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NATIONAL ASSOCIATION OF Manufacturers

MANUFACTURING Institute

A look ahead

How modern manufacturers can create positive perceptions with the US public

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Introduction

As the pace of transformation within the manufacturing industry accelerates—the digital and physical worlds converging and much of the skilled workforce retiring—many US manufacturing executives face a set of new and evolving challenges. Primary among these challenges is the issue of talent—ranked by global manufacturing executives as the #1 driver of manufacturing competitiveness.[1] In fact, many manufacturing companies are facing a critical skills gap issue (i.e., talent shortage). It's estimated the US manufacturing industry will face an expected shortage of two million workers over the 2015–2025 period due to factors such as:[2]

- Availability of qualified workforce
- Changing dynamics of the skillsets needed for advanced manufacturing
- Perceived attractiveness of the industry among general public

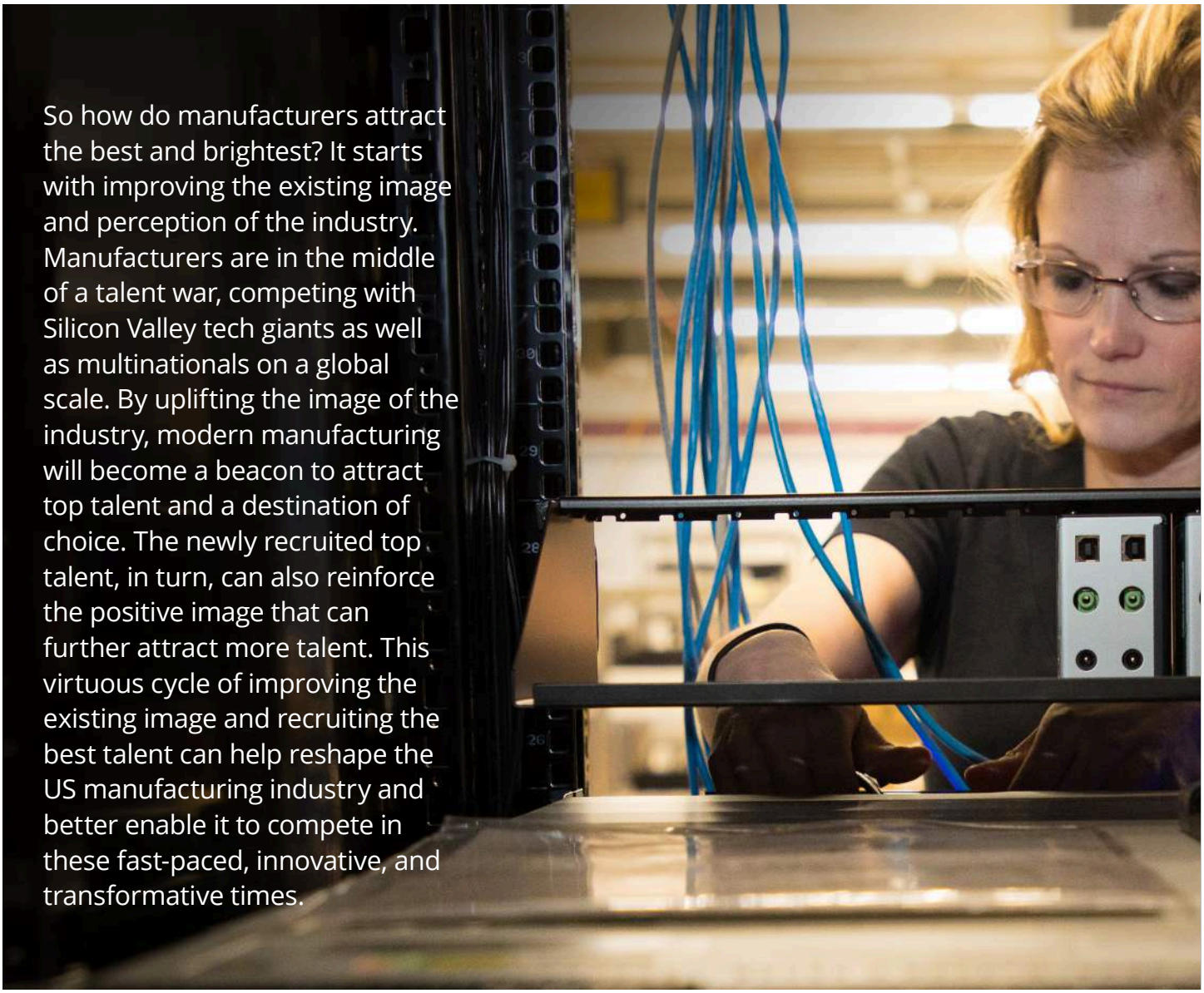
While we explore the first two factors in some of our related research efforts, the central focus of this study is to better understand the US public perception of the manufacturing industry. Specifically, this study examines what Americans want (or don't want) in a career, how they view the US manufacturing industry vis-à-vis other industries, and how they perceive the future of manufacturing. Answering these questions can arm manufacturing executives with the tools to dispel potential misperceptions as well as take active steps to attract and retain the best and the brightest talent for modern manufacturing careers. Often US manufacturers are in the middle of a talent war, competing with Silicon Valley tech giants as well as multinationals on a global scale. Many domestic and global manufacturing companies are all recognizing the strategic importance of talent in defining their future competitiveness and differentiation. For US manufacturers to succeed in the long term, they will likely need to first work toward improving the perception of their companies, as well as the overall industry, and make manufacturing a preferred destination for the world's top talent.

About the study

Deloitte and the Manufacturing Institute have teamed up to conduct a multi-year research initiative to better understand the US public perception of manufacturing. To this end, an independent research company, on behalf of Deloitte and The Manufacturing Institute, conducted an online survey of more than 1,000 Americans spread across 50 states, with a demographic representation mirroring that of the actual US population.

A call to action

The results of this year's study—our sixth in eight years—gauging Americans' perspectives on the US manufacturing industry relative to other industries, reveals public perception is perhaps at an inflection point. The vast majority of Americans surveyed (roughly 8 in 10) continue to view US manufacturing as vital to maintaining the economic prosperity of the country. However, less than 5 in 10 Americans surveyed believe manufacturing jobs are interesting, rewarding, clean, safe, stable, and secure. Also, manufacturing is not the preferred industry to start a career today, with less than 3 in 10 Americans surveyed likely to encourage their children to pursue a manufacturing career. Yet, when asked what future jobs in manufacturing will look like, Americans surveyed have overwhelmingly optimistic views—future manufacturing jobs will require high-tech skills (88 percent) and will be clean and safe (81 percent), as well as more innovative (77 percent). Given these findings, manufacturers could benefit from uplifting current perceptions and tapping into the future vision in order to help attract talent, both young and old, to the industry.



