

The Role of Michigan's Academic Institutions in the Forest Products Sector

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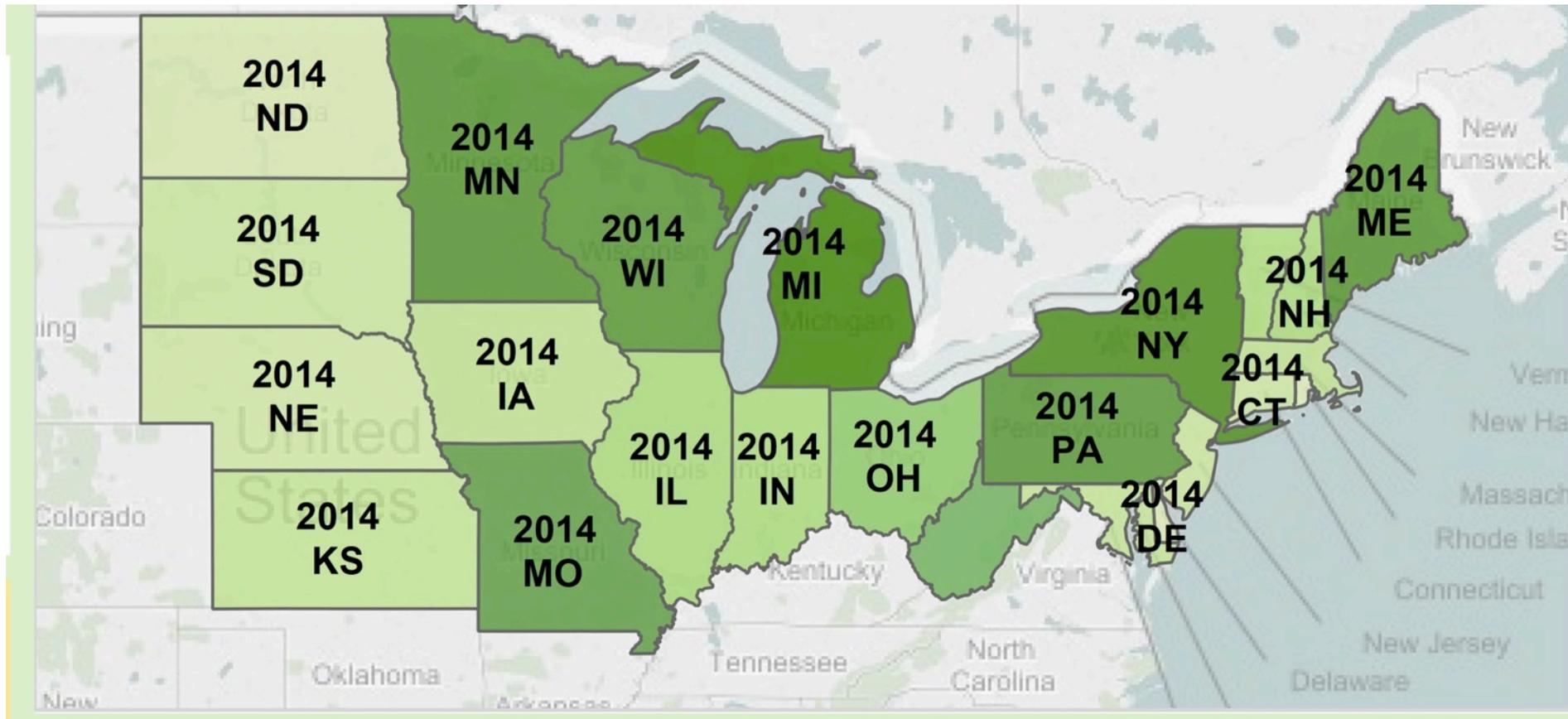
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Chair and Professor, Forest Ecology
Department of Forestry
Michigan State University

Collaboration in MICHIGAN FOREST BIOMATERIALS INITIATIVE



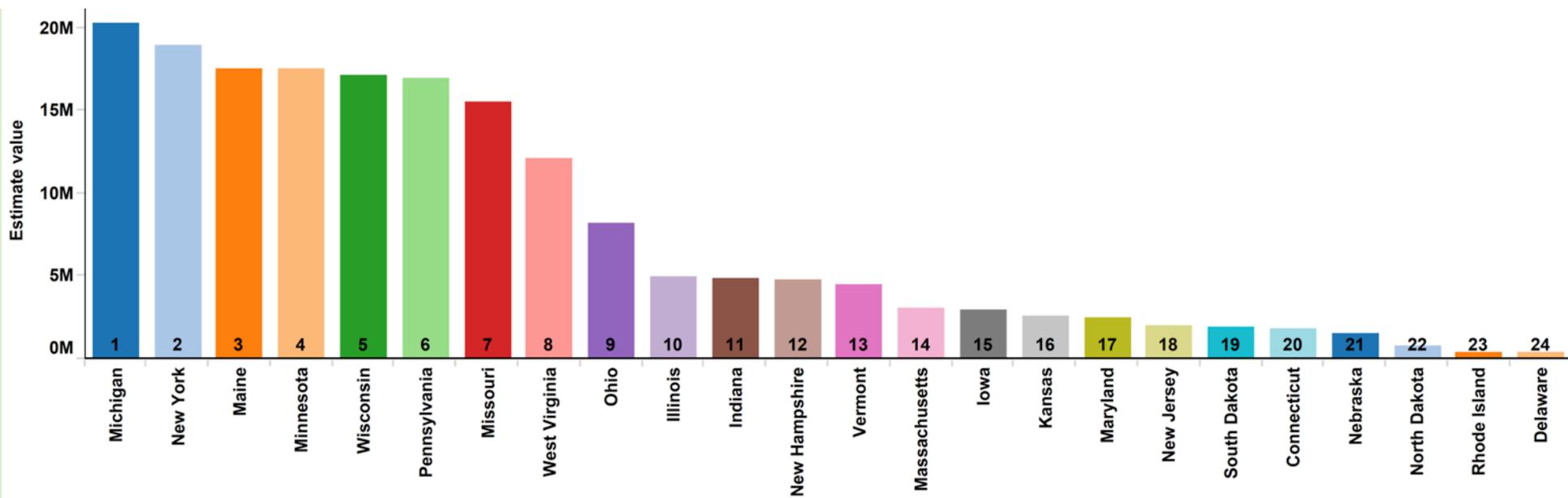
Northern Forest Inventory and Analysis - FIA



