

Clearing the AV Validation Hurdle

ITS Michigan Annual Meeting

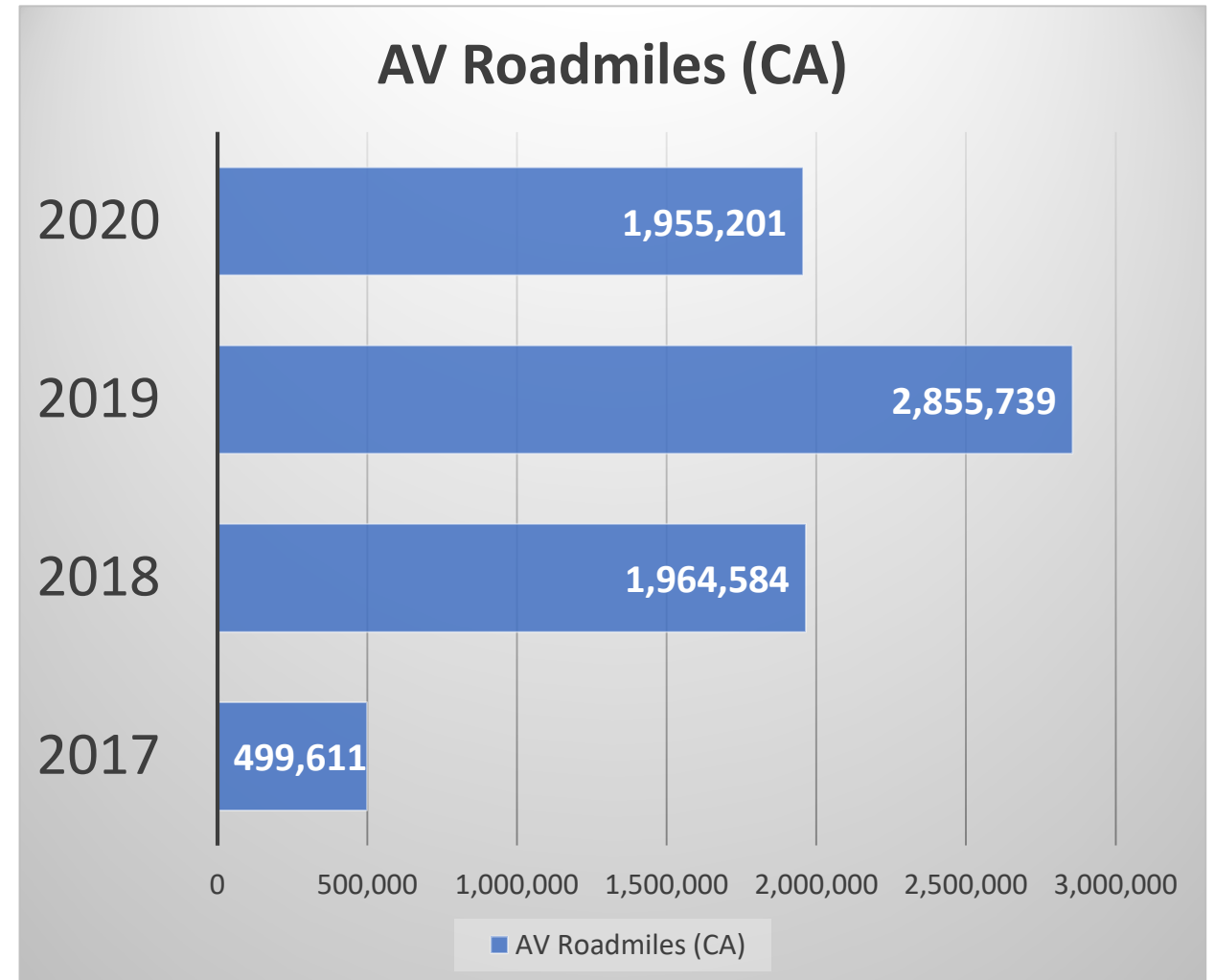
October 5th, 2021



Millions of AV Miles Driven Annually

~2M test miles in CA in 2021

29 companies



[Disengagement Reports - California DMV](#)

Snapshot 2020



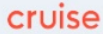













Mileage leaders Waymo and Cruise
Test miles between disengagement improvement over 2018


- Waymo – 3X
- Cruise – 5X
- Pony.AI – 11X
- Nuro – 5X

Waymo >20M total self-driving miles,
74,000 driverless miles

The Self-Driving Car Companies Going The Distance

Number of autonomous test miles and miles per disengagement (Dec 2019-Nov 2020)*

			Miles	Miles per disengagement
Waymo (Alphabet)			628,839	29,945
Cruise (GM)			770,049	28,520
AutoX			40,734	20,367
Pony.AI			225,496	10,738
Argo.AI (Ford, VW)			21,037	10,519
WeRide			13,014	6,507
DiDi Chuxing			10,401	5,201
Nuro			55,370	5,034



* Cases where a car's software detects a failure or a driver perceived a failure, resulting in control being seized by the driver.

Source: DMV California, via The Last Driver License Holder



So How Many Miles to Validate an AV?

According to NHSTA in 2019
1.1 deaths per 100 million miles

[2019 Roadway Fatalities Report Released | NHTSA](#)

To prove AV's are 20% better than human drivers using a fleet of 100 AV's driving 25 mph:

- Avoiding Crashes – 28M miles (1.3 years)
- Avoiding Injuries – 170M miles (7.6 years)
- Avoiding fatalities – 5B miles (225 years)

Kalra, Nidhi and Susan M. Paddock, *Next Stop, Neptune? Why We Can't Rely on Test-Driving Alone to Assess the Safety of Autonomous Vehicles*, Santa Monica, Calif.: RAND Corporation, IG-128, 2017. As of April 08, 2021: <https://www.rand.org/pubs/infographics/IG128.html>

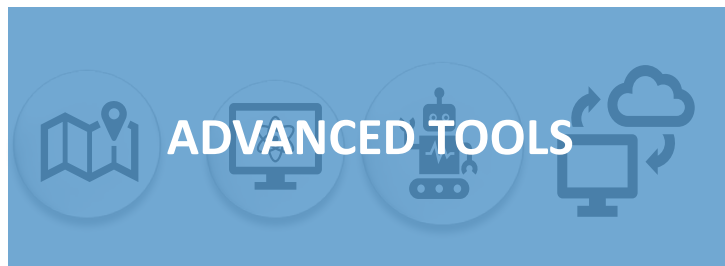
Clearing the AV Validation Hurdle

More advanced validation tools and resources are required to help reduce the amount of public road testing to validate AV's for deployments

- Public road testing is not sufficient
- Integrated approach simulation, track, road
- More advanced AV tool chain required
- Interoperability (still yet to come)
- Standards (Industry, Federal, State)

There is no smoking gun that solves it all today – more purposeful work required to go faster

Creating a neutral platform for collaboration



A Cooperative Approach to Mobility Industry Acceleration



American Center for Mobility

CONNECTED. AUTOMATED. VALIDATED.

©2020 AMERICAN CENTER FOR MOBILITY ALL RIGHTS RESERVED.

No reproduction of this material is allowed without written permission of American Center for Mobility.

Contact acmmarketing@acmwillowrun.org for additional inquiries.