So how do manufacturers attract the best and brightest? It starts with improving the existing image and perception of the industry. Manufacturers are in the middle of a talent war, competing with Silicon Valley tech giants as well as multinationals on a global scale. By uplifting the image of the industry, modern manufacturing will become a beacon to attract top talent and a destination of choice. The newly recruited top talent, in turn, can also reinforce the positive image that can further attract more talent. This virtuous cycle of improving the existing image and recruiting the best talent can help reshape the US manufacturing industry and better enable it to compete in these fast-paced, innovative, and transformative times.

Photo by David Bohrer/National Assoc. of Manufacturers

After helping arm manufacturers with valuable insights about Americans' current and future perceptions of the industry, the study concludes with a set of recommended actions manufacturers can take—individually or collectively—to help improve the perception of the industry, such as:

- Investing in programs directed toward skill development, such as internships, apprenticeships, and certification programs, as these are the types of programs Americans find most attractive.
- Raising awareness about the benefits of a manufacturing career, dispelling potentially false perceptions, and opening the doors to have the public see what modern manufacturing actually is by actively supporting events like Manufacturing Day™, as these events have a successful track record in improving perceptions about manufacturing.
- Tapping into more pro-manufacturing demographic groups like females, Gen X Americans, and American parents—who have a better overall perception about the industry—as strong recruiting targets and brand ambassadors of manufacturing.

Keeping in mind the insights identified in this study, manufacturing executives can foster and enable a strong and thriving image of the future of manufacturing that not only attracts more quality talent but also taps more into underrepresented groups like women and millennials in order to increase future competitiveness—both at a company and country level.

Key takeaways

Importance of manufacturing

More than
8 in 10 Americans surveyed

believe the US manufacturing industry is vital toward maintaining an average American's living standards.

Manufacturing is ranked
#3
in terms of the importance in creating new jobs and the fourth most important in maintaining a strong national economy in the US according to our survey.

Americans with **high manufacturing familiarity**, **Gen X**, and **parents** surveyed see manufacturing as the most preferred job-creation engine in the United States.

Current public perception

A higher percentage of Americans surveyed in 2017 (compared to 2014) believe the US manufacturing industry is:

High-tech
(64 percent)

Can compete globally
(55 percent)

However, fewer Americans surveyed (less than **5 in 10**) believe manufacturing jobs to be interesting and rewarding, clean and safe, and stable and secure than in the past.

Less than
3 in 10 Americans surveyed
would encourage their children
to pursue a manufacturing career.

However, respondents familiar with the industry are nearly **2x more likely** to encourage children in pursuing a manufacturing career than others.

Future public perception

More Americans surveyed believe that US manufacturing will **grow stronger** in the longer term than in prior studies.

An overwhelming majority of Americans surveyed believe future manufacturing jobs will:

Require higher technical skillsets
(88 percent)

Occur in safer and cleaner environments
(81 percent)

Public awareness of **advanced technologies in manufacturing** is **growing,** according to our survey, but appears **disjointed** from executive priorities of what is critical to the future of manufacturing.

Creating awareness and interest in manufacturing

Programs directed toward hands-on skills development, such as internships, apprenticeships, and certification programs, find the most traction among Americans surveyed **(more than 6 in 10).**

Manufacturers should further raise awareness of strong job benefits and high-paying jobs as existing attributes of current manufacturing careers, which are the two most cited job-selection criteria (by nearly **9 in 10 Americans** surveyed).

Manufacturing has:

- The highest tenure for workers **(9.7 years)**
- One of the lowest employee turnover rates **(2.3 percent)**
- The highest average wages **($81,289)** across all private-sector industries

Elevating public awareness of these statistics could help dispel false perceptions and get the good news out.

Improving US manufacturing competitiveness

More than **three-quarters** of Americans surveyed agree that the US needs a more strategic approach and should further invest to develop its manufacturing base.

Nearly **7 in 10 Americans** surveyed in 2017 believe developing a strong manufacturing base should be a national priority and that the government should provide tax incentives to encourage it.

The need for:

- **Decreasing health care costs**
- **Instituting a comprehensive energy policy**
- **Reforms in the education system**

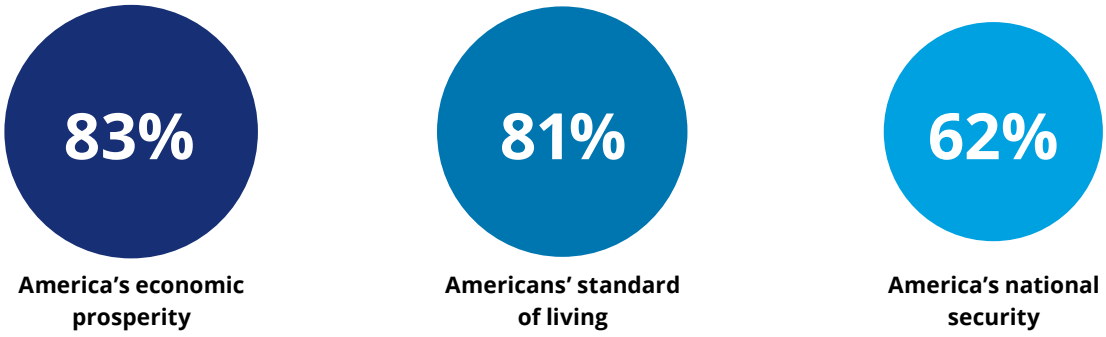
are some of the actions Americans surveyed indicate would bolster US manufacturing competitiveness.

The importance and image of manufacturing

Americans hold the US manufacturing industry in high regard and importance

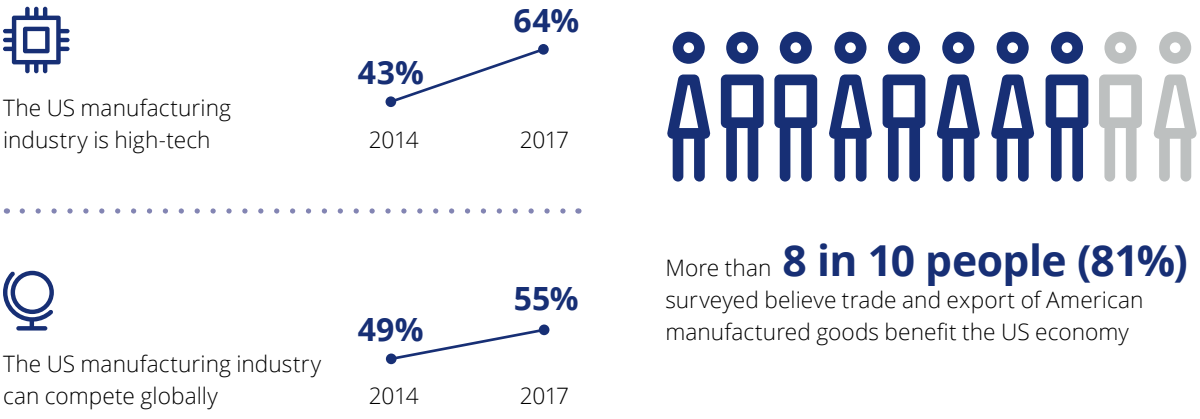
Similar to past years, the US public recognizes the importance of manufacturing and overwhelmingly believes manufacturing is vital to the economy and their standards of living.

