2004 Indiana Logger Survey
A Joint Study by Purdue University, the University of Wisconsin, and the USDA Forest Service

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Introduction and Methods

The purpose of this study was to examine the economic, social, and resource (i.e. timber supply) consequences of land tenure change from the perspective of those who work in the forest, namely loggers. This project was a cooperative effort of Charles Michler of the Hardwood Tree Improvement and Regeneration Center, Mark Rickenbach and Tom Steele of the University of Wisconsin, Paul Gobster of the USDA Forest Service – North Central Research Station, and Shorna Broussard of Purdue University. The survey was designed to gather data in three areas: (1) business and individual demographics, (2) assessments of the business environment, and (3) specific information on perceived effects of land tenure change.

Surveys were mailed to 183 logging companies in Indiana. The survey design consisted of four mailings: (1) a survey and cover letter (April 19, 2004), (2) a reminder postcard (April 23, 2004), (3) a 2nd cover letter and survey to non-respondents (May 19, 2004), and (4) a 3rd cover letter and survey to non-respondents (June 25, 2004). Of the 183 logging companies in the sample, a total of 30 companies were not eligible (surveys returned undeliverable, gone out of business, deceased), 96 companies never responded to the survey mailings, and 57 companies completed the survey for a response rate of 37.25%.
Timber Supply

Respondents were asked questions regarding timber supply and production. When asked if the respondent owned or managed an independent logging business, 42 of the 57 respondents answered “yes,” while 16 answered “no.” Of the respondents that did not own or manage an independent logging business, five completed the survey. The responses from these five individuals were assumed to be informed and were thus included in the survey results.

![Bar chart showing timber volume harvested over the last five years]

Figure 1. Trends observed in the timber volume harvested over the last five years

To identify recent trends in timber supply and sales, respondents were asked to identify if they had observed a change in both the timber volume that they harvested and the number of sales harvested in the last five years. In general, many respondents (42%) indicated a slight to great increase in the timber volume harvested in the last five years (Figure 1). Thirty-percent of respondents had no change in harvest volume, and 28% had a slight or great decrease in the last five years. Similar trends were observed in reference to the number of sales harvested in the last five years where 41% observed a slight or great increase, 30% remained the same, and 28% had a slight or great decrease in the number of sales (Figure 2).
When asked to give their best estimate of timber harvested in 2003, the respondents were given the option of answering in any combination of cords, thousand board feet (MBF), tons, or other units. No respondent reported cords harvested. For thousand board feet harvested, 39 responded with an amount. This volume ranged from 6 to 4,000 MBF harvested in 2003 (Figure 3). The mean volume harvested in 2003 was 896.2 MBF with a median of 500 MBF. Of the 56 respondents that reported zero tons harvested, 44 of them reported a volume greater than zero for the thousand board feet. Only two respondents reported the volume in tons; one reported 500 tons and another reported 5,000 tons.
When respondents were asked to provide the number of individual timber sales that were completed or partially completed in 2003, the majority of respondents had between 1 and 10 completed sales. The range was from 1 completed sale to 1,995 completed sales in 2003. Only two respondents had more than 60 completed sales in 2003 (Figure 4).

The number of partially completed sales in 2003 ranged from zero to four in the 12 responses received (Figure 5).
Figure 6. Counties indicated by respondents (n=48) where most of timber was cut in 2003. The number of times a county was indicated by a logger is indicated by shading. The darker the shading, the more times the county was referenced as a main source of timber.
Respondents were given a map of Indiana, and asked to indicate the counties where they cut most of their timber in 2003. This information was then compiled into a new map showing the number of times each county was referenced (Figure 6). The counties that were indicated the most by respondents were Jennings County (n=18), Ripley County (n=15), and Decatur County (n=12). The number of counties selected by respondents varied from 0 to 70. The mean number of counties reported as the source of most of their timber was 6.84. The frequency of occurrence of logged counties in northern Indiana (45 counties) was 142 and 255 in the southern half of the state (47 counties). The mean value for the northern counties was 3.16, and for the south was 5.43. This indicates that loggers rely on the southern half of the state almost twice as heavily as the northern half.

Respondents were asked to provide the total number of sales by acreage. They were then asked to provide the number of profitable sales by acreage. The responses were totaled, and a mean provided for each total number of sales and number of profitable sales in 2003 (Table 1). For parcels 41-80 acres in size, one respondent had 46,850 sales, and all 46,850 were profitable. This skewed the mean for this category, thus we excluded this response for this calculation.

