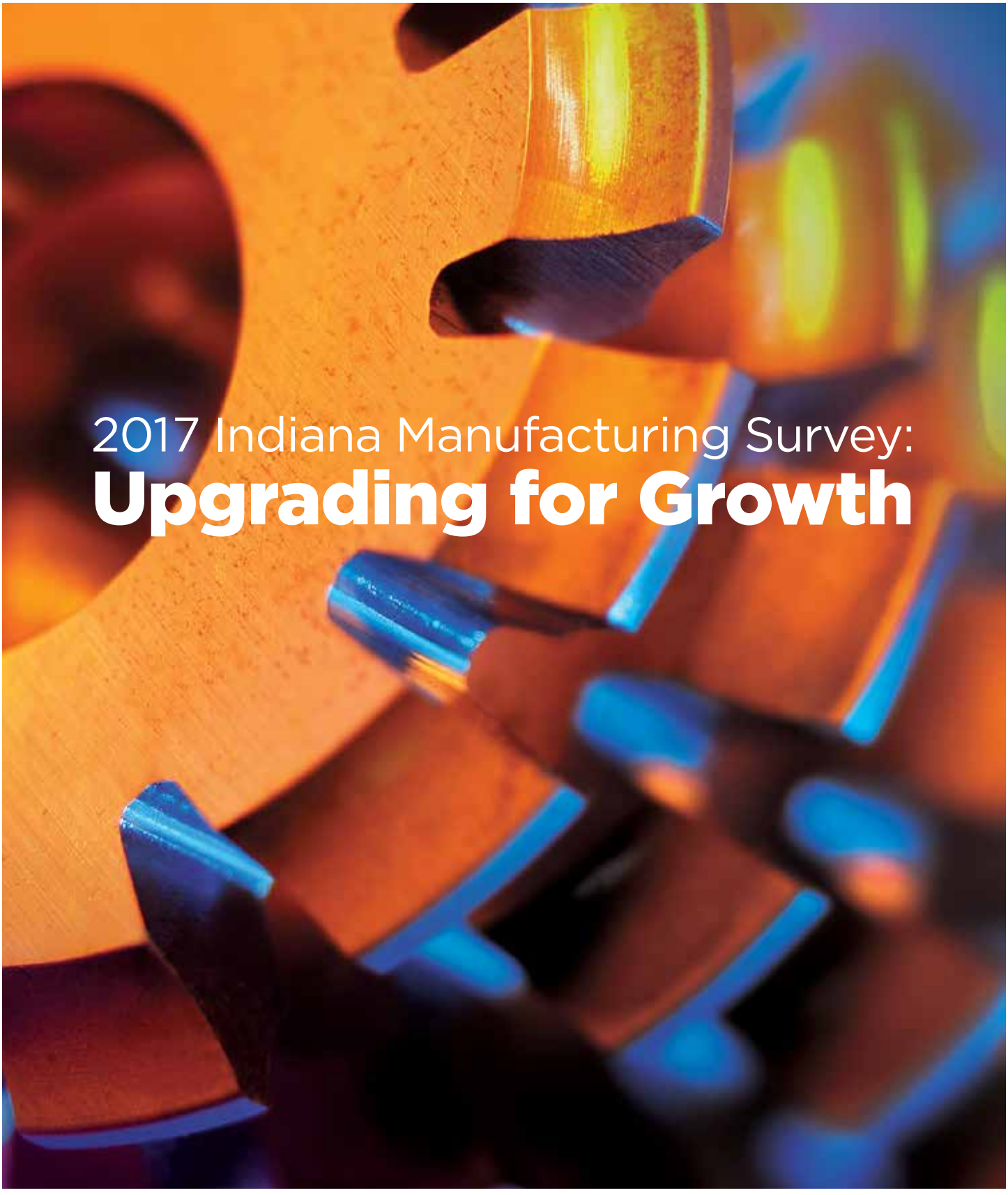

2017 Indiana Manufacturing Survey:
Upgrading for Growth

KSM KATZ SAPPER & MILLER

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Foreword

Our annual survey of Hoosier manufacturers is now in its 11th year, and, as with all long-running studies, you expect to see periods of stability as well as periods with changes or shifts in methods and strategies. Our 2017 results suggest that such a shift is underway.

In recent years, workforce development issues have vexed Indiana manufacturing. Today, with market shares continuing to expand and product lines rapidly multiplying, the topmost emphasis of Hoosier manufacturers has shifted towards upgrading automation and expanding facilities to capitalize on growth opportunities.

The answer to why that strategic shift is occurring isn't difficult. First, given that automation is now more affordable and capable than ever, Indiana's manufacturers are in what is perhaps best described as a technological "arms race" with competitors around the world to develop and sustain their competitive edge. Second, given the persistent shortages of skilled manufacturing workers – fueled in part by the reluctance of Millennials to consider careers in the field, as well as accelerating baby-boomer retirements – the only option is to try and automate as many workstations as possible across factory shop floors where humans once stood.

In short, the challenge facing almost every Hoosier manufacturer is significant. How do you continue to grow and prosper in today's new era of rapid technological advancement while your skilled workforce pool is continually shrinking? Some might think that the substitution of capital for labor is inevitable given the pace of innovation, but new technologies will still require skilled workers. So automation alone won't be enough to sustain the growth in the industry.

While Indiana's manufacturers are still holding their own against the world's toughest competitors, much remains to be done. Now is time for action. We've reached a point in time where Indiana's troublesome workforce challenges must be effectively addressed and resolved. Action and cooperation from managers in industry, leaders in government, and especially educators, are required and will determine how bright the future is for everyone involved in Indiana manufacturing.

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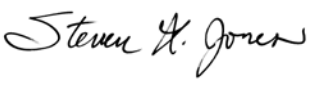

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Executive Summary

The 2017 Indiana Manufacturing Survey results indicate that the Hoosier manufacturing sector remains healthy, well into this tepid but sustained recovery, although regulatory and workforce challenges continue to blunt its potential. Growth in sales revenues and profit margins continue to be positive, and there are signs that an increasing number of firms are implementing, or at least considering, major capital investments, especially in technology and automation. This year's survey results also offer the views of a number of managers on how to more effectively recruit young people into careers in manufacturing. Regarding trade, few respondents wish to terminate NAFTA, but a large majority want to see it renegotiated. And, as in past years, respondents indicate that regulatory and compliance burdens remain high, although these are dwarfed by concerns over healthcare regulations and the high corporate tax rate, indicating that the industry's future is inextricably linked to the hottest debates in Washington, D.C., today.

Calls to Action for 2018: Indiana Manufacturers

The good news is that Hoosier manufacturers appear largely healthy as we enter the latter portion of this decade; however, improving operations through investment in workforce development as well as technology and automation continue to be critical for remaining competitive. Important elements include:

- **Continue to make strategic investments, especially in automation.** As shop floor automation becomes more affordable and capable, to remain competitive firms will need to stay on top of such innovations through investment in technology and workforce training.

- **Foster apprenticeship programs.** While process improvements, such as Lean and Six Sigma, are some of the best investments any manufacturer can make, supporting in-house training for existing workers and apprenticeship programs for new hires are equally critical.

- **Remind others what is at stake.** The manufacturing sector is the "backbone" of Indiana's economy, creating even more jobs in service industries. Make sure that everyone you interact with outside of manufacturing knows that.

- **Recruit the workforce of the future.** Help high school guidance counselors understand that a traditional college education is not for every student, and that the rewards to a technical education and skills training can be even greater for many. As one manager suggested, "Bring back the hands-on training in high schools and stop pushing everyone to a four-year college career."

Calls to Action for 2018: Government Policy Makers

This year's study again suggests that the potential of the manufacturing sector to grow and remain globally competitive is being hindered not only by skilled worker shortages but also by public policy matters, especially healthcare costs, as well as tax and regulatory burdens. To promote economic growth and foster new job creation, the government, at all levels, needs to work to:

- **Support manufacturers.** Existing regulations should be reevaluated in terms of a cost-benefit analysis, including the costs of compliance. Energy independence can be a key advantage for U.S. manufacturers.

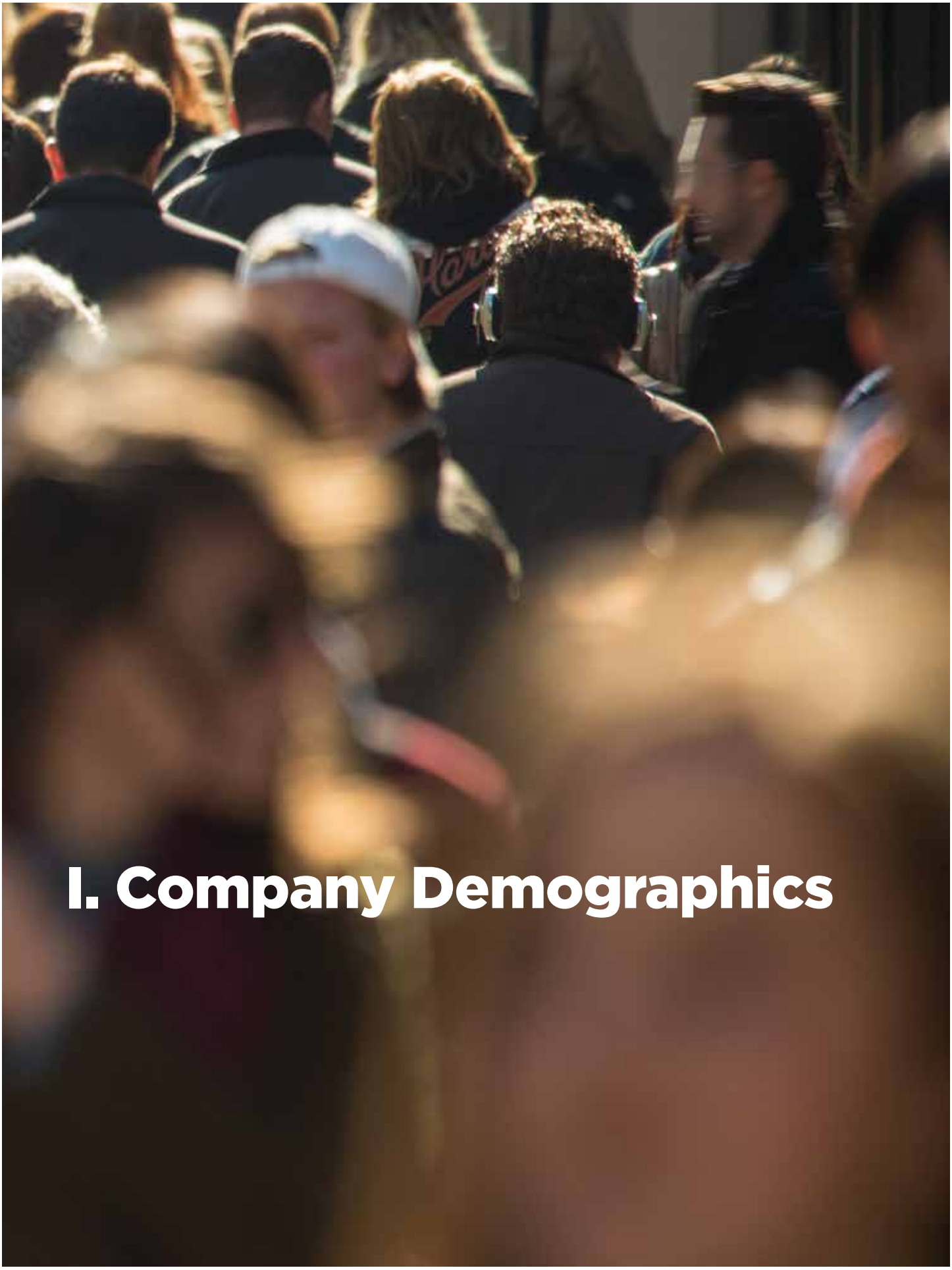
- **Make taxes competitive.** Sixty-one percent of our respondents believe that lowering the corporate tax rate would make U.S. manufacturers materially more competitive, globally. Likewise, keeping Indiana's business taxes competitive is critical to job growth in the state.