Figure 1. Importance of US manufacturing industry, according to US public
Percentage of respondents who believe the manufacturing industry is very important or important to maintaining:



The American public also recognizes the high-tech and globally competitive nature of the US manufacturing industry as well as the value generated from trade in manufactured goods. In fact, US exports in manufactured goods amounted to $1.1 trillion, about 74 percent of total US merchandise exports in 2015 alone.[3]

Figure 2. Nature of US manufacturing industry, according to US public
Percentage of respondents who strongly agree or agree with each statement



At the same time, Americans surveyed indicate more should be done to foster manufacturing, including adopting a more strategic approach, ensuring further investments, and providing more attractive tax incentives. Over two-thirds of Americans surveyed believe developing a robust manufacturing base should be a national priority.

Figure 3. Emphasis on the need for a strategic approach, according to US public
Percentage of respondents who strongly agree or agree with each statement

The US needs a more strategic approach to the development of its manufacturing base	**76%**
The US should further invest in the manufacturing industry	**76%**
The US should ensure long-term, stable funding for programs that spur innovation and advanced manufacturing	**71%**
Developing a strong manufacturing base should be national priority	**69%**
The US should provide tax incentives to encourage manufacturing in the US	**68%**

Yet, while the US public overwhelmingly believes manufacturing is vital, it currently ranks lower than other industries in terms of creating a strong national economy and generating new jobs. For instance, the US manufacturing industry is ranked fourth behind energy, technology, and health care industries in terms of maintaining a strong US economy.

Figure 4. Ranking of industries viewed by US public as most important to maintaining a strong national economy
Ranks calculated based on composite scores, as given by respondents, for each industry

Industry	Rank
Energy	1
Technology	2
Health care	3
Manufacturing	**4**
Financial services	5
Communications	6
Retail	7

Americans surveyed also rank manufacturing as the third most important industry in terms of supporting job growth at the community level. There's a positive outlook for manufacturers, though, as certain segments of the population—parents, Generation X, and those with high familiarity of manufacturing—rank manufacturing as #1.

Figure 5. Ranking by US public of the type of new industry facility they would support to create 1,000 new jobs in their community
Ranks calculated based on composite scores, as given by respondents, for each industry

Overall respondents		Parents of school-age children		Gen X (born 1965–1976) respondents		High-familiarity respondents	
Industry	**Rank**	**Industry**	**Rank**	**Industry**	**Rank**	**Industry**	**Rank**
Technology	1	**Manufacturing**	**1**	**Manufacturing**	**1**	**Manufacturing**	**1**
Health care	2	Technology	2	Technology	2	Energy	2
Manufacturing	**3**	Energy	3	Health care	3	Technology	3
Energy	4	Health care	4	Energy	4	Health care	4
Communications	5	Communications	5	Communications	5	Communications	5
Financial	6	Financial	6	Financial	6	Financial	6
Retail	7	Retail	7	Retail	7	Retail	7

Note: 'High Familiarity' respondents refer to those who have worked or are working in the manufacturing industry.

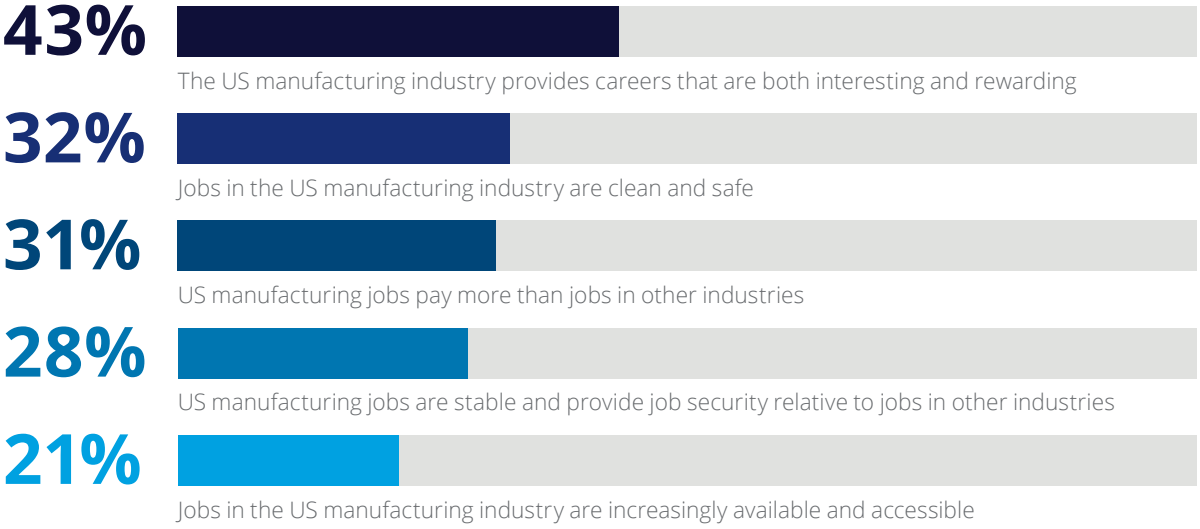
Photo by David Bohrer/National Assoc. of Manufacturers

Building the talent pipeline

Despite recognizing the importance of the manufacturing industry, it seems many Americans do not have a positive impression of current manufacturing jobs, and they do not feel schools are doing enough to expose students to the industry. But there is a bright side: Some of the public's perceptions and worries could not be further from reality, and those familiar with the industry are more likely to encourage the next generation to pursue a career in manufacturing.

Current results indicate the ability of manufacturers to capture their fair share of the talent pool will continue to be a challenge. Many Americans appear to not have a strong perception of current manufacturing jobs, are reluctant to choose careers in manufacturing, and many are not encouraging the next generation of talent to pursue these jobs either.

Figure 6. Current views of US public regarding manufacturing careers
Percentage of respondents who strongly agree or agree with each statement



Many Americans tend to feel school systems aren't doing enough to expose children to the manufacturing industry.

