

# THE ECONOMIC IMPACT OF RHODE ISLAND'S FORESTRY & WOOD PRODUCTS SECTOR

THE  
UNIVERSITY  
OF RHODE ISLAND

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A logging truck is shown from a rear-quarter perspective, driving away on a dirt road covered in snow. The truck's bed is filled with large logs, and a crane arm is visible at the front. The surrounding forest consists of tall, thin trees, some with snow on their branches. The sky is overcast.

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# EXECUTIVE SUMMARY



- + 513 firms**
- + 2,496 jobs**
- + \$408.0 million gross sales**

The Rhode Island Forestry and Wood Products Sector spans commercial loggers and arborists, Christmas tree farms, forest consultants, sawmills, wood products manufacturers, woodland owners and woodworkers. These 513 firms (not including land owners) generated 2,496 jobs and \$408.0 million of gross sales in 2016. Including spillover effects across all sectors of the Rhode Island economy, the total economic impact was 4,844 jobs and output of \$716.4 million (+/- 17.9%).

This study is the first to measure the economic impact of the RI Forestry and Wood Products Sector using an approach in which businesses are hand-counted to estimate jobs, gross sales, and economic impacts across the state. We find Arborists comprise the largest subsector by jobs and number of firms, while Milling and Manufacturing is the largest by annual gross sales.

# BACKGROUND

This study uses the approach of Sproul (2015) and Sproul and Michaud (2018), in which survey data, business listings from the RI Secretary of State Corporate Database, and marketing databases are combined to estimate annual revenues (or gross sales) and jobs for firms in the RI Forestry and Wood Products Sector in 2016. Revenues for woodland owners are estimated from Intent-to-Cut reports provided by the RI Department of Environmental Management (RIDEM) and from the 2016 Forest Inventory Analysis (FIA) of the United States Forest Service (USFS) (Butler, 2017).

Impact estimates were generated by inputting our revenues and jobs estimates into the industry-standard, IMPLAN input-output modeling software. For impacts, we report only the conservative “output multipliers” following Jeong and Crompton (2015). All confidence intervals presented are 95% intervals, recognizing both potential measurement error in the data collection, and potential sampling error in terms of which data were available.

Details of our data collection, subsector definitions, estimation procedure and confidence intervals can all be found in the Technical Appendix to this report, available at [riepr.org](http://riepr.org).

# RESULTS

The Rhode Island Forestry and Wood Products Sector includes 513 firms, generating \$408.0 (+/- 15.4%) million in annual gross sales and employing 2,496 people (+/- 17.9%). The largest subsector, in terms of the number of firms and jobs, is Arborists, including both landscaping and utility line work.

## Gross Sales and Jobs by Subsector

Category	Firms	Sales, \$M	Jobs
Arborists	349	180.06	1,742
Christmas Tree Farms	48	6.14	83
Forest Consulting	11	0.26	8
Logging	45	11.32	82
Milling and Manufacturing	27	190.63	452
Mulch and Materials Dealers	8	9.07	51
Woodland Owners	--	0.85	14
Woodworking	25	9.71	65
<b>Total</b>	<b>513</b>	<b>407.19</b>	<b>2,482</b>



