

Wood is Good, and State Forest Provide Much More !!

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Presentation Outline

- Background of Forest Resources

(Net volume of live trees, net volume of growing stock, annual mortality, harvest, removals, and growth to harvest ratio)

- Importance and benefits from forest

(Economic, social, and ecological values)

- Tracking the economic contribution of forest products industry and forest-based recreation

- Few issues and challenges in forest resources management

Forest Resources in Michigan

Timberland	2012	2017	5-year
			Change
Area (thousand acres)	19,272	19,314	0.20%
Net volume of live trees (million ft ³)	32,251	33,360	3.40%
Net volume of growing stock trees (million ft ³)	29,694	30,586	3.00%
Annual net growth of growing stock trees (thousand ft ³ /yr)	662,031	624,724	-5.60%
Annual mortality of growing stock trees (thousand ft ³ /yr)	284,141	354,841	24.90%
Annual harvest removals of growing stock trees (thousand ft ³ /yr)	309,045	348,214	12.70%
Annual other removals of growing stock trees (thousand ft ³ /yr)	13,118	10,307	-21.40%
Annual net growth to harvest removals ratio	2.14	1.79	-16.20%

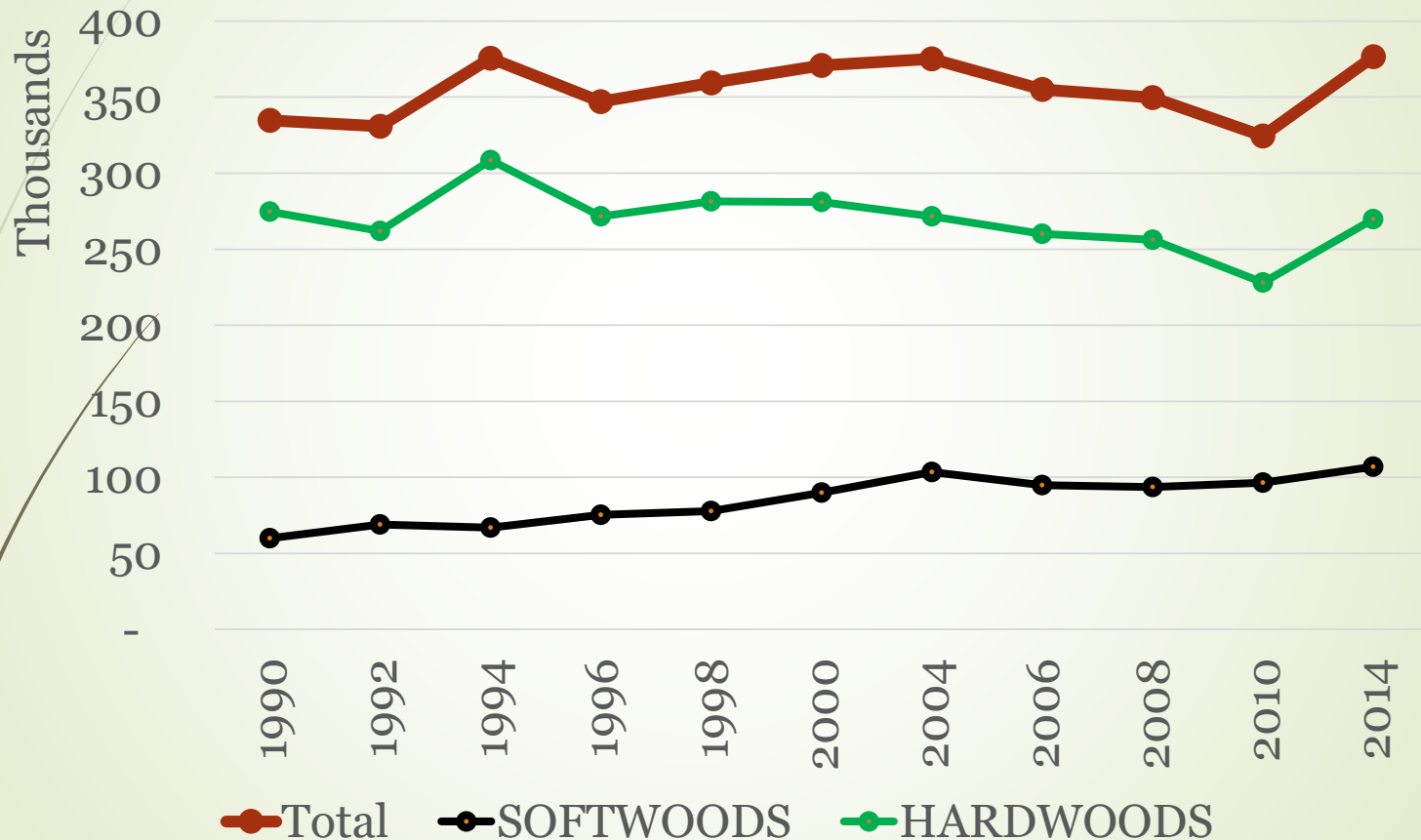
Source: https://www.fs.fed.us/nrs/pubs/ru/ru_fs153.pdf

Net growth to harvest removals by regions

Timberland Net Growth to Harvest Removals Ratios by Region	2012	2017	5-year
			Change
Western Upper Peninsula	1.4	1.3	-7.3%
Eastern Upper Peninsula	1.6	1.7	4.3%
Northern Lower Peninsula	2.7	2.5	-7.4%
Southern Lower Peninsula	3.0	1.7	-44.5%
Statewide	2.1	1.8	-16.2%

Source: USDA Forest Service, Forest Inventory and Analysis Program. Evaluator

Industrial roundwood receipts by softwoods and hardwoods, Michigan



Softwood- almost 11% increase; Hardwood-about 18% increase, Total- 16% increase

Michigan Timber Industry, 2014

	2008	2010	2014	Change 2010-2014
Number of primary wood-using mills	283	260	259	-0.4%
Industrial roundwood receipts—MMCF ^a	349.8	324.5	376.7	16.1%
Saw log receipts—MMBF ^b	647.6	736.6	853.2	15.8%
Industrial roundwood production—MMCF ^a	346.4	338.8	386.3	14.0%
Saw log production—MMBF ^b	654.1	738.8	880.1	19.1%
Growing-stock removals from timberland for industrial roundwood—MMCF ^a	314.8	314.6	354.6	12.7%
Sawtimber removals from timberland for industrial roundwood—MMBF ^b	1,046.9	1,102.6	1,312.7	19.1%
Harvest residue generated by industrial roundwood harvesting—MMCF ^a	98.9	99.4	116.4	17.1%
Total harvest removals for industrial roundwood—MMCF ^a	445.2	438.2	502.7	14.7%
Residues produced at primary wood-using mills—thousand green tons	5,666.5	2,742.5	2,968.0	8.2%

^a Million cubic feet.

