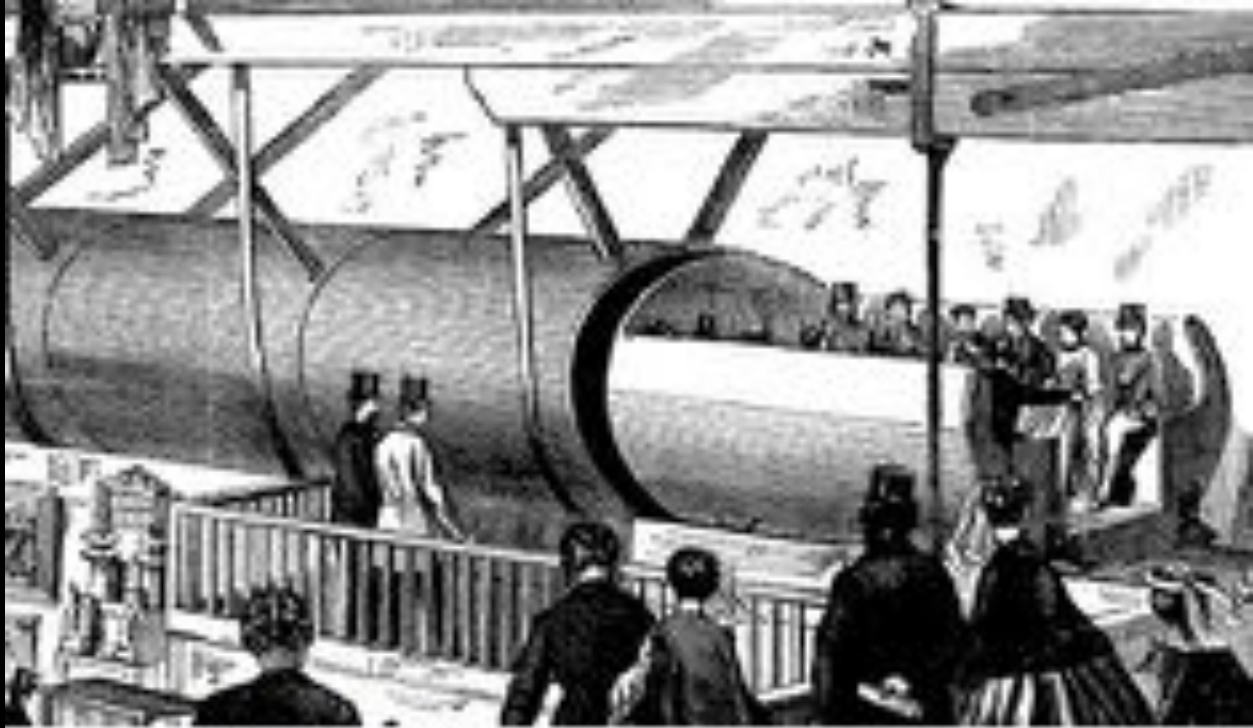


# Future of Transportation

**APA-DC**  
**October 6, 2017**



# Hyperloop: 1867











**So What about  
Autonomous Vehicles?