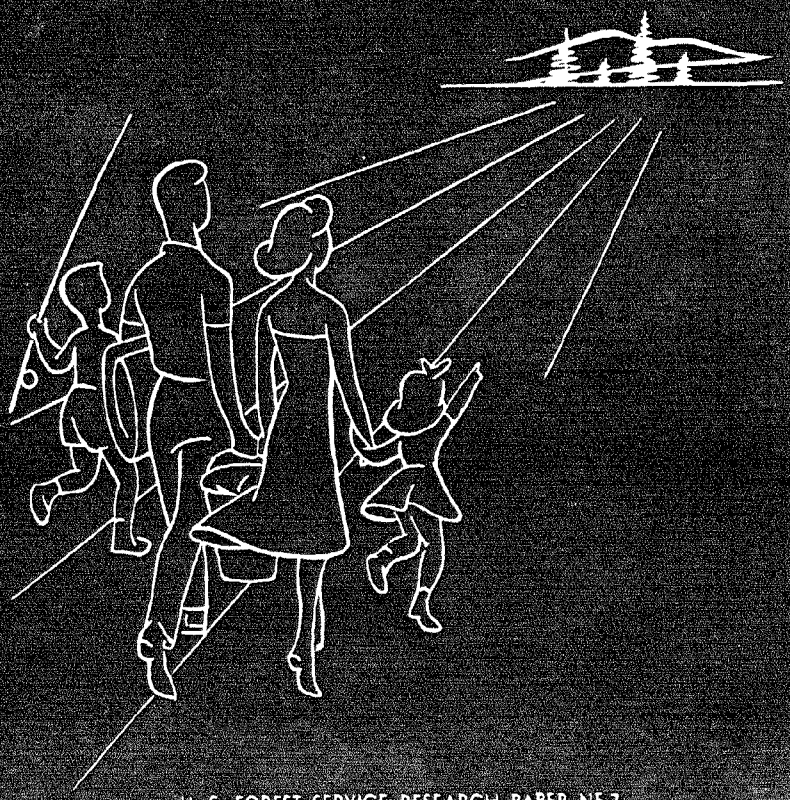
Relationships between

Visitor Characteristics and Recreation Activities

on two National Forest areas

by J. Alan Wagar



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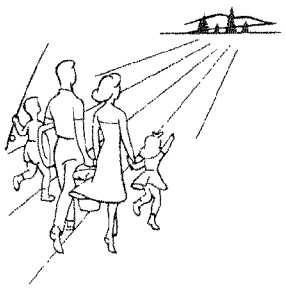


NEARLY every discussion of problems in outdoor recreation emphasizes the need of planners and administrators to know more about the people who seek recreation: their desires, their attitudes, and the kind of activities they prefer as well as what segments of the population they represent. Thus, as a preliminary study in recreation research, the Northeastern Forest Experiment Station sought to determine the relationships between the characteristics of visitors and their interests in recreational use of forest land. The study was also designed to guide future research in recreation.

A questionnaire was used on two National Forest recreation areas to establish these relationships and to determine: (1) what

Figure 1. — A typical summer scene at Twin Lakes Recreation Area, near Kane, Pa., one of the two areas where a study was made to determine what people want of a recreation area.

types of people were using these areas, (2) what these visitors were doing, (3) what they wanted, and (4) how much they enjoyed their visits.

The study was conducted at the Stuart Recreation Area on the Monongahela National Forest in West Virginia and at the Twin Lakes Recreation Area on the Allegheny National Forest in northwestern Pennsylvania (fig. 1 and fig. 2). Each of these areas is located in a pleasant forest environment near a small town; each offers swimming, picnicking, and camping. The Stuart Recreation Area, operated by Forest Service personnel, charges no admission

fee. The Twin Lakes Recreation Area, on the other hand, is operated by a concessionaire who charges for admission.

