

Three Transportation Revolutions

Call to Action

Daniel Sperling

Distinguished Blue Planet Prize Professor and Founding Director
Institute of Transportation Studies
University of California, Davis

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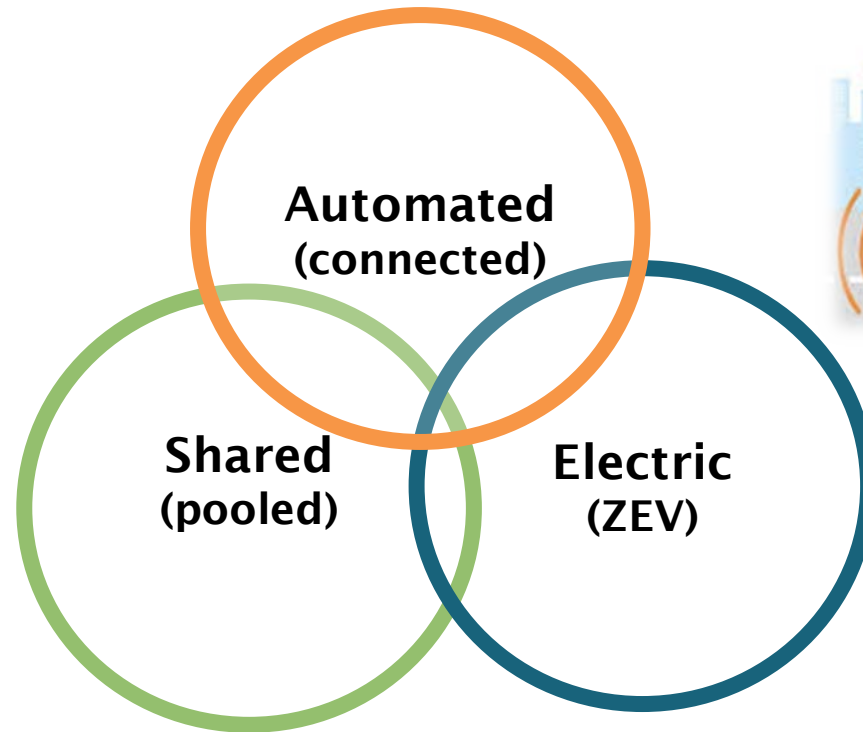
Board Member, California Air Resources Board

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How to create more economically, environmentally, and equitably sustainable transport

Electrification + Automation + Pooling/Sharing

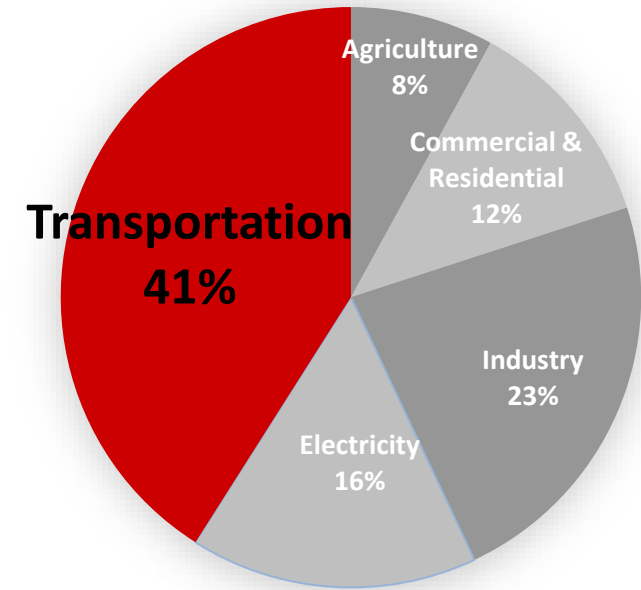


For Decades, We Have Failed to Improve Transportation

Climate Change, Traffic Congestion, Equitable Access to Jobs, Economics, Transit, Safety (recently)



California Greenhouse Gas Emissions



Goals and Priorities

- Cost
 - \$8500/yr to own and operate a vehicle
 - High cost for infrastructure and parking
 - High cost for suburban bus routes and paratransit
 - *Increase non-SOV choices*
- Environment
 - Transport-related GHGs (and VMT) increasing
 - *EVs + micro-mobility + enhanced public transport/pooling*
- Transit
 - Ridership dropping
 - *Coordination/integration with private mobility services*
- Safety/security
 - High fatalities, increasing for pedestrians
 - *More protected bike/scooter paths*

Electric Vehicles Will Dominate... Not If, But When

(battery electric, plug-in hybrid, and hydrogen fuel cell electric)