<table>
<thead>
<tr>
<th>Acreage Range</th>
<th>Mean Number of Total Sales (n)</th>
<th>Mean Number of Sales That Were Profitable (n)</th>
<th>Percent of Profitable Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 acres</td>
<td>6.25 (12)</td>
<td>3.50 (8)</td>
<td>56%</td>
</tr>
<tr>
<td>6-10 acres</td>
<td>6.95 (21)</td>
<td>3.86 (14)</td>
<td>55%</td>
</tr>
<tr>
<td>11-20 acres</td>
<td>7.78 (27)</td>
<td>3.82 (17)</td>
<td>49%</td>
</tr>
<tr>
<td>21-40 acres</td>
<td>8.12 (34)</td>
<td>4.67 (24)</td>
<td>58%</td>
</tr>
<tr>
<td>41-80 acres¹</td>
<td>6.89 (26)</td>
<td>4.53 (19)</td>
<td>66%</td>
</tr>
<tr>
<td>81-160 acres</td>
<td>4.58 (19)</td>
<td>3.93 (15)</td>
<td>86%</td>
</tr>
<tr>
<td>161 acres or more</td>
<td>2.77 (13)</td>
<td>2.09 (11)</td>
<td>75%</td>
</tr>
</tbody>
</table>

¹CaseID 2638 was removed as it was an outlier (46,850 sales)
To identify the affect of commercial and/or residential development on timber harvest, respondents were asked to identify if they had conducted a harvest on land that was being cleared for such development. Slightly over half of the respondents confirmed that in 2003, they had conducted a harvest for residential or commercial development (Figure 7).

Those respondents that had harvested on land that was being cleared for development were then asked to specify the number of timber sales related to development that they had in 2003. Table 2 summarizes this information.

Table 2. Number of sales completed or partially completed for development purposes in 2003

<table>
<thead>
<tr>
<th>Number of Sales</th>
<th>Frequency (n)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>19</td>
<td>82.61%</td>
</tr>
<tr>
<td>6-10</td>
<td>1</td>
<td>4.35%</td>
</tr>
<tr>
<td>11-15</td>
<td>2</td>
<td>8.70%</td>
</tr>
<tr>
<td>16-20</td>
<td>1</td>
<td>4.35%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

All respondents were asked to examine the trend over the last five years of sales that were completed or partially completed to clear land for commercial or residential development. Nearly half (46%) of respondents indicate that the trend has been constant over the last five years, but 41% say that there has been a slight or great increase in the number of land clearings for development (Figure 8).
To examine the ownership of harvested lands, respondents were asked to determine the percentages each of the following ownerships represented in their 2003 harvests: private woodlands, industrial or corporate owned forests, national forests, state forests, county forests, tribal forests, and other (specified by respondent). The majority of harvested land was privately owned. The mean percentages offered by the 45 respondents are displayed in Figure 9.

Figure 8. Trend over the last five years in the number of sales completed or partially completed to clear land for residential or commercial development

Figure 9. Mean ownership percentage of 2003 harvested lands (n=45)
Figure 10. Mean percentage of clearcuts and partial/thinning cuts in 1998 and 2003 for these two silvicultural treatments only.

The survey then addressed two types of silvicultural methods utilized in harvesting: clear cutting and partial thinnings. Care should be taken when interpreting these figures as they do not represent all types of silvicultural methods (shelterwood, seed tree, single tree selection, etc.) but only two of them (thinning and clear-cuts). So the data correspond to two of approximately eight possible silvicultural methods and should not be interpreted as being representative of all silvicultural methods. Each respondent was asked to indicate the percent of harvest volume that was either clearcut or done with a partial/thinning cut for the years 1998 and 2003. The responses were then averaged for each year/treatment combination (Figure 10). Over the five year span, the mean percent of harvest volume from partial/thinning cuts decreased slightly (1.4%). The amount of volume from clearcuts increased slightly from 92.9% in 1998 to 94.3% of harvest volume in 2003. Understandably, more timber volume will be produced from a clearcut than a partial/thinning cut.

The respondents were then asked to provide information as to their 2003 harvest volume. A percentage of the following products was requested: veneer, hardwood pulp, hardwood sawtimber, softwood pulp, softwood sawtimber, and other (to be specified by respondent). The mean percentage of each product is displayed in Figure 11.
Figure 11. 2003 harvest volume by type (n=43)

The type of mill to which the timber was delivered was the next item on the survey. Each respondent was asked to specify the percent of total harvest volume in 2003 that went to the following outlets: small sawmill (produces less than five million board feet per year), large sawmill (produces five million board feet per year or more), pulp or paper mills, log buyers, and other (to be specified by respondent). Mean percents were calculated (Figure 12). Eighty-eight percent of the 2003 harvest volume was delivered to sawmills, large and small. Two percent of the volume was delivered to pulp or paper mills, while seven percent was delivered to log buyers.