Figure 7. Current views of US public regarding school-system exposure to manufacturing
Percentage of respondents who strongly agree or agree with each statement

Only **45%**

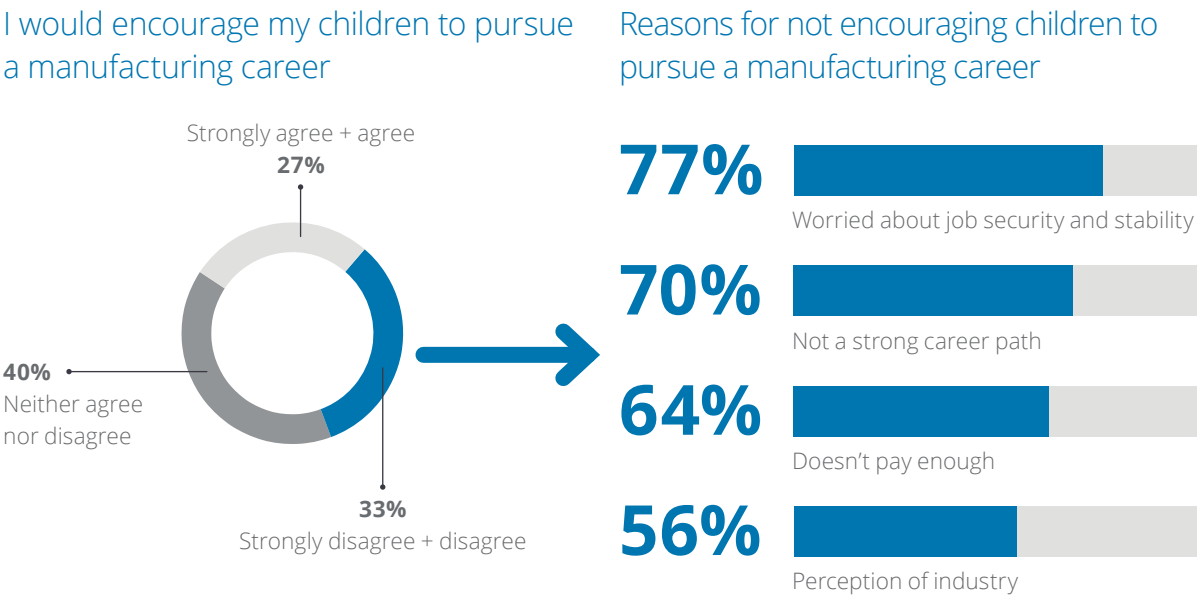
believe the school system in their community provides exposure to skills required to pursue a career in manufacturing (e.g., science, technology, engineering, and math)

Only **24%**

believe their local school system encourages students to pursue careers in manufacturing

Roughly one-third of Americans surveyed would not encourage their children to pursue a manufacturing career today, pointing to concerns around job security and stability, weak career path, and poor pay.

Figure 8. Current views of US public regarding their children pursuing a manufacturing career
Percentage of respondents who strongly agree or agree with each statement



Yet many of their concerns could not be further from reality. Manufacturers could benefit from helping ensure Americans know the facts about the industry by:

Dispelling concerns about stability, security, and career trajectory: For instance, the average (mean) tenure of workers (with current employer) in the manufacturing industry is the highest among all private-sector industries at 9.1 years (2016). In fact, manufacturing jobs have one of the lowest employee turnover (2.3 percent) and quit rates (1.2 percent) in the last five years (2011–2016) among all private-sector jobs. Also, many manufacturing jobs have become high-tech and innovative, with manufacturers requiring new levels of technical and problem-solving skills from workers. With many senior-level Baby Boomers retiring, the next 10 years are expected to witness many job openings in manufacturing, especially in high-skilled and high-tech manufacturing occupations, as well as leadership positions. (Sources: Bureau of Labor Statistics and National Association of Manufacturers)

Dispelling concerns about pay: The average manufacturing worker in the United States earns almost $20,000 more, including pay and benefits, compared to the average employee working in other industries. In fact, the average manufacturing worker earned $81,289 annually, while the average US worker earned $63,830 in 2015. (Source: National Association of Manufacturers)

Silver lining: High industry familiarity leads to greater preference for manufacturing careers and more positive perceptions

Often increased familiarity with US manufacturing leads to more favorable manufacturing perceptions and increased career interest. Specifically, parents and respondents with high manufacturing industry familiarity (i.e., those who have worked in the industry) are nearly twice as likely to encourage their children to pursue a manufacturing career today than those with no familiarity.

Figure 9. Views on encouragement given to children to pursue a manufacturing career, by familiarity level
Percentage of respondents who strongly agree or agree with the statement

Manufacturing industry: Pioneering job creation for America

Manufacturing is a foundational industry in the US economy. It contributes 12 percent of US GDP and employs roughly 12 million people, and the effect of manufacturing activities ripples across the entire nation.

- US manufacturing has the highest multiplier effect of any economic sector. For every $1.00 spent in manufacturing, another $1.81 is added to the economy, as compared to only $0.54 for retail and $0.58 for wholesale.
- For every job created in manufacturing, four additional new jobs are created in the broader economy.

In addition, between 2015-2025, more than 3.5 million manufacturing jobs will likely be needed, partly due to the growth of the industry and partly due to the retirement of Boomers. Moreover, according to recent studies, 84 percent of manufacturers report a moderate or serious shortage of qualified applicants for skilled and highly-skilled production positions, as well as engineers and management positions. About 80 percent of manufacturing organizations indicate they're willing to pay more than the market rates in critical workforce areas. Clearly, there's significant demand within the manufacturing industry for top talent.