Auto Industry Ready

- Automakers have developed the technology
- Supply chains in place
- Battery costs continuing to drop

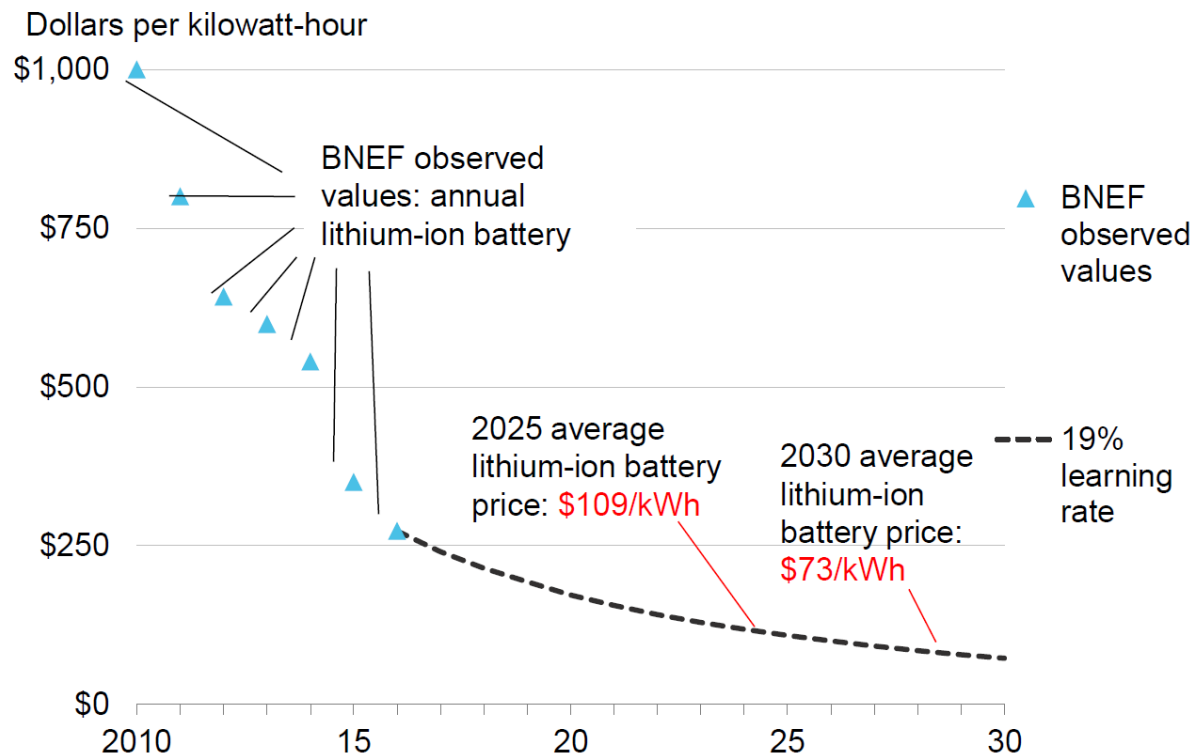
Policies in Place?

- Strong performance standards in all major markets to reduce GHGs (energy) (though “issues” in one large market☹)
- ZEV mandates in China and 30% of US
- Very strong GHG standards in place in Europe—essentially forcing EV sales
- Strong political declarations for EVs in many cities and some countries

