the classification of slope you normally ski as a guide.)
____	2	
____	3	
____	4	
____	5 intermediate	
____	6	
____	7	
____	8	
____	9	
____	10 advanced	
____	11	

If you downhill ski, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you downhill ski, please check the appropriate column for the following types of equipment:

	own	rent	borrow	don't use
downhill skis	___	___	___	___
ski boots	___	___	___	___
bindings	___	___	___	___
ski poles	___	___	___	___
waxes	___	___	___	___
other (specify)	___	___	___	___

If you downhill ski, do you use the same skis for such things as rescue operations or crosscountry skiing? If so, what percentage of the use of your downhill skis is for recreational downhill skiing? _____%

If you downhill ski, with which (if any) of the other 16 recreational activities in this survey do you often combine downhill skiing?

Crosscountry Skiing (Ski Touring)

Definition: Skiing which includes flat or gently rolling terrain & usually not many long or steep slopes.

Do you crosscountry ski (ski tour)? yes _____ no _____

I feel that Crosscountry Skiing (Ski Touring) is:

non-challenging	___:___:___:___:___:___:___	challenging
individualistic	___:___:___:___:___:___:___	regimented
tied-down	___:___:___:___:___:___:___	footloose
freedom-filled	___:___:___:___:___:___:___	restrained
rugged	___:___:___:___:___:___:___	non-rugged
energetic	___:___:___:___:___:___:___	non-energetic
risk-avoiding	___:___:___:___:___:___:___	risk-taking
noisy	___:___:___:___:___:___:___	quiet
natural	___:___:___:___:___:___:___	artificial
disturbing	___:___:___:___:___:___:___	peaceful
mechanized	___:___:___:___:___:___:___	unmechanized
wildlife-supporting	___:___:___:___:___:___:___	wildlife-threatening
resource-preserving	___:___:___:___:___:___:___	resource-consuming
ecologically-undesirable	___:___:___:___:___:___:___	ecologically-desirable
pleasant	___:___:___:___:___:___:___	unpleasant
awful	___:___:___:___:___:___:___	wonderful
good	___:___:___:___:___:___:___	bad

(If you do not crosscountry ski (or ski tour), please go to next activity.)

If you crosscountry ski (or ski tour), how many times a year? _____

If you crosscountry ski (or ski tour), in which skill level do you classify yourself?

___	1	skis mainly flat, rockless, treeless terrain; knows little
___	2	about equipment or procedures.
___	3	
___	4	
___	5	able to wax own skis appropriately; can turn skis
___	6	adequately; can ski more than 5 miles comfortably; can
___	7	ski gently rolling terrain.
___	8	
___	9	
___	10	meets all requirements for intermediate level; able to
___	11	handle emergency situations (includes first aid, rescue procedures, & equipment improvisation); feels comfortable turning skis; & is able to handle at least one of following: trips of 25 miles or more, overnight trips, heavy backpack (while skiing), or rough or steep terrain.

If you crosscountry ski (or ski tour) do you <u>usually</u> do so (please check only one:

_____ alone
_____ with one person
_____ with more than one person

Do you ever engage in crosscountry skiing competition? yes ___ no ___

If you crosscountry ski (or ski tour), please check the appropriate column (of the first four columns) for each of the following types of equipment. Check the last column (labelled "downhill") if you use the exact same piece of equipment for downhill skiing (if you also downhill ski).

	own	rent	borrow	don't use // downhill
crosscountry skis	___	___	___	___
ski boots	___	___	___	___
bindings	___	___	___	___
ski poles	___	___	___	___
waxes	___	___	___	___
other (specify)	___	___	___	___

If you crosscountry ski (or ski tour), do you use the same skis for such things as rescue operations or downhill skiing? If so, what percentage of the use of your crosscountry skis is for recreational crosscountry skiing (or ski touring)? _____%

If you crosscountry ski (or ski tour), with which (if any) of the other 16 recreational activities in this survey do you often combine crosscountry skiing (or ski touring)?

Gun Hunting

Definition: Tracking, stalking, or otherwise looking for game from the ground with intent to shoot it with gun.

Do you gun hunt? yes _____ no _____

I feel that Gun Hunting is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not gun hunt, please go to next activity.)

