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RECREATIONAL ACTIVITY CHOICE AND WEATHER: THE SIGNIFICANCE OF VARIOUS WEATHER PERCEPTIONS IN INFLUENCING PREFERENCE FOR SELECTED RECREATIONAL ACTIVITIES IN MICHIGAN STATE PARKS

By

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ABSTRACT

RECREATIONAL ACTIVITY CHOICE AND WEATHER: THE SIGNIFICANCE OF VARIOUS WEATHER PERCEPTIONS IN INFLUENCING PREFERENCE FOR SELECTED RECREATIONAL ACTIVITIES IN MICHIGAN STATE PARKS

By

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This study was concerned with ascertaining the significance of various weather variables in affecting recreational activity choice. It did not consider the selection of the particular park to be visited, but rather, was concerned with the choice of activities within the previously-selected park.

A random sample of summer users at three representative Michigan state parks provided data which indicated the respondents' revealed preference for the activities of sightseeing from the car, walking to scenic points, picnicking and swimming. Three sets of weather data were collected: daily park weather--conditions at the park; daily origin weather--conditions at the user's origin; and forecast origin weather--the forecasted conditions as released on the

previous day. Origin areas with relatively homogeneous weather conditions were designated, and those respondents who indicated origins within the designated areas (approximately 75 per cent of the total respondents) were included in the analysis.

The selected weather characteristics together with park user and use characteristics (independent variables) were then related to recreational activity preference (dependent variables) in an initial statistical model. Analysis of the relationship was conducted by means of a two-stage least squares procedure. Since four activities were being considered at three different parks, twelve least squares equations were tested.

Although numerous weather variables within the equations were statistically significant at the .90 level of confidence, they did not account for a great deal of the variation around the mean of the dependent variables. The coefficient of determination (R^2) for the equations ranged between a low of .0494 and a high of .2126. The activity which appeared to possess the best goodness of fit was that of swimming. Sightseeing from car equations generally had the lowest R^2 values, and those of picnicking and walking to scenic points had intermediate R^2 values. Waterloo State Recreation Area, representing intermediate-class parks, showed the least variation in goodness of fit, e.g., R^2 values ranged between .1275 and .1616.

Activity equations from the other two parks exhibited a wider range of R^2 values.

No major patterns of significant independent variables could be discerned through examination of the composition of least squares equations.

If the weather-recreational activity choice relationship could be quantified and combined with accurate, long range weather forecasts and other pertinent variables, forecasting models could be formulated. The "participation load" within activities could then be forecasted, and managers of recreation areas could adjust their operating schedule and staff coverage accordingly.

There is a need for further research into all aspects of the weather-recreational behavior relationship.

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CHAPTER I

THE PROBLEM

Introduction

Weather influences human behavior--this fact is self-evident. However, the exact significance and limiting effects of weather have not yet been determined. In fact, many attempts to model and describe the relationship between man and his environment conveniently ignore the effects of weather. The National Science Foundation, in its most recent Annual Report on Weather Modification, states:

> Relatively little is known about the processes of decision-making by which people respond to the normal variability of weather. The techniques for investigation are available, but the surface has scarcely been scratched with respect to what needs to be done. As the practicality of meaningful weather modification grows every day more promising, the social, economic, legal, and ecological implications involved demand an increasing share of attention. The human consequences of deliberate or inadvertent modification of natural processes must be understood and evaluated in advance. The extent and complexity of potential effects on human life and the ecology are only beginning to receive serious study by investigators in the many disciplines involved.[1]

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[1]National Science Foundation, Weather Modification--Tenth Annual Report for Fiscal Year Ended June 30, 1968 (Washington, D.C.: U.S. Government Printing Office, 1969), p. 141.

That aspect of human behavior in which the effects of weather should be most evident is in recreational or free time behavior. When an individual is free to choose his activities, variables such as weather will exert more influence upon the choice and corresponding behavior within the activity, than when the individual is obligated to a certain behavioral pattern; i. e., work activities are usually carried on regardless of weather whereas the atmospheric environment appears to exert more influence upon recreational participation. Weather influences should be even more evident if the free time activity is a form of outdoor recreation and is subject to disruption by atmospheric changes. Therefore, if one wishes to examine the effects of weather on human behavior, it seems reasonable that research concerned with the relationship between recreational behavior and weather would be of considerable importance.

Statement of the Problem

The problem is to ascertain the relationship which exists between weather and recreational activity choice. Specifically, is the choice of participation in selected outdoor recreation activities at a sample of Michigan state parks and recreation areas influenced by daily weather characteristics? If so, how much influence is exerted by different weather perceptions? Is the preconceived perception of the weather that is obtained from the previous day's forecast more important in affecting recreational activity choice than the actual weather at either the user's origin or at the park itself?

Many factors are thought to affect recreational activity choice. Do daily weather characteristics exert a significant influence upon the revealed preference for selected outdoor recreation activities?

Significance of the Problem

Human activities vary considerably in their sensitivity to different weather characteristics. While some activities can be undertaken within a wide range of atmospheric conditions, others are profoundly affected by the slightest change in weather.

> Our knowledge of these sensitivities, however, is inprecise and incomplete. . . . Much more work needs to be done before precise estimates of effects of changes in various weather parameters on given industries or activities can be developed, and before the impact of such changes on the economy as a whole can be traced.[2]

In the case of those activities which are weather sensitive, attempts have been made to accommodate to weather changes by

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[2]National Science Foundation, Human Dimensions of the Atmosphere (Washington, D.C.: U.S. Government Printing Office, 1968), p. 35.

reducing the uncertainty of their occurrence and by devising techniques to offset adverse effects. Weather forecasting is an attempt to reduce the uncertainty of weather events. Adverse effects can be counterbalanced through the construction of shelters and the creation of artificial atmospheres, e.g., picnic shelter, swimming pool enclosures. For the most part, man has concentrated his attention on accommodating to the weather. There is, however, a growing trend to attempt to modify the weather itself.

How do people decide which of several alternative means of accommodating to different weather parameters is the most appropriate? Much depends upon how they perceive these parameters, and on their perception of and attitudes towards various alternative adjustments to the physical elements. Relatively little is known, however, about such perceptions and attitudes. For example, what factors condition the manner in which people interpret and respond to information given in a weather forecast? In summary, little is known about how people use weather information.

Man's accommodation to his atmospheric environment reflects his perception of the effects of weather elements and his perception of the opportunities for adapting to them. The fact that he rejects some climatic regions[3] and accepts others indicates that

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[3]Climate is simply the prevailing or average weather conditions of a place as determined by the meteorological conditions over a period of years.

he finds it difficult or impossible to pursue certain activities where temperatures are extreme, the precipitation is too sparse or too heavy, or where winds are especially strong. Whether or not he rejects these types of climates, or how he accommodates to them, varies considerably from region to region, and reflects differing cultural backgrounds, levels of technology, levels of economic development, and so on.[4]

Very little is known about the importance of weather in influencing the choice of recreational activities and in governing behavior within those activities. Despite the fact that most outdoor recreation activities are directly subject to the weather, little research has focused on this relationship. Clawson recognized the problem when he stated:

> Even a modest acquaintance with outdoor recreation suggests that it is weather-sensitive--anyone who has had a picnic spoiled by a sudden downpour can testify to that. But we need to explore in just what ways, and at what stages in the recreation experience, weather is most influential; and we need further to consider the influence of climate, as well as that of weather, on outdoor recreation.[5]

If relationships between weather and recreational activity choice could be quantified, the information would be of more value

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[4]Ibid., p. 35.

[5]Marion Clawson, "The Influence of Weather on Outdoor Recreation," Human Dimensions of Weather Modification, Department of Geography Research Paper Number 105 (Chicago: University of Chicago, 1966), p. 184.

than merely to aid in describing general recreational behavior. Such information could be combined with that obtained from long range weather forecasts to construct a forecasting model. Then, the participation "load" within activities could be forecasted, and managers of recreation areas could adjust their operating schedule and staff coverage accordingly. Thus, the quantification of the inter-relation between weather and recreational activity choice could have management and economic implications.

As the use of weather modification techniques increases, more concern likely will be paid to the social and legal implications of such manipulations. Knowledge of the ways and extent to which normal weather characteristics affect recreational behavior will better equip the decision-maker to deal with policy questions related to the advantages and disadvantages of weather modification. Perhaps in the future it might be possible to even regulate use of some recreation areas through atmospheric manipulations.

Information about the influence of weather upon recreational activity choice could also prove to be a useful input to models of recreational behavior currently being formulated.

There is an increasing tendency to attempt to overcome the effects of weather in everyday life, e.g., enclosed shopping malls, improved all-weather clothing, air conditioning and improved heating. Although the movement to take one's weather-impervious living environment into the out-of-doors is gaining momentum (e.g., increase in sales and use of self-contained recreational vehicles), it is unlikely that outdoor recreational activities will ever be completely isolated from atmospheric influences.

Limitations of the Study

This study was conducted within the following limitations:

1. This study was limited to a few recreation areas, which are thought to be representative of the Michigan state parks system.
2. Only individuals whose recreational trips originated in selected areas of the State and who indicated participation in the following activities were considered in this study;
   a) sightseeing from car
   b) walking to scenic points
   c) picnicking
   d) swimming
3. The study was limited to recreational activity that took place during the period July 1, 1968, to September 5, 1968.
4. It was concerned with only those individuals entering a Michigan state park or recreation area by means of an

authorized entrance; specifically, an entrance that was regularly supervised by Michigan state park staff.

Assumptions

The following assumptions were made in this study:

1. It was assumed that through analysis of recreational activity participation records and weather records, it is possible to determine the influence of atmospheric conditions upon revealed preference[6] for selected recreational activities. The theory of revealed preference was originally proposed by Paul A. Samuelson to derive a consumer preference structure from actual market data.[7] While it has not, as yet, fulfilled the initial goals of preference structure explanation, the theory of revealed preference has "inspired fruitful research which finally showed how little of the rationale of classical theory of choice is reflected by the market behavior."[8] This study was not directly concerned

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[6] A revealed preference is an overt consumer choice indicating that the individual has selected a particular behavioral option. No information about the consumer is required except the apparent selective behavior.

[7] Paul A. Samuelson, "A Note on the Pure Theory of Consumer's Behavior," Economica, V (1938), 353-354.

[8] Nicholas Georgescu-Roegen, "Choice and Revealed Preference," Southern Economic Journal, XXI (1954), 129.

with formulating or testing a theoretical structure of consumer preferences. It did, however, borrow a principle from the revealed preference theory. That principle was that through observation of market behavior and a knowledge of the market conditions, it is possible to determine the influence that market characteristics exert upon consumers' choice.

2. It was assumed that reliable, valid results were obtained from a previous study entitled "Recreation Area 'Day-Use' Investigation Techniques: A Study of Survey Methodology Within Michigan State Parks."[9]

3. It was assumed that weather data obtained from the Michigan Office of the State Climatologist, from a review of newspapers issued during the period under study, and from records kept by the staff in each of the sample parks are valid.

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[9]Douglas Melvin Crapo, "Recreation Area 'Day-Use' Investigation Techniques: A Study of Survey Methodology Within Michigan State Parks" (unpublished M.S. Thesis, Michigan State University, 1969); and the expanded published version of that study: Douglas M. Crapo and Michael Chubb, Recreation Area Day-Use Investigation Techniques: Part 1, A Study of Survey Methodology, Technical Report Number 6, Recreation Research and Planning Unit (East Lansing, Michigan: Department of Park and Recreation Resources, Michigan State University, 1969).

Hypothesis

The specific hypothesis investigated in this study was that selected weather characteristics do not exert a significant influence upon the revealed preference for certain recreational activities at three Michigan state parks and recreation areas.

CHAPTER II

THE INFLUENCE OF WEATHER ON RECREATIONAL BEHAVIOR

The amount of available information relating recreational behavior to weather is extremely limited. Most of the existing information is nothing more than conjecture--and usually offered as an "aside" to the main issue under deliberation. If one wishes to hypothesize the form of a weather-recreational behavior relationship, it is, therefore, necessary to search for appropriate information in other fields of study.

General Behavioral Effects of Weather

It is generally recognized that weather and climate affect human behavior in pervasive ways. Studies have shown that the profitability of certain economic activities is very dependent upon fluctuations in the weather. Other investigations have indicated that some activity behavioral patterns are influenced by weather variations. Still others suggest that an individual's performance and psychological mood are influenced by weather patterns. Weather does have an effect upon our lives, but is the effect theoretically predictable?

Individual Variations in Response

A range of individual responses to atmospheric changes within any group of persons must be anticipated. As one would expect, there are many typical reactions. Perhaps a large number of people in a group will experience the same reaction or sensation. In contrast, a few may experience a completely different reaction. In any event, it is important to realize that we are dealing with the interactions of several very complex systems. Atmospheric fluctuations, the complex responses of the human body and the even more complex responses of a group of individuals combine in a complicated relationship. Therefore, some responses can be established only in a statistical sense; i.e., they apply validly to a large group of persons, yet some individuals in that group may show very divergent responses.

Although it has been proposed that divergent weather responses can be attributed to different individual metabolic rates,[1]

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[1] H. E. Landsberg, Weather and Health (Garden City, New York: Anchor Books, 1969), p. 34.

there is some evidence that such a relationship does not exist.[2]

Types of Behavioral Response

Weather and climate arouse three types of human response: adaptation, movement, and adjustment. Man has adapted physiologically to wide ranges of temperature, precipitation, and wind.[3] The physiological adaptations have, in turn, created psychological ones. Several studies relate energy levels and success of various civilizations directly to climatic factors.[4]

Movement may be a permanent or temporary response to harsh climatic conditions. Temporary movement, for example, may occur in response to severe weather events, or to extreme winters or hot, humid summers.

Weather and climate have little or no perceptible effect on the type of activity pursued or the rhythm of its pursuit for many

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[2] A. P. Gagge, J. A. J. Stolwijk, and B. Saltin, "Comfort and Thermal Sensations and Associated Physiological Responses During Exercise at Various Ambient Temperatures," Environmental Research, II (April, 1969), 228.

[3] National Science Foundation, Human Dimensions of the Atmosphere, op. cit., p. 32.

[4] For instance: Clarence A. Mills, World Power and Shifting Climates (Boston: Christopher Publishing House, 1963); E. Huntington, Civilization and Climate (New Haven: Yale University Press, 1924); and C. E. P. Brooks, Climate Through the Ages (New Haven: Yale University Press, 1928).

types of human activity, and so no response is required. Some activities, however, are affected in important ways by variations in atmospheric conditions; and men try to <u>adjust</u> to these changes in various ways. They may permanently insulate themselves from the effects of weather, as in constructing stormproof buildings or developing drought-resistant crops; or they may temporarily offset the effects by wearing appropriate clothing or rescheduling an activity, as in delaying a harvest or postponing a vacation trip.

With the recent improvements in technology, there is an increasing interest in adjusting weather characteristics to the established behavioral patterns of man. It has also been found that certain human activities affect weather and climate. For example, large urban areas are consistently a few degrees warmer in temperature than the surrounding region. The drainage of wetlands and creation of artificial impoundments of water can bring about changes in the weather and climatic conditions of adjacent areas.

Behavioral response to weather can be examined within the framework of adaptation, movement and adjustment. However, the question remains, "How should the elements of weather be studied in order to ascertain their effects upon behavior?"

Methods of Combining Weather Elements for Study

Elements of weather usually combine in discernible patterns. For instance, a low atmospheric pressure generally occurs in combination with high temperature and relative humidity, and with general cloudiness and precipitation. Several attempts have been made to devise a system of weather classifications within which human behavior could be studied.[5] None of the proposed schemes has met with overwhelming support, most likely due to the difficulty in reducing the numerous combinations of weather elements to a reasonable number of classifications.

Several indices have been developed for use in relating combinations of weather elements to specified human reactions, e.g., comfort indices for "average" individuals and for those individuals suffering from weather-sensitive disorders. Sargent and Zahari have stated that considerable caution must be used when relating indices derived from climatic chambers to the forecasting of man's reaction

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[5] See, for example: W. J. Maunder, "A Human Classification of Climate," Weather, XVII, No. 1 (1962), 3-12; Robert L. Hendrick, "An Outdoor Weather-Comfort Index for the Summer Season in Hartford, Connecticut," Bulletin of the American Meteorological Society, XL, No. 12 (1950), 620-623; and K. J. H. Buettner, "Human Aspects of Bioclimatological Classification," Biometeorology: Volume 1 (New York: Macmillan Company, 1962), pp. 128-141.

to the weather.[6] They implied that a medical-meteorological forecast could not be explicitly stated in a mathematical formula; that it was, in reality, a value judgment.

Most indices have been developed for use in controlled atmospheres, and the ones which could be used in an outdoor setting appear to have been formulated using convenient, available weather elements.

In summary, there is no generally accepted method of combining weather elements which could be used in the analysis of the weather-recreational behavior relationship.

Human Reactions to the Weather

Physiological Responses.--The majority of the research dealing with weather and its effects upon man has focused on the physiological relationship. Since the time of Hippocrates the medical profession has recognized that weather influences health. In turn, health and comfort influence behavior and, hence, affect recreational participation. The largest group of weather sufferers consists of those persons afflicted by ailments grouped under the general heading of rheumatism. Atmospheric pulsations combined with falling

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[6] F. Sargent and Daniel S. Zahari, "Medical Meteorological Forecasting: An Application of Fundamental Bioclimatological Concepts," International Bioclimatological Congress: 1960 Proceedings (New York: Permagon Press, 1962), p. 215.

temperatures and rising humidity will generally cause discomfort to those suffering from rheumatism. Weather also aggravates another complex of diseases commonly referred to as asthma. The distribution of pollen, a main causal factor in asthma disorders, is directly influenced by the weather. Weather may also aggravate or ameliorate the course of other chronic diseases, e.g., heart and circulatory ailments.[7]

Performance and Deviant Behavior Relationships.--Little research deals with the normal behavioral response to weather conditions. In an early study of the influence of weather on deviant behavioral occurrences, Dexter related public school absences, bank clerical errors, arrests for assault and murder, suicides, sickness, and arrests for drunkenness to selected weather characteristics in the cities of New York and Denver. He found the following relationships:

1. As wind velocity increased there appeared to be an increase in the occurrence of all forms of deviant behavior examined.[8]

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[7] A complete, comprehensive summary of the physiological consequences of weather may be found in Medical Biometeorology by S. W. Tromp.

[8] Edwin Grant Dexter, Weather Influences (New York: Macmillan Company, 1904), p. 257.

2. With an increase in temperature there was a corresponding increase in arrests for assault.[9] Yet, during the same temperature increases it was noted that the suicide rate and the number of arrests for drunkenness decreased. An extreme temperature, either hot or cold, was found to induce an increase in public school absences and bank clerical errors.[10]

3. Extreme deviations from the usual conditions of atmospheric pressure and humidity appeared to elicit an increase in extraordinary behavior.[11] An interesting exception to this rule proved to be the suicide rate; contrary to general opinion, the number of suicides decreased during extreme weather conditions.[12]

4. An increase in sky cover, which refers to the proportion of sky area covered by clouds, was associated with a decrease in the number of most deviant behavior occurrences. Exceptions to this rule were bank clerical errors and the incidence of sickness, both of which increased with cloudiness.[13]

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[9] Ibid., p. 146.

[10] Ibid., p. 249.

[11] Ibid., p. 253.

[12] Ibid., p. 218.

[13] Ibid., p. 262.

5. Precipitation elicited identical responses to those previously noted with sky cover.[14]

The relationship between deviant behavior and weather was remarkably similar in both New York and Denver. Differences between the two cities were most evident in the reaction to relative himidity, wind velocity and occurrence of low temperatures. Since these weather characteristics were the ones for which New York and Denver showed the greatest difference in day-to-day readings, the minor disparities in weather influence were not unexpected.

Several recent studies have supported Dexter's findings. Performance studies have found that telegraphers make considerably more mistakes when surrounding temperatures climb.[15] School children in rooms with carefully controlled atmospheres make fewer mistakes in their tests.[16] A study of reform school abscondings has linked the number of escapes directly to the number of daily hours of sunshine.[17] Even motor skill reaction times are influenced by the weather.[18]

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[14] Ibid.

[15] Landsberg, op. cit., p. 93.

[16] Ibid.

[17] R. V. Clarke, "Seasonal and Other Environmental Aspects of Abscondings by Approved School Boys." British Journal of Criminology, VII, No. 2 (1967), 204.

[18] Landsberg, op. cit., p. 95.

Identification of a "Neutral Zone"

Throughout the literature relating weather to human behavior there is one similarity--a "neutral zone" exists within which changes in the weather do not elicit a behavioral change. Usually the "neutral zone" is not explicitly identified, but a few recent studies have attempted to ascertain the limits of such a zone. Gagge, Stolwijk and Hardy found that there is a temperature range where man reacts in a neutral manner.[19] A "comfort zone" between 28° and 30° Centigrade was identified in which there were no temperature regulatory efforts such as sweating, vasoconstriction, and vasodilation. Also, the sense of discomfort to temperature increased more rapidly with colder conditions than with warmer ones. The authors stated in summary that man's immediate behavior can be predicted through knowledge of changes in temperature.[20] Heating and air conditioning engineers regularly use a predetermined neutral comfort zone in assessing the amount of equipment required for buildings. It has also been found that the child conception rate

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[19] A. P. Gagge, J. A. J. Stolwijk, and J. D. Hardy, "Comfort and Thermal Sensations and Associated Physiological Responses at Various Ambient Temperatures," Environmental Research, I (June, 1967), 19.

[20] Ibid., p. 20.

increases during the generally "neutral" temperature months of Spring and Autumn.[21]

To summarize, it is evident that the relationship between weather and human behavior is extremely complex. There has been no systematic attempt to subject the relationship to intensive analysis. Instead, the studies completed to date have generally considered small, unrelated problems with little attention being given to respective position within a larger system of relationships.

The Relationship of Weather to Recreational Behavior

The factors which are believed to influence participation in recreational activities are so numerous and interrelated that isolation and examination is unlikely at the present time. Human behavior in general is influenced by a composite of forces, and the relationship between causal factors and eventual human behavior still basically remains an unknown quantity.

Assuming that an individual has free time available for recreational participation, the choice of activities can be considered to be influenced by three groups of factors: personal characteristics of the individual, e.g., age, sex, previous recreation education and

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[21] Ellsworth Huntington, Season of Birth (New York: John Wiley and Sons, Inc., 1938), p. 130.

experience; social environment, e.g., primary group memberships, secondary group memberships, social mores; and the physical environment, e.g., individual's life-space, recreational opportunities, and weather. It is probable that the factors within each of the three broad groups interact in varying combinations and degrees of intensity to influence recreational activity choices.

Weather is merely one of the factors within the physical environment grouping which might influence recreational activity choice. In a year-long study of pleasure boat launchings on an Arkansas reservoir, Dowell found that mean daily temperature and precipitation were associated with 63.69 per cent of the variation in boat launchings.[22] When daily wind velocity and atmospheric pressure range were added into the multiple linear regression equation, all four meteorological factors had a combined coefficient of determination (R^2) of .6435.[23] Various other authors mention that weather exerts an important influence upon recreational behavior, but the relationship has not received further quantitative investigation.

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[22] Carroll Davis Dowell, "The Relationship of Reservoir Pleasure Boating to Selected Meteorological Factors" (unpublished Ph.D. Dissertation, Texas A and M University, 1970), p. 49.

[23] The square of the multiple correlation coefficient, the coefficient of determination (R^2), may be defined as the proportion of the sum of the squared deviations from the mean of the dependent variable accounted for by the independent variables.

Atmospheric elements were found to exert a definite influence upon pleasure boating in Arkansas. Does the extent of the influence remain the same for other recreational activities and in other regions of the country?

Activity and Regional Variation

Participation in outdoor recreation is thought to be dependent upon a certain range of temperature, sunshine, humidity, wind velocity, and other atmospheric factors, if it is to be tolerably enjoyable. This "neutral zone" of tolerability varies from activity to activity. For example, one would suspect that the "neutral range" of weather tolerance for participation in swimming is smaller than the same neutral range for participation in walking for pleasure. Dowell found that the majority of pleasure boating participation occurred within certain broad meteorological ranges:

> Approximately 90 per cent of the boat launchings occurred on days with a daily mean temperature range between 56° and 86° Fahrenheit; 81 per cent occurred on days with 45 miles or less of daily total wind [velocity]; 90 per cent occurred on days with less than 0.50 of an inch of precipitation; and 87 per cent occurred on days with barometric pressure change between -0.10 and 0.10 inches.[24]

Dowell's findings could be expanded so as to define a "neutral zone" of weather tolerance for the activity of pleasure

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[24] Ibid., pp. 48-49.

boating. With detailed investigation, similar ranges could be identified for other recreational activities.

One would also suspect that the weather-sensitivity of outdoor recreation participation varies from region to region. For instance, rain occurring in a region which has only twenty rain-days annually (e.g., in the southwestern section of the United States) will likely have more influence upon human behavior than rain of the same intensity and duration occurring in a region which has one hundred rain-days annually (e.g., in the Pacific Northwest). Through research, "weather-sensitivity regions" could be identified in which the behavioral reaction of recreationists to atmospheric changes is relatively homogeneous. A starting point for such a study might be the identification of regions with relatively homogeneous climates.

Since weather and climate influence the distribution of natural resources, they also define the types of recreational activities which may be pursued together with the respective seasons for pursuing those activities. Thus, the choice of outdoor recreation activities within that climatic region is directly controlled by the weather.

Recreational Activity Choice

The recreation experience consists of several phases which differ in weather-sensitivity. Clawson has expressed the relationship as follows:

> [The recreation experience] . . . consists of five interrelated sequential stages: (1) anticipation or planning, when the person or family considers what to do, where to go, when, what to take, how much time and money to spend, and the like; (2) travel from home to the site; (3) on-site experiences, which have typically had all the attention in the past; (4) travel home again; and (5) recollection, when one relives the earlier experiences, and perhaps reinterprets them differently than he did at the time. The first phase (planning) typically takes place in the recreationist's home or at least in his home town, typically it is where he spends more than half of all the money required for the whole experience, and is likely to be largely indifferent to weather, except as he subconsciously projects the weather then prevailing into the later experience. The fifth phase (recollection) also takes place at home, or in the home town, is likely to cost relatively little in money but may consume a lot of time, and is highly weather-indifferent. The second and fourth phases, the travel parts, take place over a range of territory, sometimes a very wide one, cost considerably in both time and money, and are modestly weather sensitive--directly, to about the same degree as any travel, but perhaps, at least during the going stage, psychologically highly anticipatory of weather conditions expected to prevail at the site. The third or on-site phase is the most highly weather sensitive of all. . . .[25]

The majority of completed recreation research has been concerned only with the on-site phase of the recreation experience. However, when investigating recreational activity choice it is desirable to consider additional recreational experience phases.

There is some question as to whether or not individuals are conscious of the effects of weather on their behavior. There is a definite possibility that weather may be regarded as unchangeable,

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[25] Clawson, "Influence of Weather," op. cit., p. 184.

and even though an individual may adapt his behavior to existing weather conditions, he may not be conscious of the overall influence of weather on his life. Therefore, it is likely that the use of direct questioning (e.g., interview) about the influence of weather would yield data of questionable validity. If a form of direct questioning cannot be used validly, the only phase of the recreational experience which could be investigated to obtain activity choice data would be the on-site phase. The individual's actions on the site will reveal his preferences among alternative recreational activities. Weather elements could then be related to the revealed preferences and the desired information could be obtained without the risk of using opinions instead of facts.

If evidence can be found to indicate that choice of outdoor recreation activities is predetermined, and that the potential participant waits in anticipation for the occurrence of that free time in which he has planned the recreation activity, then a case may be made for stating that the weather influence may not be great in any phase. For the majority of the population, free time for recreation is rigidly controlled as to timing; one must go when he has free time, regardless of whether weather is favorable or not. If, however, it can be shown that most outdoor recreation participation is impulsive (spur-of-the-moment) with little preplanning, weather may play a more important part in the activity choice.

A major question relative to the issue of timing remains unanswered: Does the inability to indulge in a recreational activity at the precise time one wishes to do so result in a lower annual participation or merely in a deferred experience?

CHAPTER III

DATA COLLECTION

In order to determine the importance of weather in influencing recreational activity choice, two types of data are required. The first type is concerned with the recreation participant --his revealed preference for various activities. Second, data are needed about the various weather elements which might prove to be influential. There is a possibility that a park user could be influenced by weather forecasts, weather conditions over his home, and ultimately by the atmospheric conditions over the park. Therefore, all three sources of data should be analyzed. The analysis should not only delineate those weather elements which have a significant effect upon recreational activity choice, but should also indicate how much influence is exerted.

The possibility of a relationship between weather and recreational behavior had been suspected by the author while conducting a previous study for, and with the assistance of, the Parks

Division of the Michigan Department of Natural Resources.[1] Although directly concerned with designing and testing a system for collecting data about Michigan state park users, a result of the study was the generation of user data. Among data collected were responses indicating preferences for available recreation activities. In conjunction with the collection of user data at selected sample parks, a daily record of weather at each of the parks was also maintained. The origin of each of the respondents was among the user data collected, and since the Weather Bureau of ESSA[2] records daily weather forecasts and conditions throughout the United States, origin weather data could be obtained. It was possible, therefore, to obtain all of the data required for this study from secondary sources. On that basis, data procurement and preparation were initiated.

Collection of Data Indicating Revealed Preference for Recreation Activities

A detailed description of the design, implementation, and results of the park-user data collection system is contained in another source,[3] and will merely be summarized in this section.

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[1] Crapo, op. cit.

[2] ESSA is the contraction commonly used for the Environmental Science Services Administration, an agency within the U.S. Department of Commerce. The Environmental Data Service and the Weather Bureau are two divisions within ESSA.

[3] Crapo, op. cit.

Selection of Sample Parks

Limited research funds necessitated the selection of a sample of parks to represent all Michigan state parks and recreation areas.[4] The stratification scheme proposed by Clawson based upon park location, management philosophy and use-intensity was used as the foundation for placing all Michigan state parks in one of three different classifications.[5] A series of meetings were held with representatives of the Division of State Parks, and the sample parks outlined in Table 1 and Figure 1 were chosen as both representative of the park system and "administratively feasible" enough to be included within the study.

TABLE 1.--Representative Michigan State Parks in Which User Data Was Collected.

Class	Park
1. User-oriented area	Holland State Park
2. Intermediate area	Waterloo State Recreation Area, Portage Lake Unit
3. Resource-based area	Tawas Point State Park

[4]For convenience, hereafter the term "park" will be used to represent any outdoor recreation area or park.

[5]Marion Clawson, Land and Water for Recreation (Chicago: Rand McNally and Company, 1963), pp. 13-16.

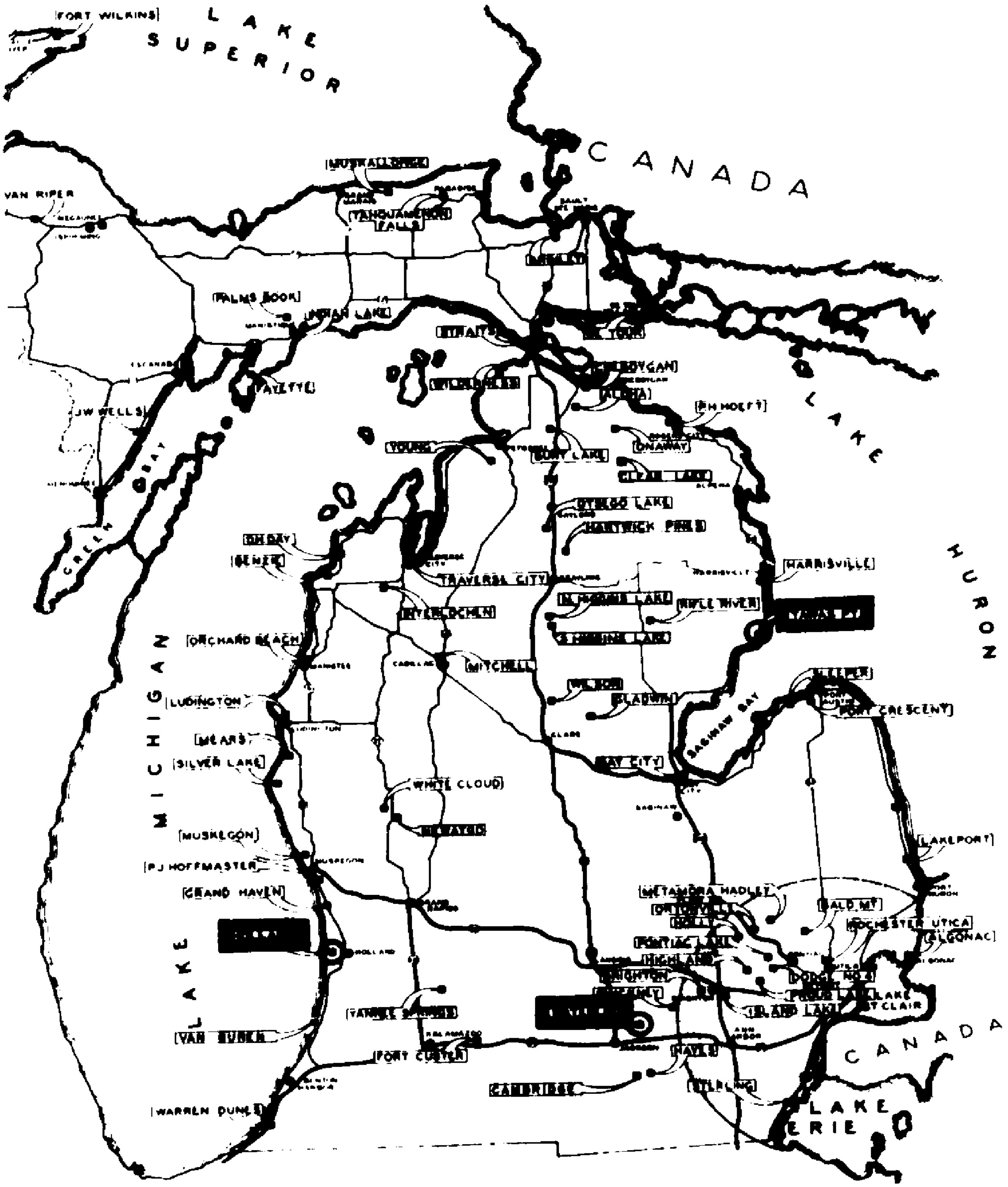

FIGURE 1. -- Location of Sample Parks in Relation to Other Michigan State Parks and Major Highway Systems.

An implicit assumption, carried over from the previously-conducted "day-use" study,[6] was that the parks analyzed in this study were representative of all Michigan state parks and recreation areas for each particular class as proposed by Clawson.

The activities offered at each of the sample parks are relatively similar, with the beach areas providing the focus for use. The following descriptive information was obtained from Division of State Parks publications and from visits to the parks by the author.

Holland State Park.--This popular lakeshore park consists of 142 acres located in Ottawa County, seven miles west of the town of Holland. Against a backdrop of towering sand dunes, it features an excellent one-quarter mile beach on Lake Michigan.

Day-use facilities are centered around the beach and include a food concession, bathhouse, and numerous picnic tables. The camping area is located in sparse woods and contains 334 sites, 278 of which have electrical connections. Showers, a laundry, a small food store and a library are available to campers.

In 1968, approximately 1,189,200 visits were made to this park.

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[6] Crapo, op. cit., p. 8.

Waterloo State Recreation Area. --Located in Jackson and Washtenaw Counties eight miles east of the City of Jackson, Waterloo State Recreation Area is readily accessible from I-94, U.S. 127, M-52, and M-106.

The largest of Michigan's state recreation areas, Waterloo contains 15,987 acres of state-owned land. The state-owned land is not one contiguous holding, but is scattered in various-sized units throughout the large tract identified as Waterloo State Recreation Area. Privately-owned inholdings constitute nearly one-half of the total area within the boundaries of the Recreation Area.

Numerous day-use sites are located throughout the recreation area but the largest of these is the Portage Lake Unit. This site contains a swimming beach on Big Portage Lake, bather's changing facilities, food concession, boat launching ramp, modern toilets, 150 picnic tables and 50 stoves.

