

USE AND USERS OF THE APPALACHIAN TRAIL: A GEOGRAPHIC STUDY

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Abstract: The Appalachian National Scenic Trail (AT) is a public footpath that spans 2,160 miles of Appalachian Mountain ridgelines from Maine to Georgia. This paper describes the first comprehensive study of recreational use and users of the AT. The primary study method was a survey of visitors to the AT. The Trail was divided into 22 relatively homogeneous sections within four major geographic regions. Sampling was conducted in each of these regions during the summer and fall of 1999. This consisted of contacting randomly selected visitors and asking them to complete a mail-back questionnaire. Nearly 2000 questionnaires were completed and returned. The questionnaire addressed user characteristics, user preparedness, the quality of the visitor experience, attitudes toward alternative management practices and economic impact. This paper presents an initial analysis of the data, including visitor characteristics and perceived problems along the trail. These variables are compared across the four major geographic regions.

Introduction

The Appalachian National Scenic Trail (AT) is a public footpath that spans 2,160 miles of Appalachian Mountain ridgelines from Maine to Georgia. The AT is noted for its length and diverse character. It was designed, constructed, and marked in the 1920's and 1930's by volunteer hiking clubs joined together by the Appalachian Trail Conference. The 1968 National Trails System Act designated the AT as a linear national park. The goal of this designation is to

maintain the Trail environment as a place for people to enjoy the Appalachian Mountains and wildlands, while at the same time conserving the natural, scenic, historical, and cultural resources of this one-of-a-kind park. It is estimated that two-thirds of the Nation's population lives within a days drive of the AT.

This study represents the first comprehensive analysis of the use and users of the AT. The research involved querying respondents about a number of variables and issues. Some of these variables and issues included demographic information, satisfaction, perceived problems, motivations, and trip characteristics. This paper includes a preliminary analysis of selected data. It focuses on visitor characteristics and perceived problems along the AT. The data from the entire sample of respondents are presented followed by a geographic analysis by region.

Methods

The primary study method consisted of a survey of randomly selected users along the Appalachian Trail. Sampling took place in the summer and fall of 1999 (84% of the sample was obtained in summer and the remaining 14% in the fall). Subjects were approached and asked if they would be willing to complete a mail-back questionnaire. A total of 2,847 AT users agreed to participate in the survey and were mailed a questionnaire. Four mailings were sent out; an initial mailing (a questionnaire, a cover letter, and a postage-paid, pre-addressed return envelope), a postcard reminder, a follow-up questionnaire and a final mailing to non-respondents. Nearly 2,000 questionnaires were completed and returned, yielding a response rate of 66 percent. The sample was designed to be as representative as possible of all users of the AT over 18 years of age and consists of hikers/walkers, campers, picnickers, anglers, etc.

Geographic Division

In order to conduct a geographic study of the AT, the trail was divided into 22 relatively homogeneous sections within four major regions. This division was based on Appalachian Trail Conference jurisdictions as well as physical boundaries. The geographic division is as follows:

NEW ENGLAND	MID-ATLANTIC	SOUTHWEST VA	DEEP SOUTH
1. Baxter St. Park	10. New York	15. Blue Ridge Parkway	19. North of Smokies-Pisgah/
2. 100 Mile Wilderness	11. New Jersey	16. Outing Club of VA Tech	Cherokee NF
3. Western Maine	12. Pennsylvania	17. Catawba	20. Smoky Mtns.
4. NH-Mahoosics	13. Maryland	18. Mount Rogers	21. NC-Nantahala NF
5. NH-White Mtns.	14. Shenandoah		22. Georgia
6. NH-South			
7. Vermont			
8. Massachusetts			
9. Connecticut			

Preliminary Findings

User Characteristics

The objective of this study is to help the Appalachian Trail's managing agencies (ATC, NPS, USFS, and trail maintaining clubs) to better understand the quality of visitors' experience and develop future management plans and education initiatives. Data on visitor characteristics plays a key role in this objective because it enables planners and managers to better understand the background of trail users.

Type of Visitor

AT users were divided into four basic types: day users (36.7%), overnight users (32.4%), section hikers (users hiking a substantial portion of the trail) (15.2%), and through hikers (users hiking the entire trail) (15.7%) (Table

1a). However, it should be noted that through hikers were intentionally oversampled in order to obtain a large enough sample for statistical purposes. The Southwest Virginia region reported predominantly day users at 77.6% (Table 1b); this is substantially higher than the other three regions.

Table 1a. Type of hiker

Type of Hiker	Number	Percent
Day user	640	36.7
Overnight	566	32.4
Through hiker	274	15.7
Section hiker	266	15.2
N=1879		

Table 1b. Type of hiker by region

Type of Hiker	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
Day user	30.1	35.8	77.6	42.3		36.7
Overnight	48.4	36.6	17.8	41.4		32.4
Through hiker					100	15.7
Section hiker	21.4	27.6	4.7	16.3		15.2

Number of Days and Miles on Trail

The mean number of days on trail reported by users other than thru hikers was 7.2 (Table 2a). The mean number of miles hiked was 71. By definition, the thru hiker

population reported higher means for both days on trail (148.4) and miles hiked (1862.6). Overall the sample exhibited more days and miles hiked on the trail in the northern regions than in the southern regions (Table 2b).

