



Driving Talent ▶

Developing Next-Gen Talent
for the U.S. Automotive Sector



**“If everyone is moving
forward together, then success
takes care of itself.”**

—Henry Ford

The United States has long been known for its automotive leadership. For generations, we've helped move the world with our strong foundation of transportation manufacturers and suppliers. Our pool of innovative, skilled talent has been second to none.

Even as the future of automotive evolves to include connected vehicles, autonomous driving and alternative energy sources, the U.S. is continually striving to ensure a strong manufacturing workforce. Skilled workers are urgently needed at all levels to build the advanced powertrains, bodies and parts that can move the industry forward. By planning carefully for the future, our nation can ensure its future capacity to lead the next generation of vehicle development.

A major champion for manufacturing advancement, SME is an 85-year-old organization specializing in the support and growth of a strong U.S. manufacturing sector. We provide education and engagement for manufacturing engineers and other practitioners as they innovate, develop, and test the industrial solutions of tomorrow. We are perfectly positioned to know what's working well and what's needed as we cultivate fresh automotive talent.

To help develop a strong baseline assessment, SME conducted a major industry survey during the fourth quarter of 2016. We asked nearly 300 experts in the U.S. auto sector to tell us which issues pose the greatest concern to them as they prepare for the future, and their responses were clear.

The U.S. is facing an automotive talent crisis—one that requires urgent attention, thoughtful solutions, and collaborative strategies. In this report, we'll examine that talent gap in detail and explore ways our nation can quickly act to reverse current trends and retain its leadership in the auto sector.

Executive Summary

U.S. global leadership in the automotive manufacturing sector is threatened by a lack of skilled talent. With large numbers of experienced workers expected to retire between now and 2030, it is essential that focused, purposeful strategies be developed to advance the nation's global leadership in vehicle production.

A 2016 SME survey shows more than three-quarters of U.S. automotive manufacturers and suppliers anticipate major challenges finding the skilled workers they need.



More than half of survey respondents expect to lose 20 percent or more of their workforce during the next five years due to retirement. Even more alarming, one in five respondents indicated they are “not sure” how they will fill these vacated positions.

Competency-based initiatives developed by industry leaders in partnership with SME have helped individual companies address their employee recruitment and training needs; however, more action is needed to address manufacturing talent supply on a broader industry scale.

An estimated two million manufacturing jobs are likely to be left unfilled as a result of critical skills gaps.

SME recommends the following strategic actions to support talent development in the auto manufacturing sector:

- Work in partnership with industry leaders to conduct global fact-finding and research and identify best talent development practices.
- Build a public education/outreach campaign in partnership with U.S. high schools, postsecondary institutions and workforce development agencies to help educate young workers about the opportunities available in the U.S. automotive sector.
- Work with K–12 and postsecondary institutions to: (i) ensure curricula and skill-building efforts match the needs of today's employers, and (ii) develop and expand practical internships and industry mentoring programs.
- Expand effective competency models to ensure employees have the knowledge, skills and abilities they need to be high performers in the U.S. auto sector.
- Work to help match the nation's 75 million millennials with manufacturers needing to fill open positions, while simultaneously educating employers about innovative ways of supporting the expectations of this unique population.
- Replicate and expand philanthropic efforts to fund youth programs, college and university scholarships and curricula, and other tools to encourage new auto industry talent.

U.S. Automotive Leadership

For generations, the U.S. has been moving the world through automotive design and manufacturing.

- We currently are the world's second largest producer of cars and commercial vehicles, with 12.2 million vehicles coming off our assembly lines in 2016ⁱ, and our growth is continuing with recent announcements of several new plant locations.
- In 2015, the United States exported approximately 2.6 million vehicles valued at \$65 billion to more than 200 countries around the world, with additional exports of automotive parts valued at approximately \$81 billionⁱⁱ.
- Currently, 187 original equipment manufacturer (OEM) component and assembly plants are located in the U.S.ⁱⁱⁱ

With this level of investment, it is not surprising that our nation's economy should rely so heavily on the strength and stability of the automotive industry. In Michigan alone—home of the Big Three auto manufacturers—motor vehicle-related GDP was \$36.9 billion in 2014—nearly the level of the next three states combined.^{iv}

This level of experience, expertise and capability in the domestic auto industry gives our nation a strong head start in the development and production of new vehicle technologies. But it also underscores a significant risk: a potential to fail in capitalizing on the existing strengths of our manufacturing workforce. We must ensure our talent base remains at the top of its game if we are to maintain our dominant position in the auto industry.

