Traffic Choices Study

Findings from a Road Pricing Experiment

Second Annual Symposium on Mileage-Based User Fees
April 20, 2010
Minneapolis, MN

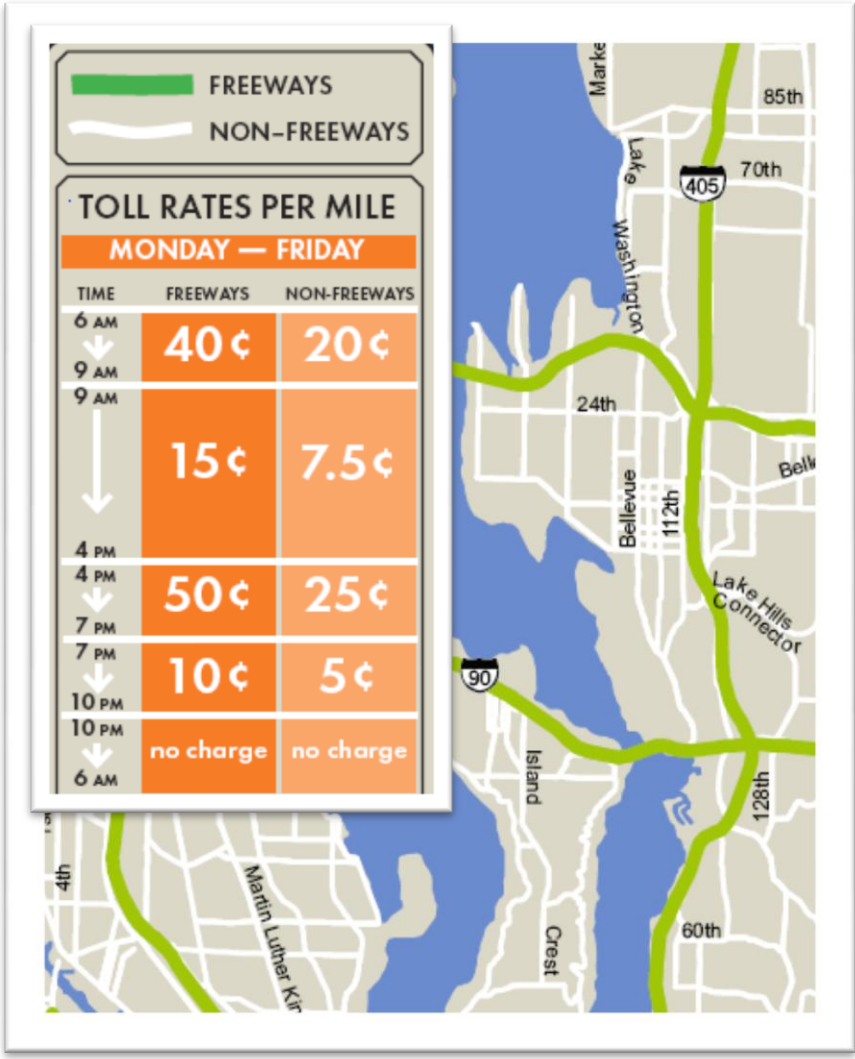
Project Background

Traffic Choices Study

- **Detailed analysis of road user choice and behavior under a broad and sustained tolling experiment**
  - Tolling on all major roads
  - Tolls based on time of day and type of road
  - True price incentive with hold harmless design

- **Development and proofing of tolling technical applications and systems design**
  - In-vehicle GPS-based tolling
  - Cellular communicating to central system
  - Large-scale operational test showing the feasibility of network-wide tolling

- **A pilot for understanding key policy variables and requirements**



Participant-Centered Project

- 275+ households; 400+ vehicles
- Randomly selected from an enriched pool of potential participant households
- Each household was provided a unique travel endowment account, based on their baseline travel behavior
- Tolls were levied against this endowment account
- At the end of the tolling period participants were given any remaining account balance

