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THE CACHE COUNTY SNOWMOBILER:

AN EMPIRICAL STUDY

by

Michael William Dierker

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

of

MASTER OF SCIENCE

in

Sociology

Approved:

Major Professor

Dean of Graduate Studies

Committee Member

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UTAH STATE UNIVERSITY
Logan, Utah

1977

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Michael William Dierker

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ABSTRACT

The Cache County Snowmobiler:

An Empirical Study

by

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Utah State University, 1977

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Department: Sociology

Snowmobiling is one of the major outdoor winter sports in Cache County, Utah. Despite its popularity, it has run into several problems, among which the most noticeable is its conflict with other winter recreationists, namely, cross-country skiers and snowshoers. In order to resolve this conflict, one must first understand more about each group involved. As such, the purpose of this research was to obtain information on the snowmobiler in Cache County, Utah. Specifically, the objectives of the study were: (1) to identify the attitudes of the snowmobiler toward leisure and the environment; (2) to identify and compare occupations, SES, and social characteristics with studies in other regions; (3) to identify and compare aspects such as when, where, and why they go snowmobiling and the areas preferred by them with studies in other regions; and (4) to identify their other leisure-time activities.

To collect the data, the names of the Cache County snowmobilers were obtained from tax assessment receipts at the Cache County Courthouse. From a total list of 501 names, a sample of 250 was selected by a simple

random procedure. A questionnaire composed of Burdge's Leisure Orientation Scale, an environmental orientation scale, and usage, ownership, and demographic questions was sent to the sample population with a 59 percent usable return rate. The data was then analyzed by the following SPSS programs to meet the objective of the study: marginals, t-test, and chi square.

Analysis of the data revealed the following major characteristics of the Cache County, Utah snowmobilers:

- (1) They are typically male, married with between three and four children per family, have a high school education or above, have a median income above the median income for Utah of \$9,320.00, and hold either a blue- or white-collar occupation.
- (2) They hold a slight preservationist orientation toward the environment.
- (3) They have a moderately strong leisure orientation.
- (4) They snowmobile primarily on weekends with friends or family with the primary area of use being the Cache National Forest.
- (5) The main reason for buying or still owning a snowmobile was "snowmobiling for pleasure."

Upon comparison with the findings of this research with studies conducted in other regions, the conclusion is reached that the Cache County, Utah snowmobilers are much like their counterparts in other regions of the country.

CHAPTER I
INTRODUCTION

Nature and Statement of Problem

The snowmobile had a short childhood. Attention of the public was quickly focused upon this mechanical sled which possessed the key to open winter recreation opportunity to larger numbers of people. The snow was there, the snowmobile was there, and the desire of the public to want additional winter recreation was there.

The snowmobile achieved phenomenal growth in the 1960's. Shipments rose rapidly from an average of less than 10,000 per year in the early 1960's to more than 500,000 in 1969 and 1970. Now, while sales still top 400,000 each year, the growth in the sales of snowmobiles seems to have diminished somewhat due to the passing of the initial fad.

However, being one of the first outdoor recreational land-based activities to provide a relatively fast traveling vehicle capable of covering considerable distances, snowmobiling has run into several problems. Of these problems, one of major concerns is its conflict with other winter sports. For example, in the winter of 1975-1976, the U.S. Forest Service recommended that certain areas of the Cache National Forest in Northern Utah be set aside for snowmobiling and other areas for activities such as cross-country skiing and snowshoeing. Many accusations were tossed back and forth between snowmobilers and cross-country skiers. For example, snowmobilers were accused of having little regard for the effects their machines have on the environment

while cross-country skiers were accused of wanting to infringe upon the rights of snowmobilers to snowmobile where they wish. The result of these accusations was some animosity between the two sides with little being done to resolve the problem.

However, the underlying problem that became apparent to this researcher was that little was known about either the snowmobiler or the other users in regard to their social characteristics, their particular attitudes, or their usage of the land.

Objectives

As mentioned above, much of the conflict between snowmobilers and others who use the national forests (in this case the Cache National Forest) might better be understood if more knowledge were available concerning each group's social characteristics. As Robert Lucas (1971, p. 17) has stated concerning problems surrounding the snowmobiler:

... If we are going to be able to fit these pieces of the puzzle together, we must know more about the nature of these kinds of uses; more about the nature of the users, their patterns of behavior, the objects and motives that drives them to choose these activities; more about their response or their likely responses to different kinds of natural or created environments; and finally, more about the response of other recreation users to them.

In accordance with this statement by Lucas, several studies have been conducted to obtain more information about snowmobilers. Studies have been done in Ontario (1970), Wisconsin (1974), Michigan (1974), Minnesota (1974), and New York (1974) which attempted to determine the overall characteristics of the snowmobiler. Studied were the social characteristics such as with whom they go snowmobiling, usage patterns

such as where and when do they go snowmobiling, and the general characteristics of the snowmobiler such as age, sex, marital status, and occupation. The results of these studies, while greatly expanding the knowledge of the snowmobiler in the East and Midwest, are not necessarily applicable to all regions. For instance, the area chosen for this study differs in at least two respects from those of previous studies. First, the area differs geographically. Previous studies where conducted in areas that were predominantly flat or hilly whereas Cache County is approximately one-half valley with flat to gently sloping terrain and one-half rugged mountainous terrain. Secondly, the area differs culturally from other studies in that Cache County is predominantly Mormon. Therefore, the results of previous studies may or may not be applicable to this region.

The specific objectives of this study were:

1. To identify attitudes of the Cache County, Utah snowmobiler toward leisure;
2. To identify attitudes of the Cache County snowmobiler toward the environment (do they tend toward being preservationists or utilitarianists);
3. To identify and compare occupations and SES (education and income) of the Cache County snowmobiler with studies in other regions;
4. To identify and compare the social characteristics of the Cache County snowmobiler (e.g., with whom do they go snowmobiling) with studies in other regions;

5. To identify and compare aspects such as when, where, and why they go snowmobiling, and the areas preferred by them, with studies in other regions;
6. To identify other leisure activities in which the Cache County snowmobiler participates.

Procedures

The names of the Cache County snowmobilers were obtained from tax assessment receipts at the Cache County Courthouse in Logan, Utah. From the total list of 501 snowmobile owners, a sample population of 250 was selected at random. The questionnaire was then mailed to the sample population with a follow-up postcard mailed to those who did not respond within 14 days. A deadline was set with only those questionnaires returned on or before that day used in the analysis. The results were then analyzed to meet the objectives of this study.

CHAPTER II
REVIEW OF LITERATURE

This chapter is devoted to a review of the literature pertaining to the present study. It is felt that such a review will be of value to the researcher, and layman, in understanding and giving support to the study being done. The following areas are reviewed:

1. Leisure: previous studies related to leisure orientation and to leisure behavior
2. Environmental disposition: previous studies concerned with one's attitudes toward the environment
3. Previous snowmobile studies: previous studies which have been conducted to determine the characteristics, both with respect to social characteristics and usage patterns of snowmobilers.

Research on Leisure

In discussing one's orientation toward leisure, it is first necessary to define what is meant by the term "leisure." According to Webster's New World Dictionary of the American Language (1968, p. 837), leisure is defined as "free, unoccupied time during which a person may indulge in rest, recreation, etc."

Furthermore, Berger (1963, p. 29) contends that:

... Leisure refers to those activities whose normative content renders them most important to us, those things we want to do for their own sake or those things that we feel ethically (as distinguished from expediently) constrained to do.

However, as Larrabee and Meyersohn (1958, p. ix) indicate:

... even in our own leisure-conscious culture we continually encounter individuals who cannot play, whose every waking moment is for work, and whose life-span is barely enough to enclose their furious exertions. Thus, leisure for most of humanity is either unavailable or undefinable.

As indicated, leisure and how leisure time is perceived varies-- both among cultures and within cultures. In some cultures, unobligated time is devoid of activity, and men may sleep or make a "virtue of transcending the human lot through inactivity" (Larrabee and Meyersohn, 1958, p. ix). In our own culture, some may connect leisure with the development of the individual. For many who feel this way, the "highest ends of making" are achieved through leisure activities in the "high culture," i.e., through music, arts, literature, reading, etc. (Larrabee and Meyersohn, 1958).

The studies of leisure thus far have been quite varied. For example, in a study by R. Clyde White (1955) the relationship of social class position to leisure behavior was measured. He divided his sample of 763 adults into four social classes by computing an Index of Status Characteristics with upper-middle as the highest class. He found that the amount and distribution of leisure was related to social class. For instance, the study found that the upper-middle class participated in more different activities and spent more of their time in leisure activities than those of lower classes.

As early attempt at systematic analysis of leisure was Lundberg's "classic" study. A large group of people were induced to keep a diary of time expenditures for several days. Lundberg found that the amount of time spent in different leisure activities varied with occupational

class and with sex. Occupation was related to leisure in the amount of time available and the way time was distributed (Lundberg et al. in Larrabee and Meyersohn, 1958, pp. 173-198). Farmers, for example, have very little time available for leisure activities during the planting and harvesting time. However, during other periods of time, such as mid-winter, they have little to do and have considerable free leisure time.

Occupation as an index of prestige has been looked at by Alfred C. Clarke (1956). He compared prestige level of a sample of 574 adult males with participation in specific leisure activities. Significant differences were found to exist among occupational prestige levels in their selection of leisure activities. For instance, playing bridge and reading for pleasure were associated with the highest prestige level while playing poker and spending time in a bar were activities associated with the lowest prestige level.

In a review of 48 studies, Douglas Sessoms (1963) attempted to summarize the relationship between selected demographic and social variables and various dimensions of outdoor participation. The studies he reviewed generally concluded that the type and number of recreational pursuits were related to age--as one becomes older he engages in fewer outdoor activities, and these are of a more passive nature; the number of recreational pursuits of an individual is positively related to income; the type and variety of leisure pursuits are related to occupational prestige level--the higher the occupational prestige level, the more numerous and varied are the pursuits.

In 1961, an attempt was made by Burdge to measure the propensities for leisure activity among different social groups. An eleven-item scale was constructed to measure leisure orientation based on a work-leisure continuum. Among Burdge's attempts to assess the validity of his measuring scales, he related leisure orientation to an urban versus farm dichotomy. Comparing samples of urban and farm populations in Ohio, he found that farmers had statistically lower overall leisure orientation scores than the urban sample. In more recent studies comparing farmers and nonfarmers in Utah, similar results were found (Andrews et al., 1972; Andrews, Madsen, and Legaz, 1974).

Harris (1971, p. 66), in a study conducted in the Bear River Basin located in Southern Idaho and Northern Utah, attempted to relate leisure to one's environmental disposition which was defined as "those general and enduring configurations of sentiments, beliefs, attitudes, and values held toward the bio-physical environment." (Harris, p. 38) In the study, Harris distinguished between preservationists--those who wish to maintain the environment in its natural state, and developers--those who wish to change the environment from its natural state, he found that individuals who held a preservationist orientation were significantly more leisure orientated than those with a developer orientation.

The Outdoor Recreation Resources Review Commission (ORRRC) conducted a study in 1962 that delineated a large variety of activities which are accepted as outdoor recreation and leisure time pursuits by Americans. Through factor analysis techniques, they analyzed the

influence of thirty independent variables on the four activity patterns. An example of the results was that participation in the grouping called "physically demanding" activities was almost solely dependent upon age. The ORRRC studies concluded that leisure time use is increasing and that changes in its nature will occur in the future (ORRRC Study Report No. 19, 1962).

This brief review of the literature of leisure indicates that leisure activities and leisure orientation are related to many variables such as age, occupation, sex, income, etc., as well as constructs such as social class. Thus, as the ORRRC report concluded, the use of leisure time is increasing and changes in its nature will occur in the future. Perhaps the recent rapid increased use of the snowmobile as a recreational vehicle provides a preview of changes to come.

Summary

The preceding review of leisure studies can be generally summarized as follows:

1. The amount and distribution of leisure time is related to one's social class, occupation, and age.
2. Differences exist among occupational prestige levels and their selection of leisure activities.
3. The older one becomes, the fewer outdoor activities one participates in.
4. The number of recreational pursuits of an individual is directly related to one's income.
5. Nonfarmers are more leisurely oriented than farmers.

6. Individuals with a preservationist orientation toward the environment are more leisure-oriented than those with a developers orientation toward the environment.