Figure 12. Mean percentage of 2003 harvest volume delivered to various outlets (n=44)
Nature of Business

We aimed to uncover key characteristics about logging companies in terms of harvest equipment, business economics, personnel, and the industry outlook.

Equipment

Respondents were asked to list the equipment used to fell and process timber. Respondents were asked to exclude any older pieces of machinery that were non-operational or only used for parts. The response options were as follows: chainsaws, feller-bunchers, harvesters, delimbers, slashers, chippers, and other (to be specified by respondent). Chainsaws and slashers were most frequently used, while delimbers were not used by any of the respondents.

Table 3. Mean number of pieces of equipment used felling and processing timber (n=47)

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Mean Number Used</th>
<th>% Use</th>
<th>% Don’t Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chainsaws</td>
<td>4.81</td>
<td>96%</td>
<td>4%</td>
</tr>
<tr>
<td>Slashers</td>
<td>0.19</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Harvesters</td>
<td>0.11</td>
<td>9%</td>
<td>91%</td>
</tr>
<tr>
<td>Chippers</td>
<td>0.09</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td>Feller-bunchers</td>
<td>0.04</td>
<td>2%</td>
<td>98%</td>
</tr>
<tr>
<td>Delimiters</td>
<td>0.00</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

After felling and processing, the respondents were asked what types of equipment they used in off-road transport of timber. Respondents were instructed not to include older pieces of machinery that are non-functional or used for parts. Each respondent was then asked to supply the number of pieces equipment they used for off-road transport. The response options were as follows: cable skidders, grapple skidders, forwarders, loaders, other (to be specified by respondent). The mean response for each piece of equipment is displayed below (Table 4). Cable skidders and loaders were most frequently used, while forwarders were only used by four respondents.

Table 4. Mean number of pieces of equipment used in off-road transport of timber (n=47)

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Mean Number Used</th>
<th>% Use</th>
<th>% Don’t Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable Skidders</td>
<td>1.62</td>
<td>87%</td>
<td>13%</td>
</tr>
<tr>
<td>Loaders</td>
<td>1.62</td>
<td>77%</td>
<td>23%</td>
</tr>
<tr>
<td>Grapple Skidders</td>
<td>0.38</td>
<td>28%</td>
<td>72%</td>
</tr>
<tr>
<td>Forwarders</td>
<td>0.09</td>
<td>9%</td>
<td>91%</td>
</tr>
</tbody>
</table>
Business Economics

Each respondent was asked to declare the amount of capital invested in their logging business. The range for this response was from $20,000 to $2,500,000. The mean amount of capital invested was $458,736 with a median of $277,500. When asked to estimate the percent of capital that is invested in harvesting equipment, the range was from 10 to 90 percent. The mean percent of capital invested in harvesting equipment was 62.6%.

When asked to estimate the volume their business could have produced when working at full capacity, the responses divided into the following measures: cords, thousand board feet (MBF), and tons. This response ranged from 7 to 4,500 MBF with a median of 1,340.5 MBF, and the only respondent reporting tons reported 10,000 tons. The mean of each measurement is reported below (Table 5).

<table>
<thead>
<tr>
<th>Units</th>
<th>Mean Volume</th>
<th>Median Volume</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cords</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Thousand Board Feet</td>
<td>1,340.5</td>
<td>1,000.0</td>
<td>28</td>
</tr>
<tr>
<td>Tons</td>
<td>10,000.0</td>
<td>10,000.0</td>
<td>1</td>
</tr>
</tbody>
</table>

When asked to estimate the volume their business would need to break even financially, the board foot measure range increased to 75 to 900,000 MBF with a median of 126,701 MBF, while the only tons reported was 5,000 tons. The mean response for each measurement is below (Table 6).

<table>
<thead>
<tr>
<th>Units</th>
<th>Mean Volume</th>
<th>Median Volume</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cords</td>
<td>0.0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Thousand Board Feet</td>
<td>126,701.0</td>
<td>1,000.0</td>
<td>24</td>
</tr>
<tr>
<td>Tons</td>
<td>5,000.0</td>
<td>5,000.0</td>
<td>1</td>
</tr>
</tbody>
</table>
The respondents were then asked to rate their company’s profitability in 2003. Figure 13 represents their responses. Fifty percent of the respondents rated their company’s profitability above average (good or excellent), while 29.8% of respondents rated their company’s profitability as average, and 18% as poor.