► **948,200**

U.S. workers employed in auto manufacturing-related jobs



► **\$146 billion**

Value of U.S. auto and parts exports—2.6 million vehicles shipped to more than 200 countries globally in 2015^{vi}



► **3.8%**

Share of U.S. employment comprised by auto manufacturing (vehicle bodies, trailers and parts)^{vii}





The Road Ahead ▶

Automotive technology is changing at an unprecedented pace. From new energy sources and lightweight materials to autonomous driving and connectivity, fresh solutions dot the transportation landscape.

The core work of the U.S. automotive sector is unchanged, however. We still must design and build strong, efficient vehicles powered by powertrains that move people forward. From headlight to tailpipe, each product requires the skilled assembly of 30,000 uniquely manufactured parts. The question that arises is this:

do we have the American talent required to remain a global leader in auto manufacturing?

Proactive, aware and engaged U.S. manufacturers are turning to competency models—structured systems for developing the needed knowledge, skills and abilities for specific jobs— to build high-performance teams. They also are pursuing innovative academic partnerships, proactive outreach efforts, and other vital strategies for developing the talent the auto industry requires. More efforts are needed, however, to ensure skilled workers are available to meet future employer demand.

These efforts have helped individual companies address their employee recruitment and training needs; however, more action is needed to address manufacturing talent supply on a broader industry scale. Younger workers still must be educated about career opportunities in the skilled trades so today's automakers and OEMs can attract the fresh talent they'll need, during both the next year and the next decade.

Changing Automotive Talent Needs

To ensure our nation's global position in the automotive sector, we first need to produce the talented, skilled innovators capable of bringing new ideas to life.

Currently available data shows gaps in this area, both now and, importantly, in the near future. This talent, or skills gap must be quickly and successfully addressed. There is a large and growing shortage of qualified talent within the automotive industry, due largely to baby boomer retirements and a lack of younger skilled workers.

The data show that skilled trades, IT and engineering talent are in short supply across the U.S. According to Manpower Inc., these professions rank first, second and fourth, respectively, on the list of hardest skills for employers to find. In the new era of mobility, these are the workers that are needed most.^{viii}

“Demographic and technological trends are critical threats to the U.S. automotive industry’s ability to meet future talent demands. The United States’ automotive leadership position is in jeopardy; implementing SME’s next-gen talent recommendations will help manufacturers find, hire, and develop the talent they need.”

