Designing Pay-Per-Mile Auto Insurance Regulatory Incentives Using the NHTSA Light Truck CAFE Rule as a Model

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ABSTRACT

By converting fixed insurance costs to per-mile charges, pay-as-you-drive-and-you-save (PAYDAYS) insurance would encourage voluntary reductions in driving with concomitant decreases in congestion, air pollution, crashes, and insurance claims. Despite these benefits, a range of technical, regulatory, and marketing challenges, and the related costs to address them, have, as of this writing, precluded anything more than a small amount of industry experimentation with the concept in the U.S.

In other circumstances where the products offered in the marketplace have been found to be important to meeting public policy objectives, government intervention in markets has sometimes occurred. Recently, the National Highway Traffic Safety Administration (NHTSA) issued a final fuel economy rule for light trucks that is intended, as its principle objective, to maximize net benefits (1). This paper explores how an analogous benefit-maximizing rule could be structured to encourage adoption of PAYDAYS insurance.

The key to designing such a benefit-maximizing rule is to determine: a) the net benefits of every mile not driven (about 16¢); b) the reduction in mileage that would result from PAYDAYS insurance (about 10%); and, c) to then calculate the net benefits of every PAYDAYS-insured mile (about 1.6¢). In one possible design of a rule, insurance companies might be offered incentive payments equal to this benefit. A mechanism by which the industry itself funds the incentive payments is described, as are alternatives. Companies would likely only offer such insurance—and the industry itself would only incur related expenses—if the 1.6¢-per-mile payment exceeded their costs of offering it.

INTRODUCTION

Traditional car insurance premiums incorporate a range of individualized risk factors (e.g., previous crashes, citations, and years of driving experience) and reflect the coverages selected, and are assessed on an annual or semi-annual basis. With a traditional premium structure, insurance is basically a fixed cost with respect to vehicle use; a reduction in mileage leads to either no or only a tiny reduction in insurance premium. Like with traditional car insurance, pay-per-mile or PAYDAYS insurance also charges individualized premiums, but it differs in that such premiums are assessed based upon the number of miles driven (vehicle miles of travel, or VMT) instead of the calendar year, which provides motorists a new option to save money by reducing their risk exposure through driving less. While it is true that not all miles driven by an individual are of equal risk, an individual's claims' risk is very closely related to how much he or she drives. Thus, using miles instead of calendar year as the principle exposure unit would almost certainly better align premiums with risk.

Companies offering PAYDAYS insurance might require motorists to pay in advance for a pre-determined number of miles and then at the end of the premium term either pay more or receive a rebate depending on how much was driven. Another approach would be to bill motorists based on their monthly or bi-monthly vehicle

mileage, similar to how utility usage is billed. This would require more frequent communication of mileage data.

PAYDAYS pricing requires verified mileage data, which can be acquired in various ways. The simplest approach is to have brokers or vehicle owners report odometer readings over the Internet or by mail, with random spot checks for verification. More sophisticated systems use electronic devices which automatically collect and send mileage data and, in some cases, even track when and approximately where a vehicle is driven to allow risk-adjusted mileage premiums to be assessed. The cost of automated data collection is declining since most new cars have odometer data recorded on internal computers. When coupled with wireless communication systems, this data has sometimes been, with the consent of the vehicle owner, automatically shared with auto dealers who in turn use it to alert such owners of servicing needs. The same data could also be shared with car insurance companies, again with owner consent.

Two insurance companies in the U.S., GMAC Insurance and Progressive Insurance, have begun to use mileage data that is transferred electronically to them for billing, although in both cases the link between mileage and insurance premiums is not nearly as strong as the reduced claims' risk associated with lower mileage warrants. GMAC Insurance, using OnStar vehicle services, has a low-mileage discount program, available in Arizona, Indiana, Illinois, and Pennsylvania, that allows motorists to earn an extra discount based on miles driven. Progressive Insurance is piloting a discount program in Minnesota, with low-mileage discounts of up to 15%.