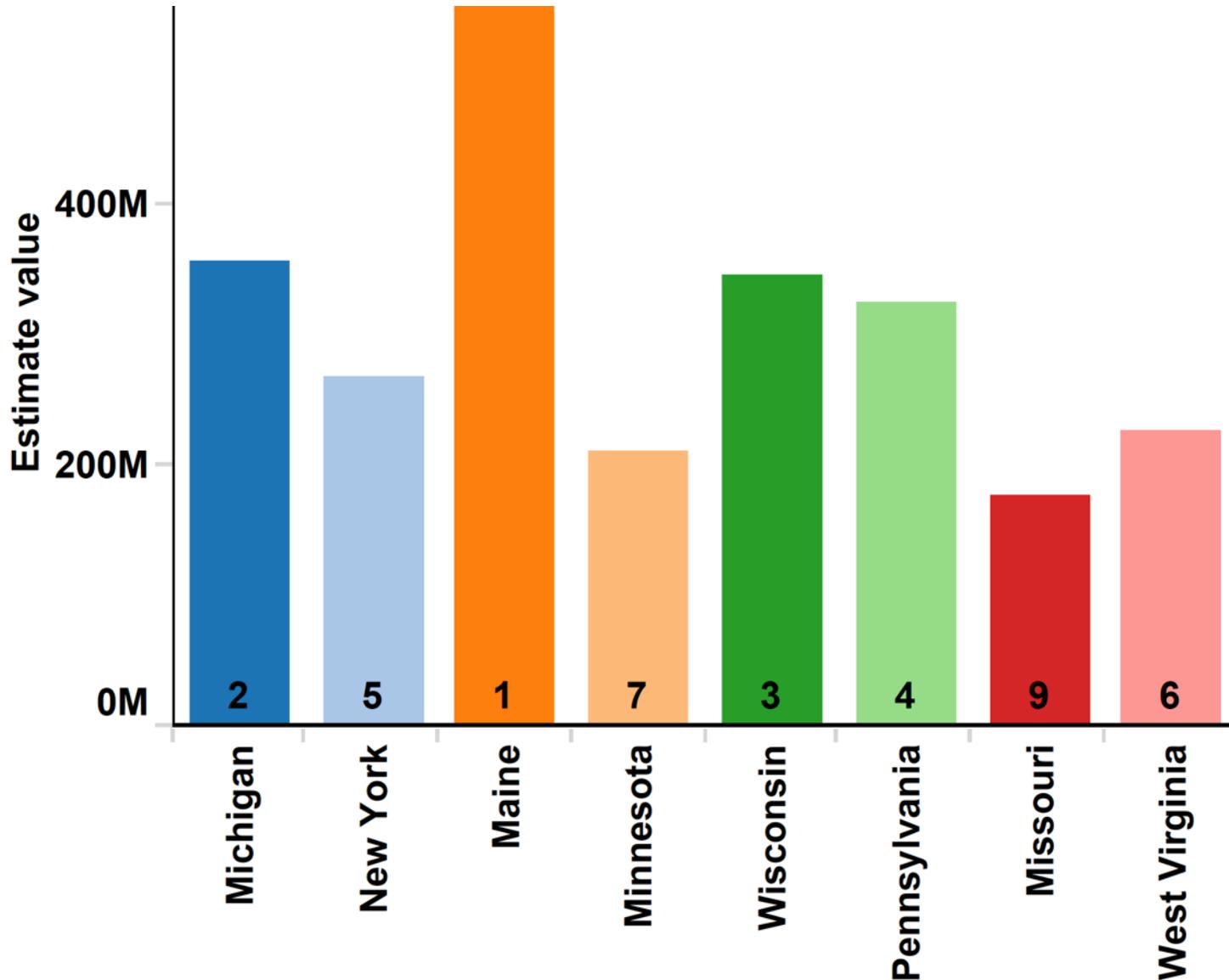


NRS-FIA

Forest Land area (acres)



