

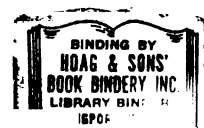
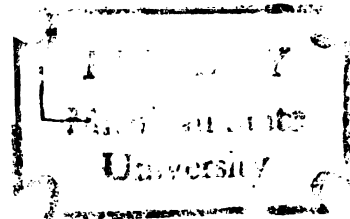
RECREATION AREA "DAY-USE"
INVESTIGATION TECHNIQUES:
A STUDY OF SURVEY METHODOLOGY
WITHIN MICHIGAN STATE PARKS

Thesis for the Degree of M. S.
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## ABSTRACT

### RECREATION AREA "DAY-USE" INVESTIGATION TECHNIQUES: A STUDY OF SURVEY METHODOLOGY WITHIN MICHIGAN STATE PARKS

By

Douglas Melvin Crapo

This study was concerned with designing and testing a data-collection system that would gather accurate information about recreation area "day-users." "Day-users" were considered to be those individuals who used recreation areas for a single day or a portion thereof. Since it was impractical to separate "day-users" from "campers" in the data-collection stage, information was gathered from each group and then separated during analysis.

The information collected was in three general categories: socio-economic characteristics of the users, user "origin" and travel characteristics, and activity characteristics while in the area. Limitations imposed upon the data collection system were that it must be inexpensive, it must yield accurate data, and it must be implemented into the existing administrative framework of Michigan State Parks.



The common methods of data collection were reviewed and the self-enumerative questionnaire was chosen as being "best," considering the limitations outlined above. However, as is the case with most self-enumerative questionnaires, there is a vital problem of survey bias resulting from non-response. Essentially, this study deals with measuring the bias effects of non-response within a sample, and with testing various methods used to attempt to reduce non-response.

A careful investigation of sampling techniques and questionnaire construction was conducted. On the basis of this investigation, an initial questionnaire and dispersal-retrieval system were designed. The questionnaire had an attractive format and appeared to be brief (although it did contain a substantial number of questions). Questionnaire distribution was through hand-out by the contact station ranger at the area entrance. Retrieval of questionnaires was accomplished by means of "voluntary deposit" into a collection box placed near the area exit. A representative sample of all Michigan parks and recreation areas was then chosen for the testing.

In the "seasonal" phase of the study, a random systematic sampling procedure was employed to distribute questionnaires to every  $n^{\text{th}}$  vehicle entering the "seasonal" sample parks during the months of July and August. 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 information was obtained from nearly all park users (hereafter called "parameter data"). The information collected by "voluntary deposit" throughout the summer months was then compared to "parameter data." It was found that at the 95 per cent level of confidence the accuracy of the "voluntary deposit" information was very high. Travel information (characterized by large standard deviations) was the only data that showed an accuracy problem.

The "experimental" study phase was concerned with identifying and testing numerous variables that might affect the amount of non-response. Testing of each variable was carried out for at least two days in all of the "experimental" sample parks.

Each variable was tested individually, and the results of that particular variable were evident through changes in the questionnaire response rate. It was found that the "questionnaire" which had the greatest amount of response possessed the following characteristics (ranked in descending order of importance).

- (1) The questionnaire was handed out at the entrance to the recreation area and was collected by means of "voluntary deposit" in a box at the recreation area exit.

- (2) A pencil was supplied with the questionnaire in order to facilitate completion.
- (3) The questionnaire was printed on a heavy card-stock.
- (4) The color of the questionnaire was, in order of preference, blue, white, brown, tan, yellow and orange.
- (5) The questions concerned with activity analysis were constructed so as to be "closed" or "structured." The use of a simple chart was most effective.

The small difference in amount of return between the "regular" length questionnaire and the "post card" length indicated that, as long as the questionnaire appeared to be of short length, response rate was unaffected by amount of content.

The printing of a pre-paid address on one side of a "post card" type questionnaire did not appear to increase the number of questionnaires returned when a "voluntary deposit" collection system was used.

The inclusion of a slotted hole in the questionnaire did not appear to increase the response rate enough to warrant its additional expense.

The data collection system designed and tested in this study may be used as a framework for future investigations of recreation area users.

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MICHIGAN STATE PARKS

By

Douglas Melvin Crapo

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CHAPTER I

THE PROBLEM AND DEFINITIONS  
OF TERMS USED

Introduction

In early 1968, authorities in the Michigan Department of Conservation expressed a need for detailed information about the Michigan State Park "day-user."<sup>1</sup> In the past, limited information about campers had been collected while data on "day-users" was virtually nonexistent.

The desired information was of the type that would expose trends in recreation area usage. These trends would then be used in the planning process, to ensure that state parks provide the types of activities and facilities that appear to be most desirable. Since "trends" are changes over time, collection of trend information must take place over an extended time period. Thus, the means of

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<sup>1</sup>A "day-user" is an individual who uses a recreation area for the day or a portion thereof. He does not reside within the recreation area during usage.

collecting the desired information would be through a continuous data collection system.

An investigation into the design of such a system revealed that there were too many "unknowns" to be able to both design and implement a data collection system of the desired scale within one season. This study represents a compromise from the above situation--the first step in the eventual implementation of a continuous data collection system throughout all state parks and recreation areas in Michigan.

### Statement of the Problem

The problem is to design and test a system to collect recreation area "day-use" information on a continuous basis within Michigan State Parks. Specifically, the problem is to design a data collection system using a questionnaire survey instrument and then test the system for accuracy of collected information.

The questionnaire survey instrument has many inherent problems when accurate information is required. Can these problems be eliminated or at least decreased to the point at which collected information is still of value to administrators?

### Significance of the Problem

The predicted increase in outdoor recreation participation, the fixed amount of land available for outdoor recreation facilities,

and the expected growth in population size combine to focus attention upon a large increase in demand for outdoor recreation opportunities.

"One thing is clear; the conventional approach to providing outdoor recreation is not adequate for present needs, and it will certainly not be adequate for the future."<sup>1</sup> These facts point out the importance of good planning and administration of recreation areas. But administration depends upon accurate data to provide an information base for decision making:

It is a tribute to the recreation leaders of the past that they were able to accomplish so much without the support of systematic research. . . . As a major activity in contemporary social life, and as a broad field of public and private enterprise, outdoor recreation has had relatively little systematic study.<sup>2</sup>

It is generally agreed that much of the research completed to date has used questionable survey methods and such low levels of statistical confidence as to render the collected data suspect. Although these studies are of value in delineating problem areas and in investigating new survey research techniques, the data collected is often little better than no data at all. Unfortunately, regardless of past inaccuracies, recreation survey results have been used in the decision-making process.

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<sup>1</sup>Outdoor Recreation Resources Review Commission, Outdoor Recreation for America (Washington, D. C. : Government Printing Office, 1962), p. 81.

<sup>2</sup>Ibid., p. 183.

As administrators recognize the value of research, the demand for accurate data is increased. Sound planning, facility and program development, budget preparation, and economic analysis all require basic data about the recreation user and the recreation site. After the conceptual framework is designed for a particular problem, and the appropriate information collected and presented in an effective form, alternative choices can be formulated from the data and the most appropriate decision can be made. Some of the specific problems facing recreation agencies in Michigan are outlined in Michigan's Recreation Future.<sup>1</sup> Among those mentioned are the lack of funds, the increasing pressure on resources, the insufficient planning for recreation use, the low level of appreciation of values of recreation, and the inadequate facilities to meet the demand.

In the past, the majority of outdoor recreation research has been centered around the camper. The problems presented by campground use occupied a disproportionate amount of a recreation manager's time. As a result there has been a great deal of interest in collecting and analyzing information about the camper. He, of all park visitors, is one of the few with a fixed location for part of his

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<sup>1</sup>Michigan Department of Conservation, Michigan's Recreation Future (East Lansing, Michigan: Michigan Department of Conservation, 1966), pp. 16-17.

visit, and a campground provides a definite population from which to draw samples. Most campers are gregarious and loquacious, hence, good research subjects. Indeed, the main problem encountered in obtaining information from campers is in terminating the interview.

"Day-users" have frequently been ignored--probably because of the many problems that they present to survey research. In comparison with campers, "day-users" are mobile--creating problems in filling the sampling frame if information is to be collected at one location. Either the information must be obtained at the site or a record of attendance must be made (i. e. , recording license plate numbers) so that contacts can be made at a later date. It is the general impression of recreation authorities that "day-users" show a higher degree of motivation than do campers. The amount of time available to pursue recreational activities is more limited for the "day-user"--the recreation day must also include time for travelling to and from the activity area. Therefore, the "day-user" is generally anxious to begin his activities, and during participation he dislikes being interrupted. At the completion of the activities, he is usually in a hurry to return to his place of residence.

Yet, in most outdoor recreation areas, "day-users" comprise the majority of recreation visits. In 1967, "day-users"

accounted for 67 per cent of the total park visits within the Michigan State Park System. Campers comprised the remaining 33 per cent.

There are two principal ways in which outdoor recreation data can be gathered: special surveys which are designed for one specific problem or need and are generally short-term studies; and continuous surveys which are designed to collect data over an extended period of time. Continuous data collection surveys are the only means of exposing usage trends. By relating trends to changes in society, predictions about future demand and usage can be made.

Because of its ease of administration, the questionnaire has been used more than any other survey method.<sup>1</sup> The questionnaire, however, has several problems associated with it which must be overcome in order to obtain accurate data from its usage. These problems are outlined in Chapter II, and several solutions are suggested.

As the volume of information collected increases, it becomes increasingly more important to put collected data into a form which permits rapid analysis. Also, the involvement of public departments,

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<sup>1</sup>Within the context of this study, "questionnaire" is interpreted to mean the printed, self-administered questionnaire. "Interview" is interpreted to mean the verbal interview in which there is both an interviewer and respondent. The printed format for the interview is referred to as the "interview schedule" or "schedule."



such as utility and transportation agencies, in the planning process forces recreation planners to put their data into a form that can be used by the other agencies. The increase in popularity of data processing/computer types of data analysis and storage is with good reason. Information in this form can be adapted to a number of uses and can be made available to a number of nonrelated agencies.

The ultimate choice of what data is required and how it will be collected rests with the administrator. Administrators and decision-makers must be cognizant of the relative advantages of data collection methods, and the limitations of the collected data.

#### Limitations of the Study

The following are limitations of this study:

1. This study will be limited to a representative sample of Michigan State Parks and Recreation Areas.
2. It will investigate only those individuals entering a Michigan State Park or Recreation Area by means of an authorized entrance; specifically, an entrance that is regularly supervised by Michigan State Park staff.
3. It will be limited to the period July 1, 1968, to September 5, 1968.
4. This study will be conducted within the normal limitations upon recreation area user surveys:

a) Although the number of people surveyed is generally large, the amount of money budgeted for research is small. A desirable data collection method maximizes the benefits for all financial inputs.

b) Visits to recreation areas are generally made with enjoyment as the purpose. Any interruption for information collection must be made as pleasant and as short as possible.

c) Information collection must take place as soon after the experience as possible. This is especially true when objective recall data is sought. Errors in recall of information are difficult to evaluate, and such errors should be decreased by collecting the desired information immediately upon completion of the activity.

d) It is generally desirable that data collection systems be made to work within the existing administrative and operational framework of the recreation area. In Michigan State Parks, the staff are usually operating near maximum load without the additional burden of a survey. This is especially important when a continuous data collection system is being considered.

5. This study will consider only those data collection systems that will function within the limitations outlined.

### Assumptions

The following assumptions are made within this study:

1. It is assumed that all Michigan State Parks and Recreation Areas fall within the classes outlined in the classification of outdoor recreation areas proposed by Clawson in Land and Water for Recreation.<sup>1</sup>

2. It is assumed that previous attendance figures for all State Parks and Recreation Areas are accurate.

3. It is assumed that through intensive research during the heaviest use period of the recreation system, a system can be designed that could be operated throughout the total recreation year.

4. It is assumed that with all the information on hand, a correct judgment can be made as to which method of data collection is "best."

5. It is assumed that when objective questions require answers of recall, both interview and questionnaire techniques will produce similar data to the same questions.

### Hypothesis

Accurate data about the socio-economic characteristics and usage patterns of Michigan State Park users can be collected on a

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<sup>1</sup>Marion Clawson, Land and Water for Recreation (Chicago: Rand McNally and Company, 1963), pp. 13-16.

continuous basis by means of a questionnaire survey instrument and a random systematic sample.

### Sub-Hypotheses

1. Through a process of trial and selective elimination, a questionnaire and dispersal-retrieval system can be designed which will obtain a greater number of usable completed responses than other questionnaires tested under similar conditions.

2. Questionnaires returned within the proposed dispersal-retrieval system will contain information that does not differ significantly from the parameters of the park-using population of the Michigan State Park System.

### Definitions

The following are definitions of terms used within this study:

accuracy: when dealing with a sample, this term refers to the closeness to the actual population parameter.

administrative framework: the overall policy, planning, design and operation relating to a particular area.

"best": having the highest degree of desirability, suitability or advantage. This judgment is made after considering several

factors, among them cost, information desired, and the existing administrative framework within which judgment is to be made.

contact station: a booth designed to control and regulate the vehicular traffic entering and leaving a specific area.

"day-user": any person entering through the recognized entrance into a Michigan State Park who is not included in the following two categories:

1. camper--users who camp within the park overnight.
2. official and service entrants--individuals performing a recognized service within the park (i. e. , park staff, Coast Guard, police, concession employees, telephone repairman).

fixed alternative ("closed" or "poll") questions: those questions which offer the respondent a choice among two or more alternatives.

interview: is a face-to-face interpersonal role situation in which one person (the interviewer) asks a person being interviewed (the respondent) questions designed to obtain answers pertinent to the purposes of the research problem.

open end questions: are those that supply a frame of reference for respondent's answers, but put a minimum of restraint on the answers and their expression.

repetitive entry: a vehicle entering a particular park two or more times in a single day.

state park or recreation area: any area administered and maintained by a state park and recreation agency for the recreation of the public.

vehicle: any type of self-propelled, wheeled conveyance (i. e. , car, bicycle, motor cycle).

Chapter II will examine the methods of data collection commonly used in recreation area user investigation. The uses of each method, together with its advantages and disadvantages, will be reviewed.

## CHAPTER II

### REVIEW OF METHODS OF DATA COLLECTION

#### Introduction

In the past, the particular survey research method used seemed to be dictated by "availability of subjects and expense rather than suitability of the technique to the criteria the writer had in mind for the evaluation."<sup>1</sup> Even present research within the field of outdoor recreation apparently is "dictated more by administrative convenience . . . than by meaningfulness of data collected."<sup>2</sup>

Before the particular method of data collection is chosen, the researcher and administrator must "weigh" each method and find the one which most closely fits the requirements of the research situation. Perhaps a combination of methods would yield the most

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<sup>1</sup>W. E. Deming, "On Errors in Surveys," American Sociological Review, 9 (1944), pp. 359-369.

<sup>2</sup>Marion Clawson and Jack L. Knetsch, "Recreation Research: Some Basic Analytical Concepts and Suggested Framework for Research Problems," Proceedings of the National Conference on Outdoor Recreation Research. Ann Arbor, Michigan, 1959, p. 15.

accurate information. The steps in deciding which research technique would be most applicable in a given situation are as follows:

1. Decide what information is desired.
2. What special characteristics does the desired information reflect? Can the information be obtained through solicitation of objective facts or is the respondent forced to state attitudes and opinions?
3. Consider the administrative framework within which the research is to be attempted. What funds are available? What period of time is available for the data collection and analysis? What staff will be available and what is the level of competence of the staff?
4. Weighing all of the advantages and disadvantages of each technique, and considering the data collection process within the administrative framework, decide which technique or which combination of techniques will best fill the research requirements.

### Survey Bias

The possible sources of bias within sampling surveys are numerous and there has been much investigation concerning them. Deming lists thirteen major types of bias together with an even larger



number of possible sources of error.<sup>1</sup> An excellent discussion on the sources of error in surveys is also presented by Cochran, who concluded that the potential value of a research project is dependent upon the care given to selecting, evaluating and controlling sources of variation.<sup>2</sup> In most surveys, one of the most important bias sources is due to non-response. A later section within this chapter will discuss this problem in detail.

Motivation of the subject is extremely important to all survey research. Unless the subject wants to cooperate and is made to feel that the information he has to offer is important, the validity of the collected data is suspect. "When the circumstances in which the report occurs leave us to suppose that the subject's motivation or the pressures to which he is exposed are such as to prevent a candid report, we are not likely to give it much credence."<sup>3</sup> Very little is known about the motivational process itself and this area is in need of further research. Cannell and Fowler suggest that there is no

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<sup>1</sup>Deming, op. cit., pp. 359-369.

<sup>2</sup>William G. Cochran, Sampling Techniques (New York: John Wiley and Sons, 1964)--Chapter 13 deals with all possible error sources and contains a summary on page 389.

<sup>3</sup>Claire Selltiz, et al., Research Methods in Social Relations (New York: Holt, Rinehart and Winston, 1967), p. 237.

value in research which does not attempt to interest or motivate the respondent in the survey.<sup>1</sup>

#### Available Methods of Data Collection

Several methods are available for data collection, among them personal interviews, observation, questionnaires, telephone surveys, and review of records that have already been established.

Telephone surveys have little to recommend them beyond speed and, in some cases, low cost. If most respondents are located in the same general area, as is the case with some regional park authorities, telephoning might be useful in obtaining information. However, telephone surveys are usually "limited by possible non-response, uncooperativeness and by reluctance to answer more than simple, superficial questions."<sup>2</sup>

Review of already collected records usually does not yield the type of information sought in recreation research. Possible uses of records are to validate responses which have been collected elsewhere, and to act as a source for addresses of individuals to be

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<sup>1</sup>Charles F. Cannell and Floyd J. Fowler, "Comparison of a Self-enumerative Procedure and a Personal Interview: A Validity Study," Public Opinion Quarterly, 27 (Summer, 1963), 263.

<sup>2</sup>Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1967), p. 397.

contacted for future research. Usually outdoor recreation agencies do not have these records available and must go to a secondary source to obtain the desired information (i. e. , Department of State).

If, for instance, one wishes to obtain a random sample of vehicles entering a park and then contact them later by mail or telephone, the process becomes complicated and costly. First, a random sample must be chosen. Second, the vehicles within the sampling frame must be identified and the license plates must be recorded. Third, the license plate numbers must then be forwarded to the Department of State. Fourth, the Department of State identifies the owner of the vehicle--this process usually takes a period of months. Fifth, the vehicle owner must then be contacted by mail or telephone to elicit his cooperation in the research. One must also keep in mind that the vehicle registrations at the Department of State are not always up to date and that a certain percentage of the sampling frame will be lost.

A description of the uses, advantages and disadvantages of the three most popular methods of survey research follows.

### Observation

#### Use

Observation reflects the network of actions and reactions among group members, or the objective behavior of individuals. As

a scientific tool, observation can be an accurate means of measuring actions to the extent that it:

(1) serves a formulated research purpose, (2) is planned systematically, (3) is recorded systematically and related to more general propositions rather than being presented as a set of interesting curiosities, and (4) is subjected to checks and controls on validity and reliability.<sup>1</sup>

The type of observation that is most commonly used in recreation research is non-participant observation. In this method, the observer watches and records behavior patterns and does not attempt to participate in or interfere with the group. This type of survey research can produce information about how people use the recreation area. Questions such as "what is the amount of use of an area (visitor-load) at a specific time?", "what is the size of the visitor group?", "what are the activities being participated in?", or "what is the length of stay?" can be answered through use of the observation method. The National Parks Service of Canada has made extensive use of observational techniques in order to obtain data for the above questions.<sup>2</sup>

### Advantages

1. Observation can uncover patterns of action that the participants themselves do not fully comprehend. An observer is

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<sup>1</sup>Selltiz, op. cit., p. 200.

<sup>2</sup>Specific surveys using the observational method are listed in the Bibliography of this study.

unbiased and can offer an objective interpretation of group behavior.<sup>1</sup>

2. Behavior is recorded as it occurs. The researcher does not have to depend upon people's retrospective or anticipatory reports of their own behavior.<sup>2</sup>

3. Observation, if the subject is unaware that he is being watched, yields information that is not influenced by anything except the person's own orientations. Direct questioning of an individual will often influence his behavior after the questioning situation.

### Disadvantages

1. Highly structured and methodical observations seem suitable only for fairly small groups, although an observer (or better, several observers) can effectively record impressions of the "social atmosphere" or "general behavior" of somewhat larger assemblages. The limitation of lack of funds for most recreation research will generally ensure that the use of observation within recreation areas will be confined to large groups, thus reflecting general behavior only.

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<sup>1</sup>Matilda White Riley, Sociological Research: A Case Approach (New York: Harcourt, Brace and World Incorporated, 1963), p. 186.

<sup>2</sup>Selltiz, op. cit., p. 201.

2. This method is applicable to action taking place only in the present. It obviously cannot be used to refer to periods prior to the inception of the research; and to extend observation into the future in order to trace a gradual development of some social system property over time requires a considerable investment of research time.<sup>1</sup>

This technique is obviously unsuitable for a continuous data collection system.

3. The areas used for outdoor recreation are usually large, with many diverse activities. Several observers would be needed to obtain a general overview of behavior on the entire area.

As we have seen, observational techniques are primarily directed toward describing and understanding behavior as it occurs. They are less effective in providing information about a person's beliefs, feelings, motivations, anticipations, perceptions or future plans; and certainly they provide no information about past behavior or private behavior. To obtain such information, the interview and the questionnaire have been used.

#### Characteristics of Data Obtained Through Questioning

Data from questioning reflects the subjective network of orientations and interpersonal relationships; for example, the underlying ideas and feelings of the members, their dispositions to act

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<sup>1</sup>Riley, op. cit., p. 186.

toward others and to define and evaluate these others in various ways. It must be kept in mind that responses to questions may be viewed as resulting from the specific item content of the various questions and the stylistic orientation of the respondent to the questioning situation.<sup>1</sup> In questions about actions or factual data the validity of response is only as good as the recall accuracy of the respondent. Therefore, answers to questions about actions are indirect reports of the action, described by the respondent as he perceived and evaluated it.

In addition to the questioning situation, characteristics of the respondent himself will also influence response. The motivation or interest of the subject towards the survey is the most important factor in the majority of studies.<sup>2</sup> Gergen found that age influenced response, especially when opinions were desired. Differences in response of the aged were hypothesized to be due to: lack of familiarity with issues, lack of interest, more constraint in responses, more complex opinions than younger people, less capability of fitting them into forced choice categories, and less willingness to

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<sup>1</sup>Kenneth J. Gergen and Kurt W. Bach, "Communication in the Interview and the Disengaged Respondent," Public Opinion Quarterly, 30 (Fall, 1966), 385.