- **Reform healthcare.** Lowering taxes is only a start – healthcare reform is also needed. As one manager lamented, "We need to be able to focus on our business rather than constantly being distracted by issues relating to the affordability and uncertainty of our employee healthcare plan."

- **Address the workforce shortage and skills gap.** There is not a singular solution to this problem, but it must continue to be evaluated. Respondents suggested such measures as: "Eliminate the negative stereotype of manufacturing employees and jobs through PR and marketing campaigns," and, "Establish a career track in high school focused on advanced manufacturing with specific job skills."

Optimism Persists

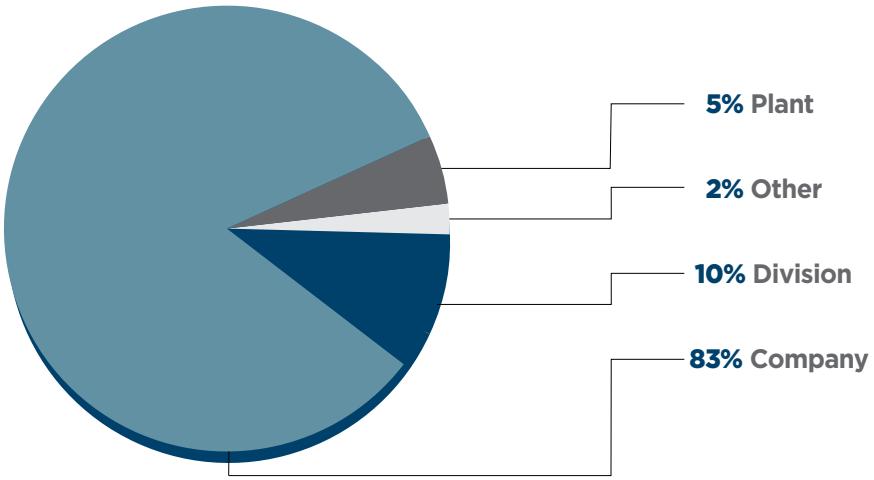
While the skills gap, worker shortages, and burdensome regulations continue to hamper Hoosier manufacturing, there is still reason for optimism about the future. The trends in financial metrics remain favorable, and investment in capital and labor, including automation, appear to be on the upswing. And while some of this investment in automation may reflect the substitution of capital for labor given the continued shortage of skilled workers, a majority of respondents believe that more automation will make their firms more competitive, with a net effect of eventually increasing the number of jobs in manufacturing. This optimism could be shattered, however, if Washington, D.C., cannot deliver the needed reforms on healthcare regulation as well as tax and regulatory policy.



I. Company Demographics

As in past years, the vast majority of respondents to the 2017 Indiana Manufacturing Survey are reporting at the company level (83%), while relatively small percentages report for divisions of larger organizations (10%), individual plants (5%), or some other organizational form (2%). The average number of direct or full-time employees per respondent is 391, with the largest employing over 8,000. In addition, the average number of contract workers and temporary workers per respondent is three and 15, respectively.

TYPES OF ORGANIZATIONAL UNITS

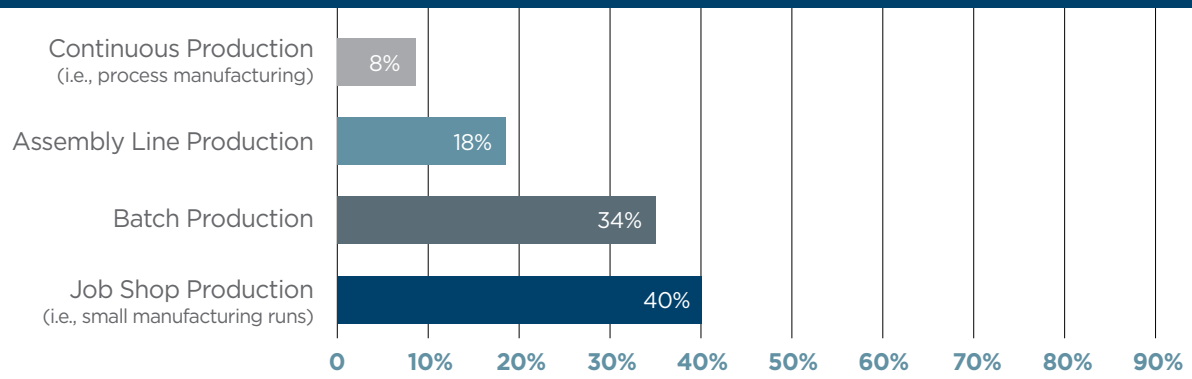


NUMBER OF EMPLOYEES

	Direct / Full-Time Workers	Contract Workers	Temporary Workers
Mean	391	3	15
Maximum	8,000	80	400

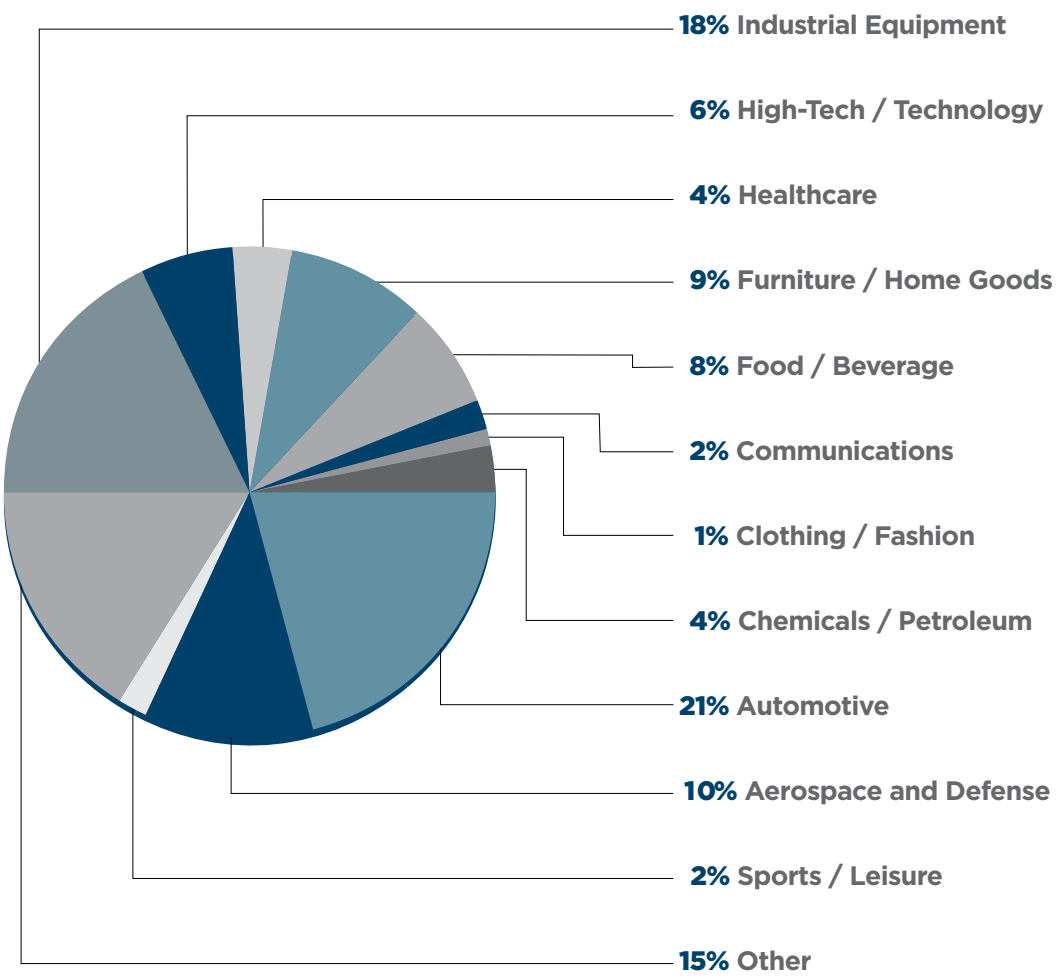
In terms of major production processes, the most common operations involve either job shop production (40%) or batch production (34%). Consistent with prior years, assembly lines and continuous production were also well represented in this year's study, making up 18% and 8% of respondents, respectively.

TYPES OF ORGANIZATIONAL UNITS



As with our previous studies, the 2017 sample reflects a balanced assortment of Indiana's most significant manufacturing industries. The three largest industry groups, represented by the survey respondents, are automotive (21%), industrial equipment (18%), and aerospace and defense (10%). Another 27% of respondents are distributed between high-tech (6%), healthcare (4%), furniture/home goods (9%), and food/beverage (8%). Companies in the "other" category (15%) include glass, laboratory equipment, metal fabrication, office products, recreational vehicles (RVs), and tooling.

