Land Use Issues:
Resort Rural Ramifications

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Abstract: Migration causes changes to land use patterns in rural areas with environmental amenities. Newcomers' preferences differ from long term residents. Conflicts sometimes arise. To explore land use issues among various groups, a survey of opinions on mountain views was developed and administered to Watauga County residents in the western North Carolina. It is found that individuals who retire to the mountain are most interested in mountain-view amenities, while individuals who have ancestors from the county are most concerned with maintaining the status quo in regards to mountain views. These preferences lead to agreement on some land use issues and disagreements on others.

Introduction

Rapid residential development in rural resort areas is occurring through out the United States. This is particularly true in the Rocky Mountain areas of the west, the coastal regions of the southeast, and some areas of the Appalachian Mountains in the east. Riebsame, Gosnell, and Theobald (1996) focus on the changing landscape in the Colorado Mountains and identify what they call the last settler's syndrome where each new settler wants the area to remain as it was on their arrival. They further note with the arrival of more affluent immigrants to the area heighten class distinctions and some times create local conflicts.

This conflict also occurs in the east where residents of rural resort areas are from divergent backgrounds and have differing view of land use. Opening statements include, should counties develop zoning ordinances? Should states designate roads as scenic byways? Should billboards be removed? And more recently, should electrical generation windmills be allowed to be built? In Watauga County, North Carolina, grassroots organizations have formed to monitor land use. Partially, through the efforts of one such group, the Committee of 100, a section of the new Route 421 was designated a scenic byway where no billboards were allowed to be built. Another group, identified with the other side of the debate, had bumper stickers printed saying "No Zoning in Watauga County."

Debates often arise between long term residents and newcomers of the area. One difference that occurs between long term residents and newcomers of rural areas occurs when long time residents focus on land as an agricultural-productive resource while newcomers view land mostly as a recreational-scenic amenity. Graves and Waldman (1991) note that the migration decision of the retired depends more on local amenities

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and housing costs then productivity of labor in an area. Therefore if the newcomers are retirees to an area then environmental amenities play a major role in the migration decision.

Section 1: Survey Methodology and Results

To explore the differences and similarity between land use preferences, a contingent valuation survey on changes to mountain views was conducted. The survey was mailed in the spring of 2005 to a random sample of 1200 Watauga County residents. It consisted of a primary mailing, a post card reminder and a second mailing to all non-respondents of the first wave. In the end, 901 useable addresses and 389 responses were obtained for a response rate of 43 percent. Table 1 contains a summary of the demographic variables. The average age of respondents was 55 years, while the average age for the county of all residents over 20 was 45. The average income of survey respondents was $61,000[1] while the average income in Watauga County from the 2000 census was $50,300 in 2005 dollars. The average level of education for the respondents was 15 years and for the county it was 14 years. The respondents tend to be older, slightly more educated, and have higher income than the population.

In addition, eleven percent of the respondents retired to Watauga County, 31 percent report having ancestors who lived in Watauga County, 16 percent are part year residents and 13 percent rent their homes in Watauga County. When it comes to mountain views, 81 percent say that they have scenic views that could be altered by billboards, windmills or cell towers on daily drives while 59 percent of respondents

report that scenic views from their home could be altered by billboards, windmills or cell towers.

In table two, opinions of land use for various subsets of Watauga County residents are reported for the use of zoning, land use by owners, and the importance of mountain views. Residents with ancestors from the county are found to be much more likely to consider land usage as a private choice not to be regulated. When it comes to zoning respondents with ancestors in the county are about split down the middle with 47 percent agreeing that there should be zoning while 43 percent disagree, when the statement is land owners should use their land any way they want 64 percent agree to this statement. This suggests that residents with ancestors from the area believe land use is an individual choice and not a community choice.

Individuals who retire to the mountains or are part year residents, however, are much more likely to be in favor of zoning regulation. For individuals who retire to the mountains 82 percent favor zoning, while only 23 percent agree that landowners should uses their land any way they want. Part year resident follow the same pattern with 85 percent in favor of zoning and 23 percent agreeing that land owners should use land anyway they want. These groups regard land use as more of a community choice.

Almost everyone agrees or strongly agrees that mountain views are an important part of the quality of life in Watauga County. The only difference is that respondents with ancestors in the county are a little less likely to strongly agree to this statement. The overall results are consistent with the idea that long time residents are more likely to value land a productive resource for uses such as for agriculture or forestry with some additional nonuse benefits of land as scenic amenity. Retirees, however, view land

mostly as a scenic amenity and not as a productive resource. This is consistent with Graves and Waldman (1991) who suggest that environmental amenities are primary motivations for retiree migration.   The next section provides an analysis on how much individuals value change in mountain views.