The largest campground within Waterloo State Recreation Area is also located at the Portage Lake Unit. This camping facility contains 198 modern campsites with electricity, flush toilet facilities, sanitation station, park store, library, and numerous nature and hiking trails. Supervised nature study programs are offered to visitors.

More than half of the 838,734 visits to Waterloo State Recreation Area in 1968 were recorded at the Portage Lake Unit.

Tawas Point State Park. --Tawas Point State Park is located in Iosco County, three and a half miles southeast of the town of East Tawas. The park fronts on both Lake Huron and Tawas Bay, with the day-use area located on the Lake Huron shore.

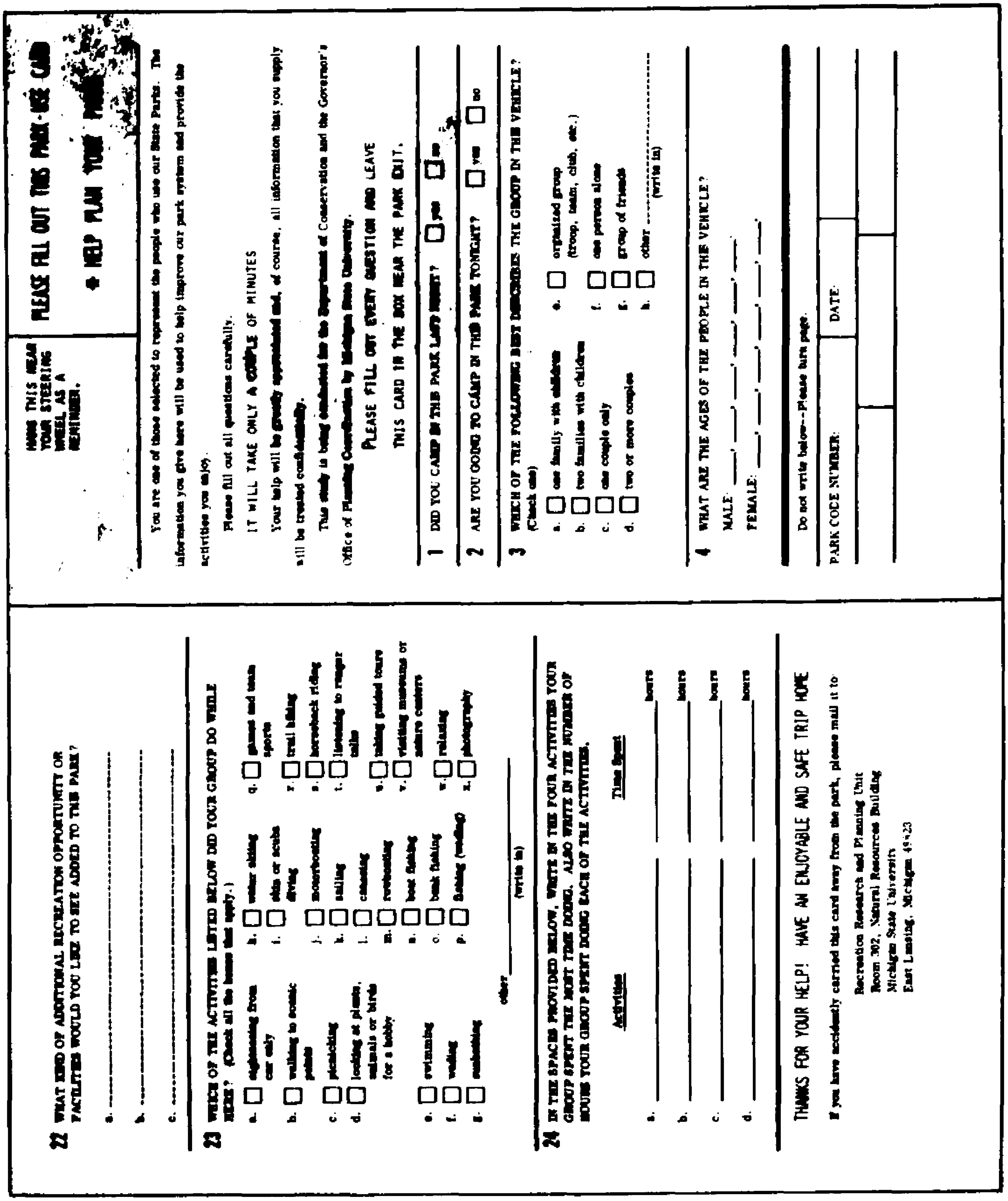
The park is in the shape of a sandy hook which extends into Lake Huron and forms Tawas Bay. More than two miles of wide, sandy beach that is continually cooled by lake breezes is available to park users. Day-use facilities include a swimming beach, boat launching ramps, hiking trails, picnic tables, and modern restrooms. A children's playground is equipped with slides, swings, and other apparatus, and a bather's change building is conveniently located near the beach.

The 170 acre park also includes a 202 site campground which is furnished with electricity, toilets, showers and a sanitation station.

Approximately 150,700 visits were made to this park in 1968.

Procurement and Evaluation of Data

The self-enumerative questionnaire was selected as the most appropriate data collection instrument. The questionnaire shown in Figure 2 was designed to collect information in three



HANG THIS NEAR YOUR STEERING WHEEL AS A REMINDER.

PLEASE FILL OUT THIS PARK-USE CARD

* HELP PLAN YOUR PARKS

You are one of those selected to represent the people who use our State Parks. The information you give here will be used to help improve our park system and provide the activities you enjoy.

Please fill out all questions carefully.

IT WILL TAKE ONLY A COUPLE OF MINUTES

Your help will be greatly appreciated and, of course, all information that you supply will be treated confidentially.

This study is being conducted for the Department of Conservation and the Governor's Office of Planning Coordination by Michigan State University.

PLEASE FILL OUT EVERY QUESTION AND LEAVE THIS CARD IN THE BOX NEAR THE PARK EXIT.

1 DID YOU CAMP IN THIS PARK LAST NIGHT? ☐ yes ☐ no

2 ARE YOU GOING TO CAMP IN THIS PARK TONIGHT? ☐ yes ☐ no

3 WHICH OF THE FOLLOWING BEST DESCRIBES THE GROUP IN THE VEHICLE? (Check one)

a. ☐ one family with children
b. ☐ two families with children
c. ☐ one couple only
d. ☐ two or more couples
e. ☐ organized group (troop, team, club, etc.)
f. ☐ one person alone
g. ☐ group of friends
h. ☐ other ______ (write in)

4 WHAT ARE THE AGES OF THE PEOPLE IN THE VEHICLE?

MALE: ___, ___, ___, ___, ___, ___

FEMALE: ___, ___, ___, ___, ___, ___

Do not write below--Please turn page.

PARK CODE NUMBER: | DATE:

22 WHAT KIND OF ADDITIONAL RECREATION OPPORTUNITY OR FACILITIES WOULD YOU LIKE TO SEE ADDED TO THIS PARK?

a. ______

b. ______

c. ______

23 WHICH OF THE ACTIVITIES LISTED BELOW DID YOUR GROUP DO WHILE HERE? (Check all the boxes that apply.)

a. ☐ sightseeing from car only
b. ☐ walking to scenic points
c. ☐ picnicking
d. ☐ looking at plants, animals or birds for a hobby
e. ☐ swimming
f. ☐ wading
g. ☐ sunbathing
h. ☐ water skiing
i. ☐ skin or scuba diving
j. ☐ motorboating
k. ☐ sailing
l. ☐ canoeing
m. ☐ rowboating
n. ☐ boat fishing
o. ☐ bank fishing
p. ☐ fishing (wading)
q. ☐ games and team sports
r. ☐ trail hiking
s. ☐ horseback riding
t. ☐ listening to ranger talks
u. ☐ taking guided tours
v. ☐ visiting museums or nature centers
w. ☐ relaxing
x. ☐ photography

other ______ (write in)

24 IN THE SPACES PROVIDED BELOW, WRITE IN THE FOUR ACTIVITIES YOUR GROUP SPENT THE MOST TIME DOING. ALSO WRITE IN THE NUMBER OF HOURS YOUR GROUP SPENT DOING EACH OF THE ACTIVITIES.

Activities	Time Spent
a. ______	______ hours
b. ______	______ hours
c. ______	______ hours
d. ______	______ hours

THANKS FOR YOUR HELP! HAVE AN ENJOYABLE AND SAFE TRIP HOME

If you have accidently carried this card away from the park, please mail it to:

Recreation Research and Planning Unit
Room 302, Natural Resources Building
Michigan State University
East Lansing, Michigan 48823

FIGURE 2. --Questionnaire Employed in Park-User Data Collection. A View of the Front and Back Pages in Unfolded Condition. Actual Size Was 8½ × 11 Inches.

5 WHAT KIND OF VISIT IS THIS FOR YOUR GROUP? (Check one)

- a. ☐ one day outing or trip
- b. ☐ part of a major annual vacation
- c. ☐ part of two or more shorter vacations
- d. ☐ part of an overnight trip
- e. ☐ part of a combined business trip and vacation
- f. ☐ other ______________ (write in)

6 WHERE IS YOUR PRESENT HOME? (Exact street address not required)

______________ Town or City ______________ County ______________ State

7 WHAT IS YOUR ZIP CODE? ______________

8 HOW MUCH TIME DID YOU SPEND TRAVELING TO THE PARK TODAY? (NOT INCLUDING "STOPOVER" TIME ALONG THE WAY.)

______________ Hours ______________ Minutes

9 HOW MANY MILES, BY THE MOST DIRECT ROUTE, IS THIS PARK FROM YOUR HOME?

______________ Miles

TO BE ANSWERED BY THE DRIVER OF THE VEHICLE

10 WHAT IS THE SEX AND APPROXIMATE AGE OF THE "HEAD OF YOUR FAMILY"?

AGE? ________ years SEX? ☐ male ☐ female

11 WHAT DOES THE "HEAD OF YOUR FAMILY" DO FOR A LIVING?

______________ Occupation (write in)

12 WHICH OF THE ANSWERS BELOW BEST INDICATES THE TOTAL NUMBER OF YEARS OF EDUCATION COMPLETED BY THE "HEAD OF YOUR FAMILY"? (Check one answer)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12

☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 or more

13 WHICH OF THE FOLLOWING BEST DESCRIBES THE TOTAL INCOME OF YOUR FAMILY LAST YEAR (Check one)

- a. ☐ under $3,000
- b. ☐ $3,000-$5,999
- c. ☐ $6,000-$7,999
- d. ☐ $8,000-$9,999
- e. ☐ $10,000-$14,999
- f. ☐ $15,000-$24,999
- g. ☐ $25,000 and over

14 HOW MANY DAYS HAVE YOU USED THIS PARK IN 1968?

- a. ☐ this is the first park visit
- b. ☐ 1-4 days
- c. ☐ 5-8 days
- d. ☐ 9-12 days
- e. ☐ 13-16 days
- f. ☐ 17-20 days
- g. ☐ 21-24 days
- h. ☐ over 24 days

HOW MANY DAYS HAVE YOU USED THE VARIOUS PARK SYSTEMS BELOW IN 1968? CHECK ONE ANSWER FOR EACH PARK SYSTEM.

	Park System	None	1-3 days	4-10 days	11-20 days	21-30 days	over 30 days
15	CITY	☐	☐	☐	☐	☐	☐
16	COUNTY and METROPOLITAN	☐	☐	☐	☐	☐	☐
17	STATE	☐	☐	☐	☐	☐	☐
18	NATIONAL	☐	☐	☐	☐	☐	☐

19 WHAT TIME DID YOU ENTER THE PARK? (Check one)

- a. ☐ 8:00-10:00 a.m.
- b. ☐ 10:00-noon
- c. ☐ noon-2:00 p.m.
- d. ☐ 2:00-4:00 p.m.
- e. ☐ 4:00-6:00 p.m.
- f. ☐ 6:00-8:00 p.m.
- g. ☐ 8:00-10:00 p.m.

20 WHY DID YOU CHOOSE THIS PARK RATHER THAN A DIFFERENT ONE?

____

DO NOT FILL OUT THE REMAINING QUESTIONS UNTIL JUST BEFORE YOU LEAVE THE PARK. ENJOY YOUR VISIT AND DON'T FORGET TO LEAVE THIS CARD IN THE BOX PROVIDED NEAR THE PARK EXIT.

21 HOW MANY HOURS DID YOU SPEND IN THE PARK TODAY? (Check one)

- a. ☐ 2 hours or less
- b. ☐ 2-4 hours
- c. ☐ 4-6 hours
- d. ☐ 6-8 hours
- e. ☐ 8-10 hours
- f. ☐ 10-12 hours
- g. ☐ 12 hours or more

FIGURE 2. --Continued. The Inside Pages of the Questionnaire.

general categories; socio-economic characteristics of the users, user origin and travel characteristics, and activity participation while in the park. Respondent sample size at each of the parks was then calculated, taking into consideration the analysis requirements.

Questionnaire dispersal was through distribution by the contact station ranger at the park entrance. A systematic sampling procedure with random starts was employed to distribute questionnaires to the designated sample units. Retrieval of the completed survey instruments was accomplished by means of voluntary deposit into a collection box placed near the park exit.

Of the total number of questionnaires handed out, approximately 63 per cent were returned. However, only 39 per cent were totally completed and were included in the analysis. Each sample park was then visited by interview teams and for a few days information was obtained from a census of park users. The data collected by voluntary deposit throughout the summer months was then compared by means of chi square and analysis of variance tests to the census data. It was found that at the 95 per cent confidence level the "voluntary deposit" data and the "census" data were from the same population, except for responses from questions relating to travel characteristics. Responses to the travel questions, which were characterized by large standard deviations, were the only ones that showed a statistically significant deviation between "voluntary deposit" data and "census" data.

Activities Selected for Analysis of Revealed Preference

Responses to Question 23, "Which of the activities listed below did your group do while here?" were used to indicate recreational activity preferences. The question contained twenty-five fixed-category response possibilities, and the recreationists merely had to indicate which of the listed activities were selected for participation.

In order to permit detailed sub-cell analysis, it was decided that those activities which had the largest response rates would be selected for further investigation. Other limitations such as financial support and available computer time dictated that no more than four individual activities were to be examined. A frequency distribution of the responses to Question 23 revealed that the following activities met the above criteria, and on that basis they were selected for inclusion in the analysis:

a. sightseeing from car

b. walking to scenic points

c. picnicking

d. swimming

The number of sample units which indicated a preference for the selected activities at each of the sample parks is contained in Table 2. Previously outlined limitations prohibited the analysis of combinations of the four activities, but participation rates for combinations are exhibited in Appendix A.

The four selected activities rank among the ten most popular outdoor recreation activities of Michigan residents.[7] The same popularity is in evidence throughout the United States,[8] and is predicted through to the year 2000.[9]

Compilation of Park Weather Data

Weather data at each of the sample parks were collected daily, with separate records being kept for morning and afternoon-evening conditions. Prior to study commencement, each sample park was visited and the staff was given instruction in the methods to be used in collecting data. The fixed-category form shown in

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[7] Michigan Department of Conservation, Michigan Outdoor Recreation Plan (Lansing: Recreation Resource Planning Division, Michigan Department of Conservation, 1967), p. I-K 210.

[8] U. S. Bureau of Outdoor Recreation, Outdoor Recreation Trends (Washington, D.C.: Government Printing Office, 1967), p. 8.

[9] Ibid., pp. 10-17.

TABLE 2. --Number of Sample Units Which Indicated Participation in Selected Activities[a]

Park	Total Number of Sample Units (N)	Activities			
		a. Sightseeing from Car Only	b. Walking to Scenic Points	c. Picnicking	d. Swimming
Tawas Point State Park	1158	403	562	377	644
Waterloo State Recreation Area, Portage Lake Unit	832	175	195	410	668
Holland State Park	950	228	286	289	548

[a] Sample units may have indicated participation within one, two, three, or all four selected activities. A summary of the number of respondents who indicated participation in combinations of the selected activities is contained in Appendix A.

Figure 3 was used to record weather conditions at the park. Temperature readings within each park were obtained from Fahrenheit thermometers located according to ESSA standards. Cloud cover, precipitation, and wind conditions were obtained from subjective ratings by the park staff.

The morning (A.M.) weather recordings were to be the average weather conditions over the park from sunrise until noon. Since the parks do not begin normal operation until 8:00 a.m., it is reasonable to assume that the morning weather data were the average weather conditions over the park from 8:00 a.m. until noon. The afternoon-evening (P.M.) weather data consisted of the average weather conditions at the park from noon until sunset.

Determination of Weather Data at the Park User's Origin

The origin of each sample unit could be identified through the response to Question 6, "Where is your present home?"[10] As one would expect, a perusal of the collected questionnaires revealed that hundreds of different communities were represented by the respondents. Staff and time limitations prohibited the collection of

[10] Since the study focus was on the day-user, the question was worded in such a manner as to facilitate day-user response. It is recognized that the question would not elicit the desired information from those respondents who did not spend the previous evening at their permanent residence.

SPECIAL WEEKLY PARK REPORT

DAY		WEATHER CONDITIONS				SAMPLE SIZE
		Temperature to the nearest 5°	Cloud Cover	Precipitation	Wind	Record number of cards handed out before noon and after noon.
		1. Low-L___ 2. High-H___ 3. Average-Avg___	1. Clear 2. Partly Cloudy 3. Overcast	1. None 2. Light Shower 3. Moderate " 4. Heavy "	1. None 2. Light Breeze 3. Gusty 4. Windstorm	Record number of cards received before noon and the cards received after noon.
MON	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___
TUES	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___
WED	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___
THUR	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___
FRI	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___
SAT	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___
SUN	AM	L___H___AVG___				CARDS OUT___ CARDS IN___
	PM	L___H___AVG___				CARDS OUT___ CARDS IN___

PARK CLOSED (Give time and reason.)

OTHER EXPLANATION! (Use other side.)

FIGURE 3. --Form Used to Record Daily Weather Conditions at the Sample Parks.

weather data for more than a few different origin areas, so an amalgamation scheme had to be devised.

Delineation of Origin Areas

Discussions with representatives from the Office of the State Climatologist revealed that areas within the State of Michigan could be identified within which weather characteristics were relatively homogeneous. It is on the basis of homogeneous weather zones that weather forecasts are formulated and issued by ESSA.

Since most Michigan counties usually have homogeneous weather characteristics throughout the entire county, user origins were classified according to counties. A 20 per cent sub-sample of collected questionnaires revealed that approximately 80 per cent of the total number of respondents at the sample parks came from counties in Southern Michigan. The results of the sub-sample are outlined in Tables 3, 4 and 5.

Using the state weather forecast zones,[11] associated weather information, and respondent origin patterns, the origin areas outlined in Figure 4 were formulated in consultation with the staff at the Office of the State Climatologist. Those respondents who did

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[11]A map of the weather forecast zones in the State of Michigan is included in Appendix B.

TABLE 3.--Michigan Counties of Origin Obtained from a Sub-Sample of User Questionnaires Collected at the Waterloo State Recreation Area, Portage Lake Unit.

Weekday Users		Weekend Users		Combined	
County	Number of Users	County	Number of Users	County	Number of Users
Wayne	47	Wayne	39	Wayne	86
Jackson	30	Jackson	22	Jackson	52
Ingham	19	Ingham	12	Ingham	31
Washtenaw	10	Washtenaw	12	Washtenaw	22
TOTAL	106	TOTAL	85	TOTAL	191
Number of Users Within the Entire Origin Sub-Sample					
113		93		206	
Percentage of the Entire Sub-Sample Originating in the Counties Listed Above					
93.8%		91.4%		92.7%	

TABLE 4. --Michigan Counties of Origin Obtained from a Sub-Sample of User Questionnaires Collected at Holland State Park.

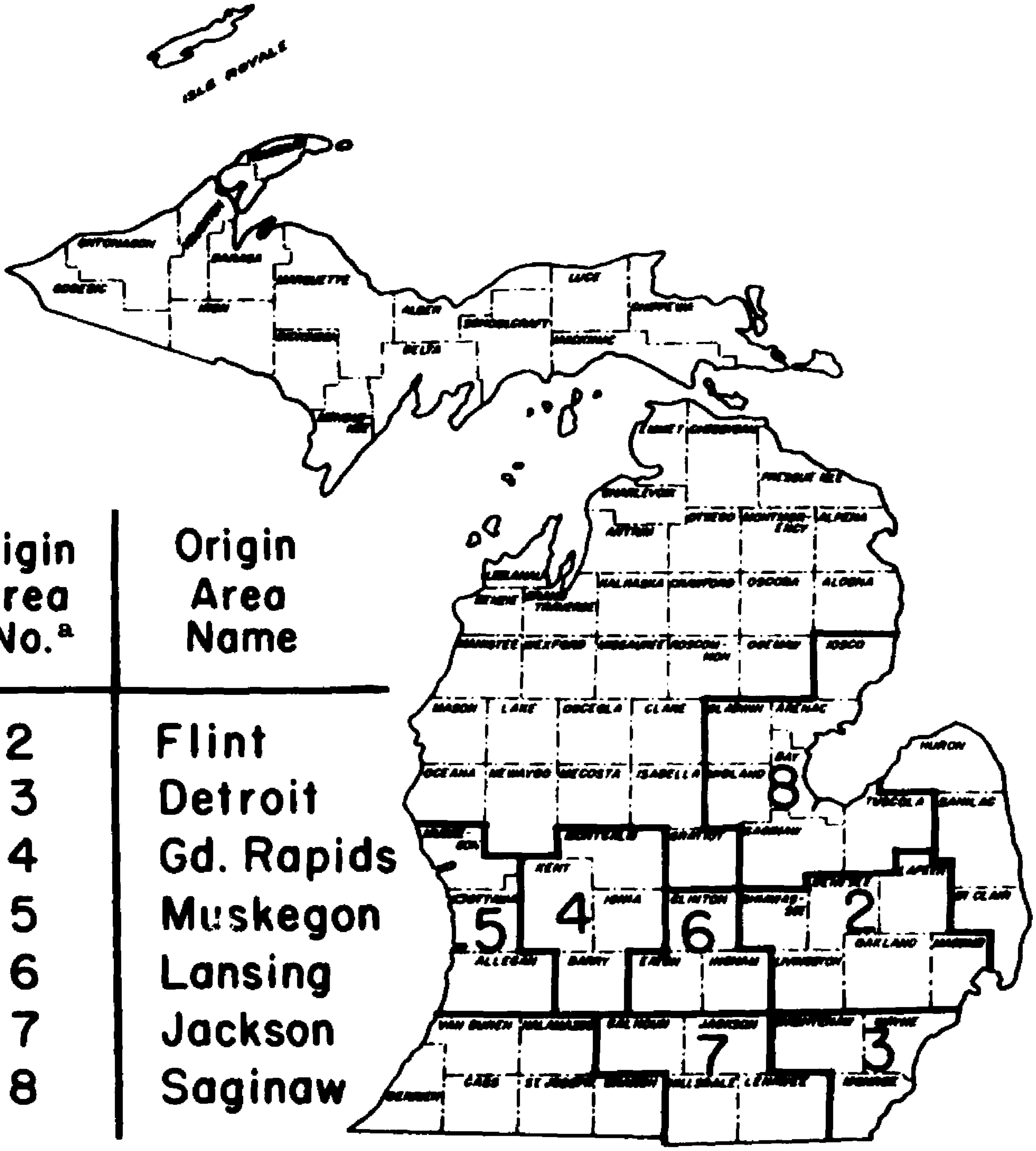
Weekday Users		Weekend Users		Combined	
County	Number of Users	County	Number of Users	County	Number of Users
Kent	37	Kent	48	Kent	85
Ottawa	34	Ottawa	34	Ottawa	68
Kalamazoo	8	Kalamazoo	10	Kalamazoo	18
Calhoun	7	Calhoun	8	Calhoun	15
TOTAL	86	TOTAL	100	TOTAL	186

Number of Users Within the Entire Origin Sub-Sample		
110	114	224

Percentage of the Entire Sub-Sample Originating in the Counties Listed Above		
78.2%	88.6%	83.0%

TABLE 5. --Michigan Counties of Origin Obtained from a Sub-Sample of User Questionnaires Collected at Tawas Point State Park.

Weekday Users		Weekend Users		Combined	
County	Number of Users	County	Number of Users	County	Number of Users
Genesee	42	Genesee	48	Genesee	90
Saginaw	32	Saginaw	45	Saginaw	73
Wayne	28	Wayne	26	Wayne	58
Jackson	10	Jackson	16	Jackson	26
TOTAL	112	TOTAL	135	TOTAL	247
Number of Users Within the Entire Origin Sub-Sample					
141		166		307	
Percentage of the Entire Sub-Sample Originating in the Counties Listed Above					
79.4%		81.3%		80.5%	



Origin Area No.[a]	Origin Area Name
2	Flint
3	Detroit
4	Gd. Rapids
5	Muskegon
6	Lansing
7	Jackson
8	Saginaw

FIGURE 4. --Origin Areas of Sample Park Respondents.

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[a]Due to data processing limitations, there was no "Number One" origin area designated.

not list their origin as being within the seven delineated origin areas were not considered in the analysis.

In each of the delineated origin areas, the weather station that collected the most detailed data was selected to provide the daily origin weather data.[12] Origin areas were named after the chosen weather stations.

Origin Area Daily Weather Data

The particular origin area daily weather factors which were to be included in the analysis were determined from a survey of recorded weather data, a review of literature, and past outdoor recreation experiences. The selected variables are categorized below and are listed in detail in the initial statistical model section of Chapter IV.

The daily origin area weather data were obtained from official ESSA Weather Bureau records. All weather data had been collected according to specifications which are standard for all

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[12]Weather Bureau Stations are rated according to the extent of staff training, the amount of ESSA supervision, the range of data collection equipment, and the hours of operation. The highest order weather stations are termed "first order." All origin area weather data were obtained from first order weather stations with two exceptions; data from second order stations, which is equivalent in quality to data from first order stations, were used for Jackson and Saginaw origin areas.

weather stations throughout the United States.[13] Three general sets of data were coded: daily meteorological conditions--generally consisting of the average conditions at that particular origin area during the entire day; 7:00 A.M. weather conditions--specific weather conditions which existed at 7:00 a.m.; and the same weather factors at 1:00 P.M.

Origin Area Forecast Weather Data

Since the original forecasts, as issued, had been discarded by ESSA, forecast weather data for each of the designated origin areas were obtained from local newspapers. The newspaper with the largest daily circulation throughout each respective origin area was selected to provide forecast weather data.[14] Newspapers used are listed in Table 6.

Chapter IV will deal with the analysis of the data and will discuss the results of the investigation.

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[13] For an explanation of these specifications see: U.S. Department of Commerce, Surface Observations: Federal Meteorological Handbook No. 1 (Washington, D.C.: U.S. Government Printing Office, 1970); or from the same source, Instructions for Climatological Observers, Circular B, Eleventh Edition (January, 1962).

[14] Daily circulation information was obtained from Editor and Publisher's Yearbook, 1969, Encyclopedia of the Newspaper Industry (New York: Editor and Publisher Co., Inc., 1969).

TABLE 6. --Newspapers Used to Provide Forecast Weather Data for Each of the Designated Origin Areas.

Origin Area	Origin Area Number	Newspaper with the Largest Daily Circulation within Each Origin Area
Flint	2	Flint Journal
Detroit	3	Detroit News
Grand Rapids	4	Grand Rapids Press
Muskegon	5	Muskegon Chronicle
Lansing	6	Lansing State Journal
Jackson	7	Jackson Citizen Patriot
Saginaw	8	Saginaw News

CHAPTER IV

ANALYSIS AND RESULTS

The method of analysis employed in this study was a variation of multiple linear regression. The use of this technique presented one major advantage over other analytical techniques: not only could those weather characteristics (independent variables) which exert a significant influence upon revealed preference for recreation activities (dependent variable) be identified, but the extent of that influence could also be estimated.

Caution must be exercised in the use of ordinary least squares because of the dichotomous nature of the dependent variable. Rather than the infinite number of values that the dependent variable is normally assumed to take, only two values were possible. For example, either a respondent chose to participate in swimming or he did not, he participated in picnicking or he did not, and so forth. Thus, the dependent variable y could only be written as:

$$y = \begin{cases} 1 \text{ if the respondent participated in the activity under consideration.} \\ 0 \text{ if the respondent did not participate in the activity.} \end{cases}$$

A general linear regression model is of the form

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \ . \ . \ . + \beta_i x_i + \epsilon$$

where:

y represents the dependent variable

$x_1, x_2, \ . \ . \ . \ x_i$ are specified as independent variables

$\beta_0, \beta_1, \beta_2, \ . \ . \ . \beta_i$ represent unknown population parameters that, in a sense, measure the weight assigned to the independent variables in prediction of the random response y

ϵ is a random component which explains the random fluctuation in y for fixed settings of $x_1, x_2, \ . \ . \ . \ x_i$.

It is assumed that the random variable ϵ has an expected value of zero and constant variance σ^2, and that repeated values of ϵ are independent of one another in repeated sampling.

Goldberger has shown that when y is dichotomous the assumption of homogeneous variance is untenable.[1] In such cases, it has been found that ϵ values are heteroscedastic: they vary systematically with estimated values of y and hence, with particular values of the independent variables.

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[1] Arthur S. Goldberger, Econometric Theory (New York: John Wiley and Sons, Inc., 1964), p. 249.

In order to obtain the best linear unbiased estimators with a dichotomous dependent variable, Goldberger has recommended a two stage least squares procedure.[2] First, the calculated values of $\hat{y}$ are obtained for each observation from an ordinary least squares solution. The $\hat{y}$ values are then used to calculate the term $\hat{y}(1 - \hat{y})$, an approximation of the variance of ϵ for that particular observation. Then values of the dependent and independent variables for each observation are transformed by dividing them by the corresponding $\hat{y}(1 - \hat{y})$ term. The final step consists of analyzing the transformed values by ordinary least squares to derive parameter estimates. By means of this procedure, not only are better unbiased estimators obtained, but the validity of the significance determination is increased.[3]

In view of the dichotomous dependent variable, the calculated value of y for any given x is interpreted as an estimate of the conditional probability of y, given x. That is, if x changes by one unit then the probability of y correspondingly changes by the estimated parameter value associated with that x.

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[2] Ibid., pp. 250-255. A concise description of Goldberger's procedure is outlined in J. Johnston, Econometric Methods (New York: McGraw-Hill Book Company, 1963), p. 228.

[3] Jan Kmenta, Professor, Department of Economics, Michigan State University. From discussions with the Author during April, 1970.

Initial Statistical Model

The initial statistical model specified in this analysis was as follows:

$$P_{jk} = b_0 + b_1X_1 + b_2X_2 \; . \; . \; . \; b_iX_i$$

where

P_{jk} = conditional probability of participating in activity j at park k

j =
- 1 for sightseeing from car
- 2 for walking to scenic points
- 3 for picnicking
- 4 for swimming

k =
- 1 for Tawas Point State Park
- 2 for Waterloo State Recreation Area, Portage Lake Unit
- 3 for Holland State Park

Characteristics of the Park User and Park Use

X_1 = total number of males in the vehicle

X_2 = total number of females in the vehicle

X_3 = total number of occupants in the vehicle, $X_1 + X_2$

X_4 = time spent traveling from user's origin to the park, to the nearest ½ hour interval

X_5 = number of miles, by the most direct route, from user's origin to the park, to the nearest mile

X_6 = total income from the previous year for the family of the driver of the vehicle, in dollars[4]

X_7 = time of park entry, to the nearest two hour interval[4]

X_8 = total number of hours spent in the park, to the nearest hour[4,5]

X_{13} = total number of activities for which participation was indicated

X_{14} = day of park entrance,[6] (weekend day park entrance-weekday park entrance)

X_{15} = time of park entrance, (P.M. park entrance-A.M. park entrance)

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[4]Coding categories are shown in Figure 2, page 36.

[5]Identification numbers 9-12 were reserved for dependent activity variables in the analysis.

[6]Parentheses are used to indicate the specific coding categories being considered in that variable. This treatment is used to ensure independence among categories, hence between variables, in a non-continuous, multi-category response, and is outlined in STAT Series Description No. 18 Analysis of Covariance and Analysis of Variance with Unequal Frequencies Permitted in the Cells, Agricultural Experiment Station, Michigan State University (November, 1969), pp. 4 and 28.

X_{16} = time of park entrance if respondent was a camper,[7] (P. M. park entrance - A. M. park entrance)

X_{17} = type of park user, (day user[8] - camper)

Park Weather Characteristics

X_{18} = minimum A. M. temperature, in F°

X_{19} = maximum A. M. temperature, in F°

X_{20} = average A. M. temperature, in F°

X_{21} = A. M. temperature range, in F°

X_{22} = minimum P. M. temperature, in F°

X_{23} = maximum P. M. temperature, in F°

X_{24} = average P. M. temperature, in F°

X_{25} = P. M. temperature range, in F°

X_{26} = A. M. sky cover, (clear - overcast)

X_{27} = A. M. sky cover, (partly cloudy - overcast)

X_{28} = A. M. precipitation, (none - heavy precipitation)

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[7] This one independent variable was found to be a linear combination of other independent variables in the regression equation. Therefore, it was dropped from the analysis to prevent matrix singularity.

[8] An individual was considered to be a day user if he used a park for recreational purposes and did not remain overnight within that park.

X_{29} = A.M. precipitation, (light showers - heavy precipitation)

X_{30} = A.M. precipitation, (moderate showers - heavy precipitation)

X_{31} = A.M. wind velocity, (no wind - windstorm)

X_{32} = A.M. wind velocity, (light breeze - windstorm)

X_{33} = A.M. wind velocity, (gusty - windstorm)

X_{34} = P.M. sky cover, (clear - overcast)

X_{35} = P.M. sky cover, (partly cloudy - overcast)

X_{36} = P.M. precipitation, (none - heavy precipitation)

X_{37} = P.M. precipitation, (light showers - heavy precipitation)

X_{38} = P.M. precipitation, (moderate showers - heavy precipitation)

X_{39} = P.M. wind velocity, (none - windstorm)

X_{40} = P.M. wind velocity, (light breeze - windstorm)

X_{41} = P.M. wind velocity, (gusty - windstorm)

Origin Area Weather Characteristics

X_{42} = forecast maximum daily temperature, in F°

X_{43} = forecast minimum daily temperature, in F°

X_{44} = forecast daily precipitation probability, in per cent

X_{45} = maximum daily temperature, in F°

X_{46} = minimum daily temperature, in F°

X_{47} = average daily temperature, in F°

X_{48} = total daily precipitation, in 1/100 inches of water

X_{49} = average daily atmospheric pressure, in 1/100 inches of mercury

X_{50} = daily wind direction deviation from monthly average, in degrees with a maximum variation of 18 degrees

X_{51} = average daily wind velocity, in miles per hour

X_{52} = average daily sky cover from sunrise to sunset, in tenths

X_{53} = sky cover at 7:00 A.M., in tenths

X_{54} = temperature at 7:00 A.M., in F°

X_{55} = relative humidity at 7:00 A.M., in per cent

X_{56} = wind velocity at 7:00 A.M., in miles per hour

X_{57} = sky cover at 1:00 P.M., in tenths

X_{58} = temperature at 1:00 P.M., in F°

X_{59} = relative humidity at 1:00 P.M., in per cent

X_{60} = wind velocity at 1:00 P.M., in miles per hour

X_{61} = forecast daily temperature range, in F°

X_{62} = daily temperature range, in F°

X_{63} = forecast sky cover, (clear - completely overcast)

X_{64} = forecast sky cover, (scattered clouds - completely overcast)

X_{65} = forecast sky cover, (partially overcast - completely overcast)

X_{66} = daily occurrence of fog, (none - heavy fog)

X_{67} = daily occurrence of fog, (fog - heavy fog)

X_{68} = daily occurrence of thunderstorms, (thunderstorm - no thunderstorm)

X_{69} = precipitation occurrence at 7:00 A. M., (precipitation - no precipitation)

X_{70} = precipitation occurrence at 1:00 P. M., (precipitation - no precipitation)

X_{71} = weather during previous day, (poor - good)

X_{72} = weather during previous day, (fair - good)

X_{73} = weather during previous two days, (poor - good)

X_{74} = weather during previous two days, (fair - good)

Combinations

X_{75} = variables 18×26

X_{76} = variables 37×40

X_{77} = variables 34×45

X_{78} = variables 50×51

X_{79} = variables $42 \times 51 \times 52$

X_{80} = variables $49 \times 53 \times 54 \times 55$

Confidence Level

The level of confidence specified for the analysis was 0.90. The rationale for selecting this level was as follows. First, the previously-collected respondent data had already been collected and tested for accuracy using a 5 per cent significance level. Hence, the maximum level of confidence which could be specified and used with reasonable assurance in this study was 0.95. Second, it was known that one of the consequences of heteroscedasticity is that the validity of significance determinations is reduced. In order to insure that all variables which were actually significant at the 5 per cent level were included in the final statistical models, it was necessary to reduce the level of confidence to 0.90.