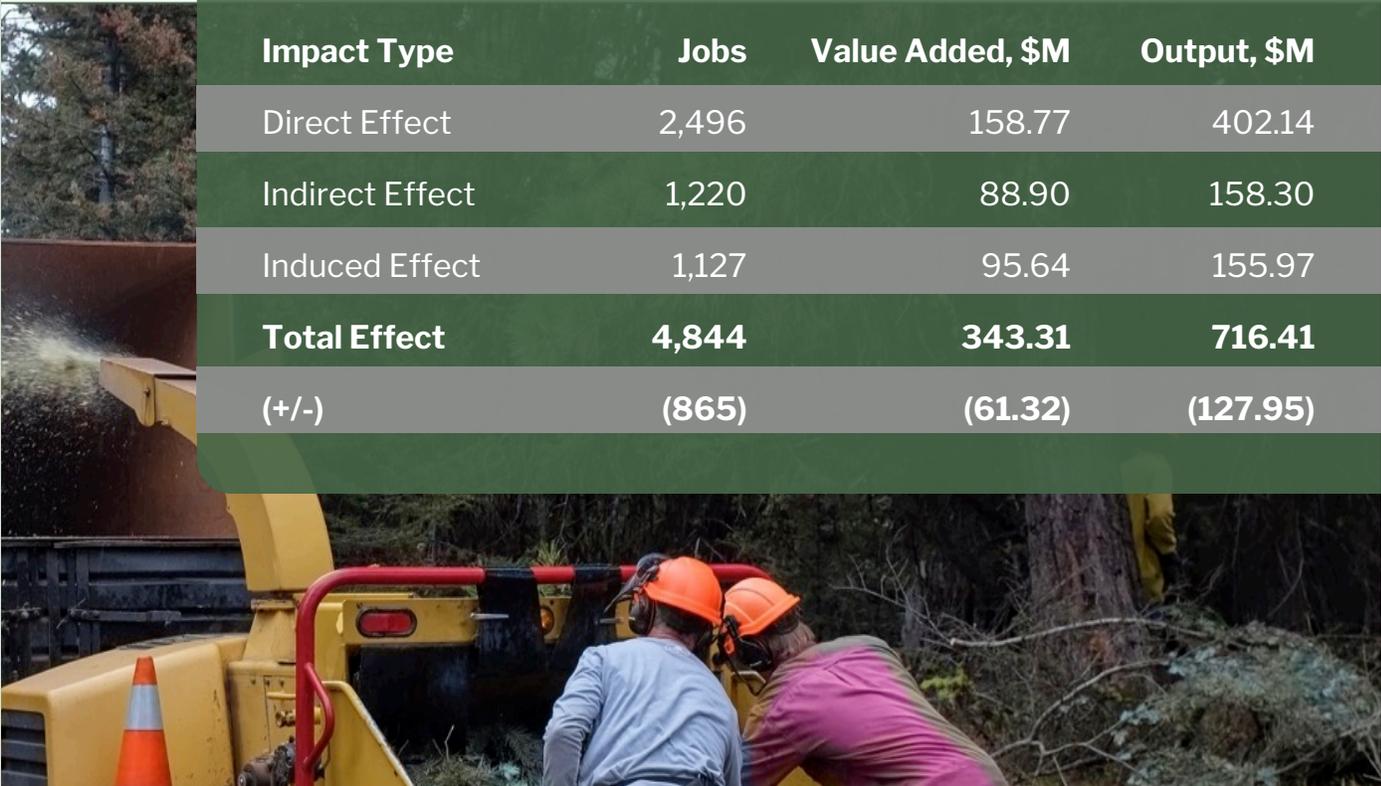
88% of RI Forestry and Wood Products employment is found in the largest two subsectors (Arborists, and Milling and Manufacturing) comprising 394 of the 513 (77%) firms in our study. There are only 27 firms in the Milling and Manufacturing subsector, but these firms on average generated more than \$7 million of gross sales and over 16 jobs in 2016, relative to the average of \$0.79 million and 4.84 jobs for the sector as a whole.

Economic impact estimates are presented below. Value Added estimates correspond to Gross State Product (GSP, the state equivalent of GDP). Output estimates correspond to gross sales, but adjusted to avoid double-counting in retail and wholesale. Direct Effects are attributed directly to the firms in our study, while Indirect Effects are estimated impacts on upstream suppliers to these firms and Induced Effects are downstream economic impacts arising from labor income and proprietor income (Lindall and Olson, 2008). Thus, if the Value Added Direct Effects were summed over all sectors of the RI economy, we would expect it to equal the GSP. The Total Effect, on the other hand, represents the answer to the hypothetical, “what would the RI economy lose if the RI Forestry and Wood Products Sector were to disappear?”

