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The 3 Revolutions And the Future of EV Fleets, TNCs, and Shared Mobility

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#WeTheStates

The 3 Revolutions
And the Future of EV Fleets, TNCs, and Shared Mobility

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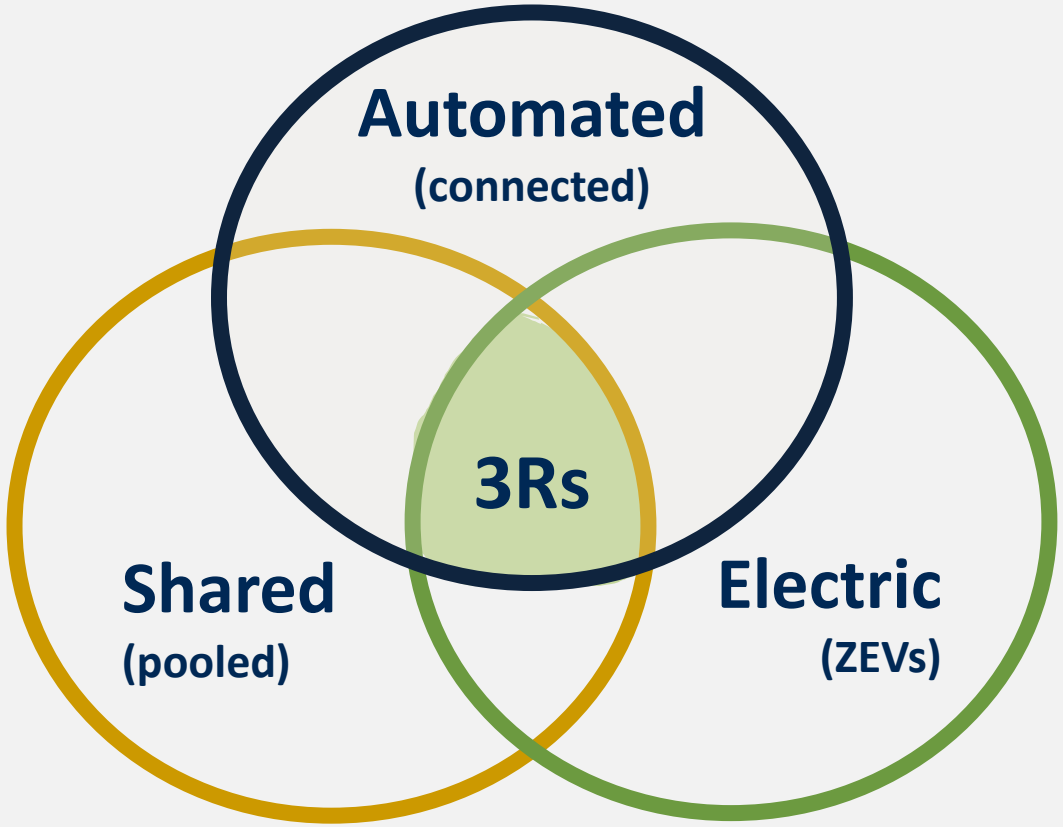
The 3 Revolutions in Transportation



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How are ridehailing services (e.g. Uber, Lyft, Via, Ride Plus, Wingz) impacting cities?