The sample does not represent a full cross-section of outdoor recreationists because the study was limited to visitors attracted by the specific offerings of these two recreation areas. Also, because response was voluntary, the returned questionnaires may not accurately represent the attitudes of all visitors. Thus the results offer no guaranteed planning formulas but simply present information that can be combined with knowledge from other sources to guide planners, administrators, and researchers. In addition, this study illustrates a method of analyzing research data and presenting relationships.

Figure 2. — A family picnic group at Twin Lakes. Picnicking ranked high among activities at both areas.

Procedures

At each recreation area, questionnaires were offered to a systematically selected sample of visitors over 15 years old. Approximately 950 visitors were invited to take questionnaires and to fill them out while on the area and return them either in person or by mail. To facilitate the return of questionnaires, a self-addressed, postpaid envelope was attached to each one. Only about 10 people refused to accept questionnaires.

As one test of differences between respondents and nonrespondents, the sex and estimated age of each person given a questionnaire were recorded. At both recreation areas the rate of response from visitors estimated to be between 20 and 39 years old was lower than for visitors who were estimated to be either younger or older than this group. This difference was statistically significant (at the 95-percent level of confidence) at the Stuart Recreation Area but not at Twin Lakes.

Approximately half of the respondents at the Stuart area and two-thirds of the respondents at Twin Lakes returned questionnaires in person before leaving the area. The rest of the respondents returned questionnaires by mail.

At the Stuart area, 527 questionnaires were distributed during 5 days (3 weekdays and 2 weekend days) in late August 1960. Of these, 299 (56.7 percent) were returned. At Twin Lakes, 416 questionnaires were distributed during 9 days (5 weekdays and 4 weekend days) in late July and early August 1960, and 279 (67.1 percent) were returned. Only four of these were unusable, and these were all from young visitors who obviously falsified their answers.

Answers to each questionnaire were coded and put on a punch card. Cards were then machine-sorted, and responses were tabulated for each question (table 1, Appendix). Of more importance, sorting provided cross-tabulations that could be tested to determine whether responses to one question were related to responses to other questions. Relationships between responses were tested for statistical significance by Chi-square. (An example is given in the Appendix). The results reported here include only those relation-

ships that showed at least a 95-percent probability that they really existed and were not just chance combinations of data.

Participation of specific groups of people in various activities has been expressed in percentages to identify recreation habits. However, the group with the highest rate of participation may not contribute the greatest number of participants. For example, the greatest *number* of picnickers on the Stuart Recreation Area lived within 10 miles. But there was a higher *percentage* of picnickers among respondents from the 11- to 30-mile zone.