Project Operations

- 450 OBU installations and removals
- System fully operational for over 18 months
- Over 270 participating households
  - Up to 18 months of trip records per household
- Hundreds of customer service calls
- Over 4,000 invoices distributed
- Over 100,000 device to central system transactions
- Over 750,000 individual trip records
- Household surveys and focus groups

Public Acceptance

Highway Finance – Key Factors in Public Acceptability

1. Relationship between fee and cost responsibility (who pays)
2. Relationship between fee and investment policy (who benefits)
3. Administrative burden (efficiency)
4. Intrusiveness (privacy)

A central question in public acceptability will be whether there is an opportunity to significantly "improve" enough factors, while keeping others from getting significantly "worse".

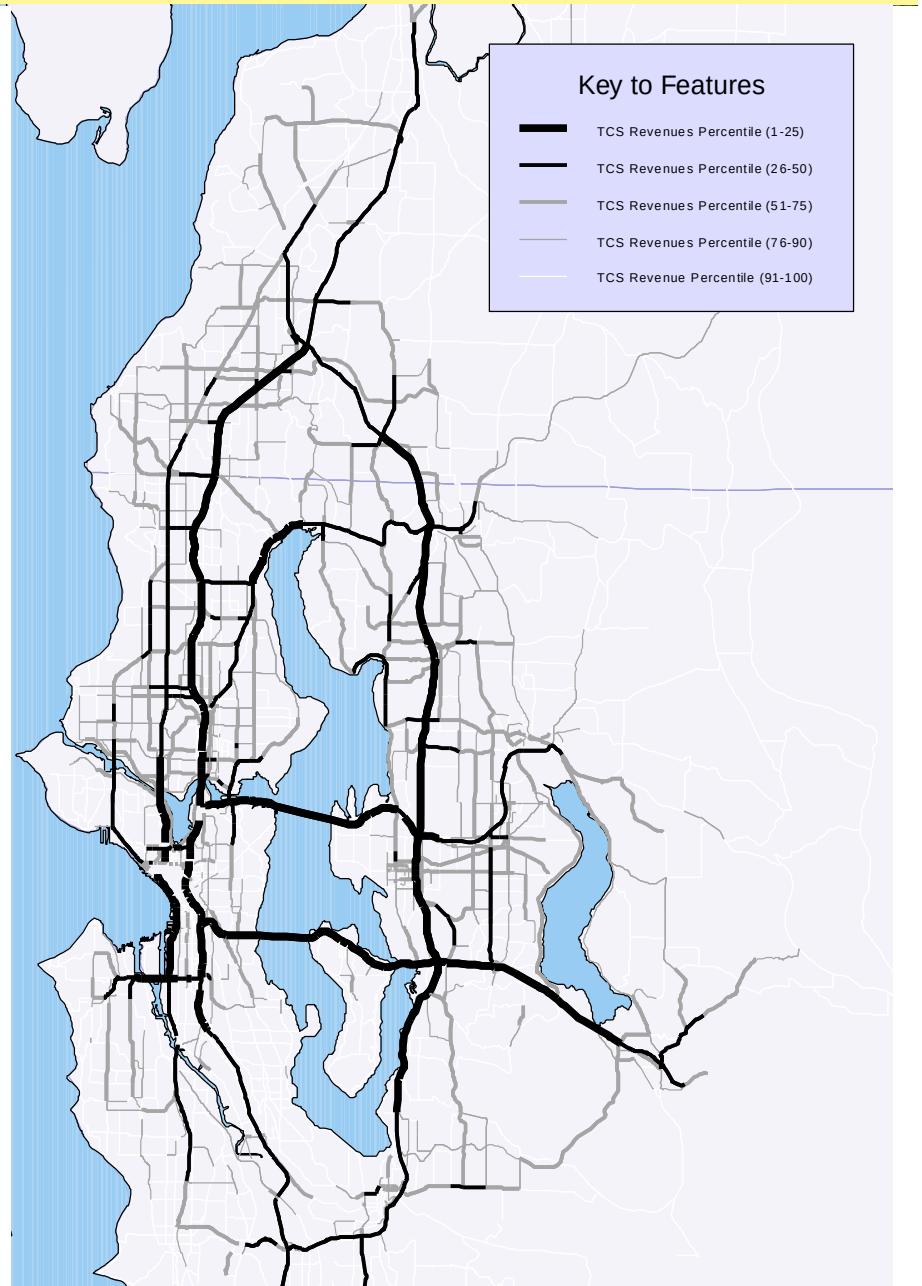
What we don't know is what weight the public places on each of the above factors

