BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION
121 7th Place East, Suite 350
St. Paul, MN 55101-2147

In the Matter of Otter Tail Power's Petition to Ensure Competitive Electric Rates for Energy-Intensive Trade-Exposed Customers

PUC Docket No. E-017/M-16-533

AFFIDAVIT OF WAYNE BRANDT

STATE OF MINNESOTA)
) ss.
COUNTY OF ST. LOUIS)

I, Wayne Brandt, being first duly sworn upon oath, state as follows:

1. I am the Executive Vice President of Minnesota Forest Industries ("MFI") and the Minnesota Timber Producers Association (TPA). MFI is an association representing the State's forest products companies. MFI members encourage conservation, proper forest management and industry development that foster sound environmental stewardship, multiple use of timber lands and sustainable, long-term timber supply. TPA is an association of loggers, truckers, small sawmills, and allied businesses.

2. Otter Tail Power's Energy Intensive Trade Exposed Customers Norbord, Inc. ("Norbord") and Potlatch Corporation ("Potlatch") are members of MFI. Otter Tail Power's Energy Intensive Trade Exposed Customer Cass Forest Products ("CFP") is a member of TPA.

3. Attached as Exhibit A is a 2010 study conducted by the University of Minnesota Duluth Labovitz School of Business entitled "The Economic Impact of Minnesota's Forestry-

Related Industries on the State of Minnesota" (the "Labovitz DNR Study"). The study estimates the economic impacts of logging, forest products manufacturing, and related industries in Minnesota, and was requested by DNR to assist with its own "Economic Impact of Forest Industries" report.

4. Attached as Exhibit B is a PowerPoint presentation that summarizes the results of the Labovitz DNR Study and narrows those results to the forest products manufacturing industry.

5. Attached as Exhibit C is a 2011 study also conducted by the Labovitz School of Business for the Minnesota Forest Resources Council (the "Labovitz MFRC Study"). This study is an update of an earlier study and estimates the importance of the forest industry in northern Minnesota, including North-Central Minnesota, which is where Norbord, Potlatch, and CFP have operations.

6. Attached as Exhibit D is a chart showing Minnesota's industrial electric rates as compared to states with major forest products industries ("Electric Rates Chart").

Forest Industry Contributions to Minnesota

7. The forest products industry is the 5th largest manufacturing industry in Minnesota, and the value of the primary and secondary forest sectors exceeds $15.7 billion. The primary and secondary forest products industry is credited with providing over 71,000 Minnesota jobs.

8. The forest products manufacturing industry is valued at $8.5 billion and employs over 28,000 people.

9. According to the Labovitz DNR Study, every job in a sawmill or engineered wood product mill creates an additional 2.9 jobs throughout the State. This type of multiplier applies to the operations of Potlatch and CFP.

10. According to the Labovitz MFRC Study, the value added for the sawmills as of 2009 was in excess of $8.4 million and the output was more than $38.5 million.

11. According to the Labovitz DNR Study, every job in a reconstituted wood product manufacturing facility creates an additional 2.5 jobs throughout the state. This type of multiplier applies to the operations of Norbord.

12. According to the Labovitz MFRC Study, the output of sawmills as of 2009, or the value of local production required to sustain activities, was more than $38.5 million. Sawmills contributed $8.4 million to the local community through spending in categories like wages, rents, interest, and profits, also called the "value added."

13. Minnesota's forest industry is also a clean energy producer. More than 1.2 million tons of wood waste are used to generate electricity. Mills with co-generation facilities can meet 11-75% of their energy needs, and 28% of the industry's total electricity consumption is met through self-generated biomass or hydroelectric facilities.

Forest Industry Concerns with Electric Rates

14. Electric energy costs are an increasing concern for my members, including Norbord, Potlatch, and CFP.

15. As it pertains to this proceeding, I have been informed by Norbord, Potlatch, and CFP, that their specific electric rates are becoming increasingly uncompetitive.[1] The Electric Rates Chart shows that Minnesota has lost its competitive industrial electricity price advantage over North Carolina, Oregon, and Washington, which are states where major competitors of Norbord, Potlatch, and CFP are located.

16. As one of the factors we can control under section 216B.1696 of the Minnesota Statutes, I believe uncompetitive electric rates for Norbord, Potlatch, and CFP needs to be addressed.

Global Pressures on Minnesota's Forest Industry

17. The U.S. and Canadian Softwood Lumber Agreement (SLA) served to limit Canadian economic advantages over U.S. lumber producers, but the SLA expired in 2015. Without this agreement, Canada has an unfair competitive advantage over Minnesota producers such as Potlatch and CFP.

18. The exchange rate of the Canadian to U.S. dollar has decreased over the past 5 years, allowing Canadian mills to sell products in the U.S. at a much lower cost than U.S. mills. In combination with the expiration of the SLA in 2015, the decreased exchange rate imposes a harsh economic hardship on Minnesota forest industries.

[1] These operations, which are sawmill and OSB facilities, are different and distinct from a paper mill. Therefore, one cannot draw a comparison between the request in this docket and the docket involving Minnesota Power.

19. Log and lumber exports to China have fallen in 2015, and U.S. exports made up 29.4% of this decline, indicating a sharply decreasing demand for products made by companies such as Potlatch, Norbord, and CFP by 13.3%.

Potential Dire Consequences of Inaction

20. Taken together, and rounding to preserve proprietary business information, Norbord, Potlatch, and CFP contribute the following to the State of Minnesota:

    a. Direct and Indirect Employment: 900 persons

    b. Total Payroll: $23 million

    c. State taxes: $3.7 million

    d. Contributions to the Community: $440,000

21. Furthermore, a properly managed forest is a healthy forest. Continued deterioration of the health of the forest products industry will have an equally detrimental impact on Minnesota forests.

22. As the fifth largest sector of Minnesota's manufacturing industry, the health of the forest product's industry is vital to the State's economy. And given the economics of Norbord, Potlatch, and CFP, referenced above, these three facilities are critical to Minnesota's North-Central economy.

23. The health of the forest product's industry is also vital to the State's forests.

24. To help ensure the continued competitiveness of my members' operations to the benefit of the State and regional economies, as documented in detail in the Exhibits to my affidavit, MFI and TPA strongly support the proposal of Otter Tail Power company in its petition for approval of an Energy-Intensive Trade-Exposed rate.

FURTHER YOUR AFFIANT SAYETH NOT.

Wayne Brandt, Executive Vice President
Minnesota Forest Industries

Subscribed and sworn to before me
this 27 day of June 2016.

Notary Public

BONNIE JEAN SEVERANCE
Notary Public-Minnesota
My Commission Expires Jan 31, 2020

EXHIBIT A

Exhibit A

Labovitz School
OF BUSINESS AND ECONOMICS
Bureau of Business and Economic Research

Consulting Report

The Economic Impact of Minnesota's Forestry-Related Industries on the State of Minnesota

August 2010

For

Minnesota
DEPARTMENT OF NATURAL RESOURCES

Division of Forestry

Research Team

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Table of Contents

List of Tables

Project Description

This project estimates the economic impacts of logging, forest products manufacturing, and related industries in the state of Minnesota. The economic modeling data and software used was IMPLAN. The study used IMPLAN's economic multiplier analysis and input/output modeling, Version 3.0, created in Minnesota by the Minnesota IMPLAN Group, Inc. Data was the most recent IMPLAN data, which is for year 2008.

The Minnesota Department of Natural Resources (DNR) asked the University of Minnesota Duluth Labovitz School Bureau of Business and Economic Research (BBER) to estimate this impact using state and county data for impact models for value added, employment, and output measures.[1] The DNR asked BBER for baseline primary and secondary forestry industry sector modeling to assist with the DNR's update of their 2004 "Economic Impact of Forest Industries" report.

BBER's deliverables are as follows: An economic impact analysis of forest products industries and related sectors in order to quantify the economic importance of these sectors in terms of employment, value of shipments (output), contribution to gross state product, and taxes paid.

Study Region

The state of Minnesota.

Procedures and Assumptions

Impact models were created for the year 2008. Regional data for the impact models for value added, employment, and output measures were supplied by IMPLAN for this impact. These data were adjusted according to best estimates of regional purchase coefficients from the DNR. From these data, Social Accounts, Production, Absorption, and Byproducts information were generated from the national level data, and were incorporated into the model. All region study definitions and impact model assumptions were agreed on before work with the models began. The BBER worked closely with the DNR in determining key assumptions in the development of the IMPLAN models.

[1] The BBER has previously studied and reported the economic impact of forestry construction and operations in such projects as The Economic Impact of Declines in Forestry-Related Industries in Minnesota, Wisconsin, and a Three-State Region, 2006; East Central Minnesota: Social and Economic Trends and Implications, Forestry Analysis 2004; and Forestry Bottleneck Analysis 2002. These reports and others of interest for this industry from the Labovitz School's research bureau are available at https://lsbe.d.umn.edu/bber.php.

IMPLAN Models

There are two components to the IMPLAN system, the software and databases. The databases provide all information to create regional IMPLAN models. The software performs the calculations and provides an interface for the user to make final demand changes. IMPLAN software version 3 was used in this analysis.

Comprehensive and detailed data coverage of the IMPLAN study areas by county, and the ability to incorporate user-supplied data at each stage of the model building process, provides a high degree of flexibility both in terms of geographic coverage and model formulation, in this case definition of the counties of the state of Minnesota.

Data

IMPLAN data files use federal government data sources including:

- US Bureau of Economic Analysis Benchmark I/O Accounts of the US
- US Bureau of Economic Analysis Output Estimates
- US Bureau of Economic Analysis REIS Program
- US Bureau of Labor Statistics County Employment and Wages (CEW) Program
- US Bureau of Labor Statistics Consumer Expenditure Survey
- US Census Bureau County Business Patterns
- US Census Bureau Decennial Census and Population Surveys
- US Census Bureau Economic Censuses and Surveys
- US Department of Agriculture Crop and Livestock Statistics

IMPLAN data files consist of the following components: employment, industry output, value added, institutional demands, national structural matrices and inter-institutional transfers.

Impacts for this model use the most recent IMPLAN data available which is for the year 2008.

Economic impacts are made up of direct, indirect, and induced impacts. The following cautions are suggested assumptions for accepting the impact model:

- IMPLAN input-output is a production based model.
- Local or export based purchases that represent transfers from other potential local purchases are not counted.
- The numbers (from U.S. Department of Commerce secondary data) treat both full and part time individuals as being employed.
- Assumptions need to be made concerning the nature of the local economy before impacts can be interpreted.
- The IMPLAN model was constructed for the year 2008 (most recent data available).
- Totals may not add to sum of components due to rounding.

Definitions Used in This Report

Primary Forest Industry Sectors – manufacturers and industrial fuelwood consumers that procure and/or utilize wood fiber directly from the forest in roundwood, chip, or equivalent form.

Secondary Forest Industry Sectors –manufacturers that purchase and/or utilize one or more primary forest products in their manufacturing process.

The IMPLAN models for both operations and construction use the following definitions for the three measures and three effects of the impact reports:

Measures

Value Added – A measure of the impacting industry's contribution to the local community; it includes wages, rents, interest and profits.

Output–Represents the value of local production required to sustain activities.

Employment – Estimates are in terms of jobs, not in terms of full-time equivalent employees. Hence, these may be temporary, part time or short term jobs.

Effects

Direct – Initial spending in the study area resulting from the project

Indirect – The additional inter-industry spending from the direct impact

Induced – The impact of additional household expenditure resulting from the direct and indirect impact.

Multipliers

Appendix C provides a complete listing of IMPLAN multipliers for the measures and effects in these forestry-related sectors. For each economic measure the Social Accounts Matrix (SAM) multipliers are derived through this formula: (Direct + Indirect + Induced)/Direct. For example, Table 3, page 9 presents SAM employment multipliers for IMPLAN forestry-related sectors included in the model.

Industry Definitions: Sectoring

A description of Forestry-Related Sectors is provided in the table below with the equivalent NAICS sector(s) shown.

TABLE 1. FORESTRY-RELATED IMPLAN AND NAICS CODED INDUSTRIAL SECTORS

Source: IMPLAN

IMPLAN Sector	*Industry Description*	*2007 NAICS Sector*
PRIMARY FOREST PRODUCTS MANUFACTURING		
31	Electric power generation and supply	2211
95	Sawmills and wood preservation	3211
96	Veneer and plywood manufacturing	321211-2
98	Reconstituted wood product manufacturing	321219
105	Paper mills	32212
SECONDARY FOREST PRODUCTS MANUFACTURING		
97	Engineered wood member and truss manufacturing	321213-4
99	Wood windows, doors, and millwork (includes flooring)	32191
100	Wood container and pallet manufacturing	32192
102	Prefabricated wood building manufacturing	321992
103	All other miscellaneous wood product manufacturing	321999
295	Wood kitchen cabinets and countertops	33711
297	Nonupholsted wood household furniture	337122
301	Office furniture, custom architectural woodwork and millwork	337211, 337212, 337214
302	Showcase, partition, shelving, and locker manufacturing	337215
106	Paperboard Mills	32213
107	Paperboard container manufacturing	32221
108	Coated and laminated paper, packaging, and plastic film	322221-2
109	All other paper bag and coated and treated paper mfg	322223-6
110	Stationery product manufacturing	32223
111	Sanitary paper product manufacturing	322291
112	All other converted paper product manufacturing	322299
FORESTRY AND LOGGING		
15	Forestry, forest products, and timber tract production	1131-2
19	Forestry support activities	115
16	Commercial logging	1133
335	Truck transportation (separate business local log hauling)	484

Baseline Minnesota Forest Industry Measures

Employment, output, and value added direct effects for forestry-related sectors, Minnesota 2008.

Assumptions for impact modeling are derived from baseline output measures, and are used as model inputs for all impacting sectors except for sectors 19, 302, and 335, which are derived from employment. (These sectors have been updated from the baseline data with help from the DNR.) Following these updates, baseline table values below can differ from the direct effects of the impact tables in this report.

Table 2. Direct Economic Contribution of Minnesota's Forestry-Related Sectors, 2008

IMPLAN ID	Description	Employment	Output	Value Added
PRIMARY FOREST PRODUCTS MANUFACTURING				
31	Electric power generation and supply[1]	136	$88,785,223	$67,478,476
95	Sawmills and wood preservation	752	$173,898,576	$37,487,460
96	Veneer and plywood manufacturing	248	$54,721,516	$22,321,279
98	Reconstituted wood product mfg	1,089	$367,406,080	$154,945,123
105	Paper mills	3,128	$2,198,173,440	$493,730,644
Total Primary Forest Products Manufacturing		*5,353*	*$2,882,984,835*	*$775,962,982*
SECONDARY FOREST PRODUCTS MANUFACTURING				
97	Engineered wood member and truss mfg	1,365	$165,969,536	$63,606,929
99	Wood windows, doors, and millwork	9,427	$1,730,009,344	$700,481,217
100	Wood container and pallet manufacturing	1,328	$176,311,904	$73,056,849
102	Prefabricated wood building mfg	625	$99,102,192	$40,608,270
103	All other miscellaneous wood products	765	$124,736,568	$48,659,457
295	Wood kitchen cabinets and countertops	6,963	$871,073,728	$285,266,430
297	Non-upholstered wood household furniture	279	$33,406,662	$15,026,721
301	Office furniture, custom architectural woodwor	1,423	$317,674,336	$144,742,692
302	Showcase, partition, shelving, and locker mfg[2]	1,091	$184,030,000	$95,680,000
106	Paperboard mills	191	$132,440,920	$24,133,321
107	Paperboard container manufacturing	4,320	$1,536,807,040	$339,728,310
108	Coated and laminated paper and packaging	1,369	$624,206,208	$161,228,379
109	All other paper bag and coated paper mfg	1,135	$338,948,160	$86,650,934
110	Stationery product manufacturing	1,270	$405,481,920	$102,583,116
111	Sanitary paper product manufacturing	79	$58,312,068	$12,162,549
112	All other converted paper product mfg	113	$30,146,442	$5,652,124
Total Secondary Forest Products Manufacturing		*31,743*	*$6,828,657,028*	*$2,199,267,300*
FORESTRY AND LOGGING				
15	Forestry, forest products, and timber tracts	199	$91,591,752	$21,471,304
19	Forestry support acitivites[3]	65	$1,916,546	$1,464,528
16	Commercial logging	2,609	$526,677,504	$152,340,461
355	Trucking (separate business log hauling)[4]	400	$51,211,517	$25,863,384
Total Forestry and Logging		*3,273*	*$671,397,319*	*$201,139,676*
TOTAL FOREST PRODUCTS MFG AND RELATED SECTORS		**40,368**	**$10,383,039,182**	**$3,176,369,957**

[1]Sources: EIA MN Renewable Electricity Summary 2007 (1.3%), MnDEED QCEW, and IMPLAN ID#31.

[2]Showcase, partition, shelving, and locker manufacturing sector has been updated from Census data by the DNR

[3]Support activities for forestry = 65 employees MnDEED QCEW divided by 9,479 employees (0.7%) in IMPLAN ID#19.

[4]Estimate separate business 400 log truck drivers of a total 38,480 employees (1.0%) in IMPLAN ID#335.

Minnesota IMPLAN Employment Multipliers (2008)

The following table presents IMPLAN employment multipliers for all forestry-related sectors included in the model.

TABLE 3. MINNESOTA IMPLAN EMPLOYMENT MULTIPLIERS (2008)

Source: IMPLAN

IMPLAN Sector	*Industry Description*	*Multipliers*
15	Forestry, forest products, and timber tract production	4.2
16	Commercial logging	2.4
19	Forestry support activities	1.2
95	Sawmills and wood preservation	2.9
96	Veneer and plywood manufacturing	2.4
97	Engineered wood member and truss manufacturing	1.8
98	Reconstituted wood product manufacturing	2.5
99	Wood windows and doors and millwork (flooring) mfg	2.1
100	Wood container and pallet manufacturing	1.7
101	Manufactured home (mobile home) manufacturing	1.8
102	Prefabricated wood building manufacturing	2.0
103	All other miscellaneous wood product manufacturing	2.1
104	Pulp Mills	0.0
105	Paper mills	4.5
106	Paperboard Mills	4.9
107	Paperboard container manufacturing	2.7
108	Coated and laminated paper- packaging paper	2.9
109	All other paper bag and coated and treated	2.4
110	Stationery product manufacturing	2.6
111	Sanitary paper product manufacturing	3.3
112	All other converted paper product manufacturing	2.3
295	Wood kitchen cabinets and countertops	1.9
297	Nonupholsted wood household furniture	1.7
301	Office furniture, custom architectural woodwork millwork	2.1
302	Showcase, partition, shelving, and locker manufacturing	1.9
335	Truck transportation (separate business = local log hauling)	1.9

Findings

The following tables report the economic impact of forestry-related industrial sectors on the economy of the state of Minnesota. The impact is reported in terms of three measures: Value Added or payroll expenditures; Output or sales; and Employment or jobs. Each measure's total includes an estimation of the indirect and induced impacts (or ripple effects) of spending and employment in the economy of the State. Tax impacts for federal, and state and local taxes are also estimated.

Following the definitions of forestry-related industries identified above, three groups of industry sectors have been modeled. They include:

- Primary and Secondary Forest Products Manufacturing Sectors
- Primary Forest Products Manufacturing Sectors
- Secondary Forest Products Manufacturing Sectors
- Forestry and Logging Sectors

1) Primary and Secondary Forest Products Manufacturing Sectors

TABLE 4. ECONOMIC IMPACT OF PRIMARY AND SECONDARY FORESTRY-RELATED INDUSTRIES ON MINNESOTA: VALUE ADDED, OUTPUT, AND EMPLOYMENT IN MINNESOTA, YEAR 2008

Source: IMPLAN	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total*
Value Added	$2,963,218,432	$2,333,376,512	$2,031,845,376	$7,328,440,320
Output	$9,733,738,496	$4,764,360,192	$3,505,102,080	$18,003,200,768
Employment	37,096	24,289	28,082	89,467

TABLE 5. ECONOMIC IMPACT OF PRIMARY AND SECONDARY FORESTRY-RELATED INDUSTRIES ON MINNESOTA: TOP TWENTY-FIVE INDIRECT AND INDUCED JOB SECTORS DEPENDENT ON FORESTRY-RELATED EMPLOYMENT

Source: IMPLAN

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Total	37,096	24,289	28,082	89,467
Wood windows and doors and millwork manufacturing	9,427	890	8	10,326
Wood kitchen cabinet and countertop manufacturing	6,963	23	8	6,994
Paperboard container manufacturing	4,320	187	10	4,517
Wholesale trade businesses	0	3,351	863	4,214
Food services and drinking establishments	0	989	2,945	3,934
Paper mills	3,128	221	3	3,352
Commercial logging	0	2,415	2	2,417
Real estate establishments	0	727	1,250	1,977
Showcase, partition, shelving, and locker manufacturing	0	1,326	232	1,558
Transport by truck	1,328	167	6	1,501
Wood container and pallet manufacturing	1,423	2	0	1,425
Custom architectural woodwork and millwork manufacturing	1,369	23	3	1,395
Coated and laminated paper, packaging paper and plastics film	1,365	11	2	1,379
Engineered wood member and truss manufacturing	0	0	1,343	1,343
Private hospitals	0	0	1,322	1,322
Offices of physicians, dentists, and other health practitioners	0	748	528	1,276
Employment services	1,270	0	0	1,270
Stationery product manufacturing	1,089	100	0	1,189
Reconstituted wood product manufacturing	0	866	310	1,177
Services to buildings and dwellings	752	413	1	1,166
Sawmills and wood preservation	1,135	6	0	1,142
All other paper bag and coated and treated paper	1,091	25	1	1,116
Nursing and residential care facilities	0	0	1,091	1,091
Management of companies and enterprises	0	946	128	1,074
Retail Stores General merchandise	0	64	968	1,032
As well as additional full and part-time jobs in another 362 various sectors of the economy . . .				30,280

TABLE 6. ECONOMIC IMPACT OF PRIMARY AND SECONDARY FORESTRY-RELATED INDUSTRIES ON MINNESOTA: SUMMARY OF FEDERAL, AND STATE AND LOCAL TAX IMPACTS

Source: IMPLAN	*Employee Compensation*	*Proprietor Income*	*Indirect Business Taxes*	*Households*	*Corporations*
Federal Government Non-Defense					
Social Ins Tax- Employee Contribution	$257,754,368	$29,334,970			
Social Ins Tax- Employer Contribution	$260,667,792				
Indirect Bus Tax: Excise Taxes			$30,468,080		
Indirect Bus Tax: Custom Duty			$14,189,284		
Indirect Bus Tax: Fed NonTaxes			$23,422,036		
Corporate Profits Tax					$95,992,352
Personal Tax: Income Tax				$347,637,152	
Total Federal Tax	$518,422,160	$29,334,970	$68,079,400	$347,637,152	$95,992,352
State/Local Non-Education					
Dividends					$40,258,152
Social Ins Tax- Employee Contribution	$2,127,480	$0			
Social Ins Tax- Employer Contribution	$9,153,109				
Indirect Bus Tax: Sales Tax			$217,663,088		
Indirect Bus Tax: Property Tax			$146,702,368		
Indirect Bus Tax: Motor Vehicle Lic			$5,886,131		
Indirect Bus Tax: Severance Tax			$1,560,470		
Indirect Bus Tax: Other Taxes			$26,707,964		
Indirect Bus Tax: S/L NonTaxes			$27,196,726		
Corporate Profits Tax					$24,870,020
Personal Tax: Income Tax				$138,634,928	
Personal Tax: NonTaxes (Fines- Fees				$14,888,227	
Personal Tax: Motor Vehicle License				$6,977,523	
Personal Tax: Property Taxes				$1,653,677	
Personal Tax: Other Tax (Fish/Hunt)				$4,499,711	
Total State and Local Tax	$11,280,589	$0	$425,716,747	$166,654,066	$65,128,172
Total Federal and State and Local	**$529,702,749**	**$29,334,970**	**$493,796,147**	**$514,291,218**	**$161,120,524**

Note: Although *Proprietor Income* is reported as $0, these taxes are included in other categories and contribute to the total.

2) The Economic Impact of Primary Forestry-Related Sectors on Minnesota

TABLE 7. ECONOMIC IMPACT OF PRIMARY FORESTRY-RELATED INDUSTRIES ON MINNESOTA: VALUE ADDED, OUTPUT, AND EMPLOYMENT IN MINNESOTA, YEAR 2008

Source: IMPLAN	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total*
Value Added	$775,962,624	$742,356,992	$478,725,120	$1,997,044,736
Output	$2,882,984,960	$1,620,064,768	$825,833,792	$5,328,883,520
Employment	5,353	7,783	6,620	19,756

TABLE 8. ECONOMIC IMPACT OF PRIMARY FORESTRY-RELATED INDUSTRIES ON MINNESOTA: TOP TWENTY-FIVE INDIRECT AND INDUCED JOB SECTORS DEPENDENT ON FORESTRY-RELATED EMPLOYMENT

Source: IMPLAN

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Total	5,353	7,783	6,620	19,756
Paper mills	3,128	34	1	3,163
Commercial logging	0	1,749	1	1,750
Reconstituted wood product manufacturing	1,089	18	0	1,107
Wholesale trade businesses	0	877	202	1,079
Food services and drinking establishments	0	217	694	911
Sawmills and wood preservation	752	65	0	817
Transport by truck	0	433	55	488
Real estate establishments	0	137	293	430
Services to buildings and dwellings	0	282	73	355
Employment services	0	211	124	335
Management of companies and enterprises	0	304	30	334
Electric power generation, transmission, and distribution	136	170	25	331
Private hospitals	0	0	316	316
Offices of physicians, dentists, and other health practitioners	0	0	311	311
Nursing and residential care facilities	0	0	257	257
Veneer and plywood manufacturing	248	4	0	252
Retail Stores General merchandise	0	6	229	235
Maintenance, repair construction of nonresidential structures	0	207	24	231
Retail Stores Food and beverage	0	6	215	221
Civic, social, professional, and similar organizations	0	74	127	201
Automotive repair and maintenance, except car washes	0	93	86	179
Architectural, engineering, and related services	0	158	21	179
Monetary authorities, depository credit intermediation	0	72	105	177
Retail and direct electronic sales	0	7	165	172
Securities, commodity contracts, investments, related activities	0	46	119	165
As well as additional full and part-time jobs in another 259 various sectors of the economy . . .				5,760

TABLE 9. ECONOMIC IMPACT OF PRIMARY FORESTRY-RELATED INDUSTRIES ON MINNESOTA: SUMMARY OF FEDERAL, AND STATE AND LOCAL TAX IMPACTS

Source: IMPLAN	*Employee Compensation*	*Proprietor Income*	*Indirect Business Taxes*	*Households*	*Corporations*
Federal Government Non-Defense					
Social Ins Tax- Employee Contribution	$58,313,832	$9,138,758			
Social Ins Tax- Employer Contribution	$58,972,960				
Indirect Bus Tax: Excise Taxes			$9,459,541		
Indirect Bus Tax: Custom Duty			$4,405,401		
Indirect Bus Tax: Fed NonTaxes			$7,271,929		
Corporate Profits Tax					$34,054,740
Personal Tax: Income Tax				$81,850,752	
Total Federal Tax	$117,286,792	$9,138,758	$21,136,871	$81,850,752	$34,054,740
State/Local Non-Education					
Dividends					$14,282,189
Social Ins Tax- Employee Contribution	$481,317	$0			
Social Ins Tax- Employer Contribution	$2,070,781				
Indirect Bus Tax: Sales Tax			$67,578,688		
Indirect Bus Tax: Property Tax			$45,547,240		
Indirect Bus Tax: Motor Vehicle Lic			$1,827,489		
Indirect Bus Tax: Severance Tax			$484,485		
Indirect Bus Tax: Other Taxes			$8,292,123		
Indirect Bus Tax: S/L NonTaxes			$8,443,870		
Corporate Profits Tax					$8,823,016
Personal Tax: Income Tax				$32,641,424	
Personal Tax: NonTaxes (Fines- Fees				$3,505,415	
Personal Tax: Motor Vehicle License				$1,642,849	
Personal Tax: Property Taxes				$389,356	
Personal Tax: Other Tax (Fish/Hunt)				$1,059,451	
Total State and Local Tax	$2,552,098	$0	$132,173,895	$39,238,495	$23,105,205
Total Federal and State and Local	**$119,838,890**	**$9,138,758**	**$153,310,766**	**$121,089,247**	**$57,159,945**

Note: Although *Proprietor Income* is reported as $0, these taxes are included in other categories and contribute to the total.

3) The Economic Impact of Secondary Forestry-Related Manufacturing Sectors on Minnesota

TABLE 10. ECONOMIC IMPACT OF SECONDARY FORESTRY-RELATED MANUFACTURING SECTORS ON MINNESOTA: VALUE ADDED, OUTPUT, AND EMPLOYMENT IN MINNESOTA, YEAR 2008

Source: IMPLAN	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total*
Value Added	$2,187,255,808	$1,591,021,568	$1,553,121,280	$5,331,398,656
Output	$6,850,753,536	$3,144,297,472	$2,679,267,328	$12,674,318,336
Employment	31,743	16,506	21,462	69,711

TABLE 11. ECONOMIC IMPACT OF SECONDARY FORESTRY-RELATED MANUFACTURING SECTORS ON MINNESOTA: TOP TWENTY-FIVE INDIRECT AND INDUCED JOB SECTORS DEPENDENT ON FORESTRY-RELATED EMPLOYMENT

Source: IMPLAN

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Total	31,743	16,506	21,462	69,711
Wood windows and doors and millwork manufacturing	9,427	773	6	10,207
Wood kitchen cabinet and countertop manufacturing	6,963	22	6	6,991
Paperboard container manufacturing	4,320	126	8	4,454
Wholesale trade businesses	0	2,474	660	3,134
Food services and drinking establishments	0	771	2,251	3,023
Showcase, partition, shelving, and locker manufacturing	0	590	957	1,547
Real estate establishments	1,423	2	0	1,425
Custom architectural woodwork and millwork manufacturing	1,328	64	5	1,397
Wood container and pallet manufacturing	1,369	15	2	1,385
Coated and laminated paper, packaging paper, and plastics film	1,365	10	1	1,377
Engineered wood member and truss manufacturing	1,270	0	0	1,270
Stationery product manufacturing	1,135	4	0	1,139
All other paper bag and coated and treated paper mfg	1,091	24	0	1,116
Transport by truck	0	893	177	1,071
Private hospitals	0	0	1,027	1,027
Offices of physicians, dentists, and other health practitioners	0	0	1,011	1,011
Employment services	0	536	404	940
Nursing and residential care facilities	0	0	834	834
Services to buildings and dwellings	0	585	237	822
All other miscellaneous wood product manufacturing	765	51	3	819
Retail Stores General merchandise	0	58	740	797
Retail Stores Food and beverage	0	52	697	749
Management of companies and enterprises	0	643	98	740
Civic, social, professional, and similar organizations	0	258	412	671
Commercial logging	0	666	2	668
As well as additional full and part-time jobs in another 357 various sectors of the economy . . .				21,097

TABLE 12. ECONOMIC IMPACT OF <u>SECONDARY</u> FORESTRY-RELATED MANUFACTURING SECTORS ON MINNESOTA: SUMMARY OF FEDERAL, AND STATE AND LOCAL TAX IMPACTS

Source: IMPLAN	*Employee Compensation*	*Proprietor Income*	*Indirect Business Taxes*	*Households*	*Corporations*
Federal Government Non-Defense					
Social Ins Tax- Employee Contribution	$199,440,544	$20,196,212			
Social Ins Tax- Employer Contribution	$201,694,832				
Indirect Bus Tax: Excise Taxes			$21,008,540		
Indirect Bus Tax: Custom Duty			$9,783,883		
Indirect Bus Tax: Fed NonTaxes			$16,150,108		
Corporate Profits Tax					$61,937,612
Personal Tax: Income Tax				$265,786,416	
Total Federal Tax	$401,135,376	$20,196,212	$46,942,531	$265,786,416	$61,937,612
State/Local Non-Education					
Dividends					$25,975,962
Social Ins Tax- Employee Contribution	$1,646,163	$0			
Social Ins Tax- Employer Contribution	$7,082,329				
Indirect Bus Tax: Sales Tax			$150,084,400		
Indirect Bus Tax: Property Tax			$101,155,128		
Indirect Bus Tax: Motor Vehicle Lic			$4,058,641		
Indirect Bus Tax: Severance Tax			$1,075,985		
Indirect Bus Tax: Other Taxes			$18,415,842		
Indirect Bus Tax: S/L NonTaxes			$18,752,854		
Corporate Profits Tax					$16,047,004
Personal Tax: Income Tax				$105,993,504	
Personal Tax: NonTaxes (Fines- Fees				$11,382,813	
Personal Tax: Motor Vehicle License				$5,334,674	
Personal Tax: Property Taxes				$1,264,321	
Personal Tax: Other Tax (Fish/Hunt)				$3,440,259	
Total State and Local Tax	$8,728,492	$0	$293,542,850	$127,415,571	$42,022,966
Total Federal and State and Local	**$409,863,868**	**$20,196,212**	**$340,485,381**	**$393,201,987**	**$103,960,578**

Note: Although Proprietor Income is reported as $0, these taxes are included in other categories and contribute to the total.

4) The Economic Impact of Forestry and Logging Sectors on Minnesota

Although these impacts can be detailed as specific impact values (as in Table 13 below), to avoid any appearance of double counting we state here that the impact of initial spending and employment in the forestry and logging sectors is included in the reporting of the impact of primary manufacturing sectors. For example, additional inter-industry spending from the direct impact and induced effects, and the impact of additional household expenditure resulting from the direct and indirect impact are *included* in the impact totals of the primary manufacturing sectors.

TABLE 13. ECONOMIC IMPACT OF FORESTRY AND LOGGING INDUSTRY SECTORS ON MINNESOTA: VALUE ADDED, OUTPUT, AND EMPLOYMENT IN MINNESOTA, YEAR 2008

Source: IMPLAN	*Direct Effect*	*Indirect Effect*	*Induced Effect*	*Total*
Value Added	$198,168,064	$183,274,496	$127,971,584	$509,414,144
Output	$658,324,672	$450,345,312	$221,028,432	$1,329,698,416
Employment	3,273	2,754	1,812	7,839

Table 14. Economic Impact of Forestry and Logging Industry Sectors on Minnesota: Top Twenty-five Indirect and Induced Job Sectors Dependent on Forestry-Related Employment

Source: IMPLAN

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Total	3,273	2,754	1,812	7,839
Commercial logging	2,609	863	0	3,472
Support activities for agriculture and forestry	65	535	1	601
Transport by truck	400	92	15	507
Forestry, forest products, and timber tract production	199	102	0	301
Wholesale trade businesses	0	178	54	232
Food services and drinking establishments	0	19	189	208
Real estate establishments	0	52	77	129
Animal production, except cattle and poultry and eggs	0	96	2	98
Employment services	0	63	34	97
All other crop farming	0	85	0	85
Private hospitals	0	0	85	85
Offices of physicians, dentists, and other health practitioners	0	0	84	84
Nursing and residential care facilities	0	0	70	70
Architectural, engineering, and related services	0	61	6	67
Retail Stores General merchandise	0	2	63	65
Monetary authorities and depository credit intermediation	0	34	28	62
Retail Stores Food and beverage	0	2	60	62
Automotive repair and maintenance, except car washes	0	38	24	62
Services to buildings and dwellings	0	29	20	49
Retail and direct electronic sales	0	3	46	49
Grain farming	0	47	1	48
Commercial and industrial machinery and equipment repair	0	45	3	48
Securities, commodity contracts, investments, and related	0	13	32	45
Private household operations	0	0	44	44
Couriers and messengers	0	35	8	43
As well as additional full and part-time jobs in another 245 various sectors of the economy . . .				1,226

TABLE 15. ECONOMIC IMPACT OF FORESTRY AND LOGGING INDUSTRY SECTORS ON MINNESOTA: SUMMARY OF FEDERAL, AND STATE AND LOCAL TAX IMPACTS

Source: IMPLAN	*Employee Compensation*	*Proprietor Income*	*Indirect Business Taxes*	*Households*	*Corporations*
Federal Government Non-Defense					
Social Ins Tax- Employee Contribution	$11,066,029	$7,041,030			
Social Ins Tax- Employer Contribution	$11,191,110				
Indirect Bus Tax: Excise Taxes			$2,159,288		
Indirect Bus Tax: Custom Duty			$1,005,602		
Indirect Bus Tax: Fed NonTaxes			$1,659,931		
Corporate Profits Tax					$8,250,118
Personal Tax: Income Tax				$22,323,900	
Total Federal Tax	$22,257,140	$7,041,030	$4,824,821	$22,323,900	$8,250,118
State/Local Non-Education					
Dividends					$3,460,010
Social Ins Tax- Employee Contribution	$91,338	$0			
Social Ins Tax- Employer Contribution	$392,966				
Indirect Bus Tax: Sales Tax			$15,425,888		
Indirect Bus Tax: Property Tax			$10,396,869		
Indirect Bus Tax: Motor Vehicle Lic			$417,153		
Indirect Bus Tax: Severance Tax			$110,591		
Indirect Bus Tax: Other Taxes			$1,892,807		
Indirect Bus Tax: S/L NonTaxes			$1,927,445		
Corporate Profits Tax					$2,137,468
Personal Tax: Income Tax				$8,902,593	
Personal Tax: NonTaxes (Fines- Fees				$956,064	
Personal Tax: Motor Vehicle License				$448,069	
Personal Tax: Property Taxes				$106,193	
Personal Tax: Other Tax (Fish/Hunt)				$288,954	
Total State and Local Tax	$484,303	$0	$30,170,750	$10,701,870	$5,597,478
Total Federal and State and Local	**$22,741,443**	**$7,041,030**	**$34,995,571**	**$33,025,770**	**$13,847,596**

Note: Although *Proprietor Income* is reported as $0, these taxes are included in other categories and contribute to the total.

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Appendices

Appendix A: Background on the IMPLAN model's coefficients

For more background on the IMPLAN model's Regional Purchase Coefficient methodology, please note the following two discussions. The first discusses the original methodology, and the second source discusses IMPLAN version 3 methodology, which is being used for the BBER estimate of forest-related industry sectors.

