

Connected & Autonomous Vehicles Survey

January 2019



SURVEY OVERVIEW AND METHODOLOGY

TU-Automotive, in coordination with its research partner Tractica, fielded a survey to automotive industry participants and technology providers. The goal was to better understand how the different sectors of the automotive ecosystem view the industry's priorities as it continues its development of connected & autonomous vehicles.

The online survey was conducted in the month of December 2018. It solicited responses via email invitations to TU-Automotive's database of automotive industry participants worldwide. After a data cleansing process that removes incomplete, unqualified, or questionable responses, the survey finished with 515 qualified responses.

Respondents were presented with a list of 40 topics/initiatives associated with the automotive industry and were asked to assign an importance score to each based on its priority to their role and their company.

The survey group represents a broad mix of geographies. The largest percentage at 42% are based in North America (primarily in the U.S.), 39% are based in EMEA, and 19% came from Asia Pacific-based respondents.

A broad mix of companies are also represented in the survey group. Automakers make up 13% of the respondents, automotive suppliers account for 14% of the base, and technology suppliers (hardware, software, semiconductor/components and software/application developers) make up another 13%. The remainder is spread across numerous other sectors that all have a play in the automotive industry, including telematics service providers, insurance companies, systems integrators, and government agencies.

Among the individual respondents, business management and technical roles lead, with 37% holding business management/ strategy positions and 33% holding engineering positions.

SURVEY QUESTIONNAIRE

1. What type of organization do you work for?

- Automaker
- Consultant
- Content Provider
- Financial Services
- Fleet Manager
- Government Agency
- Hardware Provider
- Industry Association
- Insurance Company
- Investor
- Mobility Provider
- Press
- Semiconductor/Component Company
- Software/Application Developer
- Systems Integrator
- Telematics Service Provider
- Tier 1 Supplier
- Tier 2 or 3 Supplier
- Wireless Carrier
- Other (please specify)

2. What is your role within your organization?

- Business Management/Strategy
- Finance
- Marketing
- Operations
- Sales
- Technology/Engineering
- Other (please specify)

3. In which world region are you located?

- North America
- Europe
- Asia Pacific
- Middle East
- Africa

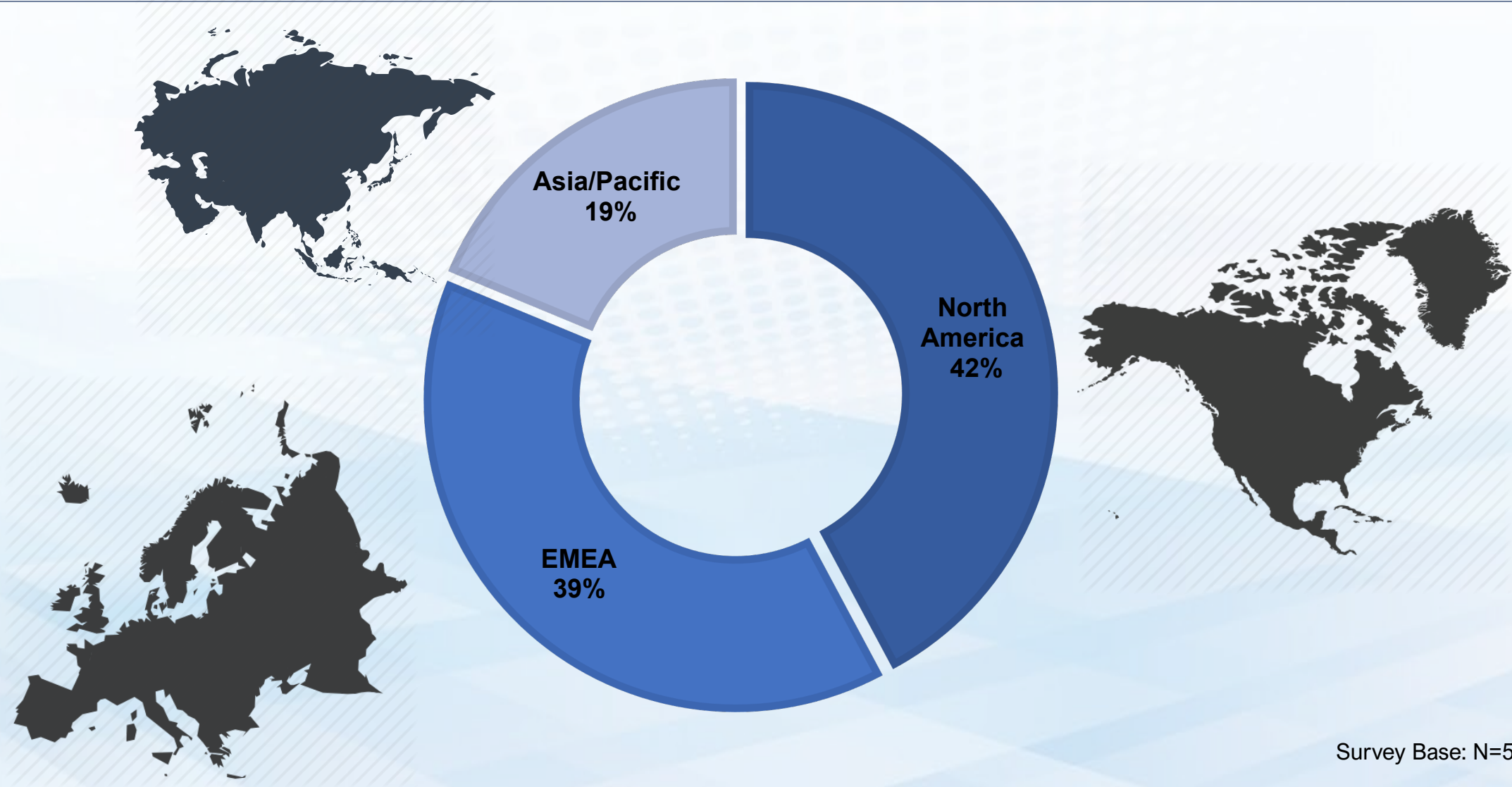
SURVEY QUESTIONNAIRE

4. Please rate the importance of each of the following topics to your role and your company.

[5 – Extremely Important, 4 – Somewhat Important, 3 – Neutral, 2 – Not Very Important, 1 – Not at All Important, N/A]

