Improving Public Highway Infrastructure

Clifford Winston
Brookings Institution
Importance of Highways in the Context of US Transport Spending

• Total pecuniary annual spending by firms and consumers on transport is $2.1 trillion

• Annual expenditures in time (freight and travelers) $3 trillion

• Government annual spending on infrastructure $0.26 trillion
Importance of the Highway Capital Stock

- Highways carry roughly 90 percent of work trips and a similar share of non-work trips
- Highways (auto and bus) carry nearly 75 percent of intercity trips
- Highways carry roughly one-third of freight traffic (truck and intermodal)

- The value of the highway capital stock is nearly $3 trillion
Highway Performance Affects Other Sectors of the Economy

- Labor Markets—job matching, employment, and wages
- International Trade—trade costs, product variety
- Industry Competition and Efficiency—scale and scope economies
- Agglomeration Economies in Metropolitan areas
My Perspective

- Highways are marked by vast inefficiencies that generate huge costs
- Those inefficiencies are attributable to inefficient microeconomic public policies
- Government has a status quo bias and does not reform its highway policies—can the private sector help?
  - Privatization
  - Innovating technology that public sector can use
  - Innovation in modes that use the infrastructure
Highway Inefficiencies

- Growing delays and congestion that increase operating costs and travel time
- Budget deficits now occur
- Those are symptoms of:
  - Mispricing—prices don’t reflect costs
  - Suboptimal investment—cost-benefit not used
  - Inflated productions costs—regulations raise labor and capital costs
  - Slow implementation of technological innovations
Inefficiencies (continued)

- The potential gains from efficient policies are large and well documented in the empirical literature—for example, congestion pricing for all vehicles and axle-weight pricing for trucks.
- Policymakers ignore calls for efficient reforms and seek to raise revenue and spend their way out of the problems.
- Periodic proposals of multiyear highway spending programs do not address critical inefficiencies and are not a sustainable strategy.
Privatization of Infrastructure

- Theory indicates success depends on market power of private firms, their incentives, and whether consumers can exert competitive pressure.

- Evidence on the effects of privatization in different parts of the world is mixed

- Evidence in the US is basically non-existent; simulations indicate possible positive scenarios

- Experiments are crucial for any resolution
Private Sector Innovations to Improve Infrastructure

- General purpose technologies such as GPS navigation services and specific technologies such as Weigh in Motion could be used to improve road pricing, investment, and safety.
- Motorists use such services to improve route choice.
- Highway capacity could be expanded by increasing the number of lanes during peak periods.
- Authorities are impeding technical change by not implementing recent innovations.
Innovations in Highway Transportation

- Highway transportation modes have improved their performance and safety regardless of the state of their infrastructure.

- Consider the vast improvements in automobiles since their introduction. Buses have also become a much more attractive mode.

- But highways have basically remained the same.
A New Innovation: Autonomous Vehicles

- Autonomous Vehicles: operated by computers have the potential to prevent collisions and reduce delays by creating a smoother traffic flow. Estimates of the benefits depend on market penetration—50% penetration yields annual benefits of $200 billion.

- Virtually all automakers and Google are developing and testing an autonomous vehicle.

- Issues are liability and safety regulations, which should be addressed promptly.
Final Comments

- Modes have led infrastructure—cars were introduced and entrepreneurs built private roads

- Public takeover of infrastructure will continue to be debated but the inefficiencies from public policies cannot be denied nor will they be addressed in the foreseeable future.

- Private sector’s best opportunity to help is through modal innovations—highway infrastructure performance may then improve