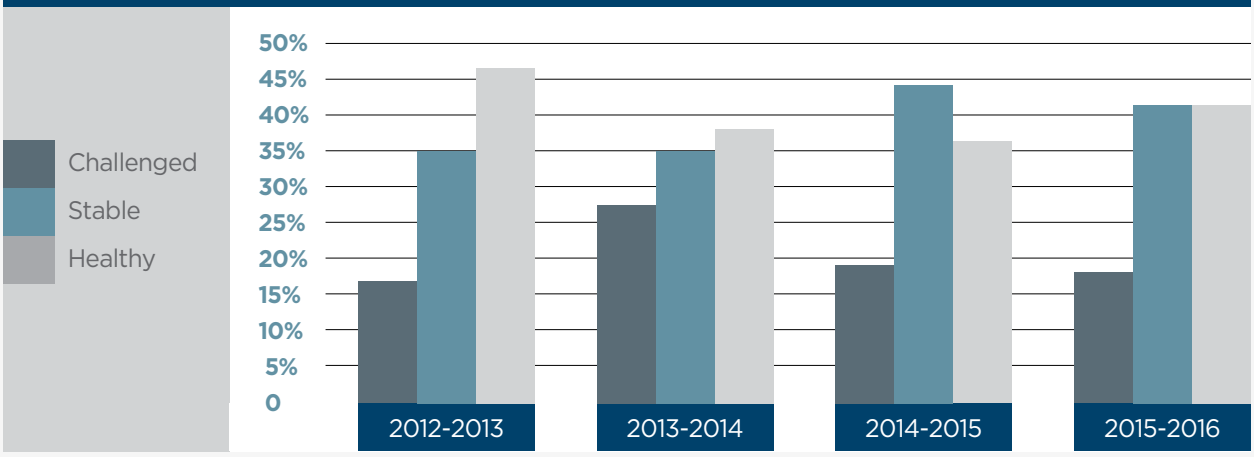
INDUSTRY TYPES



II. Overall Economic and Financial Performance

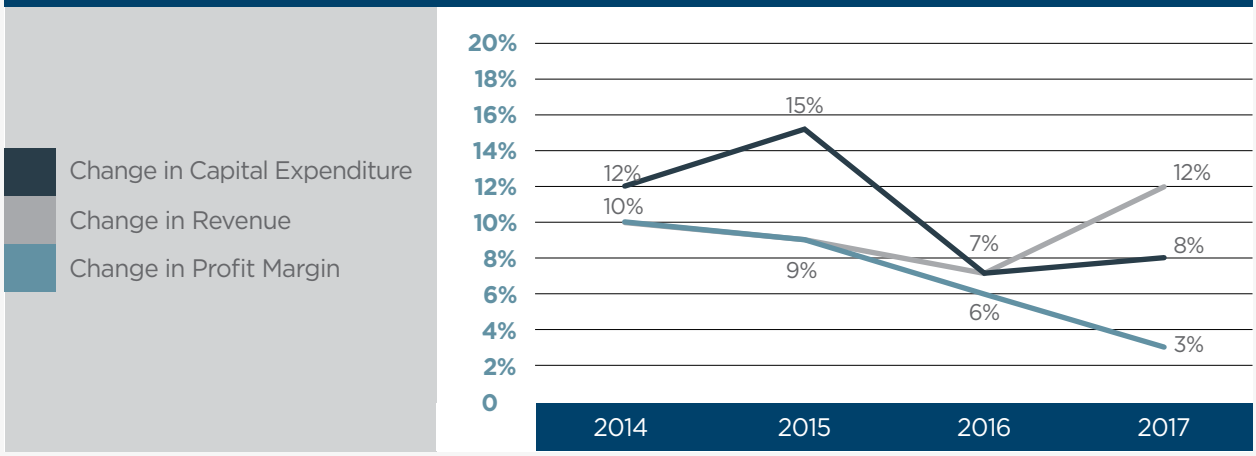
We asked respondents to rate their overall financial performance over the past two years as either "healthy," "stable," or "challenged." The results indicate the post-recession recovery appears to be maintaining with 41% describing their most recent performance as "healthy," 41% as "stable," and 18% as "challenged." This represents a slight improvement over the results from the last couple surveys but not quite up to 2012-13.

FINANCIAL PERFORMANCE



Regarding key financial metrics, most notably, the expected percentage change in profitably has declined over the past several years, down to an expected 3% increase in 2017 over 2016. However, this still represents an expected rate of increase, and together with the much larger 12% increase in expected revenues, suggests that margins are tightening, as would be expected in an extended recovery. Somewhat encouragingly, no further erosion is expected in capital expenditures, with an increase of 8% expected in 2017 over 2016.

EXPECTED FINANCIAL METRICS (YEAR-OVER-YEAR % CHANGES)



Also encouraging is that 88% of manufacturers expect revenues to increase in 2017, more than in any recent years, although this could also be a sign of the onset of inflationary pressures. The percentages of respondents expecting increases in profit margins (72%) and capital expenditures (75%) are off slightly from last year, suggesting past improvements may have plateaued.

FINANCIAL METRICS

% Change	Min % Value	Max % Value	Avg % Value	% Positive
2017 Survey				
Revenue for 2017 over 2016	-30	77	12	88
Net Profit Margin for 2017 over 2016	-64	40	3	72
Capital Expenditures for 2017 over 2016	-92	100	8	75
2016 Survey*				
Revenue for 2016 over 2015	-40	61	7	79
Net Profit Margin for 2016 over 2015	-83	60	6	76
Capital Expenditures for 2016 over 2015	-72	100	7	83
2015 Survey				
Revenue for 2014 over 2013	-83	100	9	78
Net Profit Margin for 2014 over 2013	-97	100	9	74
Capital Expenditures for 2014 over 2013	-79	100	15	72
2014 Survey				
Revenue for 2013 over 2012	-40	100	10	72
Net Profit Margin for 2013 over 2012	-64	100	10	67
Capital Expenditures for 2013 over 2012	-100	100	12	64

*Note: Beginning with the 2016 survey, these questions were changed to ask about what is expected for the current year, as opposed to what actually occurred in the prior year.

Many of the written responses to the survey suggest that these generally favorable financial metrics have been a real challenge for manufacturers to achieve given the modest growth of this post-recession economy. When asked, **"What was your worst manufacturing decision in the past year?"** various respondents suggested that revenues and profits continue to be concerns for Hoosier manufacturers.

"Not investing enough in our facility."

"Not buying new machinery."

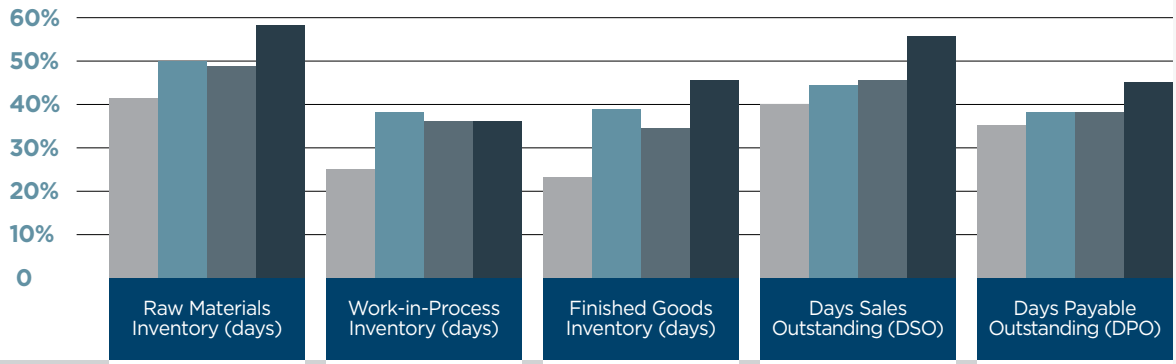
"Delaying accountability programs with supervisors and operators."

"Staying static in terms of improving procedures."

"To continue to repair older machinery rather than replace."

In regard to working capital, the mean days of inventory for raw materials and finished goods jumped noticeably in 2017 to 58 and 46 days, respectively. Average reported finished-goods inventory levels, in particular, have doubled from the lows of 2013-14 (23 days) in comparison to about a month and a half, today. However, the revenue expectations mentioned above suggest that this build is in anticipation of growth, rather than unmaterialized expectations. Days sales outstanding and days payable outstanding also increased by about a week to 56 and 45 days, respectively, from 46 and 38 days in the prior year, perhaps reflecting the cash-flow strains of sustained growth. Also, the mean cash conversion cycle (i.e., average days inventory plus days receivable minus days payable) jumped by 11 days in 2016-17, to 58, from 47 days in 2015-16.

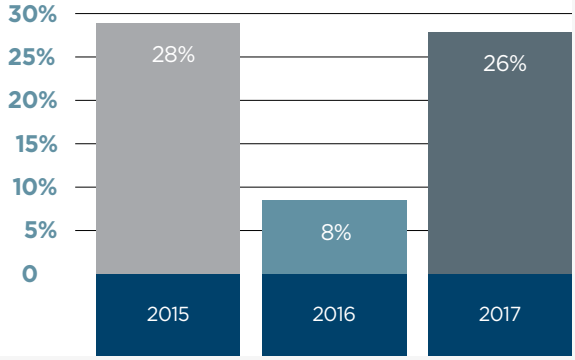
WORKING CAPITAL AND CASH FLOW METRICS (MEAN)



	Raw Materials Inventory (days)	Work-in-Process Inventory (days)	Finished Goods Inventory (days)	Days Sales Outstanding (DSO)	Days Payable Outstanding (DPO)
2013-14	42	25	23	40	35
2014-15	50	38	39	44	38
2015-16	48	36	34	46	38
2016-17	58	36	46	56	45

In terms of product markets, 28% of respondents in our 2015 survey expected their markets to grow rapidly over the next three to five years (2017-2019). Those optimistic growth expectations collapsed in the 2016 survey, with just 8% of respondents anticipating strong growth three to five years out (2018-2020). But in this year's survey, optimism has returned, now with 26% of respondents predicting rapid growth in their markets over the next three to five years (2019-2021).

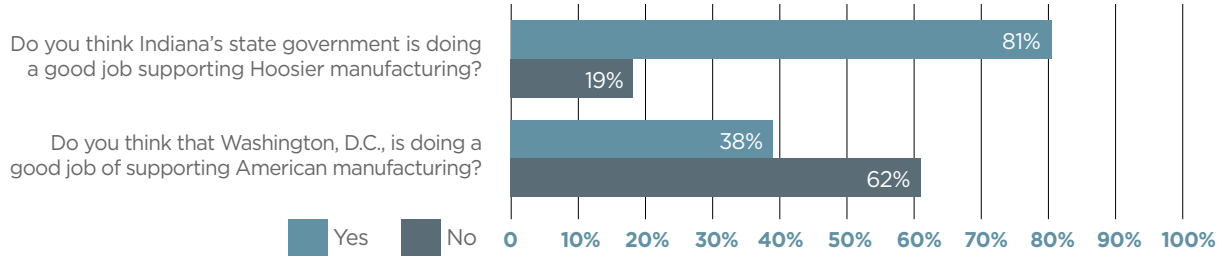
EXPECTING RAPID MARKET GROWTH



III. Regulatory Concerns

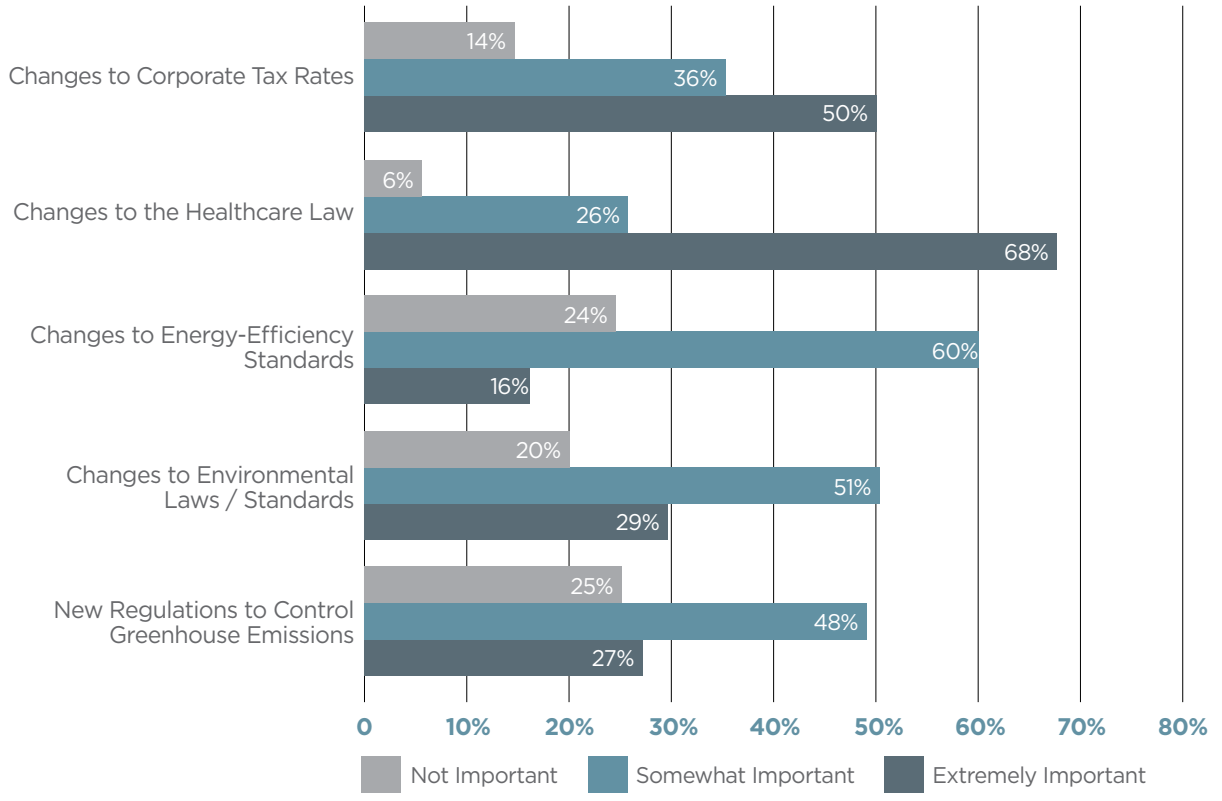
As in past years, the 2017 survey asked for opinions on how well the government is doing in its support of the manufacturing industry. Similar to past surveys, the vast majority (81%) believe that Indiana's state government is doing a good job, while, conversely, most (62%) think the federal government is not.