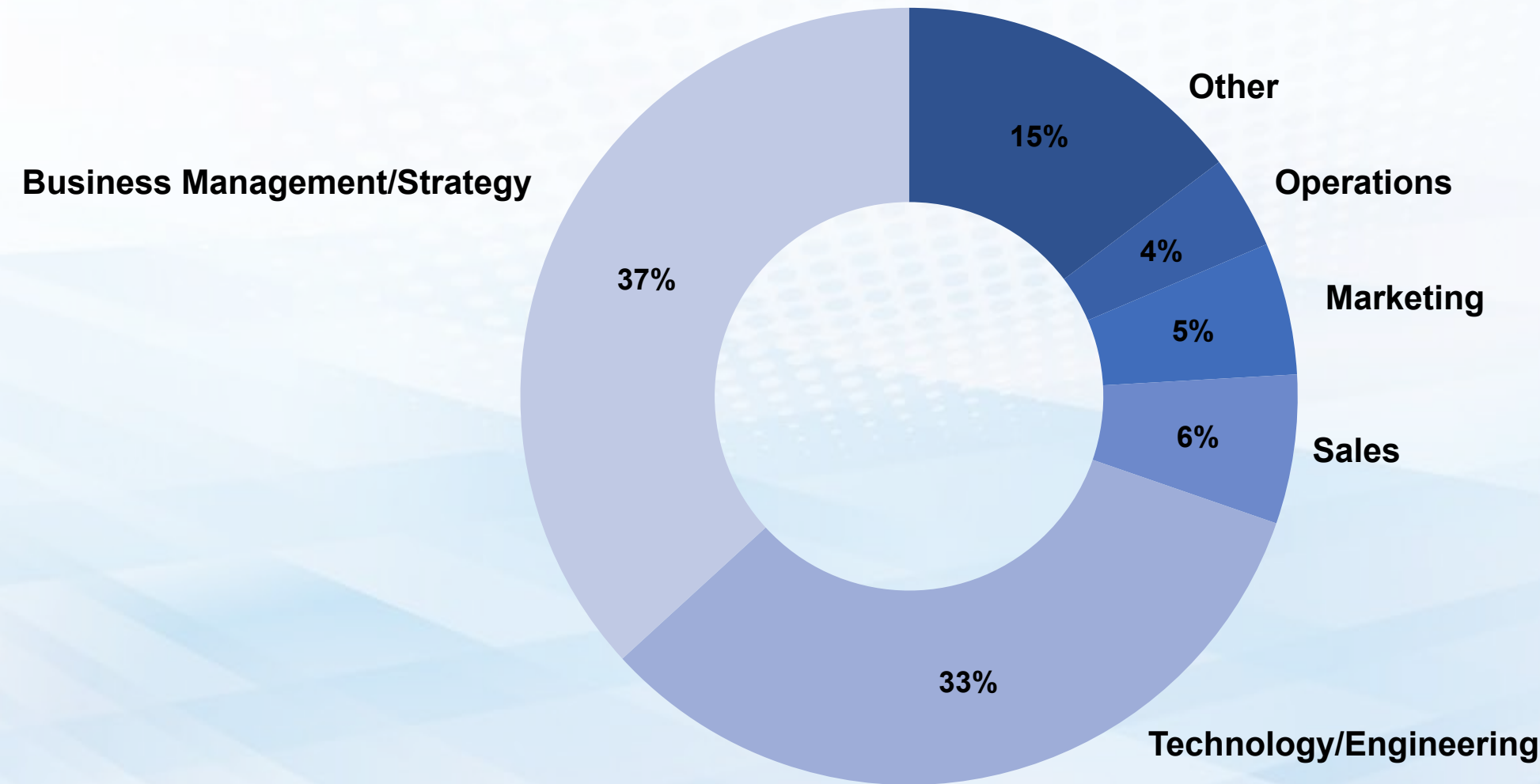
- 5G Connectivity
- Advanced Driver Assistance Systems (ADAS)
- Artificial Intelligence for Automotive
- Automotive Cybersecurity Issues
- Automotive Human Machine Interaction (HMI)
- Autonomous Vehicle Market Ecosystem
- Autonomous Vehicle Regulatory and Policy Issues
- Autonomous Vehicle Software Systems
- Autonomous Vehicle Use Cases
- Blockchain for Automotive
- China Market Dynamics
- Cloud-Based Automotive Systems
- Commercial Autonomous Vehicles (Trucks, Buses, etc.)
- Commercial Electric Vehicles (Trucks, Buses, etc.)
- Connected Car Data Monetization Strategies
- Connected Car Services
- Consumer Autonomous Vehicles
- Consumer Data Privacy and Security
- Driver Monitoring Systems
- Edge Computing for Automotive
- Electric Vehicle Charging Infrastructure
- Electric Vehicle Connected Services
- Electric Vehicle Market Ecosystem
- Fleet Telematics
- Head-Up Displays
- Intelligent Transportation Systems
- Mobility as a Service
- Personalized Services in Vehicles
- Predictive Maintenance
- Ridesharing Models
- Sensor Networking/Data Fusion
- Smart City Transportation Systems
- Smart Parking Systems
- Vehicle Data Management
- Vehicle Localization and Mapping
- Vehicle to Grid (V2G) Systems
- Vehicle to Infrastructure Communications (V2X)
- Vehicle to Vehicle Communications (V2V)
- Virtual Assistants for Automotive
- Voice and Speech Recognition

