

Benchmark Study

Table of Contents

- → Letter from Xometry's Head of Enterprise
- → Driving Progress: Xometry's 2024 Automotive Manufacturing Industry Survey
 - Key Insights
 - The Current State of the Supply Chain
 - The Future Outlook on Innovation: Electric Vehicles, Connected Car Concepts, Autonomous Vehicle Technology, and Artificial Intelligence
- → Appendix Xometry's 2023 Q4 American Manufacturing Resilience Poll
- → Methodology
- → About Xometry[®] and Thomasnet.com[®], a Xometry Company

Letter from Xometry Senior Vice President of Enterprise Sales

Cars transformed the United States. From the Ford Model T that democratized driving for Americans to the Tesla Model Y, the first electric vehicle to become the world's best-selling car, vehicles have evolved as feats of engineering and design.

Automotive vehicles shape our nation, impacting infrastructure, connecting us to places near and far, and driving our export businesses. The people powering the industry innovate daily to develop state-of-the-art vehicles that take transportation to the next level.

We surveyed experts in the industry and found that most automotive manufacturing professionals are feeling optimistic about the market. More than two-thirds (68%) expect their company to generate more sales in 2024.

Many in the automotive manufacturing industry are looking to reshore. Already, 80% of the sector reports sourcing at least half of its services domestically, while 66% sources at least half of its products or raw materials domestically. Supply chain fulfillment is top of mind for many, with about three-quarters of respondents planning to add North American service suppliers and products or raw materials suppliers within the next 12 months.

This creates an opportunity for American industry, as the automotive sector looks to source metals; electrical and electronic components; packaging materials; and fasteners, gaskets, and other hardware domestically. Combined with initiatives such as Domestic Manufacturing Conversion Grants for EVs — the Biden administration's 2023 allocation of a \$2 billion investment — the automotive industry is poised for growth and innovation in 2024.

"Driving Progress: Xometry's 2024 Automotive Manufacturing Industry Survey" joins Xometry's ongoing body of research designed to provide leaders with industry insights, including our quarterly American Manufacturing Resilience CEO surveys with John Zogby Strategies and Forbes, as well as our 2023 Medical Device Manufacturing Report.

Xometry looks forward to helping automotive manufacturers build big ideas.



Weston Norris

Xometry Senior Vice President of Enterprise Sales

Xometry

Key Insights

Xometry[®] and Thomasnet.com[®], a Xometry company, conducted a benchmark study forecasting 2024 automotive manufacturing trends. This study reveals five key trends:

- 1. More than two-thirds of the automotive industry that we surveyed expects their company to grow in 2024.
- **2.** Amid the backdrop of the successfully resolved 2023 United Auto Workers strike, two-thirds (67%) of those surveyed in the automotive manufacturing sector reports that their company will increase worker wages within the next 12 months.
- **3.** More than three-quarters (79%) of the automotive manufacturing industry we surveyed is likely to reshore products or raw materials suppliers within the next year, but cost is the biggest barrier to sourcing automotive supplies domestically.
- **4.** An overwhelming majority (84%) of automotive industry professionals surveyed indicate that it's difficult to bridge the gap between their current status of electric vehicle innovation and where the Biden administration wants them to be in 2024.
- **5.** Artificial intelligence (AI) is an untapped technology in the automotive sector, with close to half (48%) of respondents not currently implementing AI in automotive production.

This study is a survey Xometry conducted on automotive manufacturing with 192 qualified respondents. We have also included an appendix that provides context about the state of North American manufacturing across industrial sectors. Xometry's 2023 Q4 American Manufacturing Resilience Poll, conducted with Forbes and John Zogby Strategies, surveyed 150 manufacturing professionals nationwide.

Most Automotive Industry Professionals Feel Optimistic About the Market

More than two-thirds of automotive industry personnel expect their company to grow in 2024, while only 9% expect their business to generate fewer goods of sale this year compared to last year. In 2023, I expect our company will generate _____ sales than/as the prior year?



