

AVs For Cities OR Cities For AVs?

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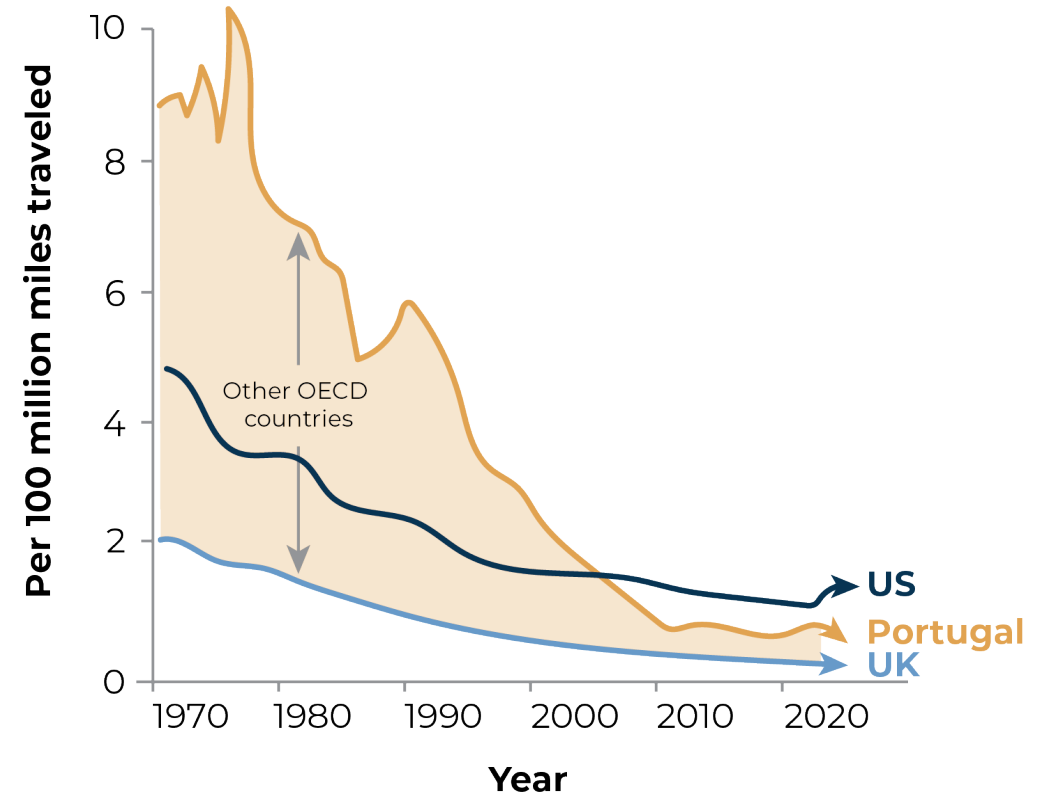
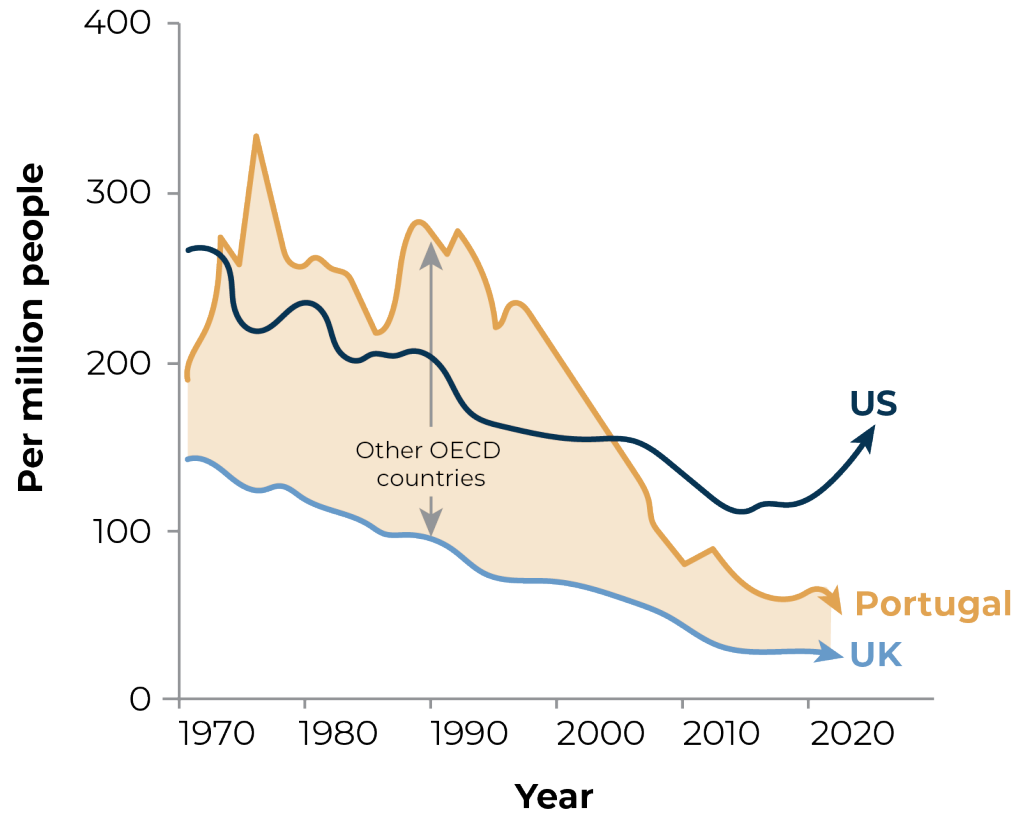
OUR DRIVERLESS FUTURE