<sup>2</sup>Cannell and Fowler, op. cit., p. 261.

provide answers on topics he is not familiar with.<sup>1</sup> Education of respondent is also an important influence upon answers to survey questions.<sup>2</sup>

### Personal Interview

Interviews may be classified according to the "depth" of information desired. An attempt to "scale" various aspects of the interview is contained in Figure 1. As one would suspect, the easiest information to obtain is that which is the most "shallow." Information about occupation, age, and amount of park usage can be obtained from a highly structured interview--one which requires a relatively less-skilled interviewer. At the other end of the "depth" scale is that information concerned with attitudes, feelings and motivations.

Interviewing is not as simple a skill as one might first suspect. In order to gather reliable information, all interviewers must use the same techniques and interview situations. This necessitates an adequate training program, adequate skilled interviewers, and supervisory control for all interviewers.

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<sup>1</sup>Gergen, op. cit., p. 395.

<sup>2</sup>Cannell and Fowler, op. cit., p. 261.



| "Depth"<br>Level | Kind of Information Sought                                                 | Verification<br>of<br>Validity | Interviewer<br>Skill<br>Needed | Usual<br>Degree of<br>Structuring   | Examples or<br>Characteristics                                                                                                                                                                                      |
|------------------|----------------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| "Surface"<br>↑   | 1a. "Objective Facts"                                                      | ↑<br>Easier<br>↓               | ↑<br>Less<br>↓                 | ↑<br>More Highly<br>Structured<br>↓ | Occupation, home ownership, residence, car registration, etc.                                                                                                                                                       |
|                  | 1b. "Personal" Facts                                                       |                                |                                |                                     | Law violations, age, income, sex life, etc.                                                                                                                                                                         |
|                  | 2. Opinions on relatively non-emotional topic                              |                                |                                |                                     | What do you think of UN; of Congo; school-bond issue; much legislation, etc.                                                                                                                                        |
|                  | 3. Attitude toward relatively "ego-important" topic                        |                                |                                |                                     | Some relevant aspects: intensity; interrelations among attitudes; involvement; self-concept; reference groups; ambivalence.                                                                                         |
| "Deep"<br>↓      | 4. Feelings (or sentiments)                                                | ↑<br>More Difficult<br>↓       | ↑<br>Greater<br>↓              | ↑<br>Unstructured<br>↓              | Often have not previously been clearly verbalized; ambivalence; appeals to symbols of consensus.                                                                                                                    |
|                  | 5. Motivational analysis<br>Pre-conscious . . .<br>. . . unconscious . . . |                                |                                |                                     | I.e., that which "lies behind" opinions, attitudes, feelings; personal goals highly complex relationship to social goals often not clear; not too much verified scientific knowledge available for "practical" use. |

Source: Donald W. Olmsted, from material distributed during Sociology 492, Methods of Social Research, Michigan State University, East Lansing, April, 1968.

FIGURE 1. -- Interview Structuring and Interview Depth

## Use

The interview has three main purposes. First, it can be used as an exploratory device to help identify variables, to suggest hypotheses, and to guide other phases of the research. Second, it can be used as the main instrument of the research. In this case, the interview schedule will include questions designed to measure the variables of the research. The "Visitor Use Study in New Jersey State Parks" exemplifies this type of interview usage.<sup>1</sup> Third, the interview can be used to supplement other data collection techniques; to validate collected information, to follow up unexpected results, and to further investigate the motivations of respondents and their reasons for responding as they do.

## Advantages

1. Since the interviewer and the person interviewed are both present as the questions are asked and answered, there is opportunity for greater flexibility in eliciting information. Problems in question interpretation can be noted and corrected immediately.

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<sup>1</sup>New Jersey Department of Conservation and Economic Development, New Jersey State Park Visitor Use Survey 1966-1967 (Trenton, New Jersey: Department of Conservation and Economic Development, 1968).

2. The interviewer has the opportunity to observe both the subject and the interview environment. Subjective evaluations can be made without the subject being aware.<sup>1</sup>

3. The personal interview usually yields a high percentage of returns, for it is difficult for people to refuse the interviewer.

4. It can be made to yield an almost perfect sample of the general population because practically everyone can be reached by and can respond to this approach.

5. The information secured is likely to be more correct than that secured by other techniques when "feelings" or motivations are sought, since the interviewer can clear up seemingly inaccurate answers by explaining the questions to the informant. If the latter deliberately falsifies replies, the interviewer may be trained to spot such cases and use special devices to get the truth.<sup>2</sup>

6. Visual material to which the informant is to react can be presented.

7. Return visits to complete items on the schedule or to correct mistakes can usually be made without annoying the informant. Thus greater numbers of usable returns are assured than when other methods are employed.

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<sup>1</sup>Selltiz, op. cit., p. 238.

<sup>2</sup>Mildred Parten, Surveys, Polls and Samples: Practical Procedures (New York: Harper and Brothers, 1950), p. 80.

8. The interviewer may catch the informant off guard and thus secure more spontaneous reactions than would be the case if a written form were mailed out for the informant to mull over.

9. The interviewer can usually control which person or persons answer the questions, whereas in mail surveys several members of the household may confer before the questions are answered. Group discussions can be held with the personal interview method if desired.

10. The personal interview may take long enough to allow the informant to become oriented to the topic under investigation. Thus, recall of relevant material is facilitated.

11. In unstructured interviews, questions about which the informant is likely to be sensitive can be carefully "sandwiched in" by the interviewer. By observing the informant's reactions, the investigator can change the subject if necessary or explain the survey problem further if it appears that the respondent is about to rebel. In other words, a delicate situation can usually be handled more effectively by a personal interview than by other techniques.

12. Also, in unstructured interviews the language of the survey can be adapted to the ability or educational level of the person interviewed. Therefore it is comparatively easy to avoid misinterpretations or misleading questions.<sup>1</sup>

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<sup>1</sup>Ibid.

### Disadvantages

1. Compared to the observational method, the degree to which one can evaluate or predict behavior from interview data is, at best, limited.<sup>1</sup>

2. The primary weakness is the interviewer himself. Unless the interviewer is competent and effective the reliability of data cannot be guaranteed.<sup>2</sup>

3. The transportation costs and the time required to cover addresses in a large area may make the personal interview method less desirable than other data collection methods.

4. The human equation may distort the returns. If an interviewer has a certain economic bias, for example, he may unconsciously ask the questions so as to secure confirmation of his views. In opinion studies especially, such biases may operate. To prevent such coloring of questions, most opinion surveyors instruct their interviewers to ask the question exactly as printed on the schedule.<sup>3</sup>

5. The organization required for selecting, training, and supervising a field staff is more complex than that needed for surveys conducted by other methods.

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<sup>1</sup>Selltiz, op. cit., p. 201.

<sup>2</sup>Jackson, op. cit., p. 11.

<sup>3</sup>Parten, op. cit., p. 81.

6. It is usually claimed that costs per interview are higher when field investigators are employed than when telephone or mail surveys are used. This may not be true if the area to be covered is not too great. If the general public in a community is to be surveyed the costs of securing a representative sample by telephone or mail inquiries will probably equal or exceed the cost by the personal interview method, since in the end personal follow-up will be necessary to round out the sample.<sup>1</sup>

7. If the interview is conducted in the home during the day, the majority of the informants will be housewives. If a response is to be obtained from a male member of the household, most of the field work will have to be done in the evening or on weekends. Since only an hour or two can be used for evening interviewing, the personal interview method requires a large staff for studies requiring contacts with the working population.<sup>2</sup>

### Questionnaires

More studies have been made with a questionnaire than any other instrument in the field of social investigation. However, as with all survey methods, questionnaires are impositions--to justify

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<sup>1</sup>Ibid.

<sup>2</sup>Ibid., p. 82.

this imposition and to convince the individual that he should fill out the questionnaire, resistance must be anticipated and procedures must be designed to overcome it.

Although questionnaire survey methods are generally grouped together for discussion, there are many differences among questionnaire techniques which affect response. It has been found that the proportion replying to a questionnaire depends upon: (1) the population being surveyed--those individuals with a higher economic status and more education tend to have a higher rate of response than others;<sup>1</sup> (2) the subject of the survey--as the interest of the respondent increases, so does the response rate.<sup>2</sup> Strong agreement or disagreement with the propositions about which respondents are being surveyed also increases response rate.<sup>3</sup> Subjects respond to questions that call for factual answers more often than to those asking for evaluations;<sup>4</sup> (3) the sponsorship of the survey--"A survey with official backing will normally get a bigger response than one emanating from, say, a university or a research agency."<sup>5</sup> If the

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<sup>1</sup>C. A. Moser, Survey Methods in Social Investigation (London: Heinemann Educational Books Limited, 1958), p. 181.

<sup>2</sup>Ibid.

<sup>3</sup>Ibid., p. 179.

<sup>4</sup>Jackson, op. cit., p. 110.

<sup>5</sup>Moser, op. cit., p. 179.

sponsoring body is in some way connected with the population, this is the most favorable survey situation; (4) the questionnaire length;<sup>1</sup> (5) the attractiveness of the questionnaire;<sup>2</sup> (6) the ease with which the questionnaire can be completed and returned. It is apparent that all means must be employed to motivate the subject and to facilitate completion and return of the questionnaire instrument.

Rewards have been investigated as a means of increasing response. A gift of a carborundum stone was made to respondents in a continuing study of recreation mobility in Ontario. It is presumed that the gift aided in eliciting the desired cooperation.<sup>3</sup> In 1940, Hancock compared the effects of rewards on questionnaire return in a study of attitudes toward a retail store. The writer in this case established four groups: the first group received only a mailed questionnaire; the second, the questionnaire and twenty-five cents; the third group of subjects received the questionnaire and the promise that they would be sent twenty-five cents as soon as their completed questionnaire was received by the investigators; the subjects of the fourth group were interviewed with the same questionnaire

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<sup>1</sup>Selltiz, op. cit., p. 241.

<sup>2</sup>Parten, op. cit., p. 391.

<sup>3</sup>Ontario Department of Lands and Forests, Ontario Park User Survey--Methodology and Results (Toronto: Ontario Department of Lands and Forests, 1967), p. A-4, Appendix A.



schedule as used in the mail follow-up. For standardization, the interviewer asked the question just as it appeared on the instrument and then marked the form according to the response of the interviewee. The interview was much more productive in terms of the per cent of completion. The questionnaire alone led to a 9.56 per cent return; the questionnaire and quarter brought in a 47.2 per cent response; the questionnaire and promise of a quarter 17.6 per cent; and the interview return was 85.5 per cent.<sup>1</sup> However, if the reward is more than nominal, this may offset the chief advantage of the questionnaire method--its cheapness.

The manner in which the questionnaire is distributed and collected is a main influence on amount of return. A questionnaire survey of campers by Taylor in 1965 received a return of from 60 to 80 per cent when the form was handed out after camper registration. When the questionnaire was handed out as an integral part of camper registration the response dropped below 40 per cent.<sup>2</sup>

The amount of response seems to improve as the "captivity" of the respondent increases. If the subject feels that he has a

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<sup>1</sup>J. W. Hancock, "An Experimental Study of Four Methods of Measuring Unit Cost of Obtaining Attitudes Toward the Retail Store," Journal of Applied Psychology, 24 (1940), pp 213-230.

<sup>2</sup>George A. James and Gordon D. Taylor, "Recreation Use Estimation in the United States and Canada," XIV IUFRO-Kongress, section 26 (Munchen, 1967), p. 19.

definite responsibility to reply, or if he feels he will suffer social disapproval by not replying, the percentage of response seems to improve. A difficulty with mail questionnaires, unless they are sent to a highly motivated group, is that they do not inspire a feeling of "captivity."

### Uses

The questionnaire can be put to the same uses as the interview, with the exception of an unstructured, in-depth examination of feelings or motivations. As the problems associated with the questionnaire technique are decreased, the usage of this technique will become even more popular.

### Advantages

1. Several members of a population may be questioned simultaneously, with no increase in research staff.
2. Questionnaires tend to be less expensive to administer than interviews.
3. Questionnaires require less skill to administer than do interviews.<sup>1</sup>
4. The impersonal nature of a questionnaire--the standardized wording, order of questions, and instructions for recording

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<sup>1</sup>Selltiz, op. cit., p. 238.

responses--can insure uniformity from one measurement situation to another.<sup>1</sup>

5. Respondents have confidence in their anonymity and thus can feel freer to express views they fear might be disapproved of.

6. Questionnaires usually place less pressure on the subject for immediate response. Thus, the subject may ponder a difficult question before answering.

7. When information concerning several members of a group or consultation with records is required, questionnaires permit consultation and discussion during the completion.<sup>2</sup>

8. The administration of a questionnaire survey can usually be adapted so that it doesn't interfere with the operation of a recreation area.

9. A mail questionnaire survey can obtain information from people located in scattered geographical areas.

10. The questionnaire may reach groups who are more or less protected from solicitors and investigators. In high-rent apartment houses or private homes where servants protect the occupants from solicitors and other doorbell ringers, for example, it is

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<sup>1</sup>Ibid.

<sup>2</sup>Cannell and Fowler, op. cit., p. 262.

often difficult for investigators to gain admittance. Of course, the fact that the questionnaire is received at the intended address does not guarantee that it will be filled in and returned.

11. Personal antagonism to investigators, which may lead to refusal to give the desired information, is avoided.

12. It is claimed that the mail questionnaire brings many more returns from the man of the house than does the telephone or personal interview method.<sup>1</sup>

### Disadvantages

1. The most significant disadvantage is the vital question of non-response. The effects of failure to fill the sampling frame and the efforts to overcome this deficiency will be discussed in a later section.

2. The answers to questionnaires have to be considered as final. There is no opportunity to probe beyond the given answer, to clarify an ambiguous one, to overcome unwillingness to answer a particular question, or to appraise the validity of what the respondent said in the light of how he said it.<sup>2</sup>

3. The questionnaire is inappropriate where it is important that the views of one person only are obtained, uninfluenced by

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<sup>1</sup>Parten, op. cit., p. 95.

<sup>2</sup>Moser, op. cit., p. 177.

discussion with others, and where it is essential that one particular person in each household or group complete the questions. When socio-economic class is to be evaluated, information is desired about the "head of the family" only. It is difficult to ensure that information collected through questionnaires applies only to the "head of the family."<sup>1</sup>

4. Questionnaires can be considered only when the questions are sufficiently simple and straight forward to be understood with the help of printed instructions.

5. Questions cannot be treated as independent, since the respondent can see all of the questions before answering.

6. There is no opportunity to supplement respondent's answers with observational data, as there is with an interview.

7. Because most people would rather talk than write, questionnaires must be made very interesting to induce responses.

8. Mail returns from the last third of the respondents come in slowly; hence the mail survey must be spread over a relatively long period, if a high percentage of returns is to be secured.<sup>2</sup>

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<sup>1</sup>Ibid.

<sup>2</sup>Parten, op. cit., p. 96.

### Design of the Questionnaire

Questionnaire length is particularly important. Numerous experiments have found that shorter questionnaires are returned more frequently than lengthy ones.

When planning questionnaires, it is desirable to use a color which will attract the recipient's attention. In some marketing studies, yellow paper was found to have the highest percentage of returns and pink followed closely, but dark colors were not effective. The same investigator also found that when one subject was to receive a series of questionnaires, alternating of lighter colors solicited more returns than the continual use of one color.<sup>1</sup>

The arrangement of questions in order of interest also has an effect upon response.<sup>2</sup> Lacking the personality of an interviewer to motivate the respondent towards the survey, the questionnaire must be its own salesman. The first question should be easily answered and should have human interest appeal. It should be short, and preferably one that can be answered with a simple yes or no. An early interest is a good guarantee of completeness of response. A few simple questions at the beginning will give the respondent

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<sup>1</sup>Ibid., p. 161.

<sup>2</sup>Jackson, op. cit., p. 9.



confidence in himself which is invaluable for carrying the subject through later more complicated questioning. After rapport has been established, a few questions asking for the respondent's advice are good for bolstering the ego and maintaining interest.<sup>1</sup> "General questions should precede specific ones, otherwise the respondent is likely to answer the general ones in terms of the earlier specific ones."<sup>2</sup>

After questions are assigned specific wording, the following points must be checked:

1. Are questions specific enough? Do they ask exactly what is required?
2. Is simple language used? Any words that cannot be understood by the desired population must be avoided.
3. Ambiguity must be avoided. A response must mean one thing only.
4. The use of vague questions encourages vague answers.
5. Avoid leading questions. Wording should be entirely neutral and should not encourage the respondent to take a position in his answer.

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<sup>1</sup>Parten, op. cit., p. 391.

<sup>2</sup>Ibid., p. 214.



6. Hypothetical questions will encourage an answer that is more a matter of philosophy or wish than fact.

7. One must be sure that he includes all answer possibilities in designing a precoded question. Respondents should not be forced into an answer category in which they do not belong.

Whether or not one should use open end questions or fixed alternative questions depends upon the type of answer desired. Colfax found that the open end form resulted in more complete and unbiased reports from high school students concerning socio-economic questions.<sup>1</sup> However, response is higher for fixed alternative questions than it is for open-ended questions.<sup>2</sup> Selltiz sums up advantages and disadvantages of both forms as follows:

Fixed alternative questions have the advantages of being "standardizable," simple to administer, quick and relatively inexpensive to analyze. . . . A closed question may help to insure that the answers are given in a frame of reference that is relevant to the purpose of the inquiry and in a form that is usable in the analysis. . . . Sometimes the provision of alternative replies helps to make clear the meaning of the question. . . . A similar function of alternative responses is to make clear the dimension along which answers are sought. . . . Finally the closed question may require the respondent himself to make a judgment about his attitude rather than leaving this up to the interviewer or quoter.

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<sup>1</sup>David J. Colfax and Irving L. Allen, "Pre-coded vs. Open-ended Items and Children's Reports of Father's Occupation," Sociology of Education, IL (January, 1967), 965.

<sup>2</sup>Jackson, op. cit., p. 110.

Closed questions are more efficient where the possible alternative replies are known, limited in number, and clear cut. Thus they are appropriate for securing factual information (age, education, home ownership, amount of rent, et cetera) and for eliciting expressions of opinion about issues on which people hold clear opinions.

Open-ended questions are called for when the issue is complex, when the relevant dimensions are not known, or when the interest of the research lies in the exploration of a process or of the individual's formulation of an issue. The closed question has the advantage of focusing the respondent's attention on the dimension of the problem in which the investigator is interested; by the same token, it does not provide information about the respondent's own formulation of the issue, the frame of reference in which he perceives it, the factors that are salient for him, the motivations that underlie his opinions. When these matters are the focus of interest open-ended questions are essential.<sup>1</sup>

An excellent description of the steps to be considered in constructing a questionnaire and interview schedule is contained in Appendix C of Research Methods in Social Relations by Selltiz. Within this appendix the points to be considered in training interviewers are also outlined.

#### Correction of Non-Response

Non-response is a problem because of the likelihood--repeatedly confirmed in practice--that people who do not return questionnaires differ from those who do. The greater the proportion of non-respondents and the extent to which non-respondents

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<sup>1</sup> Selltiz, op. cit., p. 262.

differ from those who did respond, the greater will be the bias from non-response.<sup>1</sup>

The most inexpensive means of dealing with non-response is by reducing it in the first place. The techniques to accomplish this have been discussed in previous sections. In spite of all efforts, however, non-response will usually occur in all survey research. Some individuals perceive survey research as an invasion of privacy and their hostility is evident in non-response to questionnaires and interviews.<sup>2</sup> Even though a respondent might want to help in giving information, he may be unable to do so. Psychologists have pointed out that we are not aware of many of our most important beliefs and motivations, and hence cannot report them.<sup>3</sup>

Most survey researchers will further reduce non-response by use of follow-up waves. Shafer doubled the response to his camper survey through the use of four follow-up waves. A somewhat comparable mail back questionnaire survey by the Detroit

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<sup>1</sup>Moser, op. cit., p. 128.

<sup>2</sup>Stanley D. Bachrack and Harry M. Scoble, "Mail Questionnaire Efficiency: Controlled Reduction of Non-response," Public Opinion Quarterly, XXXI (January, 1967), 267.

<sup>3</sup>Selltiz, op. cit., p. 237.

Metropolitan Area Regional Planning Commission obtained the following completed response:<sup>1</sup>

|                                                        |                                   |
|--------------------------------------------------------|-----------------------------------|
| Initial Response                                       | 14.2% of Total Number Distributed |
| Additional response following the 1st "follow-up" wave | 19.3% of total number Distributed |
| Additional response following the 2nd "follow-up" wave | 15.7% of Total Number Distributed |
| Additional response following the 3rd "follow-up" wave | 9.2% of Total Number Distributed  |
| Total                                                  | 58.4%                             |

Another survey within the same regional parks obtained 30.8 per cent of the sampling frame in the initial response. Two mail follow-up waves produced an additional 28.8 per cent of the sampling frame.<sup>2</sup> It seems apparent that the use of follow-up waves will increase questionnaire response significantly. However, follow-up waves are difficult to administer, expensive and time consuming.

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<sup>1</sup>Detroit Metropolitan Area Regional Planning Commission, Home Survey of Regional Recreation Activities (Detroit: Detroit Metropolitan Area Regional Planning Commission, 1959), p. 19.

<sup>2</sup>Detroit Metropolitan Area Regional Planning Commission, Park Users Survey: A Survey of Persons Using Eight Selected Regional Parks in the Detroit Region (Detroit: Detroit Metropolitan Area Regional Planning Commission, 1959), p. 21.

A low response rate does not necessarily mean the research is of no value:

. . . it would be quite wrong to imply that non-response vitiates the scientific nature of sampling. Mail surveys apart, it is usually possible to keep non-response down to a reasonable level and to estimate roughly what biasing effects it may have upon the results.<sup>1</sup>

Statistical adjustments for non-response are outlined in Sampling Techniques by Cochran.<sup>2</sup>

Even with 100 per cent returns, the researcher must be cautious about accepting the responses from questionnaires or interviews.<sup>3</sup> This is especially true when subject matter deals with social approval issues or issues of status.

### Comparison of the Personal Interview and Questionnaire Survey Methods

Comparisons of the interview and questionnaire survey methods can be made on the following basis:

1. Amount of response--numerous studies have shown that the interview method obtains responses from a larger proportion of the sample.

<sup>1</sup>Moser, op. cit., p. 127.

<sup>2</sup>Cochran, op. cit., p. 71.