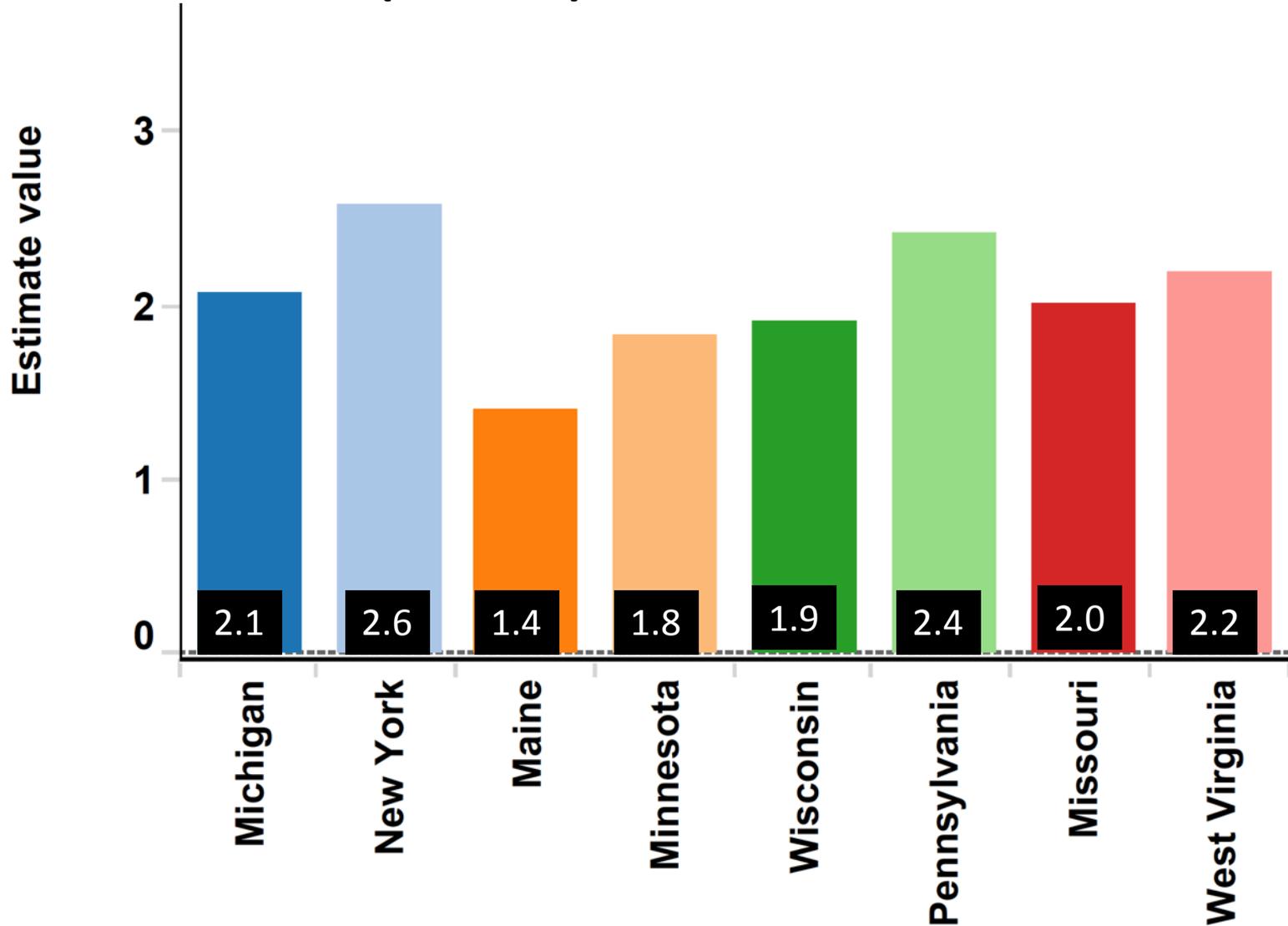
Harvest removals (cubic feet/year) 2014



Net growth to total removals (ratio) 2014



NRS-FIA

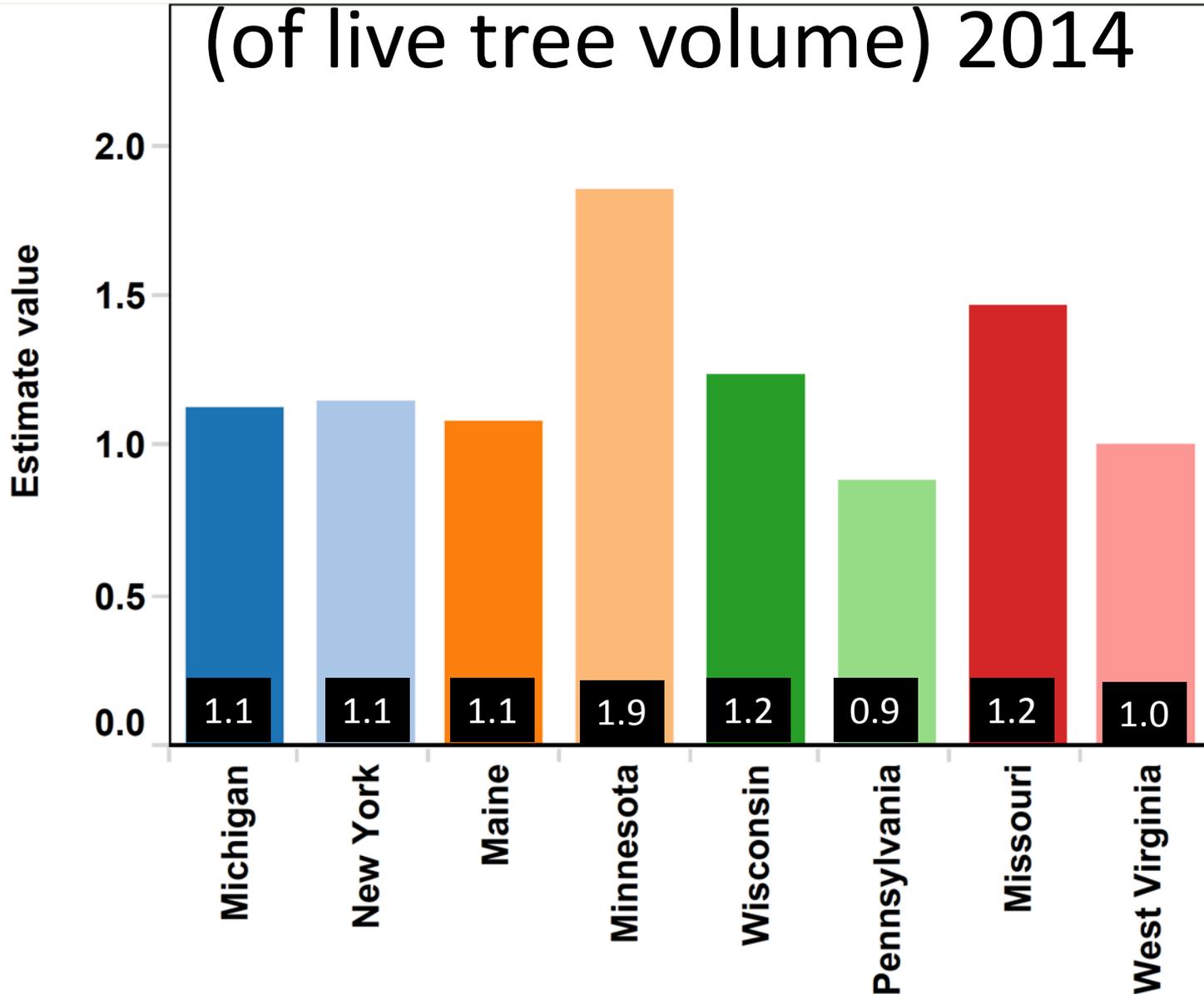


PERCENT Mortality

(of live tree volume) 2014



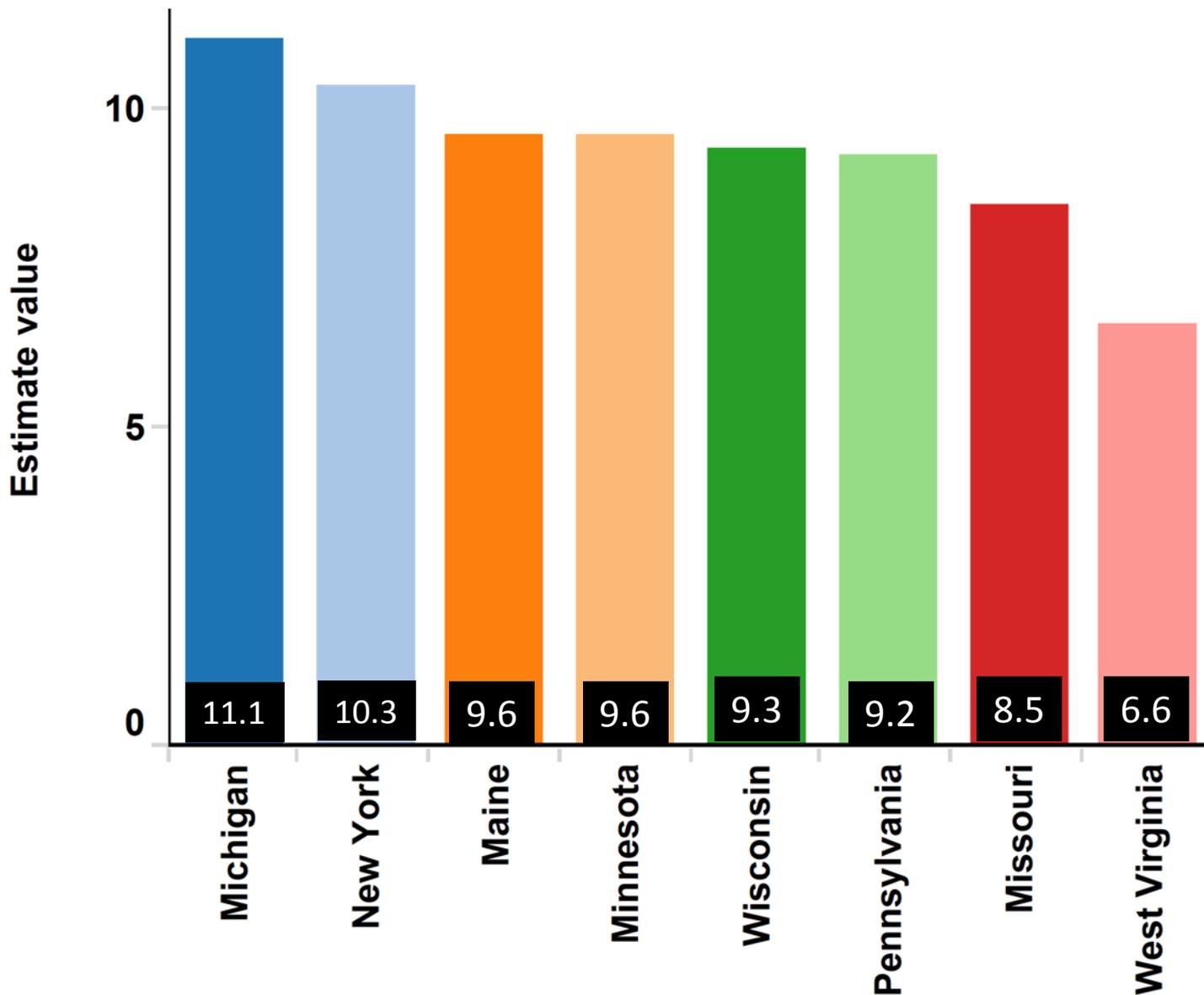
NRS-FIA





NRS-FIA

Forest Land % USFS





CLUSTER MAPPING

Open data on industry clusters and regional business environments to promote economic growth and U.S. competitiveness.



H A R V A R D | B U S I N E S S | S C H O O L
Institute for Strategy & Competitiveness



E D A

The logo for the U.S. Economic Development Administration (EDA) features the letters 'E', 'D', and 'A' in a bold, blue, sans-serif font. Two small yellow stars are positioned between the 'E' and 'D', and between the 'D' and 'A'. The letters are superimposed on a light blue silhouette of an eagle with its wings spread.

U.S. ECONOMIC DEVELOPMENT ADMINISTRATION

North American Industry Classification System (NAICS)

US Department of Commerce

The United States economy has 51 clusters in total

OUR (traditional) Industry clusters:

Forestry

Wood Products

Furniture (some)

