



# MICHIGAN'S AUTOMOBILITY

2023

# FROM THE EXECUTIVE DIRECTOR

**“MICHauto remains a unique leader, voice, and advocate for the automotive and mobility industry, which has transformed and now entwines with the tech and new energy economy sectors.”**

In 2007, a group of like-minded stakeholders in Michigan decided the state needed an organization to be a convenor and voice for its signature industry. MICHauto was formed that year to promote, retain, and grow the industry right here in Michigan.

Today, MICHauto remains a unique leader, voice, and advocate for the automotive and mobility industry, which has transformed and now entwines with the tech and new energy economy sectors. The change that has occurred in the last decade, as well as the changes that lie ahead, will be immense.

Michigan must seize this strategic inflection point driven by sustainability and digitalization. Michigan must develop, retain, and attract the talent to grow for the future. Companies must evolve in an increasingly competitive global industry.

MICHauto has worked with the Granholm, Snyder, and now Whitmer administrations. All have embraced and come to understand the industry’s economic importance due in large part to MICHauto’s work. The MICHauto team intends to continue its mission and work for Michigan’s future.

MICHauto is a voice for the industry on policy, focused on developing talent from the Industry 4.0 factory and the connected vehicle to the Cloud. It is a champion for the growth and innovation that will ensure the state’s prosperous economic future.

This report is all about the numbers, assets, and initiatives that make Michigan the most unique ecosystem for mobility development and advanced manufacturing in the world. This is undeniably who we Michiganders are. And thanks to investors’ support, the MICHauto community will continue to carry the mission long into the future of the Great Lakes State.

Michigan’s people, ideas, and determination put the world on wheels and are leading in the next generation of mobility. Michigan is an ideal place where young minds, new thinking, and new ideas come to grow.

I hope you will find this information valuable, and always know that MICHauto is at work and focused on its mission for you.



A handwritten signature in blue ink, appearing to read "Glenn Stevens Jr." with a stylized flourish at the end.

GLENN STEVENS JR.

**Executive Director, MICHauto  
Vice President, Automotive  
and Mobility Initiatives,  
Detroit Regional Chamber**

## ABOUT MICHAUTO

**MICHauto** is the state’s only automotive, mobility, and technology cluster association committed to promoting, retaining, and growing Michigan’s signature industry. It provides a platform for industry leaders and stakeholders to engage in advocacy, discuss industry priorities, improve the high-tech talent outlook, and create an innovation-friendly environment to support next-generation mobility developments.

**MICHauto focuses on:**

- » **High-Tech Talent**
- » **Advocacy**
- » **Innovation**
- » **Convening**

# BY THE NUMBERS

## Industry Overview

**\$300 B +**

mobility industry's annual contribution to Michigan's economy

**26**

original equipment manufacturers (OEMs) located in Michigan

**18**  
VEHICLE  
MODELS

built in Michigan, including 4 EV models, across 13 plants

**98 OF**  
THE 100

top automotive suppliers to North America have a presence in Michigan, with 65 headquartered here

**6 OUT OF**  
THE 18

Fortune 500 companies currently located in Michigan are engaged in the automotive and mobility industry

**21%**

of all U.S. auto production occurred in Michigan in 2022

**#1**

state for auto production

**15%**

of North American auto production occurred in Michigan in 2022

**#1**

state for OEM- and supplier-announced investments since 2018, capturing 21% of announced investments in the U.S. and totaling \$28 billion

## Talent Advantage and Education Pipeline

**#1**

in the nation for automotive manufacturing jobs, 6x higher than national average

**#1**

among states for concentration of engineers

**17**

universities and colleges with nationally ranked undergraduate engineering programs, and 5 offer nationally ranked graduate programs

**8,455**

engineering degrees awarded in 2021, with 35% being master's degrees or higher

**\$451 M**

or 17%, of Michigan's higher education R&D is dedicated to engineering

## Global Impact

**#1**

exporter of transportation equipment in the U.S.

**#1**

northern international border crossing

**\$61 B**

in exports in Michigan in 2022, up 37% compared to 2020

## Leading the Electric Future

**#1**

in EV- and battery-related announced investments by OEMs and suppliers

**24<sup>TH</sup>**

state in EV charging stations per capita, up from 32<sup>nd</sup> in 2021

**40+**

companies involved in the EV battery supply chain

## Testing and Deployments

**#1**

for operational U.S. Department of Transportation-funded connected vehicle deployments with 16 projects

## Entrepreneurial Network

**\$1.2 B**

in total venture capital deals in 2022

**23<sup>RD</sup>**

in venture capital deals among states

## Technology Assets

**1 OF ONLY 5**

U.S. Patent and Trademark Offices (USPTO) in the nation is located in Detroit

**#1**

for business-funded automotive and mobility R&D, making up 67% of the nation's shares with \$13 billion in funding

# INDUSTRY OVERVIEW

## GLOBAL OEM AND SUPPLY CHAIN DESTINATION

Michigan has a large presence of OEMs with headquarters, R&D facilities, or technical centers in the state, significantly contributing to the state's economy and employment opportunities.

26

OEMs located in Michigan

98 OF THE TOP 100

automotive suppliers to North America have a presence in Michigan, with 65 headquartered here



## MICHIGAN MANUFACTURING

### #1 in the Nation

for vehicle production, producing over 1 million more vehicles in 2022 than the next highest state, Indiana. In 2022, over **2.1 million vehicles** were assembled in Michigan, a 7% increase compared to 2018.

### Michigan Plants Accounted for:



more than 21% of all U.S. automotive production, more than any state in the nation.



15% of all North American production.

