

MN CAV ACTIVITIES – WILL WE GET TO A DRIVER-LESS WORLD

WHAT IS HAPPENING AT THE:

- NATIONAL LEVEL
- REGIONAL LEVEL
- STATE LEVEL



HOW FAR ALONG ARE WE?



LEVEL 0

LEVEL 1

LEVEL 2

LEVEL 3

LEVEL 4

LEVEL 5

No Automation
Human operates everything
Honda Fit

Driver Assist
One piece of automation
Ford Jeep Compass

Partial Automation
Two or more
Tesla
Model 3

Conditional Automation
Not approved in U.S.
Audi A8 (Europe)

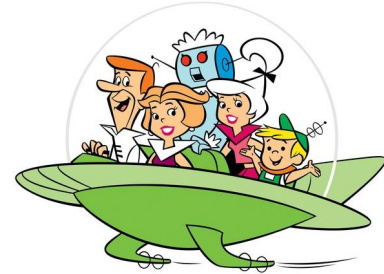
High Automation
Geo-fenced;
Slow-speeds
Easy Mile Shuttle

Full Automation
No human driver
Waymo?



WHAT OUR FRIENDS THINK

← ANCIEN HISTORY SELF-DRIVING CARS CAN BE BOUGHT AND ARE EVERYWHERE →



THE STONE AGE

THE HISTORY BOOKS

THE FIRST CAR

MY FIRST CAR

I CAN BUY THIS, RIGHT?

JETSONS IN 2021

WHY TALK ABOUT CAV?

INNOVATION AND TECHNOLOGY HELPS US MEET OUR STATE AND REGIONAL GOALS



**GREATER
MOBILITY &
EQUITY**



**WORKFORCE
DEVELOPMENT**



**SAFETY &
OPERATIONS**



**ECONOMIC
DEVELOPMENT &
SMALL BUSINESS**

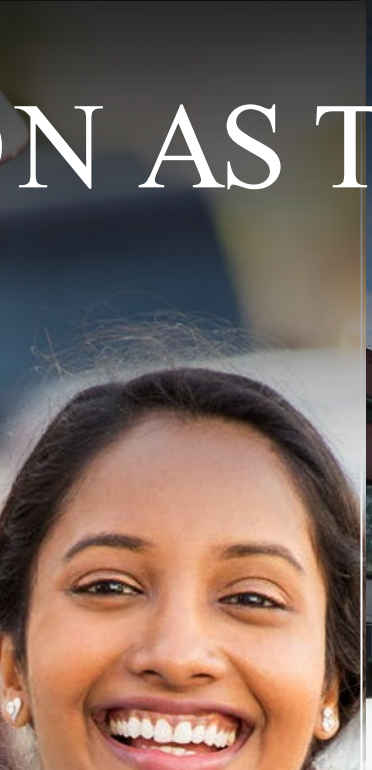
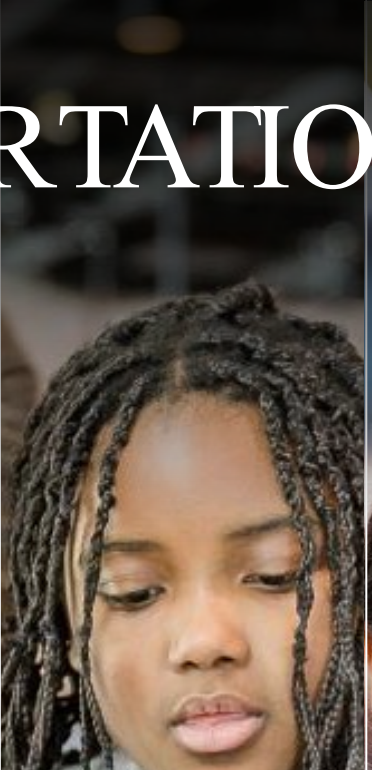


**INFRASTRUCTURE
INVESTMENT**



**HEALTH &
ENVIRONMENT**

TRANSPORTATION AS THE NEXUS



ECONOMY

An icon representing the economy, showing a bar chart with an upward-pointing arrow.

HEALTH

An icon representing health, showing a stethoscope.

EDUCATION

An icon representing education, showing an open book.

HAPPINESS

An icon representing happiness, showing a smiling face.

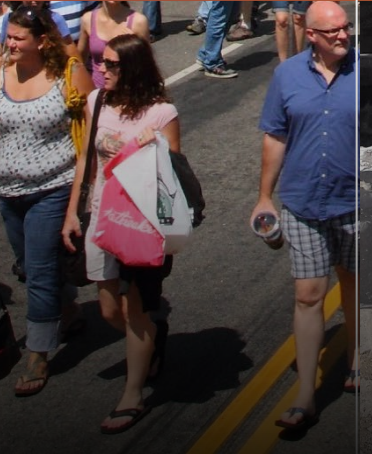
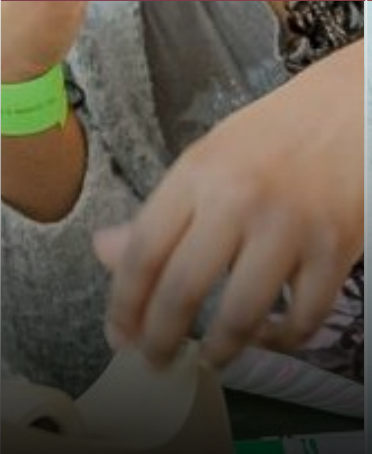
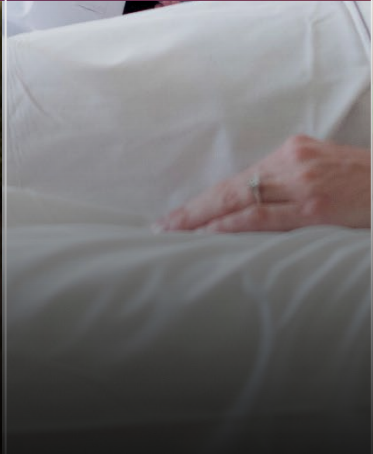
COMMUNITY

An icon representing community, showing a globe.