If you gun hunt, how many times a year? _____

If you gun hunt, in which skill level do you classify yourself?

____	1	meets no requirements for advanced level.
____	2	
____	3	
____	4	
____	5	knows some emergency procedures (includes first aid, rescue
____	6	procedures, & equipment improvisation); & meets at
____	7	least one requirement for advanced level.
____	8	
____	9	
____	10	knows emergency procedures, & meets at least two of these
____	11	requirements: uses wild game as primary meat source; has special tracking &/or stalking skills; has had intensive training with hunting firearms &/or procedures; is able to hunt in rugged terrain; knows how to dress meat properly in the field.

If you gun hunt, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you gun hunt, do you own, rent, or borrow your gun? own _____
rent _____
borrow _____

If you gun hunt, with which (if any) of the other 16 recreational activities in this survey do you often combine gun hunting?

<u>Bow Hunting</u>

Definition: Tracking, stalking, or otherwise looking for game from the ground with intent to shoot it with bow & arrow.

Do you bow hunt? yes _____ no _____

I feel that Bow Hunting is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not bow hunt, please go to next activity.)

If you bow hunt, how many times a year? _____

If you bow hunt, in which skill level do you classify yourself?

____	1	meets no requirements for advanced level.
____	2	
____	3	
____	4	
____	5	knows some emergency procedures (includes first aid, rescue
____	6	procedures, & equipment improvisation), & meets at
____	7	least one requirement for advanced level.
____	8	
____	9	
____	10	knows emergency procedures, & meets at least two of these
____	11	requirements: uses wild game as primary meat source; has special tracking &/or stalking skills; has had intensive training with hunting firearms &/or procedures; is able to hunt in rugged terrain; knows how to dress & butcher meat properly in the field.

If you bow hunt, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you bow hunt, do you own, rent, or borrow your bow? own _____
rent _____
borrow _____

If you bow hunt, with which (if any) of the other 16 recreational activities in this survey do you often combine bow hunting?

Fishing

Definition: Attempt to catch living fish in non-stagnant water.

Do you fish? yes _____ no _____

I feel that Fishing is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not fish, please go to next activity.)

If you fish, how many times a year? _____

If you fish, in which skill level do you classify yourself?

- [ ] 1 has no concern for skill or procedure; relies on luck.
- [ ] 2
- [ ] 3 has some skill; is not concerned about style for its own
- [ ] 4 sake.
- [ ] 5 is concerned about style, but has only moderate skill; knows
- [ ] 6 some about fish habits; has very little variety in tech-
- [ ] 7 niques or types of fishing locations; knows some emerg.
- [ ] 8 proc. (incl. first aid, rescue proc., & equip. improv.).
- [ ] 9 has great concern for style; may fish in catch-&-release
- [ ] 10 situation.
- [ ] 11 understands fish habits in variety of situations; has special fishing skills; is able to locate & catch fish under extremely challenging situations; knows emergency procedures.

If you fish, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you fish, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
fishing pole	___	___	___	___
reel	___	___	___	___
fishing line	___	___	___	___
hooks	___	___	___	___
knife	___	___	___	___
flies	___	___	___	___
lures	___	___	___	___
bait	___	___	___	___
scale	___	___	___	___
measure	___	___	___	___
sinkers	___	___	___	___
floats	___	___	___	___
net	___	___	___	___
tackle box	___	___	___	___
creel (fishing bag)	___	___	___	___
waders	___	___	___	___
other (specify)	___	___	___	___

If you fish, with which (if any) of the other 16 recreational activities in this survey do you often combine fishing?

Day Trips on Horseback

Definition: Trips on horse which require one day or less.

Do you take day trips on horseback? yes _____ no _____

I feel that Day Trips on Horseback are:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not take day trips on horseback, please go to next activity.)

If you take day trips on horseback, how many times a year? _____

If you take day trips on horseback, in which skill level do you classify yourself?

____	1	has ridden very little & knows little about horses, their
____	2	care, or riding techniques.
____	3	
____	4	
____	5	can catch, groom, & saddle own horse; has had at least 30
____	6	hours formal instruction, work experience, or trail
____	7	riding experience; & knows some emergency procedures
____	8	(includes first aid, rescue procedures, & equipment
____	9	improvisation).
____	10	has had more than 30 hours experience on horseback; is
____	11	qualified to completely care for horse & equipment; knows emergency procedures; & has at least some knowledge of training & veterinary procedures.