PAYDAYS insurance offers several potential benefits, as follows:

- Applying the results of studies assessing changes in VMT related to changes in fuel prices, researchers have projected that PAYDAYS insurance would lead to a 9% to 20% reduction in VMT, with a concomitant reduction in congestion and air pollution . Further, the potential reduction in crashes and related insurance claims has been projected to be proportionately greater than the VMT reduction. (2)(3)(4).
- By providing an affordable insurance option to low-income motorists who are willing to limit their mileage, PAYDAYS insurance would be expected to reduce the number of uninsured motorists (2).
- PAYDAYS insurance has been shown to be a better way to reduce gasoline consumption, in terms of providing net public benefits, than even gasoline taxes (4).
- Government incentives to promote PAYDAYS insurance have been projected to be very cost competitive in terms of reducing air pollution and saving lives as compared with other government transportation-related expenditures aimed at achieving these objectives (5).

Largely by history and tradition, rather than for economic reasons, government intervention in some aspects of the transportation marketplace is much greater than in others. To promote safety, energy conservation, and environmental protection, laws have been written and regulations have followed affecting vehicle designs (by the Federal

government and the State of California), fuels (by both the Federal and state governments), and driver safety (by state governments, but sometimes instigated by Federal incentives), but not car insurance. Instead, car insurance regulation is focused almost entirely on consumer protection and is solely a state-by-state matter entailing no Federal involvement. Expanding the Federal regulatory domain to include the car insurance industry could enable the successful encouragement of PAYDAYS insurance. Of course, there would be political challenges to doing this, as there have been to regulating fuel economy at the Federal level.

While there are a number of reasons that companies might want to offer PAYDAYS insurance absent mandates or incentives (such as better pricing of risk, reducing claims' costs, and the potential of gaining market share from low-mileage drivers), there are a range of costs and barriers that have precluded all but a few small concept tests in the U.S. For any company to offer PAYDAYS insurance it would need to: a) secure regulatory approval to offer it in the many states that require such approval; b) establish a method for reliably collecting accurate mileage data in a manner that is both cost effective and acceptable to its customers; c) conduct customer surveys and focus groups before launching; d) determine how to price the product; e) develop new marketing campaigns and pay for advertising; f) modify billing systems; g) bolster its customer support services to be able to answer customer inquiries resulting from transitioning to PAYDAYS pricing; and, h) figure out how to make up for lost revenues from its reduced margins on the low-mileage drivers that it currently insures by increasing its market share of such drivers. Clearly, there are barriers to entry and regulatory incentives could help overcome them.

This paper proposes a framework for a benefit-maximizing Federal insurance rule or other equivalent Federal incentives (although similar state-level action would also be very beneficial) that would help stimulate PAYDAYS insurance to be offered in the marketplace. Such a rule would need to be authorized under Federal law in order to be promulgated. The April 6, 2006, NHTSA final fuel economy rule for light trucks serves as a useful analog because it was structured to maximize net benefits and thus offers a calculation framework and assumption set. The following sections address: a) the potential benefits of PAYDAYS insurance; b) the design of an insurance rule and industry-funded incentive pool; and, c) a discussion of some alternative policy approaches.

CALCULATING BENEFITS OF PAYDAYS INSURANCE

In assessing the benefits of a proposed PAYDAYS insurance rule, the assumptions and figures used in creating and assessing net benefits for the NHTSA light truck fuel economy rule were looked to as a useful analog. Serving as sources were: a) the Federal Register notice detailing both the rule and the rationale for it; and b) the companion Final Regulatory Impact Analysis NHTSA prepared for the rule (1)(6). For light truck fuel economy standards, net benefits include "the increase in light truck prices due to technology improvements, the decrease in fuel consumption, and a number of other factors viewed from a societal perspective…Benefit estimates include the benefits to consumers in terms of reduced fuel usage and other savings, such as the reduced

externalities generated by the importing, refining, and consuming of petroleum products"
(1).