EQUITY

An icon representing equity, showing a scale of justice.

ENVIRONMENT

An icon representing environment, showing a tree.



NATIONAL TRENDS IN CAV & AUTOMATION



CAV NATIONAL & REGIONAL STRATEGY



MAASTO
MID AMERICA ASSOCIATION OF
STATE TRANSPORTATION OFFICIALS

AU VSI
ALL THINGS UNMANNED

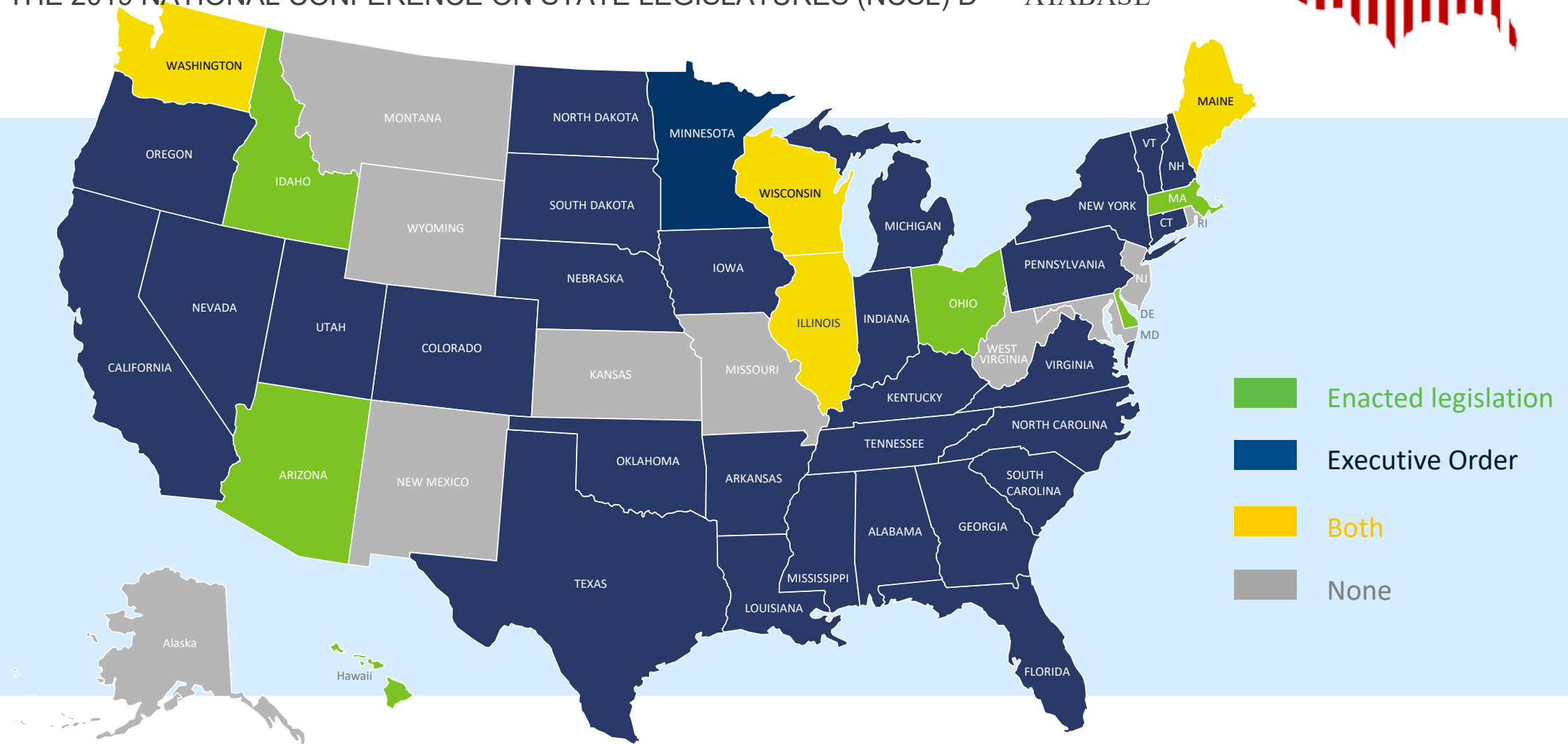
TRB
Transportation Research Board

U.S. Department of
Transportation
Federal Highway
Administration

ITS AMERICA

NEED FOR A COORDINATED APPROACH

FROM THE 2019 NATIONAL CONFERENCE ON STATE LEGISLATURES (NCSL) DATABASE



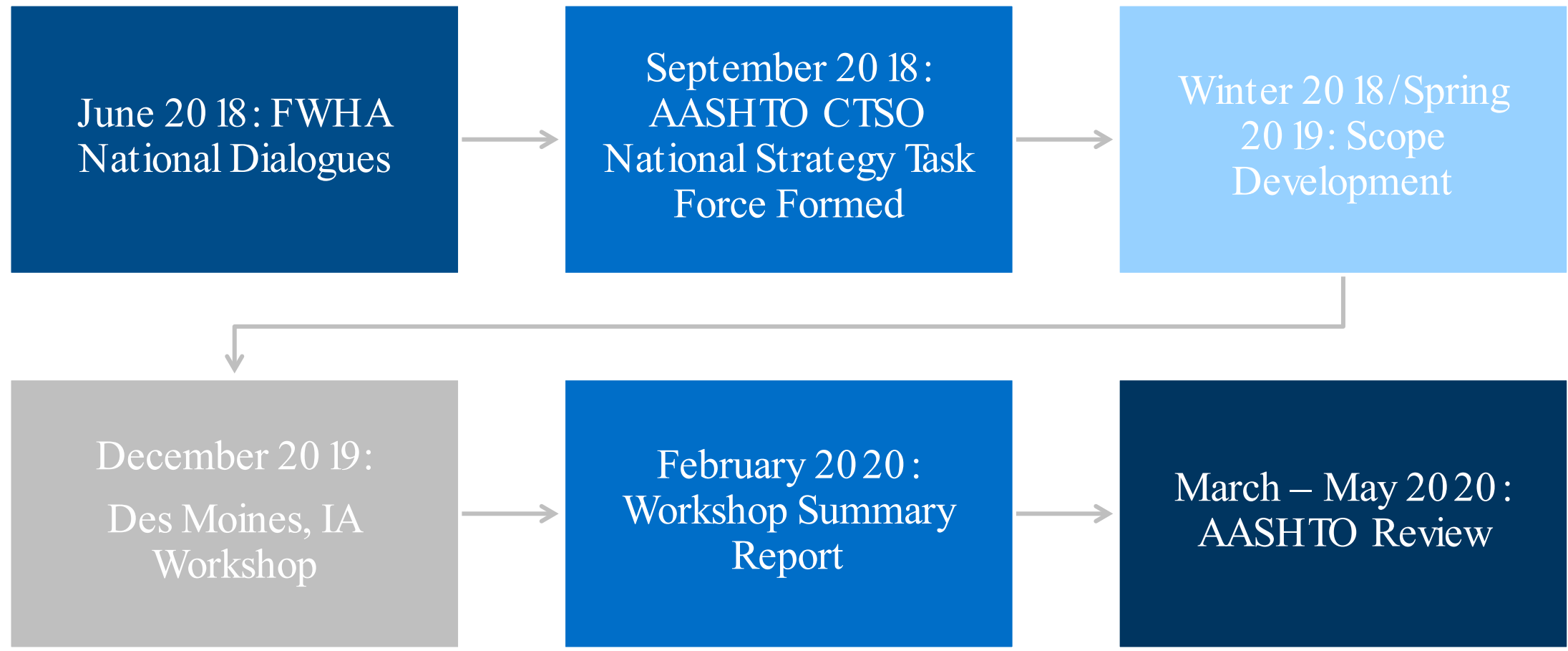


WHAT ARE THE GOALS OF A NATIONAL STRATEGY?





HOW IS THIS BEING ACCOMPLISHED?





WHAT WE LEARNED SO FAR



- Need to create a unified vision and mission
- Need to understand what it means to be “ready” for CAV
- Stakeholder engagement is critical
- Equity and vulnerable communities must be addressed



NATIONAL WORK

SO MUCH GOING ON, HOW DO WE KEEP TRACK OF IT ALL?

- **AASHTO**
 - Policy, planning, infrastructure, industry, Evs, Shared Mobility, Drones
- **TRB**
 - Socioeconomic impacts, AI, ITS, technology law, user information systems, automated transit systems, Shared mobility, geometrics
- **ITS- America**
 - AV Task Force, cybersecurity, smart infrastructure, V2X, Mobility on Demand
- **Pooled Fund**
 - NW Passage, Connected Vehicle, FHWA ATMA, Enterprise, Ohio DOT AV, FHWA HCM
- **FHWA**
 - Workzone Data Exchange, Concept of Ops for CAV

REGIONAL TRENDS IN CAV & AUTOMATION

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MAASTO CAV MISSION