To better understand the trends within logging businesses, respondents were asked to identify any trends in profit margins that they have observed in their profit margins in the last five years (Figure 14). Half of the respondents noticed a decline in profit margins

**Figure 13.** Rating of company’s profitability in 2003

**Figure 14.** Trends observed in profit margins over the last five years
Delivered wood prices have...

"...not kept pace with production costs." 26

"...kept pace with production costs" 16

"...outpaced production costs 2

Number of respondents (n=44)

Figure 15. The general trend in wood prices compared to production costs over the last five years (greatly decreased and slightly decreased). Ten respondents (22.7%) indicated that their profit margins had remained the same over the last five years, while 12 respondents (27%) experienced a slight to great increase.

Respondents were asked to state the general trend in delivered wood prices in the last five years (Figure 15). Twenty-six respondents (59.1%) indicated that wood prices have not kept pace with production costs, while 16 (36.4%) said that they have kept up. Only two respondents (4.5%) stated that wood prices have outpaced production costs.

Greatly Decreased 0
Slightly Decreased 2
Remained the Same 1
Slightly Increased 23
Greatly Increased 18

Number of Respondents (n=44)

Figure 16. Trend in business costs over the past five years
To find the trend in business costs, respondents were asked if their costs have increased, decreased, or stayed the same over the past five years (Figure 16). Ninety-three percent of the respondents stated that the costs increased (slightly or greatly) in the last five years. One respondent stated that the costs of business have remained the same, while two respondents felt that costs had decreased over the last five years.

The factors that might affect profitability in the logging industry were asked in the survey.

Each respondent was asked to rank each factor from (1) not important at all to (4) very important to their business. Mean rankings are shown in Figure 17. Stumpage prices had the highest importance score with mill prices and equipment maintenance also ranking as important to the respondents businesses. Logger training and benefits (not including workman’s compensation) were viewed as less important.

After ranking the importance of the factors, the respondents were asked to indicate from the list, the most important and second most important factor in remaining profitable (Figure 18). Stumpage prices remained the most important factor with 18 respondents

**Figure 17.** Mean importance score (1=Not important at all, 4=Very important) indicating how important each factor is to the logging businesses in Indiana.
Figure 18. Ranking of the first and second factors that are most important factors in remaining profitable.

(43.2%) listing it as the most important factor and 11 (24.4%) naming it as the second most important factor. Mill prices and fuel prices remained of high importance. Stumpage availability was recognized as highly important with eight (18.2%) respondents claiming it as most important and five (11.1%) claiming it as second. Logger training was not classified as most important by any respondent, and was second in importance to only one respondent. Benefits (not including workman’s compensation) were not ranked as the most important or second most important factor by any of the respondents.

Respondents were then asked to rate the importance (1=not important at all, 4=very important) of factors affecting to whom wood is sold from the following list: “contractual obligations,” “location of mill,” “only outlet for product,” “price offered,” “timeliness of payment”, and other (to be specified by respondent). The “price offered” had the highest mean importance scores (Figure 19) with a value of 3.82 which is considered to be very important. “Contractual Obligation” and “Only outlet for the product” had a mean value of 2.49 and 2.85 respectively which denotes that these factors, while somewhat important, are not strong influencing factor for respondents.
Respondents were then asked to indicate which of the above factors were the most important and second most important factor when deciding to whom wood would be sold. Thirty-eight respondents ranked price offered as the most important (n=32) or the second most important (n=6) factor (Figure 20). Location of the mill and timeliness of payment were ranked the second most important factor. Again, the only outlet for product and contractual obligations were not a considerable concern for most respondents.
Personnel

Twenty-eight of 43 respondents indicated that they employed workers. These respondents were asked to answer questions regarding employment. The employers were asked to report the number of full-time and part-time employees in each of the following categories: wood workers, truck drivers, procurement workers, mechanics, office and clerical workers, supervisor/manager/owners, and landowner assistance foresters. A mean of 4.18 full-time and 3.80 part-time woods workers are employed by these respondents (Table 7).

