

**CIPEC Working Paper Series**

CWP-05-02

**Descriptive Statistics of the  
Monroe County Landowners Survey 2003**

**By**

**Marco A. Janssen  
Abigail M. York  
Richard J. Caldanaro  
Shanon Donnelly**

Center for the Study of Institutions, Population, and Environmental  
Change

Indiana University, 408 North Indiana Avenue, Bloomington, IN 47408  
Tel. 812-855-2230, Fax 812-855-2634, E-mail [cipec@indiana.edu](mailto:cipec@indiana.edu), Internet [www.cipec.org](http://www.cipec.org)

# Descriptive statistics of the Monroe County Landowners Survey 2003

**Marco A. Janssen**  
**Abigail M. York**  
**Richard J. Caldanaro**  
**Shanon Donnelly**

**Center for the study of Institutions, Population and Environmental Change**  
**Indiana University**

**June 2004**

## Introduction

Forests are an important component of the landscape of southern Indiana. In contrast to the glacially impacted northern portion of the state, southern Indiana is composed of hilly terrain with relatively thin, poor soils. The hills and steep topography have made some lands unattractive for modern agricultural use and secondary forests have been allowed to re-grow. Approximately 87% of the Indiana's forest cover is on private land (Birch 1996).

In much of Southern Indiana there has been reforestation as agricultural land uses have been abandoned, but recently urbanization has begun to outpace reforestation. Exurbanites are converting agricultural or forested land into large lot developments throughout the peri-urban regions in Indiana (Munroe and York 2003).

This survey was conducted in order to understand individual land use decision-making across a wide range of parcel sizes that encompass different types of landowners.

A 1998 survey uncovered that aesthetic preferences were a major determinant in reforestation decision-making (Kauneckis and Novac 2000). This survey evaluates landowner decision-making with regard to institutional factors, information, parcel size, age, gender, income, education, recreational land use, risk preferences, and tenure in Indiana, as well as aesthetic preferences.

This survey also aids in the development of an agent-based model of land use in Monroe County by identifying characteristics of agents, such as income, employment, and preferences, as related to their land use. Six hypotheses were proposed which informed the formulation of the survey questions:

*Hypothesis 1:*

Private land owners interact with their neighbors, friends, and family about land use management practices.

*Hypothesis 2:*

Private land owners do not intentionally base their decisions about land use management on information derived from professional foresters, and (non) governmental programs.

*Hypothesis 3:*

NIPF landowners whose families lived longer in to Indiana will participate less in governmental and nongovernmental programs.

*Hypothesis 4:*

Landowners with higher levels of educational attainment are more likely to actively manage their forestland for economic benefit.

*Hypothesis 5:*

The level at which aesthetics and timber operations are incompatible is directly related to frequency and type of recreational use.

*Hypothesis 6:*

Higher income landowners are less likely to harvest timber than lower income landowners.

Table 1. Hypotheses

Before we discuss the survey results, we review the study methodology.

### Sample Procedure

We limited the population of owners to those who held a total of 5 acres of land or more. All non-private landowners were removed from this population of landowners before we drew our sample. Non-private landowners included churches, government entities, trusts, limited partnerships, businesses, land trusts, and banks. There were 911 records that fell into the non-private landowner category. Some of these non-private owners may be present in more than one record such as, “Boy Scouts of America Central IN Council Inc” and “Boy Scouts of America Central Indiana Council Inc”.

Figure 1 shows the distribution ownership size among the 5139 private landowners with more than 5 acres from which the sample was then drawn.

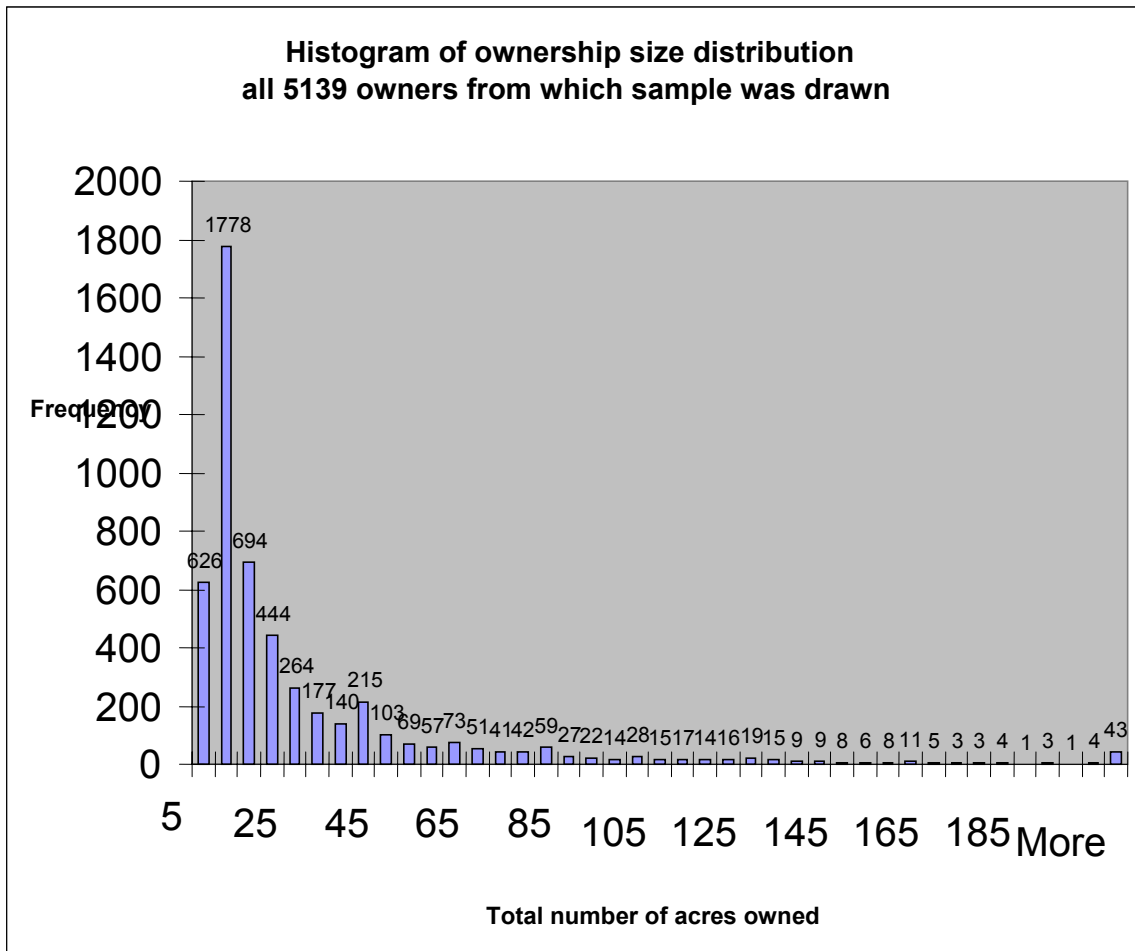


Figure 1. Distribution of Ownership Size (N=5139)

From this population of 5139 landowners, we drew a random sample of 783 landowners. From the 1591 parcels, we randomly selected 29 “seed” parcels from which adjacent parcels were selected to create “neighborhoods” for additional sampling. The “seed” parcels and their neighbors yielded a sample of 273 private landowners, who will receive surveys in an attempt to maximize the information we receive about neighborhood effects.

## Survey Mailing

The mail survey was conducted by the Indiana University Center for Survey Research (CSR) in Bloomington, IN. The questionnaire was 10 pages. The CSR mailed questionnaires to Monroe County landowners on August 28, 2003. The questionnaires were mailed in CIPEC envelopes with a cover letter and a return envelope using the CSR's return address. A reminder/ thank you postcard was sent on September 24, 2003 to those from whom no response had been received.

