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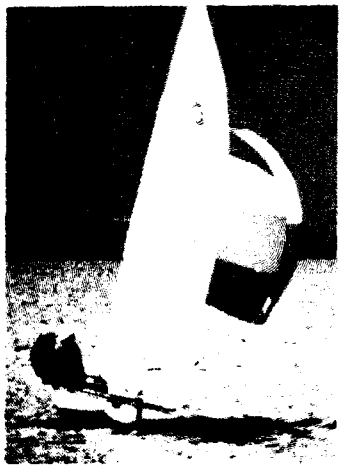

NATURAL RESOURCES RESEARCH PROGRAM

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# SUMMARY OF THE 1988 CAMPGROUND RECEIPT STUDY

by

Tere A. DeMoss

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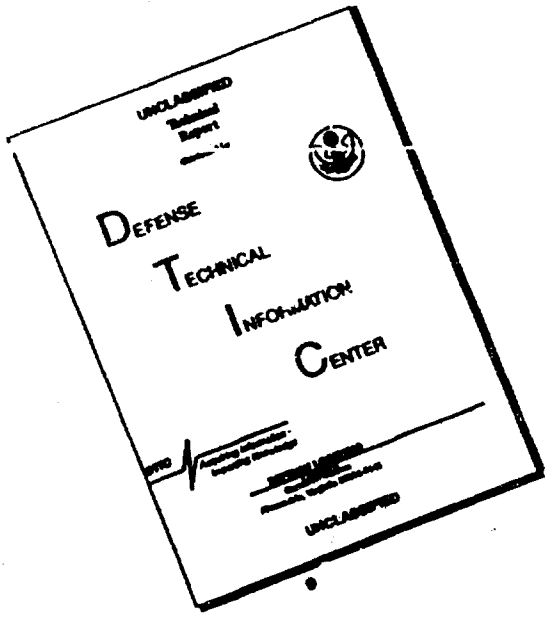


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The Campground Receipt Study (CRS) was established to systematically collect information on visitor characteristics at Corps of Engineers fee campgrounds. This system has proved to be an efficient method of collecting trend data.

Since the creation of the CRS there have been a great many changes in the study procedures, data collection form, and study sites. These changes have been described in previous reports. The main purpose of this report is to describe the 1988 data and the trends in camping use indicated by the CRS data collected from 1981 to 1988.

The CRS data represent the best available nationwide sample of descriptive characteristics of visitors to Corps campgrounds. The database can be used by all levels within the Corps to examine current use patterns and, with several years of data, to monitor and evaluate changes in visitor characteristics over time.

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# Contents


Preface . . . . . .v

1—Introduction . . . . . .1

Purpose . . . . . .1
Background . . . . . .1
Study Procedures . . . . . .3
Multi-Year Procedural Development . . . . . .3

2—Data Analysis . . . . . .5

1988 CRS Data . . . . . .5
Trend Analysis . . . . . .8

3—Conclusions And Recommendations . . . . . .25

Conclusions . . . . . .25
Recommendations . . . . . .26

References . . . . . .27

Appendix A: 1988 CRS Data Summaries
for Individual Recreation Areas . . . . . .A1



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Availability Codes
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## Figures


Figure 1. Campground Receipt Study project locations . . . . . 2

Figure 2. Mean number in party, 1981-88 . . . . . 9

Figure 3. Mean length of stay (in days), 1981-88 . . . . . 10

Figure 4. Percent of camping parties with prior visits to the project, 1981-88 . . . . . 11

Figure 5. Percent of camping parties having the project as their primary destination, 1981-88 . . . . . 12

Figure 6. Percent of camping parties using Golden Age or Golden Access passports, 1981-88 . . . . . 13

Figure 7. Percent of camping parties with cars, 1981-88 . . . . . 14

Figure 8. Percent of camping parties with trucks, 1981-88 . . . . 15

Figure 9. Percent of camping parties with vans, 1981-88 . . . . . 16

Figure 10. Percent of camping parties with motor homes, 1981-88 . . . . . 17

Figure 11. Percent of camping parties with tents, 1981-88 . . . . . 18

Figure 12. Percent of camping parties with pop-up trailers, 1981-88 . . . . . 19

Figure 13. Percent of camping parties with pickup campers, 1981-88 . . . . . 20

Figure 14. Percent of camping parties with travel trailers, 1981-88 . . . . . 21

Figure 15. Percent of camping parties with powerboats, 1981-88 . . . . . 22


## Tables


Table 1. 1988 Camping Permit Summary . . . . . 6

Table 2. 1988 General Use Characteristics . . . . . 6

Table 3. 1988 Distribution of Vehicle Types . . . . . 7

Table 4. 1988 Distribution of Camping Equipment and Powerboats . . . . . 8

# Preface

The work reported herein was conducted as part of the Natural Resources Research Program (NRRP). The NRRP is sponsored by the Headquarters, US Army Corps of Engineers (HQUSACE), and is assigned to the US Army Engineer Waterways Experiment Station (WES) under the purview of the Environmental Laboratory (EL). The NRRP is managed under the Environmental Resources Research and Assistance Programs (ERRAP), Mr. J. L. Decell, Manager. Dr. A. J. Anderson was Assistant Manager, ERRAP, for the NRRP. Technical Monitor(s) during this study were Ms. Judy Rice and Mr. Robert Daniel, HQUSACE. This report presents the results of the 1988 Campground Receipt Study. Camping trends are presented based on time series data collected from a nationally representative sample of Corps-managed campgrounds.

The report was prepared by Ms. Tere A. DeMoss, Resource Analysis Group (RAG), EL. Individuals who contributed technical expertise to this report were Mr. Kay Arunalasam and Ms. Tracy L. Christian, RAG. Review and comments were provided by Mr. R. Scott Jackson and Ms. Kathleen Perales, RAG.

The report was prepared under the general supervision of Mr. H. Roger Hamilton, Chief, RAG, EL; Dr. Conrad J. Kirby, Chief, Environmental Resources Division, EL; and Dr. John Harrison, Chief, EL. The report was edited by Ms. Janean Shirley of the Information Technology Laboratory, WES.

COL Larry B. Fulton, EN, was Commander and Director of WES during preparation of this report. Dr. Robert W. Whalin was the Technical Director.

This report should be cited as follows:

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# 1 Introduction

## Purpose

This is the eighth in a series of reports which summarize the results of the Campground Receipt Study (CRS). The CRS has undergone continual improvement in procedures and in the application of data analysis. Changes in procedures are generally found in the earlier reports (1980-82), while improvements in special data applications tend to be found in the later reports (1982-88). The main purpose of each report, however, is to describe the CRS data so that a database can be established to analyze trends in camping use each year. This summary uses the 1988 data and examines the trends from 1981 through 1988.

## Background

In 1978, the Recreation Research and Demonstration System (RRDS) was established under the Natural Resources Research Program of the US Army Corps of Engineers. The RRDS units serve as permanently designated outdoor laboratories at which information on recreation and resource aspects of lake management can be systematically gathered. In constructing a representative sample of sites, Title V economic development and physiographic regions[1] were combined to produce 30 physio-economic regions. Twenty-four units were selected from these regions, representing approximately 5 percent of the then 465 Corps projects. From these 24 units, the 16 projects with fee camping programs agreed to participate in the CRS (Figure 1). The 24 projects were chosen to represent a wide variety of multi-purpose reservoirs, locks and dams, and dry lakes. A US Army Engineer Waterways Experiment Station (WES) publication (Hart 1981) contains a detailed explanation of the RRDS units and their selection. Specific criteria for selection are provided below:

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1 Title V, Public Works and Economic Development Act of 1964 (Public Law).

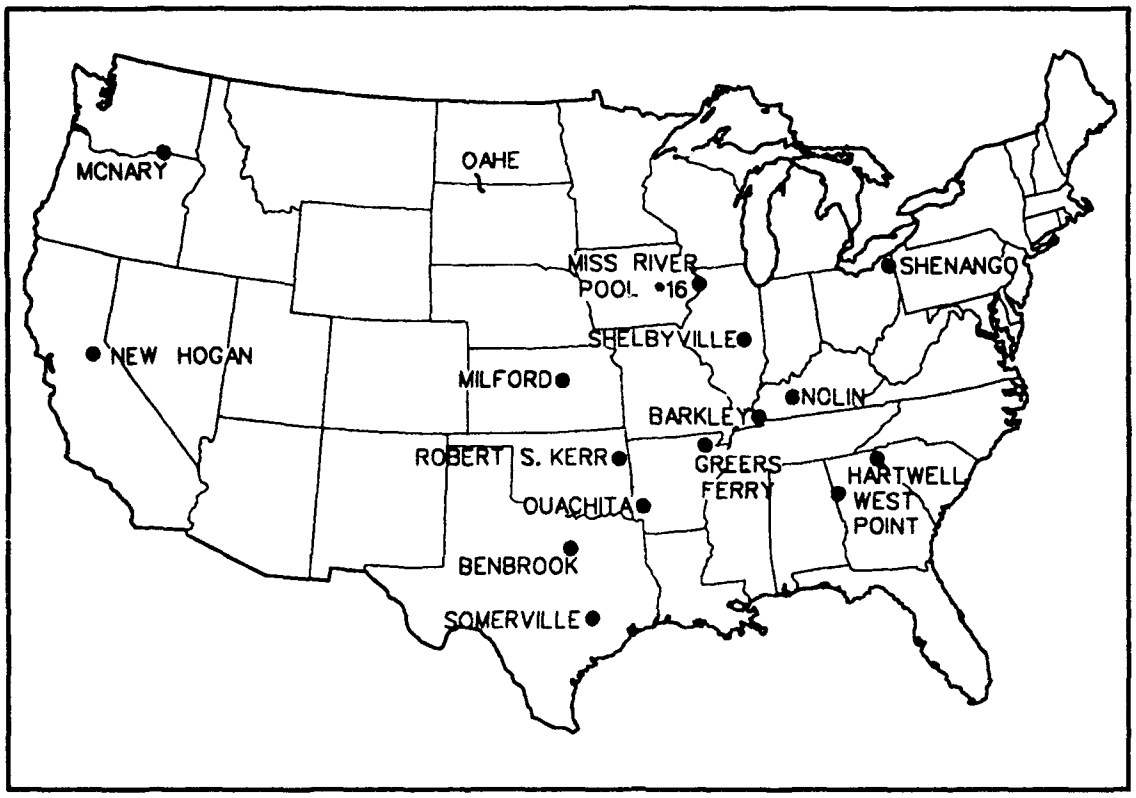


Figure 1. Campground Receipt Study project locations

*a*. Full range of activities.

*b*. Spectrum of resource characteristics.

*c*. Nationwide distribution of units.

*d*. Range of conditions at multi-purpose projects.

*e*. Planning, design, and management tasks.

One of the main uses of the RRDS has been the CRS. Through the CRS, a database has been developed on one of the Corps' most popular activities: camping. Four factors guided the development of the CRS (Curtis and Hansen 1982):

*a*. The procedures and instruments developed were to place a minimum burden on project personnel.

*b*. The procedures were to have a minimum impact on the recreation visitor when registering at the campground.

*c*. The monitoring procedures were intended to be cost-effective and efficient.

*d*. The data collected were designed to be valid and reliable.

There are two important distinctions concerning the CRS database that require attention. First, the information gathered, as a subset of the CRS, only includes fee campers; therefore, these campers do not describe the "Corps visitor" per se. Second, the analyses are done to illustrate potential uses rather than to provide a definitive portrayal of all possible applications. Users are encouraged to further utilize the database as the management tool for which it was intended.

## Study Procedures

Data collection for this study was done by rangers and campground gate attendants as campers registered. Most of the data were collected through observation, so there was minimum impact on the visitor. Data were recorded on Engineer Form 4457-1. A thorough discussion of the development of this form is provided in the 1983 Campground Receipt Study report by Akers-Fritschen (1985).

After the CRS data were collected and sent to the corresponding District Offices for keypunching, they were forwarded to WES for analysis. For the analysis, a FORTRAN program, the Recreation Analysis Program (RAP), was developed. This program generates two reports. The "Area Report" provided a summary of the CRS data for each recreation area, while the "Site-Specific Data Report" provided most of the same information for each campsite. District offices that participate in the CRS were provided with a copy of the RAP for their own analysis purposes.

For the 1986-88 analysis, data from the RAP output were transferred into the Statistical Analysis System (SAS). SAS is an advanced data manager and statistical software package. The creation of SAS data sets for the CRS provides greater options for examining the data with specific research questions.

## Multi-Year Procedural Development

Data gathered at the demonstration units have undergone three distinct phases of development. Initially, the study focused attention on the campground receipt in terms of defining how and what types of data were to be collected. Forms went through improvements and were finalized during the early part of the study. Comparison of key variables across projects has provided an assessment of campground market behavior in the Corps.

