An Assessment of the Economic Contribution of Pulp, Paper and Converting to the State of Wisconsin

Prepared for the Wisconsin Economic Development Corporation by the Wisconsin Institute for Sustainable Technology

August 5th, 2019

Acknowledgements

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Wisconsin Institute for Sustainable Technology
College of Natural Resources
University of Wisconsin-Stevens Point

Wisconsin Paper Council

Wisconsin Economic Development Corporation

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Executive Summary

Wisconsin's pulp, paper and converting industries generated $18.16 billion in economic output and employed 30,262 workers in 2018. Collectively, the paper industry is the fifth-largest manufacturing sector in Wisconsin. Wisconsin's paper industry is significant not only within the state: It leads the nation by many metrics, including in value of products sold, number of employees and number of paper mills.

This study looks at the industry in two ways. First, it reviews and collates publicly available industry data such as the number of mills in the state, number of workers employed, volume of products produced, and types of products produced, among other factors. Sources include the U.S. Census, the Bureau of Labor Statistics, the Bureau of Economic Analysis, and IMPLAN. We've used this data to show trend lines such as how employment in the industry has changed over time, as well as to provide a current snapshot of where the industry is now in the national and state context, and the industry economic contributions at the county level.

This research finds that total economic contributions of the pulp, paper and converting industries, through direct, indirect and induced effect is estimated to produce or support $28,885,298,447 in economic output and 95,853 Wisconsin jobs. Details for economic contributions at the state and county level are on pages 51-94.

Alongside the data-driven portion of the study, researchers interviewed and surveyed leaders across the industry – owners, C-suite executives, managers, marketing and development personnel – to get their take on the state of the industry currently, threats and opportunities to the industry, and the direction these people see the industry heading.

People refer to "the paper industry" or sometimes to "pulp and paper," but the industry is more complicated than those simple references suggests. While some types of paper, such as brown paper for packaging, are commodity products, others are specialized.

Twenty-four paper companies operate mills at 34 locations in Wisconsin. Integrated mills, such as ND Paper in Biron, produce both pulp and paper. Others produce only one or the other. Ahlstrom-Munksjö's Rhinelander mill, for example, does not manufacture pulp but purchases fiber to produce specialty papers. Sustana, in De Pere, does not make paper but makes pulp from recycled fiber and sells the pulp to other paper companies.

At least 204 converters operate facilities in the state. Converters take paper produced at a mill and change it to a finished product. These products are as varied as art paper, food packaging, tissues and towels, medical papers, industrial papers, and printing and writing paper, to name just a handful of the myriad end uses for Wisconsin paper.

Although media accounts of the paper industry in the past decade have often focused on areas of decline and job loss, Wisconsin's paper and related industries in 2018 are in a relatively stable position. That's not to say threats don't exist, but at this point, much of the industry consolidation and mill closure activity driven by declining paper demand has already taken place. Industry leaders say they are optimistic about the future of the industry, while cautioning that some additional consolidation and corresponding business closings may occur as the industry wrings out excess production capacity in some sectors. Because some sectors are now seeing growth, it's possible that rather than closing, operations may be able to reposition themselves to survive, such as occurred with the former Appleton Coated plant in Combined Locks. (See page 104 for more on Appleton Coated, now the Midwest Paper Group.)

Employment in the industry in Wisconsin plunged by nearly 10 percent in just three years following the Great Recession, 2007-2010, but in the three years 2014-2017 (latest BLS data), the paper industry workforce has declined by just 1.89 percent. Today, highly skilled engineers and technology workers, such as those educated in the paper science and chemical engineering program at UW-Stevens Point, are in demand. Hiring is also occurring in the production labor force as baby boomers retire; most plants expect significant turnover in employees over the next five years. In interviews conducted for this study, mills and converters indicated expectations for a stable, rather than declining, production workforce. In fact, recruitment of an adequate workforce is seen as one of the major challenges in the industry.

Opportunities for the industry include increased demand for packaging materials – growth driven by the surge in e-commerce and its concurrent demand for shipment packaging, often referred to as “the Amazon effect.” Other specialty papers such as coated and/or laminated materials that can compete with plastic and are seen as more sustainable and environmentally sound also show growth potential. Tissue and towel, a sizeable segment of Wisconsin paper production, is seen as stable and relatively recession-proof. It’s expected to grow at roughly GDP levels. (An oft-repeated line in the industry is that the tissue sector is safe “because there’s no app for that.”)

Capital investment has been relatively low since the mid-1990s, leaving the industry with an aging infrastructure. That trend appears to be reversing; interviews with industry leaders along with published reports show substantial planned capital investments in the next several years in Wisconsin, led by a more than $500 million new paper plant being constructed by Green Bay Packaging, the first completely new mill constructed in the state in decades.

While the purpose of this study is only to report on the current state of Wisconsin’s pulp, paper and converting industries, and not to offer policy prescriptions, nevertheless the findings within may offer some direction for state policy makers and economic development agencies.

Structure of this report

This report comprises three parts:

1. A quantitative analysis of the economic contribution of Wisconsin’s paper manufacturing industry (see pages 16-94 for charts, heatmaps and descriptions).
2. A qualitative review of the status of Wisconsin’s paper manufacturing industry, informed by interviews and a survey of industry stakeholders (see pages 95-103 for details of the questions asked and responses received).
3. Examples of innovation and adaptation in the industry (see pages 104-108 for these vignettes).

Introduction

In order to fully understand the paper manufacturing sector's place in Wisconsin's economy, it is necessary to understand, firstly, the breadth and scope of the industries that comprise paper manufacturing and, secondly, the difference between economic contribution and economic impact.

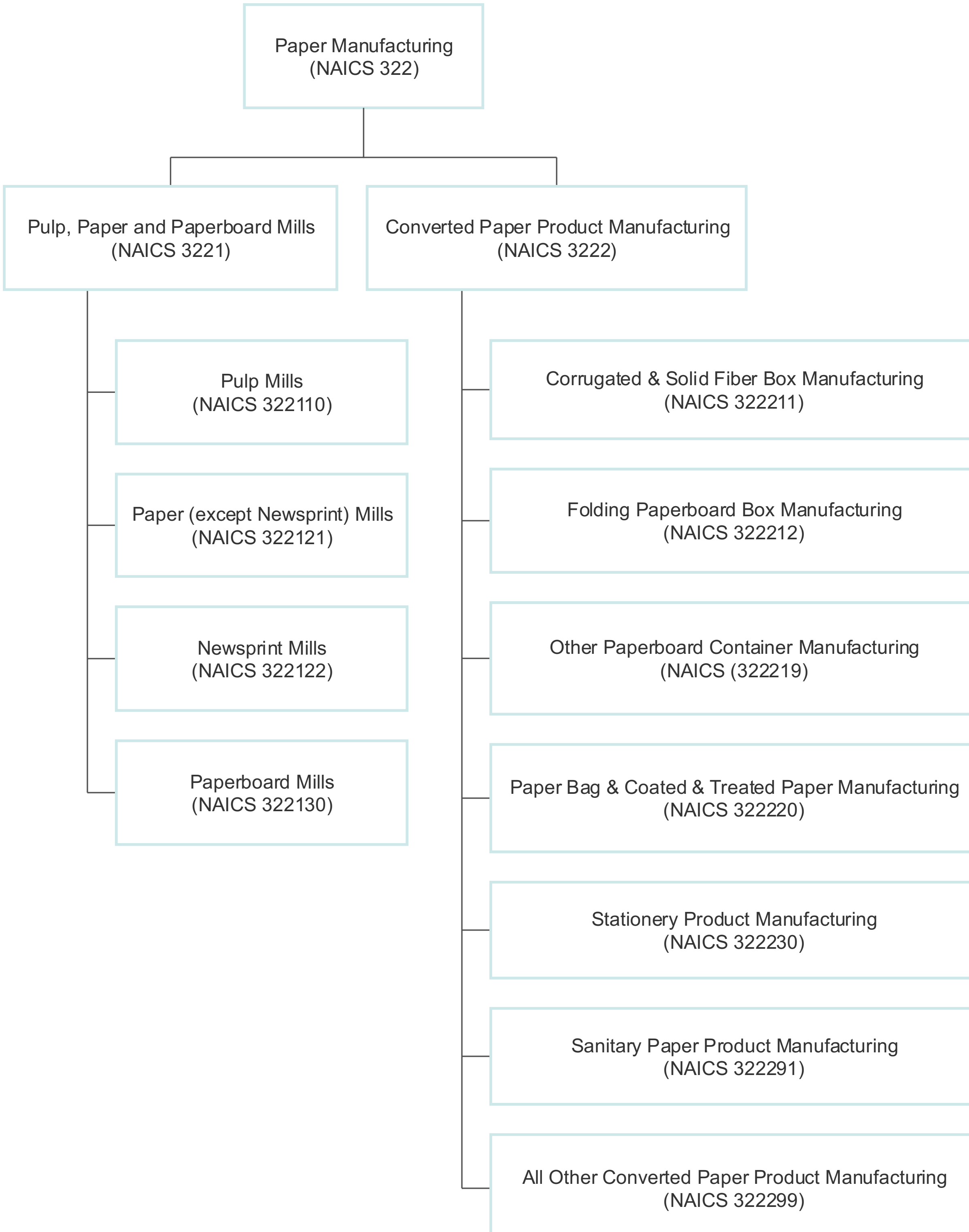
North American Industry Classification System

In preparing this report, we have adopted the North American Industry Classification System (NAICS) as the basis for defining paper manufacturing and for categorizing and quantifying the subsectors within it. NAICS is the system used by federal statistical agencies to classify business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. An establishment is typically a single physical location, and each establishment is classified to an industry according to the primary business activity taking place there. At the most detailed industry level, a six-digit code is used. At the highest level, paper manufacturing comprises the manufacture of pulp, paper and paper products derived from those outputs as defined below.

Paper Manufacturing

Paper Manufacturing (NAICS 322) is a subsector of the Manufacturing business sector (NAICS 31-33). Paper manufacturing is defined within NAICS as establishments primarily engaged in manufacturing pulp, paper and paper products. The manufacture of pulp involves separating cellulose fibers from other impurities in wood, used paper, or other fiber sources. The manufacture of paper involves matting these fibers into a sheet. Converted paper products are produced from paper and other materials by various cutting and shaping techniques.

The chart on the following page sets out the NAICS hierarchy for paper manufacturing establishments and the scope of the paper manufacturing sector covered in this report.


Paper Manufacturing
(NAICS 322)
Pulp, Paper and Paperboard Mills
(NAICS 3221)
Converted Paper Product Manufacturing
(NAICS 3222)
Pulp Mills
(NAICS 322110)
Paper (except Newsprint) Mills
(NAICS 322121)
Newsprint Mills
(NAICS 322122)
Paperboard Mills
(NAICS 322130)
Corrugated & Solid Fiber Box Manufacturing
(NAICS 322211)
Folding Paperboard Box Manufacturing
(NAICS 322212)
Other Paperboard Container Manufacturing
(NAICS (322219)
Paper Bag & Coated & Treated Paper Manufacturing
(NAICS 322220)
Stationery Product Manufacturing
(NAICS 322230)
Sanitary Paper Product Manufacturing
(NAICS 322291)
All Other Converted Paper Product Manufacturing
(NAICS 322299)

Pulp, Paper and Paperboard Mills (NAICS 3221)

This industry group comprises establishments primarily engaged in the manufacture of pulp, paper or paperboard.

Pulp Mills (NAICS 322110)

This industry comprises establishments primarily engaged in manufacturing pulp without the subsequent manufacture of paper or paperboard. The pulp is made by separating the cellulose fibers from the other components in wood or other material, such as used or recycled rags, linters, scrap paper, and straw. There is only one such pulp mill in Wisconsin, Sustana located in De Pere, and for the subsequent economic analyses, its contribution is included within the Paper Mill subsector.

Paper Mills (except Newsprint) Mills (NAICS 322121)

This industry comprises establishments primarily engaged in manufacturing paper (except newsprint) from pulp. These establishments may manufacture their own pulp or purchase pulp. In addition, the establishments may also convert the paper they make. An example of such a mill is ND Paper in Biron.

Newsprint Mills (NAICS 322122)

This industry comprises establishments primarily engaged in manufacturing newsprint. These establishments may manufacture or purchase pulp. In addition, the establishments may also convert the paper they make. There are no newsprint mills in Wisconsin and this sub sector will not be discussed further.

Paperboard Mills (NAICS 322130)

This industry comprises establishments primarily engaged in manufacturing paperboard from pulp. These establishments may manufacture their own pulp or purchase pulp. In addition, the establishments may also convert the paperboard they make. An example of such a mill is Corenso North America Corp. in Wisconsin Rapids.

Converted Paper Products (NAICS 3222)

Corrugated & Solid Fiber Box Manufacturing (NAICS 322211)

This industry comprises establishments primarily engaged in laminating purchased paper or paperboard into corrugated or solid fiber boxes and related products, such as pads, partitions, pallets and corrugated paper without manufacturing paperboard. These boxes are generally used for shipping. An example of such an establishment is the Westrock Merchandising Display plant in Adams.

Folding Paperboard Box Manufacturing (NAICS 322212)

This industry comprises establishments primarily engaged in converting paperboard (except corrugated) into folding paperboard boxes without manufacturing paper and paperboard. An example of such an establishment is Graphic Packaging International LLC in Wausau.

Other Paperboard Container Manufacturing (NAICS 322219)

This industry comprises establishments primarily engaged in converting paperboard into paperboard containers (except corrugated, solid fiber, and folding paperboard boxes) without manufacturing paperboard. An example of such an establishment is Great Northern Corporation in Chippewa Falls.

Paper Bag & Coated & Treated Paper Manufacturing (NAICS 322220)

This industry comprises establishments primarily engaged in one or more of the following:
(1) cutting and coating paper and paperboard; (2) cutting and laminating paper, paperboard, and other flexible materials (except plastic film to plastic film); (3) manufacturing bags, multiwall bags, sacks of paper, metal foil,

coated paper, laminates, or coated combinations of paper and foil with plastic film; (4) manufacturing laminated aluminum and other converted metal films from purchased foils; and (5) surface coating paper or paper board. An example of such an establishment is Wausau Coated in Wausau.

Stationery Product Manufacturing (NAICS 322230)

This industry comprises establishments primarily engaged in converting paper or paperboard into products used for writing, filing, art work, and similar applications. An example of such a company is The Lang Companies in Waukesha.

Sanitary Paper Product Manufacturing (NAICS 322291)

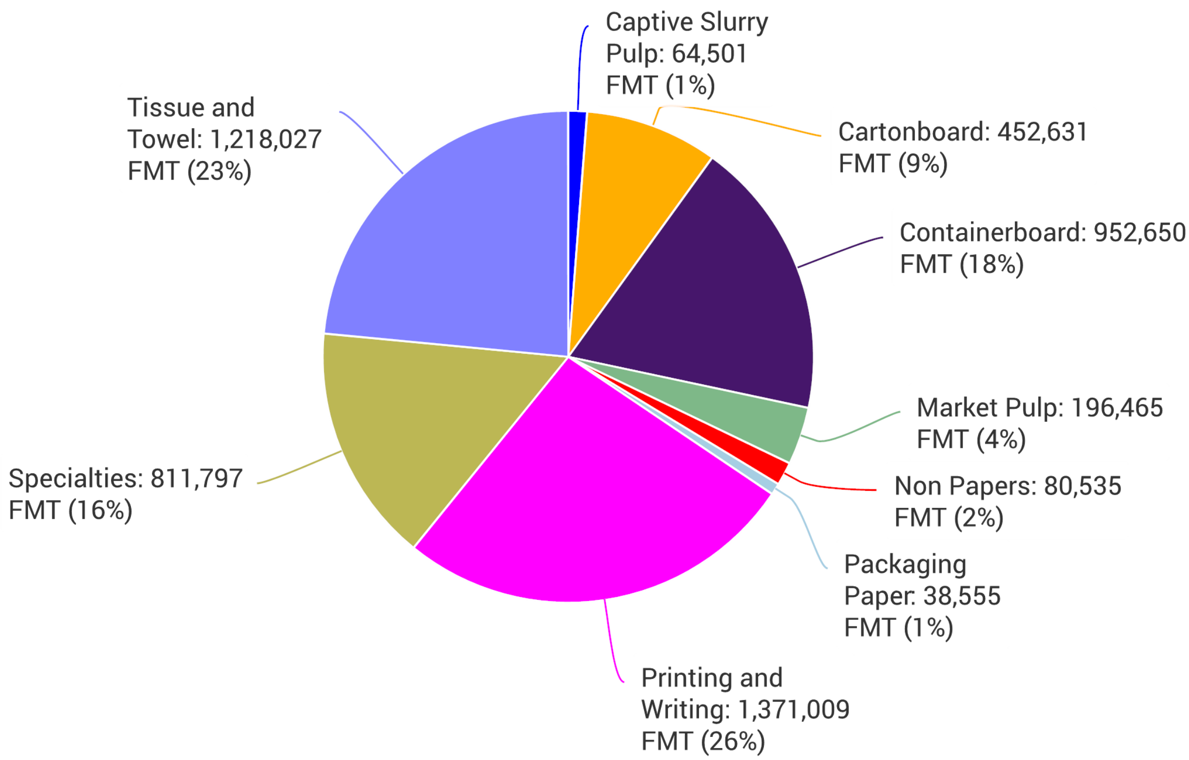
This industry comprises establishments primarily engaged in converting purchased sanitary paper stock or wadding into sanitary paper products such as facial tissues, handkerchiefs, table napkins, toilet paper, towels, disposable diapers, sanitary napkins, and tampons. An example of such an establishment is Creative Converting in Clintonville.

All Other Converted Paper Product Manufacturing (322299)

This industry comprises establishments primarily engaged in converting paper or paperboard into products (except containers, bags, coated and treated paper, stationery products, and sanitary paper products) or converting pulp into pulp products, such as egg cartons, food trays, and other food containers from molded pup. An example of such an establishment is Progressive Converting in Appleton.

Diversity of pulp and paper grade production in Wisconsin

With the exception of newsprint mills, there are businesses operating in every other subsector of paper manufacturing in Wisconsin. The following chart, comprising data provided by Fisher International, illustrates the diversity of current manufacturing output (nominal production values).



NOMINAL PRODUCTION OF PULP, PAPER AND PAPERBOARD (FINISHED METRIC TONS) IN WISCONSIN (2018). DATA PROVIDED BY FISHER INTERNATIONAL AND ACCESSED FROM ITS FISHERSOLVE NEXT™ DATABASE.

Economic impact or economic contribution

This study comprises an assessment of existing paper manufacturing business to Wisconsin's economy. Therefore, it adopts the convention of using 'economic contribution' terminology to assess the economic effects of those existing businesses on Wisconsin. In keeping with convention, the term economic impact is used only for the establishment of new businesses or the closure of existing businesses and so will not be discussed further in this document.

Specialty paper

You unwrap a cough drop and pop it in your mouth, dropping the wrapper into the recycle basket beside your desk without giving it a thought. But people in the paper industry have given that wrapper a great deal of thought. It's an example of what the industry calls a specialty paper – a paper developed for a specific purpose and to exacting specifications. In this case, the papermakers have built in a special property called "twistiness" that helps it stay tightly around the cough drop once a machine wraps it. The paper is also specially coated to preserve freshness and to avoid sticking to the cough drop when it is unwrapped by the consumer.

This lozenge paper is just one of thousands of unique paper products made in Wisconsin, and in conversations about the viability of Wisconsin's paper industry, talk usually turns quickly to "specialty papers" like this. Industry leaders and observers point to these as a reason for optimism. Rather than making commodity papers such as newsprint (none is made in Wisconsin), mills create a variety of paper for different applications and converters modify that paper in myriad ways for myriad end uses.

Understanding the future of Wisconsin's paper industry requires some understanding of specialty papers because, unlike the shrinking markets in some commodity papers, the industry sees growth opportunities in specialty applications, particularly where paper may supplant plastic. Consumers are looking for sustainable products and paper increasingly is seen as a more sustainable alternative. Improvements in coating technology, for example, are opening opportunities in paper-based food packaging to replace plastic.

"Just the aversion to plastic products we're seeing today is a reason to see some optimism on the paper packaging end of things," one converter remarked, a sentiment that was repeated in numerous interviews.

While specialty papers are frequently pointed to as a sustaining force in Wisconsin's paper industry, the term specialty paper is not well-defined even within the industry. One papermaker joked that the industry prefers to keep it that way because competition is fierce and each manufacturer strives to protect its trade secrets, so a little vagueness in descriptions may be a good thing. Nevertheless, manufacturers and converters provided some examples of Wisconsin specialty grades to illustrate this important sector.

Food papers

Ahlstrom-Munksjö, which operates four paper mills in Wisconsin, makes a wide range of specialty papers including food wrapping papers. Its website touts the performance of its "sweets, chocolate and snack wrapping paper":

"High performance twisting, wrapping and folding papers specially developed for sustainable sweets, chocolate and snack packaging… Our Rocalonde™ grades run trouble-free on high-speed twisting machines. They resist the extreme constraints that are exerted and they have supreme twist retention so that sweets always open easily when you want them to – with no annoying rustle!"

GLASSINE FOOD WRAPPING PAPERS MEET EXACTING SPECIFICATIONS FOR HEALTH, SAFETY AND PACKAGING PERFORMANCE. THE PAPERS OFFER GREASE RESISTANCE, COME IN COMPOSTABLE AND NATURAL OPTIONS AND ARE USED AROUND THE WORLD. PHOTO COURTESY AHLSTROM-MUNKSJÖ.

Food wrapping paper is a significant chunk of business for Wisconsin paper manufacturers and converters, ranging from paper sleeves (interleaves) between slices of cheese or deli meat, to grease-resistant papers, baking papers and more. Domtar and Verso, like Ahlstrom-Munksjö and others, make a variety of specialty papers aimed at the food wrap market, and converters throughout Wisconsin create thousands of products for different end-uses.

Labels and release liners

IMAGE COURTESY OF WAUSAU COATED.

Labels are also a big part of Wisconsin specialty paper production. Labels require a face stock, on which the graphics are applied; a release liner, which protects the label adhesive until the label is to be applied to a product; the adhesive; and a top coat to protect the graphics. Converters take those papers and add adhesives and coatings designed for each specific application. Specialty papers made in Wisconsin for the wine and spirits industry, for example, stand up to water and ice baths, deliver luxurious appearances and textures, and with custom converting, are scuff resistant, can be cut to odd shapes, adhere to glass, foil, and plastic, and can be printed with digital printing equipment. They are delivered around the world.

While we may think of labels only as something adhered to a consumer product, they are in fact ubiquitous. Medical labels, for example, include prescription labels, test result labels and instrument labels. Store shelves collectively contain millions of price and item labels. Packaging of all types requires labeling.

Flexible packaging

Flexible packaging has become an important end use for specialty paper. Image courtesy of Verso.

The flexible packaging market provides an opportunity for specialty paper manufacturers as they innovate ways to base more of this packaging on paper rather than plastic.

Graphics applications

Specialty papers for graphics applications are shown in the image on left, while the image of the magazine rack illustrates a continued market for publishing papers. Images courtesy Verso.

While the overall printing and writing paper market has declined in the face of digital displacement – more reading being done online – Wisconsin paper manufacturers and converters are major providers of specialty grades for graphics applications.

Other specialty categories include but are not limited to:
Construction papers, such as those used in the manufacture of roofing products, drywall and so on.

Electrical insulating papers, including papers used in batteries.

Industrial papers used in production of abrasives.

Filter papers with countless applications for air and liquid filtration, from automotive and industrial use to food preparation and medical use and much more.

Medical papers, such as used on exam tables or to package medical supplies.

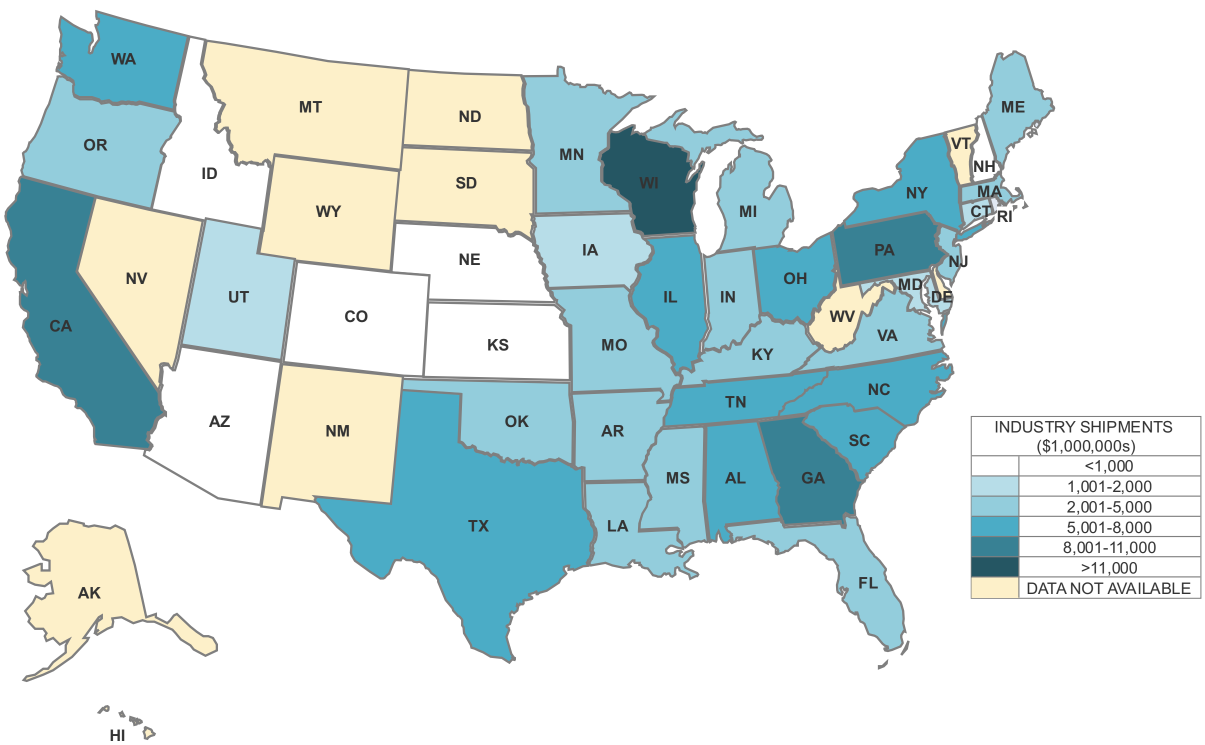
Wisconsin's Paper Manufacturing Industry in the National Context

By several important measures, Wisconsin's paper manufacturing industry leads the nation. More people are employed in the paper manufacturing industry in Wisconsin than in any other state, and Wisconsin's total payroll for those employees also leads the nation. Wisconsin is also the most productive state, shipping more value in paper products than any other.

In this report, when we refer to the paper manufacturing industry as a whole, as in this section, the data includes paper manufacturing of all types, that is all mills: pulp mills, paper mills, paperboard mills; and all converters: paperboard, containers, paper bag, coated and treated paper, sanitary paper (tissue and towel), stationery, and all other converted paper products. We use the North American Industry Classification System (NAICS) codes to compile the data.

Wisconsin's 2018 output of all paper manufactured products is estimated to be $18.16 billion, well ahead of second-place Pennsylvania at $10.9 billion.

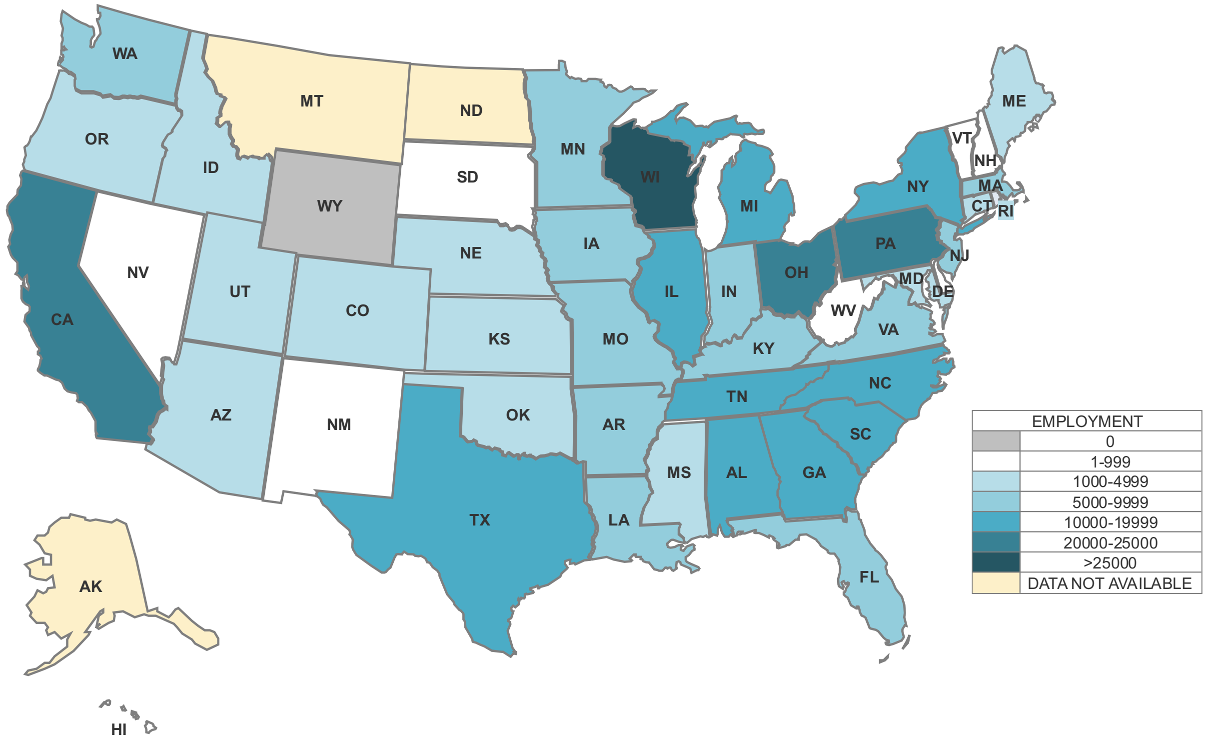
Industry shipments



Wisconsin, at $18.16 billion, ships more value in paper products than any state in the U.S. The figures include pulp, paper and all paper products. Sources: American Forest and Paper Association, 2018 and original research.

