

Marketing a National Forest: The Resource Manager's Dilemma¹

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Abstract: National Forests throughout the United States are facing critical management decisions regarding optimal resource use amidst strong countervailing pressures for access. Visitors to Talladega National Forest in Alabama were surveyed to develop appropriate marketing strategies. Cluster analysis showed that separate homogeneous user groups exist. This information was vital to the formation of appropriate marketing strategies.

Forest based recreation is continually gaining participants. Opportunities to pursue traditional activities such as hunting and hiking, as well as new ventures such as rock climbing or rafting, may all occur within one National Forest area. The USDA Forest Service has a unique role: forest managers must consider demands for timber management as well as highly diverse forest recreational uses.

The 217,000-acre Talladega National Forest (TNF) located in the lower Appalachian Mountain chain, was used to evaluate conflicting user demands and develop appropriate marketing strategies for non-timber forest resources. Contained within the boundaries are a 2,000-acre resort state park, the 7,940-acre Cheaha Wilderness, a 100-mile National Recreation Trail, a National Scenic Byway, a major interstate highway, two wildlife management areas, and an array of lakes, rivers, streams, and trails that make the area a strong recreational attraction. The National Forest also contains colonies of the endangered red-cockaded woodpecker and other threatened and endangered species. In addition, the Talladega is a resource well-suited for rapid growth of southern pine and hardwood.

Marketing Resources

The concept of market segmentation involves the use of one or more variables in classifying visitors into homogeneous groups (Kotler 1983, Pride 1989). Crompton (1983) referred to the possible variables as geographic, sociodemographic, and behavioral. While many studies have focused on geographic variables, (Cornell and O'Leary 1989, Jorgensen 1990, May 1992), the most commonly used variables for segmentation were sociodemographic

characteristics (Pride 1989). Kotler (1983) noted that because sociodemographic data are generally easiest to obtain, it is the most popular variable.

The perception that geographic and sociodemographic characteristics alone are not sufficient to properly classify consumers led to more sophisticated approaches to segmentation. Among these, marketers have commonly used benefit segmentation to divide the market. (Kotler 1983, Calantone and Johar 1984).

Only a few studies have applied the more common segmentation principles to National Forest users (Jorgensen 1990, May 1992). However, these studies typically employed locational or sociodemographic factors for defining potential market segments. More clearly defined market segments are needed for forest managers to provide proper recreational opportunities to the public.

Theoretical Framework

National Forest services are examples of public goods. Public goods are those which are not controlled by one individual, accessible by all, and show consumption indivisibilities. A public good is not divided among consumers but is available to all. Therefore, since no one is excluded, no one can capture the full benefit of the good. The benefit derived from the good is a function of the total amount of the good made available.

The appropriate model for public good analysis is the pure market discrimination model. This model recognizes that each individual receives different levels of marginal benefits from a public good. However, it is impossible to estimate individual demand curves for thousands of visitors. Thus, it is important to group individuals who receive similar benefits. Cluster analysis is a commonly used method for grouping visitors who seek similar benefits. Using this method, respondents may be placed into relatively homogeneous groups based on the similarities they share (Kachigan 1986).

The clustering technique was applied to the TNF to group respondents based on the types of benefits sought. This site was chosen for empirical analysis because of its popularity for highly diverse outdoor recreational activities.

Methods and Procedures

During 1993 personal interviews were conducted of visitors on the TNF. A sample period of 65 days resulted in 193 visitor contacts from which a total of 148 usable questionnaires were obtained.

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The survey questionnaire contained several sections focusing on recreational activity in and around the TNF. A benefits sought section using a one to five importance ranking was included to determine activities and facilities visitors considered important to their satisfactory recreational experience. Geographic and sociodemographic questions such as distance travelled, income, education, and travel cost were also included.

Visitors rated 37 possible benefits during the survey. Because evaluation of all these different variables was vague, factor analysis was used to condense the 37 potential benefits into grouped variables. Using condensed variables, cluster analysis was performed on the visitor use data to determine what segments existed in the visitor population. Once visitor segments were identified, they were tested for stability with discriminant analysis.

Market Segments Defined

Data on all respondents were combined to obtain a general demographic profile which showed a strong white male prevalence among forest visitors. Furthermore, the results characterized the average respondent as being a middle-class, full-time employee with 2 years of college-level education.

Additionally, trip distance data showed a regional pattern of visitation with the majority of visitors from northern Alabama. The mean distance travelled to the forest was 78 miles, but the median distance was only about 35 miles, indicating that a small number of visitors travelled much greater distances.

Cluster analysis allowed identification of user groups based on personal characteristics and the benefits they were seeking in personal recreational experiences, including visits to TNF. The analyses indicated the particular benefits sought by different user groups.