Research on Environmental Disposition

The purpose of this section of the review of literature is to identify previous studies which provide insight and knowledge for the present study. It is felt that the review of literature to this area has reinforced the foundations for this part of the study.

In examining the perception of individuals toward the environment, one finds that even in ancient times there existed differences in feelings. For instance, the Greek scholar, Thucydides, held the belief that highly productive land provided for unequal distribution of wealth--a few becoming wealthy relative to the socio-economic position of the masses. This, he felt, leads to internal friction and an unfavorable effect upon the people. Thucydides also felt that wealth resulting from a highly fertile land attracts robbers and scoundrels from other regions causing problems of law and order. Montesquies, Ferguon, Guyot, and others have also discussed what is called the relationship between natural resources and the social characteristics and behavior of society (Thomas, 1925).

As Spoehr (1956) illustrated, perception of the natural environment can also be related to the social structure of a culture. For example, the Marshall Islanders retain a feudal-like class system; having a paramount chief, varying degrees of lesser nobility, and

commoners. Title to all the land is held by the paramount chief with usufruct rights being apportioned among the varying degrees of nobility, and in turn among the commoners. Thus, land is very much prized and cherished. "The more the merrier," and also the better condition it is kept in, the higher is production which also boosts status. The cattle-raising people of East Africa, on the other hand, assign great importance to the number of cattle a man owns. These people often overgraze and ruin their land in order to boost their status by owning a large number of cattle. These studies illustrate that social structure of a society plays an important role in the perception of the environment and the conservation of natural resources.

Another aspect of culture found to effect one's perception of the environment is religion. Man's relationship to nature has been perceived differently from one culture to another. In the Orient, Best (1942, p. 14) found that:

The outlook of the Maori, as in connection with natural phenomena and nature generally, often differed widely from our own; thus he looked upon the far spread forests of his island home as being necessary to his welfare, and also being of allied origin. This peculiar outlook was based on the strange belief that men, birds, and trees descended from a common source; their ultimate origin lay with the primal pair. Rangi (the sky parent and Father) and Earth (the Mother). Though they were actually brought into being by Tane the fertilizer, one of the seventy off-spring of the above-mentioned parents.

To the Maori, then, man is part of one total system encompassing man, nature, and the supernatural, and because of their beliefs this group tends to live in "harmony" with nature.

In the modern occident, man's perception of natural resources and his relationship to nature is quite different. For these groups,

man is separate from nature, and God separate from both. As summarized by Redfield (1961, pp. 109-110):

... The subsequent development of a world view in which God and man are both separated from nature, and in which the exploitation of material nature comes to be a prime attitude, may be attributable to our Western world almost entirely and so might be regarded, so Sol Tax has suggested, ... as a particular "cultural invention."

Not only are there differences in environmental perception from culture to culture, but at the same time there are intracultural variations. In a study designed to illuminate intracultural variation in values, Kluckhohn and Strodtbeck (1961) found a significant difference between a Texas culture region and the Mormon culture region. Despite great similarity, the Texans viewed natural resources as a part of man's environment to be exploited, manipulated, and controlled for his benefit; whereas, the Mormons opted for balance and harmony between man and his environment. Nelson (1952, p. 35) states that the Mormon belief that "the earth is the Lord's, men are but stewards of that portion which his agents assign to them." Kluckhohn and Strodtbeck also found that there was variation of perception of the environment within the Mormon culture due to differences in certain social characteristics. The younger, more educated people held a stronger view toward the maintenance of balance and harmony between men and the environment than the older, less educated. As can be seen, there are differences in one's perception of the environment not only from culture to culture, but also within cultures. As such, there have in recent years (since 1965) been numerous studies conducted to identify environmental perceptions.

In 1965, Medalia and Finker conducted an opinion survey in Clarkston, Washington concerning community perception of air quality, and found that the higher the occupational rating of the head of the household, the greater the expression of concern about air pollution. When tested with the Guttman Scale, twice as many respondents in the professional and managerial category expressed high concern for air pollution as respondents falling in the clerical worker and labor category.

In a similar study conducted by Harris (1971) in the Bear River Basin located in Southern Idaho and Northern Utah, the heads of 1,070 households were interviewed of which 221 were used in his study. Results showed that a greater proportion of individuals with a preservationist orientation toward the environment are highly educated and have professional, technical, or white-collar occupations; while the majority of individuals possessing a developer orientation are less highly educated and have farm, operative, kindred, and farm manager type of occupations. These findings are quite similar to the findings of an earlier study by Andrews and Geertsen (1970) who found nonfarmers to be slightly more preservationist oriented than farmers.

In a later study conducted in 1972 (Andrews et al., 1972, p. 42) respondents were selected from four Utah counties, two located in Eastern and the other two located in Central Utah. To measure environmental orientation, a nine item Likert-type scale was developed. No significant difference between farmers and nonfarmers with respect to their environmental orientation was found. In a further analysis of the 1972 study, results showed that nonfarmers had the highest overall

environmental orientation, part-time farmers the next highest, with farmers the lowest overall environmental orientation (Andrews, Madsen, and Dunaway, 1973).

Hendee (1969) suggested that one's perspective toward the environment may be explained to some extent by place of residence. Urban residents are generally removed from the natural environment during the week and on weekends escape to the natural out-of-doors to recreate, thus allowing the development of greater appreciative attitudes toward nature. Such rural occupations as farming, mining, and logging, on the other hand, are based on the exploitation and consumption of natural resources, thus allowing the development of a utilization attitude toward the environment. Green (1964) has explained romantic and appreciative attitudes toward the natural environment as a national rural bias, impelling contemporary urban man to recapture the spirit and realness of harmony with nature through outdoor recreation. It is assumed that such forces are less pronounced among those constantly living close to nature in rural environments.

In a study conducted by Harry, Gale, and Hendee (1969, p. 247) an attempt was made: (1) to examine the link between conservationists attitudes, and (2) to compare the characteristics and involvement of conservationists with regard to participation in a large outdoor activity voluntary association in the Pacific Northwest.

Their research revealed that conservationists (those who are concerned about preserving the environment) were much more involved in the formal structure of the association and more likely to belong to an outdoor activity club. They also found that the majority of the

conservationists were in the 25-54 age group, that they were better educated, and they held higher level occupations than nonconservationists.

Catton (1969), in another study, attempted to measure respondents' tendencies to differentiate various environments. For instance, environmental differentiators were those who would agree with statements such as "Even if it is allowed, one should not camp just anywhere he pleases in remote back-country of wilderness character." (Catton, 1969, p. 124) Nondifferentiators would be more likely to endorse statements like "The area in front of one's tent can be made more attractive by taking a broom and sweeping up all needles fallen from trees." (Catton, 1969, p. 124) It was found that, while the majority of all respondents held positive differentiator scores, those who preferred back-country campgrounds tended to be stronger differentiators.

As part of the same study, statements were asked designed to measure respondents' attitudes on a scale of preference for using (utilization) versus preserving (preservationists) natural resources. Car campers were found to be less preservationist orientated than those who preferred back-country camping. Utilizationist attitudes were also more common among those with rural backgrounds and less common among those raised in the city.

As association between involvement in activities and environmental concern was found in a study done by Dunlop and Hefferman (1975, p. 27). They found that a stronger association existed between involvement in appreciative activities (hiking, photography, biking, etc.) and

environmental concern than between involvement in consumptive activities (farming, mining, logging, etc.).

Thus, as has been pointed out, one's perception of his environment is intricately related to and dependent upon many factors. As Wohrwill (1970, p. 304) has stated:

Behavior is in a variety of ways instigated by and directed at particular attributes and characteristics of the environment. Individuals give evidence of more or less strongly defined and affective responses relating to their environment--as witness the tumult and shouting evoked by current environmental problems.

Other writers (Hill, Garrison, and Tripp, 1968; Lucas, 1964) have recently pointed to the importance of understanding perception and its variation within the population. It is felt that by understanding and realizing the differences among attitudes administrators can more effectively formulate policies for the "total community" and many of the problems and antagonisms may be elevated.

Summary

The preceding review of studies on environmental disposition may be generally summarized as follows:

1. The perception of the natural environment can be related to the social structure of a culture.
2. One's perception of the natural environment varies between cultures and within cultures.
3. Individuals with a preservationist orientation toward the environment are most commonly highly educated and tend to have professional, technical, or white-collar occupations.

4. Individuals with a developers (utilitarian) orientation toward the environment tend to be low in educational level and have farm, operative, and labor occupations.
5. Urban residents tend to be more preservationist oriented than rural residents.
6. Nonfarmers tend to be more preservationist oriented than farmers.
7. Individuals who are involved in appreciative activities tend to have a higher environmental concern than those involved in consumptive activities.

Previous Snowmobile Studies

In this section, a review of previous snowmobile studies done throughout North America will be undertaken. It is felt that by carefully detailing the findings of these various studies, it will aid one in understanding and evaluating the present study.

In October of 1969, the Bureau of Outdoor Recreation's Northeast Regional Office held a regional conference in Boston, Massachusetts regarding all aspects of snowmobiling and their use. Results of the conference indicated that at that time, "five states have 70 percent of the nation's snowmobiles--Michigan, Minnesota, New York, Wisconsin, and Maine in that order." (Bureau of Outdoor Recreation, 1968, p. 3)

Also indicated were:

1. 85 percent of snowmobile owners were hunters and fishermen;
2. 47 percent of all owners operate their machine within five miles of home;

3. 22 percent of all owners travel more than 100 miles to enjoy this activity.

A later report put out by the U.S. Department of the Interior (1971) found that the off-road-recreational vehicle (ORRV) user typically lives in a rural area although the suburbanite and urbanite also participate but to a much lesser extent. In looking specifically at the snowmobiler, the study profiles the snowmobiler as averaging 42 years of age, being married with an average of two children per family, and having an average of 1.45 snowmobiles per household. Also shown was that the snowmobiler is probably either a craftsman, foreman, manager, or proprietor of a business, and has a median income of \$10,500.00 (in 1971) annually. This corresponds to a similar report by the Senate Subcommittee on Parks and Recreation (1971, p. 55) which profiled the snowmobiler as about 40 years of age, having two children, considering snowmobiling a family sport, and earning about \$10,650.74 per year before taxes.

The Department of the Interior study (1971) gave some clue as to the usage of the snowmobile. The average snowmobiler was found to spend 13 hours per week on his machine, and one in every four operators belonged to a club. The snowmobile was primarily used for trail riding, safaris, or group snowmobiling. One in three snowmobilers used public lands for his outings. In addition, 82 percent of the snowmobilers fished, while 80 percent hunted.

A survey conducted by the Upper Great Lakes Regional Commission (Senate Subcommittee of Parks and Recreation, 1971, p. 55) found that the snowmobiler's own field, his neighbor's fields, or other private

property receives over 60 percent of the snowmobiler's use. The combination of public, Federal, State, county, and city lands make up the other 37 percent.

In 1971, Jerry Vila (1971) reported the findings of Ontario's 1970 snowmobile study carried out by the Ontario Department of Tourism and Information. The study found that the highest incidence of snowmobile ownership was in the managerial and ownership occupation group. Eleven percent belonged to this category. The second highest group was in the professional group (9 percent) with the third highest in the sales category (7 percent). Only 4 percent of the farmers were found to own a snowmobile.

Reasons for buying a snowmobile were found to vary. About 80 (78.5) percent indicated snowmobiling for pleasure as the main reason for purchase. The next highest group (15.2 percent) gave as reasons for buying a snowmobile "to facilitate other kinds of outdoor winter recreation, such as winter hunting, ice fishing, transportation to ski areas, etc." (Vila, 1971, p. 32) Only 6.3 percent gave "nonrecreational transportation" and "rental purposes" as the reason for purchase.

In examining the intensity and timing of snowmobile use, Vila (1971) reported that about 35 percent of the respondents snowmobile between 21-40 days per season. Nearly 11 percent had over 80 days of snowmobiling activity during the season. The average number of days spent snowmobiling was 41.9 with an average use per day of 3.7 hours. One interesting finding was that 31 percent of snowmobiling time occurred at night.

