RECREATION PARTICIPATION, COMMUNITY, AND RESOURCE MANAGEMENT POLICY SUPPORT OF ADIRONDACK PARK RESIDENTS

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Abstract

The purpose of this paper is to examine the relationship between recreation participation, community of residence, and Forest Preserve management policy support of Adirondack Park residents. Data come from a random household survey of permanent residents in five Adirondack communities. Communities were selected based the degree to which local economic activity was dependent on natural amenities. Questionnaires were mailed to 1389 households and 540 were returned for an adjusted response rate of 40%. Bivariate analyses suggest that policy preferences vary by recreation participation and community of residence. Multinomial logistic regression estimating the marginal effects of recreation participation, community, and individual characteristics indicates that motor/consumptive recreation was positively associated with policies regarding resource development and negatively associated with resource protection. Appreciative recreation is only significantly associated with opposition to resource development policies.

1.0 Introduction

Many of the public conflicts regarding planning and management in the Adirondack Park revolve around what types of recreation are appropriate on Forest Preserve lands and what values should drive the NY DEC's planning and management (Terrie, 2008)[1]. Disagreement as to how to plan and manage new acquired Forest Preserve lands have focused on if and how much motorized recreation should be permitted as well as whether or not the State should have even purchased the lands (Mann, 2014). The public discourse tends to dichotomize the interests into "greens" and "pro-development." But, it's likely that the social factors underlying the disagreements are more complicated than the media makes apparent. Finding socially acceptable management policies requires understanding the social factors that shape and influence stakeholders preferences (Shindler, Brunson, & Cheek, 2004).

The literature on intracommunity conflict and resident perceptions of natural resource policy have generally focused on "culture clash," a perceived rural-urban dichotomy among more recent and long term residents of rural regions (Gosnell & Abrams, 2011). More recent analyses recognize that this dichotomy is false and that Bourdieu's theory of cultural capital (Bourdieu 1986) may provide a better basis for exploring differences in natural resource policy preferences among residents in high amenity regions (Armstrong & Steadman, 2013). An important form of

[1] The Adirondack Park encompasses both public and private lands. The public lands in the Adirondacks and Catskills are designated State Forest Preserve and receive protection under Article XIV of the New York State Constitution.

cultural capital that can shape residents' perceptions is their recreation participation preferences (Backlund & Kuentzel, 2012; Stalker, 2011). Thus, to understanding resource management policy preference, outdoor recreation participation can provide a useful guide to distinguish who will support or oppose different management policies.

A large body of research has investigated the relationship between outdoor recreation participation and environmental behaviors and attitudes. Findings from these studies have suggested that outdoor recreation participation has shown mixed support for associations with environmental attitudes and relatively strong associations with environmentally responsible behaviors (Berns & Simpson, 2009). Most of the studies in this literature operationalize the dependent variables by creating an attitudinal scale or index that measures the *degree* of importance, agreement, or behavior. For example, many of these studies assess environmental concern using the New Environmental Paradigm Scale (e.g. Van Liere & Noe, 1981; Tarant & Green,1999; Thapa, 2010). Tarant (Tarant & Cordell, 1997; Tarant & Green, 1999) has recognized that the relatively weak associations between participation and environmental attitudes could be associated with attitude specificity, measurement challenges, or that people participate in multiple activities. Tiesel and O'Brien (2003) attempted to address this limitation to previous research using econometric models that control for participation in multiple activities. They found that when controlling for a variety of factors, there are consistent relationships between recreation activity participation and environmental concern and behavior.

Less research has investigated the relationship of outdoor recreation and specific policies among the general public. Jackson (1987) showed a divergence in policy preferences among recreationists who participated in motorized and non-motorized forms of recreation. Motorized recreationists were more likely to support resource development activities while non-motorized recreationists were more likely to support preservationist policies. Like the research on outdoor recreation and environmental attitudes and behavior, these associations were relatively weak to moderate.

There is a significant shortcoming to this body of literature is translating the practical effects of the relationship between activity participation and attitude. It is difficult to interpret the practical effects of a unit change in the dependent variable when it is measured on a scale or index score. For policy makers to understand the difference between those who support and do not support policy proposals, it is clearer to suggest which characteristics predict agreement or disagreement with the proposal.