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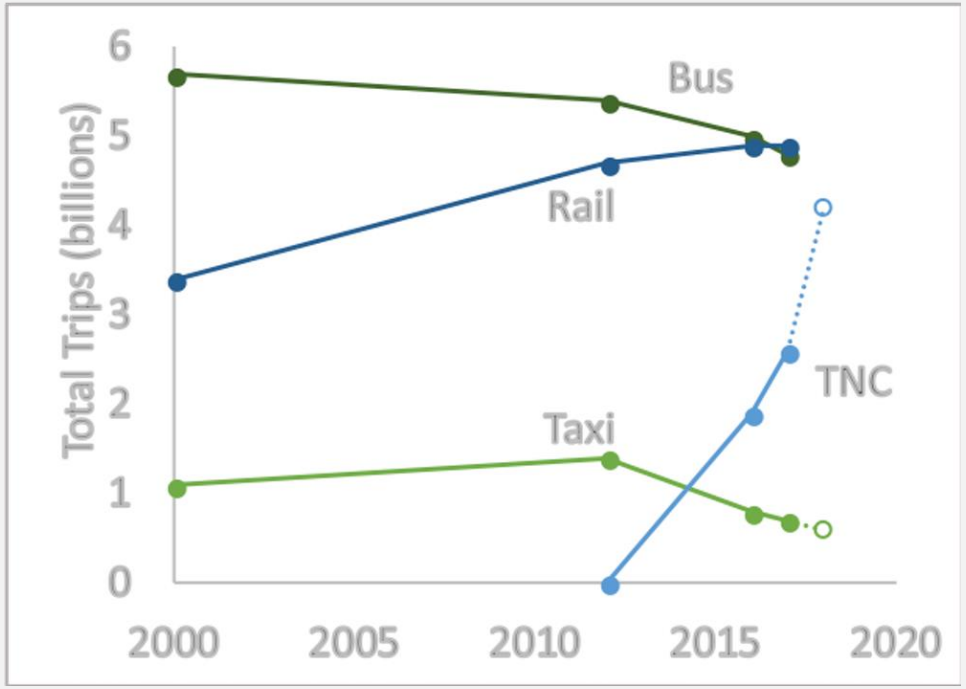
Ridehailing low mode share but on the rise…

- Uber is operating in 600 cities globally
- Lyft is in 300+ cities in U.S. and Canada

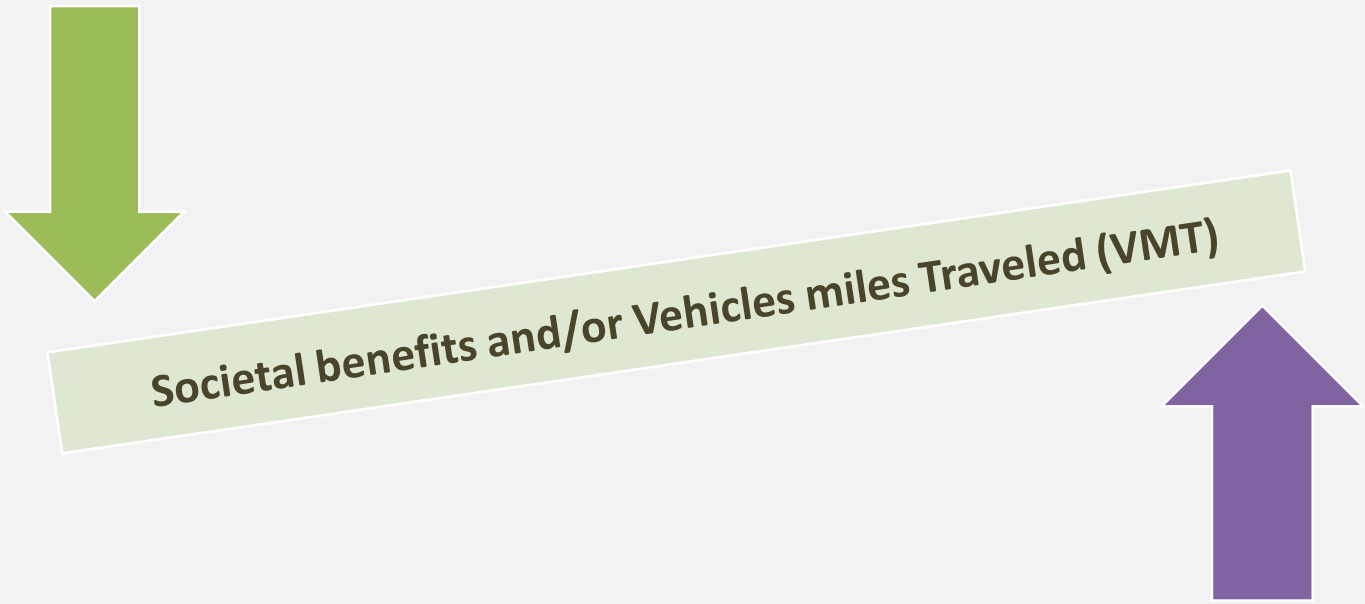
NHTS 2017:

- Ridehailing accounts for 1.7% of miles in urban areas with rail (compared with 86% personal cars)
- Only ***10% of U.S. residents*** (aged 16+) reported to have used ridehailing in the past 30 days.