Table 2a. Number of days on trail and miles hiked

	Users (Non-Thru Hiker)		Thru Hikers	
	Days on Trail	Miles Hiked	Days on Trail	Miles Hiked
Mean	7.2	71.0	148.4	1862.6
Median	2	13	167	2160

N=1339, 1356; 305,297

Table 2b. Number of days on trail and miles hiked by region

	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
Days on Trail	8.6 (3)	11.4 (2)	2.1 (1)	4.6 (2)	148.4 (167)	33.4 (3)
Miles Hiked	88.1 (17)	122.6 (16)	16.9 (7)	38.9 (15)	1862.6 (2160)	392.9 (18)

expressed in means (median)

Group Size

Overall users tended to hike either alone or in small groups of two and three (Table 3a). However, the regional

analysis exhibits a stronger tendency among users in the Southwest Virginia and Deep South regions to hike in groups of two or more rather than alone (Table 3b).

Table 3a. Group size

Size of Group	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
1	309	21.1	185	62.7
2	595	40.6	79	26.8
3	195	13.3	17	5.8
4	123	8.4	8	2.7
5	49	3.3	2	0.7
6	61	4.2	1	0.3
7	15	1.0	2	0.7
8	28	1.9	0	0.0
9	13	0.9	0	0.0
10	24	1.6	0	0.0
More than 10	55	3.7	1	0.3

N=1467;295

Table 3b. Group size by region

Size of Group	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
1	20.8	34.5	12.5	18.4	62.7	28.0
2	43.3	39.7	38.0	37.7	26.8	38.3
3	10.3	13.9	17.8	14.6	5.8	12.0
4	7.7	3.0	11.2	12.6	2.7	7.4
5	2.0	3.0	5.0	5.0	0.7	2.9
More than 5	15.9	6.0	15.6	11.7	1.4	11.4

Gender

The majority of users were male (69%) versus female (31%) (Table 4a). Males constituted a majority in all four geographic regions (Table 4b). The thru hiker population

displayed a larger difference in gender at 82.4% male and 17.6% female.

Table 4a. Gender

	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
Female	452	31.0	51	17.6
Male	1005	69.0	239	82.4

N= 1457; 290

Table 4b. Gender by region

	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
Female	30.0	25.3	40.1	28.3	17.6	28.8
Male	70.0	74.7	59.9	71.7	82.4	71.2

Age

The average age of users was in the mid-to-upper thirties (mean = 37.9 years of age) (Table 5a). The majority of thru hikers (67%) were between 20 and 39 years-of-age.

Average age is relatively consistent across the regions and the thru hiker population (Table 5b).

Table 5a. Age

	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
Under 20	94	6.4	9	3.1
20 to 39	658	45.1	195	67.0
40 to 59	584	40.0	77	26.5
60 and over	124	8.5	10	3.4

N= 1460; 291

Table 5b. Age by region

Region					
New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
39.8	40.3	35.3	39.6	33.5	38.0

Education

The level of education reported by respondents ranged widely, but was concentrated in the higher educational

levels (Table 6a). This pattern was relatively consistent across geographic regions (Table 6b).

Table 6a. Level of education completed

	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
8th grade or less	1	0.1	0	0.0
Some high school	29	2.0	2	0.7
High school graduate or GED	111	7.6	27	9.3
Business school, trade school, some college	280	19.2	61	21.0
College graduate	448	30.7	135	46.4
Some graduate school	160	11.0	28	9.6
Masters, doctoral, or professional degree	429	29.4	38	13.1

N= 1458; 291

Table 6b. Level of education by region

	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
8th grade or less	0.2	0.0	0.0	0.0	0.0	0.1
Some high school	2.8	1.9	1.0	1.3	0.7	1.8
High school graduate or GED	8.1	6.7	6.1	9.4	9.3	7.9
Business school, trade school, some College	17.4	19.1	24.0	17.9	21.0	19.5
College graduate	29.4	32.2	31.9	31.1	46.4	33.3
Come graduate school	9.6	10.5	15.3	9.4	9.6	10.7
Masters, doctoral, or professional degree	32.5	29.6	21.7	31.1	13.1	26.7

Income

Income levels ranged from less than \$20,000/year to more than \$100,000/year (Table 7a). Income levels appear to be

slightly lower in the southern regions of the trail and substantially lower for thru hikers (Table 7b).