PARTICIPANT PROFILE: GEOGRAPHICAL SEGMENTATION



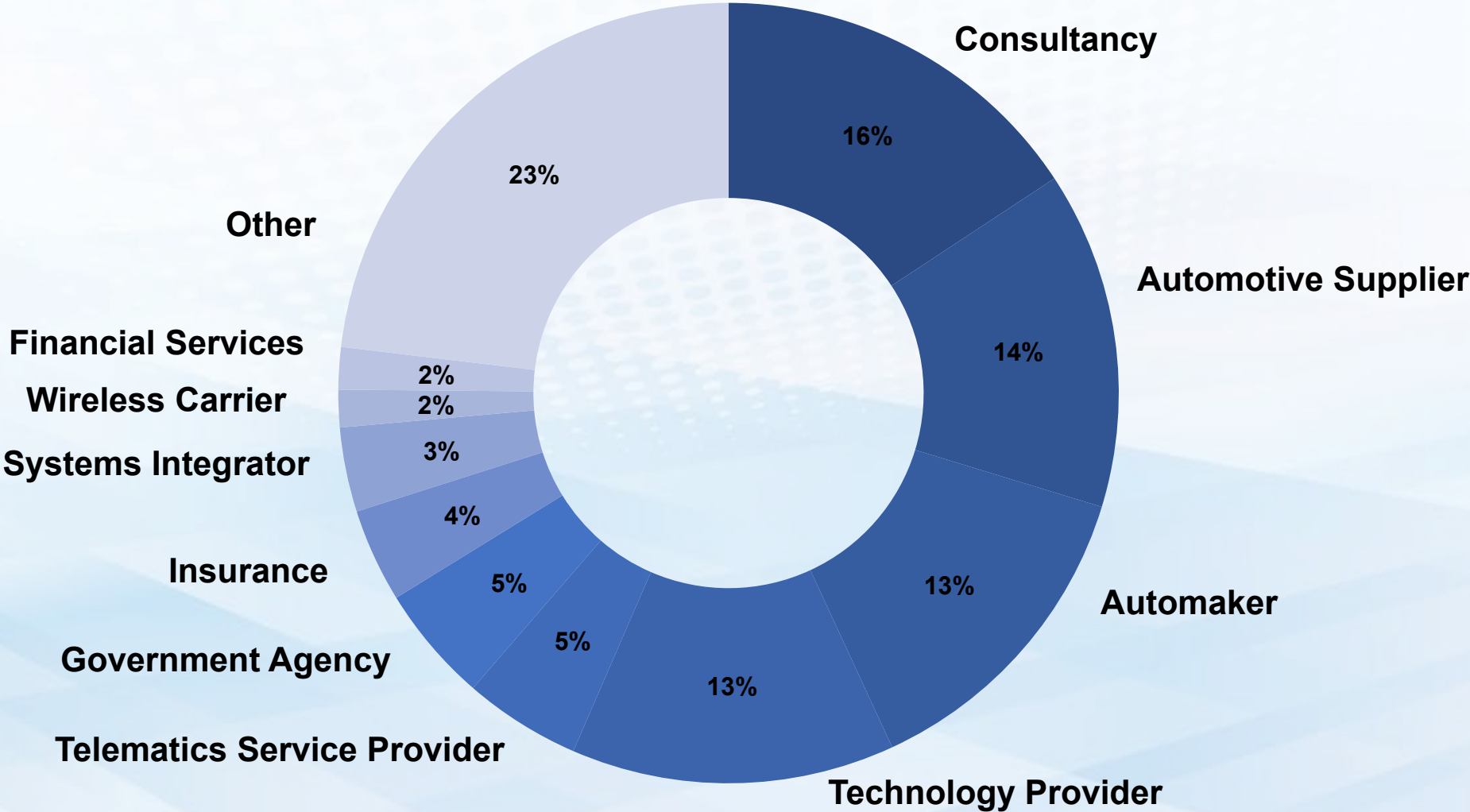
Survey Base: N=515

PARTICIPANT PROFILE: JOB TITLES



Survey Base: N=515

PARTICIPANT PROFILE: ORGANIZATION TYPE

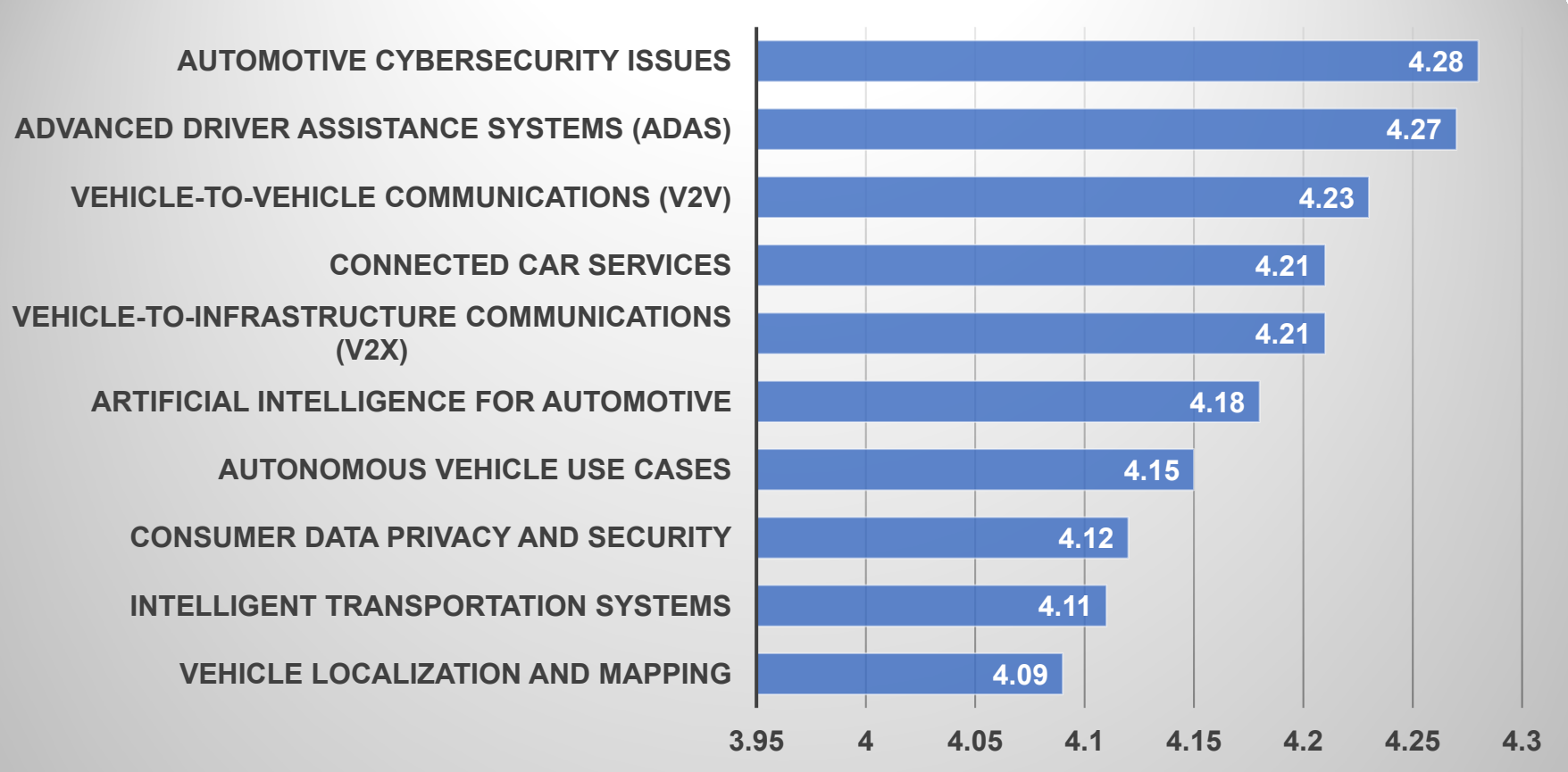


Survey Base: N=515

TOP 10 PRIORITIES: ALL RESPONDENTS

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=515

(Weighted Average)

A holistic view of the priorities from the complete survey base shows cybersecurity threats as the leading priority for the industry followed closely by the continued development of advanced driver assistance systems (ADAS).

Read further to see how these priorities shift depending on which segment of the automotive ecosystem is responding.

Connected & Autonomous Vehicle Priorities by Company Type

TOP 10 PRIORITIES BY COMPANY TYPE: SUMMARY

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important

Automakers	Weighted Average
Advanced Driver Assistance Systems (ADAS)	4.62
Connected Car Services	4.49
Artificial Intelligence for Automotive	4.47
Automotive Human Machine Interaction (HMI)	4.46
Automotive Cybersecurity Issues	4.44
Vehicle Data Management	4.41
Autonomous Vehicle Use Cases	4.41
Driver Monitoring Systems	4.40
Vehicle Localization and Mapping	4.37
Consumer Data Privacy and Security	4.33