➤ *But strong commitment needed for many years to achieve California goals*

Lithium-ion battery pack prices will drop another 75% by 2030

Lithium-ion battery price forecast



Source: Bloomberg New Energy Finance

73%

2010-16 decline in price

22%

2015-16 decline in price

7-10%

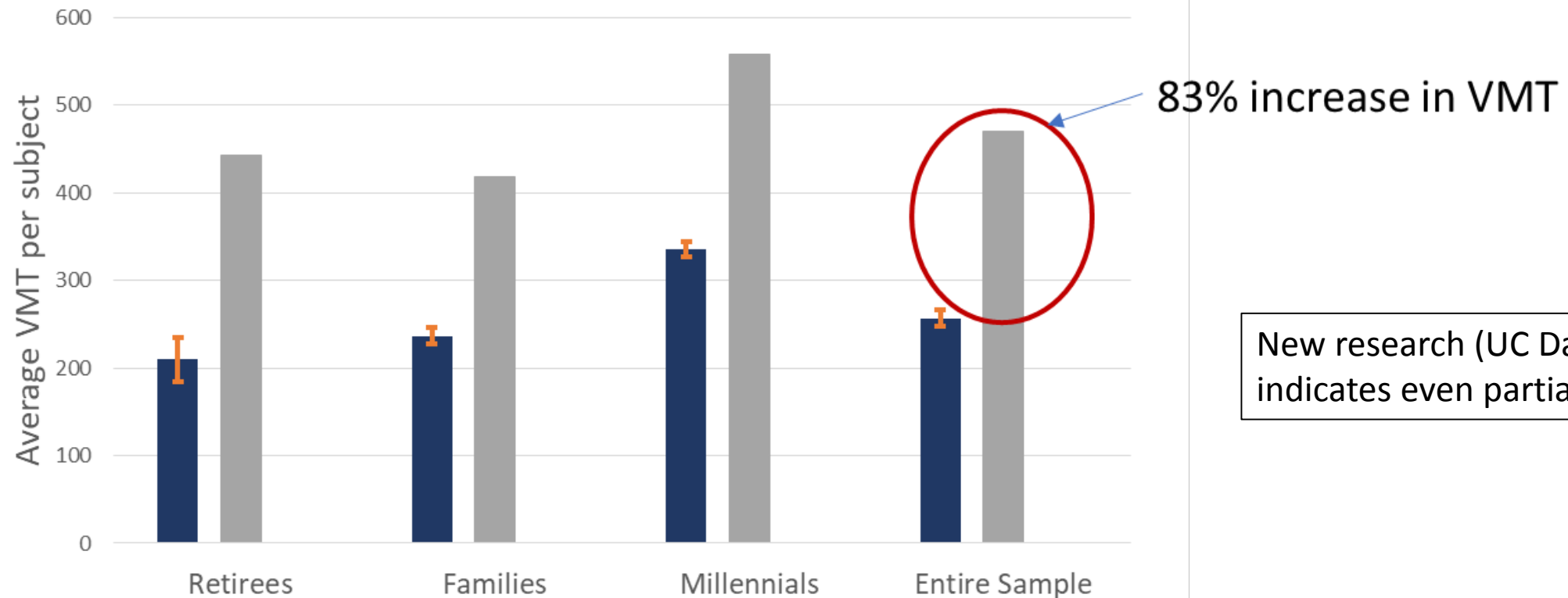
Annual rate of reduction
2017-30

AVs Will Dominate (Eventually) ... But Will They Be “Pooled” or Individually Owned?

- Ridehailing and some automotive companies embrace “pooling”
Lower price \Rightarrow more customers (price elastic) \Rightarrow more revenue \Rightarrow more profit



If Individually Owned, AVs Will Greatly Increase VMT (Hell Scenario)



■ Non-chauffeur weeks (average) ■ Chauffeur week ■ Offset from pre/post chauffeur weeks

Source: Early findings from UC Davis/Berkeley “chauffer” study: Harb, M., Xiao, Y., Circella, G., Mokhtarian, P., & Walker, J., presented at TRB Meeting, Washington D.C., January 8, 2018.

3Rs Promise Much Better Accessibility for Mobility Have-Nots

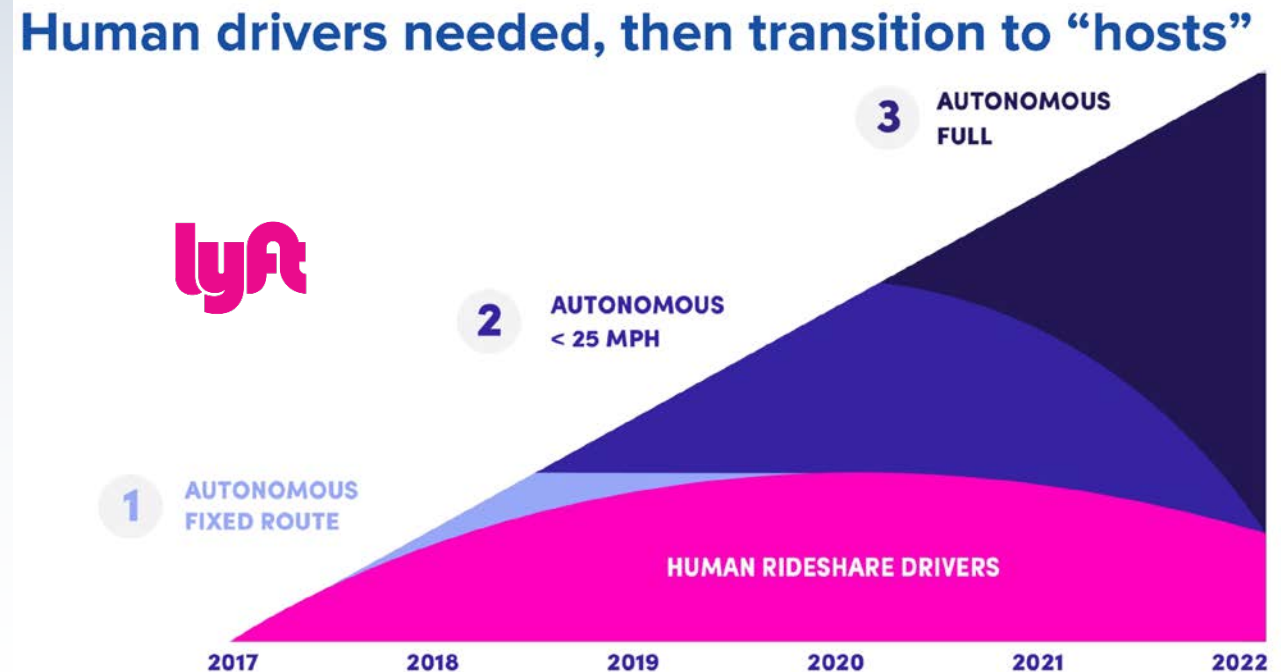
- Mobility disadvantaged are poorly served today
 - Conventional transit serves a small percent of mobility disadvantaged, often poorly
 - 41% of taxi trips taken by HHs with <\$25k income
- 3 Rs (pooled, electric, automated) have potential to greatly enhance accessibility
 - Low cost for and high availability of pooled, automated services
 - facilitated by public finance reform (to subsidize rides with private services)

