Pay-As-You-Drive-And-You-Save Insurance

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What are PAYDAYS Pricing and PAYDAYS Insurance?

- Converting hidden and lump-sum costs of auto ownership and usage to transparent, variable costs.
- Such costs may relate to insurance, but also to parking, vehicle taxes and fees, or to the car itself through car sharing.

Why PAYDAYS Pricing?

- Most of the costs of owning and operating a vehicle are fixed.
- The financial incentive not to use personal vehicles heavily is relatively small.
- Many households, especially low-income ones, would prefer variable costs to fixed ones.
- Various studies project substantial driving reductions, public policy benefits, and consumer savings resulting from PAYDAYS pricing.

PAYDAYS Insurance Is Not a New Concept

- As early as 1929, virtues of charging for car insurance by the mile were recognized.
- Concept promoted by Nobel economist William Vickery in his 1968 work: "Automobile Accidents, Tort Law, Externalities and Insurance."

Growing Body of Research Supports PAYDAYS Pricing

- Host of mostly small instrumented vehicle studies consistently shows a strong linkage between certain driving habits and crashes.
- Actions of insurance companies also suggest actuarial underpinnings for PAYDAYS pricing.

Instrumented Vehicle Studies Support PAYDAYS Pricing

- “100-Car Naturalistic Study” in No. VA found that the 12.5% most dangerous drivers had over 100X the crash risk of the 12.5% safest drivers.
- An Israeli 103-vehicle monitoring study found that aggressive drivers were responsible for 16.6X the crash costs of the safest drivers.
- A 95-driver test of incentives to reduce speeding in Sweden led to a decline in speeding frequency from 15% to 8% of driving time.

Instrumented Vehicle Studies

Study Title	Participation	Results
How Risky Is It? An Assessment of the Relative Risk of Engaging in Potentially Unsafe Driver Behaviors	This "100-car naturalistic study" included 109 primary drivers and 132 secondary drivers of vehicles in Northern Virginia	Enormous amounts of driving data, including from video, were recorded, along with 82 crashes, 761 near crashes, and 8,295 incidences. Inappropriate passing was over-represented in crashes and near crashes by 72X its frequency, versus 3X for drowsiness and inappropriate speed. The 12.5% most dangerous drivers experienced over 100X the per-mile crashes, near crashes, and incidences as the 12.5% safest drivers.
Safety Correlation and Implications of an In-vehicle Data Recorder on Driver Behavior	This Israeli vehicle monitoring study included 103-employer owned vehicles	Based on data gathered, drivers were classified as good, intermediate or aggressive. Aggressive drivers were responsible for 16.6X the crash costs of good drivers and 8.6X the crash costs of intermediate drivers despite driving similar mileages. Merely sharing data with employees led to a 38% reduction in at-fault crashes.
Relationships Between Crash Involvement and Temporal-Spatial Driving Behavior Activity Patterns: Use of Data for Vehicles with Global Positioning Systems	This Atlanta study included 460 instrumented vehicles	Crash-involved drivers drove 36% more freeway miles, especially during the morning commute period (54% more), drove at higher speeds on all facility types and at all times, and had significantly more hard-deceleration events.
Pay-as-you-speed: Two Field Experiments on Controlling Adverse Selection and Moral Hazard in Traffic Insurance	This instrumented vehicle study included 95 drivers in Borlange, Sweden	Using financial incentives to reward safe driving speeds, speeding declined from 15% of the time to between 7 and 9% depending upon incentives.
Effects of ISA (Intelligent Speed Adaptation) on the Driving Speed of Young Volunteers: A Controlled Study of the Impact of Information and Incentives on Speed	Thirty-one drivers between the ages of 18 and 28 in North Jutland, Denmark had there vehicles instrumented	Drivers reduced their speeding as a result of being provided a 30% insurance discount for participating and losing some of that discount every time they sped (as well as being alerted by an in-vehicle unit).