Using the condensed variables derived through factor analysis (*table 1*), clustering was effective in defining survey respondents (*table 2*). A three-cluster solution provided the best picture of the benefits respondents were seeking. Four of the seven composite benefits-sought variables were significant in defining the relevant clusters (*table 3*). Yet, these variables alone were not sufficient to define distinct clusters. In initial analyses using only benefits-sought, the distances between cluster centroids were relatively small, e.g., the distances between clusters two and three showed distinctions detectable only at levels beyond two decimal points. To increase the distinction between clusters, visitor characteristics of trip distance, education, income, and employment status were added as bases for clustering.

To better understand what visitors wanted, rankings for the significant benefits-sought variables were contrasted between the clusters (*table 4*). Members of clusters two and three were similar with respect to benefits sought, but differences in other characteristics showed they were distinct groups.

Cluster means for the composite wilderness variable showed agreement among all three groups that these activities and facilities were generally important to the region. Statistically significant differences among the clusters existed only for hiking and backpacking. More than two-thirds of the respondents in cluster one specifically said that hiking was an extremely important benefit, but only 40 percent of respondents in the other clusters indicated it was important.

Additionally, nearly two-thirds of the respondents in cluster one said that backpacking was an important activity while half or less of the members in clusters two and three felt it was an important recreational experience.

Table 1—Variables used to cluster respondents and the importance variable components.¹

Group name	Importance variables
Wilderness	swimming in a lake or river, canoeing, visiting a designated wilderness area, hiking, backpacking, horseback riding, camping in a natural area
Consumption	hunting, fishing
Modern	swimming in a pool, water skiing, pleasure boating, using a marina, staying overnight in a cabin or a motel/lodge, eating in a restaurant
Social	socialize with other visitors, attend a visitor orientation program
Nature	picnicking in natural area, being alone with nature, viewing nature, visiting nature center, going for scenic drives
Sports	riding a bicycle, trail bikes, off-road vehicles, rock climbing/adventure sports, cross-country training, test or exercise outdoor skills, play outdoor sports or games, tennis, golf, competing in organized sports, having equipment to rent
Recreational vehicle	flush toilets, hot showers, RV dump station, camping in an area with fully developed facilities

¹Talladega National Forest Visitor Survey, Alabama 1993.

Table 2—Cluster summary for the three-cluster solution.¹

Cluster	Frequency	Nearest cluster	Distance between cluster centroids
1	13	3	6.75
2	58	3	4.05
3	77	2	4.05

¹Talladega National Forest Visitor Survey, Alabama, 1993.

Table3— Means and ranges for all variables in each cluster. Talladega National Forest visitor survey, Alabama, 1993.

Variable	Range	P>F	Means		
			Cluster 1	Cluster 2	Cluster 3
Wilderness	1-5	.4912	2.32	2.51	2.54
Consumption	1-5	.0001	3.65	1.97	2.15
Nature	1-5	.0618	1.75	2.20	2.40
Recreational vehicle	1-5	.5338	3.33	2.87	2.86
Trip distance	Actual	.0001	56-75	26-35	36-55 distance
Education	1-25 (yrs)	.0001	22	12	15
Employment	Current Status	full-time	full-time	full-time	full-time
Income	1-10	.0001	\$31,000	\$19,000	\$30,000
Amount more willing to pay	dollars	.0020	55.16	45.87	94.77

Table 4—Mean scores for each component of the composite variables.¹

Variable ²	P>F	Mean scores		
		Cluster 1	Cluster 2	Cluster 3
Wilderness				
Swimming in a lake or river	.6722	2.31	2.39	2.53
Canoeing	.4012	2.46	2.86	2.75
Visit a designated wilderness area	.3564	2.23	2.24	2.26
Hiking	.0866	1.61	2.21	2.17
Backpacking	.0474	2.31	2.80	2.52
Horseback riding	.2658	3.38	3.16	3.08
Camp in natural surroundings	.6048	1.92	2.18	2.11
Consumptive				
Hunting	.0001	4.31	2.14	3.33
Fishing	.0131	3.00	1.84	2.01
Natural				
Picnicking in a natural area	.1482	1.94	1.95	2.18
Being alone with nature	.1654	1.54	2.10	1.99
Viewing and photographing nature	.2493	2.00	2.10	2.38
Visiting a nature center	.1348	2.15	2.73	2.99
Going for scenic drives	.2733	1.54	2.30	2.29
Recreational vehicle				
Flush toilets	.6450	3.25	2.70	2.80
Hot showers	.8657	3.16	3.05	2.83
RV dump station	.5786	3.83	3.19	3.43
Camping in an area with full-developed facilities	.1802	3.08	2.31	2.62

¹Talladega National Forest Visitor Survey, Alabama, 1993.²Importance scale: 1- extremely important; 5-extremely unimportant.