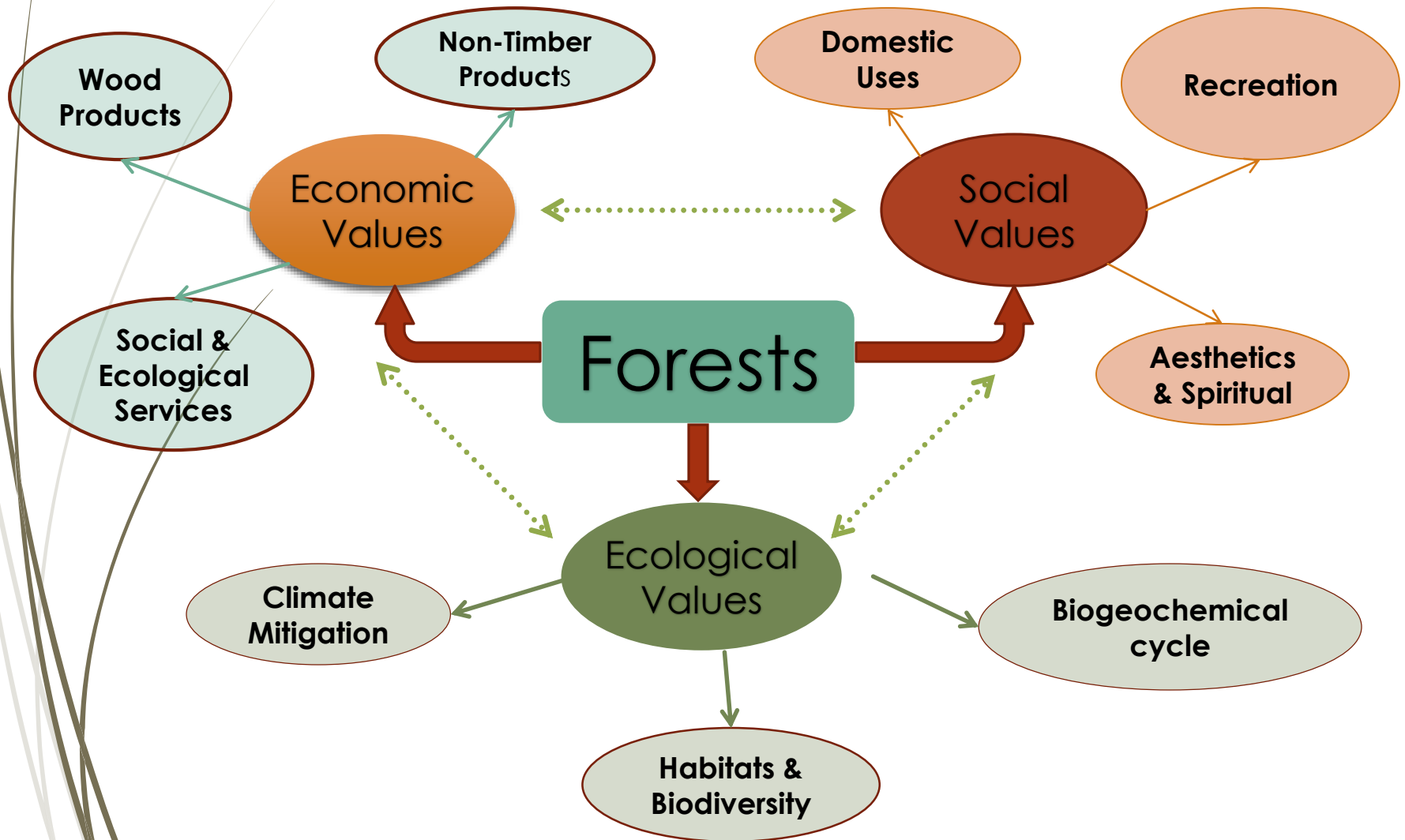
^b Million board feet, International ¼-inch Rule.

Piva, Ronald J.; Neumann, David D. 2018. Michigan Timber Industry, 2014. Resource Update FS-RU-169. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 6 p. <https://doi.org/10.2737/FS-RU-169>.

Background

- Net volume of live trees increased
- Industrial roundwood receipts increased
- Saw log production, sawtimber removals from timberland increased
- Wood is good, but forest not only provides timber !!
- Wildlife habitat, watershed protection, biodiversity conservation, clean air, clean water
- Forest-based recreation such as hunting and wildlife watching

Importance and Benefits from Forests



The 138 products from 80 forest species used by people in Michigan's Upper Peninsula (Emery, 1998).

In 2018, 125,000 gallons (0.275 gallons/tap) of maple syrup was produced in Michigan (National Agricultural Statistics service , USDA 2018)

13% increase from 2017



Bricktops , Lions Mane (source: www.michiganmorels.com)



- Value of maple syrup production- 5,632 thousands of dollars (almost 40% increase from 2016)
- 238 direct jobs

Economic Values

Primary Solid Wood Products

Veneer mills, sawmills, wood preservation..

Secondary Solid Wood Products

Engineered wood, wood windows and door, flooring, wood container..

Paperboard and other Paper Products

Paperboard container, paper bags, stationery products, sanitary paper..