<sup>3</sup>Elwood Lewis Shafer, Jr., "Effects of Sampling, Location, Period, and Method on Camper Survey Results" (unpublished Ph.D. dissertation, State University College of Forestry, Syracuse University, 1966), p. 13.

2. Completeness of return--an interviewer can assure that all questions are answered completely.
3. Quality of answer--the presence of the interviewer generally insures that most answers are "usable."
4. Cost of method--unless extensive callbacks are required, the questionnaire method is considerably less expensive.

In a recent study, Shafer compared various methods of obtaining opinions (preferences) from campers. He used four techniques: personal interviews at the site; questionnaires to be completed and returned at the camping site; questionnaires mailed to the camper immediately upon completion of the camping experience; and questionnaires mailed three months following the camping experience. Shafer used four follow-up waves in order to decrease the non-response to the questionnaire methods. He concluded that hand out and mailed survey procedures could be expected to produce about the same total response regardless of the intensity of sampling or the location, but sampling periods throughout the summer may have a significant influence on return.<sup>1</sup> In comparing other methods with the interview he found that answers obtained from the hand out method differed significantly from corresponding answers obtained from the interview, 19 per cent of the time. The mailed questionnaires

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<sup>1</sup>Ibid., p. 168.

varied between 12 per cent and 24 per cent from interview results, depending upon the sample waves included in the analysis. Shafer concluded that:

. . . based on a complete overview of all these results, the hand out and mailed survey methods--with three to four waves for non-respondents--generally seemed to be reliable for obtaining information of the type requested in this study (opinions of the recreation site) if a 10 to 25 percentage point discrepancy from comparable personal interview values is acceptable.

However, if only a 10 to 15 percentage point differential can be tolerated, then the delayed mailed procedure is recommended, with the possible exception perhaps of questions that deal with large value categories. . . .<sup>1</sup>

Shafer found that the answers for sensitive questions such as income and expenditure patterns were the same for all methods, implying that the potential subject matter which can be accurately treated in future questionnaire surveys seems quite broad and varied.<sup>2</sup> He states that if interviews are out of the question, the delayed mailed survey should be used in preference to hand out or immediately mailed surveys.<sup>3</sup>

In obtaining information about issues involving social approval or disapproval, Knudson found questionnaire responses to

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<sup>1</sup>Ibid., p. 168.

<sup>2</sup>Ibid., p. 174.

<sup>3</sup>Ibid., p. 178.

be more valid than interview responses.<sup>1</sup> The interviews appeared to provide information that has been revised to an assumed public standard or standard held by the interviewer. When information is desired about a person other than the respondent, Cannell and Fowler found that the most valid answers were obtained by the questionnaire method.<sup>2</sup> These authors also found that:

. . . in the interview procedure, education of respondent is the most important variable, and that motivation is a factor only within educational groups; whereas in self-enumerative procedures motivation is a more important variable, and education of respondent becomes a factor within the "better motivated" groups of respondents.<sup>3</sup>

When "objective recall" data is desired, with no attitudes or opinions called for, very little difference is found between responses from interview and questionnaire methods.<sup>4</sup>

The following chapter will discuss preliminary aspects of study design.

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<sup>1</sup>Dean D. Knudson, "Response Differences to Questions on Sexual Standards: An Interview-Questionnaire Comparison," Public Opinion Quarterly, XXXI (January, 1967), 297.

<sup>2</sup>Cannell and Fowler, op. cit., p. 262.

<sup>3</sup>Ibid., p. 261.

<sup>4</sup>Ibid.



## CHAPTER III

### DESIGN OF A DATA COLLECTION SYSTEM

#### Determination of the Desired Information

Several meetings were held with representatives from interested Park and Recreation agencies to determine the type of information needed to indicate "day-use" trends. It was concluded that factual data about the "day-user" was required in three general categories; characteristics of the user, locational and travel characteristics, and activity and use characteristics. The total information outlined as being of value to planners and administrators was as follows:

#### Characteristics of the User

1. Distinguish between the "day-user" and the camper.
2. Group composition--what kind of group entered the park?
3. Ages and sex of all individuals in the group?

4. What is the socio-economic level of the family of the driver of the vehicle?

Travel and Locational Characteristics

5. What is the "origin" or residence of the user?

6. What distance is the "origin" of the user from the park?

Activity and Use Characteristics

7. What "type" of a visit is this? For example, one day event or part of a major annual vacation?

8. How often does the subject use the particular park?

9. How often does the subject use other parks? City parks? County and metropolitan parks? State parks? National parks?

10. When did the subject enter the particular park?

11. How much time did the user spend in the park?

12. What activities were participated in and for what length of time?

Determination of the  
"Best" Survey Method

Authorities of the Michigan State Park system advised that a continuous data collection system must function within the following limitations:

1. No additional staff would be made available to supplement the present staff within each park and recreation area. During the summer season, a maximum of two staff members from division office would be made available for limited periods of time.

2. Since the process of obtaining names and addresses from vehicle registrations would be too costly and time consuming, no methods of dispersal-retrieval were to be considered that would have to use this information source.

3. Data was desired for each park and recreation area.

4. Funds for the research were extremely limited.

5. The data collection system should be put into operation as soon as possible.

6. Data collected must have a known accuracy that will permit it to be used in the planning and management processes.

As previously outlined above, all of the desired information was "objective recall," that is, no opinions or attitudes are sought. "Objective recall" data can be obtained through the use of either personal interview or questionnaire techniques.

Considering the advantages and disadvantages of each method as outlined in Chapter II, the data required, and the limitations of the Michigan State Park system, the "best" survey technique was the questionnaire method. The one weakness of this technique

was the low rate of response, thus jeopardizing accuracy of information. If this deficiency could be surmounted, questionnaires could provide data of the desired accuracy.

### Design of the Survey Instrument and Dispersal-Retrieval System

The testing of each sub-hypothesis involved different parks, sampling methods and administrative procedures. In order to avoid confusion, the development of the "best" questionnaire and dispersal-retrieval system (discussed in Chapter V of this report) is hereafter referred to as the "experimental phase." Testing collected questionnaire data for accuracy (discussed in Chapter IV) is hereafter referred to as the "seasonal phase" because the same type of questionnaire was distributed throughout the entire summer season. Although the testing of each phase was carried out in different parks, both phases were administered from the same research center during the same time period.

Before implementing each phase, several common problems were encountered. The following section applies to both the "experimental" and "seasonal" phases of the study.

### Sampling

If one were to survey every user entering every State Park or recreation area, a fantastic amount of funds (and staff,

administrative space, and analysis resources) would be required. Fortunately, a sample of visitors will yield the desired information within precise limits of accuracy. The greatest advantage of sampling is that it saves time, labor and money, allowing more "distance" for the research dollar. If the sampling procedure is correctly designed and is followed, the research limitations are minimal.<sup>1</sup>

In order to obtain a representative sample, that is, to ensure that all segments of the population that use the area are sampled according to their relative "weights," a random method of sampling should be employed. The criteria of a random sample is that every subject in the population has an equal chance of being included in the sample.

A random sample is difficult to obtain within a recreation area. It cannot be obtained by choosing individuals participating in certain activities (because responses will be biased towards that particular activity and other activities will be ignored), or by choosing vehicles within a parking lot (because not all vehicles are usually vehicles within a parking lot--some vehicles are parked along roadways, others can be taken to the activity site, i. e., bicycle). Usually the only locations where truly random samples can be chosen are at entrances or exits.

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<sup>1</sup>The disadvantages of sampling are outlined on page 111 in Surveys, Polls and Samples by Parten.

Random sampling is relatively simple. Either the use of random number tables or a systematic sampling system will yield a truly representative sample, assuming that "enough" sampling periods (of "long enough" duration) are used.

If the area has two or more entrances or exits the task becomes more complicated. The proportion of total vehicle flow either into or out of the area must be calculated for each entrance or exit. A correspondingly proportionate amount of the random sample must then be obtained for each of the entrances or exits. For example, if a particular area has three entrance/exits, with proportions of total vehicular traffic of 20 per cent, 30 per cent and 50 per cent respectively, then 20 per cent of the total sample should be obtained at the first entrance/exit, et cetera.

When a sample is used to represent the entire population, the science of statistics can be employed to make inferences about the population based upon information contained in the sample. Inasmuch as populations are "characterized by numerical descriptive measures called parameters, statistical inference is concerned with making inferences about population parameters."<sup>1</sup> Typical population parameters are the mean, standard deviation, or the area between

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<sup>1</sup>William Mendenhall, Introduction to Probability and Statistics (Belmont: Wadsworth Publishing Company, 1967), p. 148.

two values of a random variable on a normal curve. Statistical sampling is an advantage over any other way of choosing a part of the population because, when the estimates of the population characteristics are made from the sample results themselves, the precision of these estimates can also be gauged from the sample results themselves.

An excellent description of all phases of sampling is included in Sampling Techniques by Cochran.

### Choice of a Population Sample

The task of determining the exact sample size is more complicated than one would first suspect. The first difficulty concerns the precision required. Ideally, the decision maker in consultation with the researcher should decide what precision is needed in sample size calculations. In practice this is difficult to accomplish: the administrator may not be able to make such a value judgment due to the complexity of the problem involved, or he may not fully understand many of the statistical implications of the experiment. Based upon the experience of Shafer,<sup>1</sup> the recommendation of Mendenhall<sup>2</sup> and discussion with recreation authorities, it was

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<sup>1</sup>Shafer, op. cit., p. 29.

<sup>2</sup>Mendenhall, op. cit., p. 158.

decided that sample size would be determined to ensure that estimation error for proportions is no greater than .05 at the 95 per cent confidence level. These statistical limits were established as the minimum acceptable, and whenever possible, the statistical standards were set to yield more precise results.

Second, the decision on sample size will be largely governed by the way the results are to be analyzed, so that the researcher must at the outset consider, at least in broad terms, the breakdowns to be made in the final tabulations. He can then calculate what numbers are needed in each subgroup to give the desired precision for that subgroup and hence, what total sample size is required. Since most surveys seek information on a number of different variables, the sample size must be calculated to yield the desired information for that "critical" question which has answers of least reliability.

The third difficulty in choosing a sample size is that in order to make the required calculations, the variability of the population must be known. Once again, sample size for the entire study will have to be determined so as to provide an adequate number of responses to that particular question which will have the greatest diversity of response. Variance data is usually obtained from previous survey research among the outlined population. In the case of this study, there was no previous research available upon which



to base calculations, so the maximum possible variance of any population was used in sample size calculations. Further discussion of the qualities looked for in choosing a sample can be found in Survey Methods in Social Investigation.<sup>1</sup>

The individual units that combine to form the sample are referred to as "sampling units." Usually, sampling units are specified individuals (respondents), but this does not always have to be the case. If the sample size is large and there is not much diversity in the number of occupants, the sampling unit can also be a vehicle. In fact, using "vehicles" instead of "individuals" will yield more data for analysis. (Information can be obtained about all vehicle occupants, not merely one person.) Because of the disadvantages of using individuals as "sampling units," this study will consider "sampling units" to be vehicles.

Although this study was designed to collect information about the "day-user" it was administratively unfeasible to separate "day-users" from campers at the data collection phase. Thus, the sample frame contains both "day-users" and campers, the separation of which will take place in the analysis phase.

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<sup>1</sup>Moser, op. cit., p. 121.

### Choice of Sample Parks and Recreation Areas

Each park and recreation area can be considered to be "individual" in that it has distinctive, unique features that attract a separate and distinct park-using population.<sup>1</sup> It makes little sense to describe an "average" user for the entire park system as the result would be a nonexistent, stereotype individual that may create more managerial problems than were intended to be solved.<sup>2</sup>

Despite the fact that parks are "individual" and should be regarded as such, it is often necessary (usually because of insufficient research funds) to use a representative sample of all parks. How then can the researcher choose a representative sample of all parks in order to enjoy the advantages of sampling previously discussed? The answer is to stratify parks into similar groupings and then choose a park from each group to represent that particular strata. The problem arises as to how parks should be stratified. In his survey of campers, Shafer found definite changes both in amount of response and completeness of response from month to month during the recreation season, and from park to park.<sup>3</sup> Based on his study, Shafer recommended that parks should be stratified "on the

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<sup>1</sup> Shafer, op. cit., p. 178.

<sup>2</sup> Ibid., p. 176.

<sup>3</sup> Ibid., p. 165.

basis of lake-acreage availability classes, tourist attraction densities, park-accessibility groupings and environment variability categories."<sup>1</sup> It has also been suggested that "attractability indexes" be developed and used to categorize parks. Unfortunately there have been no suitable methods of classification developed to date, and further research is needed in this area.

For lack of a better stratification scheme, the one proposed by Clawson was used for this study.<sup>2</sup> This stratification guide, while being so general as to not exclude any State park or recreation area, was specific enough to indicate definite boundaries for each of the three categories. The three classes of recreation areas proposed by Clawson are:

1. User-oriented areas--located close to large population centers and characterized by a large annual attendance.
2. Intermediate areas--located within two hours driving time from major population centers and usually characterized by the diversity of activities offered.
3. Resource based areas--generally located considerable distances from large population centers and characterized by a lack of intensive development of the site.

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<sup>1</sup>Ibid., p. 5.

<sup>2</sup>Clawson, op. cit., p. 13.

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Upon request, lists of park characteristics and past attendance figures for each State park and recreation area were made available to the research staff. A series of meetings was held with representatives of the Division of State Parks to "pair" parks for each of the two study phases. The parks outlined in Table 1 and Figure 2 were chosen as both representative of the park system and "administratively feasible" enough to be included within the study.

TABLE 1. -- Sample Parks of the Michigan State Park System  
Included in This Study

| Class                     | "Experimental"<br>Phase           | "Seasonal"<br>Phase               |
|---------------------------|-----------------------------------|-----------------------------------|
| 1. User-oriented<br>area  | Dodge Brothers<br>#4 State Park   | Holland State Park                |
| 2. Intermediate<br>area   | Pinckney State<br>Recreation Area | Waterloo State<br>Recreation Area |
| 3. Resource-based<br>area | Harrisville State<br>Park         | Tawas Point State<br>Park         |

#### Design of the Dispersal-Retrieval System

The limitations imposed by the Michigan State Park system and by the use of random sampling, drastically reduced the dispersal-retrieval options available. The only means of dispersal available that does not involve the use of additional staff members is by

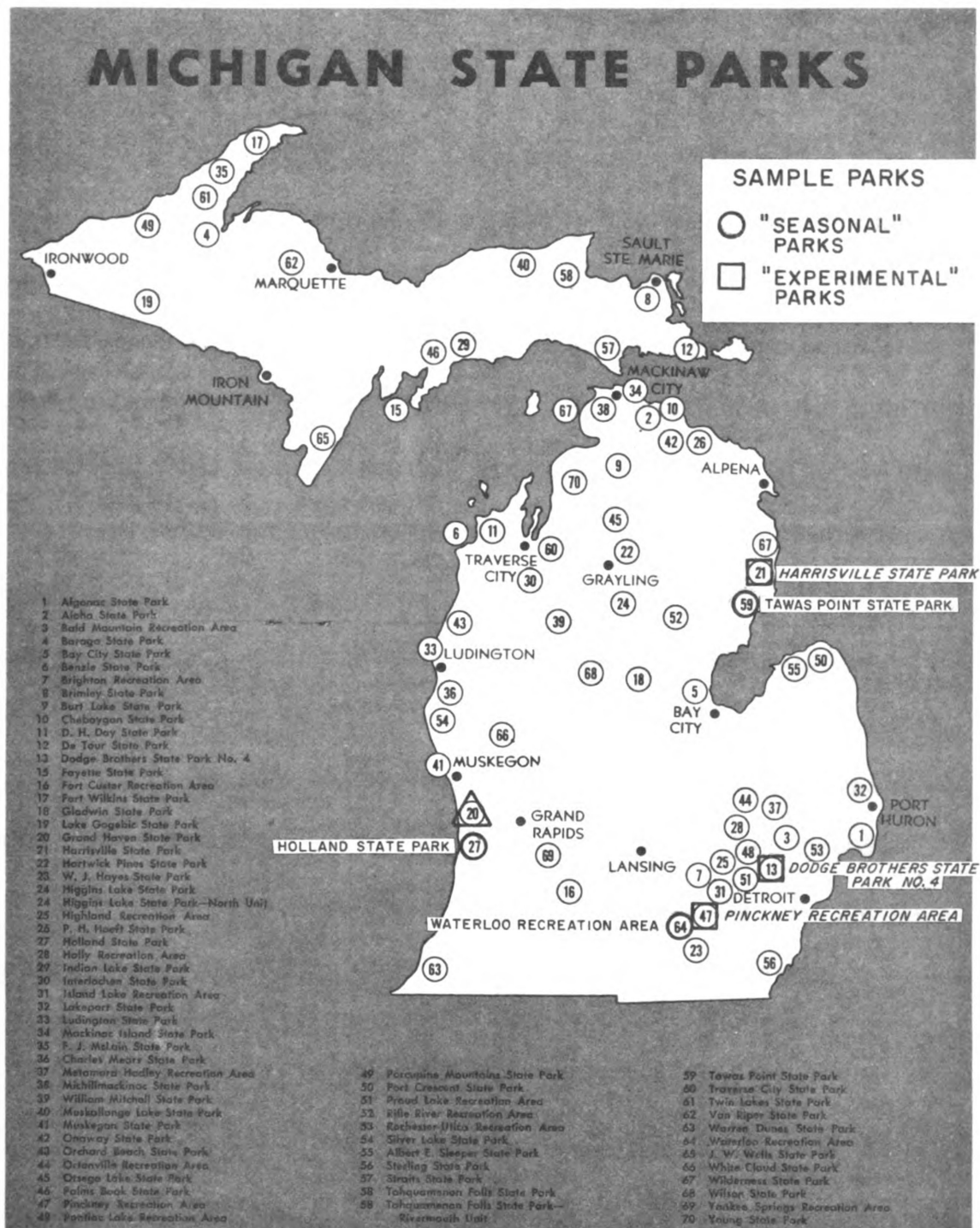


FIGURE 2. -- Michigan State Parks and Recreation Areas Indicating Sample Park Locations

questionnaire hand out to designated sample frame vehicles at the area entrance by the contact station ranger. Retrieval options available are either deposit in a designated container within the recreation area or mail-back to a central location. Since the mail-back method is costly (at least seven cents per response), time consuming, and requires space on the questionnaire for the mailing address and postal permit number (thus reducing space available for questions), this method of retrieval is unsatisfactory. The use of follow-up waves could not be considered because there was no way of identifying and contacting sample frame members once they had left the park. Vehicle registrations could not be used, as previously explained.

In summary, the questionnaire survey instrument was to be distributed to sample frame members by contact station rangers. Retrieval was to be by voluntary deposit in a collection box placed near the area exit. No follow-up waves were to be used.

### Questionnaire Design

The questionnaire should be designed so that it will obtain the greatest response rate possible, with all answers completed and interpretable. To accomplish this, the survey instrument must appear to be so attractive that the respondent will want to complete

it, yet simple enough that all questions can be interpreted correctly and answers can be easily given. Although adaptations were to be made within each of the study phases, the following basic design principles were incorporated into all questionnaires constructed.

Questionnaires were designed so as to appear brief. A single sheet of paper stock with maximum dimensions of  $8\frac{1}{2} \times 11$  inches was to be used. This would necessitate photo-reduction of all printed material in order to fit within the size limitations. The paper stock also had to be sturdy enough so that the questionnaire could be filled out without requiring an additional supporting surface.

In addition to the information previously outlined to be included on the questionnaire, space also had to be provided for the particular park identification number and the date on which the questionnaire was handed out. These items were necessary in order to identify the questionnaires for later analysis. Campers were to be identified by their response to the question, "Are you going to camp in this park tonight?" Since most parks do not contain concessions in which users can buy food staples, campers usually have to leave and re-enter the park at least once a day. In order to cover the situation of the camper returning to the park after buying breakfast requirements the day he is to break camp, an additional question, "Did you camp in this park last night?", was included. If the answer



to both of these questions was negative, the individual was a "day-user."

In addition to the traditional means of obtaining user origins (asking the respondent to write-in his town or city, county, and State of residence) a question requesting postal zip code numbers was included. If respondents would answer the zip code question, a more precise indication of origin could be made, i. e. , zip code area 48912 is a more precise area than "Lansing."

Socio-economic level is difficult to ascertain, because it is a composite measurement requiring evaluations from at least two different scales. Answers to the following questions could be combined to indicate socio-economic levels:

1. What is the age and sex of the "head of the family"?
2. What is the education of the "head of the family"?
3. What is the occupation of the "head of the family"?
4. What total income did the driver's family earn during last year?

Difficulty was encountered in determining which would be the best method to obtain information about activities "participated in" while at the park. No consensus of opinion could be found as to which method would be best, so a pre-test was conducted with all proposed techniques. As a result of this pre-test an activity analysis

question was designed in which the various activities "participated in" could be identified, and those activities in which the participant spent most time could be assigned a quantitative time measurement.

As an additional aid to recreation area management, the question "What kind of additional recreation opportunities or facilities would you like to see added to the park?" was included. Also, it was felt that this question would be an "ego booster" for the respondent, helping to maintain interest for the activity analysis question that followed.

In order to provide background information for later market studies, Michigan State Park authorities indicated that they wished to obtain guidance about why people actually chose a particular park. The question, "Why did you choose this park rather than a different one?" was included as a means of outlining answer categories to be used in future studies.

Throughout the entire survey, a central motivating theme and symbol were used. The symbol was a picnic table silhouette which was superimposed on all questionnaires, signs and collection boxes. It was hoped that respondents would subconsciously associate the questionnaire to the instructions on the signs and ultimately to the collection box, thus improving response. The theme, "by completing and handing in this card you can help plan your parks" was

expressed in the questionnaire, in signs, and in the short verbal message given by the contact station ranger.

## CHAPTER IV

### ACCURACY OF COLLECTED INFORMATION

The purpose of this study phase was to test sub-hypothesis two, that is, to check the accuracy of information collected by questionnaire. In order to accomplish this, a continuous data collection system using a questionnaire survey instrument was designed and implemented. The data collected from this system was then compared to parameter data for the park-using population. Thus, the accuracy limits of questionnaire information were determined.