A follow-up questionnaire was sent on October 15, 2003 to all those who had not yet submitted a response. This questionnaire was mailed with a return envelope using CIPEC's return address and a follow-up letter on CIPEC letterhead. The CSR stopped accepting questionnaires on November 21, 2003.

The questionnaires were scanned for data using a Kodak Digital Science Scanner 3500. The data was saved to an Access database once it had been verified for scanner accuracy. The written responses and margin notes from the questionnaires were entered into Microsoft Access using a form created by the CSR. Addresses provided for summary requests were also entered in this form. Ten percent of both scanned and data-entered questionnaires were monitored for quality control purposes.

The following table characterizes the disposition of every case in the sample.

<b>Dispositions</b>	<b>Count</b>
Completed	385
Received after cut-off date	6
Deceased	3
Away/duration	1
Duplicate	2
Not eligible	1
Bad address/couldn't re-contact	37
Refused	85
No response	526
<b>Total</b>	<b>1046</b>

Table 2: Types of responses on mailed surveys

The response rates differed for the various samples. For the random sample we received 290 responses from 783 mailings, which is a 37% response rate. For the 273 neighbors we had sampled, we received 91 responses, which is a 33% response rate. A significant higher response rate is derived for the Classified Forest Program sample of which we received 48 responses from 83 mailings (a 58% response rate). Because some landowners were drawn in different samples, the net sample size is 1046.

The raw survey data was checked on inconsistencies and it is this cleaned data set that we will discuss in the following pages.

In this report, we provide preliminary interpretation of the 290 responses from our 783 randomly sampled landowners. Future reports will analyze the clustered neighborhoods

and Classified Forest owner samples. In the next section we discuss the respondents' demographic information. This is followed by discussion of land management. We conclude with a brief discussion of our results.

## DEMOGRAPHICS

We asked respondents about the landholdings, socioeconomic situation, and religiosity in order to understand the context for their land management decisions. The majority, 89%, of the respondents were primary residents of Monroe County (n=281). The average landholding in Monroe County for our respondents was 50 acres (n=271). We asked respondents about their landholdings outside of Monroe County, of 220 respondents, 197 held no property outside Monroe County (Figure 2) Twenty-three respondents held land outside of Monroe County with an average holding of 110 acres and range of 1 to 1060 acres.

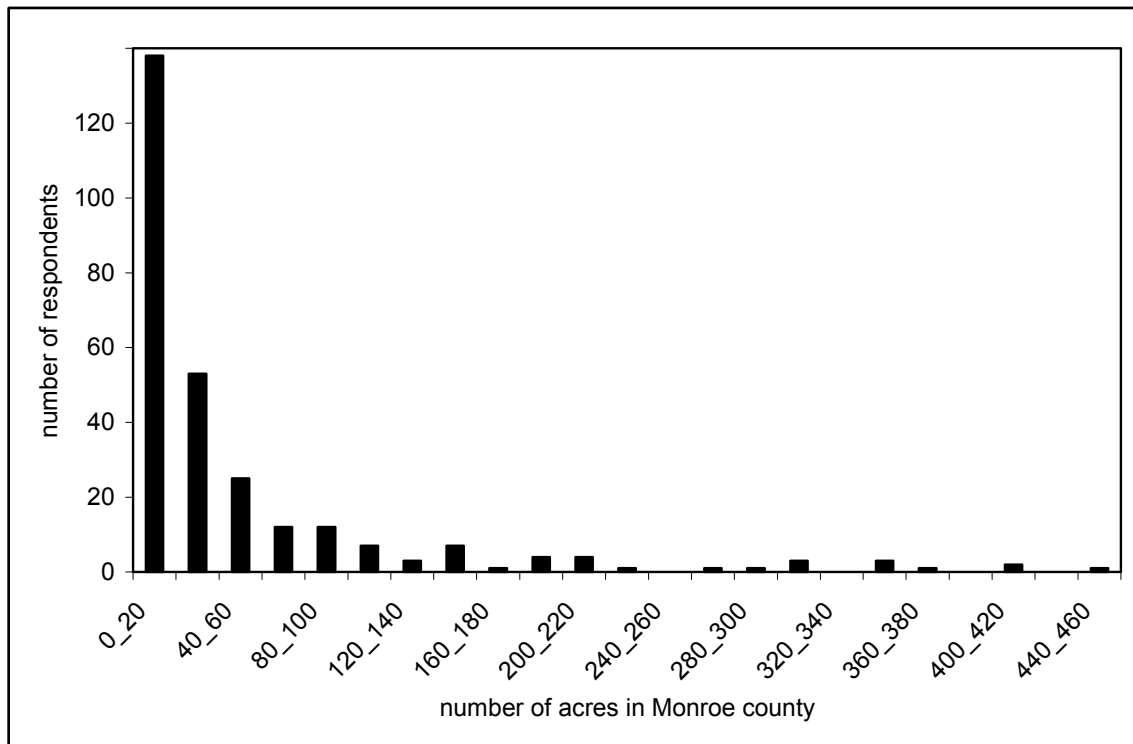


Figure 2: Distribution of Acres Owned in Monroe County (n=271)

Respondents were asked about leasing land within Monroe County, 16 respondents reported leasing land, while 270 said they do not lease land (n=286).

We asked about inheritance of landholdings and 52 respondents reported that they had inherited land while 234 had not inherited any land (n=286).

### *Employment Status*

The majority of respondents 59% work full-time, 22% were fully retired, 17% were working part-time, and 2% were unemployed (n=289) (Figure 3).

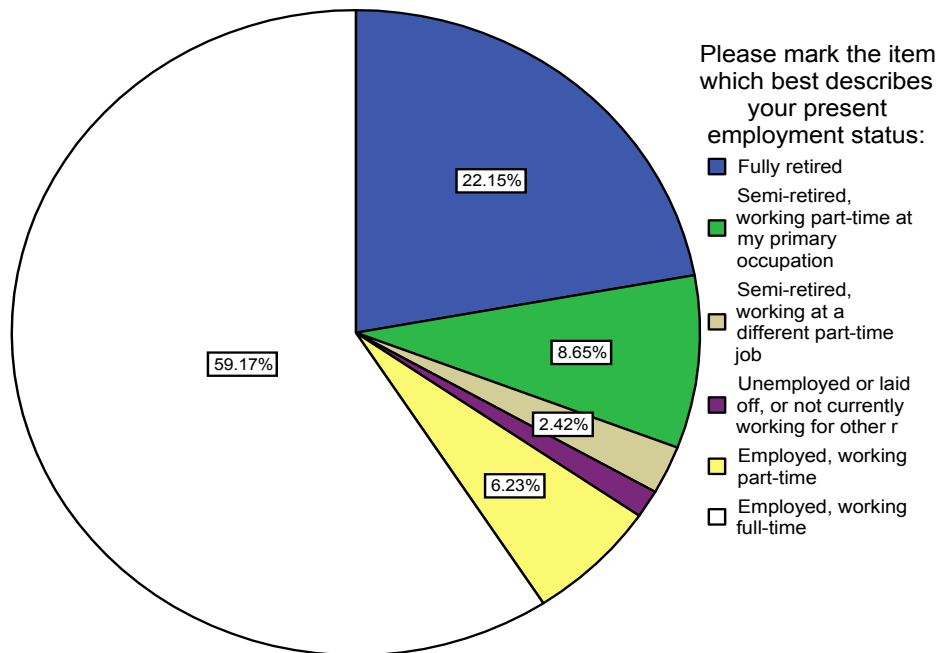


Figure 3: Employment Status (n=289).