**



**>30,000 Traffic Deaths per Year**



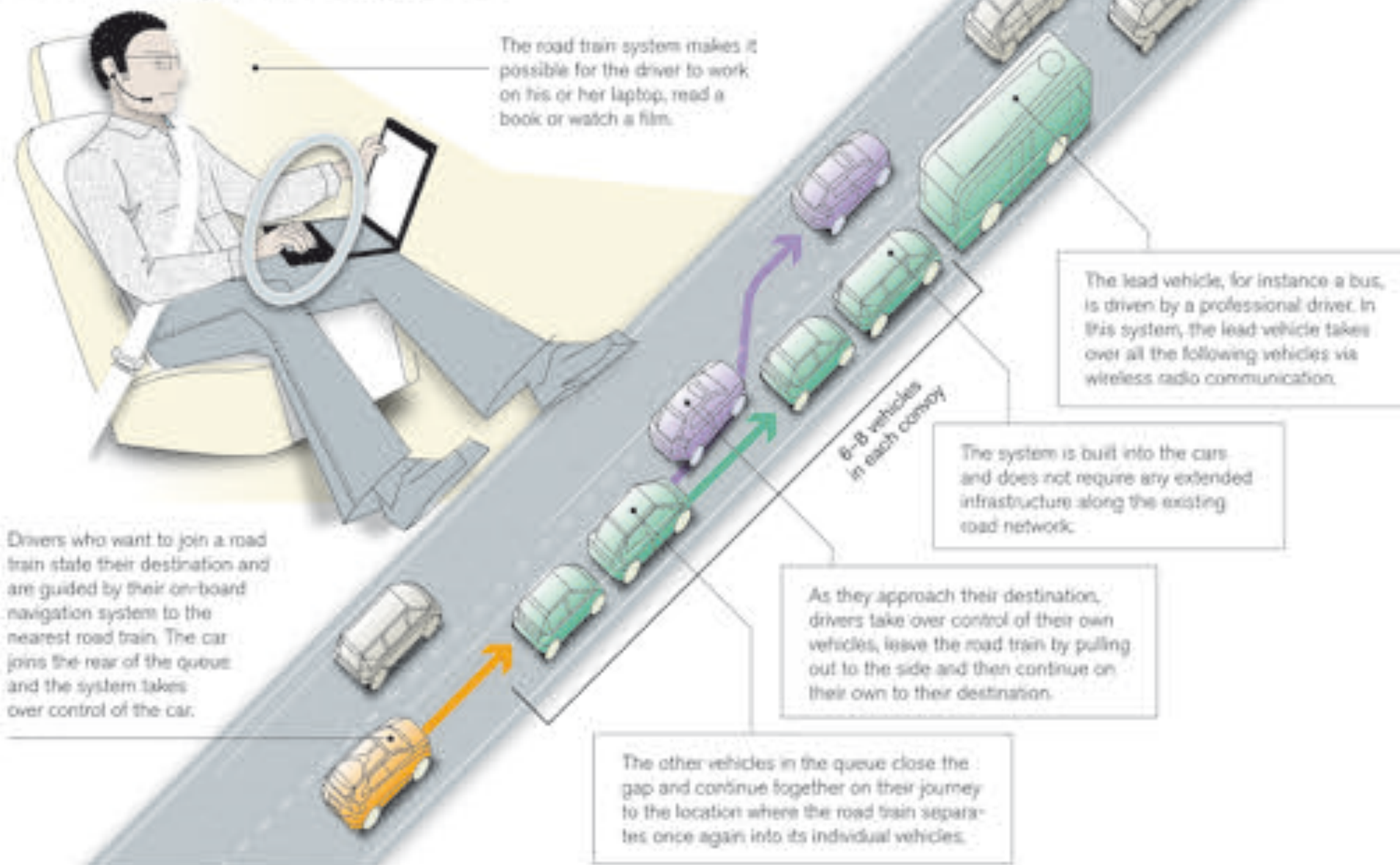
# Eliminate 80% Commercial Parking Demand?