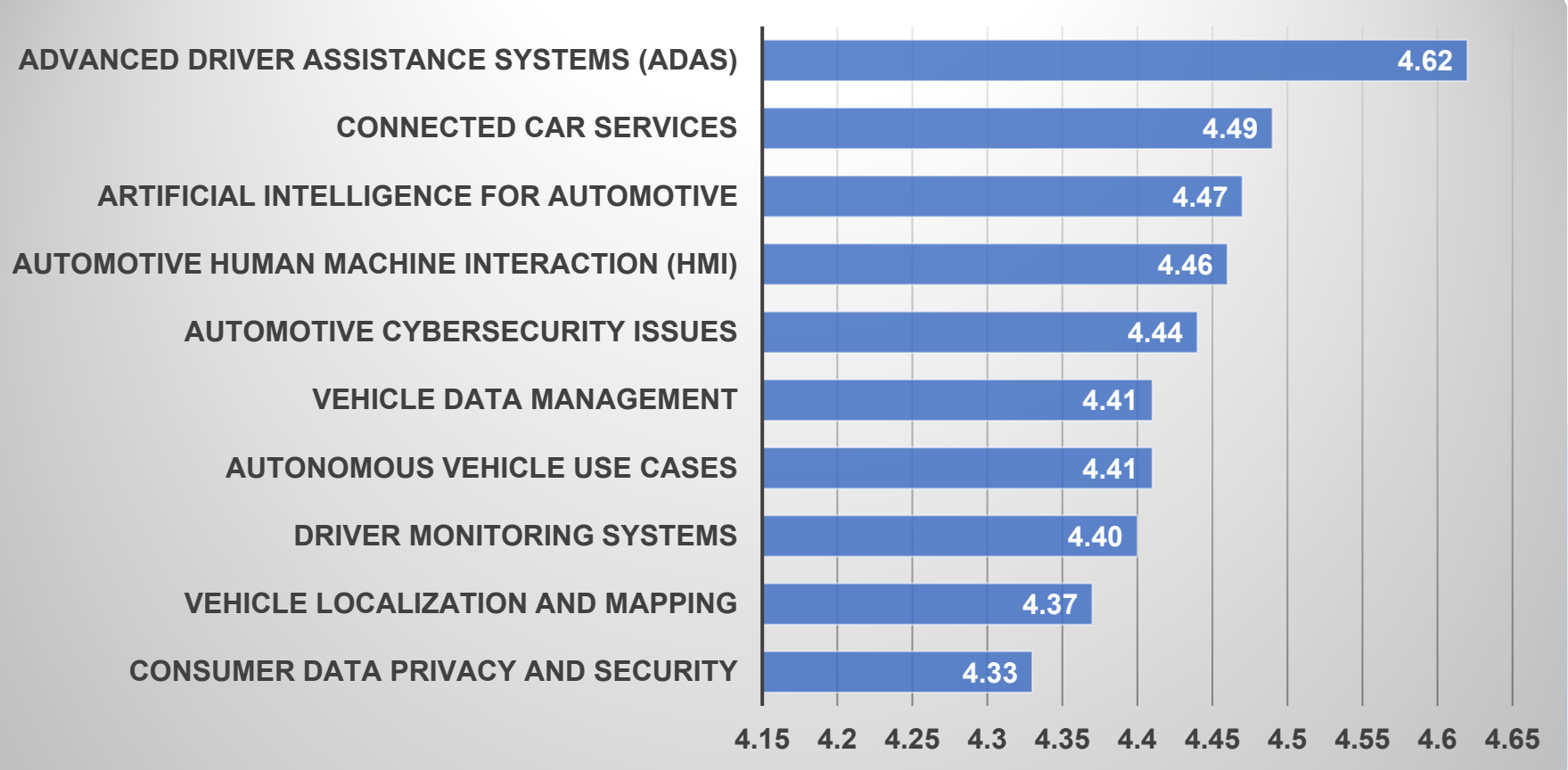
Technology Providers	Weighted Average
Connected Car Services	4.25
Automotive Cybersecurity Issues	4.22
Vehicle-to-Infrastructure Comms (V2X)	4.21
Consumer Data Privacy and Security	4.21
Autonomous Vehicle Software Systems	4.21
Vehicle-to-Vehicle Communications (V2V)	4.16
Artificial Intelligence for Automotive	4.16
Autonomous Vehicle Use Cases	4.15
Vehicle Data Management	4.14
Sensor Networking/Data Fusion	4.11

Tier 1, 2, 3 Suppliers	Weighted Average
Advanced Driver Assistance Systems (ADAS)	4.41
Artificial Intelligence for Automotive	4.28
Sensor Networking/Data Fusion	4.23
Automotive Cybersecurity Issues	4.23
Driver Monitoring Systems	4.16
Automotive Human Machine Interaction (HMI)	4.16
Autonomous Vehicle Software Systems	4.13
Autonomous Vehicle Use Cases	4.13
Consumer Autonomous Vehicles	4.10
Vehicle-to-Vehicle Communications (V2V)	4.08

TOP 10 PRIORITIES: AUTOMAKERS

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=69 respondents who work for Automakers

(Weighted Average)

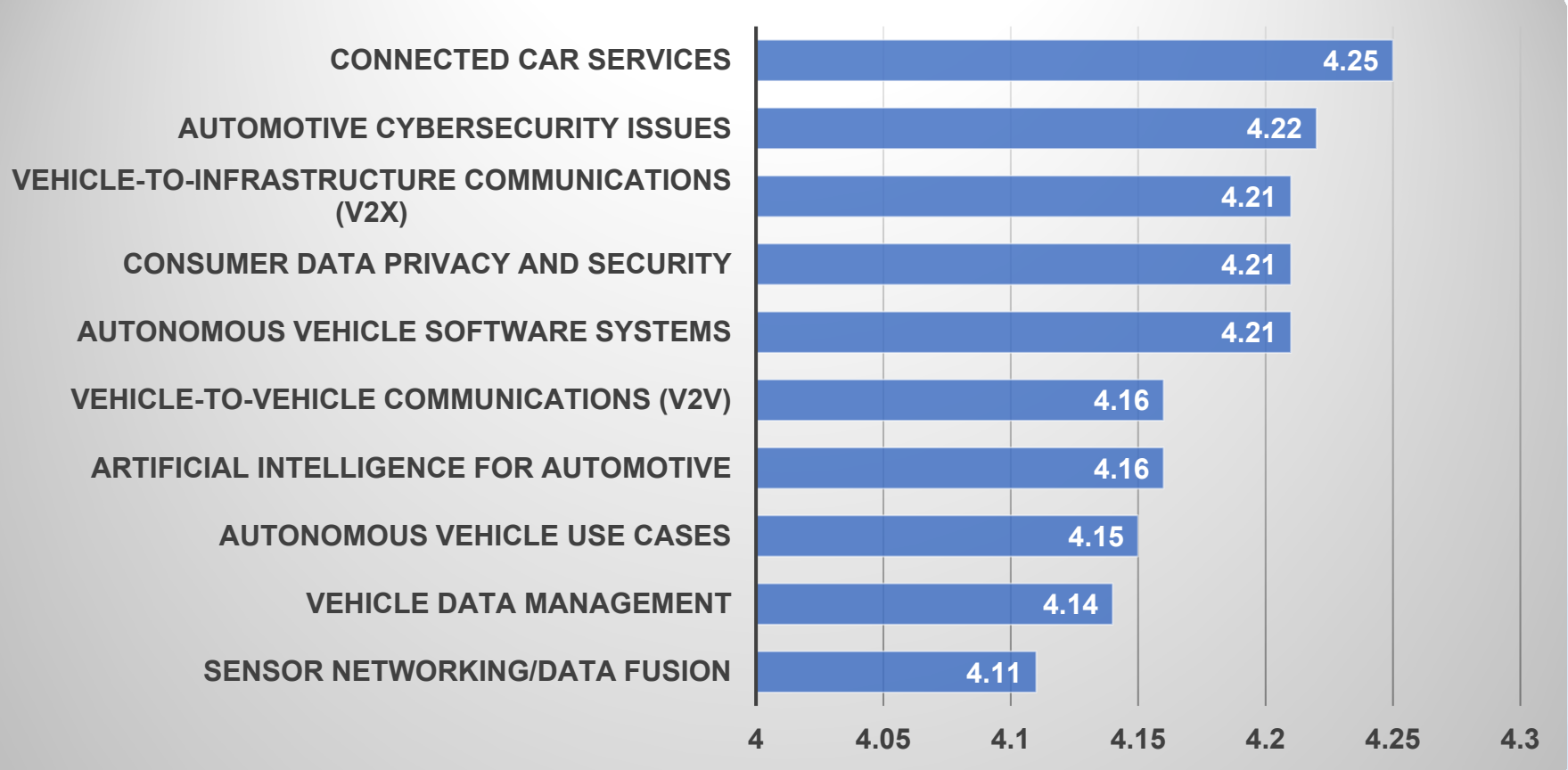
Automakers consider the continued development of ADAS as their top priority.