Last studied in the Ontario study was the type of area used and preferred for snowmobiling (Vila, 1971, p. 34). The type of area most commonly used was "other private land" (24.6 percent) followed by "own cottage area" (1.9 percent), and provincial parts (1.4 percent). The area preferred was found to be "unorganized open lands, bush and wooded areas in a hilly landscape with no special facilities except snowmobiling trails." (Vila, 1971, p. 35) Approximately 70 percent of the respondents preferred this type of area.

Fairly recently, Snowsport Publications Incorporated (1973) conducted a survey of snowmobile owners throughout North America. They found the snowmobiler to be 38 years old, 8 of 10 married, having 4.2 persons per household, 70 percent having incomes over \$10,000.00, with two-thirds nonurban dwellers (live in a town of 25,000 or less, or on a farm).

Snowmobilers were found to have an average of two snowmobiles per household with two-thirds owning two or more. Ninety-eight percent have owned a snowmobile for two or more years. Each snowmobiler used his machine just over eleven hours per week.

Hill (1974; also in Hill and Brown, 1973) in his study of Central New York snowmobilers and patterns of vehicle use found results similar to those of the Snowsport Study (1973). He found that 95 percent were male, 86 percent were married, and 83 percent had children. The average age was 36 years with a range from 14 to 74. Over half were 21 to 40 years of age.

With respect to education, 70 percent had at least a high school education. Twenty percent had obtained further education with 5 percent

having 16 years or more. With respect to income, only 4 percent earned under \$6,000.00 while 74 percent earned from \$6,000.00 to \$15,000.00. The leading occupational grouping was craftsman and foreman (25 percent) followed by operatives (21 percent).

Hill (1974) characterized his sample as quite active. Over half owned more than one vehicle. Users operated their machines an average of 3.5 hours per day. About three-fourths of this was weekend activity and one-fourth weekday activity. Nighttime snowmobiling accounted for 46 percent of the total activity. Over half the sample estimated they usually snowmobile more than ten miles from their departure point, while an additional 40 percent travel five to ten miles. Eighty percent of all snowmobiling was done in the county of residence, the majority of it on private lands. Fifty-three percent did most (80 percent) of their snowmobiling on nonpublic lands they neither owned nor rented.

Reasons cited for snowmobiling suggested participants' favor in the activity:

... opportunity for adventure, 24 percent; family winter fun, 22 percent; enjoyment of nature, 18 percent; a change of routine, 16 percent; companionship, 9 percent; physical exercise, 7 percent; and the thrill or challenge of fast driving, 4 percent. (Hill and Brown, 1973, p. 34)

The most recent studies covering all aspects of snowmobiling were conducted in Michigan, Minnesota, and Wisconsin (Michigan Department of Natural Resources and Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural Resources and Upper Great Lakes Regional Commission, 1974; Wisconsin Department of Natural Resources and Upper Great Lakes Regional Commission, 1974). These studies were very comprehensive in their coverage of the different aspects of snowmobiling.

The social characteristics found in the three studies were quite similar. The average age was 25 in both Minnesota and Wisconsin and 27 in Michigan, quite younger than those of earlier studies. Family size averaged 3.5 persons per household in all three states. Occupations of snowmobilers were similar for all three studies with professional, managerial or owner, and skilled labor comprising approximately 55 percent in the states. Farmers represented 12.4 percent in Wisconsin, 11.2 percent in Minnesota, and 2.3 percent in Michigan. Income was also quite similar between states. Most incomes fell in the \$10,000.00 to \$24,000.00 bracket (Michigan, 71.5 percent; Minnesota, 66.4 percent; Wisconsin, 64.9 percent) with approximately 10 percent in all states having incomes above \$25,000.00 per year.

Residency was also quite similar between states. Wisconsin had 41.2 percent living in cities larger than 2,500, 31.9 percent in cities smaller than 2,500, and 26.9 percent living on farms. This compares to in Minnesota 36.6 percent, 38.4 percent, and 24.4 percent, respectively, and in Michigan 38.6 percent, 38.4 percent, and 22.4 percent for the same three categories.

Usage was another aspect examined in these studies. Interestingly, in all three states, approximately 50 percent do their snowmobiling on their own land, on a relative's land, or on a friend's land. State and national forest use varied from 9 percent in Minnesota, to 10 percent in Wisconsin, and to 25 percent in Michigan. Other areas extensively used were, in Minnesota, State parks and game and recreation areas (7 percent), and in Wisconsin, corporate lands (8 percent) and State parks and game and recreational lands (7 percent). Also discovered from the

studies was that for most individuals snowmobiling is a family activity rather than a personal activity (Michigan, 83.4 percent; Wisconsin, 79.1 percent; Minnesota, 76.3 percent). Most found it quite desirable to go snowmobiling with friends or relatives (Michigan, 82.4 percent; Wisconsin, 85.5 percent; Minnesota, 81.2 percent).

On the above mentioned areas, questions were asked related to features snowmobilers found desirable. Marked trails were found to be desirable (Michigan, 63.4 percent; Wisconsin, 87.0 percent; Minnesota, 68.0 percent) as were groomed trails (Michigan, 55.1 percent; Wisconsin, 75.7 percent; Minnesota, 61.8 percent). Large open areas and unplowed roads were also found to be desirable. Seventy-five percent (Minnesota) to 90 percent (Wisconsin) expressed trail-riding as their main activity in snowmobiling while 5 percent in Michigan and Wisconsin and 10 percent in Minnesota use the snowmobile in hunting, fishing, or trapping. The studies also indicated that nighttime use of snowmobiles was quite popular. In Michigan 44 percent of the time, Wisconsin 51 percent of the time, and in Minnesota 41 percent of the time spent snowmobiling occurs after dark, with from 13 to 18.5 days being spent snowmobiling at night per season.

In a study more closely related to the present research, Knopp and Tyger (1973) identified the conflict of land use between snowmobilers and cross-country skiers. Investigated were the relationship between participation in the two forms of outdoor recreation and their attitudes toward the environment. With the use of a Likert-type scale, nine questions were asked designed to measure the response to environmental issues of 169 snowmobilers and 220 cross-country skiers. Both groups

were found to have an index above the "undecided" level on the scale with cross-country skiers scoring slightly higher.

Summary

The following is a brief summary of the findings of the preceding studies:

General Characteristics

1. Early studies indicate the average age of a snowmobiler to be about 40 years of age. Later studies done in Michigan, Minnesota, and Wisconsin indicate an average age of about 25.
2. The snowmobile owners are typically male.
3. The snowmobilers are predominantly married with an average of two children per family.
4. The snowmobilers occupy predominantly professional, managerial, and skilled labor occupations.
5. The snowmobilers income predominantly falls into the \$10,000.00 to \$24,000.00 range.
6. The snowmobilers have at least a high school education with 20 percent having a post-high school education.
7. Early studies indicate that the snowmobiler typically lives in a rural area whereas later studies indicate that the majority of the snowmobilers are urban residents (live in a city above 2,500 in population).

Usage and Ownership Characteristics

8. The main reason for buying a snowmobile was "snowmobiling for pleasure."

9. The majority of snowmobiling is done on the snowmobiler's own land, on a relative's land, or on a friend's land.
10. Most snowmobiling is done with one's family, friends, or relatives.
11. Snowmobiling is predominantly a weekend activity.
12. Snowmobiling is both a day and nighttime activity with about equal time being spent both periods.
13. The majority snowmobile more than 10 miles per trip.
14. The greatest number snowmobile between 21-40 days per season.

Preservationist Orientation

15. Snowmobilers are slightly preservationist in their orientation toward the environment.

Hypotheses

According to previous studies on snowmobilers, the average age of a snowmobiler is around 40 years of age (U.S. Department of the Interior, 1971; Senate Subcommittee on Parks and Recreation, 1971; Hill, 1974). Although some studies have indicated a lower average age (Michigan Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Wisconsin Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974), this study will use the results which most predominate, that is that they are middle aged. As such, it is hypothesized that:

1. The Cache County snowmobiler will tend to be middle aged.

An examination of previous studies indicates that the occupational categories of snowmobilers varies between studies. For instance, snowmobilers were found to hold predominantly blue-collar occupations in studies conducted by the U.S. Department of the Interior (1971) and by Hill (1974), white-collar occupations in a study by Vila (1971), and blue and white-collar occupations in the Michigan, Minnesota, and Wisconsin studies (1974). Thus, as no clear set occupational category has been found in the previous studies, the following hypothesis will not be based upon the previous findings but upon the researcher's discretion. As such, it is hypothesized that:

2. The Cache County snowmobiler will hold mostly professional, businessman, managerial, or white-collar occupations.

Studies reviewed also found that snowmobilers have total family incomes above \$10,000.00, are predominantly male, married with an average of two children per family, and they have at least a high school education (Vila, 1971; Senate Subcommittee on Parks and Recreation, 1971; U.S. Department of the Interior, 1971; Snowsport Publication, 1973; Michigan Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Wisconsin Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974). As such, the following hypotheses are proposed:

3. The Cache County snowmobiler will have a total family income above the state median for Utah of \$9,320.00 (U.S. Department of Commerce, 1970).

4. The Cache County snowmobiler will be predominantly male.
5. The Cache County snowmobiler will be predominantly married.
6. The Cache County snowmobiler will average two or more children per family.
7. The Cache County snowmobiler generally will have a high school education or above.

Environmental Orientation

According to a study conducted by Knopp and Tyger (1974), snowmobilers tend to be very slightly preservationist oriented in their attitudes toward the environment. As such, the following hypothesis is proposed:

8. Cache County snowmobilers, as a group, will tend toward a preservationist orientation toward the environment.

In addition to the above, previous studies have indicated that non-farmers are more preservationist oriented toward the environment than farmers (Andrews, Madsen, and Dunaway, 1973). Therefore, in addition to the above hypothesis, the following hypothesis is proposed:

9. Cache County snowmobilers who are nonfarmers will have a higher environmental preservationist orientation than those who are farmers.

It will also be tested to determine if there is a significant difference in the environmental orientation of two nonfarm groups--white-collar and blue-collar occupational groups.

Leisure Orientation

According to a study conducted by ORRRC (1962), leisure time use is rapidly increasing. As such, the following hypothesis is proposed:

10. As a group, the Cache County snowmobiler will tend toward being leisure oriented rather than work oriented.

Previous studies have also indicated that nonfarmers are more leisure oriented than farmers (Burdge, 1961; Andrews, Madsen, and Legaz, 1974; Andrews, Madsen, and Dunaway, 1973). Therefore, the following hypothesis is proposed:

11. Cache County snowmobilers who are farmers will be less leisure oriented than those who are nonfarmers.

Besides the above, it will also be tested to determine if there is a significant difference in the leisure orientation of two nonfarm groups--white-collar and blue-collar occupational groups.

Social Characteristics

An examination of previous studies done in Michigan, Minnesota, and Wisconsin (1974) indicate most snowmobiling is done with the family or friends. Thus, the following hypothesis is proposed:

12. The Cache County snowmobiler will do most of the snowmobiling with their family and friends.

In addition, it will be tested to determine if there is any significant difference between farmers and nonfarmers with respect to social characteristics.

Ownership and Usage Characteristics

In this section, aspects such as why, when, and where the snowmobiler goes snowmobiling and the areas preferred by them will be examined. With respect to where they go, previous studies conducted in Michigan, Minnesota, Wisconsin (1974) and Ontario (Vila, 1971) indicate that the majority of snowmobiling is done on the snowmobiler's own land, on a relative's land, or on a friend's land. However, as such a large area of Cache County is public land (Cache National Forest), the following is hypothesized:

13. The Cache County snowmobiler will do the majority of snowmobiling on public lands (Cache National Forest).

In examining when and why they go snowmobiling, previous studies have found that most snowmobiling is a weekend activity (Hill, 1974) and the main reason for going or for buying a snowmobile was for "snowmobiling for pleasure." (Vila, 1971; Hill, 1974) As such, the following two hypotheses are proposed:

14. The Cache County snowmobiler will do the majority of snowmobiling on weekends.
15. The Cache County snowmobiler's main reason for owning a snowmobile is to snowmobile for pleasure.

Other Leisure-Time Activities

As the final part of this study, other leisure-time activities preferred by the Cache County snowmobiler will be examined.