HOW WELL IS MANUFACTURING SUPPORTED BY GOVERNMENT?



When asked about what is most critical in terms of regulatory concerns to their companies, healthcare is again, as in last year's survey, considered most important (68%), with the corporate tax rate close behind (50%).

IMPORTANCE OF REGULATORY CONCERNS TO INDIANA MANUFACTURING



Following up on this, when asked, **"What regulatory issue is having the biggest negative impact on your business?"** representative comments included:

"Corporate tax rate / healthcare (tie)."

"Lack of cost control in healthcare. Need to have employees not worry about their health and the health industry inflating costs every year by 5-7%. Unsustainable."

"Corporate tax rates."

"Never ending reporting to the point we have to hire outside firms to take care of this reporting."

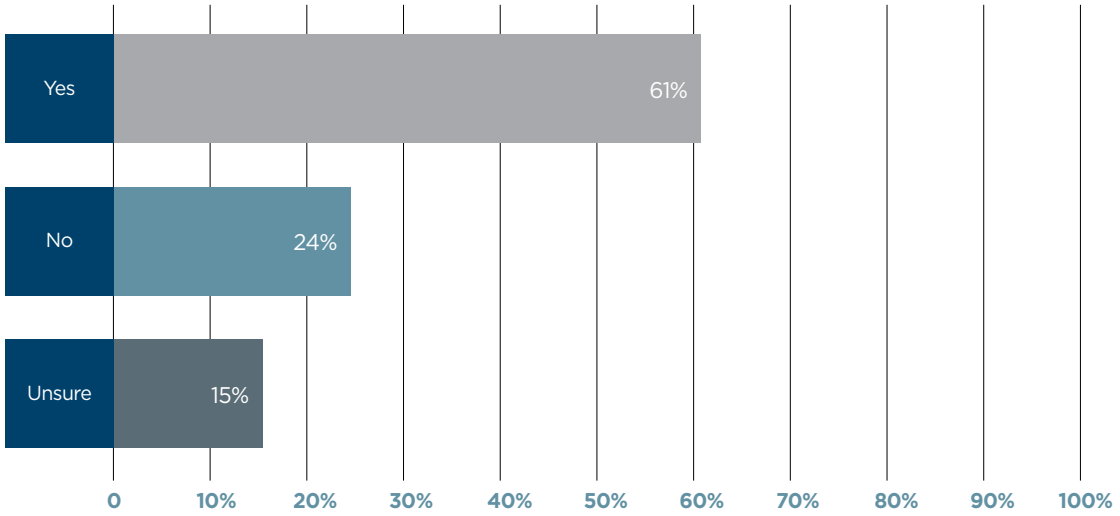
"CAFE/Greenhouse Gas standards: We support keeping standards; however, we are concerned about the rate of introducing new technologies. Balancing technology vs. cost has never been more important."

"All the new regulations that have come out over the past years continue to cause undue burden without improvement."

"The EPA created huge (almost insurmountable) problems for my company and my industry in 2016-17. Forced two of our industry's flagship manufacturing facilities to close shop and move to Mexico, along with hundreds of jobs."

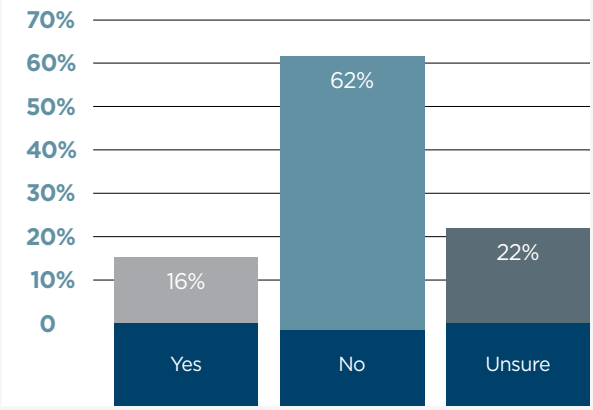
Digging deeper into these issues, when asked, "Will reducing the U.S. corporate tax rate help your business improve its competitiveness?" the majority of respondents (61%) replied "Yes." In terms of what that corporate tax rate should be, the average response was just over 18%, with a standard deviation of approximately 6%.

WILL REDUCING U.S. CORPORATE TAX RATE IMPROVE COMPETITIVENESS?

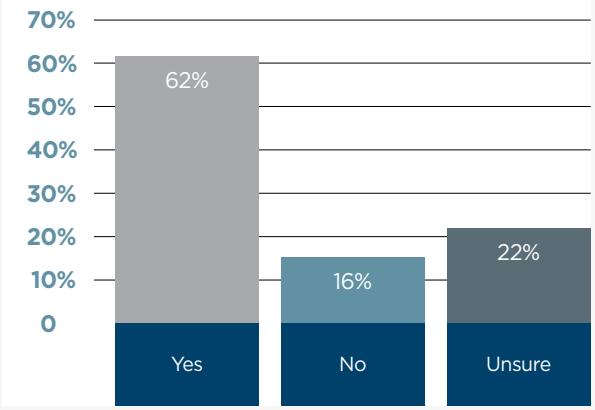


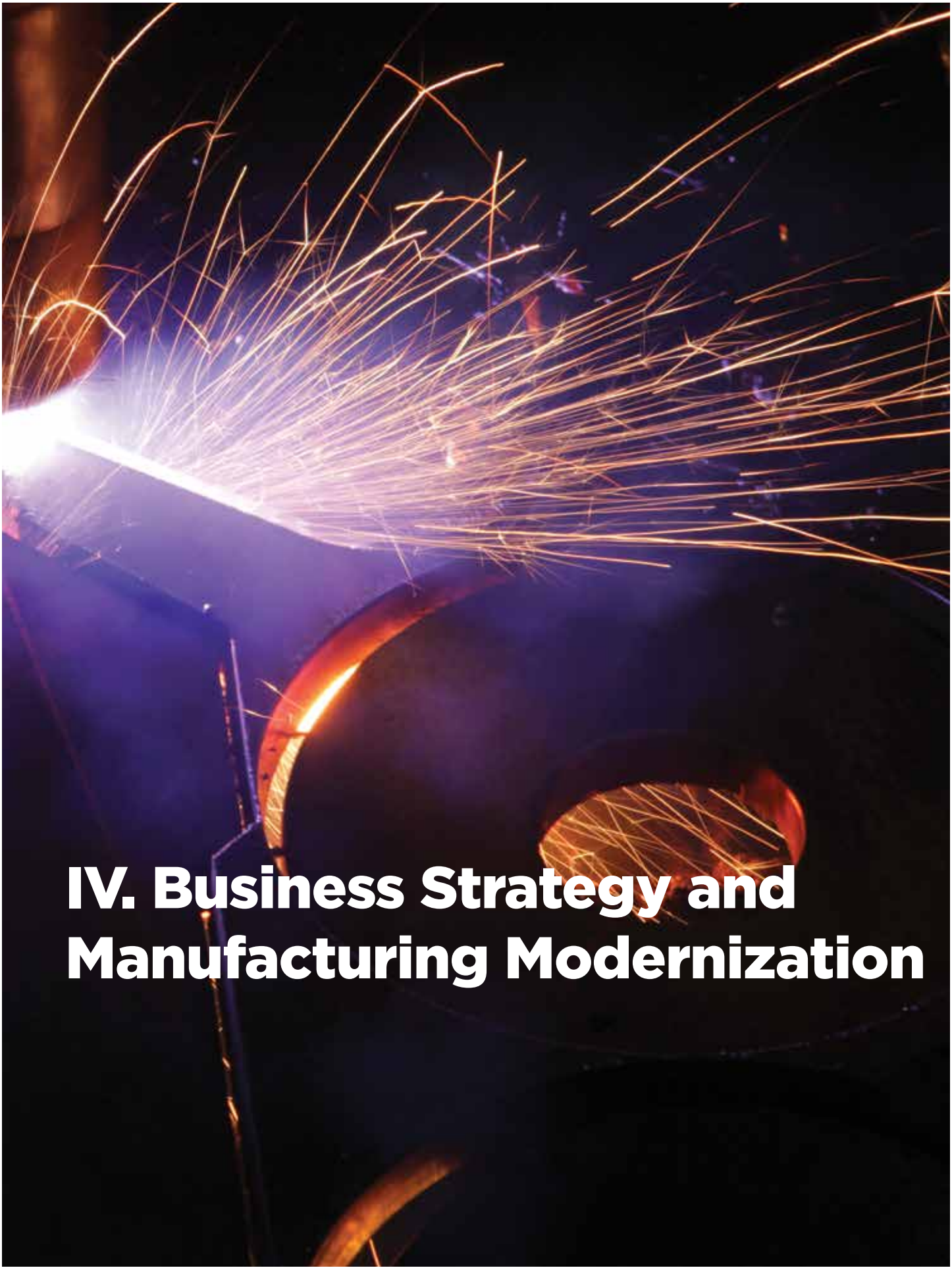
In recent years, there have been a growing number of headlines around the future of the North American Fair Trade Agreement (NAFTA). In the 2017 survey we asked respondents for their opinions on either terminating or renegotiating NAFTA. The majority (62%) said that it should not be terminated, but an identical 62% thought that it should be renegotiated.

SHOULD THE U.S. TERMINATE NAFTA?



SHOULD THE U.S. RENEGOTIATE NAFTA?





IV. Business Strategy and Manufacturing Modernization

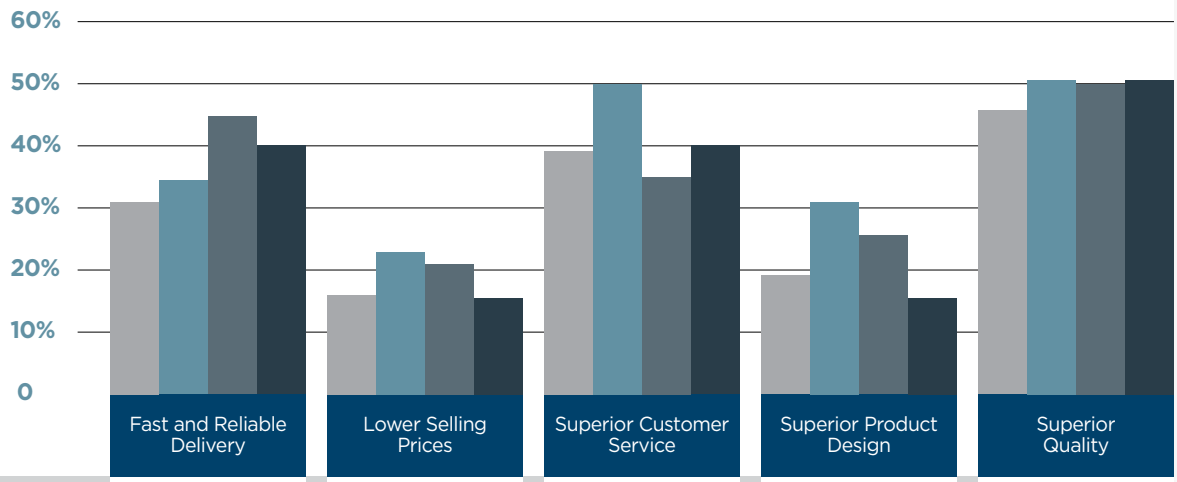
An important strategic business decision every manufacturer makes is how to win customers' orders based upon the traditional competitive priorities of delivery, price, service, design, and quality. The relative importance of these business strategies have remained highly constant from 2014-17. Overall, superior quality, fast and reliable delivery, and superior customer service rank most important. Similarly, lower selling prices and superior product design have been relatively less important capabilities.

