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

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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

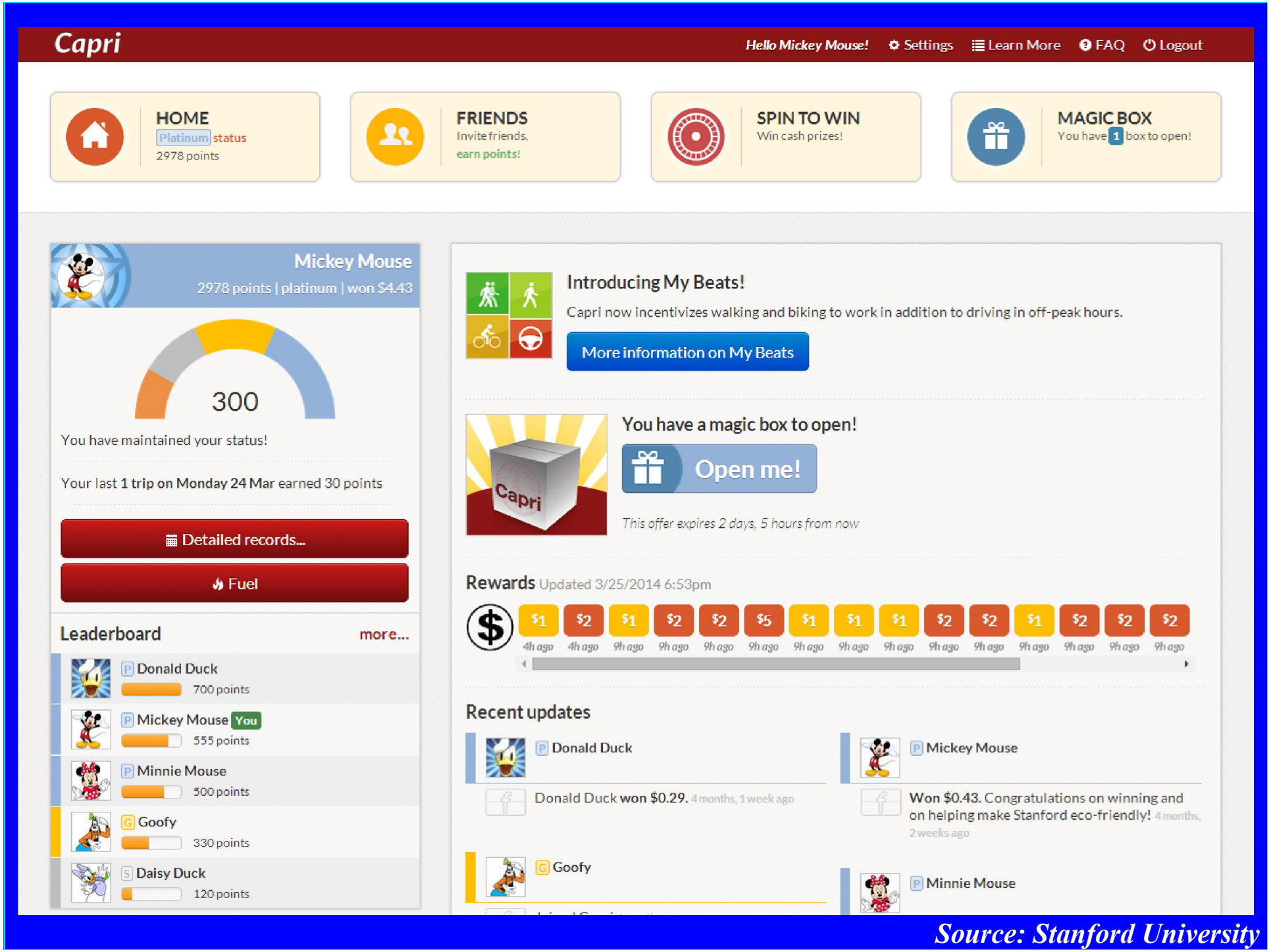
- Responding to 95% of private-sector employees receiving free parking v. 6% receiving transit benefits, equalizing benefits through parking cash out has been shown to work:
  - VPPP 2002 study of Downtown Seattle "FlexPark" cash-out program yielded a 10% reduction in driving to work
  - Eight-site Los 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