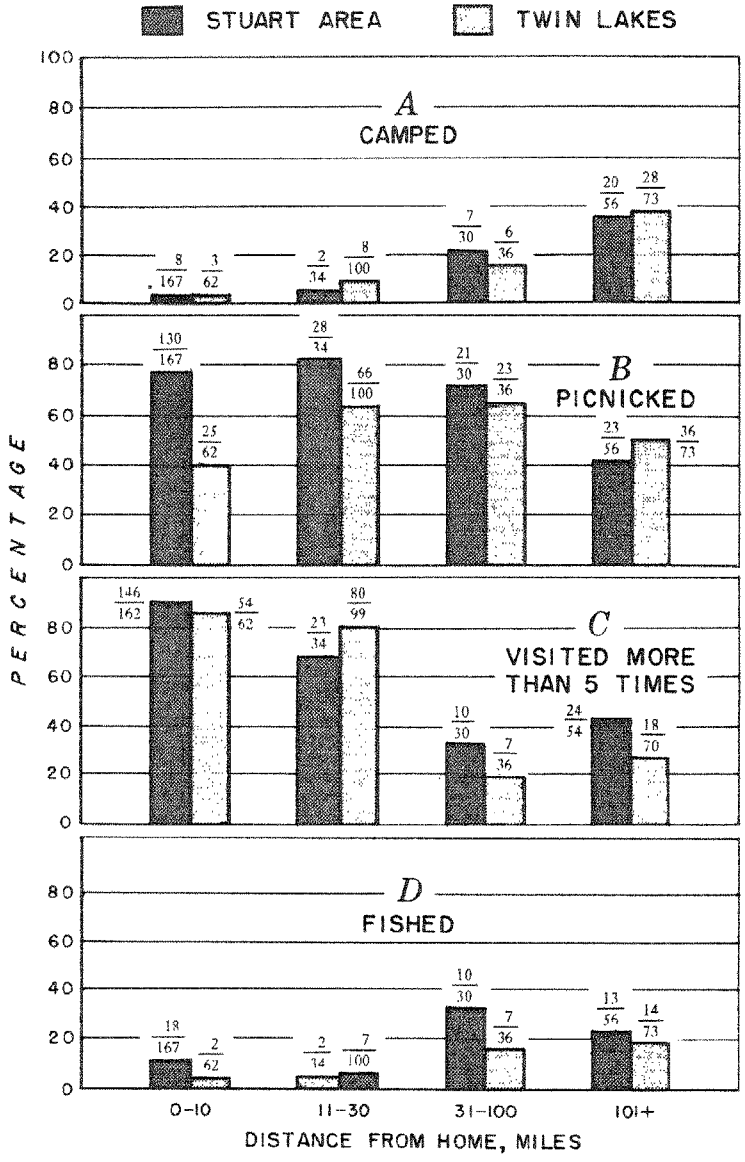
In this type of study it is always possible that the people who did not answer are different in their recreational preferences from the people who did. However, it was not possible to follow up the people who did not respond; and results refer only to the people who returned questionnaires. Because of the statistical procedures used to analyze the data, we can be at least 95 percent sure that the following relationships existed among the visitors who did reply.

Results

Answers from visitors to the Twin Lakes and Stuart Recreation Areas were sufficiently different so that some characteristics, attitudes, and actions of visitors to the one area could not be adequately predicted from a survey on the other area. Thus when responses from Twin Lakes were compared with responses from the Stuart area, significant differences were found in distributions of age, income, education, marital status, distance from home, reasons for visiting, number of previous visits, hours spent per visit, and the proportion of respondents who picnicked, swam, sat and watched, or pursued some active recreation.

In spite of the many differences between visitors to the Stuart area and Twin Lakes, several relationships between visitor characteristics and activities were similar on both areas. Although a sample of only two areas does not permit generalization, the similarity of results suggests that some of these relationships may have wide application and should be tested by further research.

Figure 3. — Recreation activities at the two areas, as related to the distance visitors traveled to get there. In this and the following charts the fractions over the bars show the data used to compute percentages. For example, in the top graph, 8/167 over the first bar indicates that, among the 167 respondents within 10 miles of home, 8 were camping.



In the following presentation, relationships common to both areas are separated from patterns found on only one area.

Relationships Common To Both Areas

Participation in several activities was related to the distances people lived from the recreation areas. The percentages of respondents who camped increased with distance from home (fig. 3,A). On each area the percentage of respondents who picnicked was highest for the 11- to 30-mile zone and decreased for greater distances (fig. 3,B). The lower percentage of picnickers from the 0- to 10-mile zone can undoubtedly be explained by the ease with which nearby residents could visit for part of a day and return home for meals.

As would be expected, the respondents living closest to the area visited it most frequently (fig. 3,C). The percentage of frequent visitors decreased with distances out to 100 miles but then increased again. This increase probably resulted from the popularity of the areas with campers, the majority of whom arrived from distances greater than 100 miles. At both areas, fishing was more popular among people who lived more than 30 miles away than among visitors who lived closer (fig. 3,D).