Advance **regional safety** and collaboration to promote **unified policy, interoperability** across boundaries, and establish **cooperative public-private partnerships** to **safely test and deploy** emerging technologies that advance regional and **community transportation needs**.

MAASTO CAV VALUES



SAFETY



SUSTAINABILITY



MOBILITY



EQUITY





#1 GOAL: DEVELOP A CAV REGIONAL STRATEGY

1. Collaborative information sharing
2. Research and testing partnerships and pooled funds
3. Uniform polices and laws
4. Outreach and education
5. Coordinated policy and pilot projects
6. Organizational alignment and coordination
7. Establishing the Midwest as a leader in CAV
8. A unified vision for CAV



MAASTO
CAV
GOALS



OCTOBER 22-23 CAV eSUMMIT

- Goal: Hear from national industry leaders and researchers to collaboratively develop a 10-year CAV strategic plan and regional strategy
- Audience: DOT leadership and staff in key functional areas
- Industry representatives may attend Day 1. Day 2 reserved for DOT staff
- Invitations forthcoming
- WebEx virtual event

Day 1 Agenda National Perspectives and Research	Day 2 Agenda Finalizing a Regional Strategy
Presentations from MAASTO states	Overview of draft regional strategy
National CAV panel with US DOT, ITS America, CAT Coalition and AASHTO	Facilitated breakouts on each draft strategy with key DOT staff
Research updates from MAASTO universities	Key takeaways and next steps before 2021 CAV Summit



MINNESOTA TRENDS IN CAV & AUTOMATION

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GOVERNOR'S ADVISORY COUNCIL ON CAV