Sources in order of bullet points: Gromis 2019; Lyft 2018; NHTS 2017; Chart from Sperling et al 2018

So Far Ridehailing Has Mixed Societal Impacts



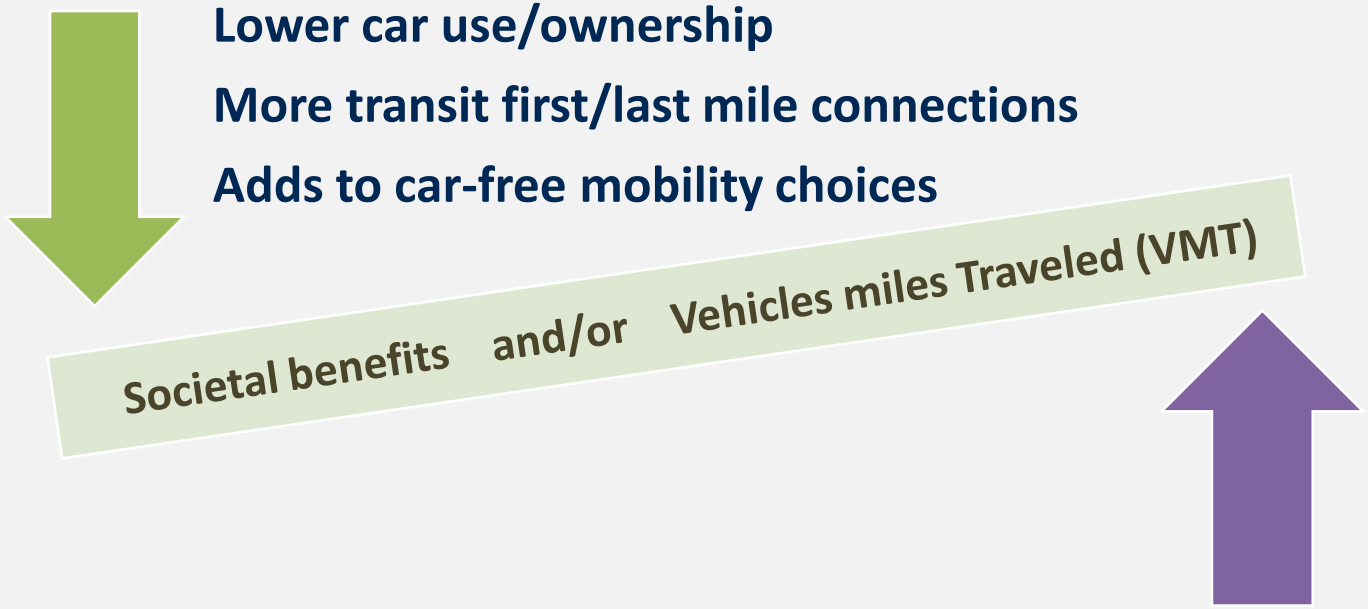
Ridehailing Impacts

Reduced drunk driving

Lower car use/ownership

More transit first/last mile connections

Adds to car-free mobility choices



Ridehailing Impacts

Reduced drunk driving

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Adds to car-free mobility choices