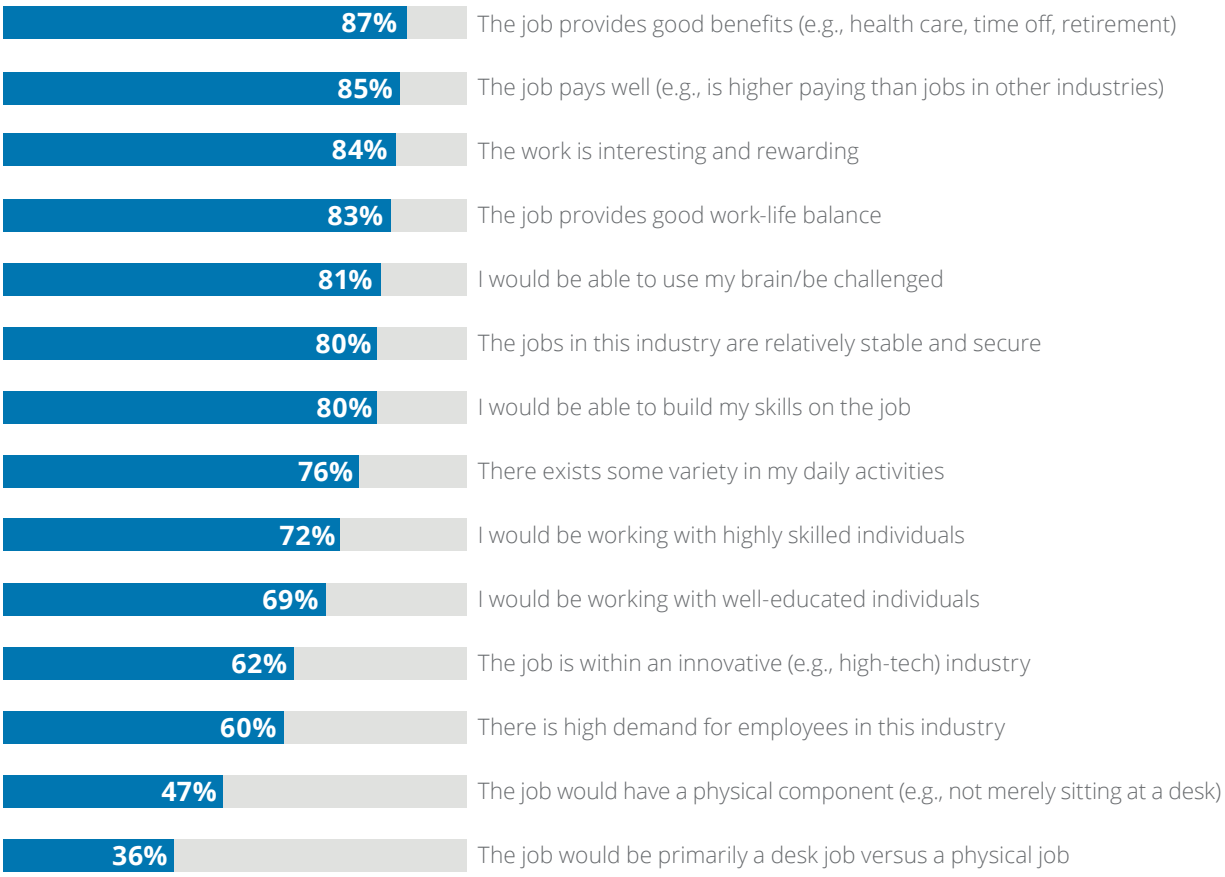
Source: Deloitte, The Manufacturing Institute, and National Association of Manufacturers

So what do Americans want?

Americans surveyed want a job that provides them with strong benefits, followed by higher compensation and interesting and rewarding work.

Figure 10. Job-selection criteria for choosing a job or potential career path

Percentage of respondents who indicated the following criteria as "very important" or "important"



Good news: A career in manufacturing has what many people want

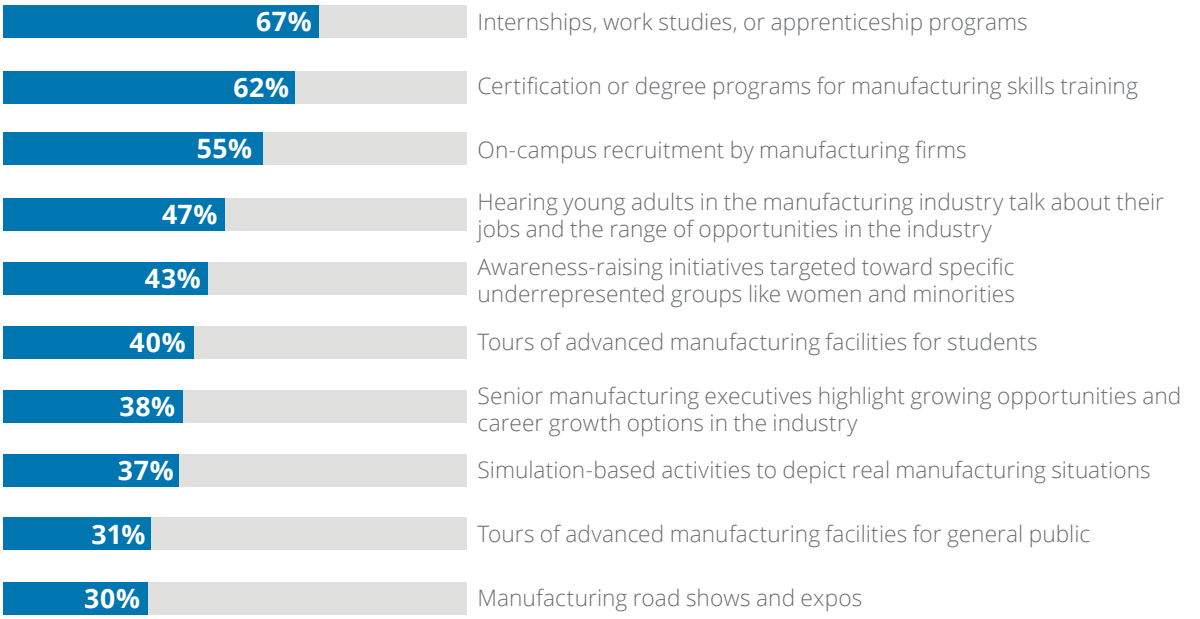
Good benefits: US manufacturing jobs offer health benefits to its employees. US manufacturers have one of the highest percentages of workers (92 percent in 2015) who are eligible for health benefits provided by their employer. Of those who are eligible, 84 percent actually participate in their employers' health benefit plans. (Source: National Association of Manufacturers)

Better pay: In 2015, the average manufacturing worker in the United States earned $81,289 annually, including pay and benefits, compared to $63,830 earned by an average worker in other industries. (Source: Bureau of Economic Analysis and Bureau of Labor Statistics)

Interesting and rewarding work: Manufacturing jobs invoke the need for continuous innovation. Manufacturers in the United States perform more than three-quarters of all private-sector research and development (R&D) in the nation, driving more innovation than any other sector. Specifically, advanced manufacturing and technology industries generate 85 percent of all US patents and employ 80 percent of the nation's engineers. (Source: Bureau of Economic Analysis and Deloitte)