— **Kristin Dziczek**
Research Director
Center for Automotive Research



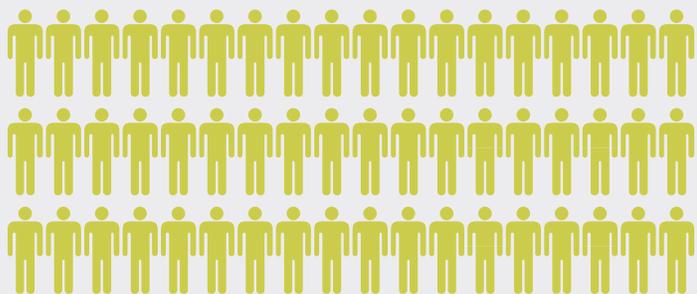
► **26%**

Estimated growth in demand for automotive supply chain talent worldwide



► **1:6**

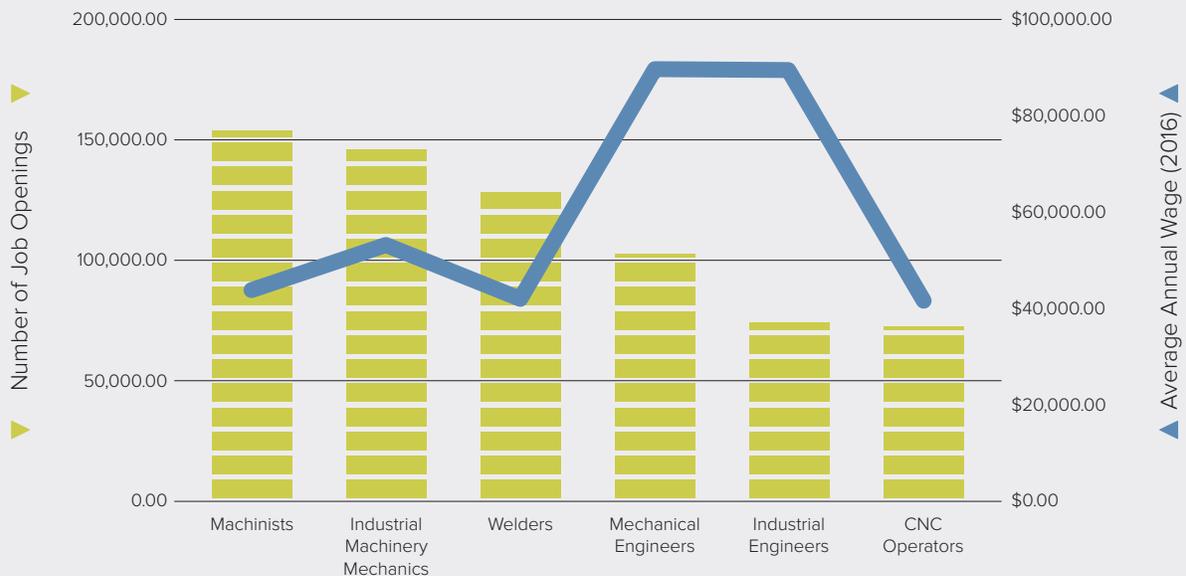
For every graduate with supply chain skills, there are six jobs to be filled



► **54%**

Of auto supply chain jobs are in middle management. Just **26%** are entry level

Automotive Positions Most Needed Due to Growth and Replacements, 2014-2024



Source: Bureau of Labor Statistics



▶ **\$81,289**

Average U.S. manufacturing worker earnings in 2015*



▶ **3.5 million**

Manufacturing jobs needed during the next decade*



▶ **2 million**

Number of unfilled manufacturing jobs expected due to skills gap[†]

These issues are particularly troubling for smaller manufacturers who are struggling to attract workers in the skilled trades. Moreover, some significant suppliers with leaner organizational structures could find themselves in a precarious position should they experience significant numbers of retirements or other employee departures. Not only would this type of scenario hamper these companies' operational effectiveness, but it also would result in massive disruptions to global auto production.

SME and its partners in the auto manufacturing sector have worked together to develop specific, customized talent solutions that help combat some of these concerns. Through ToolingU-SME, individual manufacturers are supported in the construction of highly effective plans for training and recruitment based on a thorough analysis of precise market conditions and projected needs. ToolingU-SME then follows up with an individualized competency framework that helps ensure proper employee training and development.

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Where the U.S. Stands: Employer Perception Data

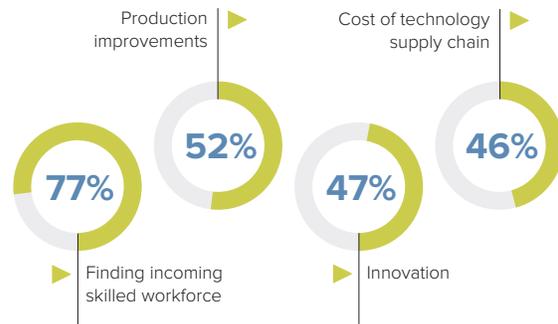
To help provide additional data for the future of U.S. automotive industry needs, particularly as it relates to finding skilled, educated talent, SME conducted a survey of 291 automotive industry executives in Winter 2017.

