

A Comparison of Four  
**SURVEY TECHNIQUES**  
Used in Outdoor  
Recreation Research

by **Elwood L. Shafer Jr.**  
and **John F. Hamilton Jr.**



U. S. FOREST SERVICE RESEARCH PAPER NE-86  
1967

NORTHEASTERN FOREST EXPERIMENT STATION, UPPER DARBY, PA.  
FOREST SERVICE, U. S. DEPARTMENT OF AGRICULTURE  
RICHARD D. LANE, DIRECTOR

---

### **The Authors**

ELWOOD L. SHAFER JR. is a project leader for the Northeastern Forest Experiment Station's recreation research project at the New York State College of Forestry at Syracuse University, Syracuse, New York. He holds Bachelor of Science and Master of Forestry degrees from The Pennsylvania State University and a Ph.D. degree from the New York State College of Forestry. Since joining the Northeastern Station in 1957, he has been engaged in forest-management, wildlife-habitat, and recreation research.

JOHN F. HAMILTON JR. is a teaching assistant in the Department of Mathematics, Indiana University. He holds a Bachelor of Arts degree from Cornell University. At the time of this study he was a digital computer programmer for the Northeastern Forest Experiment Station's recreation research project at Syracuse.

---

A Comparison of Four  
**SURVEY TECHNIQUES**  
Used in Outdoor  
Recreation Research



**Contents**

What kind of survey? .....	1
General study design .....	1
Experimental design .....	2
Survey techniques .....	2
Sampling procedure .....	3
Sample size .....	4
Analysis .....	6
Response to sampling frame .....	6
Response to question items .....	6
Results and discussion .....	9
Total response .....	9
Individual questions .....	12
Conclusions .....	15
Literature references .....	17
Appendix .....	19

## **WHAT KIND OF SURVEY?**

**B**ECAUSE of the great and growing interest in outdoor recreation, many studies are being made by private and public agencies that need information for planning use of land and facilities for recreational purposes.

In these studies much attention is being given to the people who use recreational facilities—who they are; where they come from; what they like; what they want; how much they are willing to spend. Many types of surveys are being used in studying these people.

The main question in planning a survey of this sort is: What survey technique can be used that will provide the most reliable and valid results at the least cost?

To get an answer that we could use in our recreation research program, we made a study of four different survey techniques—a personal interview, a handout questionnaire, an immediate mail questionnaire, and a delayed mail questionnaire. Results show that the delayed mail survey, conducted 3 months after the camping experience, gets the best results at the least cost.

Our study is described here for the benefit of other research workers in outdoor recreation.

## **GENERAL STUDY DESIGN**

To begin with, we assumed that the personal-interview type of survey provides the most realistic replies to the questions asked. But the personal interview is the most expensive type of survey. So the purpose of our study was to determine whether a less expensive survey technique would adequately reproduce the result of a personal-interview survey.

The percentage of respondents who answered individual questions in the personal-interview survey was compared with the percentage of respondents who answered the same questions in a handout survey and two different mailed surveys. Also, the per-

centage response from the sampling frame for each survey technique was compared. A sampling frame is the total number of people selected for sampling.

The study was designed to detect differences—between the personal-interview results and results from each of the other survey techniques—that might significantly affect recreation management decisions. Before the study we asked recreation managers and planners throughout the Northeast: How large a percentage difference would there need to be between personal-interview response (the control) and nonpersonal-interview response to a question before you would use the more expensive personal-interview method to survey recreationists? Generally, with the type of questions used in this study, most managers suggested that response differences of about 8 to 10 percent or greater between the control and any of the other survey methods would necessitate use of the personal-interview technique.

Subject areas in the questionnaire, which was used for all four survey techniques, included: sociological characteristics of campers, purposes for camping, camping expenditure and investment patterns, income, and attitudes about various campground environmental conditions and administrative procedures.

Because of the subject matter investigated, study results are applicable mostly in future recreation-management surveys. However, analytical procedures—described in somewhat more detail than normally would be done if this paper were directed only at resource managers—may be a useful reference for recreation researchers.

## **EXPERIMENTAL DESIGN**

### **Survey Techniques**

The four survey techniques compared were: personal interview, handout, immediate mail, and delayed mail. The same questionnaire was used for all four surveys (appendix).

These techniques were applied at two New York State campgrounds—Fish Creek and Hearthstone Point—during the 3 summer months in 1964.

The questionnaire, which contained 17 questions, was printed

on light green paper and was folded into a brochure that was 8½ by 3 inches. To stimulate interest in the survey, a sketch of a woodland area was used as background material on the cover page.

Response patterns to the personal-interview technique were assumed to be the most valid measurements attainable of camper characteristics and opinions, and thus the personal-interview results served as the standard (or control) for evaluating results of the other three survey techniques. Although it is not always certain that this assumption is valid, personal-interview data generally are accepted as the most accurate measure of response patterns. With the personal-interview technique, non-response was negligible in the initial sample.

The handout survey was directed from the camper registration booth at the entrance to each park. As camping parties registered, certain ones received a questionnaire. They were requested to answer it and return it to the booth as they left the park after completing their visit.

In the immediate mail survey, questionnaires were mailed to selected camping parties immediately after they had completed their visit to the park.