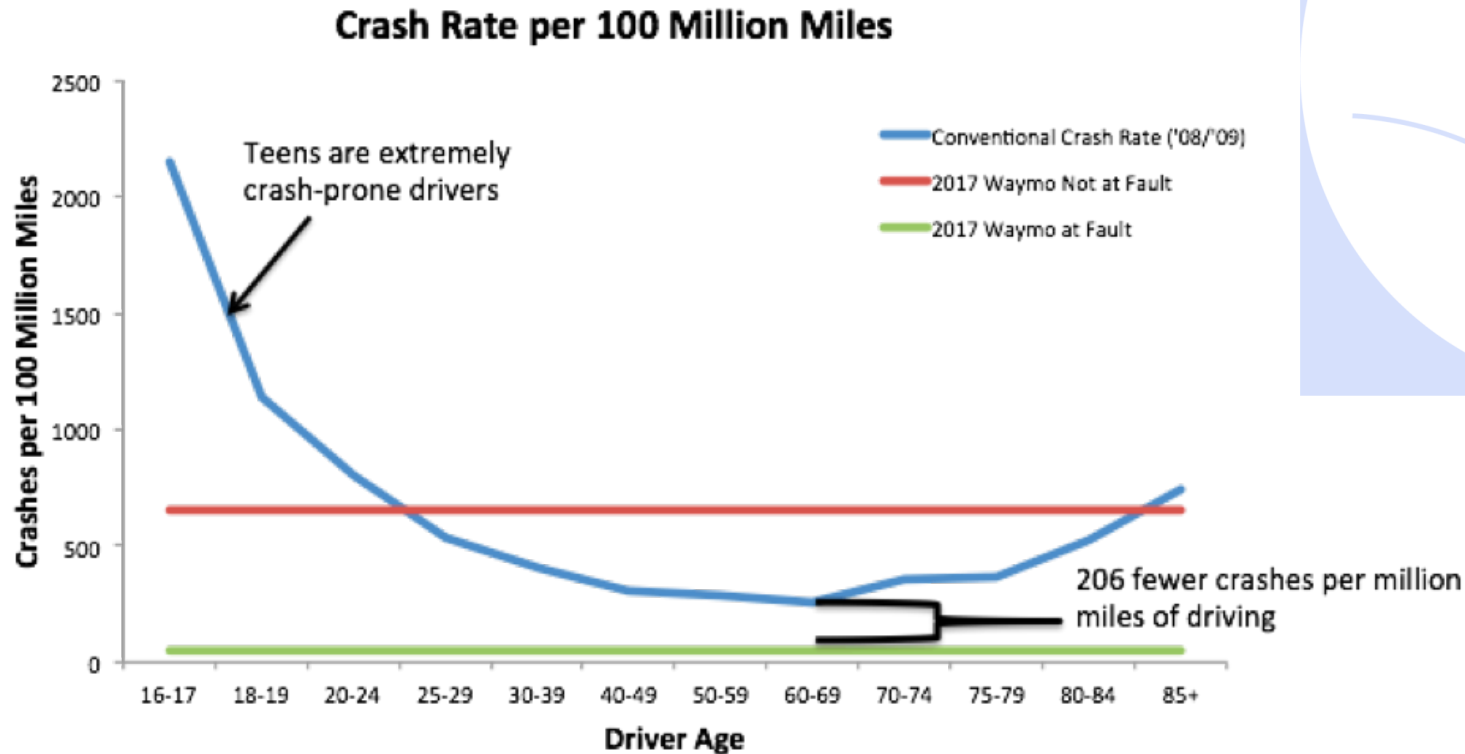
AVs & Traffic Safety

Public Health Crisis

Road fatalities



Are AVs Safer Than Human-Driven Vehicles?



Over 7+ million rider-only miles, compared to human benchmarks, the Waymo Driver had

