

The Study of Leisure Behavior of the Users of Federal Recreation Areas Administered by Three Federal Agencies

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国立公園サービス(National Park Service), 国有林サービス(National Forest Service), そして陸軍工兵団(Army Corps of Engineers)の3つの異なる機能を持つ連邦政府附属機関によって管理・運営される, 野外レク・エリア利用者のサイト内(on-Site)でのレジャー行動に違いがあることは, 先行研究(HCRS, 1979)によって明らかにされている。例えば国立公園サービスによって管理されるエリアの利用者は, 文化的・教育的活動に頻繁に参加し, 陸軍工兵団によって管理されるエリアの利用者は水辺活動に多く参加する傾向がある。しかしながら, この結論を年間を通してのサイト外(off-Site)での活動参加パターンとしてとらえるにはデータが不足している。本研究の目的は, 3つの野外レク・エリア利用者の, サイト内とサイト外でのレジャー行動を比較することにある。分析には1979年度の全米野外レクリエーション計画(The Third

Recreation Plan)のデータが使用された。3つの異なるサイト利用者の社会経済プロフィール, 年間を通しての野外レク活動への参加率, そして因子分析によって得られたサイト外での野外レク活動の構造が測定された。その結果, 国立公園サービスによって管理されるエリア利用者は, 他のエリア利用者 비해, 収入, 教育程度, そして職業的威信度が高く, 文化的, 教育的活動に一年を通じて参加していることが明らかになった。この事実は, 各エリア利用者のもつ社会経済的背景の相違と, 活動に対する異なった好み(taste)の存在を示している。これに対し, 因子分析によって明らかになった, サイト外で参加された野外レク活動の構造には高度な類似性が見られた。この活動構造の同質性と, 参加活動の選択の異質性の関係についての考察が, 各エリア利用者の人口統計学的プロフィールに照らして行われた。

Studies of federal recreation areas indicated that different types of recreational resources and opportunities induce different on-site leisure behavior among the users of these areas (HCRS, 1979). For example, the users of the National Park Service site have participated in cultural and educational activities, while the majority of the Corps of Engineers respondents have engaged in a variety of waterfront activities. However, there is no empirical evidence that these results can be extended to leisure behavior exhibited by the same users while participating in off-site outdoor recreation activities throughout the year. A knowledge of the similarities or differences in off-site users' leisure behavior could be quite useful in managing and marketing efforts. The off-site recreation activity patterns of the users of the National Park Service, the Forest Service, and the Corps of Engineers were compared by using the data collected by the Heritage Conservation and Recreation Service for the 1979 Nationwide Outdoor Recreation Plan. For the purpose of this study, three measurements were adopted. The results of the first two measurements revealed the different socioeconomic profiles and different popular activities across agencies. For example, National Park Service visitors tend to have high income, education, and occupational prestige, and were likely to participate in cultural and educational activities throughout the year. These results indicate the heterogeneity of activity perception among federal users. The third measurement indicated that the structure of off-site activities obtained from factor analysis are quite similar across different agency users. The

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relationship between the homogeneity of the activity structure and the heterogeneity of activity taste among federal users are discussed in light of demographic profiles.

Key Words: Leisure behavior, federal recreation areas, factor analysis

Introduction

Many types of federal recreation areas in the United States have been adapted to different kinds and combinations of recreational use. These areas are under the jurisdiction of several federal land management agencies and are widely distributed throughout the country. (Federal land management agencies include: National Park Service, National Forest Service, Bureau of Land Management, Bureau of Reclamation, and Tennessee Valley Authority.)

The National Park Service was established for the purpose of protecting and regulating the use of the federal estate by establishing national parks, monuments, and reservations. These areas have been preserved for natural as well as scientific, historical, recreational, and cultural purposes. The Forest Service, a bureau in the U.S. Department of Agriculture, administers over 187 million acres of land. The Forest Service became more directly involved in the provision of recreation opportunities after the passage of the Multiple Use Act of 1960. With over 200 million visitor-days spent in recreation use of the national forests annually, recreation is the fastest growing activity on these lands. In contrast, the Army Corps of Engineers maintains and improves rivers and other waterways to enhance navigation and control floods. The Civil Works Program of the Corps contributes to outdoor recreation through nationwide construction, operation and maintenance of reservoirs and stabilizing pools, harbors, and waterways in addition to protecting and improving coastal beaches. Hence, federal recreation areas managed by these various agencies have offered different recreational opportunities to users in terms of history, facilities, management policies, and natural settings.