Table 7. Number of full- and part-time workers employed by task (number of responses in each category is in parentheses)

<table>
<thead>
<tr>
<th>Type of Employee</th>
<th>Full-Time (n)</th>
<th>Part-Time (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woods Workers</td>
<td>4.18 (22)</td>
<td>3.80 (5)</td>
</tr>
<tr>
<td>Truck Drivers</td>
<td>1.95 (21)</td>
<td>2.50 (6)</td>
</tr>
<tr>
<td>Procurement Workers</td>
<td>1.69 (13)</td>
<td>0.33 (3)</td>
</tr>
<tr>
<td>Office and Clerical workers</td>
<td>1.43 (14)</td>
<td>0.60 (5)</td>
</tr>
<tr>
<td>Supervisor/Manager/Owners</td>
<td>1.00 (14)</td>
<td>1.00 (4)</td>
</tr>
<tr>
<td>Mechanics</td>
<td>0.73 (11)</td>
<td>1.00 (4)</td>
</tr>
<tr>
<td>Landowner Assistance Foresters</td>
<td>0.63 (8)</td>
<td>0.25 (4)</td>
</tr>
</tbody>
</table>

Twenty-four of 28 respondents who employ workers said that their business was a family business. We inquired about the likelihood of a future generation (e.g. owner’s son, daughter, niece, nephew) taking over the business (Figure 21). Fifty-four percent of the respondents indicated that it was very or somewhat likely that a future generation will take over the family business.

Figure 21. Likelihood that a future generation will take over the logging business (n=22)
The respondents that employ workers were then asked to indicate whether they agree or disagree with three statements. The first statement was “reliable workers are hard to find.” Eighty-seven percent of the respondents said that they agreed or strongly agreed with this statement (Figure 22a), while only 3% disagreed. The second statement was “skilled workers are hard to find.” Eighty-six percent of respondents agreed or strongly disagreed with this statement (Figure 22b). Seven percent of respondents disagreed with this statement. Finally, the third statement was “worker turnover is high in my company.” Fifty-seven percent of respondents agreed or strongly agreed with this statement (Figure 22c). Many more respondents were neutral (30%) or disagreeable (40%) with this statement than they were the other two questions. These responses may point to the fact that once an employer finds an employee who is reliable and skilled, they retain those employees for a longer period of time.

Figure 22. Levels of agreement for the statements: (a) Reliable workers are hard to find, (b) Skilled workers are hard to find, and (c) Worker turnover is high in the company (n=30)
Industry Outlook

All respondents were asked whether they would be in the logging business five years from now. If they answered no, they were directed to answer an open-ended question to explain why. Eight of the 44 respondents expected not to be in the logging business in five years. Their explanations ranged from retirement (n=4) and health related issues (n=2) to they cannot afford to continue (n=1) and logging opportunities have stopped (n=1).

Respondents were asked to predict trends in the logging industry over the next five years. The respondents were asked to indicate the level to which they agreed with thirteen statements (1=strongly disagree, 3=neutral, 5=strongly agree). The statements regarding industry outlook that was least agreeable on average for respondents were “there will be much less logging in my area because of urban sprawl” with an average agreement score of 2.81 (Figure 23). “More ‘low impact’ logging equipment will be used” was almost exactly neutral at 3.02. “Logging will be pretty much like it is now” and “logging will be more mechanized” were very close in agreement scores at 3.30 and 3.32, respectively. “Mill prices will increase” had an average score of 3.45, while “we will face greater competition from outside the United States” had a slightly higher agreement at 3.59.
For the statement, “There will be fewer, but larger, logging contractors,” the mean score of 3.67 which indicates an overall weak agreement. The statement “there will be more subcontracting, with no employees” resulted in slightly less agreement at a mean of 3.63. “Logging parcel sizes will be smaller” had a mean of 3.70, while “logging practices will be more regulated” and “loggers will have to travel further for good logging chances” both had a mean score of 3.88. “More woodlots will be harvested for residential or commercial development” had a mean score of 3.91. This is an interesting result because the threat of urban sprawl is not recognized as synonymous with residential or commercial development (less logging for urban sprawl only had a mean score of 2.81). “Stumpage prices will increase” had the highest mean score of 4.02. According to these responses, increased stumpage prices and regulation in conjunction with terminal sales, smaller parcel sizes for logging, and increased distance to travel for logging jobs are the greatest perceived threats to the industry in the next five years.

![Figure 23. Mean scores for logging industry trends over the next five years (1=strongly disagree, 5=strongly agree)](image)
Demographics

Following are demographic characteristics of the owners of logging businesses in Indiana. The average age of logging business owners in Indiana according to survey results is 51.4 years and all respondents were male. The vast majority of respondents were white (non-Hispanic) (Figure 24). African- and Native-American respondents each represented 2% of logging company owners.