Hiring and Retaining Workers at All Levels Is a Challenge in the Automotive Sector

Which of these statements applies to your workforce? (Select all that apply)



- \rightarrow Internships are more prevalent than apprenticeships in the automotive industry in 2023.
- Automotive job opportunities will expand in 2024 as 15% of those surveyed plan to grow their workforce within the next year.

Xometry

67% of the Automotive Sector Reports That Their Company Will Increase Worker Wages Within the Next Year



Quoted Responses from Automotive Professionals on Challenges — Economics

Survey respondents were asked to complete the following sentence: The biggest challenge in my field today is ...

Rising costs Hitting target pricing	Keeping up with parts supplies due to price and availability	Tariffs, shipping costs, and production costs due to raw material costs
Market fluctuation	Hiring skilled workers	Getting customers to spend their money
Inflation	at a reasonable wage	

Quoted Responses from Automotive Professionals on Challenges — The Workforce

Survey respondents were asked to complete the following sentence: The biggest challenge in my field today is ...

Finding qualified new employees	Finding people who want to upskill themselves	Long-term dependability of the labor market
Retaining talent	Developing a culture of quality in my organization	Gaining management support to implement new ideas
Work-life balance		
Expertise		

Supply Chain



Despite Ongoing Supply Chain Disruptions, Automotive Professionals Have Been Able to Successfully Source Parts

The most difficult parts to source include engine components and parts, wiring harnesses, airbags and related components, body components, cables, cameras, electric powertrain components, electric switches, and sensors.

Number of Responses

n=100

Xometry



*graph continued on the next page

11

Despite Ongoing Supply Chain Disruptions, Automotive Professionals Have Been Able to Successfully Source Parts: Previous Graph, Continued



45%

Xometry

Less than Half of the North American Automotive Industry Is Manufacturing the Products That Are in Short Supply



Xometry

Automotive Manufacturers Are Eager to Reshore Their Supply Chains

When adding new suppliers to your supply chain, where do you look? (select all that apply)



- North America is the No. 1 location where the automotive industry is seeking to add new suppliers, followed by Asia.
- Even though the critical lithium-ion battery minerals needed to further the electric vehicle revolution can be found in Africa, the continent is not yet a significant player in the supply chain.



Domestic Sourcing of Automotive Product and Raw Materials Sourcing Is Common

What percentage of your product and/or raw materials sourcing is currently domestic?



- Only 8% of the U.S. automotive industry does all of its sourcing internationally.
- → 66% of the automotive sector surveyed sources at least half of its products and/or raw materials domestically.
- → 40% of the industry surveyed sources two-thirds or more of its automotive products and/or raw materials domestically.

Number of Responses

n=89

More Than Three-Quarters (79%) of the Automotive Manufacturing Industry Is Likely to Reshore Products or Raw Materials Suppliers Within the Next Year

How likely are you to add North American products or raw materials to your supply chain in the next 12 months?



Almost half (44%) of the automotive sector is "very likely" to "extremely likely" to add North American products or raw materials suppliers to their supply chain soon.

Number of Responses

The Automotive Sector Seeks to Source a Wide Range of Products and Raw Materials in North America

What products or raw materials are you looking to source domestically? (select all that apply)



- Metals (18%) are the top raw materials the automotive industry is looking to source domestically.
- → Electrical or electronic components (15%); packaging materials (11%); and fasteners, gaskets, or other hardware (10%) are also in demand.

Number of Responses

n=69

Cost Is the Biggest Barrier to Sourcing Automotive Supplies Domestically

What are the barriers, if any, to sourcing automotive supplies domestically? (select all that apply)



- Domestic automotive supplies are not always available when they're needed. Availability (20%) is the second-biggest barrier to reshoring, with lead time/speed (13%) coming in third.
- → While vendor responsiveness (5%) is not a major barrier, finding labor/talent (11%) is.

n=81

Number of Responses

Respondents Want Supplies Fast: Lead Time/Speed Is the Biggest Barrier to Sourcing Automotive Supplies Internationally (15%) and the Third Biggest Domestically (13%)

- → Quality is the second-biggest concern when sourcing internationally (11%), but less of a barrier when sourcing domestically (7%).
- Tariffs, customs, and geo-political conflict are barriers to sourcing automotive supplies overseas.