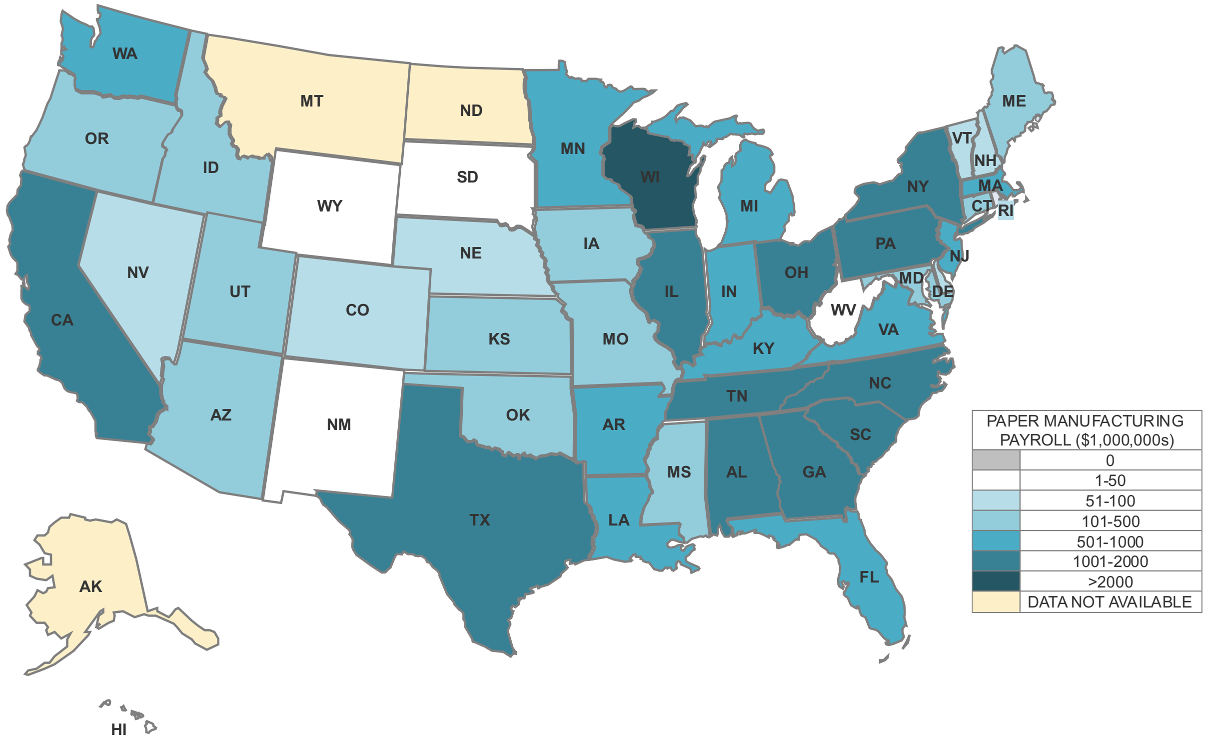
Paper manufacturing employment

Wisconsin's paper industry employed 30,262 workers in 2018. Rounding out the top five in employment are Pennsylvania, in second place, with 22,973; California, 22787; Ohio, 20,154; and Georgia, 19,444.



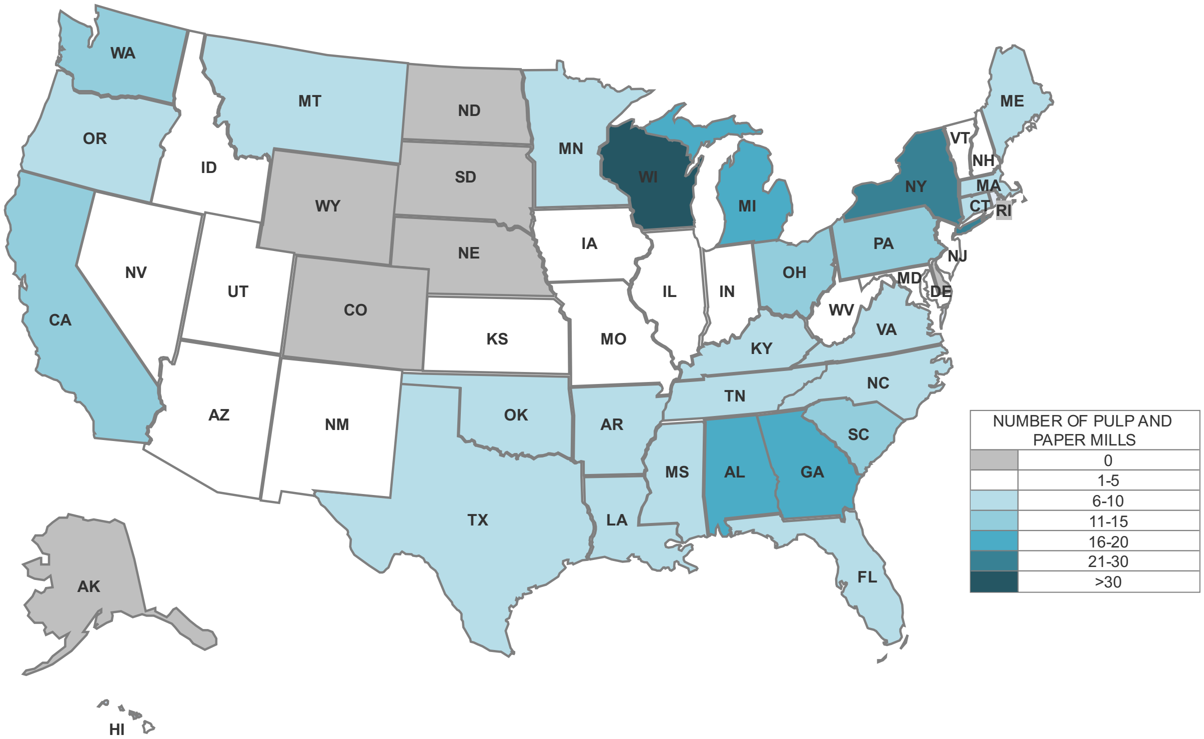
WISCONSIN LEADS THE NATION IN TOTAL NUMBER OF EMPLOYEES IN THE PAPER INDUSTRY. SOURCES: AMERICAN FOREST & PAPER ASSOCIATION, 2017 AND ORIGINAL RESEARCH.

Paper manufacturing payroll



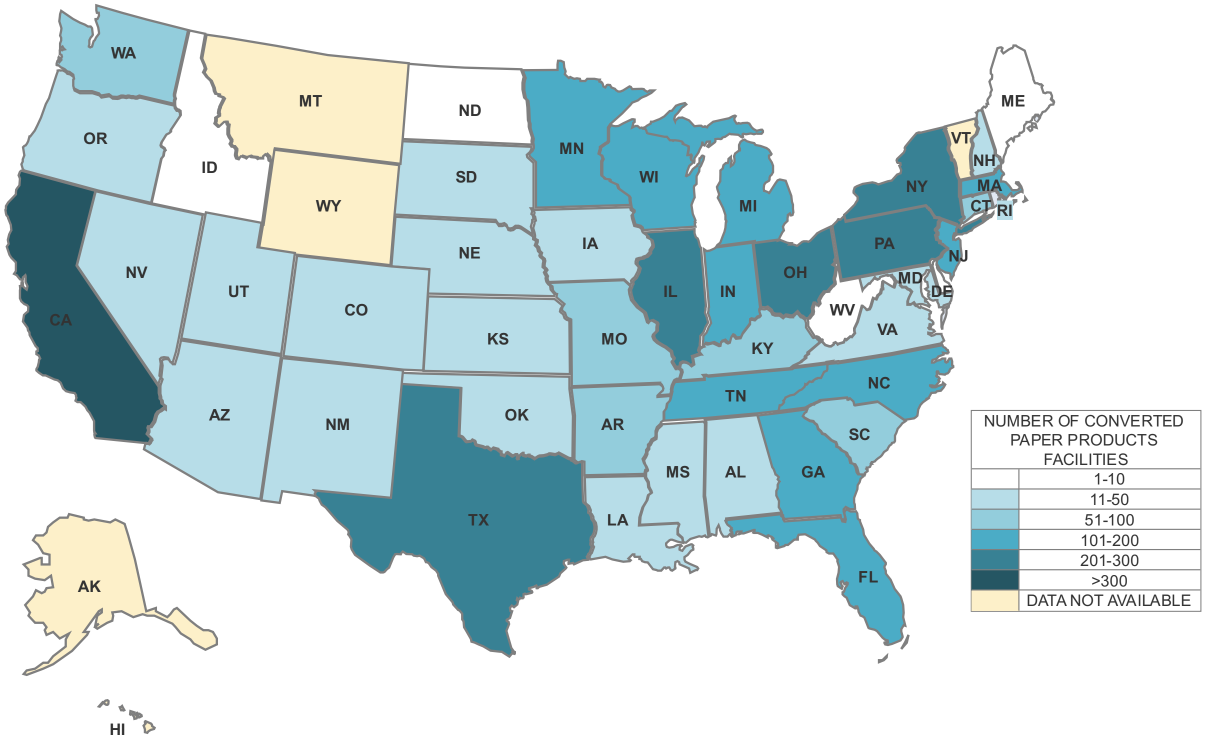
WISCONSIN, AT $2.58 BILLION LEADS THE NATION IN TOTAL PAYROLL IN THE PAPER INDUSTRY. SOURCES: AMERICAN FOREST & PAPER ASSOCIATION, 2017 AND ORIGINAL RESEARCH.

Paper industry facilities by state: pulp and paper mills



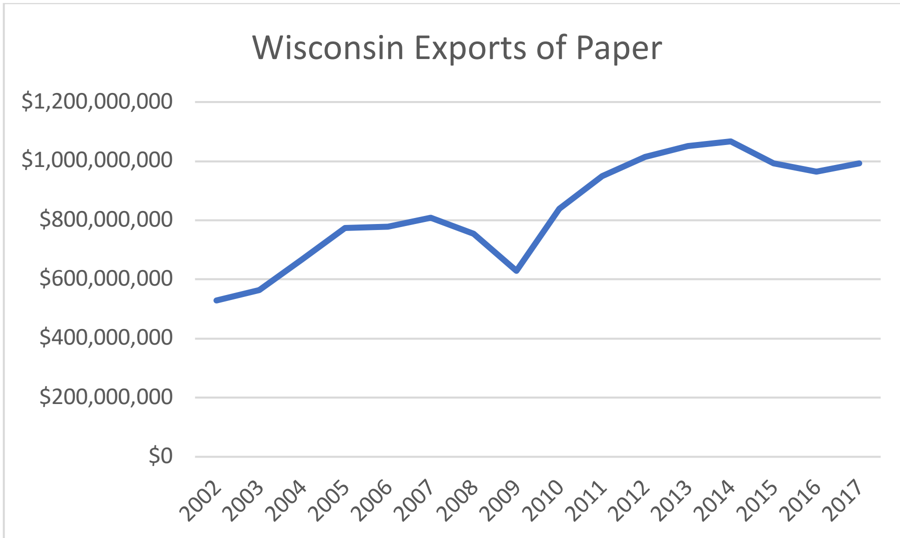
Wisconsin has more paper mills than any other state, with 34. It is followed by New York with 28, Georgia with 20, Michigan with 17 and Alabama with 16. Montana and Virginia data unavailable. Sources: American Forest & Paper Association, 2017 and original research.

Paper industry facilities by state: converting facilities



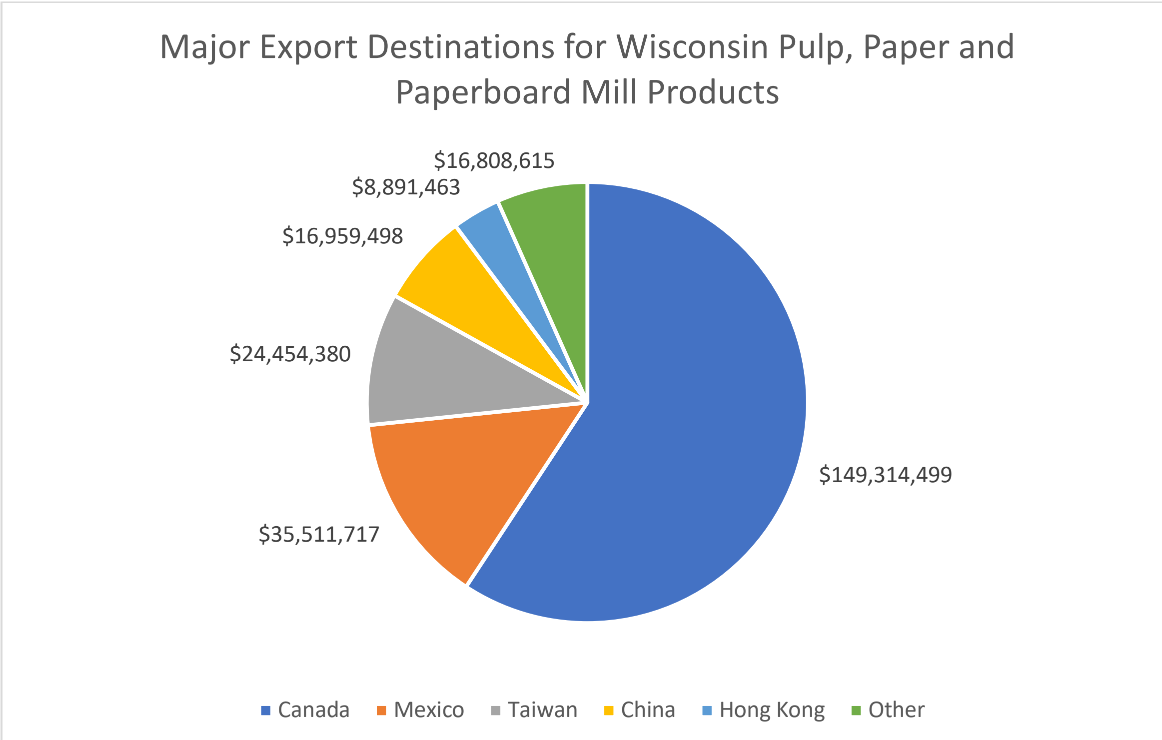
ONLY SIX STATES HAVE MORE PAPER PRODUCT CONVERTING FACILITIES THAN WISCONSIN, WHICH HAS 204. DATA FOR ALASKA, HAWAII, MONTANA, VERMONT AND WYOMING NOT AVAILABLE. SOURCES: AMERICAN FOREST & PAPER ASSOCIATION, 2017 AND ORIGINAL RESEARCH.

Exports of Wisconsin's paper manufacturing sector

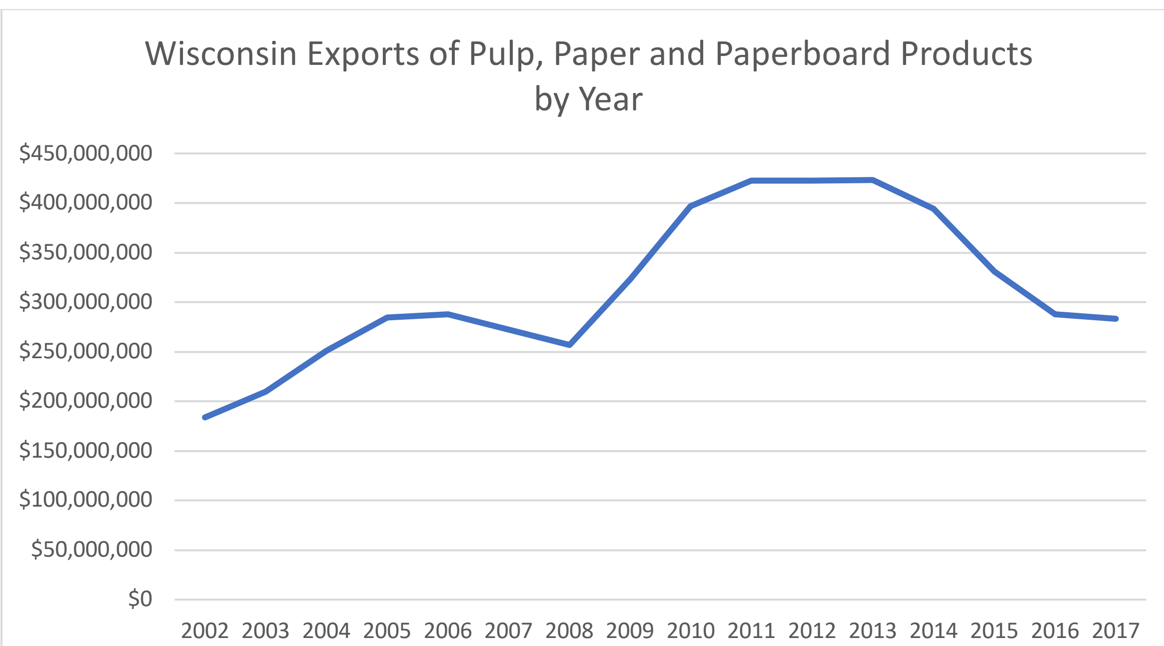


THE VALUE OF PAPER EXPORTED BY WISCONSIN MANUFACTURERS HAS INCREASED BY NEARLY 90 PERCENT OVER 15 YEARS (VALUES NOT ADJUSTED FOR INFLATION). SOURCE: USA TRADE ONLINE, 2018.

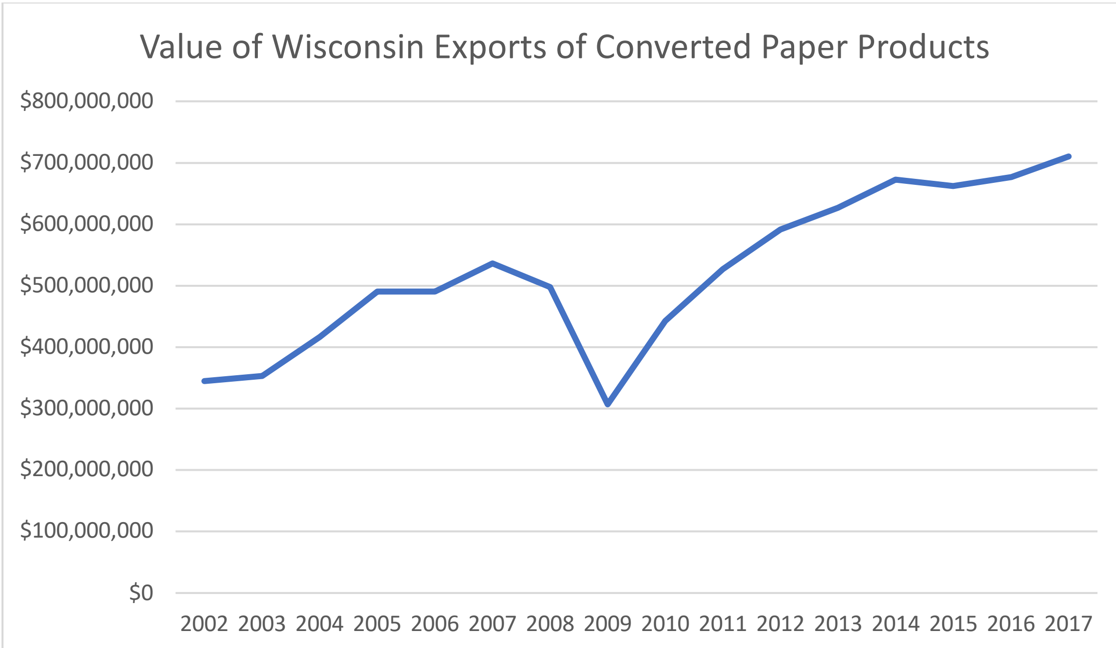
WISCONSIN COMPANIES EXPORT PAPER AND PAPER PRODUCTS TO 100 COUNTRIES AROUND THE WORLD. CANADA IS BY FAR THE LARGEST TRADING PARTNER, ACCOUNTING FOR 62 PERCENT OF WISCONSIN'S PAPER EXPORTS, OR MORE THAN THE REST OF THE WORLD COMBINED. MEXICO (9.7 PERCENT) AND CHINA (3.6 PERCENT) RANK SECOND AND THIRD IN EXPORT DESTINATIONS. SOURCE: USA TRADE ONLINE, 2018.



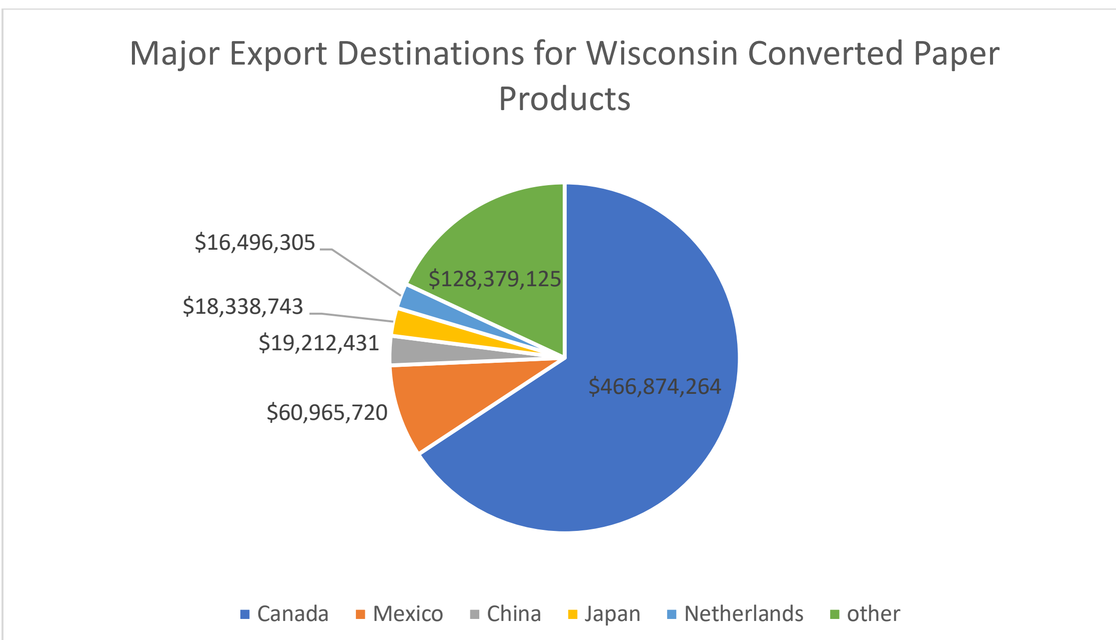
SOURCE: USA TRADE ONLINE, 2018.



SOURCE: USA TRADE ONLINE, 2018.

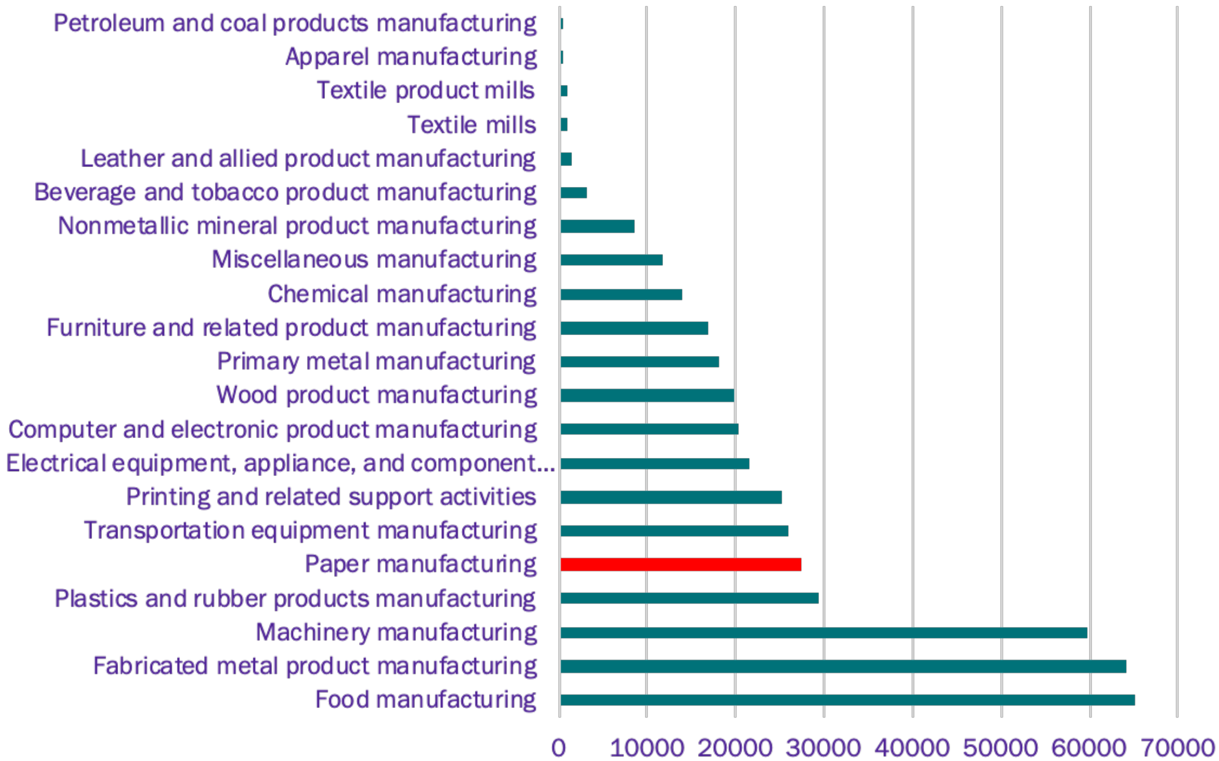


SOURCE: USA TRADE ONLINE, 2018.



SOURCE: USA TRADE ONLINE, 2018.

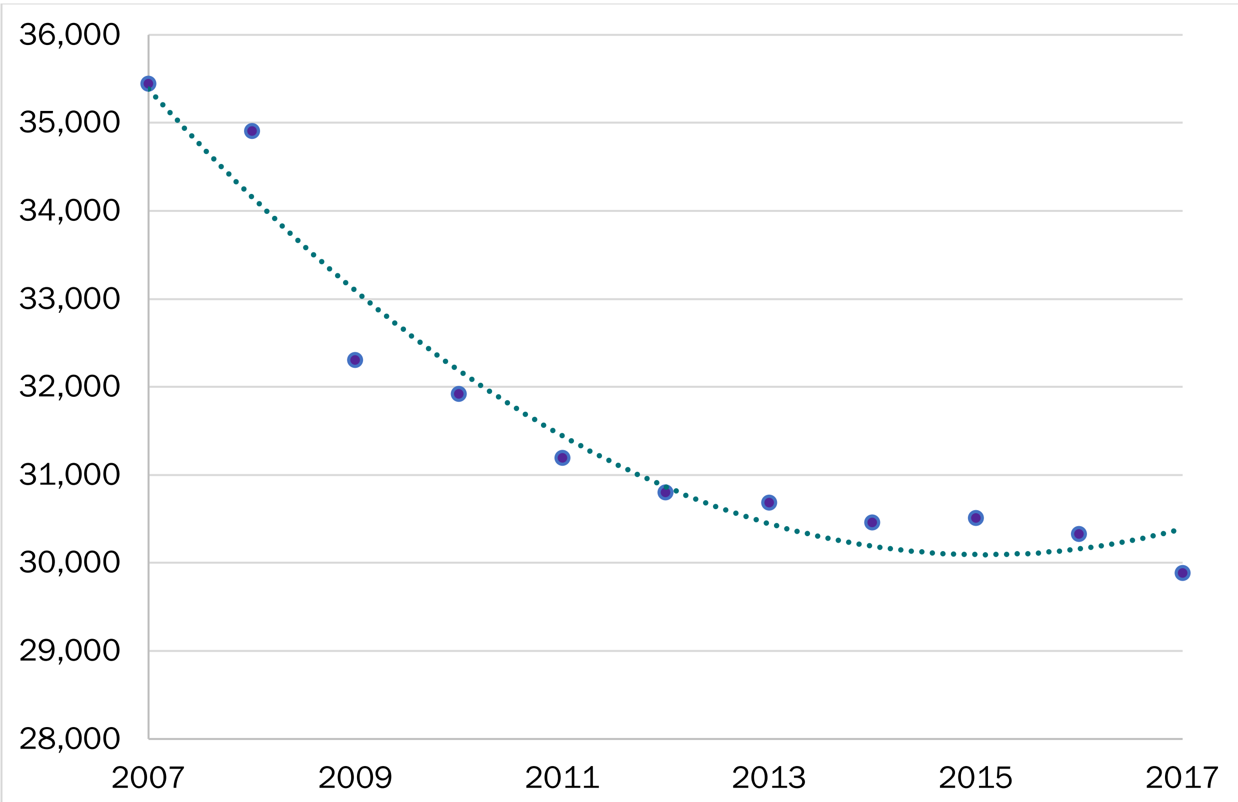
Manufacturing sector employment in Wisconsin



Number of employees in Wisconsin manufacturing sectors. Paper is the fifth-largest manufacturing sector in Wisconsin in employment. Source: Bureau of Labor Statistics, 2017.

Total employment in Wisconsin's paper manufacturing industry by year

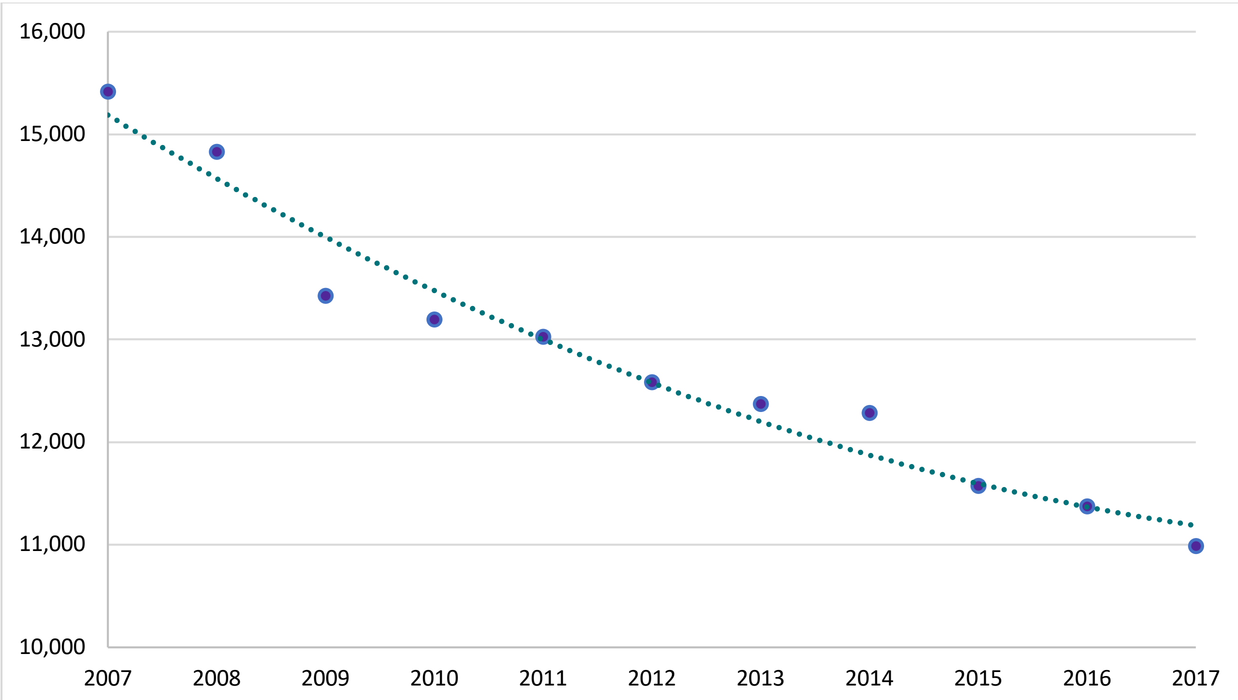
Our research indicates the paper manufacturing industry employed 30,262 Wisconsin workers in 2018. According to the Bureau of Labor Statistics, in 2007, prior to the Great Recession, total employment was 35,442. After a sharp, nearly 10 percent drop in employment from 2007-2010, total employment has continued to decline but at a much slower pace, shedding 6.3 percent of employees in the past seven years. Based on our research, 2018 BLS data may show an uptick when it becomes available, as some industry representatives indicated they were adding slightly to their workforce while others said they expected numbers to remain stable rather than decline.



All paper manufacturing employees. Source: Bureau of Labor Statistics, 2017, total employment, NAICS Code 322. The dotted "best fit" line indicates that the shrinkage in employment numbers in the paper industry has leveled off in the past five years.