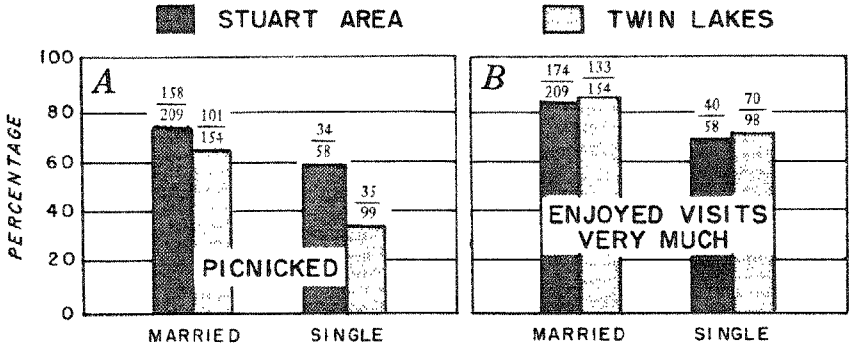


Figure 4. — Marital status as related to the visitors who picnicked, and to those who said they enjoyed their visits very much.

Married visitors were more likely than single people to picnic (fig. 4,A) and to say that they enjoyed their visits very much (fig. 4,B). Higher percentages of married respondents arrived with family (fig. 5,A) and higher percentages of single respondents arrived alone (fig. 5,B) or with friends (fig. 5,C). Only male respondents indicated that they arrived alone. And of all male respondents, only 5.2 percent arrived alone at the Stuart area and 7.8 percent at Twin Lakes.

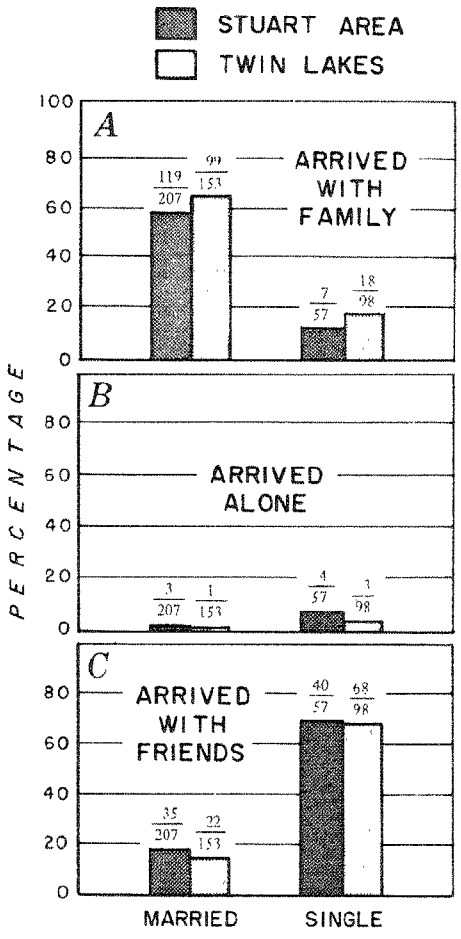


Figure 5.—Marital status as related to the groupings in which visitors arrived.

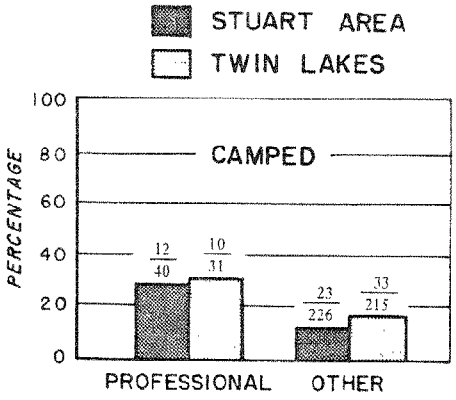


Figure 6. — Recreational activities were related to type of employment. Professional people were more likely to camp than others.

Significantly higher proportions of professional people camped at both areas than did respondents with other occupational classifications (fig. 6). Housewives and other non-income-producers were classified according to the occupation from which their family incomes were primarily derived.