Procedure and Results

Collected data were transferred to computer input cards.[9] Data on the newly-produced punched cards were then compared to the original data in order to identify recording or keypunch errors. The CDC 6500 Computing System was then used to prepare new data decks in which, for independence in analysis, all non-continuous, categorized responses were transformed into dummy variables. Again, new decks were scrutinized for possible errors.

At this point, a linking procedure was followed. Thirteen decks of punched cards were in existence: three decks of "respondent"

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[9] Required sample park respondent data were obtained from previously-prepared punched cards. The production of the original punch card decks has been described in Crapo and Chubb, op. cit., pp. 62-64.

data, one for each of the sample parks; a deck of "daily park weather" cards for each of the three sample parks; and seven decks of "daily origin weather" cards, one for each of the origin areas. It was necessary to link the appropriate daily origin and park weather data to respondent data. For example, consider a respondent from Washtenaw County who entered Tawas Point State Park on July 25, 1968. Desired data from the completed, returned questionnaire (including recreational activity data) had been placed on one punched "respondent" card. The "daily park weather" card which contained the weather data for Tawas Point State Park on July 25 was then joined to the "respondent" card. Finally, the "daily origin weather" card, which contained the weather data (including forecast) from the Detroit origin area for July 25, was also linked to the "respondent" card. The three-card combination was then recorded on magnetic tape and filed under the name of the park. This procedure was repeated until all of those respondents originating in the seven specified origin areas were represented. Those sample respondents who had indicated an origin outside of the seven included areas were dropped from the analysis. The number of respondents indicating origins within the specified origin areas is shown in Table 7.

TABLE 7. --Number of Respondents Originating in the Seven Specified Origin Areas.[a]

	Tawas Point State Park	Waterloo State Recreation Area, Portage Lake Unit	Holland State Park
Number of respondents in original sample of park-users	1158	832	950
Number of respondents indicating origin in one of seven origin areas, and included in analysis	919	679	603
Per cent of original respondents included in analysis	79.3%	81.6%	63.4%

[a]Refer to Figure 4 for outline of origin areas.

Reduction in the Number of Independent Variables

In an attempt to reduce the large number of independent variables in each of the twelve park-activity[10] versions of the initial statistical model, a "least squares add" computer program (LSADD) was used to eliminate those variables which were not significant at the 0.90 confidence level.[11] The LSADD routine is a multiple regression program with automatic stepwise addition of variables to form a least squares equation. Through the use of the LSADD routine, a candidate for entering into an equation is selected from among all those independent variables not presently in the equation. The candidate selected is that independent variable which will reduce unexplained variance around the mean of the dependent variable the most. Conversely, the selected independent variable is that one which will raise the coefficient of determination (R^2) the most. Restricting criteria which will terminate variable selection can be specified when using this program, e.g., a predetermined significance

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[10]"Park-activity" is used to denote a particular activity which took place at a given park. Therefore, a total of twelve different park-activities were considered in this study.

[11]This program is described in detail in the publication LSADD: Stepwise Addition of Variables to Form a Least Squares Equation, STAT Series Description No. 9, Agricultural Experiment Station, Michigan State University (November, 1969).

level. If the candidate variable does not violate the preset restricting criteria, it is added to the least squares equation, a new candidate is selected for examination, and the procedure is continued. When all remaining candidates violate the restricting criteria, the procedure is terminated.

The LSADD program, as were all computer programs subsequently used, was run on the CDC 3600 computer and employed double precision accuracy. By this means, approximately 23 digits (excluding leading zeros) were carried along in the calculations at every step.

The simple correlations, means, standard deviations and other statistics relating to variables included in the original equations are shown in Appendices C, D, and E. Those independent variables which were identified as significant are listed in Appendix F.

One advantage of the LSADD routine is that conditions giving rise to matrix singularity will cause no difficulty in the operation of the program. This is due to the fact that a variable will not be selected as a candidate if entering that variable into the equation would cause the matrix to be singular. A disadvantage of the LSADD routine is that partial regression coefficients and their associated statistics are not calculated.

First Stage Least Squares

In order to obtain the $\hat{y}$ values needed for the final stage of the two-stage least squares technique, and to further test the significance of independent variables, significant variables identified by the LSADD routine were entered into a "least squares delete" computer program (LSDEL).[12] For example, independent variables which had been significant in any of the four different "activity" equations from a sample park, were combined into a "pool" for that park. The LSDEL program then selected independent variables for each of the four "activity" equations for that park from the "pool" of significant variables.

As one would suspect, independent variable 13 ("total number of activities in which participation was indicated") was one of the most significant in every LSADD equation. As the number of activities in which participation was indicated increased, the greater was the probability that the activity posing as the dependent variable would be included in the total. Because independent variable 13 would have little value in a forecasting model, it was deleted from further analysis at this stage.

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[12] A detailed description of the LSDEL program is contained in LSDEL: Stepwise Deletion of Variables from a Least Squares Equation, STAT Series Description No. 8, Agricultural Experiment Station, Michigan State University (November, 1969).

With the LSDEL routine, an initial equation is obtained using all independent variables. The particular independent variable which reduces the variance around the mean of the dependent variable the least, is then deleted from the equation. A new equation is then estimated. A second variable is then deleted using the previously described criteria and the procedure continues until a variable selected as a candidate for deletion meets one or more of the specified stopping criteria.

Once the significant independent variables in each park-activity equation had been identified, the $\hat{y}$ values for each respective observation were calculated. Using these values, the term $\hat{y}(1 - \hat{y})$ was then calculated. At this point, every respondent who had indicated participation in the particular park-activity under investigation had been assigned a $\hat{y}(1 - \hat{y})$ value.

Final Least Squares Stage

All of the observed values of the variables included in each of the park-activity equations derived from the LSDEL program were then divided by their respective $\hat{y}(1 - \hat{y})$ values. The resulting values were then entered into a final analysis for each park-activity.

A brief description of the significant independent variables in the final park-activity least squares equations is contained in

Table 8. Regression coefficients and associated statistics applicable to a given activity in each of the parks are shown in Tables 9, 10, 11, and 12.

Interpretation of Results

The null hypothesis of this study was that selected weather characteristics do not exert a significant influence upon the revealed preference for certain recreational activities at three Michigan state parks and recreation areas. On the basis of the numerous independent variables found to be significant in the different park-activity least squares equations, the null hypothesis must be rejected.

Although many of the independent variables were identified as being statistically significant within the park-activity equations, they did not account for an appreciable amount of the variation in the dependent variables. It is apparent that a model useful in forecasting the choice of outdoor recreation activities will have to include variables in addition to those relating to weather.

As one would expect, weather variables became more influential in affecting recreational activity choice as the amount of direct atmospheric contact of participants within activities increased. The activity which exhibited the smallest R^2 values was "sightseeing from car." This activity can be pursued regardless of weather conditions,

TABLE 8. --Brief Description of Significant Independent Variables Contained in the Final Park Activity Least Squares Equations.

Identification Numbers and Brief Description

Characteristics of Park User and Park Use	
1	Total males in car
2	Total females in car
3	Total occupants in car
4	Travel time to park
5	Miles from user's origin
6	Income for driver's family
7	Park entry time
8	Hours in park
14	Park entrance day
15	A.M. or P.M. park entrance
17	Day-user or camper

Park Weather Characteristics	
18	Min. A.M. temp.
19	Max. A.M. temp.
20	Avg. A.M. temp.
24	Avg. P.M. temp.
25	P.M. temp. range
27	A.M. sky cover
29	A.M. precip.
31	A.M. wind vel.
32	A.M. wind vel.
34	P.M. sky cover
36	P.M. precip.
37	P.M. precip.
38	P.M. precip.
39	P.M. wind vel.
40	P.M. wind vel.
41	P.M. wind vel.

Origin Area Weather Characteristics	
42	Forecast max. temp.
43	Forecast min. temp.
44	Forecast precip. probability
45	Max. daily temp.
46	Min. daily temp.
47	Avg. daily temp.
49	Avg. at. pressure
50	Avg. wind direction
51	Avg. wind vel.
52	Avg. sky cover
53	7:00 A.M. sky cover
54	7:00 A.M. temp.
55	7:00 A.M. rel. humidity
56	7:00 A.M. wind vel.
57	1:00 P.M. sky cover
59	1:00 P.M. rel. humidity
60	1:00 P.M. wind vel.
63	Forecast sky cover
64	Forecast sky cover
67	Occurrence of fog
68	Occurrence of thunderstorms
70	1:00 P.M. precip.
71	Previous day's weather
73	Weather for previous two days
74	Weather for previous two days

Combinations	
77	Variables 34 × 45
78	Variables 50 × 51
79	Variables 42 × 51 × 52

TABLE 9. --Information from the Final Regression Equations for the Activity "Sightseeing from Car."

	Park					
	Tawas Point State Park		Waterloo State Recreation Area, Portage Lake Unit		Holland State Park	
$\bar{y}$ Values	.34712		.18851		.24378	
B_o Values	+.63589		+.04259		+29.70827	
Identification Numbers of Significant Independent Variables Followed by Their Respective Regression Coefficients	17	-.09039	17	-.14028	17	-.11924
	7	+.01931			7	+.07066
	8	-.01944			8	-.02462
			3	-.00350	3	+.02088
			47	-.03247	47	+.00967
	18	-.00580	24	+.01405	6	+.00936
	40	+.04356	46	+.02092	45	+.02522
	53	+.01255	51	+.00238	49	+.00967
	56	+.00866	72	-.06527	63	+.11569
	73	+.07015			68	+.09931
	78	+.00007			71	-.07682
R^2 Values	.0494		.1487		.1358	
$\bar{R}^2$ Values[a]	.0400		.1398		.1197	

[a] $\bar{R}^2$ is the multiple correlation coefficient adjusted by degrees of freedom.

TABLE 10. --Information from the Final Regression Equations for the Activity "Walking to Scenic Points."

	Park		
	Tawas Point State Park	Waterloo State Recreation Area, Portage Lake Unit	Holland State Park
$\bar{y}$ Values	.49293	.22386	.28358
B_o Values	-.48317	-5.92339	+.24613
Identification Numbers of Significant Independent Variables Followed by Their Respective Regression Coefficients	17 -.04376	17 -.09676	
	24 +.00424	24 -.00945	
	42 +.01389	42 -.01580	
	45 -.02159	45 +.01177	
		8 +.02436	8 +.02796
		40 -.24857	40 -.09541
	41 +.22333		41 -.05702
	54 -.00207		54 +.02888
	- - - - - -	- - - - - -	- - - - - -
	4 +.03767	29 +.10873	46 -.02893
	7 -.02654	39 -.19961	51 +.00111
	14 +.01791	44 +.00153	52 +.02396
	18 -.01845	49 +.00246	59 -.00394
	20 +.00501	70 +.08794	71 -.09990
	27 +.04805	74 +.07897	
	32 -.08919	77 +.00130	
	37 +.02561		
	47 +.03131		
	50 +.05404		
	57 -.00328		
	67 -.02938		
	78 -.00057		
R^2 Values	.1302	.1616	.0892
$\bar{R}^2$ Values	.1118	.1439	.0738

TABLE 11. --Information from the Final Regression Equations for the Activity "Picnicking."

	Park					
	Tawas Point State Park		Waterloo State Recreation Area, Portage Lake Unit		Holland State Park	
$\bar{y}$ Values	.32644		.51105		.30182	
B_o Values	+.66268		+1.31709		-.28916	
Identification Numbers of Significant Independent Variables Followed by Their Respective Regression Coefficients	7	+.02742	7	-.08747	7	-.03080
	8	+.10619	8	+.01461	8	+.02505
			3	+.02742	3	+.05952
			14	+.03114	14	+.05406
			47	+.00581	47	+.01638
	40	-.01576			40	+.31332
	2	+.02779	17	+.04109	31	+.40576
	4	+.00043	39	+.15362	36	-.07728
	5	-.00002	44	+.00076	38	-.19697
	6	-.02089	45	-.01360	41	+.25160
	20	-.01350	53	-.00937	46	-.01548
	32	-.02743				
	34	-.94540				
	43	-.00373				
	54	+.01047				
	55	-.00099				
	74	-.08310				
	77	+.01191				
R^2 Values	.1052		.1275		.1723	
$\bar{R}^2$ Values	.0903		.1144		.1569	

TABLE 12.--Information from the Final Regression Equations for the Activity "Swimming."

	Park					
	Tawas Point State Park		Waterloo State Recreation Area, Portage Lake Unit		Holland State Park	
$\bar{y}$ Values	.56148		.82180		.55721	
B_o Values	-14.11037		-.99266		+15.13367	
	8	+.03857	8	+.00704	8	+.01155
	17	-.09412	17	-.00081	17	-.08056
			42	+.00736	42	+.01813
			47	+.06014	47	+.01554
			52	-.01883	52	-.02216
	7	-.04165			7	-.02988
	25	+.00401			25	+.00751
	40	+.11079			40	+.08080
	49	+.00448			49	-.00590
	1	+.00481	3	+.03207	4	-.01959
	2	+.03782	19	-.01216	31	+.21720
	5	-.00017	39	-.20080	34	+.10859
	15	+.05665	46	-.03657	38	+.19016
	18	+.00410	51	+.00179		
	24	-.00196	56	-.01276		
	54	+.00669	63	-.14578		
	55	+.00815				
	60	+.01643				
	64	-.16185				
R^2 Values	.2126		.1406		.2014	
$\bar{R}^2$ Values	.1987		.1238		.1824	

as vehicle occupants are not directly in contact with the weather. On the other hand, participants in the outdoor recreation activity "swimming" are directly exposed to the atmosphere, and "swimming" was found to have the highest goodness of fit of the four activities examined. "Walking to scenic points" and "picnicking" exhibited intermediate R^2 values.

Differences in goodness of fit were noted also among the three sample parks. Waterloo State Recreation Area, the sample park which represented intermediate-class parks, showed little R^2 variation among the four selected activities, e.g., R^2 values ranged between .1616 and .1275. The resource-based park, Tawas Point State Park, exhibited the greatest variation, e.g., R^2 for "swimming" was .2126, whereas R^2 for "sightseeing from car only" was .0494. Holland State Park, the user-oriented area, showed a goodness of fit similar to the resource-based park.

The vast majority of correlations between variables were weak. It is interesting to note that none of the forecast weather variables showed a high correlation with any daily weather variables. The few high correlations generally occurred in groups consisting of interrelated temperature variables. This would suggest that in the formulation of models to forecast the effects of weather on recreational behavior, the most conveniently-collected daily temperature variable would adequately represent all daily temperature variables.

To a considerable extent the number of significant independent variables in each of the park-activity equations was a reflection of the amount of data used. As the number of observations in a given park-activity increased, there was an increase in the degrees of freedom on which to base significance tests, thereby decreasing the error term which is used to calculate significance. The result was that an increase in the number of observations brought about a corresponding increase in the number of significant independent variables.

It appears that the individual's choice of various recreation activities is a complex process and is extremely difficult to forecast. There was no major discernible pattern among the various park-activity equations. Not one independent variable was identified as being significant in all twelve park-activity equations. Several independent variables occurred in at least one activity equation at each park, yet only four variables occurred in more than half of the park-activity equations. On the basis of the information summarized in Table 13, a general prediction model to forecast participation in outdoor recreation activities at any type of park would include the following variables:

TABLE 13. --Summary of Significant Independent Variables Which Occurred in at Least Three Different Park-Activity Least Squares Equations.

Identification Numbers and Brief Description of Significant Independent Variables	Number of Different Activity Equations in Which the Significant Independent Variables Occurred			
	Tawas Point State Park	Waterloo State Recreation Area, Portage Lake Unit	Holland State Park	Total (Maximum of 12)
8 Hours in Park	3	3	4	10
17 Camper or Day User	3	4	2	9
7 Park Entry Time	4	1	3	8
40 Park P.M. Wind Vel.	3	1	3	7
42 Forecast Max. Temp.	1	2	1	4
14 Weekday or Weekend Use	1	1	1	3
47 Origin Ave. Daily Temp.		3	3	6
3 Total in Vehicle		3	2	5
24 Park Ave. P.M. Temp.	2	2		4
54 Origin 7:00 A.M. Temp.	3		1	4
41 Park P.M. Wind Vel.	1		2	3
45 Origin Max. Temp.	1	2		3
49 Origin At. Pressure	1		2	3
52 Origin Ave. Sky Cover		1	2	3

X_8 = total number of hours spent in the park

X_{17} = type of park user, (day user - camper)

X_7 = time of park entry

X_{40} = park P. M. wind velocity, (light breeze - windstorm)

A further difficulty in formulating a forecast model arises because of the character of the above variables. None of them are suitable for inclusion in a long-range forecasting model. Data required for the first three variables concerned with park-use are not usually available in enough advance time to be of value. Data required for the remaining variable dealing with wind velocity are not generally issued in weather forecasts. In summary, there does not appear to be a general model which could be formulated from the independent variables tested, which could be used to forecast choice of outdoor recreation activities.

That group of independent variables which contributed the largest proportionate number of significant variables to each park-activity equation was that concerned with the "characteristics of the park user and park use."

The particular weather perception which appeared to apportion the greatest number of variables to each park-activity equation was the daily origin weather.

The decline in R^2 values between LSADD and corresponding LSDEL equations was caused by the elimination of variable 13 "total number of activities in which participation was indicated." A comparison of the LSADD R^2 values, presented in Appendix F, and the LSDEL R^2 measures in Tables 9, 10, 11, and 12 revealed that the deletion of this one variable generally resulted in R^2 values being halved.

The slight difference in significant independent variables as determined by the LSADD and LSDEL programs was probably due to the differences between the two statistical methods. In using the LSDEL program, all variables were initially entered into the least squares equation. Hence, the group effect of these variables had a chance to exert itself from the start. The LSADD routine does not have this characteristic; a group of variables which individually account for little of the variation around the mean of the dependent variable and that as a group explain much of the variation of the dependent variable, may never be entered into the equation.

Example of Weather Sensitivity.--Heteroscedasticity prevented the use of most of the statistics normally generated in linear regression programs. In an attempt to obtain further information from the analytical results and to ascertain the sensitivity of recreational activity choice to weather variables, the following example was calculated.

Equations for "swimming" at Holland and Waterloo Parks were selected because of all the park-activity equations, they had the largest number of continuous weather variables in common. The common weather variables in the two equations were:

X_{42} = forecast maximum daily temperature, in F°

X_{47} = average daily temperature, in F°

X_{52} = average daily sky cover from sunrise to sunset, in tenths

To isolate the three identical weather variables for examination, the effects of the other independent variables in each equation were removed. This was accomplished by inserting the mean values of those variables destined for removal into the equation, and then multiplying the mean values by their respective coefficients. The resulting values were then added to the B_o figures.

At this point, the only independent variables remaining in each equation were the three common weather variables. The common weather variables were then examined individually. The effect of the two weather variables not under examination was removed by the process described in the previous paragraph. Maximum and minimum values of the remaining variable inserted into the equation in turn, were multiplied by their respective coefficients, and the resulting values were solved to yield a value for y.

An index of sensitivity, roughly equivalent to the elasticity index used by economists, was then calculated. The index was a measure of relative change and indicated how sensitive swimming participation was to changes in the three weather variables.

A summary of the calculations is shown in Table 14.

There appeared to be a wide range of sensitivities among the variables. Little consistency in variable sensitivity was noted between the two parks.

TABLE 14. --Summary of "Swimming" Participation Sensitivity to Selected Weather Variables at Two Sample Parks.

		"Swimming" Least Squares Equation	
		Waterloo State Recreation Area	Holland State Park
Value of y After Inserting Maximum and Minimum Values in Each Common Weather Variable (Considered One at a Time)	X_{42} = Forecast Maximum Daily Temperature in F°	Max. .8497 Min. .6289	Max. .6258 Min. -.2088
	X_{47} = Average Daily Temperature in F°	Max. 1.5213 Min. -.2228	Max. .5744 Min. .1703
	X_{52} = Average Daily Sky Cover from Sunrise to Sunset, in Tenths	Max. .6642 Min. .8525	Max. .5214 Min. -.2998
Sensitivity Index Values $\frac{\Delta Y}{\Delta X_i} \cdot \frac{X_i}{Y}$	X_{42}	Max. .82 Min. .76	Max. 6.25 Min. 2.57
	X_{47}	Max. 3.36 Min. -15.12	Max. 5.38 Min. 2.30
	X_{52}	Max. -.28 Min. $-\infty$	Max. -.74 Min. $-\infty$

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This study has attempted to ascertain the significance of various weather variables in affecting recreational activity choice. A sample of summer users at three representative Michigan state parks provided data which indicated the respondents' revealed preference for the activities of sightseeing from car, walking to scenic points, picnicking and swimming. Three sets of weather data were collected: daily park weather--conditions at the park; daily origin weather--conditions at the user's origin; and forecast origin weather--the forecasted conditions as released on the previous day. The weather characteristics together with park user and use characteristics (independent variables) were then related to recreational activity preference (dependent variables) by means of a two-stage least squares procedure.

The conclusions of this study are outlined below.

Conclusions

1. The null hypothesis of this study was that selected weather characteristics do not exert a significant influence upon the revealed preference for certain recreational activities at three Michigan state parks and recreation areas. On the basis of the numerous independent weather variables found to be significant in the different park-activity least squares equations, the null hypothesis must be rejected.

2. Although numerous weather variables within the twelve final park-activity equations were identified as being statistically significant at the .90 level of confidence, they did not account for a great deal of the variation around the mean of the dependent variables. The coefficient of determination (R^2) for the equations ranged between a low of .0494 and a high of .2126. It is evident that a model to accurately forecast recreational activity choice within Michigan must include other variables in addition to those of weather.

3. Weather became more important in influencing recreational participation in activities as the amount of direct atmospheric exposure of participants increased. "Swimming" equations had the highest R^2 values while "sightseeing from car only" equations exhibited the poorest fit to the data. The

intermediate activities of "walking to scenic points" and "picnicking" had similar R^2 values.

4. The goodness of fit of least squares equations also appeared to vary among parks. The activity equations from Tawas Point State Park respondents, representative of resource-based park users, exhibited the greatest variation in the coefficient of determination, e.g., R^2 was .2126 for swimming but only .0494 for sightseeing from car. The representatives of intermediate-class park users, Waterloo State Recreation Area respondents, had activity equations which possessed little variation in R^2 among the four selected activities, e.g., R^2 ranged between .1616 and .1275. Respondents from Holland State Park, representing user-oriented park visitors, exhibited a similar goodness of fit to resource-based park respondents.

5. Of the three different sets of weather data tested, daily origin weather characteristics constituted the largest proportional representation within park-activity equations.

6. No <u>major</u> patterns of significant independent variables could be discerned through examination of the composition of park-activity equations. The following items were, however, observed:

a. The group of independent variables which contributed the largest proportion of significant variables to each park-activity equation was that concerned with the "characteristics of the park user and park use."

b. The activity equations for "picnicking" appear to possess a more deviant composition of independent variables than those of the other selected activities.

c. Only four independent variables appeared in more than half of the different equations. They were:

X_8 = total number of hours spent in the park

X_{17} = type of park user, (day user - camper)

X_7 = time of park entry

X_{40} = park P.M. wind velocity, (light breeze-windstorm)

Recommendations

1. The relationship between weather and recreational behavior is in need of further investigation. Such a small amount of research has been conducted in this subject area, that it is virtually untouched. Many questions remain unanswered. "How can we measure the sensitivity of recreational activities to weather changes? How weather-sensitive are various recreation activities? How does the activity weather-sensitivity

vary from region to region? How does weather affect behavior within the recreational activity?" These questions are but a few of the many that confront the recreation profession.

2. In order to determine how sensitivity of recreational participation to weather varies among different types of parks, it is first necessary to be able to identify homogeneous groupings of parks. Further research needs to be undertaken in order to devise methods of stratifying parks. What types of stratification schemes would be most valuable to the researcher? To the administrator? Does the basis for stratification change over time? Does the basis for stratification change depending upon the specific decision being considered?

3. An outdoor recreation weather index consisting of a few categories should be developed for use in further weather-recreational behavior study. The criteria for categorization into one of the outlined classifications should be detailed enough so that meaningful forecasting models can be formulated using the classifications. Classification must be simple enough, however, to permit managers of recreation areas to make category assignments and thus, to use

the forecasting models. An appropriate weather index would encourage weather sensitivity comparisons among activities and among regions.

4. Accurate long-range weather forecasting would allow people to plan their free time with more certainty than at present. They could avoid attempting to do something which unfavorable weather would make unpleasant or impossible, and could take advantage of very favorable weather conditions for particular kinds of outdoor recreation. If accurate long-range weather forecasts were available, it is probable that the importance of forecasted weather in influencing recreational activity choice would increase. On a larger scale, it is even possible that economic activities could be modified to permit more free time when weather is likely to be favorable for certain outdoor recreation activities. Even today the economic activities of some businesses are altered by people taking advantage of favorable weather conditions, e.g., absence of assembly line workers during weather-favorable hunting days in the fall, but such absences are largely unplanned and are costly as they disrupt production processes.

5. Professionals in the field of recreation should be more concerned with the uses and techniques of quantitative methods. There is a trend in other professions towards an increased use of quantification. To keep abreast of associated developments in other disciplines, and to permit the use of the most modern research techniques, it is imperative that increasing attention must be given to the interpretation and use of more sophisticated methods. There should be more effort directed towards the use of quantitative methods in hypothesis testing, with an aim of expanding the existing theoretical base.

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APPENDICES

APPENDIX A

NUMBER OF SAMPLE UNITS WHO INDICATED PARTICIPATION IN COMBINATIONS OF THE SELECTED ACTIVITIES

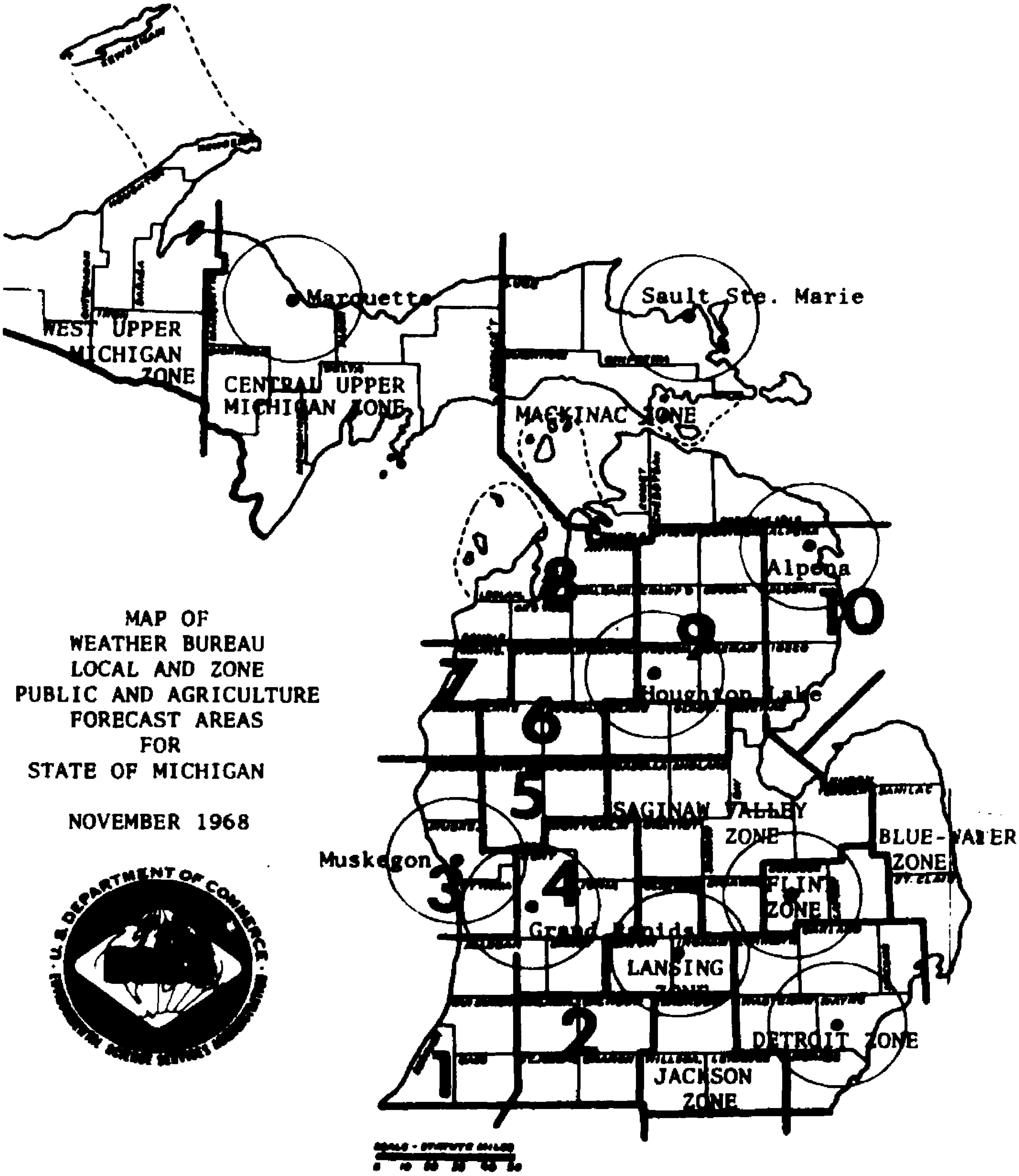
Activity Combinations	Waterloo State Recreation Area, Portage Lake Unit N = 832	Holland State Park N = 950	Tawas Point State Park N = 1158
a. Sightseeing from Car b. Walking to Scenic Points	77	66	192
a. Sightseeing from Car c. Picnicking	68	44	112
a. Sightseeing from Car d. Swimming	137	85	198
b. Walking to Scenic Points c. Picnicking	116	117	233
b. Walking to Scenic Points d. Swimming	167	198	344
c. Picnicking d. Swimming	363	214	278

Activity Combinations	Waterloo State Recreation Area, Portage Lake Unit N = 832	Holland State Park N = 950	Tawas Point State Park N = 1158
a. Sightseeing from Car b. Walking to Scenic Points c. Picnicking	46	22	76
a. Sightseeing from Car b. Walking to Scenic Points d. Swimming	67	39	124
a. Sightseeing from Car c. Picnicking d. Swimming	63	31	88
b. Walking to Scenic Points c. Picnicking d. Swimming	106	92	172
a. Sightseeing from Car b. Walking to Scenic Points c. Picnicking d. Swimming	43	13	61

APPENDIX B

WEATHER FORECAST ZONES

IN THE STATE OF MICHIGAN



MAP OF
WEATHER BUREAU
LOCAL AND ZONE
PUBLIC AND AGRICULTURE
FORECAST AREAS
FOR
STATE OF MICHIGAN

NOVEMBER 1968

APPENDIX C

VARIOUS STATISTICS FOR VARIABLES AND THEIR SIMPLE CORRELATIONS FOR TAWAS POINT STATE PARK DATA

Broken Line	Signifies Simple Correlations Between .800 and .999
Solid Line	Signifies Simple Correlations Between .600 and .799

TOTAL RAW OBSERVATIONS= 920
TOTAL OBSERVATIONS DROPPED= 1
TOTAL OBSERVATIONS IN PROBLEM= 919

TAWAS POINT

T A B L E A - - STATISTICS ON TRANSFORMED VARIABLES

LABEL	VAR	MINIMUM VALUE	MAXIMUM VALUE	MEAN	STANDARD DEVIATIONS	SUM	SUM OF SQUARES	SUM OF SQUARED DEVIATION FROM THE MEAN
TOT MALE	1	0.00000	9.00000	2.06855	1.2587485	1901.00000	5457.00000	1384.60110
TOT FEM	2	0.00000	8.00000	2.04026	1.3646298	1875.00000	5535.00000	1709.51034
TOT VEH	3	0.00000	15.00000	4.07584	1.9577170	3745.00000	18943.00000	[illegible]
TRAV TIM	4	0.00000	9.00000	3.16975	2.7679950	2913.00000	16207.00000	[illegible]
MILES	5	0.00000	746.00000	115.30947	89.2262617	105942.00000	19144984.00000	[illegible]
INCOME	6	0.00000	7.00000	3.74755	1.5826648	3444.00000	15286.00000	2299.40899
ENTRY TI	7	0.00000	7.00000	3.27943	1.7972387	2030.00000	11600.00000	[illegible]
HRS PARK	8	0.00000	7.00000	2.69994	2.6960424	2472.00000	13322.00000	6672.60989
SIGHTSEE	9	0.00000	1.00000	0.34712	0.4763124	319.00000	319.00000	[illegible]
WALKING	10	0.00000	1.00000	0.49293	0.5002222	453.00000	453.00000	229.70403
PICNIC	11	0.00000	1.00000	0.32644	0.4691663	300.00000	300.00000	202.06746
SWIM	12	0.00000	1.00000	0.56149	0.4964750	516.00000	516.00000	226.27639
TOT ACT	13	0.00000	9.00000	3.94233	2.6796952	3623.00000	20875.00000	6591.04842
WKDY+END	14	-1.00000	1.00000	0.02720	1.0001742	25.00000	919.00000	918.31991
A+P	15	-1.00000	1.00000	0.55930	0.7979535	514.00000	372.00000	584.51795
CAMP+DAY	17	-1.00000	1.00000	0.22960	0.9738157	211.00000	919.00000	870.55495
A LO TEM	18	46.00000	81.00000	65.24048	8.2031239	59956.00000	3973330.00000	61721.85419
A HI TEM	19	60.00000	93.00000	77.19475	6.7656166	70942.00000	5510372.00000	42009.85495
A AVTEM	20	53.00000	86.00000	71.27095	7.8061857	65498.00000	4713166.00000	49401.00420
A TEM RG	21	2.00000	28.00000	11.95430	5.8442384	10986.00000	162684.00000	31304.00052
P LO TEM	22	57.00000	86.00000	69.28745	8.9563330	63523.00000	4110356.00000	72003.00702
P HI TEM	23	67.00000	94.00000	76.42437	8.4066380	70172.00000	5717078.00000	64876.40001
P AV TEM	24	55.00000	91.00000	72.59195	8.5339244	66712.00000	4909610.00000	66891.00041
P TEM RG	25	-14.00000	26.00000	12.13493	6.3044810	11152.00000	171816.00000	36487.20077
A CLD 1	26	-1.00000	1.00000	0.16134	0.6765327	146.00000	444.00000	420.20040
A CLD2	27	-1.00000	1.00000	0.35582	0.7429013	327.00000	623.00000	506.60039
A PREC 1	28	-1.00000	1.00000	0.95647	0.2305938	879.00000	893.00000	52.20090
A PREC 2	29	-1.00000	1.00000	0.02067	0.1884671	19.00000	33.00000	32.60910
A PREC 3	30	-1.00000	1.00000	-0.00762	0.0869896	-7.00000	7.00000	6.90040
A WIND 1	31	-1.00000	1.00000	0.15887	0.4106497	146.00000	178.00000	154.80022
AWIND 2	32	-1.00000	1.00000	0.58324	0.5274408	536.00000	568.00000	255.20194
A WIND 3	33	-1.00000	1.00000	0.18825	0.4334000	173.00000	205.00000	172.00000
P CLD 1	34	-1.00000	1.00000	0.13275	0.7046408	122.00000	472.00000	455.80013