The purpose of this analysis is to examine the influence of resident's recreation participation as an indicator of cultural capital on their support for five different management policy propositions. The analysis seeks to estimate the marginal effect of recreation participation on the probability that a respondents will "agree" with the policy as compared to "disagree" when controlling for the community of residence, length of residence, and socio-economic background. Differences between "agreement" and "disagreement" are analyzed because it should represent a practical difference in attitude rather than a matter of degree.

2.0 Methods

2.1 Data collection

Data for this study come from a random household survey of permanent residents from five towns fully within the Adirondack Park: Harrietstown, Lake George, Tupper Lake, Warrensburg, and Webb. A return mail questionnaire was designed to collect information on several issues including: community attachment, satisfaction and participation; recreation participation; and perceptions of Park management and policy; and socio-demographic and housing characteristics. A sample of 1389 households (including both home owners and renters) was drawn by Survey Sampling International. Data collection procedures followed a modified Tailored Design Method during the Fall 2012 (Dillman, Smyth, & Christian, 2008). Five hundred forty completed questionnaires were returned for an adjust response rate of 40%.

2.2 Variables

2.2.1 Forest preserve policy

Resident's support for Forest Preserve management and policy were assessed with five items: "Public law should be changed to allow timber harvesting on Forest Preserve land." "More wilderness should be designated." "More motorized recreation should be created." "More land should be added to the Forest Preserve." "The state should purchase more conservation easements." Respondents were asked to indicate whether their level of agreement on a five point likert type response scale ranging from "Strongly Disagree" to "Strongly Agree" with a "Neither" in the middle. Response categories were collapsed into three groups Disagree, Neither, and Agree for analysis. Categories are collapsed for analysis because the analyses focus is on the differences between those who "Agree" and those who "Disagree."

2.2.2 Outdoor recreation participation

To assess recreation participation, respondents were asked to indicate which of 28 possible activities they participated in the previous 12 months inside the Adirondack Park. Principal components analysis with Promax was then used to reduce the activities into five categories "Appreciative," "Motorized/Consumptive," "Wildlife Watching," "Lake," and "Running." Table 1 displays the component loadings, eigenvalues, and percent of variance explained for each component. Participation in each category was then dummy coded where 1 and 0 where 1=participates in the category.

2.2.3 Individual variable

Education, income, and length of residence were used to control for individual covariates. Education was measured by asking respondents to indicate their highest level of education. Categories were collapsed into a dummy variable that represents having achieved a BA/BS or greater. Income was measured in 12- $10,000 income categories. Length of residence was measured by asking "How many years have you lived in the Adirondacks?" Towns were dummy coded 0 or 1.

2.3 Data analysis

To evaluate the relationships between recreation participation, community and resource management policy support three analyses were undertaken. Bivariate analyses examined the relationships between town of residence and recreation participation with resource management policy preferences. Town/policy relationships were assessed with chi square tests of

independence. Recreation participation/policy relationships were assessed using spearman's *r*. Five multinomial logistic regression equations were estimated for each of the five policies to estimate the marginal effects of individual characteristics, recreation participation, town of residence, and length of residence on policy preferences. Multinomial logistic regression requires choosing one category as the "0" from which regression coefficients are estimated. For this analysis, the category "Disagree" is used a zero so the coefficients can be interpreted as the change in the probability that respondents "Agree" compared to "Disagree" (If this were a logistic regression, Disagree = 0, Agree = 1). To save space and simplify presentation, coefficients for "Neutral" are not presented, and estimates are only calculated for "Motorized/Consumptive' and "Non-Motorized" recreation. The exponentialized Beta coefficient is presented because of its ease of interpretation and the community variables are best interpreted in relationship to Harrietstown.