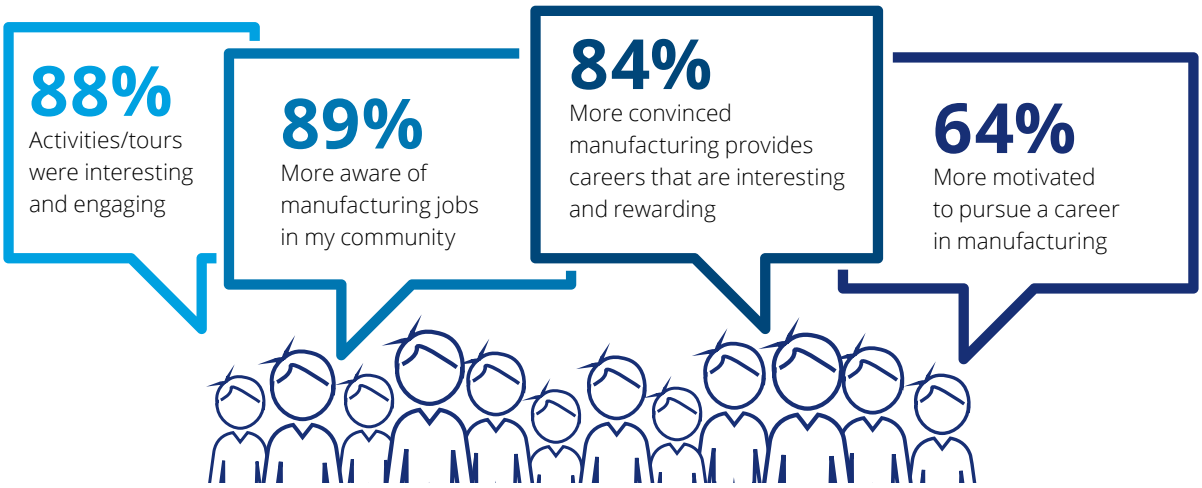
What types of programs will increase interest in manufacturing?
Americans are most interested in programs like internships, apprenticeships, and certifications for developing critical skills, which can encourage them to take up careers in manufacturing. Targeted awareness-raising initiatives and tours of advanced manufacturing facilities are other possible avenues to attract talent.

Figure 11. Programs that increase interest in manufacturing careers
Percentage of respondents who said each of the following programs would help to increase interest in manufacturing as a career choice to a "great extent" or "high extent"



Furthermore, manufacturers can tap into national programs, such as Manufacturing Day™, that have demonstrated to be highly effective in creating positive perceptions about manufacturing among target groups such as students.

Figure 12. Manufacturing Day™ impact on students
Percentage of Manufacturing Day™ student participants who strongly agree or agree with the following statements



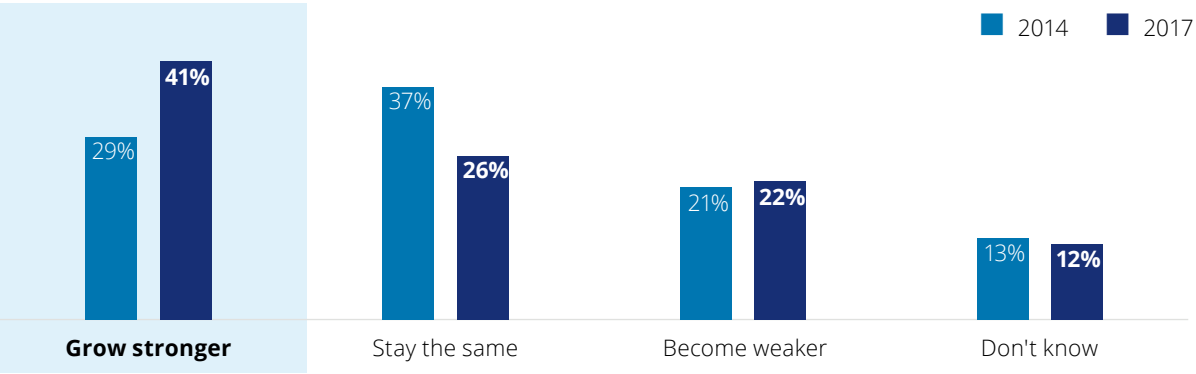
Source: 2016 Manufacturing Day™ survey findings, Deloitte and The Manufacturing Institute

Perceptions of the future of manufacturing

Look again: The future outlook is brighter

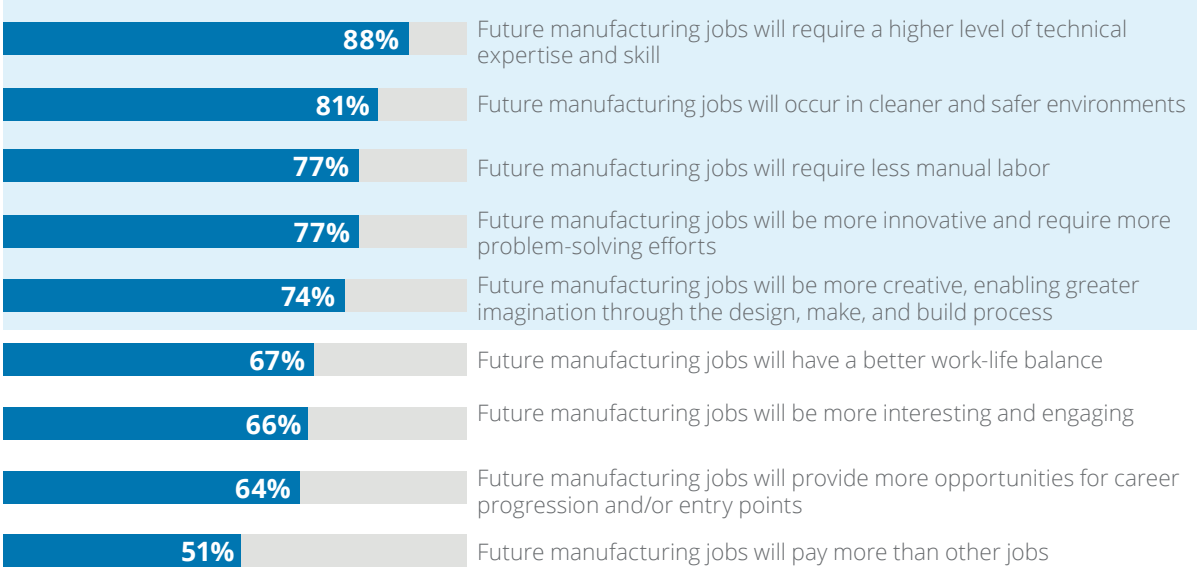
Despite what current perceptions may be, the future outlook of manufacturing among Americans is growing stronger, with nearly half of respondents believing the industry will grow stronger in the long term (41 percent in 2017 versus just 29 percent in 2014).

Figure 13. US manufacturing outlook over the longer term (more than 12 months), according to Americans surveyed



Americans surveyed also believe future manufacturing jobs will be more attractive, have greater career prospects, will be more creative and innovative, and will require higher levels of technical and problem-solving capabilities.