Stuart Recreation Area

The percentage of people who were sightseeing at the Stuart Recreation Area tended to increase with their distance from home and was greatest for the 31- to 100-mile zone (fig. 7). Visitors seeking new sights probably travel farther than visitors with other motivations. Also, people are apt to become increasingly curious

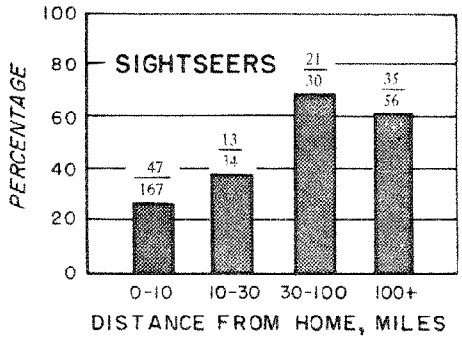
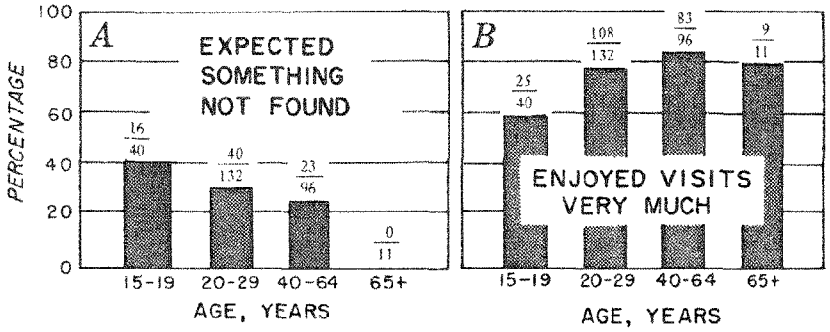


Figure 7.—Stuart Recreation Area: distance from home as related to sightseeing.

Figure 8. — Stuart Recreation Area: relationships among age groups and enjoyment of the area. Younger people seemed to be less satisfied than older people.



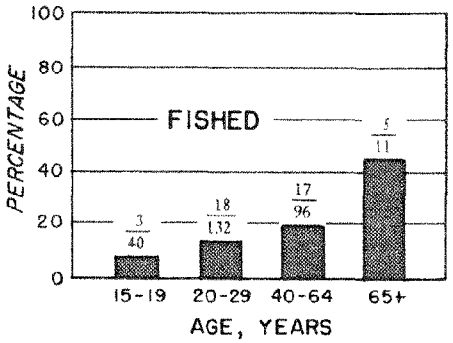


Figure 9. — Stuart Recreation Area: relationship between age and fishing.

about their surroundings when they leave their everyday environments. The slight decrease in sightseeing by visitors from more than 100 miles away may have resulted from the fact that campers predominated in this group. Thus camping might have replaced curiosity and sightseeing as the prime factor motivating travel for some visitors from this distance zone.

The percentage of respondents who expected something not found on the Stuart Recreation Area decreased with age (fig. 8,A) and fewer teenagers replied that they enjoyed their visits "very much" than did older respondents (fig. 8,B). These results indicated a tendency for young people to be less satisfied than older

people with their visits to the area. The explanation for this difference between age groups may be important in planning for future recreational developments, and further research is needed to determine what this difference means.

The percentage of visitors who fished increased with age (fig. 9). Fishing was more popular among men than women. Sitting and watching were more popular among women.

As income increased, the percentage of people who were camping increased (fig. 10,A). However, in actual numbers more than

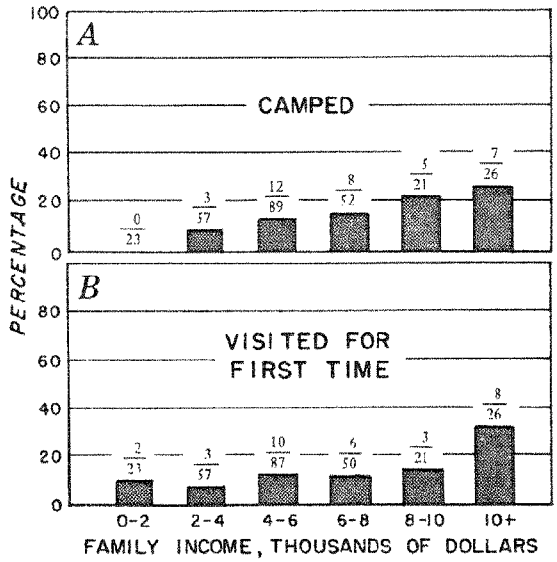


Figure 10. — Stuart Recreation Area: family income related to recreation activities.