Table 1
Principal Components Analysis of Recreation Participation

Activity	Non-Motorized	Motorized/ Consumptive	Running	Lake	Watching
Cross Country Skiing	.91				
Mountain Biking	.78				
Snowshoeing	.68				
Flatwater Kayak	.51				
Flatwater Canoe	.43				
Day Hiking	.41				
Hunting		.82			
ATV		.74			
Fishing		.68			
Snowmobile		.64			
Road Running			.89		
Trail Running			.88		
Swimming				.80	
Motor Boat				.68	
Bird watching					.86
Wildlife Watching					.84
Eigenvalue	3.89	2.13	1.50	1.24	1.08
% Variance	24.29	13.33	9.40	7.76	6.74

3.0 Results

3.1 Study location differences

Table 2 displays a socio-demographic profile of the respondents by community. Community residents vary across towns by age, length of residence, income and education. Respondents of Lake George tended to be the newest, most wealthy residents. Respondents from the town of Webb had the oldest mean age (M=63). The town of Harriesttown had the youngest and most educated respondents. Respondents from Warrensburg were the most likely to be female and were generally had the lowest incomes. Tupper Lake respondents had the longest length of residence and had the least educated respondents.

Table 2
Demographic Profile by Town

	Town					
	Lake George	Webb	SLK[1]	Warrensburg	Tupper Lake	Total
n	94	70	129	70	134	524
Mean Age	57	63	52	60	58	57
Mean Residence Length	29	30	33	38	42	35
% Female	34.9	39.7	39.2	44.2	34.8	38.3
Income % <$55,000	33.3	63.1	49.0	65.5	60.4	54.5
BA +	43.2	26.5	56.0	25.3	17.6	34.0

[1]SLK=Harrietstown

Of the five policy proposals, none were clearly supported by a majority of the respondents (see Table 3). Pluralities were more likely to agree with allowing timber harvest on Forest Preserve land and the increased development of motorized recreation opportunities and less likely to agree with increase conservation measures. Table 4 presents community differences in resource policy preferences using the ratio of proportions (% Agree/% Disagree) that agree with the state compared to those who disagree. The ratio of proportions, in this case, is a measure of the relative magnitude of difference in agreement within the sample (Agresti & Finlay, 1997). Respondents from all the communities but Harrietstown were more likely to agree with changing public law to allow timber harvesting on forest Preserver Lands than disagree. Residents of Warrensburg were twice as likely to agree as disagree and residents of Tupper Lake were almost four times more likely to agree than disagree. Residents of Warrensburg and Tupper Lake were also more than twice as likely to agree that more motorized recreation should be created as disagree. In the other three communities, most respondents were more likely to disagree with creating more motorized recreation than agree. Residents of Lake George were more likely to agree with statements concerning the increased purchase of conservation easements and adding to the Forest Preserve. Tupper Lake residents were approximately four times less likely to agree

with increased conservation easement and expanding wilderness areas than disagree while they were just over 7.5 time less likely to agree with expanding the Forest Preserve than agree.

Table 3
Agreement with Natural Resource Policies

	% Agree	% Neutral	% Disagree	n
Public law should be changed to allow timber harvesting on Forest Preserve Land.	44.8	27.5	27.7	505
More motorized recreation should be created.	41.1	23.9	35.0	506
The state should purchase more conservation easements.	24.4	36.0	39.6	500
More Wilderness should be designated.	23.7	31.3	45.0	498
More land should be added to the Forest Preserve.	21.4	33.5	45.1	505

Table 4
Community Differences in Resource Policy Preferences

	Ratio of proportions that will "agree"					
	Lake George	Webb	SLK	Warrensb -urg	Tupper Lake	Total
Public law should be changed to allow timber harvesting on Forest Preserve Land.[1]	1.40	1.33	0.73	2.04	3.96	1.61
More motorized recreation should be created.[2]	.55	.93	.58	2.28	2.28	1.17
The state should should purchase more conservation easements.[3]	1.54	.68	.78	.66	.24	.62
More Wilderness should be designated.[4]	.78	.50	.72	.81	.24	.52
More land should be added to the Forest Preserve.[5]	1.26	.65	.56	.44	.13	.47

[1] $X^2 = 33.04$, 8 df, $p<.001$, n=505, [2] $X^2 = 48.44$, 8 df, $p<.001$, n=506 [3] $X^2 = 41.82$, 8 df, $p<.001$, n=500 [4] $X^2 = 30.02$, 8 df, $p<.001$, n=498 [5] $X^2 = 40.15$, 8 df, $p<.001$, n=505