Figures presented in (+/-) format represent 95% confidence intervals. For example, the total jobs impact of 4,844 +/- 865 (17.9%) means we estimate the true total impact has a 95% chance of lying between 3,979 and 5,709 jobs.

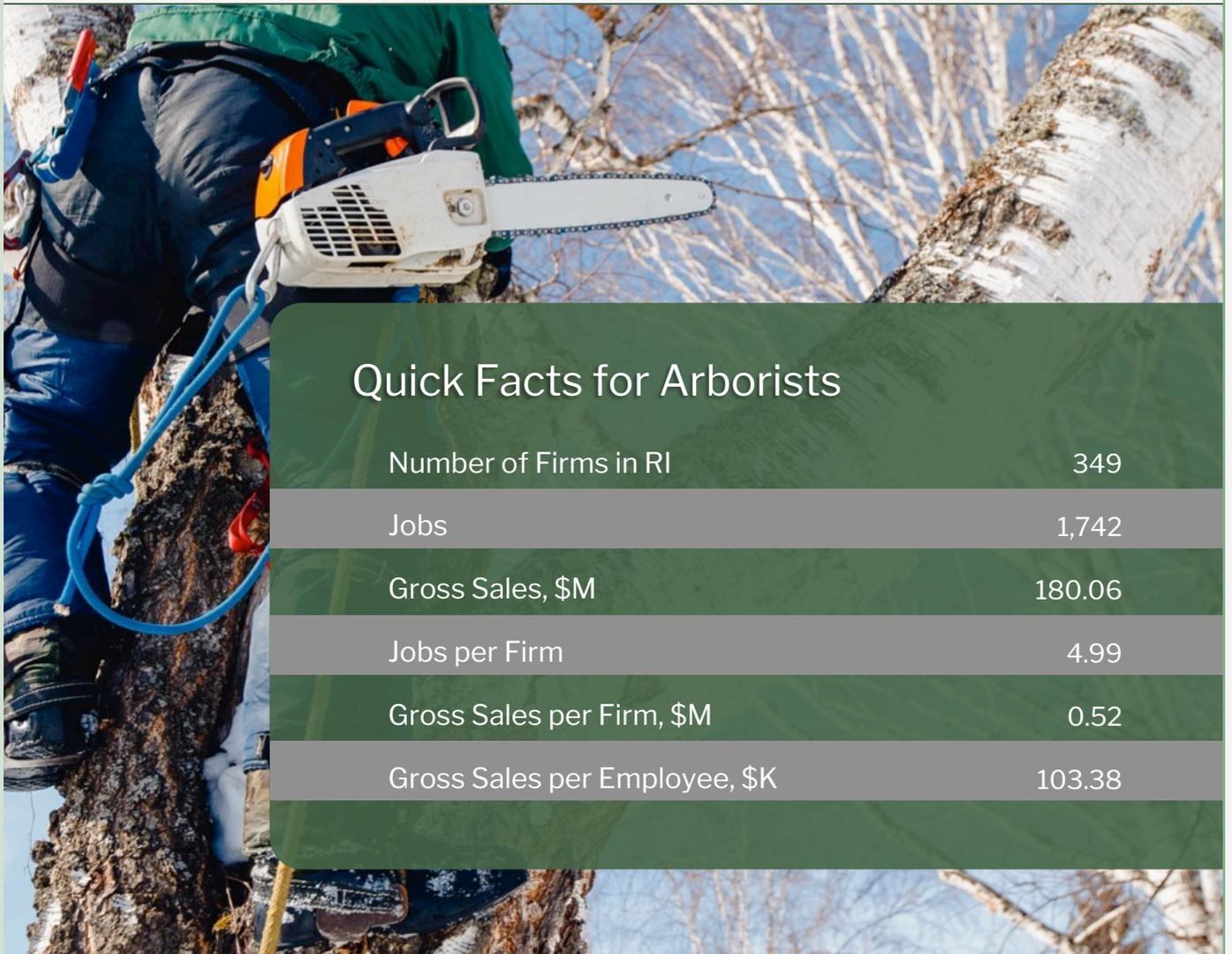
### Economic Impact Estimates

Impact Type	Jobs	Value Added, \$M	Output, \$M
Direct Effect	2,496	158.77	402.14
Indirect Effect	1,220	88.90	158.30
Induced Effect	1,127	95.64	155.97
<b>Total Effect</b>	<b>4,844</b>	<b>343.31</b>	<b>716.41</b>
(+/-)	(865)	(61.32)	(127.95)



# ARBORISTS

Arborists comprise the largest subsector in terms of both jobs and number of businesses. These businesses tend to specialize either in landscaping tree services or in utility and power line work. There were 354 companies with licensed arborists operating in Rhode Island in 2016, of which 5 are loggers and not included here. There additional 158 individual license holders, including 30 Federal employees, 51 State employees, and 77 private individuals. To avoid double counting, none of the private individuals are reported as businesses here, since many are employed by the firms in our list.



## Quick Facts for Arborists

Number of Firms in RI	349
Jobs	1,742
Gross Sales, \$M	180.06
Jobs per Firm	4.99
Gross Sales per Firm, \$M	0.52
Gross Sales per Employee, \$K	103.38

# CHRISTMAS TREE FARMS

There are 48 farms specializing in cut Christmas trees found in Rhode Island, as reported in the US Department of Agriculture's Agricultural Census (2012). The estimates below are based on a sample of 13 Christmas tree farms with gross sales data and 14 (mostly overlapping) with jobs data. Our (conservative) methods for scaling values up to account for the 48 total farms are discussed in the Technical Appendix to this report.

## Quick Facts for Christmas Tree Farms

Number of Firms in RI	48
Jobs	83
Gross Sales, \$M	6.14
Jobs per Firm	1.72
Gross Sales per Firm, \$M	0.13
Gross Sales per Employee, \$K	74.16