CHAPTER III

METHODOLOGY

Cache County, Utah was selected as the site for this study for four reasons. First, the county is composed of varying geographical terrain--from rugged mountainous areas to the flat valley floors. Second, within the county lies various land ownership ranging from commercial land to U.S. Forest Service lands (Cache National Forest). The third reason was the fact that with sample annual snowfall, snowmobiling is a popular sport. Last of all, it was discovered that no study had been done on snowmobiling in this county, or for that fact in Utah. For these reasons, Cache County, Utah provided an ideal setting for this study.

Questionnaire

The questionnaire used consisted of two scales, one dealing with leisure, and one with environmental disposition, and a series of usage and social background questions.

Leisure Scale and Leisure Activities

The leisure scale used in this study was a six-item modification of Burdge's (1961) eleven-item Leisure Orientation Scale. Questions 1-6 composed the scale. This is a "Likert-type" scale in which scores for each respondent can range from one to five for each of the six questions, giving a total possible range of scores from 6 to 30. A low score indicates a greater work orientation and a higher score a

greater leisure orientation. Each scale item consisted of five levels of response: strongly agree, agree, undecided, disagree, and strongly disagree (see the Appendix).

Burdge's Leisure Orientation Scale has become quite widely used in the study of leisure. Therefore, several studies have been done which point out its validity and reliability (Burdge, 1961; Andrews et al., 1972; Andrews, Madsen, and Legaz, 1974).

Part II of the questionnaire was designed to obtain information about the leisure style and preferred activities of snowmobilers. The list of 23 selected leisure activities was obtained from previous studies (Medford, 1968; Meuller and Gurin, 1962).

Frequency of participation was based upon activity occasions during the previous twelve months. Activity occasions were "times" that the respondent participated. The respondents were asked to check one category for each activity: never tried, once or twice, three to five times, six to ten times, or more than ten times (see the Appendix). For analysis, the third and fourth categories were combined into an area of moderate participation. Once or twice represents "very little" participation although it represents a step from none to some. More than ten times represents "heavy" participation.

It must be stated that this type of information is heavily dependent upon the memory of the respondent. Thus, the data obtained by this method is actually how many times the respondent says he participated in the activity, not necessarily actual participation.

Information about preferred activities was obtained from responses to the question "What two leisure activities do you enjoy most?"

Respondents were asked to list a first and a second choice.

Environmental Disposition Scale

The environmental disposition scale used in this study consisted of eleven items developed and used in various other studies. Questions 7-17 composed the scale. This is a "Likert-type" scale in which scores for each respondent can range from one to five for each of the six questions, giving a total possible range of scores from 6 to 30. A low score indicates a greater "utilizationist" orientation and a higher score a greater "preservationist" orientation. Each scale item consisted of five levels of response: strongly agree, agree, undecided, disagree, and strongly disagree.

Items for this scale were selected from previous scales for two reasons: One, the basis of their relevancy to the area and two, the items differentiated between two groups with few scoring in the middle (undecided) range. Questions 8, 10, and 14 were taken from a scale developed and used by Andrews, Madsen, and Legaz (1974, p. 170). Questions 7, 11, 15, 16, and 17 were taken from a scale used by Knopp and Tyger (1973, p. 10). Questions 9 and 12 were added after review by several snowmobilers and others to obtain the snowmobilers' view of their activity and to make the questionnaire more relevant to them. However, after preliminary analysis, it was decided not to include them in the final analysis. The reason was that due to the nature of the questions, the snowmobiler was strongly inclined to give an answer

that was not derogatory to the sport, thereby causing a strong likelihood for biasing.

Usage and Ownership Questions

Questions 18-37 were designed to determine (1) ownership, (2) usage, (3) social characteristics, and (4) areas used and items needed in these areas. Questions 19-25 were related to ownership. Questions 27-33 relate to usage. Question 26 refers to social characteristics, and questions 34-37 relate to areas used and items needed in these areas. Question 18 was not used as returns indicated that only one belonged to a snowmobile club.

Demographic Questions

The background questions included questions 38-47. These were designed to allow comparisons to other studies and to offer the possibility of controlling for demographic variables that might be influencing the study. The variables used are: (1) age, (2) sex, (3) marital status, (4) number of children, (5) family income, (6) occupation, (7) place of residence, (8) years of education, and (9) political affiliation.

Pretest

Due to extremely limited funds the pretesting of the questionnaire was quite limited. Seven individuals who either owned snowmobiles or had owned snowmobiles and six other individuals examined the questionnaire. Following their recommendations, questions 9 and 12 were added to the environmental disposition scale. Question relating to the number of snowmobiles owned, and questions 36 and 37 relating to items needed in

snowmobiling areas were also added. One question related to drinking and smoking was eliminated.

Sample

The population from which the sample was obtained was derived by obtaining the names of the majority of the snowmobile owners in Cache County, Utah from tax assessment receipts at the Cache County, Utah Courthouse.¹ The total population, after correcting for duplications and individuals owning several snowmobiles, totaled 501. The sample used was randomly selected by taking every second name on the list to obtain a sample of 250.

The questionnaires were mailed March 11, 1976 with 16 being undelivered; four were readdressed with new addresses and remailed. As the twelve others could not be readdressed, 12 new names were randomly selected from the remaining list of names by taking every eighth name. These were then mailed out. One hundred and three questionnaires were returned following the first mailing with one returned undelivered marked "moved--left no address." After a second mailing of a reminder card, 50 more were returned. Of the total returned, three were returned uncompleted. One was returned uncompleted as the individual now lives in California, and two were eliminated as they no longer owned snowmobiles. The final usable returns totaled 148 snowmobile owners. Of

¹The list, according to the county assessor, was only approximately 90 percent of the total number of snowmobile owners in Cache County. The reason is that some buy their snowmobiles outside the county and some do not bother to register their snowmobiles.

these, 21 (14.2 percent) were farmers by occupation and 127 were non-farmers by occupation.

In order to determine if the returns were representative of the population sampled, in respect to nonfarmers-farmers, an attempt was made to determine what percent of the nonreturns were farmers or nonfarmers by consulting with the Cache County assessor and the Cache County Farm Extension Office. It was estimated that 18 (18 percent) of the nonreturns were farmers and 81 (82 percent) were nonfarmers. Thus, it is felt that the usable returns are representative of the population sampled.

Methods of Analysis

Normally, the first task of analyzing any data is to determine the basic distributional characteristics of each variables to be used in the subsequent statistical analysis.

Information of the distribution, variability, and central tendencies of the variables provides the researcher with necessary information required for selection of subsequent statistical techniques. (Nie et al., 1975, p. 181)

As such, the first statistical test to be run was the SPSS marginals program. With the aid of the obtained information, further statistical analysis was undertaken.

After examining the distribution of each of the variables, the researcher normally begins to investigate sets of relationships among two or more of these variables. In the present study, the T-test, which was run according to the SPSS programs (Nie et al., 1975) was used. The T-test was used to determine if there was any significant difference between the means of various groups related to each hypothesis. For

example, is there a difference in the leisure attitudes between farmers and nonfarmers? The 0.05 ($Z=1.96$) level of significance was used.

The statistical measure chi-square was used to test the relationship between the dependent variable (farmer-nonfarmer) and the independent variables (demographic variables, leisure orientation, environmental orientation). The 0.05 level of significance was used. Chi square is a test of statistical significance. It helps to determine whether a systematic relationship exists between two variables. This is done by computing the cell frequencies which would be expected if no relationship is present between the variables given the existing row and column totals. The expected cell frequencies are then compared to the actual values found in the table. The greater the discrepancies between the expected and actual frequencies, the larger the chi square becomes.

CHAPTER VI
ANALYSIS OF DATA

In accordance with the objectives of this study, four areas will be examined. The first section covers those general hypotheses dealing with age, occupation, income, sex, marital status, family size, and education. The second section covers the hypotheses associated with environmental orientation. The next section deals with the hypotheses on the leisure orientation of the Cache County snowmobiler. The final section of this chapter deals with three areas: (1) the social characteristics of the snowmobiler, (2) usage aspects, and (3) other leisure-time activities of the Cache County snowmobiler.

General Hypotheses

The sample selected for this study was found to be highly homogeneous in regard to socio-economic characteristics and moderately homogeneous in demographic characteristics. According to Hypothesis 1, it is hypothesized that the Cache County snowmobiler will tend to be middle aged. As Table 1 shows, 63.3 percent of the sample studied were between the ages of 31 and 55 with 23.1 percent age 30 or below, and 13.6 percent above 55 years of age. The median age was 39.9 years ($\bar{X}=40.4$) of age with a range of 62 years; the oldest was 71 with the youngest being 17. Thus, Hypothesis 1, that the Cache County snowmobiler will tend to be middle aged is supported.

TABLE 1.--Age distribution of the Cache County snowmobiler

Age	N (%)
17 thru 30	34 (23.1)
31 thru 55	93 (63.3)
56 thru 71	<u>20 (13.6)</u>
Total	147(100.0)

Mean=40.4; Median=39.9; Range=62; Missing observations=1.

Hypothesis 2 states the Cache County snowmobiler will hold mostly professional, businessman, managerial, or white-collar occupations. Results of the analysis (see Table 2) show the snowmobilers were divided as follows: farmers, 14.2 percent; blue collar, 39.9 percent; businessman or managerial, 21.6 percent; professional, 12.8 percent. The remaining 11.5 percent was composed of white collar, 2.0 percent; student, 0.7 percent; retired, 6.1 percent, and other, 2.7 percent. Considering professional, businessman, and managerial as white-collar workers raises the total white-collar workers to 54 or 36.4 percent. These findings, while similar to the findings of other studies, do not support the hypothesis. The fact that there are slightly more blue-collar workers than white-collar may reflect the occupational structure of Cache County which is approximately 51 percent

TABLE 2.--Occupational distribution of the Cache County snowmobiler

Occupation	N	%
Blue collar	59	39.9
White collar	3	2.0
Businessman or managerial	32	21.6
Professional	19	12.8
Farmer	21	14.2
Retired	9	6.1
Student	1	0.7
Other	4	2.7
Total	148	100.0

blue collar and 49 percent white collar among the nonfarm population.¹

Again, Hypothesis 2 is not supported by the data.

Considering total family income, it is hypothesized (Hypothesis 3) that the Cache County snowmobiler will have a total family income above the state median for Utah of 9,320.00. As indicated in Table 3, the median total family income of the respondents fell into the \$10,000.00 to \$14,999.99 category. Of the respondents, 82.6 percent had total family incomes over \$10,000.00 with 18 percent having total family incomes in excess of \$20,000.00. Those with incomes below \$10,000.00 comprised 17.4 percent of the respondents. This salary range is almost identical when compared to previous studies (U.S. Department of the Interior, 1971; Hill, 1974; Michigan Department of Natural Resources and Upper Great Lakes Regional Commission, 1974;

¹Breakdown of nonfarm occupations in Cache County, Utah, as of December, 1977, according to Job Service, Logan, Utah.

TABLE 3.--Total family income distribution of the Cache County snowmobiler

Total family income	N	%
\$0,000 to \$5,999.99	4	2.8
\$6,000 to \$9,999.99	21	14.6
\$10,000 to \$14,999.99	57	39.6
\$15,000 to \$19,999.99	36	25.0
\$20,000 or above	<u>26</u>	<u>18.0</u>
Total	144	100.0

Mean=3.4; Median=3.3; Missing observations=4.

Wisconsin Department of Natural Resources and Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural Resources and Upper Great Lakes Regional Commission, 1974). Again, the results of the analysis indicate that Hypothesis 3 is supported.

In examining the sex of the snowmobiler, it is hypothesized that the Cache County snowmobiler will be predominantly male (Hypothesis 4). As Table 4 indicates, this hypothesis is strongly supported with 94.6 percent being males and only 5.4 percent being females. These results, while supporting the hypothesis, are again quite similar to those of previous studies (U.S. Department of the Interior, 1971; Hill, 1974).

The marital status of the respondent was the next area analyzed. In association with marital status, Hypothesis 5, "Cache County snowmobilers will be predominantly married" is proposed. Analysis indicates that 93.9 percent are married and 6.1 percent are single (see Table 5). These results are even higher than those of other studies. For instance, Hill (1974, p. 284) found only 86.0 percent to be married

TABLE 4.--Sex distribution of the Cache County snowmobiler

Sex	N	%
Male	140	94.6
Female	<u>8</u>	<u>5.4</u>
Total	148	100.0

TABLE 5.--Marital status distribution of the Cache County snowmobiler

Marital status	N	%
Married	139	93.9
Single	<u>9</u>	<u>6.1</u>
Total	148	100.0

compared to 93.9 percent in this study. Here again, the results do support the hypothesis that the snowmobiler is predominantly married.