Respondents were asked how significant the contribution of farm income, timber harvesting, and land leasing were to their household income. Only one respondent indicated for each category that this source of income was important.

### *Education*

There was great variation in the level of formal education among respondents (Figure 4). Approximately one-quarter (25%) of respondents had some college or technical training, one-fifth (21%) received high school or GED, one-fifth (20%) obtained a graduate degree, and 16% received a Bachelor's Degree (n=289).

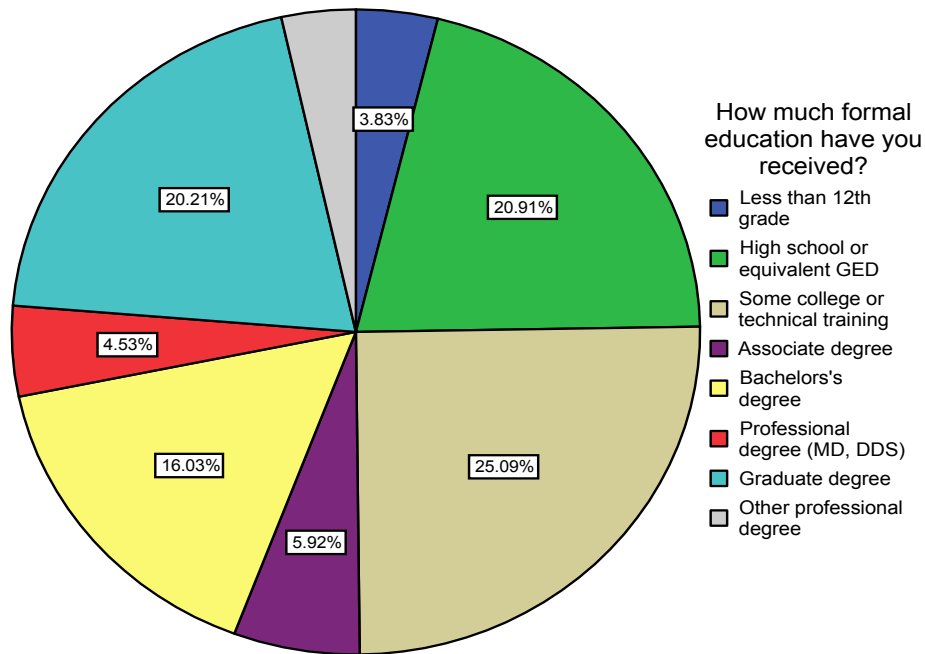


Figure 4: Distribution of Formal Education (n=289)

*Length of Time in Southern Indiana*

We asked our respondents about their tenure in Southern Indiana, in order to assess whether they had historic familial ties to the area (Figure 5). The majority of respondents reported that their families moved to southern Indiana prior to 1900. Respondents gave various text responses from specific dates to generational information such as ‘great great grandparents’.



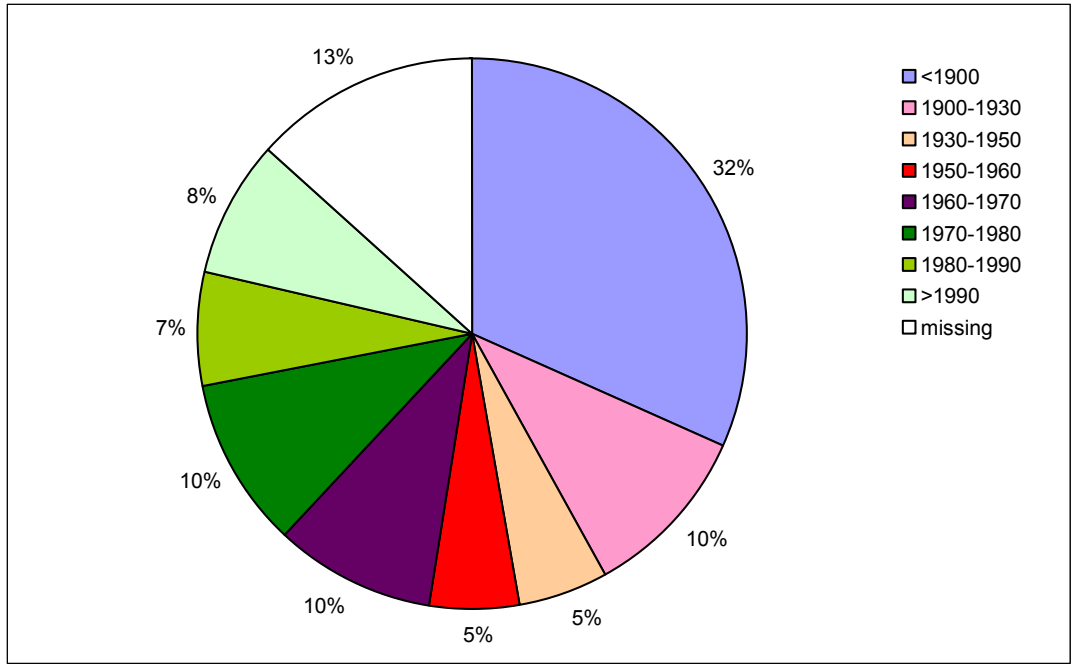


Figure 5: Distribution of Family Tenure in Southern Indiana. (n=290)

*Religious Services*

Nearly equal proportions of respondents reported attending religious services at least once a week (34%) and not attending religious services (35%) (n=280) (Figure 6).

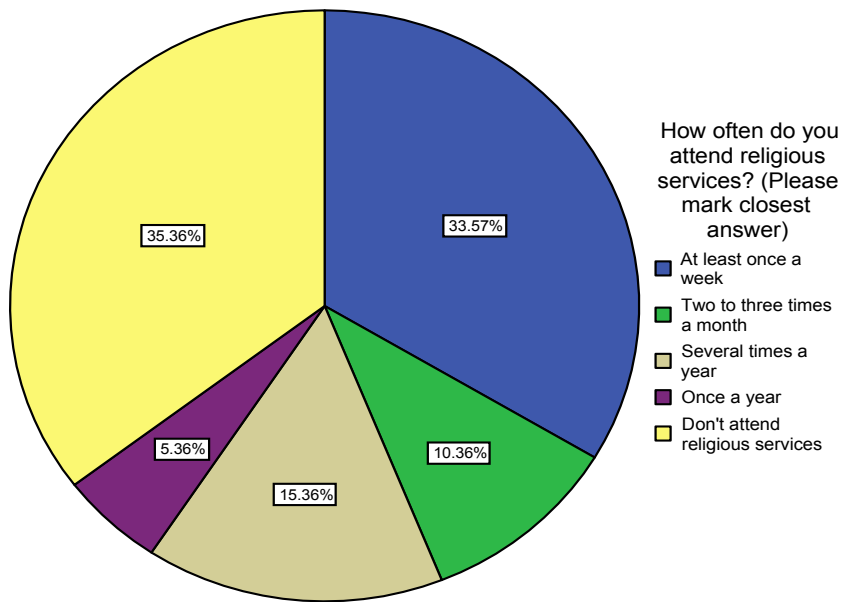


Figure 6: Religious Service Attendance. (n=280)

*Gender and age of respondent and households*

74.8% of those filling out the survey were men. The average age of the respondent was 55.6 years with a minimum of 25 years and a maximum of 95 years. 275 of 290 respondents answered this question.

Including the respondent, the average household size is 3.5 people and the male to female ratio is almost even at 1.02. 51.3% of households had two members. The largest household reported had ten members (note: there were only ten spaces for household member information).