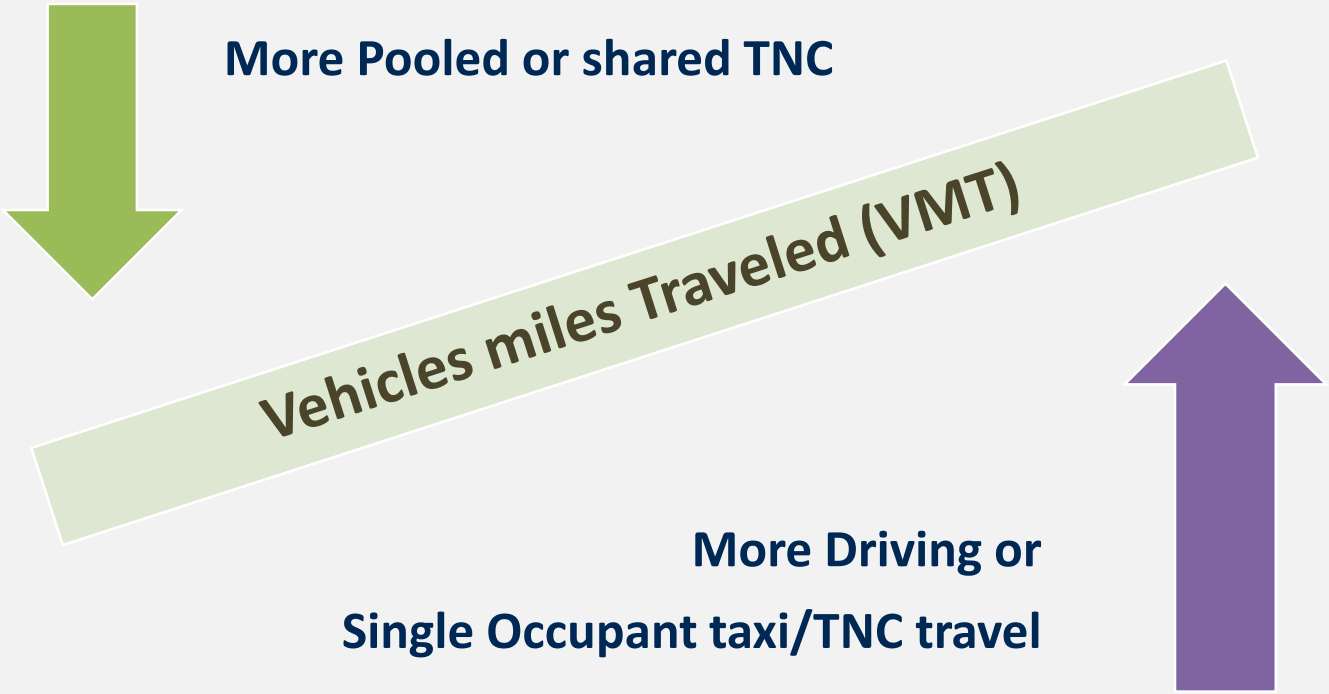
Societal benefits and/or Vehicles miles Traveled (VMT)

