

STATE OF  
MANUFACTURING  
**RHODE ISLAND**

2022

## ACKNOWLEDGEMENTS

### MANUFACTURING COMMUNITY

This report represents a collaborative effort, with significant input by owners and senior leaders from manufacturing companies of all sizes and across all manufacturing subsectors. This includes 150+ responses to the Voice of Manufacturers (VOM) survey which concluded in January 2022.

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Courtesy of Goodwin-Bradley, Hexagon, High Purity New England, igus, NIST MEP, Propel, LLC, Taco Comfort Solutions, Wright's Dairy Farm & Bakery, and Steve Mason Photographer.

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Industrial Revolution in Rhode Island, 18th Century

## LETTER FROM POLARIS MEP

Manufacturing in Rhode Island has a rich history. Starting with Samuel Slater leading the industrial revolution in Pawtucket, RI, to decades of dominating the textiles and jewelry industries, to today's advanced manufacturing processes, and innovations in the blue technology sector, high-tech submarine-building and so much more. Manufacturing has been the foundation and driver for the evolution of our state.

The past three years have brought unprecedented challenges to the national manufacturing industry and Rhode Island was not an exception. The COVID-19 pandemic dramatically changed labor, supply chains and working environments while demand for goods increased. Rhode Island manufacturers answered the call!

It's our great pleasure to release the 2022 Rhode Island State of Manufacturing report which details the current environment and their thinking about future prospects.

The manufacturing industry has gone through many cycles in the past. Throughout, Polaris MEP has worked diligently to sustain and grow manufacturing companies in Rhode Island. A coalition of the Rhode Island Manufacturers Association, Polaris MEP, policy makers, suppliers and service providers, educators, and – most importantly – our manufacturers, could be even more powerful.

A focused and unified effort to implement the actions recommended by the State of Manufacturing study is the way we can, together, build a brighter future.

Polaris MEP Advisory Board:

Wendy Mackie, Interim Chair – Marine Retailers Association of the Americas  
Pete Kaczmarek – Mearthane Products Corporation  
Janet Raymond – Greater Providence Chamber of Commerce  
Leslie Taito – Taco Comfort Solutions



“We cannot have a healthy economy without manufacturing. We make things. That’s how this country has gotten strong from the beginning.”

– Mikko Hurley,  
Shapes and Powders Strategist, Saint-Gobain



# LETTER FROM RIMA

The Rhode Island Manufacturers Association (RIMA) jumped at the chance to partner on this study as a way to shine the light on the achievements of the manufacturing industry.

Our manufacturers are regularly recognized as individuals for the way they lift their local communities. Leaders share their prosperity with their neighbors. They play key roles in civic groups.

During the last three years, Rhode Island's manufacturers also have been praised for their determination, resiliency, and ability to overcome obstacles. As the advocate for the Ocean State's 1,400+ manufacturers, RIMA worked diligently during the pandemic to ensure our manufacturing sector remained open. We worked with the various state departments and Polaris MEP to provide solutions and offer answers to their concerns.

Our economy came out of the pandemic strong due to those efforts.

However, manufacturing often gets little credit for its contributions as a sector. The industry offers stable careers with good pay and benefits. It offers creative jobs and career growth. Manufacturing powers RI's economy.

This study is an important tool in RIMA's efforts to advocate for our members and the entire state. The State of Manufacturing 2022 report emphasizes the critical role manufacturing plays in economic development. We will use the insights in this report to push further into a new period of growth that benefits every Rhode Island resident.

Dave Chenevert  
Executive Director, Rhode Island Manufacturers Association



## ECOSYSTEM SUPPORTS

A robust manufacturing-related ecosystem exists in Rhode Island to support the manufacturing community and focus on data-driven recommendations to strengthen the manufacturing community.

### An abridged list in alphabetical order:

- 401 Tech Bridge
- Association of Independent Colleges & Universities of Rhode Island
- Greater Providence Chamber of Commerce
- Polaris MEP
- Rhode Island Black Business Association (RIBBA)
- Rhode Island Commerce Corporation
- Rhode Island Hispanic Chamber of Commerce
- Rhode Island Manufacturers Association (RIMA)
- Rhode Island Marine Trades Association (RIMTA)
- Rhode Island Procurement Technical Assistance Center (RI PTAC)
- Small Business Administration (SBA)
- Southeastern New England Defense Industry Alliance (SENEDIA)

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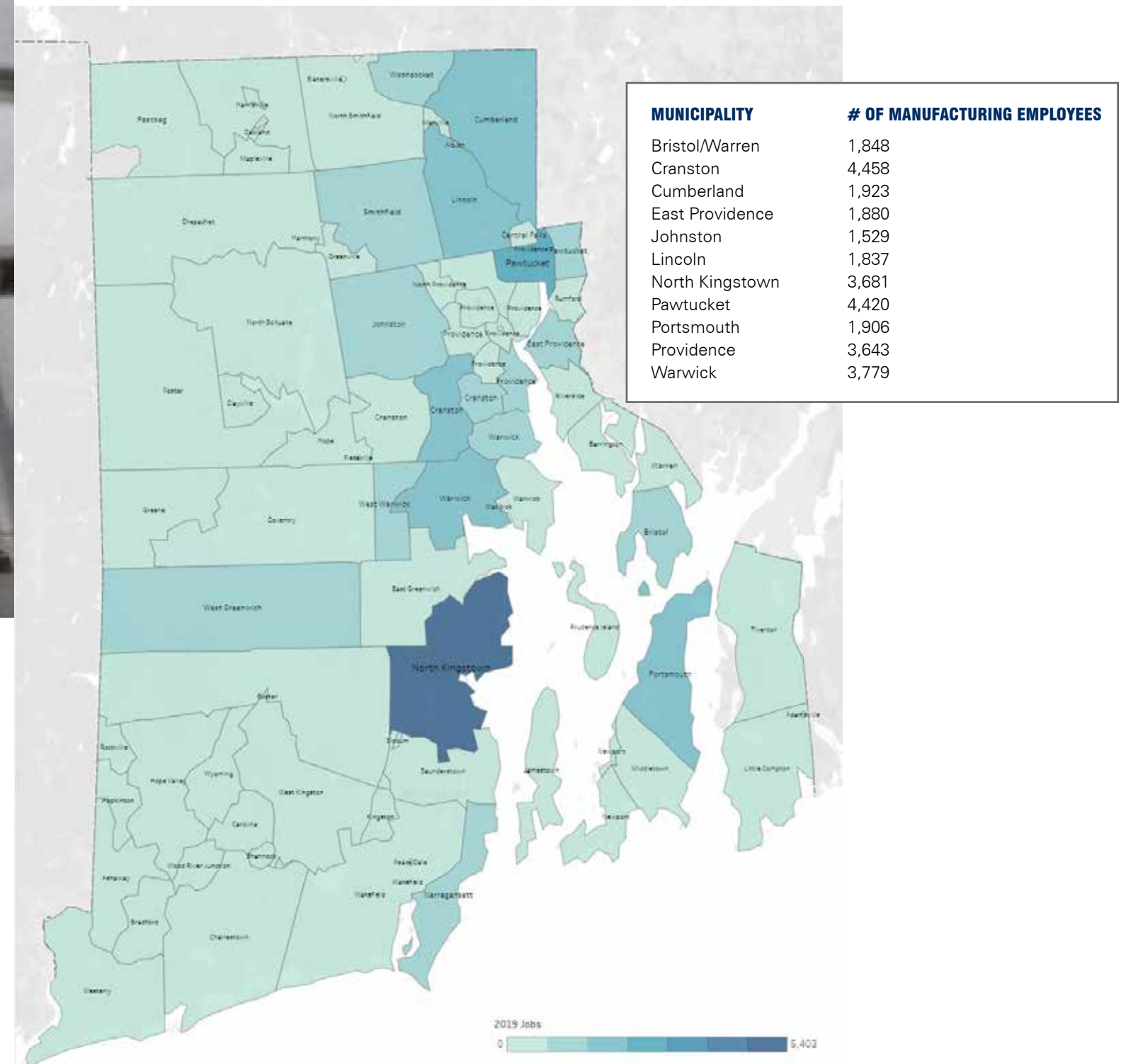
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## Rhode Island Manufacturing Jobs by Zip Code, 2019

Providence County contains the lion's share of manufacturing employment (21,400 jobs or 53.0% of the total manufacturing employment). Washington County contains fewer manufacturing jobs (8,900). However, Washington County holds a higher concentration of manufacturing jobs per total residents.



## EXECUTIVE SUMMARY

The 2022 *State of Manufacturing Rhode Island* report is a first-of-its-kind publication which fuses the results of a formally conducted economic impact study with direct survey responses from Rhode Island's manufacturing community.