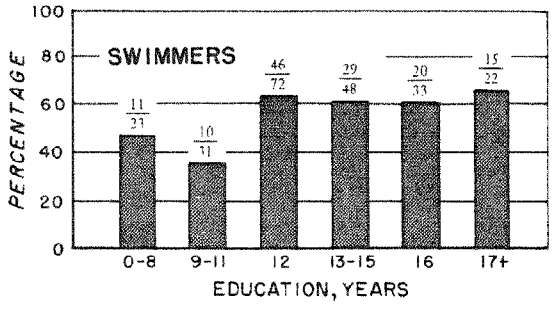


Figure 11. — Stuart Recreation Area: education related to swimming.

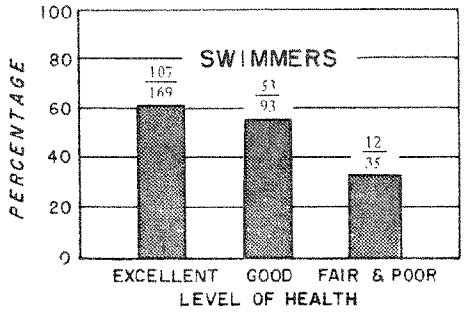


Figure 12.—Stuart Recreation Area: swimming related to health.

half of the campers sampled had incomes between $4,000 and $8,000. The percentage of visitors making their first visit to Stuart tended to increase with income (fig. 10,B)—probably indicating that people with the higher incomes travel more widely than people with lower incomes.

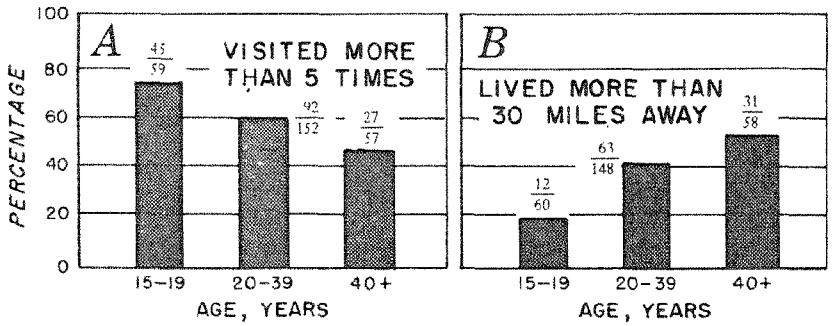
Adult visitors to the Stuart area who did not complete high school were less likely to swim than were adults with more education (fig. 11). This difference may indicate that people who are able to go to school longer also have greater opportunity to develop recreational skills. As might be expected, fewer people with poor or fair health swam than did visitors who indicated good or excellent health (fig. 12).

Twin Lakes Recreation Area

Young people visited Twin Lakes more frequently than older people (fig. 13,A). Women visited the area more frequently than men. The percentage of visitors who lived more than 30 miles away increased with age (fig. 13,B)—indicating that older people may travel more widely than others. (This trend would probably reverse beyond retirement age, but the sample at Twin Lakes included very few visitors over 64).

At Twin Lakes, a higher percentage of married than single people came from more than 30 miles away; a higher percentage of married people were found to be camping; and a higher percentage of single people came for the purpose of sightseeing or were found to be sitting and watching. Finally, a smaller percent-

Figure 13. — Twin Lakes Recreation Area: relationships between age, frequency of visits, and distance traveled.



age of visitors in the below-$2,000 income class participated in active recreations at Twin Lakes than did people with higher incomes. One explanation may be that the lowest income group included retired people and working women.