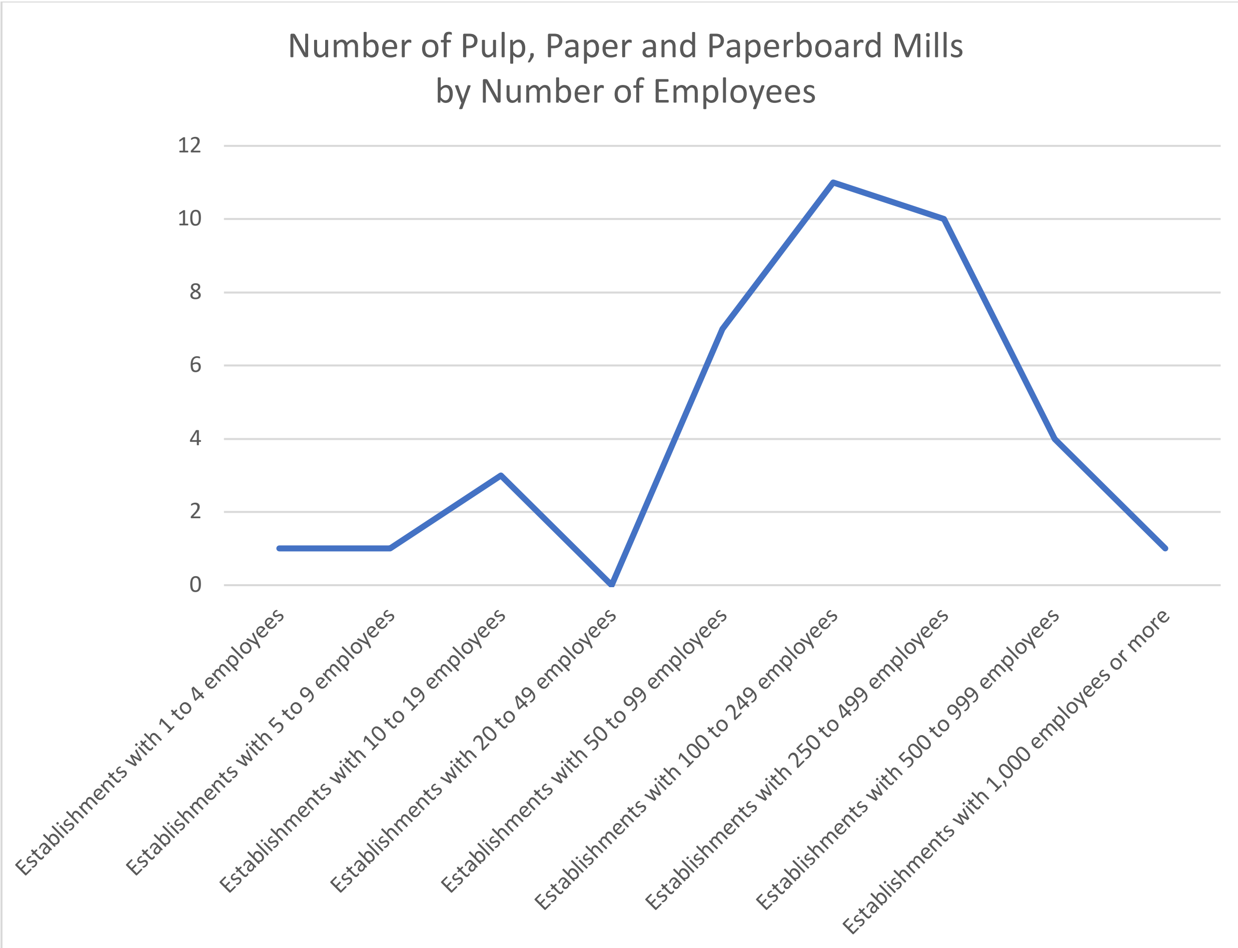
Employment within mills (pulp, paper and paperboard)

Analysis of employment within mills, setting aside the converting side of the paper industry, illustrates that most of the decline within the Wisconsin paper manufacturing industry has occurred in the mills. Nearly 80 percent of overall job reduction occurred within mills.



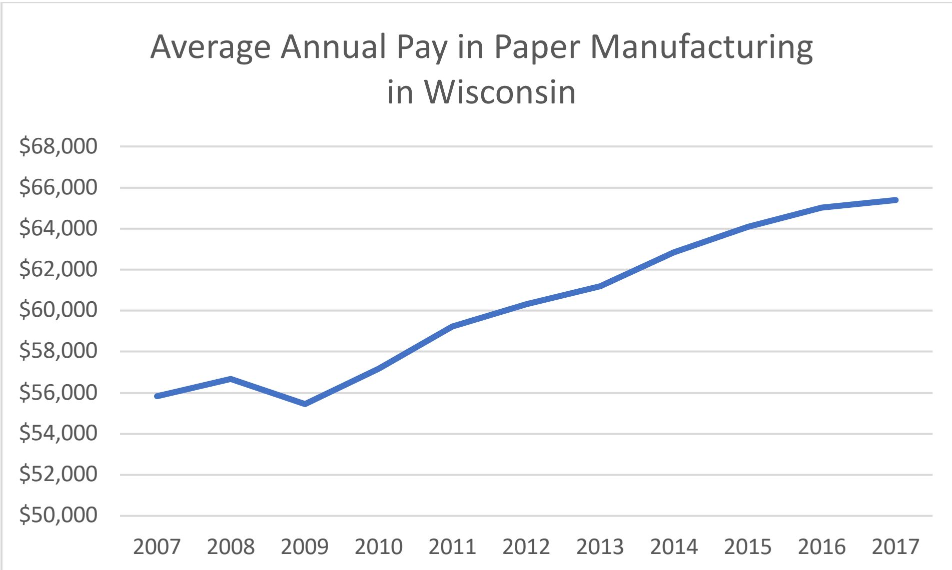
PULP, PAPER AND PAPERBOARD MILL EMPLOYEES. SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Analysis of employment numbers in pulp, paper and paperboard mills reveals that the mills themselves are significant employers in the communities in which they are located. In many instances, these mills are located in rural communities and constitute a major proportion of all manufacturing employment. These aspects are discussed further on pages 31-33.



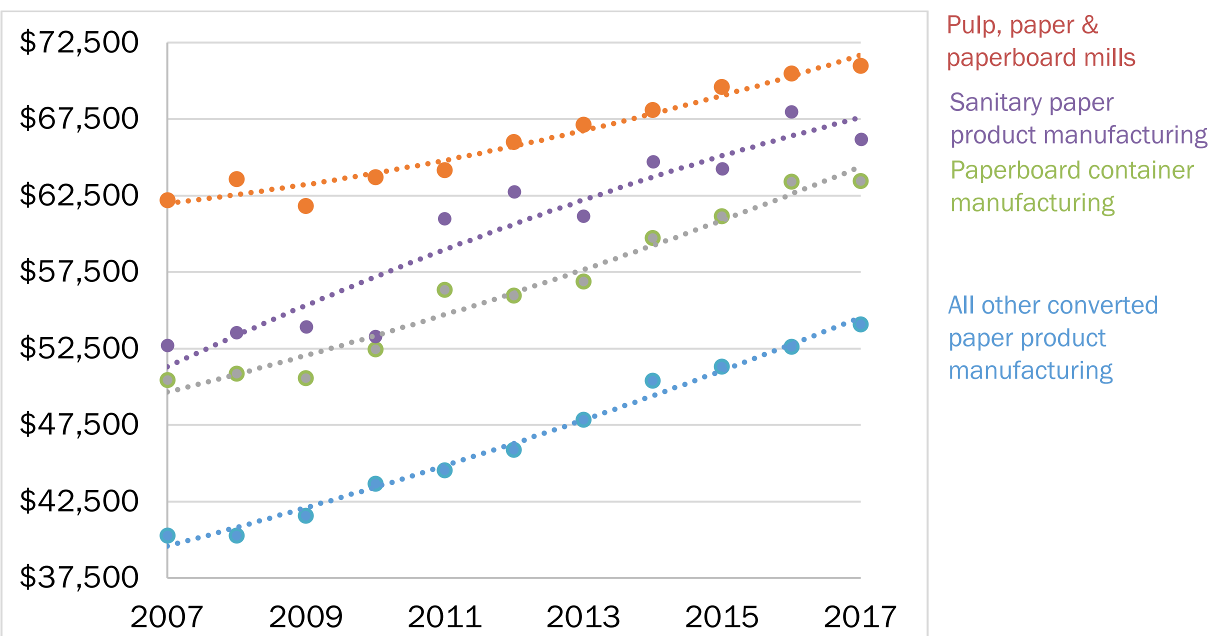
Paper mills are significant employers in the communities in which they are located. Most mills employ between 100 and 500 people. Source: Bureau of Labor Statistics, 2017.

Industry compensation

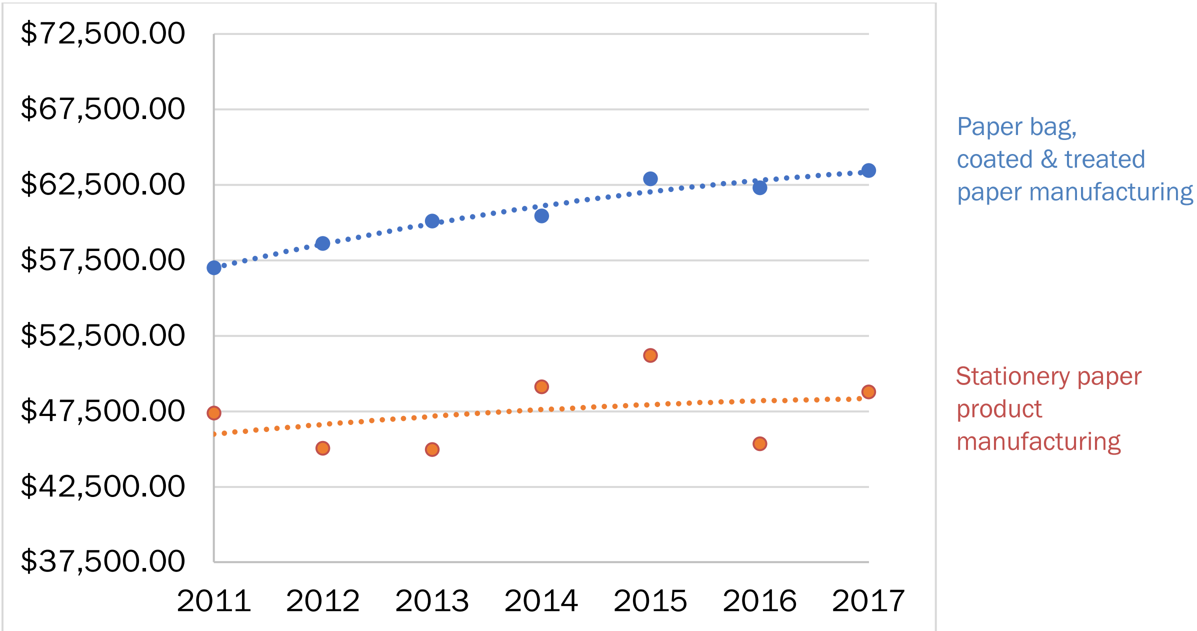


AVERAGE ANNUAL PAY INCREASED 17.5 PERCENT FROM 2007 TO 2017, BASICALLY KEEPING PACE WITH INFLATION: $55, 835 IN JUNE 2007 WOULD BE THE SAME AS $65,644 IN JUNE 2017. SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Average pay by sector



AVERAGE ANNUAL PAY VARIES ACROSS THE DIFFERENT PAPER MANUFACTURING SECTORS. SOURCE: BUREAU OF LABOR STATISTICS, 2017.

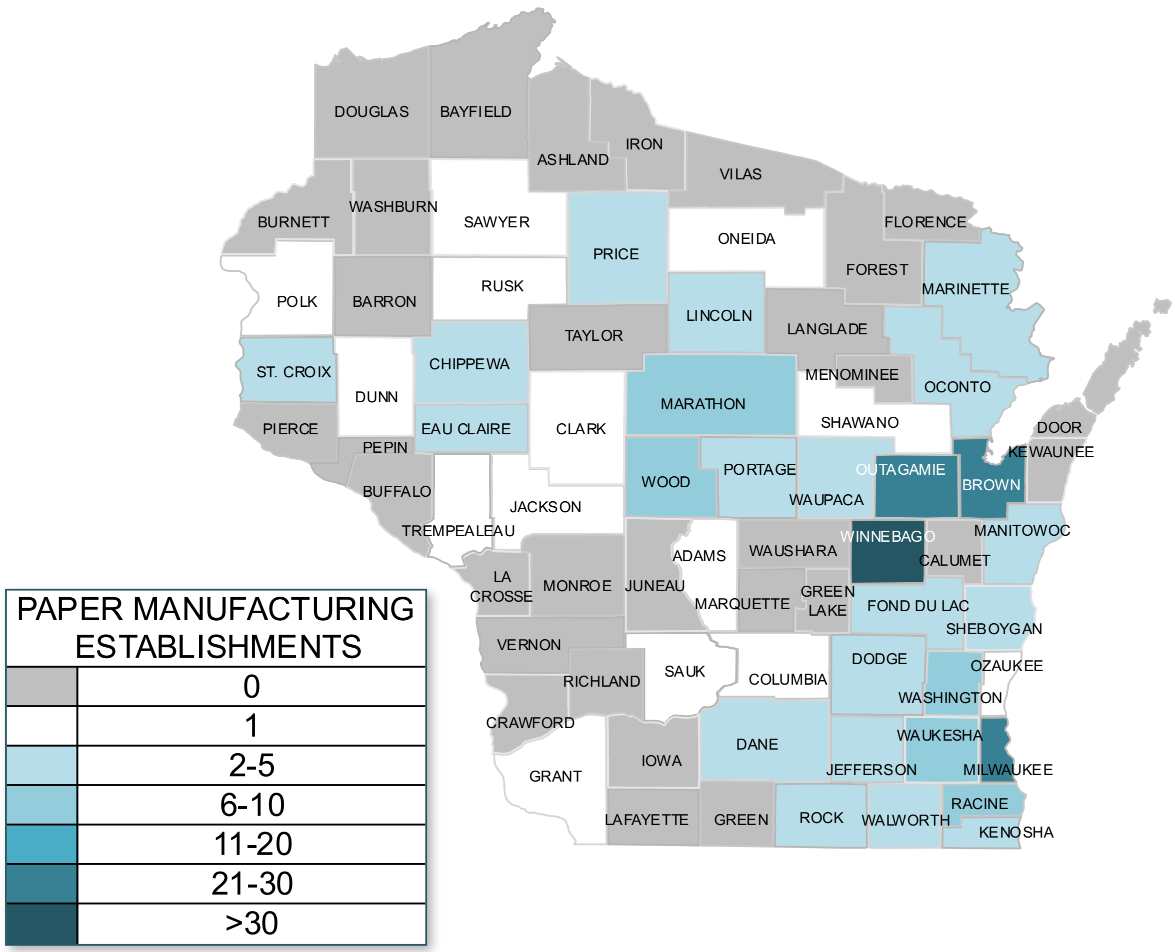


AVERAGE ANNUAL PAY VARIES ACROSS THE DIFFERENT PAPER MANUFACTURING SECTORS. SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Economic Contribution of Wisconsin's Paper Manufacturing Industry, by County

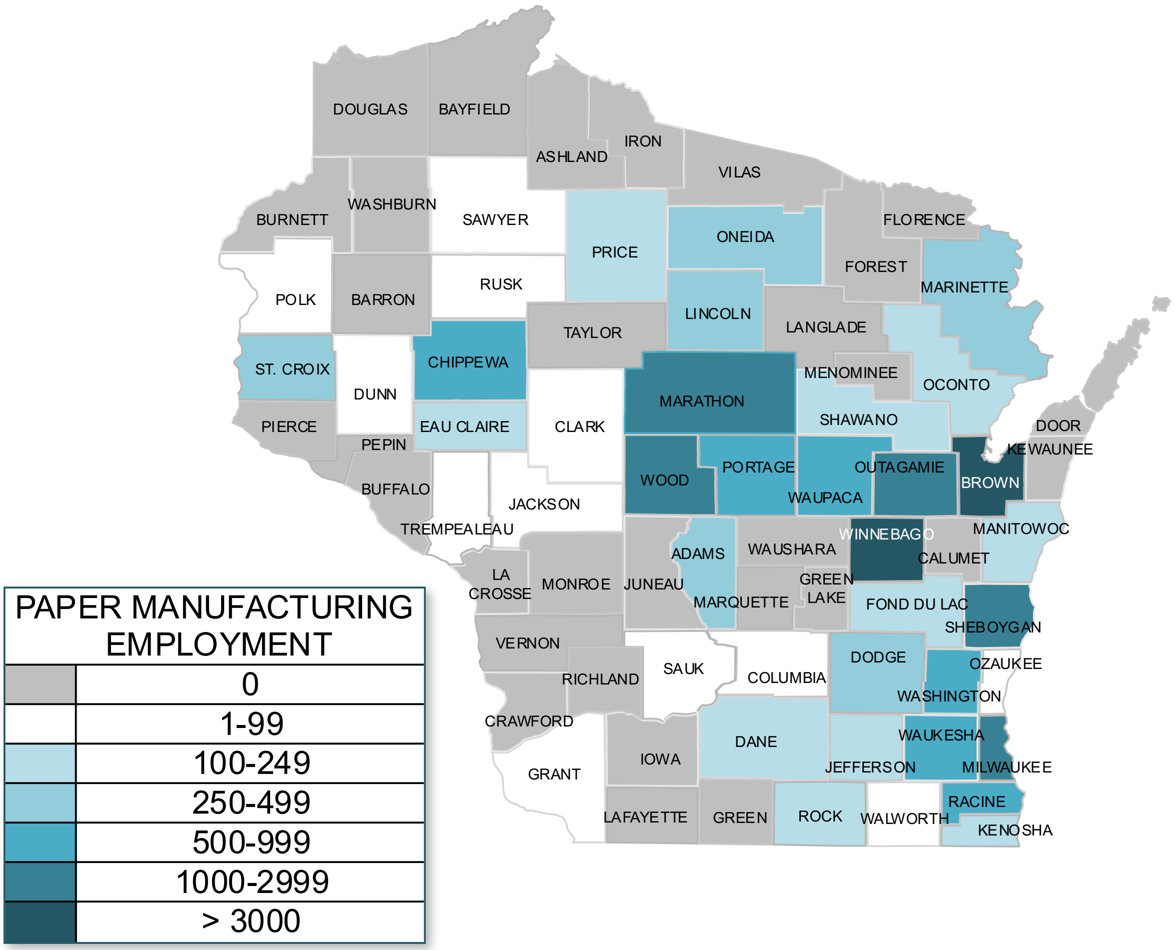
Paper manufacturing establishments

The following chart shows the widespread distribution of paper manufacturing establishments throughout Wisconsin. Some 41 counties of Wisconsin are home to paper manufacturing businesses.



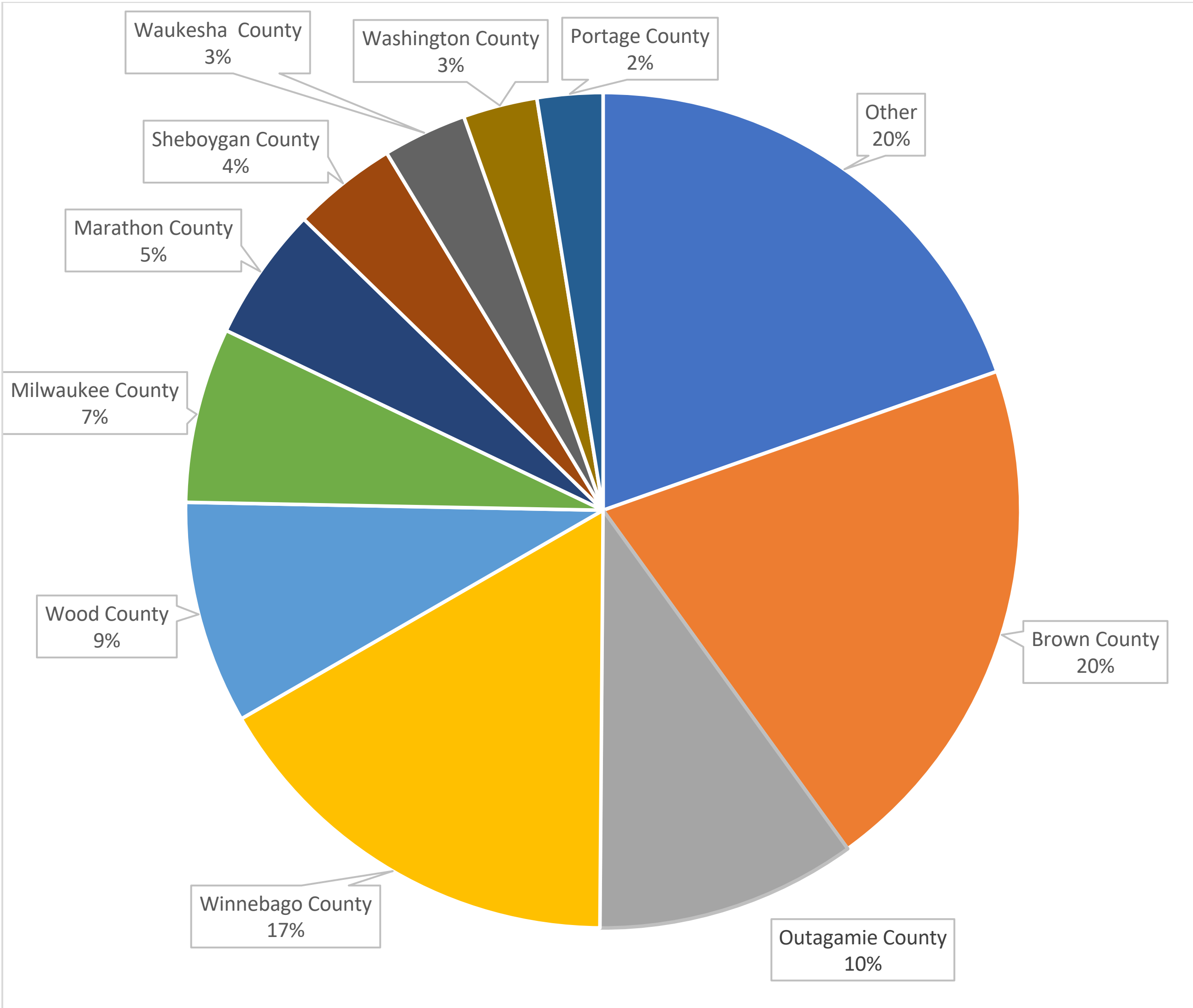
SOURCE: BUREAU OF LABOR STATISTICS, 2017.

30,262 paper manufacturing jobs are located in those 41 counties. While employment is widespread, the heat map shows the concentration of employment in the Fox Valley, notably Brown, Outagamie and Winnebago counties. Significant pockets are also located on the Wisconsin river in Marathon, Wood and Portage counties.



Source: Source: Bureau of Labor Statistics, 2017.

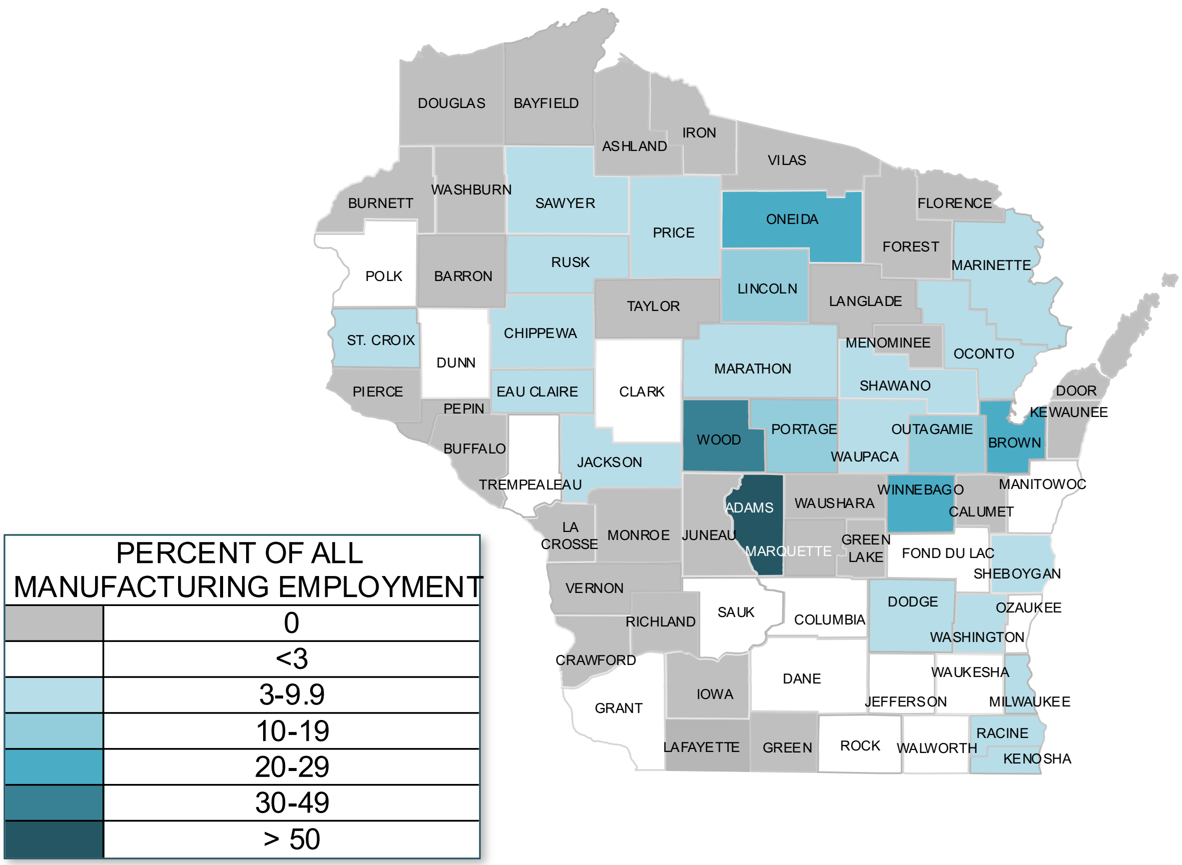
Distribution of paper manufacturing industry employment in Wisconsin



ALTHOUGH THE PAPER MANUFACTURING INDUSTRY IS REPRESENTED BY COMPANIES IN 41 COUNTIES, TEN WISCONSIN COUNTIES EMPLOY 80 PERCENT OF ALL PAPER MANUFACTURING INDUSTRY EMPLOYEES IN WISCONSIN. SOURCE BUREAU OF LABOR STATISTICS, 2017.

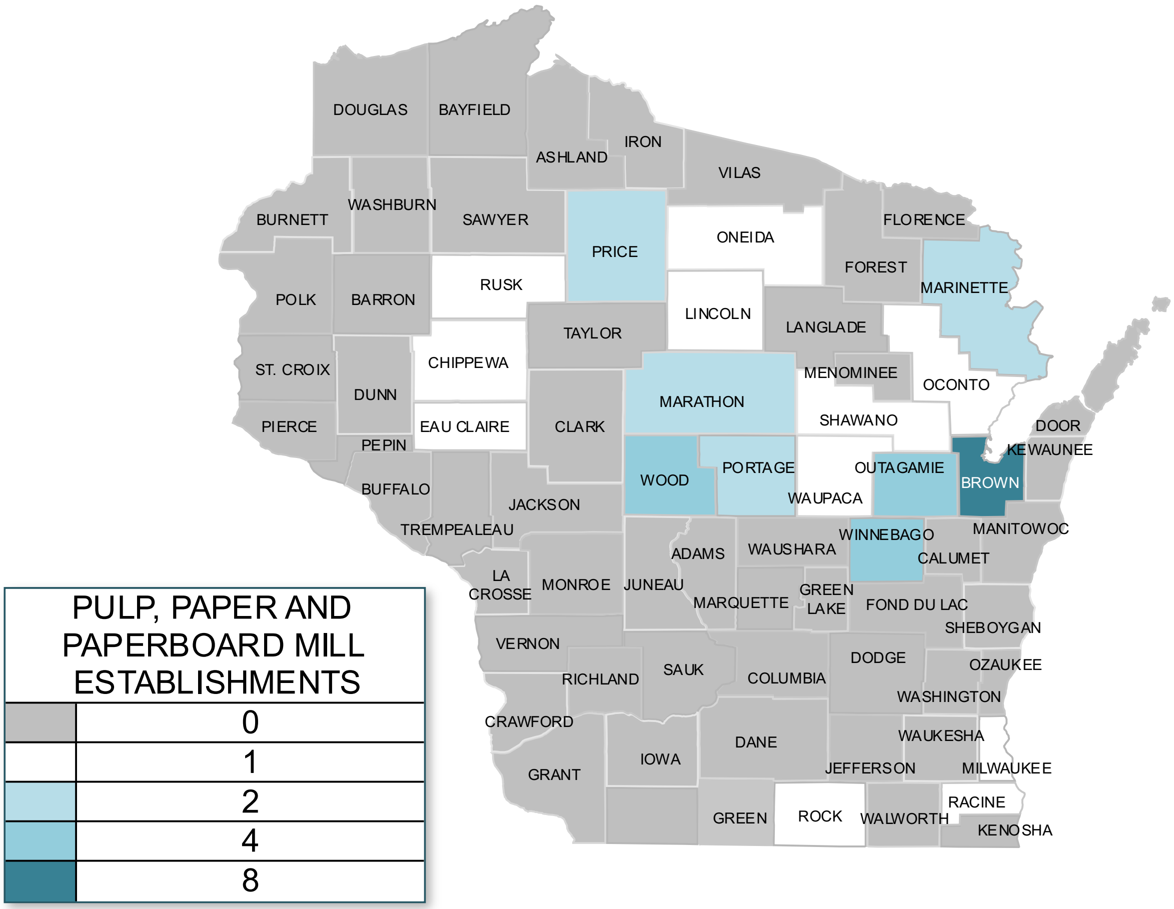
Paper manufacturing as a proportion of all manufacturing

The following heat map shows the proportion of all paper manufacturing jobs as a percentage of all manufacturing employment. Notable are counties such as Adams, Oneida, and Wood where just a handful of establishments account for a high proportion of manufacturing employment in those counties.