# Join a road train

A safe and energy-efficient way to travel



# First/Last Mile



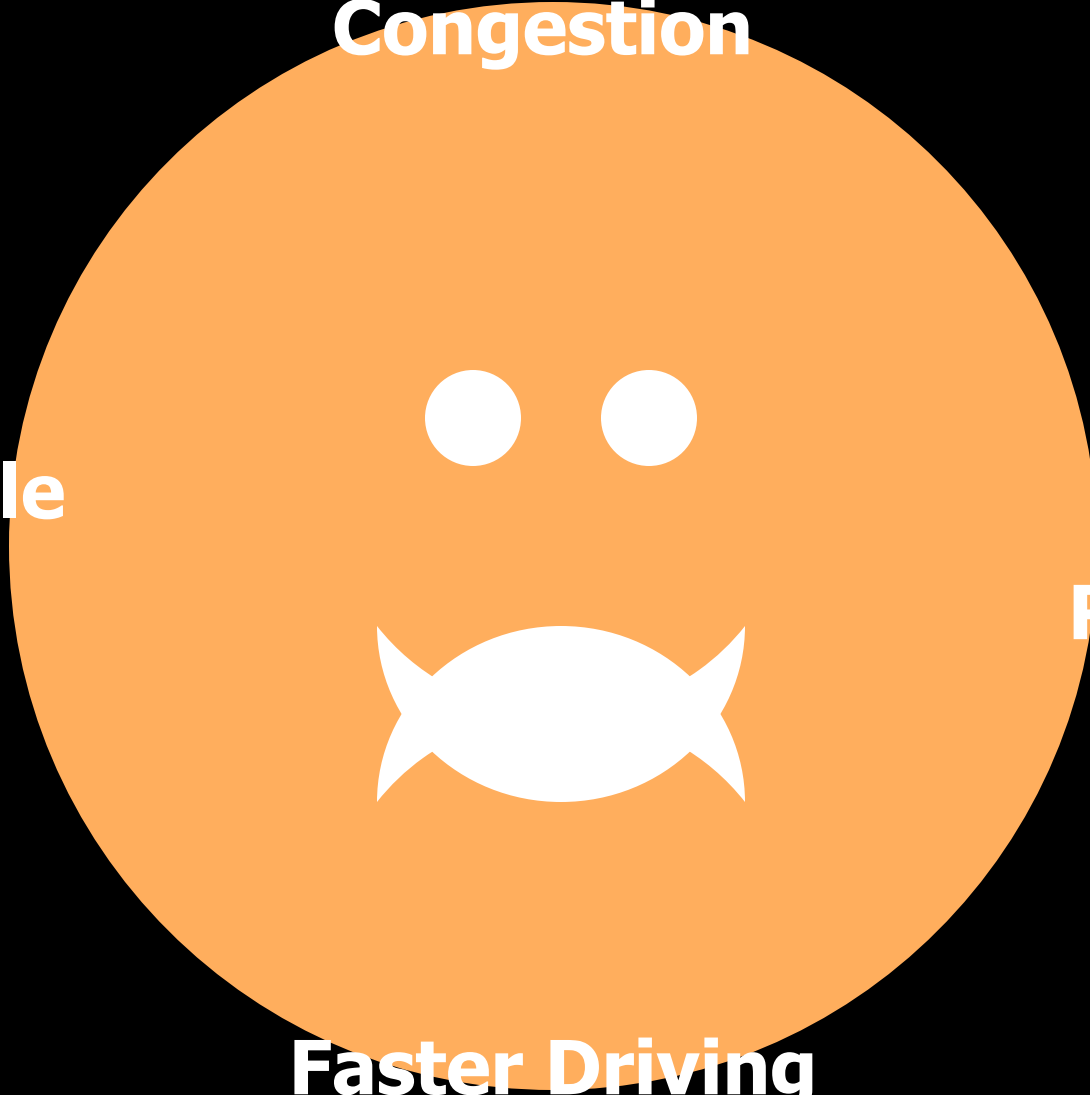
# Induced and Latent Demand

**Congestion**

**More People  
Drive**

**Widen  
Roadway**

**Faster Driving**





space required  
to transport **60 people**



Car?



Bus?



Bicycle?