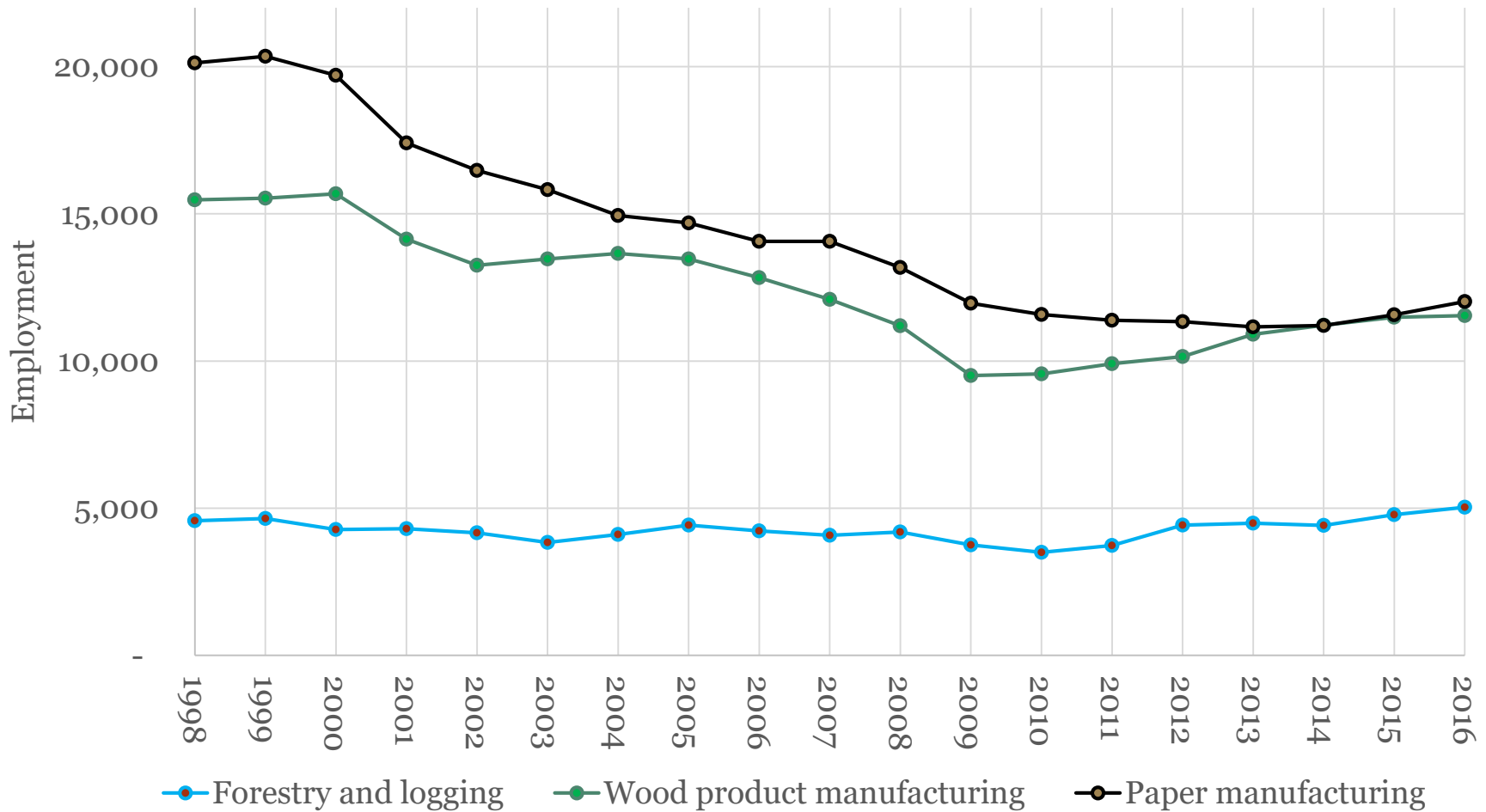
Wood Furnitures

Wood kitchen cabinet, wood office furniture...



Economic Values

Economic contribution of forest products industries in Michigan



Total full-time and part-time employment in selected forest product industries (Data source: Bureau of Economic Analysis)

Economic Values

Economic contribution of forest products industries in Michigan, 2017

Direct
Impact

Indirect
impact

Induced
Impact

Total Impact

Effect	Employment	Labor Income (Thousands \$)	Gross State Product ¹ (Thousands \$)	Output (Thousands \$)
Direct	40,647	2,660,178	3,441,041	12,100,530
Total	90,970	5,462,085	7,955,156	20,134,897

Tracking the economic contribution overtime

Forest Economy of Delta County



Direct Economic Contributions in 2015

Forest Products Industries	Employment	Labor Income (Millions)	Output (Millions)	Value Added (Millions)
Forestry and Logging	255	8.9	18.4	9.9
Primary Solid Wood Products and Wood-based Power	80	3.1	21.1	3.8
Secondary Solid Wood Products	54	1.2	7.6	1.4
Wood Furniture	17	1.0	2.6	1.3
Primary Paper and Paperboard Products	615	80.9	527.6	141.6
Secondary Paper and Paperboard Products	13	0.7	5.4	0.9
Total	1,032	\$95.8	\$582.8	\$158.9

County Statistics		Percent of State
Total Land	748,817 acres	(2.06%)
Forest land	610,540 acres	(3.00%)
Farmland	70,832 acres	(0.71%)
Population	36,377	(0.37%)
Employment	19,154	(0.35%)

HIGHLIGHTS

Forest products industries directly employ 39,417 people in Michigan with an annual direct output or sales of 12 billion dollars.

The industries generate 108 million dollars annually in direct sales, excise and other business taxes in MI.

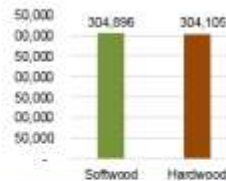
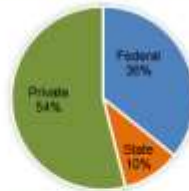
Forest products industries provide 5.4% of the jobs in Delta County and 20.4% of the output. Paper mills is the largest industry in terms of direct output in the County.

Delta County ranks number 1 in direct primary paper and paper board products output and jobs in Michigan.

For each direct job in the forest products industries, an additional 1.5 jobs are supported statewide.

Indirect business taxes generated by forest industries: \$5.9 million.