A second stage of development has been the documentation of general results over time, such as reporting on the changes in types of camping equipment. Important trends are highlighted in the report series (e.g., an increase in camping parties with tents and camping parties with powerboats during the years 1981 through 1984) (Lawrence and Fritschen 1986).

The third stage of CRS development has included the use of data for analyses beyond routine summaries and toward specialized management applications. This report is an extension of previous efforts since it reports on salient trends while illustrating management applications. This is aimed at improving the efficiency of project operations, which will provide for a general understanding of the Corps customer who stays overnight at a Corps campground.

# 2 Data Analysis

## 1988 CRS Data

The data summarized in this report were collected from the eight projects that participated in the CRS during 1988. The CRS data were analyzed as independent recreation areas and projects, and then for the entire sample of projects. In this section, both the individual project and entire sample data will be described. The recreation area data can be found in Appendix A.

### Data limitations

In 1986 and 1987, the supply of Engineering Form 4457-1 was inadequate to meet the needs of all CRS projects. In 1986, from 15 projects, the number of camping permits decreased from 146,087 (1985) to 79,390. In 1987, the number of projects participating decreased to nine projects. Since the lack of forms was not a problem in 1985, Table 1 shows the 1985 data instead of the 1986-87 permit summary. Readers are advised to compare the number of permits issued in 1988 to the number issued in 1985 to judge how completely the data in this table represent camping use during that time period.

### 1988 data

Campers at the CRS recreation areas accounted for 763,606 recreation days[1] of use in 1988 (Table 2). The average length of stay ranged from 2.0 to 3.4 nights. The average for the entire CRS in 1988 was 2.7 nights.

The size of the camping parties in 1988 averaged 3.4 persons, ranging from 2.4 at Mississippi Pool 16 to 3.8 at Milford and Shenango River Lakes. Nationwide, 78.4 percent of the parties had previously visited the

[1] A recreation day is defined as a visit by one individual to the project for recreation purposes during all or any reasonable portion of a 24-hr period.

**Table 1**
**1988 Camping Permit Summary[1]**

| Project | Number of Permits, 1985 | Number of Permits, 1988 | Number of Groups, 1988 |
|---|---|---|---|
| Greers Ferry Lake | 20,210 | 55,855 | 42,515 |
| Milford Lake | 4,408 | 4,088 | 3,663 |
| Mississippi Pool 16 | 1,873 | 2,581 | 1,805 |
| Nolin River Lake | 5,256 | 4,220 | 3,873 |
| Lake Oahe | 8,036 | 11,883 | 8,099 |
| Lake Ouachita | 8,621 | 7,555 | 5,311 |
| Lake Shelbyville | 18,405 | 10,254 | 7,859 |
| Shenango River Lake | 7,618 | 7,270 | 4,620 |
| West Point Lake | 8,376 | 10,336 | 8,661 |
| CRS total | 83,353 | 114,042 | 86,406 |

[1] In 1986 and 1987, the supply of Engineering Form 4457-1 was inadequate to meet the needs of all CRS projects. This was not a problem in 1985. By comparing the number of permits issued for each project to the 1985 record, changes in 1988 data (increases or decreases) can be noted.

**Table 2**
**1988 General Use Characteristics**

| Project | Recreation Days[1] | Mean Length of Stay Nights | Mean Number In Group | Percent Prior Visits[2] | Percent Primary Destination[2] | Percent Golden Age Passport[3] |
|---|---|---|---|---|---|---|
| Greers Ferry Lake | 344,035 | 2.5 | 3.3 | 83.2 | 95.0 | 16.7 |
| Milford Lake | 28,098 | 2.1 | 3.8 | 40.7 | 53.7 | 20.4 |
| Mississippi Pool 16 | 12,499 | 3.1 | 2.3 | 58.9 | 86.3 | 47.6 |
| Nolin River Lake | 27,996 | 2.0 | 3.5 | 81.0 | 96.9 | 7.3 |
| Lake Oahe | 62,897 | 2.7 | 3.0 | 67.7 | 80.9 | 25.3 |
| Lake Ouachita | 62,219 | 3.2 | 3.6 | 70.4 | 90.1 | 19.0 |
| Lake Shelbyville | 80,734 | 3.0 | 3.4 | 81.4 | 97.6 | 14.9 |
| Shenango River Lake | 59,731 | 3.4 | 3.8 | 83.7 | 95.3 | 17.2 |
| West Point Lake | 84,497 | 2.9 | 3.4 | 82.4 | 94.7 | 21.1 |
| CRS total/average | 763,606 | 2.7 | 3.4 | 78.4 | 91.8 | 18.3 |

[1] Recreation days of use was calculated by multiplying the number in the group times the length of stay for each fee receipt. The individual recreation days were then added to produce a project total. Any receipts which had the number in group or length of stay missing were deleted from the calculations. Therefore, this measure of use may be conservative.
[2] Percent of camping parties.
[3] Percent of camping permits.

project. This variable tends to show a broad range in variation between projects as evidenced by the value of 83.7 percent at Shenango River Lake, to 40.7 percent at Lake Milford. More than three-fourths, or 91.8 percent, of the camping parties at CRS projects indicated that the project was the primary destination for their trip. However at Lake Shelbyville, 97.6 percent of the camping parties reported the project as the primary destination for their trip. At the individual projects, the lowest percentage of Golden Age passports was found at Nolin River Lake (7.3 percent) the highest at Mississippi Pool 16 (47.6 percent).

For the cumulative 1988 data, an analysis of the type of vehicle, or vehicles, used by camping parties in Table 3 indicates that more parties used trucks (50.9 percent) than cars (32.5 percent). The highest percentage of truck use was at Greers Ferry Lake (55.4 percent), while the lowest percentage of truck use was at Mississippi Pool 16 (33.5 percent). Relatively few of the camping groups arrived in vans (12.0 percent), motor homes (15.9 percent), or via other modes of transportation (0.73 percent). The exceptions were Mississippi Pool 16 and Lake Oahe, where 39.2 percent and 28.8 percent of the camping parties, respectively, reported using motor homes.

**Table 3**
**1988 Distribution of Vehicle Types (Percent of Camping Groups)[1]**

| Project | Car | Truck | Van | Motor Home | Others[2] |
|---|---|---|---|---|---|
| Greers Ferry Lake | 29.4 | 55.4 | 10.3 | 10.8 | 0.73 |
| Milford Lake | 34.5 | 53.2 | 13.9 | 17.8 | 0.22 |
| Mississippi Pool 16 | 33.2 | 33.5 | 11.4 | 39.2 | 0.00 |
| Nolin River Lake | 37.1 | 39.1 | 13.9 | 11.6 | 0.36 |
| Lake Oahe | 16.4 | 45.0 | 10.6 | 28.8 | 0.19 |
| Lake Ouachita | 35.8 | 53.5 | 13.3 | 13.8 | 3.30 |
| Lake Shelbyville | 39.5 | 42.6 | 16.8 | 17.4 | 0.29 |
| Shenango River Lake | 49.7 | 38.8 | 13.5 | 16.2 | 0.80 |
| West Point Lake | 33.1 | 50.9 | 13.2 | 24.7 | 0.50 |
| CRS average | 32.5 | 50.9 | 12.0 | 15.9 | 0.73 |

[1] These categories are not mutually exclusive. Camping groups could bring with them multiple types of camping equipment, which may account for nationwide totals that exceed 100%.
[2] The "Others" category includes any mode of transportation that is not listed. This may include such things as motorcycles, bicycles, etc.

During 1988, as shown in Table 4, the most popular type of camping equipment at the CRS projects was a tent (41.5 percent nationwide). At Nolin River Lake, about one-half (48.3 percent) of the camping parties used at least one tent. It must be noted that the equipment categories are not mutually exclusive; therefore, tents may not necessarily be the principal means of camping for those groups that reported using them. Overall, the nationwide averages of other types of camping equipment included travel trailers (23.3 percent), pickup campers (6.3 percent), and pop-up

trailers (8.4 percent). In terms of other recreation equipment, about one-third (29.2 percent) of all camping parties brought a powerboat to CRS projects.

**Table 4**
**1988 Distribution of Camping Equipment and Powerboats (Percent of Camping Groups)[1]**

| Project | Tent | Pop-up Trailer | Pickup Camper | Travel Trailer | Motor Homes | Powerboat |
|---|---|---|---|---|---|---|
| Greers Ferry Lake | 47.5 | 9.0 | 4.4 | 24.0 | 10.8 | 17.0 |
| Milford Lake | 32.1 | 6.4 | 7.7 | 29.3 | 17.8 | 33.0 |
| Mississippi Pool 16 | 6.9 | 5.4 | 4.3 | 39.9 | 39.2 | 7.4 |
| Nolin River Lake | 48.3 | 5.2 | 10.0 | 6.2 | 11.6 | 45.3 |
| Lake Oahe | 19.3 | 4.8 | 17.5 | 23.3 | 28.8 | 52.2 |
| Lake Ouachita | 49.1 | 9.5 | 4.4 | 24.9 | 13.8 | 42.5 |
| Lake Shelbyville | 41.9 | 11.6 | 5.4 | 20.9 | 17.4 | 36.6 |
| Shenango River Lake | 34.5 | 10.9 | 6.1 | 22.9 | 16.2 | 29.3 |
| West Point Lake | 29.9 | 7.0 | 5.5 | 22.4 | 24.7 | 46.7 |
| CRS average | 41.5 | 8.4 | 6.3 | 23.3 | 15.9 | 29.2 |

[1] These categories are not mutually exclusive. Camping groups could bring multiple types of camping equipment, which accounts for nationwide totals that exceed 100%.

## Trend Analysis

One of the primary purposes of the CRS was to create a database that would enable the prediction of trends in recreational use. Each year of data collection improves the predictability of a trend analysis. A comparison of the CRS databases for the years 1981 through 1988 is presented in Figures 2-15. Where no bars appear on the bar charts, data were not available or were missing. For example, Mississippi Pool 16 did not participate in the CRS until 1984; therefore, the figures reflect this lack of information for the years 1981-83 in all charts. Because of the lack of adequate forms in the 1986-87 data, only eight of the projects have historical data for the trend analysis. Even though Lake Barkley and Hartwell Lake did not participate in 1988, they were included for historical information.

Across these projects, mean group size has not changed dramatically since 1981 (Figure 2). For Milford Lake, the averages continued to decrease from 3.8 in 1981 to 3.2 in 1986 but returned to 3.8 in 1988. Mississippi Pool 16 reported some of the smallest party sizes, with a mean of approximately 2.6 for 5 years. (Mississippi Pool 16 was not part of the CRS system prior to 1984.) Mean length of stay (Figure 3) exhibits greater variation than mean group size. The averages ranged from a low of 1.6 nights for 1981 at Milford Lake to a high of 3.7 during 1982 at Shenango Lake.