space required  
to transport **60 people**



car



uber



autonomous car

# Early Signs of Change

Figure 9. Changes in ridership by mode, 2012 to 2013

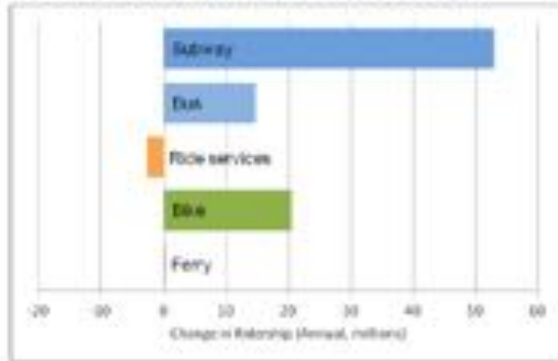


Figure 10. Changes in ridership by mode, 2013 to 2014

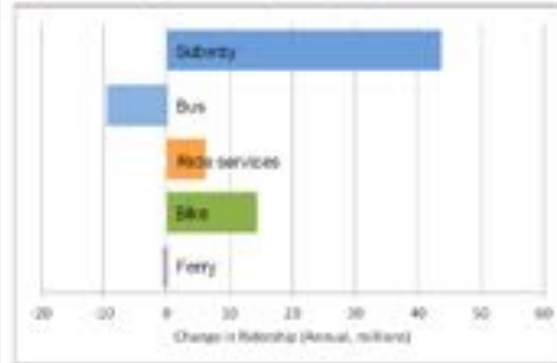


Figure 11. Changes in ridership by mode, 2014 to 2015

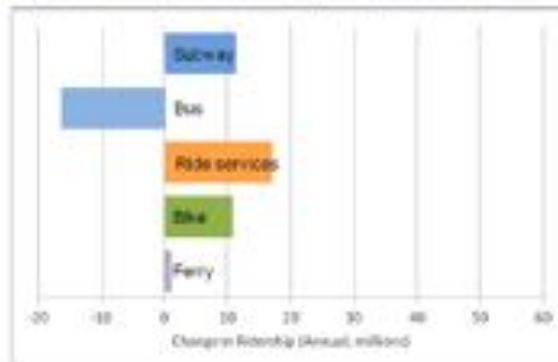
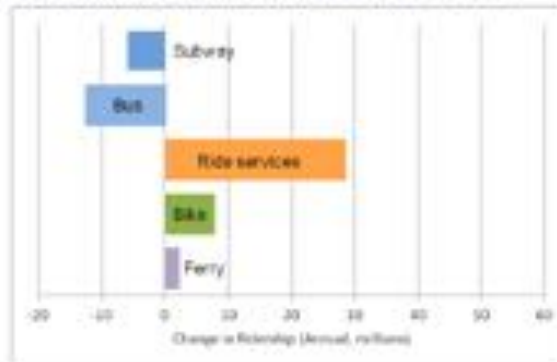


Figure 12. Changes in ridership by mode, 2015 to 2016



## SCHALLER REPORT

Ride-hailing the leading source of non-personal car travel in NYC 2014-2016

Most ride-hailing *growth* (not trips) in the outer boroughs, where transit is less convenient