In the delayed mail survey, questionnaires were mailed to sampled camping parties 3 months after they visited the park. A 3-month waiting period seemed sufficient for examining the effect of a time interval on respondent recall.

A cover letter and a postage-paid self-addressed business-reply envelope were included with all mailed questionnaires, including second, third, and fourth mailings to nonrespondents in the handout and mail surveys.

### **Sampling Procedure**

Sampling was carried on throughout the summer. As each camping party entered a park, one of the four sampling techniques was assigned to it:

1. Personal interview.
2. Handout survey.
3. Immediately mailed questionnaire.
4. Delayed mail questionnaire.

The survey techniques were assigned in sequence as camping parties arrived: 1,2,3,4,1,2,3,4,1,2,3,4, and so on. Each new day the sampling sequence was taken up where it had been left off the day before.

Furthermore, each day all parties selected were assigned systematically to one of two replications. In this way a replication number (1 or 2) was permanently assigned to each camping party throughout the experiment, regardless of whether they responded to the initial survey, the follow-up procedures, or did not answer at all. The replicating procedure resulted in two complete and independent sets of data throughout each of the three experimental factors—the parks, months, and techniques—and this permitted testing the significance of interactions (to be discussed later in detail) among these factors.

The sampling pattern resulted in unequal numbers of observations among parks, months, survey procedures, and replications. No effort was made to randomly delete from or add to a particular sample in order to have exactly the same number of respondents throughout all categories in the experimental design.

It was necessary to record, from a park's registration file, the names and addresses of those parties selected for the handout and mailed surveys. Each party's name was assigned a number that corresponded to a coded number on the questionnaire they received. This procedure permitted identification of nonrespondents for use in additional waves.

### **Sample Size**

The study was designed to detect differences between survey techniques that were important to management. For example, suppose *all* camping parties throughout the summer at the two parks had been personally interviewed, and for a given park-month category, 50 percent of the respondents answered a particular item within a question. Within the same park-month category in our experiment, we wanted a sufficient sample of respondents for each survey technique so that, 95 times out of 100, our sample percentage result ( $p$ ) would be within  $\pm 9$  percentage points of the true value ( $P$ ), when  $P = 50$  percent. The calculated sample size needed to meet our requirements was

125 respondents (Walker and Lev 1953) within each of the 24 technique-month-park categories. However, in the final results, sample sizes varied from 73 to 223, or about an average of 156 respondents, for any one technique-month-park category (table 1).

Variations in sample sizes were due to changes in campground use-intensity patterns, fluctuations in camper length-of-stay patterns, and unavoidable revisions in the sampling pattern. We did not have enough time and/or interviewers, especially during July and August, to interview all camping parties selected for personal interviews, and at the same time to maintain adequate sampling procedures at the campground registration booth for the handout and mailed surveys. Thus more respondents usually were included in the nonpersonal interview techniques (table 1).

Altogether, there were 48 cells in the study design: 4 techniques  $\times$  3 months  $\times$  2 parks  $\times$  2 replications = 48 cells. Final sample sizes within the various cells varied from 36 to 120 (table 1). Usually, any sample size of less than 50 or 60 re-

Table 1.—*Number of questionnaires partially or totally completed within each survey technique, month, park, and replication*

Park	Replication	Survey technique			
		Personal interview	Handout	Immediately mailed	Delayed mail
JUNE					
Fish Creek	1	50	52	53	49
	2	51	48	49	42
Hearthstone	1	37	54	47	45
	2	36	52	50	45
JULY					
Fish Creek	1	66	101	89	96
	2	65	93	93	93
Hearthstone	1	84	111	105	104
	2	88	105	99	107
AUGUST					
Fish Creek	1	45	94	87	93
	2	44	96	89	96
Hearthstone	1	89	111	120	107
	2	94	110	103	107
Total	—	749	1,027	984	984

spondents per cell included the entire population available for that specific cell. A total of 3,744 camping parties responded to the four survey techniques.

## **ANALYSIS**

Survey techniques were evaluated comprehensively. First, the total response to the sampling frame was analyzed. Then the response to individual questions in the handout and mailed methods and the response to the same items in the personal-interview method were compared and evaluated. All computations were performed on an IBM 1620 electronic digital computer.

### **Response to Sampling Frame**

All four survey techniques were compared in terms of the percentage of total sampling frame obtained after each successive wave during 3 months at two parks. A three-factorial analysis of variance was used: 4 methods  $\times$  3 months  $\times$  2 parks (with 2 replications)—Model I, fixed effects. The percentage of respondents in each cell was transformed to the arcsin square root before analysis, as recommended by Snedecor (1959).

Orthogonal comparisons (Walker and Lev 1953) were used to compare personal-interview plus handout results with immediately mailed plus delayed mail results; personal interview with handout data; and immediately mailed with delayed mail results. Individual months also were compared orthogonally: June with the combined effects of July and August; and also July with August (table 2).

### **Response to Question Items**

In the next phase of the analysis, replies to all questions were sorted into discrete categories. Then survey methods were compared, in percentage of respondents who answered individual items within each question. The items that were used as a basis for comparing survey techniques were those items answered most and least within each question of the personal-interview survey. An appropriate number of additional analyses was performed for several questions where more than two categories assumed a predominate and a minor position in the response spectrum.