The importance placed on connected car services and AI for automotive shows recognition of the revenue opportunity from the digital ecosystem beyond what can be made from just selling the vehicles themselves.

TOP 10 PRIORITIES: TECHNOLOGY PROVIDERS

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=69 respondents who work for Technology Providers
(Hardware, software, semiconductors/components, and software/application developers)

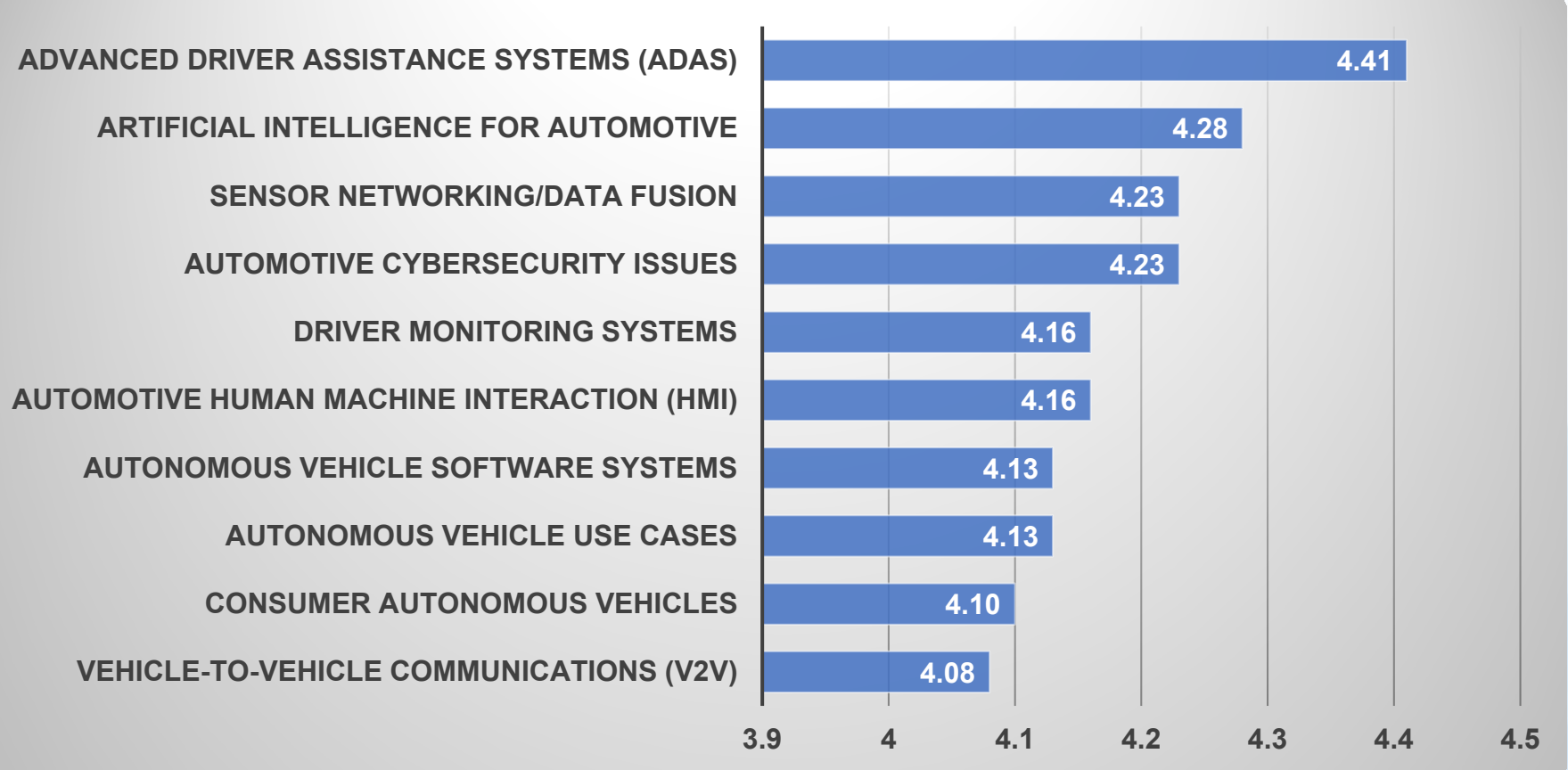
(Weighted Average)

Technology providers consider connected services and cybersecurity issues as their top priorities, suggesting that they see cellular technology as key to the ability of an auto to sense the world around it, convey its intent, and be situationally aware.

TOP 10 PRIORITIES: AUTOMOTIVE SUPPLIERS

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=72 respondents who work for Tier 1, 2, or 3 Suppliers

(Weighted Average)

Automotive suppliers weight the priorities in much the same way as their automaker customers do.

Both segments consider ADAS and AI for automotive among their leading priorities. However, automotive suppliers put a level of priority on sensor networking that outstrips the importance any other segment places on it.

Connected & Autonomous Vehicle Priorities by World Region

TOP 10 PRIORITIES BY WORLD REGION: SUMMARY

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important

North America	Weighted Average
Connected Car Services	4.27
Automotive Cybersecurity Issues	4.27
Advanced Driver Assistance Systems (ADAS)	4.26
Consumer Data Privacy and Security	4.23
Artificial Intelligence for Automotive	4.20
Vehicle-to-Vehicle Communications (V2V)	4.18
Consumer Autonomous Vehicles	4.15
Vehicle-to-Infrastructure Comms (V2X)	4.13
Sensor Networking/Data Fusion	4.12
Autonomous Vehicle Use Cases	4.11