13

OEM assembly plants in Michigan, including 3 plants producing EV models

18

models produced in Michigan in 2022, including 4 EV models: Chevrolet Bolt EV and Bolt EUV, Ford F-150 Lightning, and GMC EV Hummer Pickup

25

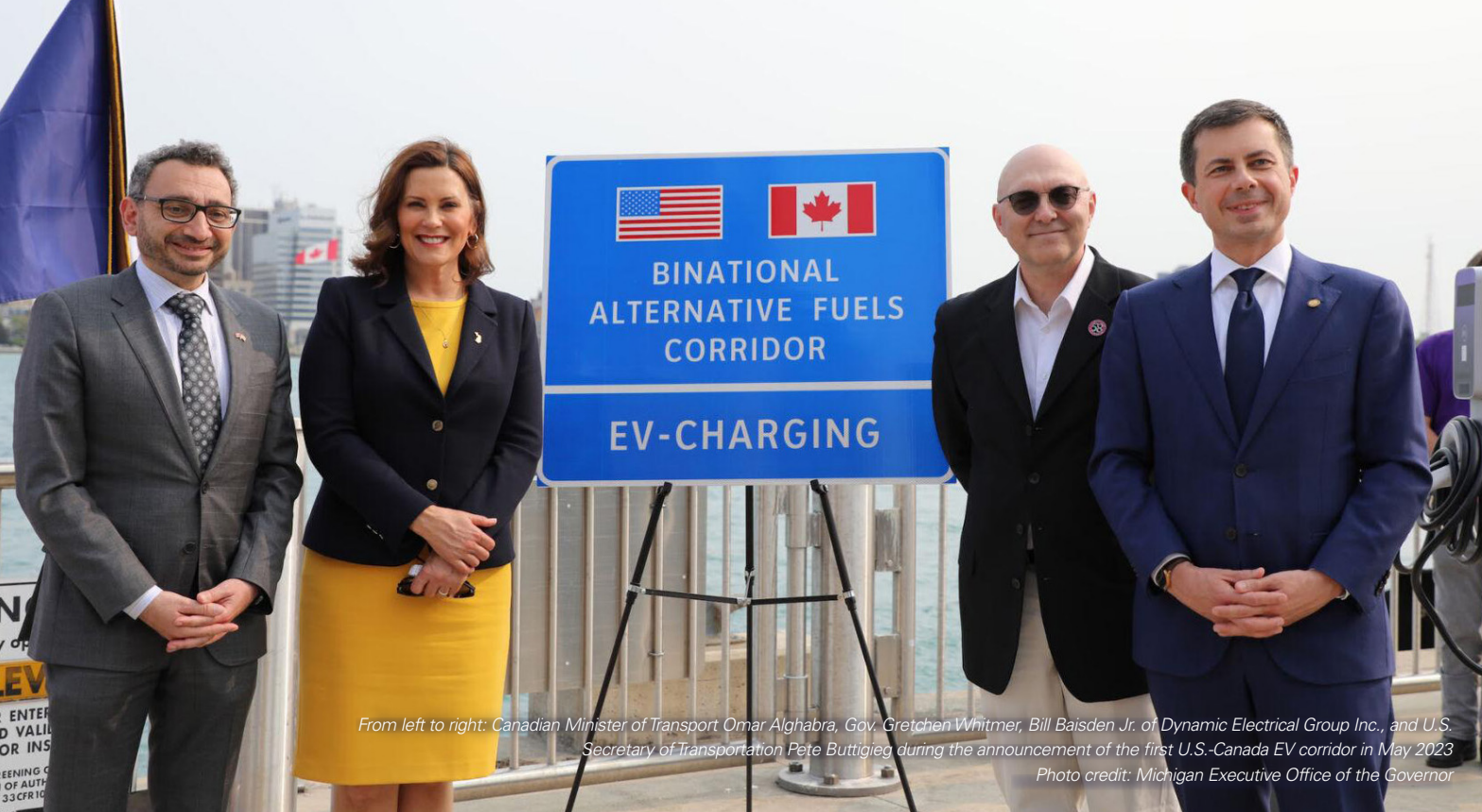
OEM components and material plants

### Michigan Total Vehicle Production

	Michigan Total Production	% of U.S. Production	% of N.A. Production
2018	2.0M	17.8%	11.8%
2019	1.9M	17.4%	11.6%
2020	1.6M	17.8%	11.8%
2021	1.8M	20.4%	14.0%
2022	2.1M	21.1%	14.6%

Source: Automotive News Research & Data Center





From left to right: Canadian Minister of Transport Omar Alghabra, Gov. Gretchen Whitmer, Bill Baisden Jr. of Dynamic Electrical Group Inc., and U.S. Secretary of Transportation Pete Buttigieg during the announcement of the first U.S.-Canada EV corridor in May 2023

Photo credit: Michigan Executive Office of the Governor

## GLOBAL IMPACT

Michigan's shared international border with Canada is one of the largest export markets in the world, making Michigan one of the most globally connected states.

### First Binational EV Corridor

Michigan and Canada's first-of-its-kind binational EV corridor will stretch from Kalamazoo to Quebec City, Quebec, and feature direct current (DC) fast chargers approximately every 50 miles, letting drivers travel and charge worry-free. This 860-mile corridor will also create good-paying jobs and strengthen trade and manufacturing between the U.S. and Canada. This \$110 million-investment in Michigan's charging infrastructure was made possible by the Bipartisan Infrastructure Law.



Source: U.S. Department of Transportation and International Trade Administration, U.S. Department of Commerce

# NEXT-GENERATION MOBILITY

Mobility is the production and distribution of goods and the provision of services that support any movement of people and products. As the industry leader over the past century, Michigan is at the helm of the shift to a more diverse mobility-focused, tech-forward industry.



## Emerging Mobility Sectors

### Outdoor Recreation

- » **Shophouse Park** in Marquette is an outdoor recreation incubator, R&D center, and technology park.
- » **Polaris Inc.**, **Electric Outdoors**, and **Snowbotix** will establish a first-of-its-kind network of charging stations for electric off-road vehicles, solar-powered off-grid battery storage platforms, and all-electric, multi-utility robots for dangerous outdoor maintenance tasks.

### Maritime

- » Michigan will have the first freshwater electric boat charging network in the U.S. through **AQUA superPower** rapid chargers.
- » **Fresh Coast Maritime Challenge** is a first-in-the-U.S. program to help companies electrify and decarbonize Michigan marines and watercraft.
- » A zero-emission, electric-powered Mackinac Island passenger ferry is in development.

### Defense

- » **The U.S. Army Ground Vehicle Systems Center (GVSC)** in Warren connects with organizations throughout Michigan.
- » **Michigan State University** and GVSC launched a \$9 million mobility research initiative to advance autonomous ground vehicle research with **Central Michigan University** and the **University of Michigan**.
- » For three decades, GVSC has been involved with the annual **Intelligent Ground Vehicle Competition** at **Oakland University**.