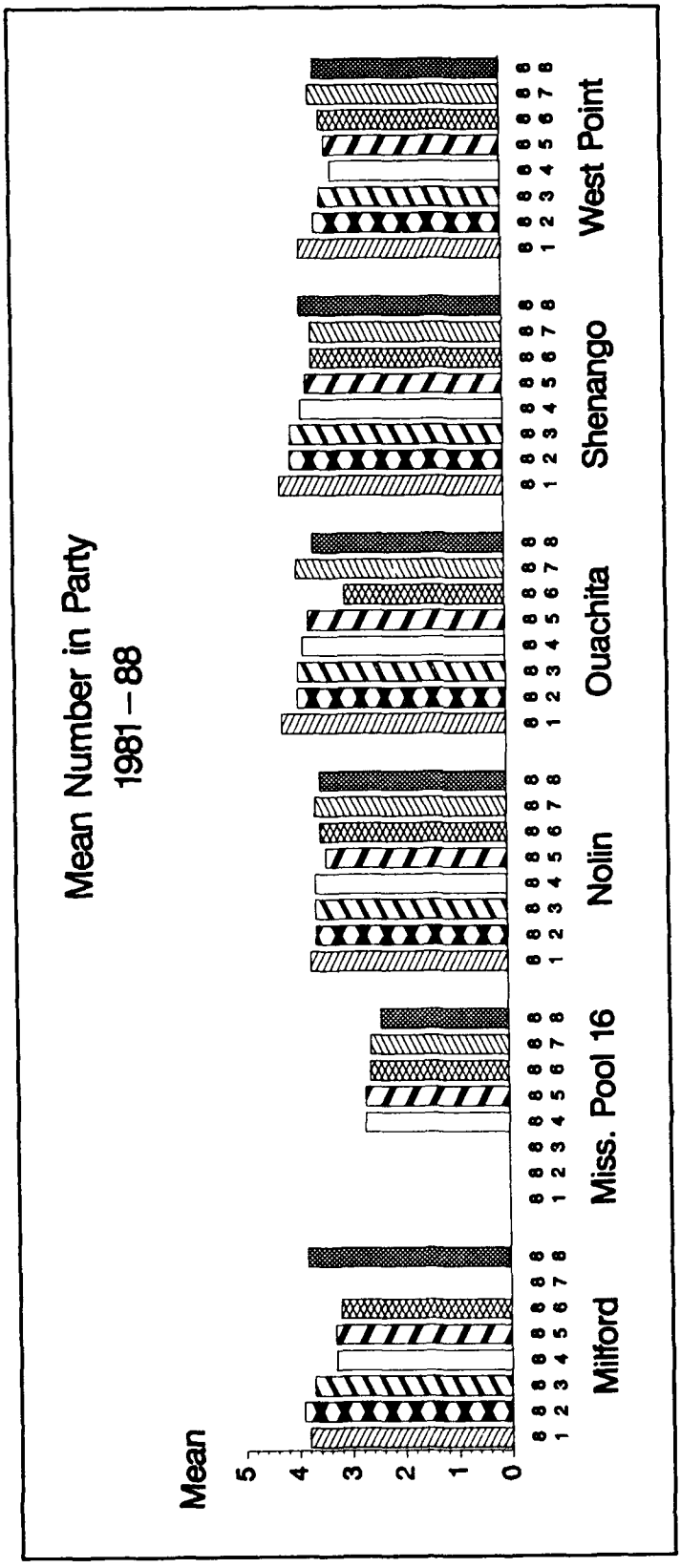


Figure 2. Mean number in party, 1981-88

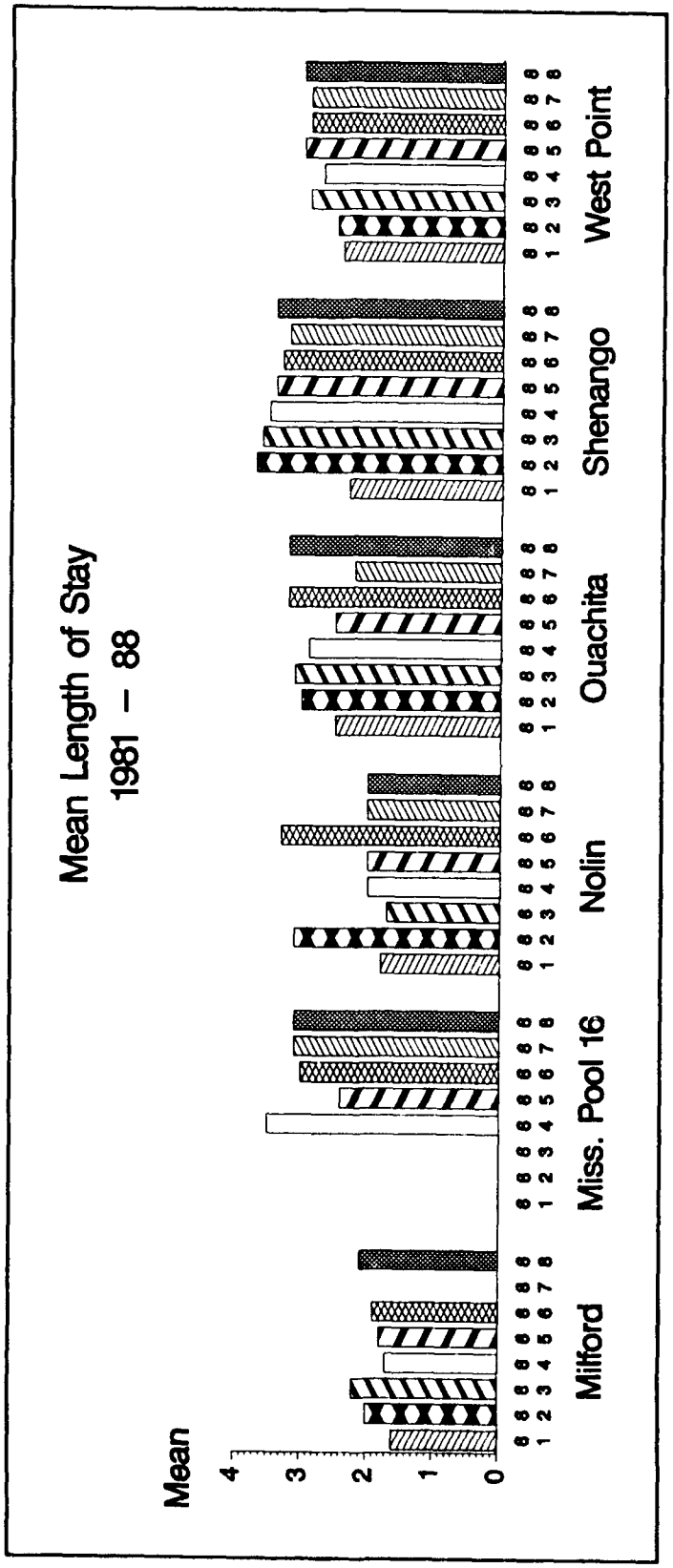


Figure 3. Mean length of stay (in days), 1981-88

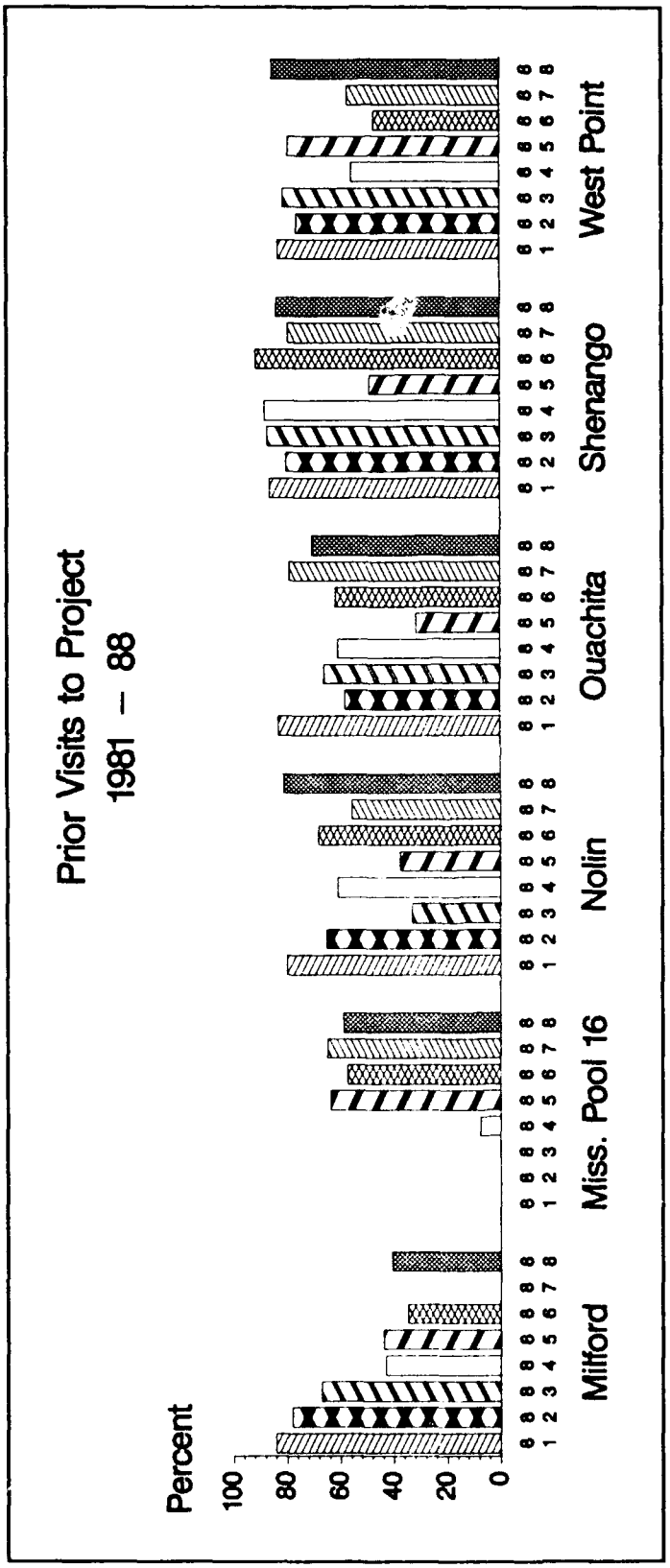


Figure 4. Percent of camping parties with prior visits to the project, 1981-88

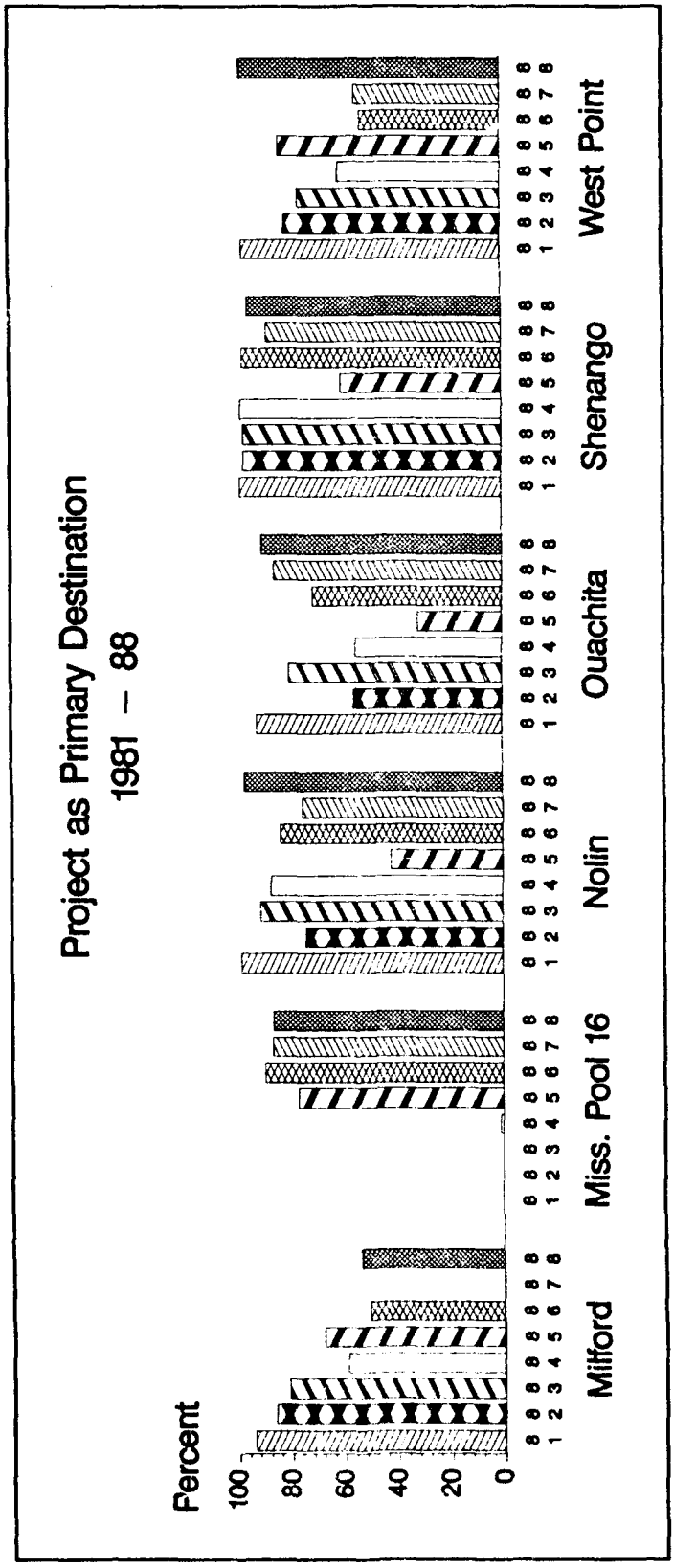


Figure 5. Percent of camping parties having the project as their primary destination, 1981-88