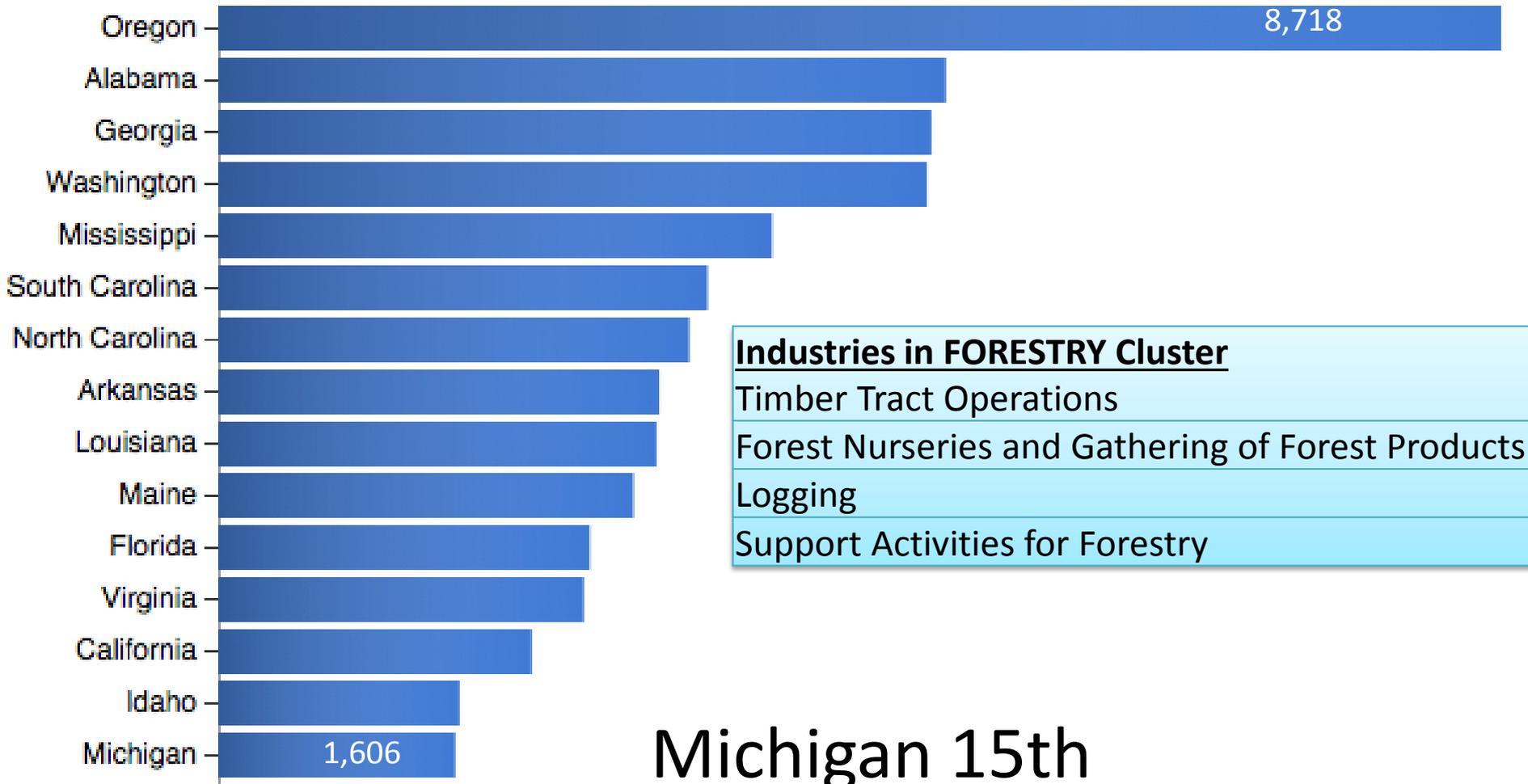
Paper and Packaging

In 2012 across the United States there were:

- 65,000 jobs in forestry & Logging (Michigan 15th)
- 320,00 jobs in Wood Products (Michigan 19th)
 - 101,000 jobs in wood processing (Michigan 17th)
 - 207,000 jobs in wood components and products (Michigan 16th - **Wisconsin 1st**)