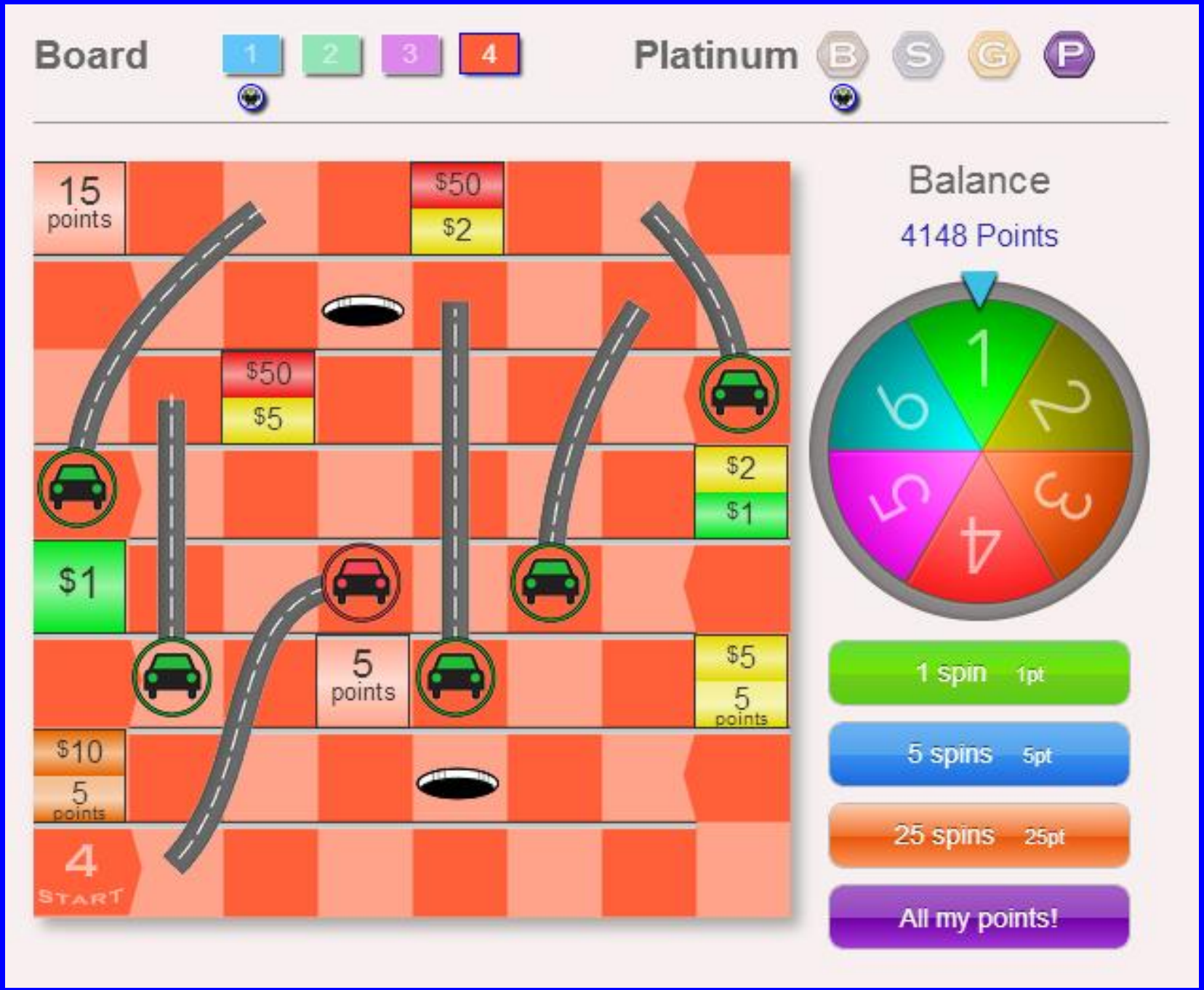
- Responding to research showing 30% of city traffic on average results from motorists circling for underpriced parking, street parking pricing has been deployed:
  - Successful projects with SFpark, LA Express Park, goBerkeley (all three supported with VPPP funding), and the lower-tech Seattle parking 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

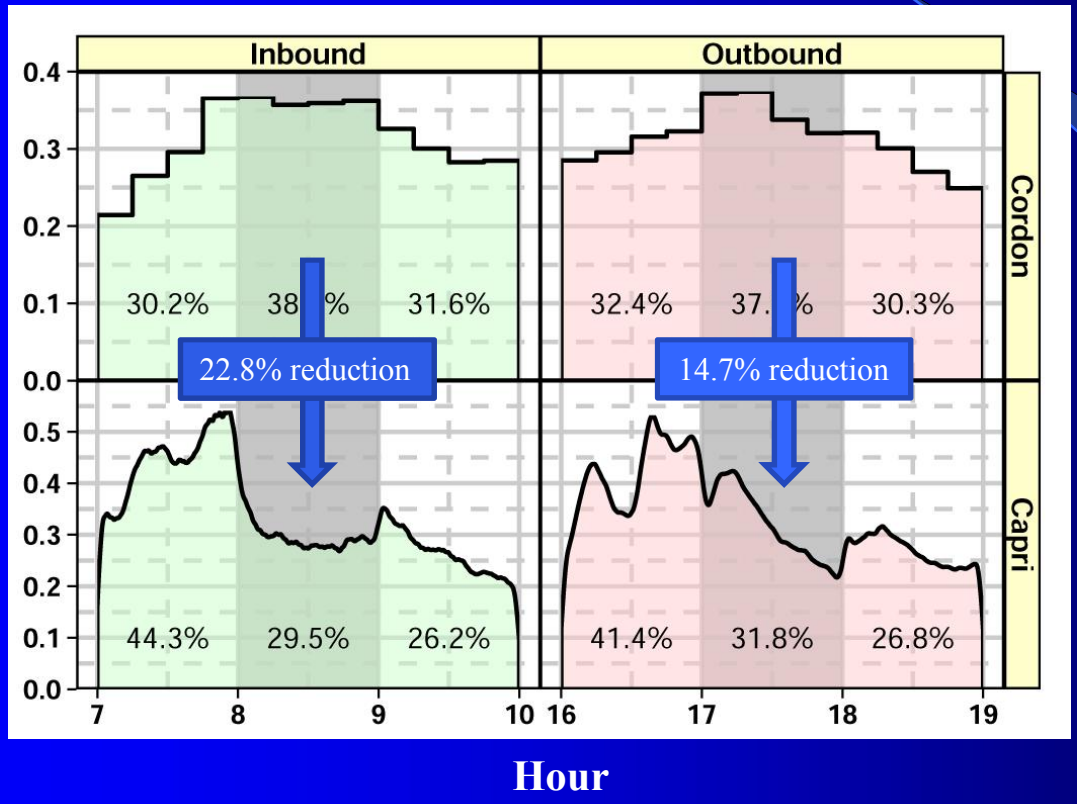


Source: Stanford University



Source: Stanford University

Capri leads to shifts in automobile commute times



All Stanford commuters, Spring / Fall 2013

Capri Participants, Apr 2, 2012 – Nov 1, 2013

- 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

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