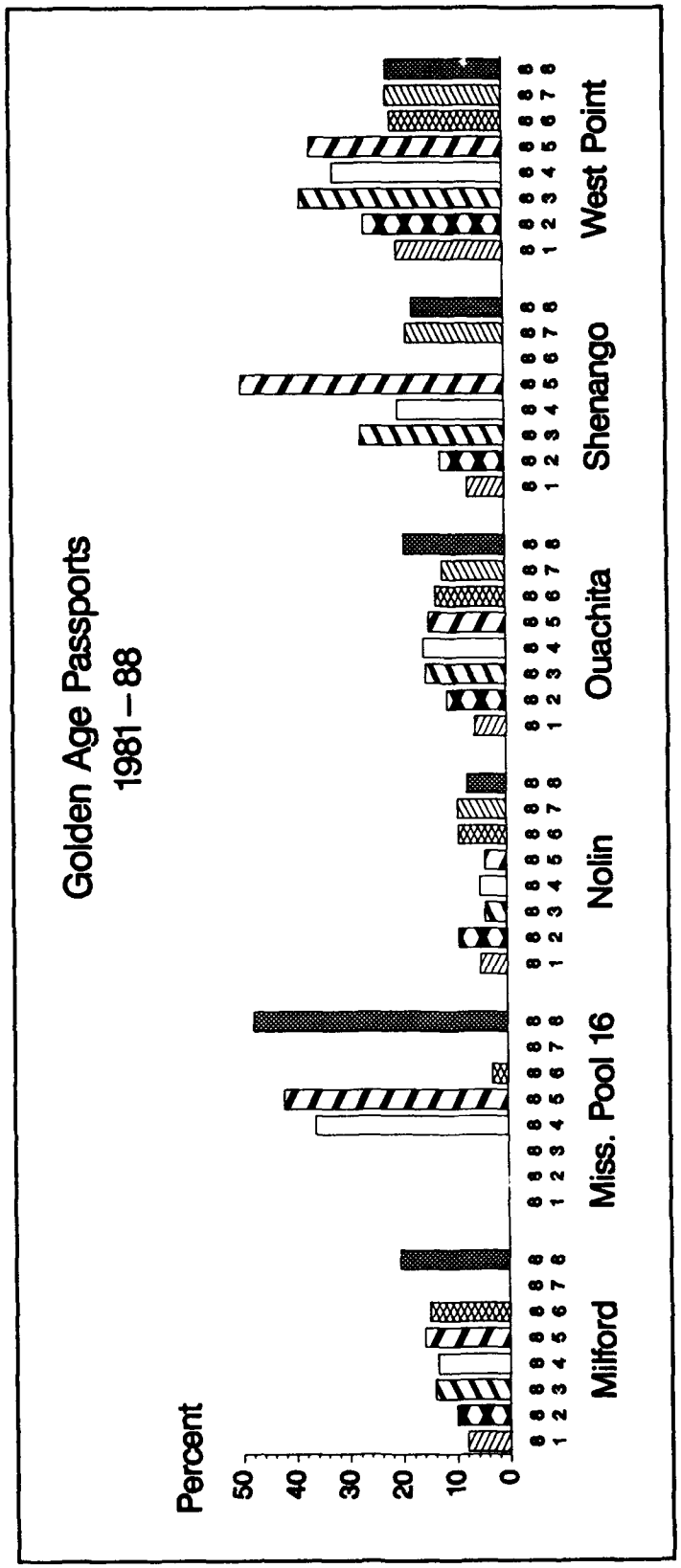


Figure 6. Percent of camping parties using Golden Age or Golden Access passports, 1981-88