Table 2.—Analysis of variance within sampling-intensity categories, after transforming percentage of total response to four methods at two parks and three months to arcsin  $\sqrt{\text{proportion}}$

Source of variation	D.f. <sup>1</sup>	Initial Sample		Initial sample + 1 wave		Initial sample + 2 waves		Initial sample + 3 waves		Initial sample + 4 waves	
		Mean square	F	Mean square	F	Mean square	F	Mean square	F	Mean square	F
Methods: <sup>2</sup>	3	5,824.79	—	2,757.24	367.14*	1,799.83	245.54*	1,378.57	208.87*	1,143.59	141.53*
1 + 2 vs 3 + 4	1	—	—	2,499.71	332.85*	1,852.69	252.75*	1,662.16	251.84*	1,474.86	182.53*
1 vs 2	1	—	—	5,765.07	768.65*	3,525.47	480.96*	2,473.56	374.78*	1,955.90	242.07*
3 vs 4	1	—	—	6.93	.92	21.34	2.91	.01	0.00	.01	0.00
Months: <sup>3</sup>	2	85.25	—	85.02	11.32*	70.87	9.67*	53.60	8.12*	37.15	4.60*
2 vs 3	1	—	—	1.45	.19	1.50	.20	6.40	.97	3.27	.40
1 vs 2 + 3	1	—	—	168.59	22.45*	140.24	19.13*	100.80	15.27*	71.02	8.79*
Parks	1	7.91	.97	.34	.05	1.90	.26	1.96	.30	.05	.01
Methods x months	6	25.76	3.17*	18.24	2.43	9.92	1.35	15.27	2.31	13.75	1.70
Methods x parks	3	9.60	1.18	4.13	.55	3.62	.49	1.43	.22	.14	.02
Months x parks	2	22.00	2.71	18.09	2.41	16.13	2.20	7.35	1.11	2.55	.32
Methods x months x parks	6	8.90	1.09	4.00	.53	7.05	.96	3.56	.54	6.34	.78
Error	24	8.13	—	7.51	—	7.33	—	6.60	—	8.08	—

<sup>1</sup> Degrees of freedom.

<sup>2</sup> Personal interview, handout, immediately mailed, and delayed mail methods are represented respectively by 1, 2, 3, and 4.

<sup>3</sup> June, July, and August are represented respectively by 1, 2, and 3.

\* Indicates significance at the 95-percent probability level.

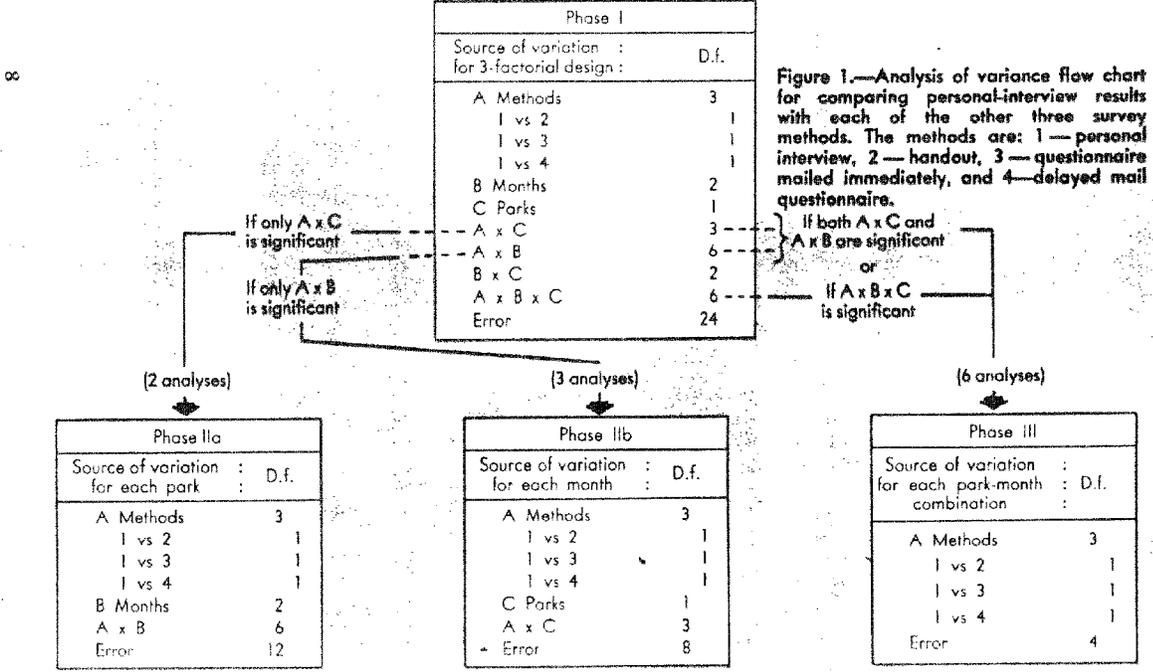


Figure 1.—Analysis of variance flow chart for comparing personal-interview results with each of the other three survey methods. The methods are: 1—personal interview, 2—handout, 3—questionnaire mailed immediately, and 4—delayed mail questionnaire.