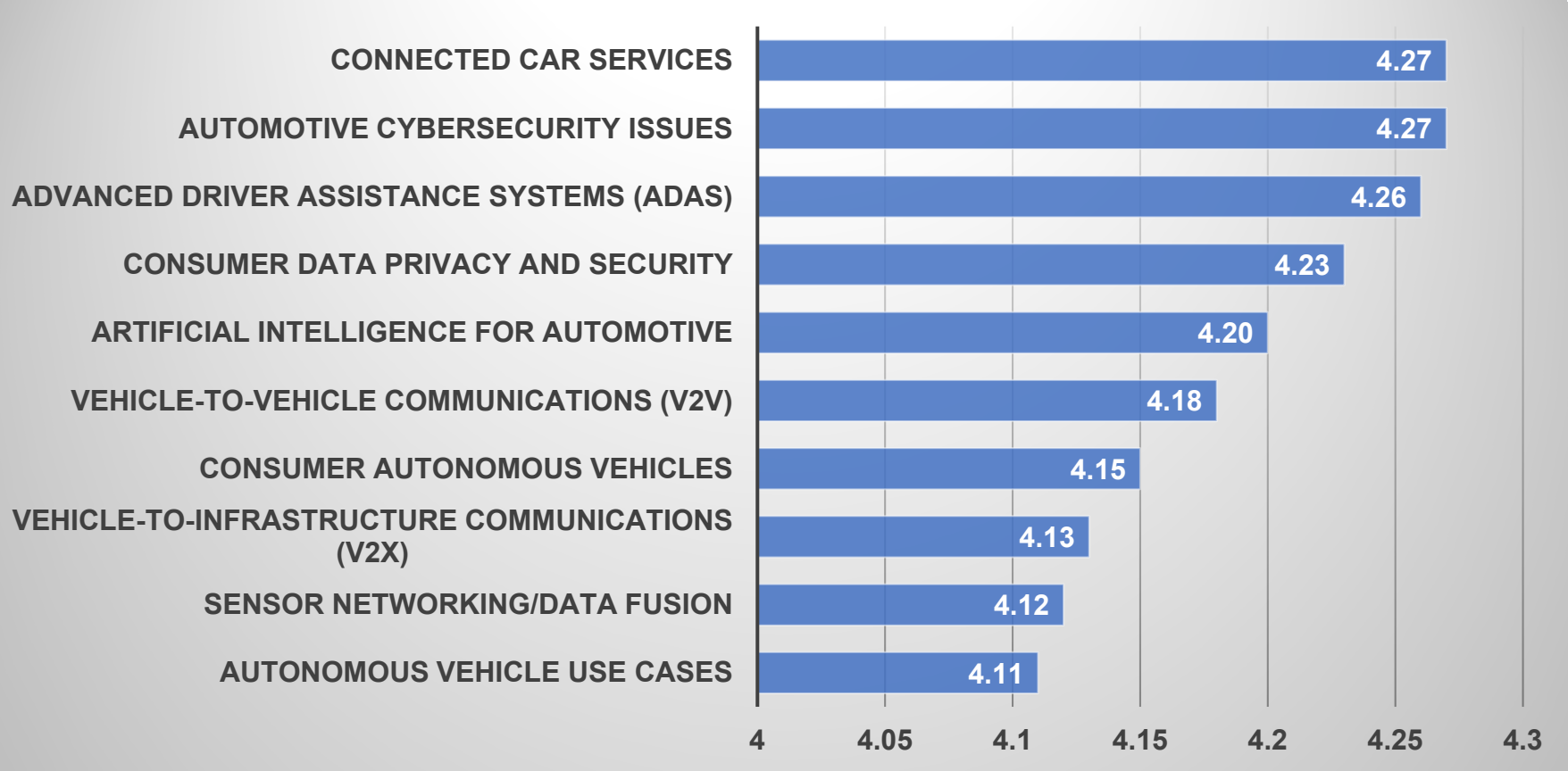
EMEA	Weighted Average
Vehicle-to-Vehicle Communications (V2V)	4.30
Automotive Cybersecurity Issues	4.29
Vehicle-to-Infrastructure Comms (V2X)	4.28
Autonomous Vehicle Use Cases	4.22
Connected Car Services	4.21
Advanced Driver Assistance Systems (ADAS)	4.20
Vehicle Localization and Mapping	4.16
Mobility as a Service	4.16
Vehicle Data Management	4.14
Artificial Intelligence for Automotive	4.13

Asia/Pacific	Weighted Average
Advanced Driver Assistance Systems (ADAS)	4.49
Automotive Human Machine Interaction (HMI)	4.36
Vehicle-to-Infrastructure Comms (V2X)	4.33
Automotive Cybersecurity Issues	4.30
Driver Monitoring Systems	4.29
Vehicle-to-Vehicle Communications (V2V)	4.27
Artificial Intelligence for Automotive	4.25
Intelligent Transportation Systems	4.24
Autonomous Vehicle Use Cases	4.23
5G Connectivity	4.19

TOP 10 PRIORITIES: NORTH AMERICA

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=216 respondents based in North America

(Weighted Average)

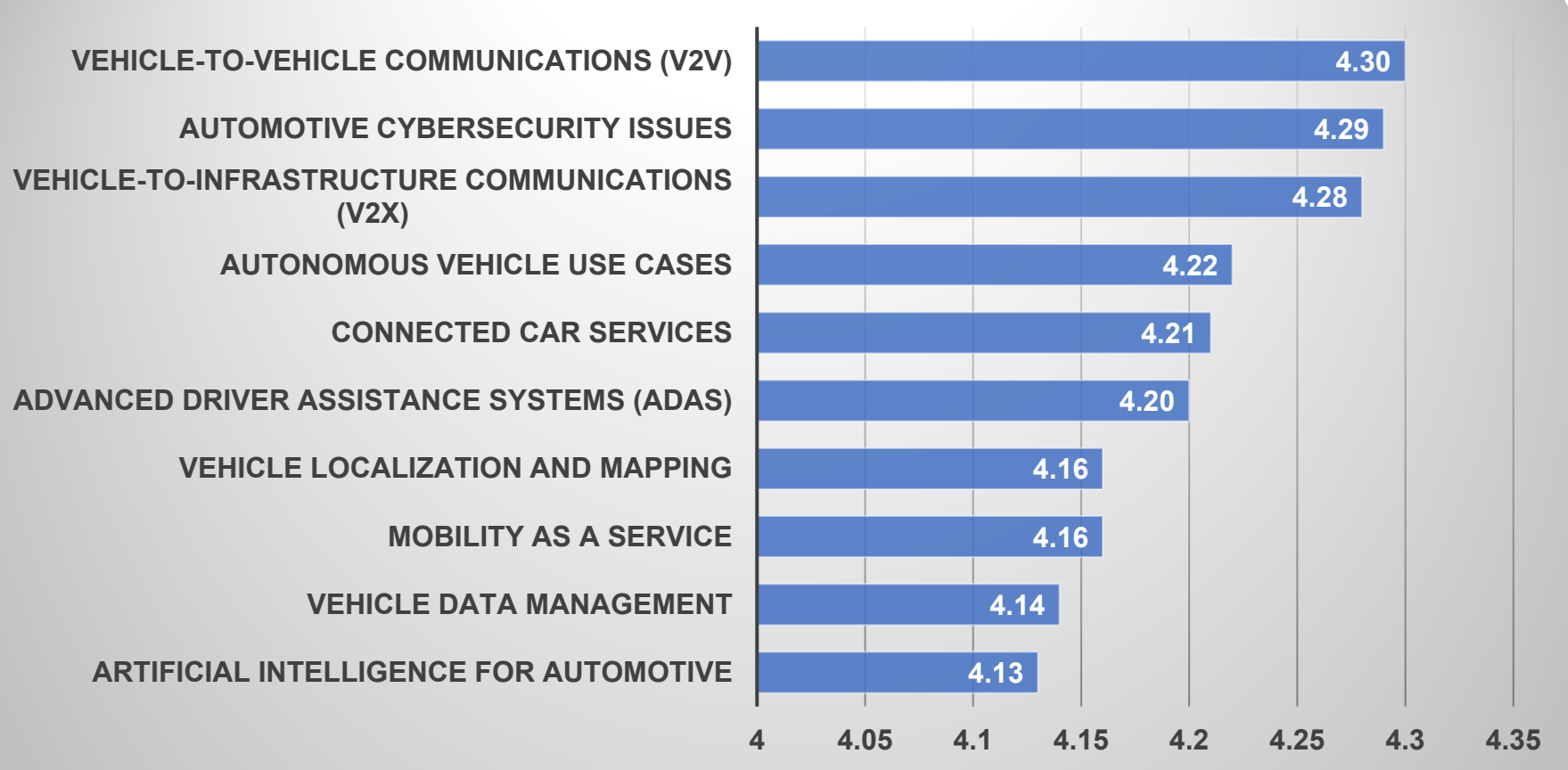
North America-based companies consider connected car and cybersecurity issues as the industry’s leading priorities. It is the only region where consumer data privacy lands within the top five priorities.