#### Preliminary Preparations

##### Questionnaire Design

The requirements of the "seasonal" questionnaire were that it must be attractive, distinctive, convenient to complete, and difficult to forget or ignore. Respondents could not fill out the questionnaire immediately upon receiving it at the area entrance because of the activity analysis questions. Motivational problems would be created because the respondent could not fill it out immediately while

interest was high; rather it had to be set aside until all activities had been completed. In order to overcome this difficulty and the ones previously outlined in Chapter III, a number of devices were employed. First, the questionnaire was printed on bright yellow 24 pound Carnival Kraft stock. This was a bright, distinctive, relatively inexpensive paper stock with enough rigidity so that the questionnaire card could be completed without requiring an additional supporting surface during the writing. Second, the card was a single sheet of paper stock folded once to provide a brochure-like questionnaire with dimensions  $5\frac{1}{2} \times 8\frac{1}{2}$  inches. Thus, the questionnaire appeared to require little time for completion and the folded size required less supporting surface during completion. Third, a slotted hole was drilled in the upper left-hand corner of the card, permitting it to be suspended from a vehicle instrument knob. This would aid response by keeping the questionnaire in view of the vehicle occupants, thus reducing forgetfulness and misplacement. Fourth, a golf pencil was supplied to respondents who indicated that they needed a writing instrument.

A sample of the "seasonal" questionnaire is contained in Appendix A.

### Sample Size

Since information as to the variability of the Michigan State Park and Recreation Area "day-user" was not available, sample size

was calculated using absolute error<sup>1</sup> and assuming the maximum possible population variance. Calculation was as follows:

The probability requirement

$$\Pr [ 1\hat{p} - p_1 \leq .05 ] \geq .95$$

leads to

$$\Pr \left[ \sqrt{\frac{1\hat{p} - p_1}{p(1-p)}} \leq \sqrt{\frac{.05}{p(1-p)}} \right] \geq .95$$

Where

$p$  = unknown proportion to be estimated

$\hat{p}$  = estimate of  $p$

$n$  = sample size

$.05$  = absolute error

$.95$  = confidence level

Using normal approximations we have that  $n$  must satisfy

$$\sqrt{\frac{.05}{p(1-p)}} \geq 1.96$$

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<sup>1</sup>As contrasted to relative error where the accuracy is specified in terms such as  $.05p$  and where lower bounds for  $p$  are needed in order to determine sample size.

$$\sqrt{n} \geq \sqrt{p(1-p)} \quad (39.2)$$

$$n \geq 1538 p(1-p)$$

Since  $p(1-p) \leq \frac{1}{4}$

Then  $n \geq \frac{1}{4} \cdot 1538 = 385$

For each unit of analysis, 385 "day-use" respondents were required. In this study, each park and recreation area was a separate analysis unit. Also, the occupants of each vehicle using the area entrance were not necessarily "day-users" (they might have been campers or park staff). Therefore, a sample of at least 900 respondents was set for each park and recreation area to guarantee the necessary "day-use" sample size.

### Sampling Method

Systematic random sampling was chosen as the method to be used in this study phase because it could be implemented with least interference to normal recreation area operation. In systematic sampling, every  $n$ th member of the population was included in the sample. For instance, to obtain a sample of 250 vehicles from a population of 1000, every fourth vehicle was selected. To ensure that every vehicle in the population had equal opportunity of being

chosen, the first sample vehicle had to be designated through the use of a random choice method (i. e. , random number tables, "drawing" from the sample space). After the initial vehicle had been identified, every fourth vehicle thereafter would automatically be included in the sample.

Since contact station rangers do not have the time to count all vehicles entering the area, a simple means of counting vehicles and identifying sample members was designed. A pneumatic traffic counter was adapted, through the use of slot car gears, to count axles and then to ring a bell when the predetermined number of axles was reached.

To determine the setting of a traffic counter, the following procedure was used: For each recreation area, the attendance for each summer month during the past three years was obtained. From this, a "conservative" estimated attendance for the months of July and August, 1968, was set. The required sample size was then divided into the estimated attendance to provide the systematic sampling frequency. Through experimentation with numerous gear ratios in the traffic counter, a setting for each individual park was obtained. For example, Holland State Park required a systematic sample of every fifty-fifth vehicle. A gear ratio to provide this exact sampling frequency could not be constructed, so one was constructed which



would yield a greater sample size than was actually required. In the case of Holland State Park the traffic counter identified each one hundred and fourth axle (fifty-second vehicle).

Some vehicles entering recreation areas have more than two axles, i. e., card with boats, trailers or campers. Since vehicles with more than two axles apparently do not enter recreation areas in a definite order or scheme of stratification, they do not jeopardize the random sampling system.<sup>1</sup> In fact, they increase the number of respondents surveyed, thus helping to guarantee the filling of the sampling frame. If the questionnaire was distributed to the vehicle that caused the traffic counter bell to ring, those vehicles having more than two axles would have an advantage. To overcome this problem, the second vehicle following the one that rang the bell was designated to receive the questionnaire.

#### Implementation of the Continuous Data Collection System

One month before the system was scheduled to be put into effect, a meeting was held with all sample park supervisors, regional park supervisors, and representatives of the Recreation Resource Planning Division and State Park Division of the Michigan Department

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<sup>1</sup>Cochran, op. cit., p. 230.

of Natural Resources. At this time, the study objectives were outlined, possible operational problems were discussed and solutions were proposed. Special emphasis was given to possible implications of the collected data for future recreation area management.

Using the discussion from the meeting as a guide, written instructions were prepared for use within each sample park. These instructions were constantly updated as new problems were encountered. A weekly report form, included in Appendix B, was also designed. This form, in combination with the regular weekly report forwarded to the State Park Divisional Office, provided the following information on a daily basis: number of visitors and vehicles entering the park, number of campers, and "day-users," number of people refused entrance to the park (usually because of a capacity crowd), number of questionnaires handed out, number of questionnaires returned, the presence of any special events in the region of the park that might influence attendance, and the weather--including amount of cloud cover, amount of precipitation, amount of wind, and maximum/minimum temperatures.

Each sample park was visited by a study team member shortly before commencement of the data collection system. The park supervisors were asked to delegate one park staff member as the "contact man" for the study, and permission was obtained to work

directly with the delegated person. In most cases, the contact man was either the park supervisor or assistant supervisor. The contact person was given the responsibility for ensuring that all phases of the study were carried out correctly. If any problems arose that were not outlined in the written instructions or orientation discussions, study team members were to be immediately contacted by telephone.

During the initial visit, study team members supervised the installation of the traffic counter, signs and collection box. The traffic counter was placed in the contact station and set with the previously determined random starting position. A short distance past the contact station a sign was erected that asked respondents to complete the questionnaire and return it at the area exit. It was anticipated that as one occupant of the vehicle was accepting the questionnaire, the other occupants could read this motivating sign. The "deposit" box was placed near the park exit, usually on the passenger side of the roadway. A short distance in advance of the deposit box a sign, "Please Deposit Completed Park Use Card Ahead," was posted. At the collection box an additional sign, "Please Deposit Park Use Card Here," was erected. The tasks of the contact station rangers were demonstrated: the placing of park code numbers and hand-out dates on each questionnaire to be done in the



FIGURE 3. -- Vehicles Waiting to Enter Dodge Brothers #4 State Park (A Typical Weekend Scene)



FIGURE 4. -- Contact Station Rangers Handing Out Questionnaires (Standing Outside the Contact Station During Heavy Traffic Flow)



FIGURE 5. -- Handing Out Questionnaires While Remaining Within the Contact Station (Flexibility Is An Asset)



FIGURE 6. -- View of Motivational Sign and Pneumatic Traffic Counter Hose From the Contact Station



FIGURE 7. -- Sign Warning Motorists of Their Approach to the Deposit Box (As Motorist Is Leaving the Park)



FIGURE 8. -- Deposit Box and Sign (Located Near Park Exit)

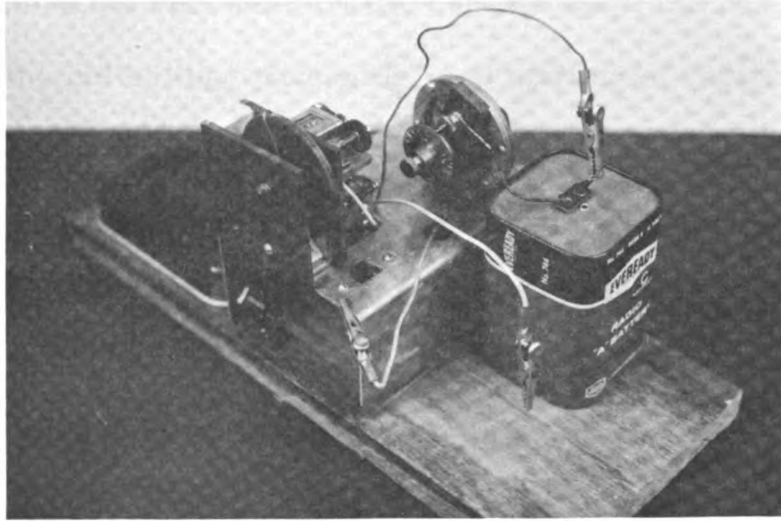


FIGURE 9. -- Pneumatic Traffic Counter  
Modified for Systematic Sampling  
Use (Designed So As to Ring a  
Bell Every  $n^{\text{th}}$  Axle)



FIGURE 10. -- Workers at the Study Center  
Preparing Experimental Ques-  
tionnaires for Shipment to Parks

morning before the vehicular traffic became busy; the completion of all forms; the collecting, packaging, and mailing of returned questionnaires; and the motivating message to be given when the questionnaire was handed out was rehearsed, namely, "Good day, Sir. Would you please fill out this card and leave it in the box near the exit as you leave the park? It is important that you complete every question. Do you need a pencil? Thanks for your cooperation-- enjoy your visit."

Sample parks were re-visited by study team members throughout the duration of the study.

#### Collection of Parameter Information

Parameters of the park-using population were to be obtained by a combination voluntary "hand in"-interview during the latter part of August. Questionnaires were to be handed to all vehicles entering the park during the interview period. A "spotter" was to be located within viewing distance of the collection box and in a position to signal to the interview team farther down the road. Those "vehicles" voluntarily returning questionnaires in the deposit box at the park exit were allowed to leave the park. The "vehicles" not depositing questionnaires in the collection box were to be stopped and interviewed to obtain information for certain "key" questions. The combination of data collection methods outlined above should produce



near 100 per cent response from all recreation area users during the interview period (hereafter, termed "parameter" information).

#### Implementation of Parameter Information Collection

Supervisors of the "seasonal" parks were contacted two weeks before the parameter information was scheduled to be collected, and assistance, in the form of making park staff members available to aid in the interview program, was requested. It was proposed that the interview teams consist of five members: one person (preferably a park staff member) would hand out questionnaires to all vehicles entering the park; one person would be positioned about 50 yards past the deposit box to act as "spotter" (again, preferably a park staff member). Those vehicles not depositing questionnaires would be directed into an interview area; two persons would be conducting interviews; and one person would be supervising the operation and relieving other team members.

During the first interview day it became apparent that the outlined interview program was inadequate. Traffic flow at the area exit was erratic, requiring five or six interviewers at times. In order to accommodate the sporadic vehicular flow, a supervised completion of a "short-form questionnaire" was substituted for the

verbal interview.<sup>1</sup> Those "vehicles" not depositing questionnaires in the collection box were directed into a designated area. The driver of the vehicle was then asked to complete the "short-form questionnaire." The questionnaire was collected when completed, the driver was thanked, and the vehicle was allowed to proceed. The success of this method led to one additional change--another collection box was erected at the exit of the designated interview area and drivers were asked to deposit the "short-form questionnaire" when it was completed.

At Holland State Park the intense vehicular traffic necessitated a further change. Even with three people handing questionnaires to vehicles entering the park, there was a traffic line waiting to enter extending for one-half mile. Experimentation revealed that there was no possible means of dispersing questionnaires at the area entrance without creating a major traffic congestion. The problem at the park exit was similar to that at the entrance--too much traffic for the one-lane exit. Therefore, it was decided to use random number tables to choose a random sample at the area exit. Those "vehicles" included in the sample were directed into a designated

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<sup>1</sup>A sample "short-form questionnaire" is contained in Appendix C.

area, asked to complete a questionnaire, and to deposit it in the collection box provided at the area exit.

### Treatment of Collected Data

Collected data was to be placed on data processing punch cards for the reasons previously outlined. Two methods could be employed to accomplish this task. The first method is through key punch--questionnaires have to be precoded by study team members, coded key punch tables must then be prepared, and finally, key punch operators use the prepared coded tables to punch the data processing cards. With this method there are three sources of human error--the precoding, the preparation of coded tables, and the punching of the data processing cards. The second available method is through the use of optical scan sheets--questionnaires must still be precoded by study team members, but instead of placing the coded information in key punch tables it is put on I. B. M. optical scan sheets. The optical scan sheets can then be processed directly through a reading-card punch machine to produce the desired data processing cards. Using this method there are only two sources of human error (the key punch operator is eliminated), and because there are fewer human handling procedures the cost is less than the key punch method. These advantages were sufficient reason to use the optical scan method of data treatment in this study.

Special I. B. M. optical scan forms were designed and are included in Appendix D of this report.

### Analysis of Data

Only those questionnaires which were entirely completed were coded and included in the analysis. If one question was not filled in, and it was not among those questions judged to be essential for analysis (i. e., questions 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 21, 23, 24 were considered "essential"), the non-completion was regarded as an error and the questionnaire was coded.

Parameter information was compared to the information collected by voluntary deposit of questionnaires by means of analysis of variance and chi square techniques. The responses from questions possessing "continuous" answer categories were analyzed through the use of analysis of variance. The chi square technique was employed on the remaining data.

Information from each sample "seasonal" park was analyzed in two different time periods:

1. Data collected from voluntary deposit<sup>1</sup> throughout the entire testing season were compared to the parameter data.

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<sup>1</sup>Data collected from the dispersal-retrieval system previously outlined in the chapter is hereafter referred to as "voluntary deposit data." Voluntary deposit data, therefore, consists of the completed questionnaires that were voluntarily deposited in the

2. Data collected from voluntary deposit during the week immediately prior to, and the week immediately following parameter information collection, were compared to the parameter information.<sup>1</sup>

In order to test the accuracy of the voluntary information, only the second time period comparison is needed. The first time period comparison was only intended to test the changes in use and user characteristics which occur throughout the duration of the summer season.

Within each of these time periods the "day-users" were analyzed separately from the campers.

### Results and Conclusions

The random-systematic sampling procedure used in this study phase appeared to function successfully. Minor difficulties occurred but were solved with a minimum of trouble. Due to the difficulty involved in stopping sample vehicles as they enter the park (vehicles with season passes do not have to stop at the park entrance), from 3% to 15% of the sample vehicles were missed. Generally, this

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collection box near each "seasonal" sample park exit (with the exception of the data obtained during the few days that parameter information collection took place).

<sup>1</sup>At Holland State Park, the "voluntary deposit" system was not re-activated when the interview team completed the collection of parameter data. Data collection from voluntary deposit within the two weeks immediately prior to the parameter information collection were used in the comparison analysis.

proportion was under 5%, but as the amount of traffic increased, one might suspect that the number of "missed" sample vehicles also increased.

A summary of the number of questionnaires distributed and returned during the "seasonal" testing program is contained in Tables 2 and 3. It appears that there is an inverse relationship between the number of completed, returned questionnaires and the total number of people visiting the park. This may be due to the fact that unlike the low-use parks, the staff in the high-use parks did not have the time to deliver the required motivating message. Also, a small sample included in a large population tends to lose the feeling of "supervised responsibility." There is less risk of "social disapproval" resulting from not handing in the questionnaire (it is easier to lose oneself in the crowd).

Parameter information collection was conducted on the dates outlined in Table 3. Since financial resources were limited and the amount of information that could be obtained at Tawas Point State Park was small, it was decided to curtail parameter information collection at that park and to move the interview team to Holland State Park. Shortly after the arrival of the team at Holland State Park, the weather became cold and windy, and the number of visitors declined drastically. However, over a period of five days, enough data were collected so that the desired analysis could be conducted.

TABLE 2. -- Number of Questionnaires Handed Out, Returned, and Judged Complete Within "Seasonal" Sample Parks (Excluding Parameter Data)

| Park                              | Number of<br>Questionnaires<br>Handed Out | Number of<br>Questionnaires<br>Returned | Per Cent<br>Returned | Number of<br>Questionnaires<br>Completed | Per Cent <sup>1</sup><br>Completed |
|-----------------------------------|-------------------------------------------|-----------------------------------------|----------------------|------------------------------------------|------------------------------------|
| Waterloo State<br>Recreation Area | 1788                                      | 993                                     | 55.5%                | 816                                      | 45.5%                              |
| Tawas Point State Park            | 2919                                      | 2477                                    | 85 %                 | 1176                                     | 47.5%                              |
| Holland State Park                | 2564                                      | 1011                                    | 39.5%                | 888                                      | 34.5%                              |
| Combined Parks Total              | 7261                                      | 4481                                    |                      | 2880                                     |                                    |

<sup>1</sup> This figure obtained by comparing the number of completed questionnaires to the number of questionnaires handed out.

TABLE 3. -- Number of Completed Questionnaires Obtained from  
 "Seasonal" Sample Park Users During Parameter  
 Information Collection

| Park                           | Date      | Voluntary<br>Deposit | Supervised<br>Response |
|--------------------------------|-----------|----------------------|------------------------|
| Waterloo State Recreation Area | August 18 | 231                  | 70                     |
|                                | August 19 | 141                  | 37                     |
| TOTAL                          |           | 372                  | 107                    |
| Tawas Point State Park         | August 21 | 51                   | 6                      |
| Holland State Park             | August 24 | 8                    | 204                    |
|                                | August 25 |                      | 75                     |
|                                | August 26 |                      | 43                     |
|                                | August 27 |                      | 73                     |
|                                | August 28 |                      | 52                     |
| TOTAL                          |           | 8                    | 447                    |
| COMBINED PARKS TOTAL           |           | 431                  | 560                    |



Analysis of the collected data revealed that each park has user characteristics that are "individual" and characteristic of that park alone. It was also evident that even within each park, the characteristics change throughout the season. The visitation time during the season was shown to be closely related to the type of person who used the parks and the way in which the park was used.

The accuracy of information collected by voluntary deposit was determined by comparing the "voluntary" data to the collected parameter information. If the assumption is made that the parameter information is valid, then any statistical difference between the two sets of data would indicate that the "voluntary" data was not accurate. However, because of the circumstances involved during the collection of the parameter information, a great deal of caution must be exercised in analytical interpretation.

Information contained in the questionnaire yielded sixty-three different variables for comparative analysis. The results of this analysis indicated that the accuracy of "voluntary" information was high. Even with the comparatively low amount of return, and with no "follow-up" waves to reduce non-response, the comparison analysis showed very little difference between "voluntary" data and parameter data. At the 95% confidence level there was no significant difference between the two groups except for the few variables outlined in Table 4.

TABLE 4. -- Variables from "Day-User" Questionnaire Information Which Show a Significant Difference in a Comparative Analysis (From Use of Both Analysis of Variance and Chi Square Techniques)

| Park                                                           | Variables                                                                                                             |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Tawas Point State Park<br>(low-intensity use)                  | None                                                                                                                  |
| Waterloo State Recreation Area<br>(intermediate-intensity use) | 1. How many miles, by the most direct route, is this park from your home?                                             |
| Holland State Park<br>(high-intensity use)                     | 1. How many days have you used this park in 1968?<br><br>2. How much time did you spend traveling to this park today? |

The subject matter area in which the voluntary deposit of questionnaires yielded the least accurate information about "day-users" was in the characteristics of travel to the park. The "seasonal" questionnaire contained two questions requesting travel information: "How many miles, by the most direct route, is this park from your home?" and "How much time did you spend traveling to this park today?" In data obtained at Holland State Park the "travel time" question proved to be significantly different in the comparison of "parameter" and "voluntary" information. The "miles traveled" question showed a significant difference in information collected at Waterloo State Recreation Area. Surprisingly, at both of these parks only one of the two travel questions indicated a significant difference. The other travel question, in the case of both parks, provided responses which showed close agreement.

There are two possible causes for the lack of accuracy in the "travel" questions. If the park-using population does not know (or care about) the distance traveled and time taken to reach the park, then the information they provide will not be reliable. Perhaps, when people are engaged in "day-use" activities they are more concerned with enjoyment than they are with travel measurements. The second possibility is that the population receiving interviews is more methodical (or accurate) in arriving at answers to the "travel" questions. An inspection of analysis results shows that the average

information obtained by interview indicates less "distance traveled" and "time taken" than information obtained by voluntary deposit. The presence of the interviewer appears to "trim down" measurements of the distance traveled.

Since there was no "voluntary deposit" information available for Holland State Park after the collection of parameter information, one would expect the variable "How many days have you used this park in 1968?" to show a lack of accuracy. In the other "seasonal" sample parks, the "voluntary deposit" information was "balanced" around the parameter information. This was accomplished by including in the comparison analysis "voluntary information" collected prior to, and immediately after parameter information collection. It was not possible to "balance" "voluntary data" at Holland State Park since no voluntary collection of data took place following parameter information collection. If the park using population consists of individuals who use the park often, an "unbalanced" time comparison would show a significant difference in response to this question. An examination of the data revealed that this, indeed, was the case. Parameter information showed a slight increase in the number of days the park was used when compared to "voluntary deposit" data. This increase was enough to indicate a significant difference between the two sets of data.

It appeared that as the intensity of usage within a particular park increased, there was a decrease in the accuracy of information collected by means of the questionnaire system outlined. It was also noted that in all parks and in all time period comparisons, more variables within the "camper" group were significantly different than among the "day-user" group. This indicates that accurate "day-user" information can be obtained from a smaller sample size than can accurate information about campers. Therefore, when continuous data collection systems are being designed which will collect information from both campers and "day-users," the sample size should be determined for camper information.

The inclusion of a message asking respondents to mail the questionnaire back to a central point, if they have forgotten to deposit it while in the park, appears to increase response by less than 1%.

Sub-hypothesis two, as previously stated, reads:

Questionnaires returned within the proposed dispersal-retrieval system will contain information that does not differ significantly from the parameters of the park-using population of the Michigan State Park System.

From the results of this study phase, it appears that this sub-hypothesis cannot be rejected.

Repetitive Entries. -- The phenomenon of "repetitive entries" was of more importance than had first been suspected. This practice



was more prevalent among campers than among "day-users." The lack of a grocery store within a state park resulted in many campers having to leave the park in order to obtain food supplies. During the period when interview teams were in the parks it was noted that some vehicles left and re-entered the park more than six times per day. Indeed, within some state parks, the traffic on the main thoroughfare resembled a parade. Cars full of youngsters continuously cruised in and out of the park searching for some "action."

The sale and use of "season passes" for entry into parks encouraged the practice of leaving and re-entering. Since it was impractical to determine the "repetitive-entry" vehicle during survey work, the results of all traffic-type surveys will over-represent the "repetitive-entry" population. The extent of this bias will depend upon the relative size of the "repetitive-entry" population, and the difference in characteristics between the general park-using population and the "repetitive-entry" population.