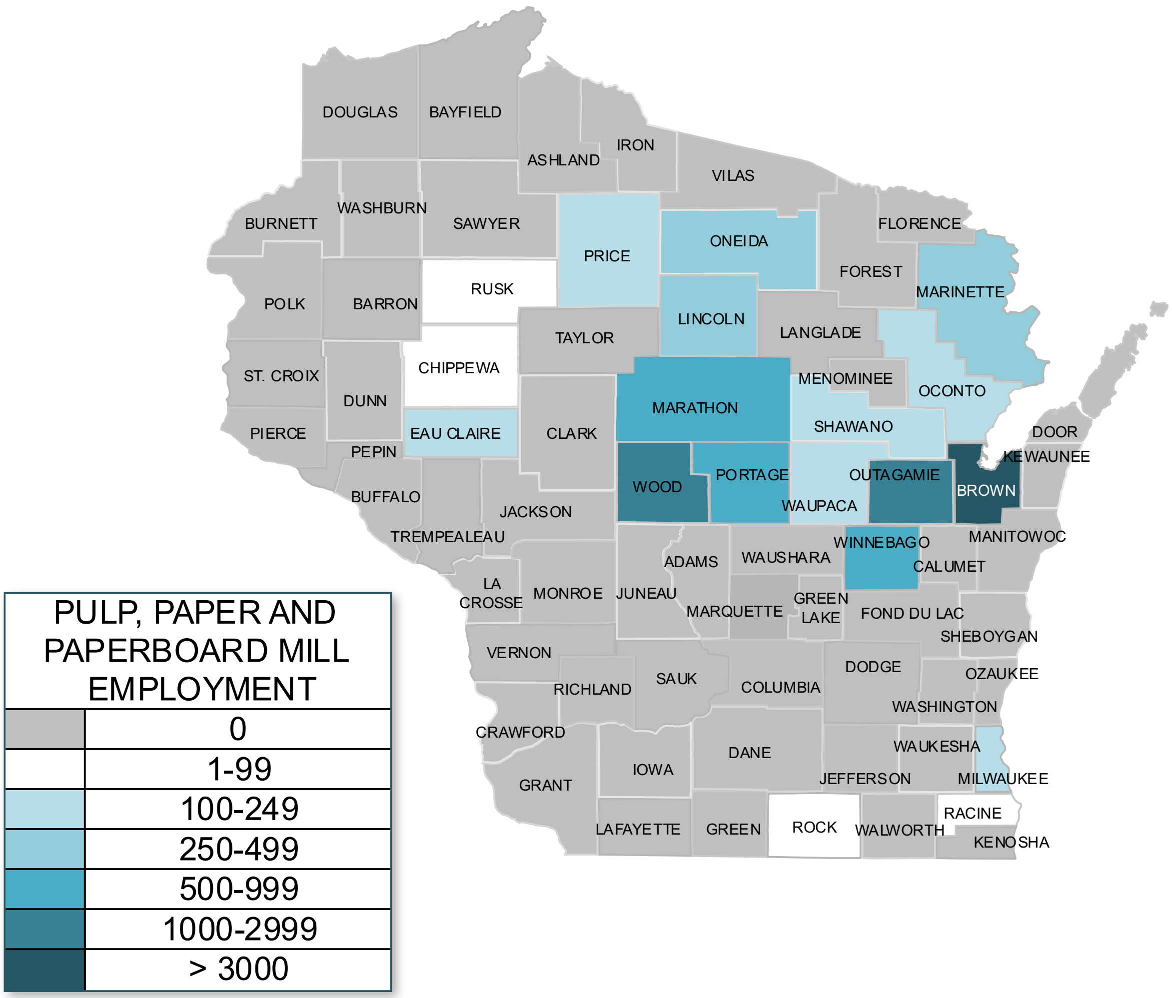
SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Number and distribution of pulp, paper and paperboard mills



SOURCE: BUREAU OF LABOR STATISTICS, 2017.

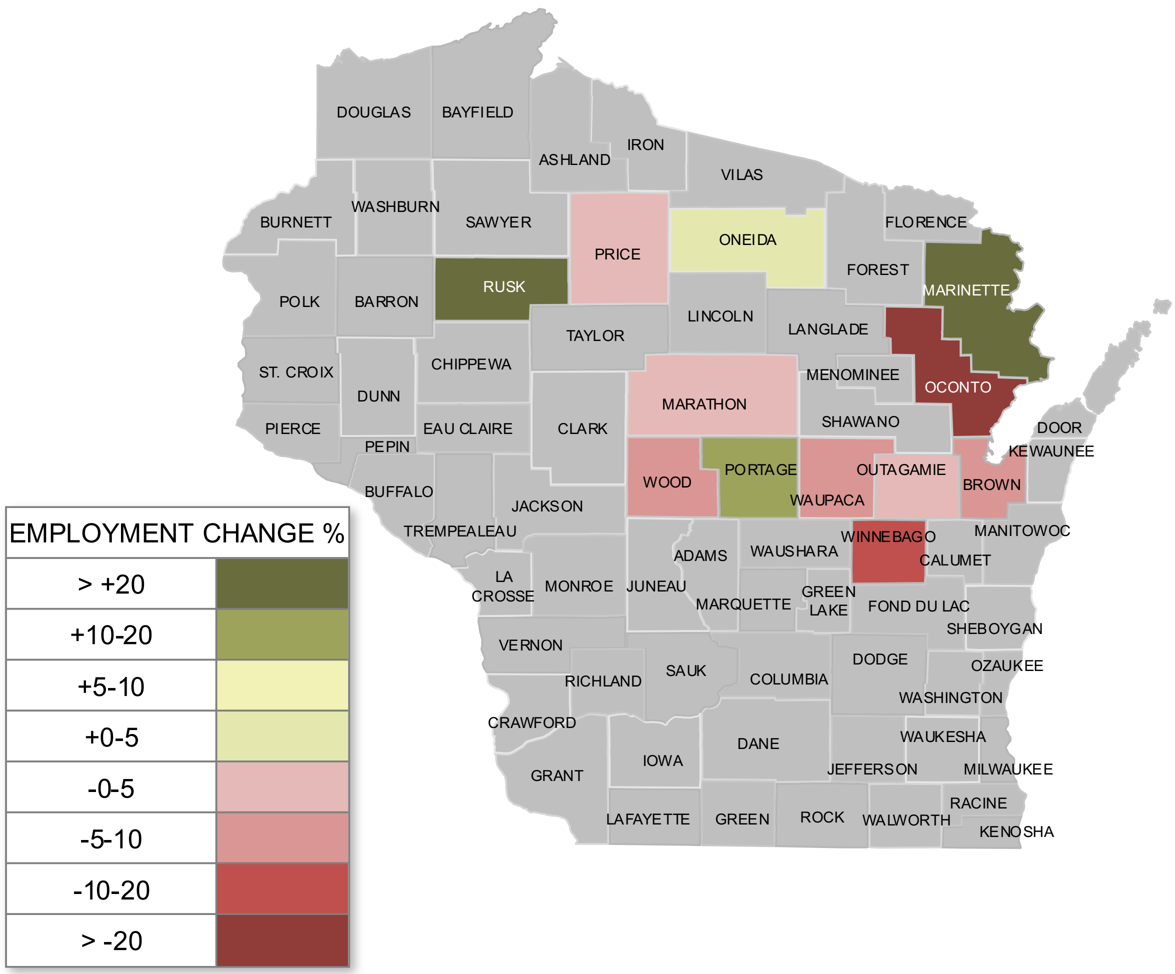
Pulp, paper and paperboard mill employment distribution



Source: Bureau of Labor Statistics, 2017.

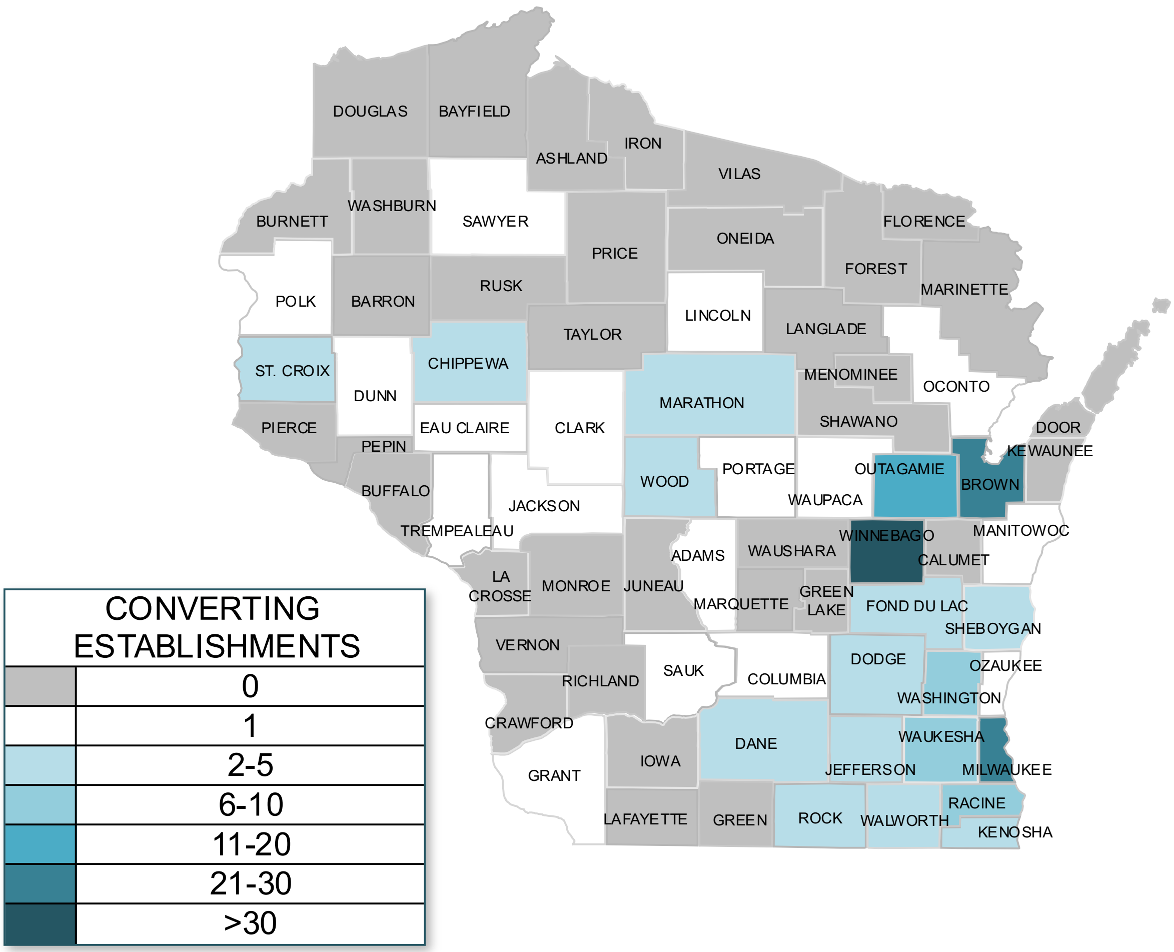
Employment change within paper mills 2015-2017

Overall employment in Wisconsin paper mills has continued to decline in the past few years, but more slowly than in the prior decade. This chart illustrates churn beneath the overall employment trend. While mill employment fell significantly in some counties, other counties saw large gains in percentage terms.



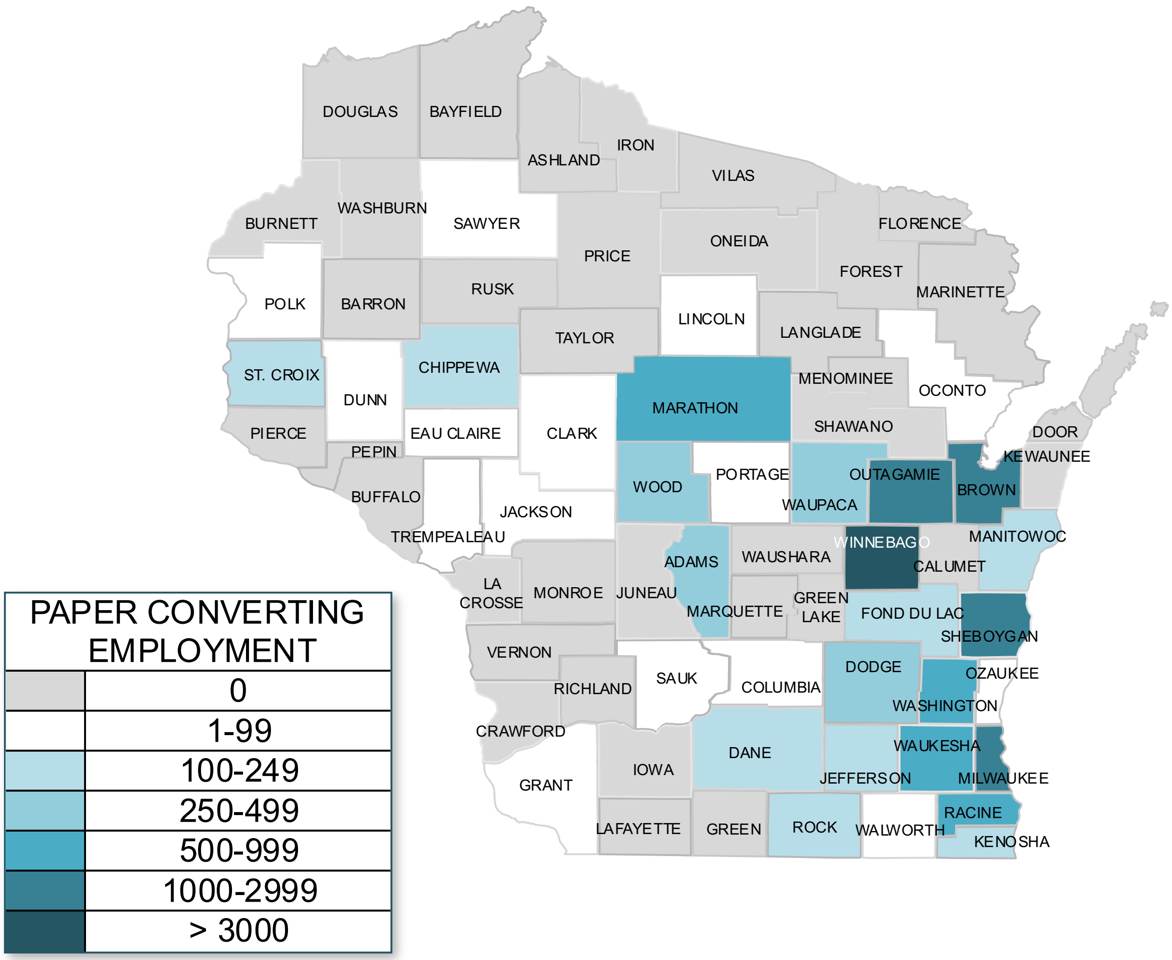
PAPER MILL EMPLOYMENT CHANGE 2015-2017. SOURCE: IMPLAN, 2017.

Number and distribution of all converting establishments



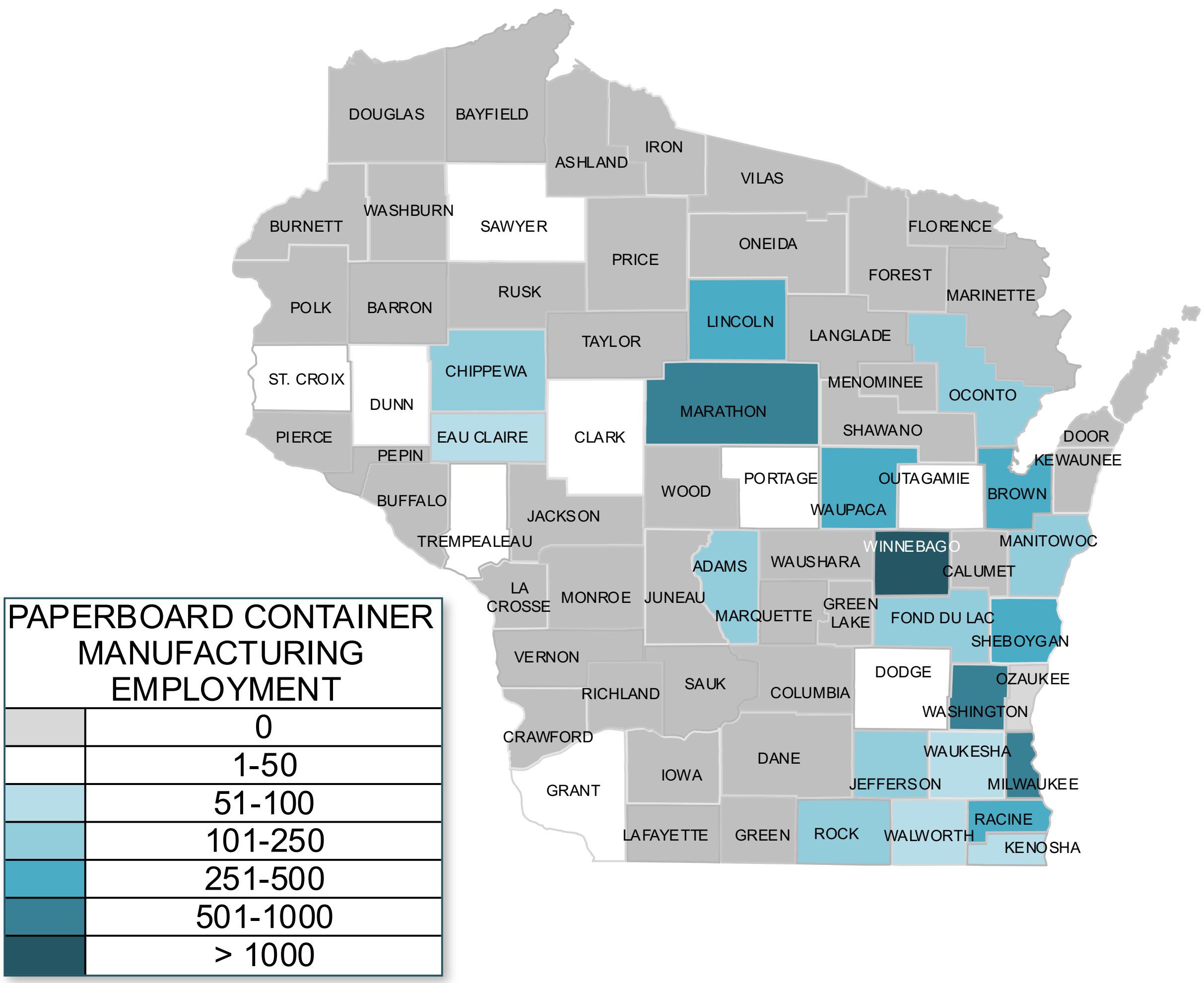
SOURCE: BUREAU OF LABOR STATISTICS, 2017.

All paper converting employment distribution



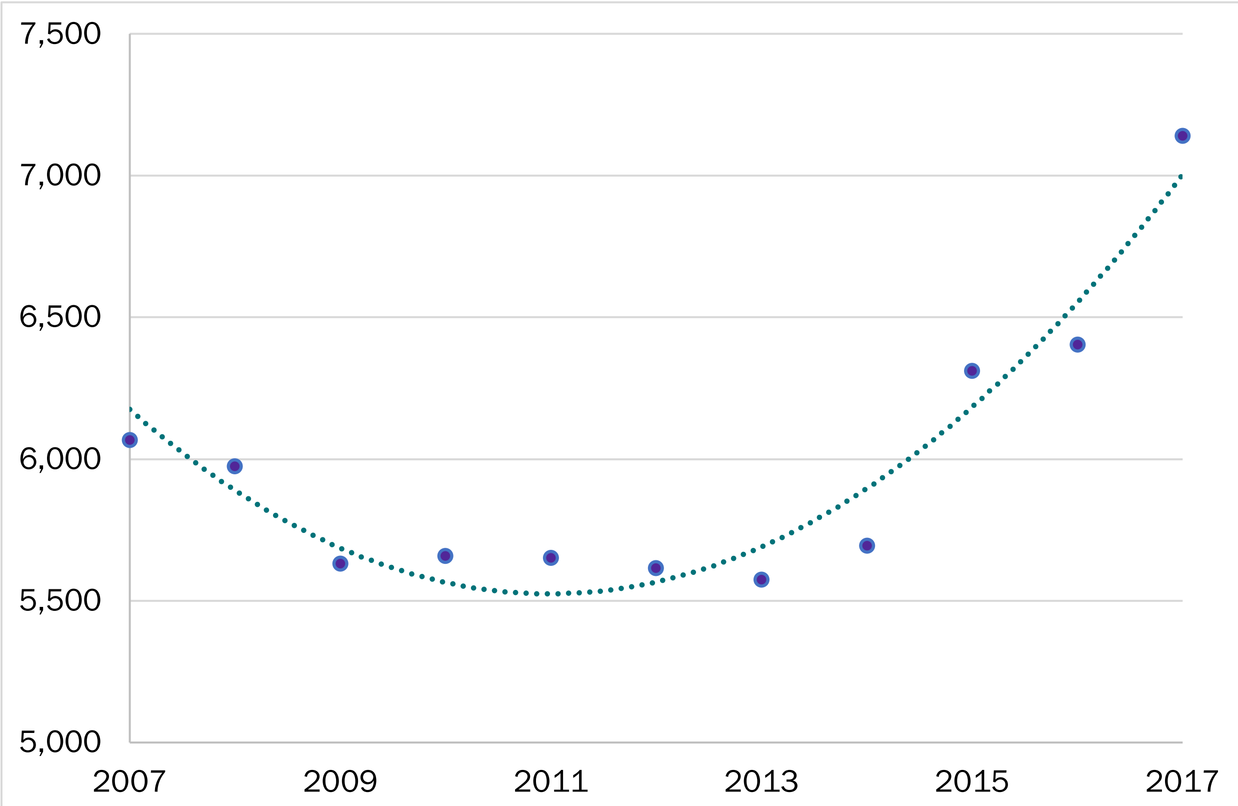
SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Paperboard container manufacturing employment distribution



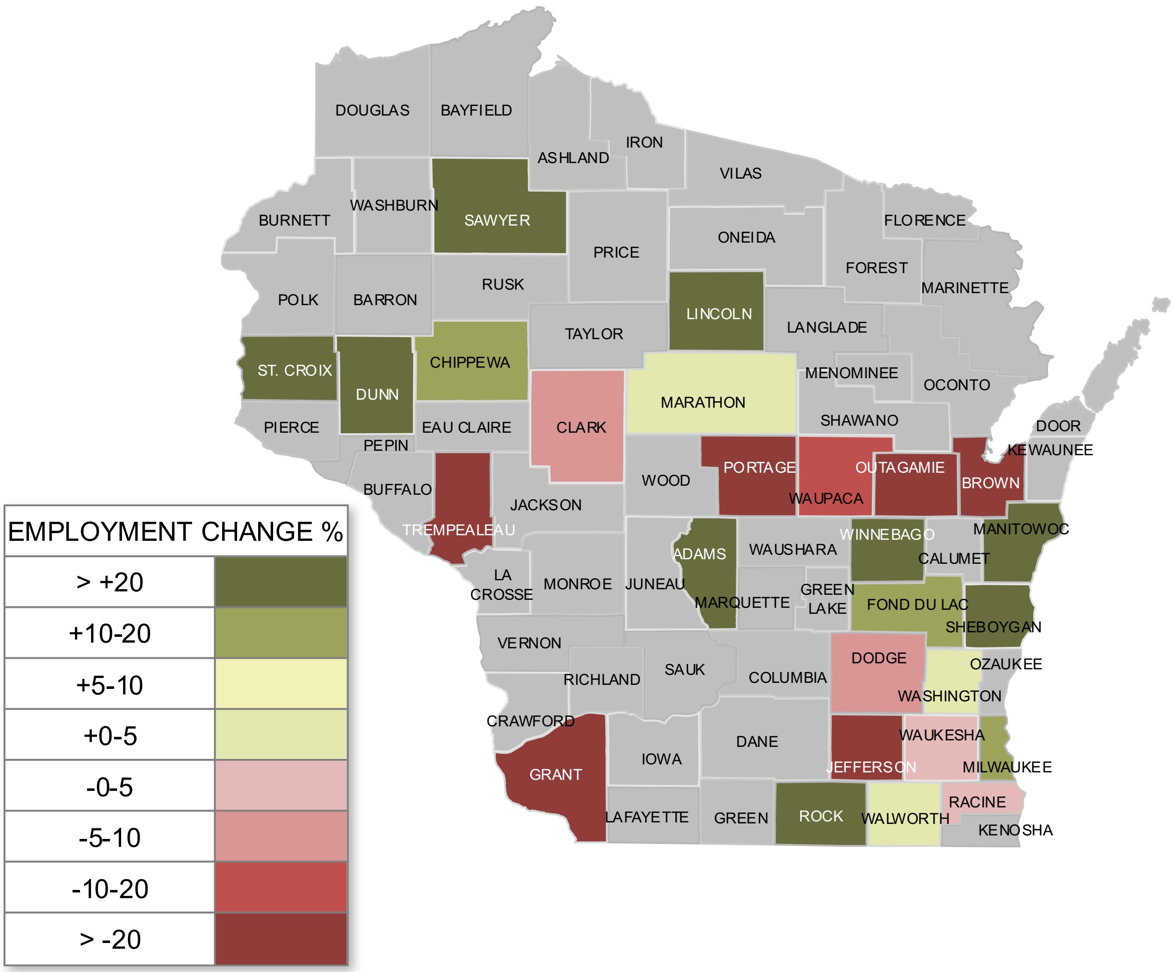
SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Employment trend in paperboard container manufacturing



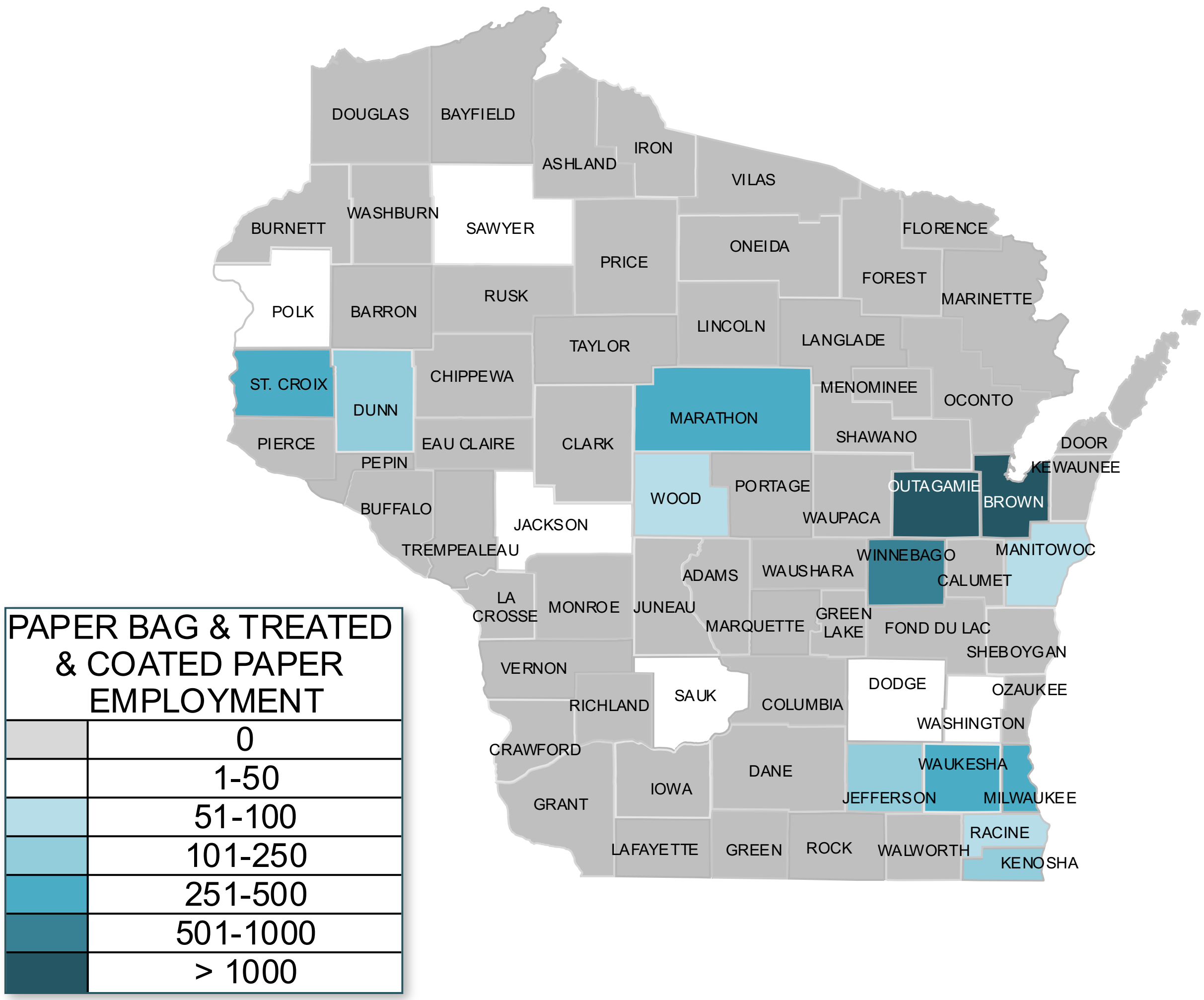
PAPERBOARD CONTAINER MANUFACTURING EMPLOYEES. SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Employment change in paperboard container manufacturing from 2015 to 2017



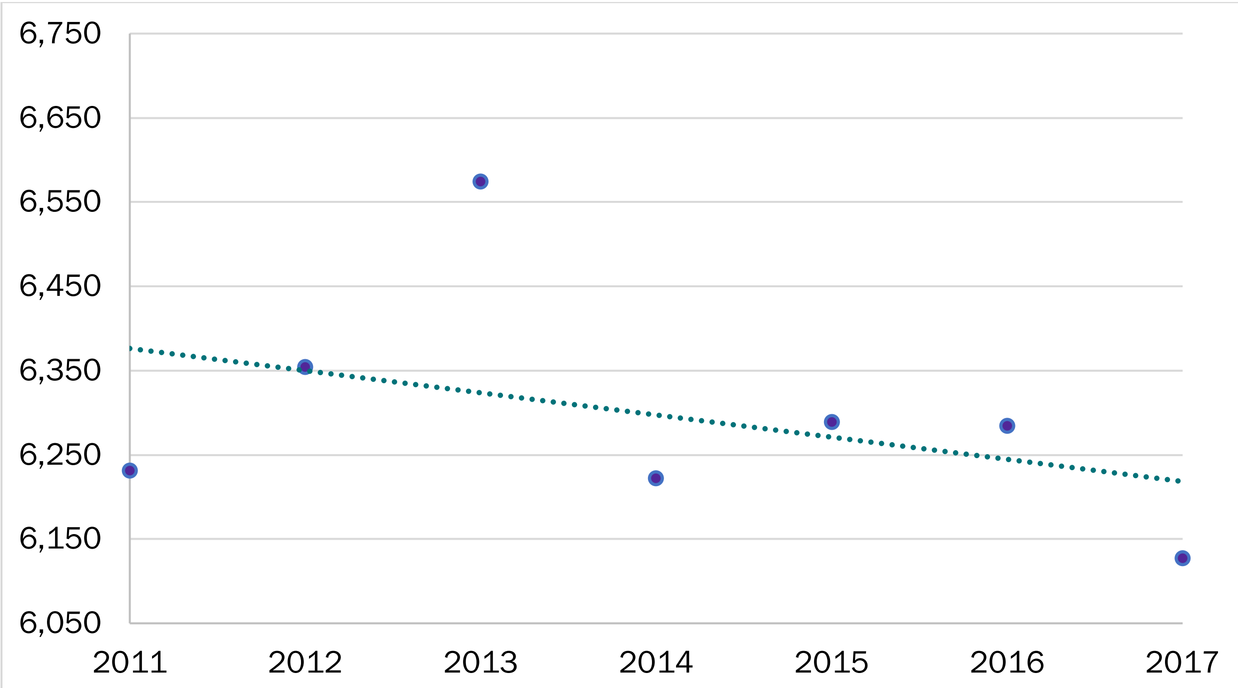
PAPERBOARD CONTAINER MANUFACTURING EMPLOYMENT CHANGE 2015-17. SOURCE: IMPLAN, 2017.