It is not difficult to imagine that the different recreational opportunities and different characteristics of the three federal recreation agencies would attract different types of users. In particular, studies of individual federal recreation areas show that the demographic profiles of the users of the three federal agencies differ (HCRS, 1979)

Due to the differing opportunities and users at each of these areas, we would expect there would be differences in the on-site participation patterns at each type of federal recreation area. According to the 1977 Federal Estate Survey, 100 percent of the respondents who visited the National Park Service site have participated in sightseeing at historical sites or natural scenic areas compared to one-half of respondents at the Corps of Engineers areas. Conversely, 93 percent of the Corps of Engineers respondents have participated in swimming and Sunbathing compared to 49 percent of the respondents of the National Park Service areas. It is apparent, then, that various kinds of recreational opportunities yield different individual outdoor recreation behavior at each of the federal recreation areas.

Despite the findings reported by the 1977 on-site survey concerning outdoor recreation behavior among public park users, there is no empirical evidence that this research can be extended to outdoor recreation behavior exhibited by these users while participating in off-site outdoor recreation activities throughout the year. Are there any relationships between federal users' on-site outdoor recreation behavior and off-site outdoor recreation behavior? Have the users of different kinds of federal outdoor recreation areas demonstrated different off-site outdoor recreation behavior? The literature that was searched contained no studies that compared off-site outdoor recreation behavior of the users of different federal estates. Thus, at this point we know that recreation areas managed by three different federal agencies attract users with different demographic profiles and, due to the type of opportunities available at each of these types of recreation areas, the on-site participation patterns of these users vary according to the type of area. We do not know, however, if the off-site participation patterns of these user groups are different. That is, are the general off-site recreation patterns of the users of a Corps of

Engineers site different from those of a National Park site? The differences in demographic profiles might lead us to think that off-site patterns would differ. But, little relationship was found between demographic factors and recreation activity participation in the work of Kelly (1978). Thus, the demographic differences among users of the various federal estates is not clear evidence that they would have differing off-site recreation activity patterns.

A knowledge of the similarities or differences in off-site users' pattern could be quite useful in the managing and marketing of the various federal agencies. For example, if National Park visitors typically have off-site recreation patterns focusing on history and education, then the agency could target its marketing and managing efforts. The purpose of this study was to compare the off-site recreation activity patterns of the users of the National Park Service, the Forest Service, and the Corps of Engineers. Two types of comparisons were made: (1) the percentage participation in off-site activities and (2) the structure of off-site activities.

Methodology

The data used in this study were selected from a survey undertaken for the 1979 Nationwide Outdoor Recreation Plan (Heritage Conservation and Recreation Service, U.S. Department of Interior, 1978). The data were collected by face-to-face interviews conducted on site at a total of 153 federally managed outdoor recreation areas. From these areas, forty areas were selected from the three largest land-managing agencies—the National Park Service, U.S. Forest Service, and Army Corps of Engineers. The overall nonresponse rate was 4.8 percent of all people approached during the data collection period, and a total of 10,333 interviews were used for data analysis. Information was sought on demographic items and frequencies of participation during the past year in 30 outdoor recreation activities.

First, user's socioeconomic statuses were investigated by using variable analysis. Consistent with the operationalization of these variables in previous research, the income, educational and occupational levels of the respondents was ascertained. Income was divided into six categories, ranging from under \$6,000 to over \$50,000. Education was defined as the highest level of formal schooling completed by the respondents at least 18 years of age and ranged from elementary school to graduate degrees. Occupation was coded into seven prestige classes, ranging from laborer to professional.

Second, off-site activity participation rates of the users of the federal estate were examined. This analysis simply shows the deviations from the average participation rate for each activity. Annual percent of participation for each activity was employed to compare the population.

Finally, factor analysis of outdoor recreation activities was employed to investigate the individual's off-site leisure behavior pattern. Factor analysis is a method for determining the number and nature of the underlying variables among larger number of measures (Kerlinger, 1964). This technique is used to derived groups of inter-related activities which share the same common factor variance. Many studies have been conducted in which stable dimensions and factor structures of leisure activities have been identified (Proctor, 1962; Bishop, 1970; Witt, 1971; McKechnie, 1974; Duncan, 1978; Yu, 1980). In the present study, this procedure was used to extract common factors from individual activity sets. Subsequently, factors, the group of activities isolated in each of three federal recreation areas, was objectively compared.