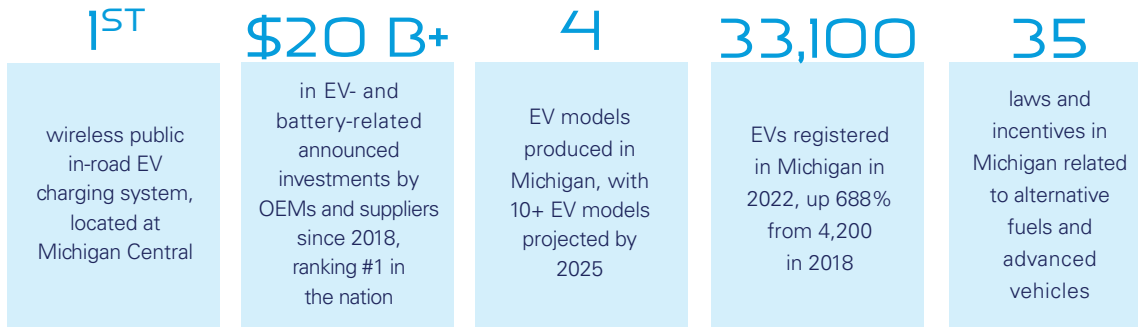
## CLIMATE + SUSTAINABILITY

The Michigan Department of Environment, Great Lakes, and Energy's (EGLE) Office of Climate and Energy developed the MI Healthy Climate Plan to pursue carbon neutrality, ensure economic competitiveness, and improve quality of life. **Highlights include:**

- » Building infrastructure to support 2 million EVs on Michigan roads by 2030 and increase access to clean transportation options by 15% each year
- » Deploy new, cleaner manufacturing technologies and conduct R&D to reduce emissions from hard-to-decarbonize industries

# LEADING THE ELECTRIC FUTURE

Powered by Michigan's historic automotive culture and manufacturing strength, the state continues to lead in the transition to electrification. Michigan's commitment to ensuring a skilled workforce and securing investments in EV and battery development is shaping the electric future.



## MICHIGAN EV INVESTMENTS

### Major EV and Battery Investments Across Michigan Since 2020

**#1** state for announced OEM and supplier investments, capturing **over 21%**, or **\$28B**, of the \$130.5B U.S. announced investments

#### Ford's Blue Oval Battery Park

\$3.5 Billion | Marshall | 2,500 Jobs

#### General Motors and LGES Ultium Cells

\$2.6 Billion | Lansing | 1,700 Jobs

#### Gotion

\$2.3 Billion | Big Rapids | 2,350 Jobs

#### LG Energy Solution (LGES)

\$1.7 Billion | Holland | 1,200 Jobs

#### Our Next Energy (ONE) Battery Manufacturing Campus

\$1.6 Billion | Van Buren Township | 2,112 Jobs

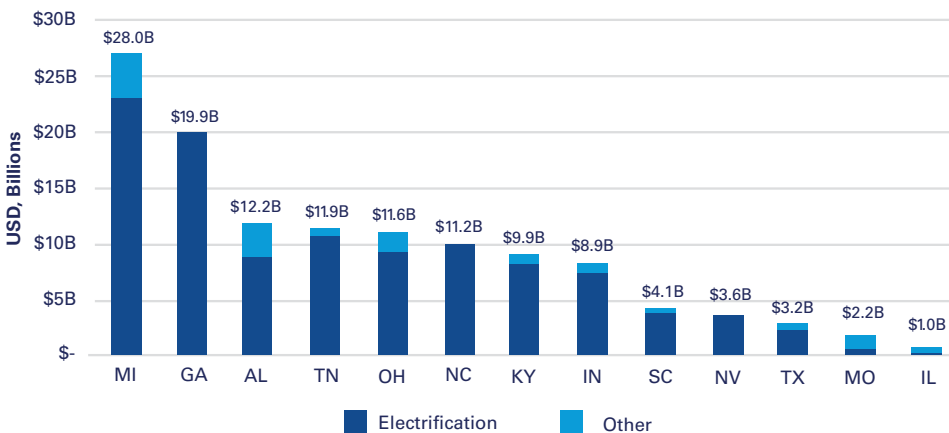
#### Toyota's R&D Battery Lab

\$50 Million | York Township

#### UL Solutions N.A. Battery Lab

\$72 Million | Auburn Hills | 61 Jobs

### OEM and Supplier Announced Investments, 2018-2023



Source: Center for Automotive Research, CAR Book of Deals, July 2023, National Renewable Energy Laboratory, U.S. Department of Energy

### TOP 3

state to lead EV battery manufacturing by 2030, with 97-136 GWh of EV battery capacity to be produced in Michigan, supporting 10 to 13M EVs per year

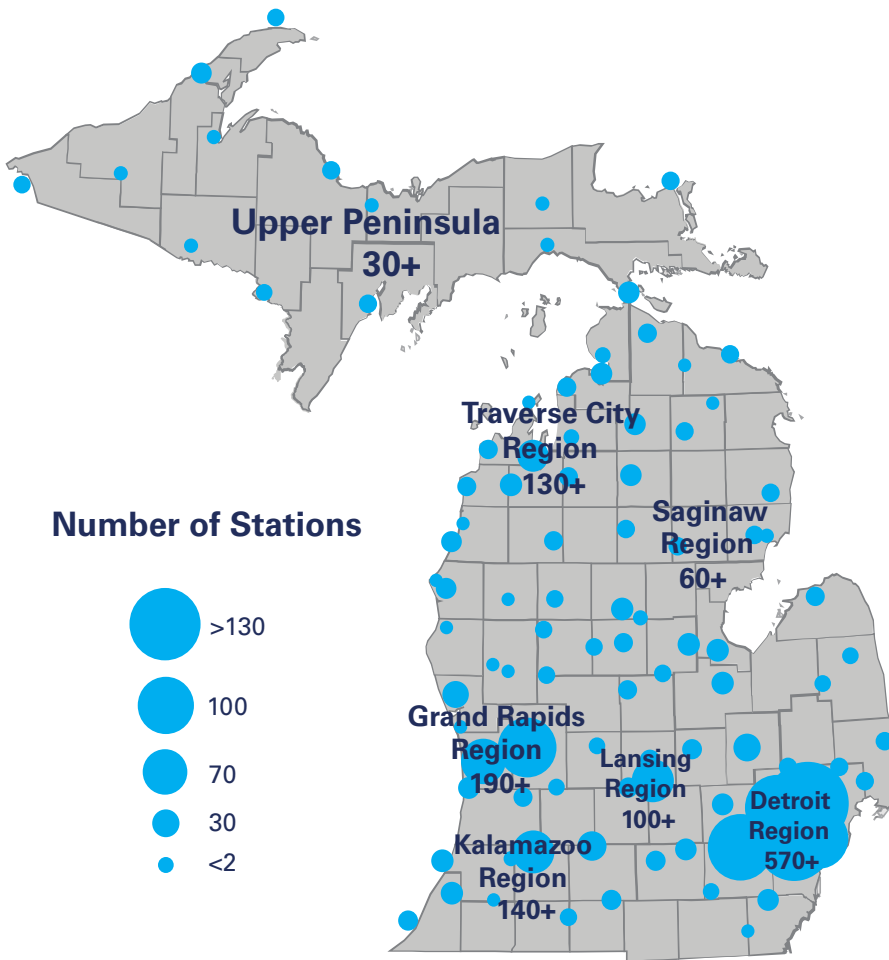
### 40+

companies involved in the EV battery supply chain in Michigan

# MICHIGAN EV CHARGING INFRASTRUCTURE

## EV Charging Stations by Region

Michigan has witnessed an **89% increase in EV charging stations** between 2018 and 2022, up 38% since 2021. To better facilitate the transition, Michigan aims to develop 100,000 EV chargers, supporting 2 million EVs on Michigan roads, by 2030.