Number of people in HH	Number of HH
1	57
2	195
3	54
4	44
5	23
6	4
7	1
8	1
9	0
10	1

Table 3: Distribution of house hold (HH) sizes

### *Marital Status*

The vast majority of respondents are currently married (79.9%) or have been married (Figure 7). Only 3.1% of respondents reported having never been married. 283 of 290 respondents answered this question.

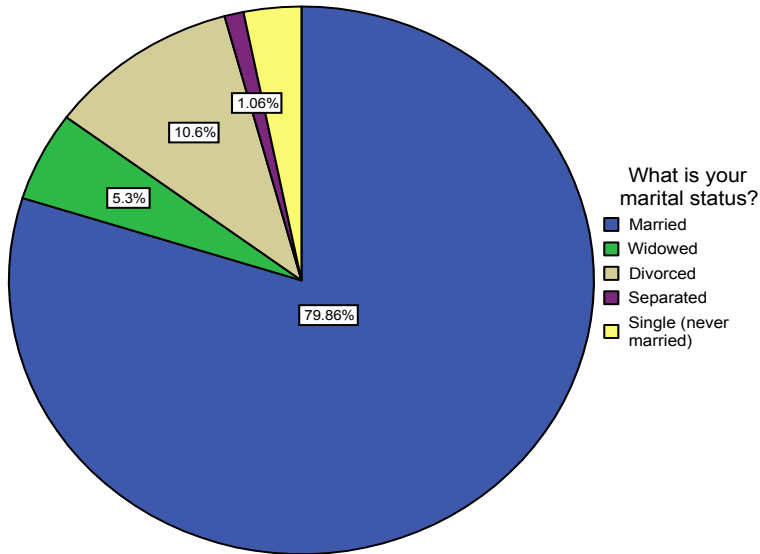


Figure 7: Marital Status (n=283)

### *Household Income*

More than 28% of respondents reported a total household income of more than \$90,000 with the second most common response being between \$60,000 and \$75,000 (n=257) (Figure 8).

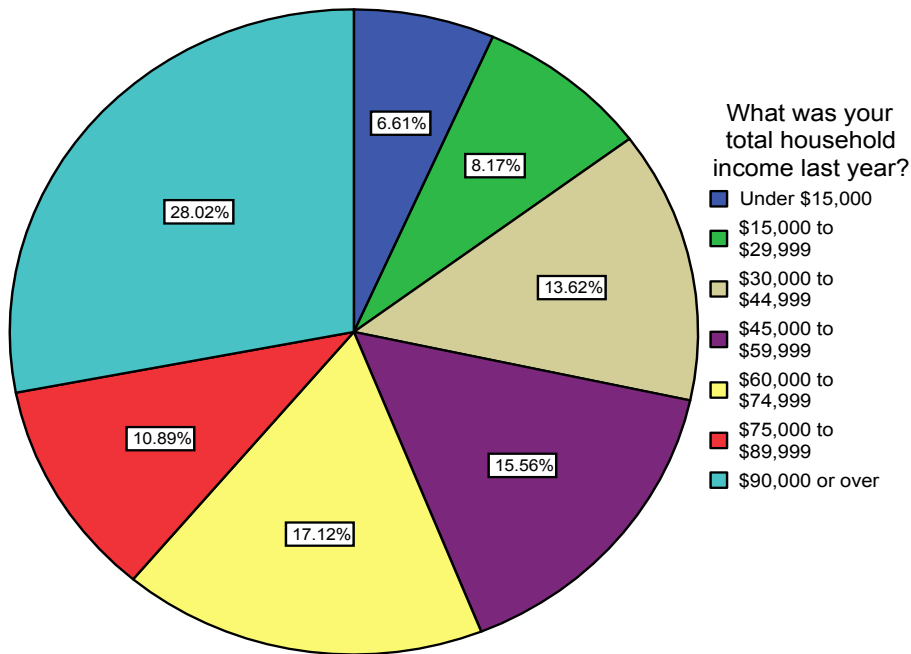


Figure 8. Household Income (n=257)

### RELATIONSHIP TO LAND

Most respondents purchased their land for residential and aesthetic reasons while farming and timber harvesting were much less important (Table 4). Recreation and land investment decisions were considered very or somewhat important by the majority of respondents, although about half as many respondents considered these reasons as important as residential purposes.

How Important Were the Following Reasons in Your Decision to Purchase Land?

	Residential Purposes	Farming Agricultural Uses	Timber Harvesting	Aesthetic Enjoyment (Value)	Land Investment	Recreation
Very Important	217	34	11	178	106	102
Somewhat Important	21	73	56	36	90	83
Not Important	13	118	153	17	35	45
Missing	39	65	70	59	59	60

Table 4. Importance of Land Uses in Decision to Purchase Land

Most respondents watch wildlife on their property daily and some respondents walk on their property daily or weekly (Table 5). Most other activities were performed monthly or yearly by respondents such as collecting tree and non-tree products, hunting, and camping. A large number of the respondents indicated that they never camp, horseback ride, or hunt on their property, while most respondents hike, watch wildlife, and collect tree and non-tree products.

How Often Have You or Others Performed Any of the Following Activities on the Land You Own in Monroe County?

	Camping	Hiking Walking	Horseback Riding	Wildlife Watching Observation	Hunting Trapping	Collecting Tree Products (e.g. firewood or nuts)	Collecting Non-tree products (e.g., mushrooms or flowers)
Daily	1	58	9	147	2	5	4
Weekly	0	68	18	40	10	8	11
Monthly	15	64	13	31	22	61	50
Yearly or Less Frequently	124	56	48	29	86	143	162
Never	120	29	170	24	150	55	46
Missing	30	15	32	19	20	18	17

Table 5. Frequency of Various Activities on Property

Approximately 46% of the land in the study area is forested, according to our respondents (Figure 9). Eleven percent of the land is farmed under crop production, 23% mowed or hayed, and about 20% grazed. The graph above assumes that the acreage is zero for missing observations, see note below regarding question 8.

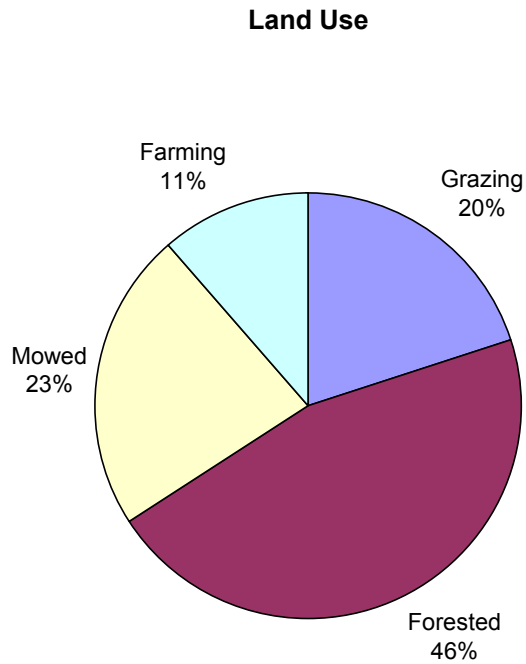


Figure 9. Land Use (Grazing n=164, Forested n= 181, Mowing n= 177, Farming n=131)

The majority of acreages for the uses were clustered near zero, with a mean of 12 acres grazed, 25 acres forested, 13 acres mowed or hayed, and 8 acres farmed in crop production (Figure 10). There were several outliers within each use category, the maximum for mowing was 140 acres, the maxima for grazing and crop production was 200 acres, whereas the maximum for forested land was 365 acres.