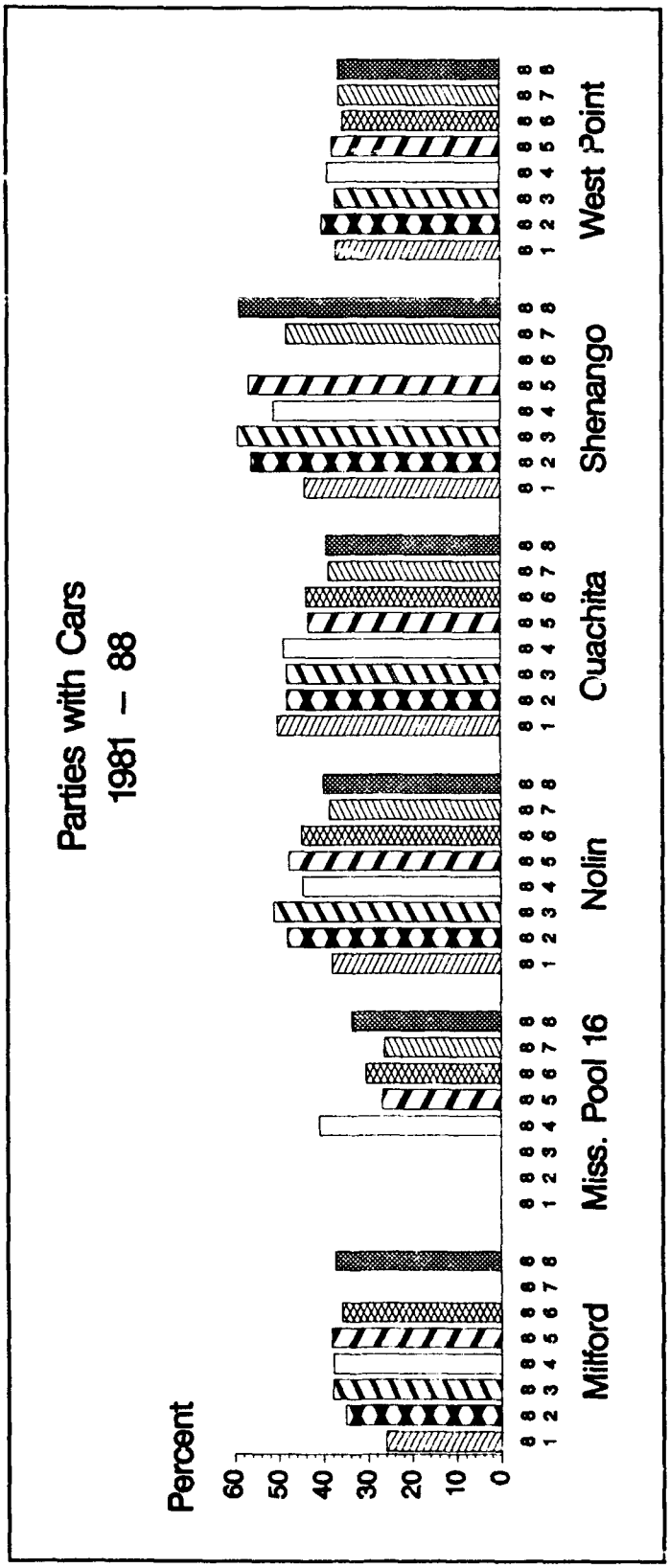


Figure 7. Percent of camping parties with cars, 1981-88

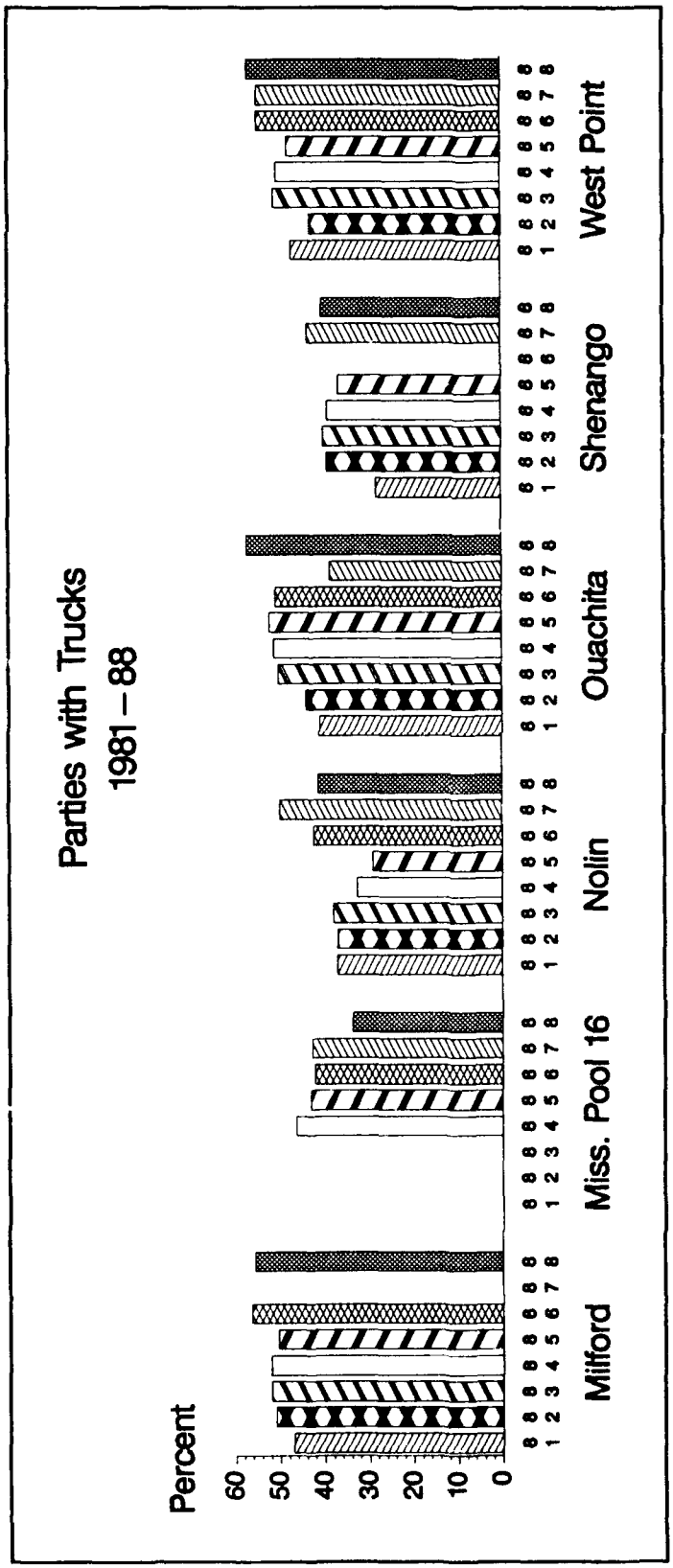


Figure 8. Percent of camping parties with trucks, 1981-88

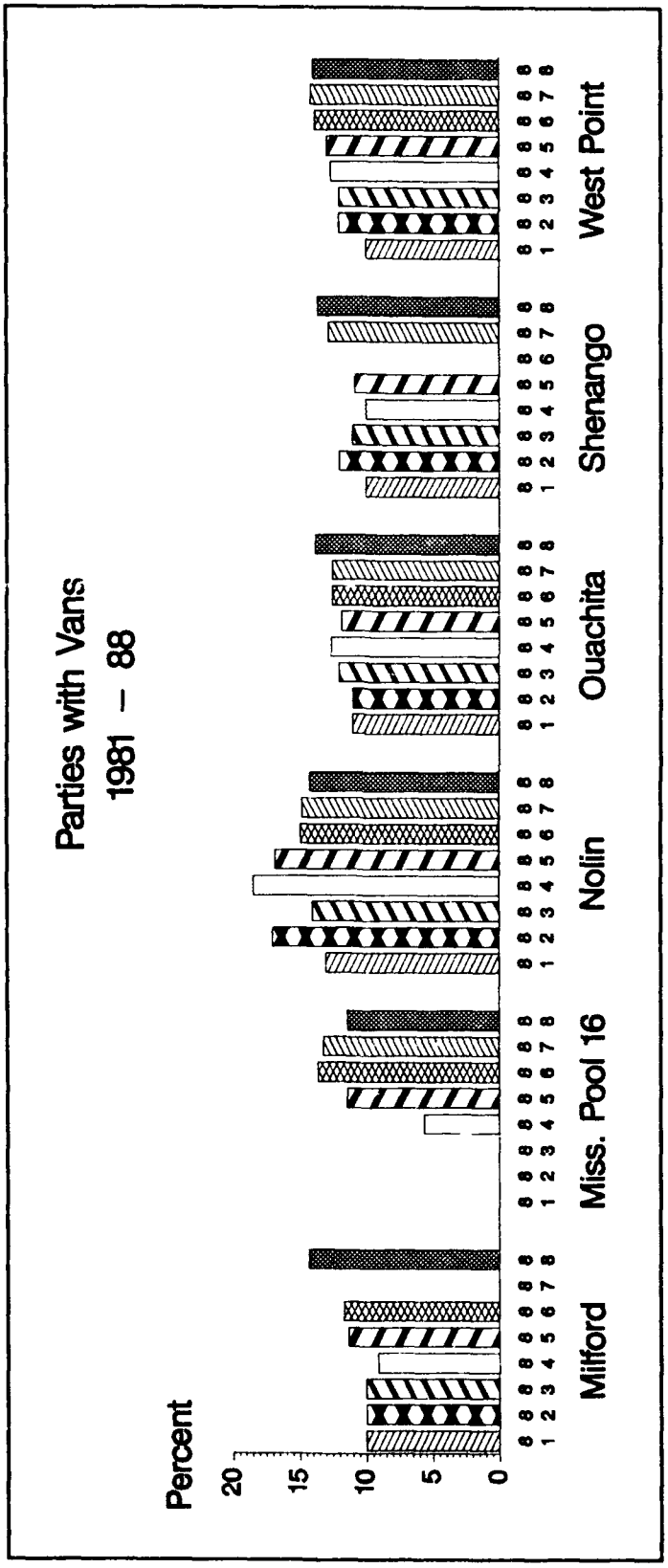


Figure 9. Percent of camping parties with vans, 1981-88

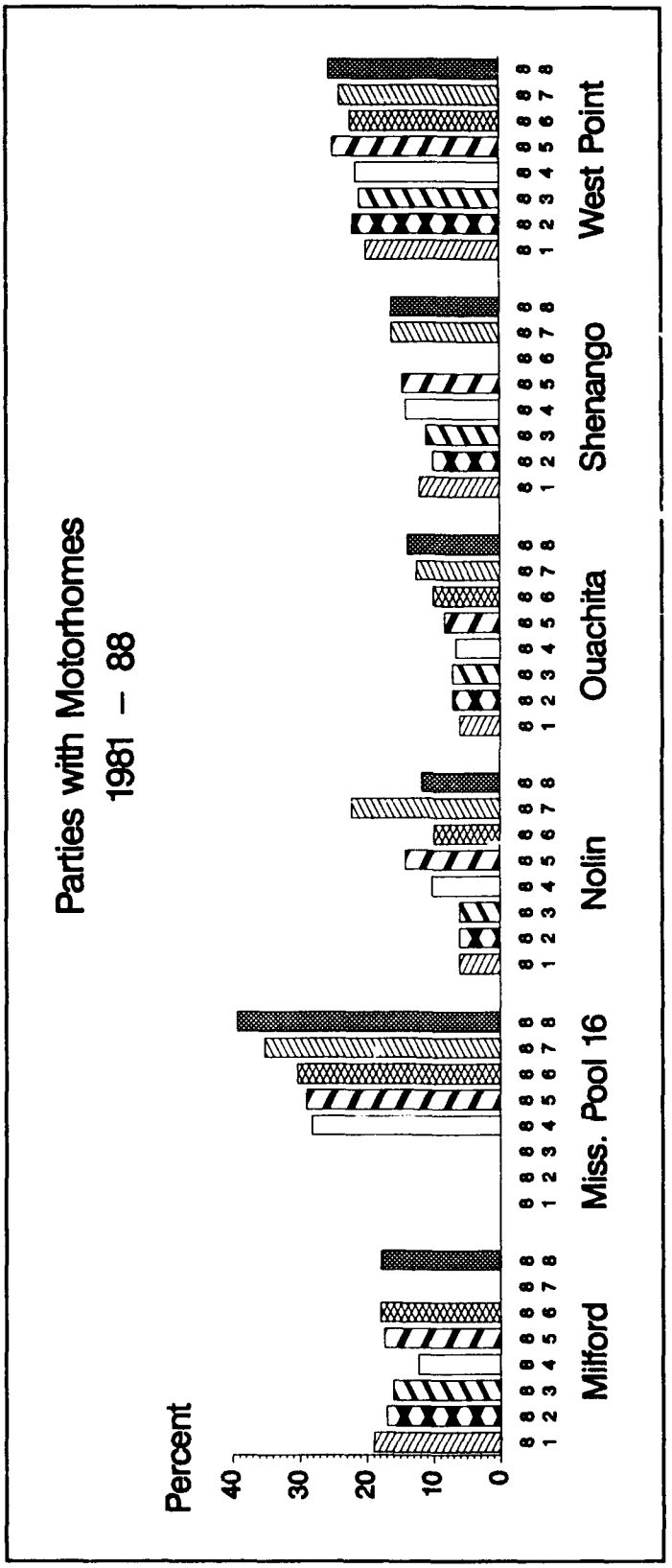


Figure 10. Percent of camping parties with motor homes, 1981-88

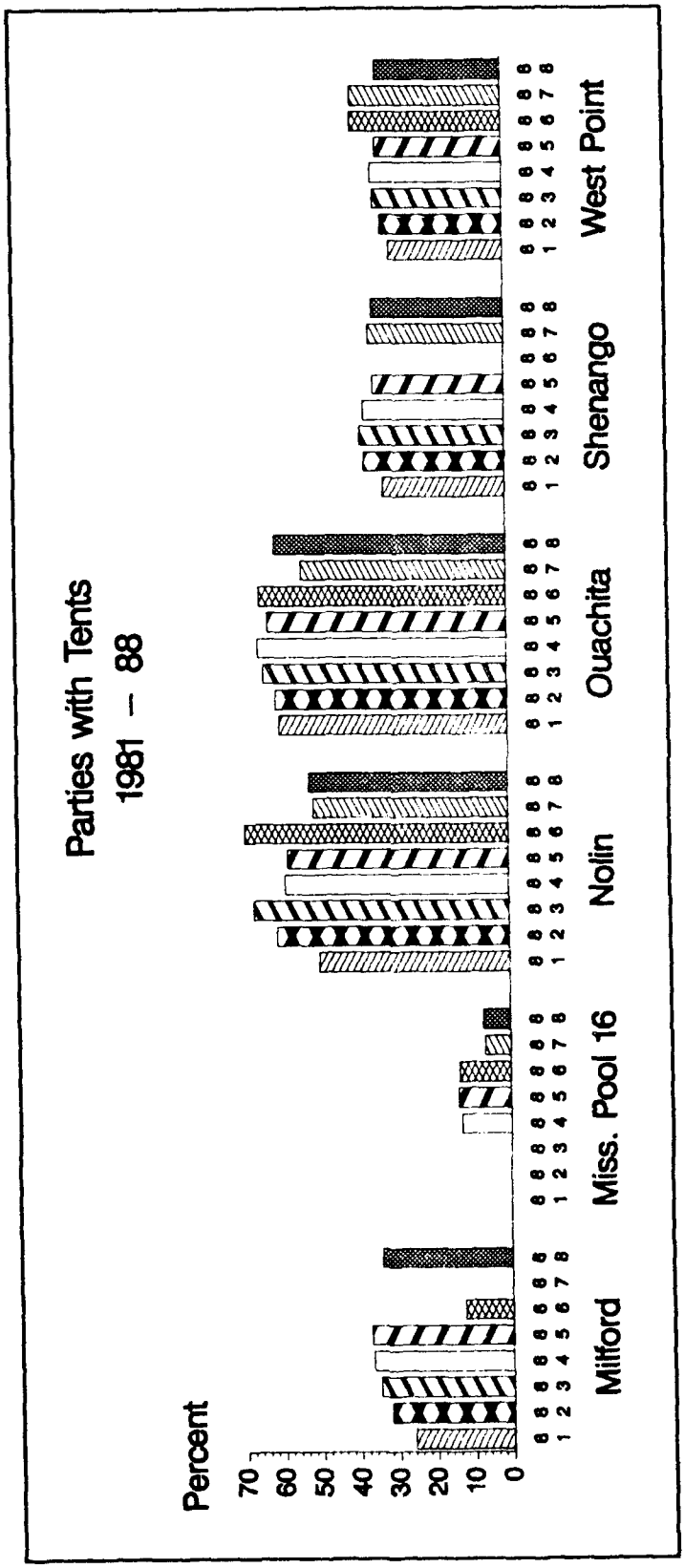


Figure 11. Percent of camping parties with tents, 1981-88

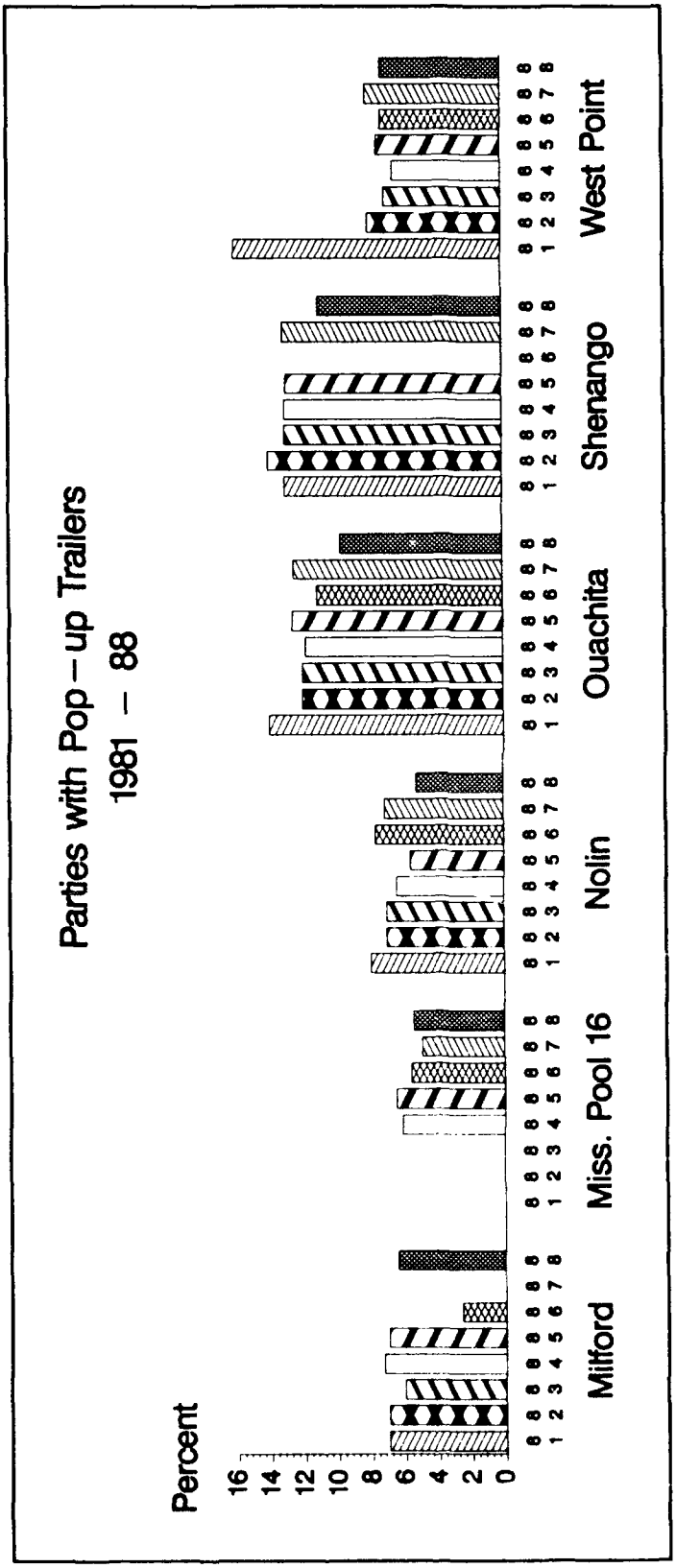


Figure 12. Percent of camping parties with pop-up trailers, 1981-88

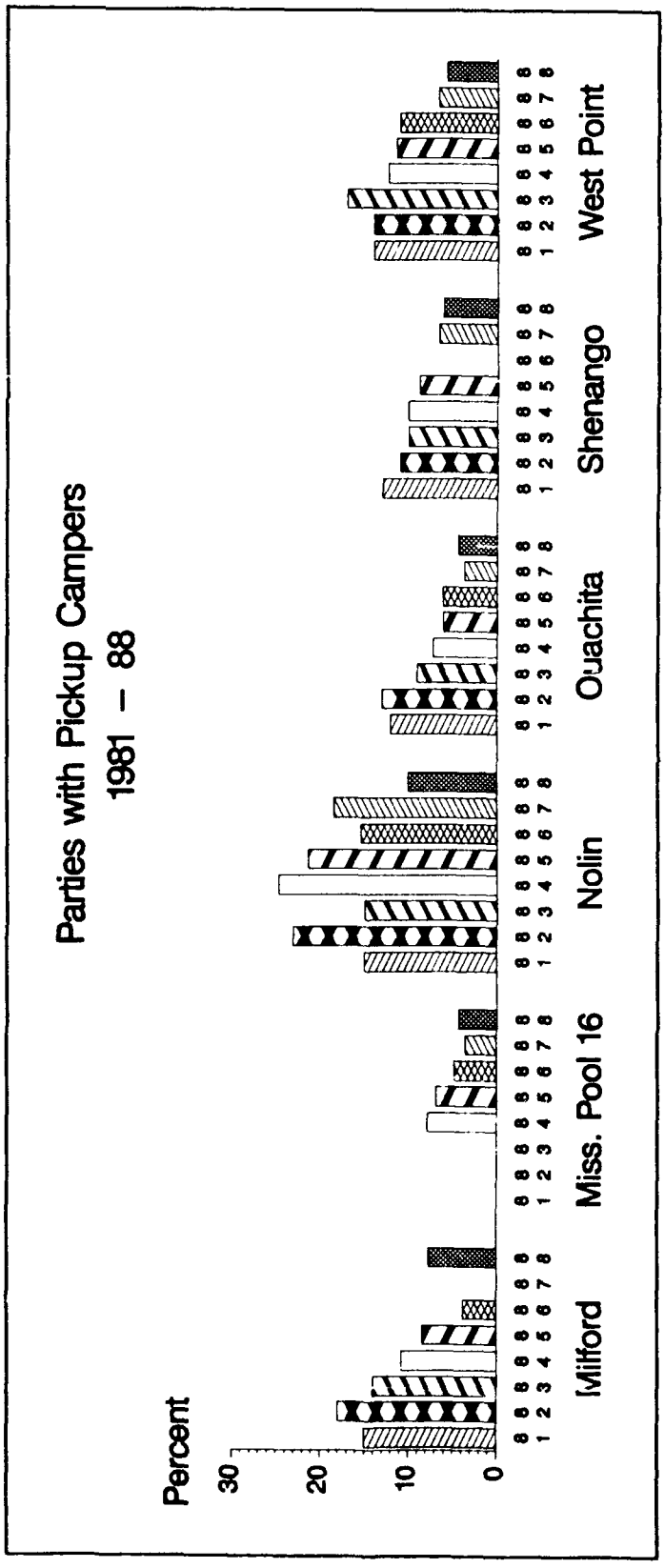


Figure 13. Percent of camping parties with pickup campers, 1981-88

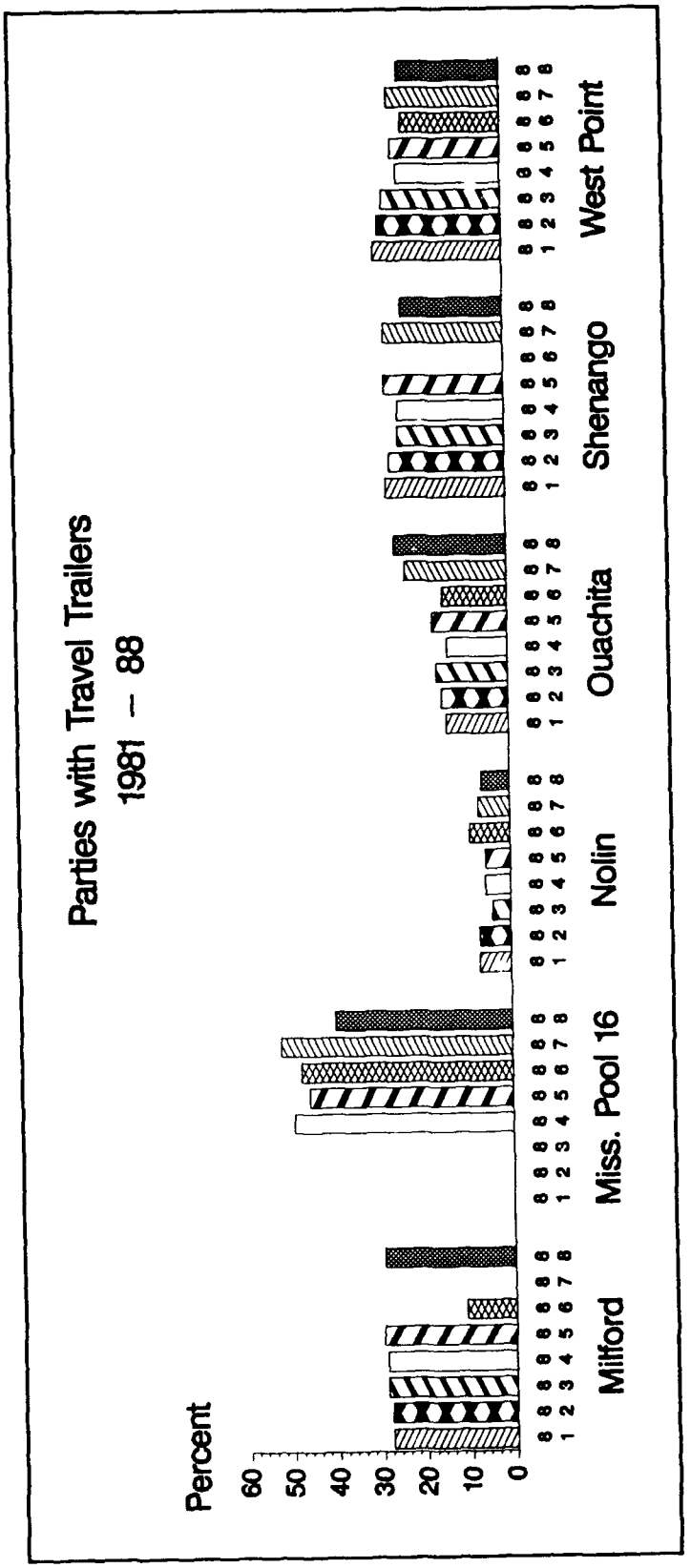


Figure 14. Percent of camping parties with travel trailers, 1981-88

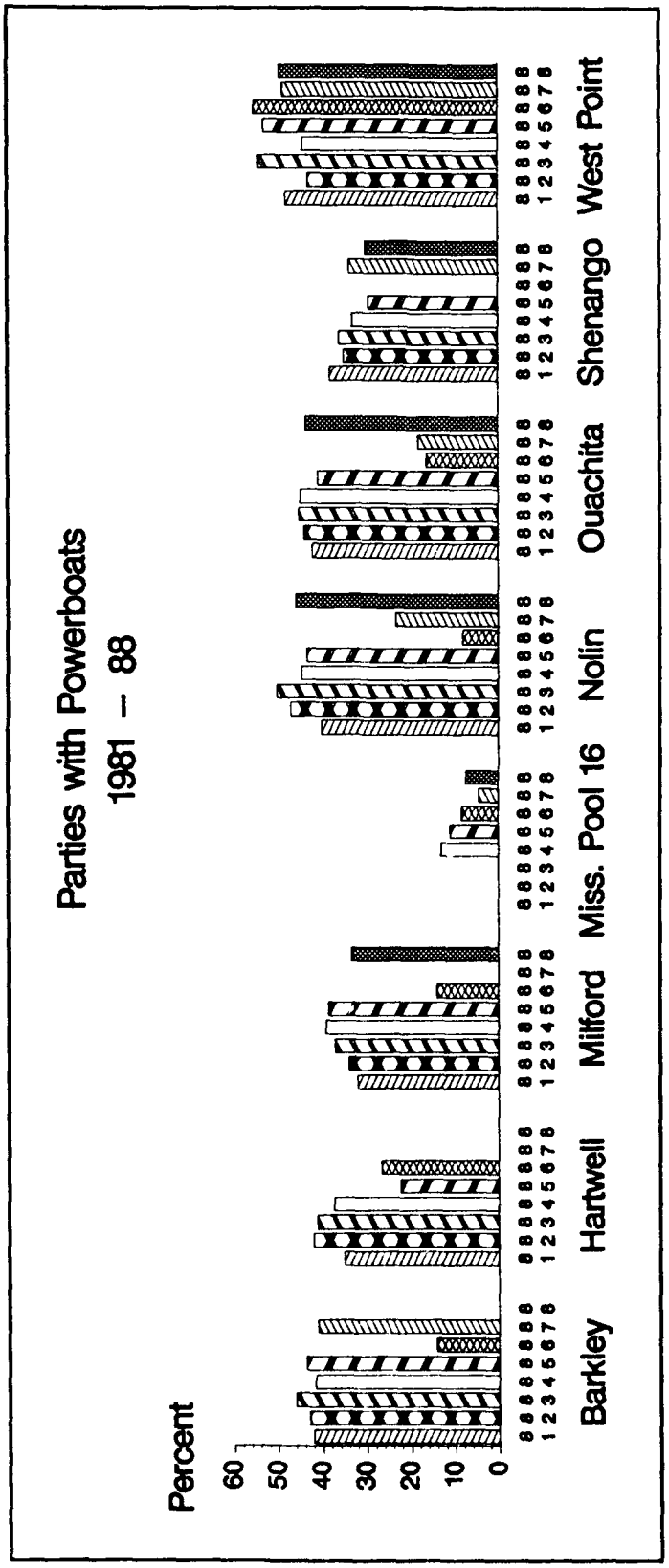


Figure 15. Percent of camping parties with powerboats, 1981-88

From 1981 to 1988, there was a general decrease in the percentage of campers with prior visits to the project and with the project as their primary destination (Figures 4 and 5) for Milford Lake. For other projects, a clear increase or decrease is not discernible.

Golden Age passport use tended to be highly variable between projects, yet fairly stable within projects with a few exceptions (Figure 6). Percentages ranged from 49.3 percent for Shenango Lake in 1985 to 4.0 percent for Nolin Lake in 1983 and 1985.[1] Nolin Lake tended to exhibit a small percentage of Golden Age passport camping parties, whereas Mississippi Pool 16 and Shenango Lake (1985) displayed relatively higher percentages.

Parties with cars provided consistent patterns over the 8-year period (Figure 7). Across projects, increases versus decreases were not clearly evident. Lake Ouachita data supported the most stable figures with a range from 39.2 to 50.0 percent.[1] Parties with trucks (Figure 8) exhibited a similar pattern of overall stability.[1] The use of trucks tended to slightly "outpace" cars for nearly every bar chart (except for Nolin Lake and Shenango Lake) when Figures 7 and 8 are compared.

Figure 9 shows a slight increase in the use of vans by camping parties except at Mississippi Pool 16 and Nolin Lake.[1] Mississippi Pool 16 showed a decrease from 13.6 to 11.3. Nolin Lake decreased only 0.6 percent; however, there has been a continual decrease since 1984 (18.4 to 14.2 percent).

Motor home use exhibited considerable variability across projects as can be seen in Figure 10.[1] The highest use occurred at Mississippi Pool 16, where, in 1988, 39.2 percent of the camping parties used a motor home. Overall, the use of motor homes as camping vehicles was small as compared to other types of camping equipment.

In Figure 11, parties with tents, a stable pattern within projects was clearly evident.[1] However, the pattern among projects displayed considerable variability. For example, at Mississippi Pool 16, about 7.1 percent of the camping parties used tents, whereas this percentage was 60.9 percent for parties at Lake Ouachita.

The use of pop-up trailers tended to be fairly stable across and within projects (Figure 12).[1] Few patterns are discernible with respect to this type of camping equipment. This was in contrast to camping parties with pickup campers (Figure 13).[1] The use of this type of camping equipment was very low for projects such as Mississippi Pool 16, while pickup