Ben Lowndes
Facilitator

Margaret Anderson-Kelly
Commissioner

Damien Rucht
Legal Liability/ Cyber Security

Public

GOVERNOR'S COUNCIL ON CONNECTED AND AUTOMATED VEHICLES CHARTER

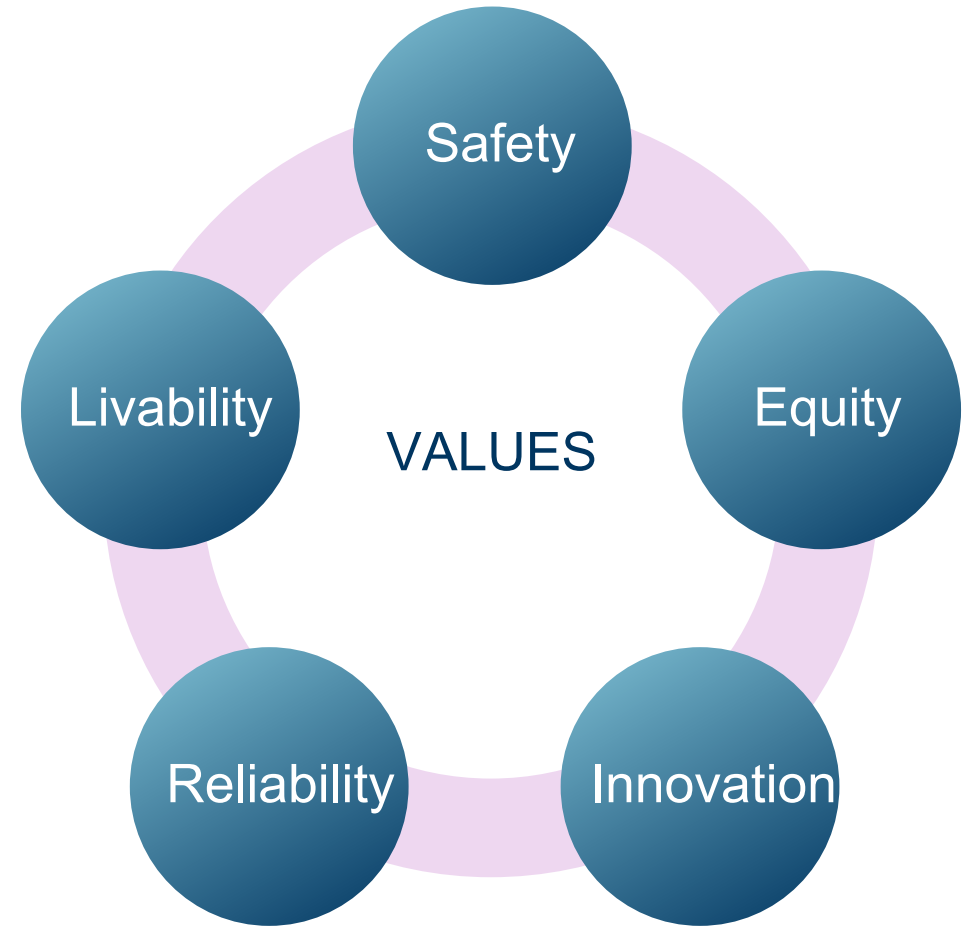
OUTLINING THE COUNCIL'S VISION, MISSION, GOALS, AND SHARED VALUES

VISION

Building a future of transportation that is safe, equitable, accessible, efficient, health, and sustainable

MISSION

The Governor's Council on Connected and Automated Vehicles collaborates with stakeholders, partners with academic institutions and private industry, and engages communities to prepare Minnesota for a future with emerging transportation technologies



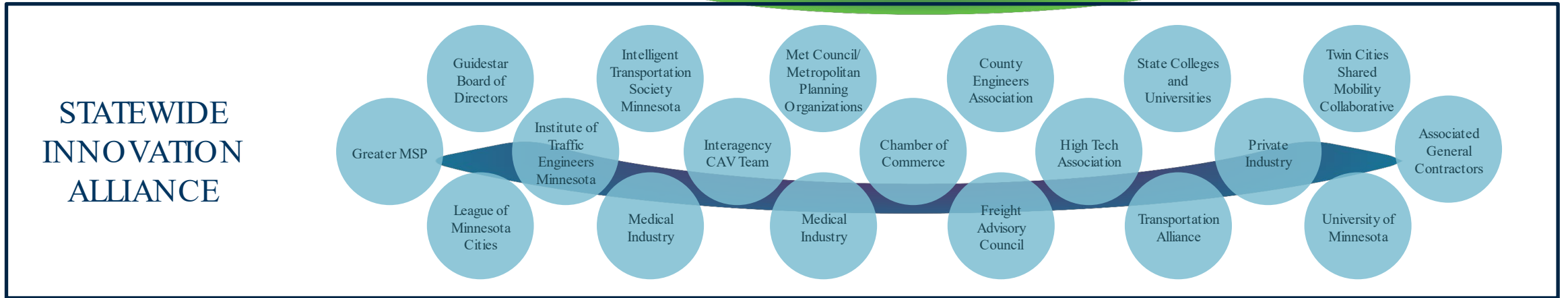
ADVISORY COUNCIL GOALS

WHAT IS THE COUNCIL AND INNOVATION ALLIANCE WORKING ON IN THE NEXT 4 YEARS?

2020 PRIORITIES	2021-2023 PRIORITIES
<ol style="list-style-type: none">1. Equity, mobility, accessibility, public health and environment2. Industry and research partnerships3. Education, outreach, engagement and demonstrations/pilots to educate communities and decision makers	<ol style="list-style-type: none">4. Infrastructure investment5. Law for safe testing and deployment6. Economic and workforce development7. Data privacy and cyber security8. Insurance and liability9. Alignment with other states and federal government and sharing best practices10. Human factors and impacts of CAV on users

NEW INNOVATION ALLIANCE MODEL

CAV ADVISORY COUNCIL



COMMITTEES





MINDOT CAV STRATEGIC PLAN

TAKE TIME TO ALIGN PROJECT/PROGRAM COMMUNICATIONS ACROSS THE REGION



-  CAPITAL INVESTMENT
-  RESEARCH
-  PARTNERSHIPS
-  REGULATION & POLICY
-  OPERATIONS & MAINTENANCE

-  MULTIMODAL
-  STRATEGIC STAFFING
-  COMMUNICATIONS
-  LONG-RANGE PLANNING

CAV CHALLENGE INNOVATION PROGRAM

DEVELOP FLEXIBLE PROCUREMENT & PARTNERSHIPS FOR NEW APPROACHES TO REGIONAL CHALLENGES



A large white circle containing the central logo for "CAV DESTINATION CAV THE FUTURE OF MOBILITY IS IN MINNESOTA" surrounded by logos of various partners and vendors including: POLARIS INDUSTRIES INC., wsb, AECOM, iteris, VISION SYSTEMS INTELLIGENCE, EY, TRAFFIC CONTROL CORPORATION, id8, H2R, plus.ai, HNTB, applied INFORMATION, KRATOS, First Transit, here, Athey Creek CONSULTANTS, wsp, THE EHRICHMAN GROUP, easy MILE, Center for Transportation Studies, ALLIANT, MobilityMania, and 3M.