Paper bag and treated and coated paper manufacturing employment distribution



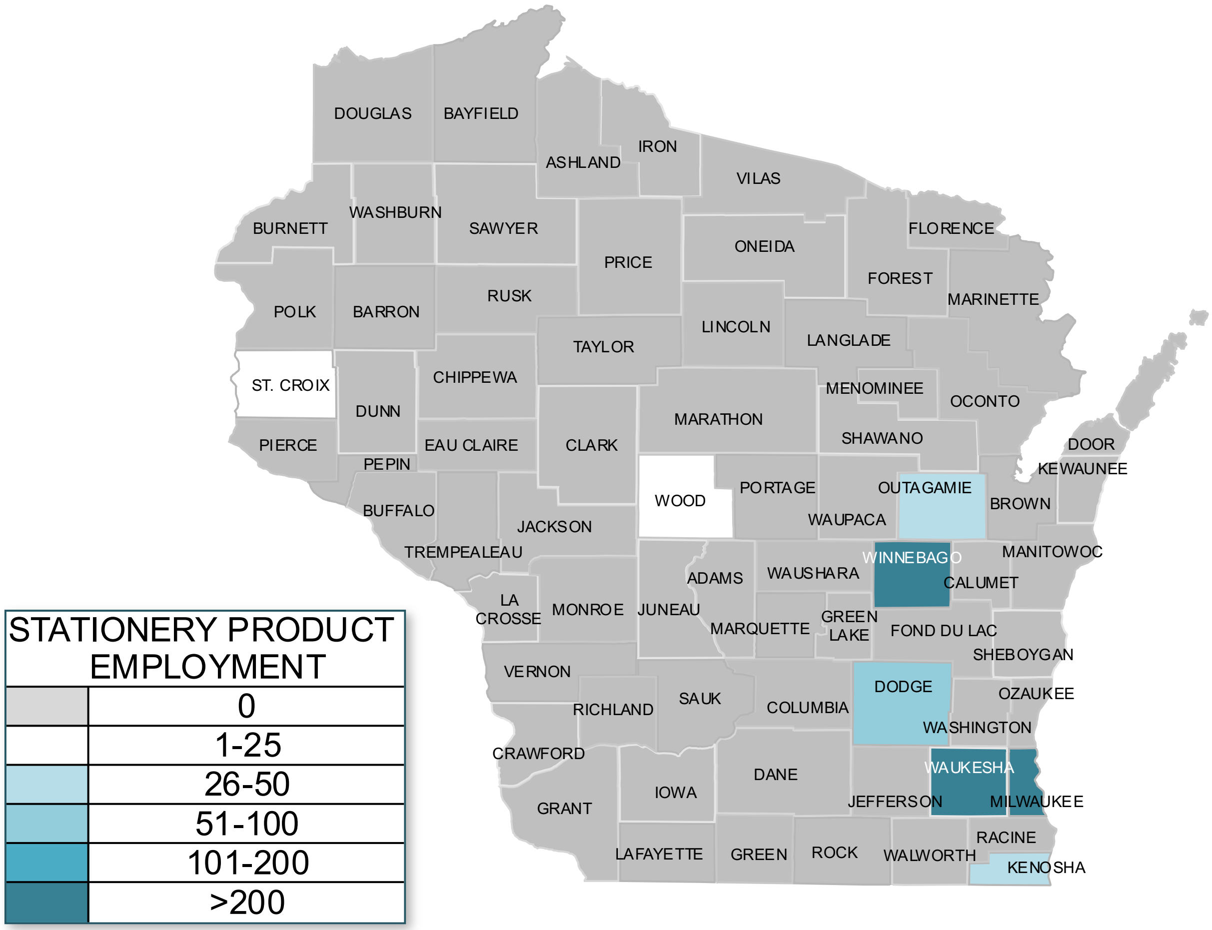
Paper bag and coated and treated paper manufacturing distribution. Source: Bureau of Labor Statistics, 2017.

Employment trend in paper bag and coated and treated paper manufacturing



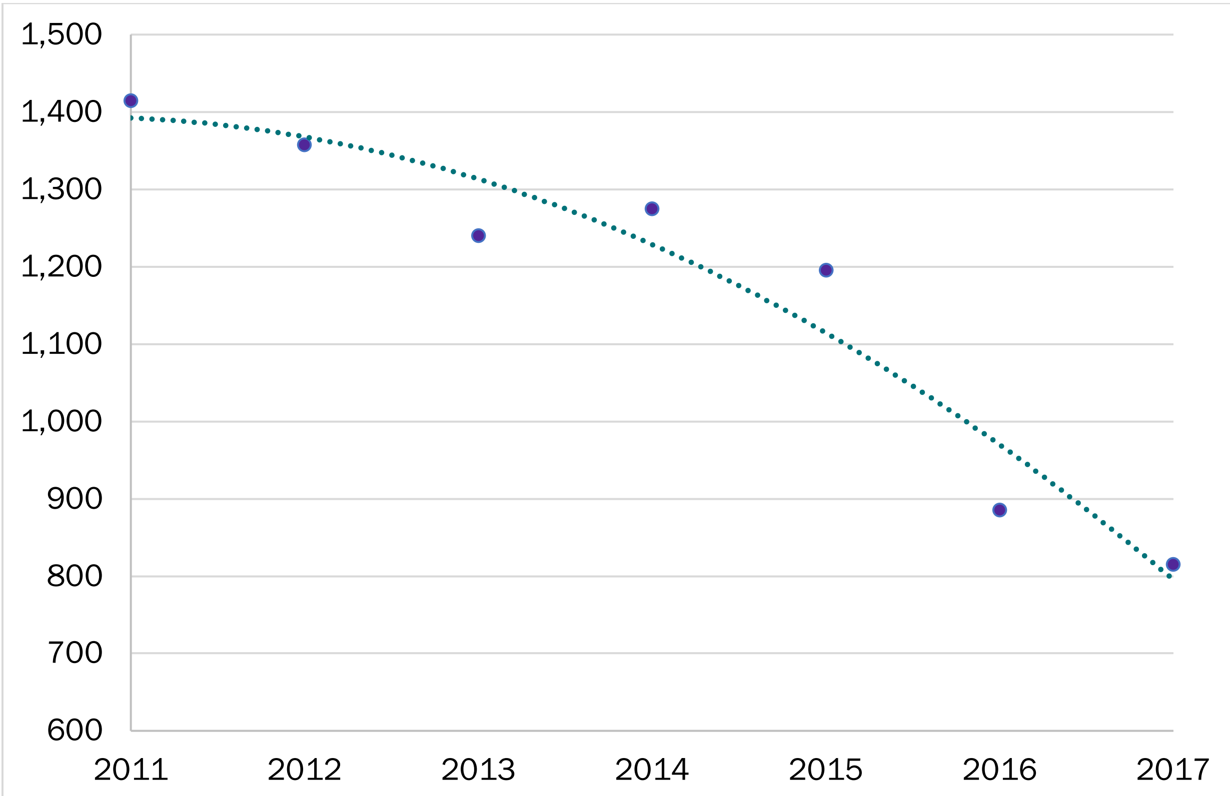
PAPER BAG AND COATED AND TREATED PAPER MANUFACTURING EMPLOYMENT. SOURCE: BUREAU OF LABOR STATISTICS, 2017.

Stationery product manufacturing employment distribution



Source: Bureau of Labor Statistics, 2017.

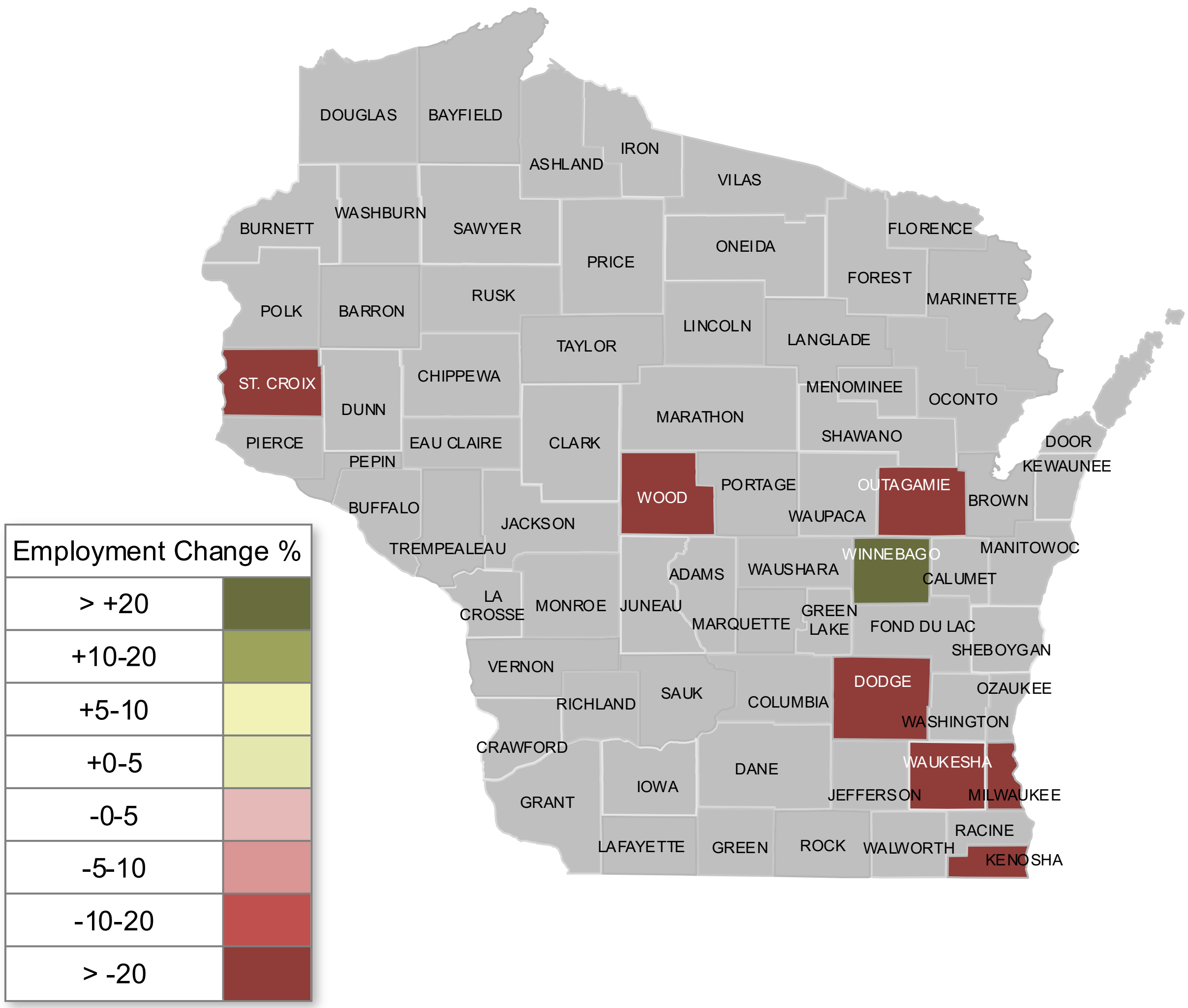
Employment trend in stationery product manufacturing



SOURCE: BUREAU OF LABOR STATISTICS, 2017.

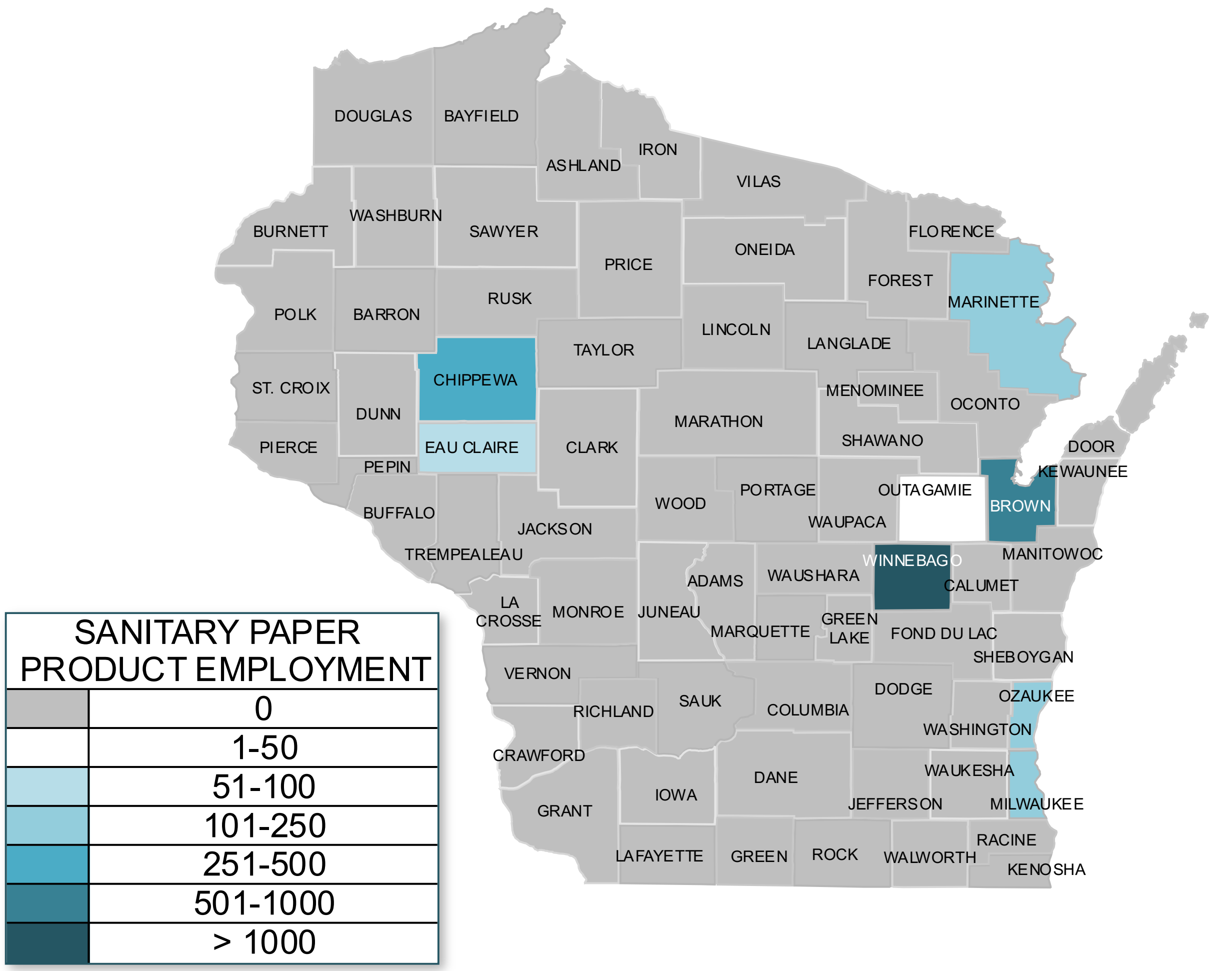
Employment change in stationery product manufacturing from 2015 to 2017

Although overall employment within this converting category declined by 380 workers (31.7 percent) from 2015 to 2017, the change was not evenly distributed. The chart below illustrates the churn within the sector, as some counties lost employees but Winnebago County employment in the sector grew by more than 20 percent.



SOURCE: IMPLAN, 2017

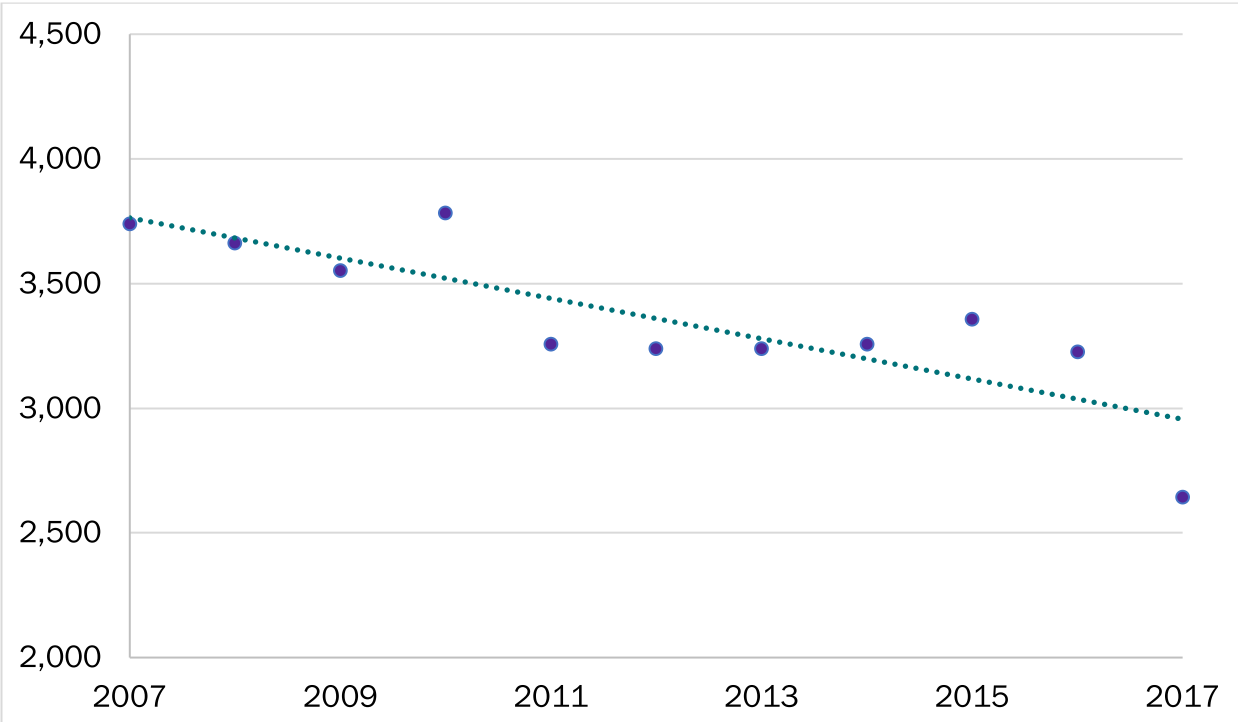
Sanitary paper product manufacturing employment distribution



SOURCE: BUREAU OF LABOR STATISTICS, 2017.

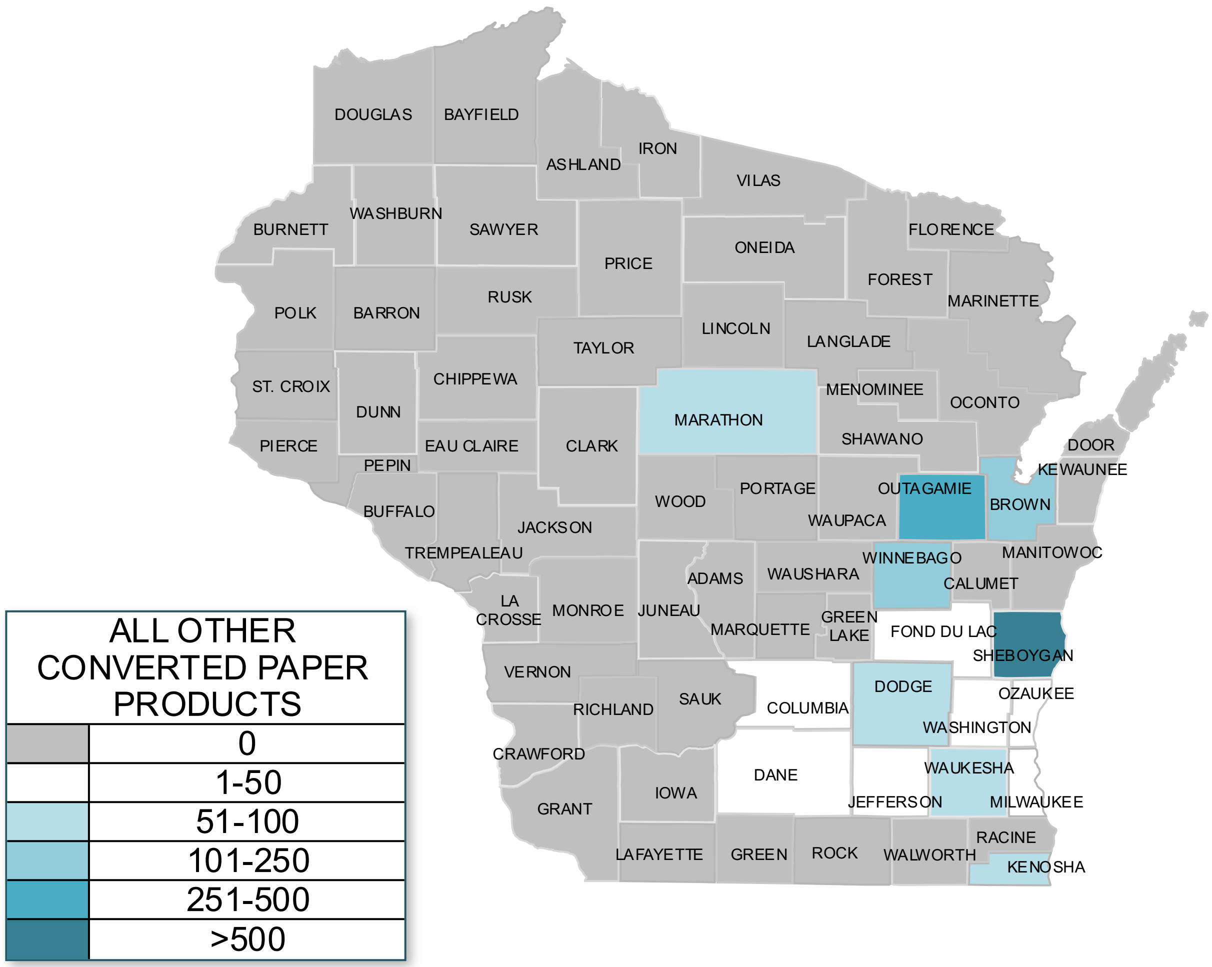
Employment trend in sanitary paper product manufacturing

Sanitary paper is the statistical category that includes all tissue and towel manufacturing, such as bathroom tissue, napkins, paper towels and facial tissue.



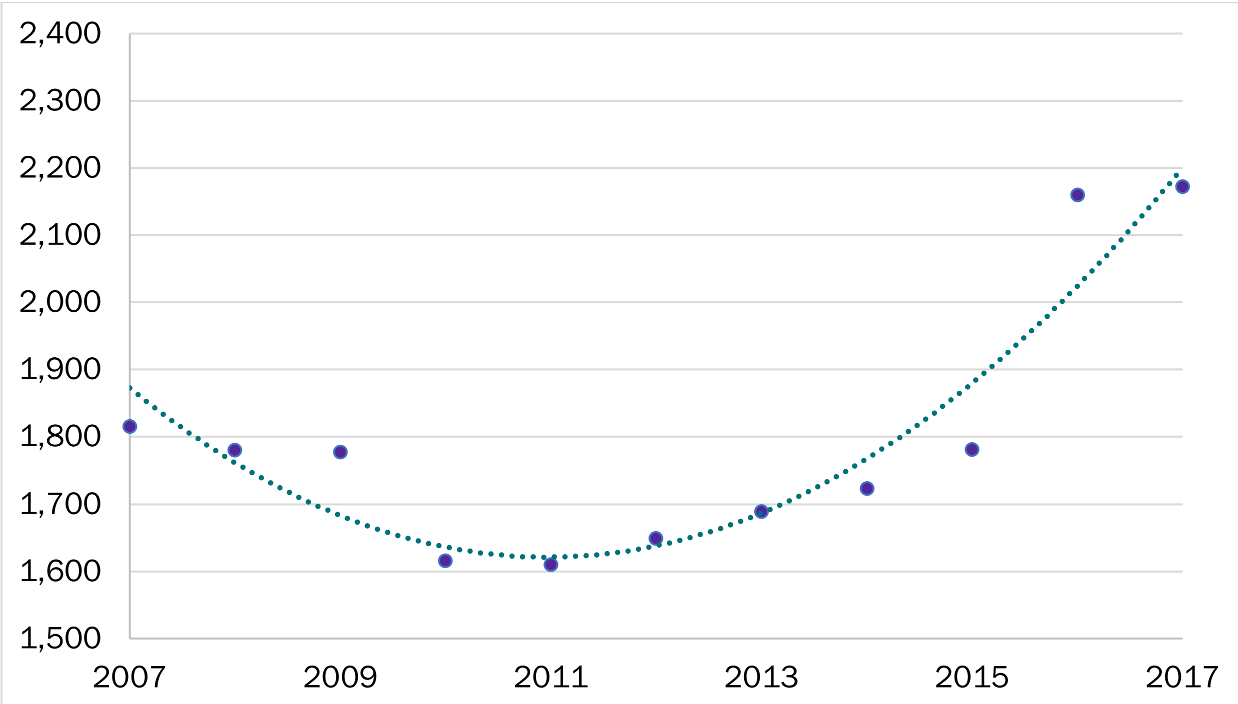
SOURCE: BUREAU OF LABOR STATISTICS, 2017.

All other converted paper product manufacturing employment distribution



Source: Bureau of Labor Statistics, 2017.

Employment trend in all other converted paper product manufacturing



SOURCE: SOURCE: BUREAU OF LABOR STATISTICS, 2017.

All Wisconsin and County-by-County Economic Contribution Data

The Wisconsin State Package of the IMPLAN Software for Economic Impact Analysis version 3.1.1001.12 was used to prepare the economic contribution data. Datasets were customized using data gathered from original research including current employment and output when it was provided by industry participants and aggregated at the county level. Dollar amounts are reported at 2019 values. Economic contribution analyses were carried out in both single industry and multi-industry modes with constraints being applied to the model to remove feedback linkages or buybacks to the subsectors being analyzed.

IMPLAN aggregates the 12 subsectors within the NAICS paper manufacturing hierarchy into eight categories as follows:

NAICS	IMPLAN Category Descriptions
322110	Pulp mills
322121, 322122	Paper and newsprint mills
322130	Paperboard mills
322211, 322212, 322219	Paperboard container manufacturing
322220	Paper bag & coated & treated paper manufacturing
322230	Stationery paper product manufacturing
322291	Sanitary paper product manufacturing
322299	All other converted paper product manufacturing

Subsequent charts and analyses are prepared from these IMPLAN categories, except for pulp and paper mills, which are combined (there is only one standalone pulp mill in Wisconsin, Sustana in De Pere).

Results from these analyses are presented using common economic terms. The economic terms are:

Employment (jobs): a measure of job positions without regard to whether they are full-time equivalents.
Labor income: the sum of employee compensation and proprietor income and is a sub-component of value added (see below).
Value-added: a combination of labor income, other property type income and tax on production and imports.
Output: the broadest measure of economic activity – sometimes referred to as sales.

Information contained in the economic contribution data sheets

Charts on the following pages detail the economic contributions of the pulp, paper and converting industries for the state of Wisconsin as a whole as well as in every Wisconsin county in which such activity takes place.

The following terminology and data is reported:

Direct effect includes the money initially spent to pay for the salaries, supplies, raw materials, and operating expenses by the primary paper manufacturing sectors.

Indirect effect means that businesses at which money is spent on supplies and other materials or services respond to the direct effects and purchase additional inputs to supply the direct industry.

Induced effects result from the spending of personal income originating from the direct and indirect effects. Local industries respond (hiring more employees, increasing payroll hours, raising salaries, and so on) to money spent by people employed in the paper manufacturing or supporting sectors.

Each chart also reports the number of direct paper manufacturing employees, number of establishments, the percent contribution paper manufacturing makes to the county as a proportion of all county manufacturing jobs and the total direct output of paper manufacturing in the county.

Key findings of the economic contribution of the paper manufacturing industry in Wisconsin

Noteworthy key findings regarding the state-level economic contribution of the pulp, paper and converting industries in Wisconsin are as follows:

Direct economic contributions
Paper manufacturing accounts for $18,163,914,173 in output in Wisconsin;

The paper manufacturing sector provides 30,262 jobs;

Paper manufacturing accounts for $2,584,657,119 of labor income;

Paper manufacturing accounts for 6.5% of all Wisconsin's manufacturing employment;

41 of Wisconsin's counties are home to some paper manufacturing activity;

There are 238 establishments in the state of Wisconsin engaged in paper manufacturing activity.

Indirect effect
An additional 35,000 Wisconsin jobs exist because of the paper manufacturing industry;

These indirect jobs are associated with $2,312,282,373 of labor income.;

$6,523,110,235 of output stems from these indirect activities.

Induced effect
The induced economic effect of Wisconsin's paper industry supports an additional 30,591 jobs;

These induced jobs are associated with $1,381,739,229 of labor income;

$4,198,274,039 of output stems from these induced activities.

Total contributions
The total economic contribution of the pulp, paper and converting industries, through direct, indirect and induced effect is estimated to produce or support:

95,853 jobs;

$28,906,724,863 in economic output;

$6,278,678,722 of labor income.

All Wisconsin

All paper Manufacturing	30,262 Employees	6.5% of all state manufacturing employment	238 Establishments	$18,163,914,173 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (238 establishments)*				
Direct effect	30,261.6	$2,584,657,119	$4,577,587,100	$18,163,914,173
Indirect effect	34,999.5	$2,312,282,373	$3,544,272,797	$6,523,110,235
Induced effect	30,590.5	$1,381,739,229	$2,440,062,053	$4,198,274,039
Total effect	95,851.5	$6,278,678,722	$10,561,921,951	$28,885,298,447
***Pulp and paper mills** (27 establishments)*				
Direct effect	10,515.5	$963,818,176	$1,869,516,451	$8,110,423,726
Indirect effect	18,728.9	$1,260,522,898	$1,929,407,907	$3,583,480,856
Induced effect	13,949.4	$630,023,012	$1,112,613,178	$1,914,247,813
Total effect	43,193.7	$2,854,364,085	$4,911,537,535	$13,608,152,395
***Paperboard mills** (7 establishments)*				
Direct effect	717.1	$67,584,988	$128,811,384	$592,066,582
Indirect effect	1,618.2	$105,230,832	$160,948,798	$300,107,083
Induced effect	1,110.4	$50,145,682	$88,550,886	$152,346,379
Total effect	3,445.7	$222,961,502	$378,311,068	$1,044,520,044
***Paperboard container manufacturing** (74 establishments)*				
Direct effect	7,191.9	$590,393,763	$786,241,706	$3,416,751,424
Indirect effect	6,152.3	$384,844,811	$582,745,805	$1,041,406,489
Induced effect	6,050.9	$273,351,715	$482,699,891	$830,562,767
Total effect	19,395.1	$1,248,590,290	$1,851,687,401	$5,288,720,680
***Paper bag & coated & treated paper manufacturing** (64 establishments)*				
Direct effect	6,119.7	$507,371,295	$787,406,303	$2,831,164,572
Indirect effect	3,802.5	$252,159,408	$389,972,910	$718,316,519
Induced effect	4,712.1	$212,862,734	$375,890,624	$646,773,096
Total effect	14,634.2	$972,393,437	$1,533,269,837	$4,196,254,188
***Stationery paper product manufacturing** (13 establishments)*				
Direct effect	852.3	$60,068,819	$89,198,500	$322,975,769
Indirect effect	497.3	$33,286,543	$50,497,779	$90,701,878
Induced effect	586.4	$26,486,200	$46,773,382	$80,474,240
Total effect	1,936.0	$119,841,562	$186,469,661	$494,151,886
***Sanitary paper product manufacturing** (21 establishments)*				
Direct effect	2,910.5	$252,718,259	$731,606,636	$2,265,419,563
Indirect effect	3,081.2	$202,964,397	$317,978,243	$585,134,178
Induced effect	2,826.0	$127,648,433	$225,423,617	$387,858,652
Total effect	8,817.7	$583,331,090	$1,275,008,497	$3,238,412,393
***All other converted paper product manufacturing** (32 establishments)*				
Direct effect	1,954.7	$142,701,820	$184,806,121	$625,112,538
Indirect effect	1,119.0	$73,273,484	$112,721,356	$203,963,231
Induced effect	1,355.4	$61,221,452	$108,110,475	$186,011,090
Total effect	4,429.0	$277,196,756	$405,637,951	$1,015,086,858

County-by-county tables of economic contribution data

The tables on the following pages set out economic contribution data for the 41 Wisconsin counties that have businesses undertaking paper manufacturing activities.