**1,250+**  
publicly  
accessible  
charging  
stations

**2,900+**  
publicly  
accessible  
charging  
ports

**24<sup>th</sup>**  
ranking in public  
EV charging  
stations per  
capita, up from  
32<sup>nd</sup> in 2021

*Note: Data accessed 6/21/23. Map includes DC Fast and Level 2 Chargers. Source: The Southeast Michigan Council of Governments, U.S. Energy Department of Energy's Alternative Fuels Data Center*

## MICHIGAN VOTER POLL: ELECTRIFICATION

The Chamber has partnered with premier research firm Glengariff Group, Inc. on an ongoing series of statewide polls with registered Michigan voters. The March 2023 poll revealed disparate views on electrification and provided a preliminary opportunity to track future EV sentiment.

### Shift From Gas-Powered to Electric Vehicles

**46.4%** of voters  
**SUPPORT** the shift



**44.4%** of voters  
**OPPOSE** the shift

**In addition,**

**57.9%** of Michigan voters support investment in charging station infrastructure for EVs

**When asked why,**

**19.6%** do not believe that the electric grid can handle it

**18.4%** say it is too expensive

**13.3%** do not believe Michigan has the infrastructure for it



## EV Infrastructure Programs

### Charge Up Michigan

A grant-funded EV charger placement project to build DC fast-charging stations across Michigan to ensure feasible long-distance trips to neighboring states and Canada.

### DTE Charging Forward and Consumers Energy Power MI Fleet

Utility programs that encourage and facilitate EV adoption through rebates and incentives for business, commercial, and residential customers.

### Lake Michigan EV Circuit Tour

A partnership between Michigan, Indiana, Illinois, and Wisconsin that will build a network of EV chargers along 1,100 miles of Lake Michigan's drivable shoreline.

### National Electric Vehicle Infrastructure (NEVI) Formula Program

Michigan will receive **\$110 million** through the Bipartisan Infrastructure Law to build EV charging infrastructure through 2026 along Michigan's designated Alternative Fuel Corridors (EV Corridors).

## MICHIGAN EV TALENT LANDSCAPE

### Chamber EV Talent Programs



MICHauto leads several high-tech talent attraction and retention efforts including the Chamber's Detroit Drives Degrees Community College Collaborative, a cross-sector initiative that elevates community colleges' role in improving the Region's talent pipeline.

Another is Let's Detroit, which attracts and retains young talent in the Region and cultivates an innovative, engaged, and culture-focused business community.

### Other Industry EV Talent Programs



The EV Jobs Academy is an employer-led collaborative of over 100 partners working together to strengthen and upskill Michigan's EV and mobility workforce, including the Southeast Michigan Mobility Talent Collaborative led by the Detroit Regional Chamber and MICHauto.



Global Epicenter of Mobility (GEM) is a coalition led by the Detroit Regional Partnership Foundation that will support six projects designed to accelerate economic growth by building on the Region's mobility assets.

- » Supported by **\$52.2 million** from the U.S. Economic Development Administration's Build Back Better Regional Challenge



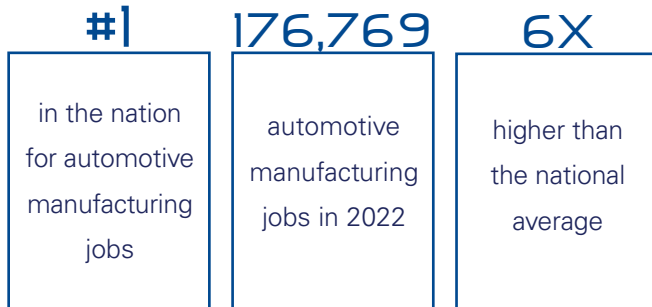
The Michigan Economic Development Corporation's (MEDC) Talent Action Teams coordinate with Michigan employers, education leaders, and training providers to make the state a leader in talent solutions and growth.



A Chevrolet Bolt EV at an EV charger near Consumers Energy's headquarters in Jackson, Michigan

# TALENT AND EDUCATION

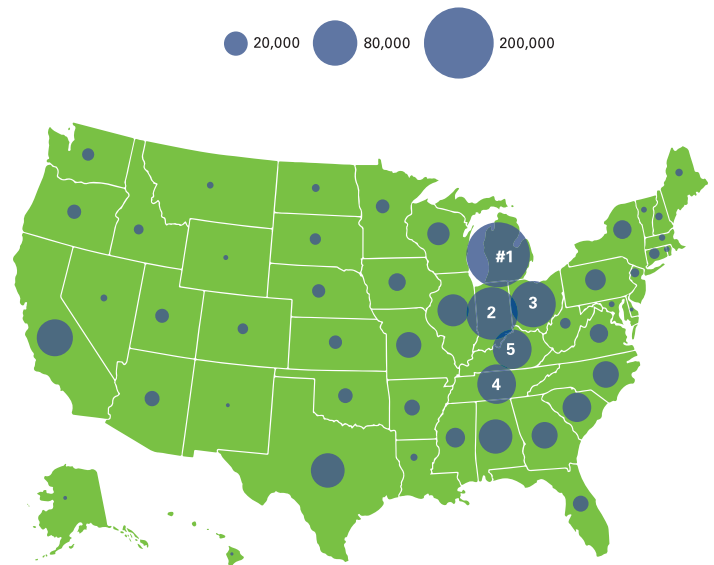
## Michigan Ranks:



Michigan's mobility industry totaled an economic output of \$304 billion in 2019. More than **1.1 million jobs** are tied to the industry, representing almost 20% of Michigan employment.

In 2022, 1 million people across the state were skilled trades workers, including over **108,000 highly skilled assemblers and fabricators** producing the world's most complex and highly technical mobility products.