In a few cases, not all figures in the NHTSA rule documents were presented in a
way that they can be converted to costs or benefits per mile. Also, since the NHTSA rule
focused on establishing fuel economy standards, some additional calculations for
PAYDAYS insurance-specific figures were required. Where benefits estimates that were
not used in the NHTSA rule are used here, the rationale and justification is explained. It
is understood, that over time new information or more refined analysis may lead to
revised figures. The mechanisms for deriving the figures are provided and the figures
themselves enable benefits to be estimated. If policymakers choose to pursue the
regulatory approach discussed here, they may want to revisit some of the numbers
provided and the assumptions behind them.

<u>Calculating the Benefits of the NHTSA Fuel Economy Rule</u>

In order to build up the PAYDAYS insurance benefits' estimate, the components
of the NHTSA benefits' estimates were first analyzed to obtain per-mile figures. These
figures are summarized in Table 1 at the end of this paper.

Fuel economy standards must be set years in advance since automakers need time
to make changes to the vehicles they produce to comply. Because of this, the NHTSA
rule relies on a variety of projections and forecasts, which become a significant source of
uncertainty in the net benefits calculations. A net present value (NPV) construct is used
which requires an assumption of a discount rate as well as a period of analysis to arrive at
benefits calculations. NHTSA selected an annualized rate of 7% for the discount rate.
The average ownership period for new vehicles, 4.5 years, was chosen for benefits
realized directly by vehicle owners, while the average life of new light trucks was
considered for other fuel conservation benefits. The NPV construct is not needed for the
PAYDAYS insurance rule because, as proposed in this paper, implementation of that rule
would start from a clean slate each year and rely on realized annual costs instead of
projected ones.

Most of the benefits of the NHTSA fuel economy rule, such as consumer savings,
result primarily from reduced fuel use. NHTSA, therefore, had to rely on forecasts of
future fuel prices in its calculations. It used U.S. Energy Information Administration
(EIA) gasoline price forecasts, which projected prices (in 2003 dollars) ranging from
$1.96 to $2.39 per gallon (excluding $0.438 per gallon in average total taxes which are
considered by economists to be transfer payments). The EIA forecasts were below actual
market prices at the time the rule was promulgated, highlighting the difficulty of relying
on projections (and leading to some critical comments in the record about NHTSA's
choice of estimates).

Among the benefits the NHTSA rule considers are the reduced economic and
environmental externalities resulting from producing less fuel—benefits that would also
be realized from a PAYDAYS insurance rule. NHTSA's rule considers that "reducing

total petroleum uses decreases our economy's vulnerability to oil price shocks." Such shocks result from relying on supplies from unstable Middle Eastern and other oil exporting nations as well as "pressures on already strained domestic refinery capacity" (1).

NHTSA's Final Regulatory Impact Analysis accompanying its rulemaking discusses and itemizes a number of externalities related to petroleum dependence. These externalities include what is characterized as demand, or monopsony, costs—which refers to the sizable effect that U.S. purchases have on overall world oil prices. The rule considers savings from reduced fuel consumption only to the U.S. economy as a whole and thus only assumes an external cost for purchases of foreign oil. NHTSA estimates a related benefit of $0.044 per gallon. NHTSA also explores supply disruption costs and estimates a related benefit of $0.045 for every gallon of gasoline not consumed (with the two costs totaling about 0.4¢ per mile).

While the proposed PAYDAYS insurance rule accepts the assumptions and calculations related to monopsony costs, as it does for other costs, there appears to be an important inconsistency between NHTSA's calculations of monopsony and other costs. NHTSA's monopsony analysis was only concerned about the portion of monopsony costs resulting in U.S. consumer payments going to foreign sources. Analysis of other costs and benefits, however, such as of crash impacts, did not suggest this approach was being taken (e.g., that payments to U.S. hospitals for crash-related medical expenses was excluded from the benefits' calculations because the money would remain in the U.S. economy). Similarly, discussions of consumer benefits resulting from overall consumer financial savings, which like crash-reduction benefits clearly dwarf monopsony-related benefits, did not include any caveats about counting only such savings from reduced purchases of imports. If NHTSA had chosen to calculate other benefits the same way as monopsony benefits, the implications would have been tremendous. It would have reduced total benefits substantially, led to a significantly more lax fuel economy standard, and sent a message that paying for something where no real net benefit is provided (e.g., for higher fuel costs or emergency medical procedures) is not a genuine loss.

