

**The Logging Sector in the Lake States of Michigan, Minnesota and Wisconsin:
Status, Issues and Challenges**

by

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Abstract

With 55 million acres of forestland, the forest products industry plays an important role in the Lake States (Michigan, Minnesota and Wisconsin) economy. The logging sector connects forest resources with the forest products industry and is a critical component of the wood products supply chain. A coordinated survey of Lake States logging business owners was conducted in Spring 2017 to learn about their business operations in 2016 and to identify the issues, challenges and opportunities facing the logging industry. A total of 550 usable responses were obtained across the region. The results show that Lake States logging businesses and business owners are aging and many businesses are operating at a capacity lower than their full production potential. About a quarter of the responding firms do not expect to be in business in five years. Though there are many small logging businesses in the region, the market is dominated by few large firms producing the majority of the volume. Differences exist across states in terms of felling methods used, source of timber and amount of capital invested. Despite that, no significant variations in average timber volume harvested or self-rated profit were observed among states.

Background

The logging sector plays a crucial role in the sustainable management of forest resources and the smooth functioning of forest products markets, which contribute significantly to the Lake States' economy. The forest products industry contributes close to \$63 billion in total output to the economies of the three states (Leefers 2018, WI Department of Natural Resources 2018, Deckard and Skurla 2011).

Loggers harvest standing timber from various landownership groups and market the harvested timber to primary forest products mills. They help meet society's demand for wood products as well as assist landowners and forest managers meet various forest management objectives, and directly or indirectly contribute to shape the structure and composition of forests (Rickenbach et al. 2015). A strong logging sector is therefore critical for sustainable forest management and a vibrant forest based-economy.

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Despite these important roles, past literature on Lake States logging businesses (Blinn et al. 2015, Rickenbach et al. 2015, Gc and Potter-Witter 2011) show that loggers are facing challenges to fulfill their potential due to various factors. These include: declining wood markets, increased operational costs, difficulty in accessing financial resources for business, the need to comply with environmental regulations and forest certification, and difficulty in recruiting and retaining skilled workforce. There is also anecdotal evidence that many logging businesses in the region closed and did not reopen due to the 2008 recession. This coupled with an aging workforce and fewer new people entering the business has raised concern within the forestry community as to the future of forests and the forest products industry in the region.

Given this situation, a better understanding of the status and capacity of logging sector in the Lake States including its challenges and future potential can assist policy makers and other concerned stakeholders to make more informed decisions to sustain and strengthen this sector in the future.

Though individual state level studies focusing on sector demographics and characteristics have been conducted in the past, they fail to provide a clear regional picture of the logging sector in the Lake States due to variation in timing of data collection, survey instrument used and focus of the study. Since the wood products markets in the individual Lake States do not operate in isolation, a regional analysis of the logging sector provides a more holistic picture of where the industry stands. Therefore, to assess the status and capacity of logging sector in the region and to better understand the issues and challenges facing the logging industry, a coordinated survey of Lake States logging business owners was conducted in 2017 to learn about their business operations in 2016.

Study Approach

Mail surveys of all logging business owners in Michigan and Wisconsin and the logging business owners that are members of Minnesota Logger Education Program were conducted in spring 2017 following Dillman's tailored design method (Dillman 2000).

Separate survey instruments with both common sets of questions that were worded consistently across the three states as well as individual state questions were developed in coordination with researchers from Michigan, Minnesota and Wisconsin. Data was collected on a broad suite of areas including: production levels, stumpage sources, equipment mix, capital investment, profitability, future plans, as well as factors influencing recruitment of the logging workforce.

The overall response rate was 23% for Michigan, 39% for Minnesota and 53% for Wisconsin. The data obtained was analyzed using descriptive and inferential statistical techniques. Cross-state comparisons were made using the Kruskal-Wallis test followed by Mann-Whitney U-test with Bonferroni correction. Additionally, Chi-square tests of independence were used to analyze categorical variables. Statistical significance for all tests was set at an alpha level of 5 percent.