P CLD 2	35	-1.00000	1.00000	.29597	0.7647267	272.00000	627.00000	541.49518
P PREC 1	36	-1.00000	1.00000	.79118	0.4854161	727.00000	795.00000	219.00003
P PREC 2	37	-1.00000	1.00000	.54461	0.3416787	41.00000	109.00000	107.17004
P PREC 3	38	-1.00000	1.00000	.01032	0.3002457	15.00000	83.00000	82.79917
P WIND 1	39	-1.00000	1.00000	-0.07073	0.3032191	-65.00000	89.00000	84.40261
P WIND 2	40	-1.00000	1.00000	.52775	0.6459544	485.00000	639.00000	383.84244
P WIND 3	41	-1.00000	1.00000	.25793	0.5746929	191.00000	345.00000	305.34399
F HI TEM	42	62.00000	95.00000	81.24592	8.0207003	74645.00000	6089367.00000	23140.48820
F LO TEM	43	0.00000	73.00000	62.73741	7.9285813	57652.00000	3674414.00000	57787.00644
F PRECIP	44	0.00000	83.00000	24.14798	19.4340779	22170.00000	878230.00000	346741.09836
HI TEM	45	63.00000	94.00000	81.19 42	7.1103714	74614.00000	6134354.00000	46411.67373
LO TEM	46	47.00000	77.00000	40.37214	7.9004374	59452.00000	3496066.00000	57290.72000
AV TEM	47	57.00000	64.00000	71.97202	7.2007444	65224.00000	4676830.00000	47670.31091
PRECIP	48	0.00000	99.00000	7.80745	22.4190058	7175.00000	517419.00000	461408.90060
AT PRES	49	2879.00000	2967.00000	2925.20936	12.5213798	2408346.00000	7864313630.00000	143920.50042
WIND DIR	50	0.00000	18.00000	4.89771	3.9319352	4501.00000	36737.00000	14192.30920
AV WIND	51	10.00000	194.00000	95.32067	31.9243149	87524.00000	9233176.00000	935901.60718
SKY COV	52	0.00000	1.00000	5.44170	2.6457344	5005.00000	33424.00000	6422.51795
7 SKY C	53	0.00000	1.00000	4.91021	4.1715060	4510.00000	38166.00000	15974.54042
7 TEM	54	5.00000	78.00000	64.59923	9.2323030	58698.00000	3849620.00000	74892.60335
7 RHUM	55	62.00000	99.00000	85.16757	7.2617721	78269.00000	6714657.00000	48676.19869
7 WIND V	56	0.00000	71.00000	7.05005	4.3939977	6479.00000	63431.00000	17723.60950
13 SKY C	57	0.00000	20.00000	6.38955	3.3193117	5872.00000	47439.00000	10112.30072
13 TEM	58	9.00000	93.00000	78.42764	7.7458927	72075.00000	5797751.00000	55070.03790
13 R HUM	59	34.00000	93.00000	64.61697	11.5392626	59737.00000	3498941.00000	122151.17919
13 WINDV	60	1.00000	19.00000	10.31338	3.7241111	9478.00000	113482.00000	12731.74936
F TEM RG	61	5.00000	72.00000	18.51251	7.5059761	17013.00000	346667.00000	51733.40009
TEM RG	62	9.00000	34.00000	21.01029	4.5499717	19332.00000	417309.00000	19004.05200
F CLD 1	63	0.00000	1.00000	0.05005	0.2171763	46.00000	46.00000	43.60790
FCLD 2	64	0.00000	1.00000	0.10337	0.3046115	95.00000	95.00000	85.17054
F CLD 3	65	0.00000	1.00000	0.84657	0.3605955	778.00000	778.00000	119.38670
FOG 1	66	-1.00000	1.00000	0.57127	0.6124108	525.00000	651.00000	391.00161
FOG 2	67	-1.00000	1.00000	0.22307	0.5574519	205.00000	331.00000	205.27095
THUN T	68	-1.00000	1.00000	0.70403	0.7105420	647.00000	919.00000	463.49910
7 PRE T	69	-1.00000	1.00000	0.97300	0.2271673	895.00000	919.00000	47.37823
13 PRE T	70	-1.00000	1.00000	0.90642	0.4276075	833.00000	919.00000	163.99212
PREV 1 1	71	-1.00000	1.00000	0.22307	0.4294077	205.00000	215.00000	169.37095
PREV 1 2	72	-1.00000	1.00000	0.75517	0.4427534	694.00000	704.00000	179.91295
PREV 2 1	73	-1.00000	1.00000	0.18825	0.4021992	173.00000	181.00000	146.48606
PREV 2 2	74	-1.00000	1.00000	0.78128	0.4240048	718.00000	726.00000	165.00000
COMM P1	75	-72.00000	79.00000	1.89119	45.5382852	10 79.00000	2012699.00000	1903009.11059
COM P2	76	0.00000	1.00000	0.04135	0.1992052	38.00000	38.00000	36.00073
COM	77	-93.00000	94.00000	11.53428	57.6799789	10600.00000	3176430.00000	3054106.07029
COM 81	78	0.00000	1501.00000	436.00544	357.4756767	400649.00000	292012757.00000	117310172.07866
COM 82	79	0.00000	14248.00000	43193.98803	29618.5713094	39495275.00000	251992149752.0000	805324465504.00000
COM 83	80	0.00000***************		81654629.39453	71426994.1660156	75040404414.00000***************************************		

SIMPLE CORRELATIONS

TOT MALE	1	1.00000									
TOT FEM	2	0.14523	1.00000								
TOT VEH	3	0.73265	0.74918	1.00000							
TRAV TIM	4	0.08743	-0.11190	0.04360	1.00000						
MILES	5	0.01030	0.01127	0.01713	0.29367	1.00000					
INCOME	6	0.04321	-0.00091	0.02091	-0.08271	-0.05337	1.00000				
ENTRY TI	7	0.07148	-0.00797	0.08060	0.08378	-0.01996	0.04191	1.00000			
HRS PARK	8	0.07960	0.07453	0.09774	0.26864	0.03112	0.02369	0.11273	1.00000		
SIGHTSEE	9	0.06057	-0.01985	0.02016	0.01557	0.05129	-0.00790	0.11646	0.01351	1.00000	
WALKING	10	-0.04065	0.13154	-0.00200	0.15192	0.10630	-0.02427	-0.14533	0.11913	-0.00569	1.00000

PICNIC	11	0.09204	0.12577	0.12002	0.15321	-0.01182	-0.08461	-0.09926	0.16364	-0.05915	0.17499	1.00000
SWIM	12	0.12195	0.15157	0.18032	0.14971	-0.05468	-0.02727	-0.02929	0.27753	-0.37043	0.00100	0.20017
TOT ACT	13	0.13343	0.12494	0.17591	0.12025	0.04928	-0.05144	-0.07349	0.35367	0.11470	0.45438	0.40016
WKDY+END	14	0.05179	-0.03712	0.02309	0.05423	-0.00200	-0.01355	0.02243	0.05202	0.07010	0.01010	-0.00502
A+P	15	0.07920	0.02231	0.06431	0.04722	-0.01199	-0.04951	0.49306	-0.02412	0.07045	-0.06922	-0.00006
CAMP+DAY	17	-0.09633	-0.07109	-0.09916	-0.39435	-0.14310	0.07157	-0.05019	-0.59231	-0.11329	-0.20391	-0.12054
A LO TEM	18	0.04411	0.03715	0.02914	-0.06997	-0.07213	-0.04776	0.00773	-0.00701	-0.05797	-0.09074	0.00449
A HI TEM	19	0.04942	0.01967	0.04151	-0.07459	-0.07759	-0.02033	-0.07356	-0.01472	-0.05244	-0.07314	0.01076
A AVTEM	20	0.04613	0.09843	0.03748	-0.07523	-0.07652	-0.03577	-0.01612	-0.00204	-0.05694	-0.08797	0.02006
A TEM RG	21	-0.01510	0.01057	0.00715	0.01106	0.01952	0.04350	-0.03742	-0.01599	0.01940	0.05302	0.01057
P LO TEM	22	-0.03457	0.02049	-0.03947	-0.02252	-0.06674	-0.01250	-0.03595	-0.07505	-0.05096	-0.11106	0.00519
P HI TEM	23	0.03592	0.00086	0.02015	-0.07706	-0.07322	-0.04024	0.01276	-0.02267	-0.05533	-0.09076	0.00002
P AV TEM	24	0.02275	0.01339	0.01406	-0.10354	-0.07615	-0.03495	-0.01371	-0.05295	-0.04900	-0.10075	0.00037
P TEM RG	25	0.09647	-0.01407	0.05004	0.06829	-0.00307	-0.00341	0.06675	0.07499	-0.03219	0.02517	-0.00012
A CLD 1	26	-0.02517	-0.01057	-0.02624	-0.00240	0.05001	0.00359	0.03072	0.03947	-0.03507	-0.03204	-0.02053
A CLD2	27	0.03025	0.06107	0.05241	0.05641	-0.09157	-0.03777	-0.02212	0.07201	-0.03050	-0.02400	0.01054
A PREC 1	28	0.02309	0.00873	0.02069	0.02440	0.01595	-0.02149	-0.00443	0.02641	-0.04903	-0.01171	-0.01098
A PREC 2	29	-0.01013	-0.01467	-0.03761	-0.02344	-0.01306	0.01757	-0.06596	-0.04740	0.00491	0.03044	0.03447
A PREC 3	30	0.01438	-0.02494	-0.00046	0.00538	0.00448	-0.00007	-0.05197	-0.01509	-0.04120	0.01120	0.00741
A WIND 1	31	0.00022	0.03134	0.02962	-0.02567	-0.05071	-0.03374	-0.01712	-0.04105	-0.00175	-0.01574	0.02694
AWIND 2	32	0.04340	0.02734	0.04010	0.03239	-0.00439	0.02701	-0.01101	0.07571	0.00410	-0.03002	-0.03910
A WIND 3	33	0.00272	-0.00917	-0.09225	0.01492	0.00500	0.02330	-0.03041	-0.02029	0.07004	0.05001	0.02426
P CLD 1	34	-0.03522	-0.02422	-0.04773	-0.02167	-0.03293	-0.02559	-0.07145	0.01997	-0.03603	0.01104	0.05329
P CLD 2	35	0.01540	0.02693	0.02001	0.05474	-0.01474	-0.04152	-0.03678	0.04595	0.10472	0.01600	0.05202
P PREC 1	36	0.01992	-0.00044	0.03759	0.03104	0.03422	-0.04705	-0.01227	0.05734	0.10392	0.02955	0.07012
P PREC 2	37	0.01244	0.05409	0.04000	-0.02761	-0.04347	0.00071	-0.06964	0.01422	-0.02163	0.00240	0.04496
P PREC 3	38	-0.04774	-0.01754	-0.04346	-0.03742	0.02201	-0.01903	-0.04076	-0.03949	0.04413	0.04791	0.07040
P WIND 1	39	-0.05169	-0.02795	-0.01597	-0.00305	0.00100	-0.01455	-0.03765	-0.01407	0.01933	0.01465	0.03096
P WIND 2	40	-0.03042	0.03024	0.00433	0.01931	0.02020	0.02497	-0.04553	0.00714	0.02354	0.00651	0.00069
P WIND 3	41	-0.01333	0.04611	0.01609	0.01063	-0.02014	-0.00061	-0.00430	0.02259	0.02261	0.04475	-0.00544
F HI TEM	42	0.04302	0.01127	0.03725	0.02937	0.03031	-0.01099	0.01491	0.04900	-0.04393	-0.00234	0.00797
F LO TEM	43	0.00222	-0.03404	-0.02458	-0.02399	-0.03950	0.05416	0.04937	0.01107	-0.01903	-0.02700	-0.02021
F PRECIP	44	-0.04675	0.02753	-0.01175	-0.01303	-0.00093	0.06690	-0.04259	-0.05044	-0.01700	0.01791	0.00026
HI TEM	45	0.05013	0.01010	0.03944	-0.09026	-0.09490	-0.03260	0.01143	-0.04150	-0.05046	-0.12934	-0.01049
LO TEM	46	0.06671	-0.02423	0.02971	-0.07046	-0.06053	-0.04144	0.01103	-0.03713	-0.05907	-0.07017	0.00010
AV TEM	47	0.06510	-0.01207	0.03617	-0.07902	-0.07967	-0.04293	0.01337	-0.04114	-0.05627	-0.09400	-0.00017
PRECIP	48	-0.02306	-0.01349	-0.07290	-0.01645	0.07997	0.03157	-0.01535	-0.06976	0.00464	-0.00029	-0.03192
AT PRES	49	0.04434	0.09969	0.06530	0.01763	-0.02640	-0.03594	0.01074	0.03034	-0.05910	0.00500	0.02790
WIND DIR	50	-0.01302	0.02140	0.00022	0.04203	0.03090	-0.01693	-0.05219	0.00153	-0.02501	0.00409	0.03904
AV WIND	51	0.04100	-0.02735	0.01166	-0.01717	0.02790	0.03155	-0.03012	0.00054	0.00503	0.01400	-0.00069
SKY COV	52	0.01094	-0.03721	-0.01751	0.02007	0.04570	0.00006	-0.02554	0.05429	0.03641	0.00442	-0.01247
7 SKY C	53	0.00310	-0.05720	-0.03155	0.02700	0.03620	-0.00073	0.03757	-0.00930	0.00674	-0.00601	0.02791
7 TEM	54	0.04524	-0.02901	0.01120	-0.05401	-0.03642	-0.05420	0.01533	-0.05312	-0.02460	-0.05772	0.03091
7 RHUM	55	-0.01922	-0.00431	-0.01459	-0.11003	-0.10176	0.01445	-0.00285	-0.02293	-0.07072	-0.06120	0.00931
7 WIND V	56	-0.02292	0.01967	0.00260	-0.10049	-0.14595	-0.06530	0.07315	-0.00641	0.04990	0.00710	-0.00310
13 SKY C	57	0.05131	0.09327	0.03711	0.02647	0.01745	-0.04723	0.07343	-0.03031	0.07393	-0.01343	-0.03209
13 TEM	58	0.07225	0.00441	0.05093	-0.07254	-0.07961	-0.01944	-0.00604	-0.01607	-0.07090	-0.10470	0.00091
13 R HUM	59	-0.00774	-0.00379	-0.04929	-0.12522	-0.11004	-0.01430	0.00914	-0.03135	-0.01761	-0.05427	-0.00006
13 WINDV	60	0.05612	-0.01256	0.02791	-0.06234	-0.00303	[illegible]	0.07394	-0.00930	-0.00551	0.02400	0.00073
F TEM RG	61	0.02643	0.04351	0.05000	0.04490	0.06742	[illegible]	-0.03055	0.01014	-0.00929	0.02700	0.02047
TEM RG	62	-0.02500	0.04469	0.01005	-0.04401	-0.02060	0.02100	-0.00132	-0.00251	-0.02213	-0.07403	-0.02925
F CLD 1	63	-0.03934	0.09786	-0.01501	0.00936	0.00370	-0.00309	-0.00049	-0.00067	-0.02062	0.02321	0.04239
FCLD 2	64	-0.00097	-0.04147	-0.03142	-0.04926	0.02153	0.00474	-0.02297	-0.03520	0.03772	0.00123	0.03040
F CLD 3	65	0.02969	0.03920	0.03004	0.03594	-0.06000	0.04277	0.06095	0.06642	-0.01939	-0.01500	-0.09033
FOG 1	66	0.01231	0.02564	0.02263	0.04120	-0.01546	-0.01721	0.01999	0.02929	0.01762	0.02100	0.00003
FOG 2	67	-0.00766	-0.03473	-0.02700	-0.11046	-0.09199	0.01945	-0.07203	-0.06944	-0.04578	-0.03535	-0.00003
THUN T	68	-0.00161	0.02003	0.01593	-0.02655	-0.00964	-0.00365	-0.00034	0.06121	-0.02441	0.05540	0.00290
7 PRE T	69	-0.03109	-0.01769	-0.03350	-0.02759	-0.00757	0.01194	-0.09029	-0.00257	-0.01600	-0.00143	-0.00169
13 PRE T	70	0.07990	0.03290	0.07417	0.05271	0.00114	-0.04187	0.06433	0.04143	-0.02245	-0.00029	0.02239
PREV 1 1	71	-0.00790	-0.04980	-0.03060	0.07167	0.07932	0.06051	-0.03145	-0.00040	0.03111	0.01406	0.01124
PREV 1 2	72	0.01600	0.03517	0.03493	-0.07450	-0.00936	-0.04470	0.02050	0.00112	-0.04001	-0.04904	-0.00011

		1 TOT MALE	2 TOT FEM	3 TOT VEH	4 TRAV TIM	5 MILES	6 INCOME	7 ENTRY TI	8 HRS PARK	9 SIGHTSEE	10 WALKING	11 PICNIC
PREV 2 1	73	-0.00407	0.04374	-0.00935	0.03096	0.13145	0.03367	-0.00715	-0.00039	-0.00205	0.01425	0.00023
PREV 2 2	74	0.09139	-0.02430	0.01373	-0.03702	-0.12159	-0.01901	0.00130	0.00940	0.00349	-0.02014	-0.00234
COMB P1	75	-0.02107	-0.01297	-0.02744	-0.00500	-0.00230	0.03019	-0.00007	0.02747	-0.03401	-0.04109	[illegible]
COM P2	76	-0.02370	0.00100	-0.01307	-0.00207	-0.01907	0.03315	-0.00006	-0.04906	-0.03663	-0.02906	-0.07605
COM	77	-0.03390	-0.03274	-0.04924	-0.02054	-0.03922	-0.02447	-0.00207	0.01023	-0.03304	0.00000	0.00055
COM 01	78	0.02003	0.01010	0.02261	0.05073	0.04476	-0.01409	-0.03050	0.01074	-0.01490	0.05701	0.03032
COM 02	79	0.03706	-0.04211	-0.00292	0.02172	0.05345	-0.00143	0.04070	-0.02190	0.02499	0.02300	-0.01630
COM 03	80	0.00205	-0.09576	-0.00147	0.01713	0.02600	-0.01077	0.00600	-0.09007	0.05057	-0.01704	0.03004

		1 TOT MALE	2 TOT FEM	3 TOT VEH	4 TRAV TIM	5 MILES	6 INCOME	7 ENTRY TI	8 HRS PARK	9 SIGHTSEE	10 WALKING	11 PICNIC
SWIM	12	1.00000										
TOT ACT	13	0.01390	1.00000									
WKDY+END	14	0.01707	0.03030	1.00000								
A+P	15	0.00199	0.02325	-0.09730	1.00000							
CAMP+DAY	17	-0.26242	-0.43031	-0.00003	-0.07572	1.00000						
A LO TEM	18	0.12409	0.01654	-0.11246	0.04198	0.00513	1.00000					
A HI TEM	19	0.12050	0.02712	-0.19903	-0.03264	0.07306	0.71391	1.00000				
A AVTEM	20	0.13017	0.02040	-0.11011	-0.06460	0.00300	[illegible]	0.90261	1.00000			
A TEM RG	21	-0.02531	0.03010	-0.02625	-0.06956	-0.03490	-0.50063	0.15902	-0.26073	1.00000		
P LO TEM	22	0.01196	-0.05569	-0.37092	-0.00767	0.12209	0.67494	0.63142	0.67306	-0.21690	1.00000	
P HI TEM	23	0.13799	0.00009	-0.19056	0.02515	0.07990	[illegible]	[illegible]	[illegible]	-0.10432	[illegible]	1.00000
P AV TEM	24	0.07947	-0.01479	-0.35607	0.01140	0.09373	[illegible]	[illegible]	[illegible]	-0.10303	[illegible]	[illegible]
P TEM RG	25	0.10710	0.30440	0.26753	0.04431	-0.04609	-0.10964	0.06234	0.01994	0.00970	[illegible]	[illegible]
A CLD 1	26	0.04900	0.00513	0.00977	0.00052	0.02979	0.06937	0.10353	0.14041	0.11510	0.04403	[illegible]
A CLD2	27	0.04042	0.03305	0.14476	-0.05309	-0.05432	-0.17225	-0.00535	-0.12096	0.23990	-0.10604	[illegible]
A PREC 1	28	0.09020	0.01311	0.03236	-0.00931	-0.03196	0.00969	0.07679	0.04225	0.07669	-0.15201	0.10735
A PREC 2	29	-0.00999	0.00021	0.00370	-0.03351	0.01566	-0.00745	0.03107	0.02050	0.04734	0.11510	-0.17030
A PREC 3	30	-0.00176	0.01213	0.09063	-0.03272	-0.01791	0.00297	0.09322	0.05344	0.10431	-0.05002	0.00013
A WIND 1	31	0.00007	-0.00156	-0.19619	-0.03943	0.09034	0.19043	0.24041	0.24004	0.02020	0.20062	[illegible]
AWIND 2	32	0.07507	0.09157	0.16400	0.03420	-0.00650	0.02100	0.21093	0.10097	0.10729	0.01209	0.01307
A WIND 3	33	-0.00650	-0.03097	0.15152	-0.03509	-0.04316	-0.20210	-0.29659	-0.26973	-0.01337	[illegible]	[illegible]
P CLD 1	34	0.04026	0.02425	-0.02059	0.30140	-0.01509	0.01313	0.10914	0.10700	0.19900	[illegible]	0.17056
P CLD 2	35	0.07793	0.17200	0.19655	-0.32067	-0.05018	-0.17799	-0.21160	-0.20066	0.00593	-0.20911	[illegible]
P PREC 1	36	0.00070	0.00300	0.36323	-0.00458	-0.01010	-0.11771	0.10506	-0.01302	0.20607	-0.20019	[illegible]
P PREC 2	37	0.02995	0.02070	-0.15425	-0.03960	-0.00020	0.00161	0.01996	0.00909	0.01975	[illegible]	[illegible]
P PREC 3	38	-0.02901	0.05127	0.06744	-0.01996	0.00500	-0.04494	0.04031	-0.00107	0.11900	[illegible]	[illegible]
P WIND 1	39	0.03977	0.04720	-0.11937	-0.02091	0.02105	-0.14337	-0.01611	-0.00993	0.10299	[illegible]	[illegible]
P WIND 2	40	0.00044	0.00116	-0.11161	-0.04735	0.02363	-0.06304	0.14069	0.05063	0.26061	0.19911	[illegible]
P WIND 3	41	0.01430	0.03526	0.02905	-0.01143	-0.06373	-0.00657	-0.16255	-0.19226	-0.06467	-0.10900	[illegible]
F HI TEM	42	0.12092	0.01960	-0.12455	0.02499	0.04191	0.29042	0.33200	0.32004	-0.03351	0.25160	[illegible]
F LO TEM	43	0.03918	-0.02123	-0.04310	0.02914	0.03170	0.16067	0.00212	0.12067	-0.13046	0.10973	[illegible]
F PRECIP	44	-0.04163	-0.01990	-0.23432	-0.01031	-0.00657	-0.16103	-0.10045	-0.17006	0.11007	0.15217	-0.00003
HI TEM	45	0.14004	-0.03241	-0.17795	0.01135	0.14199	0.71409	0.67404	0.74051	-0.22219	[illegible]	[illegible]
LO TEM	46	0.12025	-0.01339	-0.27314	0.01291	0.10067	[illegible]	[illegible]	[illegible]	-0.30469	[illegible]	[illegible]
AV TEM	47	0.13123	-0.02710	-0.23943	0.01326	0.12615	[illegible]	[illegible]	[illegible]	-0.32695	[illegible]	[illegible]
PRECIP	48	-0.10292	-0.00290	-0.16246	-0.00034	0.00241	0.00074	-0.11530	-0.00032	-0.22996	[illegible]	[illegible]
AT PRES	49	0.10517	0.06347	0.11294	0.04664	0.01099	-0.22093	-0.05909	-0.16020	0.29211	-0.12001	0.01062
WIND DIR	50	-0.02133	0.31660	0.02065	-0.04667	-0.02200	-0.50939	-0.31300	-0.43700	0.35263	-0.42402	-0.00395
AV WIND	51	-0.06561	-0.04402	-0.05955	-0.00422	-0.00400	0.17926	0.02232	0.09497	-0.22015	0.02920	0.04070
SKY COV	52	-0.04670	-0.02746	-0.03071	0.00076	0.03460	0.23900	-0.06001	0.11052	-0.40394	-0.00970	-0.07094
7 SKY C	53	-0.02407	-0.01427	-0.10182	0.04231	0.03022	0.22674	-0.00710	0.10096	-0.32656	0.10304	0.00290
7 TEM	54	0.11416	-0.00735	-0.23420	-0.06194	0.12151	0.72913	0.60553	0.71092	-0.32243	0.59996	0.06007
7 RHUM	55	0.11677	0.02520	-0.13205	0.03935	0.01577	0.17059	0.27466	0.19990	-0.03724	0.14105	[illegible]
7 WIND V	56	-0.03036	-0.00697	-0.02311	0.02373	0.04212	0.13961	-0.03055	0.06170	-0.22605	-0.01903	0.00609
13 SKY C	57	-0.02711	-0.00100	0.02634	0.02029	-0.01490	0.05941	-0.11420	-0.02703	-0.21007	-0.10304	[illegible]
13 TEM	58	0.14990	-0.01707	-0.00123	-0.00026	0.12400	0.64793	0.63492	0.60744	-0.17453	0.55300	[illegible]
13 R HUM	59	-0.04363	-0.05240	-0.29104	0.01644	0.01036	0.20026	0.02067	0.17325	-0.37139	0.29263	[illegible]
13 WINDY	60	-0.03202	-0.01943	0.01050	0.04902	0.00957	0.06339	-0.02620	-0.00756	-0.11931	-0.02716	0.00090
F TEM RG	61	0.03903	0.03559	-0.03769	-0.01044	-0.00553	0.02909	0.13590	0.00350	0.11537	-0.03289	0.00271

		12 SAIN	13 TOT ACT	14 WKDY+END	15 A+P	17 CAMP+DAY	18 A LO TEM	19 A HI TEM	20 A AVTEM	21 A TEM RG	22 P LO TEM	23 P HI TEM
TEM RG	62	0.02295	-0.02740	0.19618	-0.00460	0.03190	-0.27129	-0.05366	-0.17012	0.32074	-0.00009	0.00009
F CLD 1	63	-0.01838	0.02544	-0.03628	-0.03455	0.01763	0.05779	-0.03029	0.05808	-0.34605	0.03470	0.01973
FCLD 2	64	-0.04567	0.01265	-0.14153	0.00836	0.30436	0.28734	-0.25926	0.29159	-0.10320	0.20200	[illegible]
F CLD 3	65	0.04970	-0.02600	0.14146	-0.03431	-0.01435	-0.27771	-0.23734	-0.27716	0.11584	-0.25900	[illegible]
FOG 1	66	-0.04170	0.01596	0.00126	-0.00361	-0.03094	-0.09454	-0.00736	-0.00253	0.12410	-0.00001	[illegible]
FOG 2	67	-0.03109	-0.07507	-0.02066	-0.07500	0.07612	-0.12799	-0.00305	-0.09164	0.20606	-0.01610	[illegible]
THUN T	68	0.06309	0.09515	0.23206	-0.00359	-0.07171	-0.20232	-0.09440	-0.15036	0.17459	-0.10475	[illegible]
7 PRE T	69	-0.02436	-0.02753	0.11023	-0.03952	0.06053	-0.00013	-0.01306	-0.00707	-0.01239	0.03517	[illegible]
13 PRE T	70	0.13640	0.05072	0.05242	0.00493	-0.00597	0.14099	0.21135	0.10064	0.04670	-0.00014	[illegible]
PREV 1 1	71	-0.05673	-0.01626	-0.14350	-0.09013	-0.05749	-0.14003	-0.16195	-0.17079	0.01014	-0.10170	[illegible]
PREV 1 2	72	0.05617	-0.00441	0.19073	0.05194	0.07242	0.12362	0.17415	0.16997	0.02009	0.06607	[illegible]
PREV 2 1	73	-0.01711	0.03534	-0.19044	0.02490	-0.01079	-0.01572	-0.00352	-0.02024	0.02267	0.11346	[illegible]
PREV 2 2	74	0.00444	-0.03992	0.20673	-0.02119	0.03469	-0.02367	-0.02235	-0.01413	0.00651	-0.14006	[illegible]
COMM P1	75	0.04279	0.01314	0.14540	0.36074	0.03692	0.12601	0.22932	0.10292	0.06549	0.00700	[illegible]
COM P2	76	-0.05070	-0.00961	-0.21341	-0.00059	0.04005	0.02291	-0.13045	-0.05174	-0.10177	0.16406	[illegible]
COM	77	0.34440	0.02143	-0.01447	-0.00044	-0.01366	0.03280	0.19957	0.12401	0.10409	0.03903	0.17709
COM 01	78	-0.05072	-0.03333	0.07994	-0.04366	-0.03498	-0.46021	-0.36325	-0.44021	0.24013	-0.45005	-0.00007
COM 02	79	-0.00297	-0.04307	-0.09675	0.01782	0.01295	0.24134	-0.03197	0.12153	-0.37576	-0.02237	[illegible]
COM 03	80	0.30392	-0.01171	-0.14927	0.00509	0.05252	0.31474	-0.00622	0.20449	-0.34470	0.20240	0.11001

		12	13	14	15	17	18	19	20	21	22	23
P AV TEM	24	1.00000										
P TEM RG	25	-0.02337	1.00000									
A CLD 1	26	0.06630	0.09731	1.00000								
A CLD2	27	-0.07953	0.22013	0.20064	1.00000							
A PREC 1	28	0.01092	0.40449	0.31341	0.33330	1.00000						
A PREC 2	29	-0.02061	-0.39291	-0.10047	-0.20042	-0.27267	1.00000					
A PREC 3	30	-0.00419	0.14252	0.15043	0.15990	0.71879	0.47472	1.00000				
A WIND 1	31	0.39765	0.13909	-0.00435	-0.01410	0.07065	-0.04749	-0.03391	1.00000			
AWIND 2	32	-0.01411	0.13012	0.54242	0.24204	0.12494	-0.02281	-0.09693	-0.34700	1.00000		
A WIND 3	33	-0.23515	-0.02047	-0.33413	0.01165	-0.24724	0.00966	-0.16419	-0.27029	-0.40450	1.00000	
P CLD 1	34	0.12006	0.20121	0.57436	0.10527	0.29350	-0.17454	0.14091	0.00906	0.24202	-0.04625	1.00000
P CLD 2	35	-0.11105	0.41177	0.24790	0.51701	0.30016	-0.10531	0.14791	-0.01109	0.25374	-0.02005	0.27007
P PREC 1	36	-0.06451	0.41727	0.31000	0.30355	0.42970	-0.09404	0.37079	-0.02900	0.27000	-0.04035	[illegible]
P PREC 2	37	-0.04600	0.29727	0.00679	0.31504	0.21092	0.10407	0.24000	-0.29715	0.00057	0.10506	0.04077
P PREC 3	38	-0.04374	-0.13460	-0.20065	-0.14016	-0.17259	0.62930	0.29672	-0.25077	-0.17712	-0.07307	-0.00749
P WIND 1	39	0.04903	-0.01196	0.23092	0.34000	-0.04260	0.02562	-0.02045	-0.21505	0.27104	-0.16303	[illegible]
P WIND 2	40	0.02479	-0.17479	0.11609	0.10030	-0.03456	0.14292	0.07162	-0.03306	0.17626	-0.30070	[illegible]
P WIND 3	41	-0.00044	0.13729	0.12073	0.39166	-0.04502	-0.10974	-0.12341	-0.26037	0.15973	0.11707	[illegible]
F HI TEM	42	0.33644	0.27509	0.08728	0.11115	0.33177	-0.27592	0.10456	0.26090	0.14652	-0.25709	[illegible]
F LO TEM	43	0.22023	0.17015	0.17413	-0.10949	0.02703	-0.13773	-0.07402	0.16994	-0.02217	-0.00365	[illegible]
F PRECIP	44	0.01077	-0.33901	-0.07740	0.14337	-0.27675	0.15259	-0.14203	0.02909	-0.19550	0.32507	[illegible]
HI TEM	45	0.74059	0.16067	0.19309	-0.35232	0.09150	-0.25900	-0.15332	0.20921	0.13621	-0.39072	[illegible]
LO TEM	46	0.71970	0.10160	-0.03527	-0.19531	-0.03994	-0.05565	-0.07671	0.23459	-0.03306	-0.16003	[illegible]
AV TEM	47	0.79222	0.12425	0.07262	-0.13390	0.02719	-0.15999	-0.09069	0.27495	0.04201	-0.20295	[illegible]
PRECIP	48	0.04164	-0.23159	-0.36345	-0.26434	-0.29776	0.25766	-0.19432	-0.03205	-0.31319	0.02403	[illegible]
AT PRES	49	-0.11910	0.20830	0.29436	0.21099	0.12417	-0.00654	0.05122	0.03477	0.31231	-0.10730	[illegible]
WIND DIR	50	-0.49520	-0.02229	0.07131	0.17656	-0.03726	0.04043	-0.02093	-0.00612	0.02249	0.11742	[illegible]
AV WIND	51	0.09912	0.04702	-0.29042	-0.17411	-0.02495	-0.02162	-0.03760	-0.00041	-0.24000	0.23717	[illegible]
SKY COV	52	-0.05191	-0.22515	-0.31425	-0.43524	-0.17043	0.24611	0.01462	-0.12671	-0.30469	0.27439	[illegible]
7 SKY C	53	0.00277	-0.12201	-0.27150	-0.31032	-0.21391	0.13106	-0.10092	-0.25036	-0.30127	0.37105	[illegible]
7 TEM	54	0.65222	0.05934	0.04799	-0.12065	-0.03307	-0.03940	-0.05075	0.20050	-0.01071	-0.21320	[illegible]
7 RHUM	55	0.14005	-0.07789	0.12343	-0.20340	-0.10139	0.06735	-0.12320	0.25407	0.00305	-0.19007	[illegible]
7 WIND V	56	0.64345	0.04659	-0.25935	-0.04509	0.01247	-0.03040	-0.01613	-0.09195	-0.11743	0.06712	[illegible]
13 SKY C	57	-0.12300	-0.03724	-0.39167	-0.24563	-0.17115	0.13609	-0.05742	-0.12530	-0.20550	0.26097	[illegible]
13 TEM	58	0.65902	0.10599	0.29553	-0.02459	0.00250	-0.22197	-0.09435	0.25537	0.16205	-0.30040	[illegible]
13 R HUM	59	0.23370	-0.29307	-0.25269	-0.36699	-0.24156	0.21760	-0.04373	-0.04047	-0.26260	0.12302	[illegible]
13 WINDV	60	0.06350	0.10007	-0.23770	-0.00994	0.04724	-0.02166	0.02755	-0.06749	-0.10743	0.13021	[illegible]
F TEM RG	61	-0.01603	0.10197	-0.14561	-0.10994	0.19249	-0.03907	0.14777	0.00341	0.12141	-0.00359	[illegible]

		24 P AV TEM	25 P TEM RG	26 A CLD 1	27 A CLD2	28 A PREC 1	29 A PREC 2	30 A PREC 3	31 A WIND 1	32 A WIND 2	33 A WIND 3	34 P CLD 1
TEM RG	62	-0.09233	0.12169	0.36411	0.25731	0.21246	-0.30811	-0.02027	0.04462	0.27026	-0.33341	0.10031
F CLD 1	63	0.04647	-0.02768	-0.12139	-0.02263	0.04190	-0.02519	0.02011	0.11784	-0.25397	0.23403	0.10764
FCLD 2	64	0.28821	-0.13093	0.11999	-0.24036	-0.07292	0.13756	-0.02075	-0.15754	-0.04345	-0.27133	0.04257
F CLD 3	65	-0.27170	0.12747	-0.02016	0.22434	0.03625	-0.09753	-0.03733	0.00180	0.19037	0.00743	-0.19999
FOG 1	66	0.32915	0.14952	-0.07094	0.31010	0.19023	-0.16087	0.06073	0.03257	-0.15007	0.14294	0.10025
FOG 2	67	-0.09259	-0.12822	-0.16179	-0.36139	-0.00072	-0.02321	-0.09971	0.04964	-0.13547	0.00104	0.02036
THUN T	68	-0.17717	-0.19471	0.24092	0.29465	0.24520	-0.01733	0.21221	0.00453	0.19951	0.00200	0.17064
7 PRE T	69	-0.01010	-0.09946	0.12663	0.11967	0.01920	-0.03826	-0.01029	0.04452	-0.05602	0.02704	0.02160
13 PRE T	70	0.15513	0.42423	0.23517	0.00536	0.32698	-0.44069	-0.01941	0.09831	0.27535	-0.36762	0.17345
PREV 1 1	71	-0.12763	-0.05982	-0.37505	0.00732	0.11613	-0.08297	0.04554	-0.06882	-0.07195	0.02501	0.04043
PREV 1 2	72	0.13299	0.00923	0.11724	0.03994	0.03213	-0.06963	-0.04648	0.07437	0.00107	-0.00366	-0.01792
PREV 2 1	73	0.06279	-0.14929	-0.31546	0.01255	0.04338	-0.06014	-0.02125	-0.07576	-0.30147	0.02146	0.00033
PREV 2 2	74	-0.10745	0.18884	0.30457	-0.00166	-0.05113	0.06391	0.01395	-0.05047	0.13752	0.01009	-0.09904
COMB P1	75	0.10981	-0.08511	0.99412	0.02279	0.30375	-0.16225	0.14608	-0.09577	0.53098	-0.29701	0.94008
COM P2	76	0.04197	-0.28027	-0.01713	-0.22464	0.33791	-0.02276	0.01892	0.29247	-0.12518	-0.09026	-0.24066
COM	77	0.17392	0.18131	0.56358	0.05593	0.20229	-0.14461	0.25345	0.00791	0.23337	-0.03707	0.99442
COM 01	78	-0.50274	0.02350	-0.66395	0.16277	-0.36221	0.15715	-0.07855	-0.04306	-0.37533	0.25037	-0.00093
COM 02	79	-0.01224	-0.09039	-0.41193	-0.41132	-0.04296	0.11539	0.03676	-0.12191	-0.34127	0.30734	-0.33231
COM 03	80	0.19089	-0.02469	-0.22027	-0.30050	-0.23500	0.11507	-0.13175	0.01062	-0.30793	0.23549	-0.21002