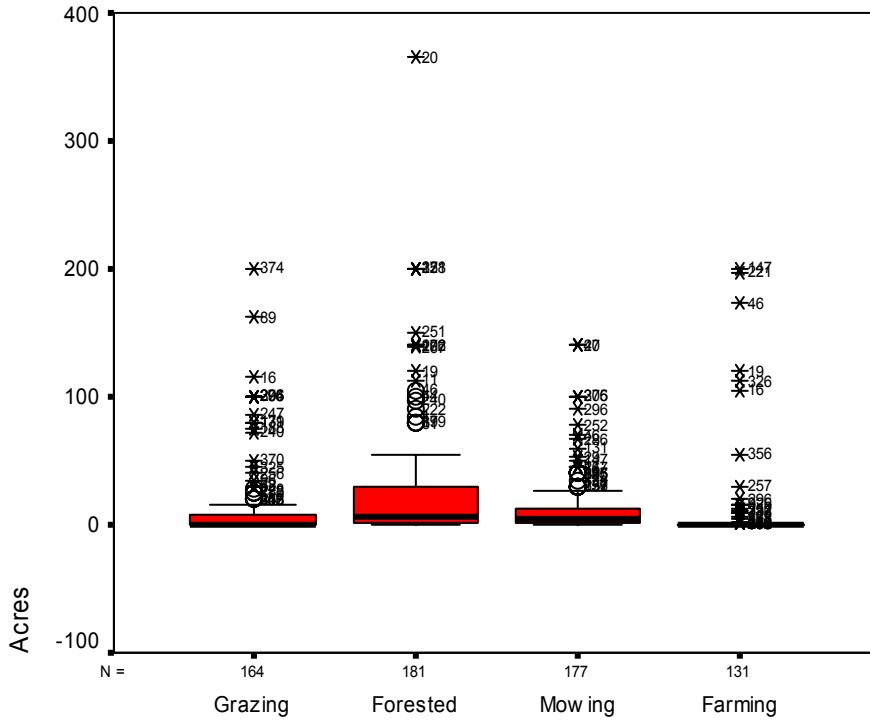


Figure 10. Distribution of Land Uses (Grazing n=164, Forested n= 181, Mowing n= 177, Farming n=131)

Figures 11-13 show that land use is not an important source of income for most respondents. Especially, farming is not an important source of income. Land use as a continuation of previous land use has a similar distribution compared to sources of income. Aesthetics is an important reason for about half the population of respondents with regard to land use/cover items mowed land and forested land. When we check the results for the respondents who filled in all items of question 9 and relate the formal education with the responses, we do not find that there is any correlation.

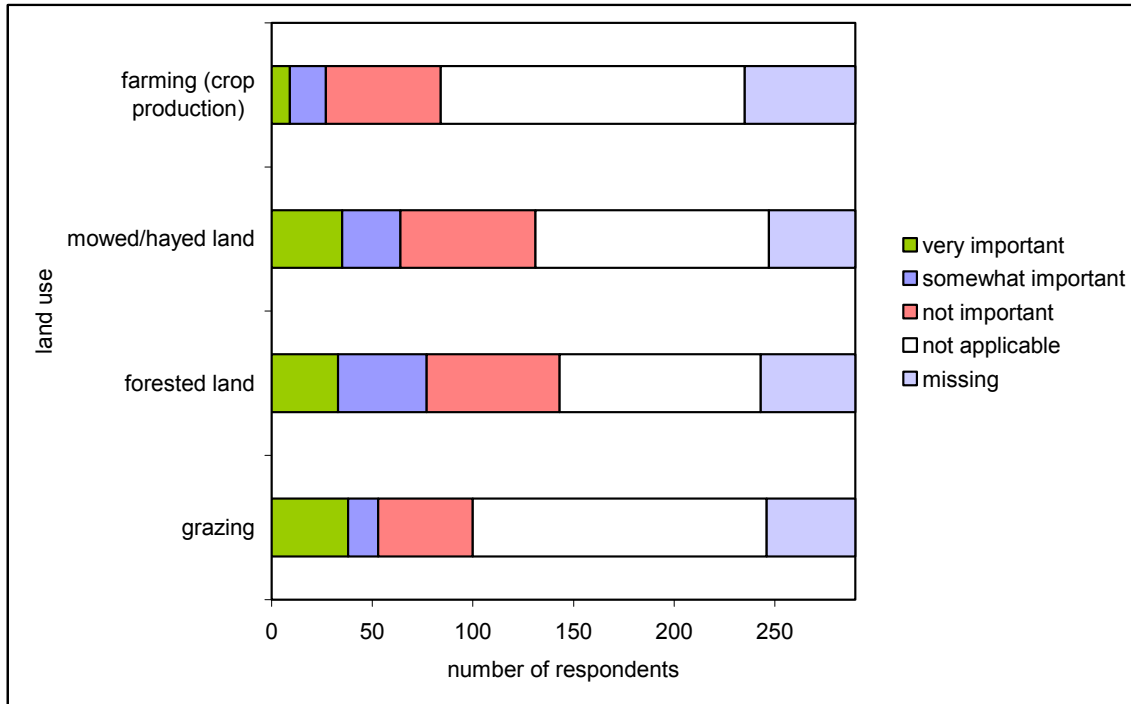


Figure 11. Importance of land use as a source of income

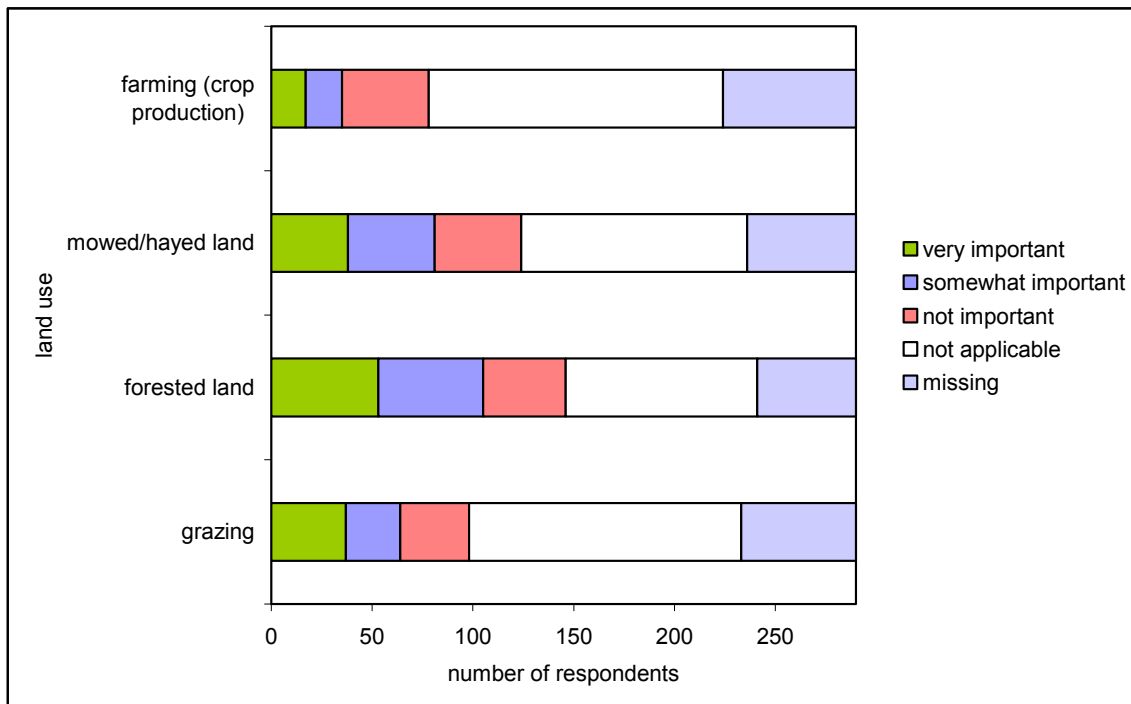


Figure 12. Importance of land use as a continuation of previous land use or family tradition