Good News

3 Revs Will Likely Generate Large Increase in Jobs

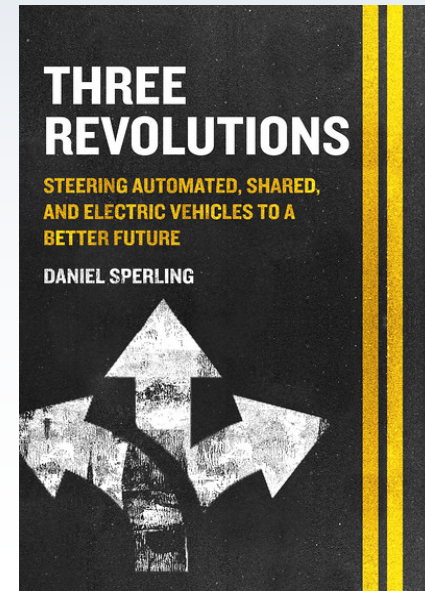
Uncompensated personal “work” (driving) ⇒ commercial activity (mobility service companies) = many new jobs

- Providing “chauffered” services
 - 10-fold increase (3% to 30+% of market)
 - Housework analogy



Pooling Is the Answer ... to Achieve “Heaven” Scenario

- “If the question is traffic congestion, the answer is pooling.
- If climate change, still pooling.
- Social equity, also pooling.
- Soaring transportation infrastructure costs: pooling!
- Potential negative effects of automated vehicles? Pooling.
- **Going forward, pooling must be the principal focus of our thinking and actions related to transportation.”**