1. Who Pays

Current Highway Finance	Variable Fees
• Low charge on every mile regardless of burden placed on the system • Polluters pay more at the margin • Those who burden capacity do not carry their weight	• **Charges vary by use of the system (time and place)** • **Polluters may or may not pay more** • **Those who burden capacity (and necessitate investment) pay the most**

Toll Revenues On the Road Network

- 5% of centerline miles produced 50% of toll revenues
- Next 50% of revenues spread broadly across the core urban network
- 25% of the centerline miles produced less than 1% of total revenues



2. Who Benefits

Current Highway Finance	Variable Fees
• Revenue generated from users insufficient to finance system improvements • Underpricing of some road segments results in congestion • Demand for high-occupancy services is undercut • Funded projects are those with political capital – cross subsidy is the norm	• **Revenues match requirements** • **Reoccurring congestion is only a memory** • **High-occupancy services are in higher demand – improving their bottom line** • **Capacity expansion is self-financing**

Benefits and Costs of Network Road Tolling

Present Value Benefits/Costs	Millions of 2008 Dollars
Benefits	
Time Savings	$36,600
Reliability Benefits	$4,500
Operating Cost Savings	$2,500
Toll Effects on Consumer Surplus	-$97,100
System Operator Benefits (Tolls)	$87,000
Present Value of Benefits	$33,600
Costs	
OBU Costs	$1,500
Enforcement	$100
Central System	$500
Data Communication	$3,300
Other	$100
Present Value of Costs	$5,500
Present Value of Benefits less Costs	**$28,200**
Benefit-to-Cost Ratio	**6.1**

3. Efficiency

Current Highway Finance	Variable Fees
• Total system efficiency is poor due to mispricing of assets • Administrative efficiency is very good but declines under any approach to fuel tax replacement • Some general public dissatisfaction over how funds are administered (we don't trust government)	• **Correct pricing of assets improves economic returns** • **Administration of charges is more complex and costly** • **Potential for larger public programs, enlarging public role in the "market"** • **Tying investments directly to revenues (limited cross subsidy) could improve public trust**

Estimating Revenue Potential

Gross proceeds from variable network tolls (not necessarily optimal toll rates):

$2.8 - $3.2 billion per year

Region's share of State fuel tax proceeds:

$500 million per year

Costs for a fuel tax collection system

- Initialization Costs = NA
- Operations = 1% of proceeds

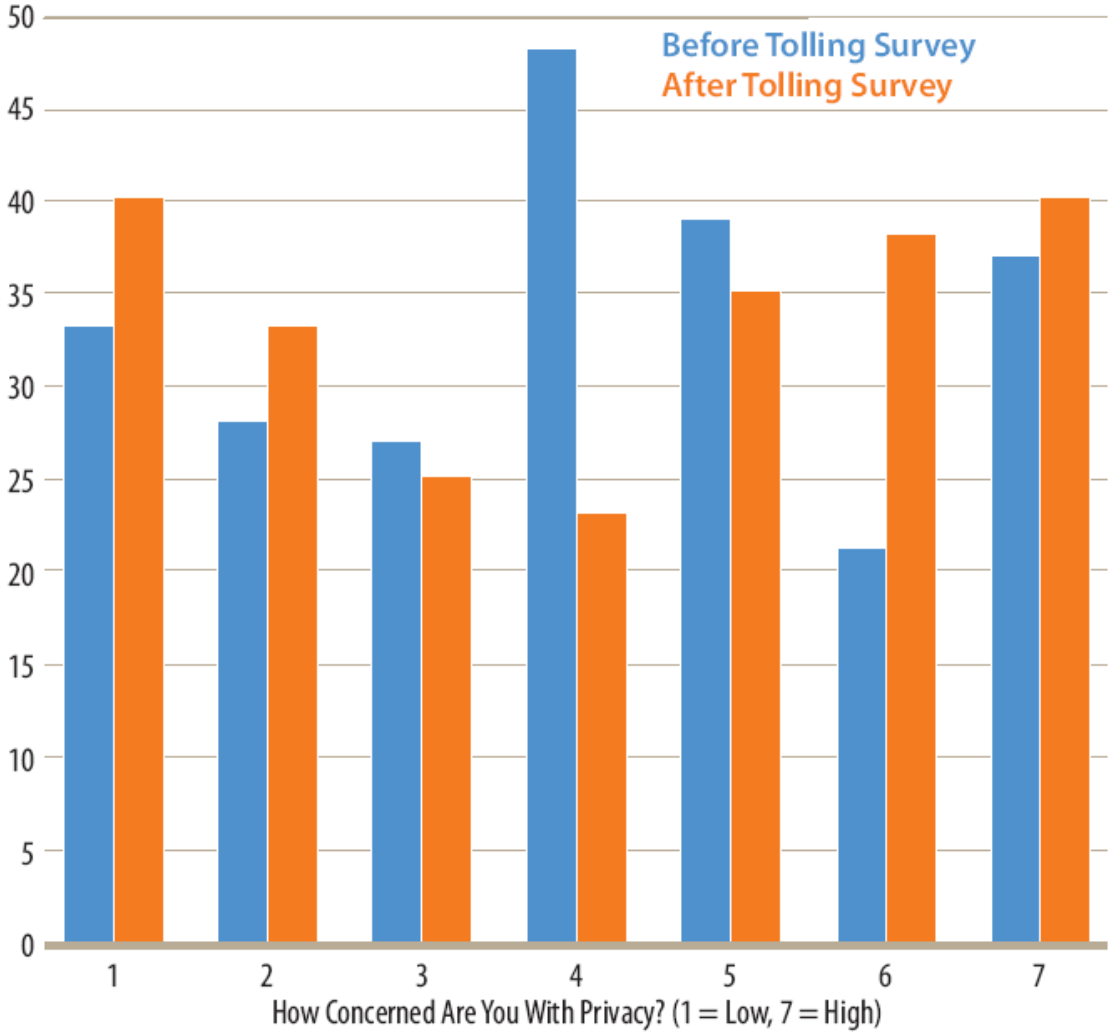
Costs for a network tolling system, (based on cost model)