## Automotive Manufacturing Jobs



Source: Lightcast

## TALENT SUPPLY

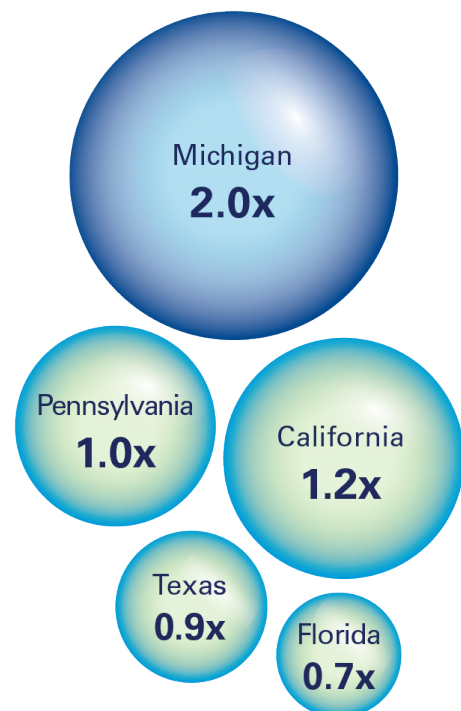
### Michigan Ranks #1 in the Employment and Concentration of:

- Mechanical Engineers**  
31,950 = 4x National Average
- Industrial Engineers**  
26,410 = 3x National Average
- Tool and Die Makers**  
9,610 = 5x National Average
- Mechanical Engineering Technologists and Technicians**  
7,970 = 7x National Average
- Model Makers, Metals, and Plastics**  
870 = 9x National Average

**97,210**

engineers in Michigan's workforce

### Michigan Ranks #1 in the Nation for Concentration of Engineers



Source: U.S. Bureau of Labor Statistics and Lightcast

# TALENT DEMAND

## Michigan's High-Demand and High-Wage Occupations by 2030

Michigan's EV shift may create up to **300,000 new, high-paying jobs** by 2030. According to Michigan's "Hot 50 Job Outlook," these examples closely impact the automotive industry.

### In-Demand Mobility-Related Occupations

- Truck Drivers
- Software Developers
- Production Workers
- Mechanical Engineers
- Industrial Engineers

### In-Demand Mobility-Related Skills

- New Product Development
- Computer Science
- Marketing
- Electrical Engineering
- Automation

**60.9%**

Michigan's labor force participation rate, ranking 39<sup>th</sup> among states

**50.5%**

of working-age adults earned credentials of value beyond high school, ranking 37<sup>th</sup> among states

**5<sup>TH</sup>**

in the U.S. for mobility-related job postings

Michigan's High-Demand and High-Wage Careers	Projected Annual Job Openings	Typical Education Required	Hourly Wage Range	Growth 2020 - 2030
Heavy and Tractor-Trailer Truck Drivers	7,635	Postsecondary Certificate or Training	\$19 - \$29	12.7%
Software Developers	3,965	Bachelor's Degree or Higher	\$37 - \$58	22.8%
Mechanical Engineers	2,920	Bachelor's Degree or Higher	\$37 - \$49	10.1%
Industrial Machinery Mechanics	2,650	Associate and/or Training	\$23 - \$30	28.2%
Industrial Engineers	2,280	Bachelor's Degree or Higher	\$30 - \$48	20.4%
Tool and Die Makers	1,045	Associate and/or Training	\$23 - \$37	2.6%

Source: Bureau of Labor Market Information and Strategic Initiatives, Michigan Department of Technology, Management, and Budget, Lightcast, Lumina Foundation, U.S. Census Bureau

## Talent Programs



Detroit Reconnect provides adults ages 25-64 free institution-neutral college and career navigation and wrap-around support to and throughout college. Part of the Chamber's Detroit Drives Degrees program, Detroit Reconnect has served **over 300 adults** since 2019.



Michigan Reconnect allows adult learners to pursue an associate degree or skill certification at any Michigan public community college through free in-district tuition or a sizeable discount for out-of-district. There have been **116,362 Michigan Reconnect applicants** since May 2023.



The Going PRO Talent Fund creates awards for employers to train, develop, and retain current and newly hired employees. In 2022, **\$36.5 million** was awarded to 1,114 employers who trained 14,448 new hires and upskilled 12,188 workers.



TalentFirst is a catalyst of over 100 chief executive officers attracting, developing, and retaining talent by highlighting gaps and implementing leading practices within 13 West Michigan counties.

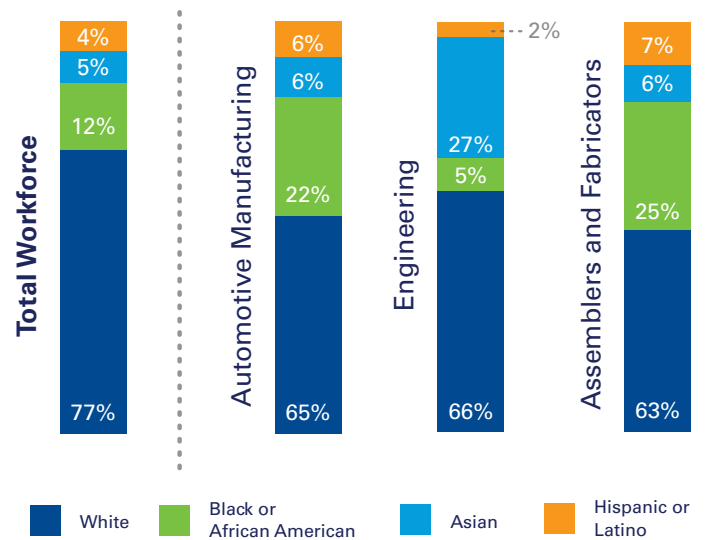
# TALENT DIVERSITY

Michigan's automotive manufacturing workforce is relatively diverse compared to the total workforce demographics, but certain occupations closely associated with the industry lack representation.

For example, the share of Black or African American workers in engineering occupations is notably lower (5%) compared to the overall automotive manufacturing industry (22%). Black or African American workers are overrepresented in assembler and fabricator occupations, with an average salary of \$37,357 compared to the median engineer salary of \$101,067.