## CHAPTER V

### DETERMINATION OF "BEST" QUESTIONNAIRE AND DISPERSAL-RETRIEVAL SYSTEM

The purpose of this study phase was to attempt to overcome the main problem of the questionnaire survey method--the vital problem of non-response. To accomplish this end, those variables which might affect the number of questionnaires returned were identified. The variables were then tested, one at a time, in order to measure the effect of each on response rates.

#### Determination of Variables Which Might Influence Questionnaire Response

The many factors which combine to influence questionnaire response rate are complex and difficult to isolate for study. As in all research relating to motivations, the examination of these factors is still in a very elementary stage. Little is known other than the most elementary relationships involved, namely, response depends upon the population receiving the questionnaire, the appearance and content of the questionnaire itself, and the circumstances in which the



questionnaire is received and collected. These factors have been discussed in detail in Chapter II.

In order to ascertain the variables that should be tested in this study, a review of factors that had influenced questionnaire response in the past was conducted. Also, a meeting with park and recreation authorities provided information on further factors which might affect amount of return. From these two sources, the variables in Table 5 were outlined as being capable of being tested in this study.

#### Means of Choosing "Best" Alternatives Within Each Variable

Within the context of this study phase, "best" is interpreted to mean that means by which the greatest number of completed questionnaire returns were obtained. To determine the "best" means of minimizing non-response, the alternatives within each variable being tested were outlined and questionnaires were designed utilizing each alternative. For example, if color of paper stock was the variable, the specific colors to be tested (i. e., blue, white, yellow, etc.) were the alternatives within that variable. The other test variables which might affect response were held constant. Therefore, if the questionnaires containing the alternatives of one variable were handed out in a random manner, one could state that the alternative which

TABLE 5. -- Variables Which Might Affect Questionnaire Response and Which Were Capable of Being Tested in This Study

| Variable                          |                                                              | Description of Alternatives                                                                                                                                    |
|-----------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Questionnaire Format (Appearance) |                                                              |                                                                                                                                                                |
| A.                                | i) Folded card<br>vs.                                        | $8\frac{1}{2} \times 11$ inch sheet folded into a $5\frac{1}{2} \times 8\frac{1}{2}$ inch pamphlet                                                             |
|                                   | ii) Flat card                                                | unfolded $8\frac{1}{2} \times 11$ inch sheet                                                                                                                   |
| B.                                | i) "Light" card stock<br>vs.                                 | 24 pound Carnival Kraft colored wrapping paper                                                                                                                 |
|                                   | ii) "Heavy" card stock                                       | index card cover stock                                                                                                                                         |
| C.                                | Color of paper stock                                         | comparison of white, yellow, blue, brown, orange and tan 24 pound Carnival Kraft stock                                                                         |
| D.                                | i) Slotted hole in upper left corner of questionnaire<br>vs. | a slotted hole allowed the respondent to suspend the questionnaire from the instrument panel, thus possibly reducing non-response due to loss or forgetfulness |
|                                   | ii) No slotted hole                                          | no "gimmick"                                                                                                                                                   |

TABLE 5. -- Continued

| Variable              |                                                  | Description of Alternatives                                                                                                                                                      |
|-----------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E.                    | i) Pencil supplied with questionnaire<br>vs.     | Golf pencil supplied                                                                                                                                                             |
|                       | ii) No pencil supplied                           |                                                                                                                                                                                  |
| Questionnaire Content |                                                  |                                                                                                                                                                                  |
| F.                    | Different forms of an activity analysis question | comparison of five different forms of activity analysis questions                                                                                                                |
| G.                    | Different question order                         | comparison of three different orderings of the same questions                                                                                                                    |
| H.                    | i) Folded card questionnaire<br>vs.              | folded $5\frac{1}{2} \times 11$ inch card                                                                                                                                        |
|                       | ii) "Post card" type questionnaire               | a $5 \times 8$ inch post card with one side containing approximately one-quarter of the questions on the folded card type, the other side containing a "please deposit" message. |

TABLE 5. -- Continued

| Variable                    |                                                                                           | Description of Alternatives                                                                                                                                                                                           |
|-----------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dispersal-Retrieval Methods |                                                                                           |                                                                                                                                                                                                                       |
| I.                          | i) Handout at entrance, deposit in collection box at area exit<br>vs.                     | Method of dispersal-retrieval used in "seasonal" phase of study. Questionnaire was "post card" type with "please deposit" message.                                                                                    |
|                             | ii) Handout at entrance, retrieval by deposit in collection box at area exit or mail back | Questionnaire was "post card" type with pre-paid, self-addressed side. Respondent could either deposit in collection box as he left the area or could mail the card at his convenience to the pre-addressed location. |
| J.                          | i) Handout at area entrance, deposit in collection box at exit<br>vs.                     | Method of dispersal-retrieval used in "seasonal" phase of study. Questionnaire was "post card" type with "please deposit" message.                                                                                    |
|                             | ii) Handout at area exit, mail back return                                                | Questionnaire was "post card" type with pre-paid, self-addressed side. Handed out at entrance and at area exits. Deposit boxes were removed and the only means of return is by mail.                                  |

achieved the highest response rate could be said to be "best." A description of all "experimental" questionnaires is contained in Appendix F.

In order to ensure that the results were due to the specific alternative tested and not due to chance, a "reasonably large number" of questionnaires were handed out and statistical techniques of significant differences were employed. The method used to determine whether one particular alternative was actually "better" than another was the "fixed-pair" method of statistical significance:

$$\hat{P}_i = \frac{x_i}{N_i} = \text{proportion of the number of type } i \text{ questionnaires that were completed and returned}$$

$$x_i = \text{number of completed, returned questionnaires of type } i$$

$$N_i = \text{number of type } i \text{ questionnaires handed out}$$

When comparing  $P_i$  and  $P_j$ ,  $\hat{P}_i - \hat{P}_j$  is approximately normally dis-

tributed<sup>1</sup> with mean  $P_i - P_j$  and variance  $\sigma_{ij}^2 = \sigma_i^2 + \sigma_j^2$ , where

$$\sigma_i^2 = \frac{P_i(1 - P_i)}{N_i} \text{ is the variance of } \hat{P}_i \text{ and } \sigma_j^2 = \frac{P_j(1 - P_j)}{N_j} \text{ is the}$$

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<sup>1</sup>For proportions of the magnitude that will be estimated, 30 or more trials will ensure approximate normality.

variance of  $\hat{P}_j$ . Using the fact that  $P(1 - P) \leq \frac{1}{4}$  for all  $0 \leq P \leq 1$ ,

we can conclude that  $\sigma_{ij} \leq \frac{1}{4N_i} + \frac{1}{4N_j}$ .

A 95% confidence interval for  $P_i - P_j$  is  $\left( \hat{P}_i - \hat{P}_j - 1.96 \sqrt{\frac{1}{4N_i} + \frac{1}{4N_j}}, \hat{P}_i - \hat{P}_j + 1.96 \sqrt{\frac{1}{4N_i} + \frac{1}{4N_j}} \right)$  and  $\hat{P}_i$  is significantly different from  $\hat{P}_j$  if this confidence interval fails to include 0. For example, with

$N_i = N_j = 500$ , the 95% confidence interval is  $\left( \hat{P}_i - \hat{P}_j - \frac{1.96}{\sqrt{1000}}, \hat{P}_i - \hat{P}_j + \frac{1.96}{\sqrt{1000}} \right)$  or  $\left( \hat{P}_i - \hat{P}_j - .062, \hat{P}_i - \hat{P}_j + .062 \right)$ , so

there is a significant difference at the 95% confidence level if

$$|\hat{P}_i - \hat{P}_j| > .062.$$

It is known that the answer given to a question depends upon the respondent's interpretation of the question and his ability to answer. Presenting the same question through different methods of data collection may result in different answers, depending upon the interpretation of the question in each context. There is a possibility that the population replying to a particular question on a blue questionnaire may differ from those who answer the same question on a white questionnaire, even if the only difference between the two questionnaires is the color of the paper stock. This variability in response

can be reduced by designing questions so as to be simple to answer and unambiguous.

### Sampling Method

The sampling method used had to provide a sample that was representative of the park-using population. For comparison purposes, enough questionnaires had to be distributed so that the returns would not result in a bias due to choosing a small, select population as the sample. This problem was eliminated by printing and distributing to the sample parks at least five hundred copies of each alternative questionnaire. Since the different questionnaires had to be distributed in a random manner, they were collated together before shipment to the parks. The contact station ranger then handed out the questionnaires in order, beginning at the top of the collated stack.

In an attempt to ensure that the sampling period provided results which were representative of the total park-using population, all tests were scheduled to include at least one weekday and one day of the weekend. Of the total questionnaires to be distributed in the test, 80 per cent were handed out on the weekend day and 20 per cent were handed out on the weekday. These percentages reflected the proportion of people visiting sample parks on weekdays and weekend days.

A further use of proportionate distribution was made in determining the exact number of collated questionnaires to be supplied to each park. A survey of past attendance records for the sample parks revealed that the total number of questionnaires in the test should be distributed as follows: Dodge Brothers #4 State Park--60%, Pinckney State Recreation Area--30%, Harrisville State Park--10%.

The sampling periods during which questionnaires were to be handed out were selected as follows: For each test, the sampling days were divided into morning (8:00 a.m. to noon) and afternoon (noon to 10:00 p.m.). The number of visitors entering parks during these time divisions was approximately equal. A random selection of the hours within each division was used to obtain the starting time for each sampling period. Questionnaires were then handed out until the supply was exhausted. In the case of inclement weather, sampling periods were adjusted so that questionnaire hand-out began as soon as the contact station was open.

One questionnaire was handed to the occupants of each vehicle entering the area during a sampling period. There were two exceptions to this procedure. Due to the small number of questionnaires to be distributed in Test Seven, every second "vehicle" entering the area received a questionnaire during the sampling period.



The investigation of mail back return, which took place in Test Eight, was conducted with questionnaire distribution at the area exit. During sample periods a park ranger was stationed at the area exit and handed prepaid, self-addressed questionnaires to all vehicles leaving the recreation area. Thus, the only means of returning the questionnaire was by mail.

### Implementation of the Testing Schedule

In order to complete the testing of all variables within the summer months, an intensive testing schedule was outlined. This schedule is contained in Table 6.

As in the "seasonal" study phase, all park supervisors from the "experimental" parks attended an orientation meeting prior to the commencement of testing. Sampling and testing techniques were discussed, and the importance of close cooperation was stressed.

Study team members visited the "experimental" sample parks to supervise the installation of signs and collection boxes. Placement of these boxes and signs was identical to that used in the "seasonal" study phase. A "contact" man was chosen, and since this person had to assume a great deal of responsibility, much time was spent outlining sampling, testing and analysis procedures. The "contact" man was instructed to immediately contact study team

TABLE 6. -- Schedule of "Experimental" Tests

| Test | Dates                                                                     | Variables Tested                                                                                                                                         |
|------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Friday, July 12, 1968<br>Saturday, July 13, 1968<br>Sunday, July 14, 1968 | A - Folded vs. unfolded card<br>B - "Light" card stock vs. "heavy" card stock<br>D - Slotted hole vs. no hole                                            |
| 2    | Friday, July 19, 1968<br>Saturday, July 20, 1968                          | F - Different activity analysis questions                                                                                                                |
| 3    | Sunday, July 21, 1968<br>Monday, July 22, 1968                            | E - Pencil vs. no pencil enclosed                                                                                                                        |
| 4    | Friday, July 26, 1968<br>Saturday, July 27, 1968                          | C - Color of paper stock                                                                                                                                 |
| 5    | Sunday, July 28, 1968<br>Monday, July 29, 1968                            | H - "Regular" length vs. post card length (hand-in)<br>I - "Regular" length vs. post card length (hand-in and mail-back)<br>D - Slotted hole vs. no hole |

TABLE 6. -- Continued

| Test | Dates                                               | Variables Tested                                                                                             |
|------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 6    | Friday, August 2, 1968<br>Saturday, August 3, 1968  | G - Different question orders                                                                                |
| 7    | Sunday, August 4, 1968                              | Test of response to "seasonal" questionnaire. The results were used as a basis for comparison in variable J. |
| 8    | Friday, August 9, 1968<br>Saturday, August 10, 1968 | J - Mail-back return vs. hand-in return                                                                      |

members by telephone if there was any doubt about testing procedures. To ensure that the data collection system was functioning correctly, study team members were present in all sample parks during the first "experimental" test. Throughout the remaining tests unannounced visits were made to sample parks in order to assess the success of testing procedures.

The weekly administrative procedure during the series of experiments was as follows: Questionnaires utilizing the alternatives to be tested on the following weekend were designed on Sunday. On Monday, the "photo-ready" questionnaire designs were delivered to the printer who generally had the desired number of copies prepared before Tuesday afternoon. The questionnaires were then rushed to the study center where park identification numbers and the date were stamped on them. Following collation of the different questionnaires within each test, they were counted, sorted and prepared for shipment. A set of instructions outlining sampling procedures, questionnaire identification, and the recording of results were enclosed within each shipment package. A set of typical park instructions is enclosed in Appendix E. The "experimental" sample parks received the packaged questionnaires on Thursday afternoon in preparation for hand-out during the testing periods. At the completion of each test, the returned questionnaires were forwarded by the park staff to the study center for analysis.

### Analysis of Data

As questionnaires were returned to the study center they were examined for completeness of response.<sup>1</sup> Using the statistical methods previously outlined in this chapter, the significance of each variable was calculated.

In order to determine whether the population completing one particular type of questionnaire differed from the population completing another type of questionnaire (within the same experimental test), a comparative analysis was conducted. The responses to the five different questionnaires in experimental Test 2 were compared using the analysis of variance and chi square techniques previously described in Chapter IV. The comparison would reveal differences in response between the different questionnaire types and would also reveal differences in response among the different "experimental" sample parks.

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<sup>1</sup>The criteria used to judge completeness of response was the same criteria used in the "seasonal" study phase. In Tests 1, 3, and 4 all questionnaires which were returned were judged to be complete. In these particular tests, the variables being investigated did not affect the actual content of the questionnaires. Therefore, there was no reason to suspect that there would be a difference between proportion of questionnaires returned and proportion of questionnaires completed.

### Results and Conclusions

All of the experimental tests were conducted as scheduled, and no major difficulties occurred during the testing program.

A summary of the number of questionnaires that were handed out, completed and returned is included in Appendix G. It is apparent that, similar to the results of the "seasonal" study phase, as the number of people visiting the park increases the proportion of completed, returned questionnaires decreases. The average proportion of completed, returned questionnaires to the number of questionnaires handed out was highest at Harrisville State Park (low-intensity usage). Pinckney State Recreation Area (intermediate-intensity usage) had the next highest proportion and Dodge Brothers #4 State Park (high-intensity usage) had the least number of questionnaires completed when compared to the total number of questionnaires handed out.

Of the total number of questionnaires returned, approximately one-quarter were incomplete. Therefore, they were not included in the analysis. Depending upon the degree of rigor used in judging completeness, from 10 per cent to 25 per cent of the total questionnaires returned in similar surveys will probably be lost from analysis.

The percentage of questionnaires returned to number of questionnaires handed out varied from 48 per cent to 32.5 per cent

(excluding Test 8--the mail-back test--in which 15.5 per cent were returned). As the testing schedule progressed, the average number of returned questionnaires decreased slightly. This may be due to the length of the testing schedule. Since tests were conducted every week-end for five consecutive weeks, there is a good possibility that some park visitors received two or more questionnaires during the testing period. If an individual completed the first questionnaire he received, it is likely that the motivation to complete additional similar questionnaires was less for each succeeding questionnaire.

The proportion of questionnaires completed to the number of questionnaires handed out varied between 31.5 per cent and 24.5 per cent (excluding Test 8--the mail-back test--in which 15.5 per cent were returned and completed).

The results of the significance testing of variables are expressed in Table 7. All calculations were made at the 95 per cent confidence level following the procedure outlined earlier in this chapter. Of the total number of variables tested, only three alternatives exhibited a variance which was significant at the 95 per cent level of confidence. However, several other variables approached this significance level. The general conclusion one might draw from this is that park users appear to be of two general types when considering questionnaire completion: one type of park user will complete a

TABLE 7. -- Results of the Testing of "Experimental" Variables

| Test <sup>a</sup> | Variable               | Questionnaire Identification | Number of Questionnaires Handed Out | Number of Questionnaires Completed | Calculation of P <sup>c</sup> | Significance at 95% Level |
|-------------------|------------------------|------------------------------|-------------------------------------|------------------------------------|-------------------------------|---------------------------|
| 1                 | A. vs.<br>Folded card  | 1-1-1                        | 2316                                | 1100                               | .475                          | No                        |
|                   |                        | 1-1-2                        |                                     |                                    |                               |                           |
|                   |                        | 1-1-3                        |                                     |                                    |                               |                           |
|                   |                        | 1-1-4                        |                                     |                                    |                               |                           |
| 1                 | Unfolded card          | 1-2-1                        | 2316                                | 1119                               | .485                          | No                        |
|                   |                        | 1-2-2                        |                                     |                                    |                               |                           |
|                   |                        | 1-2-3                        |                                     |                                    |                               |                           |
|                   |                        | 1-2-4                        |                                     |                                    |                               |                           |
| 1                 | D. vs.<br>Slotted hole | 1-1-3                        | 1737                                | 861                                | .496 <sup>b</sup>             | No                        |
|                   |                        | 1-2-1                        |                                     |                                    |                               |                           |
|                   |                        | 1-2-3                        |                                     |                                    |                               |                           |
|                   |                        | 1-1-4                        |                                     |                                    |                               |                           |
| 1                 | No hole                | 1-2-2                        | 1737                                | 821                                | .473                          | No                        |
|                   |                        | 1-2-3                        |                                     |                                    |                               |                           |

<sup>a</sup> For detailed test schedule refer to Table 6.<sup>b</sup> Differences in P result from the fact that all questionnaires returned in Test 1 were considered complete. In subsequent tests, these returned questionnaires were examined for completeness of response.<sup>c</sup> See page 97 for description.



TABLE 7. -- Continued

| Test | Variable                          | Questionnaire Identification | Number of Questionnaires Handed Out | Number of Questionnaires Completed | Calculation of P | Significance at 95% Level |
|------|-----------------------------------|------------------------------|-------------------------------------|------------------------------------|------------------|---------------------------|
| 5    | Slotted hole                      | 4-1-1                        | 387                                 | 124                                | .320             | No                        |
|      | D. vs. No hole                    | 4-1-2                        | 387                                 | 119                                | .307             |                           |
| 6    | Different question order          | 5-1-3                        | 396                                 | 172                                | .434             | No                        |
|      |                                   | 5-1-1                        | 396                                 | 168                                | .424             |                           |
|      |                                   | 5-1-2                        | 396                                 | 156                                | .394             |                           |
| 5    | "Regular" length                  | 4-1-2                        | 387                                 | 119                                | .307             | No                        |
|      | H. vs. Post card length (hand in) | 2-4-1<br>2-4-2<br>2-4-3      | 1161                                | 392                                | .338             |                           |

TABLE 7. -- Continued

| Test  | Variable                                     | Questionnaire Identification      | Number of Questionnaires Handed Out | Number of Questionnaires Completed | Calculation of P | Significance at 95% Level |
|-------|----------------------------------------------|-----------------------------------|-------------------------------------|------------------------------------|------------------|---------------------------|
| 5     | I. "Regular" length                          | 4-1-2                             | 387                                 | 119                                | .307             | No                        |
|       | vs. Post card length (hand in and mail back) | 2-5-1<br>2-5-2<br>2-5-3           | 1161                                | 363                                | .313             |                           |
| 7 & 8 | Hand in return                               | Test 7<br>5-1-1<br>2-1-1          | 1000                                | 349                                | .349             | Yes                       |
|       | J. vs. Mail back return                      | Test 8<br>2-5-1<br>2-5-2<br>2-5-3 | 1500                                | 231                                | .154             |                           |

TABLE 7. -- Continued

| Test | Variable                  | Questionnaire Identification     | Number of Questionnaires Handed Out | Number of Questionnaires Completed | Calculation of P | Significance at 95% Level |
|------|---------------------------|----------------------------------|-------------------------------------|------------------------------------|------------------|---------------------------|
| 1    | "Heavy" card stock        | 1-1-3<br>1-1-4<br>1-2-3<br>1-2-4 | 2316                                | 1154                               | .498             | Yes                       |
|      | B. vs. "Light" card stock | 1-1-1<br>1-1-2<br>1-2-1<br>1-2-2 | 2316                                | 1065                               | .460             |                           |
| 3    | Pencil enclosed           | 2-1-1W                           | 500                                 | 240                                | .480             | Yes                       |
|      | E. vs. No pencil          | 2-1-1N                           | 500                                 | 163                                | .326             |                           |

TABLE 7. -- Continued

| Test | Variable                                    | Questionnaire Identification | Number of Questionnaires Handed Out | Number of Questionnaires Completed | Calculation of P | Significance at 95% Level |
|------|---------------------------------------------|------------------------------|-------------------------------------|------------------------------------|------------------|---------------------------|
| 4    | C.<br>Color of paper stock                  | Blue                         | 273                                 | 159                                | .582             | No                        |
|      |                                             | White                        | 274                                 | 158                                | .577             |                           |
|      |                                             | Brown                        | 273                                 | 157                                | .575             |                           |
|      |                                             | Tan                          | 273                                 | 153                                | .560             |                           |
|      |                                             | Yellow                       | 273                                 | 147                                | .538             |                           |
|      |                                             | Orange                       | 273                                 | 141                                | .516             |                           |
| 2    | F.<br>Different activity analysis questions | 2-3-5                        | 357                                 | 161                                | .451             | No                        |
|      |                                             | 2-3-2                        | 358                                 | 152                                | .425             |                           |
|      |                                             | 2-1-1                        | 356                                 | 146                                | .410             |                           |
|      |                                             | 2-3-4                        | 357                                 | 142                                | .398             |                           |
|      |                                             | 2-3-3                        | 356                                 | 138                                | .388             |                           |

questionnaire without being unduly influenced by the appearance and content of the questionnaire itself; the other type of park user tends to ignore the questionnaire in spite of different changes made in questionnaire appearance and content.