## **Pop Quiz:**

**Who's investing the most in  
autonomous vehicle technology?**

## **Pop Quiz:**

**What's Google's revenue model?  
Selling information, right?**



**~95%**  
**of Google's revenue is**  
**Advertising**



# Minority Report

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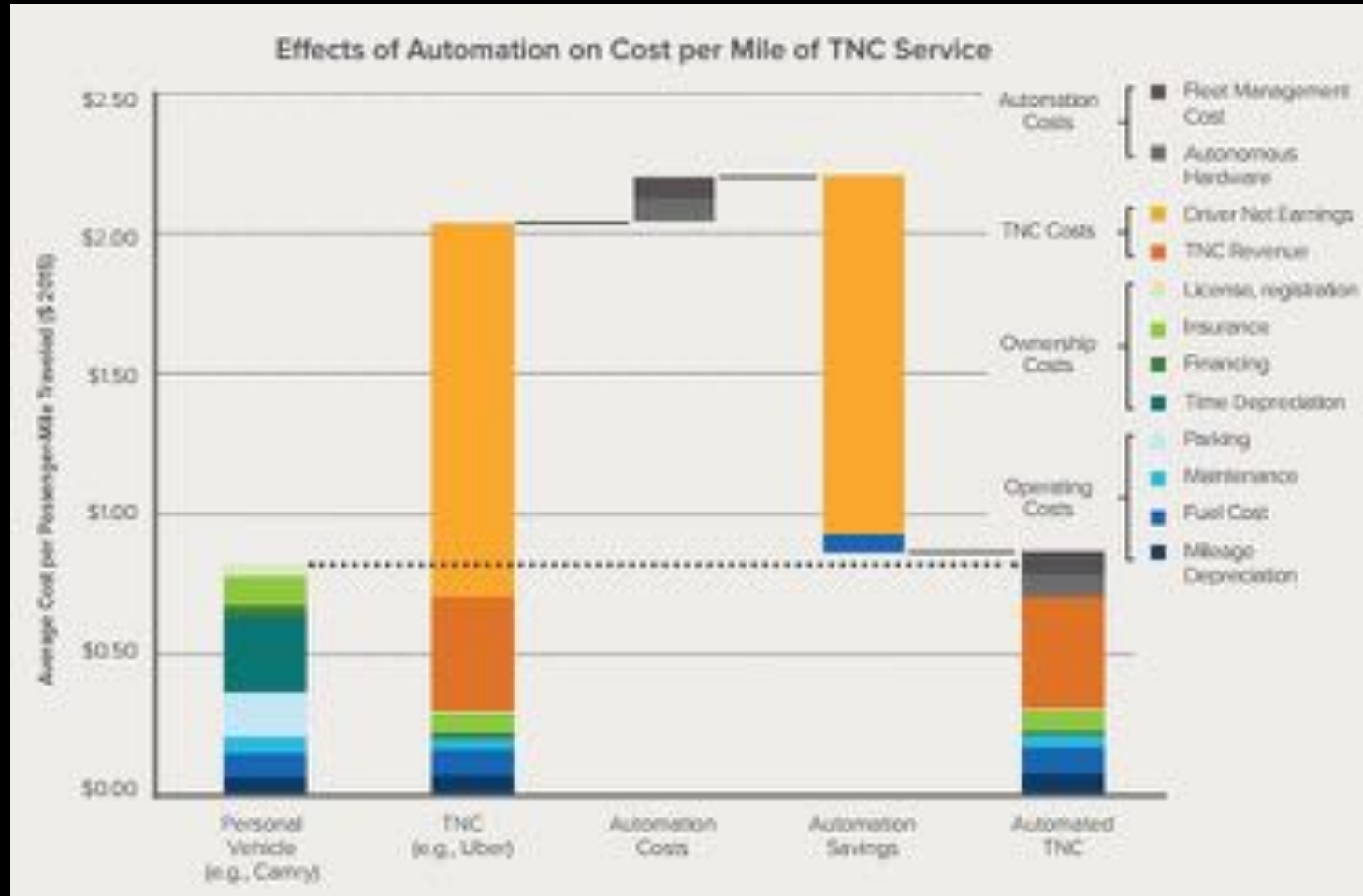




# Cost Models

## FACTORS THAT MAY DETERMINE ADOPTION MODEL

- Cost per ride: \$1 threshold vs. traditional autos
- Cost of AVs: Too costly for vast majority of people?



**Dear Auto Makers:  
You're no longer selling a myth.**

**Or cars.**

**You're selling  
time.**

# Effect on Cities – Current Trajectory

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- Upside: Parking lots and garages repurposed
- Downside: Stranded parking garages
- Parking revenue collapses
- Gas tax collapses
- Suburban retail sales tax collapses
- Induced demand results in severe congestion
- Sprawl
- Public health declines