		24	25	26	27	28	29	30	31	32	33	34
P CLD 2	35	1.00000										
P PREC 1	36	0.39073	1.00000									
P PREC 2	37	0.25266	0.01027	1.00000								
P PREC 3	38	-0.09183	0.16408	0.35392	1.00000							
P WIND 1	39	0.42210	0.29670	0.31430	0.33576	1.00000						
P WIND 2	40	0.27546	0.35259	0.00076	0.34339	0.01932	1.00000					
P WIND 3	41	0.27415	0.03437	0.41727	0.15025	0.56303	-0.06960	1.00000				
F HI TEM	42	0.00648	0.20684	-0.27247	-0.33146	-0.00947	0.12116	-0.36342	1.00000			
F LO TEM	43	0.00757	0.12263	-0.20704	-0.14609	0.09166	0.17362	-0.19291	0.39934	1.00000		
F PRECIP	44	0.01671	-0.22251	0.00596	0.03160	0.21070	0.12300	0.17093	-0.14907	0.11970	1.00000	
HI TEM	45	-0.01153	-0.03032	-0.10259	-0.21372	0.03252	0.00367	-0.13249	0.45332	0.27642	-0.22394	1.00000
LO TEM	46	-0.15074	-0.19539	-0.33401	-0.09099	-0.11495	-0.06529	-0.10643	0.34939	0.23013	-0.10140	0.00120
AV TEM	47	-0.10915	-0.12797	-0.07162	-0.15607	-0.09372	-0.03764	-0.15302	0.41438	0.29797	-0.10105	0.07052
PRECIP	48	-0.29194	-0.45599	-0.23937	-0.63910	-0.17795	-0.14098	-0.07225	-0.11455	-0.02917	0.00014	0.00015
AT PRES	49	0.26467	0.36731	-0.11536	-0.04509	0.23510	0.20123	0.07366	0.10986	0.10156	-0.07504	0.00470
WIND DIR	50	0.00535	0.15278	-0.02903	0.03326	0.17750	0.15581	0.01023	-0.07739	0.03551	-0.00703	-0.30021
AV WIND	51	-0.20855	-0.19265	0.14577	0.03110	-0.30224	-0.46460	0.01389	0.00541	-0.21397	-0.13494	-0.02093
SKY COV	52	-0.36296	-0.32109	-0.03383	0.12124	-0.20029	-0.15751	-0.12010	-0.12075	-0.01979	0.14096	-0.09996
7 SKY C	53	-0.22130	-0.25247	-0.19303	0.03675	-0.10243	-0.12102	-0.17141	-0.05909	0.09950	0.21605	0.07009
7 TEM	54	-0.12064	-0.16039	-0.04753	-0.05870	-0.03747	-0.00621	-0.10227	0.33209	0.10240	-0.07200	0.70016
7 RHUM	55	-0.08209	-0.24111	-0.16590	-0.00247	-0.00036	0.01267	-0.16093	-0.06406	0.15253	0.10712	0.10050
7 WIND V	56	-0.03733	-0.17567	0.13037	0.05003	-0.11935	-0.23030	0.12220	-0.02336	-0.17091	-0.13012	-0.02079
13 SKY C	57	-0.17392	-0.20917	0.03077	0.11023	-0.13495	-0.26410	0.06063	-0.24026	-0.11966	0.15096	-0.20003
13 TEM	58	-0.01233	0.01152	-0.12576	-0.17256	0.01905	0.06376	-0.09649	0.43192	0.25919	-0.29747	0.00669
13 R HUM	59	-0.26372	-0.43904	0.10716	-0.13232	-0.08406	-0.20540	0.07422	0.29016	-0.09057	0.22020	0.00777
13 WINDV	60	-0.21556	-0.12247	0.14963	0.07923	-0.33149	-0.47773	0.10131	0.00496	-0.25224	-0.11146	-0.07006
F TEM RG	61	-0.33465	0.06177	0.12198	-0.00654	-0.26520	-0.10234	-0.35332	0.24007	-0.79974	-0.22605	0.01123
TEM RG	62	0.25742	0.27939	-0.09908	-0.17963	0.24807	0.24615	0.08239	0.10069	0.03230	-0.17313	0.13044
F CLD 1	63	-0.01058	0.09984	-0.07999	-0.01249	-0.02076	-0.02532	0.03391	-0.00131	-0.03384	-0.19030	-0.01036
FCLD 2	64	-0.14535	-0.03765	-0.04436	0.27930	-0.07407	0.06014	-0.15344	-0.04371	0.06510	-0.14620	0.21069
F CLD 3	65	0.13250	-0.02752	0.05562	-0.22038	0.07997	-0.03548	0.12732	0.03771	-0.03452	0.21920	-0.17671
FOG 1	66	0.09315	0.22701	0.20404	0.02630	-0.04570	-0.15562	0.27243	0.03926	-0.10990	-0.01225	-0.16074
FOG 2	67	-0.15947	-0.06956	-0.00655	0.03029	0.04109	0.13652	-0.01272	-0.09318	-0.01611	0.12067	0.00610
THUN T	68	0.32037	0.33571	0.15035	0.01246	0.13530	0.07487	0.09192	0.02104	0.09078	-0.03600	-0.19609
7 PRE T	69	-0.03057	0.02925	-0.34111	-0.05763	-0.07605	-0.03960	-0.07541	0.02092	0.01306	-0.03031	-0.00231
13 PRE T	70	0.03644	0.33724	-0.31030	-0.29731	-0.05171	0.32149	-0.12971	0.61975	0.19996	-0.40700	0.30364
PREV 1 1	71	-0.01544	0.02553	-0.30130	-0.05362	-0.07112	-0.07929	0.02373	-0.03011	-0.00363	0.13095	-0.20046
PREV 1 2	72	0.05617	0.01774	0.00740	-0.04366	0.05750	0.04097	-0.01526	0.03251	0.00683	-0.09739	0.25076

		35 P CLD 2	36 P PREC 1	37 P PREC 2	38 P PREC 3	39 P WIND 1	40 P WIND 2	41 P WIND 3	42 F HI TEM	43 F LO TEM	44 F PRECIP	45 HI TEM
PREV 2 1	73	-0.05363	-0.03793	-0.12462	-0.07659	0.07358	0.00713	0.01021	0.11679	0.09717	0.16062	-0.00065
PREV 2 2	74	0.09655	0.08028	0.12750	0.07006	-0.30656	-0.05535	0.02573	-0.00002	-0.09060	-0.16476	0.01700
COMB P1	75	0.23060	0.31502	0.07204	-0.20093	0.20101	0.09569	0.11477	0.06623	0.19244	-0.06730	0.21063
COM P2	76	-0.19438	-0.03755	-0.20320	-0.50305	-0.43846	-0.30527	-0.33591	0.15064	0.12355	-0.01706	0.09000
COM	77	0.20701	0.51019	0.05160	-0.00114	0.23255	0.16010	0.10322	0.07260	0.24763	-0.04100	0.15113
COM 01	78	-0.01100	0.09310	-0.00132	0.03271	0.07090	-0.03360	0.03679	-0.01830	0.01985	-0.05163	-0.40000
COM 02	79	-0.47575	-0.29192	0.00195	0.05734	-0.49956	-0.38545	-0.16577	0.03120	-0.14137	-0.00906	-0.00013
COM 03	80	-0.22600	-0.30013	-0.25144	-0.00F31	-0.17599	-0.0955	-0.19367	-0.01644	0.13315	0.10573	0.20391

		46 LO TEM	47 AV TEM	48 PRECIP	49 AT PRES	50 WIND DIR	51 AV WIND	52 SKY COV	53 7 SKY C	54 7 TEM	55 7 RHUM	56 7 WIND V
LO TEM	46	1.00000										
AV TEM	47	0.95636	1.00000									
PRECIP	48	0.17020	0.9529	1.00000								
AT PRES	49	-0.23602	-0.13030	-0.29511	1.00000							
WIND DIR	50	-0.40650	-0.40409	-0.12997	0.30981	1.00000						
AV WIND	51	0.23722	0.13092	0.14503	-0.41306	-0.23430	1.00000					
SKY COV	52	0.27675	0.10530	0.34950	-0.35923	-0.17933	0.19421	1.00000				
7 SKY C	53	0.35174	0.24021	0.30150	-0.36694	-0.17090	0.22035	0.72404	1.00000			
7 TEM	54	0.84910	0.84349	0.14040	-0.23001	-0.37506	0.26717	0.14207	0.27980	1.00000		
7 RHUM	55	0.31979	0.1202	0.04033	-0.00038	-0.11190	-0.39194	0.11027	0.11357	0.05946	1.00000	
7 WIND V	56	0.11303	0.4752	0.09970	-0.19671	-0.09800	0.46739	0.09594	0.02501	0.12200	-0.26301	1.00000
13 SKY C	57	0.07712	-0.0527	0.27520	-0.23191	-0.10287	0.08 37	0.67257	0.30041	-0.02205	0.07904	0.07179
13 TEM	58	0.71520	0.83414	0.03305	0.03151	-0.31159	-0.02495	-0.12735	0.00317	0.67127	0.13905	-0.10071
13 R HUM	59	0.30370	0.25403	0.20045	-0.36201	-0.20559	0.27413	0.45644	0.40004	0.26166	0.20742	0.19549
13 WINDV	60	0.02626	-0.0975	0.02495	-0.27374	-0.20416	0.75363	0.01403	0.02013	0.00333	-0.31422	0.40423
F TEM RG	61	-0.01205	-0.0469	-0.04501	-0.06470	-0.00606	0.22961	-0.06521	-0.14031	0.32999	-0.20394	0.17934
TEM RG	62	-0.45292	-0.19732	-0.19631	0.41717	0.11147	-0.45 07	-0.40465	-0.49340	-0.20107	0.02975	-0.29931
F CLD 1	63	-0.01967	-0.1992	-0.07909	-0.04075	0.07706	-0.04 34	0.03137	0.06007	-0.02604	0.02000	-0.00739
FCLD 2	64	0.27731	-0.25603	0.07151	-0.12549	-0.10390	0.24001	0.00401	0.21343	0.30032	0.03090	0.07426
F CLD 3	65	-0.22236	-0.20491	-0.61255	0.13951	0.10077	-0.16510	-0.07179	-0.21712	-0.23794	-0.03032	-0.02196
FOG 1	66	-0.17902	-0.16227	-0.11140	-0.02313	-0.07954	0.36061	-0.32357	-0.26090	-0.11113	-0.49275	0.20253
FOG 2	67	-0.00131	-0.2103	0.25011	-0.05027	0.03025	0.02031	-0.05621	-0.05230	0.01140	0.03103	0.03091
THUN T	68	-0.20677	-0.25004	-0.69136	0.32301	0.22543	-0.21717	-0.34254	-0.20760	-0.27926	-0.03946	-0.00017
7 PRE T	69	-0.05406	-0.3237	-0.13617	0.06316	0.07750	-0.02937	-0.09605	-0.12106	-0.04664	-0.00104	-0.14056
13 PRE T	70	0.11000	-0.25311	-0.20050	0.20919	0.37946	-0.01633	-0.26127	-0.19971	0.15207	-0.00499	-0.04023
PREV 1 1	71	-0.10301	-0.10425	0.09846	-0.22330	-0.07292	0.25593	0.09272	0.11620	-0.07535	-0.04402	-0.01050
PREV 1 2	72	0.00775	0.17477	-0.07193	0.15001	-0.00572	-0.21553	-0.12916	-0.14925	0.07021	0.00091	0.05111
PREV 2 1	73	-0.04059	-0.5725	0.06110	-0.04022	0.31977	-0.02010	-0.04941	0.03669	0.00647	0.00004	-0.00719
PREV 2 2	74	0.02416	0.0554	-0.03406	-0.01499	-0.03176	0.16270	0.02073	-0.05340	-0.01652	-0.05762	0.05005
COMB P1	75	0.05503	0.10460	-0.35571	0.26227	0.07537	-0.25782	-0.20574	-0.22090	0.04750	0.12072	-0.10140
COM P2	76	0.07012	0.9184	0.29406	-0.11222	0.03600	0.05651	0.15144	0.11036	0.06636	0.10371	-0.02477
COM	77	0.34397	0.9140	-0.31674	0.19607	0.07416	-0.11481	-0.32337	-0.22507	0.03503	0.02523	-0.07032
COM 01	78	-0.35216	-0.39340	-0.10292	0.17112	0.00476	0.12740	-0.00956	-0.00160	-0.29670	-0.26509	0.11605
COM 02	79	0.26070	0.12309	0.31459	-0.42031	-0.27041	0.70069	0.77732	0.59670	0.22023	-0.17605	0.20936
COM 03	80	0.44095	0.36020	0.32444	-0.35077	-0.22409	0.10755	0.09060	0.06670	0.42461	0.23101	-0.00130

13 SKY C	57	1.00000								
13 TEM	58	-0.19010	1.00000							
13 R HUM	59	0.33510	-0.06921	1.00000						
13 WINDV	60	0.07560	-0.03501	0.11052	1.00000					
F TEM RG	61	-0.04033	0.2011	-0.00995	0.26973	1.00000				
TEM RG	62	-0.34405	0.17211	-0.57697	-0.17433	0.07546	1.00000			
F CLD 1	63	-0.01643	-0.0043	0.00373	-0.01262	0.03457	0.01795	1.00000		
FCLD 2	64	-0.07074	0.19950	0.17069	0.15442	-0.00795	-0.15227	-0.07794	1.00000	
F CLD 3	65	0.07750	-0.15539	-0.15320	-0.12310	0.04160	0.11777	-0.53920	-0.79759	1.00000	
FOG 1	66	-0.14720	-0.11564	-0.18995	0.38051	0.14241	0.05350	0.10271	-0.04205	-0.02663	1.00000

		13 SKY C	13 TEM	13 R HUM	13 [illegible]	F TEM PG	TEM [illegible]	F CLD 1	FCLD 2	F CLD 3	FOG 1	FOG 2
		57	58	59	[illegible]	61	62	63	64	65	66	67
FOG 2	67	-0.09786	[illegible]	0.06887	[illegible]	-0.04571	0.04716	-0.02921	-0.17444	0.14903	-0.17008	1.00000
THUN T	68	-0.16723	-0.14367	-0.27991	[illegible]	-0.02121	0.15[illegible]	0.09567	-0.19165	0.10317	0.02327	-0.17065
7 PRE T	69	-0.05584	0.12497	-0.15681	[illegible]	0.02019	0.09126	0.02642	-0.02391	0.08423	0.05979	-0.10879
13 PRE T	70	-0.24114	0.43557	-0.0450[illegible]	[illegible]	0.28335	0.39677	0.05384	0.05832	-0.00082	0.09441	-0.10073
PREV 1 1	71	0.03221	-0.25775	0.22285	[illegible]	-0.07233	-0.22670	-0.03384	0.04837	-0.03983	0.14722	0.04219
PREV 1 2	72	-0.05346	0.24468	-0.22449	[illegible]	0.21452	0.25[illegible]45	-0.03085	-0.12714	0.12618	-0.08192	0.08174
PREV 2 1	73	-0.07794	[illegible]	0.06556	[illegible]	-0.01395	-0.03768	0.15323	0.01987	-0.10061	-0.02992	0.08115
PREV 2 2	74	0.06635	[illegible]	-0.0657[illegible]	0.13176	0.03825	0.01947	-0.17592	0.00456	0.10089	0.02428	-0.00445
COMP P1	75	-0.33773	0.22237	-0.2240[illegible]	[illegible]	-0.15896	0.32511	-0.17181	0.15927	-0.04079	-0.07140	[illegible]
COM P2	76	-0.01171	[illegible]	0.11925	[illegible]	[illegible]	[illegible]	-0.04767	-0.07052	0.00841	-0.10543	-0.03418
COM	77	-0.37484	0.14467	-0.14325	[illegible]	-0.21293	0.15967	0.09324	0.10456	-0.17145	0.17706	0.01733
COM C1	78	-0.02776	-0.35581	-0.22973	[illegible]	[illegible]	[illegible]	0.06749	-0.15311	0.00830	0.12019	0.02033
COM C2	79	0.44732	-0.11317	0.41544	[illegible]	0.17[illegible]23	-0.55[illegible]94	-0.03783	0.15452	-0.10765	0.03593	-0.00469
COM C3	80	0.34327	0.11464	0.41715	[illegible]	[illegible]	[illegible]	0.04731	0.25390	-0.24310	-0.34408	[illegible]

		THUN T	7 PRE T	13 PRE T	PREV 1 1	PREV 1 2	PREV 2 1	PREV 2 2	COMP P1	COM P2	COM	COM C1
		68	69	70	71	72	73	74	75	76	77	78
THUN T	68	1.00000										
7 PRE T	69	0.24172	1.00000									
13 PRE T	70	0.05179	[illegible]	1.00000								
PREV 1 1	71	-0.05342	[illegible]	-0.16492	1.00000							
PREV 1 2	72	0.06729	[illegible]	[illegible]	[illegible]	1.00000						
PREV 2 1	73	-0.01979	[illegible]	0.07414	[illegible]	-0.21512	1.00000					
PREV 2 2	74	0.05245	[illegible]	[illegible]	[illegible]	0.27191	[illegible]	1.00000				
COMP P1	75	0.27342	0.2417[illegible]	0.19414	[illegible]	[illegible]	[illegible]	0.05394	1.00000			
COM P2	76	-0.17[illegible]	[illegible]	0.6453[illegible]	[illegible]	[illegible]	0.16591	-0.14797	-0.02568	1.00000		
COM	77	0.24853	[illegible]	0.15256	[illegible]	[illegible]	[illegible]	-0.14751	0.45363	-0.24217	1.00000	
COM C1	78	0.18605	[illegible]	[illegible]	[illegible]	[illegible]	0.02563	[illegible]	-0.09291	0.17553	-0.01487	1.00000
COM C2	79	-0.35425	[illegible]	-0.39175	[illegible]	[illegible]	[illegible]	0.02931	-0.39146	0.15233	-0.30646	0.03267
COM C3	80	-0.37944	[illegible]	[illegible]	[illegible]	-0.14257	[illegible]	[illegible]	-0.15977	0.14998	-0.28782	-0.19045

		COM C2	COM C3
		79	80
COM C2	79	1.00000	
COM C3	80	0.54949	1.00000

APPENDIX D

VARIOUS STATISTICS FOR VARIABLES AND THEIR SIMPLE CORRELATIONS FOR WATERLOO STATE RECREATION AREA, PORTAGE LAKE UNIT DATA

Broken Line	Signifies Simple Correlations Between .800 and .999
Solid Line	Signifies Simple Correlations Between .600 and .799

WATERLOO

TOTAL RAW OBSERVATIONS [illegible]
TOTAL OBSERVATIONS DROPPED [illegible]
TOTAL OBSERVATIONS IN PROBLEM [illegible]

*******THE FOLLOWING VARIABLES [illegible] FOR ALL OBSERVATIONS**********
[illegible]
33

T A B L E [illegible] - - STATISTICS ON TRANSFORMED VARIABLES

LABEL	NO.	MINIMUM VALUE	MAXIMUM VALUE	MEAN	STANDARD DEVIATIONS	SUM	SUM OF SQUARES	SUM OF SQUARED DEVIATION FROM THE MEAN
TOT MILE	1	[illegible]	[illegible]	2.29[illegible]	[illegible].4953[illegible]	1579.[illegible]	4470.00000	1435.09820
TOT FEM	2	[illegible]	[illegible]	2.[illegible]	1.561356[illegible]	1442.[illegible]	5136.00000	1071.35493
TOT VEH	3	[illegible]	1[illegible]	4.4[illegible]	[illegible].2341277	299[illegible]	16597.00000	3390.17060
TRAV TIM	4	[illegible]	[illegible]	[illegible]	1.441445[illegible]	794.[illegible]	2714.00000	1400.76209
MILES	5	[illegible]	75.[illegible]	46.[illegible]	4[illegible].5348477	3[illegible]	42[illegible].00000	2736066.93665
INCOME	6	[illegible]	7.[illegible]	3.[illegible]	1.55[illegible]34	23[illegible]	11[illegible].00000	1899.90221
[illegible]	7	[illegible]	7.[illegible]	2.33144	1.[illegible]1[illegible]2[illegible]	[illegible]17.[illegible]	[illegible]75.00000	2224.20619
HRS [illegible]	8	[illegible]	7.[illegible]	2.[illegible]44.4	2.37[illegible]4749	1[illegible]	[illegible]711.00000	3025.07334
[illegible]	9	[illegible]	[illegible]	[illegible]	[illegible].39[illegible]	175.[illegible]	[illegible]2[illegible].00000	153.07040
[illegible]	10	[illegible]	[illegible]	[illegible]22[illegible]44	[illegible].4171357	[illegible]	[illegible]52.00000	117.07349
[illegible]	11	[illegible]	[illegible]	[illegible]51[illegible]5	[illegible].[illegible]2465	347.[illegible]	347.00000	169.00716
[illegible]	12	[illegible]	[illegible]	[illegible]	[illegible].[illegible]823459	[illegible]5.[illegible]	55[illegible].00000	99.48741
TOT [illegible]	13	[illegible]	[illegible]	4.4[illegible]	[illegible].[illegible]1[illegible]2[illegible]65	[illegible]14.[illegible]	[illegible]7[illegible].00000	4209.21895
[illegible]	14	-1.[illegible]	[illegible]	[illegible]	[illegible].[illegible]877594	-[illegible]	470.00000	661.90221
[illegible]	15	-1.[illegible]	[illegible]	[illegible]	[illegible].[illegible]3972	15[illegible]	434.00000	[illegible].06303
[illegible]	17	-[illegible]	1.[illegible]	[illegible]475[illegible]	[illegible].4786557	325.[illegible]	479.00000	523.44035
[illegible]	18	52.[illegible]	9[illegible]	6[illegible].74227	7.[illegible]2[illegible]2577	4[illegible]	[illegible]242[illegible]9[illegible].00000	33467.00691
[illegible]	19	59.[illegible]	9[illegible]	79.[illegible]5744	[illegible]	53[illegible]	42[illegible]764.00000	44460.79094
[illegible]	20	5[illegible]	[illegible]	74.[illegible]72	4.[illegible]	5[illegible]2[illegible]3.[illegible]	[illegible]759[illegible]6[illegible].00000	33805.74669
[illegible]	21	[illegible]	2[illegible]	[illegible]	[illegible].[illegible]46[illegible]	7[illegible]	95[illegible]97.00000	22044.55376
[illegible]	22	5[illegible]	[illegible]	7[illegible].[illegible]524[illegible]	7.75[illegible]	51[illegible]76.[illegible]	39[illegible]6[illegible]64.00000	49817.20719
[illegible]	23	64.[illegible]	9[illegible]	[illegible]	4.[illegible]43[illegible]	55907.[illegible]	4642597.00000	44531.13107
[illegible]	24	6[illegible]	[illegible]	7[illegible].51[illegible]	7.[illegible]742[illegible]	5[illegible]9[illegible]9.[illegible]	4379471.00000	36049.64359
[illegible]	25	[illegible]	2[illegible]	[illegible].47[illegible]	5.77[illegible]	4[illegible]71.[illegible]	[illegible]71[illegible].00000	22575.00004
[illegible]	26	-[illegible]	[illegible]	[illegible]	[illegible].[illegible]945072	122.[illegible]	45[illegible].00000	420.07093
[illegible]	27	-[illegible]	[illegible]	[illegible]	[illegible].[illegible]5[illegible]2034	45.[illegible]	[illegible].00000	306.77761

A PREC 1	29	0.00000	1.00000	[illegible]	0.3425721	587.00000	587.00000	79.53601
A PREC 2	30	0.00000	1.00000	[illegible]	0.3099032	73.00000	73.00000	65.15169
A PREC 3	31	0.0000	1.00000	0.02799	0.1655437	19.00000	19.00000	18.46834
A WIND 1	32	0.00000	1.00000	[illegible]	0.2732985	55.00000	55.00000	50.54692
A WIND 2	32	0.00000	1.00000	0.61900	0.2779759	624.00000	624.00000	50.54692
A WIND 3	33	0.00000	1.00000	[illegible]	[illegible]	0.00000	0.00000	0.00000
B CLD 1	34	-1.00000	1.00000	0.22549	0.5938057	221.00000	311.00000	239.06022
B CLD 2	35	-1.00000	1.00000	0.47572	0.6184824	323.00000	413.00000	259.34004
B PREC 1	36	-1.00000	1.00000	0.58218	0.3271725	509.00000	601.00000	72.57437
B PREC 2	37	-1.00000	1.00000	0.03829	0.1995734	26.00000	28.00000	27.00442
B PREC 3	38	-1.00000	1.00000	0.07364	0.2649567	50.00000	52.00000	40.31011
B WIND 1	39	0.00000	1.00000	0.14875	0.3561924	101.00000	101.00000	85.97644
B WIND 2	40	0.0000	1.00000	0.79381	0.4046435	539.00000	539.00000	111.13602
B WIND 3	41	0.00000	1.00000	0.05744	0.2326467	39.00000	39.00000	36.79994
F HI TEM	42	65.00000	95.00000	82.37555	4.4991272	55973.00000	4621175.00000	13663.23417
F LO TEM	43	0.00000	73.00000	63.45655	5.6294721	43087.00000	2795630.00000	21486.46034
F PRECIP	44	0.00000	95.00000	22.82443	18.7287967	16270.00000	672980.00000	237820.61899
HI TE	45	64.00000	94.00000	82.45500	6.7446457	55987.00000	4647795.00000	30842.37997
LO TEM	46	41.00000	79.00000	61.54674	8.2277756	41792.00000	2614148.00000	45890.09720
AV TE	47	54.00000	85.00000	72.23446	7.1591794	49044.00000	3592964.00000	34749.42268
PRECIP	48	0.00000	99.00000	8.15611	27.6603968	5538.00000	405732.00000	360943.49213
AT PRES	49	2975.00000	2961.00000	2916.19149	18.8970918	1981452.00000	5782496312.00000	242811.11045
WIND DIR	50	0.00000	18.00000	5.97 79	4.0524712	4027.00000	35923.00000	11139.74669
AV HI 2	51	10.00000	177.00000	95.25348	30.4692037	65542.00000	6327834.00000	629390.09419
SKY CTV	52	0.00000	10.00000	5.08247	2.8073265	3451.00000	22987.00000	5343.30144
7 SKY 2	53	0.00000	10.00000	4.66 09	4.1644474	3300.00000	27890.00000	11709.70030
7 TEM	54	45.00000	87.00000	65.73765	7.9457051	44636.00000	2977117.00000	42087.35726
7 HUM	55	65.00000	99.00000	81.12519	6.3257254	55084.00000	4495864.00000	27164.39035
7 WIND V	56	0.00000	25.00000	5.76333	7.2271228	4017.00000	31919.00000	6956.27600
13 SKY 2	57	0.00000	20.00000	5.99522	7.1947711	4066.00000	30897.00000	6543.90974
13 TEM	58	60.00000	93.00000	76.51041	7.1275418	53993.00000	4327891.00000	34853.81000
13 HUM	59	34.00000	87.00000	55.97054	11.7925279	38004.00000	2215132.00000	87997.41090
13 WI DV	60	1.00000	25.00000	9.59704	7.4151837	6517.00000	75457.00000	7087.25711
F TEM RC	61	5.00000	72.00000	18.91500	5.4400414	12840.00000	243190.00000	20004.54492
TEM RC	62	1.00000	39.00000	20.80574	4.5359127	14195.00000	315728.00000	13967.06760
F CLD 1	63	-1.00000	1.00000	0.03093	0.2315477	21.00000	37.00000	36.30052
FCLD 2	64	-1.00000	1.00000	0.09573	0.3321014	65.00000	91.00000	74.77961
F CLD 3	65	-1.00000	1.00000	0.82622	0.4091904	561.00000	577.00000	113.40037
FOG 1	66	-1.00000	1.00000	0.68630	0.5572771	466.00000	538.00000	210.10262
FOG 2	67	-1.00000	1.00000	0.15464	0.4864429	105.00000	177.00000	160.76209
THUN T	68	-1.00000	1.00000	0.67061	0.7756935	479.00000	479.00000	407.09287
7 PRE T	69	-1.00000	1.00000	0.84761	0.2526765	457.00000	479.00000	43.20719
13 PRE T	70	-1.00000	1.00000	0.81753	0.3979495	523.00000	479.00000	107.30144
PREV 1 1	71	-1.00000	1.00000	0.20913	0.4483727	142.00000	166.00000	136.30539
PREV 1 2	72	-1.00000	1.00000	0.72754	0.4675495	494.00000	518.00000	150.59099
PREV 2 1	73	-1.00000	1.00000	0.21495	0.4336047	146.00000	146.00000	127.32977
PREV 2 2	74	-1.00000	1.00000	0.71281	0.5051337	484.00000	518.00000	172.99053
CPM P1	75	-67.00000	57.00000	11.59647	55.1645756	7874.00000	2154558.00000	2063239.43149
CPM P2	76	0.00000	1.00000	0.03976	0.1955472	27.00000	27.00000	25.92636
CPM	77	-91.00000	93.00000	26.50443	49.5171130	17990.00000	2146284.00000	1664139.72815
CPM I1	78	0.00000	145.00000	49.54492	347.1966779	33580.00000	245073500.00000	81682790.37891
CPM I2	79	0.00000	17672.00000	3855.65-72	28187.6353467	2638972.00000	19643639304064.0000	538757694496.00000
CPM I3	80	0.00000***************		79337465.26595	69463417.4726567	5387013866.00000***		

SIMPLE CORRELATIONS

TOT MALE	1	1.00000		
TOT FEM	2	0.19442	1.00000	
TOT WEN	3	0.87334	0.77124	1.00000

TRAV TIM	4	0.07843	-0.00939	0.04660	1.00000							
MILES	5	0.00763	0.03059	0.02986	0.10147	1.00000						
INCOME	6	0.05317	0.00194	0.03757	-0.03778	-0.01900	1.00000					
ENTRY TI	7	-0.09181	-0.01142	-0.00912	-0.09155	-0.06677	-0.0361[illegible]	1.00000				
HRS PARK	8	0.12276	0.10057	0.00404	0.39059	0.09104	0.02 [illegible]	-0.02406	1.00000			
SIGHTSEE	9	-0.03160	-0.03407	-0.04113	0.11033	0.04654	-0.06036	-0.02252	0.15730	1.00000		
WALKING	10	0.04305	0.03002	0.05972	0.12631	0.34943	0.025[illegible]	-0.01940	0.25529	0.26510	1.00000	
PICNIC	11	0.13590	0.16056	0.13572	0.04365	-0.09513	0.02939	-0.11616	0.04272	-0.00598	0.13657	1.00000
SWIM	12	0.11749	0.12309	0.10203	-0.01600	-0.05391	-0.01 95	-0.02993	0.12045	-0.06091	0.10236	0.10121
TOT ACT	13	0.13940	0.10460	0.16626	0.07929	-0.01660	-0.01756	-0.00771	0.30097	0.30996	0.44749	0.30827
WKDY*END	14	0.07599	-0.06120	-0.03297	-0.02531	0.00909	0.06215	-0.01271	0.01377	-0.06650	0.03007	0.12747
A+P	15	-0.04695	-0.01640	-0.03742	-0.11216	-0.07020	-0.04250	0.53072	-0.16067	-0.00911	-0.03973	-0.00036
CAMP+DAY	17	-0.09787	-0.09036	-0.13052	-0.01027	-0.03697	0.02579	0.05471	-0.54964	-0.31421	-0.26063	0.14399
A LO TEM	18	0.01396	0.02350	0.02154	-0.07052	-0.17576	0.01469	0.04772	-0.03993	-0.06329	-0.07943	-0.09605
A HI TEM	19	0.01179	0.01120	0.01410	-0.01112	-0.00976	0.02400	0.03093	-0.01931	-0.05000	-0.00320	-0.04406
A AVTEM	20	0.02434	0.02257	0.02096	-0.03655	-0.07291	0.01367	0.04319	-0.03407	-0.34149	-0.09594	-0.00120
A TEM RG	21	-0.00033	-0.01271	-0.00666	0.00996	0.14224	0.02732	-0.03342	0.02139	-0.00542	-0.02004	-0.02052
P LO TEM	22	-0.01946	0.01099	-0.00221	-0.04713	-0.02403	0.03575	0.05936	-0.05024	-0.37406	-0.10307	-0.07609
P HI TEM	23	0.01071	0.03063	0.00007	-0.03425	-0.02965	0.01617	0.02797	-0.03094	-0.05121	-0.09311	-0.09805
P AV TEM	24	-0.00390	0.01292	0.09523	-0.03619	-0.02300	0.02275	0.03625	-0.04409	-0.04673	-0.10917	-0.07630
P TEM RG	25	0.04149	-0.02465	0.01262	0.01526	-0.00525	-0.02545	-0.00063	0.02047	0.02074	0.00009	0.00060
A CLD 1	26	-0.05194	-0.02409	-0.04644	-0.04076	-0.16597	0.00[illegible]1	0.01402	-0.02749	0.00475	0.00536	-0.01013
A CLD2	27	0.00353	0.00405	0.00470	-0.01167	-0.14745	-0.05575	0.07030	-0.05530	-0.05115	-0.04471	-0.03200
A PREC 1	28	-0.04093	-0.01607	-0.03531	0.03555	-0.00291	0.0471[illegible]	-0.04733	-0.06909	-0.37324	-0.02403	-0.00290
A PREC 2	29	0.03799	-0.02130	0.01300	-0.0 755	0.10397	-0.03453	0.01617	0.04624	0.07504	0.05313	0.00067
A PREC 3	30	0.02363	0.07770	0.05204	-0.04921	-0.02375	-0.02025	0.06706	0.03706	0.30955	-0.04027	-0.03055
A WIND 1	31	0.01540	0.11 41	0.00333	[illegible]684	-0.02011	0.02181	-0.02679	-0.00437	-0.06829	-0.00404	0.03123
AWIND 2	32	-0.01540	-0.11 41	-0.00336	-0.01654	0.02011	-0.02181	0.02679	0.00437	0.06829	0.00404	-0.03123
A WIND 3	33	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
P CLD 1	34	-0.02990	-0.05735	-0.04715	-0.04510	-0.14040	0.01357	-0.01275	-0.06444	0.04022	0.05673	0.00001
P CLD 2	35	0.04043	0.00063	0.03967	0.01620	-0.02437	-0.01153	0.00503	0.03923	-0.04007	-0.00175	0.00269
P PREC 1	36	-0.05040	-0.13600	-0.10136	-0.0 509	-0.09026	-0.01935	0.03613	-0.05925	0.01245	0.03143	0.03900
P PREC 2	37	0.04821	0.00557	0.03753	0.05116	0.00045	0.00043	-0.02923	0.02630	-0.05470	-0.03225	-0.00024
P PREC 3	38	0.02473	0.10766	0.00037	-0.02954	0.11955	0.02 [illegible]	0.00509	0.01340	-0.07012	-0.05554	-0.00132
P WIND 1	39	0.00101	-0.14598	-0.03214	-0.01922	0.00332	-0.02401	0.03001	-0.05909	-0.04275	-0.03504	0.00090
P WIND 2	40	-0.01930	0.03414	0.01510	0.04220	0.01234	0.01456	-0.02925	0.04624	0.03157	0.00207	-0.00156
P WIND 3	41	0.03124	0.01297	0.02275	-0.04420	-0.02693	0.05761	-0.03104	0.01115	0.01049	0.04905	-0.02449
F HI TEM	42	0.02479	-0.10967	-0.06303	-0.12979	-0.17593	0.02246	0.04367	-0.02735	-0.00232	-0.12215	-0.03002
F LO TEM	43	0.00215	0.01646	0.00739	-0.07653	-0.00144	-0.04172	-0.01465	-0.00537	-0.05920	-0.00002	-0.03636
F PRECIP	44	0.03033	0.01455	0.03203	0.03406	0.02359	-0.03777	0.01095	-0.06315	0.02047	0.00301	0.07014
HI TEM	45	-0.03485	0.02250	0.00455	-0.06034	-0.05757	0.00395	0.02791	-0.05097	-0.12130	-0.09103	-0.09090
LO TEM	46	0.04398	0.03360	0.04344	-0.06164	-0.07436	0.01515	0.01049	-0.00304	-0.06619	-0.00074	-0.04096
AV TEM	47	0.01324	0.03 29	0.02908	-0.06579	-0.07216	0.01511	0.03153	-0.01904	-0.09040	-0.09971	-0.06025
PRECIP	48	0.00559	0.04125	0.03345	0.01742	0.03184	-0.01 77	-0.02099	0.02742	0.05131	-0.06700	-0.01741
AT PRES	49	0.10254	-0.09749	0.06744	0.20736	0.17755	0.04100	-0.12442	0.13712	0.12216	0.16112	0.00076
WIND DIR	50	-0.05194	0.01393	0.01501	-0.03123	-0.04377	0.0182[illegible]	0.02325	-0.02522	-0.00202	-0.00303	0.01002
AV WIND	51	0.04630	0.00279	0.03402	0.13320	-0.02334	0.00 31	-0.05630	0.05293	0.12146	0.07719	0.00009
SKY COV	52	0.03329	0.04099	0.04419	-0.02593	0.09746	0.01732	-0.07592	0.04603	-0.03438	-0.00506	-0.01095
7 SKY C	53	0.00117	0.01712	0.01502	-0.02077	0.02957	-0.04[illegible]	-0.01715	0.02111	0.00625	-0.03117	-0.00632
7 TEM	54	0.02916	0.03077	0.05692	-0.07109	-0.04159	0.00706	0.02706	-0.02257	-0.04279	-0.00103	-0.00035
7 RHUM	55	0.02379	-0.00240	0.01023	0.00914	0.15006	0.01777	-0.01097	0.03509	-0.03395	-0.02013	-0.01037
7 WIND V	56	0.01372	0.02194	0.02994	0.01642	-0.05971	-0.00249	0.03045	0.02121	0.05164	0.01007	-0.00034
13 SKY C	57	0.07595	0.05920	0.04350	-0.04436	0.07297	0.04451	-0.00392	-0.00049	-0.01273	-0.09904	-0.01225
13 TEM	58	-0.03114	0.02743	-0.01226	-0.06629	-0.07512	0.00 [illegible]	0.07671	-0.05934	-0.12690	-0.09009	-0.06957
13 R HUM	59	0.07026	0.07167	0.0 9143	0.06831	0.10154	0.01472	-0.04091	0.06463	0.03399	0.00109	0.00107
13 WINDV	60	-0.02235	0.01452	-0.04700	0.00785	-0.03125	-0.05759	-0.00571	-0.02932	0.07113	0.00040	0.01005
F TEM RG	61	0.01623	-0.03754	-0.06032	-0.02012	-0.10214	0.05162	0.05119	-0.01732	-0.00667	-0.01000	0.00073
TEM RG	62	-0.10135	-0.02744	-0.00106	0.02252	0.04915	-0.02093	0.00761	-0.06075	-0.06055	0.02490	0.00111
F CLD 1	63	-0.01439	0.01577	0.00399	0.07333	-0.01063	0.02164	-0.00444	-0.00757	0.01695	0.01904	-0.04752
FCLD 2	64	0.02939	0.03243	0.04049	0.07697	0.14453	0.00729	-0.03392	0.07972	0.04291	0.03672	-0.01069
F CLD 3	65	0.02497	0.04476	0.05040	-0.02139	-0.07790	-0.01262	0.04341	-0.00247	-0.09906	-0.01375	0.01060