## OVER A THIRD

of automotive manufacturing jobs are fulfilled by racially diverse workers, compared to less than a quarter of the jobs across the total workforce



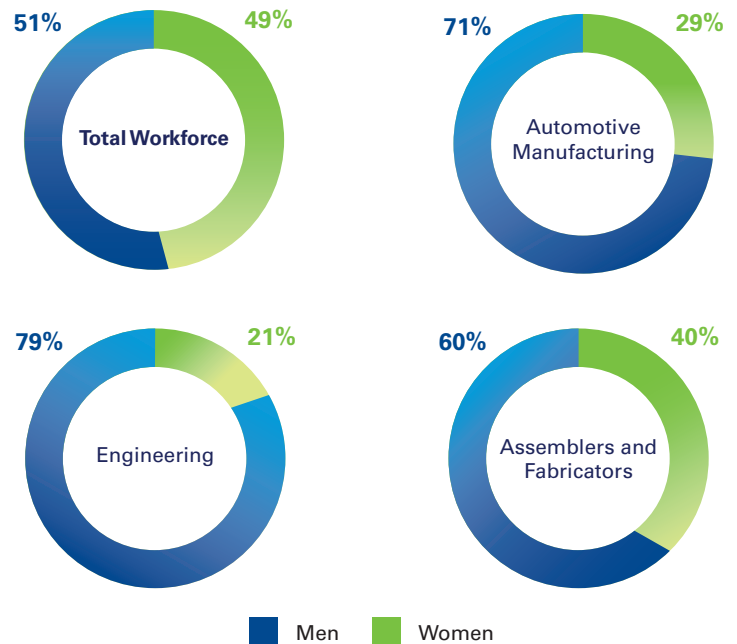
Note: Percentage may not total 100 due to rounding  
Source: Lightcast

## Women Make Up a Third of the Automotive Industry

Despite representing half of Michigan's overall workforce, women are underrepresented in the automotive industry, at **only 29%** of its workforce.



The Center for Automotive Diversity, Inclusion, and Advancement (CADIA) promotes diversity and inclusion in the automotive industry by providing tools, networks, and insights to companies.



Source: Lightcast



Formed in 2020 and currently led by MICHauto, CADIA, and NDIA, the Coalition is a cross-industry executive group focused on growing diversity, equity, and inclusion initiatives and metrics across the state.



A student attends MiCareerQuest, a career exploration experience for middle and high school students



## 125,710

total degrees and certificates awarded by state educational institutions in 2021

## 8,455

engineering degrees awarded by educational institutions in 2021, with 35% being master's degrees or higher

## 17

universities and colleges nationally ranked undergraduate engineering programs and 5 nationally ranked graduate programs

## Top 10 Engineering Institutions

Institution	City	Degrees Awarded (2021)
University of Michigan	Ann Arbor	2,787
Michigan Technological University	Houghton	988
Michigan State University	Lansing	965
University of Michigan	Dearborn	645
Wayne State University	Detroit	530
Oakland University	Rochester	517
Kettering University	Flint	385
Western Michigan University	Kalamazoo	382
Lawrence Technological University	Southfield	279
Grand Valley State University	Allendale	171

Source: The Integrated Postsecondary Education Data System

# HIGHER EDUCATION RESEARCH LEADERSHIP

## University Research Corridor

Michigan's University Research Corridor (URC) is one of the nation's top academic research clusters and is a leading force in the state for talent production, academic research, and economic revitalization. The URC is an alliance of Michigan State University, the University of Michigan, and Wayne State University — Michigan's three leading research institutions.



### \$2.7 B

in annual higher education R&D, ranking 11<sup>th</sup> in the nation

### 8<sup>TH</sup>

in the nation for doctorate recipients

### \$451 M

or 17% of Michigan's higher education R&D is dedicated to engineering

Source: National Science Foundation's National Center for Science and Engineering Statistics, 2021

### \$20.6 B

URC total economic impact with 139,600 students enrolled and \$1.3 billion in research spending in 2021

### \$1.5 M

URC alumni worldwide with 712,000 graduates residing in Michigan

### #1 in the U.S.

for undergraduate degrees in high-demand mobility fields; URC granted over 14,800 in 2020

### \$542.2 M

spent on R&D at URC institutions since 2015

Source: University Research Corridor Economic Impact Report, 2022

# MAJOR HIGHER EDUCATION RESEARCH CENTERS

## Kettering UNIVERSITY

Kettering University GM Mobility Research Center's autonomous vehicle testing track is the only one of its kind on a college campus in the country. The outdoor lab space and proving grounds enhance autonomous vehicle R&D, vehicle safety standards, and EV technology.



Michigan Tech advances new technology and sustainability solutions on campus at the Keweenaw Research Center, Great Lakes Research Center, Freshwater Research and Innovation Center, and the Michigan Tech Research Institute in Ann Arbor. They received \$8 million from the U.S. Department of Energy to advance technologies to reuse and recycle EV batteries.

## Lawrence Technological University

The Rockwell Automation/McNaughton-McKay Electric Co. I4.0 Robotics and Industrial Automation Laboratory uses the Internet of Things to reshape manufacturing. The Lawrence Tech Transportation Institute finds cost-effective and resource-efficient ways to maintain national transportation infrastructure.



The University of Michigan Electric Vehicle Center will boost public and private R&D, train workers, and develop EV batteries and pilot technology with automakers, suppliers, and startups. This new center will join other research facilities like Mcity, Battery Lab, and the Transportation Research Institute.



MSU Mobility has conducted \$75 million in autonomous and connected vehicle R&D in the past five years, with nearly 50 experts and researchers working across seven MSU colleges designing integrated communication and control systems for automated vehicles.



The WSU Connected and Autonomous Driving Lab (CAR Lab) realizes the vision of connected and autonomous driving by designing and implementing technologies like edge computing, communication systems, data analytics, privacy-preserving models, and more.

## Community College Mobility Centers



**Advanced Transportation Center**



**Center for Advanced Automotive Technology**

18

Michigan community colleges and universities offer alternative fuels and hybrid EV courses

## Transportation Design Program

COLLEGE for Creative STUDIES

The College for Creative Studies is a globally recognized design institution with STEM-designated transportation design programs. Graduates work on industry-leading and mobility-forward design while applying skills related to forms and materials, functionality, and engineering.

Source: Detroit Regional Partnership



A student explores careers in several high-demand industries at MiCareerQuest

## K-12 EDUCATION PIPELINE



Discover Auto, a talent attraction program led by MICHauto, in partnership with Square One Education Network and Project Lead the Way, connects high school students with automotive and mobility companies to learn about industry job opportunities.

- » **8** participating automotive-led companies
- » **300+** students engaged since launch



FIRST® prepares young people for the future through inclusive, team-based robotics programs. FIRST® Robotics Competition combines STEM learning with the fun and competition of traditional sports while promoting skills in engineering.