85% reduction in injury-causing crash rates

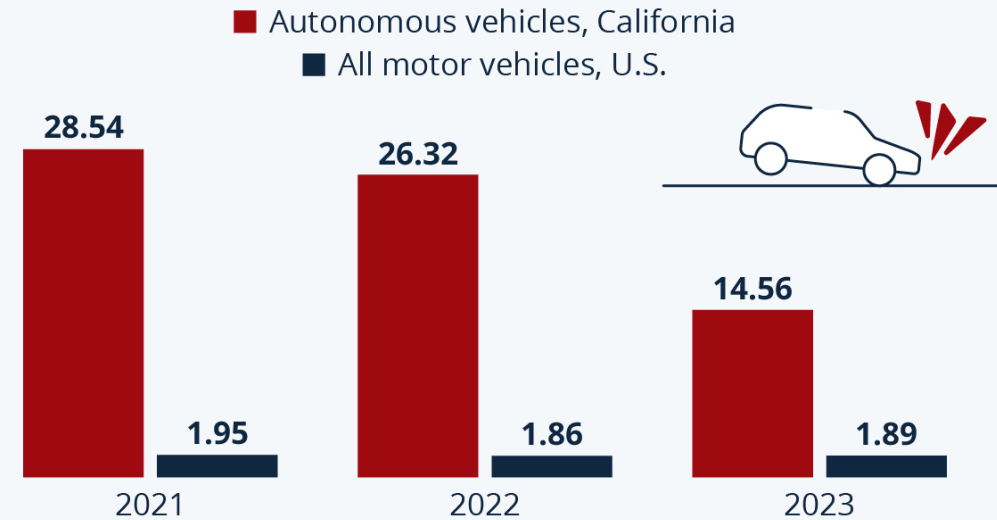
57% reduction in police-reported crash rates

*The rate at which drivers crash per vehicle miles traveled. Data represents all crashes, regardless of who contributed to the crash.

Not So Fast!

The State of Autonomous Vehicle Safety

Collisions/crashes per million vehicle miles driven by autonomous test cars/all motor vehicles in the U.S.*



* AV collisions include incidents with minor/cosmetic damage and without police involvement. Overall motor vehicle crashes are estimates of police-reported incidents.

Sources: California DMV, National Highway Traffic Safety Administration

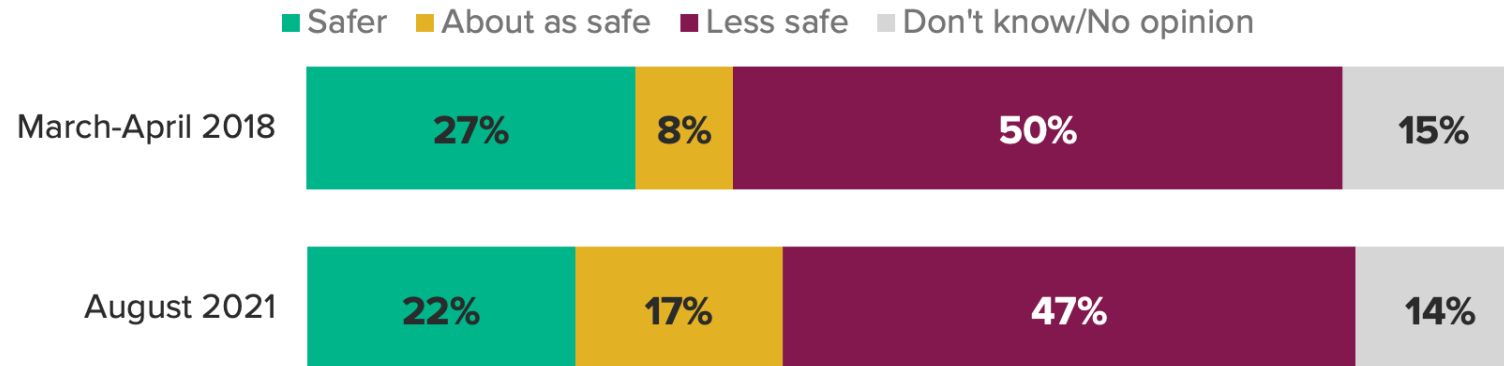


What Does The Public Think?

Share of Public That Thinks Autonomous Vehicles Are About as Safe as Cars Driven by Humans Doubles in 3 Years

But the share of U.S. adults who believe autonomous vehicles are safer than regular cars has fallen 5 percentage points since 2018

Respondents were asked if they believe autonomous vehicles are more, less or about as safe as regular cars driven by humans