Initially a three-factorial analysis of variance—4 methods (A)  $\times$  3 months (B)  $\times$  2 parks (C)—was performed, using only initial sample data; then a three-factorial analysis using total sample data—that is, the initial sample data plus data from all four waves—was done. The quantity analyzed was the arcsin square root transformed percentage of respondents. Dunnett's test (1955) was used to make individual comparisons between the personal-interview results and the other three methods.

There were several directions that any one analysis could take, depending on the statistical significance of the first-order and second-order interactions.

If the second-order interaction (AxBxC) was significant, or if both the AxB and AxC interactions were significant, the computer executed analytical phase III. This phase consisted of an analysis of variance for a single classification (methods) within each of the six park-month combinations (fig. 1).

If only the AxC interaction was significant, then phase IIa of the analysis was performed. This phase consisted of a two-factorial analysis of variance (4 methods  $\times$  3 months) within each of the two classifications for parks (fig. 1).

An analytical phase IIb was used if only the AxB interaction was significant. This resulted in a two-factorial analysis of variance (4 methods  $\times$  2 parks) within each of the three classifications for months (fig. 1).

If none of the first- or second-order interactions was significant, the analysis was completed in phase I. This procedure used the error term of the initial three-factorial analysis to test for significant differences among survey methods (fig. 1).

## **RESULTS AND DISCUSSION**

### **Total Response**

Although handout and mailed surveys have been criticized because they usually elicit a small proportion of returns and because people react differently to this kind of survey than they do to a personal interview, we found that these two points did not affect our results appreciably.

The overall results of this study indicated that handout and mail surveys—with four waves for nonrespondents—provide results that are the same as personal-interview results in 75 to 87 percent of the questions. Delayed mail surveys, conducted 3 months after the camping experience, appear preferable to handout or immediate mail surveys.

The month in which a survey was conducted significantly influenced the percentage of total response within each sampling intensity (table 2).

In the initial sample, response to the three nonpersonal interview methods varied during the 3 months from 34 to 52 percent (fig. 2). Also, with the initial sample, the ranges of these values between methods (fig. 2) was smaller in August (42 to 46 percent) than in June (40 to 52 percent) and July (34 to 47 percent). This response pattern may help to account for the significant method x month interaction encountered with initial sample data (table 2). Interaction measures the failure of the percentage results among the survey methods to follow approximately the same trend each month; or, conversely, interaction measures the failure of percentage results when summarized for each month to follow approximately the same trend throughout all survey methods.

Total response to the personal-interview method remained consistently high (98 to 99 percent) at all parks throughout the summer (fig. 2).

During July and August, overall response to the three nonpersonal-interview methods was the same throughout each wave; however, response for June was significantly different from July-August results (table 2).

The combined response to personal interviews and handout questionnaires was always significantly greater than the combined response to the mailed surveys. Furthermore, the handout response was always smaller than the response to the personal interviews, but response to the two mailed surveys always remained about the same (table 2). In addition, although not compared statistically, the percentage response to the handout method within the various waves seemed consistent with corresponding values of the mail survey (fig. 2).

