THE FUTURE OF MOBILITY:
What economic trends are impacting mobility?
Transport added value fluctuates between 8 and 10 percent of GDP.

This fraction tends to fall in recessions, as car purchases are highly cyclical.

Source: National Transportation Statistics
1.7 TRILLION US DOLLARS in 2014

\[ Y = C + I + G + NX \]

\[ 1.7 \approx 1.167 + 0.284 + 0.313 + -0.113 \]

- Consumption C: households buy cars, parts, fuel, transportation services.
- Investment I: mostly firms buying vehicles
- Government purchases G: Providing roads
- Net Exports NX: surplus for aircraft overwhelmed by deficit for cars and parts
EMPLOYMENT

• Of 146 M. US workers, 6%, or 8.7 M. are transport or related. (According to National Transportation Statistics. Other sources >10% if you include more manufacturing, energy).

• 3.7 M. drivers - 1.7 heavy truck, .8 light truck, .7 bus, .25 taxi, .25 others

• 2 M. Vehicle manufacture and repair

• 2 M. Secondary support (flight attendants, postal workers, dispatchers)

• 0.32 M. Air, rail, sea

• 0.22 M. Infrastructure build and repair

• 0.48 M. Other
OTHER BASIC FACTS

- More light trucks sold than cars, but many light trucks used for passengers not freight.

- If all expenditure on new light vehicles counts as passenger, passenger transportation is much more important than freight transport.

- Passenger transportation measured in passenger miles. Freight in ton-miles.

- If you measure freight transport by tons or total expenditure, trucking is by far the largest of the freight transport industries. Measured by ton-miles, railroads bigger than trucking.

- Virtually all for-hire intercity passenger transportation is by air, though measured in passenger miles, private auto transport is many times larger.

- International transportation is not easily measured by ton-miles or passenger miles so is measured in total tons, total containers (TEUs), or total expenditure.
Passenger miles p.c. peaked in 04 and has been falling. No consensus on why.

- Passenger miles per person varies with the price of driving, especially gasoline.
- Car sales sensitive to interest rates. Fuel price affects type of vehicles sold more than total number.
- Expenditure on moving freight has been falling as a percentage of GDP and is now a little under 4%.
- This is due to relative decline of iron and steel compared to electrical machinery as an element of national income.
**Vehicle Sharing**

- Professor Ken Boyer: Salient characteristic of transport economics is that average cost per mile is several times marginal cost per mile. Reason: non-use-based depreciation. Cars also lose value while not driven. If households no longer owned vehicles, marginal and average cost of driving would converge to higher price.

- Vehicles might increasingly be hired by the hour rather than bought outright by households. Uber has the ambition of reducing vehicle ownership per person in favor of for-hire services.

- Related trend: people aged 16-26 so are driving fewer miles and owning many fewer cars than their parents did. Want to live in environments that do not favor driving. Whether this is a passing fad or a new normal is unclear.
Upcoming Technologies

- Driverless car: Potential to be highly disruptive.
  - Increase productivity, frees up many hours
  - Increases mobility of seniors
  - Could easily eliminate 2 Million jobs, mostly long distance truck drivers
    (US horses peaked in 1915 at 26 M., now less than 10 M.)

- Cloud-based B2B services – less need to move computing equipment

- 3-d printing – could reduce need to move freight.

- Video conferencing, virtual reality – will business travel and tourism become obsolete? Might reduce, but not eliminate.