By tapping into the Voice of Manufacturers (VOM), common trends, strengths and challenges emerged. Survey respondents breathe life into raw economic data to provide the reader with a deeper understanding of Rhode Island's manufacturing landscape and the backdrop for the study's key findings on leveraging regional resources, accelerating growth and innovation, and cultivate the next generation workforce.

As the following pages will demonstrate, the state of Rhode Island manufacturing is strong. The recommended action items located in each section and summarized in the conclusion are designed to position Rhode Island manufacturing businesses to be globally competitive in this post-pandemic, technology-driven manufacturing era.

"Nothing beats the can do attitude of the people in Rhode Island. People want to get it done and want to do their jobs well."

— Andrea Antinarelli, Plant Manager, Lucas-Milhaupt



# RHODE ISLAND MANUFACTURING LANDSCAPE

This report provides a bird's eye view of the manufacturing sector as a key economic driver for Rhode Island.



## ECONOMIC SIGNIFICANCE

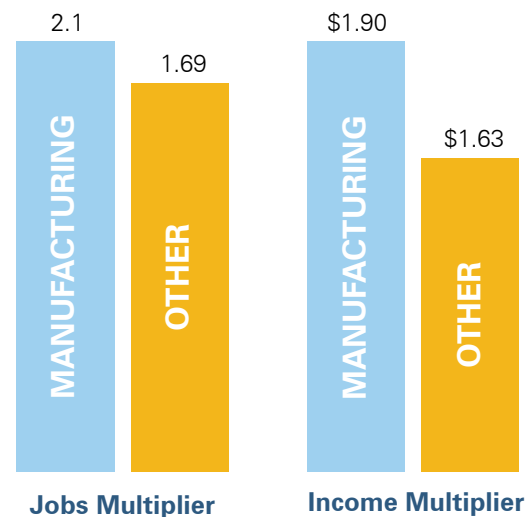
**Manufacturing plays a critical role in the Rhode Island economy.**

- Contributes \$5.6 billion in Gross Domestic Product (GDP) or 9.1% of the state's total GDP.
- Employs nearly 40,000 individuals or approximately 8.5% of the total workforce.
- Compensates workers on average \$80,000 per year, 13% higher than the statewide average.

**Manufacturing produces higher multiplier effects for jobs, earnings and sales than the average for all other industries in the state.**

- Every one job in manufacturing is responsible for sustaining 1.1 additional Rhode Island jobs.
- Every \$1 in pay to manufacturing workers results in an additional 90 cents of income for other Rhode Island workers.
- Every \$1 in sales in manufacturing produces 53 cents in additional sales for Rhode Island businesses.

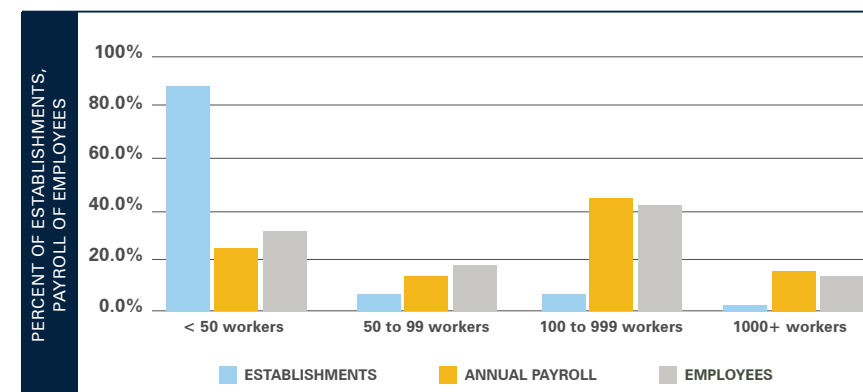
## MULTIPLIER EFFECTS OF MANUFACTURING V. OTHER INDUSTRY SECTORS IN RHODE ISLAND



"The best part of manufacturing in Rhode Island is the support programs. It eases the burden on us so we can focus on growing and improving the business."

– Don Foisy, Director of Operations, Mahr

## DISTRIBUTION OF ESTABLISHMENTS, PAYROLL AND EMPLOYEES



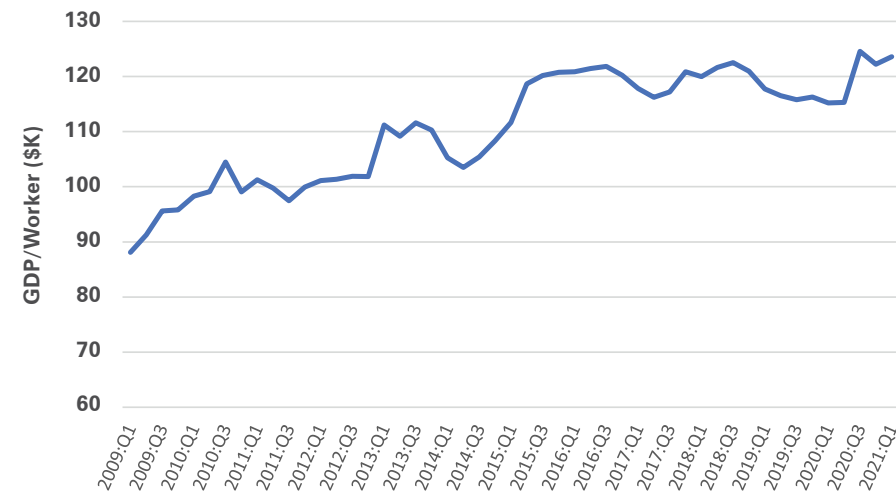
**RHODE ISLAND MANUFACTURING COMPANIES COME IN ALL SHAPES AND SIZES.**

86.5% of all businesses employ fewer than 50 workers. These small businesses compose 23.5% of total payroll and 29.9% of all employees. However, firms in the 100 to 999 worker range account for the highest share in terms of total payroll (47.4%) and total employees (41.8%).





**GDP PER WORKER IN MANUFACTURING 2009-2021**



Productivity continues to ascend in Manufacturing. Since the close of the Great Recession, GDP per worker has increased from \$88,100/worker to \$123,620/worker, an increase of 40.3%. Productivity has continued to increase in other industries as well, though at a lower rate than in Manufacturing (36.1% for all other industries).

Like the rest of the nation, Rhode Island suffered significant manufacturing job losses during the 2020 recession, losing more than 2,500 jobs between 2019 (Q4) and 2020 (Q3). However, 24 industry groups performed better in Rhode Island than in the US between 2019 and 2020.

**Notable industry groups included:**

- Navigational, Measuring, Electromedical and Control Instruments Manufacturing
- Printing and Related Support Activities
- Fabric Mills
- Plastics Product Manufacturing
- Medical Equipment and Supplies Manufacturing
- Pharmaceutical and Medicine Manufacturing

The sector surged back with easing of COVID-19 restrictions. Between August 2020 and August 2021 manufacturing contributed the second largest number of jobs among all sectors, equivalent to 13% of all net new job growth. Boat Building & Repairing is responsible for 5,100 jobs, and the highest growth in terms of net job growth over the past five years and the past ten years (+1,800 jobs between 2009 and 2019).



MANUFACTURING-RELATED EMPLOYMENT CLUSTERS AS DEFINED BY EMPLOYMENT SHOW THE DIVERSITY OF MANUFACTURING SUBSECTORS.

Location Quotients (LQ) show the state’s manufacturing specialization relative to the nation. A LQ of 1.0 means that the region and the nation are equally specialized in this area. Precious Metals Manufacturing at one point employed nearly 10,000 people in the state. By 2019 that number dropped to 2,800. As an indication of how niche the industry is, Rhode Island has a LQ of 31.35 in this cluster.