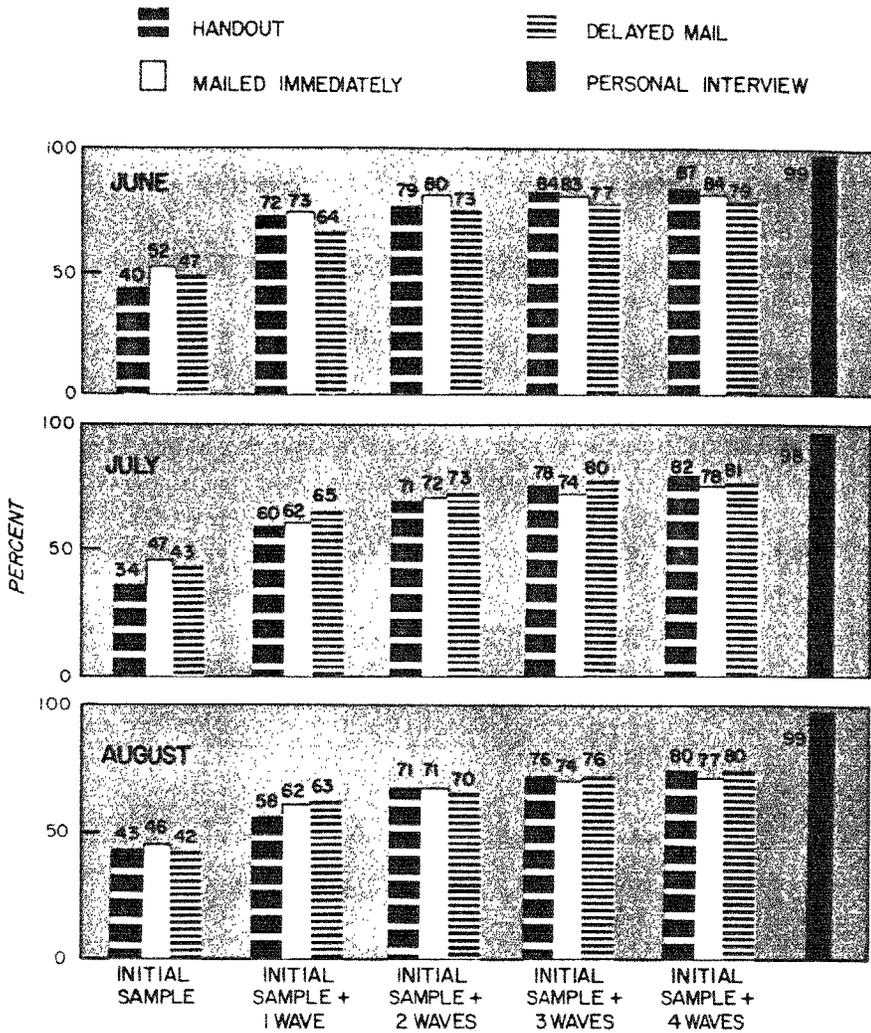


Figure 2.—Response to four survey-research methods that used the same questionnaire. An initial sample and four waves were used in the handout, immediately mailed, and delayed mail procedures. Bars indicate percentage of sampling frame obtained.

Maximum increases in total response were: 32 percent between the initial sample and the first wave (handout method in June); 13 percent from wave one to wave two (handout method in August); 7 percent between the second and third wave (handout and delayed mail methods in July); and 4 percent between wave three and four (fig. 2).

### Individual Questions

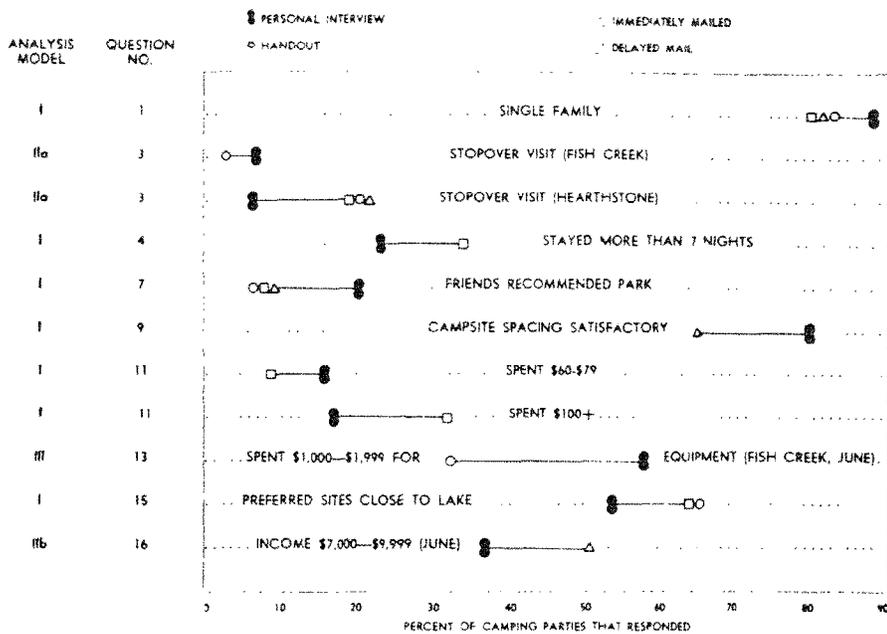
Remember that percentage results of the personal-interview technique needed to differ by  $\pm 8$  to 10 percent or more from corresponding results of the less expensive survey techniques before personal interviews would be used by managers and planners for future surveys.

When initial sample data of all four survey techniques were compared in percentage of camping parties who answered individual question items, the immediately mailed results differed significantly from the control (personal interview) about 12 percent of the time. The delayed mail results disagreed significantly with the control data 22 percent of the time. However, these trends for the mail surveys were approximately reversed when additional data from all four waves were combined with the initial data. Results of the handout technique differed significantly from corresponding results of the control 19 percent of the time, regardless of sampling intensity (table 2).

Table 3.—Percentage of question items in the handout and mailed survey methods that were significantly different from corresponding personal-interview data

Survey method	Sampling intensity	
	Initial sample data only	Initial sample + 4 waves
	Percent	Percent
Handout	19.0 <sup>1</sup>	19.0
Immediately mailed	12.5	25.0
Delayed mail	22.0	12.5

<sup>1</sup> For example, 19 percent of the question items in the initial sample of the handout method differed significantly from corresponding items in the personal-interview results.