According to Hypothesis 6, the "Cache County snowmobiler will average two or more children per family." The results of the analysis are shown in Table 6. As indicated, the number of children the respondents had ranged from none (5.6 percent) to 10 (1.4 percent), with a median number of 3.66 children per family ($\bar{X}=3.8$). This differs considerably from the results found by the U.S. Department of the Interior (1971), Snowsport Publication Incorporated (1973), and the

TABLE 6.--Number of children per family of the Cache County snowmobiler

Number of children	N	%
None	8	5.6
1-2	28	19.4
3-4	62	43.1
5-6	33	22.9
7+	<u>13</u>	<u>9.0</u>
Total	144	100.0

Mean=3.80; Median=3.66; Range=10; Missing observations=4

Michigan, Minnesota, and Wisconsin studies (1974). However, as the Utah birth rate is well above the national average (25.9 vs. 18.2), the findings were not to surprising. Thus, the hypothesis that the Cache County snowmobiler will have two or more children per family is supported.

The last general hypothesis which was proposed is Hypothesis 7, which states that "Cache County snowmobiler will have a high school education or above." Analysis (Table 7) shows that of the respondents, 44.2 percent had high school educations, 25.1 percent had some college, and 23.9 percent had four years of college or more. The median number of years of education completed for the respondents was 12.5 years (\bar{X} =13.6). These results indicate an even higher overall education for the study population when compared to a study done by Hill (1974, p. 284). Hill found that 70 percent had at least a high school education while results

TABLE 7.--Educational attainment of the Cache County snowmobiler

Level of education	N	%
Less than high school	10	6.8
High school	65	44.2
Some college	37	25.1
Four years of college	12	8.2
More than 4 years of college	<u>23</u>	<u>15.7</u>
Total	147	100.0

Mean=13.6; Median=12.5; Missing observations=1.

of this show 93.2 percent have at least a high school education. Thus, the results tend to support the above stated hypothesis.

Environmental Orientation

This section of the study was designed to determine the environmental orientation of the snowmobiler, i.e., are they preservationist or utilitarianist in their orientation toward the environment? In association with this, Hypothesis 8 was developed. This hypothesis states that the "Cache County snowmobiler, as a grup, will tend toward a preservationist orientation toward the environment." Table 8 indicates how the respondents answered the questions. As shown in Table 8, the snowmobile sample is slightly preservationist in orientation with a median score of 3.36 ($\bar{X}=3.20$) being obtained on a five-point scale with 1 being scored very utilitarian and 5 very preservationist oriented. This is in general consensus with the findings of Knopp and Tyger (1973) and supports the hypothesis (Hypothesis 8) that was proposed.

TABLE 8.--Response to environmental disposition scale by question

Question	Mean	Median	Standard deviation	Range
7	2.91	2.82	1.13	4.0
8	3.56	3.75	1.05	4.0
10	2.87	2.58	1.28	4.0
11	3.86	3.95	0.88	4.0
13	2.13	1.95	1.04	4.0
14	4.24	4.32	0.84	4.0
15	2.73	2.46	0.79	4.0
16	4.06	4.11	0.79	4.0
17	<u>2.46</u>	<u>2.35</u>	<u>0.89</u>	4.0
Overall mean	3.20			
Overall median		3.36		
Overall standard deviation			0.97	

One other item examined in this section was the environmental orientation of farmers versus nonfarmers. Hypothesis 9 states that "Cache County snowmobilers who are nonfarmers will have a higher environmental preservationist orientation than those who are farmers." As Table 9 shows, there is a difference between farmers and nonfarmers with nonfarmers significantly more preservationist orientated than farmers ($p=0.05$). This is in agreement with the findings of previous studies (Andrews, Madsen, and Legaz, 1973; Andrews and Geertsen, 1970) and supports the proposed hypothesis (Hypothesis 9).

In addition to the above, tests were run to determine if there was a difference in the environmental orientation of two of the nonfarm groups--white-collar and blue-collar occupational groups. As seen in Table 10, there is no significant difference between the two occupational groups. This does not support the previous findings of Medilia and

TABLE 9.--Environmental orientation of farmers vs. nonfarmers

Group	N	Mean	Standard deviation	T value	d.f.
Farmer	21	2.76	0.47	2.45*	146
Nonfarmer	<u>127</u>	3.07	0.55		
Total	148				

*Significant at $p=0.05$

TABLE 10.--Environmental orientation of white and blue-collar occupational groups

Group	N	Mean	S.D.	T value	d.f.
White collar	54	3.01	0.60	1.02	105.50
Blue collar	<u>59</u>	3.11	0.52		
Total	113				

Finker (1965) and Harris (1971) who found individuals with professional, managerial, technical and white-collar occupations expressing a higher environmental concern than blue-collar occupations.

Leisure Orientation

This section was designed to measure the leisure orientation of the snowmobiler, i.e., do they tend toward a work orientation or a leisure orientation? In accord, it was hypothesized that "As a group,

the Cache County snowmobiler will tend toward being leisure oriented rather than work oriented (Hypothesis 10). As seen in Table 11, the median response to the questions associated with the leisure scale fell on the leisure oriented side of the scale with 1 being scored as work oriented and 5 as leisure oriented. The median for the overall scale is 3.64 ($\bar{X}=3.57$), thus indicating a moderately strong leisure orientation. Therefore, the results tend to support Hypothesis 10.

TABLE 11.--Response to Leisure Orientation Scale

Question	Mean	Median	S.D.	Range
1	4.10	4.15	0.83	4.0
2	3.64	3.92	1.14	4.0
3	4.71	4.81	0.49	2.0
4	2.05	1.88	1.06	4.0
5	4.14	4.21	0.83	3.0
6	3.48	3.72	1.01	4.0
7	<u>2.91</u>	<u>2.82</u>	<u>1.13</u>	4.0
Overall mean	3.57			
Overall median		3.64		
Overall S.D.			0.93	

One other item analyzed in this section was the leisure orientation of farmers versus nonfarmers. According to Hypothesis 11, "Cache County snowmobilers who are farmers will be less leisurely oriented than those who are nonfarmers." As seen in Table 12, there is no significant difference between farmers and nonfarmers with respect to their leisure orientation. This does not agree with the findings of previous studies which found nonfarmers more leisurely oriented than

TABLE 12.--Leisure orientation of farmers versus nonfarmers

Group	N	Mean	S.D.	T value	d.f.
Farm	21	3.75	0.31	0.50	146
Nonfarm	<u>127</u>	3.69	0.46		
Total	148				

farmers (Andrews, Madsen, and Dunaway, 1973; Andrews, Madsen, and Legaz, 1974). Thus, the hypothesis that snowmobilers who are farmers will be less leisurely oriented than nonfarmers is not supported.

In addition to the above, tests were run to determine whether there was a difference in the leisure orientation of two of the nonfarm groups--white-collar and blue-collar occupational groups. As seen in Table 13, there is no significant difference between snowmobilers with white-collar occupations and snowmobilers with blue-collar occupations with respect to their leisure orientation.

TABLE 13.--Leisure orientation of white and blue-collar occupational groups

Group	N	Mean	S.D.	T value	d.f.
White collar	54	3.62	0.48	1.00	106.57
Blue collar	<u>59</u>	3.71	0.42		
Total	113				

General Findings

Social Characteristics

As part of this study, question 25 was asked to determine whom snowmobilers usually go with when they go snowmobiling. In accordance with this, it was hypothesized (Hypothesis 12) that the Cache County snowmobilers will do most of their snowmobiling with their family and friends. As seen in Table 14, the great majority of the respondents usually snowmobile with friends (54.1 percent) or with their family (33.8 percent), with only a small percentage going with relatives (8.8 percent) or alone (3.4 percent). These results are in consensus with those found in Michigan, Minnesota, and Wisconsin and support Hypothesis 12.

TABLE 14.--With whom do you usually go snowmobiling?

Whom go with	N	%
Go alone	5	3.4
With friends	80	54.0
With family	50	33.8
With relatives	<u>13</u>	<u>8.8</u>
Total	148	100.0

In addition to the above, tests were run to determine if there was any significant difference between farmers and nonfarmers with respect to social participation. As seen in Table 15, there is no significant difference between the two groups and with whom they go

TABLE 15.--With whom go snowmobiling by farmer-nonfarmer occupational groups

With whom go	Farmer		Nonfarmer	
	N	%	N	%
Alone	1	4.8	4	3.1
With friends or others	10	47.6	70	55.1
With family or relatives	<u>10</u>	<u>47.6</u>	<u>53</u>	<u>41.7</u>
Total	21	100.0	127	100.0

d.f.=2; Chi square=0.473 (p < 0.79)

snowmobiling. There is a slight tendency for nonfarmers to go more often with friends or others and less often with family or relatives than farmers.

In examining the areas used by snowmobilers for snowmobiling, it was hypothesized that the Cache County snowmobiler will do the majority of their snowmobiling on public land, specifically the Cache National Forest (Hypothesis 13). As seen in Table 16, the majority of the respondents (68.0 percent) were found to do their snowmobiling in the Cache National Forest. This was followed by: on your own land, 9.5 percent; on a friend's land, 9.5 percent; on a relative's land, 3.4 percent; in the Wasatch National Forest, 3.4 percent; in ski areas, 0.7 percent; and others (roads, commercial areas), 5.4 percent. None of the respondents indicated they snowmobiled on public roads. These findings are not in agreement with the findings of previous studies (Senate Subcommittee on Parks and Recreation, 1971; Vila, 1971; Hill, 1974). They do, however, support Hypothesis 13.

TABLE 16.--Areas used for snowmobiling

Area used	N	%
Cache National Forest	100	68.0
Own land	14	9.5
Friend's land	14	9.5
Relative's land	5	3.5
Other*	<u>14</u>	<u>9.5</u>
Total	147	100.0

Missing observations=1

*Others included ski areas, commercial areas, Wasatch National Forest, and other.

In addition, tests were run to determine if there existed any significant difference in where farmers and nonfarmers snowmobile. However, preliminary analysis indicated that due to the extremely small N's in 50 percent of the cells, chi square would not be accurate. As such, chi square will not be used but the data will still be shown as it still serves to show that there does exist a difference between the two groups. As shown in Table 17, farmers do most of their snowmobiling on either their own land (38.1 percent) or on the Cache National Forest (47.6 percent). Nonfarmers, on the other hand, tend to snowmobile in the Cache National Forest (71.4 percent) with the next highest area of use being the Other category (ski areas, Wasatch National Forest). Thus, results tend to indicate that the Cache National Forest in the area of primary use for both the farmer and the nonfarmer with nonfarmers using it more than farmers who use their own land slightly less than they use the Cache National Forest.

TABLE 17.--Areas used for snowmobiling by farmer-nonfarmer occupational groups

Area used	Farmer		Nonfarmer	
	N	%	N	%
Own land	8	38.1	6	4.8
Friend's land	2	9.5	12	9.5
Relative's land	0	0.0	5	4.0
Cache National Forest	10	47.6	90	71.4
Other (ski areas, Wasatch National Forest)	<u>1</u>	<u>4.8</u>	<u>13</u>	<u>10.3</u>
Total	21	100.0	126	100.0

Examining when snowmobilers go snowmobiling, it was hypothesized that the Cache County snowmobilers will do the majority of their snowmobiling on weekends (Hypothesis 14). As seen in Table 18, 69.6 percent of the respondents do the majority of their snowmobiling on weekends and 30.4 percent on weekdays. This is in agreement with the previous findings of Hill (1974) and supports Hypothesis 14.

TABLE 18.--Time of week respondents snowmobile

Time of week	N	%
Weekdays	45	30.4
Weekends	<u>103</u>	<u>69.6</u>
Total	148	100.0

In addition to the above, tests were run to determine if there was any significant difference between the time of week farmers go snowmobiling and the time of week nonfarmers go. Analysis showed that there was a significant difference at the $p = 0.05$ level (see Table 19). Nonfarmers go mainly on the weekend and farmers showing a slight tendency to go more on weekdays.