**MANUFACTURING-RELATED CLUSTERS IN RHODE ISLAND**

TITLE	2019 JOBS	2019 LQ
Boat Building & Repairing	5,111	10.87
Precious Metals	2,826	31.35
Information Technology and Analytical Instruments	2,476	0.56
Metalworking Technology	2,399	1.50
Plastics	2,338	1.08
Textile Manufacturing	2,087	3.13
Printing Services	1,745	1.17
Upstream Metal Manufacturing	1,720	1.29
Food Processing and Manufacturing	1,692	0.44
Production Technology and Heavy Machinery	1,601	0.50
Paper and Packaging	1,319	1.10
Medical Devices	1,303	1.32
Downstream Chemical Products	1,201	1.32
Biopharmaceuticals	1,194	1.19
Downstream Metal Products	1,182	0.78
Lighting and Electrical Equipment	1,090	1.02
Aerospace Vehicles and Defense	1,013	0.46
Construction Products and Services	922	0.28
Recreational and Small Electric Goods	681	1.06
Furniture	645	0.50
Livestock Processing	601	0.33
Wood Products	494	0.38
Automotive	481	0.14
Communications Equipment and Services	372	0.37
Vulcanized and Fired Materials	360	0.42
Apparel	278	0.57
Leather and Related Products	219	1.68
Fishing and Fishing Products	201	1.21
Upstream Chemical Products	55	0.10



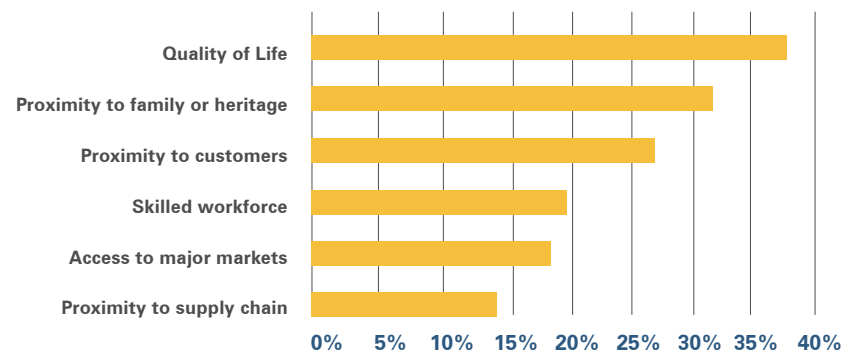


## MANUFACTURERS OUTLOOK

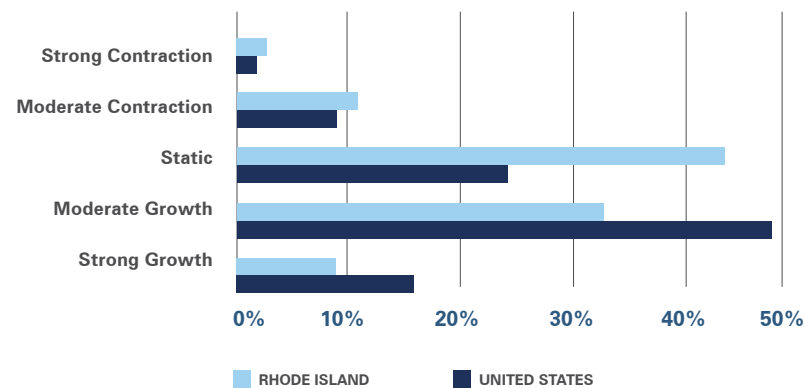
An economic outlook provides an assessment of the economy in the context of risk and uncertainty that can threaten growth. The Voice of Manufacturers (VOM) survey included questions about economic outlook as well as the perceived competitive advantages of doing business in Rhode Island.

VOM respondents identified quality of life, proximity to family members or heritage, and proximity to customers as the top competitive advantages that Rhode Island offers their manufacturing business.

### COMPETITIVE ADVANTAGES FOR DOING BUSINESS IN RHODE ISLAND



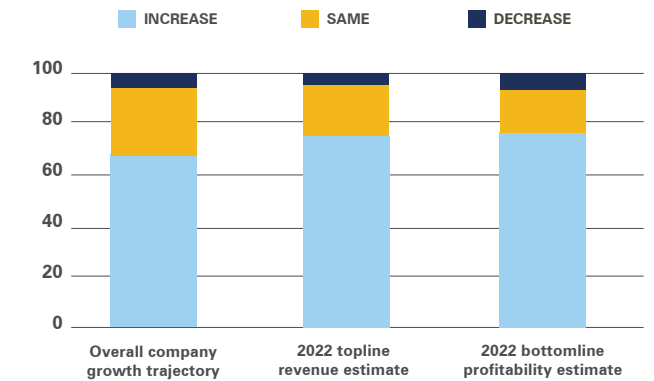
### 2022 OUTLOOK: NATIONAL VERSUS STATE PERSPECTIVE



Rhode Island's manufacturing leaders hold a conservative overall outlook for manufacturing growth in the state as compared to their outlook for the nation.

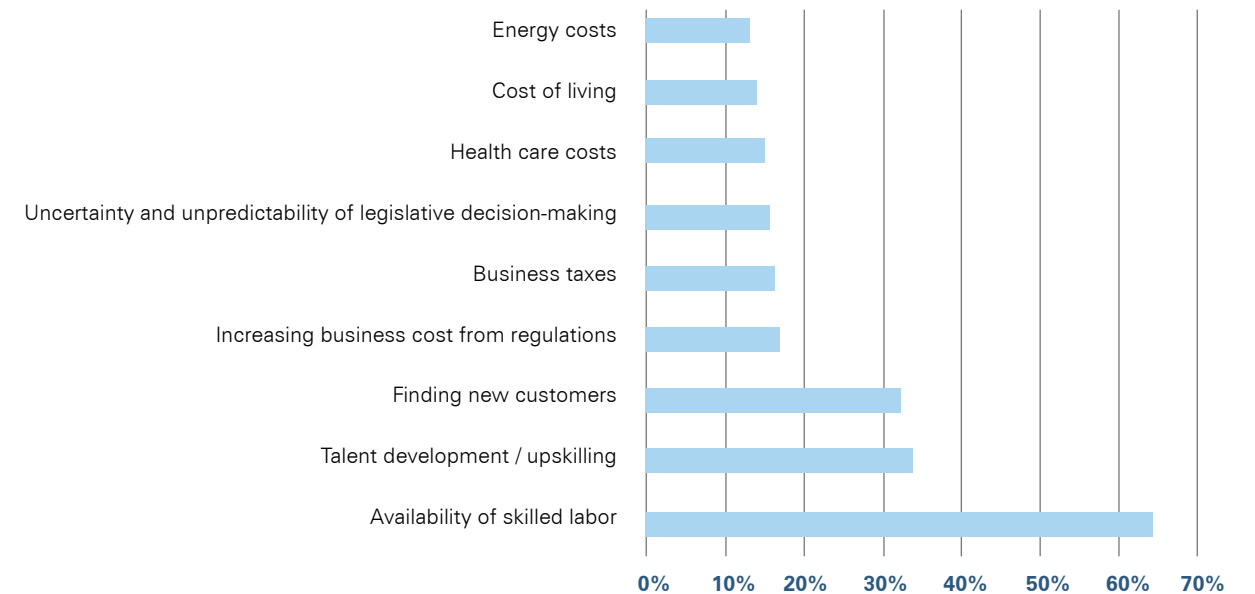
However, the majority of these manufacturers felt their companies were on a positive growth trajectory overall with anticipated increases during 2022 to their top and bottom lines.

### 2022 OUTLOOK: RHODE ISLAND MANUFACTURERS



RI VOM respondents reported a positive economic outlook for their companies. Survey participants identified people-related issues as the top factor limiting growth followed by developing new markets and business costs.

### TOP THREE FACTORS THAT LIMIT YOUR COMPANY'S GROWTH



## RECOMMENDATIONS

Align with RI Innovates 2.0 Economic Development strategy

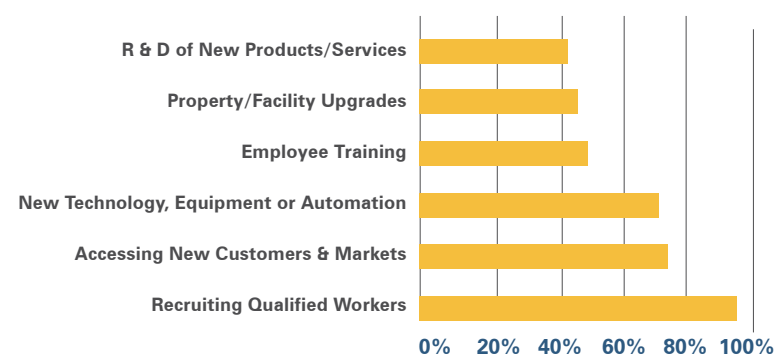
Connect social responsibility efforts such as affordable housing and public transportation to economic opportunity available in the manufacturing sector



# LEVERAGING REGIONAL RESOURCES

Nearly three out of four RI VOM respondents reported that they planned to introduce a new product or service in 2022. Of these companies, nine out of 10 will base production for this new product or service in Rhode Island – which leads to more direct and indirect economic impact.

## TOP GROWTH DRIVERS FOR RHODE ISLAND MANUFACTURERS



When asked to identify a single driver for future growth, manufacturing leaders gave nearly equal weight to two areas: *market and product development* and *people-related factors*.