If you take day trips on horseback, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you take day trips on horseback, please check the appropriate column for the following types of equipment:

	own	rent	borrow	don't use
horse	___	___	___	___
halter	___	___	___	___
bridle	___	___	___	___
saddle	___	___	___	___
saddle blanket	___	___	___	___
bareback pad	___	___	___	___
riding boots	___	___	___	___
grooming tools	___	___	___	___
horse trailer	___	___	___	___
other (specify)	___	___	___	___

If you take day trips on horseback, do you also use your horse for such things as ranch work, polo, or pack trips? If so, what percentage of your horse's use is for recreational day trips? _____%

If you take day trips on horseback, with which (if any) of the other 16 recreational activities in this survey do you often combine day trips on horseback?

Pack Trips on Horseback

Definition: Trips on horse which require more than one day & transport of supplies on own horse, pack horse, or pack mule.

Do you take pack trips on horseback? yes _____ no _____

I feel that Pack Trips on Horseback are:

non-challenging	__	__	__	__	__	__	challenging
individualistic	__	__	__	__	__	__	regimented
tied-down	__	__	__	__	__	__	footloose
freedom-filled	__	__	__	__	__	__	restrained
rugged	__	__	__	__	__	__	non-rugged
energetic	__	__	__	__	__	__	non-energetic
risk-avoiding	__	__	__	__	__	__	risk-taking
noisy	__	__	__	__	__	__	quiet
natural	__	__	__	__	__	__	artificial
disturbing	__	__	__	__	__	__	peaceful
mechanized	__	__	__	__	__	__	unmechanized
wildlife-supporting	__	__	__	__	__	__	wildlife-threatening
resource-preserving	__	__	__	__	__	__	resource-consuming
ecologically-undesirable	__	__	__	__	__	__	ecologically-desirable
pleasant	__	__	__	__	__	__	unpleasant
awful	__	__	__	__	__	__	wonderful
good	__	__	__	__	__	__	bad

(If you do not take pack trips on horseback, please go to next activity.)

If you take pack trips on horseback, how many times a year? _____

If you take pack trips on horseback, in which skill level do you classify yourself?

____	1	knows nothing about outfitting, but rides on trips outfitted
____	2	by others; knows only how to stay on horse required time.
____	3	able to care for own horse; good rider.
____	4	
____	5	knows a little about outfitting; can aid main outfitter on
____	6	trip; knows some emergency procedures (includes first aid,
____	7	rescue procedures, & equipment improvisation).
____	8	able to outfit trip for self.
____	9	able to outfit trip for small group of capable riders.
____	10	
____	11	able to outfit trip for large group of inexperienced riders; knows emergency procedures.

If you take pack trips on horseback, do you usually do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you take pack trips on horseback, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
horses &/or mules	___	___	___	___
halters	___	___	___	___
saddles	___	___	___	___
bridles	___	___	___	___
saddle blankets	___	___	___	___
saddle bags	___	___	___	___
cooking equipment	___	___	___	___
sleeping bags	___	___	___	___
hobbles	___	___	___	___
ropes	___	___	___	___
horse trailer	___	___	___	___
other (specify)	___	___	___	___

If you take pack trips on horseback, do you also use your horse for such things as ranch work, polo, or day trips? If so, what percentage of your horse's use is for recreational pack trips? _____%

If you take pack trips on horseback, with which (if any) of the other 16 recreational activities in this survey do you often combine pack trips on horseback?

Trail Bike Driving

Definition: Driving trail bike off main street, highway, or vacant lot. (In other words, driving trail bike somewhere like Forest Service trail.)

Do you drive a trail bike? yes _____ no _____

I feel that Trail Bike Driving is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-supporting	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not drive a trail bike, please go to next activity.)

If you drive a trail bike, how many times a year? _____

If you drive a trail bike, in which skill level do you classify yourself?

____	1	drives on dry, smooth trails with easy grades.
____	2	
____	3	
____	4	
____	5	able to tackle moderately dry, rough trails & occasional
____	6	steep grades; knows some emergency procedures (includes
____	7	first aid, rescue procedures, & equipment improv.).
____	8	
____	9	
____	10	
____	11	able to handle rough trails, steep grades, adverse traction situations, & emergency conditions.