HOW TO WIN ORDERS: COMPETITIVE PRIORITIES (MEAN)

	2017 Survey	2016 Survey	2015 Survey	2014 Survey
Fast and Reliable Delivery	4.03	4.17	4.17	4.11
Lower Selling Prices	3.50	3.53	3.49	3.41
Superior Customer Service	4.09	4.19	4.00	4.16
Superior Product Design	3.56	3.73	3.57	3.45
Superior Quality	4.16	4.33	4.33	4.39

Once again, superior quality was rated extremely important by 45% of Hoosier manufacturers in 2017. Indeed, over the past four years, superior quality has been extremely important with almost half of all companies in our annual study.

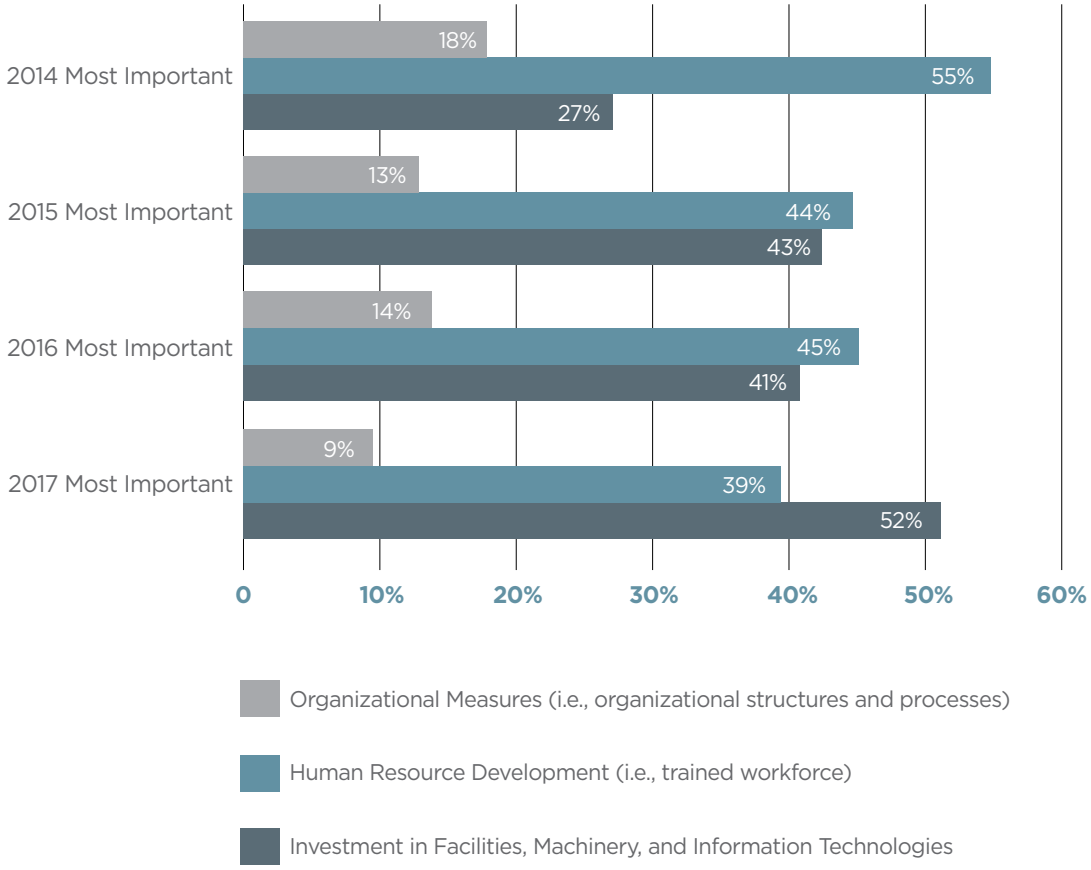
HOW TO WIN ORDERS: COMPETITIVE PRIORITIES CONSIDERED "EXTREMELY IMPORTANT"



	Fast and Reliable Delivery	Lower Selling Prices	Superior Customer Service	Superior Product Design	Superior Quality
2017	31%	16%	39%	19%	45%
2016	34%	23%	50%	31%	51%
2015	44%	21%	35%	26%	50%
2014	40%	15%	40%	15%	51%

Since the Great Recession, we have tracked the major areas of concern for manufacturing in terms of modernization. In 2014, human resource development (i.e., trained workforce) peaked at 55% as the most important concern. In 2015 (44%) and 2016 (45%), human resource development again edged out investment in facilities, machinery, and information technologies as the top priority regarding manufacturing modernization. That all changed in 2017, and facilities, machinery, and information technologies emerged as the top priority in terms of modernization at 52% of Hoosier manufacturers. Similarly, human resource development was considered most important at 39%, the lowest level in almost a decade.

MANUFACTURING MODERNIZATION PRIORITIES



We also asked Indiana manufacturers what they believed to be their best and worst manufacturing decisions in the past year. A variety of comments related to modernizing manufacturing operations referenced not only technologies, but human resource issues as well.

Best Decisions

"Focusing on a lean approach."

"The purchase of additional automated machinery; doubling the rate of growth and expansion."

"Investing in equipment to increase the size of the product we can offer to our customers."

"New state-of-the-art equipment."

"Invest in new equipment and processes to onshore manufacturing from China."

"The addition of manufacturing space and machinery."

"New factory investment to facilitate debottlenecking of existing factories."

"Increasing number of shifts to improve capacity, delivery metrics."

Worst Decisions

"To just throw people at our production shortfalls."

"Hiring an unqualified CNC programmer."

"Hired some individuals who were unfit for employment."

"Trying to take on 15% growth in the current job market shortage."

"Decision to focus on new product category introductions instead of new feature innovations with existing products."

"Not organizing and standardizing more."

Similar to prior studies, this year's survey included questions on a variety of advanced manufacturing technologies and programs on a scale of 1-5, with 1 being "No Use" and 5 being "Very High Use."

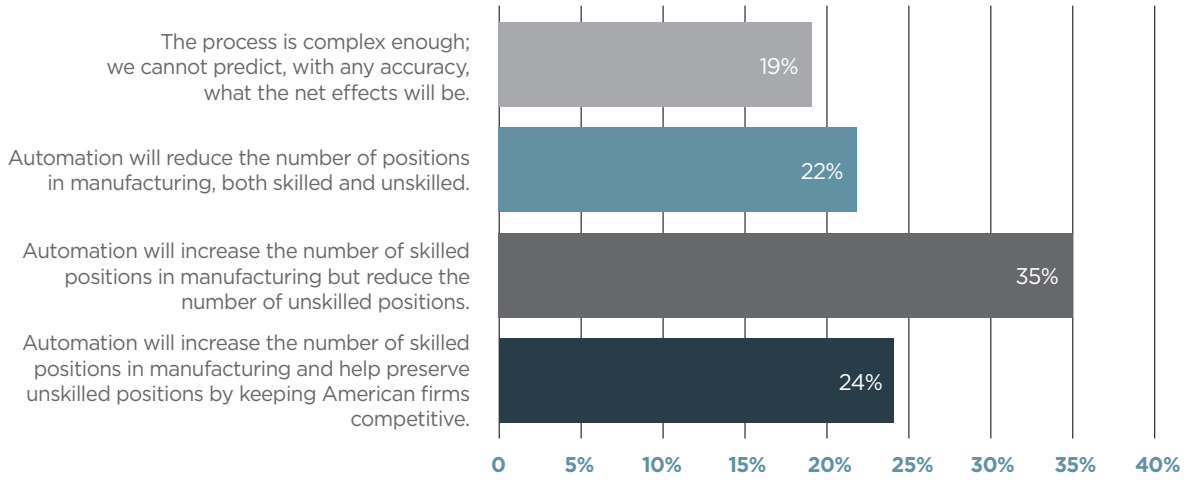
2017 SURVEY Manufacturing Technologies	No Use	Limited Use	Some Use	High Use	Very High Use	Mean
Automated Guided Vehicles (AGVs)	92%	3%	4%	0%	1%	1. 17
Automatic Storage / Retrieval Systems (AS/RS)	81%	7%	11%	0%	1%	1.35
Bio or Gene-Technology (e.g.,catalysts or bio reactors)	92%	3%	4%	1%	0%	1.15
CNC Machines	32%	6%	10%	12%	40%	3.24
Computer-Aided Design / Engineering (CAD-CAE)	15%	7%	14%	28%	36%	3.63
Computerized / Video Assembly Instructions	57%	19%	17%	7%	0%	1.74
Coordinate-Measuring Machine (CMM) Inspection	40%	7%	20%	18%	15%	2.61
Dry Ice Blasting (i.e., CO2 or cryogenic cleaning)	80%	3%	7%	7%	3%	1.49
Dry Processing / Minimum Quantity Lubrication System	79%	7%	9%	5%	0%	1.37
Flexible Manufacturing Systems (FMS)	47%	14%	28%	11%	0%	2.03
Laser as a Tool (e.g., cutting, welding, forming)	68%	6%	10%	9%	7%	1.79
Novel Materials (e.g., composite or renewable raw)	54%	19%	16%	6%	5%	1.85
Rapid Prototyping or Tooling (e.g., stereo lithography)	53%	26%	13%	6%	2%	1.74
RFID Product / Part Tracking	73%	10%	4%	9%	4%	1.61
RFID Tool Control	81%	7%	7%	5%	0%	1.33
Advanced Manufacturing Programs						
Apprenticeship Programs for Training New Workers	9%	12%	28%	38%	13%	3.35
Lean Manufacturing	7%	13%	37%	25%	18%	3.32
Six Sigma	26%	29%	27%	15%	3%	2.38
Work Cells / Cellular Manufacturing	31%	10%	26%	21%	12%	2.72

In general, the use of almost all advanced manufacturing technologies has increased in recent years. Having said that, CNC machines, CAD systems, and related technologies such as coordinate-measuring machines (CMM) have been most emphasized in terms of advanced manufacturing. In a similar way, 93% of all Indiana manufacturers rely on the philosophy known as "Lean manufacturing" in 2017. In the same way, apprenticeship programs for training workers has rapidly expanded in use for 2017, with 91% of Hoosier manufacturers presently using it in their businesses.