Adams County

All paper Manufacturing	253 Employees	76.4% of all county manufacturing employment	1 Establishment	$115,859,977 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	253.0	$17,289,345	$23,317,770	$115,859,977
Indirect effect	115.0	$5,653,606	$8,145,416	$16,958,619
Induced effect	49.7	$1,660,920	$3,862,217	$6,828,094
Total effect	417.7	$24,603,871	$35,325,403	$139,646,690
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	253.0	$17,289,345	$23,317,770	$115,859,977
Indirect effect	115.0	$5,653,606	$8,145,416	$16,958,619
Induced effect	49.7	$1,660,920	$3,862,217	$6,828,094
Total effect	417.7	$24,603,871	$35,325,403	$139,646,690
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Brown County

All paper Manufacturing	6009 Employees	23.0% of all county manufacturing employment	30 Establishments	$3,987,674,118 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (30 establishments)*				
Direct effect	6009.4	$488,741,439	$937,401,586	$3,987,674,118
Indirect effect	6814.7	$489,989,970	$749,906,239	$1,333,273,112
Induced effect	4911.7	$220,975,081	$380,121,994	$652,391,690
Total effect	17,735.7	$1,199,706,490	$2,067,429,819	$5,973,338,920
***Pulp and paper mills** (6 establishments)*				
Direct effect	3210.8	$291,636,218	$565,959,589	$2,469,655,517
Indirect effect	4612.6	$339,396,217	$517,918,036	$927,814,680
Induced effect	3172.6	$142,730,618	$245,530,294	$421,390,494
Total effect	10,996.3	$773,763,053	$1,329,407,920	$3,818,860,691
***Paperboard mills** (2 establishments)*				
Direct effect	187.4	$15,444,482	$29,648,805	$150,732,645
Indirect effect	326.5	$23,535,072	$36,094,296	$64,747,558
Induced effect	199.5	$8,975,628	$15,438,931	$26,496,650
Total effect	713.5	$47,955,182	$81,182,032	$241,976,853
***Paperboard container manufacturing** (4 establishments)*				
Direct effect	382.1	$29,593,965	$39,664,560	$179,451,919
Indirect effect	307.2	$19,638,216	$29,562,480	$51,649,203
Induced effect	245.3	$11,038,350	$18,987,328	$32,588,654
Total effect	934.7	$60,270,531	$88,214,368	$263,689,776
***Paper bag & coated & treated paper manufacturing** (7 establishments)*				
Direct effect	1,183.2	$89,876,486	$141,561,001	$536,783,356
Indirect effect	666.9	$45,581,492	$69,891,985	$121,369,528
Induced effect	674.6	$30,354,134	$52,210,429	$89,612,656
Total effect	2,524.6	$165,812,113	$263,663,415	$747,765,541
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	0	0	0
Indirect effect	0	0	0	0
Induced effect	0	0	0	0
Total effect	0	0	0	0
***Sanitary paper product manufacturing** (9 establishments)*				
Direct effect	843.4	$47,464,064	$141,181,816	$586,074,003
Indirect effect	792.6	$54,316,601	$84,986,477	$147,584,855
Induced effect	508.0	$22,854,543	$39,317,594	$67,478,260
Total effect	2144.0	$124,635,208	$265,485,886	$801,137,118
***All other converted paper product manufacturing** (2 establishments)*				
Direct effect	202.4	$14,726,224	$19,385,815	$64,976,676
Indirect effect	108.8	$7,522,371	$11,452,965	$20,107,288
Induced effect	111.6	$5,021,807	$8,637,418	$14,824,975
Total effect	422.8	$27,270,403	$39,476,198	$99,908,939

Chippewa County

All paper Manufacturing	587 Employees	10.5% of all county manufacturing employment	3 Establishments	$373,859,925 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (3 establishments)				
Direct effect	586.9	$51,404,525	$96,107,388	$373,859,925
Indirect effect	420.4	$20,177,249	$30,732,193	$60,582,423
Induced effect	292.2	$9,726,924	$18,083,148	$33,608,492
Total effect	1,299.5	$81,308,698	$144,922,728	$468,050,840
Pulp and paper mills (1 establishment)				
Direct effect	91.9	$10,045,944	$16,252,374	$70,793,880
Indirect effect	99.4	$5,429,920	$8,109,750	$15,458,753
Induced effect	64.7	$2,152,650	$4,003,532	$7,438,296
Total effect	256.0	$17,628,515	$28,365,656	$93,690,928
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	234.0	$17,781,516	$23,150,820	$108,738,349
Indirect effect	136.1	$6,276,821	$9,391,091	$18,345,352
Induced effect	97.5	$3,245,392	$6,028,751	$11,209,469
Total effect	467.5	$27,303,729	$38,570,662	$138,293,170
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (1 establishment)				
Direct effect	261.0	$23,577,065	$56,704,194	$194,327,697
Indirect effect	184.9	$8,470,508	$13,231,352	$26,778,318
Induced effect	130.1	$4,328,881	$8,050,864	$14,960,727
Total effect	576.0	$36,376,454	$77,986,410	$236,066,742
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Clark County

All paper Manufacturing	25 Employees	0.7% of all county manufacturing employment	1 Establishment	$10,885,804 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	25.0	$1,277,875	$1,753,393	$10,885,804
Indirect effect	9.3	$412,956	$616,946	$1,218,338
Induced effect	5.3	$158,768	$299,621	$568,257
Total effect	39.5	$1,849,599	$2,669,959	$12,672,398
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	25.0	$1,277,875	$1,753,393	$10,885,804
Indirect effect	9.3	$412,956	$616,946	$1,218,338
Induced effect	5.3	$158,768	$299,621	$568,257
Total effect	39.5	$1,849,599	$2,669,959	$12,672,398
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Columbia County

All paper Manufacturing	5 Employees	0.1% of all county manufacturing employment	1 Establishment	$1,736,036 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	5.3	$415,014	$547,097	$1,736,036
Indirect effect	1.6	$85,097	$131,542	$258,884
Induced effect	2.0	$75,440	$133,393	$242,587
Total effect	8.8	$575,551	$812,033	$2,237,507
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (1 establishment)				
Direct effect	5.3	$415,014	$547,097	$1,736,036
Indirect effect	1.6	$85,097	$131,542	$258,884
Induced effect	2.0	$75,440	$133,393	$242,587
Total effect	8.8	$575,551	$812,033	$2,237,507

Dane County

All paper Manufacturing	246 Employees	1.0% of all county manufacturing employment	4 Establishments	$101,327,298 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (4 establishments)				
Direct effect	245.7	$16,927,838	$25,622,910	$102,541,291
Indirect effect	135.1	$9,922,069	$15,411,921	$25,689,806
Induced effect	126.5	$5,949,282	$10,831,347	$17,700,966
Total effect	507.2	$32799,190	$51,866,178	$145,932,063
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (3 establishments)				
Direct effect	198.3	$13,815,446	$21,578,094	$87,822,574
Indirect effect	110.4	$8,133,165	$12,617,777	$20,964,229
Induced effect	103.0	$4,843,887	$8,818,864	$14,412,233
Total effect	411.7	$26,792,497	$43,014,735	$123,199,036
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (1 establishment)				
Direct effect	47.4	$3,112,392	$4,044,815	$14,718,717
Indirect effect	24.7	$1,788,905	$2,794,144	$4,725,577
Induced effect	23.5	$1,105,395	$2,012,483	$3,288,734
Total effect	95.6	$6,006,692	$8,851,442	$22,733,027

Dodge County

All paper Manufacturing	214 Employees	2.0% of all county manufacturing employment	5 Establishments	$78,799,208 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (5 establishments)				
Direct effect	214.0	$20,906,948	$25,830,367	$78,799,208
Indirect effect	67.7	$4,363,379	$6,024,904	$11,048,199
Induced effect	90.0	$3,126,774	$5,904,708	$10,799,487
Total effect	345.8	$28,397,101	$37,759,979	$100,646,893
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	25.5	$2,646,256	$3,152,494	$11,333,994
Indirect effect	11.1	$678,217	$932,015	$1,686,448
Induced effect	11.8	$409,023	$772,340	$1,412,670
Total effect	45.2	$3,733,496	$4,856,849	$14,433,112
Paper bag & coated & treated paper manufacturing (1 establishment)				
Direct effect	48.2	$4,513,922	$6,134,289	$20,279,128
Indirect effect	14.7	$935,165	$1,302,766	$2,378,895
Induced effect	19.3	$669,712	$1,263,859	$2,312,160
Total effect	82.2	$6,118,800	$8,700,915	$24,970,183
Stationery paper product manufacturing (1 establishment)				
Direct effect	67.4	$5,146,964	$6,719,534	$22,944,908
Indirect effect	20.7	$1,376,274	$1,891,084	$3,455,764
Induced effect	23.3	$810,434	$1,529,531	$2,797,959
Total effect	111.4	$7,333,672	$10,140,149	$29,198,630
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (2 establishments)				
Direct effect	72.9	$8,599,806	$9,824,050	$24,241,180
Indirect effect	21.3	$1,373,722	$1,899,039	$3,527,092
Induced effect	35.6	$1,237,605	$2,338,977	$4,276,698
Total effect	129.8	$11,211,133	$14,062,066	$32,044,969

Dunn County

All paper Manufacturing	184 Employees	6.0% of all county manufacturing employment	2 Establishments	$86,295,136 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (2 establishments)				
Direct effect	183.9	$15,814,371	$23,340,264	$86,295,136
Indirect effect	64.9	$3,185,482	$4,930,884	$9,590,701
Induced effect	72.6	$2,289,725	$4,754,462	$8,601,549
Total effect	321.3	$21,289,579	$33,025,609	$104,487,386
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	48.7	$4,269,933	$5,557,518	$23,364,103
Indirect effect	22.5	$1,072,734	$1,619,846	$3,136,435
Induced effect	20.4	$643,711	$1,337,183	$2,418,968
Total effect	91.6	$5,986,378	$8,514,548	$28,919,506
Paper bag & coated & treated paper manufacturing (1 establishment)				
Direct effect	135.2	$11,544,438	$17,782,745	$62,931,033
Indirect effect	42.4	$2,112,748	$3,311,037	$6,454,266
Induced effect	52.2	$1,646,014	$3,417,279	$6,182,581
Total effect	229.7	$15,303,200	$24,511,061	$75,567,880
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Eau Claire County

All paper Manufacturing	300 Employees	5.4% of all county manufacturing employment	2 Establishments	$200,357,920 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (2 establishments)				
Direct effect	300.5	$22,872,480	$51,652,111	$200,357,920
Indirect effect	284.1	$16,608,052	$26,300,769	$47,690,849
Induced effect	218.7	$9,508,758	$16,566,295	$28,495,310
Total effect	803.2	$48,989,290	$94,519,176	$276,544,079
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	60.5	$4,205,210	$5,492,788	$27,610,157
Indirect effect	51.4	$2,872,156	$4,403,636	$7,917,653
Induced effect	39.1	$1,699,850	$2,960,742	$5,093,395
Total effect	150.9	$8,777,215	$12,857,166	$40,621,205
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (1 establishment)				
Direct effect	240.0	$18,667,270	$46,159,323	$172,747,762
Indirect effect	232.7	$13,735,897	$21,897,133	$39,773,197
Induced effect	179.6	$7,808,908	$13,605,553	$23,401,915
Total effect	652.3	$40,212,075	$81,662,009	$235,922,874
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Fond du Lac County

All paper Manufacturing	192 Employees	1.8% of all county manufacturing employment	5 Establishments	$93,733,567 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (5 establishments)*				
Direct effect	191.5	$19,367,514	$25,633,436	$93,733,567
Indirect effect	90.7	$4,995,490	$7,533,219	$13,997,495
Induced effect	109.5	$4,703,009	$8,214,406	$14,151,279
Total effect	391.7	$29,066,014	$41,381,060	$121,882,341
***Pulp and paper mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (3 establishments)*				
Direct effect	177.8	$18,004,245	$23,871,799	$88,879,953
Indirect effect	86.5	$4,759,090	$7,164,180	$13,292,201
Induced effect	102.3	$4,392,081	$7,671,221	$13,215,605
Total effect	366.6	$27,155,416	$38,707,200	$115,387,759
***Paper bag & coated & treated paper manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (2 establishments)*				
Direct effect	13.7	$1,363,269	$1,761,637	$4,853,614
Indirect effect	4.2	$236,400	$369,038	$705,294
Induced effect	7.2	$310,928	$543,185	$935,674
Total effect	25.2	$1,910,597	$2,673,860	$6,494,582

Grant County

All paper Manufacturing	23 Employees	1.0% of all county manufacturing employment	1 Establishment	$10,408,678 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	22.8	$1,517,754	$2,050,914	$10,408,678
Indirect effect	11.6	$648,196	$943,018	$1,789,865
Induced effect	8.7	$297,212	$578,197	$1,078,747
Total effect	43.2	$2,463,162	$3,572,129	$13,277,290
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	22.8	$1,517,754	$2,050,914	$10,408,678
Indirect effect	11.6	$648,196	$943,018	$1,789,865
Induced effect	8.7	$297,212	$578,197	$1,078,747
Total effect	43.2	$2,463,162	$3,572,129	$13,277,290
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Jackson County

All paper Manufacturing	1 Employees	0.1% of all county manufacturing employment	1 Establishment	$499,547 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	1.2	$106,728	$108,878	$499,547
Indirect effect	0.3	$19,260	$29,481	$57,025
Induced effect	0.4	$14,246	$28,033	$51,426
Total effect	1.9	$140,234	$166,392	$607,997
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (1 establishment)				
Direct effect	1.2	$106,728	$108,878	$499,547
Indirect effect	0.3	$19,260	$29,481	$57,025
Induced effect	0.4	$14,246	$28,033	$51,426
Total effect	1.9	$140,234	$166,392	$607,997
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Jefferson County

All paper Manufacturing	253 Employees	2.9% of all county manufacturing employment	6 Establishments	$115,149,812 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (6 establishments)				
Direct effect	253.4	$18,378,246	$26,957,469	$115,149,812
Indirect effect	111.3	$5,634,165	$8,745,164	$16,508,553
Induced effect	86.3	$3,015,385	$6,073,455	$10,849,046
Total effect	450.9	$27,027,796	$41,776,089	$142,507,411
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (3 establishments)				
Direct effect	115.9	$8,531,233	$11,461,649	$53,859,277
Indirect effect	60.5	$2,976,485	$4,560,408	$8,754,710
Induced effect	41.3	$1,445,000	$2,910,580	$5,199,111
Total effect	217.8	$12,952,718	$18,932,637	$67,633,098
Paper bag & coated & treated paper manufacturing (2 establishments)				
Direct effect	136.2	$9,757,606	$15,383,923	$60,896,595
Indirect effect	50.3	$2,634,332	$4,147,952	$7,862,175
Induced effect	44.5	$1,555,884	$3,133,640	$5,597,735
Total effect	231.1	$13,947,823	$22,665,516	$74,356,505
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (1 establishment)				
Direct effect	1.3	$89,407	$111,898	$393,940
Indirect effect	0.4	$23,348	$36,804	$71,668
Induced effect	0.4	$14,501	$29,235	$52,200
Total effect	2.1	$127,255	$177,936	$517,807

Kenosha County

All paper Manufacturing	403 Employees	5.2% of all county manufacturing employment	5 Establishments	$178,952,239 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (5 establishments)*				
Direct effect	402.8	$36,255,831	$53,382,689	$178,952,239
Indirect effect	70.8	$2,792,859	$4,005,799	$7,117,589
Induced effect	145.7	$5,707,813	$10,269,109	$16,797,701
Total effect	619.2	$44,726,504	$67,657,597	$202,867,529
***Pulp and paper mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (1 establishment)*				
Direct effect	50.9	$4,898,315	$6,455,748	$25,057,271
Indirect effect	14.0	$543,441	$767,839	$1,328,721
Induced effect	20.3	$795,987	$1,432,135	$2,342,604
Total effect	85.2	$6,237,743	$8,655,722	$28,728,596
***Paper bag & coated & treated paper manufacturing** (2 establishments)*				
Direct effect	233.2	$21,597,295	$33,643,398	$111,485,573
Indirect effect	38.0	$1,502,031	$2,138,501	$3,816,318
Induced effect	86.3	$3,380,168	$6,080,333	$9,946,135
Total effect	357.4	$26,479,494	$41,862,231	$125,248,026
***Stationery paper product manufacturing** (1 establishment)*				
Direct effect	48.6	$3,600,152	$5,330,042	$18,661,312
Indirect effect	7.6	$302,533	$436,258	$781,955
Induced effect	14.6	$570,242	$1,026,558	$1,679,058
Total effect	70.8	$4,472,927	$6,792,857	$21,122,325
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (1 establishment)*				
Direct effect	70.2	$6,130,069	$7,953,502	$23,748,083
Indirect effect	11.1	$444,855	$663,201	$1,190,596
Induced effect	24.5	$961,416	$1,730,083	$2,829,904
Total effect	105.8	$7,536,339	$10,346,786	$27,768,582

Lincoln County

All paper Manufacturing	419 Employees	15.5% of all county manufacturing employment	2 Establishments	$165,934,510 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (2 establishments)				
Direct effect	419.0	$27,362,029	$36,666,532	$165,934,510
Indirect effect	189.5	$8,001,865	$12,152,340	$25,772,026
Induced effect	136.7	$4,438,205	$8,633,442	$16,375,134
Total effect	745.2	$39,802,099	$57,452,315	$208,081,669
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (2 establishments)				
Direct effect	419.0	$27,362,029	$36,666,532	$165,934,510
Indirect effect	189.5	$8,001,865	$12,152,340	$25,772,026
Induced effect	136.7	$4,438,205	$8,633,442	$16,375,134
Total effect	745.2	$39,802,099	$57,452,315	$208,081,669
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Manitowoc County

All paper Manufacturing	235 Employees	2.4% of all county manufacturing employment	2 Establishments	$102,229,852 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (2 establishments)*				
Direct effect	234.8	$13,321,668	$19,102,201	$102,229,852
Indirect effect	102.3	$4,657,675	$7,105,440	$14,031,259
Induced effect	71.0	$2,505,578	$4,637,598	$8,400,827
Total effect	408.2	$20,484,921	$30,845,239	$124,661,937
***Pulp and paper mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (1 establishment)*				
Direct effect	146.4	$8,313,291	$11,288,252	$64,868,607
Indirect effect	72.0	$3,230,511	$4,885,282	$9,615,280
Induced effect	45.6	$1,608,732	$2,977,505	$5,393,693
Total effect	264.0	$13,152,534	$19,151,038	$79,877,581
***Paper bag & coated & treated paper manufacturing** (1 establishment)*				
Direct effect	88.4	$5,008,378	$7,813,949	$37,361,244
Indirect effect	30.4	$1,427,164	$2,220,159	$4,415,979
Induced effect	25.4	$896,846	$1,660,093	$3,007,134
Total effect	144.2	$7,332,387	$11,694,201	$44,784,356
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Marathon County

All paper Manufacturing	1759 Employees	10.5% of all county manufacturing employment	10 Establishments	$1,047,356,871 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (10 establishments)*				
Direct effect	1,758.9	$153,995,806	$253,258,329	$1,047,356,871
Indirect effect	1,664.8	$93,537,587	$139,794,845	$257,703,142
Induced effect	1,202.5	$52,786,236	$95,242,575	$162,294,452
Total effect	4,626.2	$300,319,629	$488,295,750	$1,467,354,465
***Pulp and paper mills** (2 establishments)*				
Direct effect	737.7	$68,186,576	$132,937,853	$570,973,580
Indirect effect	959.5	$55,473,888	$82,542,873	$151,414,692
Induced effect	604.1	$26,515,568	$47,843,247	$81,522,663
Total effect	2,301.3	$150,176,032	$263,323,973	$803,910,935
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (4 establishments)*				
Direct effect	672.4	$56,843,056	$75,932,703	$321,855,418
Indirect effect	519.0	$27,702,088	$41,430,382	$76,970,698
Induced effect	408.2	$17,919,231	$32,331,806	$55,095,305
Total effect	1,599.6	$102,464,376	$149,694,890	$453,921,421
***Paper bag & coated & treated paper manufacturing** (3 establishments)*				
Direct effect	290.7	$24,483,047	$38,491,534	$135,553,835
Indirect effect	158.4	$8,800,848	$13,455,941	$24,887,914
Induced effect	160.7	$7,056,547	$12,731,449	$21,695,650
Total effect	609.8	$40,340,442	$64,678,925	$182,137,399
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (1 establishment)*				
Direct effect	58.1	$4,483,127	$5,896,240	$18,974,038
Indirect effect	27.9	$1,560,763	$2,365,649	$4,429,838
Induced effect	29.5	$1,294,889	$2,336,073	$3,980,834
Total effect	115.5	$7,338,779	$10,597,962	$27,384,710

Marinette County

All paper Manufacturing	385 Employees	5.9% of all county manufacturing employment	2 Establishments	$294,176,626 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (2 establishments)				
Direct effect	384.9	$32,250,644	$76,135,704	$294,176,626
Indirect effect	270.5	$11,964,265	$18,647,214	$36,033,004
Induced effect	208.0	$7,008,854	$12,334,422	$22,570,366
Total effect	863.5	$51,223,763	$107,117,340	$352,779,996
Pulp and paper mills (1 establishment)				
Direct effect	227.1	$19,711,102	$38,537,300	$173,397,054
Indirect effect	188.1	$8,258,879	$12,855,161	$24,567,707
Induced effect	131.7	$4,437,728	$7,810,177	$14,291,271
Total effect	546.9	$32,407,709	$59,202,639	$212,256,032
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (1 establishment)				
Direct effect	157.8	$12,539,542	$37,598,403	$120,779,572
Indirect effect	82.4	$3,705,386	$5,792,052	$11,465, 297
Induced effect	76.3	$2,571,126	$4,524,245	$8,279,095
Total effect	316.6	$18,816,054	$47,914,701	$140,523,963
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Milwaukee County

All paper Manufacturing	1,531 Employees	2.8% of all county manufacturing employment	27 Establishments	$761,205,695 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (27 establishments)				
Direct effect	1,530.7	$118,598,791	$193,364,350	$761,205,695
Indirect effect	603.0	$38,736,246	$56,583,205	$95,597,533
Induced effect	620.4	$30,404,122	$51,715,103	$81,632,782
Total effect	2,754.1	$187,739,158	$301,662,659	$938,436,010
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (1 establishment)				
Direct effect	56.6	$4,227,263	$8,128,841	$44,718,716
Indirect effect	53.5	$3,451,848	$5,221,519	$9,501,781
Induced effect	30.9	$1,515,777	$2,578,049	$4,069,335
Total effect	141.1	$9,194,888	$15,928,409	$58,289,832
Paperboard container manufacturing (9 establishments)				
Direct effect	572.8	$44,652,539	$59,562,041	$269,073,301
Indirect effect	262.4	$16,176,678	$23,148,816	$38,224,495
Induced effect	238.9	$11,709,639	$19,917,068	$31,440,007
Total effect	1,074.1	$72,538,856	$102,627,925	$338,737,803
Paper bag & coated & treated paper manufacturing (10 establishments)				
Direct effect	458.6	$38,548,784	$59,721,345	$212,890,156
Indirect effect	129.5	$8,497,857	$12,502,677	$21,325,278
Induced effect	185.0	$9,063,745	$15,416,722	$24,335,799
Total effect	773.1	$56,110,387	$87,640,743	$258,551,233
Stationery paper product manufacturing (2 establishments)				
Direct effect	228.7	$15,116,518	$22,991,243	$85,739,293
Indirect effect	61.5	$4,196,070	$6,050,254	$10,045,738
Induced effect	76.3	$3,739,462	$6,360,357	$10,040,048
Total effect	366.5	$23,052,050	$35,401,855	$105,825,079
Sanitary paper product manufacturing (3 establishments)				
Direct effect	190.9	$14,266,230	$40,756,756	$141,398,112
Indirect effect	89.6	$5,976,315	$9,000,720	$15,386,578
Induced effect	80.2	$3,928,464	$6,682,352	$10,547,502
Total effect	360.6	$24,171,009	$56,439,828	$167,332,192
All other converted paper product manufacturing (2 establishments)				
Direct effect	23.0	$1,787,457	$2,204,123	$7,386,117
Indirect effect	6.5	$437,477	$659,220	$1,113,664
Induced effect	9.1	$447,034	$760,554	$1,200,090
Total effect	38.7	$2,671,968	$3,623,897	$9,699,870

Oconto County

All paper Manufacturing	115 Employees	5.2% of all county manufacturing employment	2 Establishments	$78,248,209 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (2 establishments)*				
Direct effect	115.0	$7,286,355	$13,349,526	$78,248,209
Indirect effect	84.4	$3,496,694	$5,254,351	$12,326,181
Induced effect	34.0	$917,164	$2,004,164	$3,880,343
Total effect	233.4	$11,700,213	$20,608,042	$94,454,732
***Pulp and paper mills** (1 establishment)*				
Direct effect	100.0	$6,466,606	$12,242,427	$71,650,058
Indirect effect	77.4	$3,280,099	$4,940,830	$11,577,884
Induced effect	30.9	$833,866	$1,822,079	$3,527,749
Total effect	208.2	$10,580,571	$19,005,336	$86,755,691
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (1 establishment)*				
Direct effect	15.0	$819,749	$1,107,099	$6,598,151
Indirect effect	7.0	$216,594	$313,521	$748,297
Induced effect	3.1	$83,299	$182,085	$352,594
Total effect	25.1	$1,119,642	$1,602,706	$7,699,041
***Paper bag & coated & treated paper manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Oneida County

All paper Manufacturing	453 Employees	26.8% of all county manufacturing employment	1 Establishment	$350,533,774 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (1 establishment)*				
Direct effect	453.3	$42,877,610	$81,395,780	$350,533,774
Indirect effect	614.1	$27,996,490	$48,051,390	$96,718,808
Induced effect	379.6	$14,423,743	$26,477,601	$47,132,662
Total effect	1,447.0	$85,297,844	$155,924,771	$494,385,245
***Pulp and paper mills** (1 establishment)*				
Direct effect	453.3	$42,877,610	$81,395,780	$350,533,774
Indirect effect	614.1	$27,996,490	$48,051,390	$96,718,808
Induced effect	379.6	$14,423,743	$26,477,601	$47,132,662
Total effect	1,447.0	$85,297,844	$155,924,771	$494,385,245
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paper bag & coated & treated paper manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Outagamie County

All paper Manufacturing	3,541 Employees	17.6% of all county manufacturing employment	26 Establishments	$2,022,921,597 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (26 establishments)*				
Direct effect	3,541.1	$286,922,644	$496,201,901	$2,022,921,597
Indirect effect	2,746.2	$166,292,928	$250,796,773	$441,018,946
Induced effect	2,461.8	$105,875,041	$189,928,919	$318,745,091
Total effect	8,749.1	$559,090,614	$936,927,593	$2,782,685,635
***Pulp and paper mills** (4 establishments)*				
Direct effect	1,483.5	$125,927,387	$246,240,835	$1,127,100,024
Indirect effect	1,724.9	$105,664,686	$158,213,718	$277,663,352
Induced effect	1,262.3	$54,284,537	$96,868,772	$163,426,889
Total effect	4,470.6	$285,876,610	$501,523,325	$1,568,190,266
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (1 establishment)*				
Direct effect	29.2	$2,193,220	$2,936,020	$13,602,661
Indirect effect	21.2	$1,180,203	$1,764,710	$3,111,391
Induced effect	18.2	$783,727	$1,398,614	$2,359,615
Total effect	68.5	$4,157,150	$6,099,345	$19,073,666
***Paper bag & coated & treated paper manufacturing** (9 establishments)*				
Direct effect	1,497.5	$122,525,118	$192,735,119	$692,831,998
Indirect effect	737.3	$44,151,490	$67,493,685	$118,758,615
Induced effect	900.7	$38,740,515	$69,129,444	$116,631,844
Total effect	3,135.5	$205,417,123	$329,358,248	$928,222,457
***Stationery paper product manufacturing** (3 establishments)*				
Direct effect	26.8	$1,634,832	$2,416,071	$9,769,777
Indirect effect	12.7	$763,860	$1,152,545	$2,022,681
Induced effect	13.1	$561,461	$1,002,202	$1,690,655
Total effect	52.5	$2,960,153	$4,570,818	$13,483,113
***Sanitary paper product manufacturing** (1 establishment)*				
Direct effect	46.9	$3,891,905	$11,478,971	$36,185,335
Indirect effect	38.3	$2,282,478	$3,517,340	$6,196,822
Induced effect	33.4	$1,434,208	$2,559,524	$4,318,153
Total effect	118.5	$7,608,591	$17,555,835	$46,700,310
***All other converted paper product manufacturing** (8 establishments)*				
Direct effect	457.3	$30,750,182	$40,394,885	$143,341,802
Indirect effect	211.9	$12,250,210	$18,654,774	$33,266,086
Induced effect	234.2	$10,070,594	$17,970,363	$30,317,934
Total effect	903.4	$53,070,987	$77,020,022	$207,015,822

Ozaukee County

All paper Manufacturing	155 Employees	1.6% of all county manufacturing employment	2 Establishments	$107,239,974 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (2 establishments)				
Direct effect	155.1	$12,008,045	$33,230,181	$107,239,974
Indirect effect	47.8	$2,349,241	$3,280,662	$5,747,357
Induced effect	42.3	$1,610,141	$2,958,032	$4,884,333
Total effect	245.2	$15,967,427	$39,468,875	$117,871,663
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (1 establishment)				
Direct effect	129.5	$10.355,905	$31,050,288	$99,295,531
Indirect effect	42.8	$2,107,896	$2,933,452	$5,125,361
Induced effect	36.7	$1,396,807	$2,566,173	$4,237,282
Total effect	209.0	$13,860,608	$36,549,914	$108,658,174
All other converted paper product manufacturing (1 establishment)				
Direct effect	25.6	$1,652,140	$2,179,893	$7,944,443
Indirect effect	5.0	$241,344	$347,209	$621,995
Induced effect	5.6	$213,334	$391,859	$647,051
Total effect	36.2	$2,106,819	$2,918,961	$9,213,489

Polk County

All paper Manufacturing	26 Employees	0.7% of all county manufacturing employment	1 Establishment	$10,618,402 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (1 establishment)*				
Direct effect	25.7	$1,273,475	$2,024,185	$10,618,402
Indirect effect	8.0	$339,249	$525,200	$1,101,769
Induced effect	6.7	$214,317	$408,956	$765,216
Total effect	40.3	$1,827,041	$2,958,340	$12,485,386
***Pulp and paper mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paper bag & coated & treated paper manufacturing** (1 establishment)*				
Direct effect	25.7	$1,273,475	$2,024,185	$10,618,402
Indirect effect	8.0	$339,249	$525,200	$1,101,769
Induced effect	6.7	$214,317	$408,956	$765,216
Total effect	40.3	$1,827,041	$2,958,340	$12,485,386
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Portage County