1) From "A comparison of the multipliers of IMPLAN, REMI, and RIMS II: Benchmarking ready-made models for comparison," by Dan S. Rickman, R. Keith Schwer, Department of Finance and Economics, Georgia Southern University, LB 8151, Statesboro, GA 30460, USA

Department of Economics, University of Nevada, Las Vegas, 4505 Maryland Parkway, Las Vegas, NV 89154, USA Received: September 1993 / Accepted in revised form: May 1995

http://www.springerlink.com/content/m40w0uw680l0p148/fulltext.pdf

Comparing IMPLAN version 2 with the BEA RIMS II model and the REMI model, Rickman and Schwer write:

> IMPLAN is nonsurvey based, using national technical coefficients derived from the 1982 U.S. input-output accounts (U.S. Department of Commerce, 1991). Its structure typifies that of input-output models found in the regional science literature. IMPLAN assumes a uniform national production technology and uses the regional purchase coefficient approach to regionalize the technical coefficients.
>
> For the goods producing sectors, IMPLAN econometrically estimates the RPCs. To calculate the RPCs for the service sectors, IMPLAN uses the interstate trade flow matrices of the uncorrected MRIO model (U.S. Department of Health and Human Services, 1983) and estimated regional demand. Also, calculated supply- demand pool ratios (see Richardson 1972, p. 123) provide upper bounds for all RPCs. State value added-to-earnings ratios are used to estimate industry supply at the county level, while demand then is estimated with the input-output table.
>
> Contrast this, for example, with the RIMS II from the BEA (p. 4):
>
> RIMS II is a static input-output model that is based on the 1982 U.S. input/output tables. Also, in contrast to IMPLAN and REMI, BEA uses the location quotient (LQ) method to regionalize the national technical coefficients (Drake 1976). This assumes that local demand is satisfied first, with the remainder of an industry's output assumed to be exports. Thus, in contrast to the RPC technique, the LQ method does not allow for cross-hauling, a good is either imported or exported, but not both. If cross-hauling exists, the LQ method produces overstated multipliers, other things being equal. BEA uses earnings data to calculate the LQ's. This assumes that factor productivity is constant across the U.S. Finally, RIMS II contains standard Type II multipliers. The induced consumption effects are driven by changes in wages and salaries and proprietor income.

Also note this comment from p. 5:

> A second difference between the models is the technique used to regionalize the national coefficients. RIMS II uses the LQ technique; whereas, IMPLAN and REMI use the RPC technique. These differences are an important source of differences in multipliers in nonsurvey-based input-output models (Stevens et at. 1989). Since the LQ technique precludes cross-hauling, the RIMS II multipliers should be larger than the IMPLAN and REMI multipliers, all else being equal. However, as noted earlier, IMPLAN uses supply-demand pool ratios to calculate upper bounds for its RPCs. Use of supply-demand pool ratios in calculating RPCs is equivalent to the location quotient method to regionalize the national technical coefficients when regional demand is calculated as a share of national demand and the demand share is based on the region's share of national sales (Robison and Miller 1988). However, Borgen and Cooke (1992) found that for the state of Idaho, the IMPLAN multipliers were larger. Also, recall that REMI uses supply-demand ratios multiplied by subjective intraregional trade coefficients for their estimates of nonmanufacturing RPCs. This method is equivalent to the supply-demand pool ratio method if and only if the intraregional trade coefficient equals one. Thus, if the IMPLAN supply-demand pool constraints are binding, the REMI RPCs for the nonmanufacturing sectors should be smaller than those of IMPLAN.

2) From a second source in the literature, “Deriving Multi-Regional Models Using the IMPLAN National Trade Flows Model,” by Scott Lindall, Doug Olson, and Greg Alward Minnesota IMPLAN Group and the USDA Forest Service, USA

http://jrap-journal.org/pastvolumes/2000/v36/F36-1-6.pdf

> Development of multi-regional input-output or social accounting models has always been hindered by the lack of good estimates of the flows of goods and services between regions. Minnesota IMPLAN Group, Inc. (MIG) along with the U.S. Forest Service (USFS) has developed a National Trade Flows Model that estimates gross trade flows between counties. The trade flows model is a doubly-constrained gravity model that uses IMPLAN’s county level estimates of commodity supply and demand. The model is balanced so that domestic imports and exports “cancel out”; that is, when domestic imports and exports for all states are summed, they are equal for each commodity. In other words, all sources of supply and demand are accounted for. This new trade flows model will be used for several purposes. First, it will be used as a new set of regional purchase coefficients (RPCs) for single region modeling. Second, the model will be used to allow estimates of model impacts on more than one study area. Third, it will be the basis for developing multiregional social accounting system (SAM) models that can be incorporated into other software. This paper will discuss the model and present some initial results along with comparisons to the original RPCs.

From p.78:

> The end results provide an ability to compute a new Regional Purchase Coefficient (RPC). The new is simply the value of trade from a county back to itself divided by total local commodity demand. The definition of the RPC is “the proportion of local supply that satisfies local demand”. The trade flows database consists of 6 Microsoft Access tables that are about 2GB each. It is difficult to test the resulting model since we do not have any observed data to check it against. The results can be subject to examination and given a reality check to see if they make sense compared to local area knowledge. [Note, this is why BBER has asked the DNR to review the modeling inputs.] Also note the discussion of review for Washington County Millwork RPC: The Millwork RPC is slightly lower than the econometric estimate, but passes the reasonability test since using Anderson Windows in housing construction is a selling point in this area. For Washington County, 86.9 percent of demand is satisfied by local production. For the rest of the Twin Cities, Washington county supplies $336.8 million of total demand of 2,702.8 million. There are other window producers in Minnesota likely satisfying that demand. Total domestic exports outside the Twin Cities are $543.3 million. Anderson does have a national market presence which becomes more apparent in the maps.

See also p. 30:

> The shipment of wood windows from Anderson Windows in Washington County is illustrated in Figure 2. Anderson is a national window manufacturing company with about 4,000 employees in the county. The national demand is clear. Higher shipments to areas of the country with rapid population and thus housing growth are also evident.

Appendix B: Tax impact definitions

State/Local:

Shows State and Local government tax types and their value of collection as a result of the modeled impacts on the Study Area. These tax types are combined, and cannot be separated into state vs. local within the software.

Tax Analysis

The impact on taxes from changes in economic activities can be modeled. Income information can be combined with SAM tax information to make estimates of the taxes generated by a change in final demand. This is a simple ratio estimate, but it will give a good first estimate of the tax effects. The same can be done with business taxes. Taxes are paid out of labor income and limit disposable income. Tax policies can be examined with regard to individual tax burdens on different income groups. A SAM allows you to examine the actual magnitude of taxes and transfer payments. Using a SAM with a spreadsheet program such as Excel or Lotus allows you to analyze the impact effects on taxes.

Indirect Business Taxes and Other Property Type Income:

The procedure to derive national 509 IMPLAN sector data for both Indirect Business Taxes (IBT) and Other Property Type Income (OPTI) is the same. The base data set is the BEA's Gross State Product (GSP) series which gives state level estimates of the components of value-added by 3-digit SIC. Nationally, a ratio of Employee Compensation to IBT or OPTI is generated based on the BEA Input-Output benchmark table. The ratios are applied to the national 509 sector IMPLAN Employee Compensation values to derive the first estimate of IBT and OPTI. The estimates are then adjusted so that their sum is equal to the national NIPA values for IBT and OPTI. State level estimates are derived by first creating a 509 sector ratio estimate for IBT and OPTI and then controlling the estimated vectors to the BEA GSP data.

Employee compensation:

Describes the total payroll costs (including benefits) of each industry in the region. It includes the wages and salaries of workers who are paid by employers, as well as benefits such as health and life insurance, retirement payments, and non-cash compensation. Employee compensation is derived for each industry from ES202 and REIS data.

Proprietary income:

Consists of payments received by self-employed individuals as income. Any income received for payment of self-employed work, as reported on Federal tax forms, is counted here. This includes income received by private business owners, doctors, lawyers, and so forth.

Indirect business taxes:

Consist of excise taxes, property taxes, fees, licenses, and sales taxes paid by businesses. These taxes occur during the normal operation of businesses but do not include taxes on profit or income. Indirect business tax numbers are derived from U.S. Bureau of Economic Analysis Gross State Product data.

Other property type income:

Consists of payments for rents, royalties, and dividends. Payments to individuals in the form of rents received on property, royalties from contracts, and dividends paid by corporations are included here as well as corporate profits earned by corporations. Other property type income numbers are derived from U.S. Bureau of Economic Analysis Gross State Product data.

Appendix C: Impact multipliers

IMPLAN Employment Multipliers , Minnesota 2008, Forestry-Related Sectors
Source: IMPLAN

IMPLAN Industry Code	*Industry Description*	*Direct Effects*	*Indirect Effects*	*Induced Effects*	*Total*	*Type I Multi-plier*	*Type SAM Multi-plier*
15	Forestry, forest products, timber tract production	2.18	4.94	1.93	9.05	3.27	4.16
16	Logging	4.95	4.07	2.68	11.70	1.82	2.36
19	Support activities for agriculture and forestry	34.62	0.52	8.10	43.24	1.02	1.25
95	Sawmills and wood preservation	4.32	5.08	3.03	12.43	2.17	2.87
96	Veneer and plywood mfg	4.54	3.23	3.27	11.03	1.71	2.43
97	Engineered wood member and truss mfg	8.23	2.56	3.97	14.76	1.31	1.79
98	Reconstituted wood product mfg	2.96	2.01	2.41	7.39	1.68	2.49
99	Wood windows and doors and millwork mfg	5.45	2.46	3.71	11.62	1.45	2.13
100	Wood container and pallet mfg	7.53	2.19	3.21	12.93	1.29	1.72
101	Manufactured home (mobile home) mfg	7.89	2.70	3.62	14.20	1.34	1.80
102	Prefabricated wood building mfg	6.31	2.50	3.69	12.50	1.40	1.98
103	All other miscellaneous wood product mfg	6.13	3.23	3.29	12.65	1.53	2.06
104	Pulp mills	0.00	0.00	0.00	0.00	0.00	0.00
105	Paper mills	1.42	2.70	2.21	6.33	2.90	4.45
106	Paperboard Mills	1.44	3.28	2.30	7.02	3.28	4.88
107	Paperboard container mfg	2.81	2.17	2.64	7.62	1.77	2.71
108	Coated, laminated paper, packaging, plastics film mfg	2.19	1.81	2.38	6.38	1.82	2.91
109	All other paper bag and coated and treated paper	3.35	1.87	2.68	7.89	1.56	2.36
110	Stationery product mfg	3.13	2.32	2.84	8.30	1.74	2.65
111	Sanitary paper product mfg	1.36	1.65	1.49	4.50	2.21	3.31
112	All other converted paper product mfg	3.75	2.44	2.43	8.63	1.65	2.30
295	Wood kitchen cabinet and countertop mfg	7.99	3.38	3.89	15.27	1.42	1.91
297	Non-upholstered wood household furniture mfg	8.37	2.36	3.12	13.85	1.28	1.66
301	Custom architectural woodwork and millwork	4.48	2.23	2.73	9.45	1.50	2.11
302	Showcase, partition, shelving, and locker mfg	5.29	1.94	2.98	10.21	1.37	1.93
335	Transport by truck	7.51	2.94	3.92	14.37	1.39	1.91

IMPLAN Output Multipliers , Minnesota 2008, Forestry-Related Sectors

Source: IMPLAN

IMPLAN Industry Code	*Description*	*Direct Effects*	*Indirect Effects*	*Induced Effects*	*Total*	*Type I Multi-plier*	*Type SAM Multi-plier*
15	Forestry, forest products, timber tract production	1.00	0.42	0.24	1.66	1.42	1.66
16	logging	1.00	0.76	0.33	2.09	1.76	2.09
19	Support activities for agriculture and forestry	1.00	0.09	1.01	2.10	1.09	2.10
95	Sawmills and wood preservation	1.00	0.97	0.38	2.35	1.97	2.35
96	Veneer and plywood mfg	1.00	0.63	0.41	2.04	1.63	2.04
97	Engineered wood member and truss mfg	1.00	0.46	0.50	1.95	1.46	1.95
98	Reconstituted wood product mfg	1.00	0.43	0.30	1.73	1.43	1.73
99	Wood windows and doors and millwork mfg	1.00	0.45	0.46	1.91	1.45	1.91
100	Wood container and pallet mfg	1.00	0.41	0.40	1.81	1.41	1.81
101	Manufactured home (mobile home) mfg	1.00	0.45	0.45	1.90	1.45	1.90
102	Prefabricated wood building mfg	1.00	0.43	0.46	1.89	1.43	1.89
103	All other miscellaneous wood product mfg	1.00	0.56	0.41	1.97	1.56	1.97
104	Pulp mills	0.00	0.00	0.00	0.00	0.00	0.00
105	Paper mills	1.00	0.57	0.28	1.85	1.57	1.85
106	Paperboard Mills	1.00	0.67	0.29	1.96	1.67	1.96
107	Paperboard container mfg	1.00	0.45	0.33	1.78	1.45	1.78
108	Coated, laminated paper, packaging, plastics film mfg	1.00	0.41	0.30	1.71	1.41	1.71
109	All other paper bag and coated and treated paper	1.00	0.40	0.33	1.74	1.40	1.74
110	Stationery product mfg	1.00	0.47	0.35	1.83	1.47	1.83
111	Sanitary paper product mfg	1.00	0.37	0.19	1.56	1.37	1.56
112	All other converted paper product mfg	1.00	0.48	0.30	1.78	1.48	1.78
295	Wood kitchen cabinet and countertop mfg	1.00	0.57	0.49	2.06	1.57	2.06
297	Non-upholstered wood household furniture mfg	1.00	0.42	0.39	1.81	1.42	1.81
301	Custom architectural woodwork and millwork	1.00	0.38	0.34	1.72	1.38	1.72
302	Showcase, partition, shelving, and locker mfg	1.00	0.37	0.37	1.74	1.37	1.74
335	Transport by truck	1.00	0.38	0.49	1.87	1.38	1.87

IMPLAN Value Added Multipliers , Minnesota 2008, Forestry-Related Sectors

Source: IMPLAN

IMPLAN Industry Code	*Description*	*Direct Effects*	*Indirect Effects*	*Induced Effects*	*Total*	*Type I Multi-plier*	*Type SAM Multi-plier*
15	Forestry, forest products, timber tract production	0.23	0.24	0.14	0.61	2.01	2.61
16	Logging	0.29	0.29	0.19	0.77	2.01	2.68
19	Support activities for agriculture and forestry	0.76	0.05	0.58	1.39	1.06	1.82
95	Sawmills and wood preservation	0.22	0.38	0.22	0.81	2.74	3.76
96	Veneer and plywood mfg	0.41	0.25	0.24	0.90	1.62	2.20
97	Engineered wood member and truss mfg	0.38	0.23	0.29	0.90	1.59	2.34
98	Reconstituted wood product mfg	0.42	0.18	0.17	0.78	1.44	1.85
99	Wood windows and doors and millwork mfg	0.40	0.22	0.27	0.90	1.55	2.21
100	Wood container and pallet mfg	0.41	0.20	0.23	0.85	1.48	2.04
101	Manufactured home (mobile home) mfg	0.31	0.23	0.26	0.80	1.75	2.59
102	Prefabricated wood building mfg	0.41	0.22	0.27	0.89	1.52	2.18
103	All other miscellaneous wood product mfg	0.39	0.27	0.24	0.90	1.70	2.31
104	Pulp mills	0.00	0.00	0.00	0.00	0.00	0.00
105	Paper mills	0.22	0.27	0.16	0.65	2.20	2.91
106	Paperboard Mills	0.18	0.31	0.17	0.66	2.72	3.63
107	Paperboard container mfg	0.22	0.23	0.19	0.64	2.04	2.91
108	Coated, laminated paper, packaging, plastics film mfg	0.26	0.20	0.17	0.63	1.78	2.44
109	All other paper bag and coated and treated paper	0.26	0.20	0.19	0.65	1.78	2.54
110	Stationery product mfg	0.25	0.25	0.21	0.70	1.97	2.79
111	Sanitary paper product mfg	0.21	0.18	0.11	0.50	1.88	2.40
112	All other converted paper product mfg	0.19	0.26	0.18	0.62	2.38	3.31
295	Wood kitchen cabinet and countertop mfg	0.33	0.30	0.28	0.91	1.91	2.77
297	Non-upholstered wood household furniture mfg	0.45	0.22	0.23	0.89	1.48	1.98
301	Custom architectural woodwork and millwork	0.46	0.20	0.20	0.86	1.45	1.88
302	Showcase, partition, shelving, and locker mfg	0.41	0.19	0.22	0.81	1.47	2.00
335	Transport by truck	0.50	0.20	0.28	0.99	1.40	1.97

Appendix D: Adjustments to Default IMPLAN Regional Purchase Coefficients

Minnesota Forest Industry --- Adjustments to IMPLAN Regional Purchase Coefficients

IMPLAN ID	IMPLAN SECTOR	NAICS 2007	Default RPC[1]	MnDNR RPC[2]	Commodity Codes[3]
PRIMARY FOREST PRODUCTS MANUFACTURING					
31	Electric power generation and supply	2211	---		
95	Sawmills and wood preservation	3211	86%		3016
96	Veneer and plywood	321211-2	86%		3016
98	Reconstituted wood products (OSB)	321219	86%		3016
105	Paper mills	32212	86%		3016, 3104
SECONDARY FOREST PRODUCTS MANUFACTURING					
97	Engineered wood members and truss mfg	321213-4	32%	25%	3095, 3098
99	Wood windows, doors, and millwork (flooring)	32191	32%	5%	3095, 3098
100	Wood containers and pallets	32192	86%		3016
102	Prefabricated wood buildings	321992	32%	25%	3095, 3098
103	All other miscellaneous wood products	321999	32%		3095, 3096
295	Wood kitchen cabinets and countertops	33711	25%	15%	3095, 3096, 3098
297	Non-upholstered wood household furniture	337122	25%	15%	3095, 3096, 3098
301	Wood office furniture, custom architectural woodwork and millwork	337211, 337212	25%	15%	3095, 3096, 3098
302	Showcase, partition, shelving, and locker mfg	337215	25%	15%	3095, 3096, 3098
106	Paperboard mills	32213	10%		3104
107	Paperboard containers	32221	10%		3106
108	Coated and laminated paper and packaging	322221-2	10%		3104
109	All other paper bag, coated, and treated paper	322223-6	18%	0%	3105
110	Stationery products	32223	18%	0%	3105
111	Sanitary paper products	322291	18%	0%	3105
112	All other converted paper products	322299	18%	5%	3105
FORESTRY AND LOGGING (INCLUDED IN THE INDIRECT/INDUCED EFFECTS OF PRIMARY MFG)					
15	Forest nurseries,forest products,and timber tracts	1131-2	---		
19	Support activities for agriculture and forestry	115	---		
16	Commercial logging	1133	86%	90%	3016
335	Truck transportation	484	---		

[1]Derived from IMPLAN 2008 Regional (Minn.) Purchase Coefficients (RPCs) for selected commodity codes.

[2]Estimates based on available information from multiple MnDNR surveys and sources.

[3]IMPLAN commodity codes referenced:

3016 = logs and roundwood
3095 = dimension lumber and preserved wood products
3096 = veneer and plywood
3098 = reconstituted wood products
3104 = wood pulp
3105 = paper from pulp
3106 = paperboard from pulp

EXHIBIT B

Exhibit B

Economic Importance of the Forest Products Industry

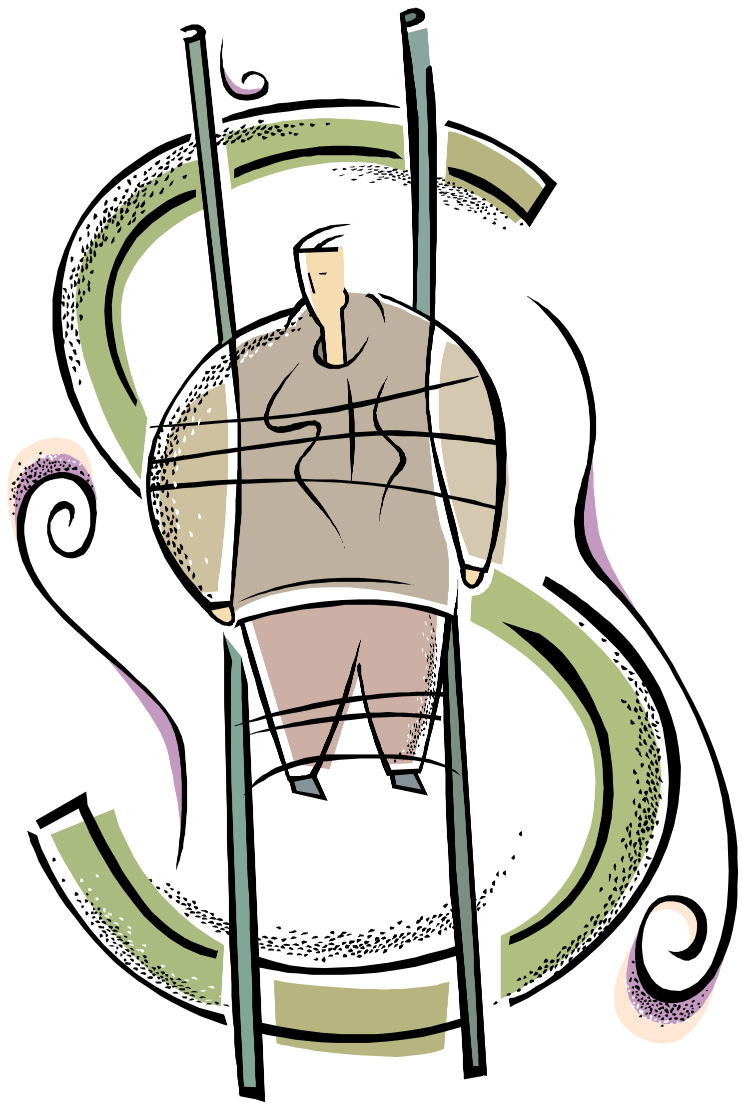


Exhibit B

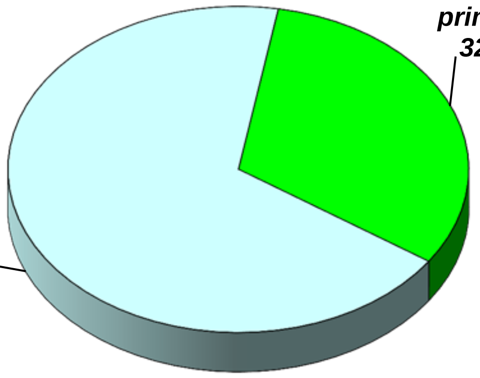
Economic Impact of the Forest Products Industry 2012

Value of Outputs (value of production)

Primary Forest Product Manufacturing	*$2.7 Billion*
Secondary Forest Products Manufacturing	*$5.8 Billion*
Total value	***$8.5 Billion***

Minnesota's $8.5 Billion Economy
- **$1.5 Billion in Wages**

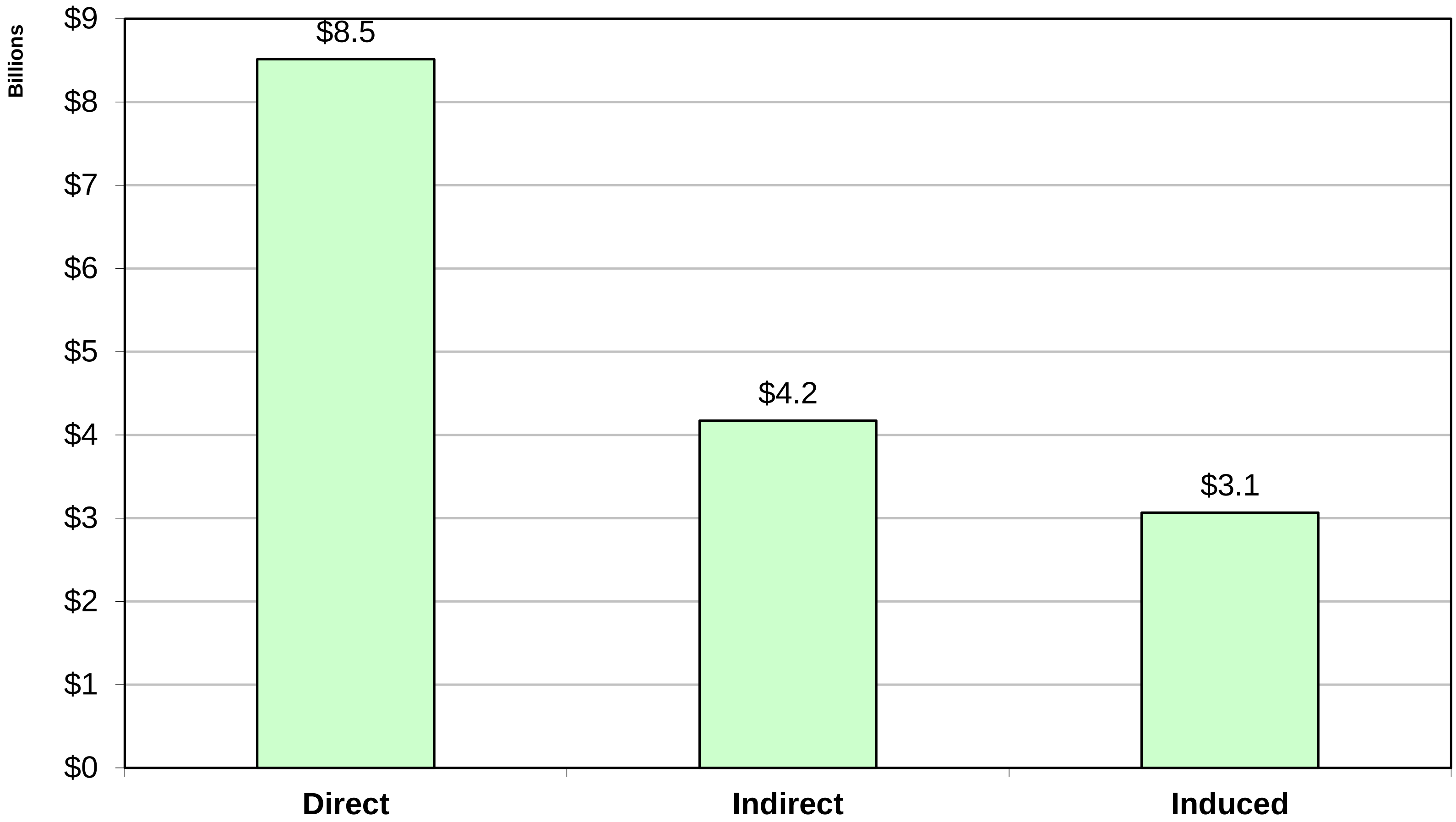
Employ more than 31,000 people



Source: UMD Labovitz School of Business. The Economic Impact of Minnesota's Forestry –Related Industries on the State of Minnesota, 2010

Exhibit B

Value of Production Direct, Indirect and Induced Effects 2012

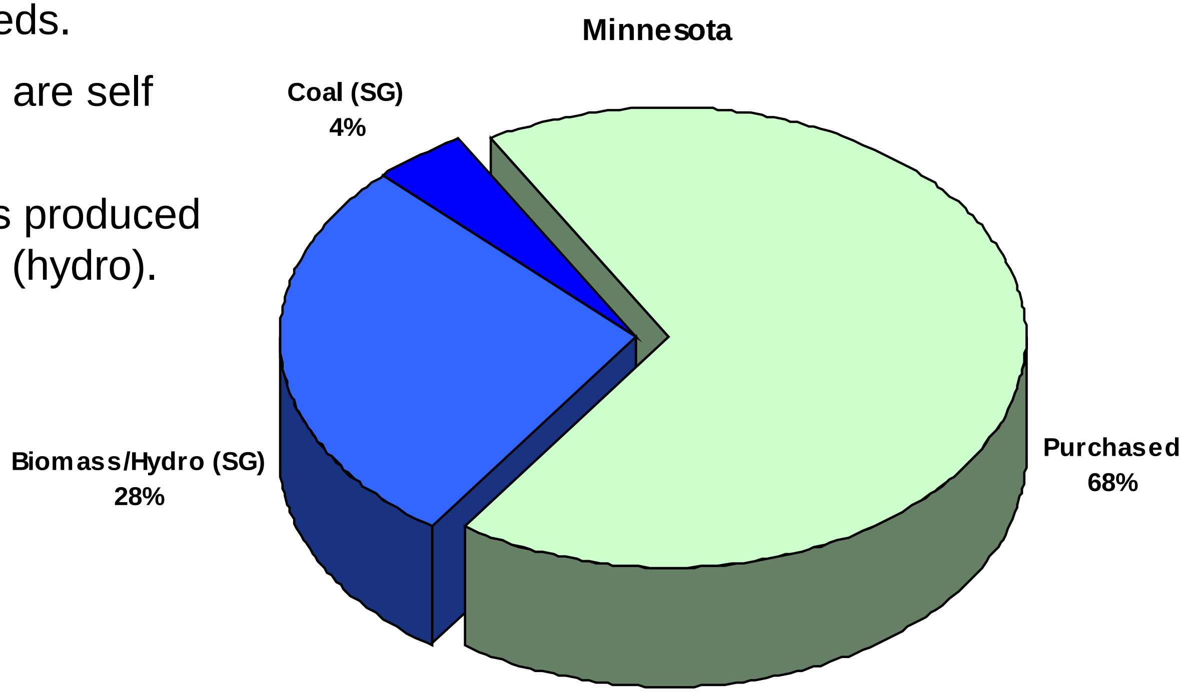


Value of Production in the Primary and Secondary Sectors Exceed $15.7 Billion

Source: UMD Labovitz School of Business. The Economic Impact of Minnesota's Forestry –Related Industries on the State of Minnesota, 2010

Energy Production

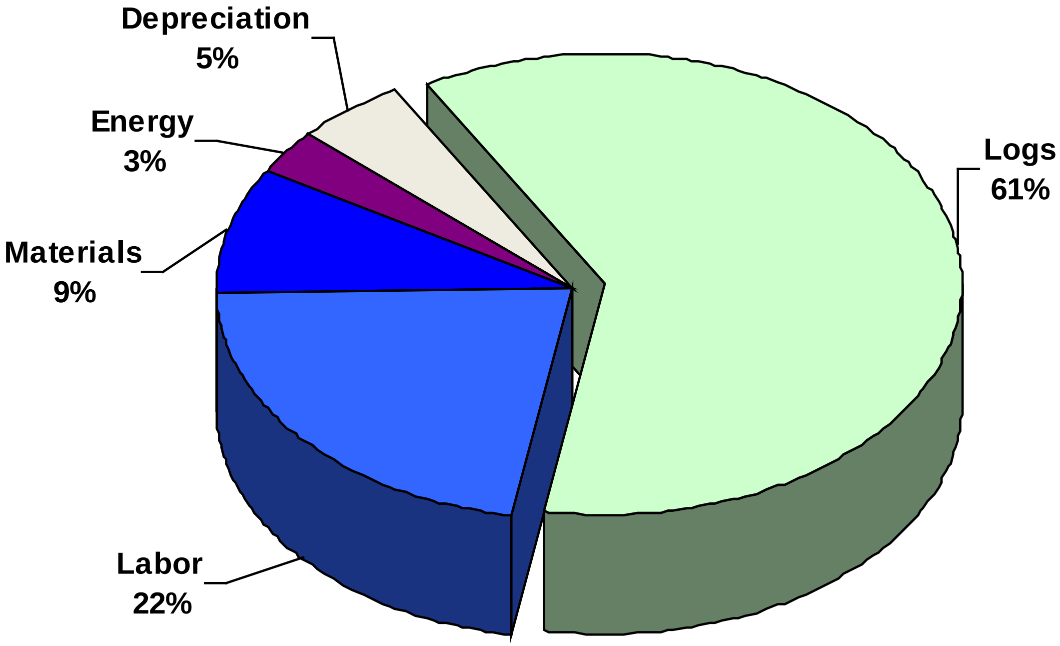
- ✓ Capital investments of more than $500 million in co-generation facilities.
- ✓ More than 1.2 million tons of wood waste are used to generate electricity.
- ✓ Mills with co-generation facilities meet 11-75 percent of energy needs.
- ✓ 32 percent of energy needs are self generated (SG)
  - ✓ 28 percent of energy is produced from biomass or water (hydro).



Source: Minnesota Forest Industries

Costs Associated with Production of Lumber

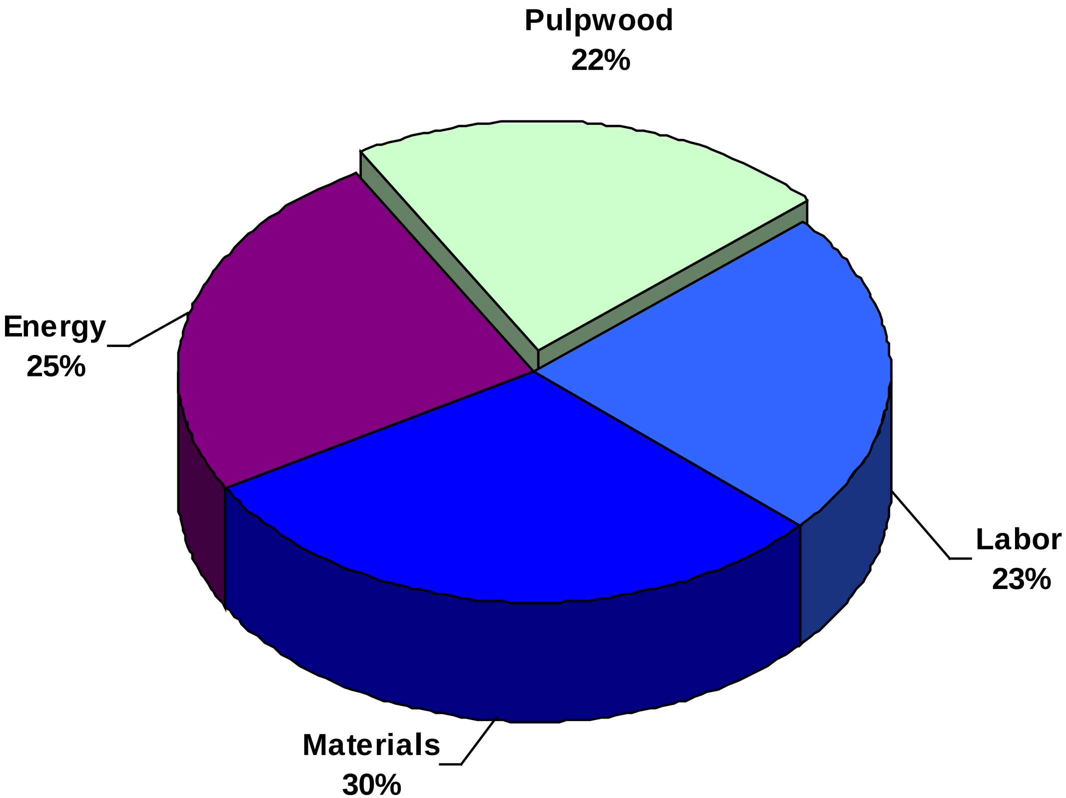
Exhibit B



Source: Minnesota Forest Industries

Exhibit B

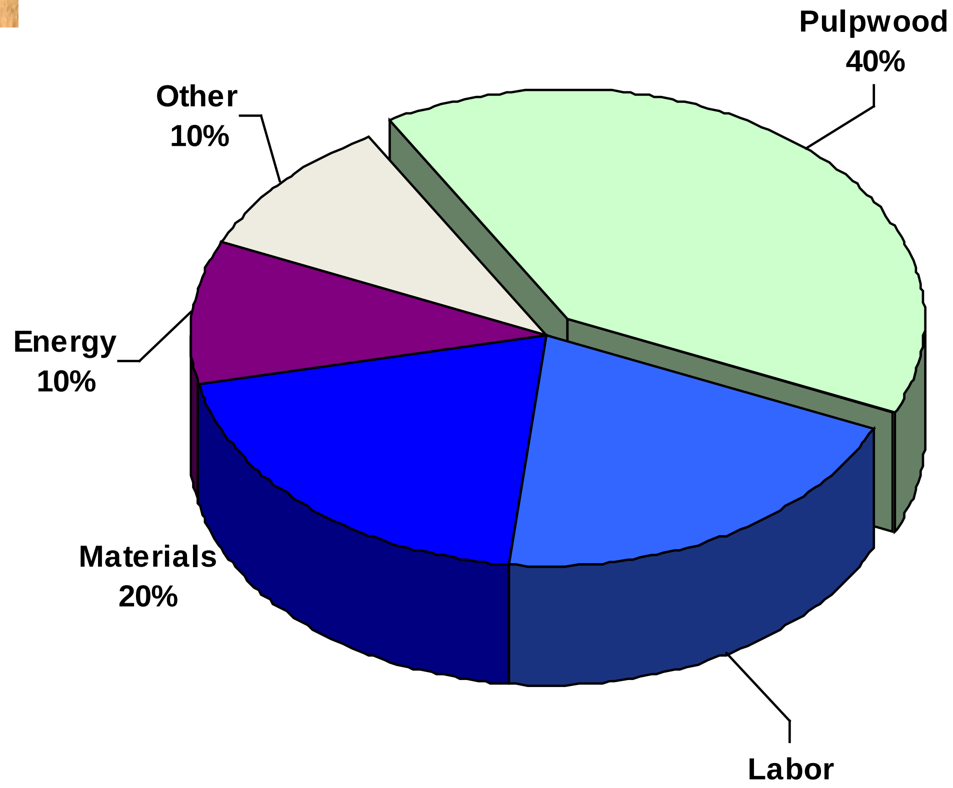
Costs Associated with Production of Paper



Source: Minnesota Forest Industries

Exhibit B

Costs Associated with Production of Oriented Strand Board



Source: Minnesota Forest Industries

Employment

Job Multipliers

- Every job in a paper mill creates an additional 3.5-4.5 jobs throughout Minnesota.
- Every job in a sawmill or engineered wood product mill creates an additional 1.5 to 2 jobs throughout Minnesota.

Source: UMD Labovitz School of Business.