[1] The low percentages for 1986-87 for Lake Barkley, Nolin Lake, and Lake Ouachita are due to inadequate forms.

campers are more popular at Nolin Lake, with a high of 10.0 percent of the camping parties using them.

In contrast to the previous figure, Mississippi Pool 16 shows the overall highest use of travel trailers (percentages in the high 40's) while Nolin Lake had the lowest, with percentages ranging from 4 to 9 (Figure 14).[1] Most projects report the use of this equipment to be at about 25 percent.

The use of powerboats tended to be relatively uniform across projects (Figure 15). Powerboat use by camping parties was the highest usage at Nolin Lake,Lake Ouachita, and West Point Lake.

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1 The low percentages for 1986-87 for Lake Barkley, Nolin Lake, and Lake Ouachita are due to inadequate forms.

# 3 Conclusions and Recommendations

## Conclusions

The recent availability of computer technology at the field level has dramatically changed the possibilities regarding data entry and retrieval for analysis and reporting of campground information. The development of the Automated Use Permit System (AUPS) (Fritschen 1988) is an advancement in the direction of computer-aided management information systems. AUPS allows campground attendants to use microcomputers in registering campers and collecting and tracking camping fees. It was designed to incorporate the data requirements of the CRS so that any Corps project utilizing AUPS can collect CRS data. CRS-related questions are displayed by AUPS while campers register according to whether a program "switch" is set. This capability eliminates the need for keypunching and error checking and provides some on-site data analysis capability.

Currently, field-level personnel can use dBASE software to generate reports on variables such as site occupancy, average length of stay, ZIP Codes, average group size, and number of Golden Age and Access permit holders. AUPS provides data that managers can review to resolve problems in a timely manner or to improve the efficiency of operating and maintaining campgrounds. These data are also useful to landscape architects and planners when evaluating future recreation area designs as well as rehab work. For example, District planners can compare key variables like site occupancy across projects and recreation areas, since the data are gathered using the same methods.

Unfortunately, the lack of an adequate supply of forms in the 1986-87 data hampered the interpretation of trends for all 16 projects in the "Summary of the 1986-87 Campground Receipt Study" (DeMoss and Titre, in preparation). Eight projects participated in the collection of the 1988 campground receipts. Of these eight projects, only six projects had adequate data in 1986-87 to allow trend analysis. (Lake Barkley and Hartwell Lake had adequate data in 1986-87, but did not participate in 1988.) In the

future, the 1986-87 data limitations (decrease in number of permits and projects) will be weighted to allow all of the projects to have trend analysis for all participating projects.

The illustrations in this report are merely examples for managers to ponder additional uses. The transition from paper forms to the AUPS will enhance the management applications of the data.