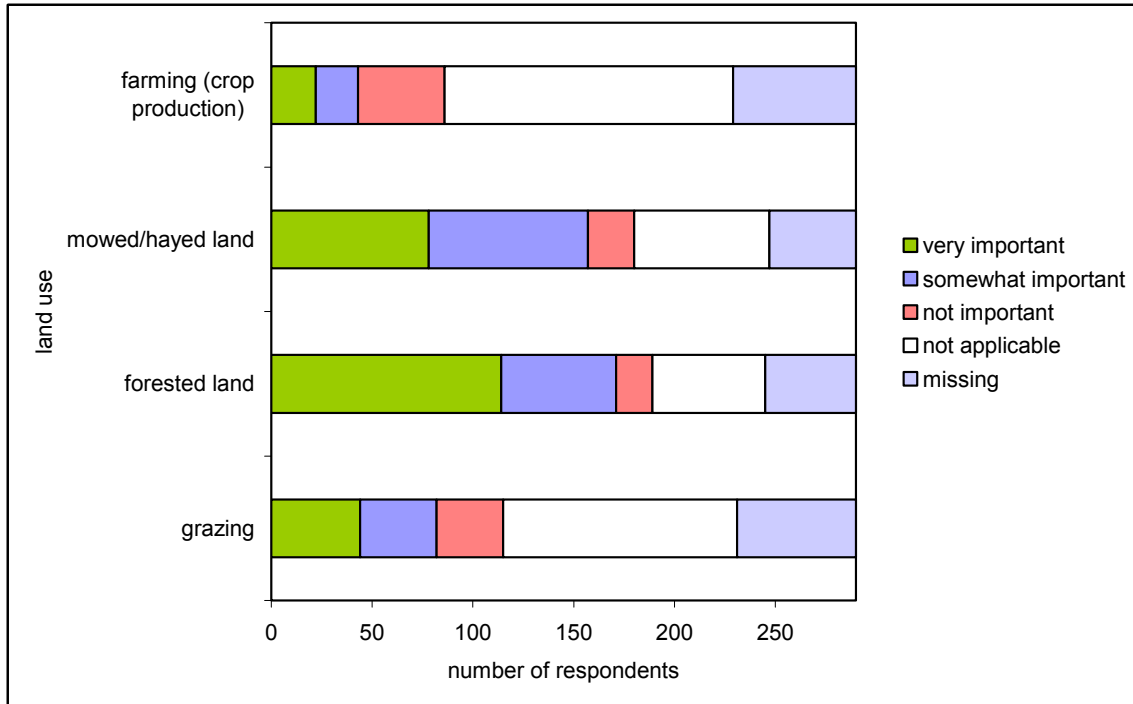


Figure 13. Importance of land use for aesthetics and visual appearance

Respondents were asked about their activities during the past 5 years that impact the landscape or prepare the land for another use, question 10. During the last five years, 83 landowners prepared the land for planting and 184 did not, 23 missing. 118 landowners applied pesticides or fertilizers to their property, 151 did not, and 21 missing responses. The pesticide and fertilizer use could be for a variety of purposes including, crops, planting trees, and most likely for lawns and gardens. 50 respondents used measures to reduce damage due to wildlife, 215 did not, and 25 missing responses. Again, we believe that many of these responses could be with regard to a household garden. 121 respondents built or repaired roads or trails, 154 did not, and there were 15 missing responses. The respondents may have constructed roads or trails, or perhaps done maintenance on driveways. Finally, 68 respondents had wildlife habitat or fisheries improvement projects, 197 did not, and 25 missing responses.

**How useful are different sources of information for making land management decisions**

Similar to other studies family and friends are the main source of information, next to neighbors (Figure 14). Books and governmental officials are also considered useful resources for information. Tax accountants and sales representatives are not considered to be valuable sources of information for land use decision making.

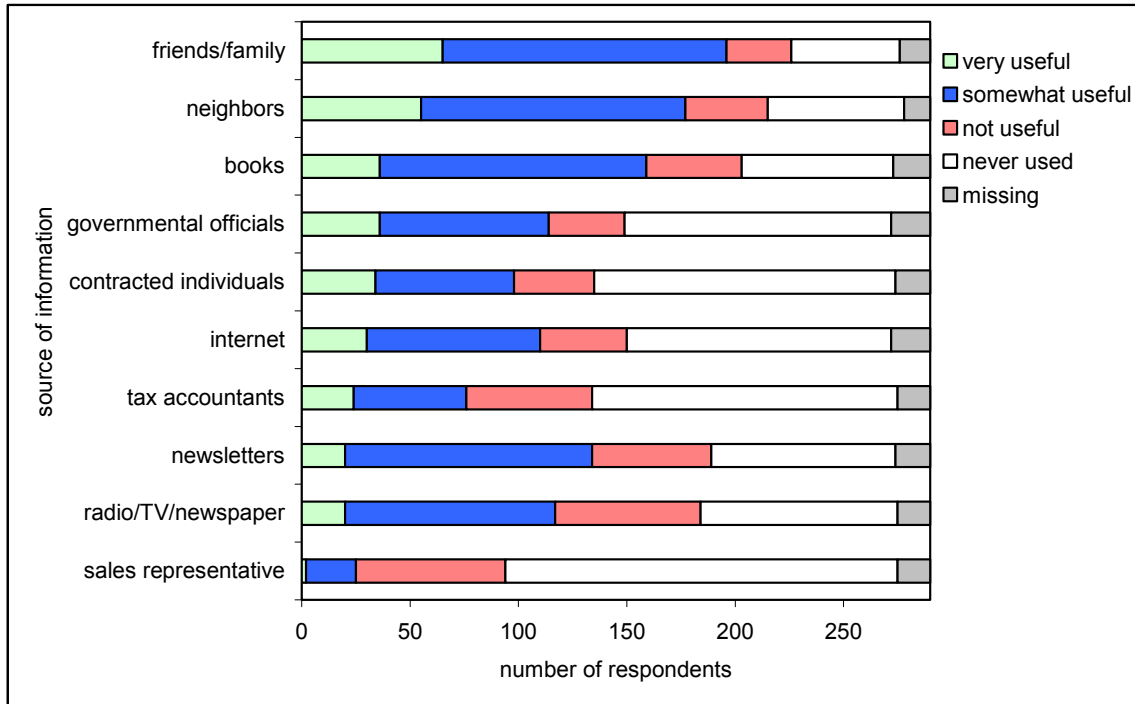


Figure 14. Usefulness of Information

### Governmental programs

On the question whether the respondent is familiar with Classified Land programs, 89 (31%) said yes, and 193 (67%) said no, 8 respondents did not give a response. Of those respondents who are familiar with Classified Land programs, 25 (28%) said that they are enrolled in any of the programs, while 63 (71%) respondents are not enrolled. One respondent who is familiar with the Classified Land programs did not answer the question on enrollment.

The 63 respondents who are not enrolled but know about the programs mentioned the following reasons for not enrolling: 12 times that they are not eligible, 35 times that they do not want to have restrictions on their property, and 14 times that it is not worth the time and effort.

From those 25 respondents who are enrolled in a Classified Land program, 19 participated in the classified forest program, 5 in the wildlife habitat, 1 is the riparian, 1 in the windbreak and 2 in the filter strip. The reasons that were given to participate by these 25 respondents are: reduction of the property tax (17 times), management assistance (9 times), improving the productivity of the forestland (11 times), and environmental benefits (15 times)

Further analysis shows that land owners with a long history in the region are somewhat less eager to participate in a Classified Land Program (Figure 15). There is no statistical relation with education level, religion, property size, or income.