Implementation Status of PAYDAYS Insurance

- Progressive I (Autograph), II (TripSense), and III (MyRate)
- GMAC Insurance
- Mile Meter
- Unigard Insurance
- Norwich Union in the U.K.
- Other foreign examples
- U.S. honorable mentions—Plymouth Rock and American Family/DriveCAM

PAYDAYS Insurance Company Offerings

Product Type	Company	Product Overview	Availability	Special Features/Comments
Straight mileage-based pricing and discounts	MileMeter	Insurance is sold in increments of 1,000 to 6,000 miles	Throughout TX	Offering true per-mile pricing, with rates specific to each policy. No vehicle monitoring, although odometer verification may be required when claims are filed.
	Plymouth Rock Assurance Corporation	Premium adjustments based upon past low mileage using public sources of vehicle-miles traveled data	Throughout MA	Policyholders are categorized into one of 144 cohort groups. Drivers in the bottom third of mileage within their cohort group have their premiums reduced by up to 40% from previous levels, while rates rise for drivers in the top third.
	GMAC Insurance	Insurance discounts based upon OnStar-verified low mileage	Most U.S. states for drivers of OnStar-equipped vehicles	Discounts of 54% for annual mileage below 2,500 and of 13% for mileage between 12,500 and 15,000.
Discounts for driver monitoring	American Family Insurance	Insurance discounts to teenage drivers in exchange for extensive monitoring by DriveCAM	While the DriveCAM program is widely available, a 10% participation discount applies only in MN and CO	Driving reports are provided to the parents and teenagers, but not to the insurance company. DriveCAM claims crash reductions of over 50%, more than offsetting the $1,000 three-year cost.
Risk-adjusted mileage-based pricing and discounts	Progressive Insurance	"MyRate" insurance discounts and surcharges are based upon mileage and driving safety; in-vehicle devise transmits relevant data to Progressive	Available now in AL, KY, LA, MD, MI, MN, MO, NJ, and OR	Discounts of up to 60% and surcharges up to 9% had been announced, but maximum discounts currently are capped at 25% and only MO drivers face a potential surcharge.
	Norwich Union	Separate products were offered for drivers from 18-23 and 24-70 years old; mileage, time-of-day, and road type data were collected by in-vehicle GPS devices and used in rate setting	These U.K. products are no longer offered	The young-driver product included a per-mile charge after using 100 "free" miles per month covered by a fixed premium, plus a 1 pound per-mile surcharge between 11 PM and 6 AM. Individual older driver usage charges varied by 11.4 times per mile, depending upon road type and time of day. Norwich Union asserted that its product led to a 30% reduction in claims.

Results of PAYDAYS Insurance

- Cuts vehicle miles traveled
- Curtails crash claims in excess of driving reductions
- Relieves congestion at a rate greatly exceeding driving reductions
- Diminishes air pollution and carbon emissions
- Lowers infrastructure costs
- Strengthens cities and lessens urban sprawl
- Provides substantial consumer savings
- Increases insurance company profits

Using Behavioral Economics to Maximize Benefits

- Target receptive customers—low mileage, high premiums, low income, urban, environmentalists, and non-car commuters.
- Market to attract customers—emphasize likely total savings, cap the maximum monthly bills, and provide individualized price comparisons.
- Encourage existing customers to limit mileage by direct and transparent per-mile pricing, transit pass discounts, and individualized technical assistance.

Targeting the Most Receptive Potential PAYDAYS Insurance Customers

Customer Attribute	Effect of Attribute on Mileage Reductions	Boosting Mileage Reductions Where Feasible
Low mileage	Would yield smaller mileage reductions than with higher-mileage drivers.	"Skimming" of profitable low-mileage drivers would in time force traditional time-based policy rates to rise and thereby expand the PAYDAYS insurance market beyond low-mileage drivers.
High premiums	Large reductions would result because of high per-mile savings.	
Low income	Because low-income drivers are the most price sensitive, large driving reductions would result.	
Urban	The relatively higher number of transportation and home-delivery options would suggest large driving reductions.	Consider subsidizing customer transit passes to encourage transit use.
Environmentalists	Large driving reductions would be expected.	Reinforce environmental benefits of reduced driving in communications.
Current transit, vanpool, carpool, and non-motorized commuters	Potential peak-period mileage reductions would be much lower than for current drive-alone commuters.	Work with Transportation Management Associations and service providers to co-market PAYDAYS insurance to both existing and potential alternative transportation customers.
Vehicle leasees	Positive effect on reductions was found in Minnesota, most likely since vehicle lessees are more accustomed than others to managing their mileage.	Work with vehicle leasing entities to allow customer rebates, reflective of increased residual value, for vehicles returned from lease with lower than allowable mileage.
Owners of multiple vehicles driven infrequently, including car collectors and do-it-yourself mechanics	Pricing of low-mileage vehicles would result in less per-vehicle mileage reductions than pricing of higher mileage vehicles. Nevertheless, households with many vehicles tend to drive more than other households, even if mileage on individual vehicles may be low.	