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VENDOR MEETINGS

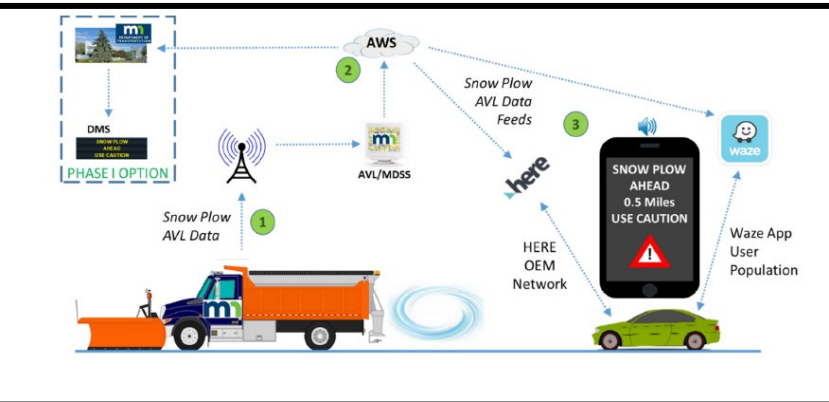
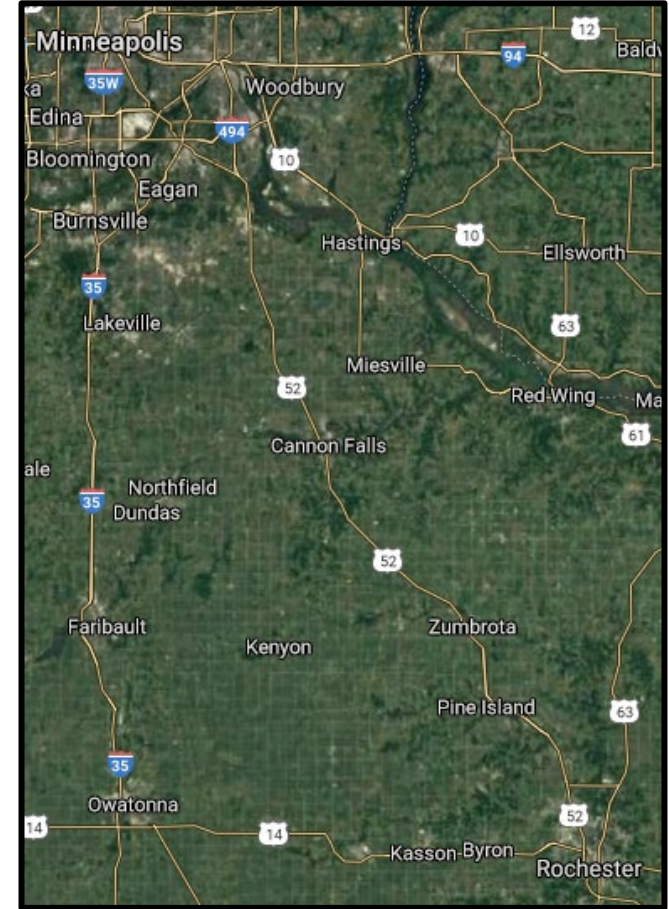
39

PROPOSALS SUBMITTED

14

AWARDED PROJECTS

CAV DEMONSTRATION PROJECTS





WHERE IS THE PUBLIC ON CAV?

4



STATEWIDE CAV MESSAGING & ENGAGEMENT PLAN

WHAT DO COMMUNITIES WANT TO KNOW AND HOW SHOULD WE COMMUNICATE WITH THEM?

WHAT DO MINNESOTANS CURRENTLY THINK OF CAV?

WHAT TERMINOLOGY RESONATES WITH PEOPLE?

WHAT ARE PEOPLE EXCITED ABOUT?

WHAT ARE PEOPLE NERVOUS ABOUT?

WHAT DO PEOPLE WANT TO KNOW ABOUT CAV?

WHAT IS THE STATE'S ROLE?

HOW DO PEOPLE WANT TO BE INVOLVED?

WHAT ELSE?