Percent of Forest land (acres) by Ownership and Forest Type



Acreage in Forest Tax Programs

Qualified Forest Program	26,376 acres
Commercial Forest Program	59,119 acres

Large Forest Products Employers in the County

- Verso-Escanaba Mill
- Northern Michigan Veneers, Besse Forest Products Group
- Lakeshore Industries
- Clare Bedding
- Weyerhaeuser (Escanaba-Plum Creek Timber Company)

All dollar amounts reported in 2015 dollar value. Data source for economic contribution: IMPLAN, 2015. Employment includes full-time and part-time employees, and self-employed. Labor income includes wages, salary, and benefits of employees as well as income for self-employed individuals. Output or sales is the total value of production or service by industry within an area for a specified time period. Value added is the sum of labor income, other property income (e.g., rents and profits) and indirect business taxes (e.g., excise and sales taxes). Direct contributions are economic activities associated with an industry or sector in the study area.

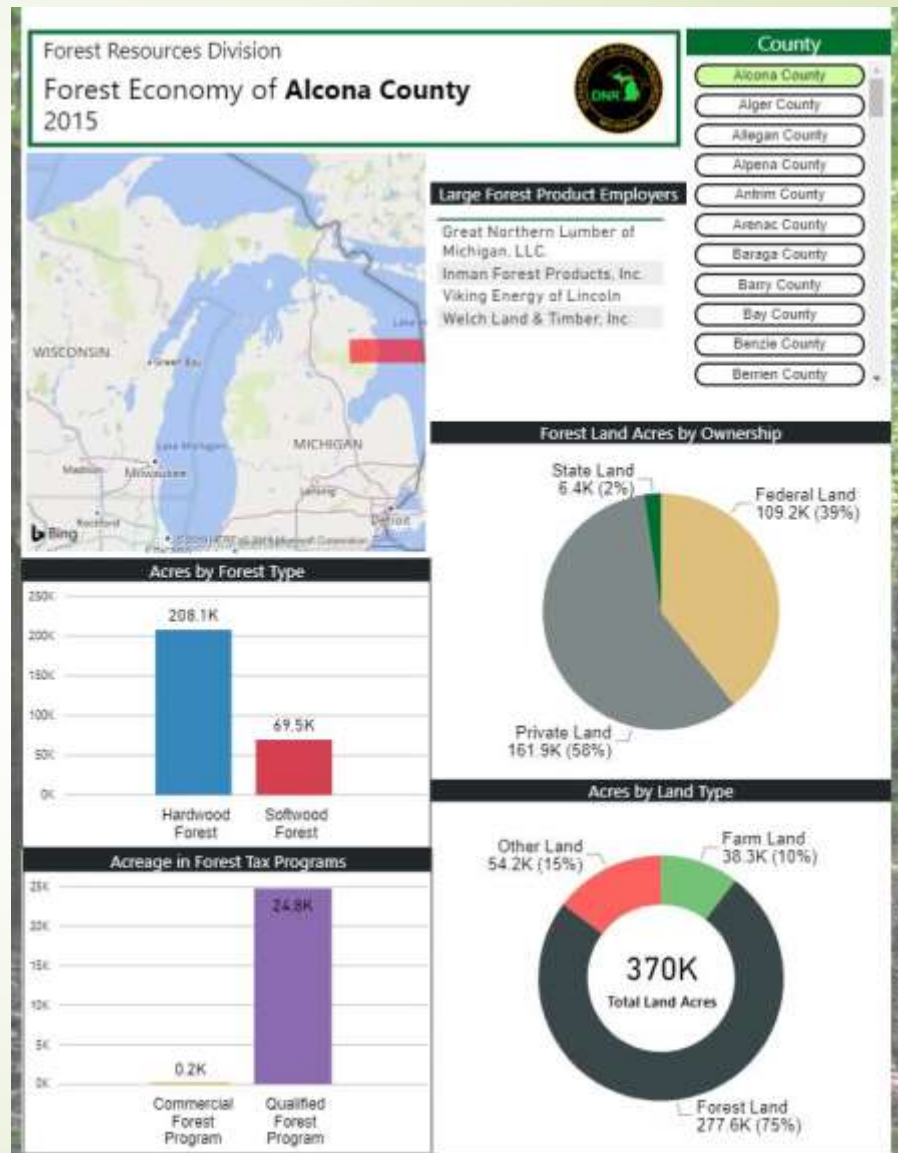
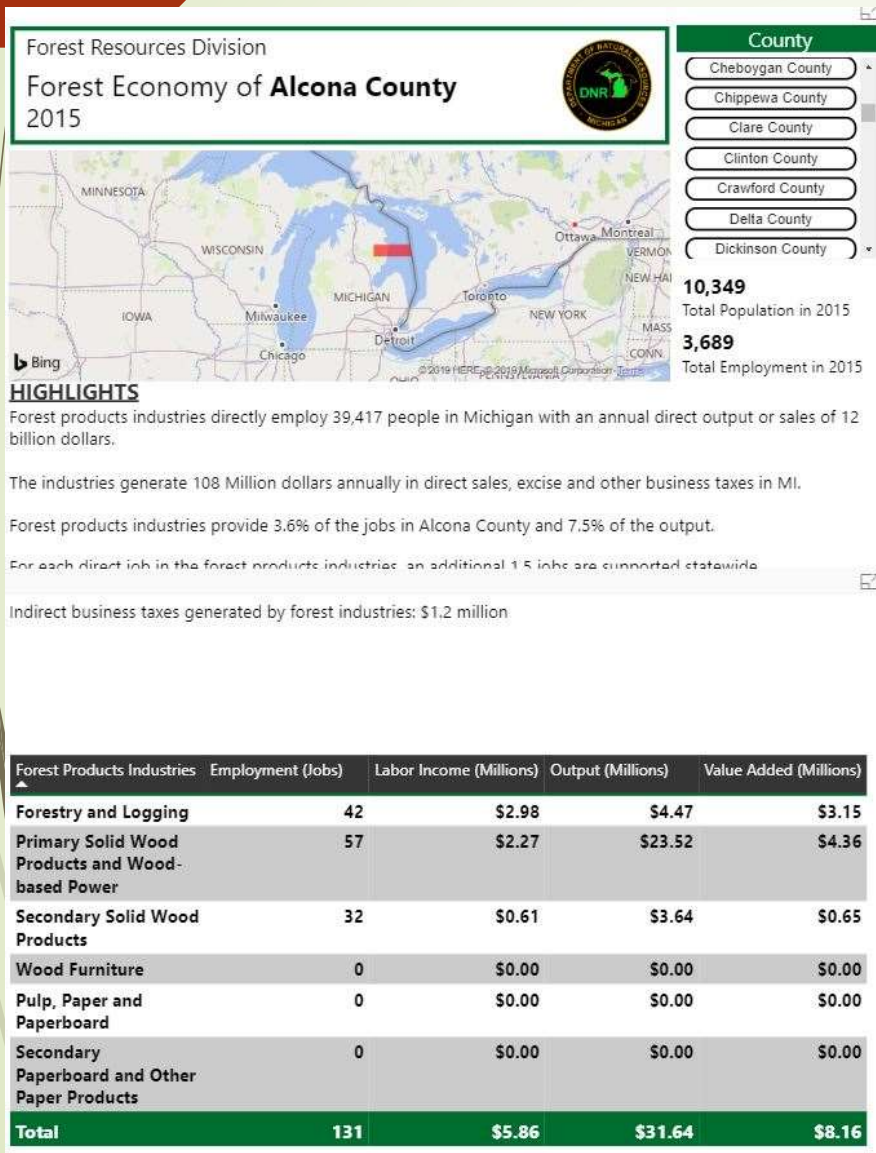
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83 counties in MI