All paper Manufacturing	526 Employees	11.0% of all county manufacturing employment	3 Establishments	$407,069,304 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (3 establishments)				
Direct effect	526.1	$49,712,747	$96,478,017	$407,069,304
Indirect effect	513.0	$31,676,367	$50,775,325	$97,233,579
Induced effect	366.5	$14,362,633	$26,891,569	$46,345,414
Total effect	1,405.6	$95,751,748	$174,144,911	$550,648,297
Pulp and paper mills (2 establishments)				
Direct effect	518.3	$49,056,105	$95,600,258	$403,327,315
Indirect effect	508.1	$31,412,716	$50,375,290	$96,498,592
Induced effect	362.4	$14,202,942	$26,592,536	$45,830,061
Total effect	1,388.9	$94,671,763	$172,568,085	$545,655,968
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	7.8	$656,642	$877,759	$3,741,989
Indirect effect	4.9	$263,652	$400,035	$734,987
Induced effect	4.1	$159,691	$299,032	$515,353
Total effect	16.8	$1,079,985	$1,576,826	$4,992,329
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Price County

All paper Manufacturing	202 Employees	9.1% of all county manufacturing employment	1 Establishment	$148,582,561 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	202.0	$14,526,213	$28,628,557	$148,582,561
Indirect effect	174.4	$10,604,852	$15,705,416	$32,423,413
Induced effect	87.7	$2,810,910	$5,582,012	$10,360,663
Total effect	464.1	$27,941,975	$49,915,985	$191,366,637
Pulp and paper mills (1 establishment)				
Direct effect	202.0	$14,526,213	$28,628,557	$148,582,561
Indirect effect	174.4	$10,604,852	$15,705,416	$32,423,413
Induced effect	87.7	$2,810,910	$5,582,012	$10,360,663
Total effect	464.1	$27,941,975	$49,915,985	$191,366,637
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Racine County

All paper Manufacturing	550 Employees	3.0% of all county manufacturing employment	7 Establishments	$262,061,288 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (7 establishments)				
Direct effect	549.5	$46,485,784	$63,568,020	$262,061,288
Indirect effect	183.4	$6,933,018	$10,045,810	$18,687,822
Induced effect	201.9	$7,561,572	$13,925,170	$23,284,445
Total effect	934.8	$60,980,374	$87,539,000	$304,033,554
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (4 establishments)				
Direct effect	471.3	$39,956,382	$53,354,651	$225,736,689
Indirect effect	166.8	$6,279,807	$9,084,236	$16,877,642
Induced effect	174.7	$6,544,983	$12,052,949	$20,153,925
Total effect	812.9	$52,781,172	$74,491,836	$262,768,256
Paper bag & coated & treated paper manufacturing (3 establishments)				
Direct effect	78.2	$6,529,402	$10,213,369	$36,324,599
Indirect effect	16.6	$653,211	$961,574	$1,810,179
Induced effect	27.1	$1,016,588	$1,872,221	$3,130,520
Total effect	121.9	$8,199,201	$13,047,164	$41,265,298
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Rock County

All paper Manufacturing	268 Employees	2.6% of all county manufacturing employment	4 Establishments	$135,714,642 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (4 establishments)				
Direct effect	266.7	$18,545,330	$26,761,760	$135,714,642
Indirect effect	249.0	$14,915,373	$22,950,483	$41,905,165
Induced effect	182.1	$7,543,933	$13,220,984	$22,985,448
Total effect	697.8	$41,004,637	$62,933,226	$200,605,255
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (1 establishment)				
Direct effect	40.6	$3,037,383	$5,840,460	$32,096,698
Indirect effect	72.8	$4,823,759	$7,462,069	$13,616,073
Induced effect	45.2	$1,872,867	$3,281,816	$5,705,050
Total effect	158.7	$9,734,009	$16,584,344	$51,417,821
Paperboard container manufacturing (3 establishments)				
Direct effect	226.0	$15,507,947	$20,921,299	$103,617,944
Indirect effect	176.2	$10,091,614	$15,488,414	$28,289,092
Induced effect	136.9	$5,671,066	$9,939,168	$17,280,398
Total effect	539.1	$31,270,628	$46,348,882	$149,187,434
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Rusk County

All paper Manufacturing	82 Employees	4.7% of all county manufacturing employment	1 Establishment	$40,596,681 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (1 establishment)*				
Direct effect	82.0	$3,277,300	$6,536,602	$40,596,681
Indirect effect	53.1	$2,656,381	$4,149,870	$9,144,403
Induced effect	20.2	$578,885	$1,186,074	$2,271,925
Total effect	155.3	$6,512,567	$11,872,546	$52,013,009
***Pulp and paper mills** (1 establishment)*				
Direct effect	82.0	$3,277,300	$6,536,602	$40,596,681
Indirect effect	53.1	$2,656,381	$4,149,870	$9,144,403
Induced effect	20.2	$578,885	$1,186,074	$2,271,925
Total effect	155.3	$6,512,567	$11,872,546	$52,013,009
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paper bag & coated & treated paper manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Sauk County

All paper Manufacturing	1 Employees	0.1% of all county manufacturing employment	1 Establishment	$1,050,731 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing *(1 establishment)*				
Direct effect	1.2	$661,248	$663,398	$1,050,731
Indirect effect	0.5	$27,466	$44,173	$78,410
Induced effect	3.4	$132,468	$246,425	$420,540
Total effect	5.0	$821,182	$953,995	$1,549,680
Pulp and paper mills *(0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills *(0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing *(0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing *(1 establishment)*				
Direct effect	1.2	$661,248	$663,398	$1,050,731
Indirect effect	0.5	$27,466	$44,173	$78,410
Induced effect	3.4	$132,468	$246,425	$420,540
Total effect	5.0	$821,182	$953,995	$1,549,680
Stationery paper product manufacturing *(0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing *(0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing *(0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Sawyer County

All paper Manufacturing	63 Employees	8.6% of all county manufacturing employment	2 Establishments	$27,682,938 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (2 establishments)*				
Direct effect	63.0	$3,766,167	$5,495,225	$27,682,938
Indirect effect	22.7	$869,232	$1,3656,349	$2,925,294
Induced effect	22.2	$642,743	$1,241,458	$2,410,165
Total effect	107.9	$5,278,142	$8,103,032	$33,018,396
***Pulp and paper mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (1 establishment)*				
Direct effect	35.4	$2,091,070	$2,843,907	$15,797,806
Indirect effect	15.0	$559,825	$867,895	$1,843,769
Induced effect	12.7	$367,470	$709,809	$1,377,974
Total effect	63.1	$3,018,365	$4,421,611	$19,019,549
***Paper bag & coated & treated paper manufacturing** (1 establishment)*				
Direct effect	27.6	$1,675,097	$2,651,317	$11,885,132
Indirect effect	7.6	$309,407	$498,454	$1,081,525
Induced effect	9.5	$275,272	$531,650	$1,032,190
Total effect	44.8	$2,259,776	$3,681,421	$13,998,847
***Stationery paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Shawano County

All paper Manufacturing	180 Employees	7.5% of all county manufacturing employment	1 Establishment	$132,400,302 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	180.0	$12,944,150	$25,510,595	$132,400,302
Indirect effect	155.4	$9,449,868	$13,994,925	$28,892,150
Induced effect	78.1	$2,504,771	$4,974,070	$9,232,274
Total effect	413.6	$24,898,790	$44,479,591	$170,524,726
Pulp and paper mills (1 establishment)				
Direct effect	180.0	$12,944,150	$25,510,595	$132,400,302
Indirect effect	155.4	$9,449,868	$13,994,925	$28,892,150
Induced effect	78.1	$2,504,771	$4,974,070	$9,232,274
Total effect	413.6	$24,898,790	$44,479,591	$170,524,726
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Sheboygan County

All paper Manufacturing	998 Employees	4.7% of all county manufacturing employment	4 Establishments	$311,629,549 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (4 establishments)				
Direct effect	997.8	$69,564,223	$83,000,720	$311,629,549
Indirect effect	329.8	$17,356,454	$26,637,360	$49,190,379
Induced effect	354.3	$14,105,342	$24,682,144	$42,799,235
Total effect	1,681.9	$101,026,019	$139,883,308	$403,619,163
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (3 establishments)				
Direct effect	269.5	$21,811,167	$20,136,037	$124,210,908
Indirect effect	124.8	$6,276,650	$9,458,074	$17,355,757
Induced effect	106.4	$4,236,143	$7,414,582	$12,856,359
Total effect	500.8	$32,323,960	$42,571,777	$154,423,024
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (1 establishment)				
Direct effect	728.3	$47,753,056	$62,864,683	$187,418,641
Indirect effect	205.0	$11,079,804	$17,179,286	$31,834,622
Induced effect	247.9	$9,869,199	$17,267,562	$29,942,876
Total effect	1,181.2	$68,702,062	$97,311,531	$249,196,139

St Croix County

All paper Manufacturing	401 Employees	5.7% of all county manufacturing employment	6 Establishments	$173,338,645 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (6 establishments)				
Direct effect	400.7	$25,436,770	$40,160,842	$173,338,645
Indirect effect	181.3	$9,728,393	$14,785,148	$27,128,683
Induced effect	148.8	$5,691,900	$10,736,053	$18,507,892
Total effect	730.8	$40,857,064	$65,682,044	$218,975,219
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	9.0	$265,650	$382,400	$3,689,640
Indirect effect	5.9	$297,496	$443,221	$824,761
Induced effect	2.4	$90,924	$171,582	$295,736
Total effect	17.4	$654,069	$997,204	$4,810,137
Paper bag & coated & treated paper manufacturing (4 establishments)				
Direct effect	374.8	$24,812,641	$39,210,316	$164,432,891
Indirect effect	168.1	$9,038,648	$13,750,916	$25,222,858
Induced effect	143.0	$5,472,067	$10,321,396	$17,793,132
Total effect	685.9	$39,323,356	$63,282,629	$207,448,881
Stationery paper product manufacturing (1 establishment)				
Direct effect	16.9	$358,480	$568,125	$5,216,114
Indirect effect	7.2	$392,249	$591,011	$1,081,064
Induced effect	3.4	$128,909	$243,075	$419,024
Total effect	27.5	$879,638	$1,402,211	$6,716,202
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Trempealeau County

All paper Manufacturing	21 Employees	0.3% of all county manufacturing employment	1 Establishment	$9,951,543 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	21.1	$1,677,540	$2,247,348	$9,951,543
Indirect effect	11.1	$428,074	$695,021	$1,428,279
Induced effect	7.4	$191,924	$414,158	$831,382
Total effect	39.5	$2,297,538	$3,356,527	$12,211,204
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	21.1	$1,677,540	$2,247,348	$9,951,543
Indirect effect	11.1	$428,074	$695,021	$1,428,279
Induced effect	7.4	$191,924	$414,158	$831,382
Total effect	39.5	$2,297,538	$3,356,527	$12,211,204
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Walworth County

All paper Manufacturing	55 Employees	0.6% of all county manufacturing employment	1 Establishment	$23,984,804 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (1 establishment)				
Direct effect	54.9	$2,825,137	$3,875,393	$23,984,804
Indirect effect	31.0	$1,494,608	$2,426,871	$4,399,833
Induced effect	17.9	$595,170	$1,204,024	$2,142,290
Total effect	103.9	$4,914,915	$7,506,288	$30,526,927
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	54.9	$2,825,137	$3,875,393	$23,984,804
Indirect effect	31.0	$1,494,608	$2,426,871	$4,399,833
Induced effect	17.9	$595,170	$1,204,024	$2,142,290
Total effect	103.9	$4,914,915	$7,506,288	$30,526,927
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Washington County

All paper Manufacturing	874 Employees	6.0% of all county manufacturing employment	11 Establishments	$428,866,968 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (11 establishments)				
Direct effect	874.1	$70,314,336	$96,396,922	$428,866,968
Indirect effect	567.4	$29,405,990	$44,851,269	$82,547,462
Induced effect	440.7	$18,078,881	$32,729,278	$56,561,794
Total effect	1,882.1	$117,799,206	$173,977,469	$567,976,225
Pulp and paper mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard mills (1 establishment)				
Direct effect	53.7	$3,926,533	$7,461,366	$42,145,831
Indirect effect	72.0	$4,314,246	$6,509,564	$11,874,055
Induced effect	37.3	$1,528,590	$2,768,453	$4,783,386
Total effect	163.0	$9,769,369	$16,739,382	$58,803,272
Paperboard container manufacturing (7 establishments)				
Direct effect	791.5	$64,490,729	$86,230,824	$375,749,424
Indirect effect	483.5	$24,442,870	$37,328,956	$68,803,187
Induced effect	392.2	$16,089,414	$29,125,893	$50,335,848
Total effect	1,667.2	$105,023,013	$152,685,673	$494,888,458
Paper bag & coated & treated paper manufacturing (1 establishment)				
Direct effect	16.2	$1,091,641	$1,692,426	$7,114,325
Indirect effect	6.9	$383,792	$599,429	$1,098,049
Induced effect	6.5	$266,655	$482,865	$834,405
Total effect	29.7	$1,742,088	$2,774,720	$9,046,779
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (2 establishments)				
Direct effect	12.6	$805,433	$1,012,306	$3,857,389
Indirect effect	5.0	$265,082	$413,320	$772,171
Induced effect	4.7	$194,222	$352,068	$608,155
Total effect	22.3	$1,264,737	$1,777,694	$5,237,715

Waukesha County

All paper Manufacturing	801 Employees	1.8% of all county manufacturing employment	10 Establishments	$337,053,152 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (10 establishments)*				
Direct effect	801.0	$69,191,434	$99,951,317	$337,053,152
Indirect effect	199.0	$11,548,921	$16,817,809	$27,730,601
Induced effect	288.9	$13,759,569	$24,308,188	$38,407,922
Total effect	1,288.9	$94,499,923	$141,077,314	$403,191,675
***Pulp and paper mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard mills** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paperboard container manufacturing** (3 establishments)*				
Direct effect	83.0	$7,299,774	$9,153,835	$38,373,272
Indirect effect	33.3	$1,843,003	$2,615,959	$4,304,655
Induced effect	32.4	$1,543,795	$2,729,319	$4,311,184
Total effect	148.7	$10,686,572	$14,499,114	$46,989,110
***Paper bag & coated & treated paper manufacturing** (5 establishments)*				
Direct effect	401.6	$38,889,455	$58,443,818	$187,519,154
Indirect effect	95.4	$5,565,188	$8,085,770	$13,379,156
Induced effect	159.0	$7,573,498	$13,378,796	$21,139,628
Total effect	656.0	$52,028,141	$79,908,381	$222,037,938
***Stationery paper product manufacturing** (1 establishment)*				
Direct effect	216.0	$14,240,393	$21,224,771	$78,250,085
Indirect effect	47.4	$2,791,380	$4,089,510	$6,713,010
Induced effect	61.2	$2,918,088	$5,153,844	$8,144,097
Total effect	324.6	$19,949,861	$30,468,124	$93,107,191
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (1 establishment)*				
Direct effect	100.4	$8,761,811	$11,128,897	$32,910,642
Indirect effect	23.0	$1,349,350	$2,026,570	$3,333,780
Induced effect	36.2	$1,724,188	$3,046,228	$4,813,012
Total effect	159.6	$11,835,349	$16,201,695	$41,057,435

Waupaca County

All paper Manufacturing	575 Employees	9.2% of all county manufacturing employment	2 Establishments	$312,983,627 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (2 establishments)				
Direct effect	575.0	$50,192,588	$72,848,456	$312,983,627
Indirect effect	270.2	$11,144,564	$17,227,766	$36,111,998
Induced effect	229.3	$6,847,293	$13,449,300	$25,586,201
Total effect	1,074.5	$68,184,445	$103,525,522	$374,681,825
Pulp and paper mills (1 establishment)				
Direct effect	100.0	$9,333,696	$18,198,656	$77,579,058
Indirect effect	68.0	$3,403,714	$5,355,310	$10,864,680
Induced effect	47.7	$1,424,246	$2,798,689	$5,323,240
Total effect	215.7	$14,161,656	$26,352,655	$93,766,978
Paperboard mills (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Paperboard container manufacturing (1 establishment)				
Direct effect	475.0	$40,858,893	$54,649,801	$235,404,568
Indirect effect	202.2	$7,740,850	$11,872,456	$25,247,318
Induced effect	181.6	$5,423,047	$10,650,611	$20,262,961
Total effect	858.7	$54,022,790	$77,172,867	$280,914,847
Paper bag & coated & treated paper manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Stationery paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
Sanitary paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
All other converted paper product manufacturing (0 establishments)				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Winnebago County

All paper Manufacturing	5,287 Employees	23.0% of all county manufacturing employment	36 Establishments	$3,420,565,666 Direct output

	Employment	Labor income	Value added	Output
All paper manufacturing (36 establishments)				
Direct effect	5,286.5	$520,599,395	$1,015,134,428	$3,420,565,666
Indirect effect	4078.6	$251,623,808	$376,524,213	$673,867,741
Induced effect	3,140.3	$124,479,547	$234,822,514	$402,231,192
Total effect	12,505.4	$896,702,750	$1,626,481,155	$4,496,664,600
Pulp and paper mills (3 establishments)				
Direct effect	1,266.1	$126,001,279	$243,682,208	$995,385,274
Indirect effect	1,382.0	$87,842,749	$129,143,249	$230,423,442
Induced effect	870.9	$34,520,464	$65,117,599	$111,542,106
Total effect	3,518.9	$248,364,492	$437,943,056	$1,337,350,822
Paperboard mills (1 establishment)				
Direct effect	222.3	$22,386,841	$42,341,261	$185,917,474
Indirect effect	295.7	$17,503,738	$25,944,650	$46,574,365
Induced effect	164.1	$6,503,728	$12,268,740	$21,014,619
Total effect	682.0	$46,394,307	$80,554,651	$253,506,458
Paperboard container manufacturing (12 establishments)				
Direct effect	1,507.5	$142,753,301	$189,146,352	$740,389,047
Indirect effect	997.5	$59,857,609	$88,588,262	$156,967,284
Induced effect	821.9	$32,582,546	$61,463,070	$105,282,849
Total effect	3,326.9	$235,193,456	$339,197,684	$1,002,639,179
Paper bag & coated & treated paper manufacturing (8 establishments)				
Direct effect	644.5	$64,155,501	$99,346,817	$314,477,791
Indirect effect	298.1	$18,623,727	$28,200,436	$50,920,663
Induced effect	336.1	$13,323,227	$25,134,755	$43,053,160
Total effect	1,278.7	$96,091,455	$152,682,007	$408,451,614
Stationery paper product manufacturing (3 establishments)				
Direct effect	249.7	$18,919,858	$28,364,035	$96,847,859
Indirect effect	109.0	$7,194,474	$10,679,448	$18,848,464
Induced effect	106.6	$4,225,204	$7,971,881	$13,654,273
Total effect	465.3	$30,339,536	$47,015,364	$129,350,596
Sanitary paper product manufacturing (4 establishments)				
Direct effect	1,197.4	$134,121,181	$396,757,475	$1,027,185,633
Indirect effect	914.2	$55,332,205	$86,043,185	$156,116,369
Induced effect	768.5	$30,464,411	$57,467,099	$98,438,195
Total effect	2,880.0	$219,917,797	$540,267,759	$1,281,740,197
All other converted paper product manufacturing (5 establishments)				
Direct effect	199.1	$12,272,433	$15,496,280	$60,362,589
Indirect effect	82.2	$5,269,307	$7,924,984	$14,017,154
Induced effect	72.2	$2,859,968	$5,399,370	$9,245,991
Total effect	353.5	$20,401,708	$28,820,634	$83,625,734

Wood County

All paper Manufacturing	2,064 Employees	35.7% of all county manufacturing employment	6 Establishments	$1,598,836,997 Direct output

	Employment	Labor income	Value added	Output
***All paper manufacturing** (6 establishments)*				
Direct effect	2,064.0	$203,508,322	$391,473,437	$1,598,836,997
Indirect effect	1,749.7	$101,762,896	$153,898,546	$294,029,802
Induced effect	1,309.8	$51,387,779	$89,230,200	$160,002,688
Total effect	5,123.6	$356,658,997	$634,602,183	$2,052,869,488
***Pulp and paper mills** (3 establishments)*				
Direct effect	1,809.7	$174,790,672	$340,234,419	$1,414,755,353
Indirect effect	1,541.4	$89,957,501	$136,152,334	$260,195,842
Induced effect	1,135.2	$44,534,108	$77,335,461	$138,673,572
Total effect	4,486.3	$309,285,282	$553,722,214	$1,813,624,767
***Paperboard mills** (1 establishment)*				
Direct effect	156.5	$18,562,487	$35,390,648	$136,455,225
Indirect effect	178.0	$10,025,681	$15,030,048	$28,843,110
Induced effect	123.8	$4,855,135	$8,430,199	$15,115,995
Total effect	458.2	$33,443,303	$58,850,896	$180,414,330
***Paperboard container manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***Paper bag & coated & treated paper manufacturing** (1 establishment)*				
Direct effect	83.4	$9,103,540	$14,263,687	$42,080,002
Indirect effect	26.0	$1,524,730	$2,327,981	$4,276,458
Induced effect	45.3	$1,755,555	$3,082,511	$5,528,133
Total effect	154.6	$12,403,826	$19,674,179	$51,884,593
***Stationery paper product manufacturing** (1 establishment)*				
Direct effect	14.4	$1,051,623	$1,584,683	$5,546,417
Indirect effect	4.3	$254,984	$388,182	$714,392
Induced effect	5.6	$219,980	$382,028	$684,987
Total effect	24.4	$1,526,587	$2,354,894	$6,945,796
***Sanitary paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0
***All other converted paper product manufacturing** (0 establishments)*				
Direct effect	0	$0	$0	$0
Indirect effect	0	$0	$0	$0
Induced effect	0	$0	$0	$0
Total effect	0	$0	$0	$0

Insights into Wisconsin's Pulp, Paper and Converting Industries: Results of Interviews and Surveys

In a series of interviews with pulp, paper and converting leaders and in a survey directed to this group, we gathered insights on the status of the industry and on perceived major threats and issues faced by the industry. In the section that follows, questions asked are posted in italics, with an overview of responses following each question. People interviewed and surveyed for this study were granted anonymity in order to protect confidential company information such as production volumes and employee data, and to allow respondents to speak freely when offering opinions and observations based on their experience. Accordingly, representative comments in the section that follows may be without specific attribution. Where specific attribution is included, separate permission was granted by the respondent to use the material with attribution.

Interviewees and those surveyed included people in ownership and in C-suite and other management positions at pulp, paper and paperboard mills and at a wide variety of converting operations. The companies varied in size, with employment ranging from fewer than 100 workers to more than 1,000 workers and annual sales volume ranging from low seven figures to well over $1 billion. The average industry tenure of those interviewed exceeded 25 years.

Interviews and the survey included questions about production volumes, specific products manufactured, payroll and other confidential information that was used to inform this report broadly but is not included in order to maintain confidentiality of that information.

Do you have any trouble recruiting employees who have the skills needed for the job?
Maintaining a full, adequately skilled workforce has become a major issue across the paper industry. The labor shortage is not unique to the paper industry. Carolyn Lee, executive director of the Washington-based Manufacturing Institute, commented on the prevalence of the issue in a February 2019 interview with the Minneapolis Star-Tribune. "Manufacturing is obviously a huge part of the economy in the U.S., but there is no place we go where we don't hear that companies are desperate for skilled workers," Lee said. "A baby boomer retires every 10 seconds."

The median age of a worker in pulp, paper and paperboard mills in 2018 was 47.9, according to the Bureau of Labor Statistics, and many in the industry are concerned about a "silver tsunami" of retirements.

"I think we're going to have another 20-25 percent turnover in the next five years, of production workers and craftsmen," said a manager at one paper mill.

Many within the industry said that recruitment is hampered by generational changes in society and perceptions about labor and manufacturing. People coming out of high school – and their parents – are more likely to see college and white-collar work as the preferred target.

"When you're talking about 18- or 20-year-olds, they have different expectations for the work force and what their working life looks like," a converter said. "Industry I think at large is going to have to find a way to meet those lifestyle needs. And probably the clearest example of that is the shift work that we do. It's very foreign to many people because if they didn't grow up in that kind of a household, to think about that and what that rotation might mean, and how they balance that – that's a hard one."

Others said the industry must do more to educate the public on how manufacturing has changed over the years. Yes, there is still shift work, but the work environment is cleaner and the work more varied and rewarding than it was decades ago, they explain.

"Once they're here and they understand the work, we tend to have very good retention," a manager said. "But sometimes people don't have a very good understanding of what a paper mill environment is, or they have misconceptions from what they've heard 10-15-20 years ago and we need a chance to present them what today's environment is."

Are you experiencing wage inflation?

Given the difficulty in recruiting employees, upward pressure on wages might be expected, but most respondents said wage increases have hewed closely to cost-of-living changes. This matches data from the Bureau of Labor Statistics, which indicates average compensation in the paper industry has tracked the consumer price index over the past 10 years. According to BLS data, the average annual earnings in the paper industry in 2007 were $55, 835, increasing to $65,388 in 2017. The BLS inflation index indicates that the June 2007 wage number would grow to $65,644 in June 2017, just $256 more than the actual average wage reported.

"Yes, we are seeing some pressure, but it has not been to where we've had to go beyond our normal trend of a 2-3 percent wage increase," said Ron Thiry, senior vice president and chief operating officer at ST Paper. "Entry-level wages are an area where we may need to make some moves to attract people. We currently bring people in about $16 an hour and that may not be enough to attract people to this type of operation."

Other mills and converters also reported bringing entry-level labor on board in the $16-18 per hour range, but said they quickly ratchet wages to $20 per hour or more after four to six months for those who stick, in order to retain good workers.

It typically takes $60-$70,000 to hire experienced machine operators and pay for engineering graduates starts at $60,000 and up, with some newly minted graduates getting offers of more than $90,000, according to interview responses.

What is your forecast for workforce requirements in terms of number of employees, educational achievements and other skills in the future?

Trend lines in the data earlier in this report illustrate the decline in overall employment in Wisconsin's paper industry. The data show a leveling off of that decline in recent years, and industry leaders indicate that total employment should remain fairly steady in the foreseeable future.

Although overall numbers may not be growing, the industry is hiring because workers are retiring in large numbers, in what is often referred to as the "silver tsunami." The average age of a paper mill worker is 47.9 and managers expect turnover of 15-25 percent over the next five years.

In terms of skills needed, most frequently mentioned were "problem solving" or "critical thinking." That's because work in manufacturing is more varied within a plant today, managers explain. The image of the punch press operator performing the same motions thousands of times a day is no longer accurate – those jobs have been automated. Instead, workers can expect to be cross-trained and perform multiple tasks across an operation that require those decision-making and problem-solving skills.

Jay Hunsberger, vice president of sales at Sustana, a recycled-pulp mill in De Pere, said his company looks for employees who learn fast and accept challenge.

"As a fairly lean manufacturing facility, we focus on employees who have a fair bit of education over and above what I think the average blue-collar worker may have," Hunsberger said. "We really do focus on a minimum of a two-year degree in something, a technical school or some sort of associate's degree. We run a very lean organization. We have eight people per shift. There's eight different jobs. They have to be cross-trained in at least three. We're asking people to have multiple job skills when we hire them, and they have to be able to develop the ability to learn almost every job we have."

Manufacturing production workers need solid basic math skills. The so-called "soft skills" – communication, teamwork, showing up on time – were mentioned frequently. Technical training and a mechanical background are plusses, but many managers said that more important were a positive work attitude and the ability to learn: skills can grow on the job.

What, in your opinion, are the biggest threats to paper manufacturers and converters in Wisconsin? What competitive disadvantages does the industry in Wisconsin suffer?

The most-frequently cited threats and/or Wisconsin disadvantages were:

- Shortage of qualified trade professionals such as electricians, pipefitters and instrumentation specialists
- Regulations that exceed requirements in other states, placing Wisconsin manufacturers at a competitive disadvantage
- High cost of labor and benefits compared to other areas of the country
- Transportation issues
- Aged infrastructure within the industry
- Fiber availability

Shortage of trade professionals

This issue and the need for “workforce development” came up in virtually every interview conducted. Paper mills and converters are struggling to recruit people into skilled trade jobs because demand exceeds supply.

"My greatest concern is the craftspeople," one mill manager said. “We're having a hard time recruiting journeyman electricians, pipefitters and millwrights. They're just not out there. That’s where we need to get in touch with those kids when they're in junior high, high school and get them in trades. We're going to be fighting over the same shrinking pool of resources. What we have to do is infuse that."

A converter remarked: "There are specific types of employees that are more challenging for us to get, and that's the skilled trades -- electricians and pipefitters and so forth. There aren't that many people who are leaving high school to go into that and as a consequence they are in short supply."

To fill gaps, companies are using a variety of approaches including more on-the-job training and apprenticeship programs.

"Finding skilled labor has been difficult and so for a several years now we have been incorporating training people we have on staff to do those skilled jobs,” said Adam Webster, mill manager at PCA’s Tomahawk mill. They hire many operators who may not have the needed mechanical education and then place them in an apprenticeship program.

“These are usually four-year commitments and we'll pay them to go to technical colleges to hone those skills," Webster said. “We're definitely not the only ones doing it. These programs are quite full. We have to get seats for those classes four to six months in advance. It's a big investment, so it's on us to retain them once we train them. When they hit skills, benchmarks, we do increase their pay."

Regulations

Regulations and in particular, environmental regulations, were frequently cited as concerns or issues for the pulp, paper and converting industries. Those interviewed said they understand the need for regulations and cited advancements made by industry in reducing emissions and improving water discharge quality. But there are concerns that Wisconsin’s regulatory approach puts the state’s industry at a disadvantage.

“Things that impact us but don’t impact some of our competitors in other states or locales, that hurts Wisconsin,” one manager said, mentioning areas such as higher workers compensation costs, environmental regulations and taxes. “We should be able to benchmark ourselves and say, are we competitive with other states, other locations. Where can we improve?”

A specific issue cited by a number of operators was phosphorus regulations that exceed federal standards and that many in the industry perceive as unfairly or incorrectly targeting the paper industry compared to other non-point-source phosphorus contributors. Paper mills don’t use phosphorus in the papermaking process but phosphorus is brought in with the wood; it’s part of wood chemistry.

"They keep clamping down on the limits," one mill manager said. "At some point we're going to have to invest in potentially cost-prohibitive technology to treat it. It could be a business-killer for us."

High cost of labor and benefits

The Southeast region of the United States was mentioned most often as the primary competitor to Wisconsin's paper industry, and leaders say that region's lower cost of labor and benefits provides it a competitive advantage.

Transportation

Transportation is cited as a top concern by many in the paper industry and there are several aspects to this concern.

The first relates to the trucking industry and its labor shortage. As in manufacturing, the trucking workforce is aging and being hit by retirements without adequate replacements. In fact, the median age of a truck transportation worker is 46.9, just a year younger than a paper mill worker. Simply getting enough trucking availability has become a concern within the paper manufacturing industry.

Another concern frequently mentioned was weight limits on Wisconsin roads, which may put the state at a competitive disadvantage and may also exacerbate the issue of driver shortages. Wisconsin's top weight limit is 80,000 pounds per truck (that's also the federal limit). Some other states allow higher limits; Michigan allows a maximum gross vehicle weight of 164,000 pounds with the use of 11 properly spaced axles. If each truck could haul a bigger load, fewer drivers would be needed and fewer, bigger loads would be more cost-effective, managers say.

Rail shipment difficulty was mentioned frequently, with one manager referring to rail transport as a "nightmare."

Transportation in terms of geography was cited as both an advantage and a disadvantage for Wisconsin operations and this aspect relates to the state's Midwestern location. For some operations, the central location was seen to provide a transportation advantage, because freight costs to all parts of the country can be manageable. Others said the distance from the coast created a competitive disadvantage because of transportation costs. Still others said the distance from the coasts created an advantage because it insulated them somewhat from offshore competition. The variation in responses illustrates the diversity within the paper and converting industries.