Section 2: Bivariate-Probit Analysis on the Value of Mountain Views

To further analyze land use preferences from various groups, a bivariate-probit model is estimated on both the likelihood of saying yes to remove billboards and the likelihood of agreeing to allow electrical generation windmills in a viewshed. Billboards and electrical generating windmills were chosen because both have potential to harm mountain views.   In Watauga County, billboards have become an issue because some roads have been designated scenic byways. Some citizens were opposed to this designation. Still other citizens have suggested removing all billboards from Watauga County roads (Groothuis, Groothuis and Whitehead 2007). In addition wind energy has also become an issue. Many individuals want green energy to be pursued. Yet many also feel that electrical generation windmills harm mountain views (Groothuis, Groothuis and Whitehead 2008).   In this analysis, the focus is on the difference preferences of the various groups in Watauga County. Both choices are modeled as follows.

Billboards

Consider a resident's utility function who receives utility from both a consumption good, z, and a scenic view amenity, q, where q represents quality of the scenic amenity that can be affect by the presence of billboards. Then a resident maximizes her utility, $u(q, z)$, subject to a budget constraint $y = pz$ where the price of z is

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normalized to one. Solving for the indirect utility function yields $v(q, y)$. The

willingness-to-pay, *WTP*, for the scenic view amenity is implicitly defined at the payment

that equates indirect utility with different quality conditions, $v(q^o, y) = v(q', y - WTP)$,

where q^o is the current quality, q' is the improved quality.

In our case, the willingness to pay question for billboard removal follows a

dichotomous choice framework.   The variable *Yes* is a qualitative variable equal to one if

the respondents answered for to the question:

> *The State of North Carolina through the Highway Beautification Act has*
>
> *suggested removing billboards along roads. The federal government has*
>
> *mandated that when billboards are removed land owners need to be*
>
> *compensated for lost income from billboards. Suppose Watauga County*
>
> *wants to remove billboards to improve mountain views. Suppose that to*
>
> *implement the removal of billboards county residents must pay $A to*
>
> *compensate land holders for the removal of billboards. Are you in favor*
>
> *of this proposal?*

FOR, AGAINST, DON'T KNOW

$A is a randomly assigned cost variable with the value of $10, $25, $100, $250 or $500.

Respondents were given three alternative answers: for, against and don't know. One

problem that arises when coding dichotomous choice CVM questions is what should be

done with "don't know" responses. We follow the status-quo conservative approach and

code all "don't know" responses as "against" responses (Groothuis and Whitehead 2002

Caudill and Groothuis 2005). This becomes the **Yesb** variable.

Windmills

Wind energy may create negative externalities for citizens of the Appalachian Mountains when the wind mills are built in the view-shed. Consider a resident's utility function who receives utility from both a consumption good, z and a scenic view amenity, x(q), where q represents quality of the scenic amenity that can be affected by the presence of windmills. Then a resident maximizes her utility, u(x(q),z), subject to a budget constraint y=px+z where the price of z is normalized to one. Solving for the indirect utility function yields v(p,y,q) where p represents the price of the scenic amenity and y is income. The willingness-to-accept, WTA, for lowering the quality of a scenic view amenity is found when,

$$1) \ v(p^0, q^0, y) = v(p^0, q^1, y + WTA),$$

where p^0 is the current price, q^1 is lowered quality and WTA is the willingness-to-accept compensating variation for lowering scenic view quality.

In our case the CV question for the windmill proposal is:

Suppose, to generate Green electricity, windmill generators are to be built on four ridge tops throughout Watauga County. To compensate individuals in the county for accepting windmills, electric utility bills would be reduced by $B each month per household. Suppose that this proposal, approving the electrical payment reduction and allowing electrical windmills to be built, is on the next election ballot. How would you vote on this proposal?
                                        FOR   AGAINST   DON'T KNOW

$B is a randomly assigned cost variable with the value of $1, $2.50, $5.00, $10.00 or $50.00. Respondents were given three alternative answers: for, against and don't know Once again one problem that arises when estimating dichotomous choice CV questions is what to do with don't know responses. We follow the status quo approach and code all

Don't Know responses as "against" responses (Caudill and Groothuis 2004 and

Groothuis and Whitehead 2002). This becomes the variable labeled as **Yesw.**

Results

The results of the bivariate probit are reported in table 3. First, the coefficient on

the log tax amount for billboard removal is negative and statistically significant while the

log offer amount for allowing electrical generation windmills is positive and statistically

significant. Both results are consistent with theory of the WTP to remove billboards and

the WTA to allow windmills.