Tracking the economic contribution overtime by county



Economics benefits of social activities such as bird watching, hiking, sight seeing

National Data

	TRAIL RECREATION ACTIVITIES	OUTDOOR RECREATION-TOTAL
Total Annual Spending	\$81 billion	\$646 billion
Direct Job Creation	768,000 jobs	6.1 million jobs
Tax Revenue Generated	\$10 billion	\$80 billion
Multiplier Effect: Total Economic Activity	\$196 billion	\$1.6 trillion

Source: The Outdoor Recreation Economy, 18-18. (2012).

Ecological services are clean air, carbon sequestration
Ecological markets exists such as nutrient market, wetland mitigation,
habitat banking

Social Values

Domestic Uses

- Fuelwood
- Fodder
- Fencing
- Wind breaks and shelter belts
- Soil erosion control
- Soil improvement



Recreation

- Recreational hunting
- Recreational fishing
- Wildlife watching
- Camping



Social Values

- Forest-based recreation plays an important role in Michigan economy and helps promote environmental and conservation goals
- In Michigan, 4.4 million residents and non-residents aged 16 and above participated in wildlife associated recreation, spending a total of **\$6.1 billion in 2011**
- These expenditures create numerous jobs, support local economies and provide vital funding for conservation programs across the state
- Economic Impact of recreation hunting in 2011 (\$2 billion direct impact; **\$3.3 billion total impact**; 14,669 direct jobs; **24,126 total jobs**)
- Economic Impact of wildlife watching in 2011 (\$1 billion direct impact; **\$1.8 billion total impact**; 10,104 direct jobs; **15,241 total jobs**)

Ecological Values

Climate

- Forests play important role in regulating carbon dioxide (CO₂) levels in the atmosphere
- Carbon sequestration help to reduce the impact of global climate change

Habitats & Biodiversity

- Forests are vital to species biodiversity by providing protection/cover, nest sites, migratory corridors and foraging opportunities for thousands of species
- Families and individuals own the majority of forests in the US, so they are critical to providing wildlife habitat for thousands of species