![Pie chart showing racial distribution of respondents.](image)

**Figure 24.** Racial distribution of respondents (n=44)

Respondents were asked to indicate the proportion of their overall income that logging contributes. Almost half of the respondents stated that over 75% of their total household income comes from their logging business (Figure 25). The average number of years of logging experience reported by respondents was 24.4 years while the average number of years the logging company has been in business was 29.9 years.

![Pie chart showing percentage of overall household income contributed by logging.](image)

**Figure 25.** Percentage of overall household income that logging contributes (n=43)
Conclusions

The timber supply portion of our study reveals that respondents reportedly had little to no increase in the volume of timber harvested and the number of sales harvested over the last five years. The profitability of harvests tended to increase with the number of acres harvested. While a moderate amount of the respondents stated that the number of sales related to commercial or residential development has remained the same, still others have noticed a slight or great increase. Just over half of our respondents reported at least one harvest related to residential or commercial development. The source of timber for logging company respondents is mostly from privately owned forestland. The core product produced by our respondents’ harvest volume was hardwood sawtimber that was mainly delivered to either large or small sawmills.

The equipment utilized by the respondents was commonly chainsaws with some slashers and harvesters used for felling and processing timber. For off-road transport, cable skidders and loaders were most popular. Use of grapple skidders and forwarders were less common.

A wide range of capital was invested in the companies surveyed, and the amount of capital invested in equipment ranged from 10 to 90%. The profitability of companies was reported as average to good with steady to decreasing profit margins over the last five years. Delivered wood prices have not kept up with costs of production for over half of our respondents, while these costs have increased over the last five years. Stumpage prices, stumpage availability, and mill prices were the top three factors in remaining profitable. As for the factors that decide to whom wood is delivered, price offered and timeliness of payment are the top two factors.

Over half of the respondents employ workers with an average of four full-time and four part-time employees. Nearly all of the businesses that employ workers are a family business. Of these family businesses, over little over half expect to pass the family business on to a future generation within the family. Less than 2% of respondents indicated that they would probably not be in business 5 years from now. Across the
respondents, the majority of respondents report difficulty in finding reliable and skilled workers, but less than one-third of the respondents agreed that worker turn-over was high.

In terms of industry outlook, logging companies foresee increasing stumpage prices, more woodlots being harvested for development, traveling further for work, increasing regulation of logging practices, and logging smaller parcel sizes.

The average respondent was 51 years old with 24.4 years in the logging industry. All of the respondents were male, and the majority of them were also white (non-Hispanic). While logging contributes a large portion of household income for nearly half of the respondents, 51% of the respondents reported that logging contributed to less than 75% of their household income.
Appendix: Survey Questionnaire

Indiana’s 2004 Logger Survey

A joint study by Purdue University and the University of Wisconsin

Photo by: Eric Hansen
We would like to begin the questionnaire with some questions about the timber you produce. In answering these questions, please provide your best estimates. Please either mark your responses with an “X” or write in your answers where appropriate. Remember, all of your answers will remain strictly confidential.

1. Do you own or manage an independent logging business?
   - Yes; please complete this survey.
   - No; you do not have to complete this survey, but we would welcome your comments on the logging industry. Please use the comment box on the outside back cover for your comments.

2. When looking back at the last 5 years, would you say the timber volume you harvested has increased, decreased, or remained the same?
   - Greatly increased
   - Slightly increased
   - Remained the same
   - Slightly decreased
   - Greatly decreased

3. When looking back at the last 5 years, would you say the number of sales you harvested has increased, decreased, or remained the same?
   - Greatly increased
   - Slightly increased
   - Remained the same
   - Slightly decreased
   - Greatly decreased

4. Using your best estimate, how much timber volume did you harvest in 2003?
   Please use the units that best fit your recollection. For example, “10,000 cords and 20 thousand board feet.”
   a. ________ Cords
   b. ________ Thousand board feet (MBF)
   c. ________ Tons
   d. ________ Other unit (please specify)

5. How many individual timber sales did you complete or partially complete in 2003?
   a. Completed
   b. Partially Completed
6. On the map below, please CIRCLE each of the names of the counties where you cut most of your timber in 2003. If this includes timber cut in other states, please list them below.

6a. Other states (please specify):
7a. Of your 2003 logging operations, how many were in each of the following acreage categories? 
7b. Also, how many of the sales in each acreage category would you rate as profitable?

<table>
<thead>
<tr>
<th>Acreage Category</th>
<th>7a. Total number of sales</th>
<th>7b. Total number of sales that were profitable</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5 acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10 acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-20 acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-40 acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-80 acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81-160 acres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>161 acres or more</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Did you harvest any timber in 2003 on land being cleared for residential or commercial development purposes?
   - [ ] Yes
   - [ ] No (skip to Q9)

8a. If yes, how many sales did you complete or partially complete in 2003 for development purposes?