What are the barriers, if any, to sourcing automotive supplies internationally? (select all that apply)



Number of Responses

Xometry

Quoted Responses from Automotive Professionals on Challenges — Raw Materials & Parts

Survey respondents were asked to complete the following sentence: The biggest challenge in my field today is...

Getting parts, especially for older vehicles	EV raw materials
Getting DEF headers	Actuators

Half of the Automotive Sector Surveyed Sources at Least Three-Quarters of Its Services in North America



What percentage of your service sourcing is currently domestic?

Xometry

- → 80% sources at least half of its services domestically.
- Only 4% of the automotive manufacturing industry sources all of its services internationally.

Number of Responses

About Three-Quarters (73%) of the Automotive Industry Will Likely Add North American Service Suppliers Within the Next Year

How likely are you to add North American services suppliers to your supply chain in the next 12 months?

Xometry



More than a quarter (36%) of these indicate that they are "very likely" to "extremely likely" to do so.

Services Related to Electrical or Electronic Components Are the Most Highly Sought-After Domestic Service

Which services are you looking to source domestically? (select all that apply)



- Assembly services, CNC machining, and services related to fasteners, gaskets, or other hardware are in demand domestically.
- Additive manufacturing, which the automotive industry turned to during the COVID-19 pandemic, remains a popular domestic service.

Number of Responses

n=75

Cost and Availability Far Outrank Other Barriers to Sourcing Automotive Services Domestically

24

What are the barriers, if any, to sourcing automotive services domestically? (select all that apply)



- → Even though products don't need to travel as far as when sourced domestically, lead time/speed can still be an issue when sourcing automotive services in North America.
- While labor/talent can be a potential barrier, the automotive industry feels confident in the quality of its domestic services.



Amid Ongoing Supply Chain Disruptions, Lead Times/Speed Continue to Be a Barrier to Sourcing Automotive Services Internationally

- → Quality and compliance expertise are greater concerns when sourcing services internationally than when sourcing domestically: quality concerns are at 10% for international vs. 6% for domestic, while compliance expertise concerns are at 7% for international vs. only 4% for domestic service sourcing.
- Privacy, including intellectual property, and geo-political conflict can be potential barriers when sourcing automotive services internationally.

Number of Responses

What are the barriers, if any, to sourcing automotive services internationally? (select all that apply)



Xometry

Most Automotive Manufacturing Professionals Surveyed Are Satisfied with the Level of Transparency and Traceability in the Supply Chain

How would you rate the level of transparency and traceability throughout your supply chain?



- → A quarter of industry professionals consider the level "good" to "excellent."
- → There are opportunities to improve supply chain visibility software, blockchain, and vendor relationship management within the automotive sector: 29% consider the level of transparency and traceability "below average" to "extremely poor."



Quoted Responses from Automotive Professionals on Challenges — Supply Chain

Survey respondents were asked to complete the following sentence: The biggest challenge in my field today is...



The Future Outlook on Innovation: Electric Vehicles, Connected Car Concepts, Autonomous Vehicle Technology, and Artificial Intelligence

Despite the Biden Administration's Investment in the Transition to Electric Vehicles, an Overwhelming Majority of the Automotive Industry Is Finding It Difficult to Supply Related Materials, Parts, and Manufacturing Services

Do you agree or disagree with the following statement: It is difficult to bridge the gap between our current status of electric vehicle (EV) innovation — including supplying materials, parts, and/or manufacturing services — and where the Biden administration wants us to be in 2024?



Xometry

Battery Innovation and Charger Compatibility Are the Top Obstacles to EV Production

What are the top obstacles to electric vehicle (EV) production? (select all that apply)



- → Related to batteries, the electrical supply grid and electric infrastructure were noted by some respondents as barriers to EV production.
- → Customer adoption remains challenging.