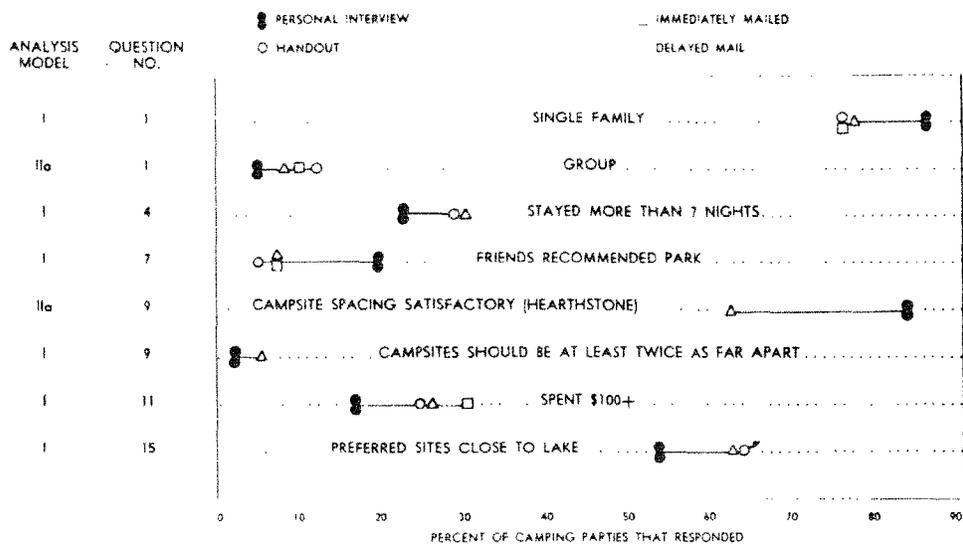
ANALYSIS-OF-VARIANCE MODELS USED TO DETECT SIGNIFICANT DIFFERENCES:  
 I = 4 METHODS X 3 MONTHS X 2 PARKS  
 IIa = 4 METHODS X 3 MONTHS  
 IIb = 4 METHODS X 2 PARKS  
 III = SINGLE CLASSIFICATION (PARKS)

Figure 3.—Questionnaire items in the initial response to handout or mailed surveys that differed significantly (at the 95-percent probability level) from personal-interview results.

Categories where significant differences in response occurred between the control and one or more of the other survey methods included: type of group, nature of visit, length of stay, reasons for camping, preferences for campsite spacing, trip expenditure pattern, equipment costs, preferences for campsite proximity to the lake, and income (figs. 3 and 4).

Regardless of sampling intensity, there were 8 to 10 percent fewer single-family camping parties in the nonpersonal interview methods than in the control (figs. 3 and 4). There were 4 to 8 percent more groups-of-friends in the handout and mail-survey results than in the control when all data were used for evaluating results (fig. 4).

In the percentage of campers who stayed 7 nights or longer, final results of the handout and immediately mailed methods were 6 to 8 percent greater than the control (fig. 4).



ANALYSIS OF VARIANCE MODELS USED TO DETECT SIGNIFICANT DIFFERENCES.  
 I = 4 METHODS X 3 MONTHS X 2 PARKS  
 IIa = 4 METHODS X 3 MONTHS  
 IIb = 4 METHODS X 2 PARKS  
 III = SINGLE CLASSIFICATION (PARKS)

Figure 4.—Questionnaire items in the total response to handout or mailed surveys that differed significantly (at the 95-percent probability level) from personal-interview results.

One of the reasons campers gave for visiting the parks was that they were recommended by friends. Regardless of sampling intensity, this answer was given by a significant 12 to 15 percent greater number of respondents in the control than in the other methods (figs. 3 and 4). However, there was agreement between the control and the other survey methods concerning other reasons frequently mentioned for camping, such as nearness to water and swimming facilities available.

Preference expressed for present campsite spacing in the im-

mediately mailed survey was 20 to 40 percent less than the control results (figs. 3 and 4).

There was a 9 to 10 percent difference between control values and those of the other survey methods, when all waves were combined, regarding a desire to camp as close to the lake as possible (figs. 3 and 4).

Within the \$100-plus stratum of the on-site expenditure category, final results of all self-enumerative techniques were 10 to 15 percent above the control value (fig. 4). Nonetheless, percentages in other strata of this cost distribution were about the same throughout the four survey methods.

Initial response in the \$7,000 to \$9,999 income bracket for the immediate mail survey was about 12 percentage points less than the control value (fig. 3).

Finally, for the handout technique, initial response in the \$1,000 to \$1,999 stratum for money spent on equipment was 26 percent lower than corresponding personal-interview results (fig. 3).

## **CONCLUSIONS**

If a total response between 75 and 85 percent of a sampling frame is desired, handout and mailed techniques used in future recreation surveys that use the same type of questions as this study will need an initial sample and two to three waves for nonrespondents. Additional attempts to contact nonrespondents beyond the use of three waves results in only a minor response from the remaining, and seemingly impenetrable, component of the sampling frame. Conversely, if personal interviews are used, practically 100 percent of the sampling frame will be obtained in the initial sample.

Handout and mail-survey procedures can be expected to elicit about the same total response regardless of the intensity of sampling or the sampling location; but sampling periods throughout the summer may have a significant influence on the percentage of total response.

Handout and mail-survey techniques—with three to four waves for nonrespondents—generally seem to be reliable for obtaining

information of the type requested in this study, if an occasional 10 to 15 percent discrepancy from comparable personal-interview values is acceptable. However, if only a 5 to 10 percent differential can be tolerated, then the delayed mail procedure is recommended, except perhaps for questions that deal with large value categories, such as \$100 or more spent while camping.

Because of the close similarities between most personal-interview and delayed-mail results, it seems very likely that most attitudes and impressions about pertinent facts surrounding the recreation experience do not change noticeably over a 3- to 5-month time interval immediately after the experience.