9. When looking back at the last 5 years, has the number of sales you completed or partially completed to clear land for residential or commercial development increased, decreased, or remained the same?
   - [ ] Greatly increased
   - [ ] Slightly increased
   - [ ] Remained the same
   - [ ] Slightly decreased
   - [ ] Greatly decreased

10. What percentage of your 2003 harvest volume came from the following ownership categories? (If none, please write in “0.” These should total 100%.)

<table>
<thead>
<tr>
<th>Ownership Category</th>
<th>% Harvested</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Private woodlands</td>
<td></td>
</tr>
<tr>
<td>b. Industrial or corporate owned forests</td>
<td></td>
</tr>
<tr>
<td>c. National forests</td>
<td></td>
</tr>
<tr>
<td>d. State forests</td>
<td></td>
</tr>
<tr>
<td>e. County forests</td>
<td></td>
</tr>
<tr>
<td>f. Tribal forests</td>
<td></td>
</tr>
<tr>
<td>g. Other (please specify):</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

11a-11b. What percentage of your 1998 and 2003 harvest volume was obtained via clearcutting or partial cutting/thinning? (If none, write in “0.” These should total 100%.)

<table>
<thead>
<tr>
<th>Method of Harvesting</th>
<th>11a. % of Harvest Volume in 2003</th>
<th>11b. % Harvest Volume in 1998 (5 years ago)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Clear-cut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Partial/thinning cuts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
12. What percentage of your 2003 harvest volume was allocated to the following product categories? (If none, write in “0.” These should total 100%).

<table>
<thead>
<tr>
<th>Product Category</th>
<th>% 2003 Harvest Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Veneer</td>
<td></td>
</tr>
<tr>
<td>b. Hardwood pulp</td>
<td></td>
</tr>
<tr>
<td>c. Hardwood sawtimber</td>
<td></td>
</tr>
<tr>
<td>d. Softwood pulp</td>
<td></td>
</tr>
<tr>
<td>e. Softwood sawtimber</td>
<td></td>
</tr>
<tr>
<td>f. Other (please specify):</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

13. What percentage of your 2003 harvest volume did you deliver to the following types of mills? (If none, write “0.” These should total 100%).

<table>
<thead>
<tr>
<th>Mill Type</th>
<th>% Delivered in 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Small sawmill</td>
<td>(produces less than 5 million board feet per year)</td>
</tr>
<tr>
<td>b. Large sawmill</td>
<td>(produces 5 million board feet per year or more)</td>
</tr>
<tr>
<td>c. Pulp or Paper Mills</td>
<td></td>
</tr>
<tr>
<td>d. Log Buyers</td>
<td></td>
</tr>
<tr>
<td>e. Other (please specify):</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

14. How many of the following pieces of equipment do you actively use in felling and processing timber? (If none, write “0.” Do NOT include older pieces of machinery that are non-operational or only used for parts.)

a. Chainsaws
b. Feller-bunchers
c. Harvesters
d. Delimiters
e. Slashers
f. Chippers
h. Other (please specify):
15. How many of the following pieces of equipment do you actively use in off-road transport? (If none, write “0.” Do NOT include older pieces of machinery that are non-operational or only used for parts.)

- a. Cable Skidders
- b. Grapple Skidders
- c. Forwarders
- d. Loaders
- e. Other (please specify):

16. How much capital is invested in this logging business? $

17. What percentage of that capital is invested in harvesting equipment? %

18. During 2003, what volume could you have produced working at full capacity? Please use the units that best fit your recollection. For example, “10,000 cords and 20 thousand board feet.”

   a. Cords
   b. Thousand board feet (MBF)
   c. Tons
   d. Don’t Know

19. What volume of wood do you need to produce annually to break even financially? This should include paying yourself.

   a. Cords
   b. Thousand board feet (MBF)
   c. Tons
   d. Don’t Know

20. How would you rate your company’s profitability in 2003?

   - Very poor
   - Poor
   - Average (broke even)
   - Good
   - Excellent

21. In the last 5 years, have your profit margins:

   - Greatly increased
   - Slightly increased
   - Remained the same
   - Slightly decreased
   - Greatly decreased
22. Which statement best reflects the general trend in delivered wood prices over the past 5 years? (Mark only one answer.)

- Delivered wood prices have **outpaced** production costs.
- Delivered wood prices have **kept pace** with production costs.
- Delivered wood prices have **not kept pace** with production costs.