TABLE 19.--Time of week go snowmobiling by farmer-nonfarmer occupational groups

Time of week	Farmer		Nonfarmer	
	N	%	N	%
Weekdays	11	52.4	34	26.8
Weekends	<u>10</u>	<u>47.6</u>	<u>93</u>	<u>73.2</u>
Total	21	100.0	127	100.0

d.f.=1; chi square=4.44 ($p < 0.05$)

Ownership and Usage Aspects

Concerning why one bought their first snowmobile and the main reason for owning one now, it was hypothesized that the Cache County snowmobiler's main reason for owning a snowmobile is for "snowmobiling for pleasure." (Hypothesis 15) As Table 20 shows, 93.9 percent and 93.2 percent, respectively, gave snowmobiling for pleasure as the main reason for buying their first snowmobile and for still owning one. This is in consensus with the findings of Vila (1971) and Hill (1974) and supports Hypothesis 15.

TABLE 20.--Reasons for buying first snowmobile and for still owning a snowmobile

Reason	For buying first snowmobile		For still owning one	
	N	%	N	%
Snowmobiling for pleasure	139	93.9	138	93.2
Ice fishing	1	0.7	1	0.7
Snowmobile racing	2	1.4	1	0.7
Other recreational purposes	2	1.4	1	0.7
Other	<u>4</u>	<u>2.6</u>	<u>7</u>	<u>4.7</u>
Total	148	100.0	148	100.0

In examining the number of snowmobiles owned by a snowmobiler, the results indicated that the median number of snowmobiles owned by a snowmobiler is 1.76 ($\bar{X}=1.35$) whereas the median number of snowmobiles per family is 2.09 ($\bar{X}=2.40$) (See Table 21). In both cases, 38.5 percent and 25.9 percent own one snowmobile, 41.2 percent and 40.8 percent own two snowmobiles, and 20.3 percent and 33.3 percent own three or more.

When the number of years that one had owned a snowmobile was examined, the results showed that 3.4 percent had owned a snowmobile two years or less, 75.5 percent between three to six years, and 21.1 percent seven or more years (see Table 22). The median number of years one had owned a snowmobile was 4.94 years ($\bar{X}=5.25$ years). With 15 years being the longest anyone of the respondents had owned a snowmobile.

TABLE 21.--Number of snowmobiles owned by respondents and total in family

Number owned	By respondent		In family	
	N	%	N	%
1	58	39.2	38	25.9
2	61	41.2	60	40.8
3	23	15.5	29	19.7
4	5	3.4	9	6.1
5 or more	<u>1</u>	<u>0.7</u>	<u>11</u>	<u>7.5</u>
Total	148	100.0	147*	100.0

*Missing observations=1

TABLE 22.--Number of years respondent has owned a snowmobile

Number of years	N	%
0-2	5	3.4
3-4	58	39.4
5-6	53	36.0
7-8	23	15.7
9 or more	<u>8</u>	<u>5.5</u>
Total	147	100.0

Mean=5.25; Median=4.94; Missing observations=1

To go snowmobiling, 60.5 percent of the respondents drive 11 to 50 miles from their home while 23.8 percent drive less than 5 miles, 13.6 percent drive 5 to 10 miles, and 2.1 percent drive more than 50 miles (Table 23).

TABLE 23.--Distance drive to go snowmobiling

Distance drive	N	%
Less than 5 miles	35	23.8
5-10 miles	20	13.6
11-50 miles	89	60.5
50+ miles	<u>3</u>	<u>2.1</u>
Total	147	100.0

Missing observations=1

While snowmobiling, Table 24 shows that 40.5 percent of the respondents indicate that they cover 11 to 30 miles with 15.5 percent covering 10 miles or less, 33.1 percent covering 31 to 50 miles, and 10.8 percent covering more than 50 miles. The median number of miles traveled on snowmobiles fell into the 11 to 50-mile range.

TABLE 24.--Distance covered while snowmobiling

Distance covered	N	%
Less than 5 miles	5	3.4
5-10 miles	18	12.2
11-50 miles	60	40.5
50+ miles	<u>65</u>	<u>43.9</u>
Total	148	100.0

Next to be examined was the number of days a snowmobiler spends snowmobiling during a typical season. The median number of days spent

snowmobiling was between 11 and 40 days with nearly two-thirds of the respondents indicating that they went that many days. Of the total respondents, 16.2 percent went 10 days or less, 62.2 percent went from 11 to 40 days, 15.5 percent went between 41 and 60 days, and only 6.1 percent went 81 days or more (see Table 25).

TABLE 25.--Number of days spent snowmobiling in a season

Number of days	N	%
10 or less	24	16.2
11-20	46	31.1
21-40	46	31.1
41-60	23	15.5
61-80	5	3.4
81 or more	4	2.7
Total	148	100.0

As far as the type of areas preferred by snowmobilers, respondents indicated that 10.4 percent prefer organized snowmobile areas; 22.8 percent prefer unorganized snowmobile areas; 16.6 percent prefer hilly, clear land; 13.8 percent prefer hilly, wooded land; 23.4 percent prefer rugged mountaineous areas; 12.0 percent prefer other types of land (Table 26). Again, no one preferred to snowmobile on public roads. One item found along with areas preferred was the fact that 66.4 percent thought that the most important item needed in these areas was parking areas with 25.8 percent stating the second most important item needed as restroom facilities.

TABLE 26.--Type of area preferred for snowmobiling by respondents

Type of area	N	%
Organized snowmobile areas	15	10.4
Unorganized snowmobile areas	33	22.8
Rugged, mountainous areas	34	23.4
Hilly, clear land	24	16.6
Hilly, wooded land	20	13.8
Other	19	12.0
Total	145	100.0

Missing observations=3

Other Leisure-Time Activities

Part II of the questionnaire was designed to determine what other leisure activities snowmobilers take part in. The question was asked "What two leisure activities do you enjoy the most?" A first and a second choice were asked for. Seven activities predominated in both the first and second choices. These were: snowmobiling, 24.5 and 25.2 percent; camping, 19.7 and 11.5 percent; hunting, 17.7 and 9.6 percent; fishing, 6.1 and 14.9 percent; boating, 5.5 and 2.7 percent; horseback riding, 4.7 and 5.5 percent; skiing (including water skiing), 3.4 and 7.5 percent; others, 18.4 and 23.1 percent (Table 27). The other category consisted of 21 various activities. One interesting aspect of the results was that in an area where skiing, both downhill and cross-country, is quite popular, 95.4 percent of the respondents had never tried cross-country skiing and 79.4 percent had never tried downhill skiing.

TABLE 27.--Other leisure-time activities of the respondents

Activity	First choice		Second choice	
	N	%	N	%
Snowmobiling	36	24.5	37	25.2
Camping	29	19.7	17	11.5
Hunting	26	17.7	14	9.6
Fishing	9	6.1	22	14.9
Boating	8	5.5	4	2.7
Horseback riding	7	4.7	8	5.5
Skiing (including water skiing)	5	3.4	11	7.5
Others	<u>27</u>	<u>18.4</u>	<u>34</u>	<u>23.1</u>
Total	147	100.0	147	100.0

Missing observations=1

CHAPTER V
SUMMARY AND DISCUSSION

Summary

Snowmobiling, while being one of the major winter recreational activities in Cache County, has run into several problems. Of these problems, one of major concerns is its conflict with other winter sports such as cross-country skiing and snowshoeing. This conflict has resulted in considerable animosity between snowmobilers and cross-country skiers and snowshoers with little being done to resolve the problem.

However, it became apparent to this researcher that the underlying problem was that little was known about either the snowmobiler or the other winter recreationists in regard to their social characteristics, their attitudes toward leisure and the environment, or their usage of the land. Thus, this research was conducted to determine the aforementioned for the snowmobilers of Cache County, Utah.

The sample population of snowmobilers was derived by obtaining the names of the Cache County snowmobile owner from tax assessment receipts at the Cache County Courthouse. From a total population of 501, a random sample of 250 was selected to whom a questionnaire was sent. One follow-up postcard was mailed to those who did not respond within 14 days. A deadline was set with only those questionnaires returned on or before that day used in the analysis. The results were then analyzed to meet the objectives of this research by the following SPSS programs: marginals, crosstabs, and T-test (Nie et al., 1975).

Discussion

Results of the analysis indicate that of the seven general hypotheses which were proposed, six were supported by the analysis (Hypotheses 1, 3, 4, 5, 6, and 7) and one was not supported (Hypothesis 2). In examining Hypothesis 1 (the Cache County snowmobilers will tend toward middle age), the results were found to support the hypothesis. This result is not to surprising as an individual would probably tend to be middle-aged before they could afford such a hobby. The results supported those of earlier snowmobile studies (Senate Subcommittee on Parks and Recreation, 1971; Snowsport, 1973; Hill, 1974) who found similar results. However, the results of this study do differ from those results found in studies conducted in Michigan, Minnesota, and Wisconsin in 1974. This is probably due to the fact that the studies conducted in these three states based their average age of snowmobilers on the ages of all the family members who snowmobile, not just the owner. However, the results do support the hypothesis.

Hypothesis 3, the Cache County snowmobiler will have a total income above the median income for Utah, was supported by the results. Again, the results were quite similar to the results of other snowmobile studies. A reason for this similarity could possibly be the expense involved in such a sport which is such that a person with a low income could not afford to indulge in the activity. Thus, the Cache County snowmobiler was found to have a median income in the range of \$10,000.00 to \$14,999.99 which supports the hypothesis and the findings of previous studies.

The fourth hypothesis which was proposed was the Cache County snowmobiler will be predominantly male. Results strongly supported this hypothesis with 95 percent of the respondents being male. These results are quite similar to those of previous studies (U.S. Department of the Interior, 1971; Hill, 1974). There are several possible reasons as to why the majority of the snowmobilers in all the studies are male. First, due to the strength required to handle a snowmobile, many women may feel they are not capable of such a sport. Second, it may be that most snowmobiles are bought by males and are registered by them, but not necessarily used by them. Thus, as most studies have obtained their samples from such registration lists, there may be a natural bias toward males. However, these are merely conjectures which need to be researched further.

Hypothesis 5, Cache County snowmobilers will be predominantly married, was also strongly supported with almost 94 percent of the respondents being married. The results were found to be even higher than those indicated in other studies (Hill, 1974; U.S. Department of the Interior, 1971). That the results of this study were found to be so high may be a reflection of: (1) the fact that the percentage of the population age 14 and over married in Utah is higher than the United States as a whole (64.2 percent vs. 61.5 percent; U.S. Department of Commerce, 1973); and (2) the culture of Cache County. Cache County is predominantly Mormon, a religion which places great emphasis on marriage. Thus, the fact that almost 94 percent of the respondents are married is not that surprising when 96 percent of the respondents are Mormon.

Analysis of Hypothesis 6 which concerned the number of children the respondents have, indicated that the hypothesis was supported. The results were, however, quite different from those of previous studies (U.S. Department of the Interior, 1971; Snowsport, 1973). The results showed that the respondents have almost two or more children per family than the respondents of other studies. An explanation for this difference may be reflected in the findings of Spicer and Gustavus (1974) who found the Utah crude birth rate (number of live births per 1000 women) of 25.9 and the Utah Mormon crude birth rate of 28.4 to be well above the national crude birth rate of 18.2. Therefore, as Cache County is in Utah and is predominantly Mormon, the findings of more children per family than in other studies is not to surprising.

Examining education, it was hypothesized (Hypothesis 7) that the Cache County snowmobiler will have a high school education or above. Results were found to support this with over 93 percent of the respondents having at least a high school education or above. These results were found to indicate a higher overall education for the study population than those of a previous study by Hill (1974). This difference may be a reflection of two things. First, the percentage of Utahans age 18 and above having at least a high school education is above that of the United States as a whole (81.3 percent vs. 76.4 percent). Second, Cache County is predominantly Mormon, a religion which places considerable emphasis and values on obtaining an education. Thus, as the respondents were predominantly Mormon and Cache County is located in Utah, one would expect a fairly high overall educational level as was found.

Thus, the results which supported the hypotheses were in fairly close agreement with the results found in studies of snowmobilers in other regions. This indicates that Cache County snowmobiler is quite similar to snowmobilers in other regions with respect to age, income, sex, marital status, family size, and education.