Based upon the results of this analysis, the questionnaire that would obtain the largest amount of response would have the following characteristics (ranked in descending order of importance with regards to questionnaire completion):

1. The questionnaire would be handed out at the entrance to the recreation area and would be collected by means of a deposit box at the recreation area exit.
2. A pencil would be supplied with the questionnaire in order to facilitate completion.
3. The questionnaires would be printed on a "heavy" card stock.
4. The color of the questionnaire should be, in order of preference: blue, white, brown, tan, yellow, and orange.
5. The questions concerned with activity analysis should be constructed according to the following preference ranking:<sup>1</sup>  
2--3--5, 2--3--2, 2--1--1, 2--3--4, and then 2--3--3. From these

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<sup>1</sup>See Figure 11 for illustrations of the activity analysis questions.

results it appears that a closed, structured approach to collecting activity information would tend to obtain the largest amount of completed response.

The small difference in return between the regular length questionnaire and the post card length would indicate that as long as the questionnaire appears to be short in length, response will not be affected.

When a "voluntary deposit" retrieval system is used in a park, the provision for pre-paid mailing of the questionnaire after leaving the park appeared to decrease the number of questionnaires returned. This could be due to the fact that respondents saw that they had an alternative way of returning the questionnaire. (It does not necessarily have to be completed while they were in the park.) The questionnaire was then carried from the park and, in spite of good intentions to complete and return it, the card was then forgotten or mislaid.

The inclusion of a slotted hole in the questionnaire did not appear to increase the response rate enough to warrant its additional expense.

The results of the analysis of variance and chi square investigation of Experimental Test 2 (determination of "best" activity analysis question) indicated that there were no significant differences

in the responses to the five different questionnaires. This comparative analysis was conducted to determine whether particular questionnaires "attract" responses from different segments of the park-using population. It appeared that despite the content and appearance of different questionnaires (if the compared questionnaires were reasonably similar), the populations completing the questionnaires possessed similar characteristics.

Sub-hypothesis one is stated as follows:

Through a process of trial and selective elimination, a questionnaire and dispersal-retrieval system can be designed which will obtain a greater number of usable completed responses than other questionnaires tested under similar conditions.

The results of this study phase indicate that sub-hypothesis one cannot be rejected. Testing of ten variables which might have affected response proved that by changing questionnaire design, content and dispersal-retrieval, response rates can be altered. On the basis of the experimental testing of each variable, it was a simple task to choose the particular alternative that received the greatest number of completed responses.

## CHAPTER VI

### RECOMMENDATIONS

The recommendations that follow apply generally to recreation survey research. Specific recommendations directed to the Michigan State Park system are included under a separate sub-heading later in this chapter.

#### General Recommendations

1. Continuous data collection systems should be implemented in all park and recreation areas. As the number of potential recreation sites declines, and the use-intensity of present sites increases, more pressure will be brought upon park and recreation agencies to provide leisure opportunities. This increased pressure is already becoming apparent in the general interest displayed by the public towards park and recreation agencies, e.g., public interest in the use of a recent Michigan recreation bond. Under these conditions, the park planners and administrators must have accurate data on which to base the decision-making process. Usually, the most valuable data is that which reveals "trends" in user



characteristics and characteristics of facility usage. This type of information probably provides the best present indication of probable future demand.

2. When recreation area "day-use" information is desired (on a continuous basis), a questionnaire data collection system of the type described in this study should be used. At the 95 per cent level of confidence, information collected by voluntary deposit of questionnaires showed little significant difference from collected parameter information. The one area in which a small significant difference was noted was in the answers to questions concerned with travel time and distance. In spite of the inconsistencies noted in the answers to the travel questions, one trend was detected. Information collected by voluntary deposit of questionnaires showed slightly more "travel time" and "miles traveled" than did parameter information. In future questionnaire surveys when travel information is desired, the respondent should be asked for both "mileage traveled" and "travel time." Based on the results of this study, if the response to one of the questions proves inaccurate, responses to the other travel question will likely yield the desired information.

A questionnaire data collection system similar to the type described in this study can usually be implemented for a fraction of the cost of a comparable interview data collection system.

3. When "day-user" information is to be collected by means of a questionnaire, the questionnaire should be handed out at the area entrance, and collected by voluntary deposit at the area exit. This type of questionnaire dispersal-retrieval was more than twice as effective as a similar "mail-back" system tested.

4. All aspects of the survey system should be coordinated so as to provide a central theme or "motivational continuum" for the research project. If the same colors, language, survey symbols (e. g. , silhouette of a picnic table) can be used on all components of the survey system, the opportunity to associate components is increased. It is believed that the coordination of survey components was a major reason for the relatively high proportion of questionnaire completion in this investigation.

5. When designing a questionnaire and dispersal-retrieval system, every effort must be made to avoid possible non-response. Based upon the results of this analysis, the questionnaire that would obtain the largest amount of response would have the following characteristics (ranked in descending order of importance with regards to questionnaire completion):

a. A pencil would be supplied with the questionnaire in order to facilitate completion.

b. The questionnaires would be printed on a "heavy" card stock.

c. The color of the questionnaire would be, in order of preference: blue, white, brown, tan, yellow, and then orange.

d. Questions dealing with analysis of activities would be highly structured. Answer categories would be "closed," perhaps in the form of "simple" graphs.

e. The questionnaire should "appear" to be of short length. The amount of material contained in a questionnaire does not seem to affect response as much as the appearance of being brief.

6. Better guidelines on the precision, reliability and validity of recreation research should be established. It is suggested that future recreation research be conducted at the 95 per cent level of statistical confidence. When calculating sample size, the estimation error should be no greater than .05 at the 95 per cent confidence level. Unless a concentrated effort is made to raise the standards of research within the field, even less attention will be paid to future research than has been the case in the past.

7. Whenever a data collection system utilizing a questionnaire is being conducted, a further test (by means of the interview technique) should be made to determine the accuracy of collected information. In most circumstances, the amount of effort involved

in an additional interview accuracy-test is worth the trouble and cost. Too often, collected data is accepted as being 100 per cent accurate when this is in reality not the case. All data has limitations and if these limitations can be carefully and concisely outlined, the collected data can be used with more confidence.

One interview-test per season should be sufficient to ascertain the accuracy of information collected by questionnaire. This is assuming that there are no drastic changes in the questionnaire content or design, the questionnaire dispersal-retrieval, the park itself, or in the population using the park.

8. Further investigation should be made of the I. B. M. optical scan process. This method uses the reflection of light from a heavy lead pencil mark to produce a data processing (computer) card. Theoretically, any base material that does not also reflect light could be used as a questionnaire "base." If a questionnaire could be designed that could be read electronically, with no intermediate coding stage, survey research could be performed at a great financial saving.

9. Whenever possible additional staff members should be used to conduct survey research. It is suspected that one of the main reasons for the high proportion of returned questionnaires in the low-use parks was that the park staff member could devote more time

to "selling" each potential respondent on the importance of the research. Additional staff members, with sole responsibility to the survey research project, could take the time for an enthusiastic motivating message without worrying about the other responsibilities of a contact station ranger. Also, special staff members could be trained in research methods, thus helping to ensure the validity and reliability of collected information.

10. Survey researchers should give more attention to the determination of the method of data collection that best meets their needs. As more expertise in research methodology develops, and as more financial support is made available for research, this problem will likely be eliminated.

11. Further research needs to be undertaken to check the validity of the collected information.

#### Recommendations to the Michigan State Park System

1. There appears to be a growing trend to use state park and recreation areas throughout the entire year, rather than merely for the short summer season. In order to ascertain use and user characteristics of this segment of the park-using population, continuous data collection systems should extend through the entire year.

2. The entrances and contact stations in the majority of state parks do not lend themselves to a user survey. There are usually no distinct separate entrance lanes for vehicles with season entry passes or for those "vehicles" purchasing daily entry permits. Traffic congestion makes traffic survey research difficult. All vehicles entering the park should come to a full stop. On the other hand, if a "vehicle" possessing an entrance permit can drive directly into the park without having to stop, any type of sampling or survey procedure is difficult. At present, the task of the contact station ranger is difficult even when a survey is not being conducted. When a visitor is at the contact station purchasing a permit, the ranger has to virtually ignore the other vehicles driving directly into the park.

3. More attention should be given to the construction of adequate contact stations at park area entrances. If there were two entrance traffic lanes and the contact station was located between them, more control could be exercised over incoming traffic.

Better communications between the park administrative office and the contact station should be established. In most parks, if any problems arise at the area entrance the ranger must leave the contact station to render assistance. Passing motorists must be depended upon to notify other rangers. If the door to the contact station was located either in the front or side, the ranger could

leave the station without losing sight of the traffic or the front counter (and his cash box) in the station.

4. More effective means of obtaining counts of all vehicles entering the park should be installed. A number of state parks do not have an accurate count of the number of vehicles admitted. Determination of sample size depends upon an accurate count of vehicles entering recreation areas.

## SELECTED BIBLIOGRAPHY



## SELECTED BIBLIOGRAPHY<sup>1</sup>

### Books and Periodicals

- Bachrack, Stanley D., and Scoble, Harry M. "Mail Questionnaire Efficiency: Controlled Reduction of Nonresponse." Public Opinion Quarterly, XXXI (January, 1967), 265-271. (Q)
- Backstrom, Charles H., and Hursh, Gerard B. Survey Research. Evanston: Northwestern University Press, 1963.
- Bauer, Raymond A. "Social Indicators and Sample Surveys." Public Opinion Quarterly, XXX (February, 1966), 343-345. (C)
- Cannell, Charles F., and Fowler, Floyd J. "Comparison of a Self-Enumerative Procedure and a Personal Interview: A Validity Study." Public Opinion Quarterly, XXVII (1963), 250-264. (C)
- Clawson, Marion. Land and Water for Recreation: Opportunities, Problems, and Policies. Chicago: Rand, McNally and Company, 1963.
- \_\_\_\_\_, and Knetsch, Jack L. Economics of Outdoor Recreation. Baltimore: The Johns Hopkins Press, 1966.
- Cochran, William G. Sampling Techniques. New York: John Wiley and Sons, 1964.

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<sup>1</sup>The letter in parentheses immediately following research reports refers to the research method used to obtain data, i. e. (O) = Observation, (I) = Interview, (Q) = Questionnaire, and (C) = Combination of research methods.

- Colfax, David J., and Allen, Irving L. "Pre-coded vs. Open-ended Items and Children's Reports of Father's Occupation." Sociology of Education, XL (January, 1967), 96-98. (C)
- Deming, W. E. "On Errors in Surveys." American Sociological Review, IX (1944), 359-369.
- Doxiadis, Constantinos A. Emergence and Growth of an Urban Region. Detroit: The Detroit Edison Company, 1967.
- Festinger, Leon, and Katz, Daniel. Research Methods in the Behavioral Sciences. New York: Holt, Rinehart and Winston, 1966.
- Good, Carter V., and Scates, Douglas E. Methods of Research. New York: Appleton-Century-Crofts, Inc., 1954.
- Gorgen, Kenneth J., and Back, Kurt W. "Communication in the Interview and the Disengaged Respondent." Public Opinion Quarterly, XXX (Fall, 1966), 385-387. (I)
- Kerlinger, Frederick N. Foundations of Behavioral Research. New York: Holt, Rinehart, and Winston, 1967.
- Knudson, Dean D. "Response Differences to Questions on Sexual Standards: An Interview-Questionnaire Comparison." Public Opinion Quarterly, XXXI (1967), 290-297. (C)
- Mendenhall, William. Introduction to Probability and Statistics. Belmont: Wadsworth Publishing Co., 1967.
- Moser, C. A. Survey Methods in Social Investigation. London: Heinemann Educational Books Ltd., 1958.
- Parten, Mildred. Surveys, Polls, and Samples: Practical Procedures. New York: Harper and Brothers, 1950.
- Reissman, Leonard. Class in American Society. New York: The Free Press, 1959.
- Riley, Matilda White. Sociological Research: A Case Approach. New York: Harcourt, Brace, and World, Inc., 1963.

Selltiz, Claire; Jahoda, Marie; Deutsch, Morton; and Cook, Stuart W. Research Methods in Social Relations. New York: Holt, Rinehart and Winston, 1967.

Sessions, Frank Q.; Epley, Robert J.; and Moe, Edward O. "The Development, Reliability, and Validity of an All-Purpose Optical Scanner Questionnaire Form." Public Opinion Quarterly, XXX (1966), 423-428. (Q)

#### Public Documents and Reports

Chubb, Michael. Outdoor Recreation Planning in Michigan. Report for Michigan Department of Conservation. Lansing: Michigan Department of Conservation, 1967.

Clawson, Marion, and Knetsch, Jack L. "Recreation Research: Some Basic Analytical Concepts and Suggested Framework for Research Problems." Proceeding of the National Conference on Outdoor Recreation Research. Ann Arbor, Michigan, 1963, 9-42.

Detroit Metropolitan Area Regional Planning Commission. Home Survey of Regional Recreation Activities. Detroit: Detroit Metropolitan Area Regional Planning Commission, 1959. (Q)

\_\_\_\_\_. Park Users Survey: A Survey of Persons Using Eight Selected Regional Parks in the Detroit Region. Detroit: Detroit Metropolitan Area Regional Planning Commission, 1959. (Q)

Hirsch, M. Lower Fort Garry National Historic Park Visitor Use Study. Canada: Department of Indian Affairs and Northern Development, April, 1967. (O)

James, George A., and Henley, Robert K. Sampling Procedure for Estimating Mass and Dispersed Types of Recreation Use on Large Areas. Asheville: U. S. Department of Agriculture, Forest Service, March, 1968.

James, George A., and Taylor, Gordon D. "Recreation Use Estimation in the United States and Canada." XIV IUFRO-KONGRESS. Section 26. (Munchen, 1967), 15-29.

King, David A. Characteristics of Family Campers Using the Huron-Manistee Natural Forests. St. Paul: U.S. Department of Agriculture, 1965. (I)

Mutch, W. E. S. Public Recreation in National Forests: A Factual Survey. Forestry Commission Booklet No. 21. London: Her Majesty's Stationery Office, 1968. (I)

New Jersey Department of Conservation and Economic Development. New Jersey State Park Visitor Use Survey 1966-1967. State of New Jersey: Department of Conservation and Economic Development, 1968. (I)

Nixon, H. N. Banff National Park: Aspects of Visitor Use. Canada: National Parks Service--Planning, Department of Indian Affairs and Northern Development, March, 1967. (I)

\_\_\_\_\_. Prince Albert National Park Visitor Use Survey. Canada: National Parks Service--Planning, Department of Indian Affairs and Northern Development, January, 1968. (I)

\_\_\_\_\_. Riding Mountain National Park Visitor Pattern Survey. Canada: National Parks Service--Planning, Department of Indian Affairs and Northern Development, June, 1968. (C)

North Central Texas Council of Governments. A Parks Appraisal. Texas: Texas Technological College, School of Agriculture, 1968.

Ontario Department of Lands and Forests. Ontario Park User Survey--Methodology and Results. Toronto: Department of Lands and Forests, 1967. (I)

Outdoor Recreation Resources Review Commission. National Recreation Survey. Study Report 19. Washington, D.C.: U.S. Government Printing Office, 1962. (I)

\_\_\_\_\_. Outdoor Recreation Literature: A Survey. Study Report 27. Washington, D.C.: U.S. Government Printing Office, 1962.

\_\_\_\_\_. Participation in Outdoor Recreation: Factors Affecting Demand Among American Adults. Study Report 20. Washington, D.C.: U.S. Government Printing Office, 1962. (I)

\_\_\_\_\_. The Quality of Outdoor Recreation: As Guidance by User-Satisfaction. Study Report 5. Washington, D.C.: U.S. Government Printing Office, 1962. (C)

Taylor, Gordon D. Techniques in the Evaluation of Recreation Use. Ottawa: Department of Indian Affairs and Northern Development, 1967.

Thorsell, J. W. A Trail Use Survey--Banff and Yoho National Parks. Canada: National Parks Service--Planning, National and Historic Parks Branch, Department of Indian Affairs and Northern Development, February, 1968.

\_\_\_\_\_. Waterton Lakes National Park Visitor Use Survey. Canada: National Parks Service--Planning, Department of Indian Affairs and Northern Development, March, 1968.

U.S. Department of Commerce. Tourism and Recreation: A State of the Art Study. A report prepared by Arthur D. Little, Inc., Washington, D.C.: Government Printing Office, 1967.

#### Other Sources

Crane, Dale A. "Progress Report, Presented to Conference on Methods of Demand Analysis for Fishing, Hunting, and Other Outdoor Recreation Activities." Washington, D.C., February 27-28, 1967.

Jackson, Robert Morton. "Differential Value of the Mailed Questionnaire and the Interview in a Follow-up Study of High School Graduates." Unpublished Ph.D. dissertation, University of Wisconsin, 1959.

Shafer, Elwood Lewis, Jr. "Effects of Sampling, Location, Period, and Method on Camper Survey Results." Unpublished Ph.D. dissertation, State University College of Forestry at Syracuse University, 1966.

## APPENDICES

## APPENDIX A

### "SEASONAL" QUESTIONNAIRE

|                                                                 |                                                                                      |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <p><b>HANG THIS NEAR YOUR STEERING WHEEL AS A REMINDER.</b></p> | <p><b>PLEASE FILL OUT THIS PARK-USE CARD</b></p> <p><b>* HELP PLAN YOUR PARK</b></p> |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------|

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 THIS VEHICLE?  
(Check one)
 

|                                                        |                                                                       |
|--------------------------------------------------------|-----------------------------------------------------------------------|
| a. <input type="checkbox"/> one family with children   | e. <input type="checkbox"/> organized group (troop, team, club, etc.) |
| b. <input type="checkbox"/> two families with children | f. <input type="checkbox"/> one person alone                          |
| c. <input type="checkbox"/> one couple only            | g. <input type="checkbox"/> group of friends                          |
| d. <input type="checkbox"/> two or more couples        | h. <input type="checkbox"/> other (write in) _____                    |
- 4 WHAT ARE THE AGES OF THE PEOPLE IN THIS 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. <input type="checkbox"/> sightseeing from car only                       | b. <input type="checkbox"/> water skiing         | q. <input type="checkbox"/> games and team sports              |
| c. <input type="checkbox"/> walking to scenic points                        | i. <input type="checkbox"/> skin or scuba diving | r. <input type="checkbox"/> trail hiking                       |
| d. <input type="checkbox"/> picnicking                                      | j. <input type="checkbox"/> motorboating         | s. <input type="checkbox"/> horseback riding                   |
| e. <input type="checkbox"/> looking at plants, animals or birds for a hobby | k. <input type="checkbox"/> sailing              | t. <input type="checkbox"/> listening to ranger talks          |
| f. <input type="checkbox"/> swimming                                        | l. <input type="checkbox"/> canoeing             | u. <input type="checkbox"/> taking guided tours                |
| g. <input type="checkbox"/> wading                                          | m. <input type="checkbox"/> rowboating           | v. <input type="checkbox"/> visiting museums or nature centers |
| h. <input type="checkbox"/> sunbathing                                      | n. <input type="checkbox"/> boat fishing         | w. <input type="checkbox"/> relaxing                           |
|                                                                             | o. <input type="checkbox"/> bank fishing         | x. <input type="checkbox"/> photography                        |
|                                                                             | p. <input type="checkbox"/> fishing (wading)     |                                                                |
- 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 accidentally 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

## APPENDIX A

### "SEASONAL" QUESTIONNAIRE

Unfolded--Showing Front and Back Pages  
 (Actual Size 8½ Inches × 11 Inches)



| <p><b>5</b> WHAT KIND OF VISIT IS THIS FOR YOUR GROUP? (Check one)</p> <p>a. <input type="checkbox"/> one day outing or trip    d. <input type="checkbox"/> part of an overnight trip</p> <p>b. <input type="checkbox"/> part of a major annual vacation    e. <input type="checkbox"/> part of a combined business trip and vacation</p> <p>c. <input type="checkbox"/> part of two or more shorter vacations    f. <input type="checkbox"/> other _____ (write in)</p> <hr/> <p><b>6</b> WHERE IS YOUR PRESENT HOME? (Exact street address not required)</p> <p>----- Town or City ----- County ----- State -----</p> <hr/> <p><b>7</b> WHAT IS YOUR ZIP CODE? -----</p> <hr/> <p><b>8</b> HOW MUCH TIME DID YOU SPEND TRAVELING TO THIS PARK TODAY? (NOT INCLUDING "STOPOVER" TIME ALONG THE WAY.)</p> <p>----- Hours ----- Minutes -----</p> <hr/> <p><b>9</b> HOW MANY MILES, BY THE MOST DIRECT ROUTE, IS THIS PARK FROM YOUR HOME?</p> <p>----- Miles -----</p> <hr/> <p><b>10</b> WHAT IS THE SEX AND APPROXIMATE AGE OF THE "HEAD OF YOUR FAMILY"?</p> <p>TO BE    AGE? ----- years    SEX? <input type="checkbox"/> male <input type="checkbox"/> female</p> <hr/> <p><b>11</b> WHAT DOES THE "HEAD OF YOUR FAMILY" DO FOR A LIVING?</p> <p>----- Occupation (write in) -----</p> <hr/> <p><b>12</b> WHICH OF THE ANSWERS BELOW BEST INDICATES THE TOTAL NUMBER OF YEARS OF EDUCATION COMPLETED BY THE "HEAD OF YOUR FAMILY"? (Check one answer)</p> <p><input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12</p> <p><input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 or more</p> <hr/> <p><b>13</b> WHICH OF THE FOLLOWING BEST DESCRIBES THE TOTAL INCOME OF YOUR FAMILY LAST YEAR (Check one)</p> <p>a. <input type="checkbox"/> under \$3,000    e. <input type="checkbox"/> \$10,000-\$14,999</p> <p>b. <input type="checkbox"/> \$3,000-\$5,999    f. <input type="checkbox"/> \$15,000-\$24,999</p> <p>c. <input type="checkbox"/> \$6,000-\$7,999    g. <input type="checkbox"/> \$25,000 and over</p> <p>d. <input type="checkbox"/> \$8,000-\$9,999</p> | <p><b>14</b> HOW MANY DAYS HAVE YOU USED THIS PARK IN 1968?</p> <p>a. <input type="checkbox"/> this is the first park visit    e. <input type="checkbox"/> 13-16 days</p> <p>b. <input type="checkbox"/> 1-4 days    f. <input type="checkbox"/> 17-20 days</p> <p>c. <input type="checkbox"/> 5-8 days    g. <input type="checkbox"/> 21-24 days</p> <p>d. <input type="checkbox"/> 9-12 days    h. <input type="checkbox"/> over 24 days</p> <hr/> <p>HOW MANY DAYS HAVE YOU USED THE VARIOUS PARK SYSTEMS BELOW IN 1968? CHECK ONE ANSWER FOR EACH PARK SYSTEM.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">Park System</th> <th style="text-align: center;">None</th> <th style="text-align: center;">1-3 days</th> <th style="text-align: center;">4-10 days</th> <th style="text-align: center;">11-20 days</th> <th style="text-align: center;">21-30 days</th> <th style="text-align: center;">over 30 days</th> </tr> <tr> <td><b>15</b> CITY</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td><b>16</b> COUNTY and METROPOLITAN</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td><b>17</b> STATE</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td><b>18</b> NATIONAL</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table> <hr/> <p><b>19</b> WHAT TIME DID YOU ENTER THIS PARK? (Check one)</p> <p>a. <input type="checkbox"/> 8:00-10:00 a.m.    e. <input type="checkbox"/> 4:00-6:00 p.m.</p> <p>b. <input type="checkbox"/> 10:00-noon    f. <input type="checkbox"/> 6:00-8:00 p.m.</p> <p>c. <input type="checkbox"/> noon-2:00 p.m.    g. <input type="checkbox"/> 8:00-10:00 p.m.</p> <p>d. <input type="checkbox"/> 2:00-4:00 p.m.</p> <hr/> <p><b>20</b> WHY DID YOU CHOOSE THIS PARK RATHER THAN A DIFFERENT ONE?</p> <p>-----</p> <hr/> <p>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.</p> <hr/> <p><b>21</b> HOW MANY HOURS DID YOU SPEND IN THIS PARK TODAY? (Check one)</p> <p>a. <input type="checkbox"/> 2 hours or less    e. <input type="checkbox"/> 8-10 hours</p> <p>b. <input type="checkbox"/> 2-4 hours    f. <input type="checkbox"/> 10-12 hours</p> <p>c. <input type="checkbox"/> 4-6 hours    g. <input type="checkbox"/> 12 hours or more</p> <p>d. <input type="checkbox"/> 6-8 hours</p> | Park System              | None                     | 1-3 days                 | 4-10 days                | 11-20 days               | 21-30 days | over 30 days | <b>15</b> CITY | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <b>16</b> COUNTY and METROPOLITAN | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <b>17</b> STATE | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <b>18</b> NATIONAL | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| <b>15</b> CITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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| <b>16</b> COUNTY and METROPOLITAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| <b>17</b> STATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| <b>18</b> NATIONAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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## APPENDIX B