23. In the last 5 years, have your costs...

- Greatly increased
- Slightly increased
- Remained the same
- Slightly decreased
- Greatly decreased

24. Below are a list of factors that might affect the profitability in the logging industry. Please circle the number that indicates how important each is to your business.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not Important at all</th>
<th>Not very Important</th>
<th>Somewhat Important</th>
<th>Very Important</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits (not including workman's compensation)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Equipment Maintenance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Equipment Replacement</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Fuel Prices</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Labor and Wages</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Logger Training</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Mill Prices</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Regulatory</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Stumpage Availability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Stumpage Prices</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Worker's Compensation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

25a-25b. Which of the factors in Question 24 above is the most important and second most important factor in remaining profitable? (Insert letter).

- Most important
- Second most Important
26. Below is a list of factors that might affect to whom logs are sold. Please circle the number that indicates how important each is to your decision in selecting to whom you sell your wood.

<table>
<thead>
<tr>
<th></th>
<th>Not at all Important</th>
<th>Not very Important</th>
<th>Somewhat Important</th>
<th>Very Important</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Contractual obligations</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>b. Location of mill</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>c. Only outlet for product</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>d. Price offered</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>e. Timeliness of payment</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>f. Other (please specify):</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
</tbody>
</table>

27a-27b. Which of the factors in question 26 above is the most important and second most important factors in whom you decide to sell your wood? (Insert letter).

   a. Most important
   b. Second most important

28. Do you employ workers?

- [ ] Yes
- [ ] No (skip to Q31 on next page)

28a. How many workers does your company employ?

<table>
<thead>
<tr>
<th></th>
<th>Full time</th>
<th>Part time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Woods workers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Truck drivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Procurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Mechanics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Office and clerical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Supervisor/ manager/owner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Landowner assistance forester</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
29. A family business is one in which the family plays a central role in the leadership and daily workings of the business and includes at least two family members. Based on this definition, is your company a family business?

☐ Yes
☐ No (skip to Q30)

29a. Will future generations (e.g. son, daughter, niece, nephew) of the owner’s family take over the business?

☐ Very unlikely
☐ Somewhat unlikely
☐ Somewhat likely
☐ Very likely
☐ No heirs
☐ Don’t know

30. For each of the following employment related statements, please indicate the degree to which you agree or disagree by circling the number that corresponds to the response that best applies.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Reliable workers are hard to find.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. Skilled workers are hard to find.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. Worker turnover is high in my company.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

31. Do you expect to be in the logging business in 5 years?

☐ Yes (skip to Q32 on next page)
☐ No; Please explain why in the box below.

[Box for explanation]
32. Please think about what logging will look like in 5 years. For each statement, please circle the number that best describes your opinion.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. There will be fewer, but larger, logging contractors.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. There will be more subcontracting, with no employees.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. There will be much less logging in my area because of urban sprawl.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d. Logging will be more mechanized.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>e. Logging practices will be more regulated.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>f. Logging will be pretty much like it is now.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>g. More woodlots will be harvested for residential or commercial development.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>h. More &quot;low impact&quot; logging equipment will be used.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>i. Logging parcel sizes will be smaller.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>j. Loggers will have to travel further for good logging chances.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>k. Stumpage prices will increase.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>l. Mill prices will increase.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>m. We will face greater competition from outside the United States.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Demographics

33. Are you the owner?
   - Yes
   - No (go to Q33a)

33a. If no, what is your role?

33b. What is your age?
   - Years old

33c. What is the age of the owner(s)?
   - Years old

34. What is your age?
   - Years old

35. What percentage does logging contribute to your household income?
   - 0-25%
   - 26-50%
   - 51-75%
   - Over 75%

36. How many years have you been in the logging industry?
   - Years

37. How many years has this company been in operation?
   - Years

38. Are you....
   - Male
   - Female

39. Would you describe yourself as:
   - White (non-Hispanic)
   - Black or African American
   - Hispanic or Latin American-origin
   - Asian or Asian American
   - Native American
   - Other (please specify)

40. Would you be interested in participating in a follow-up personal interview in the summer or fall of 2004 to help us better understand your state’s logging sector?
   - Yes
   - No → Please skip to the next page.

40a. If yes, please provide contact information and the best time/way to reach you.

Name

Address

City

State

Zip code

Phone number

FAX number

E-mail

Best time/way to reach you
Thank you for taking the time to complete this questionnaire. We value your time and opinions. If you have additional comments you would like to share, please do so in the space below.

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