3.2 Outdoor recreation and policy

Spearman's *r* was used to assess the bivariate relationship between recreation participation and resource policy preferences. Results suggest that these relationships when statistically

significant, were relatively weak (see Table 5). Consumptive/Motorized recreation participation was positively associated with allowing timber harvesting and increasing motorized recreation. It was negatively associated with adding more land to the Forest Preserve. Appreciative recreation was negatively associated with allowing timber harvesting and increasing motorized recreation. Appreciative recreation was positively associated with adding land to the Forest Preserve. Wildlife watching was negative associated with increasing motorized recreation and positively associated with the state purchase of more conservation easements. Lake recreation was not associated with any of the policy statements. Running was negatively associated with allowing timber harvest and increased motorized recreation.

Table 5
Recreation Participation and Resource Policy Preferences

	Spearman's *r*				
	Consumptive /Motorized	Appreciative	Wildlife Watching	Lake	Running
Public law should be changed to allow timber harvesting on Forest Preserve Land.	.14	-.13	ns	ns	-.13
More motorized recreation should be created.	.21	-.10	-.10	ns	-.23
The state should purchase more conservation easements.	ns	ns	.09	ns	ns
More Wilderness should be designated.	ns	ns	ns	ns	ns
More land should be added to the Forest Preserve.	-.13	.11	ns	ns	ns

3.3 Multinomial regressions

To simultaneously test the effects of recreation participation, community, and individual characteristics on resource policy support, multinomial logistic regression analyses were performed for each policy item. Table 6 presents the exponentialized beta coefficients and model fit statistics for the five models. All five models are significant and have Cox and Snell pseudo r-squares ranging from .16-.23 and from .18 to .26 for Nagalkerke pseudo r-squares.

For "Public law should be changed to allow timber harvesting on Forest Preserve land," five of the independent variables had significant marginal effects. Longer term (ExpB = 1.03) and wealthier residents (Income ExpB=1.11) were more likely to agree than disagree with allowing timber harvesting. Both recreation participation variables were significant. "Non-Motorized" recreationists were less likely to agree with allowing timber harvesting than disagree (ExpB= .52) while "Motorized/Consumptive" recreationists were more likely to Agree than disagree (ExpB=2.78). In comparison to the reference community, Harrietstown, Tupper Lake residents

were significantly more likely (ExpB=3.62) to agree with allowing timber harvesting than disagree.

Table 6
Multinomial logistic regression models

	Timber Harvest n = 412	More Motors n = 413	More Easements n = 407	More Wilderness n = 405	Expand Forest Preserve n = 413
	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
BA	.76	.41**	2.08*	2.00*	1.81
Length of Residence	1.03***	1.01*	.97***	.98**	.97***
Income	1.11*	1.08	.88**	.79***	.80***
Appreciative	.52*	.59	1.08	1.17	1.48
Motor/Consumptive	2.78**	3.33***	.584	.615	.37**
Lake George	1.48	1.03	2.55*	1.57	3.46**
Webb	1.48	1.36	.78	.79	.83
Warrensburg	2.09	4.46***	1.04	.74	.92
Tupper Lake	3.62**	3.59**	.34**	.26**	.25**
Intercept (B)	-1.62**	-1.48**	1.46*	1.55**	1.83**
-2 Log likelihood	818.63	807.77	801.38	785.80	772.96
x^2	72.76***	96.91***	92.35***	89.97***	109.89***
Cox &Snell	.16	.21	.20	.20	.23
Nagelkerke	.18	.23	.23	.22	.26

*p<.05, **p<.01, ***p<.001

Community of residence and recreation participation were important factors in support for increasing motorized recreation. Having at the least a Bachelor's degree decreased the probability that a respondent would support increasing motorized recreation almost 60% (ExpB = .41). Motorized/Consumptive recreationists were over three times more likely to agree than disagree (ExpB = 3.33). Residents of the Warrensburg were 4.5 times more likely to agree than disagree (ExpB = 4.46) compared to Harrietstown while residents of Tupper Lake were 3.5 times more likely to agree than disagree (ExpB= 3.59) compared to Harrieststown residents.