		1 TOT MALE	2 TOT FEM	3 TOT VEH	4 TRAV TIM	5 MILES	6 INCOME	7 ENTRY TI	8 HRS PARK	9 SIGHTSEE	10 WALKING	11 PICNIC
FOG 1	65	-0.01473	0.03454	0.00824	0.03091	-0.11599	-0.07947	0.01194	0.00828	0.06744	0.07985	0.01083
FOG 2	67	0.01751	-0.04599	-0.01760	-0.03832	-0.14292	-0.02721	0.05338	-0.03714	0.03255	-0.02545	0.00011
THUN T	68	0.01171	-0.03815	-0.01840	0.02725	-0.04832	0.02544	-0.01537	-0.03201	-0.06253	-0.00016	-0.00091
7 PRE T	69	-0.06602	0.11412	-0.03392	-0.03242	-0.09497	0.03467	-0.05033	-0.04234	-0.02763	-0.04383	0.03784
13 PRE T	70	-0.06086	-0.10211	-0.11440	-0.01837	0.02275	-0.00221	-0.01359	-0.05461	-0.07348	0.00476	-0.00449
PREV 1 1	71	0.03246	0.01795	0.01745	0.05719	-0.02455	0.01467	0.00333	0.00578	0.10279	0.05687	0.03972
PREV 1 2	72	0.00752	0.06018	0.04402	-0.02418	-0.06211	0.00713	-0.01252	-0.01829	-0.07889	-0.01001	-0.05765
PREV 2 1	73	0.01598	0.08585	0.37778	0.04043	0.32676	-0.01031	0.02991	0.05765	0.05984	0.00794	0.03230
PREV 2 2	74	-0.01182	0.01338	-0.00413	-0.02632	0.01860	0.01911	-0.05953	0.02346	0.03551	0.00156	-0.03784
COMM P1	75	-0.05475	-0.02490	-0.04736	-0.05376	-0.14445	0.03126	0.01432	-0.03237	0.00257	0.05784	-0.01795
COM P2	76	0.06041	0.01393	0.04367	0.05141	0.00065	0.00543	-0.03072	0.03659	-0.04027	-0.01000	0.00384
CO	77	-0.01907	-0.15847	-0.04750	-0.04391	-0.14569	0.01517	-0.01706	-0.06264	0.03586	0.05630	0.00406
COM 01	78	0.03274	0.01039	0.04426	0.01333	-0.04955	0.03407	-0.02020	0.01558	0.05308	0.03303	0.00062
COM 02	79	0.04331	0.00171	0.02535	0.03530	0.02458	-0.00911	-0.13475	0.05534	0.02664	-0.03470	-0.00090
COM 03	80	0.01731	0.02489	0.02379	-0.01052	0.09509	-0.04167	-0.01626	0.02635	-0.00083	-0.03440	-0.04990

		1	2	3	4	5	6	7	8	9	10	11
S-IV	12	1.00000										
TOT ACT	13	0.42278	1.00000									
WKDY+END	14	-0.04064	0.33228	1.00000								
A+P	15	-0.05075	-0.27244	-0.04479	1.00000							
CAMP+DAY	17	-0.13625	-0.41821	0.69836	0.09665	1.00000						
A LO TEM	18	0.15174	-0.08618	-0.06569	-0.01635	0.02599	1.00000					
A HI TEM	19	0.13609	-0.02608	-0.15761	-0.04212	0.03150	0.71399	1.00000				
A AVTEM	20	0.15256	-0.01762	-0.15868	-0.03399	0.02755	0.90858	0.92356	1.00000			
A TEM RG	21	0.00656	-0.03727	-0.14036	-0.03894	0.01265	-0.21431	0.35347	0.16931	1.00000		
P LO TEM	22	0.14495	-0.03618	-0.31576	0.06124	0.03592	0.74141	0.63239	0.62980	0.24507	1.00000	
P HI TEM	23	0.19999	-0.02758	-0.22996	-0.03972	0.02782	0.65139	0.79425	0.78390	0.37107	0.77412	1.00000
P AV TEM	24	0.10055	-0.02479	-0.30062	-0.01591	0.02420	0.73192	0.66421	0.89923	0.31974	0.91784	1.00000
P TEM RG	25	0.00685	0.01694	0.18161	-0.05746	-0.00956	-0.00242	-0.00376	-0.01358	0.09452	-0.31067	0.41057
A CLD 1	26	0.03267	0.15347	0.09935	0.00013	-0.01773	-0.13541	-0.12474	-0.16905	-0.00942	-0.12200	-0.00035
A CLD2	27	0.00456	-0.02379	-0.13595	0.07691	0.00064	-0.10374	-0.02598	-0.04436	0.00932	0.03269	0.04013
A PREC 1	28	0.07427	-0.01991	0.08537	-0.02139	0.05099	-0.33782	-0.04077	-0.05180	-0.02226	-0.05494	0.00703
A PREC 2	29	-0.00696	0.03776	-0.07361	0.02969	0.00032	0.02561	0.07940	0.05456	0.07459	0.07182	0.00031
A PREC 3	30	0.00900	-0.02963	0.12712	-0.01137	-0.12301	0.03040	-0.04093	-0.00040	-0.09309	-0.02029	-0.00034
A WIND 1	31	0.07541	0.01474	-0.10600	0.03357	0.09415	-0.10212	-0.01145	-0.05714	0.10764	0.04102	0.00077
AWIND 2	32	-0.02541	-0.01474	0.10600	-0.03357	-0.09415	0.10212	0.01145	0.05714	-0.10764	-0.04102	-0.00077
A WIND 3	33	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
P CLD 1	34	0.04140	0.06420	0.10225	-0.01030	0.04068	-0.04703	-0.02315	-0.06596	0.02092	-0.00400	0.04706
P CLD 2	35	0.01594	-0.01960	0.09063	0.01603	-0.00970	-0.13365	-0.23723	-0.17946	-0.16910	-0.20023	-0.14023
P PREC 1	36	0.02053	0.02000	0.11402	0.03674	0.04254	-0.00430	-0.13767	-0.12340	-0.04566	-0.01651	0.00014
P PREC 2	37	0.01222	-0.01502	-0.07392	-0.02939	0.02990	-0.05396	0.06992	0.03517	0.16272	-0.09224	-0.00670
P PREC 3	38	-0.04458	-0.05919	-0.06697	0.03563	-0.03770	0.13595	0.05262	0.10250	-0.39114	0.07709	0.00103
P WIND 1	39	-0.01003	-0.03677	-0.23012	0.02052	0.05960	0.14740	0.31261	0.25645	0.24771	0.35431	0.31057
P WIND 2	40	0.03054	0.04699	0.16791	0.00746	-0.06215	-0.24115	-0.22907	-0.20175	-0.02079	-0.24343	-0.10126
P WIND 3	41	-0.05045	-0.02546	0.07221	-0.04451	0.01602	0.19304	-0.07041	0.06291	-0.34406	-0.11050	-0.10439
F HI TEM	42	0.14279	0.00119	-0.11711	-0.01607	-0.01236	0.33074	0.31701	0.36235	0.05224	0.29065	0.30191
F LO TEM	43	0.11510	0.01416	-0.22075	0.03635	0.01710	0.19719	0.03130	0.27384	0.10178	0.20510	0.20050
F PRECIP	44	0.00237	-0.00303	-0.13027	0.11777	0.00272	-0.13319	-0.00302	-0.10722	0.04420	-0.06672	-0.12095
HI TEM	45	0.21531	-0.05335	-0.10539	-0.01679	0.05154	0.74562	0.79146	0.91005	0.29045	0.77233	1.00004
LO TEM	46	0.14311	0.00195	-0.17007	-0.05759	-0.01623	0.83973	0.71195	0.81351	0.01314	0.64764	0.70441
AV TEM	47	0.19793	-0.02236	-0.19117	-0.03532	0.00061	0.91453	0.77163	0.94601	0.09058	0.73934	1.00000
PRECIP	48	-0.01693	-0.04423	-0.16401	-0.01477	-0.02393	0.05529	0.10315	0.10052	0.00303	0.06711	0.05460
AT PRES	49	-0.03299	0.17206	0.03010	-0.13042	-0.11570	-0.31057	-0.15194	-0.24307	0.14450	-0.15606	-0.10149
WIND DIR	50	-0.09347	-0.03637	-0.32451	0.04305	0.33126	-0.47104	-0.33544	-0.41203	0.10217	-0.27298	-0.33041
AV WIND	51	-0.06539	0.06607	0.30151	-0.07181	-0.32932	0.30100	0.09265	0.17434	-0.20976	0.00529	-0.04946
SKY COV	52	-0.00277	-0.05710	0.10691	-0.02755	0.01320	0.24860	0.09114	0.19050	-0.17375	0.05200	0.09592
7 SKY C	53	-0.01117	-0.03047	-0.04596	-0.00638	0.00422	0.24122	0.22391	0.24000	0.01622	0.16202	0.20140
7 TEM	54	0.15421	-0.01540	-0.14476	-0.03896	0.0312?	0.85947	0.73451	0.05742	-0.01547	0.47222	1.00007

		12 S...	13 ... APT	14 ...EY+END	15 A+P	17 CAMP+DAY	18 A LO TEM	19 A HI TEM	20 A AVTEM	21 A TEM RG	22 P LO TEM	23 P HI TEM
7 RHUM	55	0.03435	-0.03854	-0.15537	-0.03980	0.00433	-0.09529	.08651	0.02268	0.23601	0.09689	0.22160
7 WIND V	56	-0.07255	0.0844	-0.07743	0.01296	-0.06476	0.26799	0.7503	0.17773	-0.21970	0.05374	-0.04700
13 SKY C	57	-0.00741	-0.0727	0.12317	0.04833	0.00423	0.15 55	-0.14929	0.05896	-0.25097	0.00014	-0.06726
13 TEM	58	0.22374	-0.0126	-0.18141	-0.01361	0.35845	0.72 22	.75257	0.70378	0.17842	0.75989	-0.07021
13 R HUM	59	0.03691	0.2227	-0.04603	-0.06865	-0.05576	0.20676	.22282	0.25707	-0.33934	0.14209	0.14851
13 WINDV	60	-0.09546	0.0632	-0.32660	0.05657	0.23031	0.23979	-0.09292	0.05869	-0.38355	-0.02923	-0.28138
F TEM RG	61	-0.07173	-0.1367	0.13180	-0.05122	-0.02796	0.07547	-0.05128	0.01561	-0.16150	-0.04059	-0.02000
TEM RG	62	0.02429	-0.0729	0.03281	0.07944	0.19621	-0.35937	-0.11452	-0.26309	0.27404	-0.06625	-0.09024
F CLD 1	63	-0.07392	-0.0201	0.01520	-0.05149	-0.02212	0.0371	-0.27759	-0.05428	-0.21796	-0.04017	0.00004
FCLD 2	64	-0.01541	0.4498	-0.02952	-0.09635	-0.01147	0.18753	.24434	0.21029	0.12358	0.24721	0.14947
F CLD 3	65	-0.00074	-0.5147	0.11335	0.0238	0.01379	-0.03972	-0.04195	-0.03240	-0.01044	-0.12037	-0.19827
FOG 1	66	-0.04723	0.7893	0.03371	0.06367	-0.04921	-0.0982	-0.23591	-0.18306	-0.24098	-0.25404	-0.30107
FOG 2	67	-0.01229	-0.4134	-0.19244	0.03154	0.03014	-0.06	0.0784	-0.03469	0.09179	-0.07042	0.00028
THUN T	68	-0.08262	-0.1444	0.16529	-0.03358	0.03422	-0.15	-0.08353	-0.19698	-0.36722	-0.17509	-0.10140
7 PRE T	69	-0.17927	-0.1737	-0.17514	0.02773	0.05667	-0.07516	-0.01442	-0.10914	-0.04744	-0.14240	-0.10203
13 PRE T	70	-0.07716	-0.4927	-0.03675	[illegible]	0.06244	-0.04344	0.7653	0.02312	0.15940	0.07156	0.14008
PREV 1 1	71	0.01171	0.1729	0.02931	0.05161	-0.08978	-0.03962	-0.07115	-0.04801	-0.09143	-0.02789	-0.17402
PREV 1 2	72	0.17415	-0.3414	0.13262	-0.05573	-0.02239	0.11427	.13581	0.13214	0.05112	0.00004	0.13288
PREV 2 1	73	-0.05963	0.4437	-0.10336	-0.04767	-0.11431	-0.12495	-0.05436	-0.06030	0.37540	-0.01518	-0.04036
PREV 2 2	74	0.04003	0.1697	0.05873	-0.0971	0.05441	0.0741 4	.11293	0.07693	0.10786	0.00268	-0.04445
COMM P1	75	0.07537	0.4052	0.07926	-0.0461	-0.01346	-0.10521	-0.05993	-0.14094	-0.01108	-0.10009	-0.07072
COM P2	76	0.01593	0.5146	0.06144	-0.04978	0.02743	-0.05157	.08252	0.04237	0.17475	-0.09028	-0.04096
COM	77	0.14792	0.0697	0.17747	-0.02129	0.04987	-0.01949	.01742	-0.03193	0.34788	-0.05301	0.09071
COM 01	78	-0.10037	0.3241	0.12516	-0.0255	-0.02555	-0.35 75	-0.29722	-0.33449	0.30903	-0.30333	-0.35907
COM 02	79	-0.09741	-0.13151	0.09561	-0.04829	-0.00714	0.29359	.02573	0.18298	-0.31946	-0.03100	-0.00089
COM 03	80	0.09751	-0.3576	-0.08822	-0.0894	0.00531	0.3176	.32574	0.72741	0.35426	0.24277	0.30857

		24	25	26	27	28	29	30	31	32	33	34
P AV TEM	24	1.00000										
P TEM RG	25	0.20010	1.00000									
A CLD 1	26	-0.11391	0.3112	1.00000								
A CLD2	27	0.03686	0.2064	0.37434	1.00000							
A PREC 1	28	-0.01276	0.4376	0.32804	0.02741	1.00000						
A PREC 2	29	0.04301	-0.6343	-0.31006	-0.03812	-0.07472	1.00000					
A PREC 3	30	-0.15543	-0.5460	-0.08336	0.01 863	-0.42805	-0.0589	1.00000				
A WIND 1	31	0.07591	-0.1597	-0.14076	-0.01633	0.11753	-0.1074	-0.05337	1.00000			
A WIND 2	32	-0.07591	-0.1597	0.14076	0.01633	-0.11753	0.1074	.05337	-1.00000	1.00000		
A WIND 3	33	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00000	0.00000	0.00000	
P CLD 1	34	-0.05449	.15138	0.44479	-0.05971	0.16539	-0.13429	-0.09357	-0.03549	0.03549	0.00000	1.00000
P CLD 2	35	-0.18677	0.6195	-0.29119	-0.0695	0.00587	-0.17463	.14394	0.12958	-0.12958	0.00000	-0.20140
P PREC 1	36	0.00712	0.5873	0.11559	-0.01943	0.39464	-0.15127	-0.34457	-0.04161	0.04161	0.00000	0.46339
P PREC 2	37	-0.18647	0.5544	0.18676	0.5316	0.29759	-0.09 45	-0.07256	0.10540	-0.10540	0.00000	-0.09800
P PREC 3	38	0.02725	-0.1725	-0.20153	0.3514	-0.30176	.16924	.45530	-0.02125	0.02125	0.00000	-0.44015
P WIND 1	39	0.35847	-0.3432	-0.17276	0.4027	-0.34241	.41419	-0.17393	0.35364	-0.35364	0.00000	-0.00609
P WIND 2	40	-0.21700	0.7173	0.28606	0.1676	0.25561	-0.32645	.10647	-0.22228	0.22228	0.00000	0.10753
P WIND 3	41	-0.17092	-0.7142	-0.23124	-0.07324	0.07923	-0.16524	-0.04195	-0.07329	0.07329	0.00000	-0.31075
F HI TEM	42	0.37193	0.4453	0.05342	0.24210	0.12923	-0.08 93	-0.07777	-0.06094	0.06096	0.00000	0.09006
F LO TEM	43	0.31955	0.2476	0.06420	0.2892	0.02438	-0.02718	-0.01853	0.16110	-0.16110	0.00000	0.01990
F PRECIP	44	-0.00074	-0.0 16	-0.16109	0.01665	-0.07566	0.05082	0.04454	0.00871	-0.00871	0.00000	-0.06000
HI TEM	45	0.65952	0.1 07	-0.08959	0.05455	0.24525	-0.13664	-0.12471	0.05684	-0.05684	0.00000	-0.00270
LO TEM	46	0.75119	0.0194	-0.29577	-0.05893	-0.24397	-0.02943	.17644	-0.03494	0.03494	0.00000	-0.17220
AV TEM	47	0.64176	0.0 67	-0.21474	-0.01521	-0.02711	-0.05	.13560	0.00311	-0.00311	0.00000	-0.14079
PRECIP	48	0.07256	-0.1744	-0.17656	-0.04972	-0.35244	.26155	.20317	-0.06128	0.06128	0.00000	-0.10205
AT PRES	49	-0.15645	-0.4261	0.12667	-0.05024	0.15610	-0.13145	-0.05119	0.09763	-0.09763	0.00000	0.00607
WIND DIR	50	-0.31617	-0.0174	0.14766	0.05961	0.13745	-0.12 64	-0.16245	0.02240	-0.02240	0.00000	0.00052
AV WIND	51	-0.03471	-0.7 95	-0.20177	-0.14559	-0.12141	0.13774	-0.07678	-0.21116	0.21116	0.00000	-0.02341
SKY COV	52	0.07175	0.6761	-0.74984	-0.15567	-0.29547	0.21 13	.14643	-0.07223	0.07223	0.00000	-0.44012
7 SKY C	53	0.19627	0.9317	-0.68487	-0.02743	-0.36575	0.32125	.15371	-0.03709	0.03709	0.00000	-0.21905
7 TEM	54	0.75113	0.14674	-0.34536	-0.01939	-0.14476	.13417	.04832	-0.04525	0.04525	0.00000	-0.19564

		24 P AV TEM	25 P TEM RG	26 A CLD 1	27 A C[illegible]	28 A PREC 1	29 A PREC 2	30 A PREC 3	31 A WIND 1	32 A WIND 2	33 A WIND 3	34 P CLD 1
7 RHUM	55	0.18495	0.18104	-0.09532	-0.15316	0.02212	-0.00912	-0.02677	0.19341	-0.19341	0.00000	-0.14584
7 WIND V	56	-0.00961	-0.13426	-0.18412	-0.12324	-0.22610	0.20758	0.15871	-0.26559	0.24559	0.00000	-0.19043
13 SKY C	57	-0.24675	-0.09464	-0.60199	-0.10529	-0.21497	0.12764	0.21351	-0.37364	0.37364	0.00000	-0.40566
13 TEM	58	0.67135	0.20154	-0.67172	0.12795	0.20136	-0.06215	-0.25513	0.03913	-0.03913	0.00000	-0.06030
13 R HUM	59	0.14841	[illegible]	-0.62361	-0.39054	-0.36919	0.25357	0.28939	0.13590	-0.13590	0.00000	-0.35592
13 WINDV	60	-0.14929	-0.27151	-0.64170	[illegible]	-0.09963	0.12309	-0.02455	-0.14851	0.14851	0.00000	-0.06330
F TEM RG	61	-0.05680	0.02763	0.11351	0.16989	0.07901	-0.04906	-0.04975	-0.21701	0.21701	0.00000	0.09783
TEM RG	62	-0.05056	0.01557	0.40302	0.24529	0.14147	-0.13810	-0.17544	0.14780	-0.14780	0.00000	0.18025
F CLD 1	63	0.00022	0.13337	0.07397	-0.15189	0.05292	-0.14439	-0.07263	-0.03968	0.03968	0.00000	0.00613
FCLD 2	64	0.21642	-0.12817	-0.31675	-0.34239	-0.22294	0.27734	-0.04824	-0.02358	0.02358	0.00000	-0.06048
F CLD 3	65	-0.15229	-0.14272	0.24137	0.22574	0.17538	-0.15483	0.17242	0.07339	-0.07339	0.00000	-0.11286
FOG 1	66	-0.30140	-0.08235	0.29535	0.22166	0.00176	-0.01761	0.03240	-0.20708	0.20708	0.00000	0.04084
FOG 2	67	0.07542	0.21958	0.14255	0.21635	-0.13165	0.13394	0.01947	-0.16091	0.16091	0.00000	0.13173
THUN T	68	-0.14476	0.09433	0.27975	0.01967	0.01138	-0.05593	-0.21895	0.11317	-0.11317	0.00000	0.15009
7 PRE T	69	-0.13039	0.04818	0.07312	-0.06131	0.37414	-0.23075	-0.19243	0.03813	-0.03813	0.00000	-0.04757
13 PRE T	70	0.12298	0.10659	0.18685	0.01461	0.39421	-0.21495	-0.41392	0.30728	-0.30728	0.00000	0.11376
PREV 1 1	71	-0.10101	-0.20914	-0.42632	-0.07227	-0.15016	0.12451	0.14055	-0.30605	0.30605	0.00000	0.08109
PREV 1 2	72	0.11449	0.06813	0.06017	0.03213	0.11516	-0.16095	-0.10740	0.01103	-0.01103	0.00000	-0.12729
PREV 2 1	73	-0.07108	-0.04051	-0.18595	-0.11131	-0.16706	0.09024	0.14203	0.21085	-0.21085	0.00000	-0.12860
PREV 2 2	74	-0.02514	-0.06513	0.22796	0.01696	0.04756	-0.02037	-0.06077	-0.10913	0.10913	0.00000	0.12523
CONV P1	75	-0.09673	0.04452	0.99591	0.05205	0.30936	-0.29065	-0.04179	-0.17497	0.17497	0.00000	0.42069
CON P2	76	-0.04734	0.05123	0.00684	0.01401	0.08056	-0.07063	-0.07453	0.10533	-0.10533	0.00000	-0.11162
CON	77	0.03150	0.15904	0.43393	-0.05035	0.15819	-0.12549	-0.07271	-0.04103	0.04103	0.00000	1.29610
CON 01	78	-0.35135	-0.05197	0.08595	0.02927	0.10619	-0.03743	-0.15753	-0.05016	0.05016	0.00000	0.07015
CON 02	79	-0.03590	0.03342	-0.65593	-0.22129	-0.19106	0.16074	0.05122	-0.15403	0.15403	0.00000	-0.36606
CON 03	80	0.20094	0.09092	-0.66195	-0.23903	-0.34808	0.31937	0.14314	-0.00943	0.00943	0.00000	-0.23851

P CLD 2	35	1.00000										
P PREC 1	36	0.29450	1.00000									
P PREC 2	37	0.18679	-0.49557	1.00000								
P PREC 3	38	-0.33754	-0.72709	-0.12972	1.00000							
P WIND 1	39	-0.00067	0.15165	-0.29026	-0.11539	1.00000						
P WIND 2	40	0.15078	0.01475	0.11611	-0.06451	-0.82321	1.00000					
P WIND 3	41	-0.13940	-0.25953	-0.57914	0.26777	-0.17319	-0.48436	1.00000				
F HI TEM	42	-0.04744	0.09744	0.11274	-0.22634	0.33591	-0.13226	0.06422	1.00000			
F LO TEM	43	0.01092	-0.17765	0.24950	-0.11273	0.22285	-0.11395	-0.14244	0.44121	1.00000		
F PRECIP	44	0.05977	0.09752	-0.57455	-0.07131	0.13595	-0.22161	-0.17237	-0.04952	0.25743	1.00000	
HI TEM	45	-0.09235	-0.06254	0.61005	0.04771	0.29435	-0.21351	-0.05345	0.37631	0.32751	-0.14407	1.00000
LO TEM	46	-0.27731	-0.14358	0.81142	0.15711	0.20311	-0.23649	0.10515	0.39208	0.31333	-0.08569	0.03428
AV TEM	47	-0.29869	-0.01114	0.69567	0.00157	0.24848	-0.23791	0.07379	0.39137	0.32639	-0.11636	[illegible]
PRECIP	48	-0.08711	-0.22107	-0.35642	0.29934	-0.06372	0.05161	-0.07876	-0.03151	-0.00496	0.11469	0.00196
AT PRES	49	0.15532	0.10441	0.09506	-0.01291	-0.05393	0.12547	-0.14337	-0.05195	-0.08119	-0.00102	-0.23743
WIND DIR	50	0.16494	0.10728	0.11632	-0.21792	-0.07562	0.14767	-0.14111	-0.11334	-0.05291	-0.04043	-0.41350
AV WIND	51	-0.14971	-0.13374	0.09436	0.16244	-0.05757	-0.18953	0.41757	-0.02283	-0.14727	-0.24134	0.02246
SKY COV	52	0.14071	-0.27709	-0.29949	0.05612	-0.34983	-0.11470	0.37537	-0.08567	0.03016	0.06063	0.14051
7 SKY C	53	0.04654	-0.13424	-0.37692	0.15156	0.15123	-0.21290	0.13924	-0.06537	0.12950	0.14275	0.22510
7 TEM	54	-0.11773	-0.02759	-0.03922	0.05928	0.24247	-0.33169	0.17475	0.04423	0.24346	-0.09939	[illegible]
7 RHUM	55	0.13570	0.01497	-0.05437	-0.13514	0.04996	0.07600	-0.21203	-0.11134	0.16587	0.06527	0.06720
7 WIND V	56	-0.17977	-0.07265	0.13774	0.07914	-0.10575	-0.06726	0.27705	0.08374	-0.00029	-0.17318	0.02004
13 SKY C	57	0.11653	-0.04357	-0.23953	0.06642	-0.11973	-0.03711	0.24744	-0.16036	-0.16876	0.10000	-0.02072
13 TEM	58	-0.15113	-0.07718	0.32236	0.05714	0.26679	-0.16965	-0.37683	0.37256	0.32730	-0.14761	[illegible]
13 R HUM	59	0.13313	-0.07376	-0.24172	0.33579	0.32235	-0.12179	0.14444	-0.17384	-0.02125	0.04249	0.19535
13 WINDV	60	-0.19243	-0.08733	0.27935	0.01494	-0.34329	-0.18374	0.34443	-0.05954	-0.20732	-0.11965	-0.10091
F TEM RG	61	-0.05734	0.15554	-0.04541	-0.05337	0.04658	-0.15424	0.20345	0.70765	-0.47156	-0.25551	-0.02830
TEM RG	62	-0.05712	0.16732	-0.01576	-0.02121	0.05779	0.11141	-0.26514	-0.07904	-0.00132	-0.05875	-0.02620
F CLD 1	63	-0.02349	0.04217	-0.02547	-0.03491	-0.02210	0.03465	-0.03330	-0.02254	-0.00100	-0.27003	0.01036
FCLD 2	64	-0.29767	-0.06753	-0.05539	0.05317	0.01663	0.02437	-0.07121	-0.13693	0.04960	-0.23190	0.12473
F CLD 3	65	0.26809	0.06715	0.09142	-0.15274	0.04678	-0.17160	0.10493	0.15926	0.03962	0.06161	-0.03944

		P CLD 2	P PREC 1	P PREC 2	P PREC 3	P WIND 1	P WIND 2	P WIND 3	F HI TEM	F LO TEM	F PRECIP	HI TEM
		35	36	37	38	39	40	41	42	43	44	45
FOG 1	66	-0.09112	-0.00023	0.09323	0.05537	-0.22865	0.1675	0.05845	-0.00947	-0.12828	0.05316	-0.10971
FOG 2	67	-0.17116	0.00744	-0.04504	[illegible]	0.04577	-0.04752	0.01261	0.11239	-0.01449	-0.00494	-0.04040
THUN T	68	0.00270	0.21039	0.09121	-0.20199	-0.15385	0.10545	0.05193	0.11347	0.04666	-0.01092	-0.00690
7 PRE T	69	0.00439	-0.04025	0.02464	0.03542	-0.20063	0.16528	0.07145	-0.10105	-0.01447	0.04405	-0.00340
13 PRE T	70	-0.12403	0.17447	0.03902	-0.24817	0.04576	-0.03246	-0.01247	0.32941	0.14160	-0.10332	0.13599
PREV 1 1	71	0.03963	0.05762	-0.17611	-0.03027	-0.13969	0.14051	-0.04453	-0.06253	0.30424	0.09962	-0.19606
PREV 1 2	72	-0.02956	-0.07267	0.12393	0.02996	-0.09853	0.04411	0.07346	0.03440	-0.10199	-0.31171	0.19632
PREV 2 1	73	-0.01003	-0.13309	-0.09012	0.18794	0.02235	-0.03207	0.07289	-0.09053	-0.01760	-0.01947	-0.13411
PREV 2 2	74	-0.07606	0.02700	0.12380	-0.09451	-0.13114	0.09227	0.04313	0.00731	-0.03413	-0.14595	-0.01190
COMM P1	75	-0.20377	0.10572	0.00527	-0.19067	-0.17206	0.20070	-0.22371	0.05269	-0.07531	-0.17254	-0.06755
COM P2	76	0.17264	-0.54911	0.20134	-0.05617	-0.08587	0.10771	-0.08323	0.12274	0.24217	-0.07709	0.01757
COM	77	-0.22506	0.46351	-0.00939	-0.44973	-0.03294	0.10965	-0.32526	0.09054	0.01715	-0.00531	-0.03610
COM 01	78	-0.11406	0.01336	0.20566	-0.16060	-0.07712	0.07047	-0.02459	-0.05550	-0.07025	-0.13294	-0.41652
COM 02	79	0.03547	-0.19610	-0.00515	0.25177	-0.20475	-0.24095	0.54057	0.05500	-0.05032	-0.07201	0.07470
COM 03	80	0.00319	-0.11406	-0.06079	0.10052	0.17779	-0.22404	-0.11901	-0.04556	0.17319	0.12445	0.30693