## Recommendations

The data in the CRS and the AUPS have reached the point where project managers and District personnel can make decisions rapidly in response to on-the-ground changes in the use of Corps areas. This AUPS/CRS combined system has been shown to improve overall efficiency and can address current problems by giving resource managers better control over a constantly changing environment. It is recommended that the CRS effort continue and that researchers and managers search for common ground in devising strategies to better serve the Corps visitor based on current information.

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# Appendix A: 1988 CRS Data Summaries for Individual Recreation Areas

**Table A1**
**1988 Greers Ferry Lake (Dam Site) User Characteristics**

| Characteristic | Dam Site Park | Old Hwy 25 | Heber Springs | Chero-kee Park | Cove Creek | Shiloh | Nar-rows | Hill Creek Park | Devils Fork | Sugar Loaf | Van Buren | Choc-taw | J. F. Ken-nedy | Project Totals[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Recreation days | 53,091 | 31,330 | 40,666 | 5,346 | 15,570 | 24,688 | 23,487 | 4,760 | 30,392 | 21,500 | 7,952 | 35,994 | 49,259 | 344,035 |
| Mean length of stay, nights | 2.1 | 2.2 | 2.3 | 2.2 | 2.0 | 2.5 | 3.0 | 1.9 | 2.7 | 2.5 | 2.6 | 2.5 | 3.5 | 2.5 |
| Mean number in group | 3.4 | 3.9 | 3.5 | 3.4 | 3.5 | 3.4 | 2.9 | 3.2 | 3.2 | 3.3 | 3.5 | 3.4 | 2.7 | 3.3 |
| Percent prior visits[2] | 95.0 | 96.5 | 83.5 | 80.5 | 85.1 | 86.7 | 63.3 | 81.0 | 82.5 | 84.2 | 50.9 | 62.4 | 87.4 | 83.2 |
| Percent primary destination[2] | 98.0 | 98.8 | 94.3 | 99.7 | 98.0 | 99.3 | 90.2 | 90.1 | 97.8 | 97.9 | 94.1 | 78.8 | 97.4 | 95.0 |
| Percent Golden Age Passports[3] | 10.1 | 7.5 | 7.3 | 4.0 | 5.5 | 10.3 | 37.7 | 5.6 | 12.4 | 12.7 | 11.8 | 24.1 | 40.0 | 16.7 |
| Percent Golden Access Passports[3] | 1.5 | 2.1 | 1.6 | 0.8 | 2.3 | 3.5 | 1.1 | 0.8 | 5.0 | 1.2 | 0.7 | 2.9 | 5.5 | 2.6 |
| Number of camping permits | 9,435 | 4,623 | 6,468 | 858 | 2,668 | 3,957 | 3,867 | 910 | 4,640 | 3,256 | 1,174 | 5,686 | 8,313 | 55,855 |
| Number of camping groups | 7,358 | 3,863 | 5,008 | 706 | 2,246 | 3,021 | 2,749 | 746 | 3,374 | 2,604 | 916 | 4,250 | 5,674 | 42,515 |

[1] Recreation area averages were weighted by the total number of permits for each area to campsite project average.
[2] Percent of camping parties.
[3] Percent of camping permits.

**Table A2**
**1988 Greers Ferry Vehicle and Equipment Type (Dam Site)**

| Vehicle and Equipment Type | Dam Site Park | Old Hwy 25 | Heber Springs | Cherokee Park | Cove Creek | Shiloh | Narrows | Devils Fork | Hill Creek Park | Sugar Loaf | Van Buren | Choctaw | J. F. Kennedy | Project Totals[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Vehicle** | | | | | | | | | | | | | | |
| Car | 37.8 | 32.2 | 32.5 | 39.9 | 30.8 | 25.4 | 23.6 | 28.9 | 22.3 | 28.6 | 38.0 | 26.0 | 19.9 | 29.4 |
| Truck | 48.2 | 57.1 | 57.5 | 54.7 | 58.8 | 55.9 | 49.2 | 59.7 | 66.2 | 56.0 | 40.8 | 58.9 | 58.9 | 55.4 |
| Van | 9.1 | 8.0 | 10.0 | 10.0 | 8.5 | 12.7 | 17.4 | 9.8 | 7.0 | 12.8 | 16.8 | 9.1 | 9.4 | 10.3 |
| Motor home | 7.6 | 5.9 | 6.3 | 2.0 | 7.1 | 8.9 | 16.1 | 10.9 | 5.4 | 10.4 | 13.5 | 16.7 | 19.0 | 10.8 |
| **Camping Equipment[2]** | | | | | | | | | | | | | | |
| Tent | 58.3 | 53.6 | 61.2 | 73.1 | 62.9 | 54.3 | 27.8 | 43.1 | 60.6 | 45.9 | 58.7 | 34.5 | 23.7 | 47.5 |
| Pop-up trailer | 8.1 | 10.3 | 9.9 | 5.9 | 7.9 | 10.3 | 9.0 | 8.2 | 11.3 | 8.8 | 6.8 | 7.3 | 10.9 | 9.0 |
| Pickup camper | 3.1 | 3.3 | 2.5 | 11.9 | 5.1 | 6.7 | 4.1 | 5.8 | 11.3 | 4.2 | 5.5 | 5.6 | 3.6 | 4.4 |
| Travel trailer | 17.3 | 23.7 | 17.9 | 8.2 | 13.0 | 21.4 | 31.6 | 26.0 | 7.2 | 26.7 | 11.4 | 32.1 | 38.2 | 24.0 |
| **Recreational Equipment** | | | | | | | | | | | | | | |
| Powerboat | 2.8 | 12.1 | 17.0 | 22.1 | 44.6 | 16.2 | 30.4 | 41.6 | 33.5 | 27.2 | 8.5 | 16.0 | 0.9 | 16.9 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project averages.
2 Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

**Table A3**
**1988 Milford Lake User Characteristics**

| Characteristic | Curtis Creek | Farnum Creek | Rolling Hills | School Creek | Timber Creek | Project Totals[1] |
|---|---|---|---|---|---|---|
| Recreation days | 6,110 | 5,565 | 10,992 | 3,951 | 2,380 | 28,998 |
| Mean length of stay, nights | 2.1 | 2.4 | 2.2 | 1.8 | 1.7 | 2.1 |
| Mean number in group | 3.6 | 5.8 | 3.3 | 3.3 | 3.9 | 3.8 |
| Percent prior visits[2] | 79.9 | 58.7 | 12.5 | 35.4 | 60.3 | 40.7 |
| Percent primary destination[2] | 90.3 | 73.5 | 23.2 | 54.1 | 81.5 | 53.7 |
| Percent Golden Age Passports[3] | 17.5 | 29.4 | 24.2 | 13.8 | 3.4 | 20.4 |
| Percent Golden Access Passports[3] | 0.5 | 0.0 | 1.3 | 0.4 | 0.7 | 0.8 |
| Number of camping permits | 943 | 612 | 1,683 | 474 | 376 | 4,088 |
| Number of camping groups | 834 | 494 | 1,588 | 455 | 292 | 3,663 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project average.
2 Percent of camping parties.
3 Percent of camping permits.

**Table A4**
**1988 Milford Lake Vehicle and Equipment Type (Percent of Camping Parties)**

| Vehicle and Equipment Type | Curtis Creek | Farnum Creek | Rolling Hills | School Creek | Timber Creek | Project Totals[1] |
|---|---|---|---|---|---|---|
| **Vehicle** | | | | | | |
| Car | 36.9 | 33.6 | 35.8 | 20.4 | 43.8 | 34.5 |
| Truck | 64.9 | 49.6 | 45.5 | 66.6 | 46.6 | 53.2 |
| Van | 14.3 | 11.5 | 15.1 | 13.8 | 10.6 | 13.9 |
| Motor home | 13.8 | 20.9 | 21.6 | 14.9 | 7.9 | 17.8 |
| Other | 0.0 | 0.6 | 0.1 | 0.4 | 0.3 | 0.2 |
| **Camping Equipment[2]** | | | | | | |
| Tent | 31.1 | 27.5 | 30.6 | 35.4 | 45.2 | 10.3 |
| Pop-up trailer | 7.6 | 4.5 | 6.4 | 4.2 | 10.3 | 6.4 |
| Pickup camper | 8.3 | 9.5 | 5.4 | 13.2 | 6.8 | 7.7 |
| Travel trailer | 33.6 | 27.9 | 29.0 | 27.5 | 23.3 | 29.3 |
| **Recreational Equipment** | | | | | | |
| Powerboat | 45.9 | 34.2 | 27.3 | 39.3 | 15.1 | 33.0 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project averages.
2 Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

**Table A5**
**1988 Mississippi Pool 16 User Characteristics**

| Characteristic | Clark's Creek | Shady Creek | Project Totals[1] |
|---|---|---|---|
| Recreation days | 6,842 | 5,657 | 12,499 |
| Mean length of stay, nights | 3.4 | 2.7 | 3.1 |
| Mean number in group | 2.2 | 2.5 | 2.3 |
| Percent prior visits[2] | 69.7 | 47.1 | 58.9 |
| Percent primary destination[2] | 84.5 | 88.3 | 86.3 |
| Percent Golden Age Passports[3] | 61.2 | 32.8 | 47.6 |
| Percent Golden Access Passports[3] | 1.7 | 5.9 | 3.7 |
| Number of camping permits | 1,392 | 1,189 | 2,581 |
| Number of camping groups | 941 | 864 | 1,805 |

[1] Recreation area averages were weighted by the total number of permits for each area to compute project average.
[2] Percent of camping parties.
[3] Percent of camping permits.

**Table A6**
**1988 Mississippi Pool 16 Vehicle and Equipment Type (Percent of Camping Parties)**

| Vehicle and Equipment Type | Clark's Creek | Shady Creek | Project Totals[1] |
|---|---|---|---|
| **Vehicle** | | | |
| Car | 32.9 | 33.4 | 33.2 |
| Truck | 30.6 | 36.6 | 33.5 |
| Van | 10.5 | 12.3 | 11.4 |
| Motor home | 42.6 | 35.5 | 39.2 |
| Other | 0.0 | 0.0 | 0.0 |
| **Camping Equipment[2]** | | | |
| Tent | 4.0 | 10.1 | 6.9 |
| Pop-up trailer | 4.5 | 6.4 | 5.4 |
| Pickup camper | 4.0 | 4.6 | 4.3 |
| Travel trailer | 40.4 | 39.4 | 39.9 |
| **Recreational Equipment** | | | |
| Powerboat | 4.3 | 10.8 | 7.4 |

[1] Recreation area averages were weighted by the total number of permits for each area to compute project averages.
[2] Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

**Table A7**
**1988 Nolin River Lake User Characteristics**

| Characteristic | Dog Creek | Wax | Moutardier | Project Totals[1] |
|---|---|---|---|---|
| Recreation days | 1,643 | 9,459 | 16,894 | 27,996 |
| Mean length of stay, nights | 1.7 | 2.0 | 2.1 | 2.0 |
| Mean number in group | 3.4 | 3.6 | 3.4 | 3.5 |
| Percent prior visits[2] | 56.0 | 72.1 | 89.1 | 96.9 |
| Percent primary destination[2] | 99.3 | 95.3 | 97.6 | 96.9 |
| Percent Golden Age Passports[3] | 9.8 | 9.6 | 5.7 | 7.3 |
| Percent Golden Access Passports[3] | 3.3 | 0.0 | 1.1 | 0.9 |
| Number of camping permits | 315 | 1,458 | 2,447 | 4,220 |
| Number of camping groups | 275 | 1,307 | 2,291 | 3,873 |

[1] Recreation area averages were weighted by the total number of permits for each area to compute project average.
[2] Percent of camping parties.
[3] Percent of camping permits.