PRIORITIZE YOUR EFFORTS

UNDERSTAND YOUR SPHERE OF INFLUENCE

Champions & Decision-makers

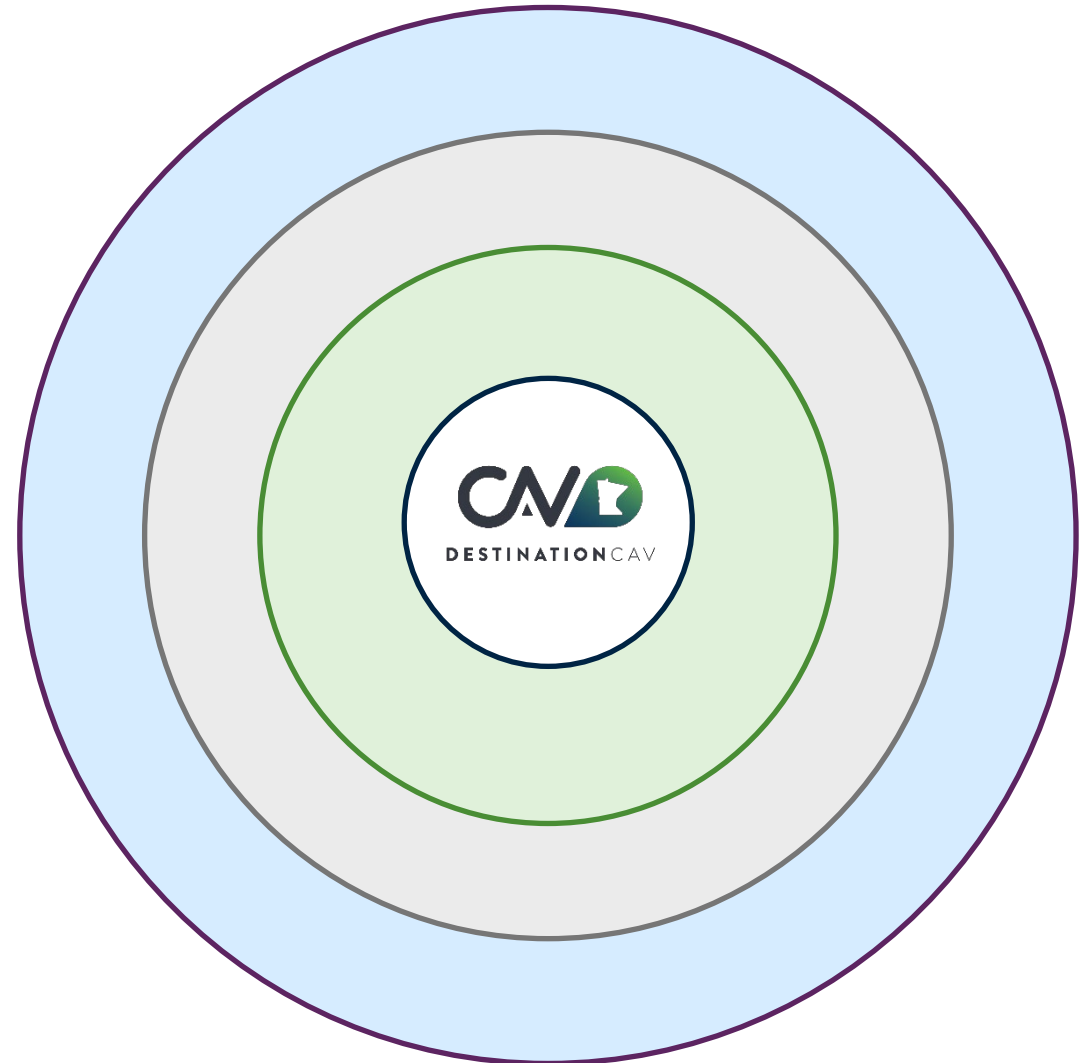
- Direct involvement
- Formal or informal power
- Ability to directly support or create barriers

Influencers & Advisors

- Can affect outcomes
- May not have direct involvement
- Access to other champions

Participants & Observers

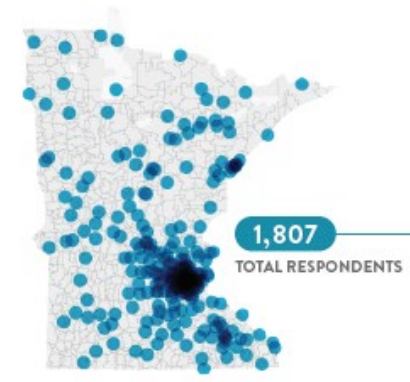
- Disinterested
- Unfamiliar
- Unlikely to affect outcomes
- Likely to be impacted in the future



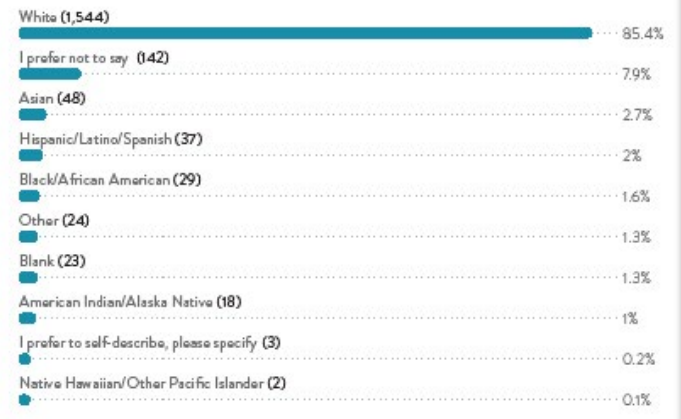
SURVEY THE PUBLIC

AN INFORMED PUBLIC IS AN ENGAGED PUBLIC

RESPONSES VIA ZIP CODES



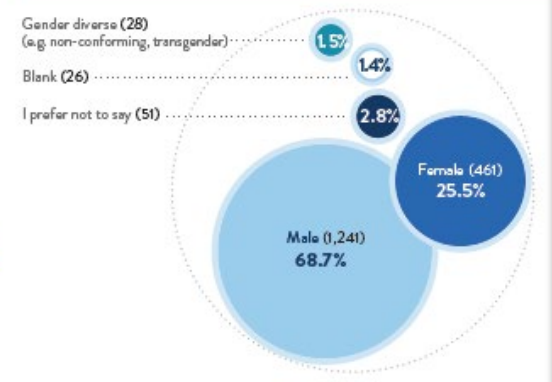
BY RACE



BY AGE GROUP



BY GENDER



Minnesota Department of Transportatio... ⋮

[Redacted]

Town one, a Toyota Rav4 with Comma.ai installed, Hands down the best driving safety aid available.. It monitors the driver and makes you watch the road and self drives better than 99% of the drivers .. When driving my other non self driving I have noticed it has trained me to watch the road better than I naturally would. Just wish you would get those dotted lines on all the turn off lanes on all the roads.