NHTSA acknowledges that fuel economy improvements generally result in a "rebound effect" (more driving occurs when driving costs decline) due to lower fuel costs per mile versus if truck fuel efficiency standards had not been strengthened. To fully account for the costs and benefits from the rebound effect, the NHTSA rule calculates the per-mile costs and benefits of driving. While, unlike with the NHTSA rule, many of the benefits of a PAYDAYS insurance rule would result from reduced driving, NHTSA's per-mile costs and benefits numbers can still be relied upon to project the net benefits of a PAYDAYS insurance rule, too. NHTSA uses the 1997 Federal Highway Administration's Highway Cost Allocation Study estimates for congestion, crash, and noise impacts of light trucks of 4.2¢, 2.30¢, and 0.06¢ per vehicle-mile, respectively (updated to 2003 dollars).

The NHTSA fuel economy rule excluded consideration of any climate-related benefits of carbon dioxide and other greenhouse gas emissions reductions that would

result from improved fuel economy. If, alternatively, NHTSA had chosen to accept the modest benefit figure of $25 for every ton of greenhouse gas emissions reduced (which falls conservatively within the $10 to $50 per ton range suggested by comments to NHTSA's proposed rule), it would yield an additional benefit of about 1.25¢ per mile not driven (each gallon of gasoline burned releases 20 pounds of carbon dioxide, or about one pound of carbon dioxide emissions for every mile of driving). NHTSA stated that it made its decision because of both uncertainty and the wide range of opinions on potential benefits. An alternative approach, which NHTSA applied in other instances of uncertainty and wide ranging opinion, would have been to choose either the "most credible" estimate or an average of multiple credible estimates of benefits.

NHTSA quantified some other costs per mile of driving, including air pollution emissions and the time to fill the gas tank, and these costs total to less than 1¢ per mile. NHTSA's total cost estimate adds up to about 8¢ per mile, excluding direct consumer cost savings. The agency acknowledges that its total cost estimate and many of its individual cost estimates on which the total is based are lower than those recommended by many who commented on its proposed rule.

One interesting discussion regarding direct consumer cost savings in the Federal Register that accompanied the NHTSA rule was about a comment submitted by Criterion Economics. Criterion suggested that the market automatically determines the optimal level for private benefits and that only external costs and benefits should be included in rulemakings. Others presented evidence that consumers, even when only accounting for their own welfare, do not sufficiently consider all personal costs and benefits. This issue is especially relevant since "NHTSA estimates that the direct fuel-savings to consumers account for the majority of the total benefits" of the rulemaking. NHTSA concluded that it could not simply assume that Criterion Economics' assertions about consumers accounting for all of their own economic interests related to fuel economy when selecting a new vehicle are true (1). To be consistent with the NHTSA rule, the proposed PAYDAYS insurance rule would also count direct consumer benefits among total benefits, as itemized in the sub-section that follows.

Calculating the Benefits of the PAYDAYS Insurance Rule

The benefits of the PAYDAYS insurance rule come primarily from reduced driving mileage (VMT) and the consumer savings, including from related fuel purchases, that result. Today, because insurance costs are largely fixed, those who limit their driving see either no or a tiny benefit in terms of reduced premiums despite the obvious reduction in claims' risks and related expenses enjoyed by their insurance providers. Assuming the average person pays $800 for insurance and drives 12,000 miles per year, this would equate to a 6.7¢-per-mile premium if PAYDAYS insurance were offered. Under PAYDAYS insurance, a driver foregoing a mile of driving would save 6.7¢ plus about 10¢ in pre-tax gasoline costs, assuming a pre-tax price per gallon of $2.50 and gas mileage of 25 miles per gallon (as noted previously, in economics terms, taxes are considered to be transfer payments instead of costs). Drivers would also realize some

additional savings resulting from reduced vehicle wear and tear that are not included in this rough calculation of benefits.