## RHODE ISLAND HAS STRONGEST PANDEMIC RECOVERY IN THE REGION, BUT GAPS STILL GIVE LARGE OPPORTUNITY.

Exploring supply chain synergy may expand opportunities for new products, services and markets. For example, analyzing which industries account for the largest amount of dollars leaving the state to purchase products. These “gaps” could be plugged either by recruitment of businesses from out of state, through the expansion of product lines by Rhode Island companies to address demand or both. The single largest gap is for Plastics Material & Resin Manufacturing. Fortunately, some in-state businesses address this need, to the tune of \$75.2 million/year, but a gap of \$143.0 million still exists. Others on the list include an array of chemical and plastics, wood products, metals and machining and a handful of others.



## RECOMMENDATIONS

Activate manufacturing leaders and align policy and resources to support statewide economic development strategy.

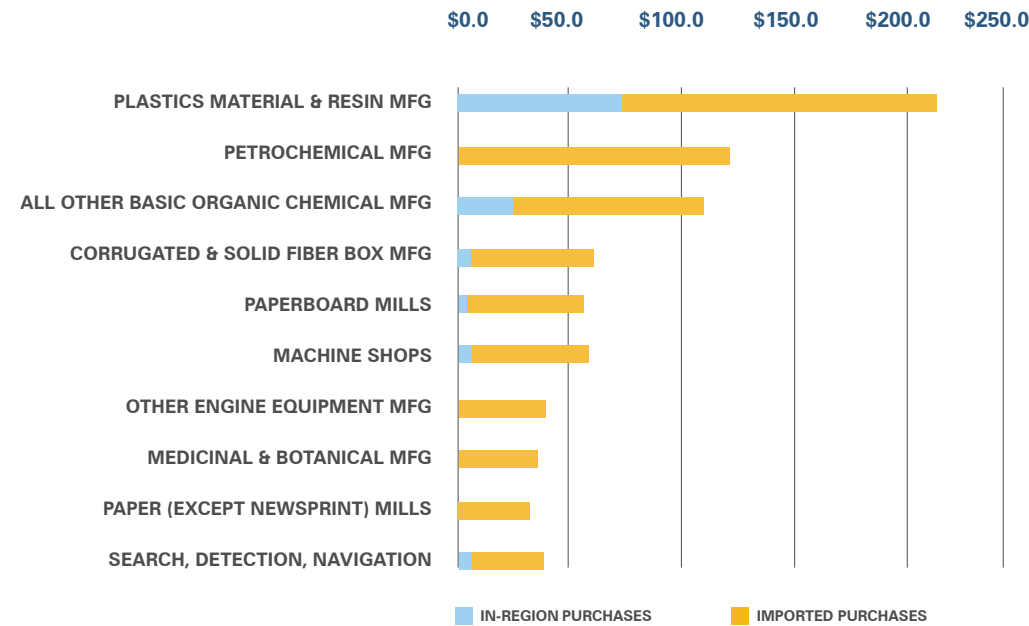


## LEVERAGING REGIONAL RESOURCES

Federal contracts and suppliers represent another natural area of exploration. Manufacturing is driven not just by private sector purchases, but also by government needs, and in particular the federal government. Department of Defense (DoD) contracts account for 89.1% of all manufactured product purchases in Rhode Island between fiscal year 2017 and fiscal year 2021, increasing by an average of 376% year-over-year for the past two fiscal years. Each state has a different profile of products and services that are provided to federal agencies. Rhode Island is among a handful of states with a uniquely high proportion provided to the DoD, but there are many other agencies purchasing products from manufacturing suppliers as well.

Orders were executed by over 2,700 prime contractors in Rhode Island during fiscal year 2021. The largest contractors include appearances by national defense contractors such as Raytheon and SAIC as well as locally owned firms such as Mikel, Inc. and Rite Solutions – both of Middletown.

### LARGEST MANUFACTURING-BASED SUPPLY CHAIN PURCHASES FROM OUTSIDE OF RHODE ISLAND



“Rhode Island is the birthplace of the American Industrial Revolution, and to this day continues a long tradition of manufacturing excellence.”

– Senator Sheldon Whitehouse

RI VOM respondents identified priorities for Rhode Island lawmakers to support the manufacturing community. These recommendations mirror the factors that limited growth. Over half of the respondents identified business-friendly policies followed by expanding the qualified manufacturing talent pool – including new workers and upskilling incumbent workers.

### LARGEST MANUFACTURING PRIME CONTRACTORS IN RHODE ISLAND (FISCAL YEAR 2021)

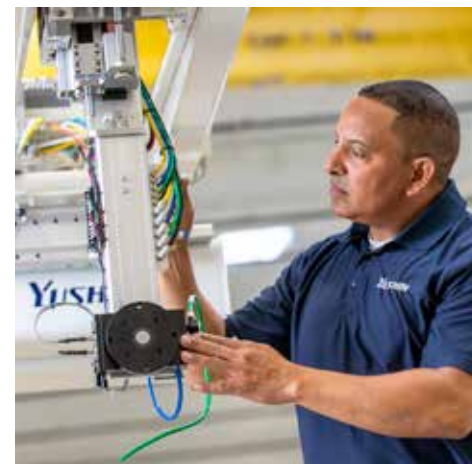
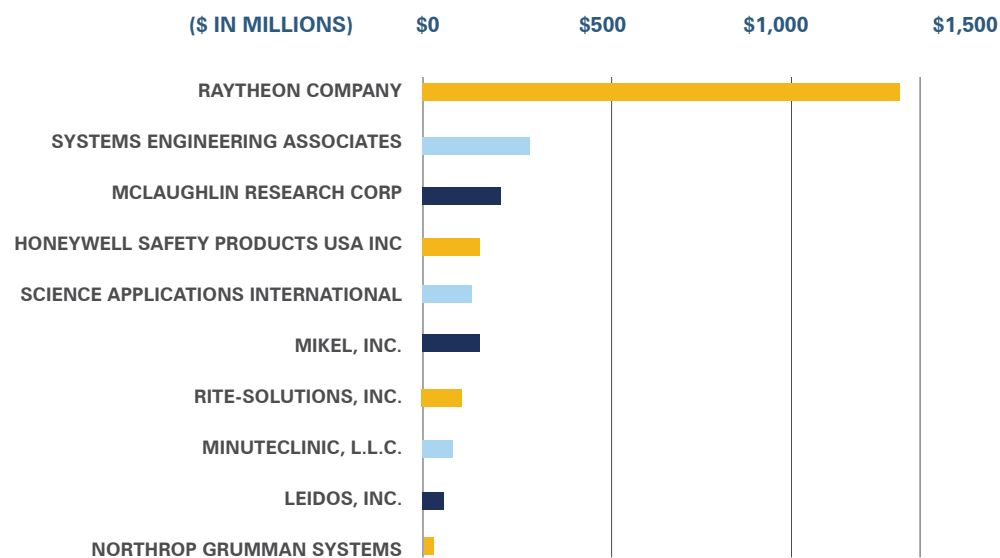
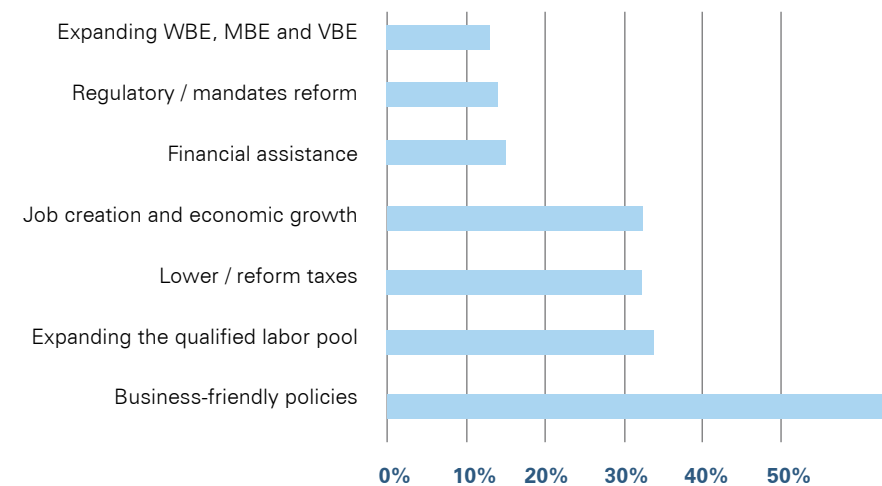


Photo by Visual Thrive

### TOP PRIORITIES FOR RHODE ISLAND LAWMAKERS TO SUPPORT MANUFACTURING



“RI doesn’t make it easy to do business. But our proximity allows us to help each other. We have access to our legislators and a great support network.”