Forestry Cluster

Employment by State, 2012



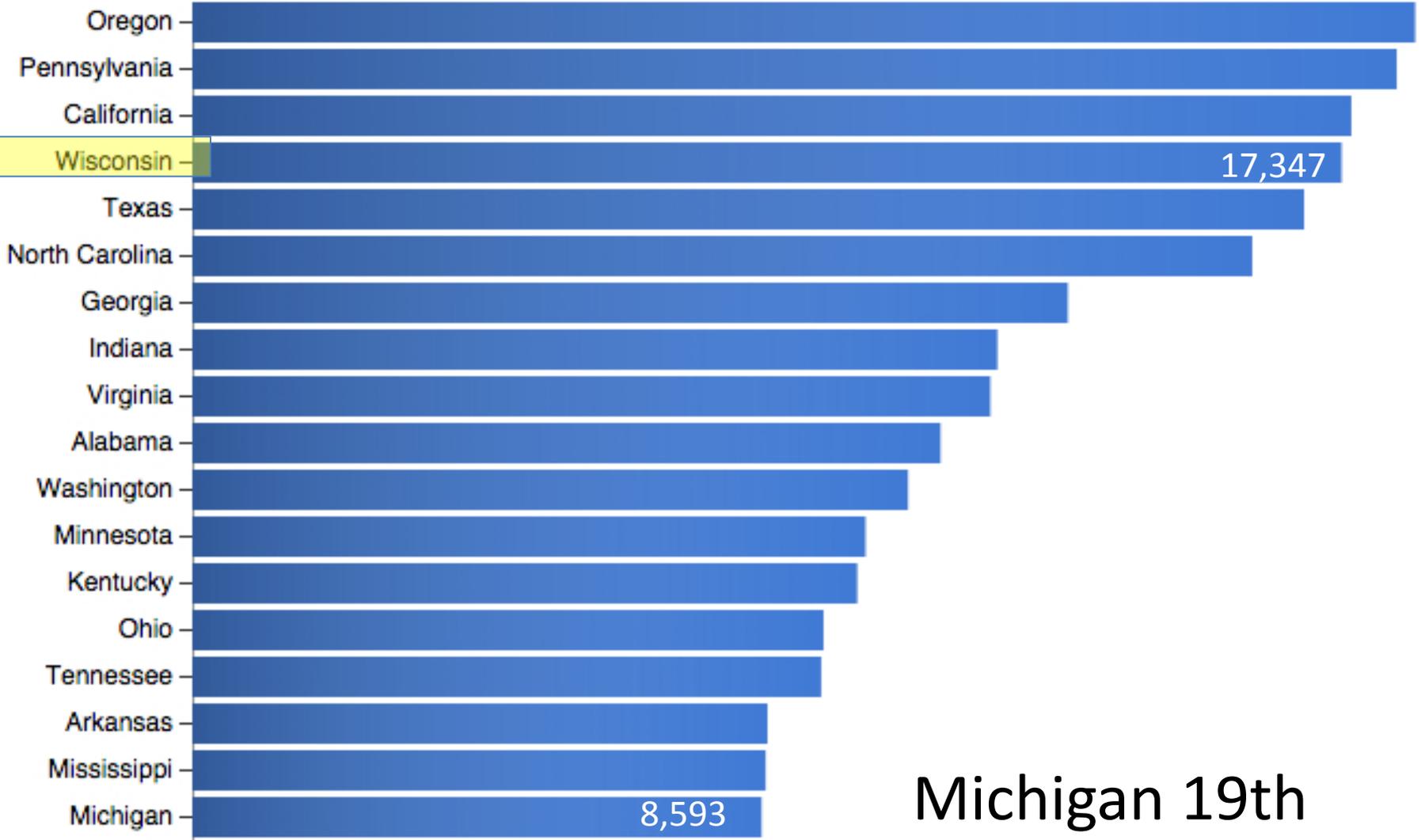
Michigan 15th

Wood Products Cluster

Employment by State, 2012

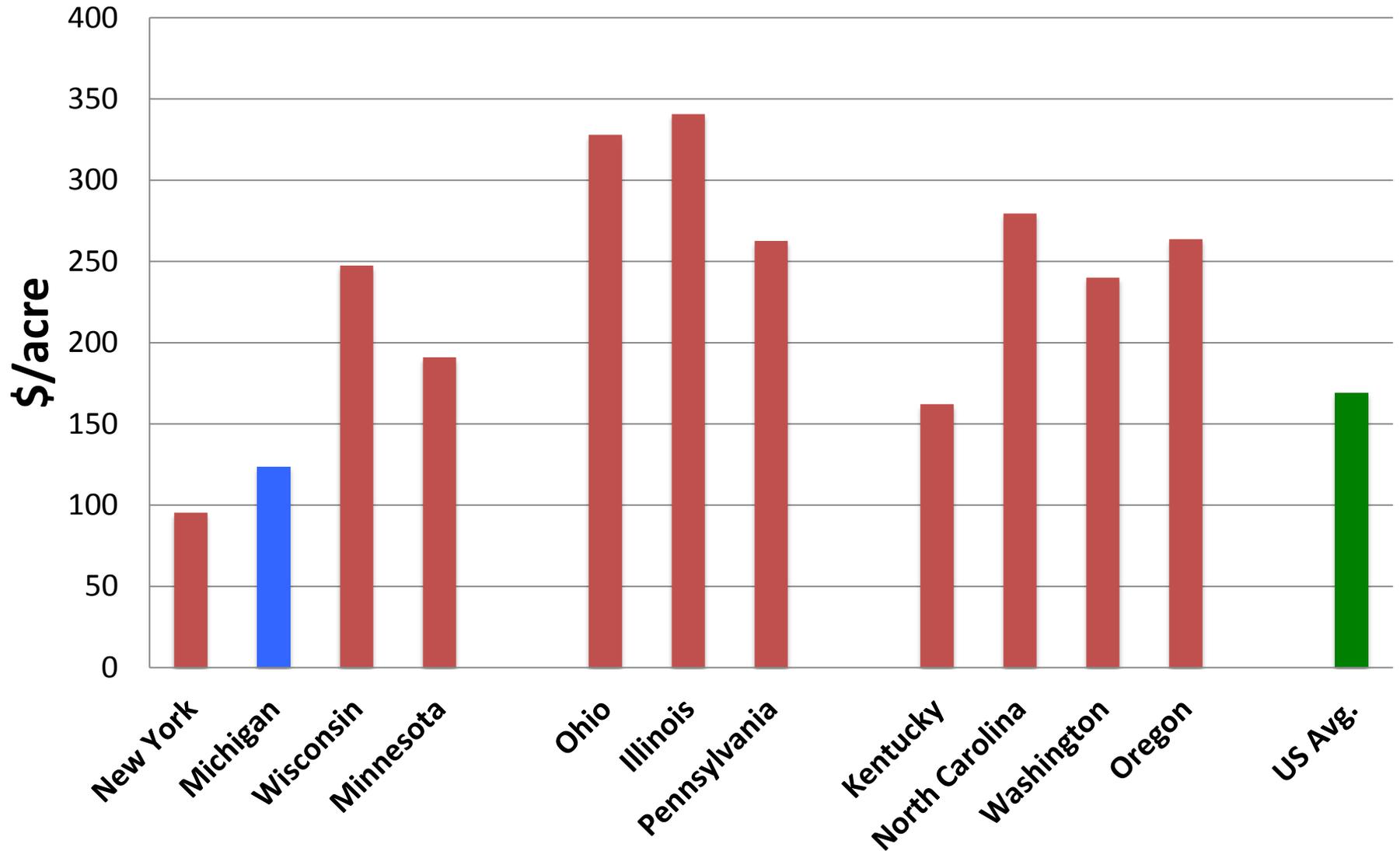
Industries in Wood Processing

Industries in Wood Components and Products



Michigan 19th

Value of Wood Products Industry (no pulp and paper) per acre of Timberland (Data - American Wood Council)



Hourly Wages in the Lake States' Logging Sector, 2014

Logging Equipment Operators*

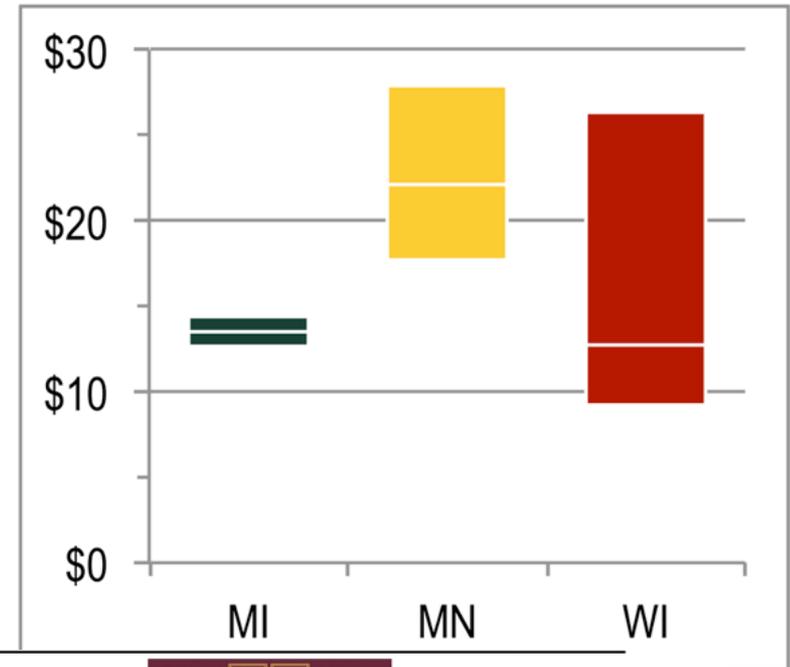
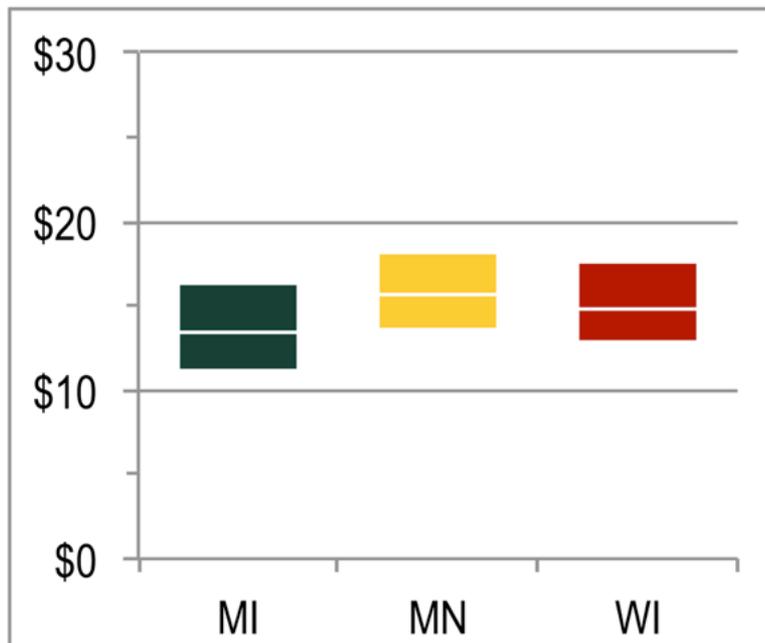
Fallers**

Median
hourly
wage

Michigan	\$13.42
Minnesota	\$15.67
Wisconsin	\$14.82

Michigan	\$13.53
Minnesota	\$22.14
Wisconsin	\$12.76

Hourly wage range
based on 25th and 75th percentile



Data: Occupational Employment Statistics, US Bureau of Labor Statistics, extracted 5/11/2015

For more, contact Mark Rickenbach
(mark.rickenbach@wisc.edu; 608/263-6710)



Emerging opportunities to add value to the forest industry

1. Mass timber buildings & Engineered wood products
2. Pulp and Paper conversion to Biorefinery
3. Niche products and markets

Minneapolis, office building that recently broke ground.





2015 First CLT panels made in the US - Oregon



Possible products from a kraft pulp mill biorefinery

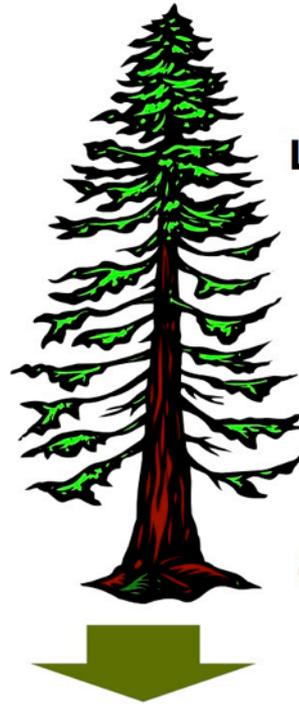
Energy

- Heat
- Electricity
- Pellets

- Biocoal
- Biooil
- Ethanol
- Methanol

- Biogasoline
- Biodiesel

Lignin
Forestry residues



Lignin

Hemi-cellulose

Extractives

Cellulose

Chemicals/materials

- Carbon fibre
- Binder
- Chemical intermediates

- Fiber additive
- Barriers
- Chem intermediates

- Bioactive chemicals
- Tall oil, turpentine

- Ethanol
- Lactic acid
- Acetic acid

Pulp fibers and cellulose

Large biorefinery cluster emerging in Sarnia – opportunity for MI



Green chemicals (particularly alcohols) a 5% growth rate since 2009 and an estimated 2015 market value of 62 billion USD.