Marketing PAYDAYS Insurance

Product or Marketing Attribute	Effect of Attribute on Mileage Reductions	Boosting Mileage Reductions Where Feasible
Default option (but with traditional time-based policy readily available)	Has the potential to boost participation substantially if company already has a large customer-base.	
Simple pricing (but algorithm to determine a policyholder's price need not be)	Unknown.	
Savings	Customers who continue to focus on overall premium savings after switching to PAYDAYS insurance would be less motivated to reduce mileage than those focusing on per-mile costs.	After customers switch to PAYDAYS insurance, immediately refocus communications to emphasize cost per mile. When marketing policy renewal, focus back onto total savings.
Control over total premiums	There should be some positive effect.	
Low premium payments with some timing discretion	Unknown.	
Cap maximum premium billed	While this may be critical to some to accept PAYDAYS insurance, it reduces disincentives for high mileage.	Charges in excess of cap need not generally be forgiven but rather rolled over into subsequent bills until paid off.
Promise to compare after-the-fact costs with traditional premium	Unknown, but consumers are willing to take greater financial risks (e.g., accepting a new insurance product) if they know they will see a later cost comparison with the alternative not chosen.	
Societal benefits (model after hybrid car marketing)	Some additional reductions among environmentalists and other socially conscious customers may occur.	

Maximizing Mileage Reductions Across Customers

Strategy	Effect on Customer Acceptance	Improving Customer Acceptance Where Feasible
Direct and transparent per-mile charges (no rebates or requirements to purchase miles in large use-or-lose bundles)	Customers would sometimes like to forget about their per-mile costs and might be reluctant to accept a PAYDAYS insurance product with these price-related attributes.	Avoid focusing on per-mile charges until after customer has chosen PAYDAYS insurance. Refocus to total savings and away from per-mile pricing when seeking policy renewal.
Frequent billing emphasizing tangible (check or even cash) as opposed to less tangible (credit card) payment forms		
Reinforce pricing through e-mail reminders and taxi-like in-vehicle meters.		
Negotiate transit pass discounts and matching funds to buy down prices of alternative transportation modes.	Would be very popular, especially in urban and other areas with good transit options.	Engage in joint marketing campaigns with transit providers (e.g., “Wouldn’t it be great if your insurance company helped pay for your transit trips? Now it might!”)
Provide individualized assistance to customers to reduce mileage by identifying alternative transportation, trip consolidation, and trip elimination (e.g., through Internet shopping) options.	Would be positively construed generally and potentially very useful to some.	

Existing Supporting Programs and Incentives

- Value Pricing Pilot Program ($3M annual set-aside for non-toll pricing projects through FY09)
- Congestion Mitigation and Air Quality Improvement (CMAQ) Program
- Eligibility under other highway and transit programs
- $1 million in tax credits for PAYDAYS insurance is available in Oregon

New PAYDAYS Incentives

- Created a hypothetical government program providing payments or tax credits equal to 10% of the value of new PAYDAYS pricing.
  - Compared against other government programs designed to build infrastructure and to reduce air emissions and fatalities.
  - Shown to be far more cost effective than the average Federal transportation emissions reduction program (CMAQ) expenditure and to the cost of providing new infrastructure.
  - Cost effective fatality reductions were also demonstrated.
- Examined Federal fuel economy rulemakings for calculation of public costs and benefits of driving miles to establish economically appropriate PAYDAYS incentives.