The respondents were asked to state the frequency of activity involvement in outdoor recreation which occurred anywhere, not just on federal land, during the past 12 months. There were thirty activities that were common to the users of the three federal recreation areas. Participation in the thirty activities was recorded into three categories: (1) no participation in the past year, (2) participated one to four times, (3) participated more than four times. Thus, the frequencies of participation were measured by a three-degree ordinal scale in the analysis. The activity sets were then factor-analyzed for each federal agency separately. Finally, the invariance of the extracted factors across the samples was examined by using the coefficient of congruence.

Analysis of Data

(1) Socioeconomic Characteristics of Federal Estate Users.

Presented in Table 1 is the annual family income of federal estate users. One-fourth of the users in the National Park system have an annual family income of more than \$25,000, compared with 13 percent in the Corps of Engineers. In contrast, one-fourth of Corps of Engineers users have earned less than \$10,000 a year. The median income of the users of National Park Service, Forest Service, and Corps of Engineers is \$18,153, \$17,353 and \$14,999, respectively. Table 2 indicates that the National Park Service hosts the highest percentage of highly educated users and the Corps of Engineers, the lowest. Also, 17 percent of the users in the National Park Service have pursued college graduate level study compared with 10 percent in the Forest Service, and only 4 percent in the Corps of Engineers.

A similar pattern holds for occupation. For example, 31 percent of the Corps of Engineers visitors are classified as blue collar employees including craftsman, operations, service, farmer, and labor categories. Similarly, 22 percent of the Forest Service visitors and 18 percent of the National Park Service users are blue collar workers. Persons in white collar occupations including professional, manager, clerical, and sales were most often found in the federal recreation areas administered by the National Park Service.

Table 1. Annual family income of federal estate users (Percentage)

Income	National Park Service (N=3965)	National Forest Service (N=2864)	Corps of Engineers (N=3504)
Under \$1,000	6	8	9
6,000-9,999	10	12	16
10,000-14,999	21	22	25
15,000-24,999	37	34	32
25,000-49,999	20	17	11
50,000+	4	3	2
No Date	2	4	5

Table 2. Annual family income of federal estate users (Percentage)

Education	National Park Service (N=3965)	National Forest Service (N=2864)	Corps of Engineers (N=3504)
Elementary	1	2	4
Junior/Middle	5	6	8
High	38	45	60
College	39	37	24
Graduate	17	10	4

The data showed that three socioeconomic characteristics vary among agency visitors. Specifically, visitors in the National Park Service, compared to the Forest Service and Corps of Engineers, tend to have higher education, income, and occupational prestige. The presence of a social class bias in the National Park Service visitors is suggested by this analysis.

(2) Activity Participation Rates of Federal Estate Users.

Table 4 indicates the deviation from average participation rates for each outdoor recreation activity.

Table 3. Occupation of federal estate users (Percentage)

Occupation	National Park Service (N=3965)	National Forest Service (N=2864)	Corps of Engineers (N=3504)
Professional	28	21	13
Manager	8	7	7
Clerical	5	6	5
Sales	3	4	4
Craftsman	8	10	12
Operations	2	4	5
Service	5	5	6
Farmer	1	1	2
Housewife	13	16	17
Laborer	2	2	6
Student	17	15	13
Retired, Widow	7	8	8
Unemployed	2	2	2

For example, the average participation rate for fishing for the entire population is 59 percent while the same rates for National Park Service, Forest Service, and Corps of Engineers are 44 percent, 61 percent, and 71 percent, respectively. According to Table 4, the National Park visitors are the most interested in cultural and sports events, sightseeing, and driving for pleasure, as well as sporting activities associated with high income such as golf, tennis, and downhill skiing. Water sports are most popular with the Corps of Engineers visitors. Camping is popular among those who visit National Forests. Outdoor pool swimming is popular with the National Park Service, but not the Corps of Engineers visitors. Specifically, visitors to the Corps of Engineers sites represent below average participation rates for all land-based outdoor activities except camping. It should be remembered that participation in outdoor recreation as measured here does not refer to only on-site behavior, but rather activity undertaken at any location during the last 12 months. In summary, the results showed significant differences in off-site outdoor recreation involvement among the users of three federal land-managing agencies.