Turning now to the general hypothesis which was not supported. Hypothesis 2 stated that the Cache County snowmobiler will hold mostly professional, businessman, managerial, or white-collar occupations. Results did show that over 36 percent of the respondents hold professional, businessman, managerial, or white-collar occupations which is in general consensus with the findings of previous studies (Vila, 1971; Michigan Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Wisconsin Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974). However, analysis showed that a somewhat larger number of the respondents (39.9 percent) hold blue-collar occupations or farmers (14.2 percent). While the number holding blue-collar occupations is similar to the findings of some studies (U.S. Department of the Interior, 1971; Hill, 1974), the proportion of farmers is considerably higher than most previous studies (exception: Wisconsin had 12.4 percent farmers). The finding that there are slightly more blue-collar workers than white-collar may simply be a reflection of the occupational structure of Cache County. According to Job Service-Cache County Office, as of December, 1976, 51 percent of the nonfarm labor force is employed in blue-collar occupations and 49 percent in white-collar occupations. While full-time farming

comprises only approximately 8.0 percent of the labor force in Cache County, the fact that farmers are fairly much free in winter may contribute to their comprising such a large percentage of the snowmobilers.

Leisure Orientation

Analysis of the respondents leisure orientation led to the support of Hypothesis 12, that as a group, the snowmobilers would tend toward being leisure oriented. Results indicated that the respondents had a moderately strong leisure orientation. This is in consensus with the findings of Andrews, Madsen, and Legaz (1974) who found the Central Utah resident to have a moderate overall leisure orientation. Thus, the Cache County snowmobiler, as a group, is much like the overall population in Utah with respect to their leisure orientation.

One other item examined was the leisure orientation of farmers versus nonfarmers. Results indicated that there were no significant differences between farmers and nonfarmers with respect to their leisure orientation. This does not support Hypothesis 11 which stated that nonfarmers would be more leisure oriented than farmers nor does it support the previous findings on farm-nonfarm populations (Burdge, 1961; Andrews et al., 1972; Andrews, Madsen, and Dunaway, 1973; Andrews, Madsen, and Legaz, 1974).

As to why no differences were found between farmers and nonfarmers, there may be several reasons. First of all, they may simply be reflecting societies' increased emphasis on leisure-time. Secondly, and probably most important, is the fact that all the respondents sampled participate

in a leisure-time activity. As seen in the analysis, over 93 percent participate in snowmobiling for the pleasure they derive from the activity. Thus, the respondents seem to see snowmobiling as a pleasurable leisure-time activity which is not associated with work. As such, one would expect snowmobilers, regardless of occupation, to have fairly similar orientations toward leisure, as was found.

Environmental Orientation

Results of this section of the analysis revealed that the Cache County snowmobiler, as a group, has a very slight preservationist orientation toward the environment. This supported Hypothesis 8 and was in consensus with the finding of Knopp and Tyger (1973) who also found that snowmobilers were slightly preservationist oriented. The results also tended to support the findings of Andrews, Madsen, and Dunaway (1973) who found the overall environmental orientation of the residents of the Weber River Basin in Central Utah to be slightly preservationist. Thus, the respondents' orientation toward the environment seems to be much like that of the general population of Utah.

Hypothesis 9 that nonfarmers would have a higher preservationist orientation than farmers was also supported. Nonfarmers were found to be significantly more preservationist in their orientation than the farmers. This supports the findings of Andrews, Madsen, and Legaz (1974) and Andrews and Geertsen (1970) who reported similar findings among farm-nonfarm populations. Again, this tends to indicate the respondents' similarity to the overall general population. Thus, the results of this section of the study indicate that the respondents are quite similar

in their environmental orientation to both the general population and to snowmobilers in other parts of the country.

An important point must be brought up at this point. In the conflict between snowmobilers and cross-country skiers, snowmobilers have many times been accused of being anti-environmentalist. As the results of this study indicate, the snowmobiler, contrary to popular opinion, is slightly preservationist oriented. This tends to indicate that they have been stereotyped without their actual attitudes being determined. In stereotyping may lie part of the problem between the snowmobiler and the cross-country skier. Cross-country skiers seem to have developed a stereotyped image of the snowmobiler without really determining the snowmobiler's actual attitudes. Thus, until both snowmobilers and cross-country skiers cast aside their stereotyped images and look at the actual attitudes of the participants, it seems that the conflict will be hard to resolve. Thus, there is a great need for additional research to help determine what images each group has about the other and ways to help each group find out the actual attitudes of each other.

General Findings

Social Characteristics

In examining the social characteristics of the Cache County snowmobilers, it was hypothesized that the Cache County snowmobilers will do most of their snowmobiling with family and friends. As the results showed, this hypothesis was supported with almost 88 percent

going with either their family or with friends. This agrees with the previous results found in Michigan, Minnesota, and Wisconsin (Michigan Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Wisconsin Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974). Thus, as in previous findings, the respondents seem to consider snowmobiling either a family activity or a social activity, with very few (3.4 percent) finding it a personal activity.

In addition, tests were run to determine if there was a difference between farmers and nonfarmers concerning whom they went snowmobiling with. Results indicated that there is a slight tendency for nonfarmers to go more often with friends or others and less often with family or relatives. Farmers, on the other hand, were equally as likely to go with either.

Ownership and Usage Aspects

Next examined were the areas used by snowmobilers for snowmobiling. It was hypothesized that the Cache County snowmobilers will do the majority of their snowmobiling on public land, specifically the Cache National Forest (Hypothesis 13). Results strongly supported the hypothesis with 68 percent of the respondents doing the majority of their snowmobiling in the Cache National Forest. These results do differ from those of previous studies which found private land the most commonly used (Michigan Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Minnesota Department of Natural

Resources and the Upper Great Lakes Regional Commission, 1974; Wisconsin Department of Natural Resources and the Upper Great Lakes Regional Commission, 1974; Vila, 1971; U.S. Department of the Interior, 1971; Hill, 1974). This difference between the present study and previous studies lies possibly in the type of land available. Areas of previous studies have relatively little public lands in the form of national forests and parks. Cache County, on the other hand, is approximately one-half Cache National Forest which is readily available to the residents of the county.

In addition, it was tested to determine if there existed any difference between where farmers and nonfarmers do the majority of their snowmobiling. As expected, there was a difference with over two-thirds of the nonfarmers using the Cache National Forest compared to just under one-half the farmers. Over one-third of the farmers were found to use their own land whereas under 5 percent of the nonfarmers use their own land. This difference is most easily explained if one considers that farmers generally own enough land which provides a quick, handy place to go snowmobiling. Nonfarmers, on the other hand, generally own very little land. Thus, the nonfarmer must generally seek somewhere to go snowmobiling. For the farmer, he has a choice of either his own land or seeking someplace else.

In examining when snowmobilers go snowmobiling, it was hypothesized that the Cache County snowmobiler will do the majority of their snowmobiling on weekends (Hypothesis 14). Results supported this hypothesis with approximately 70 percent of the respondents doing the majority of their snowmobiling on weekends. This was also in agreement with the

findings of Hill (1974). These results tend to follow the logical reasoning that many people are employed in jobs in which the weekends are the only time available to recreate.

In addition to the above, tests were run to determine if there was any significant difference between the time of week farmers and nonfarmers go snowmobiling. Results showed that for farmers, the time of week was relatively unimportant with the time split almost equally between weekends and weekdays. For nonfarmers, almost three-fourths go on weekends. The difference between when farmers and nonfarmers go is probably related to their occupations. Winter, for the farmer, is basically a fairly nonactive period when they have little field work, etc. The farmer is also self-employed, thus capable of working when he wishes. Thus, the farmer is more capable of going at any time of the week. On the other hand, nonfarmers are more likely to have typical 40-hour per week jobs which require them to be at work during the week. Thus, the nonfarmer is more likely to have only the weekends on which to recreate. Therefore, it is highly probable that the reason for the difference between when farmers and nonfarmers go snowmobiling is due to their occupation.

Concerning why one bought his first snowmobile and the main reason for still owning one, it was hypothesized (Hypothesis 15) that the Cache County snowmobiler's main reason for both buying his first snowmobile and for still owning one is for "snowmobiling for pleasure." As the results indicated, this hypothesis was strongly supported as over 93 percent of the respondents replied "snowmobiling for pleasure." This tends to indicate that individuals in this area buy and own

snowmobiles strictly for the enjoyment they obtain from the activity and not because it may be advantageous to them in other pursuits such as work. These results also tend to support the findings of previous studies done by Vila (1971) and Hill (1974).

In examining the number of snowmobiles owned by the respondents and the number of snowmobiles in the family, results showed that the majority of the respondents and families have between two and three snowmobiles. An explanation for owning this number may possibly be seen when one considers with whom the snowmobilers go snowmobiling. As results showed, snowmobiling is done mainly with one's family or friends, and since most snowmobiles hold only two persons, one would assume a need for more than one snowmobile. Thus, a family of five or six would be expected to own more than one snowmobile.

One final aspect which this research revealed was the fact that 95.4 percent of the snowmobilers had never tried cross-country skiing. This in itself may be an important clue as to why there is conflict between snowmobilers and cross-country skiers. It may be that snowmobilers do not understand what the actual needs and attitudes of the cross-country skiers are but have stereotyped them as being a particular type of individual with particular attitudes. Conversely, cross-country skiers may not have tried snowmobiling. Thus, cross-country skiers also may not understand the actual needs and attitudes of snowmobilers, but may have developed a stereotyped image of the snowmobiler. Therefore, one may conjecture that the conflict between snowmobilers and cross-country skiers revolves around each group stereotyping of the other without a true knowledge of each other.

Conclusion

This study attempted to determine just who the Cache County snowmobilers are. What are their attitudes toward leisure and the environment? When, where, and why do they go snowmobiling? What are their general characteristics? Results indicate that the Cache County snowmobilers are typically male, married with between three and four children per family, have a high school education or above, have an income above the average for Utah, and hold either a blue-collar or white-collar occupation. They have a slight preservationist orientation toward the environment and have a moderately strong leisure orientation.

Snowmobiling is primarily done with friends or family with most snowmobiling done on weekends. The primary area used for snowmobiling is the Cache National Forest. The main reason for buying a snowmobile or for still owning one is "snowmobiling for pleasure." Thus, the Cache County snowmobilers are very much like their counterparts in other regions of the country.

Recommendations

It is recommended that the findings of this study be used as a basis for further research into this area and not as a finality. Due to the extremely limited nature of this study, a more thorough and comprehensive study is needed. It is also recommended that future studies be done on the snowmobiler in other areas of the West as little has been done in this region and the results of this study may or may not be applicable.

One last recommendation that needs to be made is the need for additional study of the conflict between snowmobilers and other winter recreationists, specifically cross-country skiers. This research has attempted to find out more about the snowmobiler, such as his attitude toward the environment, etc. However, while the present research helps one to understand the snowmobiler, research is needed to help understand the other winter recreationists and, more specifically, why there exists conflict between the two groups-viz. snowmobilers and cross-country skiers.

Limitations to the Study

One must realize that with any study there are limitations to the conclusions that can be drawn. This is particularly true with this study, with the results being applicable only to the snowmobilers in Cache County, Utah. There are at least three reasons why. First, due to the geographical nature of the county, it is rather unique. The county is composed of approximately one-half valley with flat to gently sloping terrain and one-half rugged mountainous terrain. Second, the population of the county is predominantly Mormon whose beliefs differ in certain respects from the denominations found in other regions. Thirdly, due to a lack of funds, the study was quite limited as to the depth and scope of the questions asked. In addition, where comparisons were made between farmers and nonfarmers, a more stratified sample would have been useful.

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APPENDIX

Noise & Fumes

To the Editor:

In regard to the controversy over the Forest Service's proposal to limit off-the-road vehicles. It always amazes us when snowmobiles and cyclists talk as if they should simply be left alone to "do their own thing" because they are not bothering anyone else.

It is inconceivable to us that these people cannot seem to see that it is virtually impossible for them to take part in these activities without greatly disturbing anyone around them who can hear or breathe.

For a long time we have felt that due regard has not been given to the disturbing effect these off-the-road vehicles have on other people in a wide radius around them. A hiker or cross-country skier can pass through the woods, and, if his behavior is correct, he will disturb no one around him. But a cyclist (motor) or snowmobiler, even if his behavior is correct, inevitably, with the noise and smell of his machine, disturbs, often greatly, anyone near him (or not near him) who is trying to enjoy the beauty and peace of the outdoors.