		LO TEM	AV TEM	PRECIP	AT PRES	WIND DIR	AV WIND	SKY COV	7 SKY C	7 TEM	7 RHUM	7 WIND V
		46	47	48	49	50	51	52	53	54	55	56
LO TEM	46	1.00000										
AV TEM	47	0.98521	1.00000									
PRECIP	48	0.07639	0.04557	1.00000								
AT PRES	49	-0.29291	-0.28481	-0.07606	1.00000							
WIND DIR	50	-0.47321	-0.46285	-0.05692	0.18474	1.00000						
AV WIND	51	0.22972	0.14977	0.38703	0.09292	-0.31320	1.00000					
SKY COV	52	0.39505	0.30550	0.34406	-0.24247	-0.25356	0.22377	1.00000				
7 SKY C	53	0.41571	0.35041	0.17315	-0.27727	-0.27938	0.22414	0.67234	1.00000			
7 TEM	54	0.94532	0.92727	0.11714	-0.38797	-0.50027	0.28764	0.47441	0.44767	1.00000		
7 RHUM	55	0.02107	0.03407	0.00931	-0.00917	0.04225	-0.39545	-0.00947	0.06471	-0.13312	1.00000	
7 WIND V	56	0.26753	0.17769	0.18325	-0.24049	-0.10994	0.67251	0.06543	0.24214	0.32251	-0.43410	1.00000
13 SKY C	57	0.20117	0.11650	0.31540	-0.21912	-0.10817	0.17772	0.76331	0.44107	0.20970	-0.07050	0.30347
13 TEM	58	0.79209	0.89663	-0.32774	-0.27851	-0.34503	-0.00111	0.60399	0.15505	0.79532	0.06409	0.01793
13 R HUM	59	0.42159	0.31893	0.38332	-0.12610	-0.28974	0.23254	0.62915	0.62305	0.47114	0.72915	0.10034
13 WINDV	60	0.01790	-0.02696	0.33198	-0.15464	-0.23410	0.65646	0.07315	0.05417	0.10359	-0.31702	0.54369
F TEM RG	61	-0.03370	-0.01495	-0.02098	0.04197	-0.03878	0.13757	-0.64276	-0.10791	0.03212	-0.26352	0.10493
TEM RG	62	-0.57314	-0.36287	-0.43956	0.17014	0.24335	-0.30365	-0.49609	-0.41097	-0.40690	0.06032	-0.44211
F CLD 1	63	0.05060	0.03376	-0.04731	0.02213	-0.09714	0.11030	0.04107	-0.01705	-0.01723	0.01740	0.00730
FCLD 2	64	0.16371	0.15213	0.18146	0.30424	-0.19723	0.16652	0.14972	0.04400	0.20508	0.09537	0.11760
F CLD 3	65	-0.00376	-0.05737	-0.11470	0.09334	0.12972	-0.26700	-0.07377	-0.25134	-0.14795	-0.08470	-0.16941
FOG 1	66	-0.14947	-0.17407	-0.11272	-0.01145	-0.15955	0.29560	-0.17582	-0.12404	-0.12017	-0.47251	0.39645
FOG 2	67	-0.64921	-0.05217	0.24307	-0.03721	0.17975	[illegible]	-0.05353	-0.10271	-0.17952	-0.05031	-0.00251
THUN T	68	-0.13970	-0.12213	-0.47952	0.15147	0.19265	-0.16759	-0.30572	-0.26057	-0.21614	-0.02364	-0.14056
7 PRE T	69	-0.07230	-0.09451	-0.19151	-0.02747	0.11877	-0.12249	-0.07345	0.15047	-0.10795	-0.05095	-0.09222
13 PRE T	70	-0.02039	0.04357	-0.33966	0.13513	0.11532	-0.03149	-0.21033	-0.20973	-0.35013	0.00520	-0.04065
PREV 1 1	71	-0.37677	-0.14106	0.20141	0.11054	0.31772	0.06714	0.12337	0.10174	-0.33992	-0.02740	0.03002
PREV 1 2	72	0.11550	0.15940	-0.21491	-0.15336	-0.30155	0.00795	-0.07473	-0.05190	0.13931	-0.02979	0.15444
PREV 2 1	73	-0.00206	-0.11654	0.30291	0.00477	0.16008	-0.01190	0.05322	0.09606	-0.10312	0.03000	0.06679
PREV 2 2	74	-0.04341	-0.12517	0.01126	-0.04987	-0.11561	0.07340	-0.07349	-0.03594	-0.12646	-0.04917	0.07051
COMP P1	75	-0.27144	-0.19215	-0.24394	0.14115	0.13360	-0.19760	-0.72227	-0.63504	-0.30427	-0.09555	-0.16235
COM P2	76	0.01757	0.01744	-0.07011	0.01213	0.11512	0.01301	-0.02171	-0.07647	-0.01439	0.00103	0.00539
COM	77	-0.13060	-0.03536	-0.15791	0.00133	0.09095	-0.01563	-0.43425	-0.09201	-0.11275	-0.14040	-0.14306
COM 01	78	-0.30253	-0.30741	-0.32751	0.22097	0.07051	0.00793	-0.10471	-0.00970	-0.37503	-0.10429	0.11416
COM 02	79	0.37392	0.26120	0.20099	-0.15271	-0.39229	0.65180	0.63737	0.57907	0.47908	-0.20526	0.50449
COM 03	80	0.48743	0.42711	0.10020	-0.27436	-0.31942	0.73717	0.67294	0.98414	0.51206	0.15921	0.20419

13 SKY C	57	1.00000		
13 TEM	58	-0.30120	1.00000	
13 R HUM	59	0.49676	0.03746	1.00000

		57 13 SKY C	58 13 TEM	59 13 R HUM	60 13 WINDY	61 F TEM RG	62 TEM RG	63 F CLD 1	64 F CLD 2	65 F CLD 3	66 FOG 1	67 FOG 2
13 WINDY	60	0.18361	-0.17209	0.33434	1.00000							
F TEM RG	61	0.13572	-0.13126	-0.12140	0.16624	1.00000						
TEM RG	62	-0.39549	0.07127	-0.53338	-0.19429	0.01892	1.00000					
F CLD 1	63	0.11533	0.03404	0.08757	0.09476	0.08922	-0.06458	1.00000				
F CLD 2	64	0.11117	0.13273	0.21554	0.05349	-0.18513	-0.11142	0.11445	1.00000			
F CLD 3	65	-0.02168	-0.07197	-0.16466	-0.13875	0.09042	0.29914	-0.14555	-0.49612	1.00000		
FOG 1	66	-0.13169	-0.18933	-0.28843	0.34259	0.04242	-0.02502	0.04274	-0.09175	-0.05730	1.00000	
FOG 2	67	-0.34364	-0.06751	-0.34517	-0.08673	0.10774	0.11728	-0.02941	-0.17376	0.10432	-0.10299	1.00000
THUN T	68	-0.28456	-0.01883	-0.30745	-0.05271	0.24535	0.12334	0.04347	-0.17215	0.04905	-0.00013	-0.10501
7 PRE T	69	0.03703	-0.06947	-0.69666	-0.12879	-0.06944	-0.02781	0.01715	0.03782	-0.05455	-0.00927	-0.03814
13 PRE T	70	-0.25360	0.21441	-0.43515	-0.02443	0.12635	0.25534	0.02772	-0.02045	-0.01569	-0.04944	-0.01020
PREV 1 1	71	0.27271	-0.23631	0.15028	-0.03459	-0.13877	-0.15737	-0.04817	0.04365	0.04565	0.02096	0.00703
PREV 1 2	72	-0.00312	0.22907	-0.04027	0.11396	0.10976	0.10235	0.06210	-0.03021	-0.07566	0.06970	-0.00639
PREV 2 1	73	0.06275	-0.14741	0.16026	-0.07854	-0.06310	-0.05953	-0.25475	0.06429	-0.09599	-0.03517	0.03067
PREV 2 2	74	-0.17589	0.33129	-0.14936	0.19119	0.37533	0.09151	-0.10249	0.01465	-0.02161	0.00603	-0.15090
COMP P1	75	-0.57711	0.07221	-0.60722	-0.02435	0.17261	0.39167	0.08989	-0.31486	0.23567	0.29472	0.15140
COM P2	76	-0.23472	0.03579	0.04408	-0.02399	-0.17156	-0.05574	-0.02722	-0.05870	0.09650	0.00602	-0.03369
COM	77	-0.42798	-0.01731	-0.33137	-0.07117	0.06359	0.18326	0.07155	-0.04974	-0.12469	0.03405	0.13405
COM 01	78	-0.04840	-0.37407	-0.19594	0.01631	0.33516	0.03859	0.04675	-0.13081	0.30299	-0.02095	0.19404
COM 02	79	0.63074	0.01478	0.53250	0.36859	0.30715	-0.56870	-0.07819	0.13943	-0.07463	0.03778	0.01129
COM 03	80	0.41604	0.23479	0.64857	0.32831	-0.22200	-0.42763	-0.01597	0.10782	-0.24652	-0.10362	-0.00031

		68 THUN T	69 7 PRE T	70 13 PRE T	71 PREV 1 1	72 PREV 1 2	73 PREV 2 1	74 PREV 2 2	75 COMP P1	76 COM P2	77 COM	78 COM 01
THUN T	68	1.00000										
7 PRE T	69	0.27015	1.00000									
13 PRE T	70	0.43600	0.14947	1.00000								
PREV 1 1	71	-0.37195	-0.01821	-0.20342	1.00000							
PREV 1 2	72	0.23543	[illegible]	0.23557	-0.52125	1.00000						
PREV 2 1	73	-0.02088	-0.03591	-0.14325	0.33253	-0.30779	1.00000					
PREV 2 2	74	0.10610	-0.05360	0.07275	-0.01445	0.27399	-0.42314	1.00000				
COMP P1	75	0.26434	0.07144	0.17558	-0.05191	0.08919	-0.19744	-0.27904	1.00000			
COM P2	76	0.07722	0.02411	0.04221	-0.05433	0.11472	-0.07745	0.03574	0.08544	1.00000		
COM	77	0.15055	-0.05946	0.13969	[illegible]	-0.11434	-0.13414	0.17946	0.42153	-0.10879	1.00000	
COM 01	78	0.13573	0.07477	0.17242	[illegible]	0.22594	0.15421	-0.04727	0.08513	0.20610	0.04465	1.00000
COM 02	79	-0.25743	-0.06722	-0.11398	[illegible]	-0.00123	0.12491	-0.11376	-0.64209	-0.37929	-0.35467	-0.09901
COM 03	80	-0.28752	-0.17967	-0.13041	[illegible]	-0.35579	0.08954	-0.07127	-0.64489	-0.24431	-0.20916	-0.24002

		79 COM 02	80 COM 03
COM 02	79	1.00000	
COM 03	80	0.55644	1.00000

APPENDIX E

VARIOUS STATISTICS FOR VARIABLES AND THEIR SIMPLE CORRELATIONS FOR HOLLAND STATE PARK DATA

Broken Line — Signifies Simple Correlations Between .800 and .999

Solid Line — Signifies Simple Correlations Between .600 and .799

HOLLAND

TOTAL RAW OBSERVATIONS= 604
TOTAL OBSERVATIONS DROPPED= 1
TOTAL OBSERVATIONS IN PROBLEM= 603

TABLE A - - STATISTICS ON TRANSFORMED VARIABLES

LABEL	VAR	MINIMUM VALUE	MAXIMUM VALUE	MEAN	STANDARD DEVIATIONS	SUM	SUM OF SQUARES	SUM OF SQUARED DEVIATION FROM THE MEAN
TOT MALE	1	0.00000	6.00000	1.67993	1.2883533	1013.00000	2781.00000	999.22020
TOT FEM	2	0.00000	9.00000	1.92371	1.4412597	1160.00000	3482.00000	1250.49000
TOT VEH	3	0.00000	10.00000	3.59204	1.9544828	2166.00000	10000.00000	2299.64179
TRAV TIM	4	0.00000	9.00000	1.27032	1.9413915	766.00000	3242.00000	2268.03064
MILES	5	0.00000	493.00000	42.60033	52.9789137	25688.00000	2783990.00000	1689072.67893
INCOME	6	0.00000	7.00000	3.79934	1.8212117	2291.00000	10701.00000	1996.72073
ENTRY TI	7	0.00000	7.00000	3.41625	1.9977253	2060.00000	9440.00000	2402.90073
HRS PARK	8	0.00000	7.00000	2.23217	2.4472833	1346.00000	6410.00000	3605.40905
SIGHTSEE	9	0.00000	1.00000	0.24378	0.4297186	147.00000	147.00000	111.10610
WALKING	10	0.00000	1.00000	0.28358	0.4511136	171.00000	171.00000	122.50746
PICNIC	11	0.00000	1.00000	0.30182	0.4594305	182.00000	182.00000	127.06799
SWIM	12	0.00000	1.00000	0.55721	0.4971282	336.00000	336.00000	148.77612
TOT ACT	13	0.00000	9.00000	3.33665	2.2577515	2012.00000	9702.00000	3068.66833
WKDY+END	14	-1.00000	1.00000	-0.22388	0.9754257	-135.00000	603.00000	572.77612
A+P	15	-1.00000	1.00000	0.47595	0.8435817	287.00000	565.00000	428.40138
CAMP+DAY	17	-1.00000	1.00000	0.64842	0.7619112	391.00000	603.00000	349.46000
A LO TEM	18	55.00000	91.00000	69.01924	5.8792952	41618.00000	2893210.00000	20810.79934
A HI TEM	19	75.00000	95.00000	80.49088	6.6787984	48536.00000	3933958.00000	26092.69903
A AVTEM	20	63.00000	93.00000	74.41957	5.9327819	44875.00000	3368859.00000	20400.00000
A TEM RG	21	0.00000	22.00000	11.47264	5.8432914	6918.00000	99922.00000	20594.20091
P LO TEM	22	60.00000	92.00000	76.16915	8.7972164	45942.00000	3546814.00000	46586.64170
P HI TEM	23	71.00000	95.00000	82.07463	6.1034332	49491.00000	4004381.00000	22425.64179
P AV TEM	24	65.00000	93.00000	79.41294	6.5157845	47886.00000	3820326.00000	25550.17910
P TEM RG	25	-12.00000	20.00000	5.88557	7.4004023	3549.00000	53057.00000	32969.86648
A CLD 1	26	-1.00000	1.00000	0.43947	0.6654010	265.00000	383.00000	266.54063
A CLD2	27	-1.00000	1.00000	0.26700	0.6261379	161.00000	279.00000	236.02827
A PREC 1	28	-1.00000	1.00000	0.89386	0.3291166	539.00000	547.00000	65.20730
A PREC 2	29	-1.00000	1.00000	0.02985	0.2056619	18.00000	26.00000	25.46269
A PREC 3	30	-1.00000	1.00000	0.04975	0.2462593	30.00000	38.00000	36.50746
A WIND 1	31	0.00000	1.00000	0.09453	0.2928039	57.00000	57.00000	51.61294
AWIND 2	32	0.00000	1.00000	0.58375	0.4933455	352.00000	352.00000	146.52073
A WIND 3	33	0.00000	1.00000	0.32172	0.4675259	194.00000	194.00000	131.59841
P CLD 1	34	-1.00000	1.00000	0.34662	0.6451481	209.00000	323.00000	250.55058

P CLD 2	35	-1.00000	1.00000	[illegible]	0.6562372	223.00000	337.00000	294.58864
P PREC 1	36	-1.00000	1.00000	[illegible]	0.5779559	460.00000	552.00000	201.00909
P PREC 2	37	-1.00000	1.00000	-0.02619	0.3518767	-17.00000	75.00000	74.88073
P PREC 3	38	-1.00000	1.00000	-0.03980	0.3337215	-24.00000	68.00000	67.04470
P WIND 1	39	-1.00000	1.00000	-0.01990	0.3482603	-12.00000	72.00000	71.76119
P WIND 2	40	-1.00000	1.00000	0.56551	0.6210089	341.00000	425.00000	232.16252
P WIND 3	41	-1.00000	1.00000	0.27570	0.5335372	176.00000	190.00000	171.30050
F HI TEM	42	72.00000	95.00000	82.4.259	4.4504949	49689.00000	4100227.00000	11705.07663
F LO TEM	43	[illegible]	74.00000	64.42627	5.2596194	38849.00000	2519547.00000	16693.00000
F PRECIP	44	[illegible]	70.00000	24.51 78	15.6121722	14780.00000	509000.00000	146734.67093
HI TEM	45	73.00000	94.00000	84.24[illegible]	4.5977965	51[illegible]1.00000	4290667.00000	10030.10242
LO TEM	46	46.00000	79.00000	63.3[illegible]	7.7779212	38174.00000	2453054.00000	36300.20812
AV TEM	47	59.00000	85.00000	73.[illegible]	4.7515192	44010.00000	3324938.00000	24205.70119
PRECIP	48	[illegible]	99.00000	[illegible]	24.6231120	6[illegible]2.00000	432114.00000	364991.20729
AT PRES	49	2901.00000	2949.00000	2922.5422	12.8571245	1762293.00000	5152475223.00000	99485.67164
WIND DIR	50	[illegible]	15.00000	4.92549	4.1974[illegible]	2972.00000	25234.00000	10505.03866
AV WIND	51	10.00000	184.00000	103.27529	34.1196852	62275.00000	7216857.00000	705300.30102
SKY CON	52	[illegible]	10.00000	5.33499	2.837[illegible]758	3217.00000	22015.00000	4092.33167
7 SKY C	53	[illegible]	1[illegible]	5.64542	4.2651951	3406.00000	30193.00000	10991.00000
7 TEM	54	51.00000	79.00000	67.12919	7.9279058	40418.00000	2730836.00000	29600.58073
7 RHUM	55	37.00000	97.00000	82.72637	7.4276840	49684.00000	4159974.00000	33151.09075
7 WIND V	56	1.00000	15.00000	6.94527	3.3848767	4188.00000	35984.00000	6097.19403
13 SKY C	57	[illegible]	1[illegible]	5.99337	3.4289111	3614.00000	28738.00000	7077.07847
13 TEM	58	64.00000	93.00000	81.15977	5.5589247	48939.00000	3990433.00000	18502.72042
13 R HUM	59	34.00000	93.00000	59.52952	11.5465577	35896.00000	2217142.00000	80288.20812
13 WINDV	60	1.00000	21.00000	9.61592	3.1972817	5799.00000	61987.00000	6130.90746
F TEM RG	61	1.00000	72.00000	17.97674	5.5521[illegible]	10840.00000	213426.00000	18597.67696
TEM RG	62	1.00000	34.00000	2[illegible]	4.8773897	12627.00000	278693.00000	14279.09075
F CLD 1	63	-1.00000	1.00000	[illegible]1446	0.3115[illegible]	43.00000	65.00000	50.45791
FCLD 2	64	-1.00000	1.00000	0.05971	0.2441343	36.00000	38.00000	35.09075
F CLD 3	65	-1.00000	1.00000	0.92919	0.3851422	508.00000	582.00000	87.60630
FOG 1	66	-1.00000	1.00000	0.55721	0.6177424	336.00000	414.00000	226.77612
FOG 2	67	-1.00000	1.00000	0.24876	0.4678[illegible]	150.00000	220.00000	180.00057
THUN T	68	-1.00000	1.00000	0.39967	0.9174219	241.00000	603.00000	506.67093
7 PRE T	69	-1.00000	1.00000	[illegible]	0.4742593	531.00000	603.00000	135.00299
13 PRE T	70	-1.00000	1.00000	0.99337	0.1151868	599.00000	603.00000	7.97047
PREV 1 1	71	-1.00000	1.00000	0.4.942	0.5127219	247.00000	259.00000	157.00021
PREV 1 2	72	-1.00000	1.00000	0.52.73	0.5195367	314.00000	326.00000	162.00000
PREV 2 1	73	-1.00000	1.00000	0.38972	0.5145270	235.00000	251.00000	159.41625
PREV 2 2	74	-1.00000	1.00000	0.49425	0.5242475	298.00000	314.00000	166.70060
COMB F1	75	-73.00000	91.00000	31.12769	46.7271842	18778.00000	1890354.00000	1314007.16740
COM P2	76	-1.00000	1.00000	0.08789	0.3959261	53.00000	61.00000	96.34303
COM	77	-92.00000	93.00000	28.61592	53.4696565	17256.00000	2214934.00000	1721120.50749
COM 01	78	[illegible]	165.00000	477.05473	389.3394218	287664.00000	72347169[illegible].00000	91240210.10036
COM 02	79	[illegible]	127755.00000	457-5.47761	13.38.9427528	27620643.00000	1921381761152.0000	6570060055200.00000
COM 03	80	.00000	***************	9566459[illegible].15675	74510[illegible]65.4367198	5769693[illegible]775.00000	***************	***************

SIMPLE CORRELATIONS

TOT MALE	1	1.00000									
TOT FEM	2	0.07182	1.00000								
TOT VEH	3	0.69614	0.76126	1.00000							
TRAV TIM	4	-0.01516	-0.01797	-0.01590	1.00000						
MILES	5	0.02017	0.02494	0.03243	0.46299	1.00000					
INCOME	6	0.04550	-0.10331	0.02410	[illegible]1392	-0.34035	1.00000				
ENTRY TI	7	0.30090	-0.10145	-0.06950	-0.1[illegible]731	-0.14979	-0.03594	1.00000			
HRS PARK	8	0.15470	0.07502	0.14060	[illegible]16579	0.13796	0.09246	-0.17271	1.00000		
SIGHTSEE	9	-0.07190	-0.12.17	-0.14048	[illegible]147	-0.34781	-0.09721	0.22797	-0.14236	1.00000	
WALKING	10	0.04219	-0.02543	0.00143	[illegible]3114	0.10292	-0.03543	-0.03904	0.14640	-0.04073	1.00000

PICNIC	11	0.21961	0.21294	0.29460	-0.01154	0.02387	-0.03073	-0.15993	0.16605	-0.13772	0.09929	1.00000
SWIM	12	0.17258	0.17998	0.24119	-0.02380	0.32859	0.05215	-0.17727	0.21709	-0.26360	0.21271	0.29455
TOT ACT	13	0.11420	0.14318	0.16050	0.03150	0.08991	0.03140	-0.20390	0.38240	-0.00760	0.50630	0.30002
WKDY+END	14	0.01599	-0.09015	-0.09147	0.09727	0.09666	-0.08424	0.05445	-0.12719	0.07091	-0.01085	0.07690
A+P	15	0.02802	-0.11901	-0.07245	-0.07057	-0.19063	-0.35559	0.41461	-0.27569	0.16054	-0.02700	-0.18128
CAMP+DAY	17	-0.17236	-0.10615	-0.18125	-0.15495	-0.13492	-0.21741	0.17316	-0.52907	0.01060	-0.15400	-0.14843
A LO TEM	18	-0.02423	0.00252	-0.01395	0.05779	0.06944	-0.05270	-0.00975	0.10003	-0.06225	0.04126	-0.05124
A HI TEM	19	0.01925	-0.03169	-0.00945	0.07469	0.32512	-0.03739	-0.07373	0.02147	-0.01630	0.00114	-0.09065
A AVTEM	20	0.01292	-0.00093	0.00519	0.07570	0.34943	-0.05106	-0.35222	0.10975	-0.06341	0.00332	-0.04395
A TEM RG	21	0.24639	-0.03071	0.00324	0.02723	-0.04116	0.03061	0.09693	-0.00412	0.04401	-0.04027	-0.01540
P LO TEM	22	0.03116	0.04307	0.04954	-0.07239	-0.08944	0.23484	0.00120	0.02396	-0.01090	-0.01001	-0.07501
P HI TEM	23	0.05247	0.00178	0.03375	-0.02349	-0.06313	-0.00508	-0.06345	-0.06009	0.01142	-0.02701	0.00694
P AV TEM	24	0.05139	0.02653	0.05043	-0.05992	-0.09353	0.33639	-0.02561	-0.01717	0.00010	-0.02352	-0.02094
P TEM RG	25	0.00626	-0.05066	-0.03193	0.04915	0.05420	-0.24558	-0.35136	-0.00290	0.02237	-0.00907	0.10039
A CLD 1	26	0.03493	-0.00623	-0.03018	0.05034	0.07520	-0.24109	-0.34707	0.05659	0.00231	0.03230	-0.03251
A CLD2	27	-0.03597	0.05022	0.00771	-0.02121	0.09442	-0.24325	-0.07658	-0.07730	0.00464	-0.02151	0.00054
A PREC 1	28	0.10380	0.14244	0.00705	-0.07721	-0.06913	0.02515	0.10522	-0.04360	-0.00467	-0.02071	-0.00751
A PREC 2	29	-0.03204	0.01337	-0.01090	-0.04937	-0.03747	-0.01059	0.03935	0.09912	0.01150	-0.00107	-0.00919
A PREC 3	30	-0.03350	-0.03600	-0.04749	0.06216	0.16565	-0.21104	-0.04092	0.02215	-0.06771	0.03727	0.00024
A WIND 1	31	0.02749	-0.05374	-0.03119	-0.02457	0.01540	0.06574	-0.05622	0.01105	0.00130	0.11112	-0.03056
AWIND 2	32	0.03310	-0.14707	-0.00750	-0.00232	-0.06150	-0.02027	0.00924	-0.00630	0.01715	-0.05037	0.00053
A WIND 3	33	-0.05214	0.10932	0.02753	0.01749	0.09557	-0.03330	0.02534	0.00415	-0.01096	-0.00709	-0.02740
P CLD 1	34	-0.03619	-0.07692	-0.07606	-0.08156	-0.07957	-0.08774	0.00249	-0.12049	0.07019	0.01599	-0.03069
P CLD 2	35	0.03445	-0.14257	-0.01180	-0.13985	0.01067	0.05574	0.01301	-0.01751	-0.06161	0.00431	0.00041
P PREC 1	36	-0.03041	0.05203	0.03109	-0.14344	-0.04771	-0.06596	0.14175	-0.05496	-0.00093	-0.09265	0.09731
P PREC 2	37	-0.01994	0.10713	0.16296	-0.01314	-0.00259	-0.09439	0.09944	0.03462	0.03455	-0.09607	0.00190
P PREC 3	38	0.03987	0.12146	0.11514	0.03151	-0.03407	-0.06762	0.12954	0.03167	-0.02490	-0.09041	0.04590
P WIND 1	39	0.02390	0.00040	0.06426	-0.05640	-0.00669	-0.06712	0.16857	-0.02991	0.01036	-0.07036	0.09007
P WIND 2	40	0.05043	0.10501	0.11796	-0.03056	-0.10399	-0.02141	0.03623	-0.03290	-0.01325	-0.12060	0.13636
P WIND 3	41	-0.00704	-0.03907	-0.01395	0.04225	0.06096	-0.06450	0.10734	0.01576	-0.01334	-0.02002	-0.01051
F HI TEM	42	0.34047	-0.21094	0.01429	-0.03584	-0.10450	0.13999	-0.01375	0.04901	-0.03440	-0.03700	-0.04074
F LO TEM	43	0.01470	0.06010	0.04029	0.01212	0.04240	-0.01603	0.03352	0.06409	-0.01371	-0.01112	-0.07395
F PRECIP	44	-0.05099	0.04054	-0.00056	0.06430	0.33616	-0.03413	0.39362	0.04063	0.01142	0.01005	-0.00044
HI TEM	45	0.02020	0.33161	0.03970	0.02409	-0.01233	0.00439	0.00357	0.05236	-0.07556	-0.00007	-0.00645
LO TEM	46	-0.04956	0.04420	-0.00126	0.00594	-0.03087	-0.01600	-0.01262	-0.00759	-0.02093	-0.05990	-0.00713
AV TEM	47	-0.01621	0.04012	0.01714	0.01660	-0.02056	-0.00652	-0.00524	0.01964	-0.04630	-0.03001	-0.00226
PRECIP	48	-0.03310	0.12319	0.01044	0.13603	0.13340	0.00600	0.04143	0.04024	0.04161	0.11199	-0.00702
AT PRES	49	0.05626	-0.03319	0.01140	-0.25412	-0.27129	-0.02593	0.15465	-0.13997	0.14990	-0.11713	-0.00611
WIND DIR	50	-0.01469	0.04509	0.01094	0.14461	0.03132	-0.06213	0.34142	-0.04077	0.10000	0.00007	0.04723
AV WIND	51	-0.09656	0.04999	-0.01031	-0.03695	-0.09400	-0.01002	-0.01455	0.00974	-0.02100	0.01497	-0.10273
SKY COV	52	-0.00243	0.01194	0.00371	0.09716	0.10201	0.00620	-0.12245	-0.01030	0.01737	0.07097	0.01707
7 SKY C	53	-0.05074	0.01455	-0.02142	0.03457	0.06991	-0.01730	-0.07354	0.00401	0.02599	0.03291	-0.00006
7 TEM	54	-0.05206	0.04141	-0.00570	0.04066	0.00057	-0.02345	-0.00077	0.05279	-0.04136	-0.00725	-0.00030
7 RHUM	55	-0.03941	-0.11473	-0.10334	-0.01515	-0.00741	0.02469	-0.00992	0.03094	0.04900	-0.02000	-0.09174
7 WIND V	56	-0.08173	0.04545	-0.01769	0.03251	-0.02309	-0.04727	0.02647	-0.03175	0.02060	-0.01260	-0.10066
13 SKY C	57	0.01090	-0.01200	-0.00536	0.06365	0.00963	0.01540	-0.15916	-0.03200	-0.00116	0.00203	0.01490
13 TEM	58	0.04055	0.03533	0.05142	0.06423	0.04583	-0.00652	-0.00643	0.07437	-0.10325	-0.00019	0.02214
13 R HUM	59	-0.00052	-0.31993	-0.06014	-0.03929	-0.00393	0.00545	-0.03771	-0.00009	0.02016	-0.05505	-0.07773
13 WINDV	60	-0.05400	-0.10275	-0.03440	0.02762	0.07252	0.03419	0.01229	0.05014	-0.01052	-0.00033	-0.00024
F TEM RG	61	0.02497	-0.07205	-0.03446	-0.03995	-0.12323	0.12636	-0.04031	-0.02112	-0.01433	-0.01925	0.03931
TEM RG	62	0.11150	-0.03425	0.04769	0.01910	0.03512	0.03190	0.02424	0.07224	-0.05336	0.00035	0.14763
F CLD 1	63	-0.01500	-0.03032	-0.03003	-0.07690	-0.00886	-0.00903	0.01039	-0.15007	0.11965	-0.04570	0.04620
FCLD 2	64	-0.05037	0.00025	-0.02547	-0.04015	-0.05610	0.04569	-0.03743	0.02126	-0.01229	-0.01004	0.02462
F CLD 3	65	0.05425	0.03309	0.05572	0.03333	0.07322	-0.01357	0.00409	0.12900	-0.00005	0.06000	-0.04661
FOG 1	66	-0.00516	0.14013	0.03057	0.10201	0.13049	0.00063	0.02425	-0.02655	0.00056	-0.03770	-0.00032
FOG 2	67	0.00231	-0.07077	-0.05135	-0.11333	-0.11315	0.03906	-0.01695	0.01104	0.07160	-0.01060	-0.01097
THUN T	68	0.01706	0.04571	0.04662	-0.03931	-0.04639	0.02919	0.02237	0.01039	-0.05794	-0.10172	0.00014
7 PRE T	69	0.13047	-0.01339	0.00409	0.02060	0.07360	0.00761	0.07449	-0.00104	-0.03625	0.01077	-0.00205
13 PRE T	70	0.05200	-0.02309	0.01749	0.02291	0.02299	0.00949	0.07640	-0.01011	-0.03442	0.03629	-0.02490
PREV 1 1	71	-0.05705	-0.00711	-0.05351	-0.12327	-0.09340	-0.04907	0.00042	-0.00390	-0.02426	-0.07204	-0.03213
PREV 1 2	72	0.02696	-0.00476	0.01409	0.17477	0.12429	-0.01052	-0.00273	0.02495	0.00337	0.03512	-0.00930

		1 TOT MALE	2 TOT FEM	3 TOT VEH	4 TRAV TIM	5 MILES	6 INCOME	7 F.THY TI	8 HRS PARK	9 SIGHTSEE	10 WALKING	11 PICNIC
PREV 2 1	73	-0.06961	-0.06179	-0.15757	-0.11693	-0.15380	-0.02808	0.04069	-0.04163	0.01286	-0.01175	-0.00058
PREV 2 2	74	0.04258	0.06074	0.07360	0.01128	0.19254	-0.04195	-0.09223	0.09520	-0.02679	0.01794	-0.00022
COMM P1	75	0.03829	-0.08213	-0.03286	0.06518	0.08061	-0.04274	-0.04848	0.06461	-0.00295	0.03405	-0.00091
COM P2	76	-0.00015	-0.06309	-0.04826	0.06190	0.03107	-0.01301	-0.08714	-0.08968	0.05155	0.07106	-0.01015
COM	77	-0.03695	-0.07322	-0.07317	-0.07896	-0.02770	-0.00769	0.08591	-0.11576	0.07037	0.01402	-0.00194
COM 01	78	-0.03419	0.04899	0.01254	0.02465	0.03157	-0.05546	0.02412	-0.04652	0.00465	0.00901	0.02976
COM 02	79	-0.04144	0.02071	-0.01597	0.04463	0.07335	0.01672	-0.11952	0.01054	0.00611	0.00480	-0.00503
COM 03	80	-0.04998	-0.09164	-0.03259	0.03533	0.07221	-0.01213	-0.04713	0.02608	0.01904	0.03429	-0.01041

		1 TOT MALE	2 TOT FEM	3 TOT VEH	4 TRAV TIM	5 MILES	6 INCOME	7 F.THY TI	8 HRS PARK	9 SIGHTSEE	10 WALKING	11 PICNIC
SWIM	12	1.00000										
TOT ACT	13	0.57851	1.00000									
WKDY+END	14	-0.13293	-0.04190	1.00000								
A+P	15	-0.12249	-0.16974	0.09539	1.00000							
CAMP+DAY	17	-0.19248	-0.33666	0.10649	0.11635	1.00000						
A LO TEM	18	0.19962	-0.32786	-0.09574	-0.11395	-0.01933	1.00000					
A HI TEM	19	0.12111	-0.36441	-0.07802	-0.02557	0.01177	0.97337	1.00000				
A AVTEM	20	0.12719	-0.34199	-0.07662	-0.06158	0.00280	0.88414	0.78743	1.00000			
A TEM RG	21	0.02813	-0.35263	0.01539	-0.01829	0.03291	-0.33501	0.56634	0.01358	1.00000		
P LO TEM	22	0.14422	-0.34843	-0.45917	-0.02346	-0.00591	0.41605	0.72365	0.57907	0.41460	1.00000	
P HI TEM	23	0.19362	-0.33196	-0.14591	-0.01175	0.08924	0.24346	0.97295	0.34954	0.40992	0.55700	1.00000
P AV TEM	24	0.17070	-0.34583	-0.33121	-0.01824	0.03197	0.36953	0.72732	0.52955	0.46064	0.90584	0.88473
P TEM RG	25	-0.02237	0.03114	0.36575	-0.03756	0.39418	-0.29151	-0.38343	-0.48542	-0.15459	-0.72042	0.14009
A CLD 1	26	0.05694	0.03294	0.09298	-0.03569	0.01593	0.22789	0.29675	0.30123	0.13405	0.03717	0.05061
A CLD2	27	0.00154	0.29681	0.03604	-0.01773	0.03692	-0.20969	-0.06155	-0.28997	0.14071	-0.04479	0.11301
A PREC 1	28	0.07779	-0.03902	-0.09494	0.01045	0.00942	-0.14037	0.20965	0.02324	0.30091	0.32303	0.36701
A PREC 2	29	-0.00048	0.03199	-0.11568	-0.00543	-0.12373	0.08194	-0.14371	-0.02709	-0.24675	-0.00680	-0.23733
A PREC 3	30	-0.00113	0.01763	0.38923	-0.01022	0.00485	0.11191	-0.15223	-0.01919	-0.20650	-0.35113	-0.29667
A WIND 1	31	0.03696	0.02969	-0.29733	-0.02155	-0.18395	0.07137	0.34319	0.04677	0.32845	0.30900	0.00605
A WIND 2	32	-0.03401	-0.02013	0.37959	0.06177	0.05195	-0.13331	-0.10779	-0.11412	0.01074	-0.20913	-0.19737
A WIND 3	33	0.01390	0.39266	-0.23519	-0.05195	0.01029	0.09576	-0.10121	0.09113	-0.21202	0.05071	-0.04300
P CLD 1	34	-0.02309	-0.03340	0.40596	0.06975	0.13342	0.26040	-0.03647	0.00632	-0.11051	-0.00679	0.00101
P CLD 2	35	0.05036	-0.01027	-0.05519	0.01472	0.06040	0.20172	0.21747	0.10009	0.04661	0.17107	0.30001
P PREC 1	36	-0.01919	-0.01120	0.32702	0.02747	0.14231	-0.03734	-0.34763	-0.04336	-0.39976	-0.36292	-0.30025
P PREC 2	37	-0.02400	0.02451	0.06306	-0.01628	-0.01229	-0.03509	-0.35463	-0.05413	-0.36923	-0.30116	-0.34259
P PREC 3	38	0.03374	0.13320	0.09505	0.01433	0.02327	-0.33490	-0.39044	-0.21041	-0.11902	-0.31220	-0.36171
P WIND 1	39	-0.02239	0.13705	0.22351	0.05939	0.04176	-0.24832	-0.51579	-0.24331	-0.33127	-0.44409	-0.40497
P WIND 2	40	0.09913	0.21327	0.64401	-0.04217	0.11195	-0.29484	-0.17878	-0.59175	0.00175	-0.09628	0.04023
P WIND 3	41	-0.06938	-0.01336	0.19704	0.04262	0.01335	0.13190	-0.36596	0.03204	-0.55180	-0.48066	-0.49005
F HI TEM	42	0.16330	0.04625	-0.31874	0.03141	-0.04874	0.04342	0.27408	0.17632	0.21244	0.37907	0.30049
F LO TEM	43	0.07293	-0.08315	-0.29317	0.07808	-0.00731	0.15978	0.26205	0.17464	0.13078	0.26924	0.10294
F PRECIP	44	-0.01833	0.12024	-0.22591	0.03726	0.01903	-0.03293	-0.16003	-0.06697	-0.14978	-0.13244	-0.10097
HI TEM	45	0.24818	0.01945	-0.34538	-0.00772	0.00639	0.49757	0.61917	0.63231	0.20786	0.62000	0.60004
LO TEM	46	0.14396	-0.07745	-0.39554	-0.01521	0.03843	0.50805	0.59422	0.63317	0.00669	0.60074	0.50894
AV TEM	47	0.19650	-0.13834	-0.41577	-0.01200	0.02533	0.50573	0.64342	0.65702	0.14600	0.64709	0.64025
PRECIP	48	0.04935	0.05744	-0.28469	-0.06094	-0.10495	0.09518	0.04122	0.02839	-0.04065	0.11213	0.09039
AT PRES	49	-0.09055	-0.12242	0.02600	0.00001	0.11791	-0.23926	-0.12553	-0.13209	0.09726	-0.03205	0.02309
WIND DIR	50	-0.35661	0.04006	0.27996	0.03160	-0.03490	-0.47826	-0.23499	-0.47900	0.21262	-0.27100	-0.04601
AV WIND	51	-0.04297	-0.19204	-0.19957	-0.02065	0.00799	0.41700	0.26902	0.31023	-0.11217	0.20904	0.00002
SKY COV	52	-0.02695	0.02305	-0.02206	-0.03498	-0.05144	-0.07510	0.01900	-0.19400	0.09738	-0.05471	0.20997
7 SKY C	53	-0.03359	-0.00114	-0.16900	-0.05591	-0.01067	0.05193	-0.01201	-0.00761	-0.06497	-0.00305	0.10330
7 TEM	54	0.14442	-0.03900	-0.38023	-0.01939	-0.00560	0.66747	0.55039	0.60083	-0.03336	0.54975	0.02152
7 RHUM	55	0.04635	-0.14150	-0.24095	-0.03595	-0.04340	0.05627	0.25794	0.09311	0.23020	0.21211	0.20426
7 WIND V	56	-0.07366	-0.00344	-0.00874	0.01285	0.01105	0.21157	-0.10434	0.10970	-0.09259	0.13004	-0.00037
13 SKY C	57	-0.03306	0.12325	0.00254	-0.06265	-0.04667	-0.00500	-0.03613	-0.20675	0.04733	-0.07104	0.00010
13 TEM	58	0.24440	0.14206	-0.33487	-0.02710	0.01324	0.43751	0.53254	0.57065	0.16053	0.51664	0.61005
13 R HUM	59	0.03337	-0.11436	-0.29929	-0.00781	-0.01772	0.29525	0.33999	0.24310	0.09153	0.32223	0.25409
13 WINDY	60	-0.35672	-0.09544	-0.15611	0.00490	0.02327	0.34677	0.11055	0.27361	-0.22255	0.12500	-0.00061
F TEM RG	61	0.04056	0.03972	0.03094	-0.04977	-0.03178	-0.11589	-0.07029	-0.02729	0.03726	0.04671	0.12016