Since handout and mailed results for embarrassing questions about income and expenditure patterns or motivational reasons for camping (Backstrom and Hursh 1963) generally were the same as personal-interview results, the range of subject matter that could accurately be covered in future self-enumerative survey techniques in outdoor recreation seems quite broad and varied. The standard precautions and sampling procedures associated with handout and mail-survey techniques, as discussed by Boyd and Westfall (1964), Cochran (1953), and Payne (1951) should be followed.



## LITERATURE REFERENCES

- Backstrom, Charles H., and Gerald D. Hursh.  
1963. SURVEY RESEARCH. 192 pp. Northwestern Univ. Press. Minneapolis, Minn.
- Bauer, E. Jackson.  
1947. RESPONSE BIAS IN A MAIL SURVEY. *Public Opin. Quart.* 11: 594-600.
- Boyd, Harper W., and Ralph Westfall.  
1964. MARKETING RESEARCH. 791 pp. Rev. Ed. Richard D. Irwin, Inc. Homewood, Ill.
- Carter, Launor F.  
1963. SURVEY RESULTS AND PUBLIC POLICY DECISIONS. *Public Opin. Quart.* 17: 549-557.
- Clausen, J., and R. Ford.  
1947. CONTROLLING BIAS IN MAILED QUESTIONNAIRES. *J. Amer. Statist. Ass.* 42: 497-511.
- Cochran, William G.  
1953. SAMPLING TECHNIQUES. 330 pp. John Wiley and Sons, Inc., New York.
- Dunnett, C. W.  
1955. A MULTIPLE COMPARISON PROCEDURE FOR COMPARING SEVERAL TREATMENTS WITH A CONTROL. *J. Amer. Statist. Ass.* 50: 1096-1121.
- Ellis, Albert.  
1947. QUESTIONNAIRES VERSUS INTERVIEW METHODS IN THE STUDY OF LOVE RELATIONSHIPS. *Amer. Soc. Rev.* 3: 541-553.
- Ferriss, Abbott L.  
1951. A NOTE ON STIMULATING RESPONSE TO QUESTIONNAIRES. *Amer. Soc. Rev.* 24: 243-245.
- Gullahorn, John T., and Jeanne Gullahorn.  
1963. AN INVESTIGATION OF THE EFFECTS OF THREE FACTORS ON RESPONSE TO MAIL QUESTIONNAIRES. *Public Opin. Quart.* 17: 294-296.
- Hansen, Morris H., and William N. Hurwitz.  
1946. THE PROBLEM OF NON-RESPONSE IN SAMPLE SURVEYS. *J. Amer. Statist. Ass.* 41: 517-529.
- McGinnis, R.  
1954. SCALING INTERVIEW DATA. *Amer. Soc. Rev.* 18: 514-521.
- O'Dell, William F.  
1962. PERSONAL INTERVIEWS OR MAIL PANELS. *J. Marketing* 26: 34-39.
- Outdoor Recreation Resources Review Commission.  
1962a. THE QUALITY OF OUTDOOR RECREATION AS EVIDENCED BY USER SATISFACTION. ORRRC Study Report 5, 95 pp. Washington, D. C.
- Outdoor Recreation Resources Review Commission.  
1962b. PARTICIPATION IN OUTDOOR RECREATION: FACTORS AFFECTING DEMAND AMONG AMERICAN ADULTS. ORRRC Study Report 20, 94 pp. Washington, D. C.
- Payne, Stanley L.  
1951. THE ART OF ASKING QUESTIONS. 6th Ed. 249 pp. Princeton Univ. Press. Princeton, New Jersey.
- Snedecor, George W.  
1959. STATISTICAL METHODS. 5th Ed. 534 pp. Iowa State College Press. Ames, Iowa.
- Suchman, Edward A., and B. McCandless.  
1940. WHO ANSWERS QUESTIONNAIRES? *J. Appl. Psychol.* 24: 758-769.
- Walker, Helen M. and Joseph Lev.  
1953. STATISTICAL INFERENCE. 510 pp. Henry Holt and Co. New York.
- Wallace, David.  
1954. A CASE FOR—AND AGAINST—MAIL QUESTIONNAIRES. *Public Opin. Quart.* 18: 40-52.

# APPENDIX

## Questionnaire Used for All Four Survey Techniques

DEAR ADIRONDACK CAMPER

By answering this questionnaire, you will be helping us to make our campsites better places for you to visit.

If you have visited Fish Creek more than once this summer, please answer the questionnaire in relation to your longest visit.

When you have finished with the questionnaire, just drop it in the box labeled "Leave Questionnaire Here" at the camper registration office, or hand to a camp employee.

Thank you for your cooperation.

*Greetings Camper*

Will you please take a few minutes to tell us about your camping trip to Fish Creek Campground in 1964 and give us your preferences and opinions about campground facilities and design?

Note: If you forget to leave your questionnaire at the camping area, we will appreciate your mailing it to:

Forest Management Department  
Camper Preference Survey  
State University College of Forestry  
Syracuse, New York, 13210

This 1964 Adirondack

*Camper Preference Survey*

is being conducted by the  
N. Y. State Conservation Department  
State University College of Forestry  
United States Forest Service

Bureau of the Budget No. 40-6419  
Expires 3/31/65 Form No. 278

Bureau of the Budget No. 40-6419  
Expires 3/31/65 Form No. 278

# Adirondack Camper Preference Survey

(No signature required--To be filled out by the head of household or head of camping group.)