– Steve Perry, Sr. Vice President, Darlington Fabrics



# WRIGHT'S DAIRY FARM

Wright's Dairy Farm is a growing food manufacturer; a working dairy farm that has been selling fresh milk direct to the public since 1914. Currently there are four lines of business under one roof including a very popular bakery.

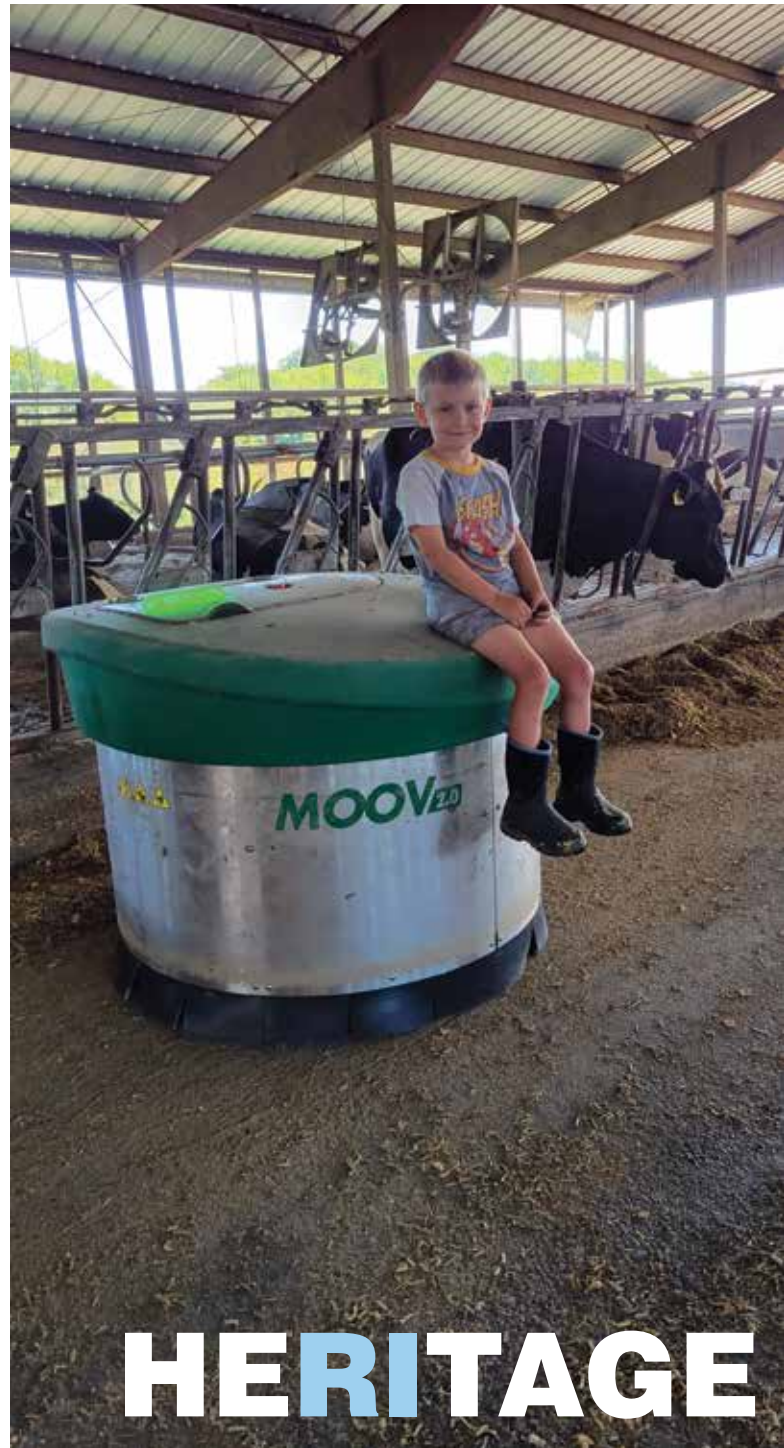
When the COVID-19 pandemic began, Wright's did not stop. In fact, they saw a higher demand for their products as more people began cooking and eating at home. In response to their struggles with systems and people development, the leadership at Wright's Dairy Farm sought to automate repeatable procedures to free up staff for responsibilities that require greater craft. One example is the addition of a Moov 2.0 robotic cow feed pusher system. As they continue to expand their ice cream production, including two recently launched self-sufficient ice cream shops, Wright's is also researching a depositing machine.

### The business leverages local and regional resources to support ongoing growth.

Cathryn Kennedy, Director of Food Operations, is active in the Rhode Island Food Policy Council. She says this gives her greater capacity to further her work and ideas, know the key players involved, and better understand the framework of the food system.

USDA Rural Development provided Wright's Dairy Farm with a Value-Added Producer Grant to stabilize ice cream production and expand sales.

In fall of 2022, Wright's will open a new ice cream production and retail space within Farm Fresh Rhode Island, a food hub which is growing a sustainable food system for the region.



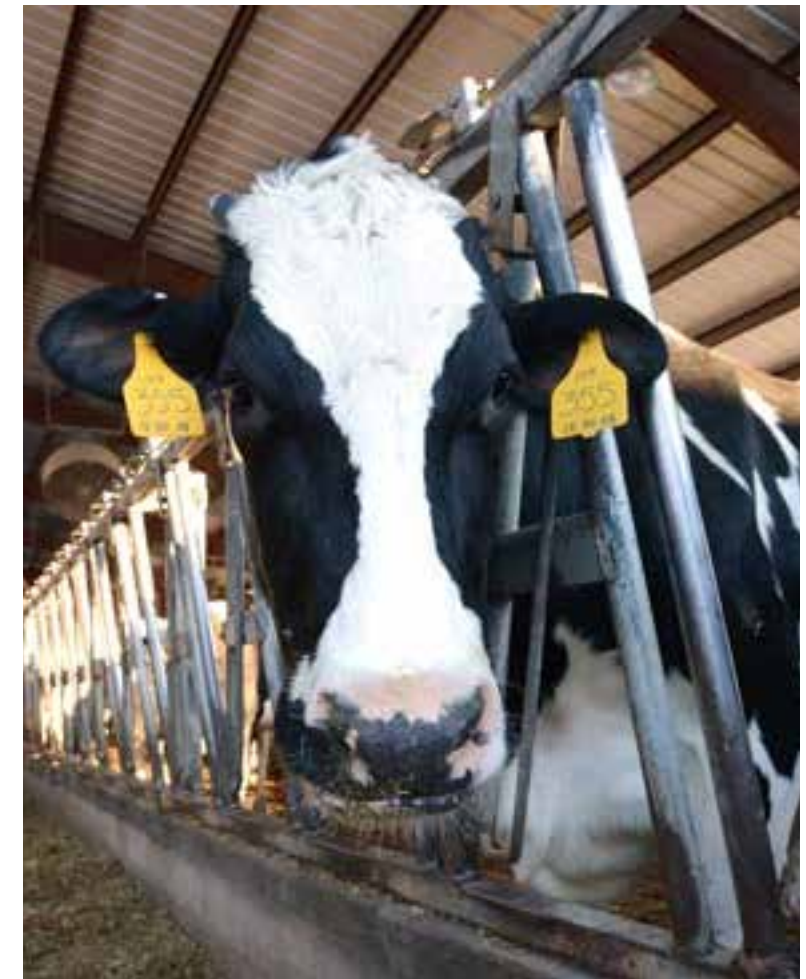
# HERITAGE



While not immune to many of the supply chain disruptions that have hit all manufacturers – for example, packaging is a challenge, and lead times for crushed graham crackers and refrigeration equipment are much longer – Wright's sources mostly US products from local distributors. Moreso, Wright's has created its own internal supply chain – they care for "happy, healthy" cows; process raw milk and bottle onsite; and sell the high-quality milk to their own bakery and ice creamery, and to consumers via retail and a wholesale delivery service. This makes Wright's a more resilient business and offers a true "farm to table" experience for consumers in RI, MA, and CT.

"Rhode Island is a small state with a lot of heart. People from Rhode Island really like to represent Rhode Island. It is nice to be in a state where you can become an icon; be known as a state-wide institution."

- Kathryn Kennedy, Director of Food Operations, Wright's Dairy Farm







# ACCELERATING GROWTH AND INNOVATION

## THE FUTURE OF MANUFACTURING

*Manufacturing* refers to the processing of raw materials or parts into finished goods through the use of tools, human labor, machinery, and chemical processing. Production tends to involve processes such as casting, welding, molding, brazing, and machining.