If you drive a trail bike, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you drive a trail bike, do you own, rent, or borrow your equipment?

own _____
rent _____
borrow _____

If you drive a trail bike, what percentage of your trail bike's use is for recreational trail bike driving (as defined above)? _____%

If you drive a trail bike, with which (if any) of the other 16 recreational activities in this survey do you often combine trail bike driving?

Snowmobiling

Definition: Use of snowmobile for recreation.

Do you snowmobile? yes _____ no _____

I feel that Snowmobiling is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not snowmobile, please go to next activity.)

If you snowmobile, how many times a year? _____

If you snowmobile, in which skill level do you classify yourself?

____	1	rides snowmobiles only as passenger; knows little about
____	2	them or operating procedure.
____	3	has driven snowmobile; knows little about them.
____	4	
____	5	knows some emergency procedures (includes first aid, rescue
____	6	procedures, & equipment improvisation).
____	7	
____	8	
____	9	
____	10	has a lot of experience driving snowmobile; able to handle
____	11	terrain, adverse snow conditions, & adverse weather; able to handle emergency situations.

If you snowmobile, do you <u>usually</u> do so (please check only one):

_____ alone
_____ with one person
_____ with more than one person

If you snowmobile, do you own, rent, or borrow your equipment?

own _____
rent _____
borrow _____

If you snowmobile, do you use your snowmobile for such things as rescue operations or ranch work? If so, what percentage of your snowmobile's use for recreational snowmobiling? _____%

If you snowmobile, with which (if any) of the other 16 recreational activities in this survey do you often combine snowmobiling?

<u>Sightseeing &/or Photography of Landscape</u>

Definition: Going to area with objective of sightseeing &/or photographing landscape &/or vegetation.

Do you sightsee &/or photograph landscape?

sightseeing: yes _____ no _____
photography: yes _____ no _____

I feel that Sightseeing &/or Photography of Landscape is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not sightsee &/or photograph landscape, please go to next activity.)

If you sightsee &/or photograph landscape, how many times a year?

sightseeing _____
photography _____

If you sightsee &/or photograph landscape, in which skill level do you classify yourself?

sightseeing:

____	1	looks at landscape, but makes no active attempt to find,
____	2	interpret, or be changed by having seen it.
____	3	
____	4	
____	5	enters area for intensive visual immersion in landscape;
____	6	or uses binoculars avidly.
____	7	
____	8	
____	9	
____	10	knows enough about area to identify specific landscape
____	11	features (in terms of history, geology, or vegetation); & enters area for intensive visual immersion in landscape.

photography:

___	1	photographs landscape, but makes no active attempt to
___	2	find, interpret, or be changed by having photographed
___	3	it.
___	4	
___	5	enters area for enriching photographic immersion in
___	6	landscape; & uses camera with manual lens settings.
___	7	
___	8	
___	9	
___	10	knows enough about area to identify specific landscape
___	11	features (in terms of history, geology, or vegetation); uses special lenses, filetes, or films, or other special equipment; can make emergency improvisations on equipment; & enters area for intensive photographic immersion in landscape.

If you sightsee &/or photography landscape, do you <u>usually</u> do so (please check only one for sightseeing & one for photography):

sightseeing -

_____ alone
_____ with one person
_____ with more than one person

photography -

_____ alone
_____ with one person
_____ with more than one person

If you sightsee &/or photograph landscape, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
binoculars	___	___	___	___
instamatic camera	___	___	___	___
35mm camera	___	___	___	___
other camera (specify)	___	___	___	___
special filters	___	___	___	___
special lenses	___	___	___	___
strobe unit (or flash gun)	___	___	___	___
tripod	___	___	___	___
other (specify)	___	___	___	___

If you sightsee &/or photograph landscape, with which (if any) of the other 16 recreational activities in this survey do you often combine sightseeing &/or photography of landscape?

Sightseeing &/or Photography of Wildlife

Definition: Going to area with objective of sightseeing &/or photographing wildlife.