We strongly feel that sports such as these that almost inevitably infringe on the rights of others should be carefully restricted. It is time we realized that there is such a thing as noise pollution and that people should have a right to enjoy the beauty of our National Forests without being subjected to noise and air pollution.

Noisy Assault

To the Editor:

I am writing in support of proposed regulations to limit the use of off-road and all-terrain vehicles by excluding them from certain areas in the Cache National Forest. I believe there must be areas preserved for those of us who shun the use of such vehicles; areas wherein we may enjoy the hills without being assaulted by all manner of outlandish machinery.

The argument has been raised that inasmuch as ORV operators have no desire to exclude we hikers, skiers and snowshoers from certain areas, we should not, in fairness, want to exclude them. They don't mind sharing the hills with us: why should we?

The answer is simple: how much of an intrusion is a skier on a snowmobiler? Or a hiker on the driver of a 4WD outfit? None. But the hiker or skier who has had his solitude shattered by the hellish thunderation of a snowmobile or a trail bike — even an unseen one — feels intruded upon to the point of heaping curses upon the head of the misguided idiot that invented the reciprocating engine.

I do not begrudge anybody's enjoyment of the hills. If, to enjoy the hills, somebody needs five hundred pounds of tin and enough noise to deafen an army, that's his bag. Let him enjoy himself in his own way. But I am entitled to the same consideration: I want to enjoy the hills my way — in silence.

Be Thankful

To the Editor:

We have been very interested in the letters that have been written concerning the noise that some people think a snowmobile makes.

We have a 22-two-year-old son, who has been deaf since birth. He is the father of a 3-year-old boy. Our son has never heard the laughter or even the voice of his little boy.

Now a few people are complaining that a little noise interrupts their solitude. If these people so badly want solitude, our son would gladly trade ears with them, then they could have all the solitude they want and our son could hear the laughter of his little boy.

Especially at this time of year when we should be giving thanks, we who are so fortunate, should stop bickering and complaining and give thanks that we have eyes that are able to see and ears that are able to hear.

Hello Snowmobiler!

As you know, this past fall there was a great deal of interest centered around you, the snowmobiler. After some checking around, it was found that little is actually known about the snowmobiler in this area. In fact, probably 90 percent of the studies on snowmobiling have been done in the East. Because of this, it was decided that a study of snowmobilers in this area could be of great value, not only to you as a snowmobiler, but also to the general public by clearing misconceptions they may hold, and to agencies, such as the forest service in establishing recreational areas.

In order to do this study, however, I must ask for your cooperation. Enclosed is a questionnaire designed to find out just who the snowmobiler in Cache County, Utah really is. Please take a few minutes to answer each question completely and to return it by the enclosed return envelope (no stamp is required). Concerning the number in the upper righthand corner, it is there so I will know who has returned the questionnaire and to keep them from receiving a reminder letter. When the questionnaire is returned, your name and the corner of the page with the number will be destroyed. This is done to assure that you and your answers will remain anonymous.

Again, please help me, and yourself, by completely answering the questionnaire and returning it promptly. Your help is greatly appreciated.

HAPPY SNOWMOBILING!

Sincerely yours,

Michael Dierker
Project Coordinator
Institute of Social Science
Research on Natural Resources
Utah State University

Enclosure

SNOWMOBILER'S QUESTIONNAIRE 1976

Cache County, Utah

INSTRUCTIONS: The following questionnaire is composed of statements and questions taken from studies of snowmobilers done throughout the country. As you may notice, the questionnaire is divided into four different parts. Please read the instructions for each part very carefully and answer every question. Answers are strictly confidential. I am not interested in individual answers but in the answers of snowmobilers as a group. Thank you for your cooperation.

PART I. For question 1-17, I would like to know your attitudes toward the statements. These statements have been taken from other studies designed to determine certain attitudes. The best answer to each statement is your own personal opinion. As the statements cover many different and opposing viewpoints, you may find that you disagree with some, agree with some, or are uncertain about others. However, whether you agree or disagree, feel certain that many others feel the same as you do. Please read each statement and then circle the answer you agree with most.

SA = Strongly agree with
 A = Agree with
 U = Undecided or agree-disagree equally
 D = Disagree
 SD = Strongly disagree

1. The constructive use of leisure time is the answer to many of the problems facing the American society.
 SA A U D SD
2. I generally feel guilty when I enjoy leisure for more than a short time.
 SA A U D SD
3. Leisure serves no useful purpose in life.
 SA A U D SD
4. My chief reason for working is to pay for my leisure activities.
 SA A U D SD
5. I sometimes feel guilty when I am on vacation because I am not working.
 SA A U D SD

6. Most people spend too much time just enjoying themselves today.
SA A U D SD
7. Potential mineral deposits should be left undeveloped in wilderness areas.
SA A U D SD
8. Economic development is of first importance and therefore no resource should be restricted from economic use.
SA A U D SD
9. Snowmobiles have no harmful effects on the environment.
SA A U D SD
10. Official wilderness areas that are set aside for permanent preservation should prohibit all future use or development of any kind.
SA A U D SD
11. New industry should be developed even if it is destructive to the environment.
SA A U D SD
12. There should be stricter laws governing the usage of snowmobiles.
SA A U D SD
13. National forests should be left undeveloped and in their natural state with no logging, grazing, or development allowed.
SA A U D SD
14. People should be allowed to build homes wherever they wish, even if it destroys the beauty of the land.
SA A U D SD
15. Pollution control laws should be more strict than they are.
SA A U D SD
16. Development of our energy resources should proceed as fast as possible regardless of the damage to the environment.
SA A U D SD
17. We need the Alaskan oil pipeline in spite of possible environmental hazards.
SA A U D SD

PART II. Here is a list of some specific leisure activities. Circle the number in the left column according to how many times you took part in the activity during the past twelve (12) months.

1=never tried it 4=six to ten times
 2=once or twice 5=more than ten times
 3=three to five times

1 2 3 4 5	Camping	1 2 3 4 5	Picnics
1 2 3 4 5	Fishing	1 2 3 4 5	Walking for pleasure
1 2 3 4 5	Hunting	1 2 3 4 5	Downhill skiing
1 2 3 4 5	Bicycling	1 2 3 4 5	Cross-country skiing
1 2 3 4 5	Horseback-riding	1 2 3 4 5	Photography
1 2 3 4 5	Driving or sight-seeing for fun	1 2 3 4 5	Participating in clubs, church work, etc.
1 2 3 4 5	Canoeing	1 2 3 4 5	Playing cards
1 2 3 4 5	Sailing	1 2 3 4 5	Bowling
1 2 3 4 5	Other boating	1 2 3 4 5	Going to movies
1 2 3 4 5	Water skiing	1 2 3 4 5	Playing tennis
1 2 3 4 5	Mountain climbing	1 2 3 4 5	Craft or hobby work
		1 2 3 4 5	Gardening, working in your yard

What two leisure activities do you enjoy the most:

First choice: _____

Second choice: _____

PART III. The following questions (18-35) are concerned with such areas as your usage and ownership of your snowmobile. Please read and answer each question carefully. All information is confidential.

18. Do you belong to a snowmobile club or organization?

1) ___ Yes 2) ___ No

If YES, please give name and location of the club. _____

19. Number of snowmobiles that you own: _____

20. Number of snowmobiles in your family: _____

21. What is the make and horsepower of your snowmobile?

Make: _____

Horsepower: _____

22. How many years have you owned a snowmobile? _____

23. How many snowmobiles have you owned in this time period? _____
24. What was the main reason for your buying your first snowmobile?
(mark one)
- | | |
|----------------------------------|---------------------------------------|
| 1) ___ Snowmobiling for pleasure | 6) ___ Other recreational purposes |
| 2) ___ Hunting | 7) ___ Nonrecreational transportation |
| 3) ___ Ice fishing | 8) ___ Use in occupation |
| 4) ___ Transportation to skiing | 9) ___ To rent to others |
| 5) ___ Snowmobile racing | 10) ___ Other |
25. What is your main reason for owning a snowmobile now? (mark one)
- | | |
|----------------------------------|---------------------------------------|
| 1) ___ Snowmobiling for pleasure | 6) ___ Other recreational purposes |
| 2) ___ Hunting | 7) ___ Nonrecreational transportation |
| 3) ___ Ice fishing | 8) ___ Use in occupation |
| 4) ___ Transportation to skiing | 9) ___ To rent to others |
| 5) ___ Snowmobile racing | 10) ___ Other |
26. When you go snowmobiling, do you usually go: (mark one)
- | | | |
|--------------------|---------------------|-----------------------|
| 1) ___ Alone | 2) ___ With friends | 3) ___ With relatives |
| 4) ___ With family | 5) ___ Others | |
27. What time of the week do you do the majority of your snowmobiling?
- | | |
|--------------------------------------|-----------------|
| 1) ___ Weekdays (Monday thru Friday) | 2) ___ Weekends |
|--------------------------------------|-----------------|
28. What is the average number of days, considering a day any 24-hour period in which you went snowmobiling even if only for a few minutes, you spend snowmobiling during a typical season (from approximately October to May)?
- | | |
|-------------------|------------------------|
| 1) ___ 1-10 days | 4) ___ 41-60 days |
| 2) ___ 11-20 days | 5) ___ 61-80 days |
| 3) ___ 21-40 days | 6) ___ 81 days or more |
29. How many of the above 24-hour days were spent snowmobiling during the daylight hours only?
- | | |
|-------------------|------------------------|
| 1) ___ 0-10 days | 4) ___ 41-60 days |
| 2) ___ 11-20 days | 5) ___ 61-80 days |
| 3) ___ 21-40 days | 6) ___ 81 days or more |
30. How many of the above 24-hour days were spent snowmobiling during the night hours only?
- | | |
|-------------------|------------------------|
| 1) ___ 0-10 days | 4) ___ 41-60 days |
| 2) ___ 11-20 days | 5) ___ 61-80 days |
| 3) ___ 21-40 days | 6) ___ 81 days or more |
31. How far from your home do you generally drive to go snowmobiling?
- | | |
|--------------------------|----------------------------|
| 1) ___ less than 5 miles | 4) ___ 51 to 100 miles |
| 2) ___ 5 to 10 miles | 5) ___ more than 100 miles |
| 3) ___ 11 to 50 miles | |

40. Marital status: 1) married 4) separated
 2) never married 5) widowed
 3) divorced
41. If ever married, the number of children you have: _____
42. Total income of the family of which you are a member:
 1) \$5,999 or less 4) \$15,000 to \$19,999
 2) \$6,000 to \$9,999 5) \$20,000 or higher
 3) \$10,000 to \$14,999
43. Your occupation:
 1) farmer
 2) businessman or managerial
 3) white collar (store clerk, secretary, etc.)
 4) blue collar (truck driver, laborer, etc.)
 5) professional (doctor, lawyer, teacher, etc.)
 6) retired
 7) student (full-time)
 8) other (specify) _____
44. Place of residence:
 1) on a farm
 2) rural, but not on a farm
 3) town of population 2,500 or under
 4) town of population 2,500 to 10,000
 5) city of population 10,000 or higher
45. Years of education that you have had (circle the last grade that you completed):
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19+
46. Religion:
 1) LDS 2) Protestant 3) Catholic 4) other
47. Political affiliation:
 1) Democrat 2) Republican
 3) Independent (not belonging to any particular party)

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE!

Hello Snowmobiler!

As you may recall, I sent a questionnaire to you several days ago about you and snowmobiling. If you have already returned it to me, I would like to take this opportunity to thank you for your cooperation, as with this information, I will be able to complete my Master of Science thesis. If you have not yet filled it out, please take a few minutes to do so and return it. Remember, all your answers are strictly confidential. Again, thank you for your cooperation.

Yours truly,

Michael Dierker

VITA

Michael William Dierker

Candidate for the Degree of

Master of Science

Thesis: The Cache County Snowmobiler: An Empirical Study

Major Field: Sociology

Biographical Information:

Personal Data: Born at Springfield, Missouri, April 19, 1953,
son of William W. and Betty Jean Dierker; single.

Education: Attended elementary school in Springfield, Missouri;
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minor in sociology, in 1974; completed requirements for
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Professional Experience: 1974 to 1975, aide to dependent children
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