This is due to recognition of cellular connectivity as the horizontal change agent that is transforming the auto industry as well as more relaxed regulations on privacy than other regions.

TOP 10 PRIORITIES: EUROPE, MIDDLE EAST, AND AFRICA

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=200 respondents based in EMEA

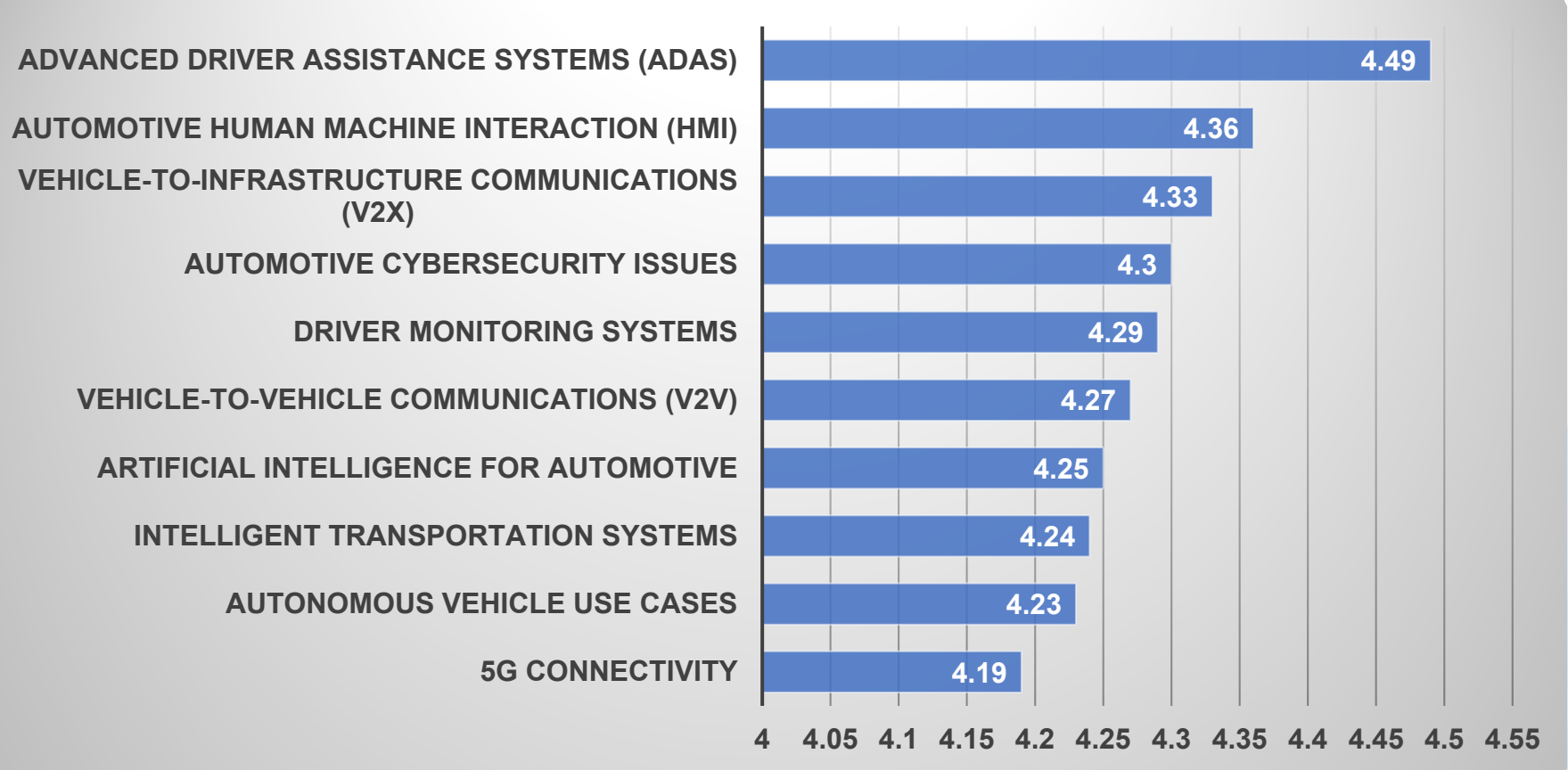
(Weighted Average)

EMEA-based companies emphasize the Internet of Things (IoT) and intelligent transport aspects of connected automotive systems by prioritizing V2V as well as V2I communications ahead of issues like connected car and AI, which are ranked higher in other regions.

TOP 10 PRIORITIES: ASIA PACIFIC

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



Survey Base: N=99 respondents based in Asia Pacific

(Weighted Average)

Asia Pacific companies prioritize ADAS significantly ahead of all other connected auto initiatives. Interestingly, they consider human machine interaction as their second leading priority.

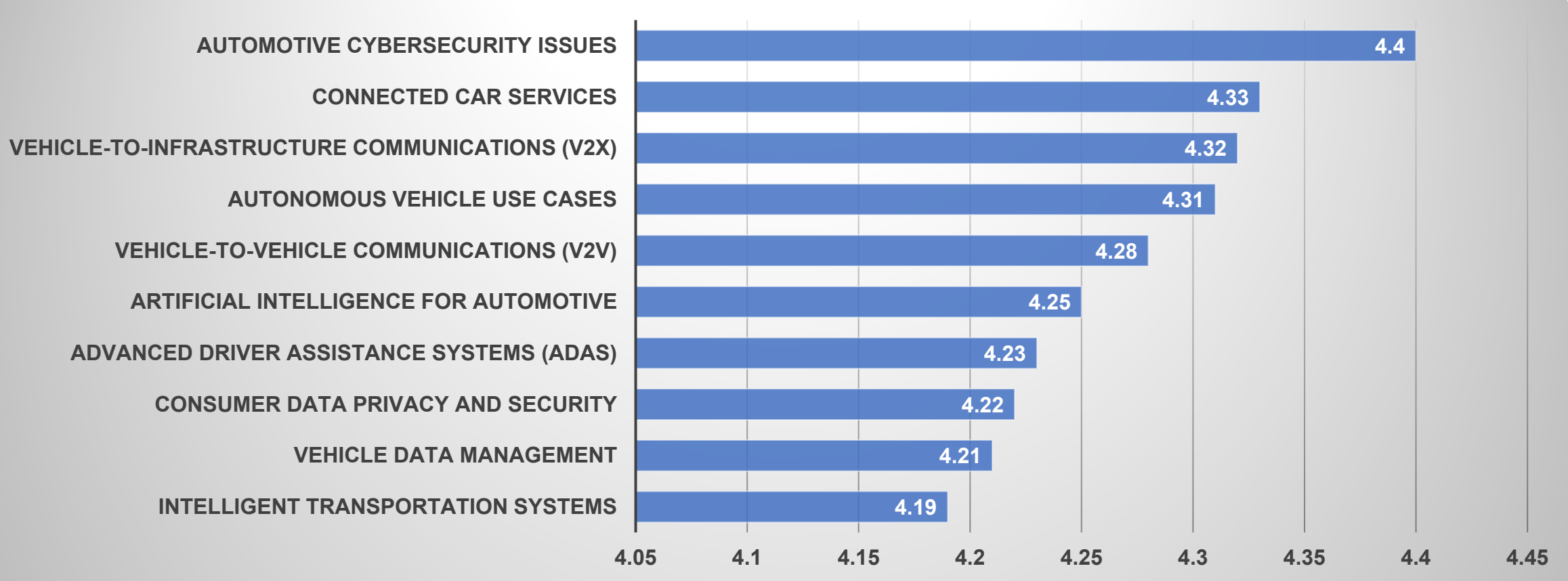
This ranking is similar to the viewpoint of automakers, which were clearly represented within the Asia/Pacific respondent base.