Biogeochemical cycles

Issues and Challenges

Changing Population in Michigan

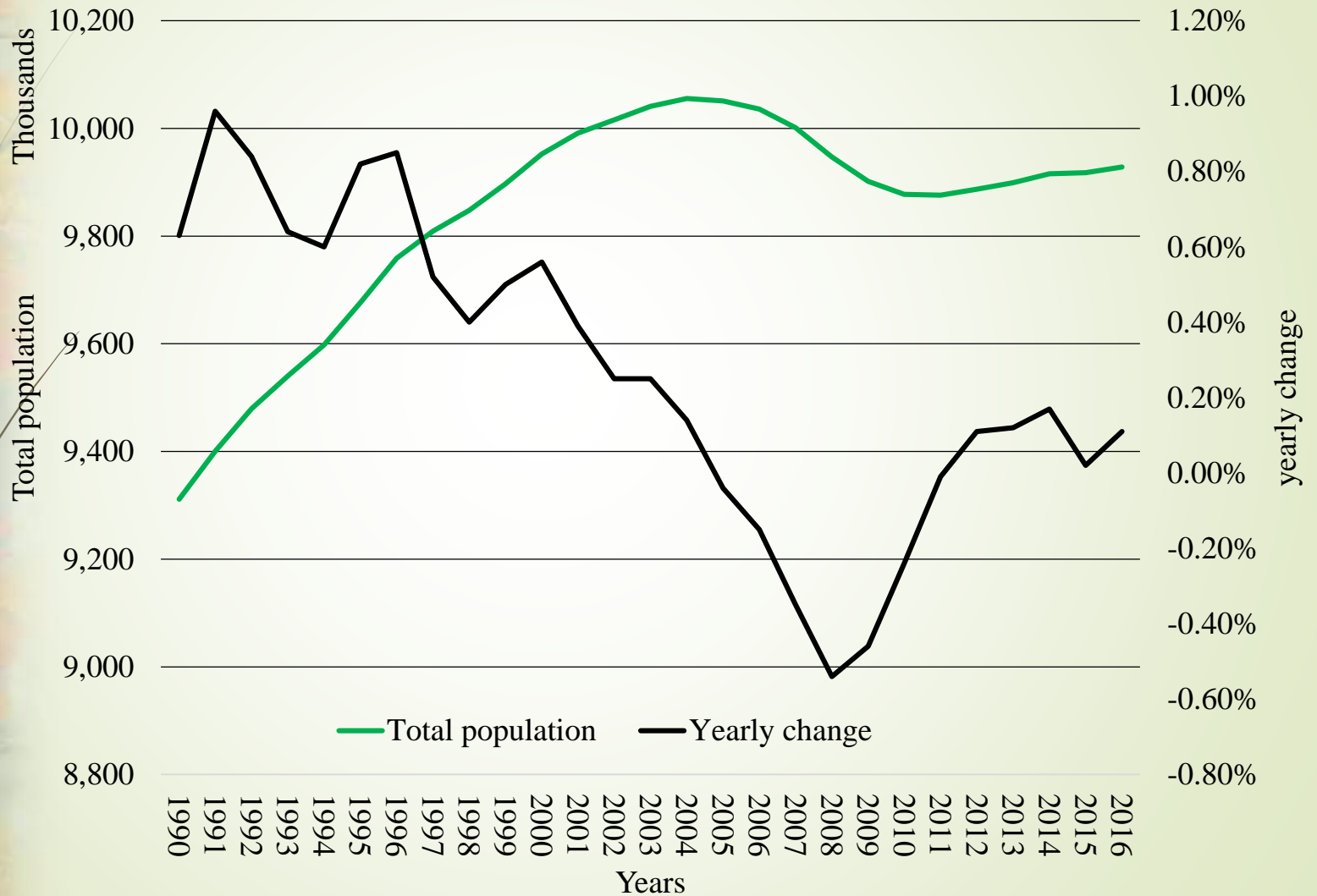
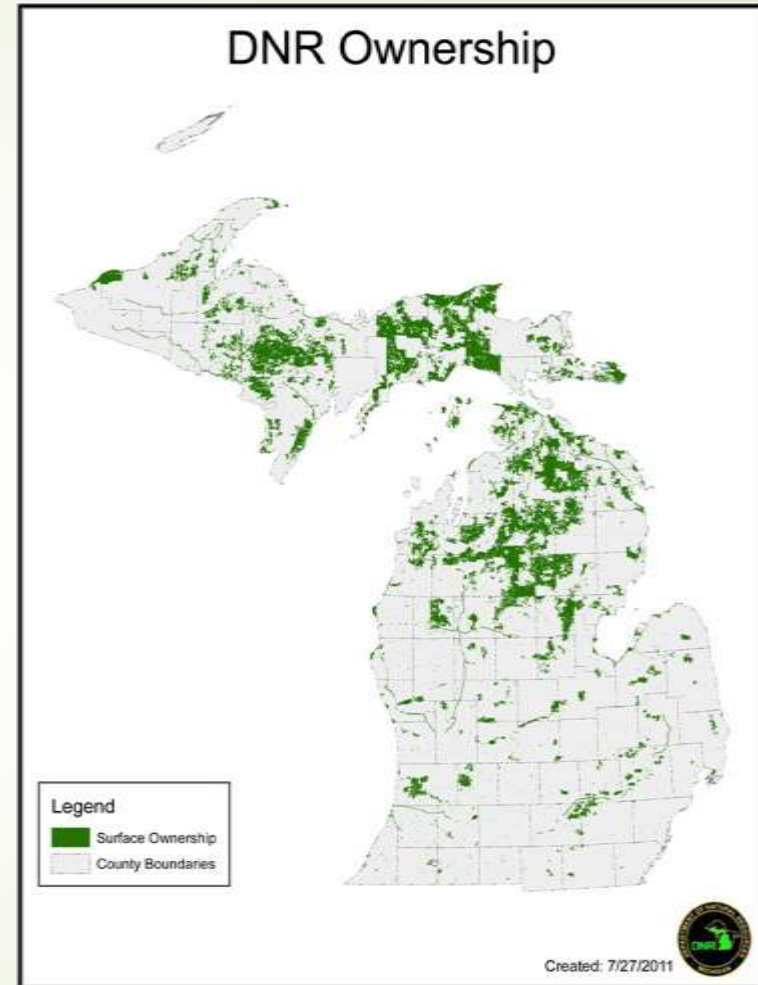
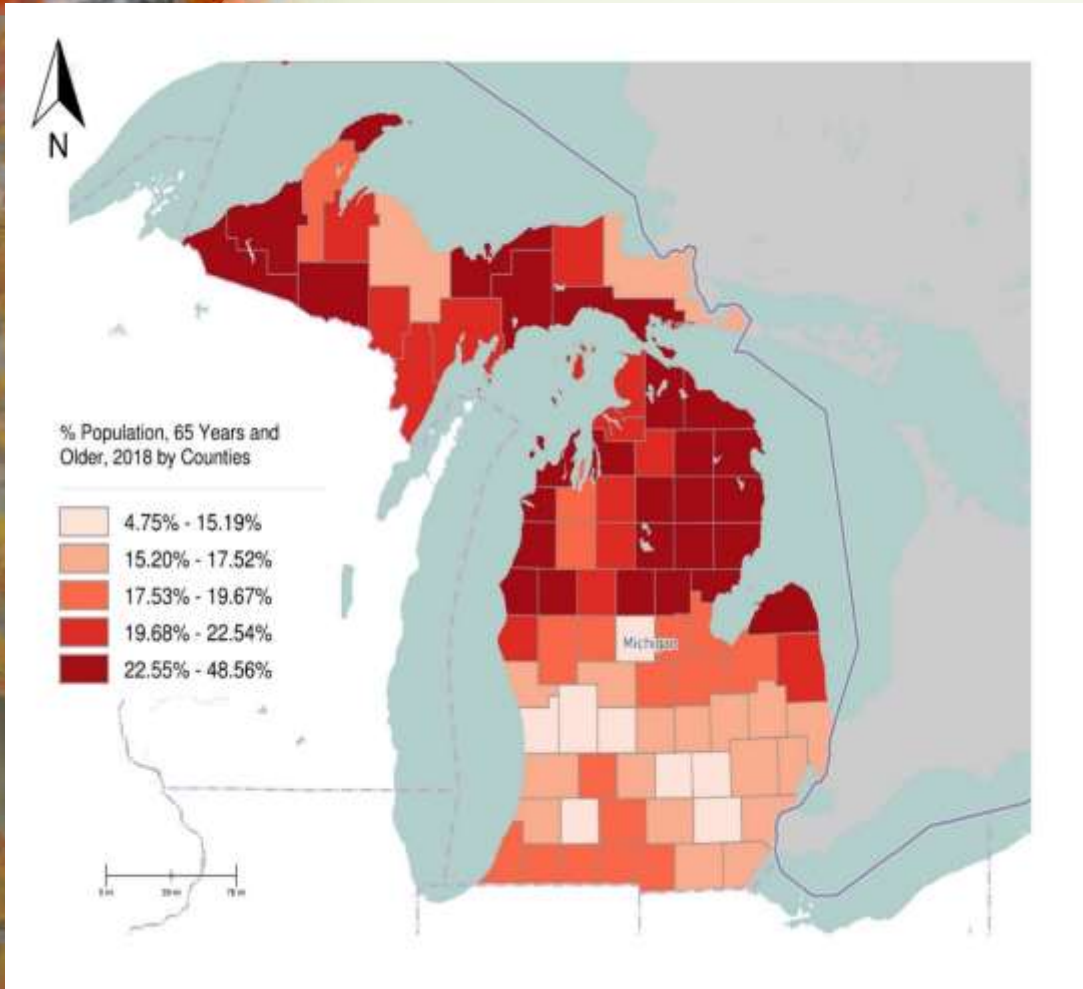