Our survey findings were conclusive: talent is the number one challenge facing the auto sector today. A whopping **77 percent of respondents said finding incoming skilled workers will be extremely or very challenging for the auto manufacturing industry** generally, and roughly the same number (75 percent) say it will be the top obstacle for their companies in particular. **Nearly half (49%) agree their companies are having difficulty finding skilled workers in manufacturing.**

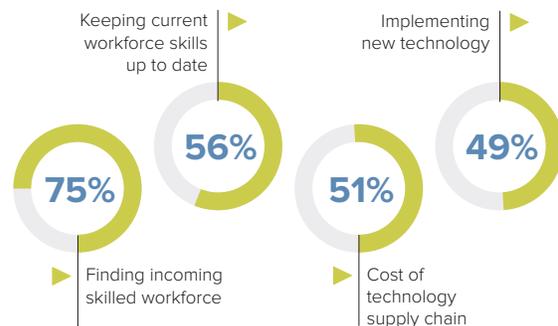
Survey respondents also confirmed national findings related to the need for qualified engineering talent, with **73 percent indicating an extremely high or high demand for engineers.**

More than half (53 percent) of respondents said they will **lose 20 percent or more of their workforce during the next five years due to retirement.** These positions will be filled through targeted hiring and recruitment plans (58%), training of existing workers (53%), or the development/ expansion of an apprenticeship program (23%). Even so, one in five respondents indicated they are “not sure” how they will fill these vacated positions.

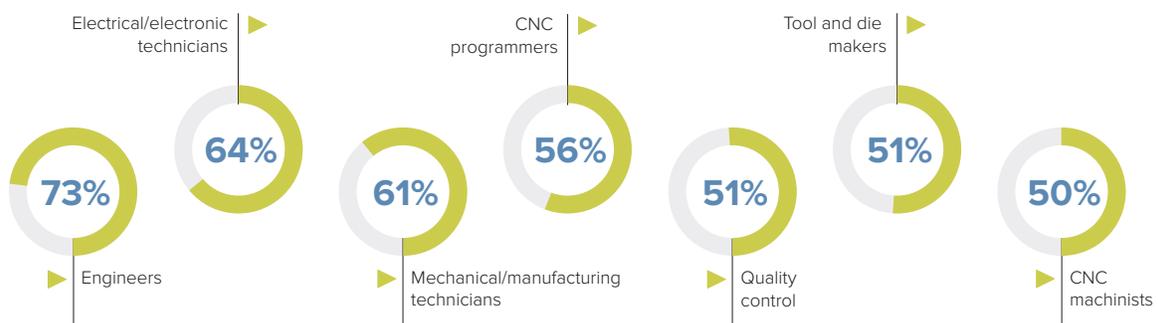
Top Automotive Industry Challenges



Top Challenges for My Company



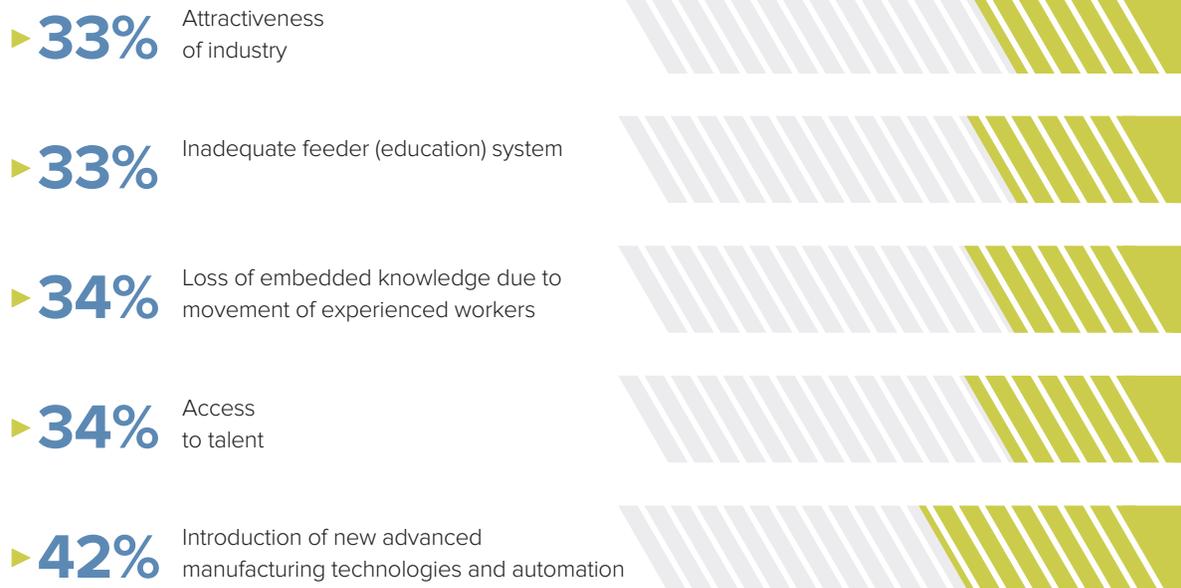
Demand for Skilled Positions



To help auto companies identify the best solutions for these employment gaps, we dug a bit deeper to see what they believe the root causes to be. A number of issues were identified, but by and large **respondents seemed to believe the introduction of new advanced manufacturing technologies is the primary culprit, followed by access to talent.**

SME's mission is to address and work with industry partners, educators and industry groups to address all of these significant—and very real—challenges.