Figure 14. Perception of future manufacturing jobs among US public
Percentage of respondents who strongly agree or agree with each statement



Advanced manufacturing and technology industries help drive innovation and national prosperity

Advanced industries, the majority of which are manufacturing based, are defined as those industries in which R&D spend per worker and the share of workers working in occupations requiring high STEM knowledge is high. Advanced industries contribute significantly to the US economy and generate more jobs, output, and worker compensation. US advanced industries, in general, employ advanced technologies, which in turn:

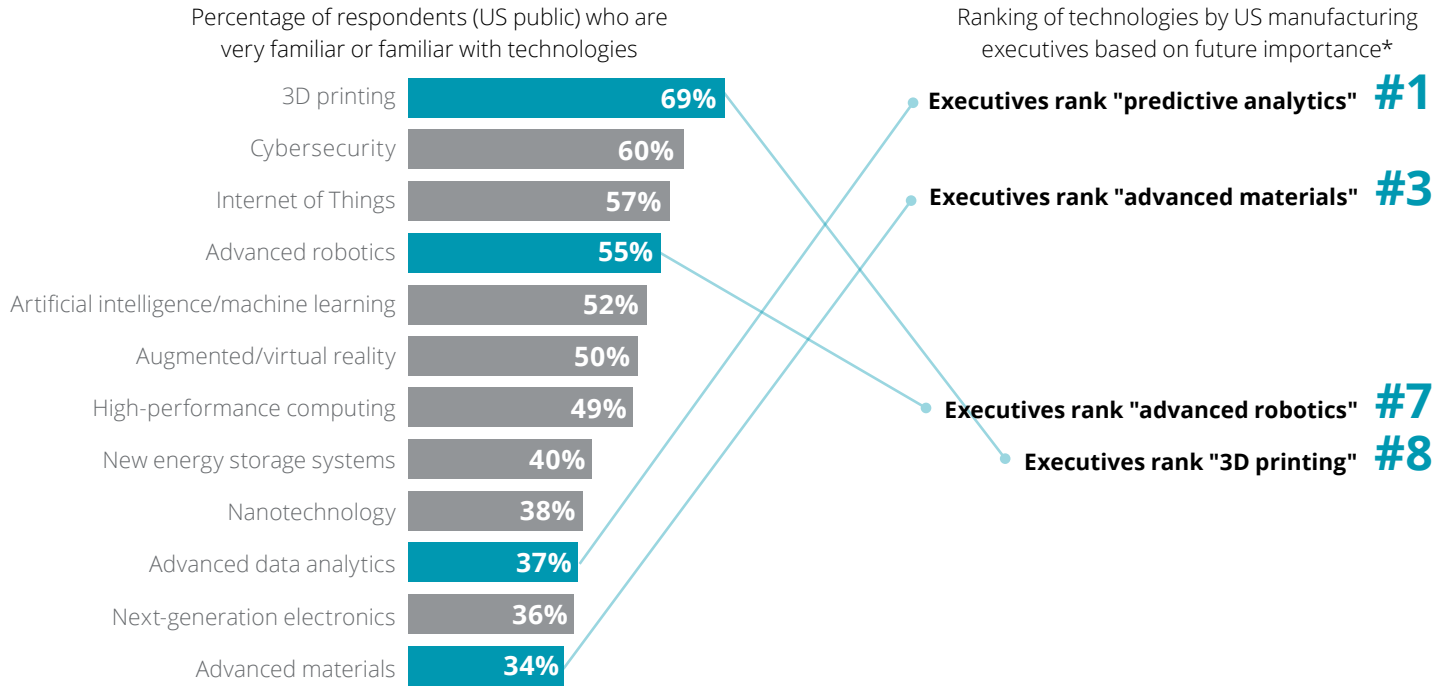
- Support 40 million workers and account for $2.7 trillion in output (17 percent of US GDP)
- Employ 80 percent of the nation's engineers (~ 5 million)
- Generate approximately 85 percent of all US patents (~360,000)
- Perform 90 percent of private-sector R&D (~ $250 billion)
- Account for 60 percent of US exports (~ $600 billion)

Furthermore, advanced industries produce complex, high-tech products which enhance US export competitiveness, leading to greater economic prosperity.

Source: Advanced Technologies Initiative: Manufacturing & Innovation, Deloitte and Council on Competitiveness

However, although public awareness of advanced technologies in manufacturing is relatively strong, it appears disjointed from what US manufacturing executives prioritize as critical to the future of manufacturing.

Figure 15. Awareness of advanced manufacturing technologies among US public and manufacturing executives



* Based on 2016 Global Manufacturing Competitiveness Index (GMCI) study, conducted by Deloitte and Council on Competitiveness.

For instance, while technologies like predictive analytics and advanced materials are ranked higher by manufacturing executives in terms of their future importance, less than 40 percent of the general American public is familiar with these technologies.

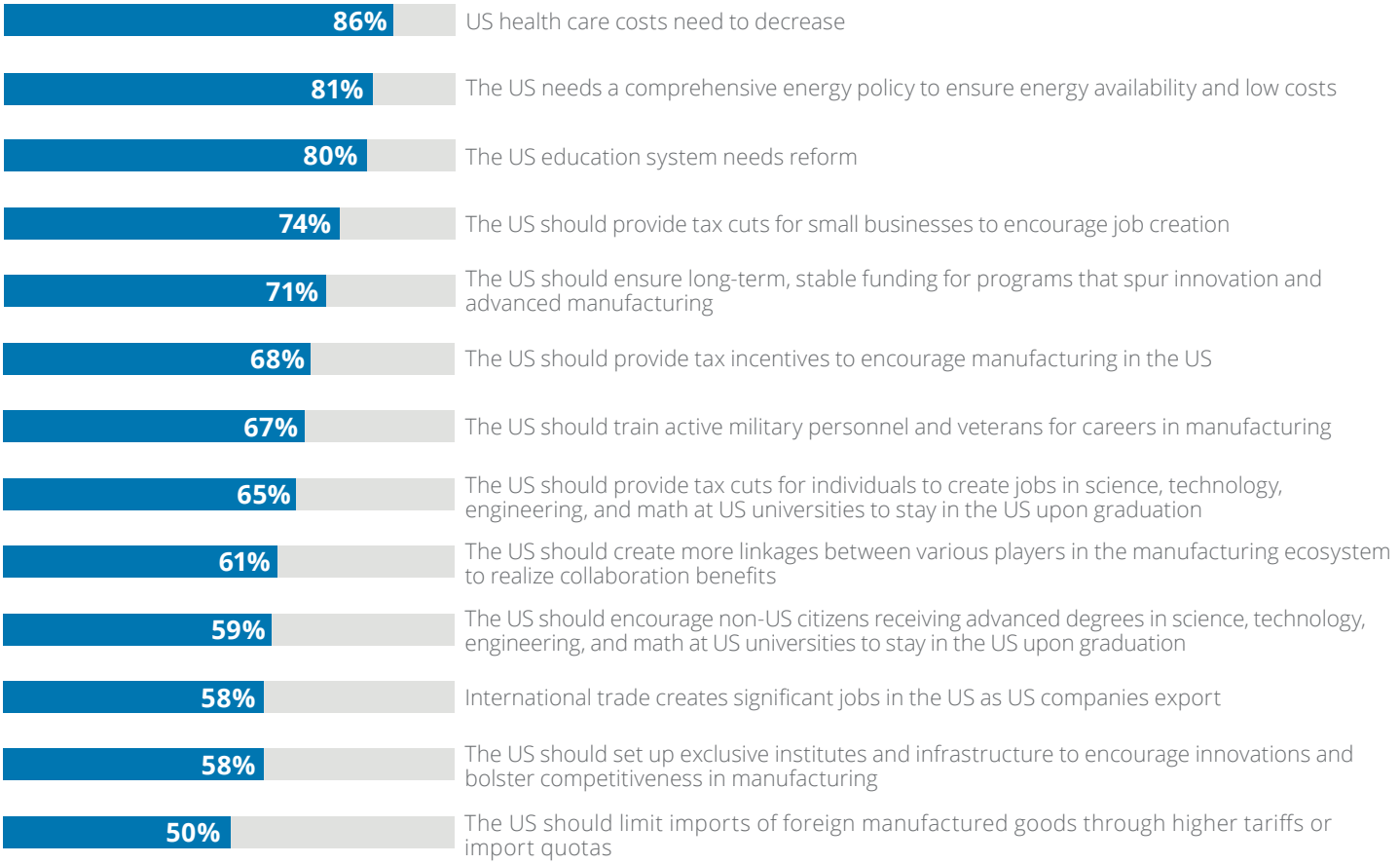
Photo by David Bohrer/National Assoc. of Manufacturers