New Mindset for Leaders

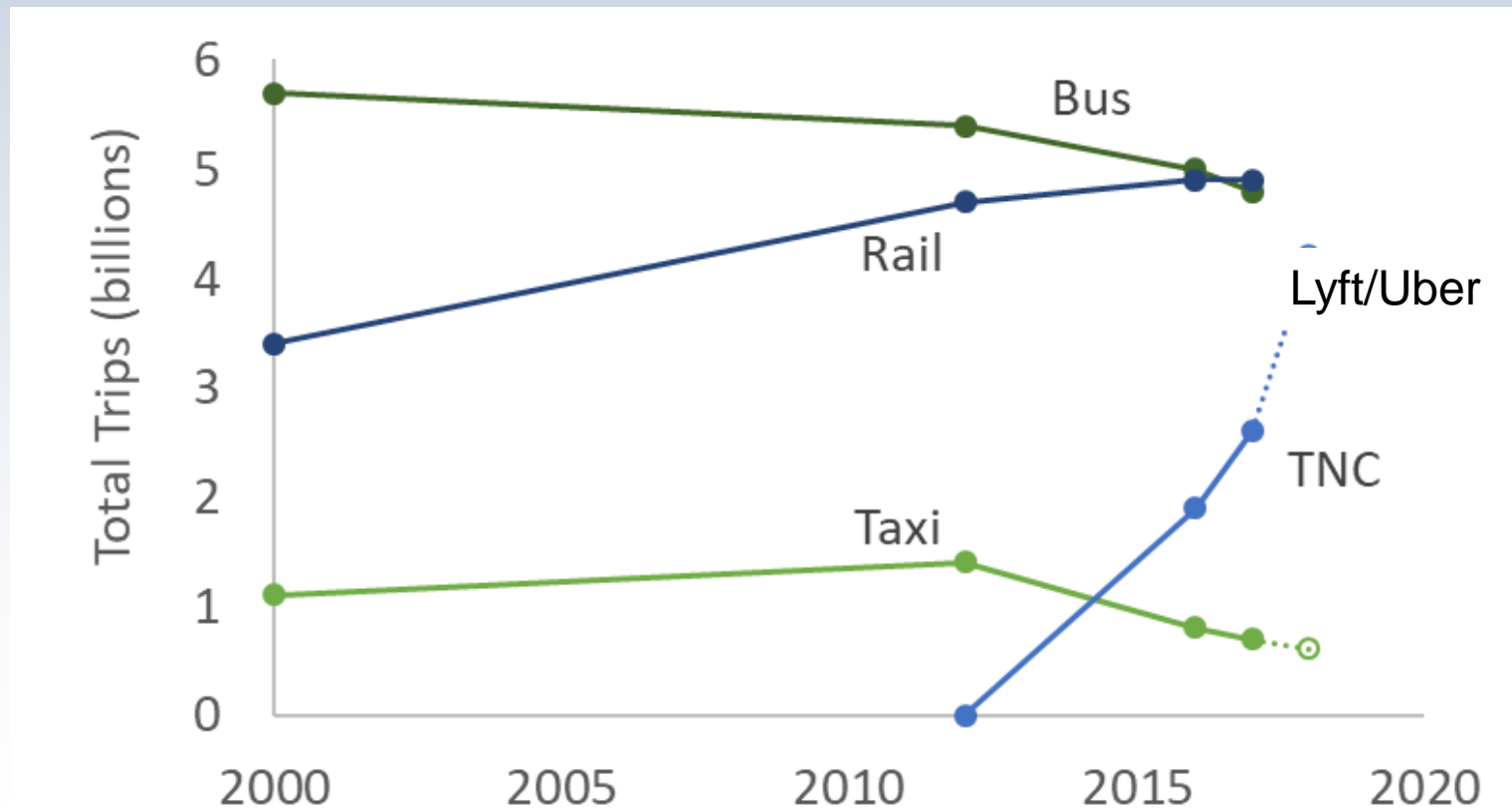
- Instead of primarily focusing on downsides of new services and business models
 - Scooters cluttering sidewalks and being unsafe
 - Uber/Lyft causing congestion and pollution in downtowns, diverting transit riders

... think and act strategically to exploit innovations for the public interest

There will be disruptions

First Disruption: Taxis

In US, taxis lost half the market and continuing to decline



Transit data from APTA, Taxi data from US Census, and projections from Schaller Consulting (2018)

The 3 Revolutions Will Be Disruptive

- Taxis, transit....
- Automotive manufacturers
- Rental cars
- Insurance
- Parking
- Vehicle service and repair
- Aftermarket vehicle parts suppliers, etc.
- Oil companies

➤ *Challenge is to smooth disruptions, especially for jobs*

Overarching Strategies (for Public Interest)

1. More mobility choices

- Micro-mobility (scooters, bikes), micro-transit, ride-hailing, car sharing

2. Better linkages between transit and private mobility services (including paratransit)

- Let transit does what it does best (high density corridors)
- More partnerships with Shared Lyft, Uberpool, micro-transit, perhaps focusing first on low-income travelers

3. More incentives for pooling, and more disincentives for single-passengers and single-occupant travel

- Curb space in cities and at airports
- Fees on Lyft/Uber/Via
- Next generation vehicle road pricing (VMT fees)

➤ MESSAGING: PMT  VMT 

Policies for 3Rs for Cities, Regions (and State)

- **Subsidies**
 - Transit partnerships with mobility companies (including public-private partnerships)
 - TNC pooled and low income riders
 - Low-density transit routes
 - EV charging for TNCs
- **Planning/Land Use**
 - Curb space for pooled services
 - Data negotiations with TNCs/microtransit
 - Infrastructure for bikes, scooters
 - Incentivize infill and mixed use transit-oriented development
 - Reform or reduce parking minimums
- **Road (and de-congestion) pricing** to favor pooling and EVs
 - Favor pooling and EVs, disincentivize empty and single-passenger miles
- **Employers**
 - Incentives for pooling/EVs (eg, Hytch in Nashville)
 - Workforce training and assistance
- **Regulatory**
 - EVs for AVs and TNCs
 - Preferential parking, lanes

“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don't let yourself be lulled into inaction.”

Bill Gates

Thank You