Artificial Intelligence Is an Untapped Technology for Production in the Automotive Sector

How are you implementing artificial intelligence (AI) in your automotive production? (select all that apply)

Xometry



31

- → 48% of respondents are not currently implementing AI in automotive production.
- Those who are turning to Al are mainly using it to help with their supplier search.

n=60

Number of Responses

Predictive Maintenance Is the No. 1 Use of Artificial Intelligence for Enhancing the Driver Experience

How are you implementing artificial intelligence (AI) to enhance the driver's experience (select all that apply)



© 2023 Xometry and/or its affiliates. All rights reserved.

Connected Car Concepts Are Not Yet Fully Realized

How are you implementing artificial intelligence (AI) to enhance the driver's experience? (select all that apply)



- → Half of survey respondents are not implementing connected care concepts into their vehicles at all.
- Vehicle to Vehicle, including directions, speed, steering, and or braking shared with nearby vehicles, and Vehicle to Cloud, in which location data, IoT connectivity, and diagnostic reporting are enabled, are the most common implementations of connected car concepts.

Number of Responses

n=61



Self-Driving Cars Remain a Work in Progress

Is your company investing in autonomous vehicles (AV) technology? (select all that apply)



Companies that are investing in autonomous vehicle technology are focused on conditional driving automation in which vehicles can drive autonomously within specific and safe conditions and driver assistance such as lane-keep-assist.

Number of Responses

n=59

The Top Sustainability Initiative Effort in the Automotive Sector Is Within Manufacturing Operations





- → Automotive manufacturers are seeking to make their vehicles more sustainable.
- Sustainability initiatives are happening across the automotive sector, including in the sourcing of raw materials and components and within logistics and shipping.



Appendix A

Xometry's 2023 Q4 American Manufacturing Resilience Poll





U.S. Manufacturing CEOs Across Industrial Sectors Are Optimistic

65% of CEOs say the future is bright.

70% of CEOs

report they expect to beat last year's sales.

Finding Skilled Talent Is Difficult for American Manufacturing CEOs

56% of CEOs

are struggling with finding qualified workers.

47% of CEOs plan to hire more workers soon.

51% of CEOs will maintain existing levels of staff.

Reshoring Operations Is Increasing

Three-quarters of manufacturing CEOs have reshored some or all of their operations. The percentage of CEOs who have reshored or are in the process of reshoring rose from **35% in 2023 Q2 to 76% in Q4.**

83% of CEOs

believe reshoring is key to the health of American manufacturing.

Manufacturing CEOs Are Turning to Artificial Intelligence to Strengthen Supply Chains

70% of CEOs

have seen an immediate return on investment in Al.

76% of CEOs

are deploying AI in supply chain management.

71% of CEOs

are deploying Al in procurement.

47% of CEOs are deploying AI in quality control.

37% of CEOs are deploying AI in

automation.

Methodology



Methodology for Driving Progress: Xometry's 2024 Automotive Manufacturing Industry Survey

This survey was conducted over a 23-day period, from October 20 to November 12, 2023.

A total of 335 respondents participated, and 192 were qualified for the survey. Due to the conditional and multiple-choice nature of the survey, some datasets may contain a different response number, which is annotated in the footnotes for clarity.

Quoted responses, including "Other" and fill-in-the-blank answers, represent a cross-section of responses and have been lightly edited for clarity.

Invited Participants:

- Qualifiers:
 - Complete, non-duplicate entry
 - Required to work in the automotive sector
 - Required that the organization is based in North America
- Recruitment:
 - Respondents were invited to participate via Thomasnet.com[®], the Thomas Industry Update newsletter, and Xometry emails. The invitation pool was incentivized with an executive summary report of the survey findings..

Respondents' Firmographics:

- → **Revenue:** Business revenues span from less than \$5 million to more than \$1 billion.
- → Employees: Company size spans from 1 to more than 1,500 employees.
- → Company Location: Identified by country and state/province.