- Initialization Costs = $750 million
- Operations = 5-8% of proceeds

4. Privacy

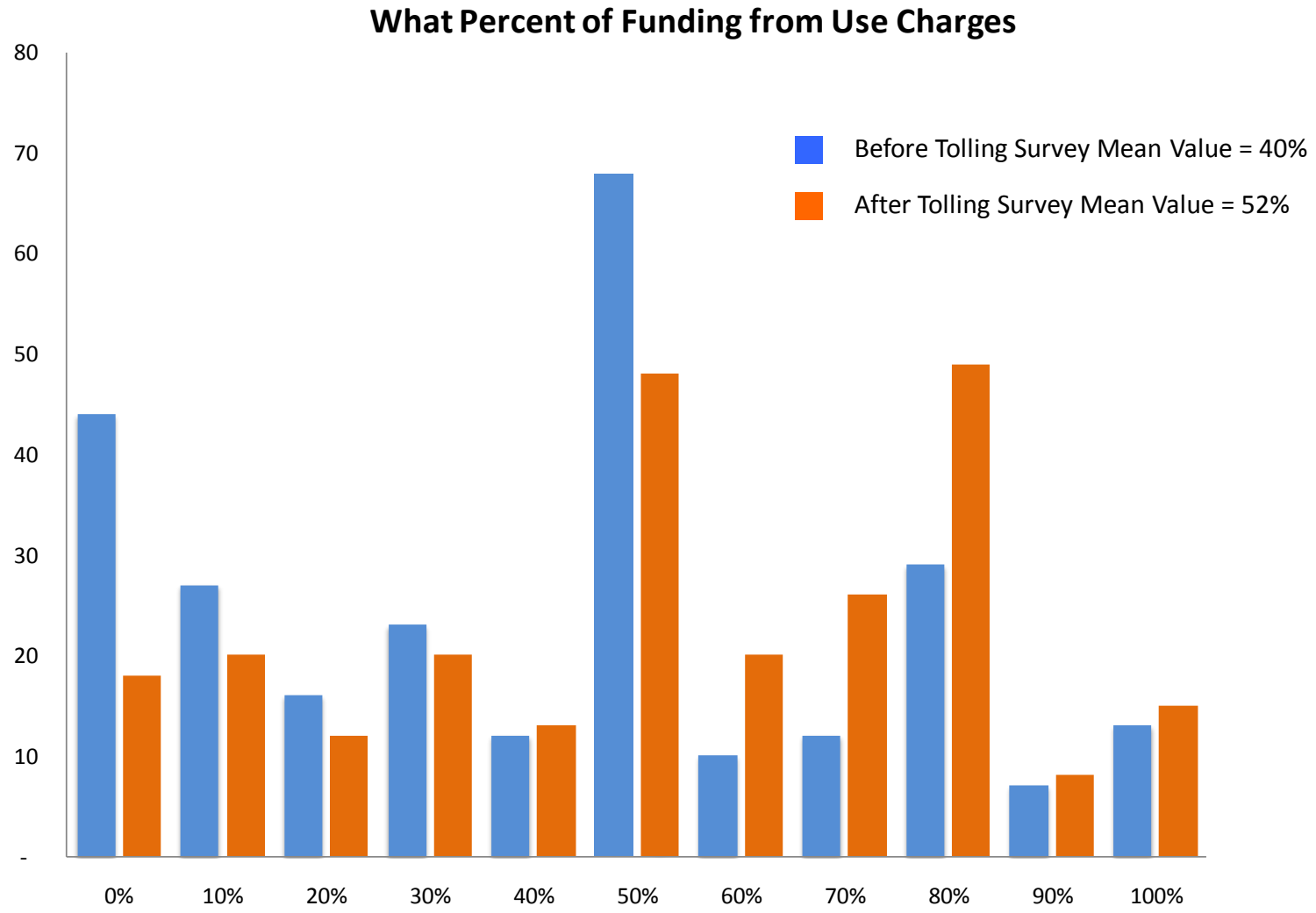
Current Highway Finance	Variable Fees
• Non-invasive technology and procedures • Simple fuel tax replacement can probably address privacy in a an "acceptable" manner • Is there privacy in a public space? People perceive the answer to be "yes"	• **Requires identification of vehicle location in time and space** • **Lots of misinformation about technology and approaches** • **For now – perception is reality**

Participant Opinions About Privacy



Summary

Participant Opinions on Finance



A Cautionary Tale or a Road Map?

- Current road finance policy is wasteful. Waste is bad.
- Variable fees provide an opportunity to make things better (improved cost responsibility and financial/economic returns), but at some costs (administrative complexity and invasiveness).
- And, with an improved financial position comes a greater possibility of abuse.
  - Are public monopolies with nearly "unlimited taxing authority" an improvement?
  - Can public agencies resist the magnitude of the revenue opportunities?
  - Are public agencies likely to honor consumers' preferences?
  - Can some rational form of pricing survive the politics?
- Any serious proposal for change will need to answer these questions specifically and demonstrate that the benefits are greater than the costs

For more information contact:

Matthew Kitchen
Puget Sound Regional Council
206.464.6196
mkitchen@psrc.org
http://www.psrc.org/projects/trafficchoices/index.htm