Image: Victor Dover. Atlanta parking



# Effect on Transit Agencies: Current Trajectory

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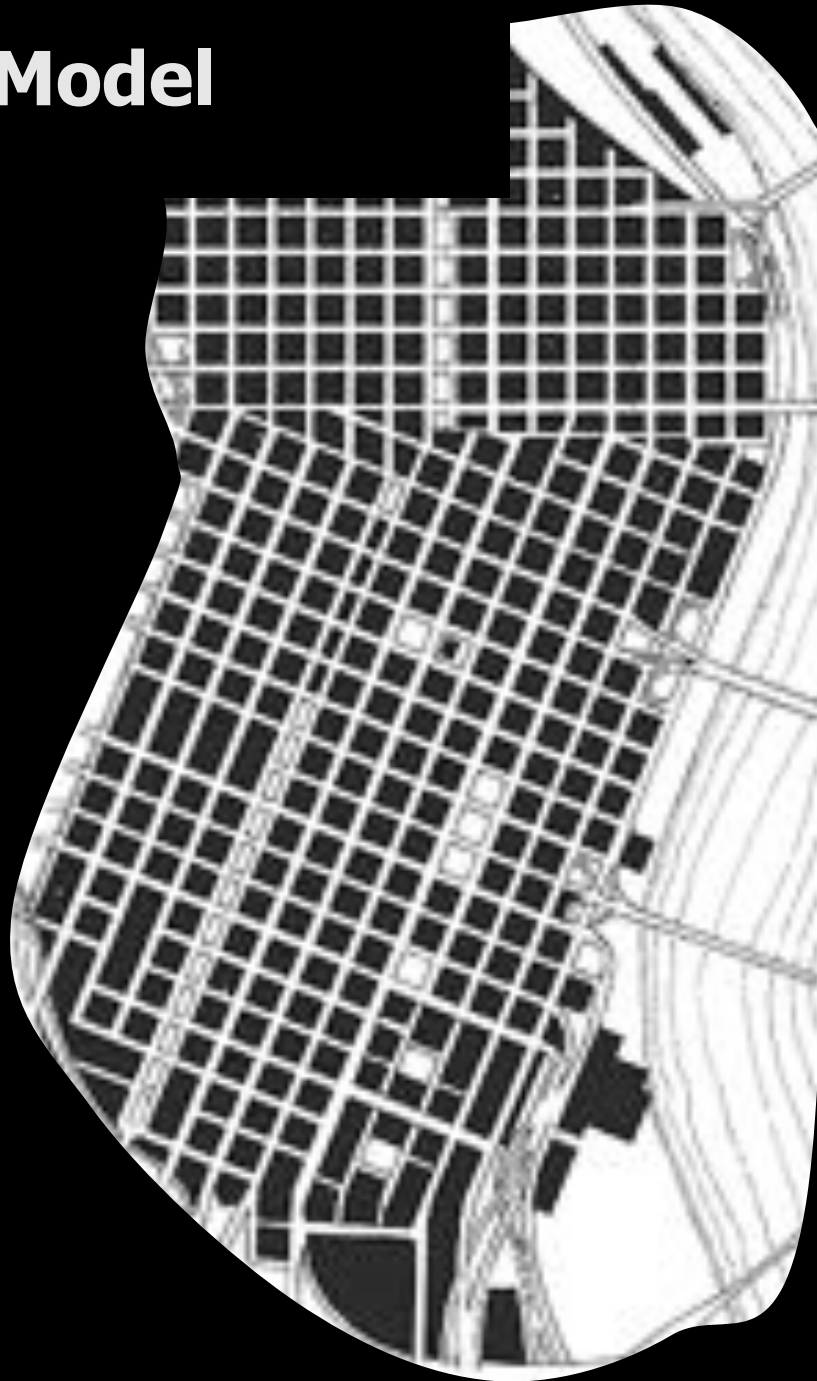
- AV fares cheaper than most transit fares for most trips
- AVs faster except at peak where transit has dedicated right of way
- Complete loss of off-peak and reverse peak revenue
- Transit agencies will seek to preserve operator jobs until retiree healthcare requires agency bankruptcy
- Huge increase in congestion and loss of person capacity
- Cities respond by offering incentives to high-capacity Chariot



# Alternative Model

Streets are 25-35% of a city's area

They are its most valuable asset



# Manage the street

---

- Price congestion
- Price wasted space
- Require corporate access to public street fosters public good
- Short term:
  - Pilot urban HOV lanes
  - Autonomous BRT
  - Ensure state regs don't preempt municipal management tools





**What should cities be doing?**

# Manage the curb

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- Design standards for curbside dropoff
- Fees for curbside access
- Promote shared use
- Eliminate dropoff/bike conflicts