Exhibit B

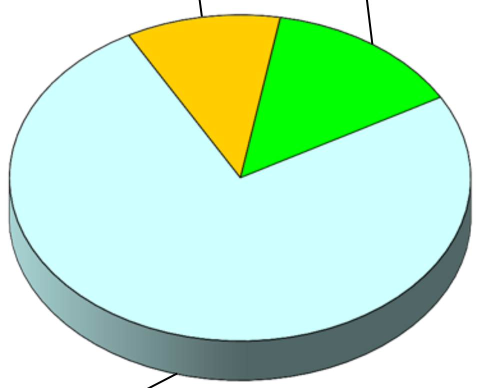
Direct Employment of the Forest Products Industry 2012

Employees

Primary Forest Product Manufacturing	4,046
Secondary Forest Products Manufacturing	*24,277*
Forestry and Logging (support activities)	*2,972*
Total employment	***31,295***

More than 31,000 direct employees

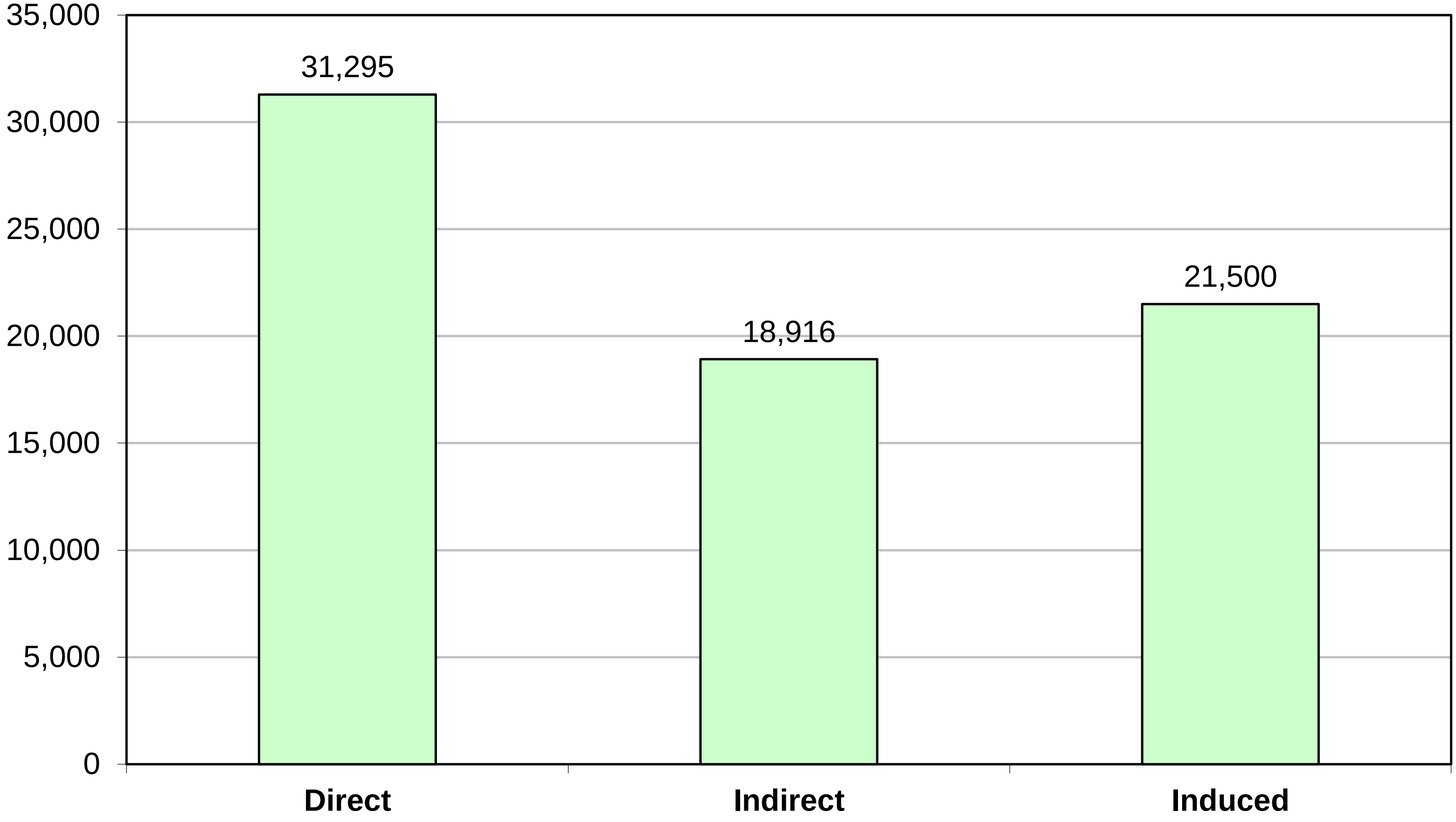
- **Additional jobs created**
  - **Indirect 18,500**
  - **Induced 21,500**
  - **5h largest manufacturing industry in state**



Source: UMD Labovitz School of Business.

Exhibit B

Employment Direct, Indirect and Induced Effects 2012

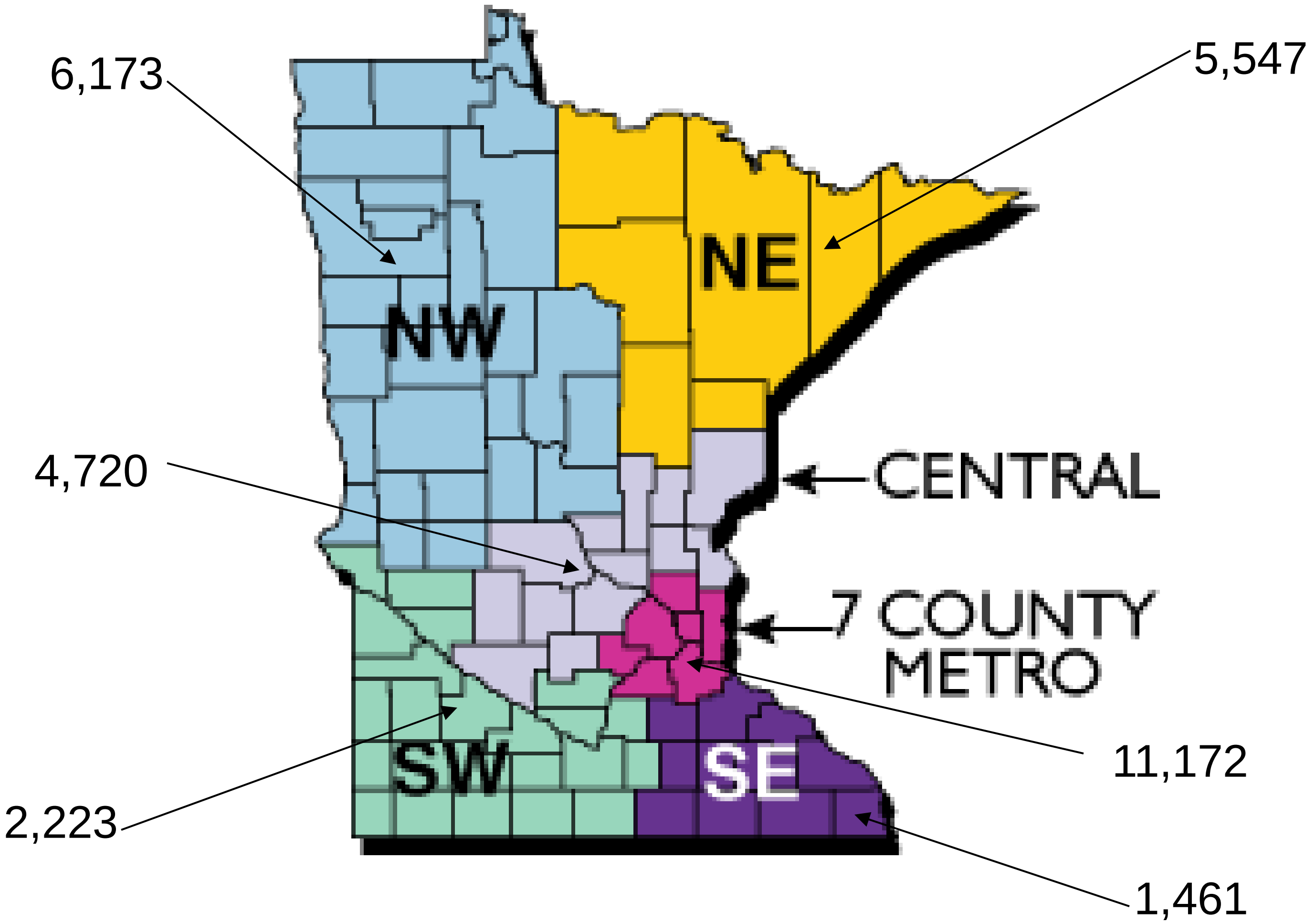


The Primary and Secondary Forest Products Industry is Credited for Providing Nearly 71,700 Jobs in Minnesota.

Source: UMD Labovitz School of Business.

Exhibit B

Forest Product Industry Employment by Economic Region (2012)



Source: UMD Labovitz School of Business., DEED, MLEP

Exhibit B

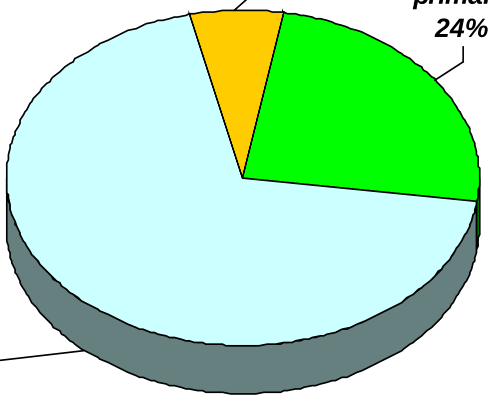
Employment of the Forest Products Industry 2012

Value Added (wages and profits)

Primary Forest Product Manufacturing	$776 Million
Secondary Forest Products Manufacturing	*$2.2 Billion*
Forestry and Logging (support activities)	*$201 Million*
Total Value Added	***$3.2 Billion***

Wages paid in excess of $1.5 Billion

- **Total value added $3.2 Billion**



Source: UMD Labovitz School of Business.

EXHIBIT C

Exhibit C

Labovitz School
OF BUSINESS AND ECONOMICS
Bureau of Business and
Economic Research

Consulting Report

UPDATE:
Northern Minnesota Forestry Analysis

June 2011

For

Minnesota Forest Resources Council

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Table of Contents

Table of Tables

Table of Figures

Executive Summary

The purpose of this study is to supply economic information and suggest trends for the landscape planners at the Minnesota Forest Resources Council. Planners requested the University of Minnesota Duluth Labovitz School's research bureau (BBER) to provide expert commentary on the counties of Minnesota's northern forest designated as the Northeast, North Central, and North Total Regions, as well as the communities of Cook and Orr .(See map on page vii.) Where possible, updated findings (which used 2009 IMPLAN data) are compared with the 2001 study (which used 1998 IMPLAN data). In most cases, nominal dollars are shown in tables and graphs. However, for the forestry sectors of the economy, deflators for the economic measures of value added and output are estimated. The appendix material to this report attempts to describe data challenges inherent in using IMPLAN data for time series comparisons. The following highlights summarize the findings in this report:

North Total Region

1) *Top Ten Value Added, Output, Employment[1] (wages, sales, jobs)*
   - Employment and payroll (state and local government-education) holds the top spot, but mining iron ore and paper mills are very strong, with almost $2.2 billion and $2.0 billion in sales or value of production, respectively. The service sectors again are important and capture six of the top ten places.
   - The housing crisis and recession had a big effect on the overall economy in general and forest products in specific.
   - As the housing market slowly recovers, alternative wood supply uses, such as biofuels, are being evaluated to determine the economic viability of business opportunities. As these potential opportunities are implemented and developed the forest products industry sectors should remain strong in the future, as the resource supply is used in new ways.
2) *Forest Products*
   - The forest products industry sectors' output per worker has risen substantially between 1998 and 2009. This output per worker productivity increase is one reason that employment in some of the forestry sectors has declined or only shown relatively small growth. The industry has been able to produce more product sales with fewer workers.
   - A positive sign for forestry employment in the future is that as these productivity improvements diminish, the only way to keep increasing production to meet demand will be to add new workers or increase the number of jobs.
   - Forest products diversification holds some good news: wood kitchen cabinets and countertops shows growth in every region.
   - Although the manufacturing sectors for OSB and paper have declined (from the 2001 study results), the forest product sectors in general have been, and continue to be, the most important economic drivers in all the counties of the North Total Region. Value added, output, and employment measures for forestry sectors are compared for 1998 and 2009 in the report.
3) *Hospitality (tourism)*
   - The hospitality sectors have been relatively stable and are a cornerstone to all regions' economies. Food service, and eating and drinking places, along with hotels and other accommodations, and some retail sectors are the economic drivers in the tourism industry.

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[1] The terms "Value Added," "Output," and "Employment," as well as other terminology used in this report, are defined on page 4.

Northeast Region

1) *Top Ten Value Added, Output, Employment (wages, sales, jobs)*
   - The Northeast remains a natural resource-based economy with iron ore and paper mills leading the way.
   - In terms of value added and output, when deflated to 1998 dollars, only paper mills show growth in both 2009 dollars and deflated dollars. Reconstituted wood products, and sawmills and wood preservation have suffered notable decline (from the 2001 results), with other sectors remaining fairly flat between 1998 and 2009 (see figures and tables in the report for more detail).
   - Job losses in the region are tracked from 1998 to 2009. With the exception of the sector showcase and partition shelving and locker manufacturing, there were substantial declines in all the forest product sectors. Indeed, non-upholstered wood household furniture manufacturing disappeared by 2009.
2) *Forest Products*
   - Paper mills, commercial logging, and reconstituted wood products dominate the forest products sectors in the Northeast Region. Value added and output for these top three sectors account for almost 94% of all forestry dollars, while 84% of the total forestry jobs are in these top three sectors.
   - As seen in the summary chart, paper mills have the largest dollar output in the Northeast. Commercial logging and reconstituted wood products also contrast (by size) the remaining nine smaller industrial sectors (see Figure 20).
   - In the region's forestry sectors, commercial logging has the highest employment (813 jobs), followed by paper mills (695 jobs). However, paper mills has much higher output and value added economic activity than the commercial logging sector.
3) *Hospitality (tourism)*
   - All three economic measures for the Northeast (wages, sales, jobs) show that the two sectors food service and drinking places, and hotels and motels including casinos, have the greatest impact in the hospitality sector. Location quotients indicate that these two sectors also play a major part in the export base of the Northeast Region. The hospitality summary chart clearly shows how important the sector food service and drinking places is to the region. Only the sector hotels and motels including casinos is also able to separate (by size) from the cluster of other small hospitality sectors in the region (see Figure 21).

North Central Region

1) *Top Ten Value Added, Output, Employment (wages, sales, jobs)*
   - The North Central Region has fared best, with high market share for forest products when compared to the US through location quotients. Use of electric power also indicates growth in this region.
   - When expressed as value added and output measures, paper mills appear to increase slightly for output but decrease for value added in the North Central Region. The deflated output value shows paper mills in decline. Other hard hit sectors include engineered wood member and truss manufacturing, and sawmills and wood preservation. On the positive side, for this region, commercial logging, all other miscellaneous wood products, and wood kitchen cabinets and countertops all show growth.
2) *Forest Products*
   - Employment changes between 1998 and 2009 reveal that only commercial logging, and wood kitchen cabinets and countertops added workers. The sectors showcase and partition shelving and locker manufacturing, and veneered plywood disappear from the top ten list in 2009. All other forest products sectors lost jobs.
   - The North Central Region has some interesting sector clustering: Wood kitchen cabinets and countertops, wood window door and millwork, and sawmills and wood preservation are clustered together. However, this cluster is small by comparison to the big three of paper mills, reconstituted wood products, and commercial logging. The remaining five sectors are very small and also cluster as a group.
3) *Hospitality (tourism)*
   - The summary chart Figure 27 reinforces the continued finding that food service and drinking places is the key tourism sector for the North Central Region. It should be noted that the high employment values in these IMPLAN data include both full-time and part-time workers. Eight other hospitality sectors are relatively small and cluster together (see Figure30).

Cook-Orr Communities

- Cook-Orr has seen a major shift in the local economy with manufacturing plant closings (OSB). It remains to be seen whether these communities will see forest products manufacturing rebound in their economies.
- In contrast to 1998, the top sector in the area defined by these community zip codes in 2009 shows temporary economic activity related to pipeline construction in the sector Extraction of oil and natural gas.
- The Cook-Orr forest products industries, in 2009, show reconstituted wood products and commercial logging accounted for over $30 million in output, $14 million in value added, and 175 jobs.
- Tables in the report show changes in wages, sales, and jobs from 1998 to 2009. The recession and housing collapse had a devastating impact on this area. As a sign of the tenacity of forest products sectors in this devastated community, the sector forest products and wood partition and fixtures had some start up activity by 2009, although employment is very small.

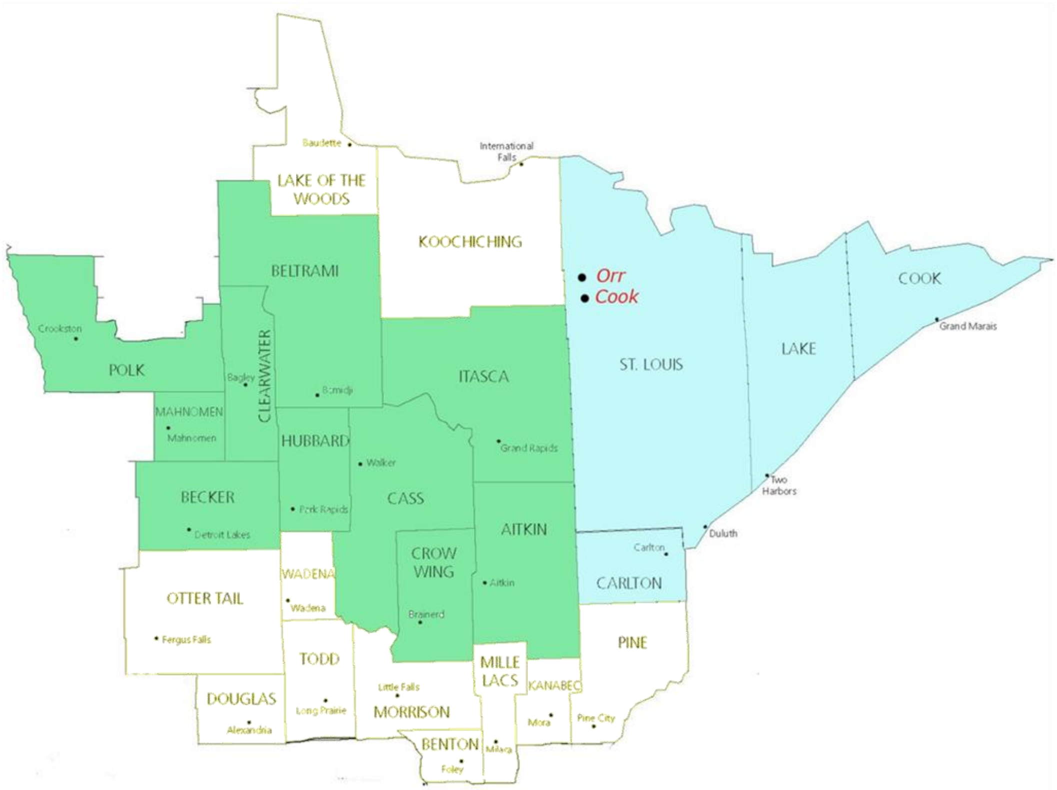

FIGURE 1. THREE REGIONS OF THE STUDY AREA BY COUNTY. SOURCE: OUTLINE MAP FROM THE US CENSUS

- **Northeast**
  Carlton
  St. Louis
  Lake
  Cook

- **North Central**
  Aitkin
  Becker
  Beltrami
  Cass
  Clearwater
  Crow Wing
  Hubbard
  Itasca
  Mahnomen
  Polk

- **North Total**
  All the counties from theNortheast and North Central regions, and including:
  - Lake of the Woods
  - Koochiching
  - Pine
  - Kanabec
  - Mille Lacs
  - Benton
  - Morrison
  - Wadena
  - Todd
  - Douglas
  - Otter Tail

- **Community Profiles**
  Cook-Orr

Project Description

The Minnesota Forest Resources Council (MFRC) asked the University of Minnesota Duluth Labovitz School Bureau of Business and Economic Research (BBER) to update the BBER's 2001 estimate of the importance of the forestry industry in the northern forest of Minnesota. [2] [3]

This update project focused on specific elements of the 2001 forestry analysis by the BBER, including collection and analysis of data for the following:

- Measure the importance of forestry to Northern Minnesota, following study regions determined in consultation with the Forest Resources Council for the previous 2001 study, as well as a limited number of reconfigured study areas.
- Update the report of the economic base of the selected regions and provide comparisons between the 2001 and 2011 studies where possible.
- Briefly analyze regional economic trends.
- Update the community of Cook-Orr selected for separate analysis in the 2001 study.

Of secondary interest, and subject to resources and time (funding levels provided) were collection and analysis of data for the following:

- Update the commentary on the economic diversity of the regions being studied.
- Update the 2001 tourism analysis.

As with the 2001 project, BBER measured the current importance of the forestry industry to Northern Minnesota. Industries selected in 2001 followed the sectors identified in the Jaakko Pöyry study.[4] Further consideration was given to this selection to insure all important industry sectors are present in the update analysis. However, economic recommendations that help support maintenance or growth of the forest products industry balanced with other interests and opportunities--biomass, carbon, ecosystem services-- involved further research and were not part of this proposal.

---

[2] The BBER has previously studied and reported the economic impact of forestry operations in such projects as *The Economic Impact of Declines in Forestry-Related Industries in Minnesota, Wisconsin, and a Three-State Region, 2006*; *East Central Minnesota: Social and Economic Trends and Implications, Forestry Analysis 2004*; and *Forestry Bottleneck Analysis 2002*. These reports and others of interest for this industry from the Labovitz School's research bureau are available at https://lsbe.d.umn.edu/bber.php.
[3] See "Northern Minnesota Forestry Analysis: Presentations, Preliminary Data, and Final Report" at https://lsbe.d.umn.edu/departments/bber/projects/FEMAT/forestry.htm
[4] "Economics and Management Issues: A Technical Paper for a Generic Environmental Impact Statement on Timber Harvesting and Forest Management in Minnesota." Prepared for the Minnesota Environmental Quality Board, December 1992, by Jaakko Pöyry Consulting, Inc. Raleigh, NC and Tarrytown, NY.

The economic diversity of the region and selected communities was analyzed, and industry importance, measured in relative terms, was estimated, comparing the region to the U.S. economy. Location quotient techniques were employed in addition to using IMPLAN input-output analysis.

The MFRC 2011 update provides expert impressions of the data by the research team. This eleven year update also emphasized jobs and job creation in the forest-based economy. Finally, this update provides comparisons between the 2001 findings and the 2011 findings where possible, and discusses the trends implied in the data.

Finally, because the requests from the MFRC included expanding the 2001 report by adjusting sectors, adding new counties, and reconfiguring the study areas, BBER was advised by MFRC on priorities of the entire project and addressed priorities as time and budget allowed.

Study Area

Some of the study areas for this analysis follow the 2001 analysis and are presented as the Northeast Region and the communities of Cook-Orr. Other study areas requested included a reconfigured North Central region, and a reconfigured North Total, both to include additional counties to the 2001 configurations, as specified by the MFRC.

Study regions proposed for the 2011 project included:

- North Central 2009
- Northeast 2009
- North Total 2009
- Cook-Orr 2009

Configuration and Reconfiguration of Study Areas

Configuration and reconfiguration of study areas determined in consultation with the Forest Resources Council are as follows:

TABLE 1. COUNTIES OF THE STUDY REGIONS

2001 Study	2011 Update Study	
Northeast	**Northeast**	Same county configuration.
Carlton	Carlton	
St. Louis	St. Louis	
Lake	Lake	
Cook	Cook	
North Central	**North Central**	Added 5 new counties.
	Aitkin	
Becker	Becker	
Beltrami	Beltrami	
	Cass	
Clearwater	Clearwater	
	Crow Wing	
Hubbard	Hubbard	
	Itasca	
Mahnomen	Mahnomen	
	Polk	
North Total	**North Total**	
North Total includes all the counties from the Northeast and North Central regions, as well as the following:	North Total includes all the counties from the Northeast and North Central regions (including 5 new counties), as well as the following:	
Lake of the Woods	Lake of the Woods	
Koochiching	Koochiching	
Pine	Pine	
Kanabec	Kanabec	
Mille Lacs	Mille Lacs	
Benton	Benton	
Morrison	Morrison	
Wadena	Wadena	
Todd	Todd	
Douglas	Douglas	
Otter Tail	Otter Tail	
Community Profiles		
Big Fork	Cook-Orr	Same zip code Cook-Orr configuration.
Cook-Orr		

Procedures and Assumptions

Models and Analyses

As in the 2001 project, which used 1998 IMPLAN data, regional data for the importance of sectors in the economic base, for value added, employment, and output measures, was supplied by IMPLAN for this analysis.

The BBER studied and estimated the operations activity in the forestry industry for the study areas as defined in the previous 2001 study and by the MFRC. Data used was the most recent IMPLAN data, which is for year 2009.

BBER worked with the MFRC to determine industry sectors of interest for this study. Although the 2001 study provides sectoring schemes for the update, changes in the structure of the data required adjustments, for example, conversion from the Standard Industrial Classification (SIC) to the North American Industry Classification System (NAICS) sectors, and aggregations and splits in sectoring for IMPLAN model version 3.

IMPLAN estimates three economic measures of contribution:

Measures

- Value Added (which includes payroll expenditures) – A measure of an industry's contribution to the local community; it includes wages, rents, interest and profits.
- Output (sales) –Represents the value of local production required to sustain activities.
- Employment (jobs) – Estimates are in terms of jobs, not in terms of full-time equivalent employees. Hence, these may be temporary, part time, or short term jobs.

Location Quotients

There are many ways to estimate a region's base. The simplest is the location quotient. The location quotient is equal to the percentage of a reference region's activity in a particular industry divided by the percentage of activity in that same industry for a larger region, usually the nation. The assumptions associated with the location quotient are obviously restrictive. However, if nothing else, the location quotient does provide an indication of the relative concentration of a particular industry in a region. The greater the location quotient value, the more important this industry is to the economic base of the region. What is more, changes in location quotient values over time represent changes in the industry's relative importance to the region's economic base. As such, location quotients are quite valuable as indicators of a region's economic base.

Model Assumptions for This Update

The reader is asked to note several important considerations when reading this report for comparisons:[5]

1) The counties of the study area have changed

The configuration of the four study areas include two cases in which the total counties of the region have changed. The North Central Region as configured in this update includes Aitkin, Cass, Crow Wing, Itasca, and Polk, which were not part of the North Central Region in the 2001 report. Following this change, the North Total Region will also be larger by the addition of these five counties. These two study areas are therefore not comparable across the 2001 and 2011 reports.

BBER has supplied new 1998 findings (the data year of the 2001 report) to reflect the addition of five counties.

2) IMPLAN data has changed

The data years analyzed for comparison include IMPLAN data for year 1998 and for year 2009. Time series data such as required for a detailed comparison between the two studies are not part of the design of MIG's IMPLAN data files. Analyses that compare economic measures by industry sector in 1998 and 2009 must rely on IMPLAN's bridge files and MS Access tables which use ratios to move through two changes in sectoring schemes—from 528 sectors to 509 sectors, and then from 509 sectors to 440 sectors. Although translating estimates of sectors' measures using ratios can be more accurate than a "closest match" scheme, this procedure is in general prohibitively complicated.

The IMPLAN literature asks users to realize that IMPLAN is not designed to be time series data. For example, IMPLAN does not go back and revise earlier data when the government revises its data. IMPLAN also changes its data reduction techniques over time. The IMPLAN users forum online discusses with users the techniques of "best match" and ratios as strategies for accommodating the sector scheme changes.

3) Inflation has been estimated only for selected forest sectors

Except for estimates from the IMPLAN model deflating selected 2009 forest sectors to 1998 dollars, measures of economic contribution from the 2001 report continue to be reported here as 1998 dollars. Sectors from the 2009 data are reported as 2009 dollars. No inflation adjustment of the entire economy (all 440 IMPLAN sectors) has been calculated. Therefore, readers should be mindful of this when comparing 1998 and 2009 economic base top ten lists. Attempts have been made to clearly label inflation adjustment or non-adjustment on graphs and tables in this update report.

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[5] Note: Bridge tables and time series data adjustments are discussed and demonstrated further in the appendix material to this report.

4) Sector descriptions have changed

In the following report, the top ten tables and graphs are designed to show the original top ten sectors from the 2001 report and (in some cases) a comparison with 2009 findings. These comparisons may show additional sectors for the comparable findings, making the 2009 list more than ten, if appropriate for displaying important comparisons.

The following list shows 2007 NAICS and BEA definitions for Forestry Products IMPLAN sectors used in this update analysis. This list aligns with the previous report's 2001 definitions for SIC Forestry/Wood Products IMPLAN definitions. Appendix B to this report discusses the 2001 SIC Forest Products sectors as well as other related secondary manufacturing industries not included in this 2011 update.

TABLE 2. FOREST PRODUCTS AND TOURISM SECTOR DEFINITIONS

2009 Data Sectoring, Forest Products

IMPLAN Code	Description	BEA Code	2007 NAICS Code
15	Forestry, forest products, and timber tract production	113A00	1131-2
16	Commercial logging	113300	11330
95	Sawmills and wood preservation	321100	32110
96	Veneer and plywood manufacturing	32121A	321211-2
97	Engineered wood member and truss manufacturing	32121B	32121
98	Reconstituted wood product manufacturing	321219	321219
99	Wood windows and doors and millwork manufacturing	321910	321910
100	Wood container and pallet manufacturing	321920	321920
103	All other miscellaneous wood product manufacturing	321999	321999
104	Pulp mills	322110	32211
105	Paper mills	32213	32212
106	Paperboard Mills	322120	32213
295	Wood kitchen cabinet and countertop manufacturing	337110	33711
297	Non-upholstered wood household furniture manufacturing	337122	337122
298	Metal and other household furniture (except wood) manufacturing	33712A	337124
300	Office furniture manufacturing	33721A	337214
301	Custom architectural woodwork and millwork manufacturing	337212	337212
302	Showcase, partition, shelving, and locker manufacturing	337215	337215

The following list shows NAICS and BEA definitions for Hospitality IMPLAN sectors used in this update analysis. This list aligns with the previous report's 2001 definitions for SIC Hospitality (Tourism) IMPLAN definitions. Appendix C to this report discusses these sectors.

2009 Data Sectoring, Tourism

IMPLAN Code	Description	BEA Code	2007 NAICS Code
362	Automotive equipment rental and leasing	532100	5321
402	Performing arts companies	711100	7111
403	Spectator sports companies	711200	7112
407	Fitness and recreational sports centers	713940	71394
408	Bowling centers	713950	71395
409	Amusement parks, arcades, and gambling industries	713A00	7131-2
410	Other amusement and recreation industries	713B00	71399
411	Hotels and motels, including casino hotels	7211A0	72111-2
412	Other accommodations	721A00	72119
413	Food services and drinking places	722000	722

5) Hay and pastures, and Imputed rental activity for owner-occupied dwellings

Two sectors that appear throughout the various data sectoring schemes are somewhat irrelevant to a report on the economic base, forestry sectors, or hospitality sectors of the study area. In the 2009 findings, both these sectors have been eliminated from the top ten rankings. "Hay and pastures," as noted in the 2001 report is a sector that "... has been de-emphasized in the following data to reflect the possible misleading nature of these data.” "Imputed rental activity for owner-occupied dwellings" is the sector that estimates what owner/occupants would pay in rent if they rented rather than owned their homes.

Study Area Overview

The three region breakdown of the North Total, as shown as percentage pie charts and bar graphs with values (dollars and jobs) in Figure 1 and 2, reveal that each region roughly accounts for about one-third of the Total Value Added, Output and Employment. But there are some important differences: The Northeast Region has the highest Value Added ($26 Billion) and Output (18.3 Billion), but the lowest total employment (143,682). The Other Northern Counties Region has the highest employment (146,266) and the second highest Output ($16.5 Billion). Both the North Central Region and the Other Northern Counties Region had $8.8 Billion in Value Added. However, the North Central Region has most total land area.

FIGURE 2. OVERVIEW: NORTHERN MINNESOTA COUNTIES' ECONOMY

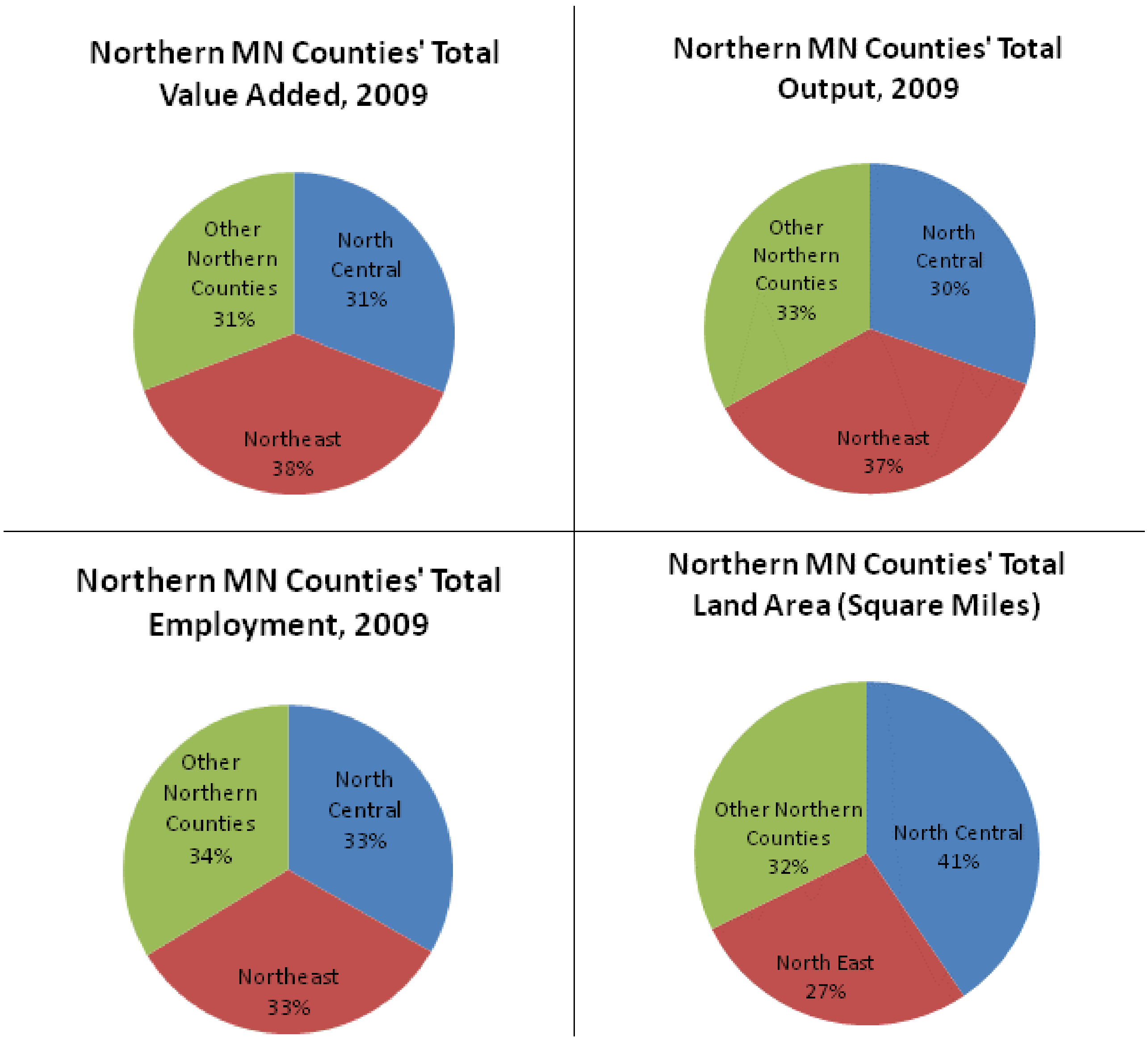
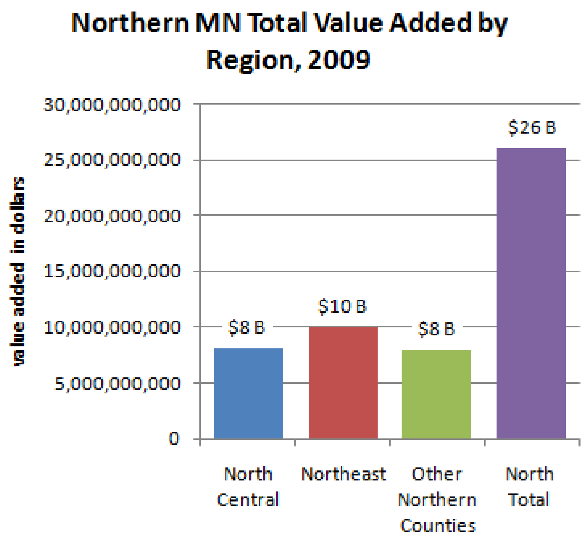
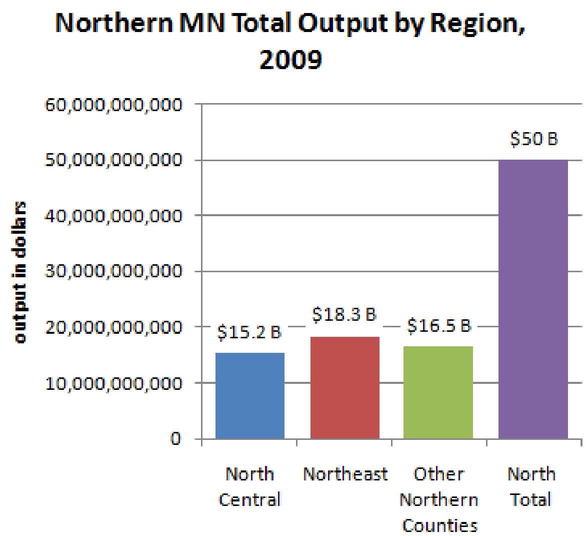


FIGURE 3. OVERVIEW: EMPLOYMENT, OUTPUT, AND VALUE ADDED
BY REGION, IMPLAN 2009





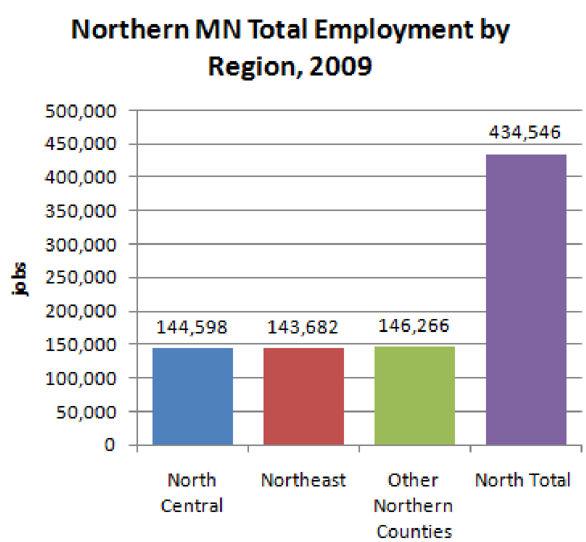


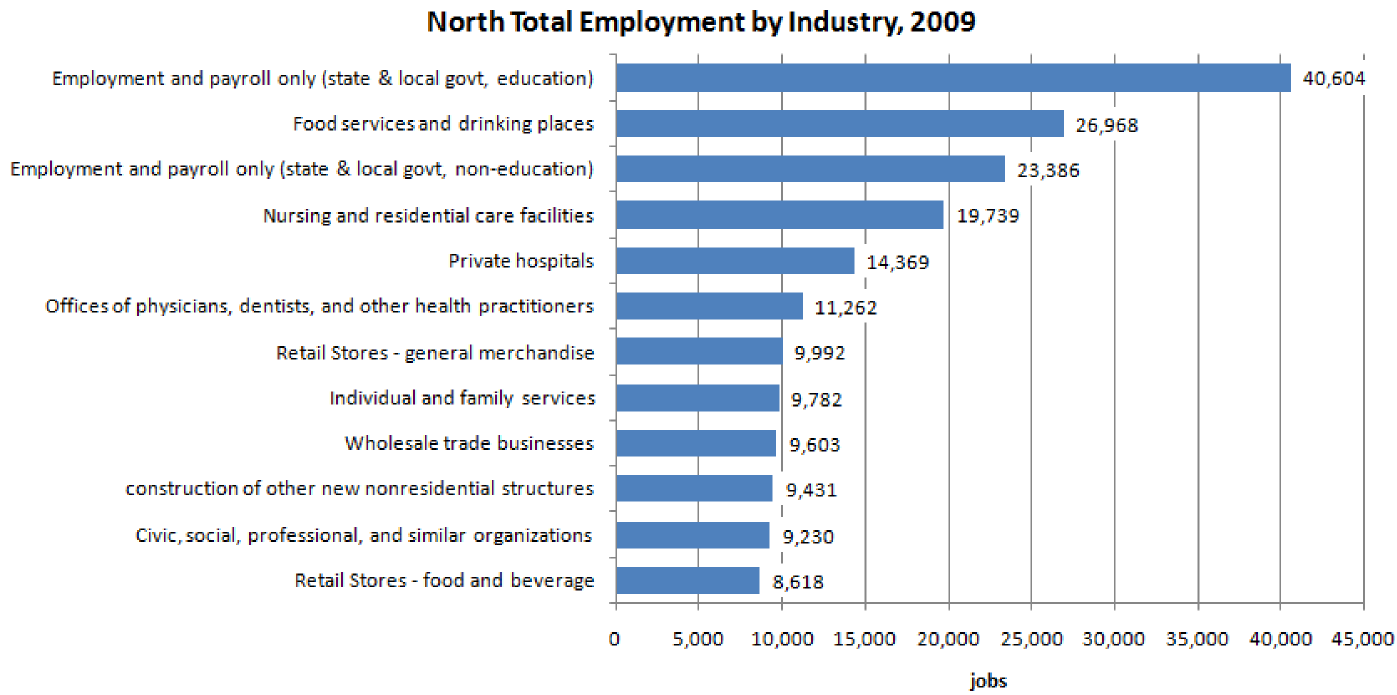
Table 3 and Figure 3 show the economic base of the total study area by presenting the top ten sectors, ranked by sector employment. The data indicate diversity across all three regions (Northeast, North Central and Other Northern Counties), with state and local government-education being the top employer in all regions. The medical sectors also have a strong presence in all the regions, including the sectors of nursing and health care facilities, private hospitals, and doctors and dentists and health practitioners' offices. Tourism is represented in this top ten by food services and drinking places, retail stores, and food and beverages. The State and local government--non-education sector is also an important employer across all regions, providing various public sector services.