Public guidance on policy to foster US manufacturing competitiveness

Many Americans continue to think the US manufacturing industry is competitive in a number of areas on the global level, but more should be done to foster American manufacturing competitiveness and increase jobs in the US.

According to Americans surveyed, policy changes are needed to lead the way globally, and they advocate reforms in health care, energy, education, and tax regimes to bolster US manufacturing competitiveness. When taken together with the public's unwavering support and backing of further investment in the industry, the public's views can be an important guidepost for public policy, as well as a key indicator for businesses. These findings should be taken into consideration while business leaders and government policymakers work together to pull the right levers on the country's economic and job-creation engine, thus helping enable America's future success.

Figure 16. Recommendations on policy changes from the US public to bolster American manufacturing competitiveness
Percentage of respondents who strongly agree or agree with each statement



Conclusion

The American public's perception of manufacturing may be at an inflection point. The good news is manufacturing clearly matters to many Americans, with the vast majority viewing US manufacturing as crucial to America's economic prosperity, standard of living, and national security. In the mind of the average American, though, many of the current perceptions of manufacturing haven't kept pace with advances in the industry, leaving a gap between perceptions and reality in terms of critical factors such as job stability, pay, and benefits. Furthermore, many are not eager to encourage their children to pursue a career in the industry. Nonetheless, important and influential demographic groups, such as parents as well as those familiar with the industry, consider the manufacturing industry in higher regard.

The good news is the perception of the industry's future looks promising. It seems the American public understands future jobs in manufacturing are likely to be high-skilled, high-tech, cleaner, and safer, as well as more innovative and creative than they are now. In order to help fast forward the perception of the industry and align it with the positive future outlook, a strategic approach should be considered.

Here are just a few steps manufacturers, either individually or collectively, can take to actively create more positive perceptions about the industry.

Manufacturing executive playbook:
Amplifying the positive perception of modern manufacturing and becoming destinations of choice for top talent

1. Get the good news out and dispel false impressions of the industry

This can be advocated through conversations and speeches and by conducting events like Manufacturing Day™ to make the US public more aware of the strong and positive truths about manufacturing. "Did you know?" types of campaigns—to help disseminate real facts associated with the manufacturing industry, like it having the highest wages, longest tenure, and strongest multiplier effect among all industries—can go a long way in improving the present perception of the industry among the general public.

2. Highlight top priorities that people seek in a career

Manufacturers can underscore areas that matter most to prospective candidates. The manufacturing industry already provides careers that have good job benefits, pay, and are interesting and rewarding—key things that the American public desires. Recognizing that the war for top talent extends far beyond the manufacturing industry, companies will likely need to increase focus on what will attract and retain the best and brightest talent so they can become destinations of choice.

3. Invest in and foster high-interest programs

Programs directed toward hands-on skill development may find the most traction among the American public, as far as increasing interest in manufacturing is concerned. Manufacturers should take note that apprenticeships, internships, and certification-based training programs top the list.

4. Create more awareness of events like Manufacturing Day

Only eight percent of Americans surveyed are currently aware or familiar with it. However, over 90 percent of those attending Manufacturing Day™ events are more convinced that manufacturing provides interesting and rewarding careers, and more than 80 percent are likely to tell others about manufacturing. Such events, if successfully conducted, can go a long way in creating awareness, dispelling false perceptions, and providing a practical experience that demonstrates the benefits of a manufacturing career.

5. Leverage segments with higher interest and perception levels

Surveyed segments such as women, Americans with high manufacturing familiarity, and American parents are more positive about manufacturing in the sense that they have a better image and perception about the US manufacturing industry. These demographic segments can be leveraged as brand ambassadors in order to improve and influence manufacturing perception within other segments.

6. Tap into the strong associations between manufacturing and economic prosperity

It's clear that Americans surveyed believe a strong manufacturing industry is vital to the nation—its economy, people, and national priorities. Manufacturers could do more to tap into the patriotic pride of a strong industrial base.

7. Generate awareness around state-of-the-art advanced technologies critical to manufacturing

Advanced technologies like predictive analytics and advanced materials—which are deemed critical to the future of manufacturing by executives[4]—should have top-of-mind awareness among the American public. Manufacturers can emulate their Silicon Valley counterparts by weaving a "cool" image of their industry with that of advanced technologies and innovation. Anecdotal evidence also suggests that Gen Y and Z Americans are tech-savvy and always look forward to what technology has to offer, both in their personal and professional lives.[5]

8. Design collaboration initiatives that bring industry, government, and academia together

Manufacturers could benefit from better enabling and tapping into a larger ecosystem that fosters innovation and creates more opportunities to attract top talent across a broader spectrum. The manufacturing industry can benefit from ecosystem players coming together for awareness-raising campaigns and initiatives. We believe there's a need to create a collective call to action by all key stakeholders to make manufacturing a destination of choice.

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Acknowledgments

The authors would like to thank **Jay Timmons** (President and CEO, The National Association of Manufacturers), **Gardner Carrick** (VP of Strategic Initiatives, The Manufacturing Institute), **Chrys Kefalas** (VP, External Communications, The National Association of Manufacturers), and **Jamie Hennigan** (VP of Strategic Communications, The National Association of Manufacturers) for their valuable inputs and suggestions.

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Industry Insights

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