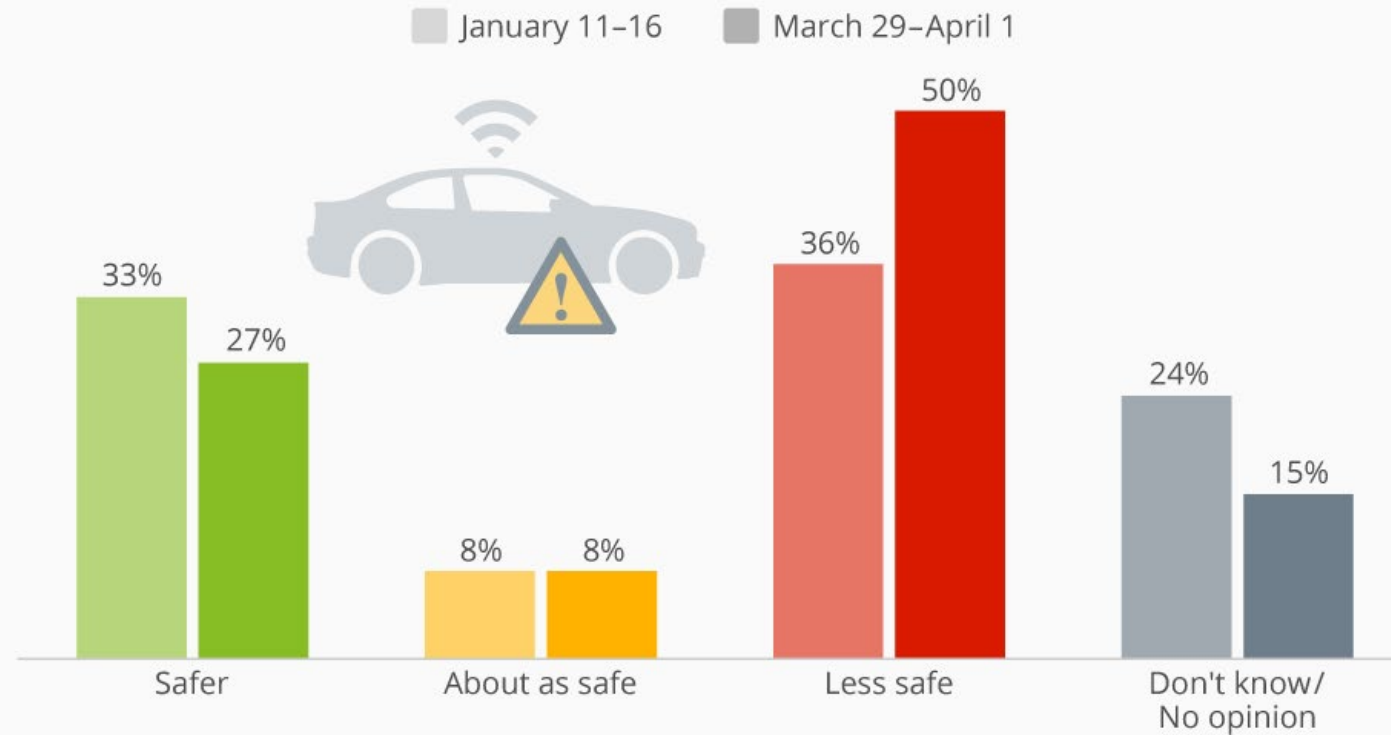
MORNING CONSULT*

Polls conducted March 29-April 1, 2018, and Aug. 25-28, 2021, among about 2,200 U.S. adults each, both with margins of error of +/-2%. Figures may not add up to 100% due to rounding.

Public Opinion Can Be Fickle

Fatal Accidents Damage Trust in Autonomous Driving

Would you say that self-driving cars are more or less safe than vehicles driven by humans?