TABLE 3. OVERVIEW: TOP REGIONAL INDUSTRY EMPLOYERS, IMPLAN 2009

Employment by Top Sectors, by Region, 2009

	North Central	*Northeast*	*Other Northern Counties*	*North Total*
Employment and payroll only (state & local govt, education)	15,495	13,222	11,888	40,604
Food services and drinking places	8,940	10,105	7,923	26,968
Employment and payroll only (state & local govt, non-education)	7,865	7,757	7,764	23,386
Nursing and residential care facilities	5,440	8,101	6,199	19,739
Private hospitals	4,472	6,762	3,134	14,369
Offices of physicians, dentists, and other health practitioners	3,464	5,408	2,390	11,262
Retail Stores - General merchandise	3,871	2,894	3,227	9,992
Individual and family services	3,876	2,937	2,969	9,782
Wholesale trade businesses	2,548	2,595	4,460	9,603
Construction of other new nonresidential structures	3,508	not top 10	5,923	9,431
Civic, social, professional, and similar organizations	3,202	not top 10	6,028	9,230
Retail Stores - Food and beverage	2,943	2,621	3,054	8,618
Insurance carriers	not top 10	4,759	not top 10	not top 10
Mining iron ore	not top 10	3,266	not top 10	not top 10
Total	144,598	143,682	146,266	434,546
Source: IMPLAN 2009				

FIGURE 4. OVERVIEW: EMPLOYMENT BY INDUSTRY, IMPLAN 2009



Analysis of Study Areas

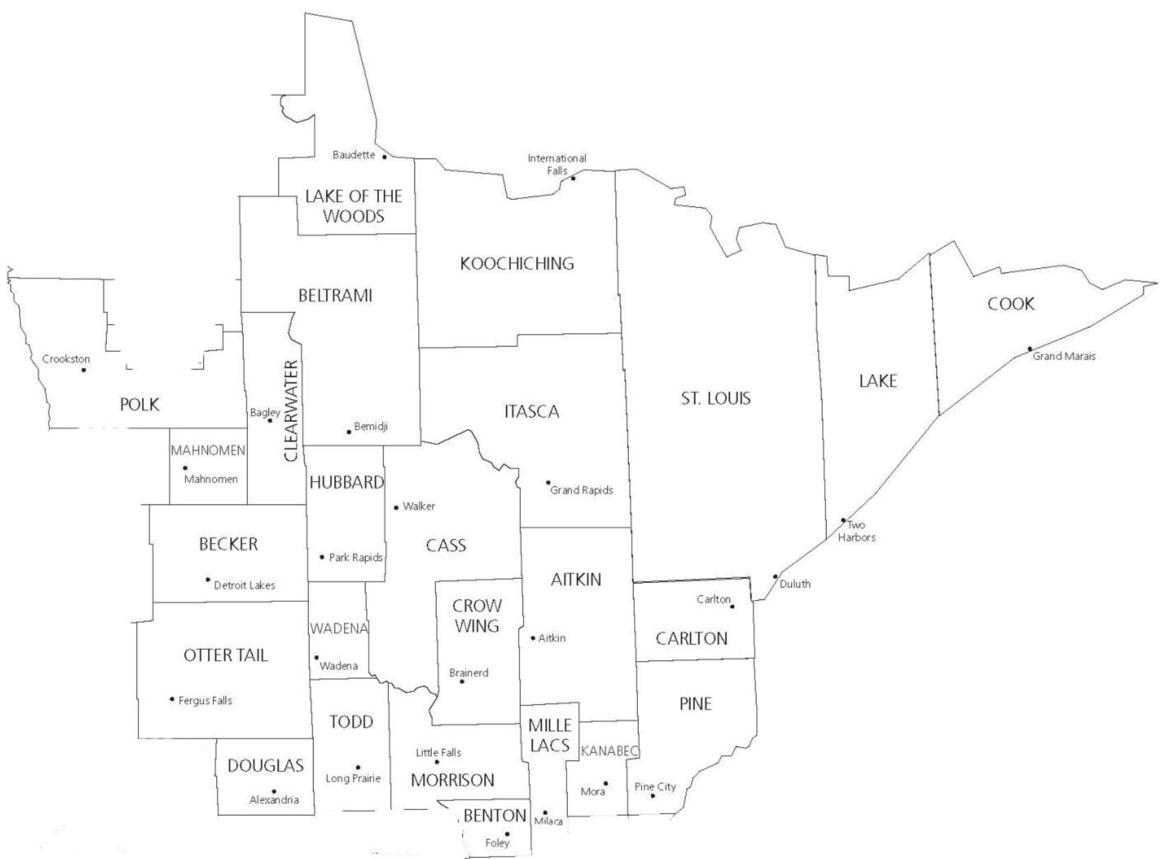
North Total

The counties of the 2009 North Total Region include all counties of the previous 2001 study plus five new counties. The economic base of the new North Total Region (payrolls, industrial production, and jobs) is compared to the 2001 North Total study area, reconfigured from the original study to now include the five new counties.

Note that the IMPLAN sectoring schemes do not allow for a one-to-one comparison of sectors in many cases. Also note that when comparisons can be made, estimates are not adjusted for inflation. (However, some estimates of inflation are included in the analyses of the forestry sectors.)

The graphics provided in the discussion and comparison of economic base sectors for 1998 and 2009 are offered as unadjusted estimates and it is hoped that they will contribution to the discussion of trends in the economic base of the region.

FIGURE 5. NORTH TOTAL COUNTIES



Source: US Census

The Economic Base: North Total -Top Ten Value Added, Output, and Employment Measures

Table 4 shows the top ten North Total value added sectors in 2009. State and local government-education and non-education dominate the top of the ranking. Services such as offices of physicians, private hospitals, insurance carriers, monetary authorities, and food services and drinking places account for one-half of the top ten. The only natural-resource-based industry is mining iron ore.

TABLE 4. ECONOMIC BASE: NORTH TOTAL REGION, VALUE ADDED, IMPLAN 2009

North Total Top Ten Value Added, 2009

Description	Value Added
Employment and payroll only (state & local govt, education)	$2,248,986,176
Employment and payroll only (state & local govt, non-education)	$1,220,752,640
Electric power generation, transmission, and distribution	$988,673,166
Offices of physicians, dentists, and other health practitioners	$903,801,556
Mining iron ore	$901,219,396
Private hospitals	$884,737,951
Insurance carriers	$850,633,280
Wholesale trade businesses	$850,187,336
Monetary authorities and depository credit intermediation activities	$635,831,618
Food services and drinking places	$566,953,506

Figure 5 compares the IMPLAN 1998 and the 2009 sector rankings of the value added measure in the economic base. Paper mills and real estate are dropped from the 2009 ranking; they are replaced by service sectors. However, employment and payroll (state and local government-education), and employment and payroll (state and local government non-education) are at the top of both the 1998 and 2009 value added rankings.

FIGURE 6. ECONOMIC BASE: NORTH TOTAL REGION, TOP TEN VALUE ADDED SECTORS, IMPLAN 1998 AND 2009

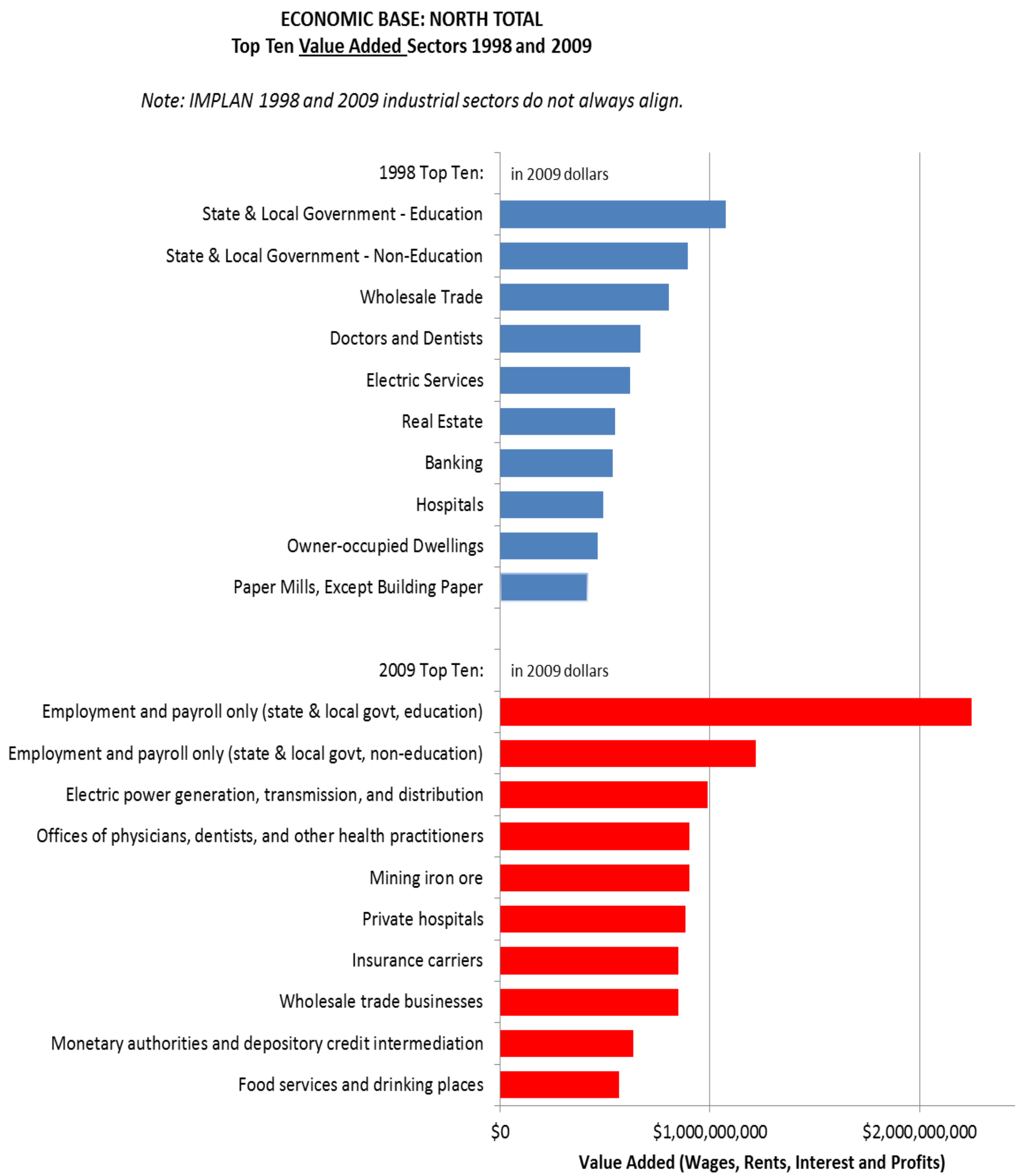


Table 5 ranks the North Total sectors by output in 2009 dollars. Employment and payroll (state and local government-education) holds the top spot, but mining iron ore and paper mills are very strong, with almost $2.2 billion and $2.0 billion in sales or value of production, respectively. The service sectors again are important and capture six of the top ten places.

TABLE 5. ECONOMIC BASE: NORTH TOTAL REGION, TOP TEN OUTPUT SECTORS, IMPLAN 2009

North Total Top Ten Output 2009

Description	Output
Employment and payroll only (state & local govt, education)	$2,248,986,368
Mining iron ore	$2,191,926,784
Paper mills	$2,037,352,576
Private hospitals	$1,831,332,480
Offices of physicians, dentists, and other health practitioners	$1,435,150,080
Electric power generation, transmission, and distribution	$1,404,093,312
Wholesale trade businesses	$1,321,622,912
Insurance carriers	$1,289,842,304
Monetary authorities and depository credit intermediation activities	$1,289,037,056
Food services and drinking places	$1,257,250,688

Figure 6 compares the rankings of output for 1998 and 2009. Mining iron ore and paper mills were very strong in both of the study years. Mining was first in 1998 and second in the 2009 top ten, while paper mills held the third spot in both years. Due to the housing market recession, real estate disappeared from the 2009 rankings but the hospitality sector (food services) rose in regional importance in 2009, landing the tenth highest output.

FIGURE 7. ECONOMIC BASE: NORTH TOTAL REGION, <u>OUTPUT</u> SECTORS, IMPLAN 1998 AND 2009

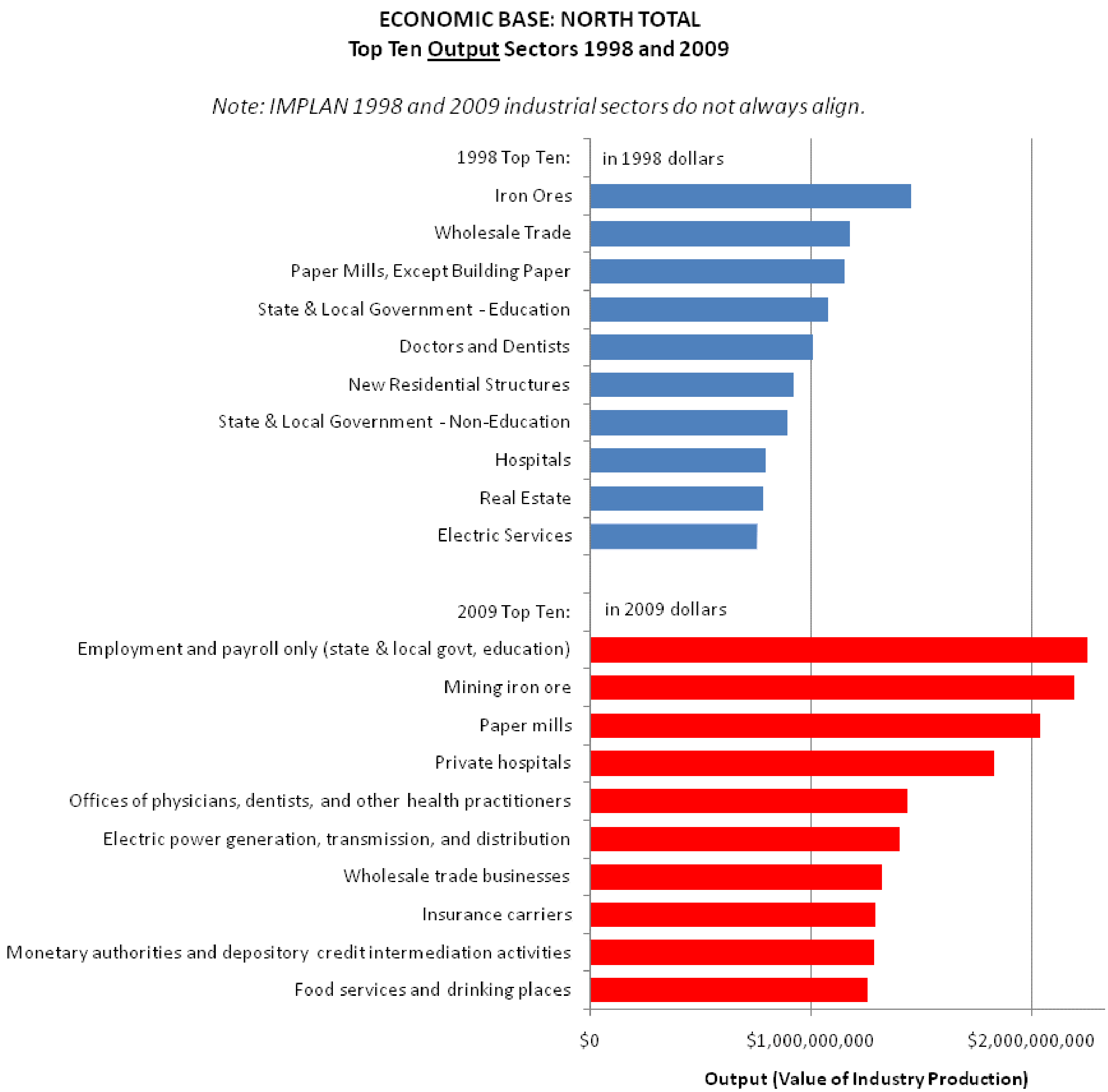


Table 6 repeats data previously reported in Table 3 of the Overview section. Only the top ten are highlighted in Table 6.

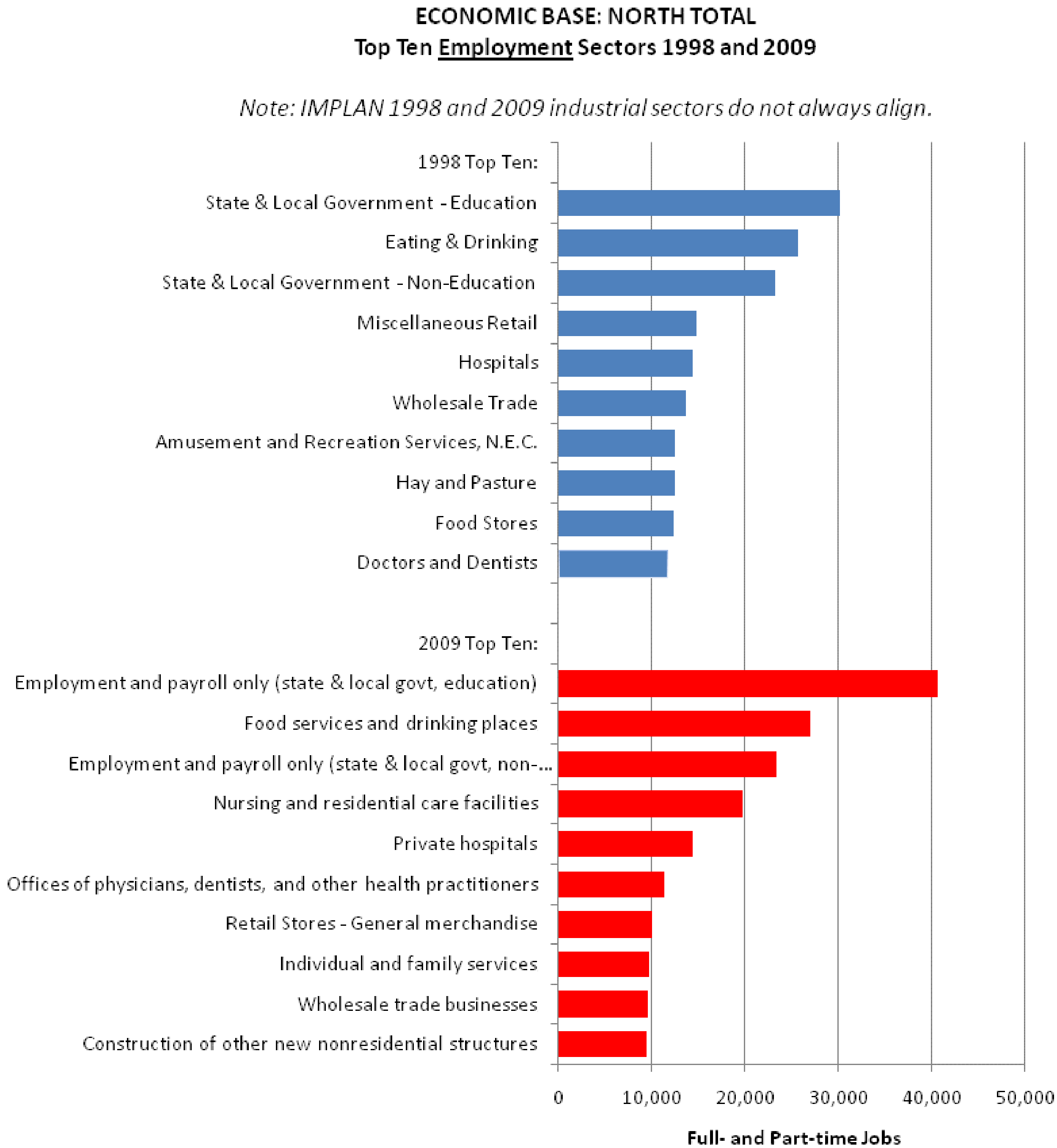
TABLE 6. ECONOMIC BASE: NORTH TOTAL REGION, TOP TEN EMPLOYMENT, IMPLAN 2009

North Total Top Employment 2009	
Description	Employment
Employment and payroll only (state & local govt, education)	40,604
Food services and drinking places	26,968
Employment and payroll only (state & local govt, non-education)	23,386
Nursing and residential care facilities	19,739
Private hospitals	14,369
Offices of physicians, dentists, and other health practitioners	11,262
Retail Stores - General merchandise	9,992
Individual and family services	9,782
Wholesale trade businesses	9,603
Construction of other new nonresidential structures	9,431

In Figure 7, these results are compared to the 1998 top ten employment results. Top ranked in both years was employment and payroll only (state and local government-education). The medical service sectors are also well represented in the top ten.

In addition, some interesting changes can be noted: there was a significant increase in employment between 1998 and 2009 in the top sectors. Food services, and employment and payroll only (state and local govt—non-education) were ranked second and third, and showed a slight job gain over 1998. New to the ranking in 2009 was construction of other new nonresidential structures, while miscellaneous retail and amusement and recreation services in the hospitality sectors dropped out of the ranking after 1998.

FIGURE 8. ECONOMIC BASE: NORTH TOTAL REGION, TOP EMPLOYMENT SECTORS, IMPLAN 1998 AND 2009



Forest Products' Position in the Economy

Table 7 shows the relative rank of the forest products sectors for 1998 and 2009. To be comparable, a “yes” is indicated in the “Best Match Column” in the table. For the comparable sectors the two rankings are reported in the second and third columns. The movement in rank is indicated by "up" or "down" in the first column. Only wood kitchen cabinets and countertop manufacturing sector moved up in rank between 1998 and 2009. But paper mills ranking was stable, only slipping from position 3 to position 4 between 1998 and 2009. Engineered wood member and truss manufacturing, and forest products and timber tract production had the largest declines in ranking.

TABLE 7. FOREST PRODUCTS: NORTH TOTAL REGION, VALUE ADDED, OUTPUT, AND EMPLOYMENT , IMPLAN

				2009 forestry sectors North Total				
Up or Down in Rank	1998 Rank by Output	2009 Rank by Output	2009 Industry Code	2009 Description	2009 Value Added	2009 Output	2009 Employment	"Best Match" Comparable Sector 1998 vs. 2009?
down	3	4	105	Paper mills	$558,459,528	$2,037,352,576	2,830	yes
down	46	56	16	Commercial logging	$70,983,825	$206,273,360	1,755	yes
up	123	89	295	Wood kitchen cabinet and countertop manufacturing	$39,515,504	$130,203,000	1,090	yes
down	19	44	98	Reconstituted wood product manufacturing	$166,750,262	$262,432,288	716	yes
		99	99	Wood windows and doors and millwork manufacturing	$35,437,180	$104,256,328	672	no
down	60	135	95	Sawmills and wood preservation	$14,439,745	$64,233,428	299	yes
down	133	174	103	All other miscellaneous wood product manufacturing	$17,328,357	$35,923,076	229	yes
		193	100	Wood container and pallet manufacturing	$12,066,251	$23,199,642	161	no
		207	301	Office furniture and custom architectural woodwork and millwork manufacturing	$9,321,415	$18,881,196	124	no
down	108	243	97	Engineered wood member and truss manufacturing	$4,693,367	$10,689,228	73	yes
down	202	262	297	Nonupholstered wood household furniture manufacturing	$3,186,360	$6,663,170	48	yes
down	214	288	302	Showcase, partition, shelving, and locker manufacturing	$1,210,202	$3,611,087	22	yes
down	129	250	15	Forestry, forest products, and timber tract production	$5,265,747	$9,474,946	14	yes
		323	296	Upholstered household furniture manufacturing	$67,163	$200,946	2	no

Note: This table includes the additional five counties of the new North Total Region for both 1998 and 2009.

Table 8 and Figure 8 highlight percentage changes in three measures of economic activity for the forest product sectors between 1998 and 2009. The dollar values are in nominal or current dollars, and are not adjusted for inflation in Table 8. Although the table reports unadjusted percent change, the up or down direction of the change is indicated. Where possible, 1998 and 2009 data from sectors which offer a one-to-one correspondence are listed in Table 8 for comparison.

TABLE 8. FOREST PRODUCTS: NORTH TOTAL REGION, COMPARABLE SECTORS FOR VALUE ADDED, OUTPUT, EMPLOYMENT, IMPLAN 1998 VS. 2009

Value Added	1998 new est.*	2009	Unadjusted % change*
Paper Mills	$451,482,000	$558,459,528	34.41%
Reconstituted wood product mfg	$157,994,000	$166,750,256	5.54%
Commercial logging	$53,829,000	$70,983,824	31.87%
Sawmills and wood preservation	$26,276,000	$14,439,745	-45.05%
Engineered wood member and truss mfg	$22,018,000	$4,693,367	-78.68%
Wood kitchen cabinet and countertop mfg	$19,686,000	$39,515,508	100.73%
All other miscellaneous wood product mfg	$16,675,000	$17,328,358	3.92%
Forestry, forest products, and timber tract production	$13,695,000	$5,265,747	-61.55%
Showcase, partition, shelving, and locker mfg	$3,421,000	$1,210,202	-64.62%
Nonupholstered wood household furniture mfg	$3,391,000	$3,186,360	-6.03%
Veneer and plywood mfg	$69,000	$0	-100.00%
Output			
Paper Mills	$1,153,918,000	$2,037,352,576	76.56%
Reconstituted wood product mfg	$426,348,000	$262,432,288	-38.45%
Commercial logging	$151,237,000	$206,273,360	36.39%
Sawmills and wood preservation	$114,525,000	$64,233,428	-43.91%
Engineered wood member and truss mfg	$58,156,000	$10,689,228	-81.62%
Wood kitchen cabinet and countertop mfg	$43,947,000	$130,203,000	196.27%
Forestry, forest products, and timber tract production	$39,216,000	$9,474,946	-75.84%
All other miscellaneous wood product mfg	$36,532,000	$35,923,076	-1.67%
Nonupholstered wood household furniture mfg	$11,492,000	$6,663,170	-42.02%
Showcase, partition, shelving, and locker mfg	$9,202,000	$3,611,087	-60.76%
Veneer and plywood mfg	$241,000	$0	-100.00%
Employment			
Paper Mills	4573	2830	-38.11%
Reconstituted wood product mfg	1622	715.64	-55.88%
Commercial logging	929	1,755.16	88.93%
Sawmills and wood preservation	742	299.31	-59.66%
Wood kitchen cabinet and countertop mfg	585	1,090.35	86.38%
Forestry, forest products, and timber tract production	518	13.65	-97.37%
Engineered wood member and truss mfg	487	73.43	-84.92%
All other miscellaneous wood product mfg	430	229.32	-46.67%
Nonupholstered wood household furniture mfg	162	48.06	-70.34%
Showcase, partition, shelving, and locker mfg	94	22.48	-76.09%
Veneer and plywood mfg	2	0.00	-100.00%

Note: For commentary on Forest Products sectors from the 2001 report which are either aggregated or split into new sectoring in the 2009 data, please see the appendices to this report: Appendix A describes the difficulties in arraying IMPLAN data as time series. Appendix B describes the list of sectors defined here as forest products' sectors in IMPLAN 528 and 440, SIC, BEA, and NAICS sectoring schemes. Also discussed are sectors not found comparable between the 2001 and 2011 forestry analyses including Wood TV and radio Cabinets, Wood Office Furniture, and Pulp Mills. Although these are unadjusted dollars, the data reveals the direction of percent change, and whether the sector increased or decreased. In Figures 7 and 8 these results were checked against inflation by using the IMPLAN model deflators for each forest products sector. Figure 9 compares employment in forest sectors for the North Total Region between 1998 and 2009. North Total Region employment comparisons show that 9 of the 11 industries lost jobs. Only wood kitchen cabinets and countertops, and sawmills and wood preservation had solid job growth.

FIGURE 9. FOREST PRODUCTS: NORTH TOTAL REGION, COMPARABLE SECTORS, VALUE ADDED, IMPLAN 1998 AND 2009

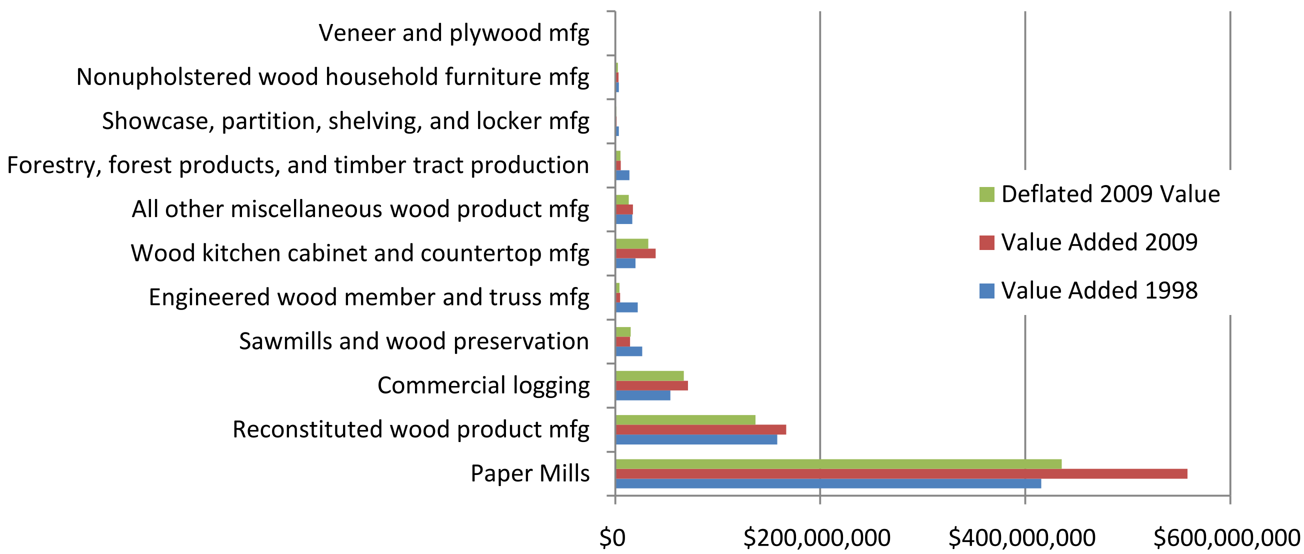


FIGURE 10. FOREST PRODUCTS: NORTH TOTAL REGION, COMPARABLE SECTORS, OUTPUT, IMPLAN 1998 AND 2009

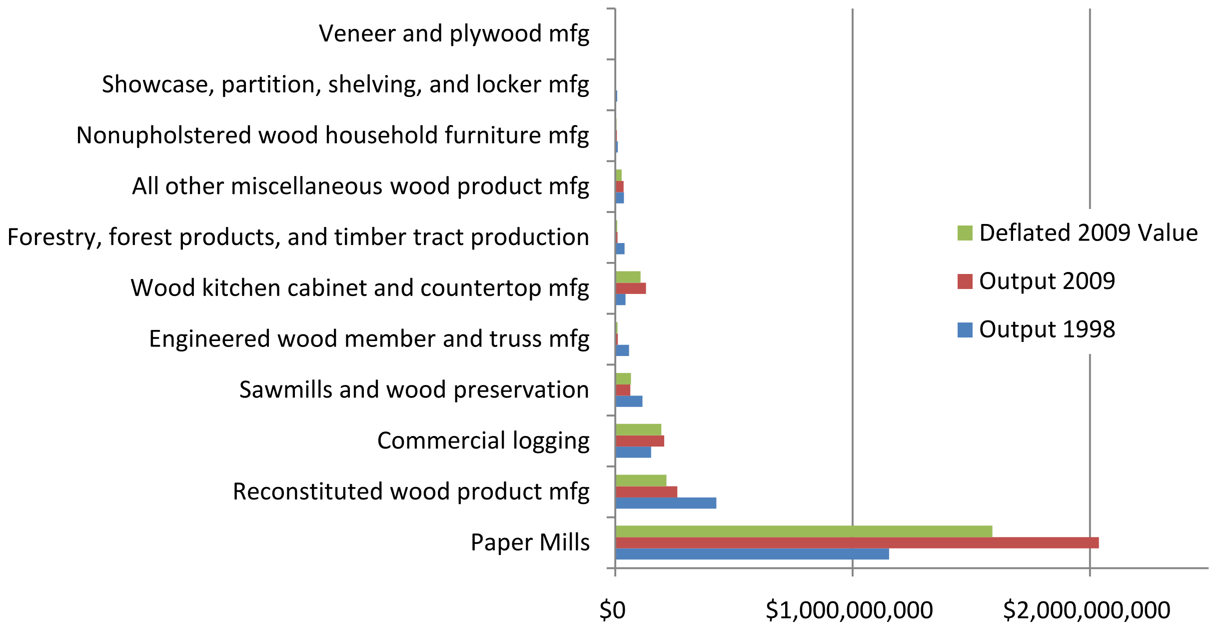


FIGURE 11. FOREST PRODUCTS: NORTH TOTAL REGION, EMPLOYMENT, IMPLAN 1998 AND 2009

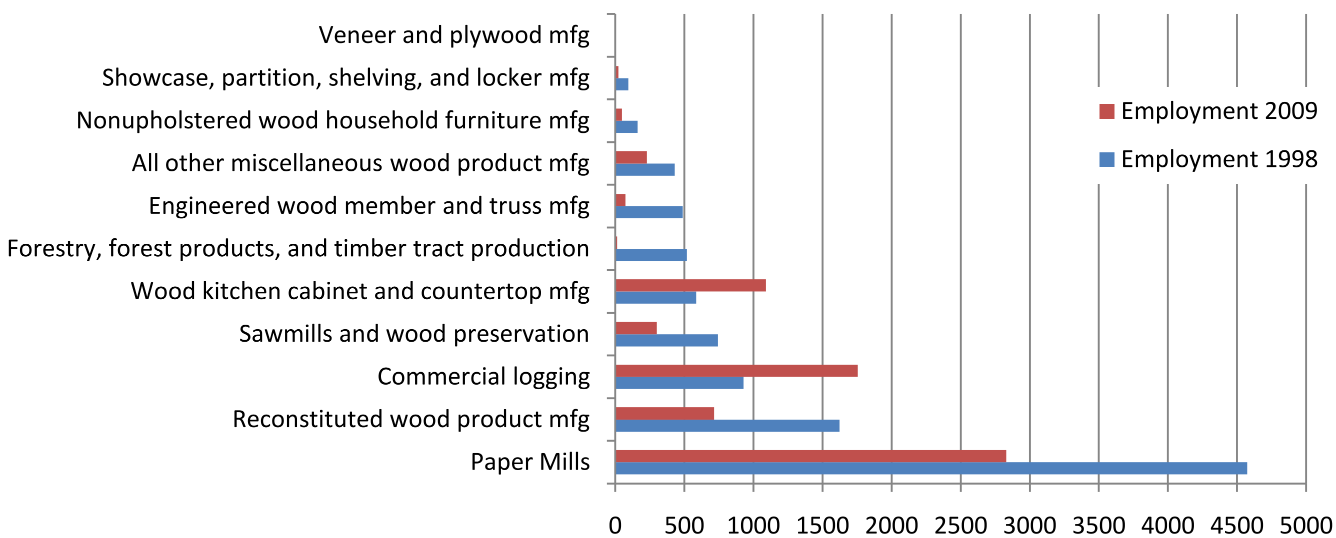


Table 9 reports the IMPLAN model individual forest sector 1998 deflated values. The 2009 values are shown in 1998 dollars, and the three measures of the economy from this table are graphed in Figures 8, 9 and 10. Growth industries included paper mills, commercial logging, wood kitchen cabinets and countertops. This expansion occurred in both nominal and deflated value added and output measures.