- » **2,000+** students participating in Michigan
- » **Michigan ranked #1** among states for the number of FIRST® robotics competition teams



National MFG Day introduces students to in-demand careers in modern manufacturing and skilled trades.

- » **15,000+** students have participated in Macomb County's Manufacturing Day since 2014, with 50 host sites offering tours in 2022
- » **6,400 students, 25 local manufacturers, and six postsecondary institutions** in Monroe and Wayne counties engaged in tours and presentations in 2021



The Square One Education Network provides STEM learning opportunities for the students and teachers of Square One Nation and builds the high-tech talent supply chain for postsecondary industry partners.

- » **743** completed challenges
- » **85** schools involved

# 2023 INDUSTRY PERCEPTION STUDY

MICHauto partnered with Lambert, a Michigan-headquartered public relations agency, to conduct a study of youth and their adult influencers to capture their perceptions of the automotive and mobility industry.

## KEY TAKEAWAYS

### Youth

MICHIGAN YOUTH ARE 3X MORE LIKELY to highly consider a career in the automotive and mobility industry than youth surveyed overall

2 OUT OF 3 youth rate the automotive and mobility industry as **better than most or excellent in salary**

71% of youth consider **work-life balance** a challenge for the industry

**Work-Life Balance Rating**

- good, very good
- okay, very poor, or terrible

### Adult Influencers

7 OUT OF 10 adult influencers believe it is an **attractive career field** for young adults entering the workforce, compared to 5 out of 10 youth

### EVs

Michigan and Detroit are behind California as the perceived leader in developing electric vehicles among youth **but slightly ahead among adult influencers**

39% of youth perceive Michigan as leading the national EV development race

56% of adult influencers consider Michigan the leader

SEE THE RESULTS  
at [michauto.org](https://michauto.org) or scan the QR code.



Consumer's Energy EV Charging Station



# ENTREPRENEURIAL NETWORK

## Detroit Named the Top Emerging Startup Ecosystem in the World

Through its vast network of accelerators and venture capital firms, Michigan's well-developed startup community ensures the technologies solving the world's mobility-related challenges are being created and developed in the state.

Startup Genome's Global Startup Ecosystem Report named Detroit the top emerging startup ecosystem globally, jumping 13 spots from the previous year.



The team at Airspace Link tours their new location at Newlab at Michigan Central, a new mobility innovation district located in Corktown, Detroit

**\$1.2 B**

in total venture capital deals in 2022 – the highest funding in the past 10 years

**193**

venture capital deals in 2022

**23<sup>RD</sup>**

in venture capital deal value among states

**7**

angel investors helped fund mobility startups

**24**

venture capital firms funded mobility technology startups

**66**

university partners and economic development organizations provide support for mobility startups

Source: Michigan Venture Capital Association, Pitch-Book-NVCA Venture Monitor

## Innovation Collaboration

### Mobility Meetups

Hosted by MICHauto, the MEDC Office of Future Mobility and Electrification (OFME), and Plug and Play Detroit, Mobility Meetups are designed to bring together dynamic startups in the automotive technology space with industry stakeholders to connect, share, and collaborate.

### Michigan SmartZones

Twenty SmartZones throughout the state provide collaboration hubs between university institutions, municipalities, community organizations, and companies to promote innovation and increase jobs and investment in technology-based businesses.

### NewLab and Michigan Central

Catalyzed by a **\$950 million** investment by Ford Motor Company, Newlab's partnership with Michigan Central will accelerate the development, scale, and adoption of critical technologies while connecting entrepreneurs and engineers with industry and government.

### Plug and Play Detroit powered by AmplifyD

In partnership with Stellantis, the Michigan Minority Supplier Development Council, MEDC, and BorgWarner, this innovation hub involves businesses directly with startup technologies to generate pilot projects, proofs of concept, and strategic partnerships.

» Plug and Play Detroit has accelerated over **60 startups** and over **13 innovation partners**

# TESTING AND DEPLOYMENT LANDSCAPE

Michigan's assets, like original equipment manufacturers, assembly plants, supply chains, proving grounds, and transportation hubs, provide a conducive testing, development, and innovation ecosystem for electrification and emerging mobility sectors like aerial, outdoor, and maritime.

## MOBILITY FUNDING PROGRAMS

### Michigan Mobility Funding Platform

Accelerates investments that create safer, more equitable, and environmentally conscious transportation for Michigan residents and companies.

### Michigan Mobility Wallet Challenge

The Michigan Department of Transportation (MDOT) and the Office of Future Mobility and Electrification (OFME) aims to increase the interoperability of transit services and create greater access and equity to personal mobility for Michigan residents.

### Fresh Coast Maritime Challenge

This first-of-its-kind program allows companies to apply for grant assistance to decarbonize and electrify marinas and watercraft statewide creating a blueprint for ports and harbors across North America.

#1

for operational U.S. Department of Transportation-funded connected vehicle deployments with 16 projects

500 MILES

of connected and automated equipped roadways and 120 miles of technology-enabled smart corridors statewide

NEARLY 6,000

Intelligent Transportation Systems devices statewide maintained and operated by Michigan Department of Transportation (MDOT)



Ford test drives an autonomous vehicle, the first step in establishing a self-driving vehicle business

# MICHIGAN'S AUTOMOBILITY ASSETS

Michigan's automotive and mobility industry encompasses more than just major automakers. The MICHauto Automobility Asset Map highlights over 300 locations and businesses that are active contributors to the industry, including OEMs, assembly plants, suppliers, proving grounds, entrepreneur resources, universities, deployments, and electrification assets.

  
VIEW THE MAP  
at  
[michauto.org/automobility-asset-map](http://michauto.org/automobility-asset-map)  
or scan the QR code.



300+

assets that are active contributors to the automobility industry

98 OF THE 100

top automotive suppliers to North America

16

U.S. Department of Transportation-funded deployment projects

10

deployments focused on aerial and maritime mobility

40+

EV battery supply chain companies

14

proving grounds

26

OEMs

55+

public and private deployment partnerships

Source: U.S. Department of Transportation, Office of Future Mobility and Electrification, National Renewable Energy Laboratory, Michigan Department of Transportation



# TECHNOLOGY LANDSCAPE

1 OF 5

U.S. Patent and Trademark Offices (USPTO) in the nation

6<sup>TH</sup>

in the nation for number of inventors, with 6,747 patents granted in 2021

6<sup>TH</sup>

in the nation by growth in job postings for tech occupations

TOP 10 STATE

for new tech business establishments in 2022

#1

in the nation for business-funded automotive and mobility R&D, making up 67% of the nation's shares with \$13 billion in funding in 2020

Source: CompTIA State of Tech Workforce | Cyberstates 2023, United States Patent and Trademark Office, National Science Foundation

## HYDROGEN FUEL TECHNOLOGY

Collaboration and connections with peer industries have ensured Michigan continues to lead in technological advancement, like hydrogen fuel.