PAYDAYS Benefits Comparisons[1]

		Program or Policy Effectiveness	PAYDAYS Effectiveness	PAYDAYS Effectiveness w/ 50% Allocation[2]
Environment ($ per ton)				
	Congestion Mitigation and Air Quality Improvement Program	$66,300	**$2,700**	**$1,350**
Safety ($ per life)				
	Hazard Elimination Program	$532,188	$797,388	**$398,694**
	Rail-Highway Crossings Program	$810,618	**$797,388**	**$398,694**
	Seatbelts Incentive Grants Bonus Program	$110,836	$797,388	$398,694
	All Government Crash Costs	$495,435	$797,388	**$398,694**
Infrastructure (¢ per mile)				
	All Cost-Beneficial Improvements: 0-2.08 % VMT Growth; 2.08-2.99% VMT Growth	 3.1¢ 5.2¢	**1.65¢**	
Non-Driver Costs (¢ per mile)				
	External and Bundled Internal Costs	10-15¢	**1.65¢**	

[1] PAYDAYS benefits are presented in bold when they outperform the comparison program or concept.

[2] Since PAYDAYS provides both environmental and safety benefits, it is appropriate to attribute half of the bonus funding to each of these types of benefits when comparing the efficacy of PAYDAYS with strategies that provide either only environmental or only safety benefits.

Estimated Per-Mile Benefits of Reduced Driving from NHTSA's Rulemakings

PUBLIC BENEFITS		
Monopsony (decreased costs of foreign oil reflecting demand)	0.9¢	
Supply disruption risk reduction associated with demand	0.5¢	
Congestion reduction benefits	4.9¢	
Crash reduction benefits	2.4¢	
Criteria air pollutant reduction benefits	1.2¢	
Noise reduction benefits	0.1¢	
Carbon emissions reduction benefits	0.1¢	
SUBTOTAL: PUBLIC BENEFITS		*10.1¢*
PRIVATE BENEFITS (50% of private savings based on "rule of half")		
Average reduced insurance premium (not from NHTSA rules)	6.7¢	
Pre-tax gasoline savings (updated using EIA 2009 projections)	15.2¢	
SUBTOTAL: PRIVATE BENEFITS		*11.0¢*
TOTAL OF ALL BENEFITS		***21.1¢***
BENEFITS OF EACH PAYDAYS INSURED MILE (21.1¢ x 8%)		***1.7¢***

Future Opportunities—Market Developments

- New capability for market segmentation.
- Marketing help from interested constituencies (e.g., urban residents and environmentalists) and government agencies.
- With unstable gas prices and the poor economy, consumers are driving less and are looking to save money.

Future Opportunities—Government Incentives

- Concerted regional efforts using a mixture of funding sources and other incentives.
- Strategic Highway Research Program study of 2,500 instrumented vehicles beginning in 2009 to provide important data.
- Other forthcoming “before” and “after” data enabling emissions trading dollars (e.g., from Federally-funded King County/Unigard pilot).
- New potential opportunities in the reauthorized Federal transportation program, especially around fuel tax alternatives.

But There Are Obstacles to Launching PAYDAYS Products

- Potentially high start up and implementation costs
- Reduced margins on high-profit, low-mileage customers
- Getting the prices right
- Patent barriers
- Concerns about consumer privacy
- Regulatory barriers in some states
- Developing successful marketing campaigns
- Providing adequate customer product support

And There Are Also Long-Term Needs and Challenges

- Failure to collect “before” data and to share data more generally.
- Driving a lot is not generally seen as a safety risk or as a reason insurance is expensive.
- There is more to learn about the effects of pricing on consumer behavior.
- “Rebundling” the “unbundled”.

But There Are Great Risks of Not Offering PAYDAYS Insurance

- Companies that do offer PAYDAYS insurance will obtain unique knowledge about claims' risks for individual drivers.
- Low-mileage, low-risk drivers who are highly profitable for insurers will shift to carriers that offer PAYDAYS insurance.
- High-mileage, high-risk drivers will shift to carriers that do not track their driving and that unwittingly under-price them.

Thank you!

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