Conclusion

The results of this study tell us much about visitors on the Stuart and Twin Lakes Recreation Areas. Although these results cannot now be applied directly to other areas with any assurance, the fact that some relationships are nearly identical on both areas may indicate widespread uniformity in visitor use-patterns. And if additional studies show further uniformity it should be possible to accurately project some visitor use-patterns from the trends found in population, education, leisure, and the economy.

■

Appendix

I

Table 1. — *Responses to the questions asked in recreation study*

Item	Stuart Area[1]	Twin Lakes[1]
	Percent	*Percent*
What was your most important reason for coming to this recreation area?		
Swimming and sunning	20.1	39.8
Preference for specific traits of area	11.7	16.5
Picnicking	30.4	9.7
General enjoyment	7.0	9.3
Interest in opposite sex	1.0	2.9
Scenery or sightseeing	4.3	1.4
Part of other or longer trip	4.3	1.4
All other answers	18.8	17.9
No response	2.4	1.1
While you are here, what things are you doing?[2]		
Fishing	14.7	10.8
Sightseeing	39.8	35.5
Camping	[3]13.4	[3]16.1
Sitting and watching	53.5	73.5
Picnicking	70.6	55.2
Swimming	57.9	83.5
Hiking	25.4	19.0
Other	[4]17.1	5.0
Proportion of respondents who participated in some form of active recreation (fishing, swimming, hiking)	69.2	85.7
How much are you enjoying your visit here?		
Very much	80.2	79.6
Fairly well	18.1	20.1
Not very much	1.0	.0
Not at all	.7	.0
No response	.0	.3

[1] Unless otherwise indicated, percentages for the Stuart area are based on 299 questionnaires and those for the Twin Lakes area are based on 279 questionnaires.

[2] Because more than one answer could be checked, answers to this question total more than 100 percent.

[3] The indicated percentage of campers at both areas may be affected by sampling procedures and therefore could be nonrepresentative.

[4] Answers most commonly listed under "other" by visitors to the Stuart area were: Softball, vesper services, visiting, horseshoes, cards, and other games.

CONTINUED

Table 1.— *(continued)*

Item	Stuart Area[1]	Twin Lakes[1]
	Percent	*Percent*
Is there a state park or forest recreation area closer to your home than this?		
Yes	[5]25.8	[6]60.9
No	69.2	36.9
Don't know	3.3	1.1
No response	1.7	1.1
How many times have you been here?		
First time	11.7	20.1
2 to 5 times	15.7	19.3
6 or more times	69.9	59.5
No response	2.7	1.1
How much time do you usually spend here?		
Day visitors:[7]		
1 to 2 hours	20.1	9.4
3 to 4 hours	44.0	44.8
5 or more hours	26.2	39.0
No response	9.7	6.8
Overnight visitors:[8]		
1 to 2½ days	35.0	22.2
3 to 5½ days	27.5	26.7
6 to 16½ days	17.5	28.9
17 to 30½ days	.0	.0
31 or more days	2.5	6.7
No response	17.5	15.5
Are you?		
Male	44.8	41.9
Female	41.8	45.5
No response	13.4	12.6
Are you?		
Married	69.9	55.2
Single	19.4	35.5
No response	10.7	9.3

[5] Audra State Park, near Audra, W. Va., was the closer park area most commonly mentioned.

[6] Bendigo State Park, near Johnsonburg, Pa., was the closer park area most commonly mentioned.

[7] Percentages based on 259 questionnaires from the Stuart area and 234 questionnaires from Twin Lakes.

[8] Percentages based on 40 questionnaires from the Stuart area and 45 questionnaires from Twin Lakes.