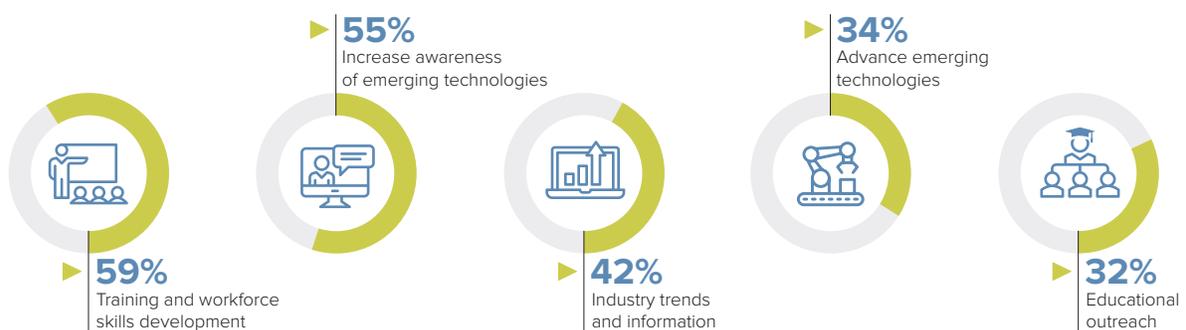
Skills Gap Causes



To help address these concerns, 77 percent of the executives we surveyed said they are providing a mix of both internal and external learning/training and development. Around 44% said they participate in apprenticeship programs, and 28 percent say their company sets funding aside for employee development.

Even so, **only 13 percent of survey respondents believe the training they provide manufacturing employees today is adequate to meet the needs of the organization going forward.** Fifty-nine percent of those surveyed would like to see industry organizations like SME provide support through training and workforce skills development.

Industry Supports Needed



Promising Strategies for Change

Urgent action is needed to help build the next generation of talent for the U.S. auto manufacturing sector. Our survey findings and data analysis make a strong case that more robust approaches to worker preparation and professional development are needed. Thoughtful, strategic action will help ensure our nation can continue to grow and attract the talent it needs to maintain its leadership in vehicle production.

Industry and policy leaders have been exploring the problems associated with U.S. automotive talent supply for some time; however, promising solutions have yet to fully materialize. As a thought leader in the development of competent manufacturing engineers, SME and its partners are well positioned to help advance ideas for building the automotive workforce our nation needs.



Conduct Global Fact-Finding and Research

Across the world, various industries and professions have, from time to time, experienced talent shortages. The approaches used to address those shortages may have lessons for today's auto sector—lessons we can extrapolate, customize and share. We propose the development of a fact-finding and research initiative, likely conducted in partnership with a global research and management organization, to help identify the most promising opportunities for developing U.S. automotive talent.

Build a Public Education/Outreach Campaign

A branded campaign conducted in partnership with U.S. high schools, postsecondary institutions and workforce development agencies can help educate young workers about the opportunities available in the U.S. automotive sector. Such an effort could incorporate a broad array of public and private partners, existing scholarship opportunities, and higher education programs to deliver compelling information and actively recruit fresh talent into the industry.



Quality Academic Partnerships

Our national K–12 and higher education institutions are the auto industry's most important asset when it comes to talent development. By fostering a demand-driven, industry-level dialogue, SME and other automotive partners can help ensure curricula and skill-building efforts match the needs of today's employers.

Additionally, working with academic institutions to develop and expand practical internships and industry mentoring programs can support a better fit between graduates and the automotive employers they wish to serve.