2016 SURVEY Manufacturing Technologies	No Use	Limited Use	Some Use	High Use	Very High Use	Mean
Automated Guided Vehicles (AGVs)	92%	3%	5%	0%	0%	1.14
Automatic Storage/ Retrieval Systems (AS/RS)	91%	4%	1%	3%	1%	1.21
Bio or Gene-Technology (e.g., catalysts or bio reactors)	96%	4%	0%	0%	0%	1.04
CNC Machines	24%	14%	10%	23%	29%	3.18
Computer-Aided Design / Engineering (CAD-CAE)	11%	11%	11%	33%	34%	3.68
Computerized / Video Assembly Instructions	60%	19%	12%	6%	3%	1.71
Coordinate-Measuring Machine (CMM) Inspection	44%	4%	16%	17%	19%	2.63
Dry Ice Blasting (i.e., CO2 or cryogenic cleaning)	84%	7%	5%	1%	3%	1. 33
Dry Processing / Minimum Quantity Lubrication System	86%	7%	4%	3%	0%	1.23
Flexible Manufacturing Systems (FMS)	53%	14%	15%	15%	3%	2.00
Laser as a Tool (e.g., cutting, welding, forming)	56%	11%	14%	11%	8%	2.04
Novel Materials (e.g., composite or renewable raw)	52%	18%	15%	5%	10%	2.03
Rapid Prototyping or Tooling (e.g., stereo lithography)	55%	15%	21%	8%	1%	1.86
RFID Product / Part Tracking	68%	7%	12%	10%	3%	1.71
RFID Tool Control	77%	12%	8%	3%	0%	1.37
Advanced Manufacturing Programs						
Apprenticeship Programs for Training New Workers	19%	18%	33%	25%	5%	2.79
Lean Manufacturing	8%	14%	29%	37%	12%	3.32
Six Sigma	38%	21%	28%	10%	3%	2.18
Work Cells / Cellular Manufacturing	33%	12%	26%	21%	8%	2.59

For the 2017 survey, we also asked for respondents' opinions on the effect of automation on the number of skilled of workers in manufacturing. The majority (35%) thought that automation will increase the number of skilled positions in manufacturing but reduce the number of unskilled positions. Alternatively, almost one-quarter (24%) believe that automation will increase the number of skilled positions in manufacturing, and it will help preserve unskilled positions by keeping American firms competitive. More pessimistically, 22% anticipate that automation will reduce the number of skilled positions and unskilled positions in manufacturing. Finally, 19% believe that we cannot predict with any accuracy what the net effects of automation will be.

EFFECT OF AUTOMATION ON THE NUMBER AND SKILL LEVEL OF JOBS IN MANUFACTURING



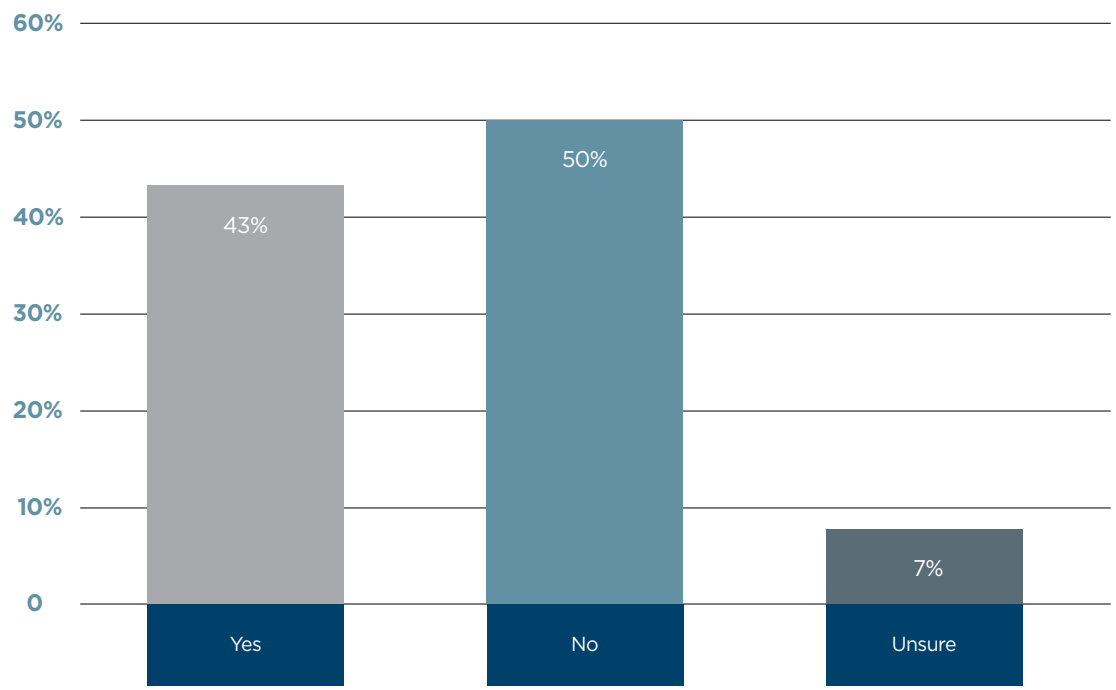
Starting with the 2016 study, we began tracking new information and process innovations in manufacturing, including additive manufacturing (3D printing) and data analytics (DA). Data analytics, in particular, is increasingly deployed in a host of manufacturing-related areas. It is also worth noting that additive manufacturing is beginning to be used more and more in fabricating spare parts, finished goods, and subassemblies, as well as shop floor tools including fixtures and jigs.

ADDITIVE MANUFACTURING / 3D PRINTING	No Use	Some Degree	High Degree
In fabricating component parts and subassemblies	90%	9%	1%
In fabricating standardized finished goods (e.g., regular production)	93%	6%	1%
In fabricating customized finished goods (e.g., mass customization)	93%	6%	1%
In fabricating spare parts (e.g., OEM replacement parts)	90%	9%	1%
In fabricating shop floor tools (e.g., fixture and jig fabrication)	84%	13%	3%

DATA ANALYTICS	No Use	Some Degree	High Degree
In our product design (e.g., engineering)	56%	35%	9%
In advertising and selling our products (e.g., sales and marketing)	47%	47%	6%
In planning and scheduling our production (e.g., forecasting, production planning, and control)	29%	47%	24%
In managing our raw materials and finished goods inventory (e.g., purchasing, inventory, and warehouse management)	27%	54%	19%
In managing our shop floor production (e.g., line / manufacturing management)	26%	56%	18%
In planning and coordinating our inbound and outbound supply chains (e.g., transportation management)	40%	51%	9%

Similarly, many businesses are increasingly threatened in the area of cybersecurity. In the 2017 survey we asked respondents how big a problem it may (or may not) be. While the majority (50%) reported no issue, 43% said it is a problem for them.

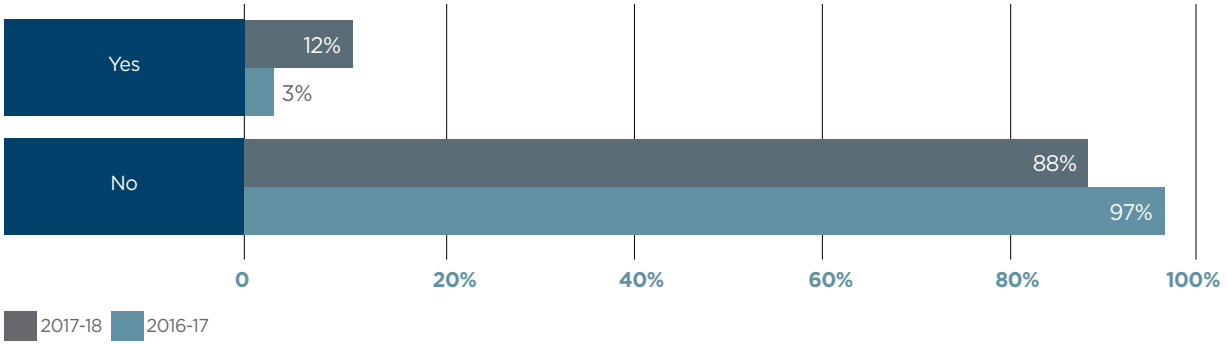
IS CYBERSECURITY A PROBLEM IN YOUR MANUFACTURING OPERATIONS?



V. Manufacturing Workforce Issues

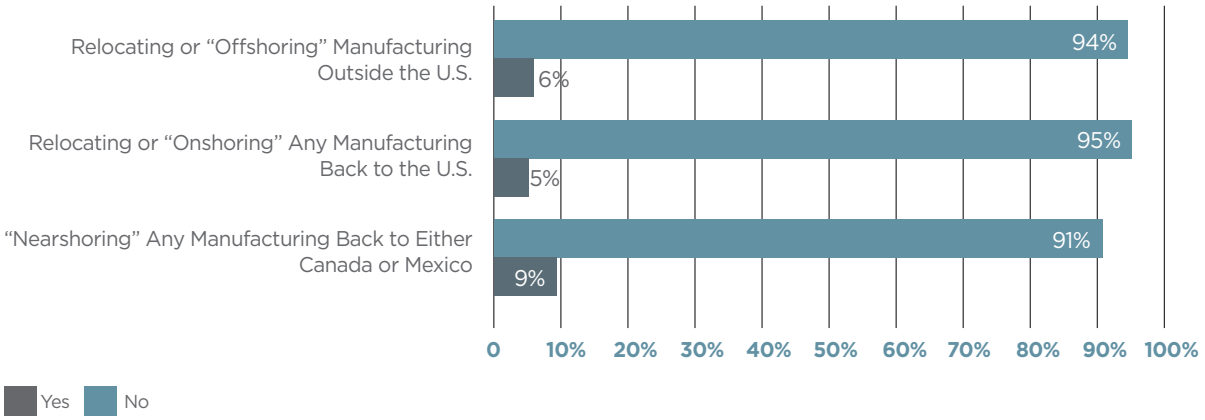
When asked about plans to open a new manufacturing facility in Indiana in the next two years, only 3% responded "yes" in the 2016 survey. For 2017, that number jumped to 12%.

OPENING A NEW MANUFACTURING FACILITY IN INDIANA IN THE NEXT TWO YEARS?



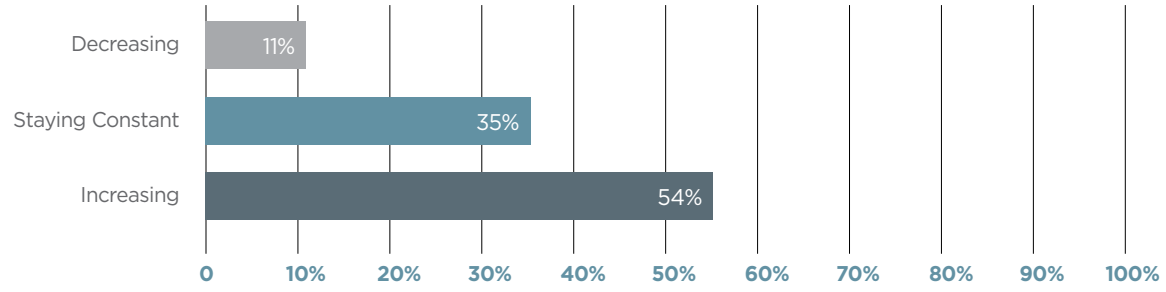
In recent surveys, we also asked respondents if they expect to "onshore" any manufacturing back to the U.S., "nearshore" it to Canada or Mexico, or, alternatively, relocate or "offshore" any production outside the country. In 2017, 9% intended to nearshore, 5% intended to onshore, and 6% intended to offshore some manufacturing.