		12 [illegible]	13 TOT ACT	14 WKDY+END	15 [illegible]	17 CAMP+DAY	18 A LO TEM	19 A HI TEM	20 A AVTEM	21 A TEM RG	22 P LO TEM	23 P HI TEM
TEM RG	62	0.04611	0.14895	0.10890	0.02542	-0.35401	-0.36951	-0.23743	-0.23664	0.00940	-0.25632	-0.01097
F CLD 1	63	-0.03548	-0.15109	0.28751	0.05699	0.09583	-0.46935	-0.22273	-0.54253	0.21740	-0.22060	0.10277
F CLD 2	64	-0.02523	0.09265	-0.11124	-0.07371	-0.26561	-0.08296	-0.18105	-0.13083	-0.12350	-0.07105	-0.08276
F CLD 3	65	0.07114	0.04105	-0.12541	-0.01022	-0.03554	0.44758	0.32976	0.53455	-0.09120	0.25909	-0.05951
FOG 1	66	-0.05546	-0.02531	0.34193	0.03234	0.04339	0.04137	-0.14545	0.01672	-0.20780	-0.10600	-0.10801
FOG 2	67	-0.03314	-0.03856	-0.29790	-0.02837	-0.34363	-0.12688	-0.11562	-0.72113	-0.00449	0.07474	0.00232
THUN T	68	0.03523	0.08310	0.15770	0.04356	0.39173	-0.25586	-0.09226	0.03972	-0.04924	0.00207	-0.00632
7 PRE T	69	0.74311	-0.01514	-0.32916	0.02433	0.37074	-0.09735	0.18306	0.03616	0.29973	0.22373	0.20420
13 PRE T	70	0.06471	0.02139	0.04594	0.03257	0.34914	0.23946	0.09359	0.06354	0.04305	0.04464	0.00838
PREV 1 1	71	-0.06456	-0.08212	0.04890	0.03244	0.10577	-0.25301	-0.15216	-0.34298	0.00365	-0.17737	-0.00856
PREV 1 2	72	0.03640	0.07491	0.34687	0.02744	-0.24031	0.26403	0.24603	0.30772	-0.00460	0.19207	0.04744
PREV 2 1	73	0.01354	-0.02447	-0.08071	-0.02421	0.03672	-0.01733	0.14335	-0.05346	0.17729	0.04707	0.09631
PREV 2 2	74	0.05243	0.06196	-0.00415	-0.03492	-0.25401	0.06756	-0.11356	0.04069	-0.19970	0.00347	-0.13024
COMP P1	75	0.06495	0.03457	0.07830	-0.04691	0.21508	0.22919	0.31675	0.32174	0.13064	0.04953	0.17935
COMP P2	76	-0.01574	-0.02127	-0.22898	-0.00789	-0.38192	0.13654	0.44053	0.14500	0.36422	0.30906	0.31019
COM	77	-0.01273	-0.03281	0.38516	0.06852	0.17133	0.09168	-0.01752	0.03367	-0.11227	-0.07309	0.08177
COM O1	78	-0.09162	0.01147	0.21591	0.02731	-0.03811	-0.37177	-0.17342	-0.30264	0.17594	-0.19933	-0.15076
COM O2	79	-0.03736	-0.01702	-0.15211	-0.03733	-0.34351	0.15819	0.17397	0.01279	0.04270	0.16903	0.17910
COM O3	80	-0.02644	-0.06061	-0.21763	-0.06255	-0.33543	0.12717	0.07629	-0.00737	-0.04067	0.00309	0.29047

P AV TEM	24	1.00000										
P TEM RG	25	-0.37693	1.00000									
A CLD 1	26	0.07953	0.08786	1.00000								
A CLD2	27	0.04174	0.14642	-0.04607	1.00000							
A PREC 1	28	0.33679	-0.00139	0.31954	-0.15245	1.00000						
A PREC 2	29	-0.11334	-0.10765	-0.24596	-0.29099	-0.29459	1.00000					
A PREC 3	30	-0.34074	0.20849	-0.13365	0.25692	-0.46753	0.15182	1.00000				
A WIND 1	31	0.20176	-0.22728	0.17009	-0.02917	0.10428	-0.34694	-0.06533	1.00000			
A WIND 2	32	-0.24047	0.20096	-0.24134	0.09613	-0.24747	-0.24105	0.22543	-0.38763	1.00000		
A WIND 3	33	0.01466	-0.07816	0.14014	-0.07262	-0.51572	0.07271	-0.19697	-0.22253	-0.01151	1.00000	
P CLD 1	34	-0.09903	0.11583	0.40689	0.02951	0.34546	-0.22730	-0.06692	-0.17373	0.16177	-0.06190	1.00000
P CLD 2	35	0.27178	0.11295	0.17276	0.32828	0.02947	-0.10753	0.27911	0.31340	-0.03190	-0.16253	-0.00035
P PREC 1	36	-0.34095	0.23832	0.00797	0.21199	0.05958	-0.24702	0.08303	-0.69205	0.30572	0.11070	0.00002
P PREC 2	37	-0.36591	0.15873	-0.26629	0.01914	-0.34148	0.51470	0.01622	-0.69132	0.20024	0.19061	-0.00129
P PREC 3	38	-0.35300	0.11704	-0.26521	0.13044	-0.03853	0.01734	0.02413	-0.67542	0.10171	0.23126	-0.07070
P WIND 1	39	-0.51077	0.20195	-0.13540	0.11663	-0.21842	0.00938	0.01169	-0.47431	0.24380	0.03973	0.14029
P WIND 2	40	-0.01347	0.16734	-0.12405	0.25195	0.15411	-0.03037	-0.22773	-0.65875	0.40633	-0.02122	0.00409
P WIND 3	41	-0.50400	0.09051	-0.20861	-0.14573	-0.34765	0.16404	0.36318	-0.55314	-0.01105	0.35002	0.10603
F HI TEM	42	0.39946	-0.20363	0.07202	-0.06972	0.16459	0.30181	-0.22501	0.10458	-0.05639	-0.04607	-0.23136
F LO TEM	43	0.27270	-0.21049	-0.05266	0.05467	0.12894	-0.25164	-0.07411	0.14530	-0.10436	0.01913	-0.13076
F PRECIP	44	-0.19544	0.00963	0.05031	-0.11151	0.30696	-0.03160	-0.07390	0.11087	-0.14107	0.22415	0.00201
HI TEM	45	0.73556	-0.17334	0.00370	0.02431	0.14332	-0.29695	-0.11307	0.11251	-0.21190	0.19314	-0.16189
LO TEM	46	0.62076	-0.30523	-0.39822	-0.02914	-0.00054	0.25349	0.03156	0.21274	-0.30659	0.10309	-0.10000
AV TEM	47	0.79671	-0.26952	0.00050	-0.01077	0.20773	-0.21226	-0.05141	0.10055	-0.27407	0.17013	-0.10960
PRECIP	48	0.17705	-0.05459	-0.04631	-0.11137	-0.12761	0.02054	-0.12150	0.10492	-0.25260	0.15902	-0.20611
AT PRES	49	-0.05248	0.05517	0.07524	0.01419	0.25715	-0.15133	-0.25093	-0.13594	0.19524	-0.12009	0.17006
WIND DIR	50	-0.29602	0.20427	-0.12032	0.31590	0.13413	-0.08615	-0.09629	0.30605	0.04505	-0.05103	0.10020
AV WIND	51	0.10577	-0.33705	-0.05021	-0.17063	-0.15223	0.16695	0.10003	0.21504	-0.43151	0.32015	-0.11100
SKY COV	52	0.07243	0.25567	-0.25294	0.04977	-0.32277	0.13079	0.18293	0.27357	-0.11613	-0.04079	-0.40013
7 SKY C	53	0.04671	0.25529	-0.18637	0.05135	-0.30235	0.13965	0.17802	0.27404	-0.19913	0.03049	-0.20714
7 TEM	54	0.53944	-0.31374	-0.04531	-0.14459	-0.14172	0.09573	0.04241	0.16754	-0.32039	0.24100	-0.00006
7 HUM	55	0.20676	-0.00931	0.01531	0.01299	-0.10995	0.11456	-0.03617	0.23212	-0.09514	-0.04497	-0.22373
7 WIND V	56	0.00479	-0.19919	-0.20358	-0.13777	-0.20275	0.09541	0.17665	0.04347	-0.19371	0.17969	-0.14052
13 SKY C	57	0.02690	0.21109	-0.31178	0.09814	-0.24156	0.12777	0.00295	0.15119	-0.02913	-0.06309	-0.14500
13 TEM	58	0.63779	-0.10787	0.12078	0.09554	0.17913	-0.14819	-0.03494	0.00911	-0.13093	0.13245	-0.12009
13 R HUM	59	0.31676	-0.10794	-0.20605	-0.28534	-0.23257	0.26921	-0.09513	0.10414	-0.24462	0.10502	-0.27971
13 WIND V	60	0.03620	-0.20592	-0.03556	-0.29521	-0.10958	0.14391	0.11511	0.02103	-0.31017	0.31413	-0.21002
F TEM RG	61	0.17579	0.04024	0.10700	-0.01716	0.01147	0.13594	-0.10859	-0.00376	0.09400	-0.05471	-0.09004

		24 P AV TEM	25 P TEM RG	26 A CLD 1	27 A CLD2	28 A PREC 1	29 A PREC 2	30 A PREC 3	31 A WIND 1	32 AWIND 2	33 A WIND 3	34 P CLD 1
TEM RG	62	-0.14615	0.20813	0.10905	0.17441	0.30593	-0.19068	-0.13375	-0.21037	0.23649	-0.11776	0.00001
F CLD 1	63	-0.04175	0.40583	-0.22198	0.33320	0.10834	-0.04875	-0.06787	-0.10044	0.27264	-0.21977	0.02026
FCLD 2	64	-0.07403	0.11299	-0.05955	-0.01752	-0.20643	-0.16795	-0.16007	-0.07911	-0.05548	0.10000	-0.00079
F CLD 3	65	0.10674	-0.35214	0.20484	-0.03296	-0.23084	0.14796	0.16193	0.14494	-0.20213	0.12290	-0.10745
FOG 1	66	-0.14154	-0.03275	-0.05011	0.14309	-0.01101	-0.07535	0.17006	-0.17342	0.19673	-0.09099	0.23620
FOG 2	67	0.07030	-0.00608	-0.14159	0.01962	-0.09936	0.13666	-0.12549	0.28908	-0.16409	0.04256	-0.02013
THUN T	68	-0.02602	-0.07473	-0.03514	-0.04438	0.22075	0.27753	-0.22549	-0.30784	0.23230	-0.09242	0.14601
7 PRE T	69	0.20201	-0.03135	0.20131	-0.19394	0.72749	-0.30401	-0.29341	0.20141	-0.35659	0.00072	0.27064
13 PRE T	70	0.07455	0.03131	0.12490	0.11603	-0.31562	0.00838	0.01146	0.01064	-0.04071	0.03973	0.10031
PREV 1 1	71	-0.17178	0.14347	-0.01243	0.19602	-0.20400	0.12031	0.25960	0.20284	-0.13274	-0.02405	-0.04033
PREV 1 2	72	0.13093	-0.19617	0.01445	-0.24930	0.19861	-0.09909	-0.22003	-0.21492	0.01752	0.11611	0.00057
PREV 2 1	73	0.04704	-0.01209	0.16361	0.19722	0.01925	-0.09441	0.13513	0.27325	-0.06007	-0.10775	0.10064
PREV 2 2	74	-0.09700	-0.11096	-0.06149	-0.12839	-0.20900	0.12438	-0.08749	-0.19906	-0.12760	0.25790	-0.04001
COMP P1	75	0.09047	0.20570	0.99679	-0.05364	0.32562	-0.27354	-0.13402	0.17652	-0.24661	0.14900	0.20079
COM P2	76	0.39510	-0.20393	0.24243	-0.01665	-0.03910	0.16944	-0.05014	0.60595	-0.21945	-0.19063	-0.17006
COM	77	-0.06497	0.10573	0.49323	0.02598	0.34392	-0.19935	-0.06566	-0.17307	0.14059	-0.04629	0.00724
COM C1	78	-0.21066	0.10509	-0.13579	0.26238	0.20036	-0.20313	-0.06192	0.02419	-0.11231	0.10336	0.10102
COM C2	79	0.10954	-0.05412	-0.22177	-0.05744	-0.35514	0.16484	0.10342	0.42057	-0.37090	0.09108	-0.08462
COM C3	80	0.12787	0.20455	-0.13571	-0.12045	-0.31357	0.16366	0.15292	0.33651	-0.25737	0.06052	-0.20076

P CLD 2	35	1.00000										
P PREC 1	36	0.05253	1.00000									
P PREC 2	37	-0.32446	0.40171	1.00000								
P PREC 3	38	-0.39136	0.55705	0.64121	1.00000							
P WIND 1	39	-0.10014	0.67557	0.56971	0.59063	1.00000						
P WIND 2	40	-0.00272	0.55477	0.47603	0.50971	0.37797	1.00000					
P WIND 3	41	-0.20075	0.51256	0.52109	0.43120	0.30776	-0.08794	1.00000				
F HI TEM	42	0.12340	-0.23359	-0.10723	-0.05343	-0.05503	0.06090	-0.37190	1.00000			
F LO TEM	43	0.03155	-0.10943	-0.14709	-0.04048	-0.02025	-0.17977	-0.03799	0.75099	1.00000		
F PRECIP	44	-0.00270	0.15003	0.02621	0.06032	0.16769	-0.09392	0.15193	0.15094	0.37500	1.00000	
HI TEM	45	0.27772	-0.10569	-0.15170	-0.16471	-0.32065	0.02727	-0.00751	0.24194	0.27952	-0.07505	1.00000
LO TEM	46	0.23614	-0.21701	-0.11101	-0.33026	-0.30444	-0.24202	0.04975	0.06452	0.26201	-0.04906	0.70191
AV TEM	47	0.27320	-0.17059	-0.13020	-0.27549	-0.30079	-0.14412	-0.01171	0.15240	0.26315	-0.06342	0.90093
PRECIP	48	-0.00243	-0.31426	-0.19098	-0.14613	-0.24963	-0.23907	-0.04623	0.04079	0.13930	0.10115	0.21740
AT PRES	49	-0.04372	0.25219	0.10075	0.23319	0.20362	0.37533	-0.17207	0.14975	-0.12341	-0.00211	-0.25094
WIND DIR	50	-0.22120	0.00554	0.02791	0.27491	0.10673	0.21134	-0.11395	-0.22007	-0.04903	-0.14056	-0.40530
AV WIND	51	-0.04374	-0.31054	-0.10027	-0.22750	-0.37526	-0.53260	0.21332	-0.20000	0.10699	0.07474	0.21054
SKY COV	52	0.07976	-0.41921	-0.12190	-0.25467	-0.39794	-0.28099	-0.00171	0.09761	0.17420	-0.03400	0.04050
7 SKY C	53	0.22006	-0.26367	-0.12204	-0.31594	-0.39933	-0.35315	0.07757	-0.07057	0.11051	-0.00550	0.10900
7 TEM	54	0.20979	-0.19479	-0.06006	-0.32910	-0.37552	-0.29504	0.16472	0.04912	0.24150	-0.00207	0.70087
7 RHUM	55	0.16249	-0.37003	-0.17410	-0.29417	-0.41536	-0.16442	-0.23245	0.07772	0.07441	-0.07493	0.21060
7 WIND V	56	-0.14676	-0.15694	0.34194	-0.04017	-0.24694	-0.32349	0.02175	-0.21621	0.11097	-0.02096	0.11009
13 SKY C	57	-0.01752	-0.33605	-0.06074	-0.10062	-0.29256	-0.16362	-0.07291	-0.02914	0.00941	-0.05374	-0.02711
13 TEM	58	0.30416	0.01229	-0.12517	-0.07094	-0.22303	0.11405	-0.06157	0.19340	0.17355	-0.04410	0.90700
13 R HUM	59	-0.39475	-0.40600	-0.01963	-0.33244	-0.46437	-0.35331	0.07444	-0.00063	0.10126	-0.00377	0.20091
13 WINDV	60	-0.34295	-0.10912	-0.34060	-0.05069	-0.10773	-0.31527	0.22729	-0.11560	0.07037	0.11209	0.00042
F TEM RG	61	0.04016	-0.02301	0.05494	-0.06459	-0.01757	0.22495	-0.25937	0.46170	-0.66055	-0.23144	-0.02920
TEM RG	62	-0.35959	0.22627	0.00209	0.33704	0.25210	0.39014	-0.17070	0.17405	-0.15464	-0.00000	-0.00071
F CLD 1	63	-0.39375	0.13709	0.02692	0.24037	0.01936	0.23595	-0.11369	-0.24039	-0.10640	-0.25077	-0.20490
FCLD 2	64	-0.14904	0.10355	0.01964	0.02923	0.01412	-0.01409	0.13615	-0.09532	-0.11174	-0.16472	-0.07412
F CLD 3	65	0.14152	-0.19424	-0.03598	-0.05355	-0.02598	-0.19402	0.09934	0.26645	0.23531	0.20007	0.20419
FOG 1	66	0.04196	0.27011	0.12671	0.16523	0.25623	0.06533	0.15185	-0.10390	-0.12772	0.12590	-0.10041
FOG 2	67	-0.01271	-0.17490	-0.11552	-0.15830	-0.29933	-0.31285	-0.05102	0.03651	0.14201	-0.07507	-0.00700
THUN T	68	0.03376	0.45161	0.29743	0.25822	0.40274	0.42777	0.03949	0.15927	-0.12177	-0.10520	-0.10513
7 PRE T	69	0.03571	0.06521	-0.29095	-0.03030	-0.31454	0.10556	-0.24515	0.11201	0.00570	0.00432	0.10912
13 PRE T	70	0.12143	-0.02369	-0.39463	-0.00409	-0.00333	0.05757	-0.00919	0.09691	0.00460	0.05366	0.07641
PREV 1 1	71	0.02026	-0.23014	-0.59255	-0.15719	-0.03970	-0.25954	-0.03295	-0.13136	0.05701	-0.09053	-0.10031
PREV 1 2	72	-0.14378	0.17960	0.00945	0.13090	0.03309	0.15103	0.07672	0.00372	0.03172	0.13591	0.10075

		35 P CLD 3	36 P PREC 1	37 P PREC 2	38 F PREC 3	39 P WIND 1	40 P WIND 2	41 P WIND 3	42 F HI TEM	43 F LO TEM	44 F PRECIP	45 HI TEM
PREV 2 1	73	0.15932	-0.17971	-0.26951	-0.23840	-0.14327	-0.13570	-0.12294	-0.12643	-0.03992	0.03928	-0.08293
PREV 2 2	74	-0.22429	0.22384	0.19233	0.2 674	0.19735	0.27359	0.19646	0.13664	0.09191	0.10830	-0.08097
COMP P1	75	0.15338	-0.79484	-0.27616	-0.25963	-0.15992	-0.12226	-0.21301	0.26840	-0.04696	0.04437	0.18425
COM P2	76	0.22393	-0.73685	-0.33193	-0.55394	-0.64394	-0.53311	-0.57225	0.12639	0.10366	-0.10482	0.12709
COM	77	-0.17353	0.44991	-0.08155	-0.07244	0.14698	0.01784	0.14994	-0.22752	-0.11738	0.08300	-0.11738
COM C1	78	-0.24254	-0.11789	-0.07847	0.25261	0.04581	0.16717	-0.07995	-0.27637	0.01032	-0.10976	-0.30839
COM C2	79	0.21772	-0.59773	-0.27324	-0.39171	-0.51777	-0.55031	-0.34255	0.11250	0.22685	0.08980	0.11967
COM C3	80	0.22514	-0.35217	-0.16874	-0.33871	-0.39575	-0.41741	0.07731	-0.03780	0.13742	-0.01046	0.17591

		46 LO TEM	47 AV TEM	48 PRECIP	49 AT PRES	50 WIND DIR	51 AV WIND	52 SKY COV	53 7 SKY C	54 7 TEM	55 7 RHUM	56 7 WIND V
LO TEM	46	1.00000										
AV TEM	47	0.95372	1.00000									
PRECIP	48	0.22934	0.23394	1.00000								
AT PRES	49	-0.33363	-0.31534	-0.23157	1.00000							
WIND DIR	50	-0.47033	-0.43337	-0.13001	-0.11772	1.00000						
AV WIND	51	0.53214	0.42771	0.16896	-0.13767	-0.21134	1.00000					
SKY COV	52	0.17403	0.19465	0.31966	-0.35213	-0.23167	0.23796	1.00000				
7 SKY C	53	0.26523	0.21014	0.23456	-0.12949	-0.15173	0.19763	0.72346	1.00000			
7 TEM	54	0.95187	0.92279	0.24226	-0.34592	-0.47676	0.55155	0.14149	0.27837	1.00000		
7 RHUM	55	0.26249	0.15464	0.05972	0.15854	-0.29193	0.13158	0.14415	0.34234	0.21240	1.00000	
7 WIND V	56	0.44759	0.32184	0.15746	-0.37453	0.23554	0.74742	0.16319	0.12287	0.45387	-0.09187	1.00000
13 SKY C	57	0.21497	0.12559	0.26191	-0.29172	0.07298	0.10192	0.45614	0.51153	0.32470	0.13103	0.11676
13 TEM	58	0.67323	0.63347	0.10896	-0.24549	-0.37752	0.10733	-0.14319	0.03174	0.66241	0.14469	0.08998
13 R HUM	59	0.50665	0.49648	0.17486	-0.24233	-0.34395	0.55313	0.17467	0.41949	0.50382	0.46595	0.44070
13 WINDV	60	0.27251	0.71118	0.30936	-0.13874	-0.36912	0.65060	-0.07652	0.06449	0.33159	0.17902	0.30044
F TEM RG	61	-0.19666	-0.12987	-0.19328	0.23584	-0.17456	-0.33595	-0.08751	-0.16708	-0.19363	-0.01273	-0.20642
TEM RG	62	-0.69525	-0.47465	-0.16947	0.24464	0.18754	-0.59953	-0.14397	-0.70184	-0.64451	-0.17735	-0.57767
F CLD 1	63	-0.23427	-0.24326	-0.11651	0.14363	0.44273	-0.24717	0.27646	0.06524	-0.34304	0.01239	0.01803
FCLD 2	64	-0.02195	-0.04659	0.03445	0.11773	-0.15491	0.02699	0.02383	0.16062	-0.01948	-0.05609	0.00009
F CLD 3	65	0.27185	0.24911	0.00496	-0.07522	-0.20313	0.20474	-0.19424	-0.17908	0.30783	0.02905	-0.03017
FOG 1	66	-0.13571	-0.14714	-0.12289	-0.12648	0.09937	0.26386	-0.41133	-0.42760	-0.17929	-0.43297	0.00666
FOG 2	67	0.06594	0.2695	0.26543	-0.13891	-0.04557	0.24578	0.28343	0.28423	0.04799	0.25138	0.22064
THUN T	68	-0.23546	-0.18077	-0.56377	0.22606	0.05123	-0.34771	-0.39971	-0.36053	-0.23972	-0.17740	-0.20090
7 PRE T	69	-0.04754	0.1465	-0.11197	0.15565	0.10931	-0.10513	-0.22685	-0.25729	-0.09574	-0.06122	-0.20090
13 PRE T	70	-0.00515	0.2709	-0.03057	0.12592	0.04786	-0.06351	-0.05423	-0.25090	-0.00799	-0.00901	-0.10827
PREV 1 1	71	0.01645	-0.08432	-0.06595	-0.09921	0.27150	0.13518	0.27912	0.22659	-0.06651	0.05316	0.17073
PREV 1 2	72	0.11596	0.17178	0.12169	0.12312	-0.24700	0.03544	-0.27142	-0.73959	0.20631	-0.03019	-0.03667
PREV 2 1	73	0.12165	0.7262	0.01608	0.14677	0.17519	0.14477	0.02145	0.00404	0.05579	0.00678	0.13147
PREV 2 2	74	-0.06679	-0.7900	0.05372	-0.12619	-0.10261	0.07723	-0.06542	-0.15240	0.00072	-0.08569	0.08267
COMP P1	75	-0.04221	0.1961	-0.05144	0.07279	-0.11445	-0.08114	-0.27241	-0.17547	-0.02880	0.01103	-0.20451
COM P2	76	0.26644	0.21575	0.20935	-0.10243	-0.17754	0.30757	0.31221	0.25287	0.23080	0.34573	0.15224
COM	77	-0.14194	-0.14211	-0.19309	0.15074	0.14174	-0.12271	-0.40217	-0.24931	-0.14135	-0.21702	-0.12084
COM C1	78	-0.25654	-0.14599	-0.08337	-0.14119	0.91745	0.11269	0.01534	-0.13894	-0.35752	-0.24055	0.20873
COM C2	79	0.33187	0.24724	0.35359	-0.41470	-0.11564	0.50526	0.83482	0.59315	0.35134	0.15003	0.42084
COM C3	80	0.34651	0.28783	0.26654	-0.23444	-0.23511	0.14937	0.89835	0.98174	0.36126	0.44746	0.12804

13 SKY C	57	1.00000									
13 TEM	58	-0.10542	1.00000								
13 R HUM	59	0.32971	0.9450	1.00000							
13 WINDV	60	-0.24559	0.3827	0.38516	1.00000						
F TEM RG	61	-0.10745	-0.1 81	-0.21996	-0.15847	1.00000					
TEM RG	62	-0.05583	0.1392	-0.61949	-0.33065	0.28575	1.00000				
F CLD 1	63	0.28369	-0.18335	-0.04863	-0.30537	-0.02069	0.13984	1.00000			
FCLD 2	64	-0.01739	-0.9078	0.10548	-0.1149	0.03413	-0.05151	-0.06234	1.00000		
F CLD 3	65	-0.21045	0.22551	-0.01340	0.13929	-0.01130	-0.08517	-0.72706	-0.51539	1.00000	
FOG 1	66	-0.22083	-0.10643	-0.33577	-0.13499	0.03341	0.03949	-0.02697	-0.13375	0.09513	1.00000

		57	58	59	60	61	62	63	64	65	66	67
		13 SKY [illegible]	13 TE[illegible]	13 R HUM	13 WI[illegible]	F TEM RG	TEM [illegible]	F [illegible]	F[illegible] 2	F CLD 3	FOG 1	FOG 2
FOG 2	67	0.22774	-0.13699	0.28615	0.11042	-0.17953	-0.19274	0.14523	0.23334	-0.25854	-0.21439	1.00000
THUN T	68	-0.31916	-0.13727	-0.26757	-0.14812	0.24105	0.25741	.02221	-0.04747	0.00879	0.20565	-0.41164
7 PRE T	69	-0.19066	0.19639	-0.23472	-0.06535	0.09778	0.25149	.08459	-0.11154	-0.00274	0.01209	-0.10813
13 PRE T	70	-0.06746	0.11594	-0.14733	-0.09733	0.07285	0.09417	0.01935	-0.22944	0.17564	0.05242	-0.07707
PREV 1 1	71	0.11603	-0.24197	0.13007	-0.19102	-0.15979	-0.26767	0.17937	-0.03651	-0.10906	-0.13549	0.20667
PREV 1 2	72	-0.10540	0.21178	-0.01603	0.21256	0.03645	0.03331	-0.28543	-0.04908	0.24067	0.15646	-0.39204
PREV 2 1	73	-0.05972	0.2169	0.13092	-0.14655	-0.09171	-0.10749	0.27225	-0.04034	-0.14282	-0.13120	0.00047
PREV 2 2	74	-0.05990	-0. 5877	-0.12044	0.24082	0.07156	0.00764	-0.29521	-0.02317	0.23942	0.06717	-0.09046
COMP P1	75	-0.29843	.14.6	-0.19911	-0.02924	0.09843	0.16704	-0.27349	-0.05371	0.20378	-0.09419	-0.13457
COM P2	76	0.23947	-0. 8727	0.36296	0.09064	0.05218	-0.27765	-0.09652	-0.07347	0.12901	-0.13741	0.30605
COM	77	-0.34875	-0. 9134	-0.25502	-0.2 492	-0.04983	0.09174	0.20395	-0.05491	-0.14767	0.16530	-0.22040
COM 01	78	0.07941	-0.36834	-0.18577	-0.13124	-0.23632	0.05477	0.09279	-0.14054	-0.22142	0.10573	0.04932
COM 02	79	0.59171	-0. 3159	0.54643	0.25775	-0.12472	-0.39483	-0.01423	0.01697	0.01476	-0.20380	0.30761
COM 03	80	0.49941	-0. 3574	0.54706	0.1 734	-0.14022	-0.35177	0.07575	0.15174	-0.11245	-0.47019	0.29735

		68	69	70	71	72	73	74	75	76	77	78
		THUN T	7 PRE T	13 PRE T	PREV 1 1	PREV 1 2	PREV 2 1	PREV 2 2	COMP P1	COM P2	COM	COM 01
THUN T	68	1.00000										
7 PRE T	69	0.19592	1.00000									
13 PRE T	70	-0.03779	0.22894	1.00000								
PREV 1 1	71	-0.34678	-0.27957	0.64619	1.00000							
PREV 1 2	72	0.27343	0.47194	-0.75320	-0.78572	1.00000						
PREV 2 1	73	-0.29943	-0. 2453	0.54372	0.35141	-0.38646	1.00000					
PREV 2 2	74	0.14843	-0. 294	-0.25549	-0.16665	0.29254	-0.46925	1.00000				
COMP P1	75	-0.05177	0.24413	0.11079	-0.02191	0.01545	0.16534	-0.06283	1.00000			
COM P2	76	-0.39171	-0. 0733	-0.01659	0.19396	-0.15286	0.07751	-0.07421	0.25867	1.00000		
COM	77	0.14275	0.37173	0.11474	-0.05736	0.03573	0.12634	-0.04339	0.39142	-0.18185	1.00000	
COM 01	78	-0.06913	0. 0875	0.67375	0.24754	-0.14798	0.17141	-0.04595	-0.12485	-0.36384	0.00656	1.00000
COM 02	79	-0.47959	-0.23827	-0.36393	0.29377	-0.19944	0.0 572	0.02922	-0.22951	0.49420	-0.41467	0.02091
COM 03	80	-0.33844	-0.25743	-0.25536	0.22431	-0.22447	0.02473	-0.17741	-0.12477	0.33376	-0.26204	-0.20701

		79	80
		COM 02	COM 03
COM 02	79	1.00000	
COM 03	80	0.62923	1.00000

APPENDIX F

IDENTIFICATION NUMBERS OF INDEPENDENT VARIABLES FOUND TO BE SIGNIFICANT THROUGH USE OF THE LSADD PROGRAM

Activity	Park		
	Tawas Point State Park	Waterloo State Recreation Area, Portage Lake Unit	Holland State Park
a. sight-seeing from car only	1, 4, 5, 7, 8, 13, 17, 18, 24, 27, 31, 49, 50, 56, 59, 60, 67, 72, 73, 79, 80 (R^2 = .0819) ($\bar{R}^2$ = .0604)	3, 4, 6, 8, 13, 14, 15, 17, 23*, 42, 47, 49, 51, 55, 62*, 70, 72, 74 (R^2 = .2161) ($\bar{R}^2$ = .1947)	3, 4, 6, 7, 8, 13, 14, 17, 33, 35, 49, 51, 62 63, 67, 68, 71, 76 (R^2 = .1638) ($\bar{R}^2$ = .1381)
b. walking to scenic points	1, 4, 5, 7, 8, 13, 14, 18, 20 24, 27, 28, 29, 32, 37, 38, 41, 42, 45, 47, 50, 54, 55, 56, 57, 59, 64, 78 (R^2 = .2949) ($\bar{R}^2$ = .2719)	1, 4, 6, 7, 8, 13, 15, 17, 26, 29, 34*, 35, 40, 41*, 42, 44, 49, 56, 59, 60, 62*, 63, 70, 74, 75, 77 (R^2 = .2926) ($\bar{R}^2$ = .2644)	2, 4, 7, 13, 17, 21, 22, 27, 38, 40, 42, 46, 52, 54, 67, 68, 71 (R^2 = .3223) ($\bar{R}^2$ = .3026)
c. picnick-ing	2, 4, 5, 6, 7, 8, 13, 17, 20, 32, 34, 40, 43, 54, 55, 58, 60, 74, 77, 78 (R^2 = .2448) ($\bar{R}^2$ = .2280)	3, 7, 8, 13, 14, 17, 19, 24, 35, 39, 43, 44, 46, 47, 53, 58*, 63, 65*, 66*, 67*, 73*, 80 (R^2 = .2703) ($\bar{R}^2$ = .2458)	3, 6, 7, 8, 13, 14, 17, 18, 25, 27, 30, 31, 34, 36, 38, 40, 41, 52, 55, 59, 62, 64, 74, 76 (R^2 = .2897) ($\bar{R}^2$ = .2602)
d. swimming	2, 5, 7, 8, 13, 15, 18, 24, 25, 40, 44, 45, 49, 51, 55, 56, 64 (R^2 = .4503) ($\bar{R}^2$ = .4400)	3, 13, 17, 19, 23*, 26, 29, 39, 42, 45, 49, 51, 52, 55, 56, 57, 63, 67*, 68*, 74, 79 (R^2 = .3058) ($\bar{R}^2$ = .2837)	3, 7, 13, 18, 25, 30, 42, 45, 47, 63, 71, 79 (R^2 = .4365) ($\bar{R}^2$ = .4250)

*Variables identified with an asterisk were not added into the LSDEL programs because they caused matrix singularity.