Do you sightsee &/or photograph specifically wildlife?

sightseeing: yes _____ no _____
photography: yes _____ no _____

I feel that Sightseeing &/or Photography of Wildlife is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not sightsee &/or photograph wildlife, please go to next activity.)

If you sightsee &/or photograph wildlife, how many times a year?

sightseeing _____
photography _____

If you sightsee &/or photograph wildlife, in which skill level do you classify yourself?

sightseeing:

☐	1	looks at wildlife, but makes no active attempt to find,
☐	2	identify, or be changed by having seen it.
☐	3	
☐	4	
☐	5	enters area for intensive visual encounter with wildlife;
☐	6	or uses binoculars avidly.
☐	7	
☐	8	
☐	9	
☐	10	looks for specific animal or bird species or knows
☐	11	enough to specifically identify most species seen; & enters area for intensive visual encounter with wildlife.

photography:

☐	1	photographs wildlife, but makes no active attempt to
☐	2	find, identify, or be changed by having photographed
☐	3	it.
☐	4	
☐	5	enters area for enriching photographic encounter with
☐	6	wildlife; & uses camera with manual lens settings.
☐	7	
☐	8	
☐	9	
☐	10	looks for specific animal species or knows enough to
☐	11	specifically identify most species seen; uses special lenses on camera or other special equipment; can make emergency improvisations on equipment; & enters area for intensive photographic encounter with wildlife.

If you sightsee &/or photograph wildlife, do you <u>usually</u> do so (please check only one for sightseeing & one for photography):

sightseeing -

_____ alone
_____ with one person
_____ with more than one person

photography -

_____ alone
_____ with one person
_____ with more than one person

If you sightsee &/or photograph wildlife, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
binoculars	___	___	___	___
instamatic camera	___	___	___	___
35mm camera	___	___	___	___
other camera	___	___	___	___
special filters	___	___	___	___
special lenses	___	___	___	___
strobe unit (or flash gun)	___	___	___	___
tripod	___	___	___	___
other (specify)	___	___	___	___

If you sightsee &/or photograph wildlife, with which (if any) of the other 16 recreational activities in this survey do you often combine sightseeing &/or photography of wildlife?

Sightseeing &/or Photography of Human Activity

Definition: Going to area with objective of sightseeing &/or photographing human activities &/or evidence of human presence.

Do you sightsee &/or photograph specifically human activity?

sightseeing: yes _____ no _____
photography: yes _____ no _____

I feel that Sightseeing &/or Photography of Human Activity is:

non-challenging	__:__:__:__:__:__:__	challenging
individualistic	__:__:__:__:__:__:__	regimented
tied-down	__:__:__:__:__:__:__	footloose
freedom-filled	__:__:__:__:__:__:__	restrained
rugged	__:__:__:__:__:__:__	non-rugged
energetic	__:__:__:__:__:__:__	non-energetic
risk-avoiding	__:__:__:__:__:__:__	risk-taking
noisy	__:__:__:__:__:__:__	quiet
natural	__:__:__:__:__:__:__	artificial
disturbing	__:__:__:__:__:__:__	peaceful
mechanized	__:__:__:__:__:__:__	unmechanized
wildlife-supporting	__:__:__:__:__:__:__	wildlife-threatening
resource-preserving	__:__:__:__:__:__:__	resource-consuming
ecologically-undesirable	__:__:__:__:__:__:__	ecologically-desirable
pleasant	__:__:__:__:__:__:__	unpleasant
awful	__:__:__:__:__:__:__	wonderful
good	__:__:__:__:__:__:__	bad

(If you do not sightsee &/or photograph human activity, please go to next activity.)

If you sightsee &/or photograph human activity, how many times a year?

sightseeing _____
Photography _____

If you sightsee &/or photograph human activity, in which skill level do you classify yourself?

sightseeing -

____	1	looks at human activity, but makes no active attempt to
____	2	find, interpret, or be changed by having seen it.
____	3	
____	4	
____	5	enters area for enriching visual encounter with human
____	6	activity; or uses binoculars avidly.
____	7	
____	8	
____	9	
____	10	knows area historically, industrially, or otherwise in
____	11	terms of its human activity; & enters area for enriching visual encounter with human activity.

photography -

- [ ] 1 photographs human activity, but makes no active attempt
- [ ] 2 find, interpret, or be changed by having photographed
- [ ] 3 it.
- [ ] 4
- [ ] 5 enters area for enriching photographic encounter with
- [ ] 6 human activity; & uses camera with manual lens settings.
- [ ] 7
- [ ] 8
- [ ] 9
- [ ] 10 knows area historically, industrially, or otherwise in
- [ ] 11 terms of its human activity; uses special lenses, filters, or films, or other special equipment; can make emergency improvisations on equipment; & enters area for enriching photographic encounter with human activity.