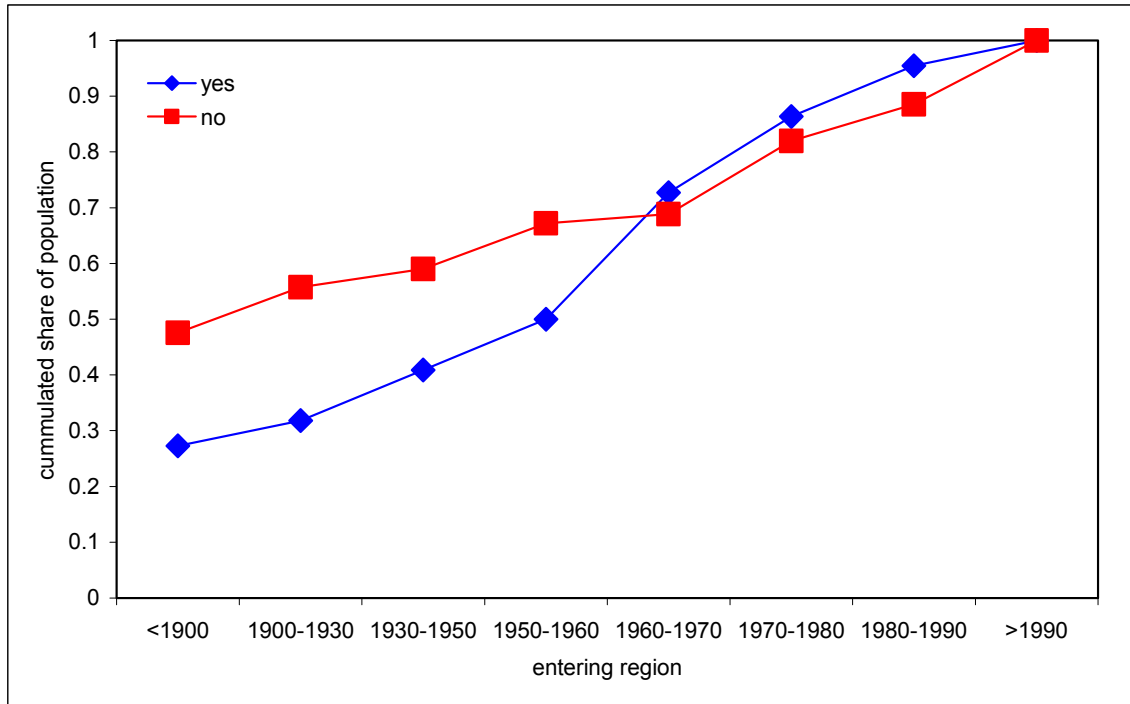


Figure 15. Cumulated share of the respondents having family arriving in southern Indiana.

We asked the respondents whether they ever used a federal cost-share program. 29 respondents (10%) said yes, 251 respondents said no, and 10 respondents did not give an answer to this question. Of those who participated in a federal cost-share program, 17 (59%) used conservation reserve program, 10 used the forestry incentives program, 4 used the stewardship incentive program, 3 used the wildlife habitat incentive program, and 2 used the wetland reserve program.

On the question whether the respondent is familiar with conservation easements, 62 (21 %) answered yes, 222 said no, and 6 respondents did not answer this question. Of the 62 who answered to be familiar, only 4 answered to participate, 53 answered that they did not participate, and 5 did not answer this question. From those who answered to be familiar with conservation easements, and do not participate, provided the following reasons: not eligible (3 times), don't want to have restrictions on the property (29 times), and not worth the time and effort (11 times).

Respondents were asked about tree harvesting on their property, 36% (n=103) had cut trees in the past 5 years and 64% (181) of respondents had not cut (Table 6). Six respondents did not answer the question. 33 respondents cut sawlogs for commercial sale, 23 cut sawlogs for personal use, and 68 cut firewood for personal use. Of those respondents that had harvesting trees in the past 5 years, 8% (n=8) indicated that the income from harvesting was very important relative to their total income and 14% (n=14) said that income from harvesting was somewhat important. 6 respondents did not answer this question.

Why Were the Trees Harvested or Cut?	Very Important	Somewhat Important	Not Important	Missing
Achieve Objectives in Management Plan	27	20	43	13
Trees Were Mature	31	15	45	12
To Clear Land for Conversion to Another Use	23	16	51	13
Needed the Money	7	12	70	14
Needed Wood for My Own Use	28	21	41	13
The Price Was Right	10	11	66	16
To Improve Hunting Opportunities	2	9	76	16
To Improve Scenic and Recreational Opportunities	14	25	51	13
To Remove Trees Damaged by a Natural Catastrophe	55	21	24	3
To Improve the Quality of Remaining Trees	49	25	23	6
To Improve Wildlife Habitat	14	28	49	12
Neighbors Logged Adjacent Tracts	3	1	83	16

Table 6. Reasons for Tree Harvesting or Cutting

Of the respondents that cut trees in the past 5 years those indicating the following reasons were very important, 55% (n=55) responding that they had cut because of natural catastrophe and 51% (n=49) cut to improve the quality of the remaining. 54% (n=49) indicated that needing wood for their own use was very important or somewhat important in their decision to cut. 51% (n=46) indicated that their trees were mature was very or somewhat important in the decision to harvest. 52% (n=47) indicated achieving objectives in their management plan that was very or somewhat important in the decision to harvest. 43% (n=39) indicated that clearing land for conversion to another use was very or somewhat important in their decision to harvest. 21% (n=19) indicated that a need for money was very or somewhat important in their decision to harvest. Similarly, 24% (n=21) indicated that the price was very or somewhat important in their decision to harvest. It appears that many decisions to harvest are not a direct result of economic factors, such as price or need for additional income, but rather are decisions based on a longer time horizon and goal to improve the quality of the forest by clearing out damage after tornados or ice storms and cutting mature trees. Furthermore, many decisions to cut are based on personal need for firewood, not for income from sale of timber. Of the respondents that harvested, 21% (n=19) had a professional forester or natural resource professional assist with the harvest by planning, marking or contracting.

Hypothesis 6 suggested a relation between income and timber harvesting. In Figure 16 we show the shares of the different categories of income for the respondents who answered income question. The two categories are the respondents who answered that

they harvest sawlogs for commercial sale (27 respondents) and the total group of respondents. The figure provides no indication to support hypothesis 6.