Those forgoing a mile of driving clearly lose some utility, but less than their financial savings or they would otherwise drive the mile. Economists typically apply the "rule of half" to calculate related consumer surpluses or total consumer benefits (7). The rule of half applies the assumption that demand for driving is evenly spread across a continuum between two reference prices, and concludes that the average utility for a trip that would be taken at the lower price but not at the higher price would fall in the middle of the continuum and thus would equal half the cost savings of not taking it. In this case, the average consumer surplus would be half of 16.7¢, or 8.35¢, per mile. Total benefits, then, accepting NHTSA's other benefits figures summing to about 8¢ per mile (and, to be consistent with NHTSA, not adding in a greenhouse gas emissions reduction benefit), would be about 16¢ per mile forgone because of PAYDAYS insurance.

The impact of PAYDAYS insurance on vehicle-miles of travel can be determined through controlled before-after studies or estimated by using existing price elasticity data from studies examining the effects of fuel price, parking price, and other driving costs. As a conservative estimate, a 10% reduction in driving is assumed (i.e., on the low side of the 9% to 20% range of driving reductions projected in the studies cited in the Introduction). If incentive costs were capped at benefit levels, the incentive payment to an insurer to offer a mile of PAYDAYS insurance could not exceed 10% of the net benefits of a reduced mile of driving, reflecting the expected 10% reduction in driving from PAYDAYS insurance. That is, using the 16¢-per-mile benefits figure from above, a maximum incentive payment for a PAYDAYS-insured mile of 1.6¢ would be appropriate. Converting to an annual figure, the benefits (and incentive payment) resulting from an average 12,000-mile-per-year driver paying the average per-mile premium would be $192 (i.e., 10% x 12,000 miles x 16¢-per-mile).

The total benefits of a PAYDAYS insurance rule would of course depend upon the number of drivers and miles of driving covered under PAYDAYS insurance resulting from such a rule. If PAYDAYS insurance covered 10% of driving miles and caused 10% of these miles to be reduced, it would lead to a 1% reduction in driving nationwide and a commensurate reduction in fuel use. If over time because of a rulemaking, PAYDAYS insurance penetration grew to cover 25, 50, and then 75% of U.S. driving miles, reductions in miles and fuel use would grow to 2.5, 5, and 7.5%, respectively. The cost to achieve these benefits is not known, although the structure of the proposed rule, as outlined below, would ensure that it would not exceed the value of the benefits.

DESIGNING AN INSURANCE RULE AND TRADING SYSTEM

With the NHTSA fuel economy rule, total benefits exceed total costs. The marginal costs of each incremental increase in mileage standards rise as the standards become more stringent, since manufactures will first rely on low-cost measures to improve fuel economy and then use progressively higher-cost measures as necessary to meet the standards. Up until the last incremental increase in fuel economy standards, where the

costs would be equal to the benefits, the costs would be below the benefits for each incremental increase in the standards.

The proposed structure of the PAYDAYS insurance rule would, by contrast, only ensure that total benefits exceed total costs each year. PAYDAYS insurance either is or is not offered; it is not offered in increments as fuel economy standards are. While a fuel economy rule has increasing marginal compliance costs as standards rise, marginal costs to an insurance company for offering PAYDAYS insurance would hold steady or decline as more customers sign up. Thus, it is economically justifiable that, in order to maximize net benefits, the total benefits of a fuel economy rule would need to exceed its total costs while the costs and benefits of a PAYDAYS insurance rule would simply need to be equal.