More vehicle travel and emissions in city centers

Mode shift away from sustainable transit/walk/bike

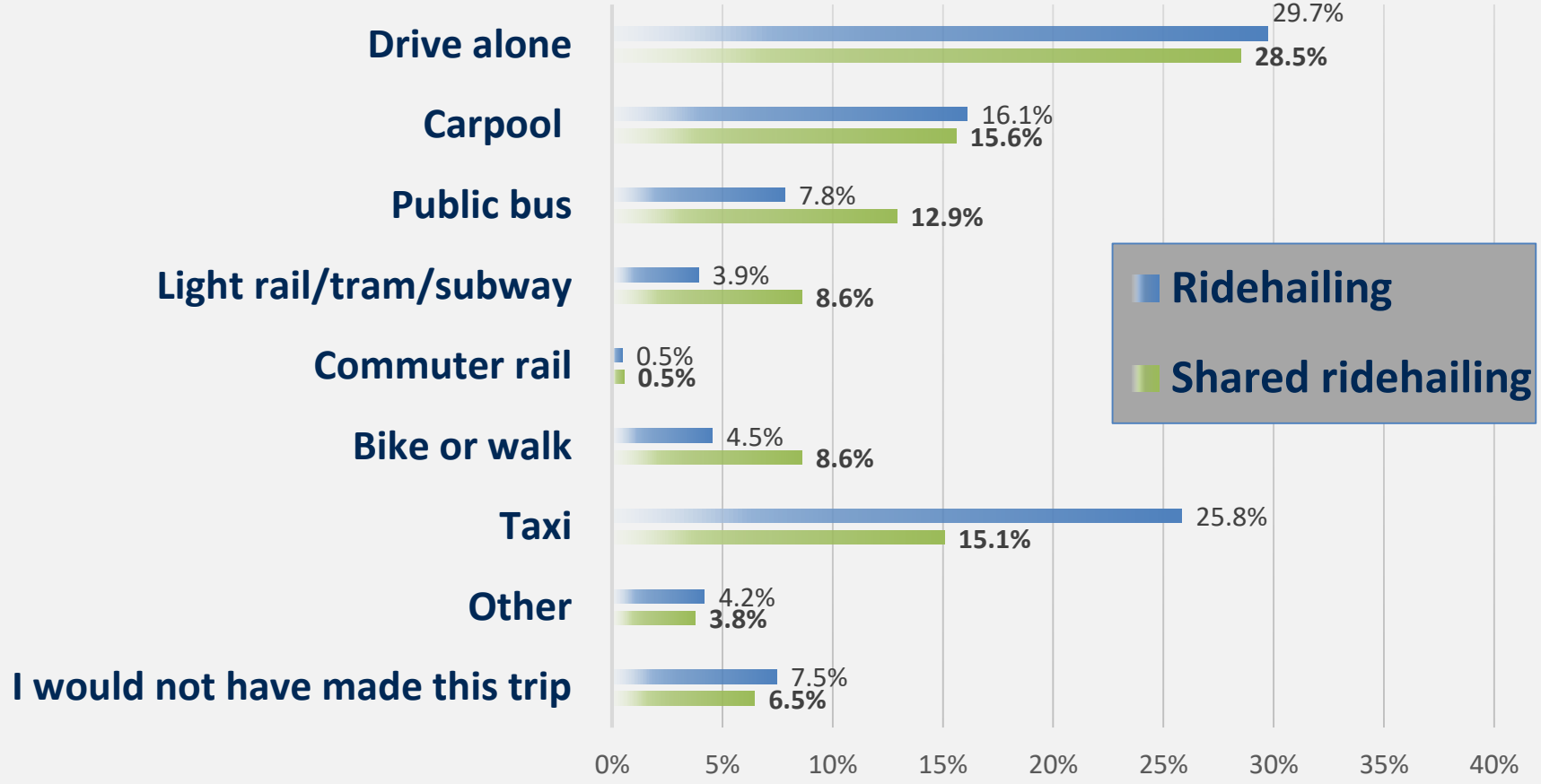
More network travel (deadheading)

In theory Pooling mitigates VMT impacts



Reported mode shift varies between pooled and un-pooled ridehailing – UC Davis 2018 California Survey

Q: *"What Would You Have Done if Ridehailing Was Not Available?"*



Circella 2018 , N=1,260

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Ridehailing Emissions Impacts in California

UC Davis Plug-in Hybrid and Electric Vehicle (PH&EV) Center Study:

- Ridehailing vehicles **travel much more** than personally owned vehicles, traveling 189 miles/day (compared to 27-38 miles/day for personally owned vehicles).
- EV ridehailing vehicles therefore **charge much more** using 30% of energy demand (despite making up 0.5% of total EVs in California).
- EV ridehailing vehicles **use public fast chargers much more** than other EV owners. EV ridehailing vehicles average 17.5 charging events/week (compared to 0.5/week for personally owned EVs).
- EV ridehailing fleets **charging patterns are different** from EV fleet at large with more daytime charging, which could offer opportunities for states with excess daytime energy reserves.

Jenn 2019 (working paper draft)

California passed SB 1014 in 2018: Established the Clean Vehicle Miles Standard and Incentive Program

CA law as amended:

*By January 1, 2020 the [California Air Resources] Board **shall establish a baseline** for emissions of greenhouse gases for vehicles used on the on the online-enabled applications by transportation network companies on a per passenger miles basis.*

*For the purposes of this section, **emissions per-passenger mile** traveled means the estimated emissions from all vehicles miles traveled in periods 1, 2, and 3….including miles driven with no passenger in the vehicles, divided by the totally number of passenger miles resulting from the transport….**including facilitation of walking, biking, and other modes** of active or zero-emission transportation"*

…."By January 1, 2021 the board shall adopt….annual targets and goals beginning in 2023 for the reduction under the baseline…"