Recreation participation had no significant effects of support for the state purchasing more conservation easements. Respondents with a Bachelor's degree or more and residents of Lake George were more likely to agree with the statement than disagree (ExpB = 2.08, 2.55 respectively). Support for the state purchase of conservation easements declined with both length of residence (ExpB = .97) and income (ExpB = .88). Residents of Tupper Lake were 66% (ExpB = .44) less likely to agree than disagree as compared to residents of Harrietstown.

A similar pattern can be found for "More Wilderness should be designated." Respondents with at least a BA were 2 time more likely to agree than disagree (ExpB = 2.00). Longer term, wealthier residents and residents of Tupper Lake were less likely to agree than disagree. Recreation participation had no significant marginal effects.

Finally, motorized/consumptive recreationists were 63% less likely to agree with "More land should be added to the Forest Preserve" than disagree (ExpB = .37) Length of residence and income were also negatively associated with support for adding land to the Forest Preserve. Residents of Lake George were almost three times more likely to agree than disagree (ExpB = 3.46) as compared to Harrieststown residents while Tupper Lake residents were four times less likely to agree than disagree (ExpB = .25) as compared to Harrietstown residents.

4.0 Discussion and conclusion

The purpose of this analysis was to explore the relationship between outdoor recreation participation, community of residence and Forest Preserve resource management policy support in the Adirondack Park. Overall, residents were more likely to support resource development and motorized recreation than they were increased conservation activities like expanding Forest Preserve Lands or the State purchase of conservation easements. Regression analyses suggest that policy support was consistent predicted by education, income, length of residence, and community of residence. Motorized and consumptive recreation was associated with resource development policies and participation in appreciative forms of recreation had no marginal effect on policy support, consistent with previous research.

The findings suggest that for residents of the Adirondacks, participation in consumptive and motorized activities helps give shape to the way residents perceive resource conservation policy. Participants in these activities were over three times more likely to agree with the expansion of motorized recreation than disagree, over two and a half times more likely to agree with allowing timber harvesting on Forest Preserve land, and 67% less likely to agree with expanding the Forest Preserve, independent of their individual characteristics or community, than disagree. This suggests that recreation participation can represent a form of "cultural capital" that gives shape to people attitudes and preferences.

Communities also played an important role in shaping respondents policy support. Residents of Tupper Lake were more likely to support resource development and motorized recreation than conservation policies while Lake George residents were comparatively more in favor of conservation activities. This is most likely due to differences in the characteristics of the two communities. Lake George can be characterized by the large number of retirees, second homeowners, and an economic base built around recreational tourism. Tupper Lake has traditionally been a "resource dependent" community with an economy built around timber

production, manufacturing, and other "blue collar" occupations. This may also suggest that there may be "community effects" in people's perceptions of resource management policy. That is, the community is a socializing for that shapes people's preferences despite other individual economic or demographic characteristics.

Individual socio-economic characteristics played an important role in shaping which policies respondents supported. Residents with bachelor's degrees or greater education were more likely to support conservation activities and less like to support resource development. In the opposite fashion, income was positively associated with support for resource development and opposed to conservation activities. Like some previous research on amenity communities, length of residence had an influence on resident's policy support. Longer term residents were more likely to support increased resource development and less likely to support conservation policies.

These findings presented here are in some ways unsurprising, and consistent with a past research. They do illustrate that although recreation participation may have moderate to weak bivariate relationships with attitudes, behaviors, or policy preferences, when controlling for participation in multiple activities and other social and personal factors, recreation participation can have large practical effects. They also suggest that in support for difference natural resource management policies among resident in the Adirondack Forest Preserve is shaped by complex differences within and between communities. Recreation participation plays a key role in shaping this difference. Across the Park, people who participate in consumptive and motorized activities share similar preferences for Forest Preserve management policy. This indicates that there is clear "culture" dedicated to these activities that gives shape to these and other attitudes regarding the Park's management. In other cases of intercommunity tension, understanding people's patterns of recreation participation can give insight into the causes and character of the conflict.

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