Challenge  Meet NEEDS within CONSTRAINTS while minimizing IMPACTS

Needs = ?  Accessibility vs. mobility, volume vs. demand
Constraints = ?  Financial, spatial, temporal, political,
Impacts = ?  Efficiency, environment, equity, safety

Impacts

Individual vs. societal
Present vs. future

Efficiency Recap
Challenge:  enough capacity for peaks vs. unused capacity during off peak
Congestion =  Volume/Capacity >0.77
  Speed < free flow
  Delay > standards
  LOS D, E, or F
Issues:  recurring vs. non-recurring; perception vs. reality; subjective assessment of what
is acceptable

Environment Recap
Energy:  Fossil fuel dependence: economy, defense, environment
  Contributing factors: low prices, fuel efficiency, driving styles
Air quality:  National Ambient Air Quality Standards (NAAQs): health basis
  Contributing factors: technology, operations, weather/topography
Others:  water quality, solid waste, noise, aesthetics, barrier effect, road ecology
Sprawl:  To what degree does road building lead to sprawl?
    To what degree does sprawl lead to more driving?

Equity
Equity of benefits – services:  transportation disadvantaged
Equity of costs – impacts:
  Monetary:  users pay, ability to pay
  Non-monetary:  environmental justice

Safety
Contributing factors:  drivers, vehicles, roads, speed limits, conditions

Unifying themes?
At what scale are these issues addressed? Mandate vs. implementation

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History

3 Rules that guide history of urban transportation
1. Innovation – speed – sprawl: higher speeds mean greater distances in same time
2. Accessibility – development: development goes where accessibility is highest
3. Innovation - expansion: direction of causality not straight forward

Eras
Rise of Transit: 1825 to 1900
Rise of Automobile: 1900 to now
Fall of Transit: 1920 to 1950s

Transit innovations: omnibus, steam train, horsecar, electric streetcar, cable car, mass transit, motor bus, trolley bus, rapid transit

Streetcar ironies
- Irony 1: Great success was also the beginning of the demise
- Irony 2: Private industry but really a subsidy from investors to general public
- Irony 3: Poor management led to dramatic and lasting change in form of cities

Streetcar demise
- GM conspiracy?
- Public choice?

Why public investments in roads but not transit
- Seen as quick and cheap in contrast to long-term investments in fixed-rail transit
- Highways served both public and private transportation
- More in American tradition of individualism
- Seemingly paid for by gas and tire taxes

Next: History of federal transportation policy