Who Is Interested?



Wilson, MI



Danielsons
sugarbush?



WOODINVILLE WHISKEY CO.
BOTTLE NUMBER **733**
BATCH NET WEIGHT
14 8.5fl oz / 250ml

**MAPLE
SYRUP**

AGED IN FRESHLY EMPTIED WOODINVILLE WHISKEY BARRELS



MADE IN U.S.A.

MADE OF 100%
NATURAL MAPLE
SAP FROM THE
SHADY SUGARBUSH
OF AMERICA'S
NORTHWOODS.



WOODINVILLEWHISKEYCO.COM

WOODINVILLE WHISKEY CO.
14508 WOODINVILLE REDMOND RD NE
WOODINVILLE, WA 98072

REFRIGERATE AFTER OPENING



MICHIGAN FOREST BIOMATERIALS INITIATIVE



MiFBI

Michigan Forest Biomaterials Initiative

Current (interim) Board:

- Edward Becker – Friction and Wear Solutions, LLC
- David DeYoe – Resource Trends Consultant (Sec.)
- Jake Hayrynen – JM Longyear
- Richard Kobe – Michigan State University
- Robert Kreipke – Ford Motor Company
- Lori Phalen – MI Association of Conservation Districts
- Terry Sharik (Chair) - Michigan Technological University
- Warren Suchovsky – Michigan Timberman, MI Farm Bureau
- David Wright – Michigan Forest Association

Current (interim) Staff:

- Mark Rudnicki (Exec Dir) – Michigan Technological University

Michigan Forest Biomaterials Initiative (MiFBI)



Mission: To enhance quality of life in Michigan by fostering sustainable forests, communities, and economies through innovative and responsible production, use, and recycling of forest biomaterials.

Michigan Forest Biomaterials Initiative (MiFBI)



2015 Strategic Plan:

- **Developing Forest Biomaterials in Michigan's Green Economy**
- **Increasing Competitiveness of Michigan Biomaterials**
- **Ensuring Sustainable Supply From Public & Private Lands**
- **Generating A Fully Functional Supply Chain**
- **Enabling Supportive Policy Coordination**

REFORGE

MICHIGAN

Renewable Forest Biomaterials For a Green Economy



**Generating Research & Extension to
meet Economic & Environmental Needs**

Project GREEN

A cooperative effort to advance Michigan's economy through plant-based agriculture.

Cooperators: plant commodities & industry, MSU AgBioResearch, MSUE, MDARD

Mission

- Research & educational programs for industry needs
- Food safety
- Quality of the environment

Project GREEN

Total economic impact of Agriculture:

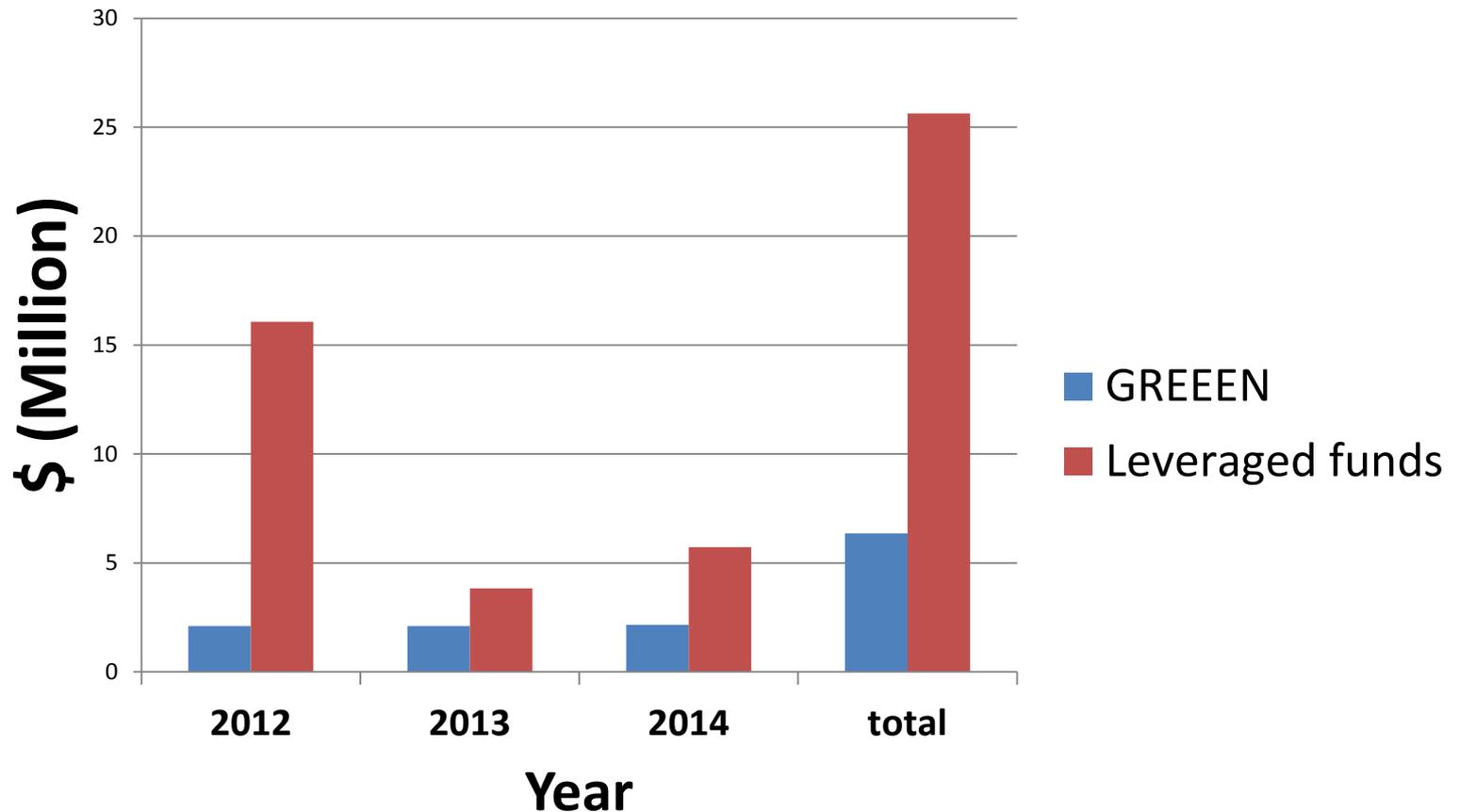
↑52%, 2004-2010

↑\$20 Billion, 2009-2012

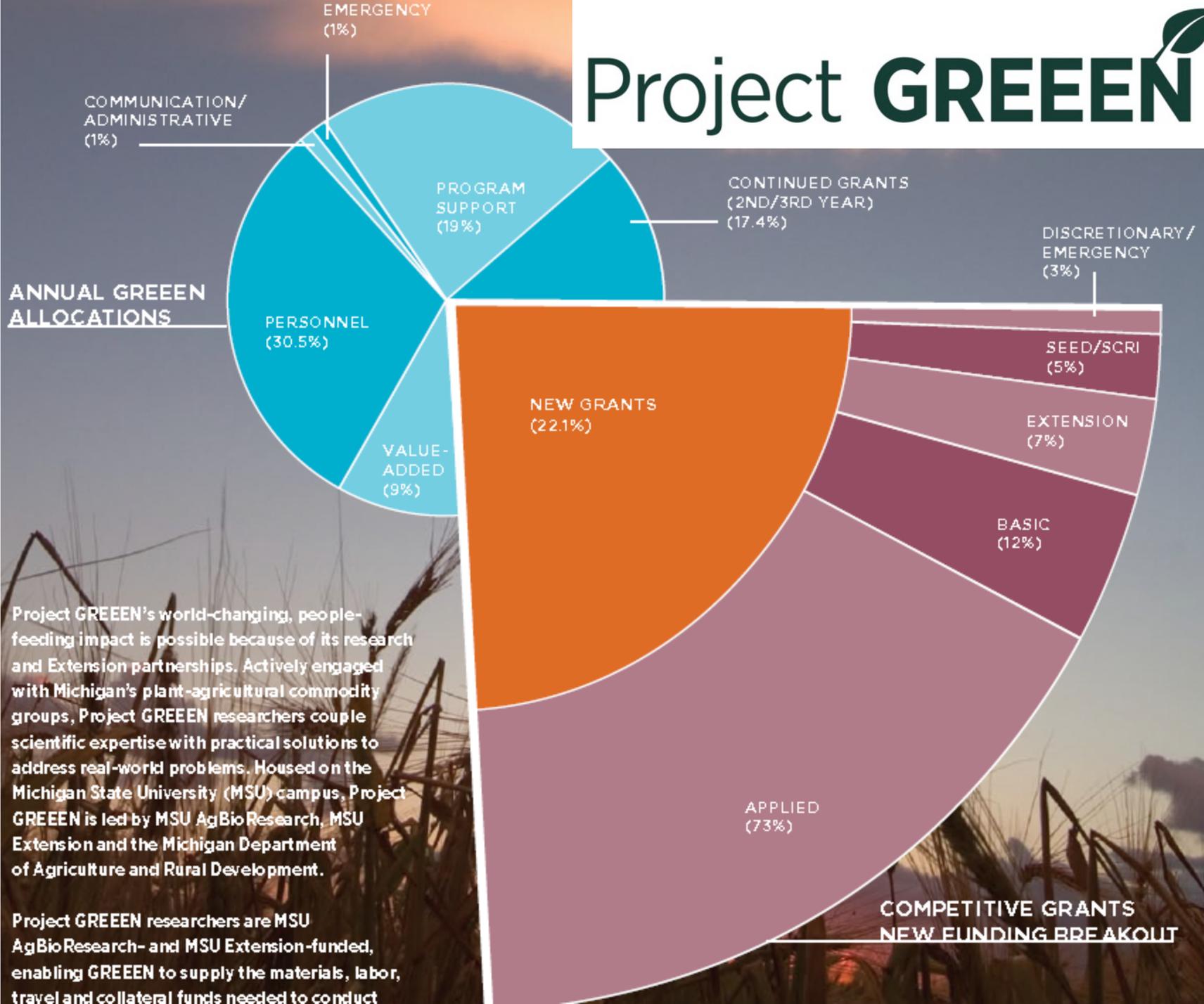
> \$100 Billion contribution (current)

Project GREEN

ROI (proposals): > 4x's



Project GREEN



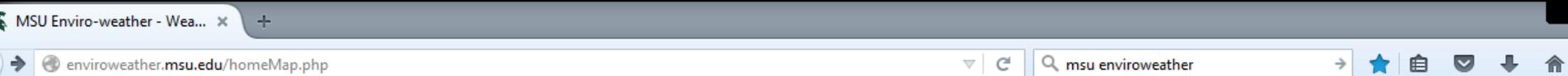
Project GREEN's world-changing, people-feeding impact is possible because of its research and Extension partnerships. Actively engaged with Michigan's plant-agricultural commodity groups, Project GREEN researchers couple scientific expertise with practical solutions to address real-world problems. Housed on the Michigan State University (MSU) campus, Project GREEN is led by MSU AgBio Research, MSU Extension and the Michigan Department of Agriculture and Rural Development.

Project GREEN researchers are MSU AgBio Research- and MSU Extension-funded, enabling GREEN to supply the materials, labor, travel and collateral funds needed to conduct

COMPETITIVE GRANTS
NEW FUNDING BREAKOUT

Project GREEN

Program support



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Enviro-weather
MICHIGAN STATE UNIVERSITY | Weather-based pest, natural resources, and production management tools

Tools for: Field crops | Fruit | Trees | Turfgrass | Vegetables | Landscape & Nursery | More weather



Welcome to Enviro-weather!

For weather-based tools: Click on a station on the map.

For access to specific commodity tools: Select from list above.

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MICHIGAN STATE UNIVERSITY

Extension

Michigan State University
AgBioResearch



MICHIGAN STATE UNIVERSITY

Enviro-weather is a collaborative project between the Michigan Climatological Resources Program and the MSU Integrated Pest Management Program. [Disclaimer and Terms of Use.](#)
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Contact information

Website or tools:

eweather@msu.edu or (517) 432-8520

Data problems or concerns:

eweather@msu.edu or (517) 432-8520

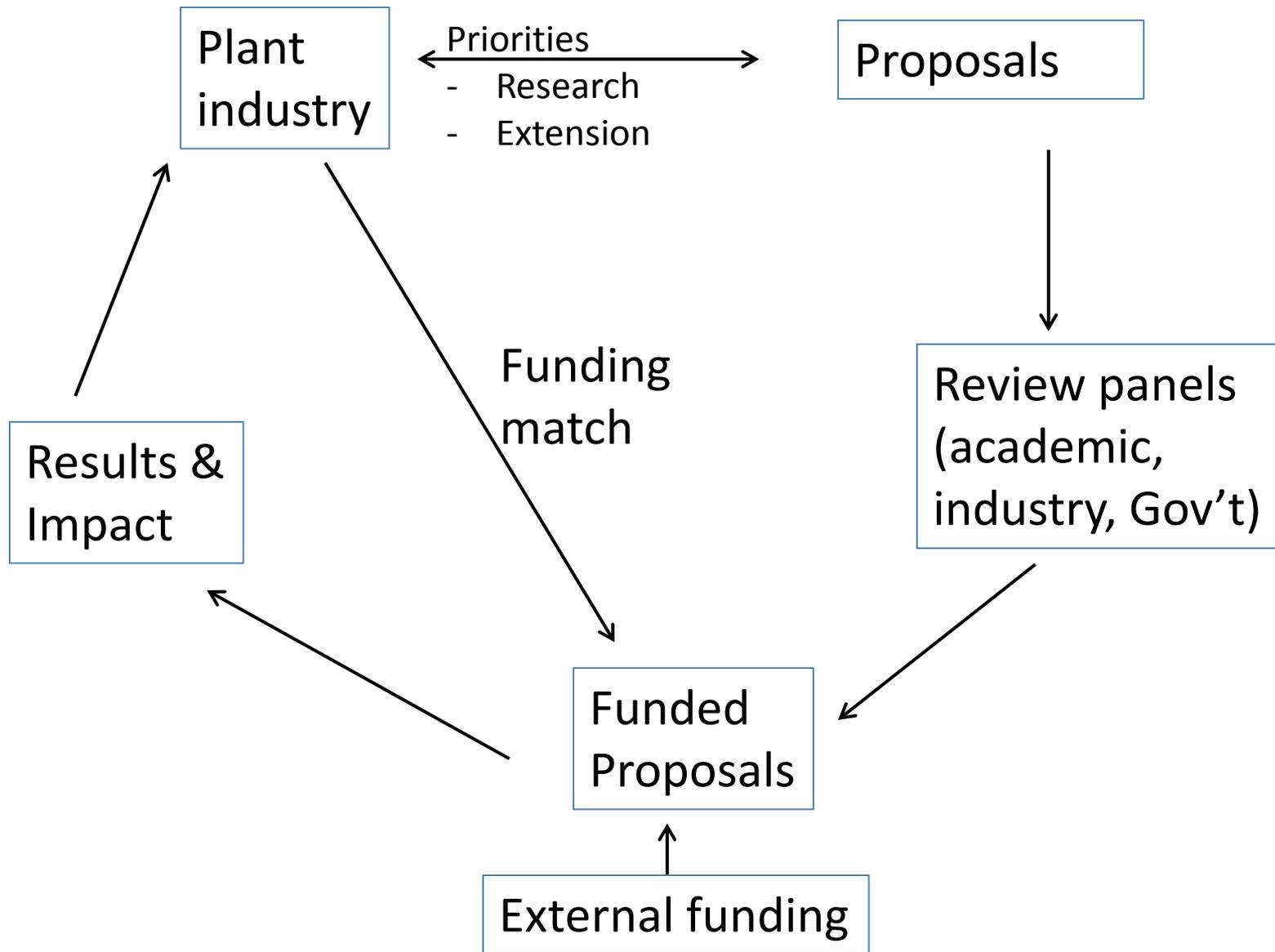
Stations:

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Project **GREEN** Proposal process





Simple Governance

(Council= DNR, MTU, MSU)

Project **GREEN** 



Simple Governance



Rapid Response

Project **GREEN** 

REFORGE

MICHIGAN

Clear roles that balance power



Project **GREEN** 

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Clear roles to balance power



Project **GREEN**



Skin in the game

State govt. (DNR) = investment

Industry = financial match

Universities = faculty, infrastructure

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Collaboration

Project **GREEN** 

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Collaboration ->

Innovation ->

Prosperity

Project **GREEN** 

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Industry's leading role

Project **GREEN** 

REFORGE

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A proposal to support, diversify, and expand
Michigan's forest products industry.