OFFSHORING, ONSHORING, AND NEARSHORING



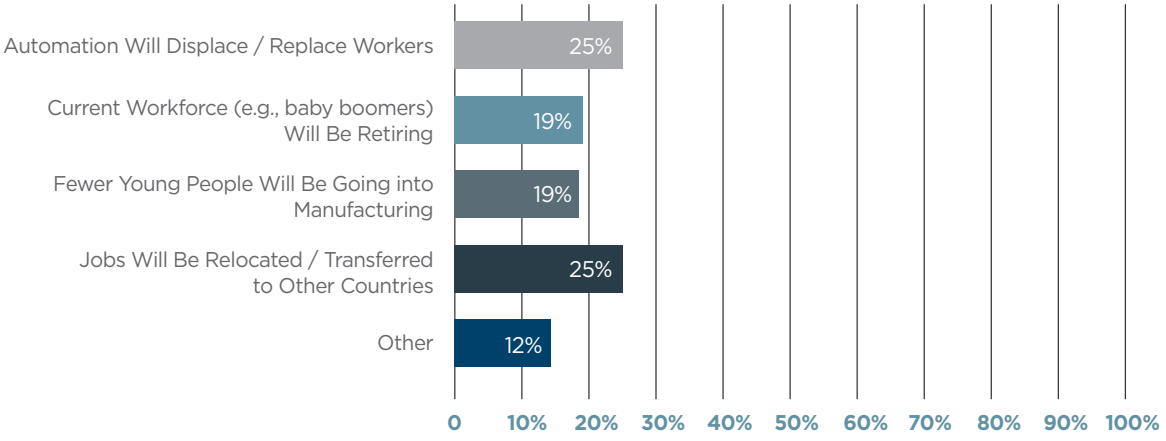
Recently, there has been a lot of speculation on whether jobs in manufacturing are increasing, shrinking, or remaining constant in terms of employment levels. In this 2017 survey, 54% of the respondents indicate the number of manufacturing jobs at their organization are increasing, 35% said the numbers are staying constant, and only 11% replied that their number is decreasing.

HOW ARE THE NUMBER OF MANUFACTURING JOBS IN YOUR BUSINESS CHANGING?



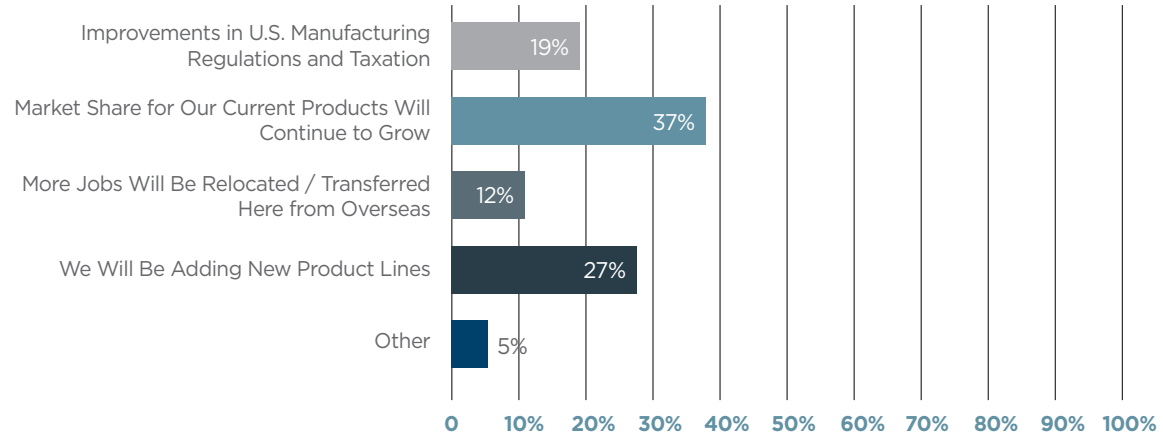
For any respondents that report "decreasing" to the question above, we then asked them for rationale. Half said it was due to either automation (25%) or jobs transferred to other countries. Interestingly, 19% percent think they are going to decrease as more baby boomers retire. An identical 19%, in turn, think their manufacturing jobs will decrease in number because fewer young people are interested in entering manufacturing.

REASONS THAT MANUFACTURING JOBS WILL DECREASE



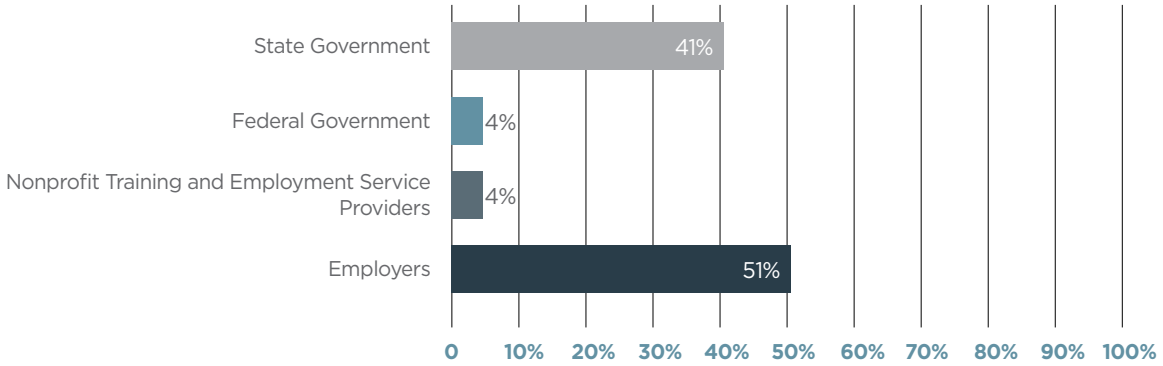
Alternatively, for those respondents that report "increasing" to the question above, we also asked for rationale. The majority (37%) said that their market share is growing, while another 27% note that they plan to add new product lines. Nineteen percent think that regulatory changes would increase manufacturing jobs, while 12% think more positions will be relocated or transferred back to the U.S. from overseas.

REASONS THAT MANUFACTURING JOBS WILL INCREASE



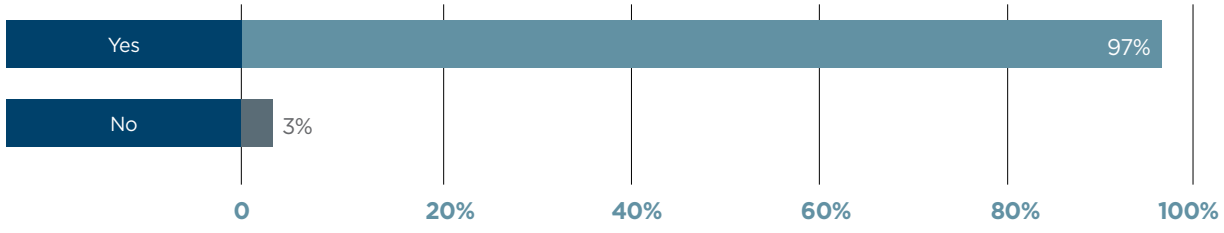
Turning to workforce development, just over half of the respondents think that employers (i.e., manufacturers) should be responsible for workforce development. Conversely, 45% think it should be driven by the state (41%) or federal government (4%).

WHO SHOULD BE THE DRIVER OF MANUFACTURING WORKFORCE DEVELOPMENT?



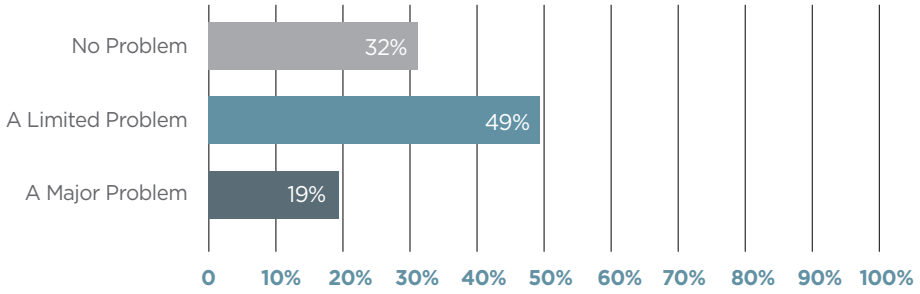
Not surprisingly, 97% of respondents have some type of on-the-job workforce training program.

DO YOU PROVIDE ON-THE-JOB TRAINING?



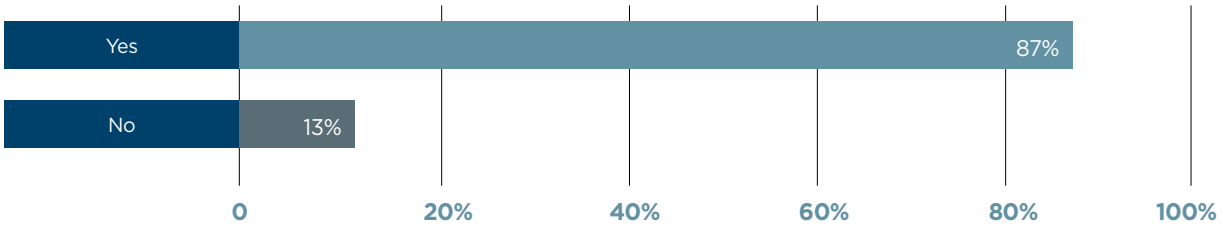
In the past two surveys, we have also included a question around problems related to illegal drugs and workers' inability to pass drug screening tests. Similar to prior years, nearly 20% of respondents report that this is a major problem, with another 49% saying that it is a "limited" issue.

HOW PROBLEMATIC IS THE USE OF ILLEGAL DRUGS/THE INABILITY TO PASS DRUG TESTS?



For the 2017 survey, we decided to include more questions focused around attracting young people into careers in manufacturing. An alarming 87% of the respondents reported that they had problems recruiting young people into the field.

ANY PROBLEMS RECRUITING YOUNG PEOPLE INTO MANUFACTURING?



We also gave respondents an opportunity to **share any advice they had for young people interested in a career in manufacturing**. Practically every respondent had something to tell young people about manufacturing, and below is just a short list of their cumulative thoughts.

"Manufacturing today is not the sweatbox of yesterday. It's more video game than hard, manual labor."

"Be proud to make something (besides a latte)."

"You will obtain a better quality of life and security than most liberal arts majors and all service workers."

"Learn to work and learn to be on time."

"Take it seriously. There are many opportunities."

"It is not your grandfather's industry. This is becoming a high-tech industry with clean working environments."

"Having a blue collar job is still honorable and can provide a healthy pay and benefits for family."

"It's no longer a dirty job but one that requires computer skills."

"Be prepared to work. Attitude means more than skills. I can teach skills; attitudes are already formed."

"Take pride in U.S. manufacturing, and there is still a lot of careers available in many industrial segments."

"Manufacturing is much less factory work than it is a calling, an industry with limitless potential to alter the future course of humanity."

Finally, we also gave our 2017 survey participants an opportunity to **share any ideas that they had on how to better promote careers in manufacturing** to young people. Once again, almost everyone had some thoughts on this important issue. Below are some of their suggestions.

"Educate teachers and guidance counselors on the opportunity, wages, and need."

"Eliminate the negative stereotype of manufacturing employees and jobs through PR and marketing campaigns."

"Let's explain the technology at work in our manufacturing process. Granted, we aren't Google or Facebook, but we have some amazing technology in use."

"Vocational training at centers such as Ivy Tech, Vincennes University, Lincoln Tech, etc."

"We need a cohesive plan across the state. We simply have too many cooks in the kitchen all trying to do the same things."

"Give those in high schools, through counselors, the knowledge that they can make a good living in ways other than college, such as through trades."

"Bring back the hands-on trainings in the high schools and stop pushing everyone to a 4-year college career."