California State Legislature. Senate Bill No. 1014

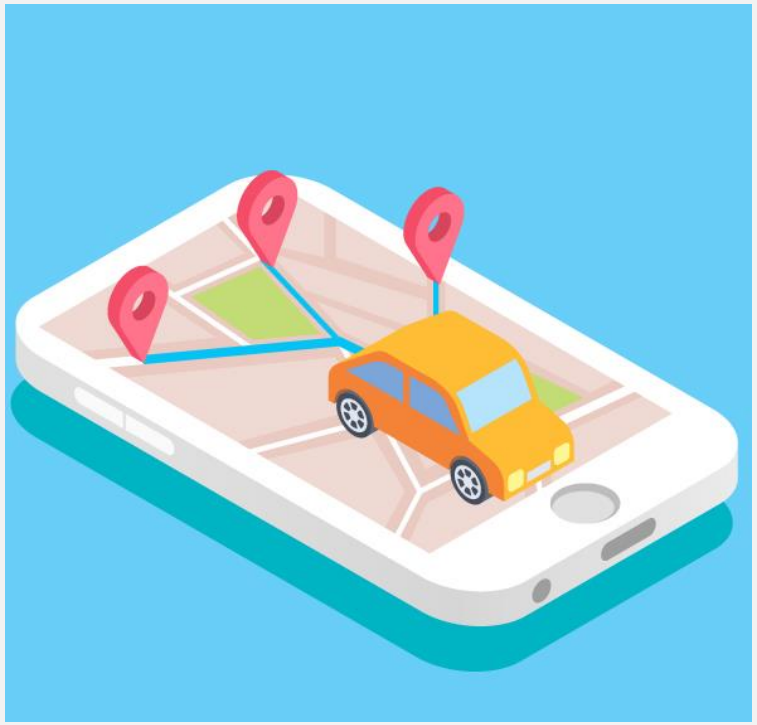
"

California's SB 1014: the Clean Vehicle Miles Standard and Incentive Program

Note the bill applies to:

*"…transportation providers regulated by the commission that provide prearranged transportation services for compensation using an online-enabled application or platform to connect passengers, **including autonomous vehicles**, charter-party carriers, **and new modes of ridesharing technology that may arise through innovation or subsequent regulation**."*

California State Legislature. Senate Bill No. 1014



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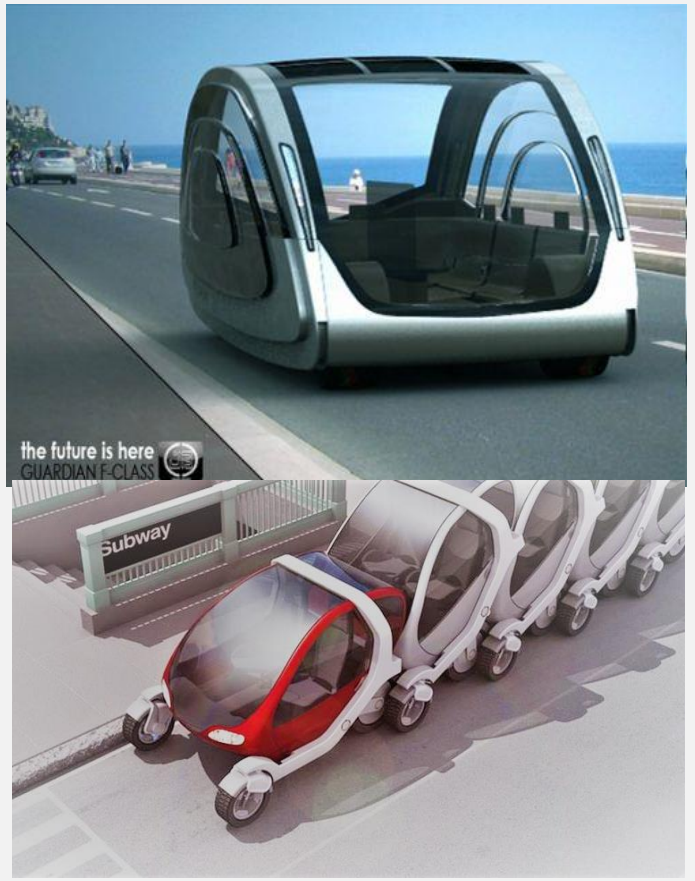
Ridehailing and Automation?