1d Like Reply 1

[Redacted]

I don't think that's the kind of autonomous vehicle they're talking about. That's more of a driver assistance thing. You're still in control of the car, not napping in the back seat. 😊

1d Like Reply 1

[Redacted]

GIF 😊 Write a comment...

🏠 📺 🏠 📄 🔔 ☰

SURVEY DATA FINDINGS - DRAFT

PRELIMINARY FINDINGS



Males self-reported greater familiarity with and more excitement about CAV technology than other genders



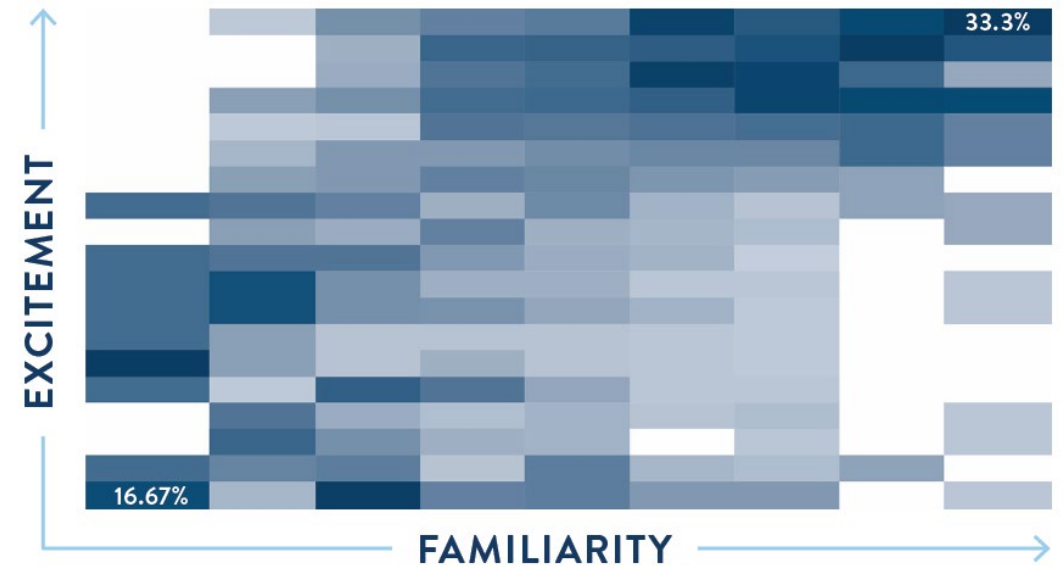
Women self-reported a lower level of familiarity with CAV technology than other genders



Younger respondents tended to report higher levels of familiarity with and more excitement about CAV technology



Metro respondents reported noticeably more excitement and noticeably less concern about CAV technology than Greater MN respondents despite reporting similar levels of familiarity



There is a direct relationship between higher levels of self-reported familiarity with CAV technology and excitement about CAV technology

MESSAGE THEMES

WHAT DO WE WANT CAV MESSAGING TO MAKE US FEEL AND UNDERSTAND?



Safety

- Safe
- We're making advancements
- Responsible
- Integrity
- Healthy
- Happy
- Transparent
- Protecting privacy



Future Innovation

- Future forward thinking
- Know when high level automation will be here
- Inspired
- Excited
- Innovation and exploration
- Creative
- Outside the box
- Human centered design



Economic and Workforce Development

- Opportunities
- Growing our economy
- Support small business
- Develop our workforce
- Reduced travel times
- Planning for the future
- Sustainable
- Investing in our region



Equity, Access & Mobility

- Equal, inclusive, diverse
- Opportunity
- Reduce disparities
- Expand access
- Multi-modal mobility
- Mobility-as-a-service
- Accountable
- Listening

TRUE ENGAGEMENT = EMPOWERING COMMUNITIES

USE THE INTERNATIONAL ASSOCIATION OF PUBLIC PARTICIPATION (IAP2) SPECTRUM

← LOW LEVEL OF PUBLIC IMPACT

HIGH LEVEL OF PUBLIC IMPACT →

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
GOAL	Share balanced and objective information in a timely manner	Seek public feedback	Work directly with communities to ensure their concerns are considered and understood	Partner with communities in every part of the decisionmaking process	Place final decision in hands of the public
MESSAGE TO PUBLIC	"We'll keep you informed."	"We'll listen to you and acknowledge your concerns."	"We'll ensure your concerns are reflected and show how you influenced the decision."	"We'll seek your advice and solution and include your feedback into the decision as much as we can."	"We will implement your decisions."

DRAFT RECOMMENDATIONS

PRELIMINARY AND MORE TO COME

- Share what we have done
 - Publish work and partnership
 - Use storytelling
- Advertise the program
 - Use branding to market work and program
 - Newsletter
 - Fact sheets and pamphlets
 - Have more presence on social media
 - Share out to networks
 - Develop earned media
 - Identify stories to pitch to media
- Update website
 - Make more user and public friendly
- Create CAV “Ambassadors”
- CAV 101 presentations and “train the trainer” model
 - Create standard presentations
- Canned articles to share with groups
 - Highlight relevant blog posts from industry (tech, agencies, manufacturing, research, testing, etc.)
- Host and convene regularly occurring webinars
- Distribute updated newsletters
- Host annual conference
- Host tech showcase
- Hold public demonstrations
- Coordinate work
 - With district and statewide freight plans
 - With MnDOT outreach activities
- Do outreach to universities to increase students involvement in CAV
- Identify activities of where to focus energy
- Create list of orgs to send updates and articles
- Be speakers at conferences
- Develop systematic approach to engaging with private sector
- Host lunch hour presentations
- Form TAC for implementation of plan
- Track data on engaging with communities
 - Who are we connecting with?
- Develop thought leaders