In developing its cost-benefit analysis, NHTSA used compliance cost data from a peer-reviewed 2002 National Academy of Sciences report entitled, "Effectiveness and Impact of Corporate Average Fuel Economy Standards." For PAYDAYS insurance there is no comparable cost data for implementation available. Moreover, a variety of techniques and product compositions could be selected in implementing PAYDAYS insurance – some more expensive than others. For example, implementing accurate and reliable mileage verification could range from inexpensive periodic third-party odometer audits to higher-priced in-vehicle monitoring technologies; but without sufficient market experience, it cannot be known whether or not the least expensive approach (which is the typical basis for cost estimates) would meet insurance company and consumer demands for reliability, ease of data collection and transmission, etc.

In terms of product composition, on-going research in the field of "mental accounting"—a discipline combining economics and psychology to explain consumer decision making—strongly suggests that varying features of the PAYDAYS insurance product would result in differing impacts in VMT (and, hence, benefits). This research suggests that ideally PAYDAYS insurance would entail direct mileage charges and frequent billing, and customers would be regularly reminded of mileage costs, such as through in-vehicle taxi-like meters. PAYDAYS insurance would even be complemented with discounted transit passes and customers would be provided with individualized assistance to reduce mileage, including identifying alternative transportation, trip consolidation, and trip elimination (e.g., through Internet shopping) options. As a practical matter, it would be difficult to determine the effect of each product feature on mileage or to regulate every product feature in order for a PAYDAYS insurance policy to be eligible for incentives. Instead, a minimally acceptable PAYDAYS insurance product should be defined, which might specify the portion of premiums that must be mileage-based (e.g., 70%), the structure of the charging mechanism (e.g., rates must be per mile and miles cannot be bundled; charges must be direct, instead of rebates off of pre-paid fixed insurance premiums), and minimum billing frequency (e.g., monthly), but would not require complimentary elements such as discounted transit passes (8).

Despite the limitations regarding cost data, a PAYDAYS insurance rule could be structured using a trading-like mechanism to guarantee that costs will not exceed

benefits, assuming the benefits are correctly calculated. Under this mechanism, companies that are able to offer PAYDAYS insurance at a cost less than the resulting benefits can receive incentive payments from a pooled account which is funded by all insurance companies. NHTSA considered the idea of an analogous "tradable" fuel economy standard during its rulemaking. Some comments on the draft rule argued that such an approach would lower compliance costs and thus enable a higher benefit-maximizing standard. Ultimately, NHTSA determined that it lacked the statutory flexibility to allow trading for compliance. For PAYDAYS insurance, new legislation would be required to allow regulation promoting it and such legislation could allow the trading-like mechanism from the start.

As envisioned, companies that offered PAYDAYS insurance would receive an incentive payment at the end of a calendar year based upon the benefits that had resulted. Benefits and related cost savings would be derived based on the mileage reductions approximated from the price per mile charged for insurance and the number of affected miles driven. To fund such incentive payments, all insurance companies could be required to contribute to a funding pool proportionate to their market share, except that no company would be required to contribute to pool payments that go to their own company. If no company offered PAYDAYS insurance in a particular year then no companies would be charged. If this were to occur, it would show that no company believed it could offer such insurance that year at a cost that is less than the benefits provided from such insurance. Using the 1.6¢ per insured mile figure derived in the previous section, if only one company provided PAYDAYS insurance to all of its customers, then this company would collect 1.6¢ per customer mile driven, paid for by other companies, and pay nothing into the pool. If 50% of driving miles were insured through PAYDAYS policies offered by multiple companies, these companies would receive the aforementioned incentive payment and would also contribute their proportionate share to the funding pool (excluding to cover any portion of the amount that they would be paid).

It might be tempting to take the incentive a step further and allow companies offering PAYDAYS policies to contribute nothing to the incentive fund, but this would have distortionary effects and likely lead to programmatic costs exceeding benefits. This is because companies would then decide to implement PAYDAYS insurance based upon their opportunity costs (including savings from not having to pay into the incentive fund) rather than just the value of the incentives. Since the benefits of PAYDAYS insurance would equal only the value of the incentive payments, an economically rationale company encountering the aforementioned incentive structure would, accounting for its opportunity costs, be willing to encumber costs in excess of the benefits of its actions.