Results

There were 550 usable responses in total, of which 54% were from Wisconsin, 25% from Minnesota and 21% from Michigan. The regional averages presented in the study are unweighted

averages. The logging businesses that indicated harvesting less than 100 cords of timber in 2016 were excluded from the analysis.

Firm characteristics and production

The average logging business in the Lake States region had been in operation for 28 years. Many firms (65%) had been in business more than 20 years with only 15% less than 10 years. The logging businesses in Minnesota were significantly older than those in Michigan (Table 1).

Respondents produced 4.8 million cords of timber with a considerable range in production (100 to 216,000 cords). The average volume produced by a logging business was 8,955 cords (median 4,000 cords). More than half of the logging businesses (56%) were small producers harvesting less than 5,000 cords annually, however these small businesses produced only 12% of the total volume harvested (Figure 1). Sixty-seven large businesses producing more than 15,000 cords annually harvested close to 56% of the reported volume in the region (Figure 1). No significant difference in average production levels was observed across states.

Most of the stumpage harvested (70%) was self-purchased by logging businesses, with the remainder purchased by someone else such as a mill or a broker. In comparison to Minnesota and Wisconsin, a significantly higher percentage of stumpage harvested in Michigan was purchased by others (Table 1). On average, the logging businesses harvested timber anywhere between 31 to 60 miles from their primary business location. A little more than half of the total volume harvested (53%) was transported to mills using contracted trucks, with the remainder transported by company-owned trucks. In general, larger logging businesses (those producing greater annual volume) transported a greater share of their harvest volume using their own trucks as compared to their smaller sized counterparts. Minnesota logging businesses transported significantly more volume using their own trucks compared to other states (Table 1).

Of the total volume harvested, only 10% was felled using chainsaws. The remaining was felled using mechanized felling equipment such as cut-to-length harvesters (53%) and feller-bunchers (37%). Michigan and Wisconsin logging businesses were more alike in terms of felling methods used. In both states, a majority of the volume was harvested using CTL harvesters unlike Minnesota, where majority of the volume was felled using feller-bunchers (Table 1).

Private woodlands were the major source of timber for logging businesses contributing approximately 41% of the total volume harvested, followed by county (20%), state (19%), industrial (12%), national (6%), and tribal forests (1%) respectively. In Wisconsin and Michigan, a significantly higher percentage of volume was harvested from private woodlands as compared to Minnesota, where a significantly higher percentage of volume was harvested from State and County forests (Table 1). A significantly higher percentage of volume was harvested from industrial forests in Michigan and Minnesota as compared to those in Wisconsin (Table 1).

Table 1. Logging firm characteristics, production level, felling methods and source of timber in the Lake States region of Michigan, Minnesota and Wisconsin, 2016.

Variable	Michigan	Minnesota	Wisconsin
Years in business	25 years ^a	30 years ^b	28 years ^{ab}
Volume harvested (Cords)	Mean (10,559) ^a Median (5,008)	Mean (11,267) ^a Median (4,000)	Mean (7,341) ^a Median (4,000)
Average percent of stumpage purchased	By self (60%) By others (40%) ^a	By self (72%) By others (28%) ^b	By self (72%) By others (28%) ^b
Average volume transported to mills (Cords)	By own trucks (4,536) ^a By contracted trucks (5,460) ^a	By own trucks (7,482) ^b By contracted trucks (4,291) ^a	By own trucks (2,772) ^a By contracted trucks (4,693) ^a
Average volume harvested by different felling methods (cords)	Chainsaw (994) ^a CTL Harvesters (5,711) ^a Feller-bunchers (3,280) ^a	Chainsaw (194) ^b CTL Harvesters (2,760) ^b Feller-bunchers (8,356) ^b	Chainsaw (1,117) ^a CTL Harvesters (5,197) ^a Feller-bunchers (1,027) ^a
Average percent of volume harvested from different landownership categories in 2016	Private woodlands (45%) ^a Industrial forest (21%) ^a National Forests (6%) ^a State forests (25%) ^a County forests (3%) ^a Tribal forests (0%) ^a Others (0%)	Private woodlands (20%) ^b Industrial forest (15%) ^a National Forests (7%) ^a State forests (27%) ^b County forests (24%) ^b Tribal forests (1%) ^a Others (6%)	Private woodlands (57%) ^a Industrial forest (4%) ^b National Forests (5%) ^a State forests (9%) ^a County forests (23%) ^c Tribal forests (1%) ^a Others (0%)