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MI Forest products industry currently worth 17.5 billion.
Strategic investment needed for 20+ billion

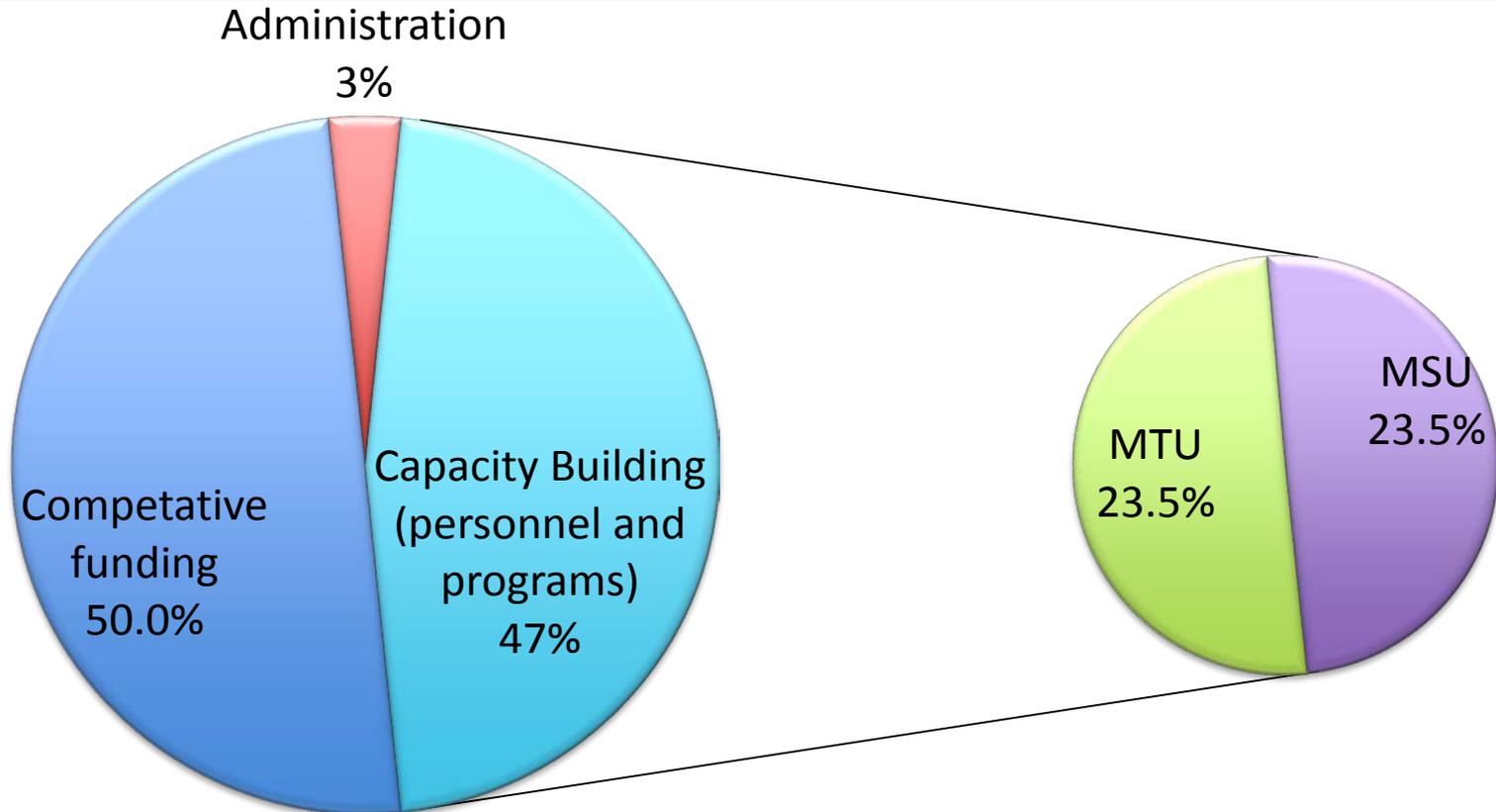
Other states are investing:

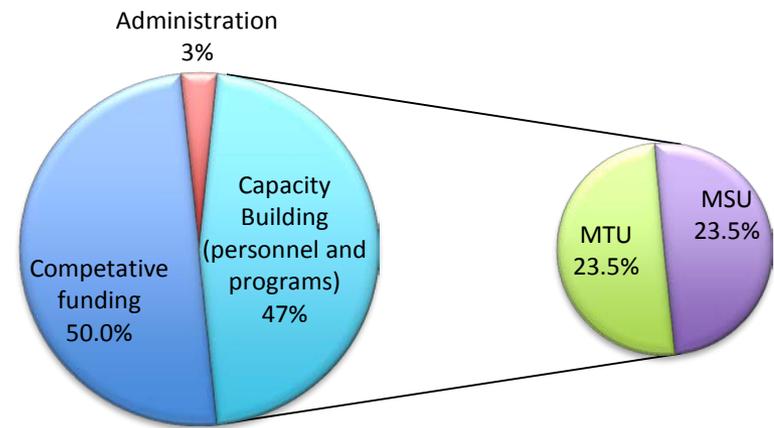
Oregon – \$63 million (50%public/50%private) for Wood Products Innovation Center

Wisconsin, Maine, Mississippi, Virginia, North Carolina

Canada – Federal and provincial governments investing hundreds of millions in Forest Product Innovations

Request for Five million \$ annual allocation directed at two major goals:





Competitive Funding

- MTU & MSU lead but open to all MI higher ed
- 50K-75K/year for 2 years

Scoring Criteria

- Technical and or scientific merit. Impact of outreach
- Alignment with industry priorities
- Must have industry match
- Likelihood for leveraging additional funding



- Industry priorities
 - gathered from trade groups, associations and professional societies
 - Annual update of priorities
 - 8 industry categories
- Initial joint meeting to set expectations, build relationships, and discuss mutual needs

Industry categories

Forestry and Supply Chain

Wood Components & Products

Paper and Packaging

Energy

Wood Processing

Wood Furniture

Advanced Biomaterials

Non-Timber Forest Products





President's 2016 Budget Proposal on USDA-led Manufacturing Innovation Institutes

- **\$80 million to support public-private partnerships to establish two Innovation Institutes engaging industry, leveraging funding, and facilitating technology transfer.**
 - **Biomanufacturing**
Building the scientific foundation, processes, and workforce capacity to move bioenergy and biobased research from development to deployment and commercialization.
 - **Nanocellulosics**
Focused on utilization of cellulose to be turned into a renewable supply of industrial materials. ensuring that the United States is the leading global source of commercial cellulosic nanomaterials research, innovation, production, and commercialization.
- **In line with the December 2012 report by the President's Council of Advisors on Science and Technology.**

REFORGE

MICHIGAN

- 1) Support existing industries by making them more competitive and profitable;
- 2) Creating more higher value opportunities;
- 3) Linking rural communities to manufacturing.

Forests are the Future

- We have underutilized forest resources
- We are shipping raw resources and jobs to other states
- Other states are investing in adding value to wood products - surging demand for renewable and sustainable products. Huge potential to link with other Michigan industries.
- REFORGE is a unique and ambitious proposal to drive public private partnership Michigan



Questions?