This is not to say that companies would not or should not make strategic decisions to spend more money in a particular year to begin offering PAYDAYS insurance, even if benefits in that year are less than the costs. Companies often make multi-year investment decisions, and some might anticipate that it would be financially advantageous to invest now in anticipation of then collecting incentive payments for years to come.

ALTERNATIVE POLICY APPROACHES, INCLUDING RULE REFINEMENTS

While many different policy schemes to promote PAYDAYS insurance might pass a cost-benefit test, the test for political viability is likely to be a more difficult one. Auto insurance is a challenging business and companies already feel overwhelmed with having to comply with a myriad of state regulations. Many companies will argue that most of the objectives behind PAYDAYS insurance should be pursued independently and do not warrant government interference. They will also argue that to the degree that PAYDAYS insurance provides opportunities to profitably gain market share and to reduce the costs of claims, they have ample incentive to pursue this on their own. Finally, companies— except those that believe they can offer PAYDAYS insurance at much less cost than the value of the incentive payments—will say that imposing new costs on the industry will cause premiums to rise, at least partially negating some of the benefits in terms of consumer savings and insurance affordability coming from PAYDAYS insurance.

While, as noted earlier, it is not unprecedented for government to impose standards on an industry and expect industry to bear the cost of compliance (e.g., the NHTSA fuel economy rule), it would be significantly easier to garner industry support if Federal tax credits, transportation funds, or other non-industry funding source were tapped to provide the incentive payments for offering PAYDAYS insurance. This approach of using public funds to promote efficient transportation is not an uncommon one. The State of Oregon has enacted tax credits, capped at a total of $1 million, of $100 per vehicle/$300 maximum per household to insurance companies where on average at least 70% of premiums are mileage-based. At the Federal level, Congressman Gerlach (R-PA) introduced the Future Fuels Act (HR 4640) in the 109th Congress, which would pay companies a penny for each PAYDAYS-insured mile (which is a bit less than the approximate 1.6¢ in benefits) where, like in Oregon, 70% of premiums would need to be mileage-based to be eligible. The bill would authorize $220,000,000 which could be appropriated for incentive payments, and such funds would be available until spent. While the Oregon approach focuses on covering the initial sometimes-high expenses to begin offering PAYDAYS insurance, the Gerlach bill would provide companies a study stream of smaller incentive payments after they have successfully begun offering PAYDAYS insurance.

It might make sense to focus PAYDAYS insurance incentives on start-up activities, rather than to cover on-going expenses, since most of the challenges to offering PAYDAYS insurance would occur then. This may have been part of the logic behind the new $3 million per year "set-aside for projects not involving highway tolls" from the $12 per year Value Pricing Pilot Program that was reauthorized in August 2005 in the omnibus Federal surface transportation law, SAFETEA-LU. The Federal Highway Administration's May 7, 2006 follow-up Federal Register notice requested PAYDAYS insurance applications among other types of applications for funding consideration. According to the Federal Register notice, which has subsequently been superseded, program funding would be awarded competitively and be used to support pre-implementation activities and implementation expenses.

Another possible incentive structure for PAYDAYS insurance could be found in the approach taken for tax credits for hybrid vehicles. Tax credits vary based upon the vehicle, with larger vehicles being eligible for larger credits, presumably because using hybrid technologies in larger vehicles would lead to a greater reduction in fuel use than when used in smaller vehicles. The tax credits also begin to phase out after 60,000 eligible vehicles are sold from an individual manufacturer, which not only saves Federal money and ensures that all manufacturers have an incentive to start producing hybrid vehicles, but also places a reasonable bet that once a company has shown it knows how to build and sell hybrids, it will continue to do both even after incentives end. Applying these policy approaches to a PAYDAYS insurance rule might lead to changing the 1.6¢ incentive payment per PAYDAYS-insured mile to payments that still average 1.6¢ per mile, but are higher for insuring higher-priced (and generally riskier) miles/drivers and proportionally lower otherwise to reflect that the higher the price per mile (or savings per mile not driven), the greater the reduction in driving and resulting benefits that would result.