However, reconstituted wood products and all other miscellaneous wood products showed small growth in 2009 dollars. Deflating the value added and output dollars reveals that these sectors declined when compared to 1998.

TABLE 9. FOREST PRODUCTS: NORTH TOTAL REGION, COMPARABLE SECTORS, IMPLAN 1998 AND 2009, DEFLATED DOLLARS

North Total 2009

Industry Code	Description	Value Added 1998	Value Added 2009	Deflated Value*
105	Paper Mills	$415,482,000	$558,459,528	$435,598,426
98	Reconstituted wood product mfg	$157,994,000	$166,750,256	$136,901,960
16	Commercial logging	$53,829,000	$70,983,824	$66,937,746
95	Sawmills and wood preservation	$26,276,000	$14,439,745	$14,974,016
97	Engineered wood member and truss mfg	$22,018,000	$4,693,367	$4,059,762
295	Wood kitchen cabinet and countertop mfg	$19,686,000	$39,515,508	$32,244,655
103	All other miscellaneous wood product mfg	$16,675,000	$17,328,358	$13,065,582
15	Forestry, forest products, and timber tract prod.	$13,695,000	$5,265,747	$4,976,131
302	Showcase, partition, shelving, and locker mfg	$3,421,000	$1,210,202	$1,002,047
297	Nonupholstered wood household furniture mfg	$3,391,000	$3,186,360	$2,558,647
96	Veneer and plywood mfg	$69,000	$0	$0

Industry Code	Description	Output 1998	Output 2009	Deflated Value*
105	Paper Mills	$1,153,918,000	$2,037,352,576	$1,589,135,009
98	Reconstituted wood product mfg	$426,348,000	$262,432,288	$215,456,908
16	Commercial logging	$151,237,000	$206,273,360	$194,515,778
95	Sawmills and wood preservation	$114,525,000	$64,233,428	$66,610,065
97	Engineered wood member and truss mfg	$58,156,000	$10,689,228	$9,246,182
295	Wood kitchen cabinet and countertop mfg	$43,947,000	$130,203,000	$106.245,648
15	Forestry, forest products, and timber tract prod.	$39,216,000	$9,474,946	$8,953,824
103	All other miscellaneous wood product mfg	$36,532,000	$35,923,076	$27,085,999
297	Nonupholstered wood household furniture mfg	$11,492,000	$6,663,170	$5,350,525
302	Showcase, partition, shelving, and locker mfg	$9,202,000	$3,611,087	$2,989,980
96	Veneer and plywood mfg	$241,000	$0	

Industry Code	Description	Employment 1998	Employment 2009
105	Paper Mills	4573	2830
98	Reconstituted wood product mfg	1622	716
16	Commercial logging	929	1,755
95	Sawmills and wood preservation	742	299
295	Wood kitchen cabinet and countertop mfg	585	1,090
15	Forestry, forest products, and timber tract prod.	518	14
97	Engineered wood member and truss mfg	487	73
103	All other miscellaneous wood product mfg	430	229
297	Nonupholstered wood household furniture mfg	162	48
302	Showcase, partition, shelving, and locker mfg	94	22
96	Veneer and plywood mfg	2	0

*2009 values are deflated to 1998 dollars.

Location quotients (LQs) for the North Total Region are shown in Table 10. LQs of greater than one indicate the industry is part of the export base of the region, while an LQ of less than one shows that sector is a net importer to the region. For example, reconstituted wood products have an LQ of 29.59 using value added as a measure. This means that reconstituted wood products are over 29 times more significant to the region's economy than it is to the nation. Paper mills are also very strong, with an LQ of over 17 when output is used as the measure. Overall, the forest products industry is an important contributor to the export base of the North Total counties. Only the three sectors of non-upholstered wood household furniture manufacturing; forest and timber track production; and showcase, partition, shelving and locker manufacturing has output LQs of less than one. These import based industries could also be considered opportunities because they are present in the region and could be developed to become part of the export base. This type of economic development is called import substitution.

TABLE 10. FOREST PRODUCTS: NORTH TOTAL REGION VS. U.S., LOCATION QUOTIENTS, IMPLAN 2009

Forest Products: North Total Region vs. US IMPLAN 2009 Location Quotients

Exporting Industries in Economic Base:	Value Added
Reconstituted wood product manufacturing	29.59
Paper mills	16.91
Commercial logging	7.42
All other miscellaneous wood product manufacturing	6.26
Wood kitchen cabinet and countertop manufacturing	4.53
Office furniture and custom architectural woodwork and millwork mfg	3.95
Wood windows and doors and millwork manufacturing	2.92
Wood container and pallet manufacturing	1.81
Sawmills and wood preservation	1.43
Engineered wood member and truss manufacturing	1.28
Forestry, forest products, and timber tract production	1.17
Importing Industries to the Economic Base:	
Nonupholstered wood household furniture manufacturing	0.54
Showcase, partition, shelving, and locker manufacturing	0.19

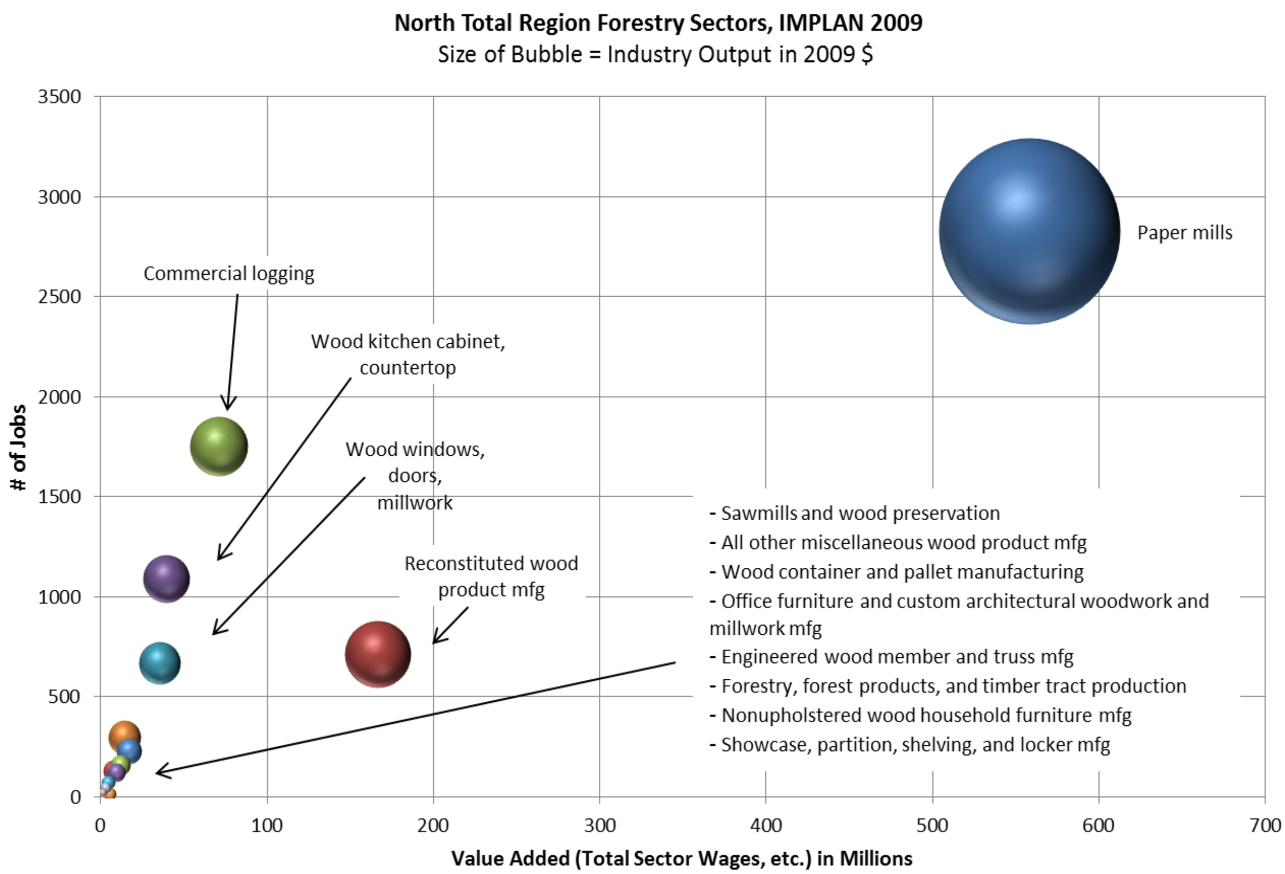
Exporting Industries in Economic Base:	Output
Reconstituted wood product manufacturing	27.56
Paper mills	17.46
Commercial logging	7.58
All other miscellaneous wood product manufacturing	5.75
Wood kitchen cabinet and countertop manufacturing	4.53
Office furniture and custom architectural woodwork and millwork mfg	3.65
Wood windows and doors and millwork manufacturing	2.91
Wood container and pallet manufacturing	1.60
Sawmills and wood preservation	1.53
Engineered wood member and truss manufacturing	1.24
Importing Industries to the Economic Base:	
Forestry, forest products, and timber tract production	0.84
Nonupholstered wood household furniture manufacturing	0.52
Showcase, partition, shelving, and locker manufacturing	0.21

Exporting Industries in Economic Base:	Employment
Reconstituted wood product manufacturing	19.85
Paper mills	14.45
Commercial logging	6.41
All other miscellaneous wood product manufacturing	4.39
Wood kitchen cabinet and countertop manufacturing	3.67
Office furniture and custom architectural woodwork and millwork mfg	2.84
Wood windows and doors and millwork manufacturing	2.39
Sawmills and wood preservation	1.26
Wood container and pallet manufacturing	1.13
Engineered wood member and truss manufacturing	1.02
Importing Industries to the Economic Base:	
Nonupholstered wood household furniture manufacturing	0.43
Forestry, forest products, and timber tract production	0.37
Showcase, partition, shelving, and locker manufacturing	0.18

Figure 11 summarizes the three measures of value added, output and employment together as a bubble chart for the forest products sectors. The horizontal axis shows the value added measure, so sector bubbles further to the right indicate a higher value added. The vertical axis shows the relative number of jobs. Finally, the size of the bubble is determined by the sector's total dollar output.

The graph depicts how the forest products industry sectors cluster around each other and the relationship between the sectors. Clearly, paper mills is the dominate sector with the largest output, value added and jobs. But the four industries of commercial logging; wood kitchen cabinet and countertop manufacturing; wood window and doors and millwork manufacturing; and reconstituted wood products have also separated themselves from the pack. The remaining eight industries are smaller in all respects and tightly clustered together.

FIGURE 12. FOREST PRODUCTS: NORTH TOTAL REGION, SUMMARY FORESTRY SECTORS, IMPLAN 2009



Hospitality

As noted in the 2001 report, tourism is difficult to define and track. Most often data for tourism studies is gathered by survey. Nevertheless, for purposes of this update, the research team continues to define a "hospitality" industry, and findings from the sectors defined as hospitality sectors are reported here.

Table 11 compares the relative rank for the hospitality sectors. Because of major IMPLAN re-sectoring of the industry definitions, only three sectors were comparable. [For more background on re-sectoring, please see sector bridge information for hospitality sectors in the appendices of this report.]

The strength of the hospitality group is shown by the sector food services and drinking places holding the eleventh highest rank in both years. The sector automotive equipment rental and leasing also had an improvement in ranking. In addition, hotels and motels including casino hotels had a high rank of 26 in the 2009 rankings. However, performing art companies did drop slightly from 1998 to 2009.

TABLE 11. HOSPITALITY: NORTH TOTAL REGION, TOP TEN IN VALUE ADDED, OUTPUT, AND EMPLOYMENT, IMPLAN 2009

Up or Down in Rank?	1998 Rank by Output	2009 Rank by Output	2009 Industry Code	2009 Description	2009 Value Added	2009 Output	2009 Employment	"Best Match" Comparable Sector 1998 vs. 2009?
same	11	11	413	Food services and drinking places	$566,953,506	$1,257,250,688	26,968	yes
		26	411	Hotels and motels, including casino hotels	$192,083,658	$396,949,280	5,121	no
		108	409	Amusement parks, arcades, and gambling industries	$52,051,045	$91,244,456	1,942	no
		131	410	Other amusement and recreation industries	$38,394,863	$67,044,732	1,852	no
		107	412	Other accommodations	$38,446,550	$92,707,448	1,419	no
		205	407	Fitness and recreational sports centers	$9,662,645	$19,677,954	705	no
down	194	221	402	Performing arts companies	$7,699,859	$15,155,807	627	close
		256	403	Spectator sports companies	$5,004,228	$8,467,636	349	no
		239	408	Bowling centers	$7,540,406	$11,433,257	319	no
up	204	145	362	Automotive equipment rental and leasing	$34,944,705	$58,407,848	212	yes

Table 12 breaks out the export base industries from the import base sectors. The ten sectors are split evenly between the import and export base. The LQ values are lower than can be seen for the forest products sectors that have been shown in the report. The lower LQ values should be expected because the hospitality sectors or tourism industry are common across the nation so a high LQ in hospitality is rare. The North Total LQs that are greater than one show that tourism continues to be an important part of the regional economy in 2009.

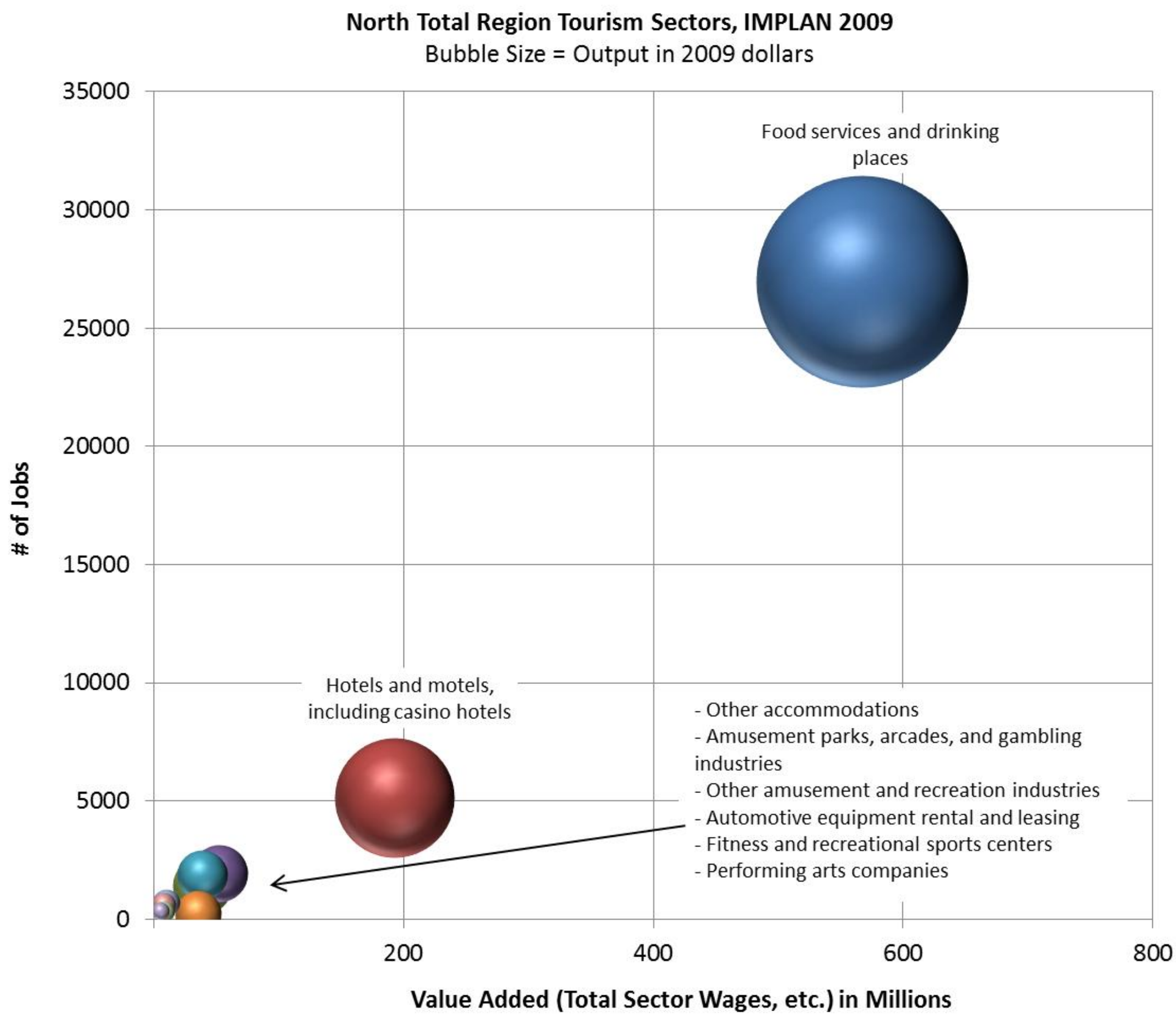
TABLE 12. HOSPITALITY: NORTH TOTAL REGION, TOP TEN IN VALUE ADDED, OUTPUT, AND EMPLOYMENT, IMPLAN 2009

Hospitality Sectors: North Total Region vs. US Location Quotients, IMPLAN 2009

	Value Added	Output	Employment
Exporting Industries in Economic Base:			
Other accommodations	2.42	2.87	2.99
Bowling centers	2.26	2.13	2.13
Hotels and motels, including casino hotels	1.40	1.52	1.76
Other amusement and recreation industries	1.15	1.22	1.53
Food services and drinking places	0.97	1.05	1.03
Importing Industries to the Economic Base:			
Automotive equipment rental and leasing	0.70	0.66	0.39
Amusement parks, arcades, and gambling industries	0.61	0.64	0.97
Performing arts companies	0.55	0.56	0.51
Fitness and recreational sports centers	0.49	0.54	0.51
Spectator sports companies	0.13	0.14	0.28

The Figure 12 tourism bubble chart reveals that food services and drinking places, and hotels and motels including casino hotels, are the economic drivers of the hospitality cluster. The remaining eight sectors are smaller and very tightly clustered together as far as number of jobs and total sector value added measure.

FIGURE 13. HOSPITALITY: NORTH TOTAL REGION, TOURISM SECTORS, IMPLAN 2009

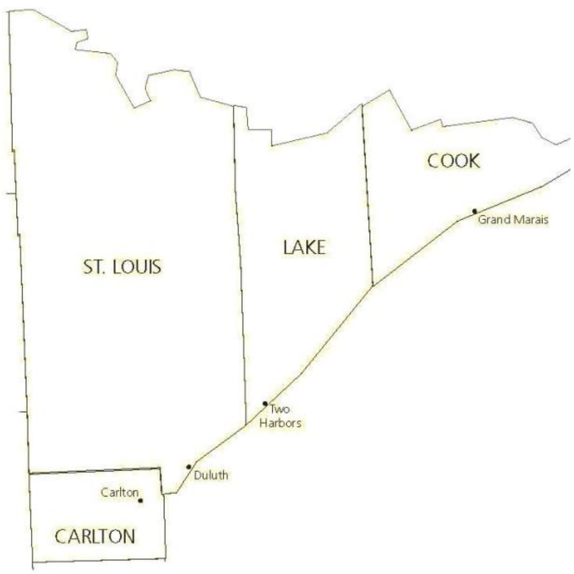


Northeast

The Economic Base: Northeast -Top Ten Value Added, Output, and Employment Measures

For the update on the Northeast Region, 2009 data are compared to 1998 data, which continues to include the same four counties—Carlton, St. Louis, Lake, and Cook. As with the North Total Region, readers should note that the IMPLAN sectoring schemes do not allow for one-to-one comparison of sectors in many cases, and also that estimates of comparisons in the economic base are not adjusted for inflation. Graphics which include 1998 and 2009 data are offered as estimates to contribute to a discussion of trends in the economic base of the Northeast Region.

FIGURE 14. COUNTIES OF THE NORTHEAST REGION



The Northeast Region has a different profile than the North Total Region. Tables 13–15 and Figures 14–16 reveal that mining iron ore is still the dominate sector in terms of value added and output measures of the economy, but this sector is only ranked eighth in employment.

The sector Insurance carriers is a new top ten sector that appears in the 2009 data but not the 1998 data. It has over $1.1 billion in output. Employment and payroll only (state and local government-education) is the top employing sector in both 1998 and 2009. However, the employment and payroll only (state and local government-non education) sector has contracted in 2009 from 1998. Across the Northeast Region, state and local government has gotten smaller. The hospitality sector remains strong and is a key driver in the Northeast Region economy.

TABLE 13. ECONOMIC BASE: NORTHEAST REGION, VALUE ADDED, IMPLAN 2009

Northeast Top Ten Value Added, 2009

Description	Value Added
Mining iron ore	$858,733,888
Employment and payroll only (state & local govt, education)	$786,566,144
Insurance carriers	$740,267,520
Offices of physicians, dentists, and other health practitioners	$500,521,088
Private hospitals	$450,139,872
Employment and payroll only (state & local govt, non-education)	$424,299,616
Electric power generation, transmission, and distribution	$414,340,128
Wholesale trade businesses	$250,639,632
Food services and drinking places	$229,856,976
Nursing and residential care facilities	$227,448,288

FIGURE 15. ECONOMIC BASE: NORTHEAST REGION, TOP TEN VALUE ADDED SECTORS, IMPLAN 1998 AND 2009

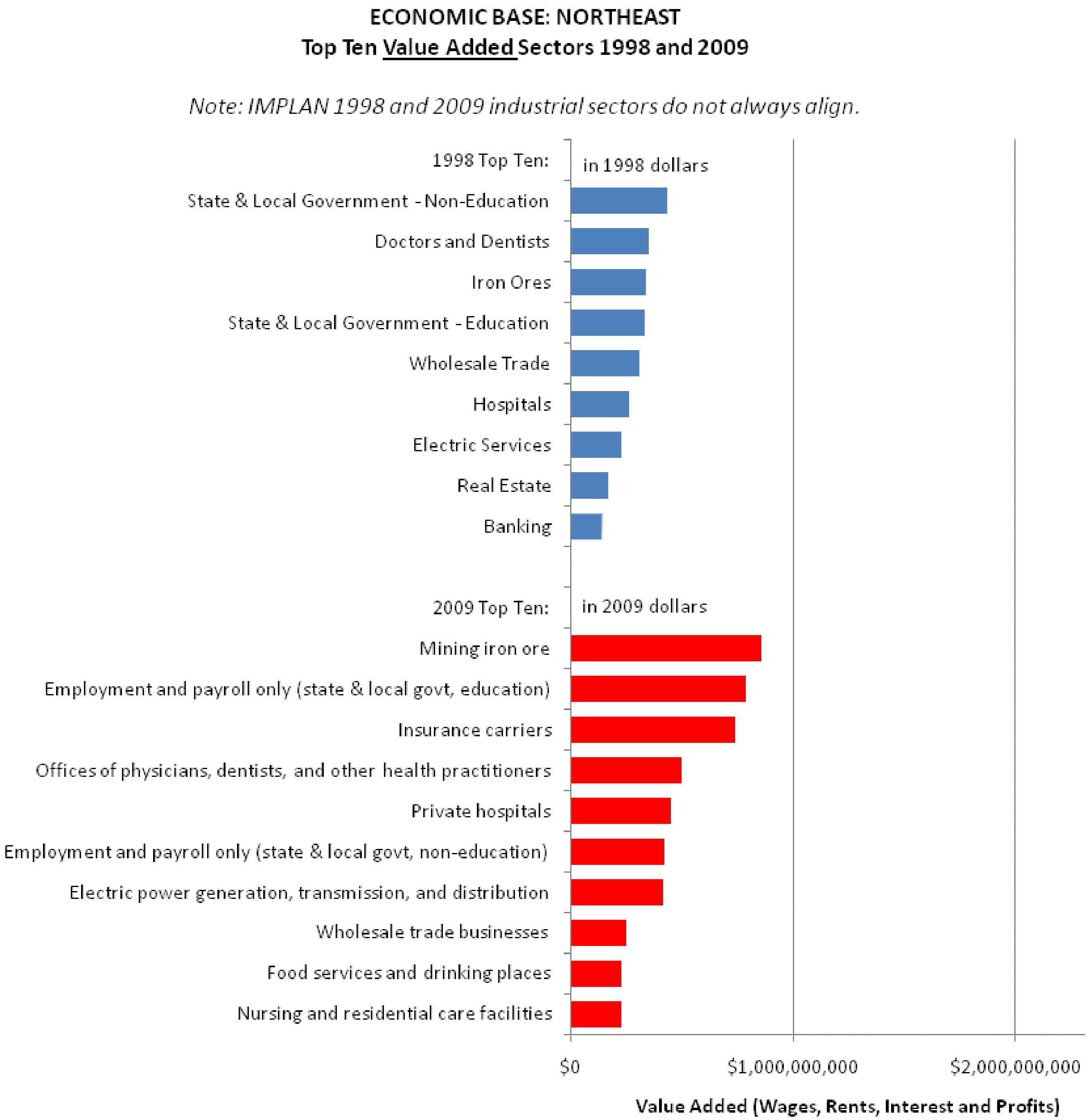


TABLE 14. ECONOMIC BASE: NORTHEAST REGION, TOP TEN OUTPUT SECTORS, IMPLAN 2009

Northeast Top Ten Output 2009

Description	Output
Mining iron ore	$2,086,350,848
Insurance carriers	$1,122,491,392
Private hospitals	$896,847,744
Employment and payroll only (state & local govt, education)	$786,566,144
Offices of physicians, dentists, and other health practitioners	$761,123,648
Paper mills	$690,525,376
Electric power generation, transmission, and distribution	$588,437,248
Food services and drinking places	$491,989,376
Monetary authorities and depository credit intermediation	$442,868,640
Employment and payroll only (state & local govt, non-education)	$424,299,584

FIGURE 16. ECONOMIC BASE: NORTHEAST REGION, OUTPUT SECTORS, IMPLAN 1998 AND 2009

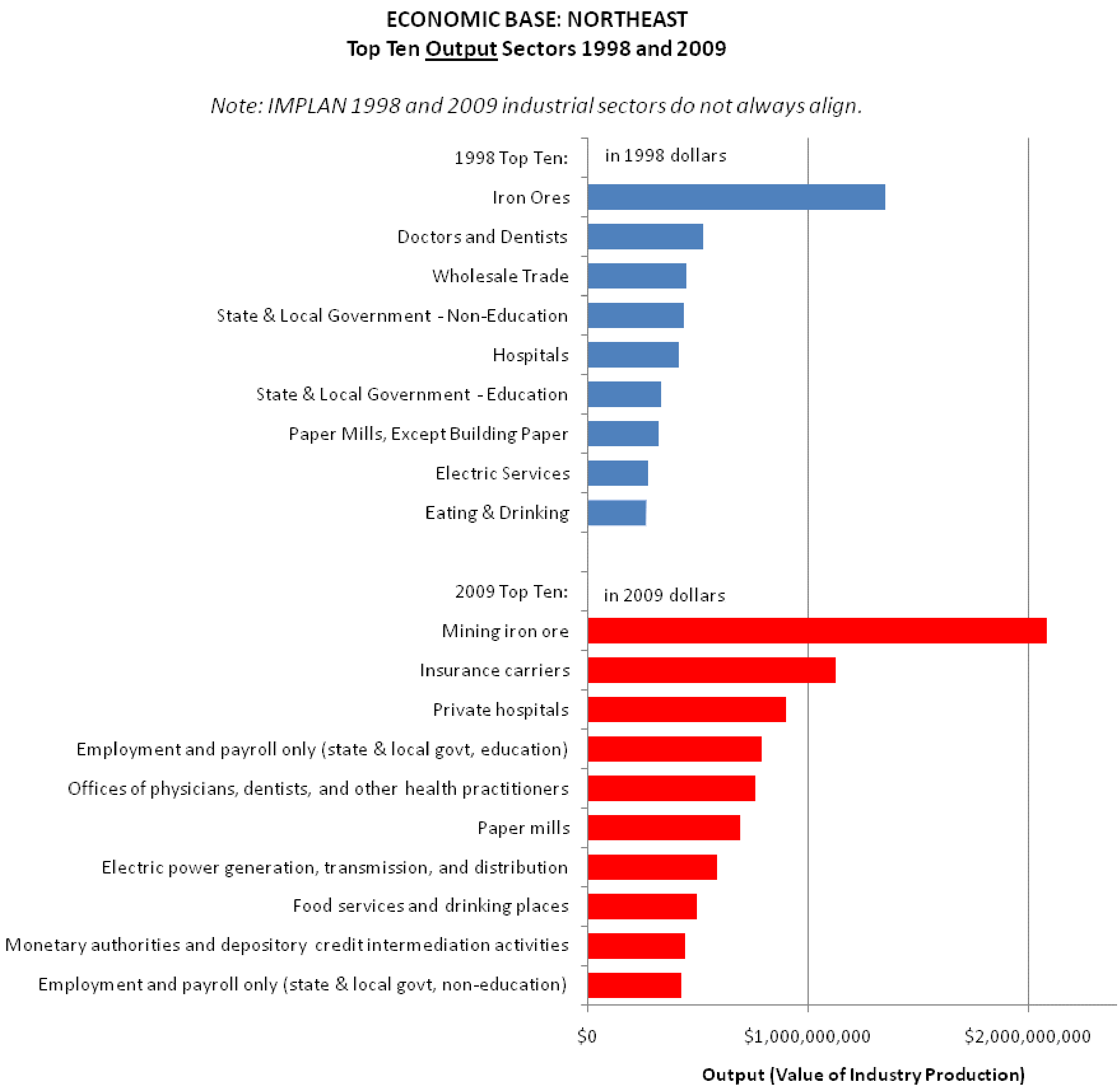
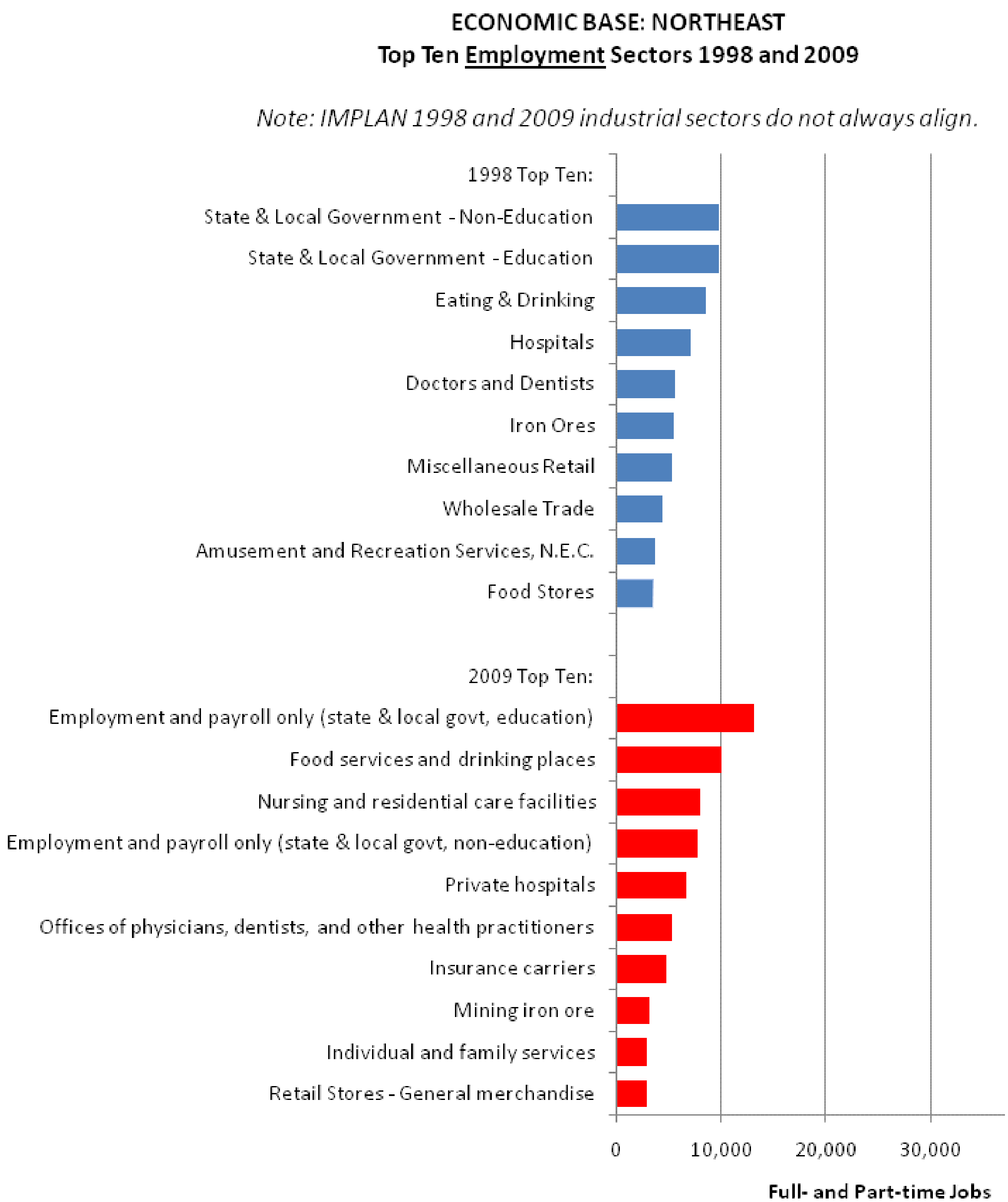


TABLE 15. ECONOMIC BASE: NORTHEAST REGION, TOP TEN EMPLOYMENT, IMPLAN 2009

Northeast Top Employment 2009

Description	Employment
Employment and payroll only (state & local govt, education)	13,222
Food services and drinking places	10,105
Nursing and residential care facilities	8,101
Employment and payroll only (state & local govt, non-education)	7,757
Private hospitals	6,762
Offices of physicians, dentists, and other health practitioners	5,408
Insurance carriers	4,759
Mining iron ore	3,266
Individual and family services	2,937
Retail Stores - General merchandise	2,894

FIGURE 17. ECONOMIC BASE: NORTHEAST REGION, TOP EMPLOYMENT SECTORS, IMPLAN 1998 AND 2009



Forest Products' Position in the Economy

Table 16 shows the relative rank (highest to lowest by employment) for the forest products sectors for 2009 in the Northeast Region.

TABLE 16. FOREST PRODUCTS: NORTHEAST REGION, VALUE ADDED, OUTPUT, AND EMPLOYMENT , IMPLAN 2009

Description	Value Added	Output	Employ-ment
Paper mills	$187,847,840	$690,525,376	963
Commercial logging	$20,498,846	$60,878,868	527
Reconstituted wood product manufacturing	$65,407,724	$102,938,952	343
All other miscellaneous wood product manufacturing	$7,003,834	$14,063,766	85
Wood windows and doors and millwork manufacturing	$3,010,316	$10,210,070	71
Sawmills and wood preservation	$3,896,032	$15,427,999	69
Wood kitchen cabinet and countertop manufacturing	$1,685,454	$5,108,570	41
Wood container and pallet manufacturing	$1,895,387	$3,645,275	25
Metal and other household furniture (except wood) mfg	$1,676,217	$3,859,344	15
Showcase, partition, shelving, and locker manufacturing	$753,135	$2,254,234	14
Forestry, forest products, and timber tract production	$1,639,824	$3,006,185	5
Engineered wood member and truss manufacturing	$286,660	$656,448	5
Office furniture custom architectural woodwork millwork mfg	$192,914	$496,581	4

In Table 17, where possible, 1998 and 2009 data from sectors which offer a one-to-one correspondence are listed for comparison. For commentary on Forest Products sectors from the 2001 report which are either aggregated or split into new sectoring in the 2009 data, please see the appendices to this report.[6]

Table 17 shows paper mills rose in value added and output but not employment. Reconstituted wood products—with the closing of oriental strand board (OSB) plants—show major decline in all three measures. The wood kitchen cabinets sector did show growth in output with a small decline in jobs and value added. Commercial logging employment was also up, despite having flat output results. Although relatively small, the showcase, partition, shelving and locker manufacturing sector shows growth in all three measures. (Again, although the table reports unadjusted percent change, the up or down direction of the change is indicated.)