# FOREST CONSULTING

We identified 11 businesses operating as forest consultants. Services provided include forest stewardship planning for State and Federal government agencies, reforestation planning, timber sales planning and assistance, and site assessments including surveying and boundary lines.

Forest consultants are the smallest firms in our study, generating an average of 0.72 jobs (not including the principal) and gross sales of \$24,000. The business has a heavy seasonal component, and many firms operate part-time. This subsector also has a substantial presence of out-of-state forest consultants serving Rhode Island, though these firms are excluded from our study.

## Quick Facts for Forest Consulting

Number of Firms in RI	11
Jobs	8
Gross Sales, \$M	0.26
Jobs per Firm	0.72
Gross Sales per Firm, \$M	0.02
Gross Sales per Employee, \$K	32.86

# LOGGING

There were 45 logging firms operating in Rhode Island in 2016, some of whom also employ (or are owned by) licensed arborists and may offer tree services and land clearing services as well.

## Quick Facts for Logging

Number of Firms in RI	45
Jobs	82
Gross Sales, \$M	11.32
Jobs per Firm	1.83
Gross Sales per Firm, \$M	0.25
Gross Sales per Employee, \$K	137.79



Logging firms may also be vertically integrated to incorporate either firewood sales or forest consulting services, and many perform a substantial amount of work outside of Rhode Island.

# MILLING AND MANUFACTURING

These 27 firms include sawmills, pallet manufacturers, and millwork, such as custom architectural millwork and flooring. The sawmills all process native lumber, and some specialize in it. Of the 27 firms, there are 7 pallet manufacturers, specializing in either new lumber or reclaimed wood pallets. As with the Mulch and Materials Dealers subsector (next page), we exclude big box retail/wholesale lumber yards as they do not source locally. Similarly, to avoid over-counting, we exclude construction materials dealers unless they are primarily lumber yards.