A lifetime cap on incentive payment eligibility to any insurance company could also be imposed, either by specifying a maximum dollar amount or, as is done with the hybrid rule, allowing incentives for only the first 60,000 PAYDAYS insurance customers of each company (perhaps for anywhere from one year to three years per customer). There are two downsides to this approach. First, companies that invest in major product changes tend to have long-term outlooks; if incentives last only for a very short duration, they might not result in the same long-term changes in company product offerings as if the incentives were longer lasting (and even perpetual incentives would be economically justifiable since the benefits would be perpetual). Second, companies might, absent continued incentives, "rebundle the unbundled" or begin selling miles in inseparable bundles to their PAYDAYS customers, as has occurred with the bundling of cell-phone minutes into plans, obfuscating the relationship between usage and price and thereby reducing the incentive to drive fewer miles (unless if customer mileage near the time of billing were such that the driver could realistically affect whether or not he or she would need to purchase the next bundle of miles).

Over time, it is conceivable that PAYDAYS insurance will become commonplace, incentives might be allowed to expire, and bundling insurance would be shunned, just like bundling gasoline with the purchase of a new sports utility vehicle is sometimes shunned today (at least by some Op Ed columnists like Tom Friedman from the New York Times). If this change in public sentiment were to occur, politicians might begin to treat bundled insurance products like gas guzzling cars that are now subjected to the Federal gas guzzler tax (which goes as high as to $7,700 on the least efficient cars) and impose penalty taxes on all-you-can-drive insurance products.

CONCLUSIONS

Federal regulations and incentives related to externalities from driving have tended to focus on fuel efficiency and emissions, while state-level rules have focused on driver safety. Absent from the focus on vehicle efficiency and driver safety is a recognition in the U.S. policy arena that VMT strongly affects the environment and safety, along with

congestion and government infrastructure costs, and that encouraging a reduction in VMT would be at least as affective a strategic response to these public concerns as are reducing per-mile fuel use, emissions, and crashes.

Automobile insurance is regulated just at the state level and only for the purpose of protecting consumers. While PAYDAYS insurance could provide substantial environmental, safety, and consumer-savings benefits, very little is being done at any level of government to promote it. The purpose of this research is to show that if an approach nearly identical to the one used by NHTSA to set light truck fuel efficiency standards were also taken to provide incentives to offer PAYDAYS insurance, all the benefits of PAYDAYS insurance could be realized for a cost that does exceed the benefits.

A key to realizing the benefits of PAYDAYS insurance in a manner that does not exceed its costs is to establish a regulatory scheme that only costs the insurance industry money if individual companies within the industry itself demonstrate by their actions that they can offer PAYDAYS insurance for less money than the total benefits it would yield. Companies would receive "benefits payments" for offering PAYDAYS insurance, and they would likely only offer such insurance and accept these incentive payments if they exceeded their costs.

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TABLE 1: Estimated Per-Mile Benefits of Reduced Driving from NHTSA's Light Truck Fuel Economy Rule

PUBLIC BENEFITS

Monopsony (decreased costs of foreign oil reflecting demand)	0.2¢
Supply disruption risk reduction associated with demand	0.2¢
Congestion reduction benefits	4.2¢
Crash reduction benefits	2.3¢
Other benefits (noise, air pollution, etc.)	c. 1.0¢

SUBTOTAL: PUBLIC BENEFITS   *c. 7.9¢*

PRIVATE BENEFITS (50% of private savings based on "rule of half")

Average reduced insurance premium	6.7¢
Pre-tax gasoline savings	c.10.0¢

SUBTOTAL: PRIVATE BENEFITS   *c. 8.35¢*

TOTAL OF ALL BENEFITS   ***c. 16.25¢***