*Advanced manufacturing* refers to the use of innovative technologies in production activities such as information, automation, computation, software, sensing, and networking. Production tends to involve processes such as additive manufacturing that create highly-complex assemblies from one continuous material (e.g., 3-D printing), use of advanced or composite materials, robotics and automation, laser machining and welding, nanotechnology, and internet connectivity between machines and systems.

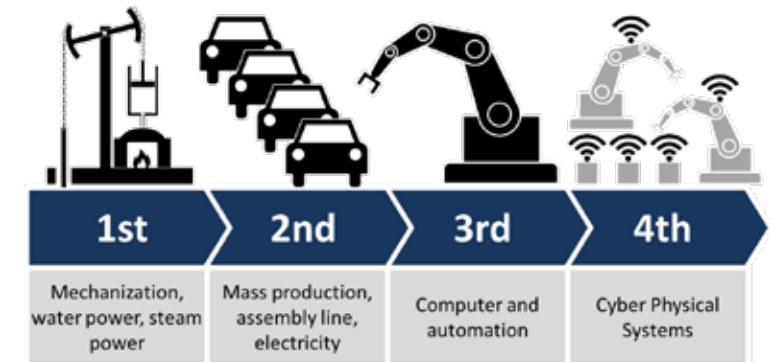
### SMART FACTORIES

Internet connectivity between machines on the manufacturing floor creates real-time feedback loops that support precise, automated tuning. This digital thread allows constant monitoring of equipment and generates notifications on issues and potential repairs – saving the company time and money. The different combination of modern technologies in these smart factories create highly flexible and self-adapting manufacturing capability.

Technology refers to machinery and equipment developed from the application of scientific knowledge for practical purposes, especially in industry. The first three industrial revolutions were characterized by technology advances. The common reference points to show the shifts across the industrial revolutions include a transformation from steam and water power (1st) to electricity and assembly lines (2nd) to computer automation (3rd).

The technologies driving the fourth (4th) industrial revolution combine physical, digital and biological worlds. In fact, these new technologies may even challenge us to rethink what it means to be human with new capabilities emerging to manufacture living tissue for medical research and clinical practice.

Today, Smart Factories operate with machines that connect to each other and a system that can visualize and manage activity across the entire production chain – within a plant and in the context of a broader supply chain.



Source: Christoph Roser at AllAboutLean.com

A supply chain involves a series of steps to get a product or service to another company that will finish production or to an end customer. Technology-driven approaches change the way manufacturers can manage across their entire supply chain and maintain operational excellence inside their own companies.

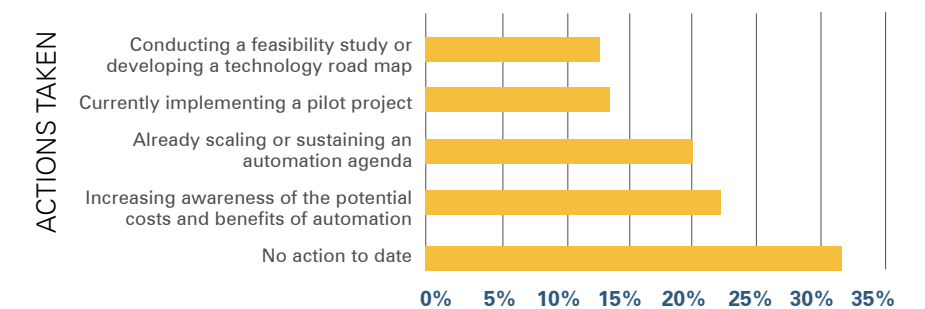
Technology advances have and will continue to replace and/or change the nature of jobs. According to a report from the World Economic Forum, Artificial Intelligence (AI) will replace 85 million jobs by the year 2025. However, AI will create 97 million new jobs during that same time period for a net change of 12 million more jobs.

## AUTOMATION IN MANUFACTURING

Automation in manufacturing refers to the use of equipment to automate systems or production processes to increase production capacity, reduce costs or both.

Three out of every five companies participating in the RI VOM survey reported taking some type of action to increase uptake of automation. Early adopters, 20% of those reporting, are already sustaining an automation agenda. Other companies are actively increasing awareness of the potential costs and benefits of automation (22%), currently implementing a pilot project (13%) and/or conducting a feasibility study or developing a technology roadmap (12%).

### CURRENT USE OF AUTOMATION IN COMPANY



Forty one percent (41%) of RI VOM respondents have taken no action to introduce automation into their companies. As such, the first order of business involves engaging more companies in activities that increase the awareness of the potential costs and benefits of automation.





The RI VOM respondents identified four clear areas of technology focus for their companies in 2022:

1. Improve automation of production processes.
2. Use data analytics to improve productivity and equipment maintenance.
3. Address / improve quality management systems such as ISO or compliance with industry standards.
4. Increase cybersecurity

### EXAMPLES OF AREAS OF TECHNOLOGY FOCUS IN 2022 BY RI VOM RESPONDENTS

- “Upgrade the ERP systems.”
- “Introduce routine 3-D scanning into design/fabrication workflow.”
- “Modernize our ordering and scheduling system.”
- “Use more project management and inventory management applications and programs.”

## CYBERSECURITY

Cybersecurity refers to protecting systems, networks, programs and sensitive information from digital attacks. Industry 4.0 places a premium on comprehensive cybersecurity strategies, especially in certain industry subsectors such as defense. The costs of data breaches include discovering and response time, downtime and lost revenue and long-term reputational damage to the business and its brand.

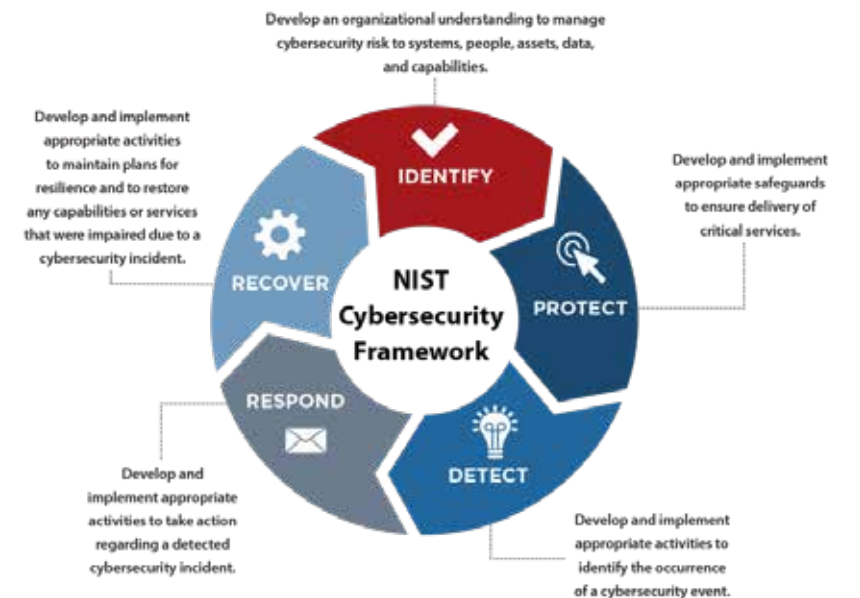
Only one in five (19%) RI VOM respondents reported being “very confident” about their company’s cybersecurity from hacking, data breaches and other technology threats. Sixty two percent (62%) report being “somewhat confident” with nearly one in five companies reporting no confidence or no action in terms of evaluating their cybersecurity measures.

Comprehensive cyber security solutions cover people, process and technology. This includes adjusting resource allocations to protect systems, understanding the impact of “connected products and equipment” such as those with sensors and the importance of encrypting data, performing end-to-end product vulnerability assessments and adjusting incident response plans to include “connected” products and equipment.

Of the top 2022 areas of technology focus, cybersecurity represented the 4th priority. The urgency and intensity in cybersecurity should mirror that of technology adoption. Much work remains in cybersecurity across manufacturers in Rhode Island.

### CYBERSECURITY FRAMEWORK AND CYBER HYGIENE BEST PRACTICES (Source: NIST Manufacturing Extension Partnership)

Only 1 in 5 companies report being “very confident” about their company’s cybersecurity measures.



### RECOMMENDATIONS

- Increase access to capital and expand technology acceleration programs
- Increase partnerships and funding for automation modernization



# GOODWIN-BRADLEY

Goodwin-Bradley has played a role in watershed moments in transportation and aerospace across the four Industrial Revolutions. Their parts were in both the Model T automobile and the first atomic submarine. They supplied Rhode Island made elements to the very first prototype helicopter made in the 1930s and continue to innovate with today's aerospace industry.