*Like superscripts denote no significant difference between states.

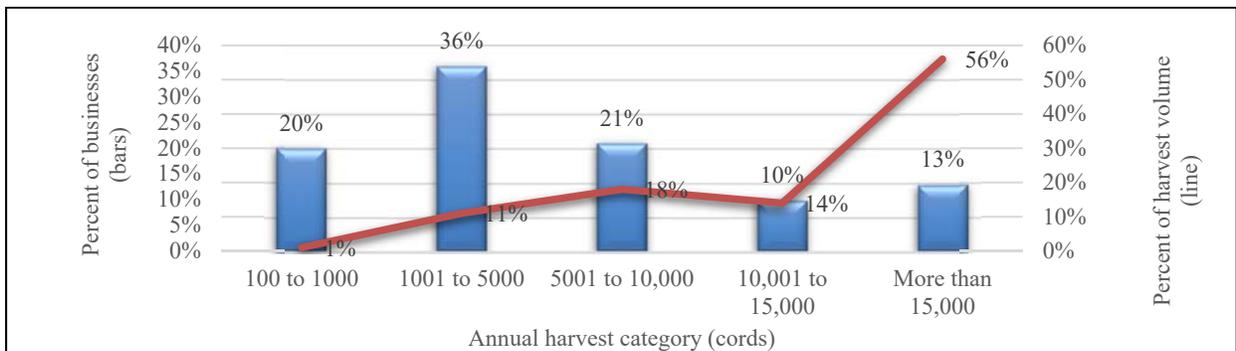


Figure 1. Percent of businesses by annual volume harvested in Lake States region in 2016.

Business condition, investment and profits

Nearly two-thirds of businesses (64%) reported that they operated below their full production potential and could have harvested on average 4,184 cords (median of 2,100 cords) of additional volume had they operated at full capacity. No significant difference in operation capacity was observed across states.

On average, the logging firms indicated investing between \$100,000 to \$499,999 in their logging business with the largest shares invested in harvesting equipment (48%) and stumpage (31%). Michigan logging firms invested a significantly higher amount of capital in their business as compared to those in Minnesota and Wisconsin. On average, the logging firms operated at a break-even profit level in 2016 and no significant difference in profit level was observed among states.

Plans for business and firm succession

The average logging business owner in the region was 54 years old and had 32 years of logging experience. About a quarter of the responding businesses reported that they do not intend to be in business in five years. There was no significant difference among states in percentage of respondents intending to leave business.

Most businesses (68%) were family operations. Despite that, only 38% indicated that a family member was likely to take over ownership of the business in the future. A large percentage (59%) either did not have a successor identified or said that no one was going to take over ownership of their business in the future.

Key Takeaways

- Logging businesses and business owners in the region are aging and with that comes the question of who will continue to log in the future.
- Though most logging businesses are family owned operations, only a modest number indicate that a family member will take over ownership in the future.
- Many logging business owners have not thought through their firm succession plan.
- Though there are many small logging firms in existence, the market is dominated by few large firms producing the majority of the volume. This raises concern about the future of small logging businesses; will they ultimately perish or continue to have their niche market as identified in the past literature.
- Majority of the logging businesses are operating below their full production potential. This raises a question about factors limiting them from harvesting at full capacity.

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