Figure: Historical trend of total population and yearly change in Michigan from 1990 to 2016 (Data: Census Bureau)



Issues and Challenges

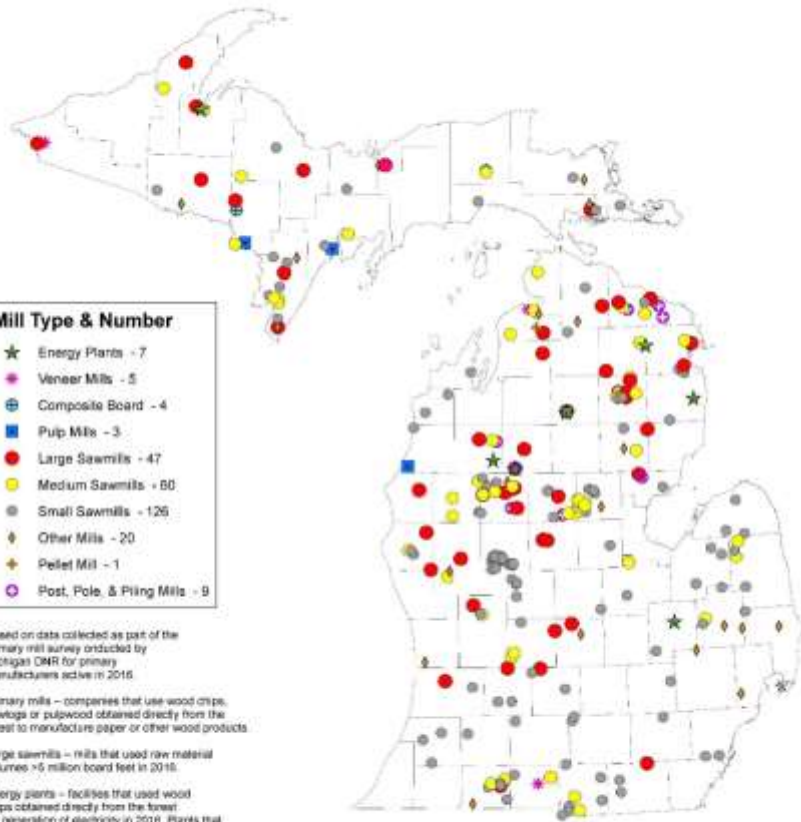
Aging Population in Michigan



How young generation perceive forestry?

Issues and Challenges

Michigan Forest Product Primary Mills Active in 2016



- Mill Type & Number**
- ★ Energy Plants - 7
 - ◆ Veneer Mills - 5
 - ⊕ Composite Board - 4
 - Pulp Mills - 3
 - Large Sawmills - 47
 - Medium Sawmills - 80
 - Small Sawmills - 126
 - ◆ Other Mills - 20
 - ◆ Pellet Mill - 1
 - Post, Pole, & Piling Mills - 9

Based on data collected as part of the primary mill survey conducted by Michigan DNR for primary manufacturers active in 2016.

Primary mills – companies that use wood chips, sawlogs or subwood obtained directly from the forest to manufacture paper or other wood products.

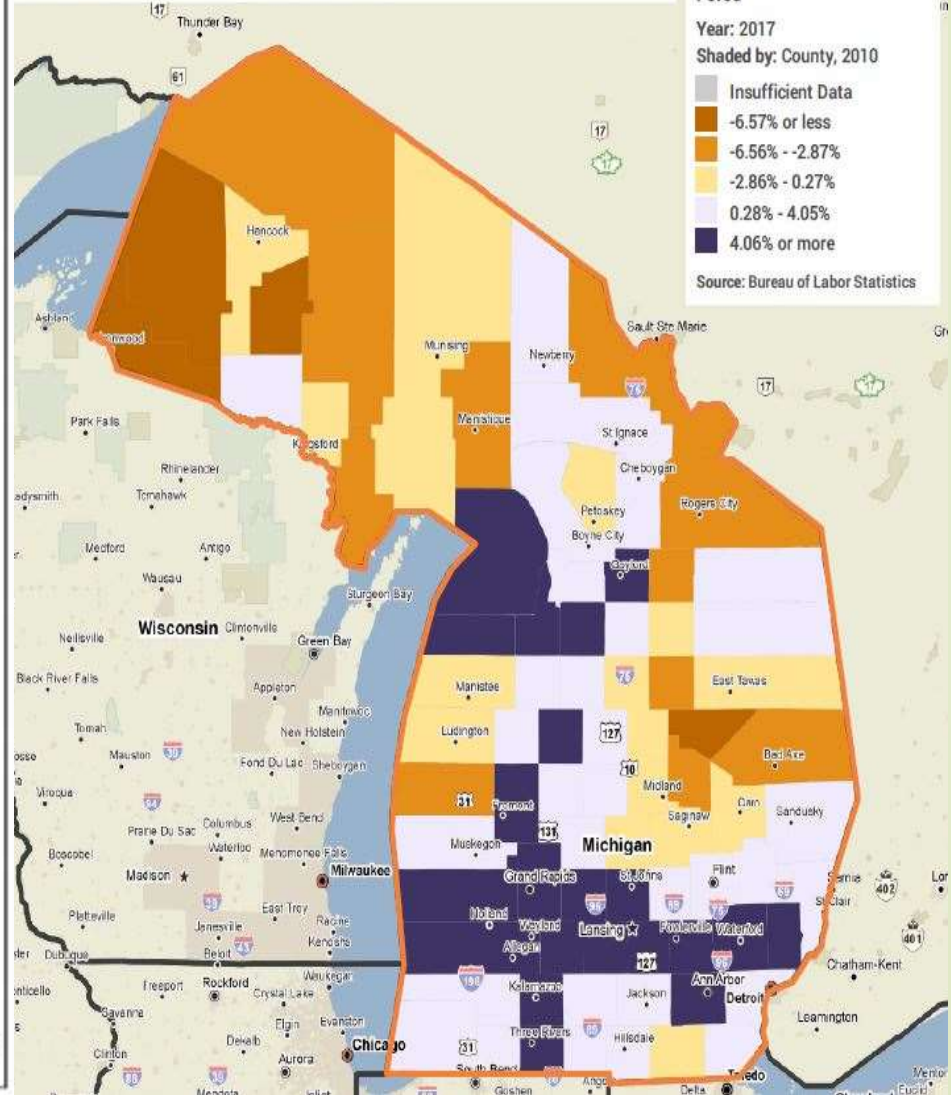
Large sawmills – mills that used raw material volumes >5 million board feet in 2016.