This family-owned manufacturer from Providence, celebrating 110 years in business, has competed and evolved with a forward-looking approach that prioritizes:

- Investments in machines and software to transform legacy systems into cutting-edge systems.
- Diversifying into new markets and new service offerings to better support today's customers.
- Investing in the skill sets of Goodwin-Bradley staff.

Each job is unique, so team members are constantly challenged to come up with new, creative solutions. Working closely with



their customers through the design process, Goodwin-Bradley can provide them exactly what they need when they need it.

ISO Certifications and technology road maps help to open new markets and de-risk the process for Original Equipment Manufacturers. As such, Goodwin-Bradley continues to meet benchmarks for standards through ISO 9001:2015 certification and diligence in other areas such as cybersecurity required for companies involved in the defense industrial base supply chain.

Vice President Chris Goodwin speaks passionately about training as critical to the future of his company and the manufacturing industry as a whole. He feels funding should focus on recruiting skilled veterans as teachers for the next generation. "You must learn the craftsmanship from the ones who have been on the front lines for so long. They're dealing with the problems of today. They're teaching the generation of tomorrow how to fix it."

"Every other year there's a new method, a new technology, a new process. What we were doing 10 years ago just does not cut it now. You won't be competitive."

– Chris Goodwin, Vice President,  
Goodwin-Bradley





# CULTIVATING THE NEXT GENERATION WORKFORCE

## WORKFORCE

Industries primarily describe what is being produced but occupations describe how the product is being produced.

A closer analysis of occupations within manufacturing reveals that production occupations account for one out of every two jobs. Office and Administrative Support, Architecture and Engineering and Transportation and Material Moving collectively comprise another 22.5% of manufacturing jobs. Technology continues to shift the nature of how products get produced translating to positive growth in occupations in areas of Architecture and Engineering (17.0%), and Life, Physical, and Social Science (39.7%).

Manufacturing employs nearly 40,000 individuals or approximately 8.5% of the total workforce in Rhode Island.

Highest growth occupations in manufacturing involve technical proficiencies. In fact, the proportion of jobs described by the Bureau of Labor Statistics as requiring a post-secondary award, associate's degree or bachelor's degree increased 5.7% whereas jobs requiring "no formal educational credential" decreased 8.1%. The proportion of jobs described requiring long-term on-the-job training (i.e. 12-months +) increased 18.3%, as compared to those requiring short-term on-the-job training (i.e. <1 month), which decreased 17.9%.

The most in-demand job titles among Rhode Island manufacturers in the past two years reflect a shift to competency-based hiring by manufacturing companies based on industry-valued credentials. Top common or soft skills for these workers include problem solving, communications, operations, basic math and computer literacy. C++ software

engineers, machine operators, sales associates, materials handlers, software engineers and assemblers represent the top five most in-demand job titles for the past six months.

2021 RI VOM survey respondents identified availability of skilled labor as the number one factor limiting growth. One out of every two respondents anticipate their productions and operations workforce headcount growing during 2022. Ninety percent (90%) of respondents reported that it was difficult finding or both difficult to find and retain workers.

Fundamental concerns about the silver tsunami of retirements remain real.

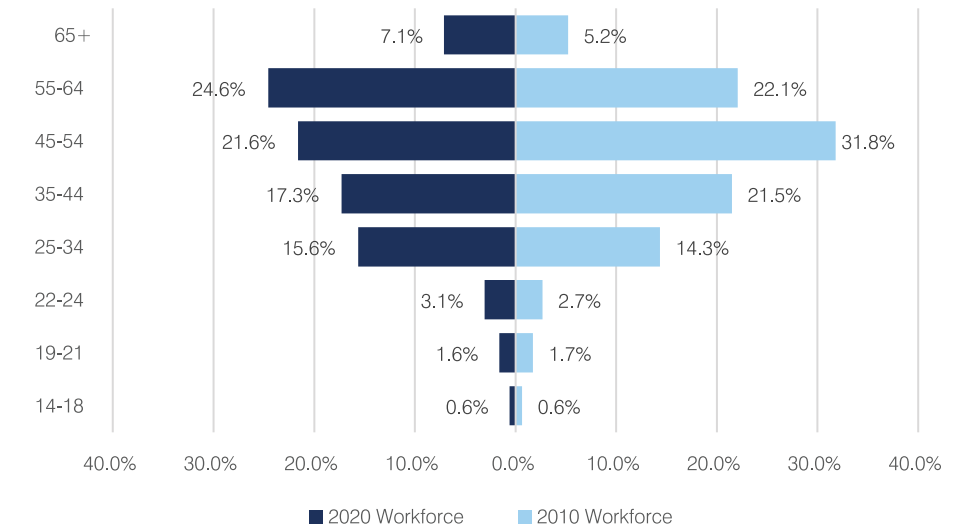
Of note, female participation in the manufacturing workforce has gradually decreased over time from 32.9% of the workforce in 2010 to 29.2% in 2020.

Expanding the workforce includes increasing workforce diversity which represents an ongoing, long-term shift in our nation's population demographics. Slight increases in workforce diversity have occurred in Hispanic or Latino/a and Black or African Americans working in Rhode Island's manufacturing sector.

"We are not looking at automation in terms of employee reduction. Our automation efforts are an attempt to bridge the skills gap while the next generation of manufacturers are trained."

– Don Foisy, Director of Operations, Mahr

## MANUFACTURING WORKFORCE BY AGE OVER TIME (2010 V. 2020)



## MANUFACTURING WORKFORCE DIVERSITY OVER TIME (2010 V. 2020)

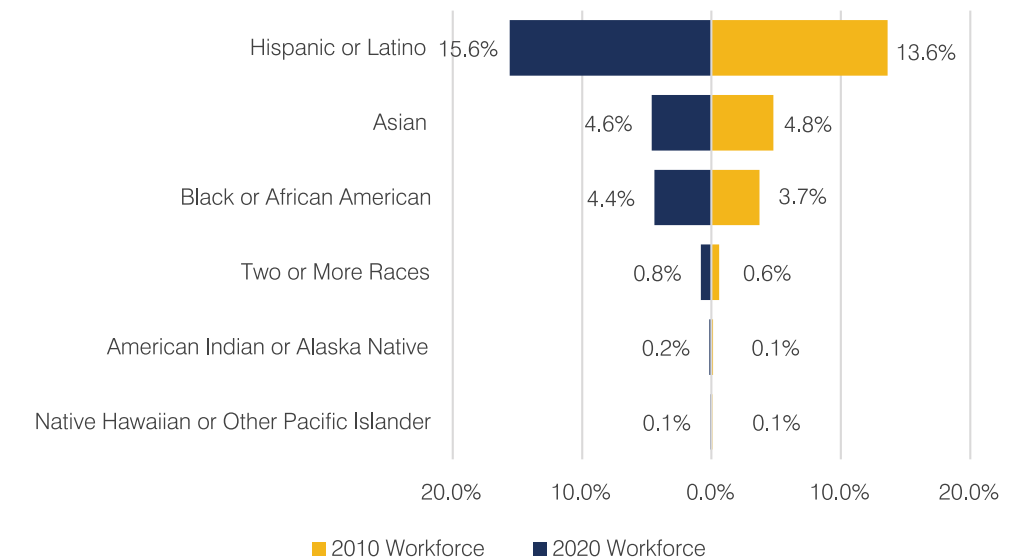






Photo by Visual Thrive

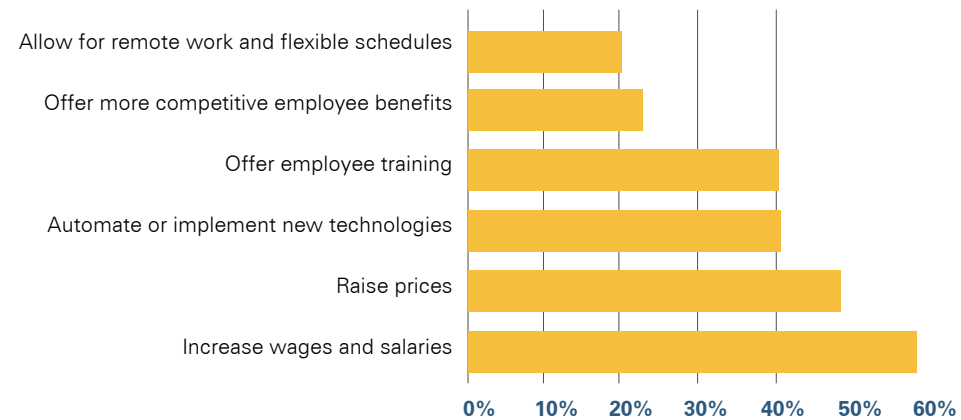
Photo by Visual Thrive

However, RI VOM respondents identified their top obstacle to hiring as: competition from other employers offering higher wages and benefits (32%), lack of technical skills or expertise (28%) and lack of appropriate work ethic (17%).