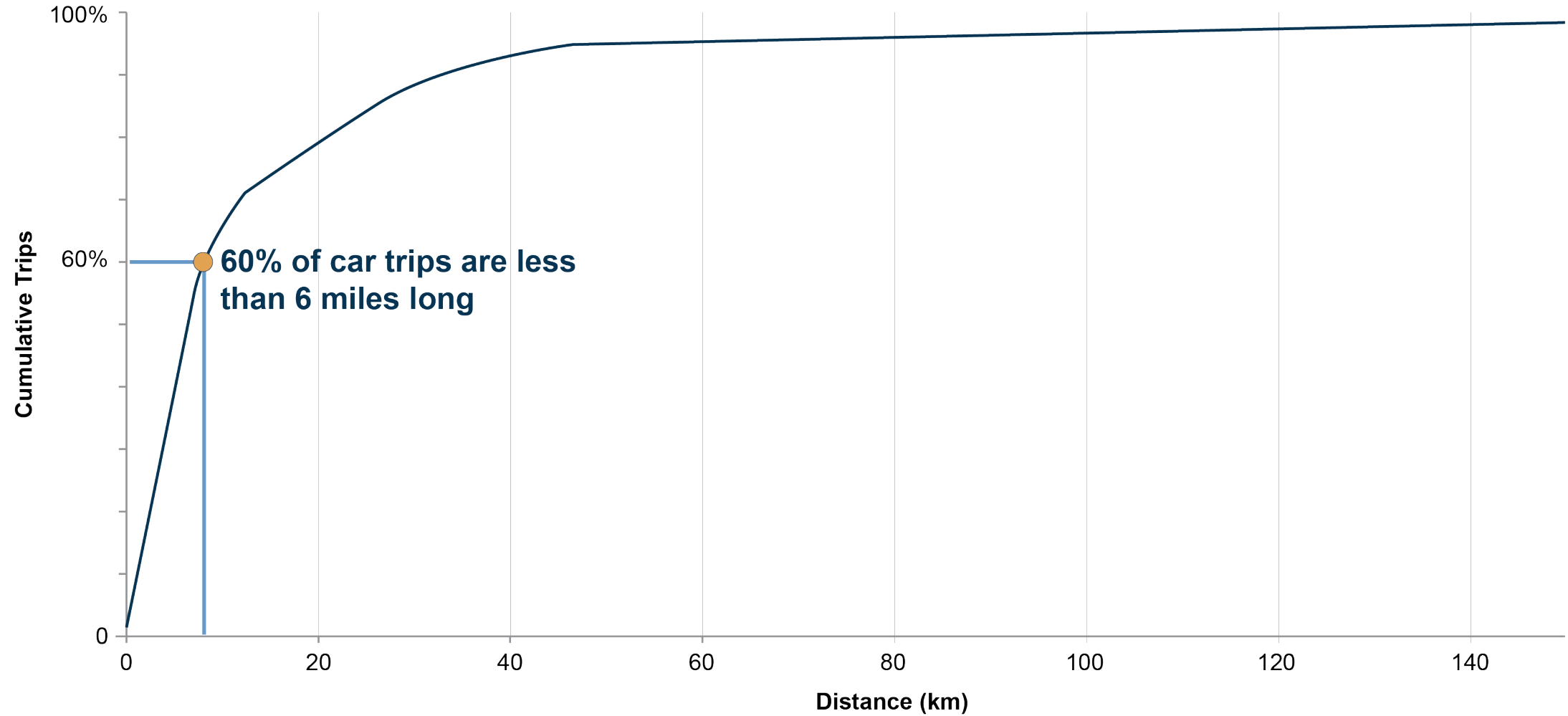


Based on two polls among roughly 2,000 U.S. adults, each with a margin of error of +/-2%
Source: Morning Consult