[6] Appendix A describes the difficulties in arraying IMPLAN data as time series. Appendix B describes the list of sectors defined as forest products' sectors in IMPLAN 528 and 440, SIC, BEA, and NAICS sectoring schemes. Also discussed are sectors not found comparable between the 2001 and 2011 forestry analyses including Wood TV and radio Cabinets, Wood Office Furniture, and Pulp Mills. Finally, in this analysis, and therefore in this table, 1998 and 2009 dollars are not adjusted for inflation.

TABLE 17. FOREST PRODUCTS: NORTHEAST REGION, COMPARABLE SECTORS, VALUE ADDED, OUTPUT, EMPLOYMENT, IMPLAN 1998 VS. 2009

Value Added	1998	2009	Unadjusted % change*
Paper mills	$122,720,000	$187,847,841	53.07%
Reconstituted wood product mfg	$84,530,000	$65,407,722	-22.62%
Commercial logging	$22,930,000	$20,498,846	-10.60%
Sawmills and wood preservation	$10,890,000	$3,896,032	-64.22%
All other miscellaneous wood product mfg	$9,710,000	$7,003,833	-27.87%
Forestry, forest products, and timber tract production	$2,630,000	$1,639,824	-37.65%
Engineered wood member and truss mfg	$2,430,000	$286,660	-88.20%
Wood kitchen cabinet and countertop mfg	$1,800,000	$1,685,454	-6.36%
Nonupholstered wood household furniture mfg	$490,000	$0	-100.00%
Showcase, partition, shelving, and locker mfg	$90,000	$753,135	736.82%
Output			
Paper mills	$322,700,000	$690,525,376	113.98%
Reconstituted wood product mfg	$224,760,000	$102,938,952	-54.20%
Commercial logging	$64,570,000	$60,878,868	-5.72%
Sawmills and wood preservation	$43,330,000	$15,427,999	-64.39%
All other miscellaneous wood product mfg	$20,940,000	$14,063,766	-32.84%
Engineered wood member and truss mfg	$7,110,000	$656,448	-90.77%
Forestry, forest products, and timber tract production	$5,130,000	$3,006,185	-41.40%
Wood kitchen cabinet and countertop mfg	$4,020,000	$5,108,570	27.08%
Nonupholstered wood household furniture mfg	$1,810,000	$0	-100.00%
Showcase, partition, shelving, and locker mfg	$240,000	$2,254,234	839.26%
Employment			
Paper mills	1,228	963	-21.62%
Reconstituted wood product mfg	843	343	-59.31%
Commercial logging	397	527	32.62%
Sawmills and wood preservation	271	69	-74.51%
All other miscellaneous wood product mfg	241	85	-64.72%
Forestry, forest products, and timber tract production	91	5	-94.91%
Engineered wood member and truss mfg	64	5	-92.91%
Wood kitchen cabinet and countertop mfg	53	41	-22.35%
Nonupholstered wood household furniture mfg	26	0	-100.00%
Showcase, partition, shelving, and locker mfg	2	14	602.94%

*Because various sectors in the 1998 data have been aggregated or split in the data sectoring for 2009, only sector change "best match" comparable sectors are used for this calculation.

As with the North Total Region, estimation of inflation for value added and output measures in the Northeast Region is suggested in Figures 17 and 18.

FIGURE 18. FOREST PRODUCTS: NORTHEAST REGION, COMPARABLE SECTORS, <u>VALUE ADDED</u>, IMPLAN 1998 AND 2009

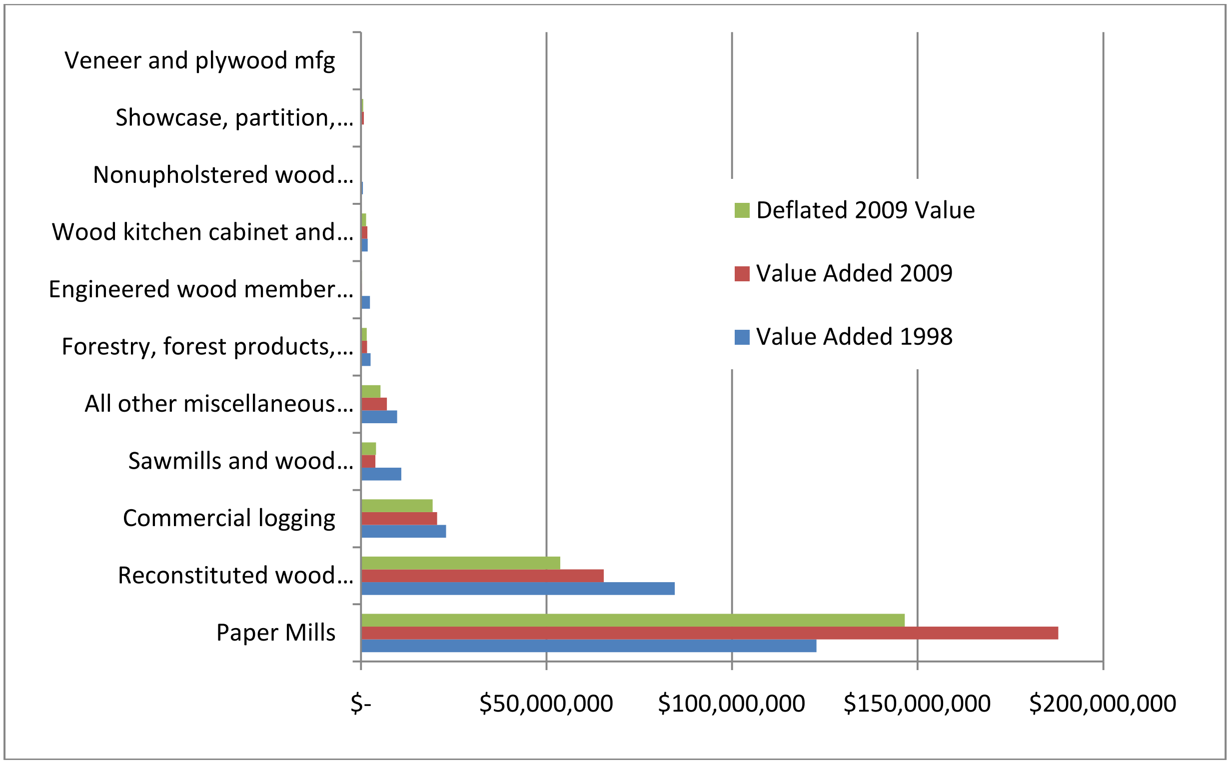


FIGURE 19. FOREST PRODUCTS: NORTHEAST REGION, COMPARABLE SECTORS, OUTPUT, IMPLAN 1998 AND 2009

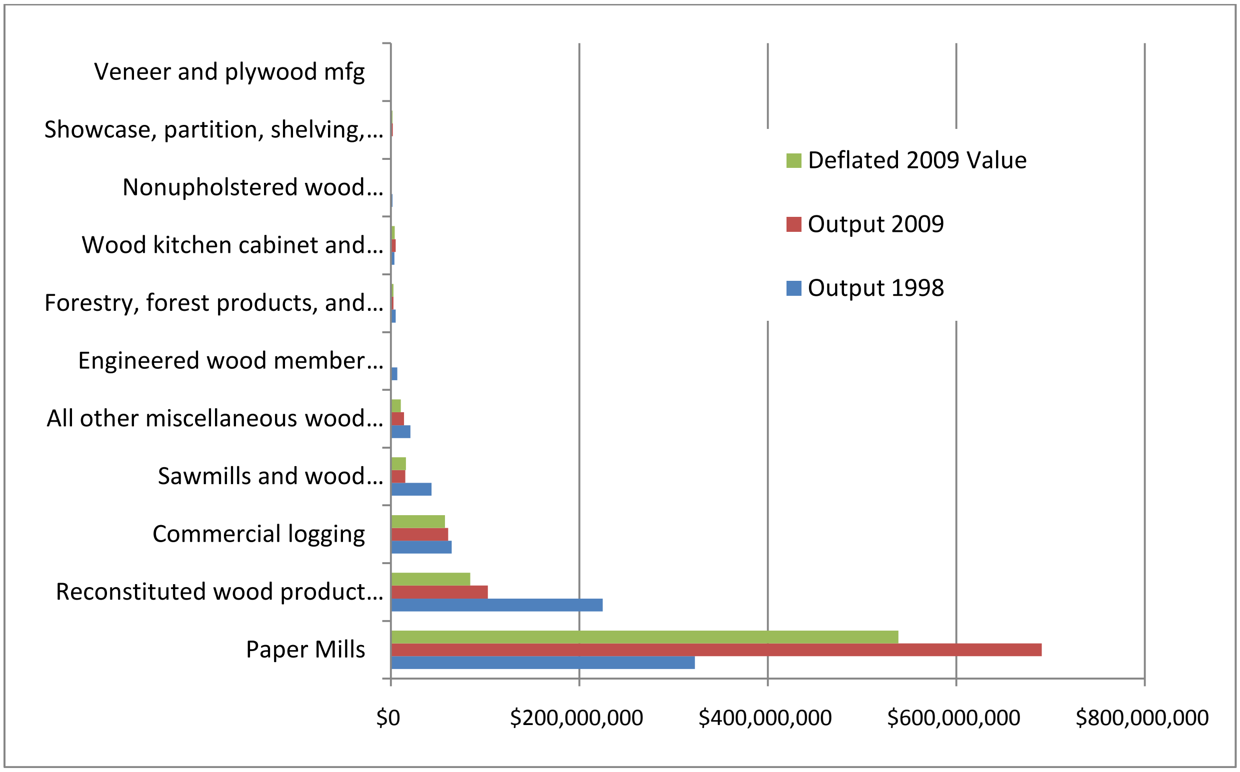


FIGURE 20. FOREST PRODUCTS: NORTHEAST REGION, EMPLOYMENT, IMPLAN 1998 AND 2009

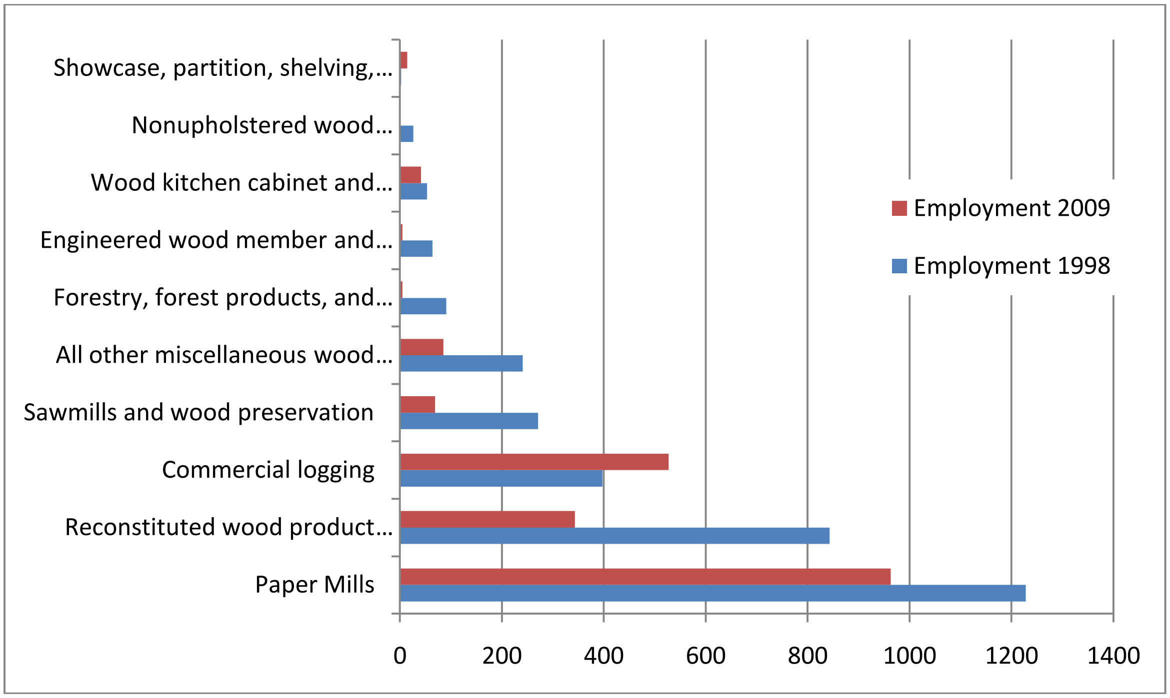


TABLE 18. FOREST PRODUCTS: NORTHEAST REGION, COMPARABLE SECTORS, IMPLAN 1998 AND 2009, DEFLATED DOLLARS

Value Added	1998	2009	Deflated 2009
Paper mills	$122,720,000	$187,847,841	$146,521,315
Reconstituted wood product mfg	$84,530,000	$65,407,722	$53,699,741
Commercial logging	$22,930,000	$20,498,846	$19,330,412
Sawmills and wood preservation	$10,890,000	$3,896,032	$4,040,185
All other miscellaneous wood product mfg	$9,710,000	$7,003,833	$5,280,891
Forestry, forest products, and timber tract production	$2,630,000	$1,639,824	$1,549,634
Engineered wood member and truss mfg	$2,430,000	$286,660	$247,961
Wood kitchen cabinet and countertop mfg	$1,800,000	$1,685,454	$1,375,331
Nonupholstered wood household furniture mfg	$490,000	$0	$0
Showcase, partition, shelving, and locker mfg	$90,000	$753,135	$623,596
Output			
Paper mills	$322,700,000	$690,525,376	$538,609,793
Reconstituted wood product mfg	$224,760,000	$102,938,952	$84,512,880
Commercial logging	$64,570,000	$60,878,868	$57,408,773
Sawmills and wood preservation	$43,330,000	$15,427,999	$15,998,835
All other miscellaneous wood product mfg	$20,940,000	$14,063,766	$10,604,080
Engineered wood member and truss mfg	$7,110,000	$656,448	$567,827
Forestry, forest products, and timber tract production	$5,130,000	$3,006,185	$2,840,845
Wood kitchen cabinet and countertop mfg	$4,020,000	$5,108,570	$4,168,593
Nonupholstered wood household furniture mfg	$1,810,000	$0	$0
Showcase, partition, shelving, and locker mfg	$240,000	$2,254,234	$1,866,506
Employment			
Paper mills	1,228	963	
Reconstituted wood product mfg	843	343	
Commercial logging	397	527	
Sawmills and wood preservation	271	69	
All other miscellaneous wood product mfg	241	85	
Forestry, forest products, and timber tract production	91	5	
Engineered wood member and truss mfg	64	5	
Wood kitchen cabinet and countertop mfg	53	41	
Nonupholstered wood household furniture mfg	26	0	
Showcase, partition, shelving, and locker mfg	2	14	

*Because various sectors in the 1998 data have been aggregated or split in the data sectoring for 2009, only sector change "best match" comparable sectors are used for this calculation.

As shown in Table 19, despite plant closings in the region, reconstituted wood product LQ remains high at around 30 for value added and output with an LQ of 28 for employment. Commercial logging and other miscellaneous wood products are part of the export base. The sector Wood kitchen cabinets and countertops is rapidly growing, and although still relatively small, is present as an import industry with LQ of less than one.

As discussed in the earlier sections of this report, location quotients indicate the degree of concentration for an identified industry. A location quotient over one identifies that industry as being over-represented in the region and classifies that industry as being a part of the region's economic base or a driver of the regional economy.

TABLE 19. FOREST PRODUCTS: NORTHEAST REGION VS. U.S., LOCATION QUOTIENTS, IMPLAN 2009

Forest Products, Northeast Region vs. US IMPLAN 2009 Value Added, Output, and Employment Location Quotients

Exporting Industries in Economic Base:	Value Added
Reconstituted wood product manufacturing	30.31
Paper mills	14.85
All other miscellaneous wood product manufacturing	6.61
Commercial logging	5.60
Sawmills and wood preservation	1.01
Importing Industries to the Economic Base:	
Forestry, forest products, and timber tract production	0.95
Wood container and pallet manufacturing	0.74
Wood windows and doors and millwork manufacturing	0.65
Wood kitchen cabinet and countertop manufacturing	0.51
Showcase, partition, shelving, and locker manufacturing	0.31
Office furniture and custom architectural woodwork and millwork mfg	0.21
Engineered wood member and truss manufacturing	0.20

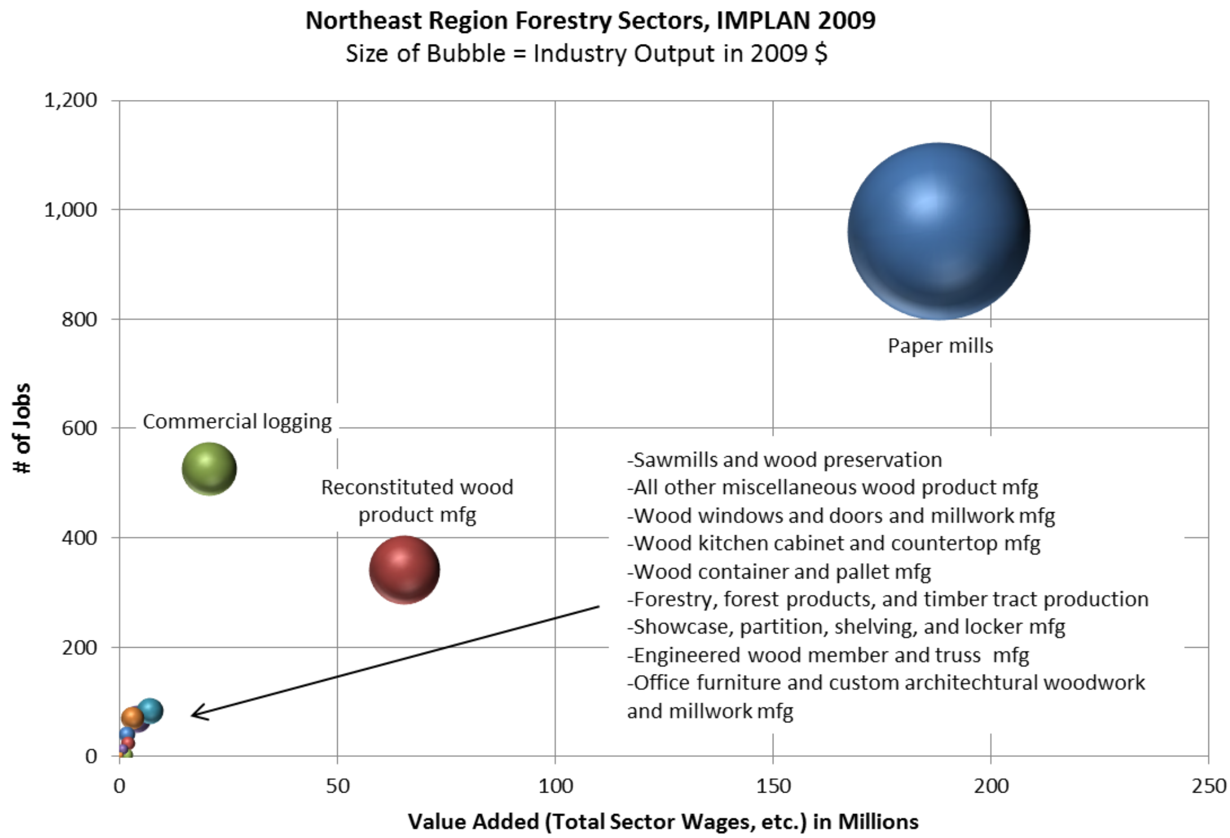
Exporting Industries in Economic Base:	Output
Reconstituted wood product manufacturing	29.54
Paper mills	16.17
All other miscellaneous wood product manufacturing	6.15
Commercial logging	6.12
Sawmills and wood preservation	1.01
Importing Industries to the Economic Base:	
Wood windows and doors and millwork manufacturing	0.78
Forestry, forest products, and timber tract production	0.73
Wood container and pallet manufacturing	0.69
Wood kitchen cabinet and countertop manufacturing	0.49
Showcase, partition, shelving, and locker manufacturing	0.35
Office furniture and custom architectural woodwork and millwork manufacturing	0.26

Exporting Industries in Economic Base:	Employment
Reconstituted wood product manufacturing	28.78
Paper mills	14.87
Commercial logging	5.82
All other miscellaneous wood product manufacturing	4.93
Importing Industries to the Economic Base:	
Sawmills and wood preservation	0.88
Wood windows and doors and millwork manufacturing	0.77
Wood container and pallet manufacturing	0.54
Wood kitchen cabinet and countertop manufacturing	0.42
Forestry, forest products, and timber tract production	0.38
Showcase, partition, shelving, and locker manufacturing	0.34
Office furniture and custom architectural woodwork and millwork mfg	0.28
Engineered wood member and truss manufacturing	0.19

Figure 20 summarizes the three measures of value added, output and employment together as a bubble chart for Northeast Region forest products sectors. The horizontal axis shows the value added measure, so sector bubbles further to the right indicate a higher value added. The vertical axis shows the number of jobs. Finally, the size of the bubble is determined by the sector's total dollar output.

The graph depicts how the forest products industry sectors cluster around each other and the relationship between the sectors. Clearly, again, paper mills is the dominate sector with the largest output, value added and employment. But the industries of commercial logging and reconstituted wood products have also separated themselves from the pack. The remaining nine industries are smaller in all respects and tightly clustered together.

FIGURE 21. FOREST PRODUCTS: NORTHEAST REGION, SUMMARY FORESTRY SECTORS, IMPLAN 2009



Hospitality

The hospitality sectors remain key players in the Northeast Region. Table 20 shows in all three measures that food services and drinking places, and hotels and motels including casinos, have the greatest impact in the tourism industry with the highest employment output and value added. The location quotients in Table 21 indicate that these two sectors also play a major role in the export base of the Northeast Region. Figure 21 of the Northeast Region tourism industry clearly shows how important the food services and drinking places are to the region. Only the sector hotels and motels including casinos is able to separate from the rest of the hospitality cluster.

TABLE 20. HOSPITALITY: NORTHEAST REGION, TOP TEN IN VALUE ADDED, OUTPUT, AND EMPLOYMENT, IMPLAN 2009

Description	Value Added
Food services and drinking places	$229,856,992
Hotels and motels, including casino hotels	$74,107,554
Amusement parks, arcades, and gambling industries	$19,335,961
Other amusement and recreation industries	$13,428,359
Other accommodations	$12,836,992
Fitness and recreational sports centers	$3,783,185
Automotive equipment rental and leasing	$3,757,400
Performing arts companies	$3,292,068
Bowling centers	$2,662,775
Spectator sports companies	$596,591
	Output
Food services and drinking places	$491,989,376
Hotels and motels, including casino hotels	$151,130,832
Amusement parks, arcades, and gambling industries	$33,363,522
Other amusement and recreation industries	$22,389,366
Other accommodations	$28,278,894
Fitness and recreational sports centers	$7,213,444
Automotive equipment rental and leasing	$6,280,256
Performing arts companies	$6,731,968
Bowling centers	$3,983,227
Spectator sports companies	$970,194
	Employment
Food services and drinking places	10,105
Hotels and motels, including casino hotels	1,901
Amusement parks, arcades, and gambling industries	678
Other amusement and recreation industries	541
Other accommodations	395
Fitness and recreational sports centers	239
Automotive equipment rental and leasing	65
Performing arts companies	295
Bowling centers	86
Spectator sports companies	34

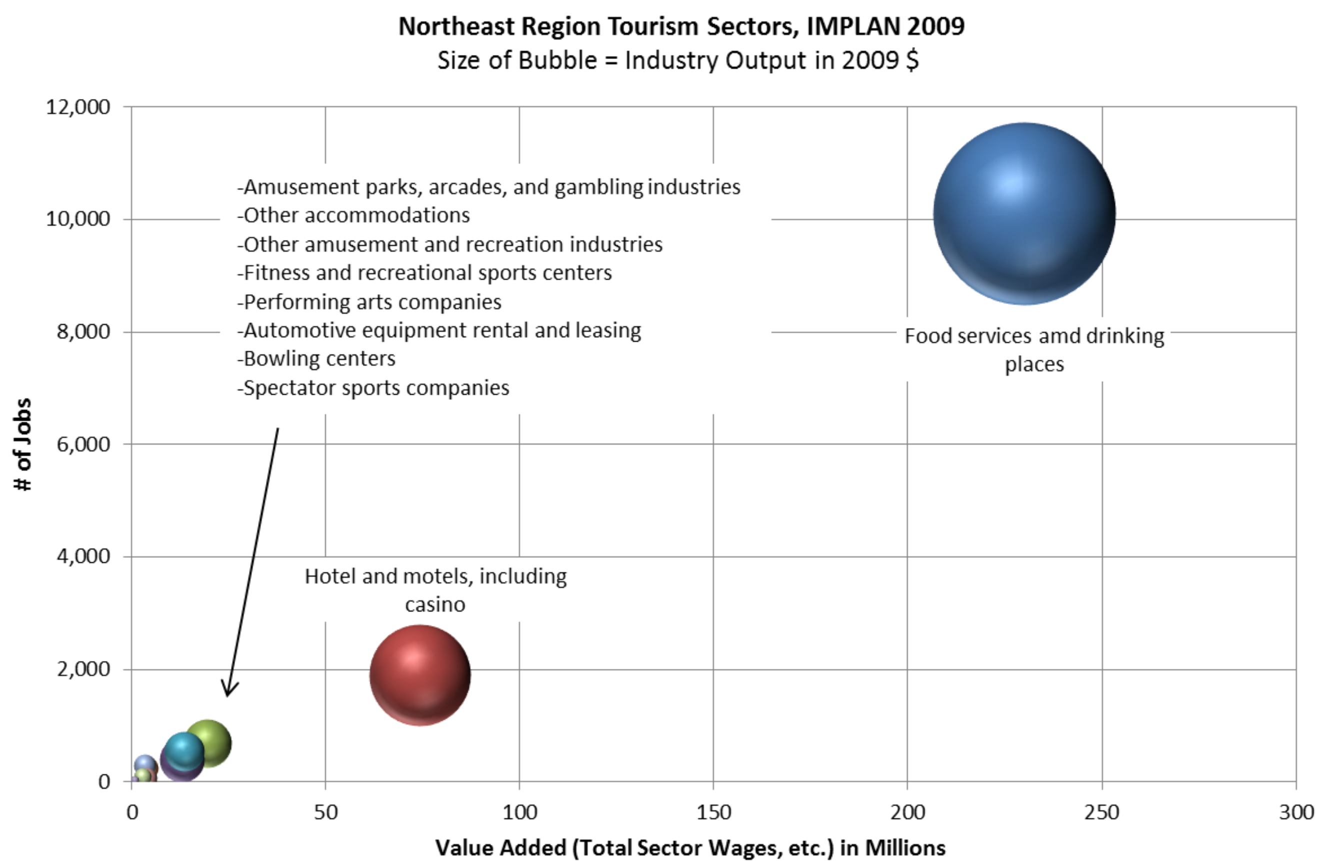
TABLE 21. HOSPITALITY: NORTHEAST REGION, TOP TEN IN VALUE ADDED, OUTPUT, AND EMPLOYMENT, IMPLAN 2009

Hospitality Sectors, Northeast Region vs. US Location Quotients, IMPLAN 2009

	Value Added	Output	Employment
Exporting Industries in Economic Base:			
Other accommodations	2.11	2.39	2.52
Hotels and motels, including casino hotels	1.41	1.59	1.97
Bowling centers	2.08	2.02	1.74
Other amusement and recreation industries	1.05	1.11	1.35
Food services and drinking places	1.03	1.12	1.16
Importing Industries to the Economic Base:			
Performing arts companies	0.61	0.67	0.73
Amusement parks and recreation services	0.59	0.64	1.03
Fitness and recreational sports centers	0.50	0.54	0.53
Automotive equipment rental and leasing	0.20	0.19	0.36
Spectator sports companies	0.04	0.04	0.08

As discussed above, Figure 21 tourism bubble chart that food services and drinking places, and hotels, are the economic drivers of the hospitality cluster. The remaining eight sectors are smaller and very tightly clustered together as far as number of jobs and total sector value added.

FIGURE 22. HOSPITALITY: NORTHEAST REGION TOURISM SECTORS, IMPLAN 2009



North Central

The Economic Base: North Central -Top Ten Value Added, Output, and Employment Measures

As with the North Total Region, the North Central Region includes five additional counties when compared to the 2001 study area. As with the previous analyses of county economies, note that the IMPLAN sectoring schemes do not allow for one-to-one comparison of sectors in many cases, and also that estimates of comparisons of the economic base are not adjusted for inflation. Graphics which include 1998 and 2009 data are offered as estimates to contribute to a discussion of trends in the economic base of the North Central counties.

FIGURE 23. COUNTIES OF THE NORTH CENTRAL REGION

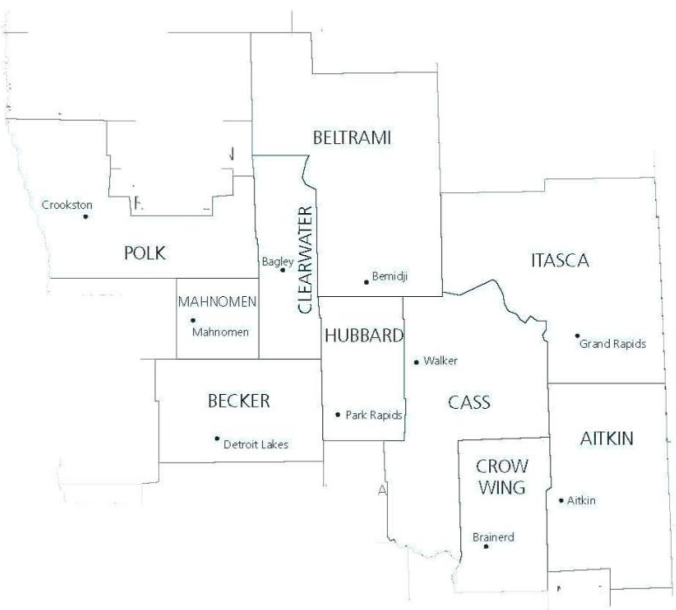


Table 22 and Figure 23 show that employment and payroll only (state and local government-education) and employment and payroll only (state and local government-non-education) are the top value added producing sectors in the region. The hospitality sectors are represented by food services and drinking places in 2009. Real estate is also present in both 1998 and 2009 and could possibly be tied to the tourism industry through vacation homes. Overall growth in the North Central Region is shown by the rising importance of electric power generation.

TABLE 22. ECONOMIC BASE: NORTH CENTRAL REGION, <u>VALUE ADDED</u>, IMPLAN 2009

North Central Top Ten Value Added, 2009

Description	Value Added
Employment and payroll only (state & local govt, education)	$853,339,520
Employment and payroll only (state & local govt, non-education)	$402,587,040
Electric power generation, transmission, and distribution	$272,484,640
Private hospitals	$268,981,152
Offices of physicians, dentists, and other health practitioners	$238,930,672
Monetary authorities and depository credit intermediation activities	$218,605,568
Wholesale trade businesses	$213,282,544
Real estate establishments	$199,055,824
Food services and drinking places	$184,478,864
Construction of other new nonresidential structures	$176,267,408

FIGURE 24. ECONOMIC BASE: NORTH CENTRAL REGION, TOP VALUE ADDED SECTORS, IMPLAN 1998 AND 2009

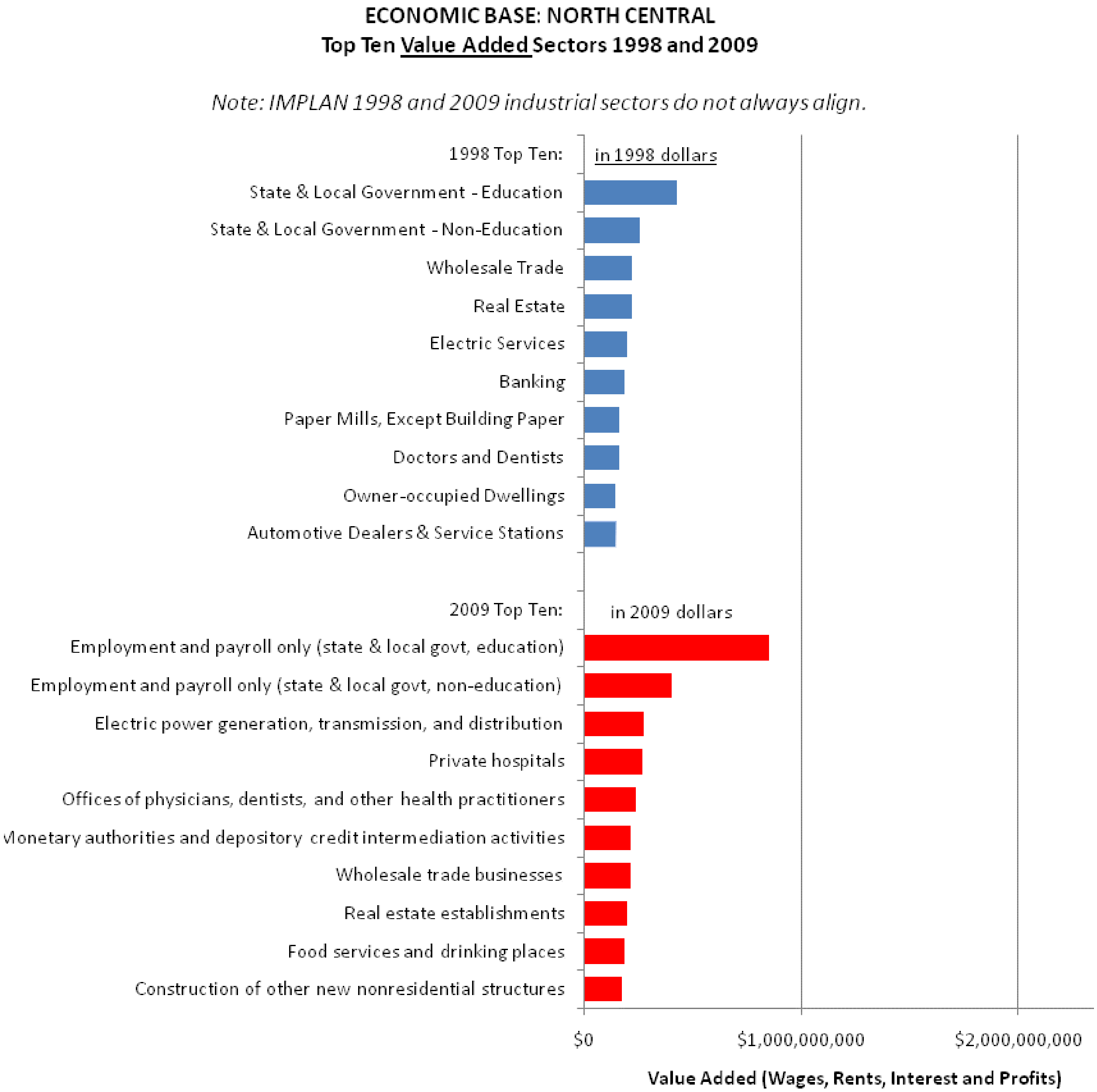


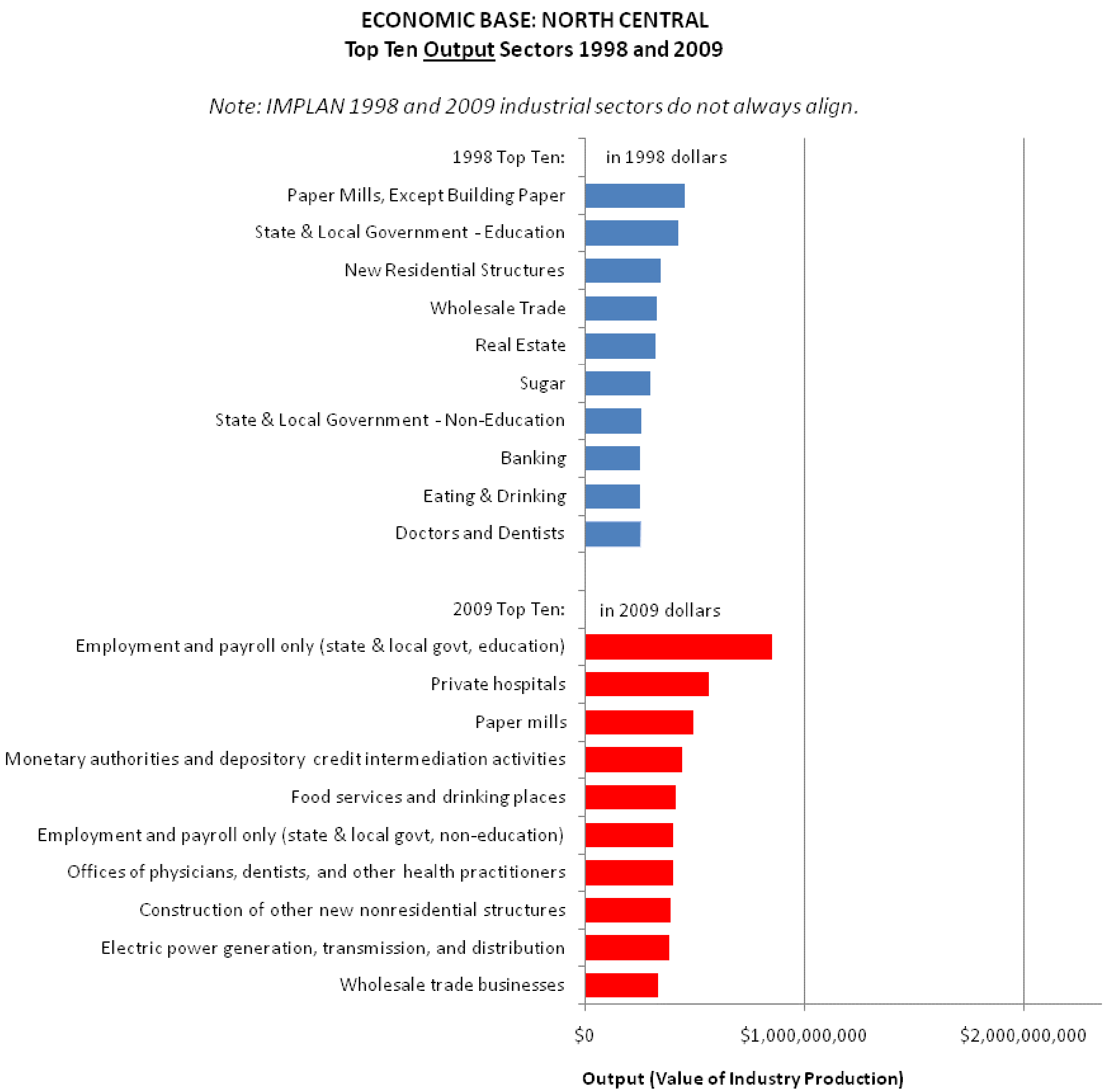
Table 23 and Figure 24 highlight the value of production or output of the North Central Region. Paper mills drop in ranking, slipping to the third highest output in 2009 compared to being first in 1998. The medical community in the region gained in importance, while new non-residential construction had an output value of almost $390 million. (Given the recession, construction output may have declined since 2009.)

