Results and Opportunities Incorporating Behavioral Economics in Vehicle Use and Parking Pricing Deployments Under the Value Pricing Pilot Program

Allen Greenberg
U.S. Department of Transportation
Federal Highway Administration

Before the
2014 Behavior, Energy & Climate Change Conference
December 9, 2014
Washington, D.C.
Presentation Outline

- Transportation pricing works—examples from road use and parking pricing projects from the Federal Highway Administration’s Value Pricing Pilot Program (VPPP)
- Transportation pricing when informed by behavioral economics works even better—examples from the pricing of road use, parking, and carsharing in VPPP projects
- Transportation pricing could be even more effective if designed with behavioral economics top of mind—an optimized pay-as-you-drive insurance offering is discussed
Transportation Pricing Works: Road Use Pricing Examples

- Puget Sound Regional Council Traffic Choices Study funded by a 2002 VPPP grant
  - Installed GPS in vehicles of 275 volunteer households given a budget from which congestion-based tolls were deducted
  - Led to a 13% reduction in “tolled” travel, reflective of a -0.12 price elasticity

- VPPP-funded Oregon Road User Fee (RUF) 2006 study
  - 299 households with GPS installed in vehicles, enabling variable RUF deductions (and fuel taxes credited back) of 10 cents per mile for congested driving and 0.43 cents per mile otherwise
  - Led to a 22% reduction in congested driving

- Many HOT lanes in the U.S. work because pricing works
Transportation Pricing Works: Commuter Parking Pricing Examples

- Responding to 95% of private-sector employees receiving free parking v. 6% receiving transit benefits, equalizing benefits through parking cash out has been shown to work:
  - VPPP 2002 study of Downtown Seattle “FlexPark” cash-out program yielded a 10% reduction in driving to work
  - Eight-site Los Angeles study showed cash out to cut drive-alone commutes from 76% to 63% of total
  - Parking cash-out study in Minneapolis-St. Paul yielded an 11% reduction in driving to work
Transportation Pricing Works: Street Parking Pricing Examples

- Responding to research showing 30% of city traffic on average results from motorists circling for underpriced parking, street parking pricing has been deployed:
  - Successful projects with SFpark, LA Express Park, goBerkeley (all three supported with VPPP funding), and the lower-tech Seattle parking pricing
  - Using pricing and technology (including occupancy sensors) to manage towards parking availability targets; more prices go down than up, but higher prices occur with higher occupancy causing meter revenue to rise (offset by lower enforcement revenue)
  - Substantially expanded price/convenience options
  - Major Federal study of SFpark shows a 27% cut in weekday cruising miles
Transportation Pricing + Behavioral Econ Works Better: Road Use Pricing Examples

- Comparing various VPPP-funded tests of priced dynamic ridesharing (which is similar to ride-sourcing offered from Uber and Lyft, except that the rider-to-driver payment is much smaller and only defers driving costs), the addition of a toll discount of up to only $0.70 for picking up one passenger on Texas Hwy 183A is credited with over 25% of app users regularly engaging in carpooling, which is many times higher than with other pilots missing this one incentive.

- Stanford University’s VPPP-funded Capri program combines an incentive with a very small expected value (10 cents per trip) and behavioral economics techniques to encourage commuters to shift out of peak travel times.
Capri leads to shifts in automobile commute times

- Capri commuters shifted from peak hours (gray) to shoulder hours (adjacent)

Source: Stanford University
Transportation Pricing + Behavioral Econ Works Better: Parking Pricing Examples

- Minneapolis PayGo Flex-Pass (giving employees a $7 rebate from monthly parking charges on days they did not park and a $2 rebate on days they used transit instead of parking) reduced driving days from 78.5% with traditional paid monthly parking to 59.8% with Flex-Pass.

- Stanford University’s Capri will be testing a daily parking incentive to encourage shifts to more remote parking facilities especially on days that close-in facilities are in highest demand.

- Market-rate parking pricing facilitates desired housing market response—unbundled parking w/on-site carsharing in Bay Area > 0.76 vehicles per unit v. 1.03-1.13.

- Parking pricing can include congestion pricing elements (e.g., SFpark $2 peak-shoulder garage entrance/exit discount; Chicago considered additional parking tax for peak-period entrance/exit).
Parking Pricing Behavioral Economics “Gem”

Who says your city is trying to rip you off?

Source: City of Los Angeles
Transportation Pricing + Behavioral Econ Works Better: Carsharing Examples

- By combining fully variable vehicle-use pricing with the opportunity to shed personal household vehicles, a VPPP-funded study of San Francisco City CarShare showed 29% sold a vehicle and over 60% forgoed purchasing one, with a 38% reduction in member vehicle-miles traveled (VMT) in the intermediate term growing to 67% over the longer term.

- A follow-on VPPP-funded City CarShare pilot is to test the effects of co-locating electric-assist bicycles and bicycle trailers with cars (priced at 50-70% less than cars) to see if this further curtails VMT.

- A VPPP-funded study in Portland, OR, of Getaround peer-to-peer carsharing, where personal vehicles are made available for neighbors to rent by the hour, showed that higher incentives ($300) for vehicle owners to aggressively start renting out their cars was no more effective than lower incentives ($200).
Transportation Pricing + Behavioral Econ Optimized: Insurance Pricing Example

- Pay-as-you-drive Insurance (PAYDI) has, without behavioral economics enhancements, been projected by a major Brookings Institution study to reduce driving by 8%.

- FHWA has been reaching out to State DOTs and to insurance companies—most recently in a Nov. 19, 2014 solicitation—to perform a before-after study of PAYDI, and has separately outlined how such a study could use behavioral economics to guide market segmentation, improve messaging, and yield greater driving reductions.
PAYDI: Using Behavioral Economics for Target Marketing

- Low mileage
- High premiums
- Low income
- Urban
- Environmentalists
- Carpoolers, non-car commuters, and teleworkers
PAYDI: Using Behavioral Economics for Messaging

- Emphasize likely total savings
- Cap the maximum monthly bills
- Provide individualized price comparisons
- Appeal to personal values
- Bundle a small number of free miles of insurance with transit passes
- Sell in small price buckets (e.g., $49 or $99)
PAYDI: Using Behavioral Economics to Minimize Driving

- Direct and transparent per-mile or per-minute-of-driving pricing—avoid rebates
- In-vehicle graphic displays of “insurance pricing meter” with e-mail and Web summaries
- Frequent billing without automatic bill payment
- Transit pass discounts (instead of bundling with a few free miles of insurance)
- Individualized assistance to identify alternatives
- “Regret lotteries” and peer comparisons to encourage continuous mileage reductions
Common Lessons about Behavioral Economics from VPPP

- Transportation pricing works, even putting aside behavioral economics
- Driving reductions can be triggered at much lower pricing levels if behavioral economics techniques are deployed
- The biggest benefits with transportation pricing come when individuals are encouraged to make lifestyle changes (e.g., shedding personal vehicles, engaging apps when making travel choices, accepting usage-based pricing)
Thank you!

- Allen Greenberg
  U.S. Department of Transportation
  Federal Highway Administration
  Congestion Management and Pricing Team
  1200 New Jersey Ave., SE
  HOTM-1, Mail Stop E-84-402
  Washington, DC 20590
  (202) 366-2425 (ph)
  Allen.Greenberg@dot.gov