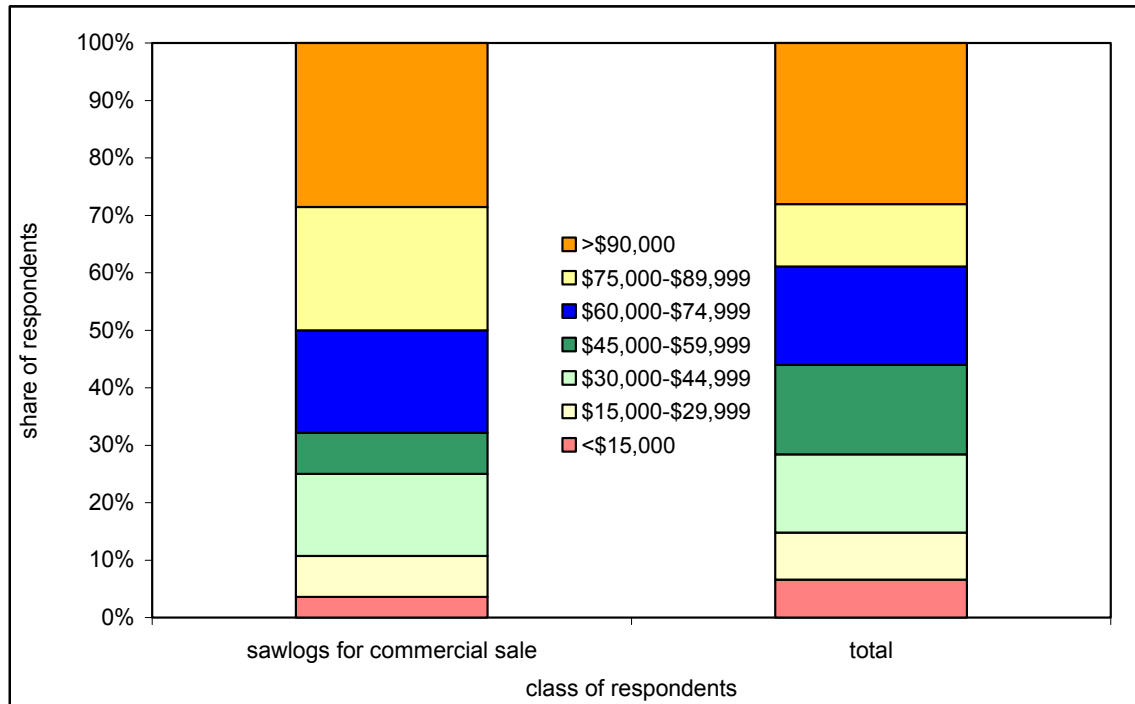


Figure 16. Distribution of income for households who cut timber for commercial sale, and for the total population

One the question whether the respondent planted trees during the past five years, 130 respondents answered yes, 159 no, and 1 respondent did not answer. The high level of tree planting is likely to be caused by the way the question was formulated. A person planting a tree in their yard will also answer with yes. Due to this problem, the results should be analyzed with care.

Of the 130 respondents who planted trees, 3 took advantage of the Reforestation Tax Credit and Amortization provisions, 59 did not, while 56 respondents did not know what these are. 12 respondents did not answer this question.

Trees were mainly planted on pasture and hill sides (Table 7).

On which land were trees planted			
Type of land	yes	No	Missing
Pasture	48	31	51
Crop fields	12	52	66
Cutover forest land	21	45	64
Wetland	6	54	70
Prairie	1	57	72
streambanks	5	54	71
Hillsides	44	35	51

Table 7. Tree Planting Location

The question about the reasons of respondents to plant trees, show that they do not so due to economic incentives, but for scenic beauty and environmental conservation.

The reason why were trees planted				
Reason	Very important	Somewhat important	Not important	missing
Revenue from timber sale to finance reforestation	3	1	93	33
Cost-share program	4	0	94	32
Low-cost seedlings from state	20	14	66	30
County educators advise	3	2	93	32
Tax benefits	0	1	94	35
Timber production	6	8	80	36
Enhance scenic beauty	96	16	7	11
Conserve natural environment	59	21	23	27
Provide forest for future generations	42	23	34	31
Food and habitat for wildlife	53	23	31	23
Improve water quality by controlling erosion	33	29	41	27
Windbreak	27	29	49	25
Advise professional forester	4	5	90	31
Seeing neighbors planting trees	0	2	97	31

Table 8. Reasons for Tree Planting

The respondents were asked to rank the types of risks they consider to be important in their land use decisions (Figure 7). Most respondents did not consider any of the types mentioned a source of risk that they include in their decision making. Timber loss and institutional changes were considered important for a significant amount of respondents. In the open question on which risks they feel to be important about 35 mentioned issues related with the nature of land use: development, urban sprawl, zoning, and the construction of I-69.

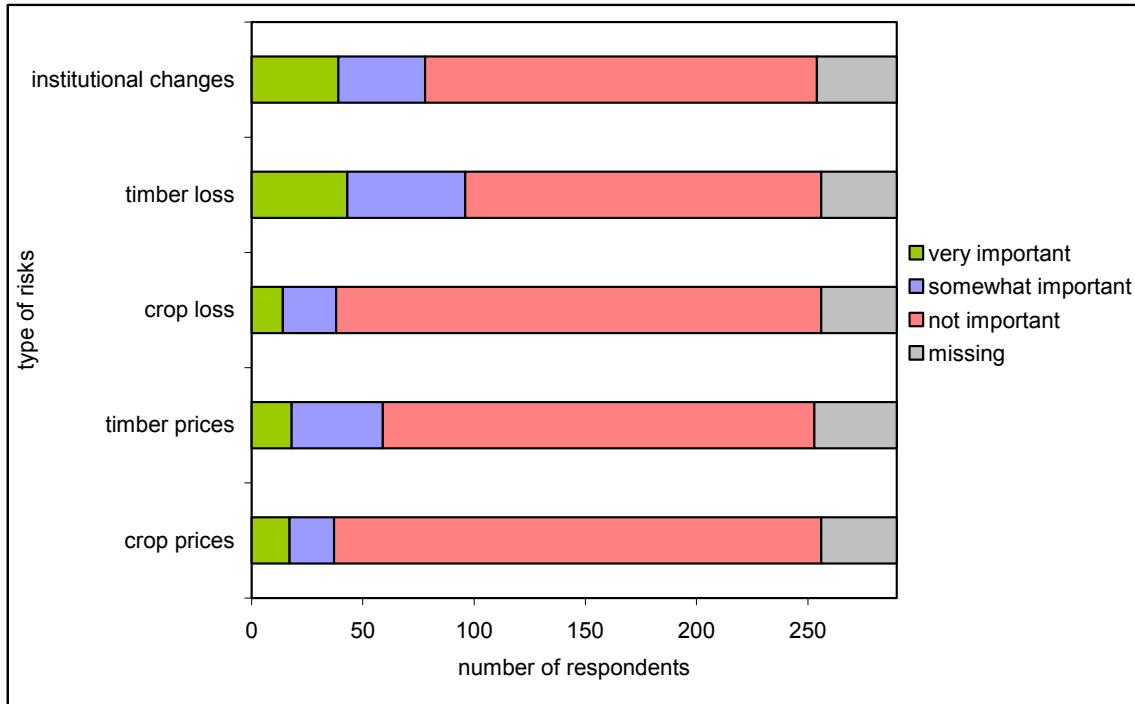


Figure 17: Importance of various types of risk in land use decision making.

On the question what time horizon the respondents consider in their decision making on land use, 131 (45%) answered with more than 3 years, 47 (16%) with 2-3 years, 40 (14%) focus only on the current year, 61 respondents don't know, and 11 did not answer this question.

### Discussion

The picture emerging from the survey is that most land owners in Monroe County own their property because they want to live in a nice scenic environment. Decisions on land use are mainly influenced by aesthetic reasons. Only a small proportion of land owners join the classified forest program, mainly for tax benefits and to stimulate environmental conservation. The main reasons that people do not want to join governmental programs is that these programs are not known or that land owners do not want to have restrictions on their property. Risks perceived by land owners relate to urban sprawl, not to crop or timber price changes.

### References

- Birch, T. (1996). Private Forest-Landowners of the Northern United States. Randor, Penn., United States Department of Agriculture Northeastern Experiment Station.
- Kauneckis, D. and C. Novac (2000). Preferences on the Landscape: How Much Do Individual Values Matter? Constituting the Commons, the eighth annual conference of the International Association for the Study of Common Property, Bloomington, Ind.
- Munroe, D. K. and A. M. York (2003). "Jobs, Houses, and Trees: Changing Regional Structure, Local Land-Use Patterns and Forest Cover in Southern Indiana." Growth and Change 34(4): 299-320.