More Highly Skilled Workers

By developing more robust robotic technologies and tools, automotive companies can reduce the number of people required to manufacture key parts and equipment. SME can support auto manufacturers and parts suppliers with skilled research and strategies needed to help re-invent core manufacturing processes.





Develop a Strong Competency Framework

Proactive, aware and engaged U.S. manufacturers are turning to competency models—structured systems for developing the needed knowledge, skills and abilities for specific jobs— to build high-performance teams. These companies are returning to the historical practice of investing in internal training programs in order to build the capabilities they will require to remain competitive.

As previously described, the **Tooling U-SME Competency Framework for Manufacturing Excellence**, introduced in 2014, features a comprehensive series of competency models in nine manufacturing functional areas. This model is just one example of a proven competency-based strategy that is capable of ensuring employees have the knowledge, skills and abilities they need to be high performers in the U.S. auto sector.

Engage Millennials

The country’s approximately 75 million millennials, those roughly between 18 and 34 years old, are coming of age and searching for satisfying careers. Match up even a fraction of this group with manufacturers needing to fill open positions, and the skills gap is solved.

However, there is a disconnect between manufacturers and millennials when it comes to expectations. While most manufacturers (78 percent) agree millennials are important to their future operations, less than half (40 percent) say they have a good understanding of this group of employees.

Integrating best practices and approaches—from creating a strong onboarding process to demonstrating how each job supports a company’s mission and purpose—can help manufacturers attract and retain this significant pool of employees. This is especially important as baby boomers—a large portion of manufacturing workers—start retiring.



Proven Tools for Learning

Through its own philanthropic efforts, the SME Education Foundation has invested over \$382 million in youth programs, college and university scholarship and curricula to encourage new automotive industry talent. To date, these efforts have inspired more than 60,000 students to explore a career in manufacturing and encouraged another 60,000 students to study STEM, with a focus on technology.

Expansion of these efforts is possible with strong industry and philanthropic support. In fact, blending SME’s proven approaches and resources with those of other similar organizations will attract new ideas and fresh thinking to a rapidly-evolving auto sector.

ⁱ <http://www.oica.net/category/production-statistics/>

ⁱⁱ <http://www.trade.gov/td/otm/autostats.asp>

ⁱⁱⁱ https://www.google.com/maps/d/viewer?mid=1D_BMlvZsP9h27M2NY2uNfi_ZZE&hl=en_US&ll=35.41714133459178%2C-99.73152600000003&z=4

^{iv} Ibid.

^v <https://www.bls.gov/iag/tgs/iagauto.htm>, not seasonally adjusted

^{vi} <https://www.selectusa.gov/automotive-industry-united-states>

^{vii} Ibid.

^{viii} http://www.manpowergroup.com/wps/wcm/connect/389b7a9d-cfe2-4b22-bd61-f0febc709cd6/2016_TSS_Global_Infographic+-+Final.pdf?MOD=AJPERES

^{ix} Bureau of Economic Analysis and Bureau of Labor Statistics.

^x Deloitte and the Manufacturing Institute

^{xi} Ibid.



SME is a nonprofit organization that supports manufacturing based on our core belief: **Manufacturing is key to economic growth and prosperity.** We serve more than a half million manufacturing practitioners each year by sharing knowledge and resources that generate solutions to industry challenges. Through SME, manufacturers can connect to state-of-the-art innovations, technical resources and opportunities, a highly skilled workforce and their peers.



Our partner foundation provides manufacturing scholarships and oversees our Partnership Response in Manufacturing Education (PRIME®) program — an acclaimed alliance of industry, educators and students. By helping to build a pipeline of skilled and STEM-capable workers, we are helping to secure future competitiveness and economic prosperity for our nation.



Tooling U-SME, a division of SME, delivers versatile, competency-based learning and development solutions to the manufacturing community, working with more than half of all Fortune 500® manufacturing companies, as well as 500 educational institutions across the country. With hundreds of high schools, community colleges and universities, Tooling U-SME is able to help develop a skilled workforce by providing industry-driven curriculum. In addition, Tooling U-SME works closely with the SME Education Foundation to inspire, prepare and support the next generation of manufacturing engineers and technologists.

Contact

For more information on the importance of driving talent and how it can impact the future of your business, please call SME at **800.733.4763** or email automotivetalent@sme.org.



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