**Table A8**
**1988 Nolin River Lake Vehicle and Equipment Type (Percent of Camping Parties)**

| Vehicle and Equipment Type | Dog Creek | Wax | Moutardier | Project Totals[1] |
|---|---|---|---|---|
| **Vehicle** | | | | |
| Car | 34.9 | 44.4 | 37.9 | 39.9 |
| Truck | 42.9 | 49.7 | 36.1 | 41.2 |
| Van | 7.6 | 13.8 | 15.2 | 14.2 |
| Motor home | 17.1 | 10.3 | 11.7 | 11.6 |
| Other | 0.0 | 1.1 | 0.0 | 0.4 |
| **Camping Equipment[2]** | | | | |
| Tent | 29.5 | 65.9 | 48.9 | 53.3 |
| Pop-up trailer | 2.5 | 5.3 | 5.5 | 5.2 |
| Pickup camper | 14.5 | 8.4 | 10.4 | 10.0 |
| Travel trailer | 3.3 | 4.8 | 7.3 | 6.2 |
| **Recreational Equipment** | | | | |
| Powerboat | 41.5 | 48.6 | 44.8 | 45.8 |

[1] Recreation area averages were weighted by the total number of permits for each area to compute project averages.
[2] Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

## Table A9
## 1988 Lake Oahe User Characteristics

| Characteristic | Beaver Creek | Downstream South | Indian Creek | Downstream North | Indian Memorial | Project Totals[1] |
|---|---|---|---|---|---|---|
| Recreation days | 5,244 | 4,681 | 16,812 | 22,702 | 13,478 | 62,897 |
| Mean length of stay (nights) | 2.0 | 1.9 | 2.9 | 2.8 | 2.9 | 2.7 |
| Mean number in group | 3.4 | 3.0 | 3.1 | 2.9 | 2.9 | 3.0 |
| Percent prior visits[2] | 82.8 | 21.0 | 66.4 | 62.1 | 96.4 | 67.7 |
| Percent primary destination[2] | 95.8 | 35.6 | 81.0 | 80.5 | 97.3 | 80.9 |
| Percent Golden Age Passports[3] | [illegible] | 25.1 | 27.4 | 26.6 | 28.2 | 25.3 |
| Percent Golden Access Passports[3] | 0.4 | 0.0 | 1.6 | 2.1 | 1.3 | 1.5 |
| Number of camping permits | 9[illegible]7 | 1,031 | 2,751 | 4,811 | 2,383 | 11,863 |
| Number of camping groups | 760 | 806 | 1,890 | 3,050 | 1,593 | 8,099 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project average
2 Percent of camping parties
3 Percent of camping permits

## Table A10
## 1988 Lake Oahe Vehicle and Equipment Type (Percent of Camping Parties)

| Vehicle and Equipment Type | Beaver Creek | Downstream South | Indian Creek | Downstream North | Indian Memorial | Project Totals[1] |
|---|---|---|---|---|---|---|
| **Vehicle** | | | | | | |
| Car | 15.7 | [illegible] | 14.8 | 15.4 | 21.7 | 17.0 |
| Truck | 46.7 | 32.8 | 50.1 | 40.4 | 49.8 | 45.7 |
| Van | 5.1 | 12.2 | [illegible] | 9.7 | 13.2 | 10.7 |
| Motor home | 2[illegible].4 | [illegible] | 31.8 | 29.4 | 30.5 | 28.8 |
| Other | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.2 |
| **Camping Equipment[2]** | | | | | | |
| Tent | [illegible] | 30.9 | 17.0 | 19.5 | 20.0 | 20.0 |
| Pop up trailer | 5.8 | [illegible] | 4.6 | 5.1 | 2.4 | 4.8 |
| Pickup camper | 17.6 | 14.5 | 19.0 | 16.2 | 19.6 | 17.5 |
| Travel trailer | 24.5 | 17.8 | 28.2 | 21.8 | 24.2 | 23.3 |
| **Recreational Equipment** | | | | | | |
| Powerboat | 32.0 | 25.2 | 63.7 | 50.5 | 57.1 | 52.5 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project averages
2 Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

**Table A11**
**1988 Lake Ouachita User Characteristics**

| Characteristic | Denby Point | Crystal Springs | Brady Mountain | Project Totals[1] |
|---|---|---|---|---|
| Recreation days | 21,924 | 9,042 | 31,253 | 62,219 |
| Mean length of stay, nights | 3.7 | 2.4 | 3.2 | 3.2 |
| Mean number in group | 3.3 | 3.9 | 3.7 | 3.6 |
| Percent prior visits[2] | 70.0 | 69.2 | 71.0 | 70.4 |
| Percent primary destination[2] | 84.9 | 93.7 | 92.5 | 90.1 |
| Percent Golden Age Passports[3] | 33.3 | 4.2 | 14.1 | 19.0 |
| Percent Golden Access Passports[3] | 1.0 | 0.0 | 0.1 | 0.4 |
| Number of camping permits | 2,741 | 1,160 | 3,654 | 7,555 |
| Number of camping groups | 1,849 | 937 | 2,525 | 5,311 |

[1] Recreation area averages were weighted by the total number of permits for each area tc compute project average.
[2] Percent of camping parties.
[3] Perce .t of camping permits.

**Table A12**
**1988 Lake Ouachita Vehicle and Equipment Type (Percent of Camping Parties)**

| Vehicle and Equipment Type | Denby Point | Crystal Springs | Brady Mountain | Project Totals[1] |
|---|---|---|---|---|
| **Vehicle** | | | | |
| Car | 26 8 | 47.0 | 38.3 | 35.8 |
| Truck | 56.0 | 53.5 | 51.6 | 53.5 |
| Van | 13.7 | 13.1 | 13.1 | 13.8 |
| Motor home | 20.2 | 4.1 | 12.7 | 13.8 |
| Other | 1.0 | 1.6 | 5.7 | 3.3 |
| **Camping Equipment[2]** | | | | |
| Tent | 28.0 | 79.3 | 53.5 | 49.1 |
| Pop-up trailer | 9.8 | 5.9 | 10.6 | 9.5 |
| Pickup camper | 5.1 | 3.6 | 4.1 | 4.4 |
| Travel trailer | 37.8 | 6.4 | 22.3 | 24.9 |
| **Recreational Equipment** | | | | |
| Powerboat | 41.4 | 40.3 | 44.1 | 42.5 |

[1] Recreation area averages were weighted by the total number of permits for each area to compute project averages.
[2] Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

**Table A13**
**1988 Lake Shelbyville User Characteristics**

| Characteristic | Opossum Creek[1] | Coon Creek | Lone Point | Lithia Springs | Forrest W. Wood | Whitley Creek | Project Totals[2] |
|---|---|---|---|---|---|---|---|
| Recreation days | 35 | 30,588 | 7,576 | 22,252 | 14,640 | 5,643 | 80,734 |
| Mean length of stay, nights | 1.0 | 3.0 | 2.8 | 3.0 | 3.5 | 2.4 | 3.0 |
| Mean number in group | 21.6 | 3.6 | 4.3 | 3.0 | 3.1 | 3.7 | 3.4 |
| Percent prior visits[3] | 20.0 | 84.1 | 66.1 | 74.9 | 95.0 | 81.3 | 81.4 |
| Percent primary destination[3] | 20.0 | 98.9 | 91.8 | 97.1 | 98.6 | 98.3 | 97.6 |
| Percent Golden Age Passports[4] | 0.0 | 11.1 | 9.0 | 13.5 | 32.9 | 3.3 | 14.9 |
| Percent Golden Access Passports[4] | 0.0 | 1.4 | 0.5 | 2.1 | 2.4 | 0.8 | 1.7 |
| Number of camping permits | 6 | 3,565 | 810 | 3,189 | 1,949 | 735 | 10,254 |
| Number of camping groups | 5 | 2,760 | 648 | 2,461 | 1,386 | 599 | 7,859 |

1 This is a special group camping area.
2 Recreation area averages were weighted by the total number of permits for each area to compute project average.
3 Percent of camping parties.
4 Percent of camping permits.

**Table A14**
**1988 Lake Shelbyville Vehicle and Equipment Type (Percent of Camping Parties)**

| Vehicle and Equipment Type | Opossum Creek[1] | Coon Creek | Lone Point | Lithia Springs | Forrest W. Wood | Whitley Creek | Project Totals[2] |
|---|---|---|---|---|---|---|---|
| **Vehicle** | | | | | | | |
| Car | 0.0 | 45.5 | 42.6 | 40.5 | 37.5 | 56.9 | 43.1 |
| Truck | 0.0 | 45.6 | 45.4 | 39.3 | 51.4 | 44.6 | 44.5 |
| Van | 20.0 | 19.5 | 16.4 | 16.7 | 13.3 | 18.2 | 17.2 |
| Motor home | 0.0 | 15.7 | 14.7 | 19.2 | 24.5 | 5.0 | 17.4 |
| Other | 0.0 | 0.1 | 1.5 | 0.3 | 0.1 | 0.0 | 0.3 |
| **Camping Equipment[3]** | | | | | | | |
| Tent | 20.0 | 55.0 | 64.5 | 44.7 | 20.1 | 90.0 | 49.0 |
| Pop-up trailer | 0.0 | 13.1 | 11.4 | 12.8 | 8.5 | 7.3 | 11.6 |
| Pickup camper | 0.0 | 5.4 | 4.9 | 5.9 | 5.3 | 4.0 | 5.4 |
| Travel trailer | 0.0 | 19.8 | 14.8 | 15.8 | 41.2 | 6.2 | 20.9 |
| **Recreational Equipment** | | | | | | | |
| Powerboat | 0.0 | 38.4 | 44.9 | 31.5 | 38.7 | 42.9 | 37.2 |

1 This is a special group camping area.
2 Recreation area averages were weighted by the total number of permits for each area to compute project averages.
3 Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

**Table A15**
**1988 Shenango River Lake (Shenango Rec Area) User Characteristics**

| Characteristic | Value |
|---|---|
| Recreation days | 59,731 |
| Mean length of stay, nights | 3.4 |
| Mean number in group | 3.8 |
| Percent prior visits[1] | 83.7 |
| Percent primary destination[1] | 95.3 |
| Percent Golden Age Passports[2] | 17.2 |
| Percent Golden Access Passports[2] | 3.2 |
| Number of camping permits | 7,270 |
| Number of camping groups | 4,620 |

[1] Percent of camping parties.
[2] Percent of camping permits.

**Table A16**
**1988 Shenango River Lake Vehicle and Equipment Type**

| Vehicle and Equipment Type | Percentage of Camping Parties |
|---|---|
| **Vehicle** | |
| Car | 56.5 |
| Truck | 40.2 |
| Van | 13.6 |
| Motor home | 16.2 |
| Other | 0.8 |
| **Camping equipment[1]** | |
| Tent | 34.6 |
| Pop-up trailer | 10.9 |
| Pickup camper | 6.1 |
| Travel trailer | 22.9 |
| **Recreational equipment** | |
| Powerboat | 30.0 |

[1] Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.

## Table A17
## 1988 West Point Lake User Characteristics

| Characteristic | R. Shaefer Heard | Holiday Park | State Line Park | Amity Park | White Tail Ridge | Project Totals[1] |
|---|---|---|---|---|---|---|
| Recreation days | 12,279 | 40,291 | 7,833 | 16,505 | 7,589 | 84,497 |
| Mean length of stay, nights | 2.3 | 3.1 | 2.5 | 3.1 | 2.9 | 2.9 |
| Mean number in group | 2.9 | 3.5 | 3.8 | 3.4 | 3.4 | 3.4 |
| Percent prior visits[2] | 61.7 | 89.0 | 71.6 | 87.9 | 95.8 | 82.4 |
| Percent primary destination[2] | 83.0 | 97.2 | 96.9 | 97.8 | 98.4 | 94.7 |
| Percent Golden Age Passports[3] | 25.1 | 20.7 | 10.4 | 24.3 | 18.1 | 21.1 |
| Percent Golden Access Passports[3] | 2.8 | 4.6 | 1.3 | 4.1 | 3.2 | 3.7 |
| Number of camping permits | 1,994 | 4,772 | 868 | 1,868 | 834 | 10,336 |
| Number of camping groups | 1,715 | 3,899 | 777 | 1,513 | 757 | 8,661 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project average.
2 Percent of camping parties.
3 Percent of camping permits.

## Table A18
## 1988 West Point Lake Vehicle and Equipment Type (Percent of Camping Parties)

| Vehicle and Equipment Type | R. Shaefer Heard | Holiday Park | Stateline Park | Amity Park | White Tail Ridge | Project Totals[1] |
|---|---|---|---|---|---|---|
| **Vehicle** | | | | | | |
| Car | 33.8 | 31.2 | 32.2 | 36.7 | 35.0 | 33.1 |
| Truck | 43.7 | 51.3 | 57.1 | 49.4 | 60.9 | 50.9 |
| Van | 11.5 | 13.7 | 13.8 | 13.8 | 12.4 | 13.2 |
| Motor home | 24.3 | 26.6 | 16.8 | 24.1 | 25.5 | 24.7 |
| Other | 0.3 | 0.7 | | 0.5 | | 0.5 |
| **Camping Equipment[2]** | | | | | | |
| Tent | 26.4 | 28.7 | 52.9 | 25.9 | 28.4 | 29.9 |
| Pop-up trailer | 6.8 | 6.2 | 6.4 | 9.1 | 8.2 | 7.0 |
| Pickup camper | 2.7 | 7.0 | 1.8 | 7.7 | 4.0 | 5.5 |
| Travel trailer | 23.3 | 19.3 | 15.2 | 28.3 | 32.0 | 22.4 |
| **Recreational Equipment** | | | | | | |
| Powerboat | 27.6 | 60.2 | 46.2 | 41.8 | 44.3 | 47.9 |

1 Recreation area averages were weighted by the total number of permits for each area to compute project averages.
2 Motor homes are included in the calculation of camping equipment percentages. Camping equipment percentages can sum to more than 100 percent because parties can use multiple pieces of equipment.