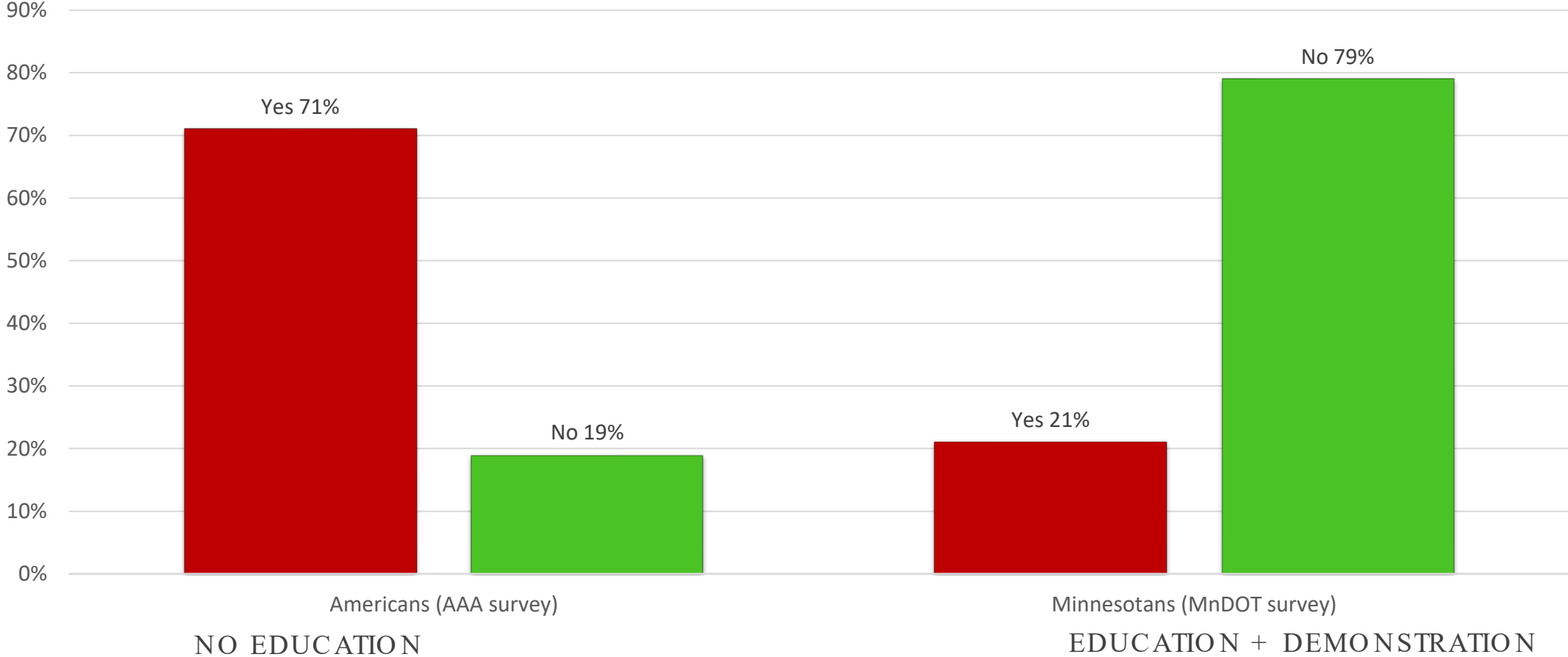
BUT IS IT REALLY ENGAGEMENT?

INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
<ol style="list-style-type: none"> 1. Advertise & market your work 2. Publish work and partnerships 3. Use storying telling 4. Create a brand 5. Send regular newsletters 6. Fact sheets and pamphlets 7. Have more presence on social media 8. Develop earned media 9. Pitch stories to media 10. Make websites more user/public friendly 11. Data tracking on engagement, demographics and success metrics 12. CAV speaker's bureau 13. CAV 10 1 presentations - "Train the trainer" model with standard presentations 14. Create "canned" articles to share 15. Highlight relevant blog posts from industry 16. Host regular webinars 17. Host lunch hour presentations 18. Organize regular tech showcases 19. Coordinate work across organizations 20. K- 12/Higher ed outreach 21. Create list of orgs to send updates and articles 22. Speak at annual conferences 	<ol style="list-style-type: none"> 23. Develop thought leaders 24. Host an annual CAV conference 25. Hold public demonstrations 	<ol style="list-style-type: none"> 26. 1:1 meetings 27. Form Community Advisory Councils to implementation and review engagement work 28. Create CAV "ambassadors" 	<ol style="list-style-type: none"> 29. Develop systematic approach to engaging with private and nonprofit sector 	<ol style="list-style-type: none"> 30. Directly engage public to inform policy proposals 31. Ask community members what pilots and use cases they want deployed

THIS WORK MATTERS

EDUCATION + DEMONSTRATIONS = INFORMED AND ENGAGED COMMUNITIES

“ARE YOU AFRAID TO RIDE IN A DRIVERLESS VEHICLE?”



THIS WORK TAKES TIME

1. Identify clear goals
2. Learn from previous work
3. Industry scan
4. Tailor messaging and tools to specific communities
5. Survey the public
6. Interview stakeholders
7. Create personas
8. Review plan with stakeholders
9. Develop public-facing website
10. Identify risks and create mitigation strategies
11. Develop evaluation metrics
12. Crisis management planning



TOP 3 TAKEAWAYS

- WE CAN NOT GO IT ALONE
- GET INVOLVED
- MNDOT CAV STRATEGIC PLAN



THANK YOU

CONNECTED & AUTOMATED VEHICLES DEVELOPMENTS

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