WEEKLY REPORT FORM USED IN  
"SEASONAL" SAMPLE PARKS

# SPECIAL WEEKLY PARK REPORT

130

| DAY  | WEATHER CONDITIONS                                  |                                             |                                                           |                                                        | SAMPLE SIZE                                                   |
|------|-----------------------------------------------------|---------------------------------------------|-----------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------|
|      | Temperature to the nearest 5°                       | Cloud Cover                                 | Precipitation                                             | Wind                                                   |                                                               |
|      | 1. Low-L____<br>2. High-H____<br>3. Average-Avg____ | 1. Clear<br>2. Partly Cloudy<br>3. Overcast | 1. None<br>2. Light Shower<br>3. Moderate "<br>4. Heavy " | 1. None<br>2. Light Breeze<br>3. Gusty<br>4. Windstorm | Record number of cards handed out before noon and after noon. |
| MON  | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
| TUES | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
| WED  | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
| THUR | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
| FRI  | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
| SAI  | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
| SUN  | L H AVG<br>L H AVG                                  |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |
|      |                                                     |                                             |                                                           |                                                        | CARDS OUT ____ CARDS IN ____                                  |

PARK CLOSED (Give time and reason.)

OTHER EXPLANATION! (Use other side.)

## APPENDIX C

"SHORT FORM" QUESTIONNAIRE USED  
AS THE INTERVIEW SCHEDULE

| DID YOU CAMP IN THIS PARK LAST NIGHT?<br><input type="checkbox"/> Yes <input type="checkbox"/> No<br>ARE YOU GOING TO CAMP IN THIS PARK TONIGHT?<br><input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   | HOW MANY HOURS DID YOU SPEND IN THIS PARK TODAY? (Check One)<br>a. <input type="checkbox"/> 2 hours or less      e. <input type="checkbox"/> 8-10 hours<br>b. <input type="checkbox"/> 2-4 hours               f. <input type="checkbox"/> 10-12 hours<br>c. <input type="checkbox"/> 4-6 hours               g. <input type="checkbox"/> 12 hours or more<br>d. <input type="checkbox"/> 6-8 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                   |                   |       |       |       |       |       |       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------|-------------------|-------|-------|-------|-------|-------|-------|
| WHAT ARE THE AGES OF THE PEOPLE IN THIS VEHICLE?<br>MALE _____<br>FEMALE: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| WHERE IS YOUR PRESENT HOME? (Exact street address not required)<br><hr/> Town or City _____ County _____ State _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                   | HOW MANY DAYS HAVE YOU USED THE PARK IN 1968?<br><br>a. <input type="checkbox"/> this is the first park visit      e. <input type="checkbox"/> 13-16 days<br>b. <input type="checkbox"/> 1-4 days                                  f. <input type="checkbox"/> 17-20 days<br>c. <input type="checkbox"/> 5-8 days                                  g. <input type="checkbox"/> 21-24 days<br>d. <input type="checkbox"/> 9-12 days                               h. <input type="checkbox"/> over 24 days                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                   |                   |       |       |       |       |       |       |
| WHAT IS YOUR ZIP CODE? _____<br>HOW MUCH TIME DID YOU SPEND TRAVELING TO THIS PARK TODAY?<br>(NOT INCLUDING "STOPOVER" TIME ALONG THE WAY.)<br><div style="text-align: right;">_____ Hours     _____ Minutes</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| HOW MANY MILES, BY THE MOST DIRECT ROUTE, IS THIS PARK FROM HOME?<br><div style="text-align: right;">_____ Miles</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   | WHICH OF THE ACTIVITIES LISTED BELOW DID YOUR GROUP DO WHILE HERE? (Check all the boxes that apply).<br><br><div style="display: flex; flex-wrap: wrap;"> <div style="flex: 1; min-width: 200px;">           a. <input type="checkbox"/> sightseeing from car only<br/>           b. <input type="checkbox"/> walking to scenic points<br/>           c. <input type="checkbox"/> picnicking<br/>           d. <input type="checkbox"/> looking at plants, animals or birds for a hobby<br/>           e. <input type="checkbox"/> swimming<br/>           f. <input type="checkbox"/> wading<br/>           g. <input type="checkbox"/> sunbathing         </div> <div style="flex: 1; min-width: 200px;">           h. <input type="checkbox"/> water skiing<br/>           i. <input type="checkbox"/> skin or souba diving<br/>           j. <input type="checkbox"/> motorboating<br/>           k. <input type="checkbox"/> sailing<br/>           l. <input type="checkbox"/> canoeing<br/>           m. <input type="checkbox"/> rowboating<br/>           n. <input type="checkbox"/> boat fishing<br/>           o. <input type="checkbox"/> bank fishing<br/>           p. <input type="checkbox"/> fishing (wading)         </div> <div style="flex: 1; min-width: 200px;">           q. <input type="checkbox"/> games &amp; team sports<br/>           r. <input type="checkbox"/> trail hiking<br/>           s. <input type="checkbox"/> horseback riding<br/>           t. <input type="checkbox"/> listening to ranger talks<br/>           u. <input type="checkbox"/> taking guided tours<br/>           v. <input type="checkbox"/> visiting museums or nature centers<br/>           w. <input type="checkbox"/> relaxing<br/>           x. <input type="checkbox"/> photography         </div> </div> |  |                   |                   |       |       |       |       |       |       |
| WHAT IS THE SEX AND APPROXIMATE AGE OF THE "HEAD OF YOUR FAMILY"?<br>AGE? _____ years    SEX: <input type="checkbox"/> male <input type="checkbox"/> female<br>WHAT DOES THE "HEAD OF YOUR FAMILY" DO FOR A LIVING?<br><div style="text-align: center;">_____<br/>Occupation (write in)</div>                                                                                                                                                                                                                                                                                                                                                                                                  |                   | OTHER _____<br><div style="text-align: center;">(write in)</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                   |                   |       |       |       |       |       |       |
| WHICH OF THE ANSWERS BELOW BEST INDICATES THE TOTAL NUMBER OF YEARS OF EDUCATION COMPLETED BY THE "HEAD OF YOUR FAMILY"? (Check one answer)<br><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/><br><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |                   | 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.<br><br><table style="width: 100%;"> <thead> <tr> <th style="text-align: left;"><u>Activities</u></th> <th style="text-align: left;"><u>Time Spent</u></th> </tr> </thead> <tbody> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | <u>Activities</u> | <u>Time Spent</u> | _____ | _____ | _____ | _____ | _____ | _____ |
| <u>Activities</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Time Spent</u> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | _____             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | _____             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | _____             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| WHICH OF THE FOLLOWING BEST DESCRIBES THE TOTAL INCOME OF YOUR FAMILY LAST YEAR (Check one)<br><br>a. <input type="checkbox"/> under \$3,000      e. <input type="checkbox"/> \$10,000 - \$14,999<br>b. <input type="checkbox"/> \$3,000 - \$5,999      f. <input type="checkbox"/> \$15,000 - \$24,999<br>c. <input type="checkbox"/> \$6,000 - \$7,999      g. <input type="checkbox"/> \$25,000 - and over<br>d. <input type="checkbox"/> \$8,000 - \$9,999                                                                                                                                                                                                                                 |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| WHAT TIME DID YOU ENTER THIS PARK?<br><br>a. <input type="checkbox"/> 8:00 -10:00 a.m.      (Check one)<br>b. <input type="checkbox"/> 10:00-noon              e. <input type="checkbox"/> 4:00-6:00 p.m.<br>c. <input type="checkbox"/> noon-2:00 p.m.        f. <input type="checkbox"/> 6:00-8:00 p.m.<br>d. <input type="checkbox"/> 2:00-4:00 p.m.        g. <input type="checkbox"/> 8:00-10:00 p.m.                                                                                                                                                                                                                                                                                     |                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                   |                   |       |       |       |       |       |       |
| PARK CODE NUMBER: _____ DATE: _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   | IDENTIFICATION NUMBER _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                   |                   |       |       |       |       |       |       |

## APPENDIX D

### OPTICAL SCAN FORMS USED IN CODING

\_\_\_\_\_

CITY \_\_\_\_\_ COUNTY \_\_\_\_\_ STATE \_\_\_\_\_  
 OCCUPATION: \_\_\_\_\_

| IDENTIFICATION NUMBER |    |     |                  |       |   |       |   |       |   |   |                   |    |     |                  |       |   |       |   |       |   |   |
|-----------------------|----|-----|------------------|-------|---|-------|---|-------|---|---|-------------------|----|-----|------------------|-------|---|-------|---|-------|---|---|
| 1                     | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 | 1                 | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 |
| 1                     | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 | 1                 | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 |
| 3                     | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 | 4                 | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 |
| 5                     | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 | 5                 | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 |
| SIGHTSEEING           |    |     |                  |       |   |       |   |       |   |   | WALKING           |    |     |                  |       |   |       |   |       |   |   |
| A-01                  | NO | YES |                  |       |   |       |   |       |   |   | B-02              | NO | YES |                  |       |   |       |   |       |   |   |
| C-3                   | NO | YES | PICNICKING       |       |   |       |   |       |   |   | D-04              | NO | YES | LOOKING          |       |   |       |   |       |   |   |
| F-05                  | NO | YES | SWIMMING         |       |   |       |   |       |   |   | P-06              | NO | YES | WADING           |       |   |       |   |       |   |   |
| G-07                  | NO | YES | SUNBATHING       |       |   |       |   |       |   |   | N-08              | NO | YES | WATER SKIING     |       |   |       |   |       |   |   |
| I-09                  | NO | YES | SKIN DIVING      |       |   |       |   |       |   |   | J-10              | NO | YES | MOTOTOATING      |       |   |       |   |       |   |   |
| K-11                  | NO | YES | SAILING          |       |   |       |   |       |   |   | L-12              | NO | YES | CANOEING         |       |   |       |   |       |   |   |
| M-13                  | NO | YES | ROMBOATING       |       |   |       |   |       |   |   | W-14              | NO | YES | BOAT FISHING     |       |   |       |   |       |   |   |
| O-15                  | NO | YES | BANK FISHING     |       |   |       |   |       |   |   | P-16              | NO | YES | FISHING - WADING |       |   |       |   |       |   |   |
| Q-17                  | NO | YES | GAMES            |       |   |       |   |       |   |   | R-18              | NO | YES | TRAIL HIKING     |       |   |       |   |       |   |   |
| S-19                  | NO | YES | HORSEBACK RIDING |       |   |       |   |       |   |   | T-20              | NO | YES | LISTENING        |       |   |       |   |       |   |   |
| U-21                  | NO | YES | TOURS            |       |   |       |   |       |   |   | V-22              | NO | YES | VISITING         |       |   |       |   |       |   |   |
| W-23                  | NO | YES | RELAXING         |       |   |       |   |       |   |   | X-24              | NO | YES | PHOTOGRAPHY      |       |   |       |   |       |   |   |
| Y-25                  | NO | YES | OTHER            |       |   |       |   |       |   |   | TOTAL--ACTIVITIES |    |     |                  |       |   |       |   |       |   |   |
| ACTIVITY              |    |     |                  |       |   |       |   |       |   |   | ACTIVITY          |    |     |                  |       |   |       |   |       |   |   |
| 1                     | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 | 1                 | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 |
| 1/2                   | 1  | 1/2 | 2                | 2 1/2 | 3 | 3 1/2 | 4 | 4 1/2 | 5 |   | 1/2               | 1  | 1/2 | 2                | 2 1/2 | 3 | 3 1/2 | 4 | 4 1/2 | 5 |   |
| HOURS                 |    |     |                  |       |   |       |   |       |   |   | HOURS             |    |     |                  |       |   |       |   |       |   |   |
| ACTIVITY              |    |     |                  |       |   |       |   |       |   |   | ACTIVITY          |    |     |                  |       |   |       |   |       |   |   |
| 1                     | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 | 1                 | 0  | 1   | 2                | 3     | 4 | 5     | 6 | 7     | 8 | 9 |
| 1/2                   | 1  | 1/2 | 2                | 2 1/2 | 3 | 3 1/2 | 4 | 4 1/2 | 5 |   | 1/2               | 1  | 1/2 | 2                | 2 1/2 | 3 | 3 1/2 | 4 | 4 1/2 | 5 |   |
| HOURS                 |    |     |                  |       |   |       |   |       |   |   | HOURS             |    |     |                  |       |   |       |   |       |   |   |



## APPENDIX E

### TYPICAL "EXPERIMENTAL" SAMPLE PARK TEST INSTRUCTIONS

# DAY USE STUDY - EXPERIMENTAL QUESTIONNAIRE-CARD RUNS

PARK Dodge Brothers #4 TESTING LOCATION Entrance

| DATE                                            | QUESTIONNAIRE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | INSTRUCTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | HANDED OUT | NUMBER RETURNED                                                                                                                                                                                                                              |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Friday<br>July 19<br>and<br>Saturday<br>July 20 | <p>2-1-1:has ques-<br/>tions 23 and 24.<br/>Question 24 be-<br/>gins with "In<br/>the spaces pro-<br/>vided below.."</p> <p>2-3-2:has ques-<br/>tions 23 and 24.<br/>Question 24 be-<br/>gins with "Mark<br/>the activities.."</p> <p>2-3-3:has ques-<br/>tion 23 begin-<br/>ning with "Which<br/>activities did.."</p> <p>2-3-4:Question<br/>23 is a chart<br/>which has 3<br/>black arrows.</p> <p>2-3-5:Question<br/>23 is a chart<br/>with one black<br/>and one outline<br/>arrow.</p> <p>ENCLOSED<br/>(SEE EXAMPLES)</p> | <p>The five different questionnaires<br/>will be supplied to you already col-<br/>lated together.<br/>Hand them out in order beginning<br/>with the top questionnaire.<br/>If the weather is good, please<br/>follow this handout schedule:</p> <p>Fri. - Begin at 9:00 A.M. Start<br/>with 150 cards (30 sets)<br/>and hand out until the<br/>supply is exhausted.<br/>- Begin at 2:00 P.M. Start<br/>with 150 cards (30 sets)<br/>and hand out until the<br/>supply is exhausted.<br/>Sat. - Begin at 9:00 A.M. Start<br/>with 900 cards (180 sets)<br/>and hand out until the<br/>supply is exhausted.<br/>- Begin again at 2:00 P.M.<br/>Start with 300 cards (60<br/>sets) and hand out until<br/>supply is exhausted.<br/>If the weather is poor, please<br/>follow this handout schedule:<br/>- Begin at 8:00 A.M. Friday<br/>and hand out cards all<br/>Friday and Saturday until<br/>the supply is exhausted.</p> |            | <p>The number returned<br/>is simply the number de-<br/>posited in the collection<br/>box. Collect cards from<br/>deposit boxes Friday at<br/>10:00 P.M. and Saturday<br/>at 10:00 P.M.<br/>Record data on next page<br/>in this column.</p> |

## DAY USE STUDY - EXPERIMENTAL QUESTIONNAIRE-CARD RUNS

PARK Dodge Brothers #4 TESTING LOCATION Entrance

| DATE | QUESTIONNAIRE | INSTRUCTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | HANDED OUT                                                                                                                                                                                                                            | NUMBER RETURNED                                                                                                                                                                 |
|------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      |               | <p>Attempt to hand out all cards on Friday and Saturday. However, if it is impossible to hand out the total number of questionnaires, count the sets of 5 still not handed out and enter the number under the "not handed out" heading.</p> <p>Please put elastic bands around each bundle of cards, label them, and forward them to Division Office, Lansing.</p> <p>You will be phoned on Sunday. Please read the number handed out and number returned to the caller. If this information could be kept near the phone, it would be more convenient.</p> | <p>FRIDAY<br/>9:00 run</p> <p><u>number</u><br/>2:00 run</p> <p><u>number</u></p> <p>SATURDAY<br/>9:00 run</p> <p><u>number</u><br/>2:00 run</p> <p><u>number</u></p> <p>NOT HANDED OUT</p> <p><u>number of sets of (5) five.</u></p> | <p>Returned</p> <p>FRIDAY</p> <p>2-1-1</p> <p>2-3-2</p> <p>2-3-3</p> <p>2-3-4</p> <p>2-3-5</p> <p>SATURDAY</p> <p>2-1-1</p> <p>2-3-2</p> <p>2-3-3</p> <p>2-3-4</p> <p>2-3-5</p> |



## APPENDIX F

### DESCRIPTION OF VARIOUS "EXPERIMENTAL" QUESTIONNAIRES

## APPENDIX F

### DESCRIPTION OF VARIOUS "EXPERIMENTAL" QUESTIONNAIRES

| Test | Basis for Design of Questionnaires                  | Paper Stock                   | Questionnaire Identification Numbers | Comments                                            |
|------|-----------------------------------------------------|-------------------------------|--------------------------------------|-----------------------------------------------------|
| 1    | Same content and design of "seasonal" questionnaire | Blue, 24 lb. , Carnival Kraft | 1-1-1                                | Folded card with slotted hole in upper left corner. |
|      |                                                     | Blue, 24 lb. , Carnival Kraft | 1-1-2                                | Folded card with no hole.                           |
|      |                                                     | Blue Index Card               | 1-1-3                                | Folded card with slotted hole in upper left corner. |
|      |                                                     | Blue Index Card               | 1-1-4                                | Folded card with no hole.                           |

| Test | Basis for Design of Questionnaires                  | Paper Stock                  | Questionnaire Identification Numbers | Comments                                                                   |
|------|-----------------------------------------------------|------------------------------|--------------------------------------|----------------------------------------------------------------------------|
| 1    | Same content and design of "seasonal" questionnaire | Blue, 24 lb., Carnival Kraft | 1-2-1                                | $8\frac{1}{2} \times 11$ inch card with slotted hole in upper left corner. |
|      |                                                     | Blue, 24 lb., Carnival Kraft | 1-2-2                                | $8\frac{1}{2} \times 11$ inch card with no hole.                           |
|      |                                                     | Blue Index Card              | 1-2-3                                | $8\frac{1}{2} \times 11$ inch card with slotted hole in upper left corner. |
|      |                                                     | Blue Index Card              | 1-2-4                                | $8\frac{1}{2} \times 11$ inch card with no hole.                           |

Due to the success of the folded card and slotted hole, all the following questionnaires were folded and contained a slotted hole unless otherwise mentioned.