Energy plants – facilities that used wood chips obtained directly from the forest for generation of electricity in 2016. Plants that only used mill residues or recycled wood are not shown.

"If you need assistance with the information on this map, please contact us by phone at 517-294-2887."

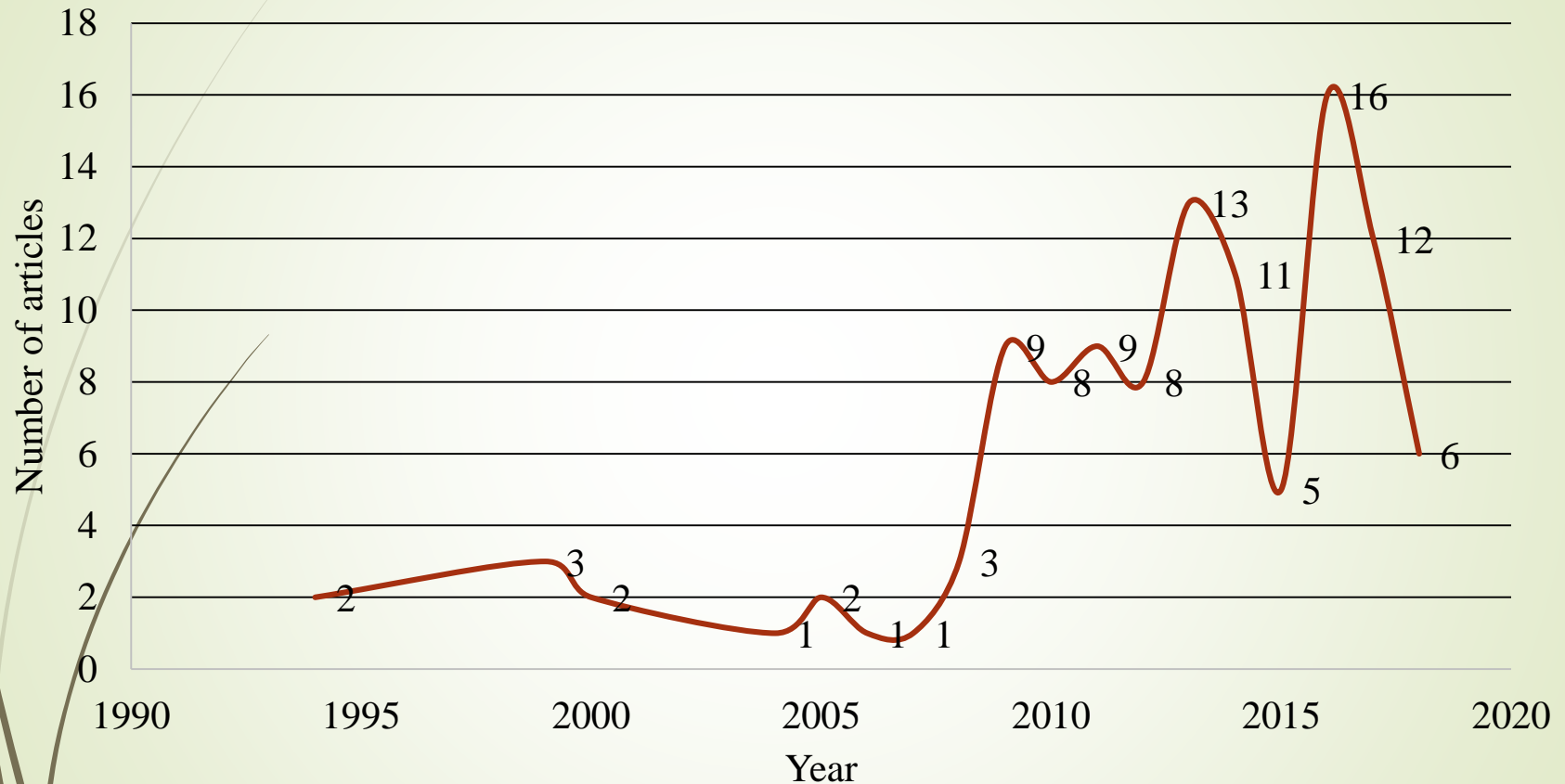


Labor force from 2012 to 2017.



- Percent Change in Labor Force**
Year: 2017
Shaded by: County, 2010
- Insufficient Data
 - 6.57% or less
 - 6.56% - -2.87%
 - 2.86% - 0.27%
 - 0.28% - 4.05%
 - 4.06% or more
- Source: Bureau of Labor Statistics

How much do we understand Forest Ecosystem services and its value?



Total number of articles published by year. Data source: Scopus database as of April, 2019; articles appeared by querying “Ecosystem Services AND Michigan” in Scopus database

Concluding remarks

- Wood is good !! (Net volume, volume receipts, Saw log production, sawtimber removals increased)
- Forest in Michigan provides substantial economic contribution (more than \$20 billion total output, more than 90,000 total jobs generated)
- Tremendous social, ecological, and economic benefits
- Forest-based recreation such as hunting and wildlife watching generates additional \$5 billion economic impacts
- However, aging population and decreasing overall labor force in Forested area of Michigan could be an issue
- Valuation and economic quantification of forest ecosystem services is necessary

Questions?