# Modernize parking regulations

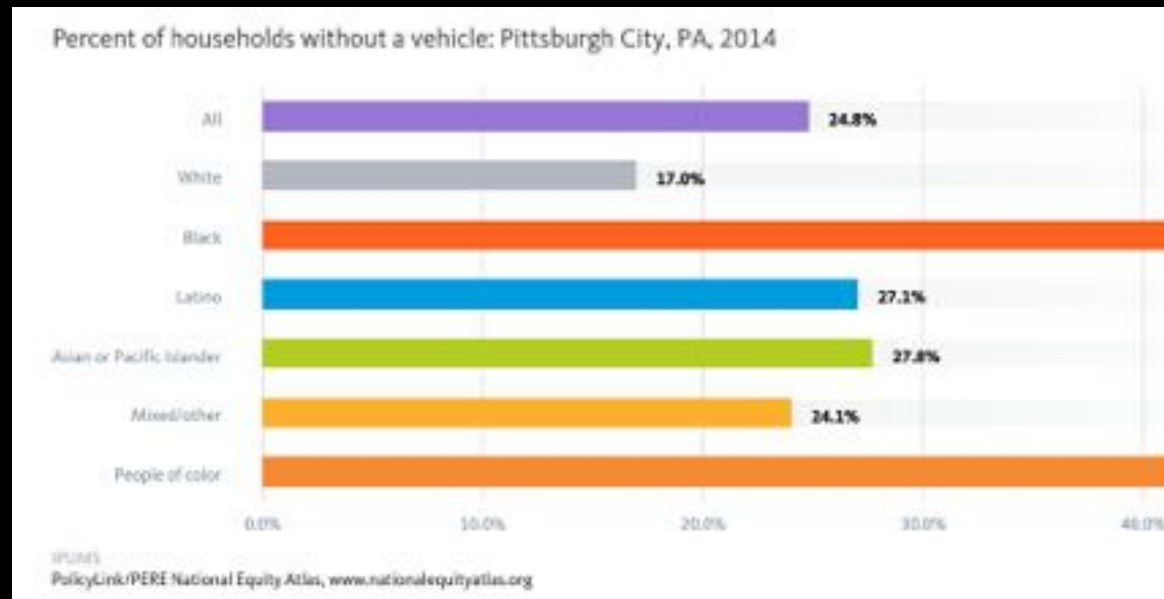
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- Price for availability
- Eliminate minimums
- Establish maximums
- Unbundle
- Share
- Promote adaptability



# Establish data protocols for public good

- Data should inform transportation system
- Barriers to flow of data between public and private sector
- Community voice as key input in data conversations
- Disaggregate data by race, income, and other demographic categories.
- Explain the problem that data will solve.





# Quantify Equity in Outcomes

---

- Research and pilot ways to measure progress in improving inequitable outcomes in access and social mobility.
- Examine all policy proposals to determine how they can advance equity.
- Involve community leaders and private sector in developing the measures and monitoring progress on them.



# Reorganize government around mobility

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- Be decisive about public transit agency survival
- Realign taxation: replace gas and parking taxes with VMT and congestion fees
- Align public right of way ownership (state, county, local) with operations
- New regional mobility authorities?



# Transit Must Lead

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- Best contexts for AVs:
  - Long haul trucking
  - Bus Rapid Transit
- Cities must partner with transit operators:  
Dedicated right of way in exchange for AV BRT, 24/7 every 2 minutes
- Begin process now to minimize any job loss





# Provide a quality future of work

---

- Autonomous vehicle technology will shift transportation job market
- Provide good wages, benefits, and protections, for people to move up the economic ladder.
- Ready current workforce to transition from old jobs to new jobs
- Next step:
  - Understand capacity of labor unions and other workforce players to support transition





# Tell better stories



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**Jeffrey Tumlin**  
**116 New Montgomery Street, Suite 500**  
**San Francisco CA 94105**  
**415-284-1544**  
**[jtumlin@nelsonnygaard.com](mailto:jtumlin@nelsonnygaard.com)**  
**[@jeffreytumlin](https://twitter.com/jeffreytumlin)**

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