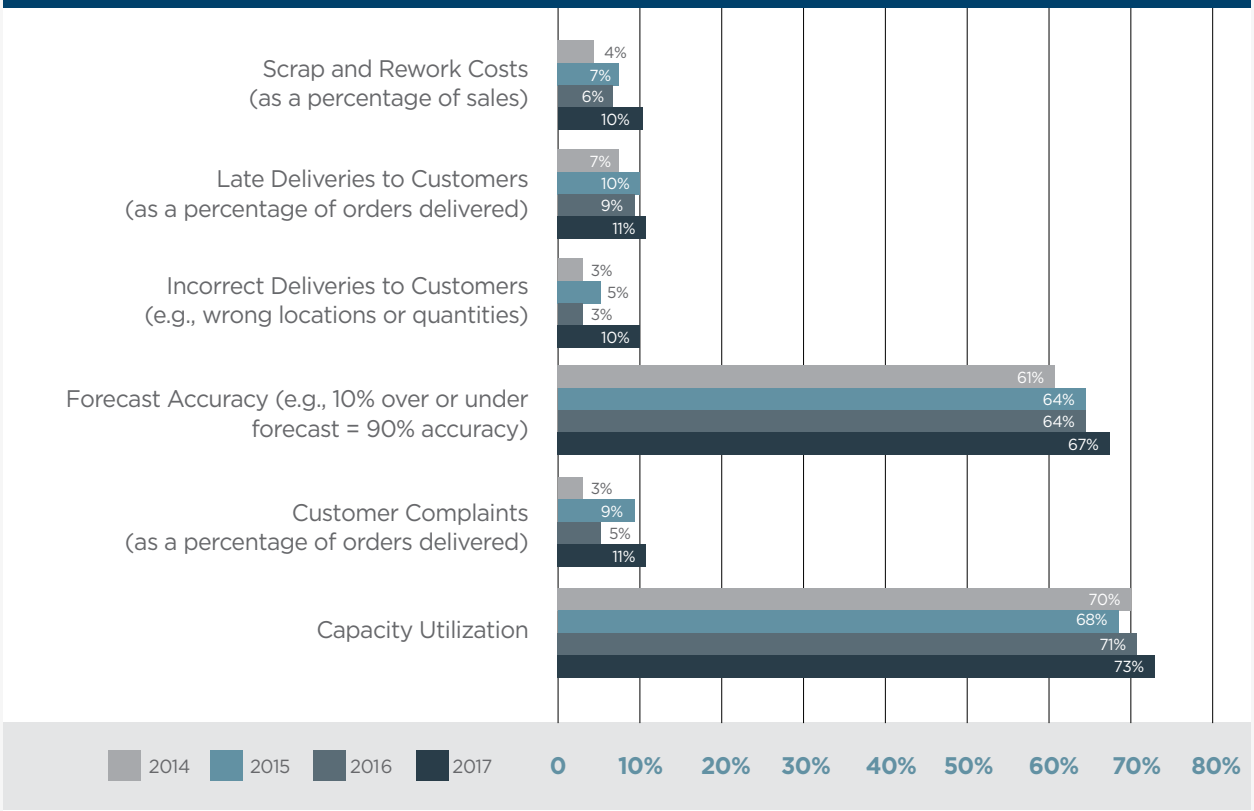
"Government and media must promote the virtues of manufacturing. Careers in manufacturing can be steady and stable."

"Establish a career track in high school focused on advanced manufacturing with specific job skills."

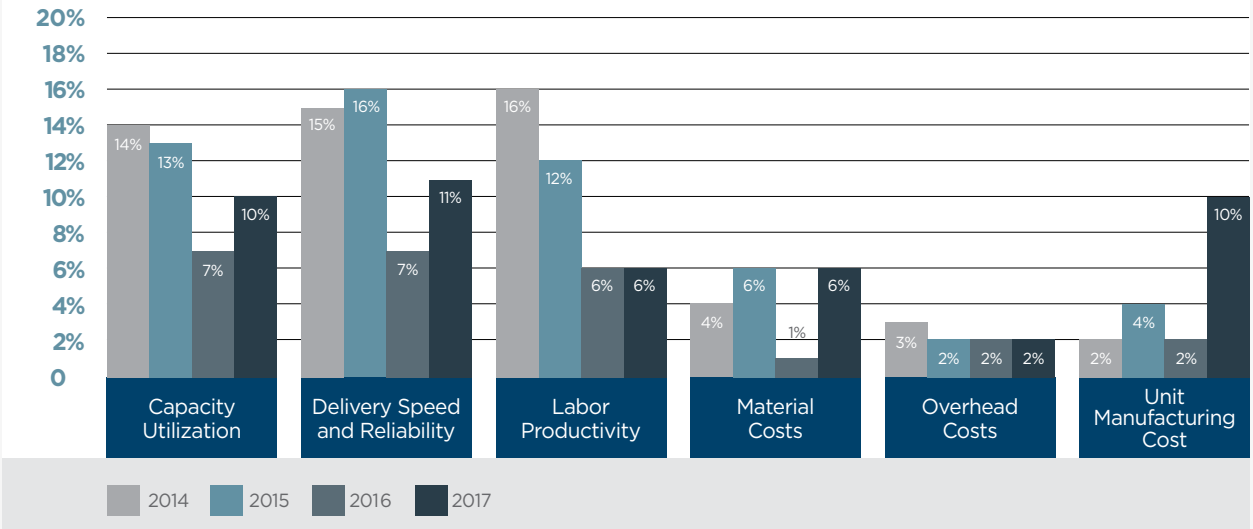
Appendix: Benchmarking Indiana's Manufacturing

The following data are averages for an array of performance metrics over the last five surveys.

WHAT WAS YOUR BUSINESS UNIT'S APPROXIMATE PERFORMANCE LEVEL FOR THE FOLLOWING?



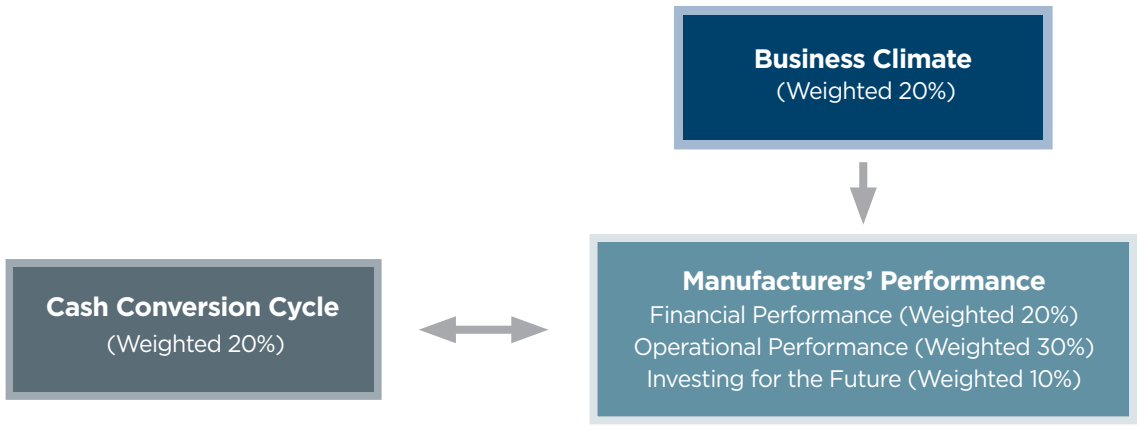
BY WHAT PERCENTAGE HAS YOUR BUSINESS UNIT'S OPERATIONAL PERFORMANCE IMPROVED, STAYED THE SAME, OR DECLINED IN THE PAST THREE YEARS FOR THE FOLLOWING?



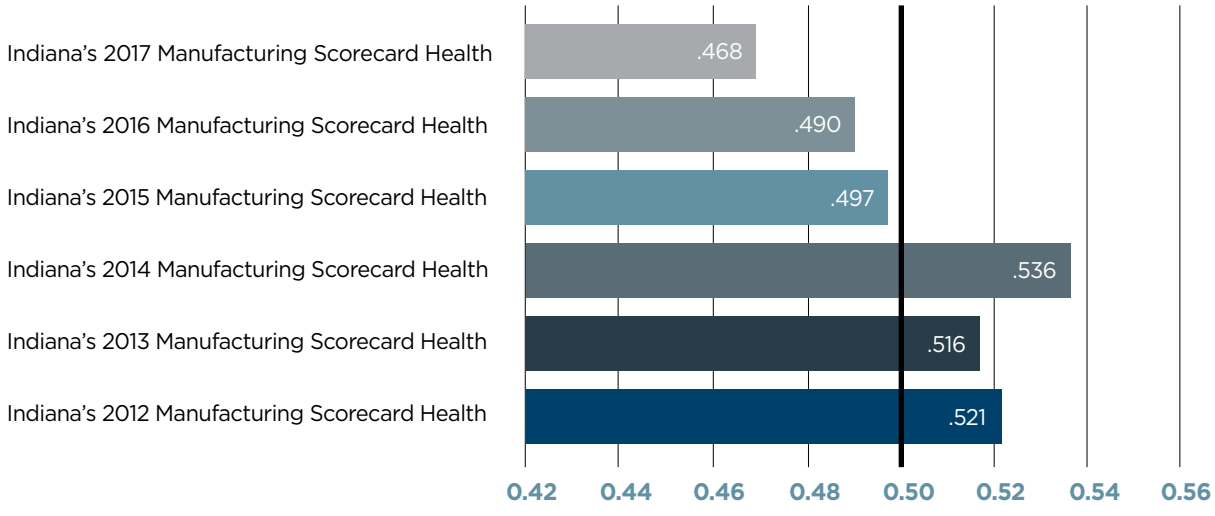
INDIANA'S MANUFACTURING SCORECARD

As with previous survey reports, this year's report includes a composite scorecard compiled using 16 different critical measures covering the business climate, cash-conversion cycle, and manufacturers' performance in order to track the overall health of Indiana's manufacturing industry. Using the 2011 study as a reference point, we set that year's score at an even "par" index baseline of .500. From there, annual scores greater than .500 indicate Indiana's manufacturing sector is getting stronger, while scores lower than .500 suggest Hoosier manufacturers are weakening. This year's score of .468 is the third time in a row over the past seven years that the index has slumped below .500, suggesting that the health of Hoosier manufacturers has decreased year-over-year, from the peak of 2014.

INDIANA'S MANUFACTURING HEALTH SCORECARD: CRITICAL AREAS AND WEIGHTS



INDIANA'S SIX-YEAR MANUFACTURING HEALTH



ABOUT KATZ, SAPPER & MILLER

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The research study was conducted in conjunction with faculty from Indiana University's Kelley School of Business on the IUPUI campus.

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D.B.A. Boston University 1998

Dr. Frohlich's research interests are in manufacturing strategy, process improvement, and supply chain integration, and he has been published in a wide variety of scholarly journals including the *Journal of Operations Management*, *Decision Sciences*, and *Production and Operations Management*. His research has won numerous awards including best papers of the year and best operations management case study. He was identified as one of the most cited authors in the field by the *Journal of Operations Management*. His teaching spans the range from supply chain management and Six-Sigma process improvement to the basics of operations. Through executive education, he has had the opportunity to teach on four continents in more than a dozen countries.

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Dr. Jones' research interests are in financial management and strategy, including how financial decision making interacts with capital market conditions. He has been published in the top scholarly journals in finance, including the *Journal of Financial Economics*, the *Journal of Finance*, the *Journal of Business & Financial Management*, and the *Journal of Corporate Finance*. He also serves as director of the school's Finance Education Enterprise, and currently, he is professor of finance at the IU Kelley School of Business on IUPUI's campus. He teaches courses in financial management, financial markets, and investment analysis, and he is a four-time winner of a Kelley School teaching excellence award.

For more information regarding the Kelley School of Business, please visit kelley.iupui.edu.

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