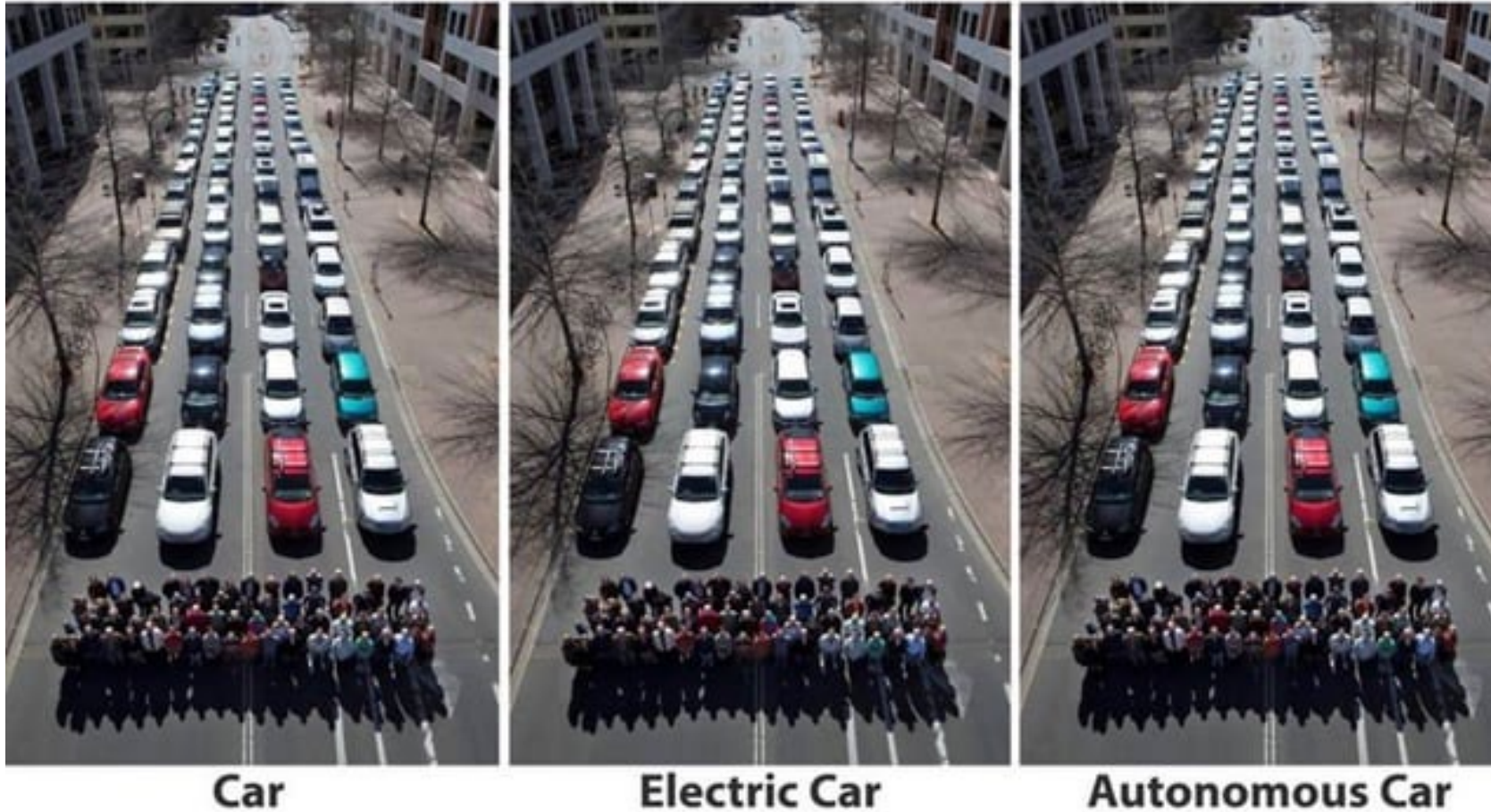
AVs & Regional Sustainability

The Potential for Mode Shift



Don't Forget the V in AV

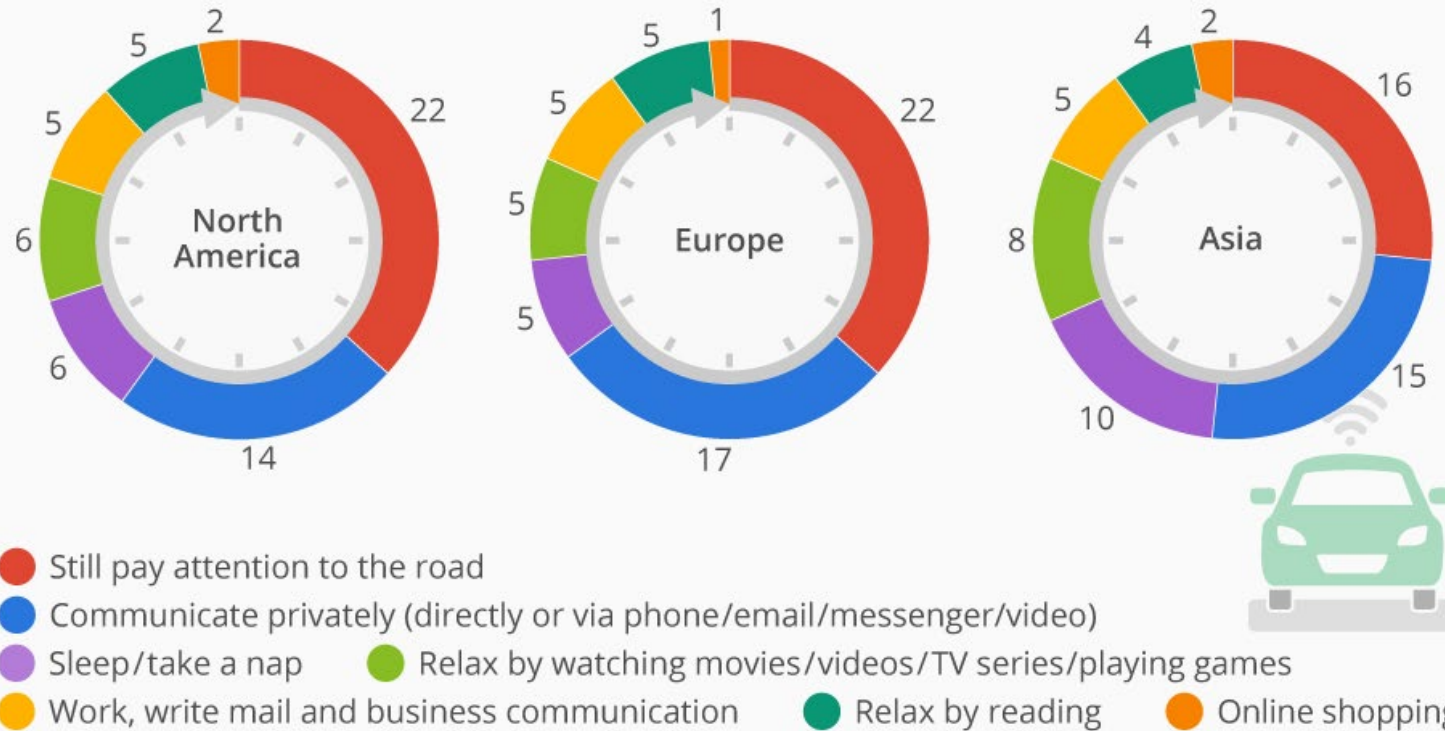
Space Required to Transport 48 People



Unlocking Travel Time

Autonomous Cars: How Would You Spend Your Time?

What would you do with your driving time if you didn't have to actively drive? (in minutes)*



* Time spent on activities/actions over a sixty minute period.
 n=130,000 car owners in nine countries. Conducted April/May 2017.
 @StatistaCharts Source: Ipsos/GenPop - What The Future | Spring 2018