Table 23. Economic Base: North Central Region, Top Ten Output, IMPLAN 2009

North Central Top Output 2009

Description	Output
Employment and payroll only (state & local govt, education)	$853,339,456
Private hospitals	$563,363,840
Paper mills	$492,071,904
Monetary authorities and depository credit intermediation	$443,651,840
Food services and drinking places	$412,618,016
Employment and payroll only (state & local govt, non-education)	$402,587,040
Offices of physicians, dentists, and other health practitioners	$399,165,472
Construction of other new nonresidential structures	$389,370,400
Electric power generation, transmission, and distribution	$386,977,024
Wholesale trade businesses	$332,854,752

FIGURE 25. ECONOMIC BASE: NORTH CENTRAL REGION, TOP OUTPUT SECTORS, IMPLAN 1998 AND 2009



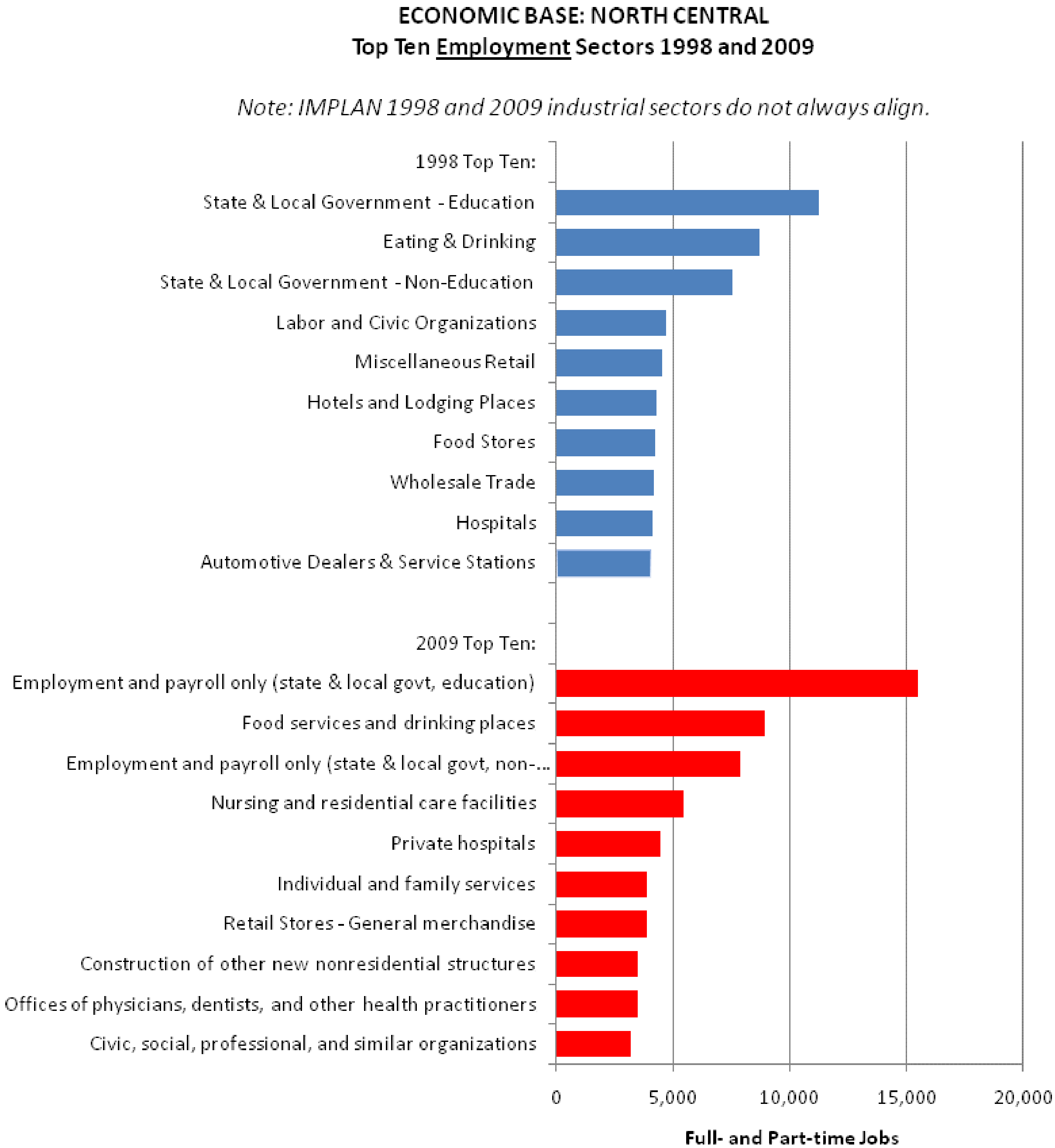
Employment is shown in Table 24 and Figure 25. Employment and payroll only (state and local government-education) grew significantly with 15,495 jobs in 2009. Food services and drinking places had the second highest employment, which indicates the importance of tourism. Private hospitals, and nursing and residential care facilities show a strong medical sector presence in the North Central Region.

TABLE 24. ECONOMIC BASE: NORTH CENTRAL REGION, TOP TEN EMPLOYMENT, IMPLAN 2009

North Central Top Employment 2009

Description	Employment
Employment and payroll only (state & local govt, education)	15,495
Food services and drinking places	8,940
Employment and payroll only (state & local govt, non-education)	7,865
Nursing and residential care facilities	5,440
Private hospitals	4,472
Individual and family services	3,876
Retail Stores - General merchandise	3,871
Construction of other new nonresidential structures	3,508
Offices of physicians, dentists, and other health practitioners	3,464
Civic, social, professional, and similar organizations	3,202
Retail Stores - Food and beverage	2,943
Wholesale trade businesses	2,548

FIGURE 26. ECONOMIC BASE: NORTH CENTRAL REGION, TOP EMPLOYMENT SECTORS, IMPLAN 1998 AND 2009



Forest Products' Position in the Economy

Although paper mills remains the forest products' largest output sector, as noted above, paper mills drop in the overall top ten ranking, slipping to the third highest output in 2009, compared to being first in 1998. Table 25 shows commercial logging has the highest employment in the 813 jobs with paper mills employing 695 workers. However, paper mills had a much higher output and value added.

TABLE 25. FOREST PRODUCTS: NORTH CENTRAL REGION, VALUE ADDED, OUTPUT, AND EMPLOYMENT , IMPLAN 2009

Description	Value Added	Output	Employ-ment
Commercial logging	$32,742,038	$95,371,400	813
Paper mills	$130,214,352	$492,071,904	695
Reconstituted wood product manufacturing	$98,464,032	$154,963,136	354
Wood windows and doors and millwork manufacturing	$10,330,532	$33,068,466	224
Wood kitchen cabinet and countertop manufacturing	$6,049,513	$23,808,152	214
Sawmills and wood preservation	$8,445,609	$38,599,428	181
All other miscellaneous wood product manufacturing	$6,798,205	$13,911,453	87
Engineered wood member and truss manufacturing	$2,678,355	$6,284,816	45
Wood container and pallet manufacturing	$2,951,056	$5,492,152	35
Nonupholstered wood household furniture mfg	$1,287,685	$2,807,575	22
Forestry, forest products, and timber tract production	$506,323	$891,757	1

Where possible, 1998 and 2009 data from sectors which offer a one-to-one correspondence are listed here for comparison. For commentary on Forest Products sectors from the 2001 report which are either aggregated or split into new sectoring in the 2009 data, please see the appendices to this report.[7]

Tables 26 and 27, and Figures 26-28 compare the 1998 North Central forest products to the 2009 industry. The deflated 2009 value added and output are also calculated and graphed in order to reveal the industry shifts. By looking at value added and output for paper mills it appears to increase slightly for output but decrease for value added. The deflated output value does show paper mills did decline. Hard hit sectors included engineered wood member and truss manufacturing, and sawmills and wood preservation. On the positive side, commercial logging, all other miscellaneous wood products, and wood kitchen cabinets and countertops show growth. Showcase, partition shelving and locker manufacturing, and veneer and plywood manufacturing disappeared in 2009. Employment changes

[7] Appendix A describes the difficulties in arraying IMPLAN data as time series. Appendix B describes the list of sectors defined as forest products' sectors in IMPLAN 528 and 440, SIC, BEA, and NAICS sectoring schemes. Also discussed are sectors not found comparable between the 2001 and 2011 forestry analyses including Wood TV and radio Cabinets, Wood Office Furniture, and Pulp Mills.

between 1998 and 2009 show that only commercial logging, and wood kitchen cabinets and countertops had added workers. All the other forest products sectors lost jobs.

TABLE 26. FOREST PRODUCTS: NORTH CENTRAL REGION, VALUE ADDED, OUTPUT, EMPLOYMENT, IMPLAN 1998 VS. 2009

Value Added	1998	2009	Unadjusted % change*
Paper Mills	$164,844,000	$130,214,352	-21.01%
Reconstituted wood product mfg	$70,105,000	$98,464,032	40.45%
Commercial logging	$18,634,000	$32,742,038	75.71%
Engineered wood member and truss mfg	$13,261,000	$2,678,355	-79.80%
Sawmills and wood preservation	$12,079,000	$8,445,609	-30.08%
Forestry, forest products, and timber tract production	$6,166,000	$506,323	-91.79%
All other miscellaneous wood product mfg	$5,715,000	$6,798,205	18.95%
Nonupholstered wood household furniture mfg	$876,000	$1,287,685	47.00%
Wood kitchen cabinet and countertop mfg	$755,000	$6,049,513	701.26%
Showcase, partition, shelving, and locker mfg	$263,000	$0	-100.00%
Veneer and plywood mfg	$69,000	$0	-100.00%
Output			
Paper Mills	$455,683,000	$492,071,904	7.99%
Reconstituted wood product mfg	$189,119,000	$154,963,136	-18.06%
Sawmills and wood preservation	$56,436,000	$38,599,428	-31.60%
Commercial logging	$53,914,000	$95,371,400	76.90%
Engineered wood member and truss mfg	$32,326,000	$6,284,816	-80.56%
Forestry, forest products, and timber tract production	$16,288,000	$891,757	-94.53%
All other miscellaneous wood product mfg	$12,106,000	$13,911,453	14.91%
Nonupholstered wood household furniture mfg	$3,130,000	$2,807,575	-10.30%
Wood kitchen cabinet and countertop mfg	$1,344,000	$23,808,152	1671.44%
Showcase, partition, shelving, and locker mfg	$636,000	$0	-100.00%
Veneer and plywood mfg	$241,000	$0	-100.00%
Employment			
Paper Mills	1,800	694.91	-61.39%
Reconstituted wood product mfg	719	353.56	-50.83%
Sawmills and wood preservation	374	181.39	-51.50%
Commercial logging	339	812.97	139.81%
Engineered wood member and truss mfg	254	44.70	-82.40%
Forestry, forest products, and timber tract production	214	1.18	-99.45%
All other miscellaneous wood product mfg	136	86.91	-36.10%
Nonupholstered wood household furniture mfg	45	21.51	-52.20%
Wood kitchen cabinet and countertop mfg	13	213.51	1542.42%
Showcase, partition, shelving, and locker mfg	6	0.00	-100.00%
Veneer and plywood mfg	2	0.00	-100.00%

*Because various sectors in the 1998 data have been aggregated or split in the data sectoring for 2009, only sector change "best match" comparable sectors are used for this calculation.

FIGURE 27. FOREST PRODUCTS: NORTH CENTRAL REGION, VALUE ADDED, IMPLAN 1998 AND 2009

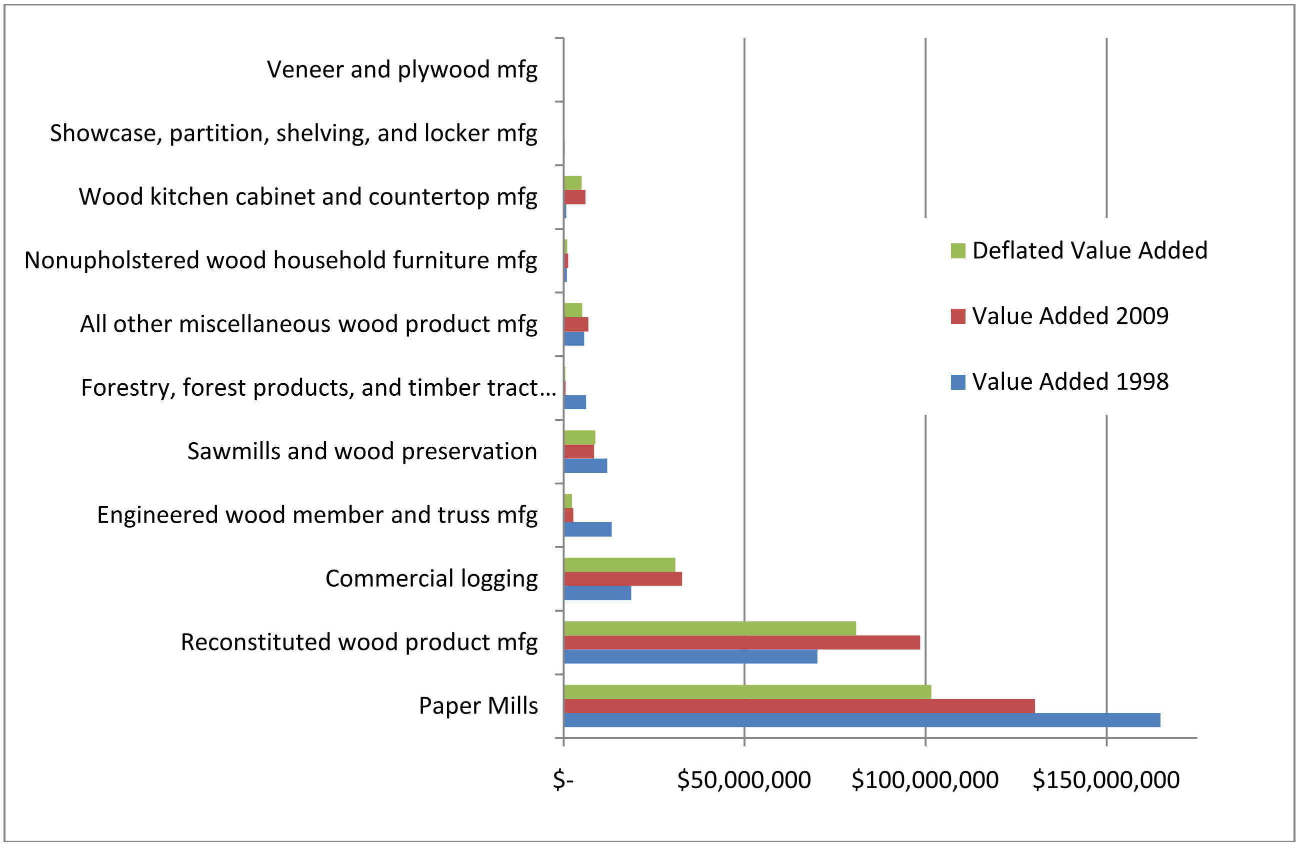


FIGURE 28. FOREST PRODUCTS: NORTH CENTRAL REGION, <u>OUTPUT</u>, IMPLAN 1998 AND 2009

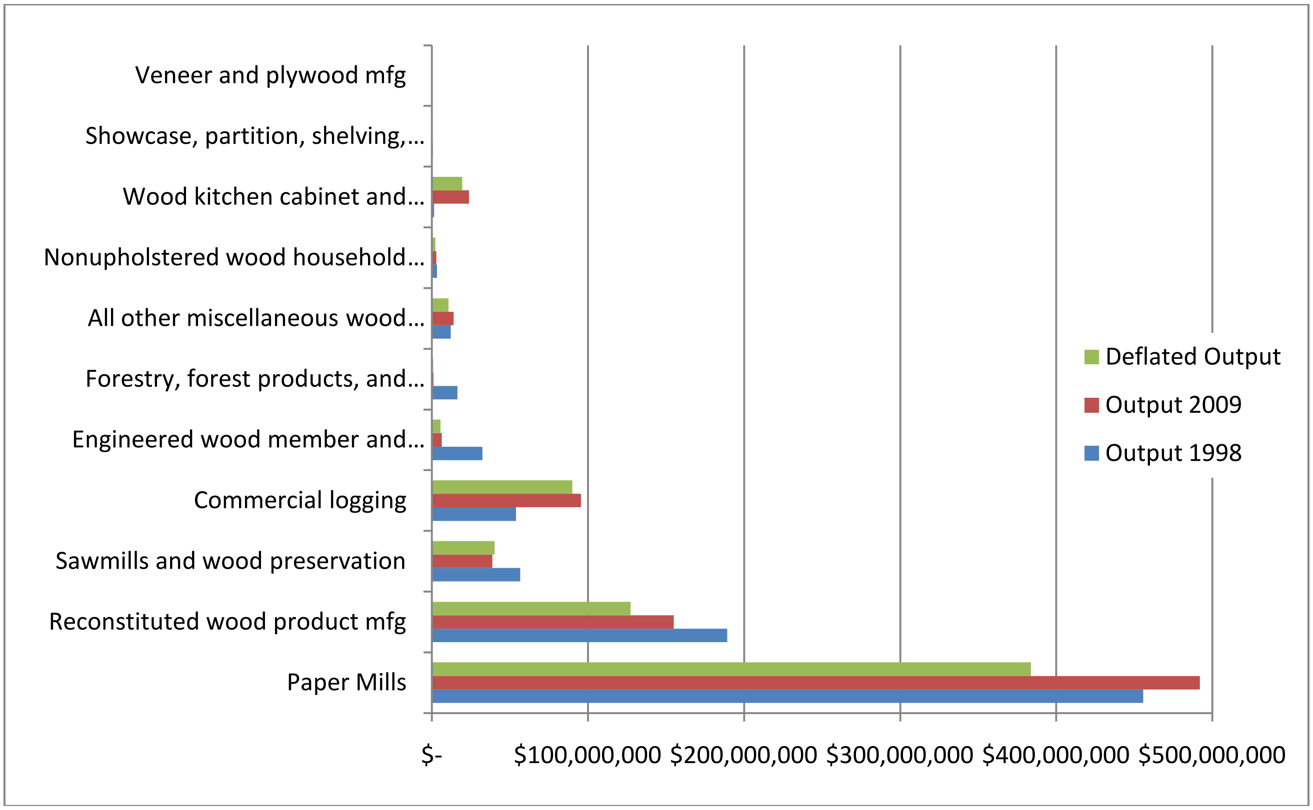


FIGURE 29. FOREST PRODUCTS: NORTH CENTRAL REGION, EMPLOYMENT, IMPLAN 1998 AND 2009

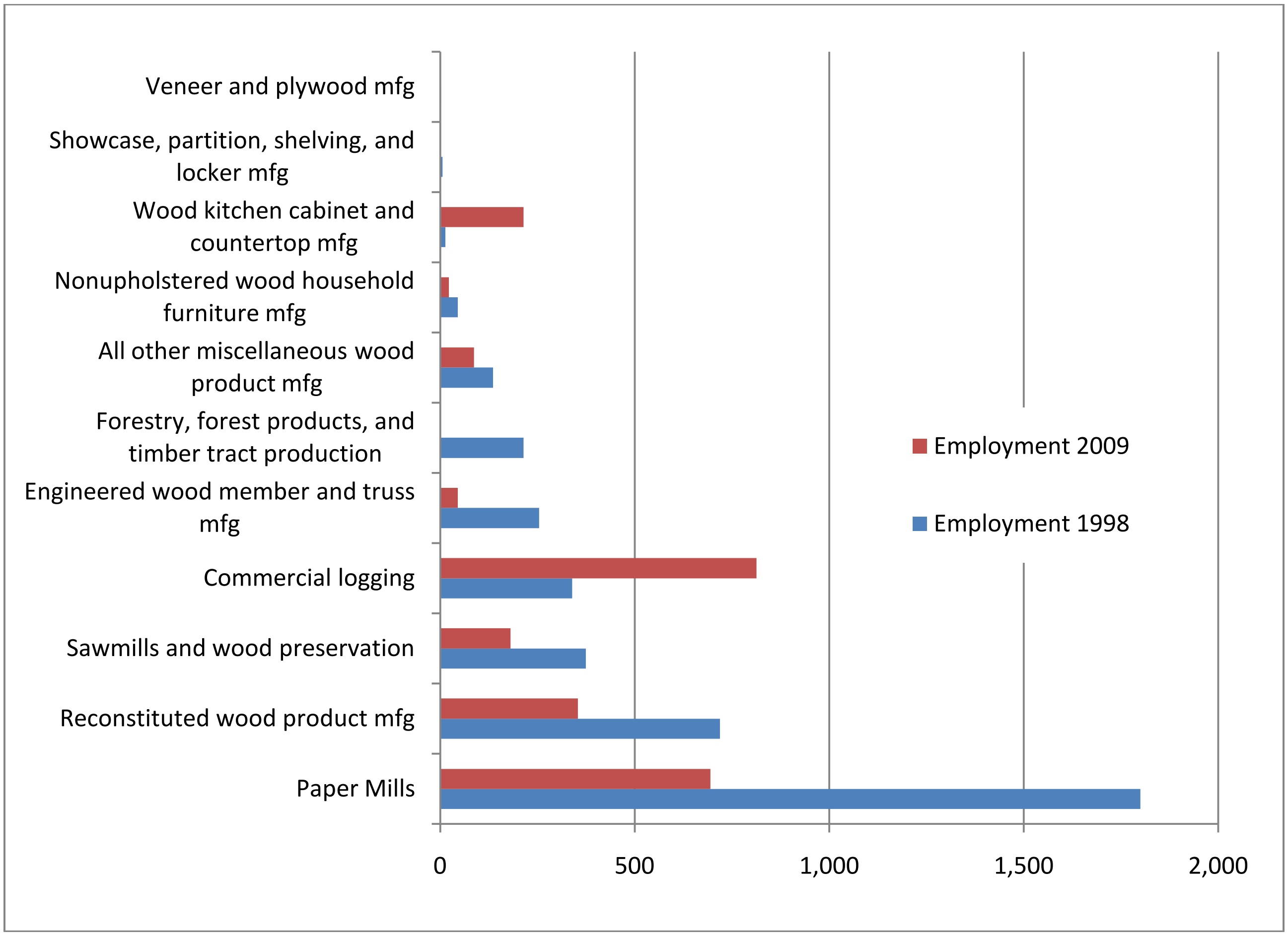


TABLE 27. FOREST PRODUCTS: NORTH CENTRAL REGION, IMPLAN 1998 AND 2009, DEFLATED DOLLARS

Value Added	1998	2009	Deflated 2009
Paper Mills	$164,844,000	$130,214,352	$101,567,195
Reconstituted wood product mfg	$70,105,000	$98,464,032	$80,838,970
Commercial logging	$18,634,000	$32,742,038	$30,875,742
Engineered wood member and truss mfg	$13,261,000	$2,678,355	$2,316,777
Sawmills and wood preservation	$12,079,000	$8,445,609	$8,758,097
Forestry, forest products, and timber tract production	$6,166,000	$506,323	$478,476
All other miscellaneous wood product mfg	$5,715,000	$6,798,205	$5,125,847
Nonupholstered wood household furniture mfg	$876,000	$1,287,685	$1,034,011
Wood kitchen cabinet and countertop mfg	$755,000	$6,049,513	$4,936,402
Showcase, partition, shelving, and locker mfg	$263,000	$0	$0
Veneer and plywood mfg	$69,000	$0	$0
Output			
Paper Mills	$455,683,000	$492,071,904	$383,816,085
Reconstituted wood product mfg	$189,119,000	$154,963,136	$127,224,735
Sawmills and wood preservation	$56,436,000	$38,599,428	$40,027,607
Commercial logging	$53,914,000	$95,371,400	$89,935,230
Engineered wood member and truss mfg	$32,326,000	$6,284,816	$5,436,365
Forestry, forest products, and timber tract production	$16,288,000	$891,757	$842,711
All other miscellaneous wood product mfg	$12,106,000	$13,911,453	$10,489,236
Nonupholstered wood household furniture mfg	$3,130,000	$2,807,575	$2,254,483
Wood kitchen cabinet and countertop mfg	$1,344,000	$23,808,152	$19,427,452
Showcase, partition, shelving, and locker mfg	$636,000	$0	$0
Veneer and plywood mfg	$241,000	$0	$0
Employment			
Paper Mills	1,800	694.91	
Reconstituted wood product mfg	719	353.56	
Sawmills and wood preservation	374	181.39	
Commercial logging	339	812.97	
Engineered wood member and truss mfg	254	44.70	
Forestry, forest products, and timber tract production	214	1.18	
All other miscellaneous wood product mfg	136	86.91	
Nonupholstered wood household furniture mfg	45	21.51	
Wood kitchen cabinet and countertop mfg	13	213.51	
Showcase, partition, shelving, and locker mfg	6	0.00	
Veneer and plywood mfg	2	0.00	

*Because various sectors in the 1998 data have been aggregated or split in the data sectoring for 2009, only sector change "best match" comparable sectors are used for this calculation.

Location quotients indicate the degree of concentration for an identified industry. A location quotient over one identifies that industry as being over-represented in the region and classifies that industry as being a part of the region's economic base or a driver of the regional economy.

Table 28 shows the North Central LQs in the forest products sectors. Reconstituted wood products value added and output show LQ values of over 56 and 53, and were the highest value in the entire study analysis. The North Central Region had the largest number of forestry sectors in the exporting economic base, with only wood container and pallet manufacturing, non-upholstered wood household furniture and forestry, forest products and timber tract production being part of the importing economy with an LQ of less than one.

TABLE 28. FOREST PRODUCTS: NORTH CENTRAL REGION VS. U.S., LOCATION QUOTIENTS, IMPLAN 2009

Forest Products, North Central Region vs. US IMPLAN 2009 Value Added, Output, and Employment Location Quotients

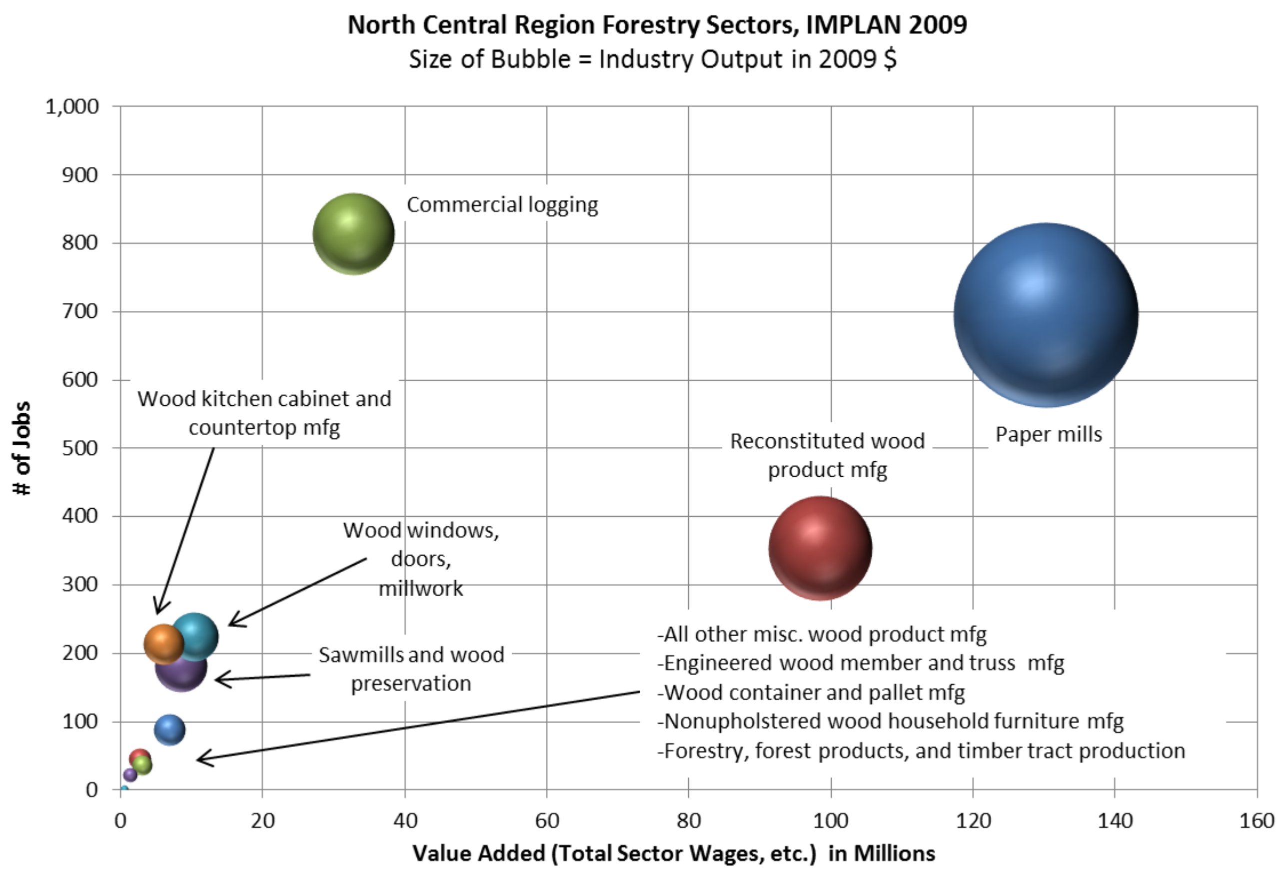
Exporting Industries in Economic Base:	Value Added
Reconstituted wood product manufacturing	56.44
Paper mills	12.74
Commercial logging	11.06
All other miscellaneous wood product manufacturing	7.93
Wood windows and doors and millwork manufacturing	2.75
Sawmills and wood preservation	2.70
Engineered wood member and truss manufacturing	2.36
Wood kitchen cabinet and countertop manufacturing	2.24
Wood container and pallet manufacturing	1.43
Importing Industries to the Economic Base:	
Nonupholstered wood household furniture manufacturing	0.70
Forestry, forest products, and timber tract production	0.36

Exporting Industries in Economic Base:	Output
Reconstituted wood product manufacturing	53.47
Paper mills	13.85
Commercial logging	11.52
All other miscellaneous wood product manufacturing	7.31
Wood windows and doors and millwork manufacturing	3.03
Sawmills and wood preservation	3.03
Wood kitchen cabinet and countertop manufacturing	2.72
Engineered wood member and truss manufacturing	2.40
Wood container and pallet manufacturing	1.25
Importing Industries to the Economic Base:	
Nonupholstered wood household furniture manufacturing	0.72
Forestry, forest products, and timber tract production	0.26

Exporting Industries in Economic Base:	Employment
Reconstituted wood product manufacturing	29.48
Paper mills	10.66
Commercial logging	8.92
All other miscellaneous wood product manufacturing	5.01
Wood windows and doors and millwork manufacturing	2.40
Sawmills and wood preservation	2.30
Wood kitchen cabinet and countertop manufacturing	2.16
Engineered wood member and truss manufacturing	1.87
Importing Industries to the Economic Base:	
Wood container and pallet manufacturing	0.75
Nonupholstered wood household furniture manufacturing	0.58
Forestry, forest products, and timber tract production	0.10

The North Central Region has some interesting sector clustering as shown in Figure 29. Wood kitchen cabinets and countertops, wood window door and millwork, and sawmills and wood preservation are clustered together. This cluster is small by comparison to the big three of paper mills, reconstituted wood products, and commercial logging. The remaining five sectors are very small and cluster as a group.

FIGURE 30. FOREST PRODUCTS: NORTH CENTRAL REGION, SUMMARY FORESTRY SECTORS, IMPLAN 2009



Hospitality

Table 29 and Table 30 show that the tourism sector in the North Central Region is the strongest in the northern forestry analysis. The LQ of 10.47 was the highest hospitality location quotient in the study, and hotels and motels, including casino hotels, were key to this exporting sector of the North Central Region's economic base.

TABLE 29. HOSPITALITY: NORTH CENTRAL REGION, TOP TEN IN VALUE ADDED, OUTPUT, AND EMPLOYMENT, IMPLAN 2009

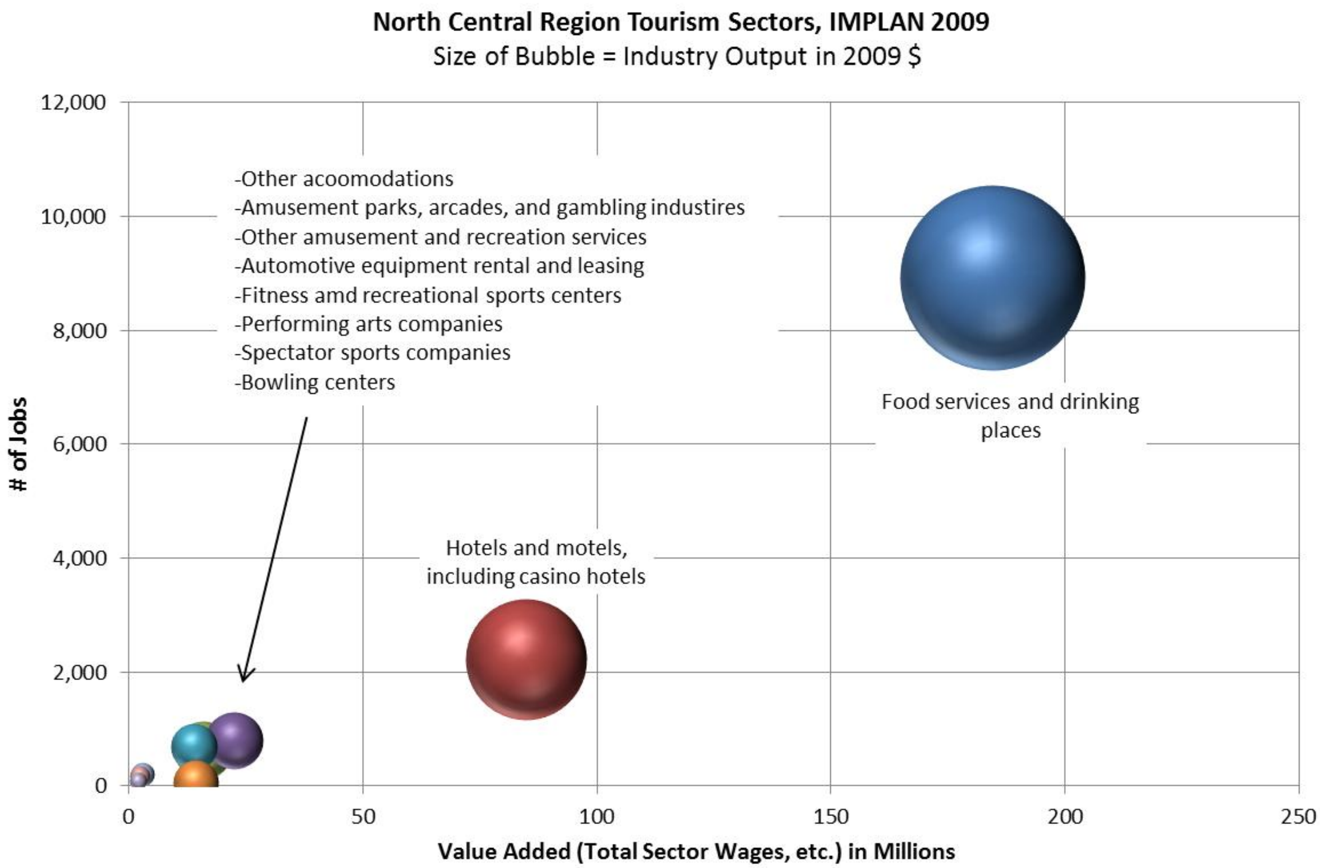
Description	Value Added
Food services and drinking places	$184,478,864
Hotels and motels, including casino hotels	$84,875,760
Amusement parks, arcades, and gambling industries	$22,472,408
Other accommodations	$15,954,291
Automotive equipment rental and leasing	$14,272,209
Other amusement and recreation industries	$13,985,476
Fitness and recreational sports centers	$2,920,843
Performing arts companies	$2,314,136
Spectator sports companies	$2,043,210
Bowling centers	$1,978,913
	Output
Food services and drinking places	$412,618,016
Hotels and motels, including casino hotels	$174,415,840
Other accommodations	$39,872,392
Amusement parks, arcades, and gambling industries	$39,032,496
Other amusement and recreation industries	$24,647,464
Automotive equipment rental and leasing	$23,855,084
Fitness and recreational sports centers	$5,972,045
Performing arts companies	$4,567,495
Spectator sports companies	$3,245,229
Bowling centers	$3,023,810
	Employment
Food services and drinking places	8,940
Hotels and motels, including casino hotels	2,226
Amusement parks, arcades, and gambling industries	809
Other amusement and recreation industries	698
Other accommodations	630
Fitness and recreational sports centers	215
Performing arts companies	190
Spectator sports companies	104
Bowling centers	95
Automotive equipment rental and leasing	69

TABLE 30. HOSPITALITY: NORTH CENTRAL REGION, TOP TEN IN VALUE ADDED, OUTPUT, AND EMPLOYMENT, IMPLAN 2009

Hospitality Sectors, North Central Region vs. US Location Quotients, IMPLAN 2009

	Value Added	Output	Employment
Exporting Industries in Economic Base:			
Other accommodations	3.50	4.61	10.47
Hotels and motels, including casino hotels	2.16	2.50	6.02
Bowling centers	2.06	2.10	5.01
Other amusement and recreation industries	1.46	1.67	4.55
Food services and drinking places	1.10	1.29	2.68
Amusement parks and recreation services	0.92	1.02	3.02
Automotive equipment rental and leasing	1.0	1.0	1.0
Importing Industries to the Economic Base:			
Fitness and recreational sports centers	0.52	0.61	1.23
Performing arts companies	0.53	0.55	0.47
Spectator sports companies	0.18	0.18	0.25

FIGURE 31. HOSPITALITY: NORTH CENTRAL REGION TOURISM SECTORS, IMPLAN 2009



The bubble chart in Figure 30 reinforces that food services and drinking places is the key tourism sector in the North Central Region. It should be noted that according to IMPLAN data, this high employment includes both full-time and part-time workers. Eight hospitality sectors are relatively small and cluster together.