- ✓ Ridehailing made chauffeured travel cheaper and more convenient.
- ✓ Automation will make chauffeured travel even cheaper resulting in a doubling or tripling of travel (despite small increases in capacity)
- ✓ Automation could enable still more new travelers, e.g. old and young, and people with mobility disabilities (10-14%)
- ✓ Like ridehailing the VMT impacts of AVs can be mitigated with pooling (but should not replace transit)

Rodier, 2018



California Public Utilities Commission AV Pilot

CPUC Automated Vehicle ridehailing pilot (runs counter to goals of SB1014):

- No fees charged to the passenger or compensation received by the manufacturer
- Limit the use of the vehicle to one chartering party at any given time (fare-splitting is not permitted)
- Restricts access of AV fleets from airport terminals (w/o approval from airport)
- Must report data on EV miles and occupancy per trip (and a number of other reporting requirements including total miles, number of accessible trips, etc.)

About a dozen cities are taxing TNCs – objectives vary

- **Flat taxes** e.g. $0.20 in Massachusetts to $2.75 or $0.75 per rider if pooled in New York City.
- **Percentage taxes** range from 1% in Alabama and South Carolina to a total of 11.38% in NYC, when combining state and city fees.
- **Take away: Rarely are cities incentivizing pooling or ZEVs despite congestion objectives**.

State level Policy Action Themes

Electrify

"Fast Charging is Critical to Support Increase in Rideshare/Carshare" (Levy 2019)

Pooling and Pricing Signals

Use "per-passenger-vehicle mile" for setting standards

Ideas for State level Policy Actions (not exhaustive)

Electrify:

- Design and build EV infrastructure for fleets (EV charging hubs)
- Incentivize or require Ridehailing and AVs to be ZEVs
- Consider using the LCFS (and similar policies) to incentivize use of electricity in ridehailing and automated fleets.

Pooling and Pricing Signals:

- Price TNCs “per-passenger-vehicle-mile”
- More comprehensive: Implement (de)congestion pricing and/or low-emission congestion zones
- Develop/expand favored lanes to further incentivize pooling (carpool / HOT lane for pooled AV trips)
- VMT pricing mandates for EVs/AVs favoring high occupancy

State level Policy Action Themes

Electrify Fleets (including ridehailing/AV fleets)

Send the Right Pooling and Pricing Signals

https://islandpress.org/books/three-revolutions

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References

- California State Legislature. Senate Bill No. 1014 California Clean Miles Standard and Incentive Program: zero-emission vehicles. Chapter 369. Chaptered by Secretary of State, September 14, 2018. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB1014.
- California Public Utilities Commission. Order Instituting Rulemaking on Regulations Relating to Passenger Carriers, ridesharing, and New Online-Enabled Transportation Services. Rulemaking 12-12-011. San Francisco, 2018. http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K279/215279920.PDF.
- Circella, G., G. Matson, F. Alemi and S. L. Handy (2019) “Panel Study of Emerging Transportation Technologies and Trends in California: Phase 2 Data Collection”, Project Report, National Center for Sustainable Transportation. University of California, Davis, January 2019; available at https://escholarship.org/uc/item/35x894mg
- Gromis, Adam. "UBER Shared + Electric Mobility Experiences." The 3 Revolutions Policy Conference, Symposium presented at UC Davis, Davis, CA, March 19, 2019.
- Jenn, Alan “Investigating the Use of Electric Vehicles in New Mobility Services”. Unpublished working paper. 2019.
- Lyft "Economic Impact Report." *Lyft.* Last modified 2017. https://take.lyft.com/economic-impact/Lyft-Drives-Economy.pdf.
- *National Household Travel Survey 2017*. Washington, DC: Developed by the CTA, ORNL under funding from the FHWA, 2018. https://nhts.ornl.gov/.
- Rodier, Caroline “The Effects of Ride Hailing Services on Travel and Associated Greenhouse Gas Emissions” National Center for Sustainable Transportation. 2018
- Rodier, Caroline “Travel Effects of Automated Vehicles” National Center for Sustainable Transportation. 2018
- Sperling, Dan; Austin Brown, and Mollie C. D'Agostino. "How Ride-hailing Could Improve Public Transportation Instead of Undercutting It." The Conversation. Last modified July 5, 2018. https://theconversation.com/how-ride-hailing-could-improve-public-transportation-instead-of-undercutting-it-96453.