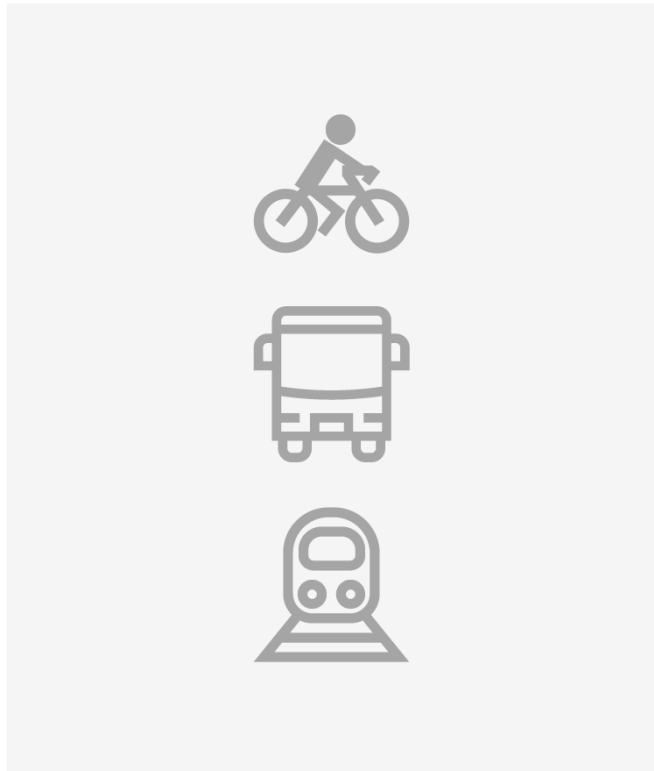


Lower Travel Costs → More Travel

Figure 1

Autonomous vehicles create induced demand

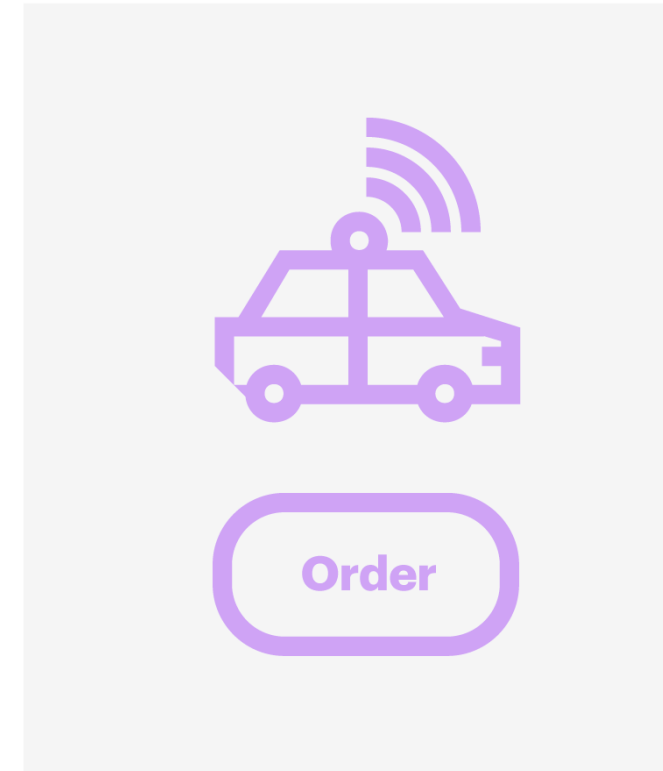
Public transit, biking, etc.



47%
of trips would have
been taken by public
transit, walking,
biking, or not taken
at all

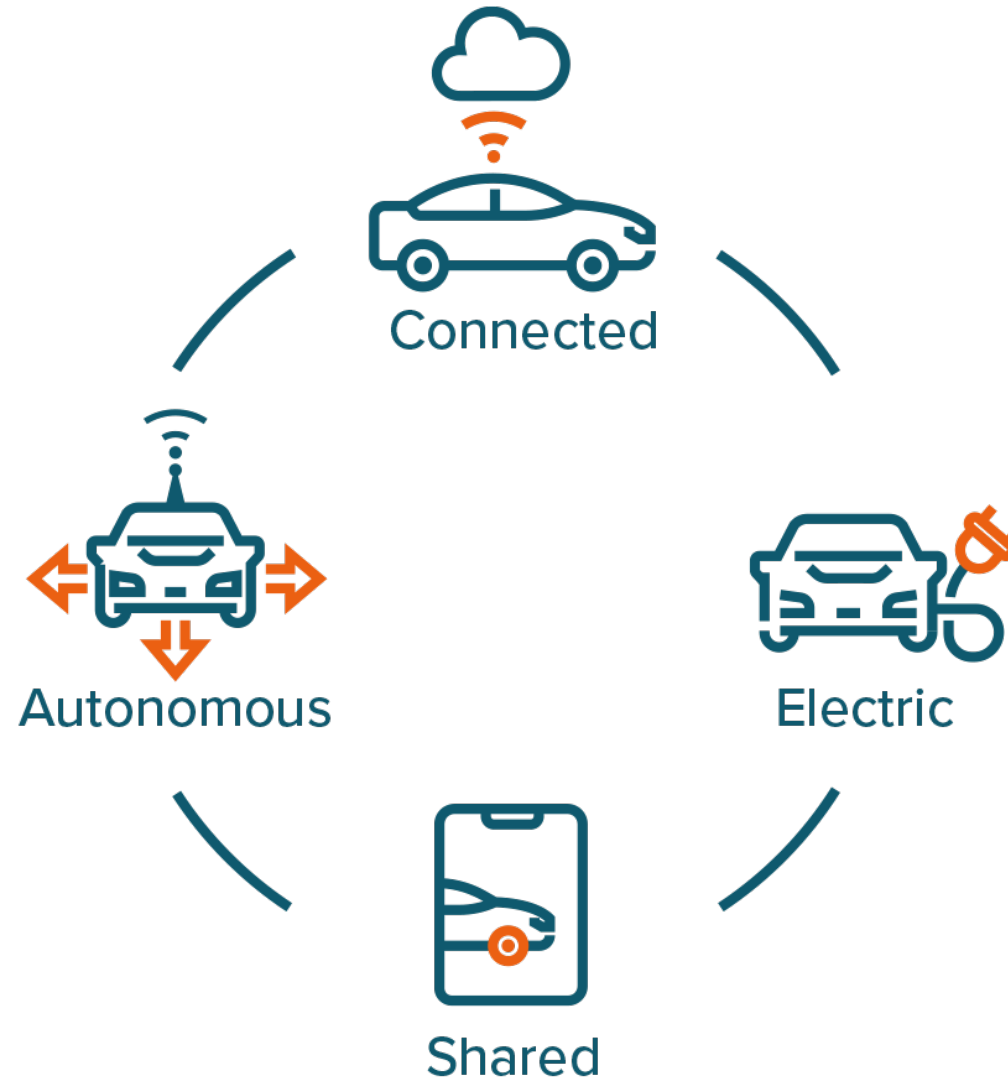


Ride-hailing



Source: Kearney analysis

Shared AVs that are Electric (SAVE)