In addition, in the windmill specification, the coefficient on income is negative

and statistically significant suggesting that the change in mountain views is a normal

good. This result is not found in the billboard specification. The coefficient on

education, however, is found to be positive in the billboard specification but statistically

insignificant in the windmill specification. The coefficient on the age of the respondent

is insignificant in both specifications. Also, individuals who report homes with views

that can be altered are less likely to accept windmills and those who report drives with

views that can be altered are more likely to pay to remove billboards.

Individuals who retire to the mountains are more likely to pay to remove

billboards and less likely to accept windmills in the county. These results suggest that

mountain views are an important amenity for those who choose to retire to Watauga

County. This result is consistent with Graves and Waldman (1991) who suggest that a

migration decision in retirement depends primarily on environmental amenities. The

results of individuals who have ancestors in the county shows they are less willing to pay

to remove billboards and also less willing to accept wind generation windmills in the county. These results suggest that the status quo in the mountains is important to this group. Also, individuals who rent homes are more likely to pay to remove billboards while the coefficient on this dummy is statistically insignificant in the windmill specification. Lastly the coefficient on the part year resident dummy is statistically insignificant in both specifications.

The correlation between specification error terms as measured by rho is positive and significant suggesting that an unobservable characteristic makes individuals who are willing to pay to remove billboards are also more likely to accept windmills in the county. This result points to a group that may value improved mountain views both by both removing billboards and improving air quality that wind energy provides.

Conclusion

Rapid residential development in rural resort areas is occurring through out the United States. Many times conflict arises between newcomers and long term residents. In this study the results show that long term residents are less in favor of zoning laws while newcomers are more in favor of land use restriction. The results of a bivariate - probit indicate that individuals who retire to the mountain are found to be most interested in the mountain-view amenities. This group is willing to pay more to remove billboards and needs more compensation to allow windmills in their viewshed. The results also show that individuals who have ancestors in from the county are most concerned with maintaining the status quo that exists with mountain views. This group is less willing to pay to remove existing billboards but requires more to allow electrical generation

windmills in their viewshed. Overall our results show that mountain views are important

to all residents but more important to individuals who choose to retire to the region.

Table One

Means of Variables

	Means
Log payment Billboards	4.38
Log offer Windmills	1.56
Ancestor in County	.31
Retire to Mountains	.11
Part Year Resident	.16
Rent Residence	.12
Home with view	.60
Drive with view	.81
Age	55.4
Income	$61,100
Education	15.2

N=334

Table Two
Zoning

We should have land **zoning** in Watauga County.	SA	A	D	SD	DK
Ancestor in County	.24	.23	.20	.23	.10
Retire to Mountains	.54	.28	.06	.06	.06
Part Year Resident	.63	.22	.06	.02	.07
Rent Home	.32	.32	.09	.09	.18
Total	.46	.25	.10	.11	.08

N=334

Landowners

Landowners in Watauga County should be able to use their land any way they want.	SA	A	D	SD	DK
Ancestor in County	.36	.28	.22	.13	.02
Retire to Mountains	.06	.17	.29	.34	.13
Part Year Resident	.04	.19	.37	.32	.09
Rent Home	.16	.30	.25	.25	.04
Total	.17	.21	.36	.22	.04

N=334

Mountain Views

Mountain views are an important part of the quality of life in Watauga County.	SA	A	D	SD	DK
Ancestor in County	.55	.41	.02	.00	.02
Retire to Mountains	.74	.23	.00	.00	.03
Part Year Resident	.74	.24	.00	.00	.02
Rent Home	.80	.20	.00	.00	.00
Total	.73	.24	.01	.00	.02

N=334

Table Three
Bivariate Probit Model
Likelihood of the WTP to Remove Billboard
Likelihood of the WTA to Allow Windmills

	Billboards Yesb	Windmills Yesw
Constant	-.728 (1.48)	.337 (0.65)
Log payment Billboards	-.289** (4.88)	
Log offer Windmills		.196** (3.28)
Ancestor in County	-.648** (3.60)	-.346** (2.08)
Retire to Mountains	.618** (1.96)	-.436* (1.69)
Part Year Resident	.133 (0.62)	-.117 (0.74)
Rent Home	.573** (2.14)	.101 (0.42)
Home with view	.254 (1.40)	-.302* (1.85)
Drive with view	.657** (2.91)	.104 (0.49)
Income	.001 (0.39)	-.004* (1.72)
Education	.052** (2.19)	.001 (0.75)
Age	.007 (1.12)	-.0003 (0.05)
Rho	.176* (1.71)	
Log likelihood	-393.18**	

*significant at the 90% level
**significant at the 95% level
N=334

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[1] Income tends to have the most item non-response of all demographic questions. Following Whitehead (1994) we impute 18 missing wage values using a wage equation.