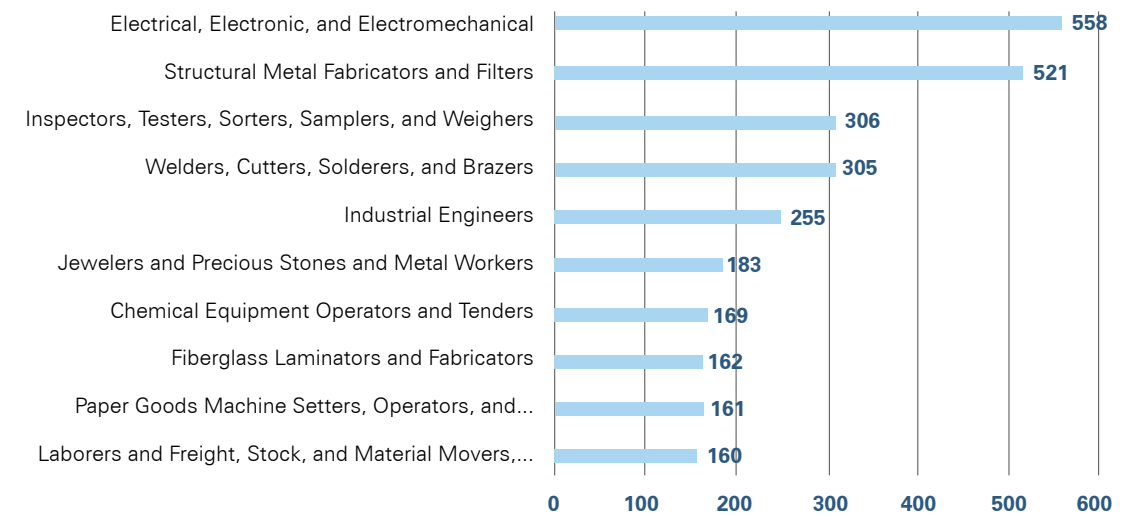
To counter these challenges, RI VOM respondents reported taking pro-active measures to increasing the attractiveness of their company to hire and retain workers.

However, only one in five RI VOM respondents reported sponsoring an Apprenticeship Program and only 30% of respondents reported participating in a manufacturing sector training initiative designed to increase access to qualified talent.

### IN 2022, WHAT DOES YOUR COMPANY PLAN TO DO TO ADDRESS WORKFORCE CHALLENGES AND FUEL GROWTH?



### HIGHEST GROWTH OCCUPATIONS IN MANUFACTURING



### RECOMMENDATIONS

Connect companies to education and training programs.

Grow K-12 awareness and career pathways with industry 4.0 skills.



# SAINT-GOBAIN

Saint-Gobain, an international company present in 76 countries, is one of the world's leading producers of engineered, high-performance polymer products. Made in Bristol, RI, these products serve the Aerospace, Automotive, Energy, Life Sciences and other industries across the globe.

In 2021, the company began to create an Aerospace Components Center of Excellence. As a result, the Bristol manufacturing company recruited Rhode Island's workforce and grew from 40 people to a little over 100 in just eight months.

Saint-Gobain expects future growth. However, finding workers is the biggest obstacle for this anticipated expansion.

Mikko Hurley, Shapes and Powders Strategist, offered several suggestions:

Exposure to today's manufacturing industry should begin early. Even younger school kids would benefit from knowing, "This is what you expect when you get a job in manufacturing."

General foundation programs for manufacturing careers are needed. This would be especially useful for those switching in after experience in other fields, such as hospitality or the military.

Programs that teach higher level or more specific skills are needed. Hurley was continually impressed with the CCRI/Polaris MEP program, Fast Track to CNC Manufacturing, which delivers a steady stream of trained machinists. "I've noticed there aren't similar programs for injection molding, for instance," said Hurley.

Saint-Gobain has been awarded "Global Top Employer Certification" seven years in a row. Their commitment to an inclusive and engaging culture is visible in the Bristol facility. The team is experimenting with swing shifts to aid in recruiting historically underleveraged workers such as mothers of school children who need to meet the bus midday.

Similarly, Hurley would like to see ongoing skills training options be more sensitive to the reality of life for tomorrow's workers. He noted, "An entry-level worker shouldn't have to take a hit to their paycheck because a class is only offered during the daytime/work hours or only during set semesters."

"To attract more workers, we need to let people know what kinds of jobs there are, what to expect when you get a job in manufacturing, and what continued skills training will be."

– Mikko Hurley, Shapes and Powders Strategist, Saint-Gobain



# ABOUT THIS REPORT

## PURPOSE

Manufacturing plays a critical role in the Rhode Island economy. More than 1,400 manufacturing companies call the Ocean State their home. The sector is notable as one of the nation's most diverse industry mixes, including advanced composites and food, jewelry and defense contractors.

Historically, reports and studies about manufacturing in Rhode Island tend to focus on specific industry subsectors such as defense or the role of manufacturing in the blue economy. Instead, this report intends to increase awareness of the state's manufacturing ecosystem as well as frame the important factors that affect its future.

In so doing, this report sets the stage for leaders to better support the growth and profitability of manufacturers, to leverage our state's unique, competitive advantages, and to generate a larger return on investments made in manufacturing.

## METHODOLOGY

Polaris MEP assembled a team of highly-qualified personnel to produce this first-ever State of Rhode Island Manufacturing study. Cross Sector Consulting, LLP, and Points Consulting, LLC, supported development of this report. Specifically, the team

- Reviewed existing reports with references to the manufacturing sector in Rhode Island.
- Analyzed manufacturing industry data using a variety of reputable and reliable sources.
- Designed a Voice of Manufacturers survey instrument and collected data from 150+ manufacturers.
- Conducted key informant interviews with manufacturing company leaders and industry partners.
- Vetted information with industry partners to ensure relevance and meaningfulness of information.

As part of the comprehensive study, the team produced additional content such as a stand-alone report with the results of the Voice of Manufacturers (VOM) survey and a stand-alone report with quantitative analyses of the state's manufacturing sector.

The Polaris MEP website also maintains an economic dashboard with a snapshot of how the sector is performing in eight main areas. This draws from national data sources and helps leaders focus on metrics most important to measuring the sector's economic progress and talent needs.

Financial support for the 2022 State of Manufacturing Rhode Island study was provided by Polaris MEP.

A statewide nonprofit organization, Polaris MEP provides competitive business improvements to grow Rhode Island's manufacturing industry. The Center is an affiliate of the National Institute of Standards and Technology's Hollings Manufacturing Extension Partnership (NIST MEP) and a business unit of the University of Rhode Island Research Foundation.



# CONCLUSION

The survey data is clear: Manufacturing in Rhode Island has evolved and is growing despite difficult headwinds in recent years.

Smaller manufacturers proved they can react, respond, and deliver. To continue to compete and grow, gaps need to be addressed in the areas of leveraging regional resources, accelerating growth through technology, and cultivating the next generation workforce. Manufacturers are ready to accept the challenges.

Trends in national and state data – including those described in this report – point to specific recommendations to strengthen the manufacturing community. Several of these recommendations represent works in progress. Others require a fresh look by elected officials and leaders of organizations serving manufacturers. Bold moves can accelerate the evolution and serve as catalyst for impactful economic growth.



## RECOMMENDATIONS

### LEVERAGING REGIONAL RESOURCES

- Increase awareness of resources available to RI manufacturing companies
- Activate manufacturing leaders and align statewide policy agenda
- Promote manufacturing awareness focusing on high-quality, high-paying jobs and career pathways
- Align with RI Innovates 2.0 Economic Development strategy
- Expand public transportation options for manufacturing workers
- Expand childcare and adult day care services to support manufacturing workers
- Increase awareness of and expand minority business initiatives
- Connect social justice and social responsibility efforts such as affordable housing to economic opportunity available in the manufacturing sector

### ACCELERATING GROWTH AND INNOVATION

- Increase access to capital and tax credits for equipment
- Enhance supply chain synergy and supply chain resiliency (supplier matching)
- Expand awareness and access to technology resources, especially automation and cyber security
- Increase the uptake of automation through partnerships and funding support
- Expand technology acceleration programs (e.g. Industry 4.0, smart factory)

### CULTIVATING THE NEXT GENERATION WORKFORCE

- Expand industry-valued education and training programs
- Partner with and activate underserved communities
- Connect companies to education and training resources
- Provide K-12 career pathway awareness and training connections with a focus on Industry 4.0 skills