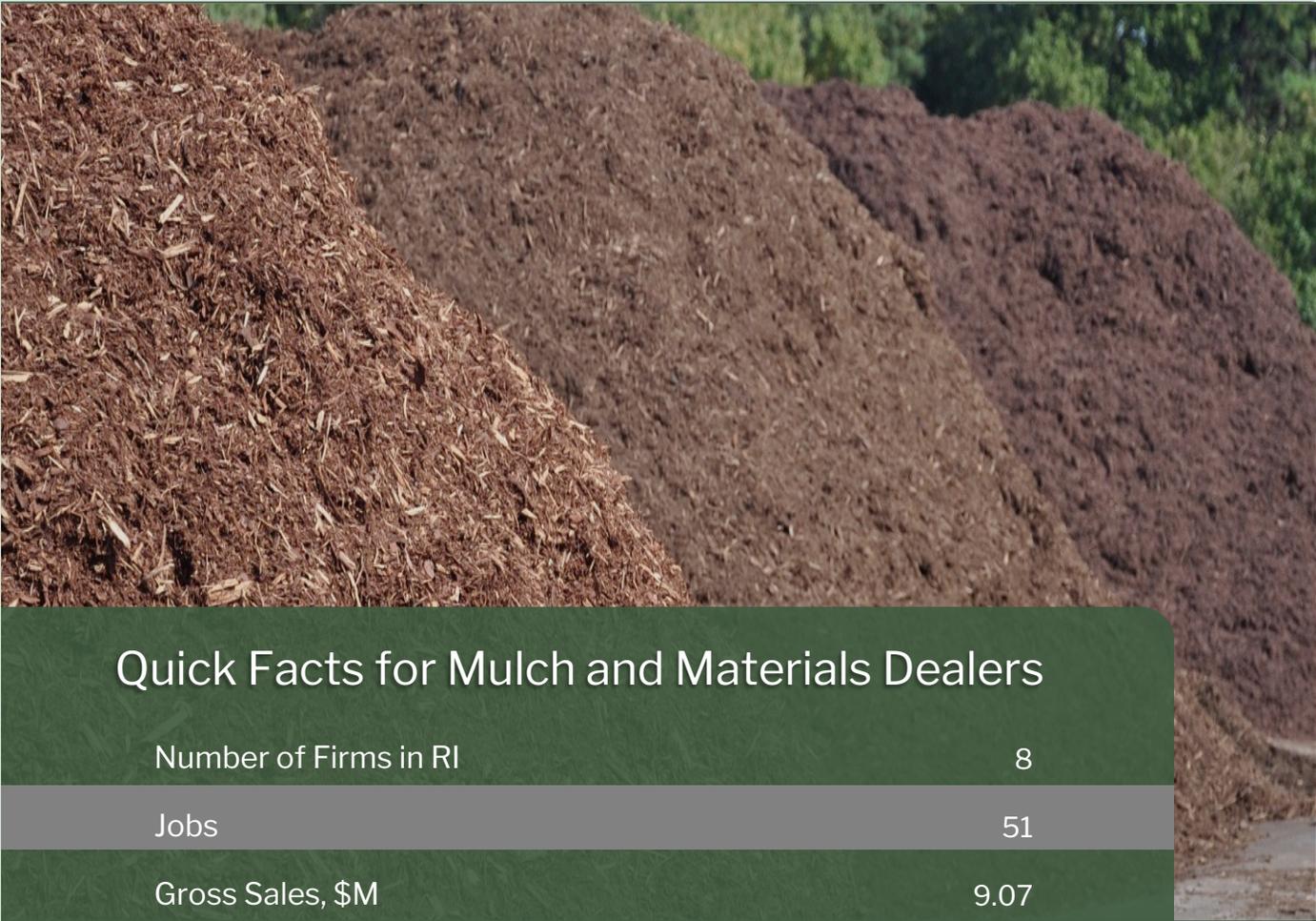
## Quick Facts for Milling and Manufacturing

