Automated Vehicles and VMT: Environment, Health, Livability, Climate

Chris Ganson, Governor's Office of Planning and Research*

*For identification purposes only

Automated vehicles will make vehicle travel easy!

…for everyone…

What will our world be like when vehicle travel is easier for everyone?

Climate

Environment

Health

Livability

Equity

Traffic

Accessibility

VMT

Cutting Greenhouse Gas Emissions Is Only the Beginning: A Literature Review of the Co-Benefits of Reducing Vehicle Miles Traveled

March 2017 — A White Paper from the National Center for Sustainable Transportation

Kevin Fang, University of California, Davis
Jamey Volker, University of California, Davis

National Center for Sustainable Transportation

ITS UCDAVIS INSTITUTE of TRANSPORTATION STUDIES

https://ncst.ucdavis.edu/white-paper/cutting-greenhouse-gas-emissions-is-only-the-beginning-a-literature-review-of-the-co-benefits-of-reducing-vehicle-miles-traveled/

VMT	GHG	Possible Effect of Driverless Vehicles
↑	↑	Easy to go by car

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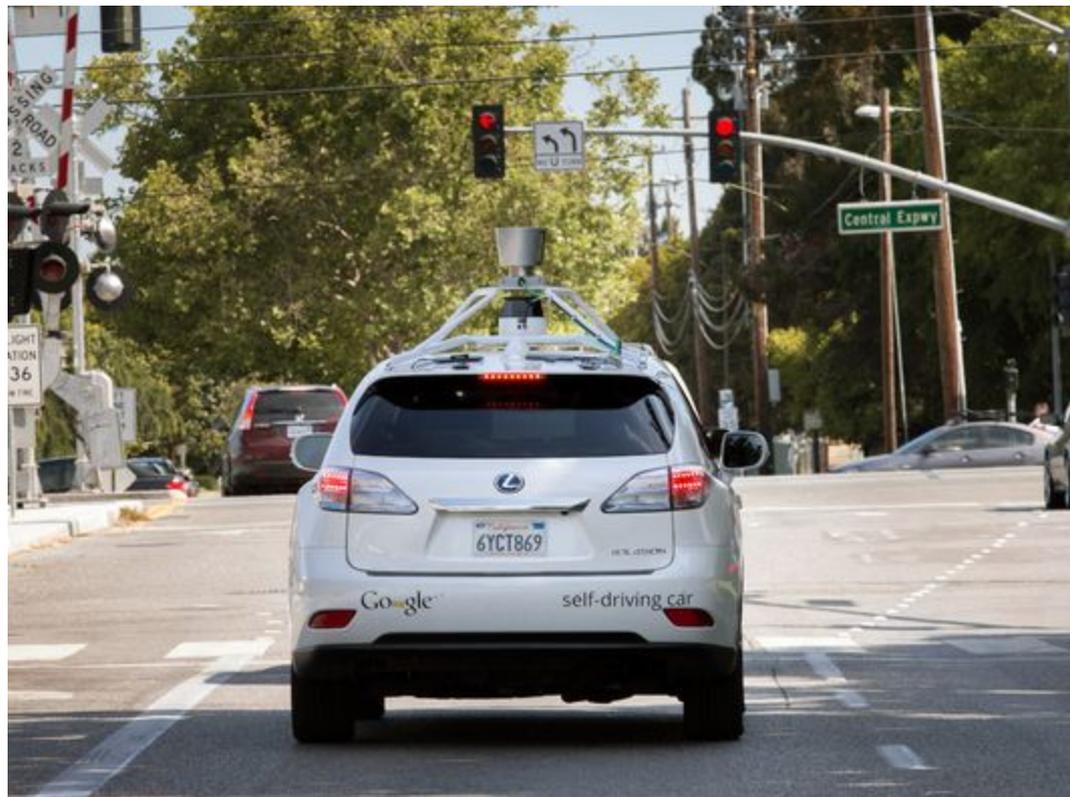
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↑	↑	Replacement of line-haul transit

→

VMT	GHG	Possible Effect of Driverless Vehicles
↑	↑	Easy to go by car
↑	↑	Replacement of line-haul transit
		Replacement of bike and walk trips

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or **?**

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What do we know about how much is VMT expected to increase?

What effects would that have?

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Peer-reviewed research on environmental impacts from high VMT projects:
- Emissions
  - GHG
  - Regional pollutants
- Energy use
  - Transportation energy
  - Building energy
- Water
  - Water use
  - Runoff – flooding
  - Runoff – pollution
- Consumption of open space
  - Sensitive habitat
  - Agricultural land

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23,000 deaths/y attributable to physical inactivity in California

Achieving CA's 2020 mode share targets:

- 2,095 fewer deaths annually

- $1 billion-$15 billion/y prevented premature deaths and disability

By comparison, 3176 auto crash deaths in California in 2015

Maizlish N. *Increasing Walking,* *Cycling, and Transit: Improving Californians' Health, Saving Costs, and Reducing Greenhouse Gases. Final Technical Report to the California Department of Public Health (CDPH)*. Berkeley, CA; 2016.
https://www.cdph.ca.gov/programs/Documents/IncreasingWalkingCyclingTransitFinalReport2016rev2017-01-28.pdf

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So what should we do?

- **Shared use**

- Shared ride

- Zero emissions

- Right-priced

- Transit-supportive

- Equitable

- Well-behaved

- With robust anti-sprawl policy

Synthesis of current thinking: Harnessing automation for the public good

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First Mile | Metro Provided | Last Mile

Trip

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Policy Brief

April 2017

Keeping Vehicle Use and Greenhouse Gas Emissions in Check in a Driverless Vehicle World

Co-Authors:
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Chris Ganson, Governor's Office of Planning and Research*
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*For identification purposes only

In November 2016, the Institute of Transportation Studies at the University of California, Davis (ITS-Davis) convened leading academic, government, private industry, and public interest stakeholders to explore science-based policies that could steer the three transportation revolutions- shared mobility, electrification, and autonomous vehicles, toward the public interest.

This policy brief reflects the opinions of the authors and not UC Davis. This brief is one in a series that presents a range of policy concepts, recommendations and research needs discussed at the 3 Revolutions Conference.

Contact: Mollie D'Agostino

Summary of Policy Recommendations

To support VMT and GHG containment goals:
1. Deploy driverless vehicles as shared use vehicles, rather than privately owned
2. Ensure widespread carpooling
3. Deploy driverless vehicles with zero tailpipe emissions
4. Take advantage of opportunities to introduce pricing
5. Increase line haul transit use rather than replacing it
6. Ensure driverless vehicles are not larger or more energy consumptive
7. Program vehicle behavior to improve livability, safety and comfort on surface streets

Current CA Research Initiatives

- Caltrans – Effect of automated on VMT and GHGs

- CDPH – Effect of automated vehicles on health

- ARB
  - TNC (incl AV) effect on VMT and GHG, for 375 credit
  - AV VMT, GHG and AQ: under various scenarios of AV penetration, rideshare, EV penetration (18 mo. starting in Jan)
  - What CAFE/ZEV requirements might be needed under VMT increase scenarios for GHG/AQ?

Thanks!

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