Area-Wide Road Pricing Research in Minnesota

Transportation Research Forum,
2006 Annual Forum, New York University

Kenneth R. Buckeye, AICP
Project Manager
Office of Investment Management
Minnesota Department of Transportation

Background

- Mileage-Based Tax Study
- A New Approach to Road User Charges
- Pay-As-You-Drive

Mileage-Based Tax Study

- 1994 Legislature asks Mn/DOT to conduct a mileage-based tax (MBT) study
- Assumed low cost, odometer or smart road technology
- Driving forces
  - Increasing efficiency of fleet
  - Alternative fuels
  - Tax avoidance / loss
  - Per-mile use charge may be a better instrument

Mileage-Based Tax Study Conclusions

- Technically feasible, but difficult to implement
- Not cost effective for a single state to implement
- Equity concerns
- Big brother / monitoring
- ITS-GPS technology holds promise
- National effort should be undertaken

A New Approach to Assessing Road User Charges

- Institutional issues
- Technical issues
- Pooled fund solicitation
  - 15 states
  - FHWA

New Approach Participants

- California
- Connecticut
- Iowa
- Kansas
- Michigan
- Minnesota
- Missouri
- N. Carolina
- Ohio
- Oregon
- Texas
- S. Carolina
- Utah
- Washington
- Wisconsin
- FHWA

A New Approach…, Driving Forces

- Transportation Funding
  - Adequacy of the existing user fees/taxes
  - Value pricing applications
  - Emerging alternative fueled vehicles
- Technology, smart vehicle
  - GPS
  - GIS
  - Onboard computers

A New Approach…, Conclusions

- No significant legal or institutional impediments
- Privacy can be protected
- VMT charges may have advantages over current road user fee system
- Smart vehicle ITS technologies seem most viable for area-wide applications
- Trade-offs that must be evaluated and monitored
- Technologies are available but expensive

Pay-As-You-Drive (PAYD) Driving Forces

- The majority of costs for owning and operating personal vehicles are *fixed*, and independent of miles traveled, facility used, or time of day in which travel occurs.
- Variable costs, those incurred for each increment of travel, are small and mostly hidden from the owner or operator.
- Fixed costs or fees such as age-based vehicle depreciation, lease payments, registration, and insurance, are paid by the vehicle owner or operator regardless of how much the vehicle is driven.
- Vehicle owners/operators have little price incentive to drive vehicles less or consider other modes because fixed fees or costs are unrelated to mileage.

PAYD Project Objectives

- Simulate the replacement of *fixed costs* of vehicle ownership and operation with *variable costs* that give drivers explicit price signals
- Examine price elasticities and how they vary by vehicle ownership/lease agreement, VMT, household income, etc.
- Evaluate driver acceptance of mileage-based fees and appropriate price signals necessary to affect travel behavior
- Identify strategies and recommendations to mainstream or institutionalize policies or techniques learned

PAYD Research Approach

- Partnership
- Market Research
  - Focus groups
  - Stated preference survey
  - Recruitment
- Demonstration
- Evaluation

PAYD Market Conclusions

- Some market niche groups have moderate to high interest in concept, similar to the focus group findings
- Driving study will tell us whether or not people are willing to change or reduce their driving behavior given price signals
  - Data indicates some behavioral changes
  - Easy to change behavior for a couple of weeks: experiment will reveal if it is done over a period of several months
  - Extent of car swapping is not yet clear
- Exit survey will tell us about ability to continue modified behavior over longer periods

CarChip EX / Davis Instruments

- Plugs in to OBD II port
- Records trip start and end times and mileage for up to 100 days
- Can also record up to four engine parameters
- Offload data using serial cable
- Cost: $179

PAYD Lessons Learned

- PAYD insurance is viewed more favorably (25% of SP survey respondents) than leasing (16%)
  - Insurance products are already regulated by the government
- PAYD products must be targeted to niche markets
  - Up to 25% of marketplace might be interested
  - Among vehicle leasers, 50-75% might be interested
  - Only about 6% of vehicles are leased today
- CarChip technology worked
- Elasticities not clearly discernable
- Mainstreaming concepts will require government push or incentives

Observations

- Motor fuel tax is a good tax…, but it is becoming an anachronism
- We can't turn the clock back on technology…, we can do better
- There is nothing inherently unfair about VMT charges
- We must take the long view
- Incremental implementation

Next Steps

- Complete PAYD project
- Administration support for VMT charges
- Future projects
- Market opportunities

Questions?

Thank you.

kenneth.buckeye@dot.state.mn.us