The manufacturer of hydrogen transport trailers is opening a first-of-its-kind hydrogen hub at the American Center for Mobility in Michigan, installing prefab hydrogen units capable of pumping **1,000 kilograms** of hydrogen per day.



The Norwegian hydrogen company will invest **\$400 million** and create 500 clean energy manufacturing jobs in a new automated gigawatt electrolyser manufacturing facility in Michigan.

## MINING EXPERTISE

As the electrification of vehicles grows, the need for a well-developed and secure domestic supply chain of critical minerals used in EV batteries has increased. Michigan's copper and iron ore have been mined for over a century, and Michigan's mining expertise has become increasingly important in this transition.



Eagle Mine, the only operating nickel mine in the U.S., and Michigan Tech received **\$8.1 million** from the U.S. Department of Energy to research technologies that develop sustainable processes to supply critical minerals for EV battery manufacturing. Another **\$2.5 million** was awarded to help mines achieve net zero emissions while extracting critical minerals from mine tailings, the by-product of mining.



Getman Corporation has been a global supplier of American mining equipment for over 65 years in Bangor. Offering a wide range of underground mining solutions like electric mining equipment, Getman designs equipment to keep miners safe.



Michigan's manufacturers are revolutionizing manufacturing, new technologies, and product distribution, including advanced robotics, AI and machine learning, additive manufacturing (3D), and smart sensors.

## Additive Manufacturing (3D)

The U.S. Army opened the **Advanced Manufacturing Commercialization Center** in Sterling Heights to house the Army's Jointless Hull subsection tool, a hybrid metal additive manufacturing machine used for engineering development and production.

## Artificial Intelligence

The **University of Michigan's Artificial-Intelligence (AI) Laboratory** provides a venue for a community of AI leaders to collaborate through the AI Partners Program. The lab includes 20 core AI faculty, nearly 100 Ph.D. students, and \$7 million in annual research expenditures. The annual AI Symposium brings academia and industry together to focus on real-life applications of AI.

## Cybersecurity

**Automation Alley** received **\$2 million** from the U.S. Department of Energy's Office of Cybersecurity, Energy Security, and Emergency Response to create a Cybersecurity Center at Oakland University to research avenues to predict, detect, and repair cyberattacks, train workforce, and partner with government and industry entities to support threat sharing.

» **16,000** cybersecurity job openings in Michigan in 2023, up from 8,700 in 2019

Source: CyberSeek

## Robotics

Michigan is home to global leaders in the robotics industry, including headquarters for KUKA Systems North America, FANUC U.S., and ABB North American Robotics.

The **Automate Conference** in Detroit, hosted by Michigan's Association for Advancing Automation, set record attendance in 2023, with more than **30,000 registrants** and **750 exhibitors**.

» **39.5%** of manufacturing employees in Michigan are exposed to robots, the greatest share of any state

» **18.5%** of manufacturing plants have robots

» **\$442M** capital expenditures for industrial robotic equipment, leading the nation

Source: U.S. Census Bureau Annual Survey of Manufactures, Experimental Data Product, 2019

## Accelerators Advancing Adoption of i4.0 Technologies



LEANROCKET  
LAB

Jackson, Michigan



CENTREPOLIS  
Accelerator  
© Lawrence Technological University

Lawrence Technological University  
Southfield, Michigan

## DEFENSE

The organizations below support the U.S. Army's Soldier and ground systems research and development, acquisition, contracting, logistics, and sustainment are located at the Detroit Arsenal in Michigan.

Michigan is also the home of defense industry primes such as AM General LLC, BAE Systems, General Dynamics Land Systems, Navistar Defense, and Rheinmetall Defense Inc., that ensure the nation's defenders have the best and latest equipment and technology.



DEVCOM  
Ground  
Vehicle  
Systems  
Center (GVSC)



Next Generation  
Combat Vehicles  
Cross Functional  
Team (NGCV-CFT)



Program Executive  
Office for Combat  
Support and Combat  
Service Support  
(PEO CS&CSS)



Program  
Executive Office  
for Ground  
Combat Systems  
(PEO GCS)



U.S. Army  
Contracting  
Command-Detroit  
Arsenal  
(ACC-DTA)



U.S. Army  
Tank-automotive  
and Armaments  
Command  
(TACOM)

# MICHIGAN'S AUTOMOBILITY ECOSYSTEM

## Top OEMs and Suppliers

**26** OEMs located in Michigan

**#1** for vehicle production

## Culture



## Talent

**#1** for automotive manufacturing jobs

**#1** for concentration of engineers

## Education

**8<sup>th</sup>** in the nation for higher education R&D

**125,700+** total degrees and certificates awarded annually



## Technology and Innovation



## Electric Vehicles

**\$20B+** in EV and battery-related announced investments by OEMs and suppliers since 2018, ranking **#1** in the nation

**#1** for business-funded automotive and mobility research and development

**89%** increase in EV charging stations since 2018

## Deployments and Testing

#1 for operational U.S. Department of Transportation-funded connected vehicle deployment with 16 projects



## Entrepreneurial Network

\$1.2B in total venture capital deals in 2022 – the highest funding in the past 10 years

**Newlab** PLUGANDPLAY DETROIT

## Defense



DEVCOM Ground Vehicle Systems Center (GVSC)



U.S. Army Tank-automotive and Armaments Command (TACOM)



U.S. Army Detroit Arsenal



Selfridge Air National Guard Base

## Global Impact

1<sup>st</sup> binational EV corridor

#1 northern international border crossing



## Legislative Priorities

- » Enhancing education and workforce opportunities
- » Growing Michigan's vibrant mobility ecosystem
- » Rebuilding the domestic supply chain
- » Strengthening transportation infrastructure and safety
- » Promoting diversity, equity, and inclusion



# Promote. Retain. Grow.

As Michigan's only automotive, mobility, and technology cluster association, MICHauto provides a platform for industry leaders and stakeholders to engage in advocacy, build awareness, increase access to talent, and foster next-generation mobility.



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## ABOUT THE COVER ARTIST



The artwork featured on this publication's cover was created by student illustrator Allison Poth in partnership with



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