|   |                                                                                                                            |                                                     |       |                                                                                     |
|---|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------|-------------------------------------------------------------------------------------|
| 2 | Basic design from the "seasonal" questionnaire with the exception of the activity analysis questions (questions 23 and 24) | Yellow, 24 lb., Carnival Kraft used throughout test | 2-1-1 | Same activity analysis as in the "seasonal" questionnaire.                          |
|   |                                                                                                                            |                                                     | 2-3-2 | See Figure 11, pages 141-142 for the activity analysis questions used in this test. |
|   |                                                                                                                            |                                                     | 2-3-3 |                                                                                     |
|   |                                                                                                                            |                                                     | 2-3-4 |                                                                                     |
|   |                                                                                                                            |                                                     | 2-3-5 |                                                                                     |

| Test | Basis for Design of Questionnaires                  | Paper Stock                                         | Questionnaire Identification Numbers | Comments                                                                                      |
|------|-----------------------------------------------------|-----------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------|
| 3    | Same content and design of "seasonal" questionnaire | Yellow, 24 lb., Carnival Kraft used throughout test | 2-1-1W                               | "Seasonal" questionnaire with a pencil enclosed in slots cut in the bottom of the front page. |
|      |                                                     |                                                     | 2-1-1N                               | "Seasonal" questionnaire with no pencil.                                                      |
| 4    | Same content and design of questionnaire 2-3-5      | 24 lb., Carnival Kraft used throughout test         |                                      |                                                                                               |
|      |                                                     | White                                               | 3-1-1                                |                                                                                               |
|      |                                                     | Yellow                                              | 3-1-2                                |                                                                                               |
|      |                                                     | Blue                                                | 3-1-3                                |                                                                                               |
|      |                                                     | Orange                                              | 3-1-4                                |                                                                                               |
|      |                                                     | Brown                                               | 3-1-5                                |                                                                                               |
|      |                                                     | Tan                                                 | 3-1-6                                |                                                                                               |



| Test | Basis for Design of Questionnaires                       | Paper Stock                                          | Questionnaire Identification Numbers | Comments                                                                                                         |
|------|----------------------------------------------------------|------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 5    | Questionnaire 2-3-5 was used as content and design basis | White Index Card used through-out test               | 4-1-1                                | Exact copy of 2-3-5.                                                                                             |
|      |                                                          |                                                      | 2-4-1<br>2-4-2<br>2-4-3              | Post card types with "deposit" message on back. See Figures 12 and 13, pages 143-144.                            |
|      |                                                          |                                                      | 4-1-2                                | Similar to 2-3-5 but with no slotted hole.                                                                       |
|      |                                                          |                                                      | 2-5-1<br>2-5-2<br>2-5-3              | Post card types with "mail back" design on back. See Figures 12 and 14, pages 143 and 144.                       |
|      |                                                          |                                                      |                                      |                                                                                                                  |
| 6    | Questionnaire 2-3-5 was used as content and design basis | Yellow, 24 lb., Carnival Kraft used through-out test | 5-1-1                                | Exact copy of 2-3-5.                                                                                             |
|      |                                                          |                                                      | 5-1-2                                | Same content and general design as 2-3-5, but with questions arranged in different order.                        |
|      |                                                          |                                                      | 5-1-3                                | Same content and general design as 2-3-5, but with questions arranged in a different order from 5-1-2 and 2-3-5. |

| Test | Basis for Design of Questionnaires       | Paper Stock                                          | Questionnaire Identification Numbers | Comments                                |
|------|------------------------------------------|------------------------------------------------------|--------------------------------------|-----------------------------------------|
| 7    |                                          | Yellow, 24 lb., Carnival Kraft used through-out test | 5-1-1                                | Exact copy of 2-3-5.                    |
|      |                                          |                                                      | 2-1-1                                | Exact copy of "seasonal" questionnaire. |
| 8    | Exact copies of questionnaires in Test 5 | White Index Card used through-out test               | 2-5-1<br>2-5-2<br>2-5-3              | Previously described.                   |

| <p><b>22</b> WHAT KIND OF ADDITIONAL RECREATION OPPORTUNITY OR FACILITIES WOULD YOU LIKE TO SEE ADDED TO THIS PARK?</p> <p>a. _____</p> <p>b. _____</p> <p>c. _____</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>22</b> WHAT KIND OF ADDITIONAL RECREATION OPPORTUNITY OR FACILITIES WOULD YOU LIKE TO SEE ADDED TO THIS PARK?</p> <p>a. _____</p> <p>b. _____</p> <p>c. _____</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><b>22</b> WHAT KIND OF ADDITIONAL RECREATION OPPORTUNITY OR FACILITIES WOULD YOU LIKE TO SEE ADDED TO THIS PARK?</p> <p>a. _____</p> <p>b. _____</p> <p>c. _____</p>                                         |             |             |          |             |          |             |          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|----------|-------------|----------|-------------|----------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|----------|------------|----------------------------------------|-------------|-----------------------------------|-------------|--------------------------------------|-------------|-----------------------------------|-------------|-------------------------------------|-------------|-----------------------------------|-------------|-------|-------|-----------------------------------|-------------|--|--|-----------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|----------|------------|----------------------------------------|-------------|-----------------------------------|-------------|--------------------------------------|-------------|-----------------------------------|-------------|-------------------------------------|-------------|-----------------------------------|-------------|-------|-------|-----------------------------------|-------------|--|--|-----------------------------------|-------------|
| <p><b>23</b> WHICH OF THE ACTIVITIES LISTED BELOW DID YOUR GROUP DO WHILE HERE? (Check all the boxes that apply.)</p> <p>a. <input type="checkbox"/> sightseeing from car only</p> <p>b. <input type="checkbox"/> walking to scenic points</p> <p>c. <input type="checkbox"/> picnicking</p> <p>d. <input type="checkbox"/> looking at plants, animals or birds for a hobby</p> <p>e. <input type="checkbox"/> swimming</p> <p>f. <input type="checkbox"/> wading</p> <p>g. <input type="checkbox"/> sunbathing</p> <p>h. <input type="checkbox"/> water skiing</p> <p>i. <input type="checkbox"/> skin or scuba diving</p> <p>j. <input type="checkbox"/> motorboating</p> <p>k. <input type="checkbox"/> sailing</p> <p>l. <input type="checkbox"/> canoeing</p> <p>m. <input type="checkbox"/> rowboating</p> <p>n. <input type="checkbox"/> boat fishing</p> <p>o. <input type="checkbox"/> bank fishing</p> <p>p. <input type="checkbox"/> fishing (wading)</p> <p>q. <input type="checkbox"/> games and team sports</p> <p>r. <input type="checkbox"/> trail biking</p> <p>s. <input type="checkbox"/> horseback riding</p> <p>t. <input type="checkbox"/> listening to ranger talks</p> <p>u. <input type="checkbox"/> taking guided tours</p> <p>v. <input type="checkbox"/> visiting museums or nature centers</p> <p>w. <input type="checkbox"/> relaxing</p> <p>x. <input type="checkbox"/> photography</p> <p>other _____ (write in)</p> | <p><b>23</b> WHICH OF THE ACTIVITIES LISTED BELOW DID YOUR GROUP DO WHILE HERE? (Check all the boxes that apply.)</p> <p>a. <input type="checkbox"/> sightseeing from car only</p> <p>b. <input type="checkbox"/> walking to scenic points</p> <p>c. <input type="checkbox"/> picnicking</p> <p>d. <input type="checkbox"/> looking at plants, animals or birds for a hobby</p> <p>e. <input type="checkbox"/> swimming</p> <p>f. <input type="checkbox"/> wading</p> <p>g. <input type="checkbox"/> sunbathing</p> <p>h. <input type="checkbox"/> water skiing</p> <p>i. <input type="checkbox"/> skin or scuba diving</p> <p>j. <input type="checkbox"/> motorboating</p> <p>k. <input type="checkbox"/> sailing</p> <p>l. <input type="checkbox"/> canoeing</p> <p>m. <input type="checkbox"/> rowboating</p> <p>n. <input type="checkbox"/> boat fishing</p> <p>o. <input type="checkbox"/> bank fishing</p> <p>p. <input type="checkbox"/> fishing (wading)</p> <p>q. <input type="checkbox"/> games and team sports</p> <p>r. <input type="checkbox"/> trail biking</p> <p>s. <input type="checkbox"/> horseback riding</p> <p>t. <input type="checkbox"/> listening to ranger talks</p> <p>u. <input type="checkbox"/> taking guided tours</p> <p>v. <input type="checkbox"/> visiting museums or nature centers</p> <p>w. <input type="checkbox"/> relaxing</p> <p>x. <input type="checkbox"/> photography</p> <p>other _____ (write in)</p> | <p><b>23</b> WHICH ACTIVITIES DID YOUR GROUP DO MOST WHILE IN THE PARK?</p> <p>a. _____ hours</p> <p>b. _____ hours</p> <p>c. _____ hours</p> <p>d. _____ hours</p> <p>e. _____ hours</p> <p>f. _____ hours</p> |             |             |          |             |          |             |          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |
| <p><b>24</b> 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.</p> <table border="1"> <thead> <tr> <th>Activities</th> <th>Time Spent</th> </tr> </thead> <tbody> <tr> <td>a. _____</td> <td>_____ hours</td> </tr> <tr> <td>b. _____</td> <td>_____ hours</td> </tr> <tr> <td>c. _____</td> <td>_____ hours</td> </tr> <tr> <td>d. _____</td> <td>_____ hours</td> </tr> </tbody> </table> <p>THANKS FOR YOUR HELP! HAVE AN ENJOYABLE AND SAFE TRIP HOME</p> <p>If you have accidentally carried this card away from the park, please mail it to:</p> <p>Recreation Research and Planning Unit<br/>Room 302, Natural Resources Building<br/>Michigan State University<br/>East Lansing, Michigan 48823</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Time Spent                                                                                                                                                                                                      | a. _____    | _____ hours | b. _____ | _____ hours | c. _____ | _____ hours | d. _____ | _____ hours | <p><b>24</b> MARK THE ACTIVITIES THAT YOUR COMPLETE GROUP DID TOGETHER WHILE IN THE PARK. WHAT DID THE ADULTS DO?</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Time Spent</th> <th>Activity</th> <th>Time Spent</th> </tr> </thead> <tbody> <tr> <td>a. <input type="checkbox"/> Picnicking</td> <td>_____ hours</td> <td>a. <input type="checkbox"/> _____</td> <td>_____ hours</td> </tr> <tr> <td>b. <input type="checkbox"/> Swimming</td> <td>_____ hours</td> <td>b. <input type="checkbox"/> _____</td> <td>_____ hours</td> </tr> <tr> <td>c. <input type="checkbox"/> Boating</td> <td>_____ hours</td> <td>c. <input type="checkbox"/> _____</td> <td>_____ hours</td> </tr> <tr> <td>Other</td> <td>_____</td> <td>d. <input type="checkbox"/> _____</td> <td>_____ hours</td> </tr> <tr> <td></td> <td></td> <td>e. <input type="checkbox"/> _____</td> <td>_____ hours</td> </tr> </tbody> </table> <p>WHAT DID THE CHILDREN DO?</p> <p>a. <input type="checkbox"/> _____ hours</p> <p>b. <input type="checkbox"/> _____ hours</p> <p>c. <input type="checkbox"/> _____ hours</p> <p>d. <input type="checkbox"/> _____ hours</p> <p>e. <input type="checkbox"/> _____ hours</p> <p>THANKS FOR YOUR HELP! 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 |  |                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | e. <input type="checkbox"/> _____                                                                                                                                                                               | _____ hours |             |          |             |          |             |          |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |          |            |          |            |                                        |             |                                   |             |                                      |             |                                   |             |                                     |             |                                   |             |       |       |                                   |             |  |  |                                   |             |

## Questionnaire 2-1-1

## Questionnaire 2-3-2

## Questionnaire 2-3-3

FIGURE 11. -- Activity Analysis Questions from Questionnaires in Experimental Test #2 -- Back Page of Questionnaires Shown



**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

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

|                                                                             |                                                    |                                                              |
|-----------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------------------------------|
| a. <input type="checkbox"/> sightseeing from car only                       | b. <input type="checkbox"/> water skiing           | c. <input type="checkbox"/> games and team sports            |
| d. <input type="checkbox"/> walking to scenic points                        | e. <input type="checkbox"/> sunbathing             | f. <input type="checkbox"/> trail hiking                     |
| g. <input type="checkbox"/> picnicking                                      | h. <input type="checkbox"/> sailing                | i. <input type="checkbox"/> horseback riding                 |
| j. <input type="checkbox"/> looking at plants, animals or birds for a hobby | k. <input type="checkbox"/> canoeing               | l. <input type="checkbox"/> listening to ranger talks        |
| m. <input type="checkbox"/> rock climbing                                   | n. <input type="checkbox"/> taking guided tours    | o. <input type="checkbox"/> visiting museum or nature center |
| p. <input type="checkbox"/> boat fishing                                    | q. <input type="checkbox"/> relaxing               | r. <input type="checkbox"/> photography                      |
| s. <input type="checkbox"/> swimming                                        | t. <input type="checkbox"/> fishing (recreational) | u. <input type="checkbox"/> other _____                      |

(write in)

2. IN THE SPACES PROVIDED BELOW, WRITE IN THE FOUR ACTIVITIES YOUR GROUP ENJOYED THE MOST IN THE DOWNING. WRITE IN THE NUMBER OF HOURS YOUR GROUP SPENT DOING EACH OF THE ACTIVITIES.

|          |             |
|----------|-------------|
| Activity | Time Spent  |
| a. _____ | _____ hours |
| b. _____ | _____ hours |
| c. _____ | _____ hours |
| d. _____ | _____ hours |

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

**PLEASE FILL OUT THIS PARK-USE CARD \* HELP PLAN YOUR PARKS**

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Please fill out all questions carefully. IT WILL TAKE ONLY A COUPLE OF MINUTES.

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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

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

2. WHAT ARE THE AGES OF THE PEOPLE IN THIS PARTY?

MALE: \_\_\_\_\_ FEMALE: \_\_\_\_\_

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

AGE: \_\_\_\_\_ years SEX: ☐ male ☐ female

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

TO BE ANSWERED BY THE DRIVER

5. 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                       |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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

|                                             |                                               |
|---------------------------------------------|-----------------------------------------------|
| a. <input type="checkbox"/> under \$2,000   | e. <input type="checkbox"/> \$10,000-\$14,999 |
| b. <input type="checkbox"/> \$2,000-\$4,999 | f. <input type="checkbox"/> \$15,000-\$24,999 |
| c. <input type="checkbox"/> \$5,000-\$7,999 | g. <input type="checkbox"/> \$25,000 and over |
| d. <input type="checkbox"/> \$8,000-\$9,999 |                                               |

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

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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

1. WHERE IS YOUR PRESENT HOME? (Easiest street address not required)

\_\_\_\_\_ County \_\_\_\_\_ State

2. WHAT IS YOUR ZIP CODE? \_\_\_\_\_

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

\_\_\_\_\_ Hours \_\_\_\_\_ Minutes

4. HOW MANY MILES, BY THE MOST DIRECT ROUTE, IS THE PARK FROM YOUR HOME?

\_\_\_\_\_ Miles

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

|                                             |                                             |
|---------------------------------------------|---------------------------------------------|
| a. <input type="checkbox"/> 8:00-10:00 a.m. | e. <input type="checkbox"/> 4:00-6:00 p.m.  |
| b. <input type="checkbox"/> 10:00-noon      | f. <input type="checkbox"/> 6:00-8:00 p.m.  |
| c. <input type="checkbox"/> noon-2:00 p.m.  | g. <input type="checkbox"/> 8:00-10:00 p.m. |
| d. <input type="checkbox"/> 2:00-4:00 p.m.  |                                             |

6. WHAT KIND OF TRIP IS THIS FOR YOUR GROUP? (Check one)

|                                                                    |                                                                           |
|--------------------------------------------------------------------|---------------------------------------------------------------------------|
| a. <input type="checkbox"/> one day outing or trip                 | d. <input type="checkbox"/> part of an overnight trip                     |
| b. <input type="checkbox"/> part of a major annual vacation        | e. <input type="checkbox"/> part of a combined business trip and vacation |
| c. <input type="checkbox"/> part of two or more separate vacations | f. <input type="checkbox"/> other _____ (write in)                        |

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

Questionnaires 2-4-1 and 2-5-1

Questionnaires 2-4-2 and 2-5-2

Questionnaires 2-4-3 and 2-5-3

FIGURE 12. -- Back View of "Post Card" Questionnaires Used in Experimental Tests #5 and #8

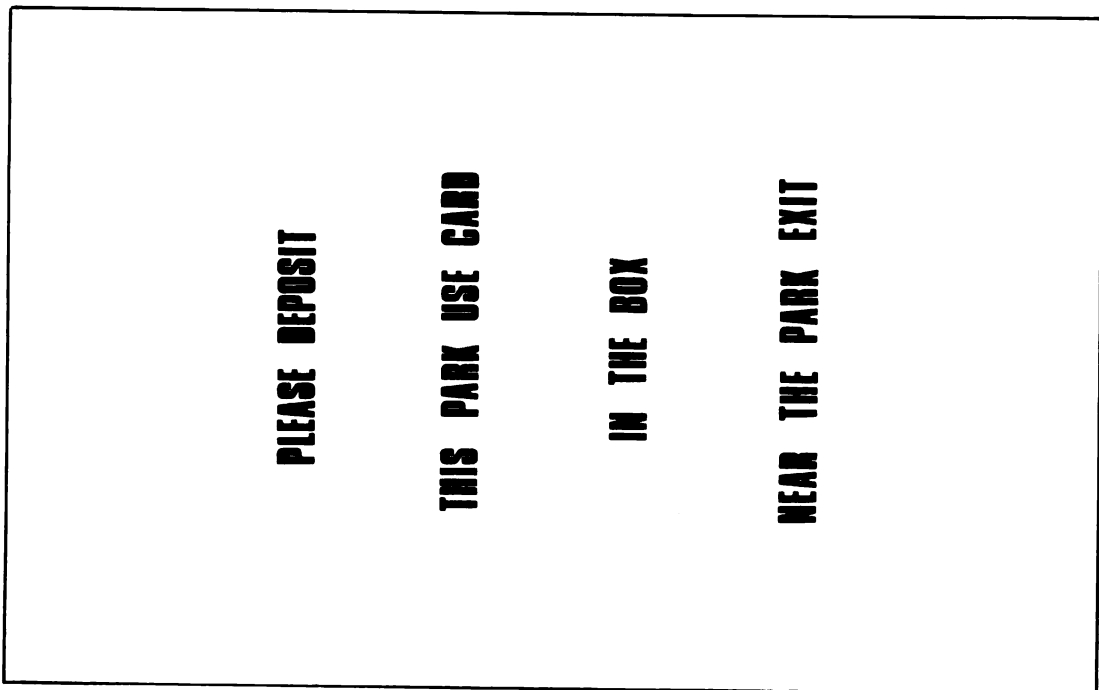


FIGURE 13. -- Front View of "Post Card" Questionnaires (2-4-1, 2-4-2, 2-4-3) Used in Experimental Test #5

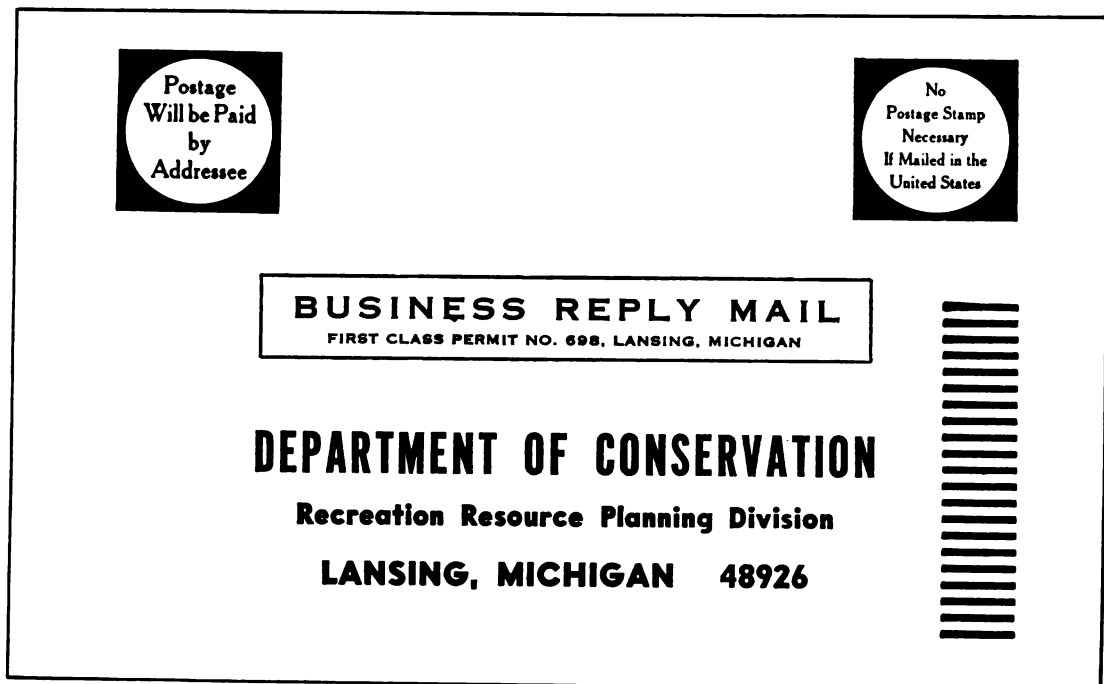


FIGURE 14. -- Front View of "Post Card" Questionnaires (2-5-1, 2-5-2, 2-5-3) Used in Experimental Tests #5 and #8

APPENDIX G

"EXPERIMENTAL" QUESTIONNAIRES  
HANDED OUT, RETURNED,  
AND COMPLETED

# APPENDIX G

## "EXPERIMENTAL" QUESTIONNAIRES HANDED OUT, RETURNED, AND COMPLETED

| Test | Questionnaire Identification | Number Handed Out | Number Returned | Number* Completed |
|------|------------------------------|-------------------|-----------------|-------------------|
| 1    | 1-1-1                        | 908               | 435             | 435               |
|      | 1-1-2                        | 250               | 102             | 102               |
|      | 1-1-3                        | 579               | 278             | 278               |
|      | 1-1-4                        | 579               | 285             | 285               |
|      | 1-2-1                        | 579               | 278             | 278               |
|      | 1-2-2                        | 579               | 250             | 250               |
|      | 1-2-3                        | 579               | 305             | 305               |
|      | 1-2-4                        | 579               | 286             | 286               |
| 2    | 2-1-1                        | 356               | 146             | 84                |
|      | 2-3-2                        | 358               | 152             | 99                |
|      | 2-3-3                        | 356               | 138             | 83                |
|      | 2-3-4                        | 357               | 142             | 79                |
|      | 2-3-5                        | 357               | 161             | 92                |
| 3    | 2-1-1W                       | 500               | 240             | 240               |
|      | 2-1-1N                       | 500               | 163             | 163               |

\*In Tests 1, 3, and 4 all returned questionnaires were considered to be complete. In the remaining Tests, all returned questionnaires were individually examined for completeness of response.



| Test | Questionnaire Identification | Number Handed Out | Number Returned | Number Completed |
|------|------------------------------|-------------------|-----------------|------------------|
| 4    | 3-1-1                        | 274               | 158             | 158              |
|      | 3-1-2                        | 273               | 147             | 147              |
|      | 3-1-3                        | 273               | 159             | 159              |
|      | 3-1-4                        | 273               | 141             | 141              |
|      | 3-1-5                        | 273               | 157             | 157              |
|      | 3-1-6                        | 273               | 153             | 153              |
| 5    | 4-1-1                        | 387               | 124             | 102              |
|      | 2-4-1                        | 387               | 114             | 93               |
|      | 2-4-2                        | 387               | 166             | 138              |
|      | 2-4-3                        | 387               | 112             | 98               |
|      | 4-1-2                        | 387               | 119             | 97               |
|      | 2-5-1                        | 387               | 104             | 80               |
|      | 2-5-2                        | 387               | 122             | 102              |
|      | 2-5-3                        | 387               | 137             | 128              |
| 6    | 5-1-1                        | 396               | 168             | 128              |
|      | 5-1-2                        | 396               | 156             | 122              |
|      | 5-1-3                        | 396               | 172             | 123              |
| 7    | 5-1-1                        | 500               | 171             | 123              |
|      | 2-1-1                        | 500               | 178             | 126              |
| 8    | 2-5-1                        | 500               | 71              | 66               |
|      | 2-5-2                        | 500               | 74              | 74               |
|      | 2-5-3                        | 500               | 86              | 86               |

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