Survey Information:

- → Survey Administration: Qualtrics, online survey
- → Survey Language: English
- → Questions: 38 questions were included

Consumer Vehicles — Including Cars, Trucks, and Vans — Dominate the Automotive Market

Which automotive market is your specialty? (select all that apply)



Construction vehicles, farming vehicles, and hazardous materials vehicles are critical to industry, yet fewer automotive experts surveyed specialize in them.

n=187

"Other" responses include: material handling forklifts; automotive lubricants; steel for all of the above; automotive parts; UTV; facility technology; IT; aftermarket parts; equipment sales to all of the above; material handling and manlifts; manufacturer for all of the above markets; restoration of old cars; hardware; software; research; recreational, off road; sports cars; class 8; and emergency equipment fire trucks and ambulances.

Electrical Components Are Integral to the Automotive Sector

What automotive specialty manufacturing or service field are you in? (select all that apply)



Assembly services, chassis and frames, engines, brake systems, cooling systems, exterior bodies, and vehicle interiors are among the highest-represented fields.

n=123

6%

Owners/CEOs Comprise the Highest Proportion of Respondents

Which option best describes your job level?



An Overwhelming Majority of Respondents Are from the United States

Where is your organization based?



An Overwhelming Majority of Respondents Are from the United States



Xometry

© 2023 Xometry and/or its affiliates. All rights reserved.

One Size Does Not Fit All: Automotive Manufacturers Fulfill Orders of All Sizes

What's your typical order size?



- Prototypes and small production runs comprise close to half (46%) of typical orders.
- → Large production runs account for a quarter of typical orders.

n=59

Methodology for Xometry's 2023 Q4 American Manufacturing Resilience Poll

John Zogby Strategies was commissioned by Xometry to conduct quarterly online nationwide surveys of 150 manufacturing executives. Secure invitations were sent to a random selection of executives via a nationally representative business panel. Each respondent was screened to meet the required target population.

The overall margin of error is +/- 8.2 percentage points.

About Xometry[®] and Thomasnet.com[®]





Speed Up Automotive Product Development With Manufacturing on Demand

Xometry works with top automotive manufacturers such as BMW, Tier One and Two suppliers, and 55% of the Fortune 500 motor vehicles and parts companies to simplify their supply chain and dynamically scale their manufacturing capacity. Think of it as production capacity-as-a-service, or just-in-time manufacturing in the digital age. Leading electric car companies and autonomous driving startups are also working with Xometry to build an infinitely more scalable on-demand supply chain of the future to get to market faster. We have expertise in injection molding, CNC machining, sheet metal fabrication and **3D printing for the automotive industry**. We also work with manufacturers of other vehicle types such as **motorcycles**.

Top Precision Automotive Applications

- Low volume prototype, pilot, or short-term production support using: Injection molding, Urethane casting, Small part stampings
- Production parts supply: Bridge tooling & parts supply, Low to medium volume tooling parts supply, Service parts supply using new or existing tooling
- Rapid prototyping with: Additive manufacturing, CNC machining
- Plant floor manufacturing support: Custom assembly fixtures/equipment/jig details, Custom check fixture or part check details

Trusted by Automotive Engineers and Designers at 55% of the Fortune 500 Motor Vehicles and Parts Companies

- → Automotive manufacturers
- → OEM automotive component plants
- → OEM vehicle assembly plants
- → OEM design studios
- → Independent OEM automotive parts manufacturers
- → Tier one & two suppliers
- → Autonomous driving technology companies
- → Replacement automotive parts manufacturers
- → Industrial heavy equipment manufacturers
- → Agriculture and forestry equipment manufacturers

Automotive Manufacturing Capabilities



Custom Online CNC Machining Services

Get instant quotes on custom metal and plastic machined parts with our Online CNC Machining Service. Make quick turn prototypes and production parts in days with free standard shipping on all US orders. ISO 9001:2015, ISO 13485 and AS9100D certified. ITAR registered.