Table 4. Activity participation rates of federal estate users
(Annual percent participation)

Outdoor Activity	Federal Agencies			
	Federal Estate	NPS	NFS	COE
Camp in developed area	58	-10	9	2
Camp in primitive area	26	- 1	8	- 8
Canoe, kayak or river run	16	2	2	- 5
Sail	10	5	0	- 4
Water ski	22	- 5	- 5	10
Fish	59	-15	2	12
Other boat	32	- 4	- 4	9
Pool swim or sun bathe	34	15	- 1	-13
Other swim and sun bathe	50	- 3	- 3	6
Walk to observe nature, bird watch, or wildlife photography	44	7	8	-15
Hike or backpack	35	5	13	-17
Other walk or jog	37	10	0	-11
Bicycle	36	7	0	- 8
Horseback ride	12	1	2	- 2
Drive vehicles or motorcycles off-road	18	- 2	4	- 2
Hunt	18	- 5	0	6
Picnic	61	0	2	- 3
Golf	12	4	- 1	- 3
Tennis	23	7	- 1	- 6
Cross-country ski	6	1	2	- 4
Downhill ski	11	3	3	- 7
Ice skate	9	4	0	- 4
Sled	11	2	1	- 3
Snowmobile	5	0	2	- 1
Other sports or games	28	4	0	- 4
Sightsee at historical sites or natural wonders	48	16	0	-16
Drive for pleasure	55	8	1	- 8
Visit zoos, aquariums, fairs, carnivals, amusement parks	39	12	- 1	-10
Attend sports events	36	7	- 1	- 6
Attend dances, concerts, plays	23	8	1	- 8

Note: Participation rates based on activity involvement anywhere; not just federal lands. Percentage expressed as difference from total federal population.

(3) Activity Structures.

Three factors, obtained by a factor analysis model using varimax rotation of the factor matrix, were extracted for each of the three agencies' visitors. The choice of three factors was based on a plot of the eigenvalues. Table 5, 6 and 7 are the summary tables for the activity structures. Thirty outdoor recreation activities were thus grouped into smaller sets of underlying activity structures. The activities listed in these tables are activities loading greater than .4 on each factor identified by the varimax rotated factor matrix. Since there is no fixed rule for deciding what is a high loading, the study followed the criterion used by Yoesting (1973) and Chase (1975) who required an activity to have a .4 or higher

Table 5. Outdoor recreation activities loading greater than A .4 on the first factor of three federal agencies

Federal Agencies	Factor 1	Factor Loadings
National Park Service	Pool swim or sunbathe . . . . .	.47
	Bicycle . . . . .	.48
	Tennis . . . . .	.51
	Other sports or games . . . . .	.50
	Attend sports events. . . . .	.45
National Forest Service	Pool swim or sunbathe . . . . .	.51
	Other walk or jog . . . . .	.41
	Bicycle . . . . .	.48
	Tennis . . . . .	.57
	Other sports or games . . . . .	.48
	Visit zoos, aquariums, fairs, carnivals, amusement parks . . . . .	.43
Army Corps of Engineers	Attend sports events . . . . .	.55
	Attend dances, concerts, plays . . . . .	.41
	Pool swim or sunbathe . . . . .	.51
	Other swim or sunbathe . . . . .	.45
	Bicycle . . . . .	.44
	Tennis . . . . .	.51
	Attend sports events . . . . .	.43

Table 6. Outdoor recreation activities loading greater than .4 on the second factor of three federal agencies

Federal Agencies	Factor 2	Factor Loadings
National Park Service	Walk to observe nature, bird watch, or wildlife photography . . . . .	.42
	Picnic. . . . .	.43
	Sightsee at historical sites or natural wonders . . . . .	.58
	Drive for pleasure . . . . .	.50
	Visit zoos, aquariums, fairs, carnivals, amusement parks . . . . .	.47
National Forest Service	Walk to observe nature, bird watch, or wildlife photography . . . . .	.52
	Picnic. . . . .	.45
	Sightsee at historical sites or natural wonders . . . . .	.63
	Drive for pleasure . . . . .	.55
Army Corps of Engineers	Walk to observe nature, bird watch, or wildlife photography . . . . .	.44
	Sightsee at historical sites or natural wonders . . . . .	.61
	Drive for pleasure . . . . .	.52
	Visit zoos, aquariums, fairs, carnivals, amusement parks . . . . .	.44

Table 7. Outdoor recreation activities loading greater than A .4 on the third factor of three federal agencies

Federal Agencies	Factor 3	Factor Loadings
National Park Service	Camp in developed area . . . . .	.48
	Hike or backpack . . . . .	.59
National Forest Service	Camp in primitive area . . . . .	.48
	Hike or backpack . . . . .	.46
	Cross country ski . . . . .	.42
Army Corps of Engineers	Cross-country ski . . . . .	.50
	Downhill ski . . . . .	.59

loading on a specific factor for it to be considered a member of the activity set defined by that factor. In the present study, activity structures (extracted factors) are not labeled because our purpose is comparison of factors rather than interpretation of factors.

(4) A Comparison of the Varimax Factor Patterns.