Cook-Orr

Economic Base: Cook-Orr -Top Ten Value Added, Output, and Employment Measures

The Northern Minnesota Forestry Analysis of 2001 presented zip code level data for the communities of Big Fork and Cook-Orr. This 2011 update report covers only the communities of Cook-Orr. As with the North Total, Northeast, and North Central Regions, we list the top ten for each of three measures of the economic base. We also show a breakout of the forestry sectors. Tourism in 2009 is not detailed for analysis here, but is represented by activity in other sectors, for example possibly retail stores-motor vehicles and parts.

TABLE 31. ECONOMIC BASE: COOK AND ORR, TOP TEN VALUE ADDED SECTORS, IMPLAN 2009

Cook-Orr Top Value Added 2009

Description	Value Added
Extraction of oil and natural gas*	$17,495,600
Employment and payroll only (state & local govt, education)	$13,484,611
Private hospitals	$11,375,195
Reconstituted wood product manufacturing	$10,389,922
Mining copper, nickel, lead, and zinc	$7,177,728
Commercial logging	$4,698,153
Water, sewage and other treatment and delivery systems	$4,472,280
Employment and payroll only (state & local govt, non-education)	$3,685,887
Monetary authorities and depository credit intermediation activities	$3,433,674
Legal services	$3,396,016

*Because previous data for the Cook-Orr zip codes did not indicate economic activity in this sector, BBER verified that in 2009 pipeline projects near Cook and Orr (see, for example, the Alberta Clipper and Southern Lights projects from Enbridge) were underway, and nearing completion in 2010.

Figures 31-33 show that the economic base of Cook-Orr has changed between 1998 and 2009. Reconstituted wood products was hit hard by the OSB plant closing and dropped from high ranking in value added, output, and employment measures. Worse yet, five sectors that were part of the top ten ranking in 1998 were completely off the updated 2009 list. These included hardwood dimension and flooring mills, motor freight transport and warehousing, maintenance and repair other facilities, wood product not elsewhere classified (NEC), and railroad and related services. However, employment and payroll only (state and local-education), and hospitals, were fairly stable between these years.

Two sectors that are new to 2009 Cook-Orr ranking and which did not show up in other regions were extraction of oil and natural gas, legal services, and mining copper nickel lead and zinc. As noted in Table 31, because previous data for the Cook-Orr zip codes did not indicate economic activity in the sector extraction of oil and gas, BBER verified the estimation of this activity with local industry representatives. Note that in 2009, pipeline projects near Cook and Orr included the Alberta Clipper and Southern Lights projects from Enbridge. These projects were underway 2009, but nearing completion in 2010. The industry sector also includes propane and natural gas distribution in the reported employment, value added, and output. The new mining sector is related to the nonferrous mining explorations that have been occurring in the area since 1998.

FIGURE 32. ECONOMIC BASE: COOK AND ORR, TOP TEN VALUE ADDED SECTORS 1998 AND 2009

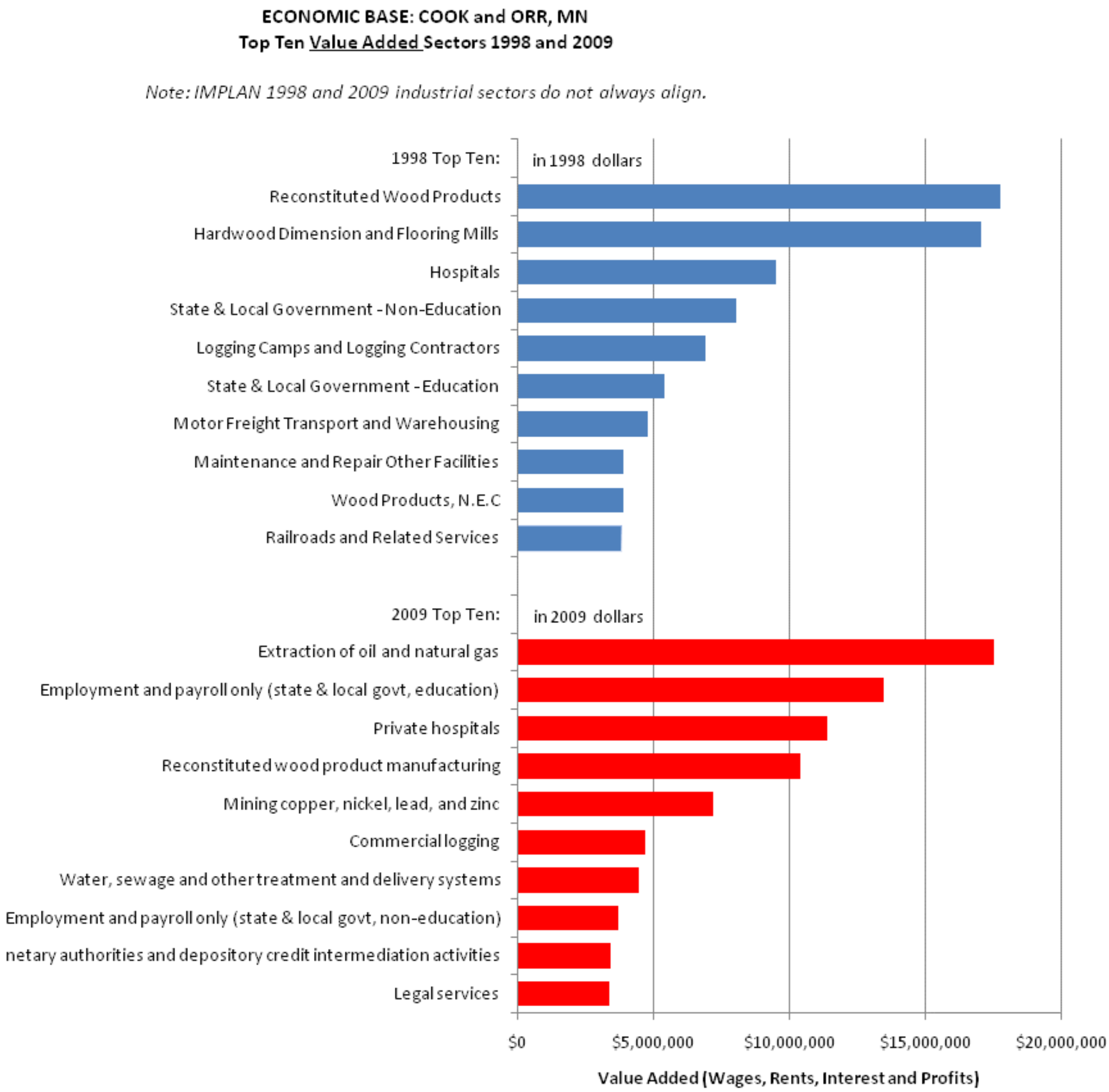


TABLE 32. ECONOMIC BASE: COOK AND ORR, TOP TEN OUTPUT SECTORS, IMPLAN 2009

Cook-Orr Top Output 2009	
Description	Output
Extraction of oil and natural gas	$47,622,056
Private hospitals	$22,633,960
Reconstituted wood product manufacturing	$16,351,704
Commercial logging	$13,862,589
Employment and payroll only (state & local govt, education)	$13,484,610
Mining copper, nickel, lead, and zinc	$12,142,956
Monetary authorities and depository credit intermediation activities	$6,855,149
Water, sewage and other treatment and delivery systems	$6,563,545
Food services and drinking places	$5,967,543
Other animal food manufacturing	$4,605,390

FIGURE 33. ECONOMIC BASE: COOK AND ORR, TOP TEN OUTPUT SECTORS 1998 AND 2009

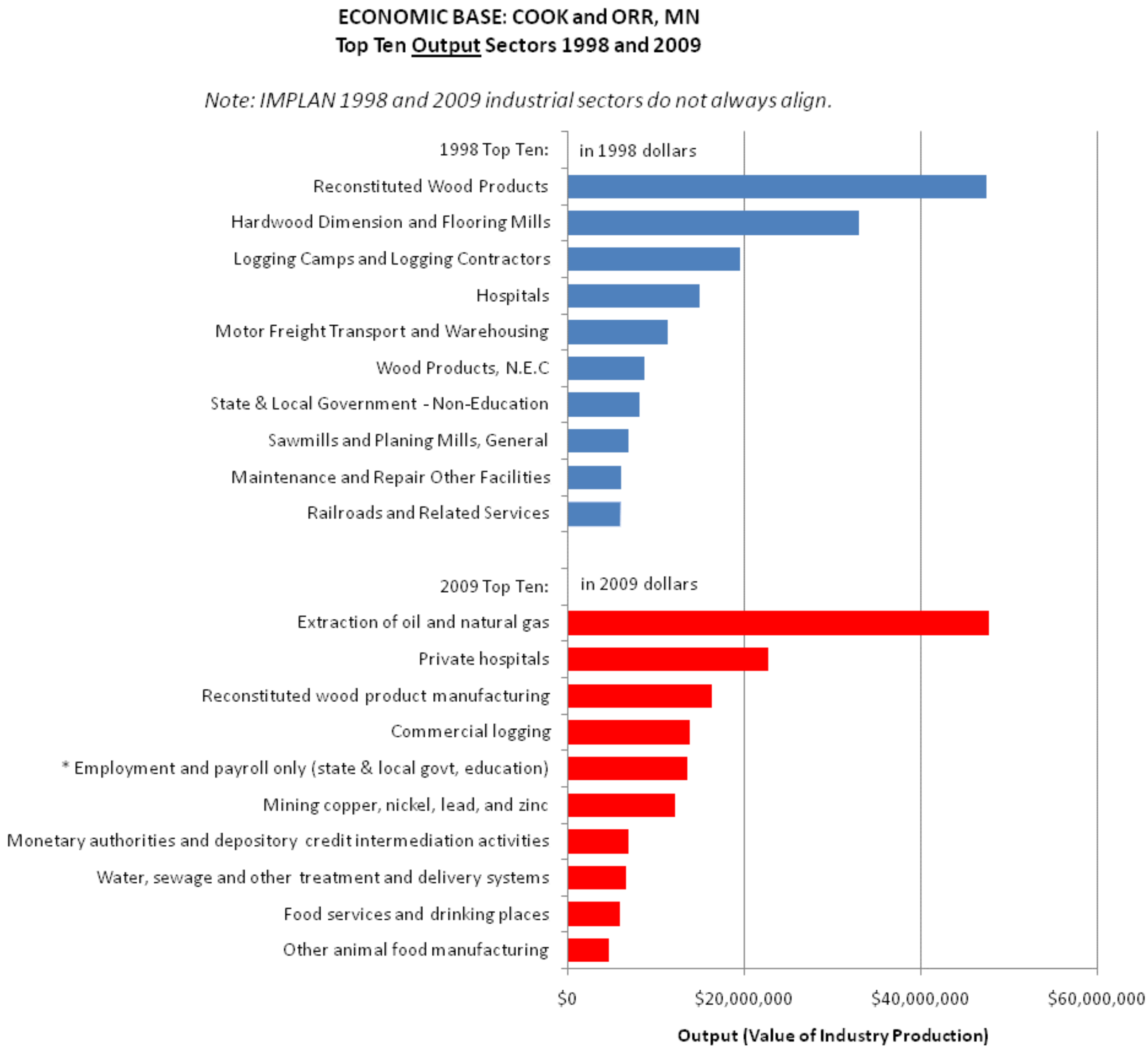
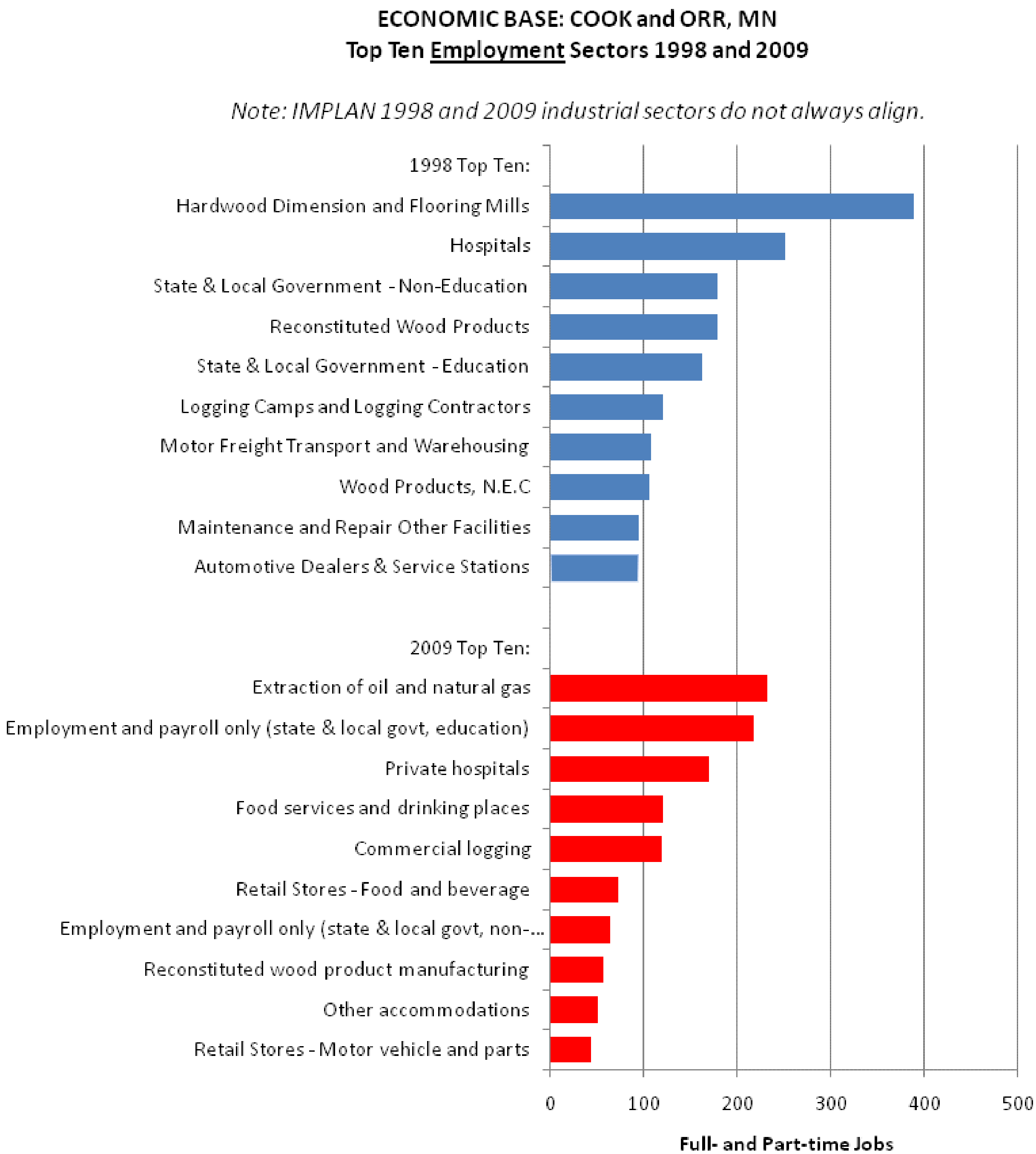


TABLE 33. ECONOMIC BASE: COOK AND ORR, TOP TEN EMPLOYMENT SECTORS, IMPLAN 2009

Cook-Orr Top Employment 2009	
Description	Employment
Extraction of oil and natural gas	232
Employment and payroll only (state & local govt, education)	218
Private hospitals	170
Food services and drinking places	121
Commercial logging	119
Retail Stores - Food and beverage	72
Employment and payroll only (state & local govt, non-education)	64
Reconstituted wood product manufacturing	56
Other accommodations	51
Retail Stores - Motor vehicle and parts	43

FIGURE 34. ECONOMIC BASE: COOK AND ORR, TOP TEN EMPLOYMENT SECTORS 1998 AND 2009



Forest Products' Position in the Economy

Cook-Orr has seen a major shift in the local economy with manufacturing plant closings (OSB). It remains to be seen whether these communities will see forest products manufacturing rebound in their economies. In contrast to 1998, the top sector in the area defined by these community zip codes in 2009 shows temporary economic activity related to pipeline construction in the sector Extraction of oil and natural gas. The Cook-Orr forest products industries, in 2009, show the combined sectors of reconstituted wood products and commercial logging accounted for over $30 million in output, $14 million in value added, and 175 jobs.

The recession and housing collapse had a devastating impact on this area. As a sign of the tenacity of forest products sectors in this devastated community, the sector forest products and wood partition and fixtures had some start up activity by 2009, although employment is very small.

TABLE 34. FOREST PRODUCTS: COOK AND ORR , VALUE ADDED, OUTPUT, EMPLOYMENT, IMPLAN 2009

2009 Description	Value	Output	Employment
	$10,389,922	$16,351,704	56
Commercial logging	$4,698,153	$13,862,589	119
All other miscellaneous wood product manufacturing	$2,170,816	$4,353,616	26
Sawmills and wood preservation	$642,831	$2,755,835	13
Forestry, forest products, and timber tract production	$150,108	$291,341	1
Showcase, partition, shelving, and locker mfg	$21,525	$64,429	1

TABLE 35. FOREST PRODUCTS: COOK AND ORR, VALUE ADDED, OUTPUT, EMPLOYMENT, IMPLAN 1998 VS. 2009

Value Added	1998	2009	Unadjusted % change*
Reconstituted Wood Products	$17,732,208	$10,389,922	-41.41%
Logging Camps and Logging Contractors	$6,931,774	$4,698,153	-32.22%
Wood Products, N.E.C	$3,872,608	$2,170,816	-43.94%
Sawmills and Planing Mills, General	$1,614,641	$642,831	-60.19%
Wood Kitchen Cabinets	$352,330	$0	-100.00%
Forest Products	$0	$150,108	new
Wood Partitions and Fixtures	$0	$21,525	new
Output			
Reconstituted Wood Products	$47,365,051	$16,351,704	-65.48%
Logging Camps and Logging Contractors	$19,561,676	$13,862,589	-29.13%
Wood Products, N.E.C	$8,726,021	$4,353,616	-50.11%
Sawmills and Planing Mills, General	$6,902,503	$2,755,835	-60.07%
Wood Kitchen Cabinets	$785,089	$0	-100.00%
Forest Products	$0	$291,341	new
Wood Partitions and Fixtures	$0	$64,429	new
Employment			
Reconstituted Wood Products	178	56	-68.55%
Logging Camps and Logging Contractors	121	119	-1.01%
Wood Products, N.E.C	106	26	-75.22%
Sawmills and Planing Mills, General	44	13	-71.41%
Wood Kitchen Cabinets	10	0	-100.00%
Forest Products	0	1	new
Wood Partitions and Fixtures	0	1	new

*Because various sectors in the 1998 data have been aggregated or split in the data sectoring for 2009, only sector change "best match" comparable sectors are used for this calculation. Sectors that are new to the list in 2009 are labelled “new.” As with previous percent change tables, this table reports unadjusted percent change, however the up or down direction of the change is indicated.

Appendix A: IMPLAN Bridge Tables

In order to follow the best match scenario and ratios scenario suggested by IMPLAN for comparing economic base sectors from different schemes, users will have to depend on bridge tables from IMPLAN which map the splits and aggregations used in three sectoring schemes for data tables.

IMPLAN follows this general design:

- 528 sectoring scheme is 1990 to 2000 data sets (SIC based)
- 509 sectoring scheme is for 2001 to 2006 (NAICS based)
- 440 sectoring scheme is for 2007 to present (NAICS based)

IMPLAN.com download files used in this project include the following:

- IMPLAN 509 To 528 Concordance Table
- IMPLAN 440 To IMPLAN 509
- Bridge IMPLAN 509 To BEA NAICS 1997 NAICS 2002
- Bridge IMPLAN 440 to BEA 2002
- 528to509 W Ratios
- 528-SIC-Sectoring scheme
- 509 IMPLAN Sector Scheme (2001 to 2006)
- 440 IMPLAN Sector Scheme (2007 to Current)

Time series data are not part of the design of MIG's IMPLAN data files. Analyses that compare economic measures by industry sector in 1998 and 2009 must rely on IMPLAN's bridge tables, as well as Microsoft Access tables that use ratios to move from 528 sectors to 509 sectors, and then from 509 sectors to 440 sectors. Although calculating sectors' economic measures using ratios can be more accurate than a "best match" scheme, this procedure is often prohibitively complicated. IMPLAN asks users to realize that IMPLAN is not designed to be time series data, and the website forum notes that IMPLAN does not go back and revise earlier data when the government revises their data. Also, IMPLAN changes its data reduction techniques over time.

IMPLAN bridge tables help users understand and use the aggregations and splits in the re-sectored economies. For example, the IMPLAN data (1998) used in 2001 to report economic activity in the forest products sectors might rely on the best match method to describe how three sectors (135 Hardwood Dimension and Flooring Mills; 136 Special Product Sawmills, N.E.C; and 137 Millwork) move from these three unique sectors with codes and descriptions to an aggregated version of these industrial sectors now known as "99 Wood windows and doors and millwork manufacturing." In the 2009 data, composed of 440 unique sectors, sectors 135,136, and 137 have been aggregated into sector 99.

Other examples of splits and aggregations are included in the following table which attempts to sketch this look at re-sectoring for the forest products industry:

1998 Data (528 IMPLAN sectoring)		2009 Data (440 IMPLAN sectoring)		NOTES
IMPLAN code #	Description	IMPLAN code #	Description	
22	Forest Products	15	Forestry, forest products, and timber tract production	
133	Logging Camps and Logging Contractors	16	Commercial logging	
134	Sawmills and Planing Mills, General	95	Sawmills and wood preservation	
135	Hardwood Dimension and Flooring Mills	99	Wood windows and doors and millwork manufacturing	Sectors 135,136, and 137 have been aggregated into 99.
136	Special Product Sawmills, N.E.C			
137	Millwork			
138	Wood Kitchen Cabinets	295	Wood kitchen cabinet and countertop manufacturing	
139	Veneer and Plywood	96	Veneer and plywood manufacturing	
140	Structural Wood Members, N.E.C	97	Engineered wood member and truss manufacturing	
141	Wood Containers	100	Wood container and pallet manufacturing	Sectors 141 and 142 have been aggregated into 100.
142	Wood Pallets and Skids			
146	Reconstituted Wood Products	98	Reconstituted wood product manufacturing	
147	Wood Products, N.E.C	103	All other miscellaneous wood product manufacturing	
148	Wood Household Furniture	297	Non-upholstered wood household furniture manufacturing	
152	Wood TV and Radio Cabinets	298	Metal and other household furniture (except wood) manufacturing	
154	Wood Office Furniture	300	Wood television, radio, and sewing machine cabinet manufacturing	Sector 154 has been split into 300 and 301.
		301	Office furniture and custom architectural woodwork and millwork manufacturing	
157	Wood Partitions and Fixtures	302	Showcase, partition, shelving, and locker manufacturing	
161	Pulp Mills	104	Pulp mills	
162	Paper Mills, Except Building Paper	105	Paper mills	

Concordance for Hospitality Sectors

IMPLAN 528 Sectors		IMPLAN 440 Sectors		Notes
454	Eating and Drinking	413	Food services and drinking places	
463	Hotels and Lodging Places	411	Hotels and motels, including casino hotels	Reconfiguration in this sector has meant that hotel casinos are added.
463	Hotels, Rooming Houses, Camps, and Other Lodging Places	412	Other accommodations	463 Hotels and Lodging Places has the same SIC code as Hotels, Rooming Houses, Camps and Other Lodging Places (SIC 7000 --> IMPLAN 528 code 463)
477	Automobile Rental and Leasing	362	Automotive equipment rental and leasing	
484	Theatrical Producers, Bands ETC.	402	Performing arts companies	According to the IMPLAN bridge table although this sector was renamed, the sector is basically composed of the same data
486	Commercial Sports Except Racing	403	Spectator sports companies	
487	Racing and Track Operation	403	Spectator sports companies	Racing and Track Operations disappears and bridge table does not suggest where it goes in the 509
488	Amusement and Recreation Services	407	Fitness and recreational sports centers	
		408	Bowling centers	
		409	Amusement parks, arcades, and gambling industries	
		410	Other amusement and recreation industries	

Appendix B: Identifying Forestry Sectors for This Project

The following list reviews BBER's 2001 Forestry Analysis sectors used to report activity in forestry and wood products industries:

2001 Industry Definitions

- Forestry/Wood Products
- IMPLAN SIC Definitions
- Forest Products- Not defined.
- Forestry Products-Timber tracts, Forest nurseries and gathering of forest products, Hunting and trapping and game propagation.
- Logging Camps and Logging Contractors
- Sawmills and Planning Mills, General
- Hardwood Dimension and Flooring Mills
- Special Product Sawmills, N.E.C.- Mills engaged primarily in manufacturing excelsior, wood shingles, cooperage stock, and sawing special products.
- Millwork
- Wood Kitchen Cabinets
- Veneer and Plywood- Hardwood and softwood included.
- Structural Wood Members N.E.C.- Primarily engaged in producing laminated or fabricated trusses, arches, and other structural member of lumber.
- Wood Containers
- Wood Pallets and Skids
- Reconstituted Wood Products
- Wood Products, N.E.C.- Primarily engaged in manufacturing miscellaneous wood products, N.E.C., and products from rattan, reed, splint, straw, veneer, veneer strips, wicker, and willow.
- Wood Household Furniture- Not including upholstered.
- Wood TV and Radio Cabinets
- Wood Office Furniture
- Wood Partitions and Fixtures
- Pulp Mills
- Paper Mills, Except Building Paper

As a check on the update list BBER compared the 2001 and 2009 Forest Analysis Forest products list with the list recently developed by the BBER and the Minnesota Department of Natural Resources to identify IMPLAN forestry sectors and their NAICS equivalents for the BBER report entitled "Economic Impact of Minnesota's Forest Industries, MN DNR, 2010," available at https://lsbe.d.umn.edu/bber/bber_projects.php. The following table shows sectors identified for that economic impact estimate.

TABLE 1. FORESTRY-RELATED IMPLAN AND NAICS CODED INDUSTRIAL SECTORS

Source: IMPLAN

IMPLAN Sector	*Industry Description*	*2007 NAICS Sector*
PRIMARY FOREST PRODUCTS MANUFACTURING		
31	Electric power generation and supply	2211
95	Sawmills and wood preservation	3211
96	Veneer and plywood manufacturing	321211-2
98	Reconstituted wood product manufacturing	321219
105	Paper mills	32212
SECONDARY FOREST PRODUCTS MANUFACTURING		
97	Engineered wood member and truss manufacturing	321213-4
99	Wood windows, doors, and millwork (includes flooring)	32191
100	Wood container and pallet manufacturing	32192
102	Prefabricated wood building manufacturing	321992
103	All other miscellaneous wood product manufacturing	321999
295	Wood kitchen cabinets and countertops	33711
297	Nonupholsted wood household furniture	337122
301	Office furniture, custom architectural woodwork and millwork	337211, 337212, 337214
302	Showcase, partition, shelving, and locker manufacturing	337215
106	Paperboard Mills	32213
107	Paperboard container manufacturing	32221
108	Coated and laminated paper, packaging, and plastic film	322221-2
109	All other paper bag and coated and treated paper mfg	322223-6
110	Stationery product manufacturing	32223
111	Sanitary paper product manufacturing	322291
112	All other converted paper product manufacturing	322299
FORESTRY AND LOGGING		
15	Forestry, forest products, and timber tract production	1131-2
19	Forestry support activities	115
16	Commercial logging	1133
335	Truck transportation (separate business local log hauling)	484

Sectors included in the 2009 Forest Industries Impact but not on the Forest Analyses 2001 and 2011 include the following ten *secondary manufacturing* sectors:

19	Forestry support activities
31	Electric power generation and supply
102	Prefabricated wood building manufacturing
107	Paperboard container manufacturing
108	Coated and laminated paper, packaging, and plastic film
109	All other paper bag and coated and treated paper mfg
110	Stationery product manufacturing
111	Sanitary paper product manufacturing
112	All other converted paper product manufacturing
355	Truck transportation (separate business local log hauling)

2009 Data Sectoring for the 2011 Analysis

IMPLAN Code	Description	BEA Code	2007 NAICS Code
15	Forestry, forest products, and timber tract production	113A00	1131-2
16	Commercial logging	113300	11330
95	Sawmills and wood preservation	321100	32110
96	Veneer and plywood manufacturing	32121A	321211-2
97	Engineered wood member and truss manufacturing	32121B	32121
98	Reconstituted wood product manufacturing	321219	321219
99	Wood windows and doors and millwork manufacturing	321910	321910
100	Wood container and pallet manufacturing	321920	321920
103	All other miscellaneous wood product manufacturing	321999	321999
104	Pulp mills	322110	32211
105	Paper mills	32213	32212
106	Paperboard Mills	322120	32213
295	Wood kitchen cabinet and countertop manufacturing	337110	33711
297	Non-upholstered wood household furniture manufacturing	337122	337122
298	Metal and other household furniture (except wood)	33712A	337124
300	Office furniture manufacturing	33721A	337214
301	Custom architectural woodwork and millwork manufacturing	337212	337212
302	Showcase, partition, shelving, and locker manufacturing	337215	337215

Appendix C: Identifying Tourism Sectors for This Project

The following list shows NAICS and BEA definitions for Hospitality IMPLAN sectors used in this update analysis. This list aligns with the previous report's 2001 definitions for SIC Hospitality (Tourism) IMPLAN definitions.

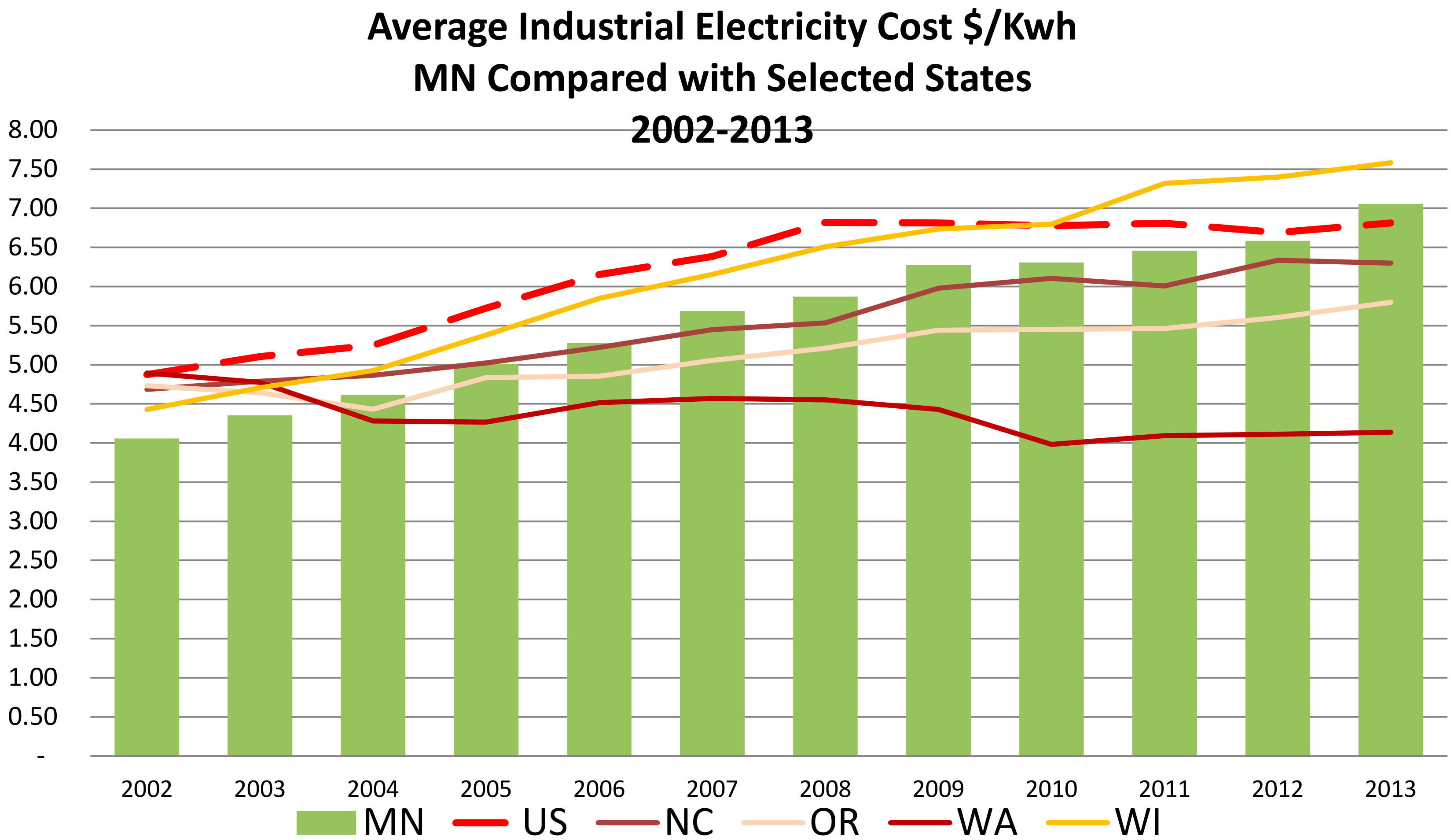
2009 Data Sectoring IMPLAN Code	Description	BEA Code	2007 NAICS Code
362	Automotive equipment rental and leasing	532100	5321
402	Performing arts companies	711100	7111
403	Spectator sports companies	711200	7112
407	Fitness and recreational sports centers	713940	71394
408	Bowling centers	713950	71395
409	Amusement parks, arcades, and gambling industries	713A00	7131-2
410	Other amusement and recreation industries	713B00	71399
411	Hotels and motels, including casino hotels	7211A0	72111-2
412	Other accommodations	721A00	72119
413	Food services and drinking places	722000	722

■

EXHIBIT D

Industrial Electrical Rates

Exhibit D

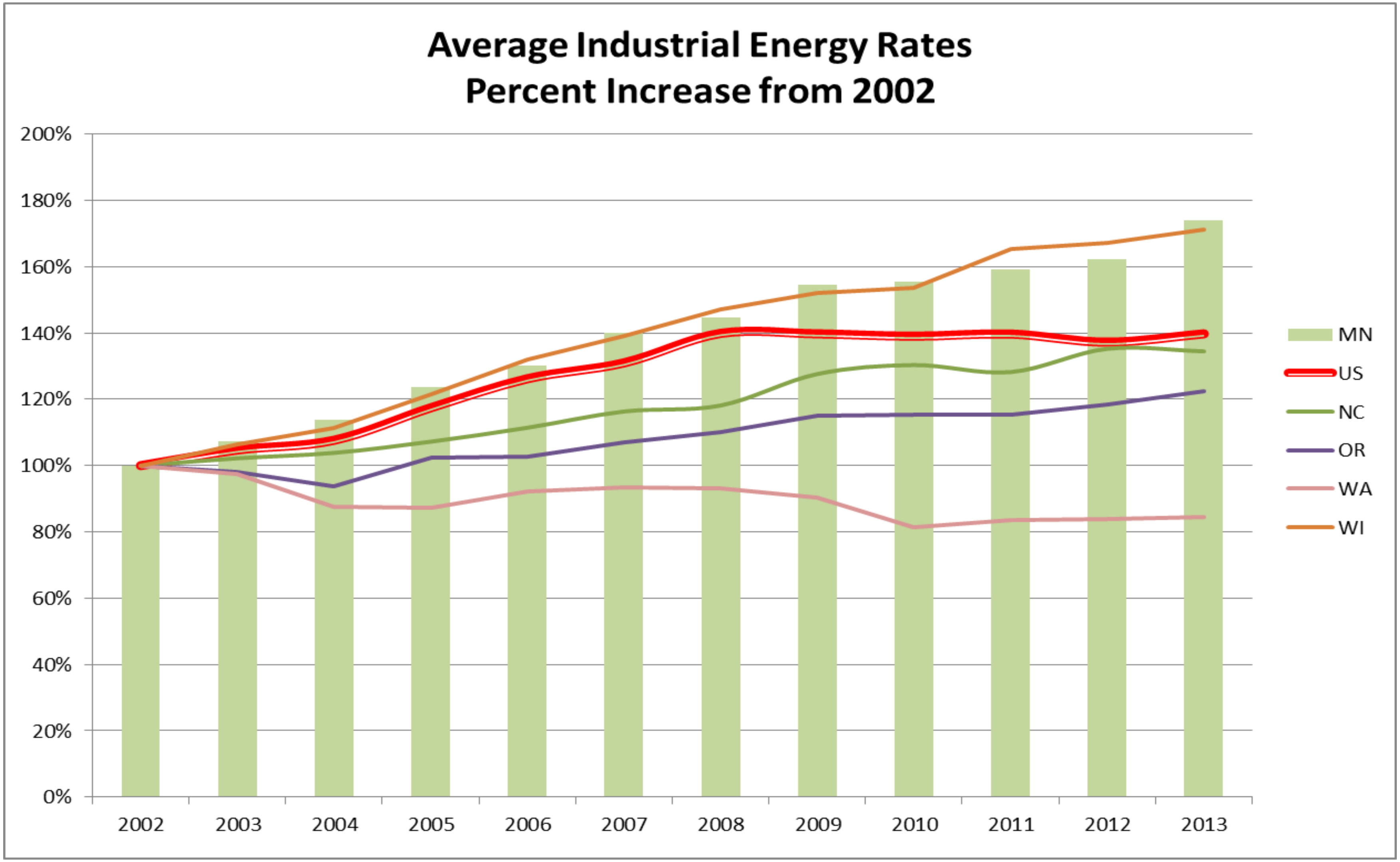


Minnesota has lost its industrial electricity price advantage over North Carolina, Oregon, and Washington (in average rates)

Source: Energy Information Administration

Industrial Electrical Rates

Exhibit D



one other states have shown less increases in rates since 2002.

Source: Energy Information Administration