If you sightsee &/or photograph human activity, do you usually do so (please check only one for sightseeing & one for photography):

sightseeing -

_____ alone
_____ with one person
_____ with more than one person

photography -

_____ alone
_____ with one person
_____ with more than one person

If you sightsee &/or photograph human activity, please check the appropriate column for each of the following types of equipment:

	own	rent	borrow	don't use
binoculars	___	___	___	___
instamatic camera	___	___	___	___
35mm camera	___	___	___	___
other camera (specify)	___	___	___	___
special filters	___	___	___	___
special lenses	___	___	___	___
strobe unit (or flash gun)	___	___	___	___
tripod	___	___	___	___
other (specify)	___	___	___	___

If you sightsee &/or photograph human activity, with which (if any) of the other 16 recreational activities in this survey do you often combine sightseeing &/or photography of human activity?

Confidential Information

your sex (check one): male _____ female _____

your age (check one):

under 15	_____	36-45	_____
15-20	_____	46-55	_____
21-25	_____	56-65	_____
16-35	_____	over 65	_____

What is the highest level of formal education you have completed?

some schooling	_____
8th grade	_____
some high school	_____
high school	_____
some college	_____
college	_____
some post-graduate work	_____
post-graduate degree	_____

What is your occupation?

What is your marital status?

single	_____
cohabiting	_____
married	_____
separated	_____
divorced	_____
widowed	_____

How many child dependents do you have?

boys _____, their ages _____
girls _____, their ages _____

How many hours each week, on the average, do you have available for recreation?

less than 3 hours _____
3 - 6 hours _____
7 - 12 hours _____
13 - 24 hours _____
25 - 48 hours (1 - 2 days) _____
49 - 72 hours (2 - 3 days) _____
more than 72 hours (more than 3 days) _____

How much vacation time do you have per year that is available for recreation?

_____

What kind of transportation do you have available for recreation?

I have unlimited use of a car or motorcycle. _____
I have limited use of a car or motorcycle. _____
I rely on friends. _____
I rely on public transportation. _____

What is your height? _____

What is your weight? _____

What is your bone structure? fine-boned _____
medium-boned _____
heavy-boned _____

How would you describe your muscle tone?

firm ___:___:___:___:___:___:___ flabby

How would you describe your sense of balance?

poor ___:___:___:___:___:___:___ good

How limber do you think you are?

very limber ___:___:___:___:___:___:___ not very limber

Do you have any physical characteristics which restrict your participation in outdoor recreational activities? (If so, please specify.)

Comments:

Appendix B

Oral Instructions for Questionnaires

Please read the instruction sheet on page 1 of the questionnaire.

Let me again stress the underlined items on the instruction sheet. Please do not dwell on any of the questions; as far as possible, record you first reactions. Answer all the questions you are supposed to, and do so to the best of your ability. An approximate answer is better than no answer at all. Above all, please be honest.

On questions involving equipment, the word "own" means that you have "unlimited access" to something. For instance, if you and your spouse share fishing equipment, both of you should mark that you own that equipment.

Sightseeing &/or photography of human activity may also include looking at buildings, ruins, or other evidence of human presence.

If you wear glasses or contacts, please list them on the last question.

A trail bike is a form of motorcycle.

I want your participation, not your husband's, family's, or best friend's.

Please don't miss the back of the last page. This is important information, which will be kept confidential.

Feel free to explain any answers, make any comments, or ask any questions as you go along.

There are two errors in the questionnaire:

(1) p. 16 - In one of the spaces it says "66"; this is strictly a typographical error and should be ignored.

(2) p. 24 - This page was run off upside down on some copies--my apologies.

Before giving it to me, please count to make sure you've completed all 17 sets of rating scales, including those for the activities in which you do not participate.

Thank you very much for your help!

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