To determine the similarity of activity clusters among the federal agencies, the coefficient of congruence was calculated. The factors are viewed as variables and an unadjusted correlation was calculated between the three sets of factor loadings for the three federal agencies. Thus, the three factors extracted from the National Park Service were correlated with the three factors extracted from both the Forest Service and Corps of Engineers. The relations among the rotated factor patterns of the three federal agencies are presented in three 3x3 correlation matrices (Tables 8, 9 and 10). For instance, Table 8 indicated a strong positive correlation between three pairs of factor loading variables. This implies that for each agency's users there are three relatively similar activity clusters. Since each factor is determined by a specific cluster of activities, the users of these two federal agencies can be said to have similar groups of intercorrelated activities.

Table 8. Correlation between the national park service and national forest service

		National Park Service		
		F1	F2	F3
National Forest Service	F1	.98	.60	.47
	F2	.49	.96	.63
	F3	.54	.37	.78

Table 9. Correlation between the national park service and army corps of engineers

		National Park Service		
		F1	F2	F3
Corps of Engineers	F1	.97	.56	.42
	F2	.49	.98	.54
	F3	.55	.17	.75

Table 10. Correlation between the national forest service and army corps of engineers

	Corps of Engineers			
	F1	F2	F3	
National Forest Service	F1	.96	.63	.45
	F2	.51	.97	.25
	F3	.50	.44	.75

Discussion

The major interest of this study was to compare federal users' off-site activity participation patterns and demographic profiles. Three measurements were adopted for the purpose of this study. The results of the first measurement, demographic analysis, indicated that education and income vary dramatically across agencies. The users of the National Park Service tend to have higher education, income, and occupational prestige, compared to the users of the other two agencies. Similar differences were found in the second analysis, percentage of participation in off-site activities. For example, Corps of Engineers users frequently visited a reservoir to participate in a variety of waterfront activities, while the users of the National Park Service were likely to participate in cultural and educational activities throughout the year. Obviously, there are no rigorous empirical data which indicate a causal link between socioeconomic variables and the type or the frequency of activity participation, yet one could hypothesize that National Park Service visitors are interested in activities associated with high income and educational level.

As a final procedure, factor analysis was used to derive the structure of off-site activities. Three off-site activity structures which are quite similar across different agency users were found. A comparison between socioeconomic characteristics and the structure of off-site activities indicated a limitation of socioeconomic information. That is, socioeconomic variables were not related to user's activity structures which are common to all federal users.

It is important to consider in more depth the potentially contradictory findings concerning off-site percentage participation rates and the structure of off-site activities. That is, the interpretation of the percentage participation rates is that the users of the different federal estates have different recreational tastes. Thus, the respondents interviewed at the National Park sites have a different set of popular activities (most commonly participated in activities) from visitors interviewed at Corps of Engineer sites. We may conclude that, with regard to popular recreation activities (mainly off-site), the users of the three federal recreation estates do not form a homogeneous group. In contrast, the interpretation of the factor analysis findings is that, with regard to the structure—the similarity in the dimensions—of recreation participation, the users of the three federal estates form a homogeneous group. They seem to have a similar perception of what activities cluster together, that is, go together in the sense that when they participated in some particular activity, they are likely to have participated in some other given activity. Thus, the users of the three federal estates have similar perceptions of what activities cluster together but differ on their sets of popular activities.

The similarity in perception of activities that cluster together may possibly be explained by the growing egalitarian nature of leisure behavior. In fact, most activity clusters for the users of the three agencies are the non-resource-based activities such as pool-swimming and sunbathing, bicycling, tennis, and attending sports events. These activities are usually available and accessible in nearly all communities. The democratization of non-resource-oriented activities which might support the thesis about cultural homogenization in modern society was depicted by Zuzanek (1978). He stated that the growing affluence of the middle class, a proliferation of mass

media which become powerful advertisers of new life-styles, together with the relative availability of leisure time and of leisure and recreation services, eroded many of the class barriers surrounding various leisure activities.

The differences in popular activities found among user groups may possibly be explained by the fact that democratization is affecting the clustering of activities without, at the same time, strongly affecting the popularity of individual activities. Popularity may still be influenced by status differences among user groups as indicated by demographic differences.

For the present, we should be suspicious of the usefulness of the structure of off-site activities for the purpose of managing or marketing the federal estate. For example, the set of intercorrelated activities often includes both popular activities and non-popular activities. It seems that knowledge of demographic profiles and the annual activity participation rates are most helpful in determining managing and marketing strategies. In any case, based on the current findings, future research might pursue the relationship between popularity as evidenced by participation rates and the dimensions of leisure participation as shown by factor structure.

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