Aged infrastructure within the industry

As mentioned earlier, capital investment has accelerated recently in Wisconsin's paper industry, but industry leaders say that prior years of lean investment have created a vulnerability. Paper competes globally and China and some European countries have built new, faster and bigger paper machines that are tough to compete with. In South America, the paper industry as a whole is much younger. As one manager put it, "Everything that's down there now is new, modern and big."

Fiber availability

It may be surprising to see fiber availability mentioned as a competitive disadvantage for Wisconsin, given the state's productive forest industry that supplies wood for paper pulp. However, the growth rate for trees is faster in southern states such as Georgia and that faster growth cycle provides an advantage. It also provides an advantage in parts of South America with fast-growth-cycle forests. "In the right regions, they can plant a seedling and harvest that tree in seven years. We can't even come close to competing with that," one manager said of the South American competition. "So their cost of wood is a lot lower."

What, in your opinion, are the biggest opportunities for paper manufacturing and converting in Wisconsin?
Opportunities most frequently mentioned were:

- Packaging: As described earlier, the increase in e-commerce has driven demand for packaging materials. One mill manager called packaging "the brightest spot in the industry."
- Mill upgrades to improve competitiveness: Wisconsin is seeing some of this in the form of increased capital expenditures described earlier.
- Specialty paper and niche production: Particularly in areas where paper may displace plastic and where paper is seen as a more sustainable product by consumers, this represents a growth opportunity.
- Innovative and progressive product development
- Industry consolidation: While this may lead to job loss and plant closures, it also represents an opportunity for the industry overall, several interviewees suggested, by weeding out inefficient operations and excess capacity. This could strengthen the industry's long-term prospects. Others noted that consolidation means fewer players to potentially bring new ideas to the industry and that there has been a loss of industry experience and knowledge through the closures that have already taken place. It must also be noted that while consolidation may benefit the industry as a whole, and leave surviving operations in a stronger position, plant closures as a result of consolidation will have a negative impact on the communities served and certainly on individuals whose jobs may be lost. The relative force of this impact may vary, depending on the location of the closure. Consolidation in the Fox Valley, where papermaking businesses are concentrated, may be felt less severely than a closure in a more rural area where the papermaking business represents an outsize proportion of local employment. Workers displaced within the concentrated business area may more readily find replacement jobs, for example. See the county-level economic contribution charts for details on the degree to which papermaking contributes to various local economies, and the heat maps on pages 30-50 for information on employment trends and how churn within the industry affects areas in different ways.
- Wisconsin's education system: Those interviewed frequently mentioned the state's education system as an advantage, noting that workers here are better prepared than in many other areas of the country. "I think our secret weapon in Wisconsin is the educational system, at the high school and at the university level," one manager said. "I think we have a great educational system. Even our hourly workers are very well educated." The educational system provides an opportunity through further workforce development efforts, such as in the skilled trades, respondents said.

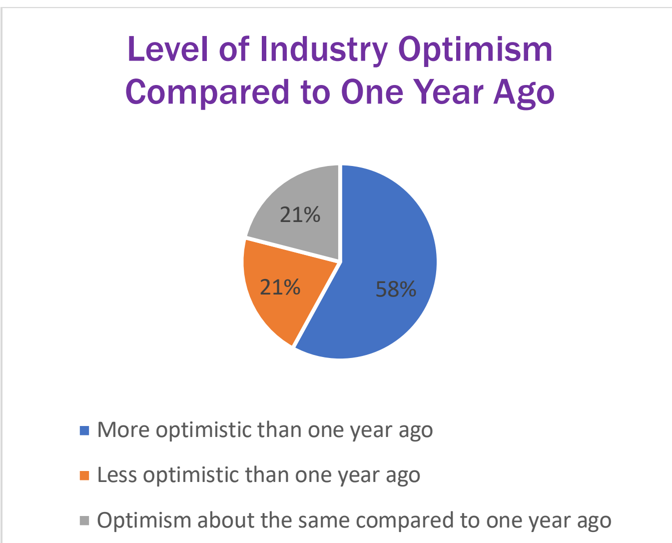
Taking the Temperature of the Pulp, Paper and Converting Industries

A series of questions sought the views of paper industry leaders on the general state of the industry.

Thinking back to one year ago, are you now more optimistic or less optimistic about the status of the pulp, paper and converting industries in Wisconsin?
Overall, there is a strong sense of optimism in the industry. Nearly six in ten respondents said they were more optimistic now than a year ago. “I’m pretty optimistic,” said one manager at a converting plant, in a response typical of what we heard. “I think [the industry decline] has leveled a bit. Just the (consumer) aversion to plastic products we're seeing today is a reason to see some optimism on the paper packaging end of things."

An owner of a paperboard plant put it this way: "I'm very optimistic because we finally turned the corner. It's been 10 years of fighting for every order. Now we've got a decent market... developing relationships, developing markets.”

The small number of respondents who found themselves less optimistic pointed to the cyclical nature of the broader economy and noted that after the longest economic expansion in U.S. history, a downturn felt inevitable. Their pessimism was based more on external factors than within the paper industry itself.



SOURCE: INTERVIEWS, SURVEYS

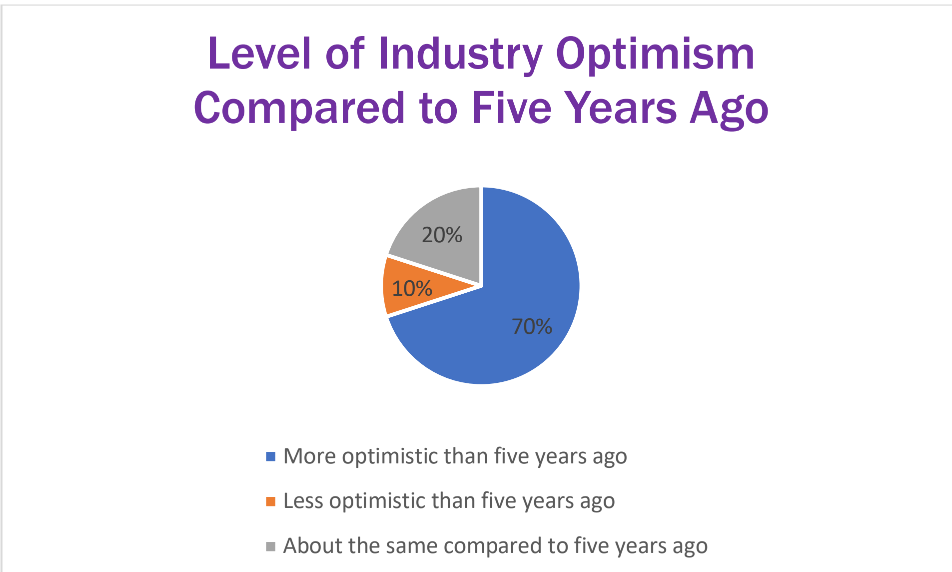
Thinking back to five years ago, are you now more optimistic or less optimistic about the status of the pulp, paper and converting industries in Wisconsin?
Industry leaders believe the worst storms have been weathered by the pulp, paper and converting industries and that prospects are better today than they were five years ago. Reasons for optimism include that capacity has been wrung out of the industry so that players remaining have better opportunities to protect profit margins.

“Even some of the younger employees are saying that for the first time in 10-15 years I can see where I can work here until I want to retire,” a mill manager said. "They're having their children apply. That's not happened in over a decade."

Another manager remarked: "To be honest with you, it's fun now. As far as what the recession did, it pushed out the people that shouldn't have been in business in the paper industry. I'm not saying that arrogantly. I'm just saying there were people in there driving prices down just to survive, and old equipment, that type of thing. It really firmed everything up."

Others pointed to efforts by various mills and converters to adjust to market conditions and to target areas of opportunity.

“Five years ago, it wasn’t clear yet how the fine-paper mills were going to reposition themselves – how or if,” said Ron Thiry, senior vice president and chief operating officer at ST Paper. “There was a lot of talk about specialty grades but that wasn’t well-defined, what type of products that was going to be. I think by some of those mills now being pointed toward packaging and containerboard, it seems to be fairly well understood directionally where they're headed, which should be good for jobs.”



SOURCE: INTERVIEWS, SURVEY

How will capital investment in the next three years compare to investments made in the past three years?

Plans for capital investment may be seen as a tangible reflection of industry optimism: Companies may be more likely to invest in what they see as promising returns. In interviews and surveys, more than 90 percent of respondents said their company’s planned capital investments would equal or exceed investments made in the prior three years. In many cases the projected increases were highly substantial both in raw dollar terms and in percentage changes.

Some of the planned investment has been significant enough to garner news coverage, such as the $500 million being invested in a new paper mill by Green Bay Packaging, the $189 million being invested by ND Paper in the Biron mill formerly owned by Catalyst, and the $100 million planned investment in 2019 alone by Verso in its Wisconsin mills – an increase from $73 million in 2018.

Beyond those headline numbers, industry executives in confidential interviews conducted for this report indicated planned investments totaling well into nine figures over the next three years in Wisconsin properties.

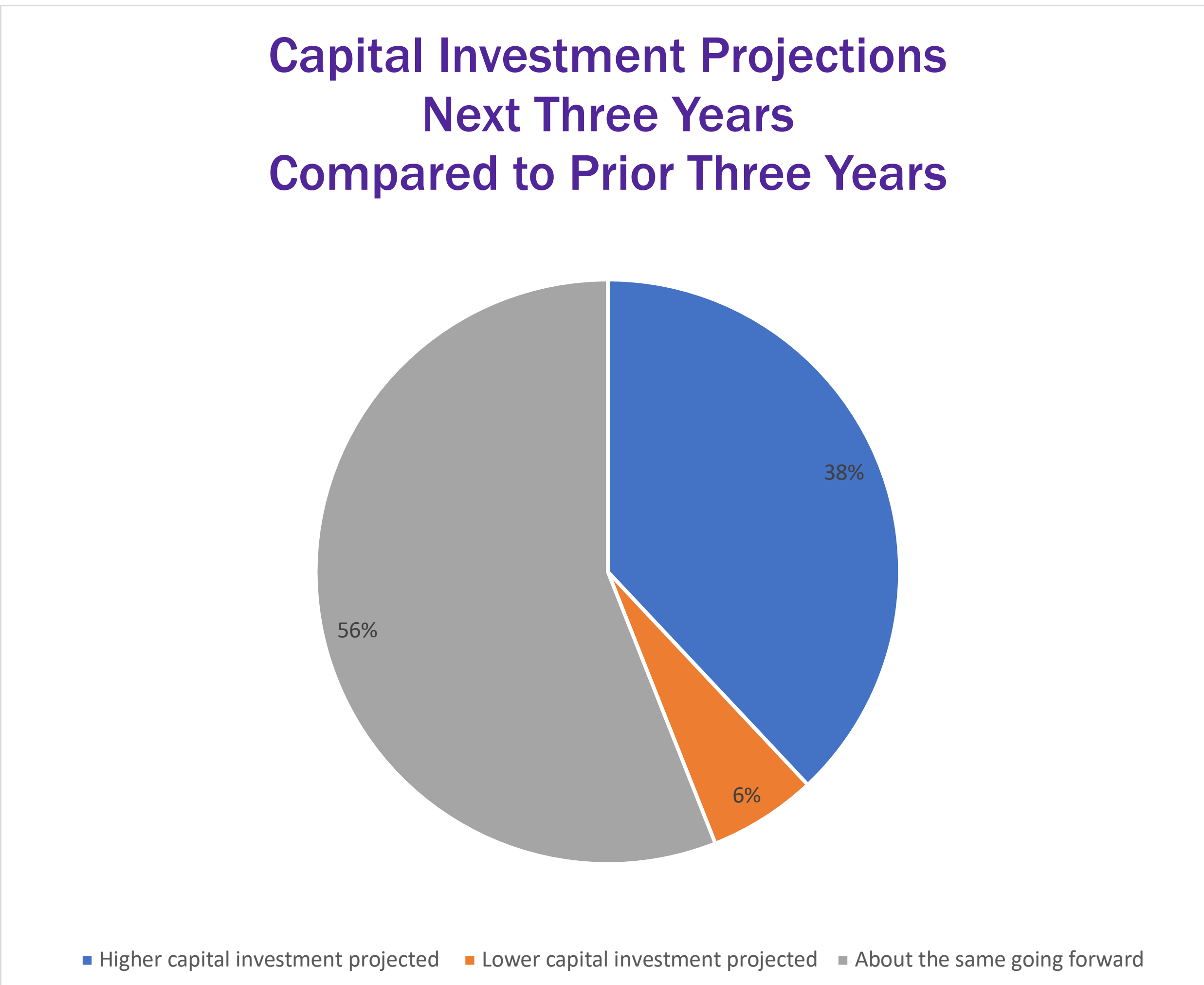
However, the picture here is not entirely positive. Many of the mills and paper converters in Wisconsin are owned by entities with operations in multiple states and in some cases, companies are choosing to spend more outside of Wisconsin after balancing many factors. In describing capital investment plans, one mill manager said expenditures at Wisconsin properties target infrastructure and efficiency improvements, but currently would be aimed mainly at "preserving the assets, just because there are better opportunities in other states." A converter said tax structures and transportation advantages in some other states make investment there more attractive and named two other states, Texas and California, in which the company was considering locating plants. Lower labor, benefit and energy costs in other regions such as the Southeast United States were cited repeatedly as enticements to move or add production outside Wisconsin.

Given the difficulties in recruiting labor, many converters are concentrating capital investment in reducing headcount or keeping headcount down while increasing output.

"Our single largest capital investment is in robotic automation equipment for packaging our material, trying to get more done with fewer people," said one converter.

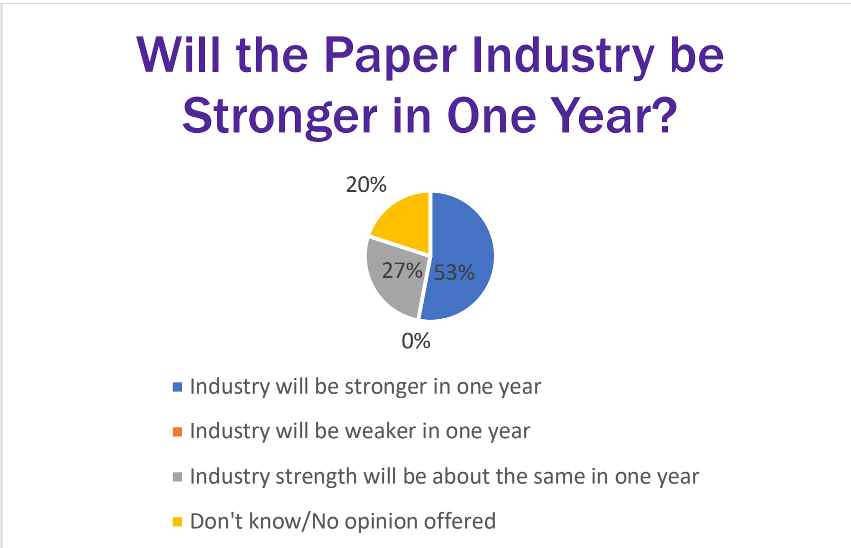
Similarly, another converter remarked that, "We're definitely accelerating our capital investment and you categorically can say that those investments would be in automation."

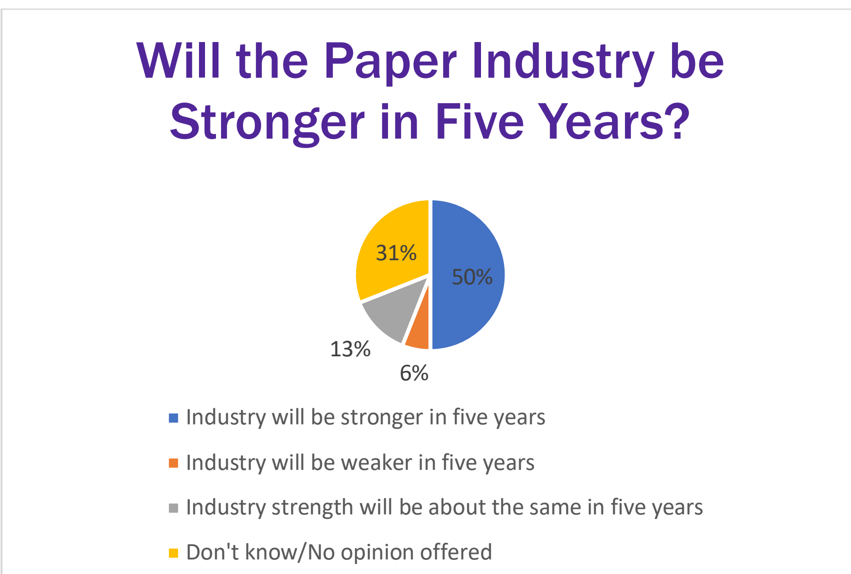
Automation is not as big a target at mills, which managers say are already running about as lean as those types of operations allow.



SOURCE: INTERVIEWS, SURVEYS

Do you think the industry will be stronger one year from now than it is today? In five years?
Most respondents believe the paper industry will be as strong or stronger in one year. Fewer people were willing to hazard an opinion on the strength of the industry five years out, having seen the ups and downs of the industry over the years (most of the respondents to interviews and surveys had more than 25 years of experience in the industry). Of those that did make a prediction, opinions were similar to the those in the one-year window.





SOURCE: INTERVIEWS, SURVEY

Adaptation and Innovation: Brief Examples in the Industry

The Appleton Coated – Midwest Paper story

Wisconsin lost nine pulp, paper or paperboard mills from 2001 to 2016, along with nearly 15,000 jobs, according to BLS data. In 2017, Appleton Coated in Combined Locks became another casualty of "technological displacement," as the move from print to digital communication is sometimes referred to. The market for the high-end coated and uncoated publishing papers produced by the mill had been shrinking and with the cost of raw materials going up, the company was squeezed beyond its capabilities. In August 2017, it filed for receivership.

But unlike other mills that closed and stayed closed, the Appleton Coated property had another chapter to write.

The only bidder at the receivership auction was Los Angeles- based Industrial Assets Corp. and it appeared that the mill's assets would be liquidated. However, union workers and others convinced the receivership judge and the new owners to consider the viability of the mill with conversion to a different product. Under an agreement, the mill was put into "hot idle," with a skeleton crew of about 100 – down from a peak of about 680 – to keep machines running and lubricated, and the steam and water still on, so the mill could be restarted.

Within months, the mill reopened under a new name, Midwest Paper Group.

"We had experimented with brown paper and they saw the market opportunity there," says John Corrigall, head of people, legal and environmental affairs for Midwest Paper. "And so on December 11, we started our Number 6 paper machine. We have three machines – 1, 6 and 7."

The brown paper is "medium liner board" and goes to various box plants, where it's made into packaging and boxes. Packaging has been a growing segment in the paper industry in recent years. The demand is driven in part by what has come to be called "the Amazon effect," representing the explosive growth in online retail, or e-commerce. Online purchasing grew by 14.2 percent in 2018, according to the U.S. Commerce Department, and the $513.61 billion spent means millions of packages for delivery.

The mill had little experience with brown paper at that point, Corrigall says, but they ran trials and got samples to customers. They continued to make some coated paper and some of the specialty, niche papers they previously sold, such as a backing paper used in the manufacture of movie screens.

The mill brought a second machine, Number 1, online in February 2018. By March, the first two machines were running at full capacity and Number 7 was running five days a week.

"We had some advantages," Corrigall said. "We did not have to do much to our machines." It was not as big a change as converting from a tissue mill, for example.

Also by March, the company and its workers had agreed to a new union contract, a two-year deal. Wages were the same as in 2016 and health benefits were included but no company pension benefits. A 401K is available for workers to contribute to.

By late summer 2018, the mill counted 310 employees, most of whom had previously worked at the plant under its former ownership. "It was very important for us to bring people back" who knew the mill and its equipment, Corrigall says. "I can't emphasize enough how the people who've come back have made this work, the people who've come back and the people who stayed. Incredible. We would not be running if those 245 bargaining-unit folks hadn't come back. They will tell you, this is home. We've got second and third generation folks working in the mill."

The Wisconsin Economic Development Corporation is providing state tax credits of up to $1.8 million provided the mill maintains a workforce of at least 300 jobs through 2022.

Meanwhile, Industrial Assets and a partner invested capital to create a pulping plant for recycled OCC, or old corrugated containers, and the pulper was running by July 2018.

“At that point, seven months [after reopening], we’re running full,” Corrigall says, with round-the-clock shifts running seven days a week. “From making no paper to running full.”

Appleton Coated’s pivot from a shrinking to a growing market may represent the adaptability needed for Wisconsin’s paper industry to survive and thrive.

Appleton Coated had started to experiment with brown paper, Corrigall says, aware that the sector was seeing increased demand. But without the shock of receivership, the changeover might not have happened. “That traumatic a switch would be very difficult to do on the fly,” Corrigall says. “Shut off your source of income, go into a new market, with a product that’s marketed differently.”

It’s not likely the mill will ever be back to 680 employees, Corrigall says. The coated freesheet manufacture and converting the mill used to do is not coming back. “That’s not the business we’re going to be in,” he says.

But for the 300-plus workers who are there, and for the communities those jobs support, the rebirth of the mill is a welcome success story in an industry that has seen its share of tough headlines in the past two decades.

Speaking to Wisconsin Public Radio in April 2018, Outagamie County Executive Tom Nelson credited the mill workers with saving the mill.

“Make no mistake, Appleton Coated’s turnaround will be remembered as one of the biggest grassroots success stories in a long time,” Nelson said.

Domtar looks to new market opportunities

Domtar has plants across the country, including two in Wisconsin, at Nekoosa and Rothschild. The signature product at these Wisconsin mills is high-quality printing and writing paper. That’s a sector hard-hit by digital displacement. The market for printing and writing paper declined greatly as people turned to electronic communication and online reading. So, what does a company do to survive?

Mike Timmer is the pulp, wood and wood yard manager, as well as the continuous improvement manager and engineering unit leader at the Rothschild mill, which has been around since 1909.

“Within Domtar, we’re kind of a niche player,” Timmer said. “We make a wide basis-weight range and we make some of the highest premium grades within Domtar. So, if you combine the ability to make heavy-weight paper and high quality, what kind of opportunities does that give you out in the market?”

Timmer pointed to Apple gift cards, which are made out of paper rather than plastic, as an example.

“If we have that capability on the machine, how can we now grow that niche?” Timmer asks. “Gift cards are one option. We’ve also done some examples of high-end packaging. When you sell a carton of golf balls, you want the packaging outside to be your advertising. We make a premium grade paper here, so how can we now change some of the characteristics of the sheet and get into packaging?”

The Rothchild mill is an integrated mill, making both pulp and paper. (It also converts the paper, making sheets.) Besides looking for new market niches for its paper, the company is looking at ways to increase profitability by finding uses for what are now byproducts of its pulp-making process.

One of those byproducts is called “red liquor,” and it contains sugars.

“There’s a big market out there for (industrial sugars) if you can figure out how to extract the sugars from the liquor, and then go out and market those,” Timmer said. “Then there’s other smaller byproducts. Call it the alcohols, the furfurals, those types of things. If you can get those types of things concentrated enough, those are actually pretty high-value products.”

Domtar has a development project underway at its Rothschild facility aimed at tapping those markets.

"There's actually a big movement right now with a lot of chemical companies to go green," Timmer said. "If you can buy your alcohol from a pulp and paper operation, that's a green, renewable, sustainable resource. There's ways that you can develop partnerships with some of those guys to offset some of the costs that it would take" to build the equipment to recover those chemicals.

Another area in which Domtar is adapting is in its workforce recruitment and training.

"We as a mill have turned half the population of this mill over in the past five years," Timmer said. "We're getting a lot younger."

The mill employs about 400 people, and Timmer said Domtar has changed how it recruits by adding online processes, which younger workers are more comfortable with, and additional training opportunities.

"We've really been focused on training systems to make sure that we've passed along the knowledge from someone who's been here for 40 years to someone who's coming in and has only been here for five years," he said.

All potential employees are given a tour of the facilities before interviews are set, "to make sure they understand a manufacturing environment," Timmer said. "We do some testing to make sure they have some basic skills, and at that time they get to sign up for an interview. You have a number of people who come in, they look at the paper machine and they go, I just don't feel comfortable. So they bow out at that point."

Once the worker is on board, he or she will immediately begin training.

"The culture of this mill is, we're a mill that doesn't have any shift supervisors," Timmer said. "When we bring guys on, we have to give them a lot of business knowledge because they're running the operation on second and third shift without supervisors. They have access to them, but they have to be able to make decisions. We've kind of leveraged what I call the Wisconsin work ethic. We give them enough knowledge so they can make business decisions. We give them parameters."

Like other mill and converting managers, Timmer said manufacturing workers today are cross-trained and may be challenged by more variability in the work place than those of a generation ago, but that variability and increased responsibility also keeps them engaged.

"We really had to put a lot of emphasis into the process of hiring, and then what we did once we got them," Timmer said.

Convergen Energy

Paper is recyclable and several mills in Wisconsin make recycled pulp. However, sometimes paper is coated with or laminated with materials that make the paper impossible or impractical to separate for recycling.

That's where Convergen Energy in Green Bay comes in. Convergen is an example of how Wisconsin's paper industry helps spawn other business development.

Convergen takes scrap paper and nonwoven material, along with nonrecyclable plastics such as film, that would otherwise be destined for a landfill and converts it to fuel pellets.

"Literally, these trucks, if they didn't come here, they would turn around and head to the landfill," said Ted Hansen, Convergen CEO.

The company does not handle any post-consumer waste. All of the material comes from manufacturing plants. For example, a company that uses labels on its products may have quantities of release liner – the label backing paper – and other scraps from the label material.

“We’re getting it from all kinds of manufacturers,” Hansen said. “A lot of times people are making packaging materials for, let’s call it Kraft Foods. Kraft is selling pizzas and you’re making the boxes, so you might be putting labels on it, printing boxes, doing all this and you’ve got the scraps. You might be using a polycoated material on it, whatever your customer has prescribed. That’s where we’re getting the material from.”

Hansen said the fuel pellets can substitute for coal or be used with coal in solid-fuel electrical generating plants, such as the plant at Weston.

“If you look at the carbon footprint of biomass, compared to paper or plastic, they all have an identical carbon footprint,” Hansen said. Because of that, the pellets are considered a renewable fuel in some states.

The company has been in business 10 years.

“When we started this business, we had to really beg people to take their waste,” Hansen said. “That changed about eight years ago, when more companies began telling their waste haulers they did not want their material going to landfills.”

But the biggest driver in the past four to five years, Hansen said, has been Walmart. The company requires suppliers to provide information on their sustainability processes.

“If someone can check the box – we’re landfill free – it gives them a competitive advantage,” Hansen said. “And so now we’re getting people coming to us and saying, we have to be landfill-free if we want to remain competitive.”

Channeled Resources

Like Convergen Energy, Channeled Resources began as an entrepreneurial venture within Wisconsin’s papermaking economic ecosystem.

Calvin Frost started the company in 1978 as a traditional recycling company, sending material to paper mills for repulping. The company headquarters are in Chicago, but its main plant is in Marathon City, Wisconsin. His daughter, Cindy White, joined the company in 1987. She had worked at Procter and Gamble in the sales division.

Her switch to the waste-handling company was “a huge culture shock,” White said. Margins were thin and trying to stay solvent in the recycling business was a brutal undertaking in the 1980s.

At one point in the mid-1990s, her father came across some fairly large rolls of coated and treated paper that a company was discarding and that was headed for a landfill. The treatment made the paper non-repulpable but Frost told the company he’d take it and see if he could figure a use for it. That paper turned out to be silicone-coated release liner. It was the beginning of the company’s evolution into different markets.

“We would get whatever the paper mills or coating companies wanted to send us,” Cindy said. “So it would be off-spec, poor quality, returns from customers, start-up material from their machines, internally rejected material.”

They worked to find secondary markets for the material, with Frost literally traveling the world, to China, India and elsewhere.

“We found some simple applications for it in the U.S and we were able to make some pretty good money,” White said. “Now probably 65 percent of what we get goes overseas into very low-end applications. We’re still doing this all today. We get about 120 truckloads per month of material, all seconds. Before we came along, it was all going to the landfill. Now, 30 years later, we have lots of competitors.”

Although they are able to broker massive amounts of material, they do get material they are not able to either recycle or repurpose and resell and that goes to the waste-to-energy market. Convergen Energy is their outlet for material that can't be resold or repulped.

But of course, companies don't want to generate waste; they want their processes to be as efficient as possible. Paper companies and converters are constantly improving their methods in order to generate less waste.

"Every year we see less and less good stuff coming in the door," White said.

That has spurred another evolution in the company. Frost got his hands on a used coating machine and Channeled Resources began making release liner paper itself. It also now makes pressure sensitive labels and tape. In addition to its Marathon City converting facility, the company has a coating plant in Toronto with three small machines but plans to move part of that business to Wisconsin.

"What we're doing now in Wisconsin is we're putting in a big machine, a 65-inch-wide silicone coater machine," White said.

The goal is to reduce the size of the Toronto operation and bring the business closer to home. Because they buy a lot of their paper from Wisconsin mills, the freight savings alone would be substantial, White said.

"We're trying very hard, consciously, to change the focus of the business away from seconds, to making product and controlling our destiny," White said.

A company that started out recycling waste generated by the paper industry has evolved to become part of the industry itself, one of more than 200 converters operating in Wisconsin.

Terms and Definitions

Grade: designation connoting the type of paper and often including additional information such as the weight of the paper. For example, in the printing and writing paper sector, grades may be defined by end-uses, such as offset, which is used in letterpress printing, or digital, which is designed for digital printing.

Parent roll: the paper roll that is produced on a paper machine; the paper before it is converted into specific products such as bath tissue, labels, writing tablets and countless other applications. Parent rolls are the width of the paper machine, which varies but is commonly around 19-24 feet in the U.S. The diameter of the roll may be around 40 inches and the weight varies depending on the grade of paper. A roll of uncoated freesheet text may weigh about 10,000 pounds, for example. The largest paper machine in the world, built by Voith and located in China, creates a roll 39.95 feet wide.

NAICS: North American Industry Classification System, used by government statistical agencies to organize industry data.

Converters/Converting: This sub-classification in the paper industry identifies activities involved in taking paper or paperboard and converting it to a specific product. An example would be converting paperboard to a packaging box. Paper comes off a paper machine in a parent roll and a converter will convert it into products such as printing and writing paper, bath tissue, towels, labels or any of myriad other specialty paper products, depending on the grade of the parent roll. Converting may include processes such as cutting, shaping, coating and laminating to produce the finished product.

Specialty paper: a broad term that has no one accepted definition in the paper industry. The term is used to contrast certain papers from commodity grades such as newsprint, tissue and towel, and printing and writing paper, with paper that is converted to a wide variety of applications in industry, medical, food and other arenas.

IMPLAN: Software for Economic Impact Analysis version 3.1.1001.12. Wisconsin State Package. Minnesota IMPLAN Group, Inc. This company provides economic impact data and analytical software; its data and software were used to analyze county-level economic impacts for this report.

Sources

Sources for this report include:

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Paper industry professionals who were interviewed and/or surveyed

U.S.A. Trade Online

U.S. Bureau of Economic Analysis

U.S. Bureau of Labor Statistics

U.S. Census Bureau

U.S. Department of Commerce

Various published media reports in newspapers, magazines and websites

Websites of pulp, paper and converting companies