Table 7a. Household income (before taxes)

	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
less than \$20,000	240	17.8	97	36.1
\$20,000 to \$39,999	245	18.2	66	24.5
\$40,000 to \$59,999	272	20.2	36	13.4
\$60,000 to \$79,000	202	15.0	30	11.2
\$80,000 to \$99,000	156	11.6	10	3.7
\$100,000 or more	234	17.3	30	11.2

N= 1349; 269

Table 7b. Household income by region

	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
Less than \$20,000	15.3	14.4	27.0	16.2	36.1	20.8
\$20,000 to \$39,999	17.5	20.4	18.0	17.6	24.5	19.2
\$40,000 to \$59,999	20.7	18.8	19.0	21.8	13.4	19.0
\$60,000 to \$79,000	15.3	14.4	14.2	15.7	11.2	14.3
\$80,000 to \$99,000	11.3	14.0	9.7	12.0	3.7	10.3
\$100,000 or more	19.9	18.0	12.1	16.7	11.2	16.3

Ethnicity and Race

The vast majority of AT users were white (96.5%) and not Hispanic or Latino (98%) (Tables 8a & 8b). This is

generally consistent across the regions and the thru-hiker populations (Tables 8a-2 & 8b-2).

Table 8a. Ethnicity

	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
Hispanic or Latino	17	2.0	6	3.9
Not Hispanic or Latino	816	98.0	146	96.1

N= 833; 152

Table 8a-2. Ethnicity by region

	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
Hispanic or Latino	1.3	5.3	0.6	2.3	3.9	2.3
Not Hispanic or Latino	98.7	94.7	99.4	97.7	96.1	97.7

Table 8b. Race

	Users (Non-Thru Hiker)		Thru Hikers	
	Number	Percent	Number	Percent
Black or African American	23	1.6	2	0.7
Asian American	17	1.2	4	1.4
White	1365	96.5	269	96.8
American Indian or Alaskan Native	7	0.5	2	0.7
Native Hawaiian or other Pacific Islander	3	0.2	1	0.4

N= 1415; 278

Table 8b-2. Race by region

	New England	Mid-Atlantic	Southwest Virginia	Deep South	Thru Hikers	Total
Black or African American	1.8	2.4	1.0	1.3	0.7	1.5
Asian American	1.4	1.2	0.7	1.3	1.4	1.2
White	96.3	95.7	97.4	96.4	96.8	96.5
American Indian or Alaskan Native	0.3	0.4	0.7	0.9	0.7	0.5
Native Hawaiian or other Pacific Islander	0.2	0.4	0.3	0.0	0.4	0.2

Perceived Problems along the AT

Respondents were queried concerning the extent to which they perceived issues as problems along the AT (Figure 1). Several issues were addressed in the questionnaire, including use impacts, trail maintenance, safety, and crowding. In all, respondents were asked about 44 conditions or issues that may exist along the AT. Respondents were asked to indicate whether each of these 44 issues was "not a problem" (0), a "small problem" (1), a "big problem" (2), or "don't know" (3).

To analyze these data a factor analysis was conducted. This is a data reduction technique that identifies relationships among multiple variables. Using this technique, we were able to identify six problem categories. They are identified below followed by a description of results:

- ***Crowding:*** This factor consisted of issues concerning groups being too large, congestion, groups encountered, and inconsiderate hikers. Overall, respondents rated crowding as a moderate problem. Crowding was perceived as more of a problem in the northern than the southern regions.
- ***Not enough facilities:*** This factor consisted of issues regarding not enough water or restrooms, too few shelters, and lack of public participation. Not enough facilities received a moderate rating from respondents. Across the regions, this issue was relatively consistent but reported slightly higher in the Mid-Atlantic and Deep South regions.
- ***Lack of information:*** This factor consisted of not enough information available to hikers, not enough information on how to prepare for a safe hike, and regulations not being publicized. Lack of information received a low rating overall. In the regional analysis this issue was more of a problem in the south than the north.
- ***External development:*** This factor consisted of questions concerning development that could be seen and traffic noise that could be heard from the trail. External development was rated as a moderate

problem overall. This issue was perceived as more of a problem by respondents in the Mid-Atlantic region than the others.

- ***Ecological impacts:*** This factor was comprised of issues concerning damage to soil and vegetation as well as trail erosion. Ecological impacts rated highest overall indicating it was a relatively big problem to respondents. Respondents in the northern regions perceived this as more of a problem than in the southern regions.
- ***Too much management:*** This factor consisted of too many rules and regulations and too many rangers/management on the trail. Too much management rated lowest overall. Respondents in the northern regions and the thru hiker population perceived this issue to be much more of a problem than those in the southern regions.

Overall, the extent to which each of these factors was perceived as a problem was relatively low. Among the factors, ecological impacts were rated as the biggest problem, whereas too much management was rated as the smallest problem.

Conclusion

This study represents the first reasonably comprehensive study of use and users of the entire AT. Study data begin to provide potentially important insights into the characteristics of the trail users, perceived trail management issues, and a variety of other variables and issues. Preliminary findings suggest that use and user characteristics may vary by geographic region of the trail. Further analysis will be conducted and may illuminate additional differences in other study variables. This information will be provided to trail managers in order to help them make more informed management decisions concerning the AT and its users.