AVs & Multimodal Transportation

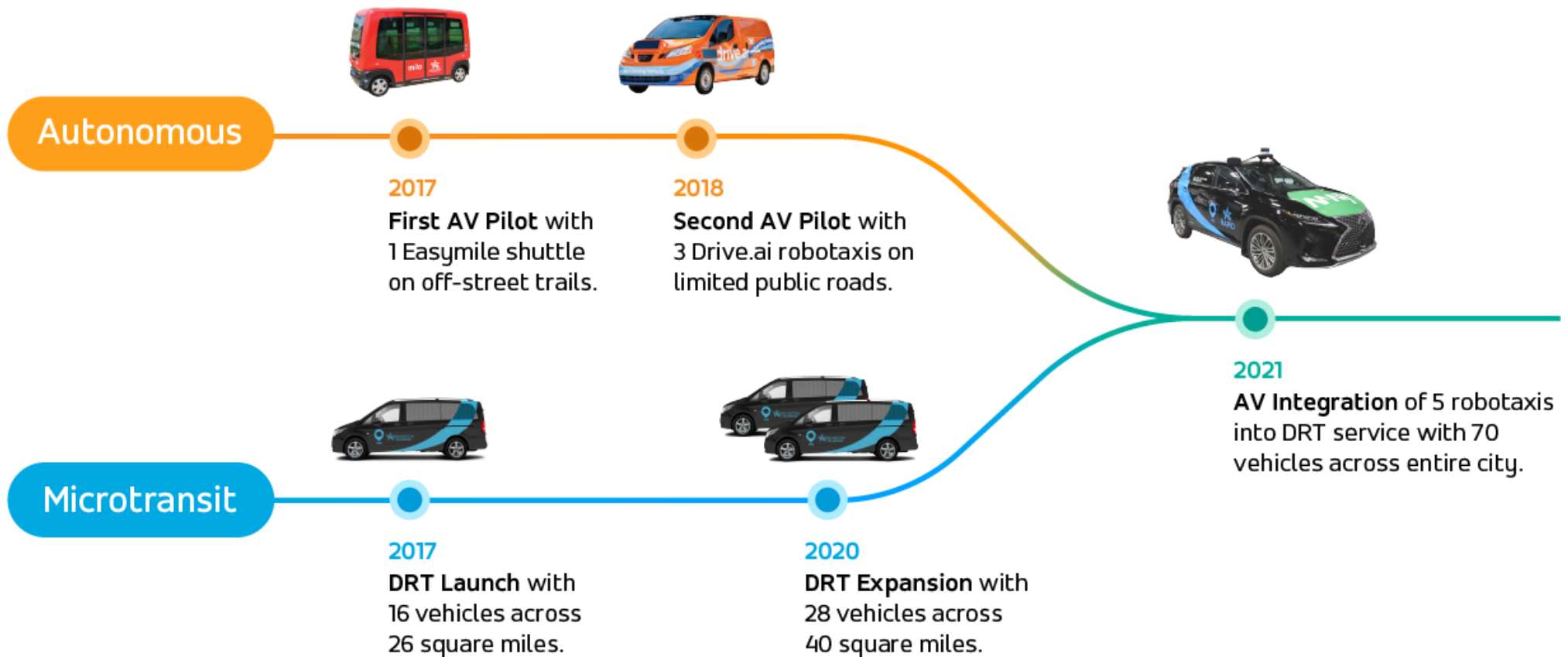
Ridehailing With AVs



Sharing is Caring



Microtransit With AVs



Synthesis

Key Takeaways

- **The safety benefits are unclear!**
 - Third-party, unbiased evaluations needed
 - Differing data and methods hinder comparison
- **Shared Automated Vehicles that are Electric (SAVE)**
 - AVs are still vehicles
 - Shared + Electric → More Sustainable Outcomes
- **Fitting AVs into a multimodal transportation system**
 - Encourage shared / carpooled trips
 - Incentivize connections to transit (first-/last-mile)

What Can We Do?

- **Data**
 - Require AV operators to share trip data
- **Research**
 - Review and evaluation of claimed safety benefits
 - Evaluate deadheading, OD pairs (trip purposes)
- **Policy**
 - Require AV operators to offer shared / carpool services
 - Incentivize connections to transit (first-/last-mile)
 - Feedback loop between on-demand microtransit and fixed-route, high-frequency mass transit



Thank you!
Questions?

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