Unlike the wilderness variable, results for the other composite benefits-sought variables showed very clear distinctions among clusters. For example, the mean score of cluster one for the consumption variable of 3.65 indicated that these activities were not important. Specifically, most of the respondents in cluster one said that hunting and fishing were extremely unimportant. On the other hand, most of the respondents in clusters two and three indicated that hunting was an important benefit they sought in various regional recreation areas. This finding wasn't a surprise since local hunting pressure is quite common.

Similarly, the study revealed the importance of fishing to local and regional visitors. More distant travelers were indifferent to the activity.

Members of all three clusters favored the components of the composite nature variable. For example, all respondents strongly favored picnicking in a natural area and being alone with nature. However, while members of clusters two and three were somewhat indifferent to visiting a nature center, nearly 70 percent of the respondents in cluster one said such a facility was an important benefit for the region. This is a signal that information sources are important if this group is to be expanded. Nature centers, interpretive programs and other similar events would be good means of building the clientele from group one.

Mean scores among the three clusters for the composite RV variable were very similar. Respondents in all three clusters were indifferent toward most of these facilities. But, interestingly, almost two-thirds of the respondents in cluster two favored fully-developed camping facilities. No clear explanation was evident for this preference by local visitors. However, it could mean that more frequent visitors simply want an upgrade in facilities.

Marketing Strategies

In the aggregate, primary activities sought were fishing, hunting, hiking, and picnicking, etc. Logically, overall strategies for attracting forest visitors should emphasize these activities. Yet, because of the magnitude of resources required for each activity and the potential conflicts between them, different resource allocations and destinations should be provided throughout the forest.

Because more than half of current visitors live within 25 miles of the forest, it is reasonable to assume that the majority of TNF visitors will continue to be from areas in or near the forest. Members of this group were interested primarily in the consumptive activities of hunting and fishing. Provision and timely maintenance of areas designated for consumptive activities would appear to be a necessary part of any marketing strategy. Yet, the resource base for hunting is somewhat eroded. At present, any additional pressure on the wildlife population, particularly white-tailed deer, could significantly diminish the breeding population, thus reducing populations further. Other wildlife species suffer similar population

problems, but to a lesser degree. Fishing resources, the alternative consumptive choice benefit, are presently underutilized, and could be safely promoted.

On the other hand, a marketing strategy focused on the regional and out-of-state visitors who desire trails and camping areas could add to the incomes of local communities if they could purchase services and supplies locally rather than transporting them to TNF. One goal of nationwide National Forest management is to improve the level of living for communities within and near forest boundaries. Regional and out-of-state visitors expressed a strong willingness to spend more on forest recreational trips if supplies and services were available. Thus, a strategy for increasing community income is desirable. Yet, the out-of-state group is the smallest of those identified as TNF users, and the portion of the regional segment with similar preferences is also relatively small. Thus, a policy to attract more visitors who typically spend more per recreational trip and prefer hiking, camping, and other activities would likely mean displacement for local and regional consumptive resource users. The manager's dilemma is now quite evident.

An optimal *resource protection strategy* should call for maintaining or reducing the pressure by local and regional residents on the wildlife base. An optimal *income strategy* would mean that non-consumptive activities and opportunities for such should be increased. Achieving both resource protection and increased incomes may be accomplished by expanding facilities and promoting opportunities favored by non-local interests. But, that strategy would leave the larger local visitor group unsatisfied.

Thus, a better alternative may be to consider either permanent or seasonal forest use-zones within which visitor activities are designated. This management strategy may be a means to allow maximum visitor satisfaction, given the resource limitations.

A successful marketing strategy for the TNF depends on promotional efforts to attract and inform potential visitors of forest use opportunities. Forest resource development provides an excellent opportunity for surrounding communities and entrepreneurs to expand economically. No marketing program can be successful unless all local interests provide for visitors' needs and interests. Thus, forest marketing strategies should evolve from the combined efforts and ideas of all interests in the area.

Conclusion

The statistical procedures used were effective in segmenting forest visitors. First, factor analysis was effective in reducing the diverse benefits sought in recreational activities into a manageable number of variables.

Second, cluster analysis proved to be an acceptable tool for market segmentation using the variables reflecting benefits forest visitors were seeking plus user geographic and

sociodemographic characteristics. Three clearly distinguishable groups of visitors to Talladega National Forest in Alabama were found.

One important observation is that all respondents were visitors to the TNF. These active forest users were found to have somewhat different preferences for recreational satisfaction. Satisfaction is the important factor in any marketing and promotional plan by the Forest Service. The fact that clustered respondents had similar preferences for recreational experiences within a National Forest does not mean the analysis had little benefit. Rather, it shows that even among people with similar resource based preferences, clear differences may be targeted for different forest management and rural development purposes.

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