CONTINUED

Table 1. — *(continued)*

Item	Stuart Area[1]	Twin Lakes[1]
	Percent	*Percent*
Which age group are you in?		
15 to 19	13.4	21.5
20 to 39	44.1	55.2
40 to 64	32.1	20.4
65 plus	3.7	.7
No response	6.7	2.2
Do you consider your health—		
Excellent	56.5	64.5
Good	31.1	28.7
Fair	10.4	5.4
Poor	1.3	.0
No response	.7	1.4
About what is the annual income of your family before taxes?[9]		
$0 to 1,999	7.7	3.9
$2,000 to 3,999	19.0	14.7
$4,000 to 5,999	29.8	38.7
$6,000 to 7,999	17.4	12.9
$8,000 to 9,999	7.0	9.0
$10,000 plus	8.7	7.5
No response	10.4	13.3
How many years of school have you completed?[10]		
Primary schooling only	9.6	4.7
High school started, not completed	13.0	13.7
High-school graduate	30.1	42.4
College started, not completed	20.1	18.9
College graduate	13.8	13.7
Post-graduate study	9.2	4.2
No response	4.2	2.4

[9] Income data are probably inaccurate, especially in the $10,000 plus bracket. Many respondents either did not answer this question or else checked several answers. A few respondents wrote "none of your business" or similar comments on the questionnaire. The age, education, and occupation given by some respondents did not support the high income figures they checked.

[10] Responses from visitors younger than 20 are not included. Percentages are based on 239 questionnaires from the Stuart area, 212 from Twin Lakes.

CONTINUED

Table 1. — *(continued)*

Item	Stuart Area[1]	Twin Lakes[1]
	Percent	*Percent*
What occupation provides the main source of income for your family?		
"Blue collar"	21.8	34.4
Professional	13.4	11.1
Business and sales	11.7	9.3
Other white collar	3.3	5.4
Unemployed	.0	1.1
Retired[11]	.7	.4
Other[12]	38.1	26.5
No response	11.0	11.8
Did you come to this area—		
Alone	2.3	1.4
With family	47.8	48.4
With friends	27.8	33.7
With family and friends	21.4	15.8
No response	.7	.7
How far away do you live?		
0 to 10 miles	55.9	22.2
11 to 30 miles	11.4	35.8
31 to 60 miles	7.7	12.2
61 to 100 miles	2.3	.7
100 miles or more	18.7	26.2
No response	4.0	2.9

[11] Former occupations of retired people were coded if possible.

[12] Many of the answers given as occupation were not specific enough to code, hence the large percentages of "other" occupations.

II

Example of Chi-Square Analysis

Punch cards for the Stuart Recreation Area were sorted according to the distances respondents lived from the area. The cards for each distance zone were then further sorted into two groups: *camped* and *didn't camp*. Counts of the sorted cards provided observed values for the cells of the following tabulation:

	Distance from home, in miles				
	0-10	*11-30*	*31-100*	*101+*	*Total*
Camped:					
Observed	8.	2.	7.	20.	37
Expected	21.53	4.38	3.87	7.22	—
Difference	13.53	2.38	3.13	12.78	—
Didn't camp:					
Observed	159.	32.	23.	36.	250
Expected	145.46	29.61	26.13	48.78	—
Difference	13.54	2.39	3.13	12.78	—
Totals	167.	34.	30.	56.	287

Expected values for each cell were computed by proportioning the marginal totals in each distance zone according to the proportions of the grand total made up of campers and non-campers. Thus the expected value for campers in the 0-10 zone equals $167 \times (37/287) = 21.53$; the expected value for non-campers in the 0-10 zones is $167 \times (250/287) = 145.46$; etc. The values obtained by squaring each difference and dividing it by the expected value were then summed to give the computed value of Chi-square. This equals $(13.53)^2/21.53 + (2.38)^2/4.38 + (3.13)^2/3.87 + (12.78)^2/7.22 + (13.54)^2/145.46 + (2.39)^2/29.61 + (3.13)^2/26.13 + (12.78)^2/48.78$, which equals 40.10 at 3 degrees of freedom. Degrees of freedom equal the number of columns minus one (in this case $4 - 1 = 3$), times the number of rows minus one (in this case $2 - 1 = 1$). A table of Chi-square values shows that a value of 40.10 could be explained by chance less than 1 time in 1,000. Therefore we can reject the hypothesis that participation in camping is independent of distance from home.

■