Start Your New Instant Quote

Custom Online CNC Machining Services



Custom Plastic Injection Molding Service

Get custom plastic molded prototypes and production parts in as few as five business days. We provide expert engineering reviews and \$500 off your first mold. Dozens of materials and finishes are available.

Custom Metal 3D Printing Service

High-quality Industrial Metal 3D Printing: DMLS and Binder Jetting Service | Free Shipping on All US Orders - No Minimums



Custom Online 3D Printing Service

Get instant online quotes on parts in over 80 metal and plastic materials. Order 3D Printed items and get Free Shipping on all US orders. ISO 9001:2015, ISO 13485 and AS9100D certified.

Start Your New Quote	Start Your New Instant Quote	Start Your New Instant Quote
Custom Plastic Injection	Custom Metal	Custom Online
Molding Service	3D Printing Service	3D Printing Service

Xometry

Company Overview

Nasdaq: XMTR

Founded in 2013 and headquartered in Maryland, with offices based in North America, Europe, and Asia

10K+ Suppliers

The world's largest network, with suppliers based in North America, Europe, and Asia

40K+ Active Buyers

Throughout North America, Europe, and Asia

Dozens of Processes

And hundreds of materials, available via our Instant Quoting Engine

Fully Managed Manufacturing Services

With Xometry Regional Headquarters



North America North Bethesda, MD, USA Europe Munich, Germany



Asia Shanghai, China

Xometry's Instant Quoting Engine



The Xometry Instant Quoting Engine leverages Al-driven algorithms plus its massive network of top global suppliers to **deliver a simple, elegant, and efficient digital quoting experience.**

- ✓ Expedite, standard, and economy lead times
- ✓ Secure file uploads
- ISO 9001:2015, ISO 13485:2016 and AS9100D Certified

->

Immense Manufacturing Capacity and Services

Additive Manufacturing

Plastic Part Production

- Binder Jetting
- Carbon DLS
- → Direct Metal Laser Sintering (DMLS)
- → Fused Deposition Modeling (FDM)
- → HP Multi Jet Fusion
- → PolyJet
- → Selective Laser Sintering (SLS)
- → Stereolithography
- → Vapor Smoothing 3D Prints

Metal and Sheet Part Production

- → Die Casting
- Metal Stamping
- Metal Extrusion
- Metal Injection Molding (MIM)

Compression Molding

Injection Molding

Bridge Tooling

- Insert Molding
- → Liquid Silicone Rubber (LSR)
- Plastic Extrusion
- Production Tooling
- Prototype Modeling
- Urethane and Silicone Casting

CNC Machining

- CNC Milling
- CNC Turning
- Wire and Sinker EDM

Sheet and Tube Fabrication

- → Laser Cutting
- → Laser Tube Cutting
- Plasma Cutting
- → Sheet Cutting
- Sheet Metal Fabrication
- → Tube Bending
- → Waterjet Cutting

Value-Added Services

- Assembly Services
- → Finishing Services
- → High-Volume Production
- Rapid Prototyping



Contact Information

Matthew Hutchison

VP, Global Corporate Communications at Xometry <u>matthew.hutchison@xometry.com</u>

Xometry 6116 Executive Blvd., Suite 800 North Bethesda, MD 20852

Report Produced By:

Aaron Lichtig SVP, Marketing, Xometry

Megan Conniff Director of Content, Thomas Insights

Stephanie Nikolopoulos Executive Editor, Thomas Insights

Brooklyn Kiosow Digital Marketing Producer, Thomas Insights

Uwa Fields Senior Manager, Marketing Operations William Gardner Marketing Automation Technical Specialist

Diana Regal Director, Branding

Catey Minnis Designer

Christopher Tomaszewicz Senior Manager, Taxonomy

Weston Norris Senior Vice President, Enterprise Sales **Kyra Stawson** Senior Technical Sales Engineer

Simona Chetan Director, Program Management Business Unit

Jeremy Zogby Managing Partner, John Zogby Strategies

Thank You



Xometry

xometry.com @xometry 240-252-1138 support@xometry.com info@xometry.eu

Get your Instant Quote Today

Visit Xometry.com