Number of Firms in RI	27
Jobs	452
Gross Sales, \$M	190.63
Jobs per Firm	16.74
Gross Sales per Firm, \$M	7.06
Gross Sales per Employee, \$K	421.72



# MULCH AND MATERIALS DEALERS

There are eight (8) specialized mulch and materials dealers in Rhode Island whose primary source of wood for mulch production is local forests. This category does not include general retail/wholesale farm and garden stores or related big box retailers, since those businesses primarily source mulch from non-local sources.



## Quick Facts for Mulch and Materials Dealers

Number of Firms in RI	8
Jobs	51
Gross Sales, \$M	9.07
Jobs per Firm	6.33
Gross Sales per Firm, \$M	1.13
Gross Sales per Employee, \$K	179.06

# WOODLAND OWNERS

As described in the Technical Appendix to this report, this subsector had to be estimated indirectly from reported logging to RIDEM and estimates of other harvests and other removals (land clearing) from the USFS. We used values, especially for wood chips from land clearing, that are quite conservative, and are thus likely to understate the total economic contribution of woodland owners and managers.



## Quick Facts for Woodland Owners

Number of Firms in RI	--
Acres of Privately Owned Forestland	253.4K
Gross Sales, \$M	0.85
Percent of Sales from Logging	55.8%
Percent of Sales from Other Harvests	10.9%
Percent of Sales from Land Clearing	33.2%

# WOODWORKING

## Quick Facts for Woodworking

Number of Firms in RI	25
Jobs	65
Gross Sales, \$M	9.71
Jobs per Firm	2.58
Gross Sales per Firm, \$M	0.39
Gross Sales per Employee, \$K	150.37

The woodworking subsector contains primarily finish woodworking firms, and finished wood products manufacturing including custom furniture and custom cabinetry. Some of these businesses specialize in specific materials such as cedar or reclaimed wood, while others are generalist workshops. Some firms also offer design and consulting services related to planning for custom woodwork.

While we did not collect wage information, this subsector has among the highest share of specialized labor in terms of gross sales. Woodworking ranks 3<sup>rd</sup> in terms of gross sales per employee, behind Mulch and Materials Dealers, and Milling and Manufacturing.

# WORKS CITED

Butler, Brett J. 2017. Forests of Rhode Island, 2016. Resource Update FS-131. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

Hasbrouck, E.C., J. Scotti, J. Stent, E.G. Hasbrouck, and K. Gerbino. 2011. RHODE ISLAND COMMERCIAL FISHING AND SEAFOOD INDUSTRIES - THE DEVELOPMENT OF AN INDUSTRY PROFILE. Cornell Cooperative Extension Marine Program.

Jeong, J.Y. and J.L. Crompton. 2015. Measuring the economic impact of a state park system. *Managing Sport and Leisure*, 20(4), pp.238-257.

Lindall, Scott and Doug Olson. 2008. "MIG Technical Analysis Guide" MIG, Inc., 1725 Tower Drive west, Suite 140, Stillwater, MN 55082, [www.implan.com](http://www.implan.com)

Sproul, Thomas W. 2015. "The Economic Impact Study of Rhode Island Plant-Based Industry and Agriculture: An Update to the 2012 Study." Department of Environmental & Natural Resource Economics, University of Rhode Island.

Sproul, Thomas W. and Clayton P. Michaud. 2018. "The Economic Impact Study of Rhode Island's Marine Trades Sector." Department of Environmental & Natural Resource Economics, University of Rhode Island.

# ACKNOWLEDGMENTS

This study was produced by:

Dr. Thomas Sproul, Associate Professor  
Clayton Michaud, PhD Student  
Andrew Bechard, PhD Student  
Department of Environmental & Natural Resource Economics  
College of the Environment & Life Sciences  
University of Rhode Island

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## **Photography Credits**

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