Connected & Autonomous Vehicle Priorities by Job Function

TOP 10 PRIORITIES: BUSINESS MANAGEMENT

Q: Please rate the importance of the following topics to your role and your company

Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important



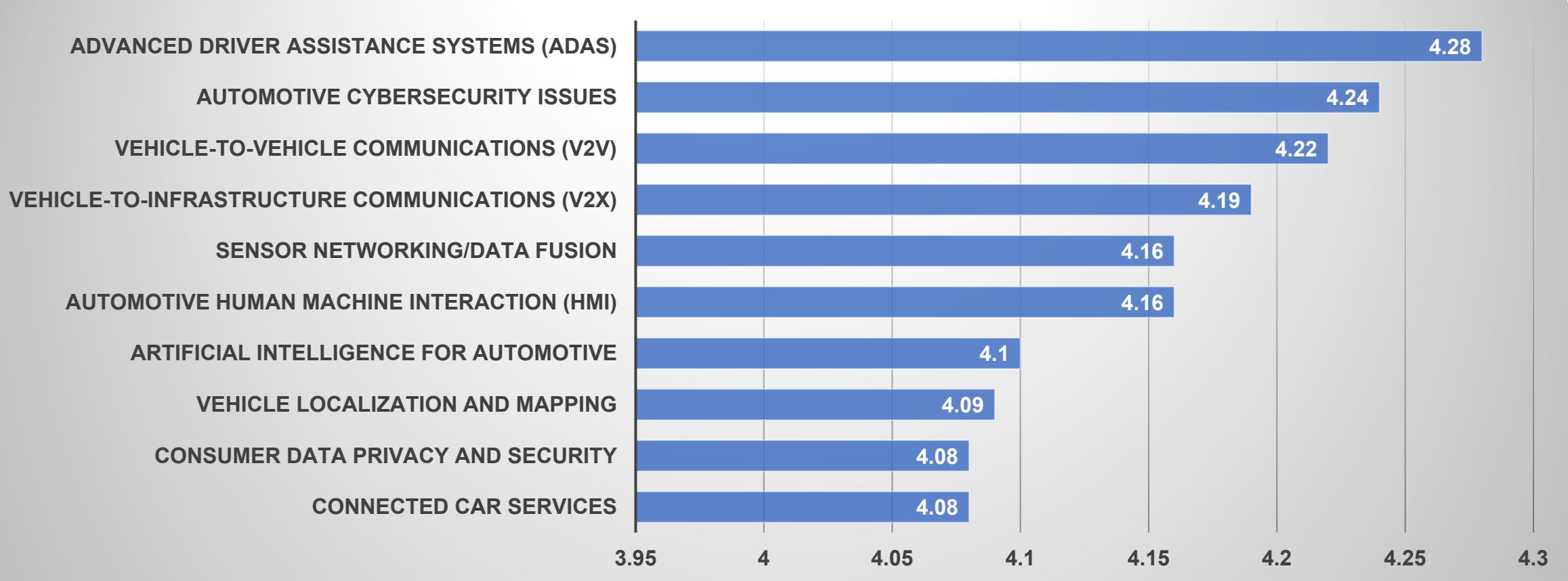
Survey Base: N=168 respondents who work in Business Management/Strategy positions

(Weighted Average)

TOP 10 PRIORITIES: TECHNOLOGY/ENGINEERING

Q: Please rate the importance of the following topics to your role and your company


Based on 1-5 scale, where 1 = Not at all important and 5 = Extremely important




Survey Base: N=154 respondents who work in Technology/Engineering positions

(Weighted Average)

ABOUT US

 **Automotive** operates a robust events portfolio in the automotive technology space, which brings together the largest and most respected decision makers in the industry. TU-Automotive events cover all aspects of the market, from connected and autonomous vehicles to the emerging technologies shaping the future of automotive technology. It publishes news and editorial content that serves as a reference point and communications hub for the evolving automotive technology segment as it converges with consumer electronics, mobile and IoT to re-define connectivity, mobility and autonomous use-cases.

 **Tractica** is a market intelligence firm that focuses on emerging technologies. Tractica's market research and consulting services provide industry participants and stakeholders with in-depth analysis of emerging technology trends, business issues, market drivers, and end-user demand dynamics across application domains including home, mobile, health, automotive, enterprise, and industrial markets. Tractica's global market coverage combines qualitative and quantitative research methodologies to provide a comprehensive view of the emerging market opportunities surrounding Artificial Intelligence, Robotics, User Interface Technologies, Advanced Computing, Connected & Autonomous Vehicles, and Wearables & Digital Health.

2019 EVENT SCHEDULE

**TU-Automotive
Detroit**

June 4-6, 2019
Novi, Michigan

**TU-Automotive
E-Mobility
Detroit**

June 5-6, 2019
Novi, Michigan

**Connected Car
Insurance
USA**

September 3-4, 2019
Chicago, Illinois

**ADAS &
Autonomous
Vehicles
USA**

September 26-27, 2019
Novi, Michigan

**TU-Automotive
West Coast**

October 3-4, 2019
San Jose, California

**TU-Automotive
Europe**

October 29-30, 2019
Munich, Germany

**TU-Automotive
Digital Insurance
Europe**

October 29, 2019
Munich, Germany

**Connected Fleets
USA**

November 12-13, 2019
Atlanta, Georgia

*** CLICK EVENT LOGOS FOR MORE DETAILS**



TOPICS COVERED

- Advanced Driver Assistance Systems
- Artificial Intelligence for Automotive
- Automotive HMI
- Autonomous Trucks and Buses
- Autonomous Consumer Vehicles
- Edge Computing for Automotive
- Mobility as a Service
- Smart City Transportation Systems
- Vehicle to Everything (V2X)


MORE INFORMATION

Web: www.tractica.com

Email: info@tractica.com

RESEARCH REPORT SCHEDULE

2Q16	Head-Up Displays	1Q19	Mobility as a Service
4Q16	Advanced Driver Assistance System Market Forecasts	2Q19	Blockchain for Automotive Applications
3Q17	Flexible Displays	2Q19	Connected V2X Systems
1Q18	Emotion Recognition and Sentiment Analysis	2Q19	Driver Monitoring Systems
1Q18	Autonomous Trucks and Buses	3Q19	Voice Recognition and Virtual Assistants for Automotive
3Q18	Artificial Intelligence for Automotive Applications	3Q19	Edge Computing for Automotive and Transportation
4Q18	Consumer Autonomous Vehicle Systems	3Q19	Autonomous Vehicle Market Forecasts
1Q19	Automotive Human Machine Interaction	4Q19	Smart Parking Systems
1Q19	Autonomous Vehicle Market Forecasts	4Q19	Connected and Autonomous Vehicles Ecosystem
1Q19	Smart City Transportation Systems		



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