1. Please check the TYPE OF GROUP which best describes your camping party at Fish Creek (check one)
- Single family
  - Two or more families
  - Group of friends
  - Organized group (troop, team)
  - One person alone

2. What was the NUMBER OF PEOPLE in your party for each of the following categories?

\_\_\_\_\_ Number of people over 18 years old  
\_\_\_\_\_ Number of people between 12 and 18 years old  
\_\_\_\_\_ Number of children under 12

3. What was the NATURE OF YOUR VISIT to Fish Creek?

- Vacation
- Week-end excursion
- Stop-over between two destinations
- Other purpose

What? \_\_\_\_\_

4. What was the TOTAL NUMBER OF NIGHTS you stayed?

\_\_\_\_\_ Nights

5. How many YEARS has the same group (which you checked in Question 1) camped together?

\_\_\_\_\_ Years

How many YEARS has the same group (which you checked in Question 1) camped at Fish Creek?

\_\_\_\_\_ Years

6. How many OTHER PUBLIC CAMPING AREAS has this same group used in New York State since you have been camping together?

\_\_\_\_\_ Number of camping areas

7. Are there any CHARACTERISTICS about Fish Creek or its LOCATION which influenced your decision to camp there this year?

Yes  No  
If your answer is Yes, then: What was the MOST IMPORTANT factor about Fish Creek which influenced the decision to camp there?

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

What was the SECOND MOST IMPORTANT factor?

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

What was the THIRD MOST IMPORTANT factor?

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

What was the FOURTH MOST IMPORTANT factor?

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

8. When camping, what SIZE OF CAMPGROUND does your camping party prefer?

- Twice as large as Fish Creek
- About the same size as Fish Creek
- Half as large as Fish Creek
- Size of campground is not important to our camping experience
- Other

What? \_\_\_\_\_

9. When looking for a tent site in a camping area, what SPACING BETWEEN TENT-SITES does your camping party prefer?
- About the same distance apart as they are at Fish Creek.
  - Closer than they are at Fish Creek.
  - Twice as far apart as they are at Fish Creek.
  - Greater than twice as far apart as they are at Fish Creek.
  - Our camping party does not consider campsite spacing when selecting a tent site - any spacing is satisfactory.
  - Other  
What? \_\_\_\_\_

10. If you had a choice, what amount of TREES and SHRUBS would your camping party prefer around its campsite?
- Completely surrounded by trees and shrubs so that your tent site cannot be seen from other tent sites.
  - Partially surrounded by trees and shrubs but your tent site may be partially seen from other tent sites.
  - Very few trees and shrubs surrounding your tent site.
  - Amount of trees and shrubs around the tent site is not very important to camping experience.
  - Other  
What? \_\_\_\_\_

11. During your visit to Fish Creek, approximately HOW MUCH MONEY did your camping party spend for the following.\*

	Amount
Lodging (Hotel and motel fees) \$	_____
Camping fees	_____
Food	_____
Entertainment	_____
Gas, oil, etc. for car	_____
Other?	_____

\*Do not consider any money spent to camp at other public camping areas - just consider the amount spent while staying at Fish Creek.

12. What is the MAXIMUM AMOUNT of MONEY you would spend for the same length of visit next year?

\$ \_\_\_\_\_ Total

13. For CAMPING EQUIPMENT used at Fish Creek this year, how much did you pay for:

	Equipment purchased	Equipment rented this year.
Tenting equipment	_____	_____
Collapsible trailer	_____	_____
House trailer	_____	_____
Boat	_____	_____
Outboard motor	_____	_____
All other equipment (stove, sleeping bags, etc.)	_____	_____

14. Please RANK any 5 of the following items IN ORDER OF THEIR IMPORTANCE to your whole camping experience at Fish Creek. For example, if your party liked the swimming facilities best, the campsite design next, the facilities for securing food and supplies third, etc., the ranks 1, 2, 3 may be entered opposite each of these items, with 1 being the best liked; and then continue until you have ranked any 5 of the following items.
- Fishing facilities.
  - Campground design and campsite spacing.
  - Type and amount of trees and shrubs in the camping area.
  - Swimming and water sports facilities.
  - Availability of other recreational facilities and tourist attractions within a few hours drive from the camping area.
  - Facilities for securing food and supplies.
  - Sanitation and washroom facilities.
  - Hiking opportunities near camping area.

15. In relationship to the lake, what TYPE OF CAMPGROUND would your party prefer if they had their choice? (check one)



All tent sites as close to the lake as possible.



All tent sites partially screened from the lake.



All tent sites completely screened from the lake so that none are visible from the lake.

16. Would you please check your annual net income before taxes for husband and wife combined? (To be filled out only by heads of family groups.)

- \$ 0 to 3,999
- 4,000 to 6,999
- 7,000 to 9,999
- 10,000 or more

17. If you have any additional comments or criticisms regarding your camping visit to Fish Creek, please feel free to list them below:

---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---



---

Thank you for your interest.  
We hope to see you again.

Bureau of the Budget No. 40-6449  
Expires 12/31/65 Form No. 078