Mile Station
R & D

"Teen-Miles"
An Insurance Agency Method for Insuring Teens' Cars

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This document describes the teen-miles method to independent agents with the intent of building a demand by agents for a teen-miles product from carriers.

CUSTOMERS FOR THE METHOD

- Our method is for insurance agents
- Who are frustrated by having only high premium products to offer for teens' cars.[1]
- Our method would insure these cars with one month policies at cents per mile rates
- Which would let teens control premiums by limiting driving.
- At startup teens would pay for an initial "fill-up" of 1,000 insurance miles and also pay policy and expense fees.
- At renewals teens would pay for "refill" miles to replace insurance miles driven (earned) since last month's odometer reading and also pay policy and reading fees.

ABOUT MILE STATION R & D

I established and funded Mile Station in 2009 to do field research on using monthly audited-odometer insurance in Austin Texas. This research was made possible by the online availability in Texas of cents-per-mile insurance from the MileMeter Insurance Company in Dallas (www.milemeter.com). Mile Station paid for miles of insurance for the cars of its research clients—ages 20-77[2]—seeking only

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[1] Substantial ownership of cars by teens will not be news to agents. This observation was recently quantified in a national survey sponsored by Allstate. The survey found that a large—and growing—majority of licensed teens under age 18 own a car:

> "Among parents who already have a child with a driver's license, 73 percent say their child *has their own car*, while another eight percent say their child shares a car with a sibling. This rate of teenage car ownership is considerably higher than what parents experienced when they were first driving (just 48 percent *had their own car* or shared with siblings)." [Italics added.]

The report also confirms that most teen cars are not new: "Of those parents whose children have cars, the overwhelming majority, 94 percent, say their child drives a used car with a mean age of 9.3 years." Therefore, most teen car owners do not need physical damage coverage.
The report, dated Sept. 21, 2011, is available at www.allstatenewsroom.com/releases/economy-puts-the-brakes-on-parents-spending-for-teen-cars-driving-expenses .

[2] MileMeter Insurance's minimum age is 18.

minimum liability coverage. In return, clients brought cars to a Mile Station office for odometer readings at startup and six-month policy renewal. Clients also reported odometer readings monthly by text message, email, or telephone, and, on request, submitted photos of odometers by cell phone and email. This research led to developing the teen-miles method.[3]

OPERATION OF THE TEEN-MILES METHOD—AN EXAMPLE

This section describes a hypothetical example using the teen-miles method. For a year of coverage, page 3 shows the monthly odometer readings and premium payments.

Start up:

Parent and teen obtain a telephone or online quote of a cents-per-mile price for the coverage wanted. They then must bring the teen's car to the agency where a CSR opens the account for the car, reads its odometer, collects payment for the initial 1,000 miles plus policy and start up fees, and issues a one-month policy for the car. (In the example, the customer pays 12.7 cents per mile times 1,000 miles plus a $10 policy fee and $40 agency start up fee: $127 + $10 + $40 = $177.)

Monthly Renewal:

Each month on any business day within the final two weeks of the one-month policy term, the teen drives the insured car to the agency. There a CSR:

- Reads or digitally captures the car's odometer reading and enters it into the client's account.
- Calculates the miles driven since the last reading. (These are the refill miles needed to raise pre-paid unearned miles back to the 1,000-mile amount initially purchased.)
- Receives the client's payment for the refill miles and a $10 policy fee and $15 odometer reading fee, and
- Issues a new insurance card to the client for the next one-month policy term (which starts in two weeks or less).

[3] My reports on previous auto insurance R & D projects are summarized in the final section below.

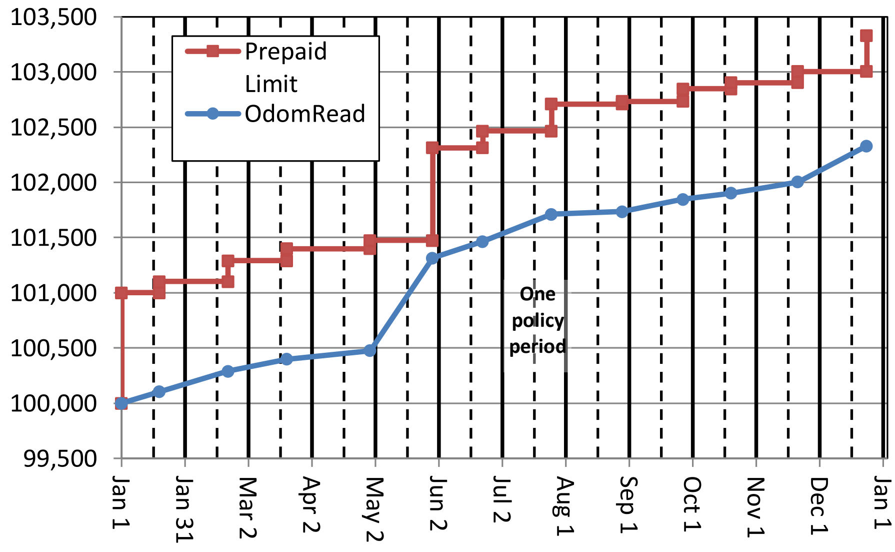
Odometer readings, miles driven, & payments

Date	OdomRead	Mi Gone	Prepaid Limit	Mo Pay
Jan 1	100,000	0	101,000	$177.00
Jan 19	100,102	102	101,102	$37.95
Feb 21	100,290	188	101,290	$48.88
Mar 21	100,399	109	101,399	$38.84
Apr 30	100,475	76	101,475	$34.65
May 30	101,314	839	102,314	$131.55
Jun 23	101,465	151	102,465	$44.18
Jul 26	101,710	245	102,710	$56.12
Aug 29	101,734	24	102,734	$28.05
Sep 27	101,847	113	102,847	$39.35
Oct 20	101,902	55	102,902	$31.99
Nov 21	102,004	102	103,004	$37.95
Dec 24	102,329	325	103,329	$66.28
Total		**2,329**		**$772.78**

Prepaid Limits

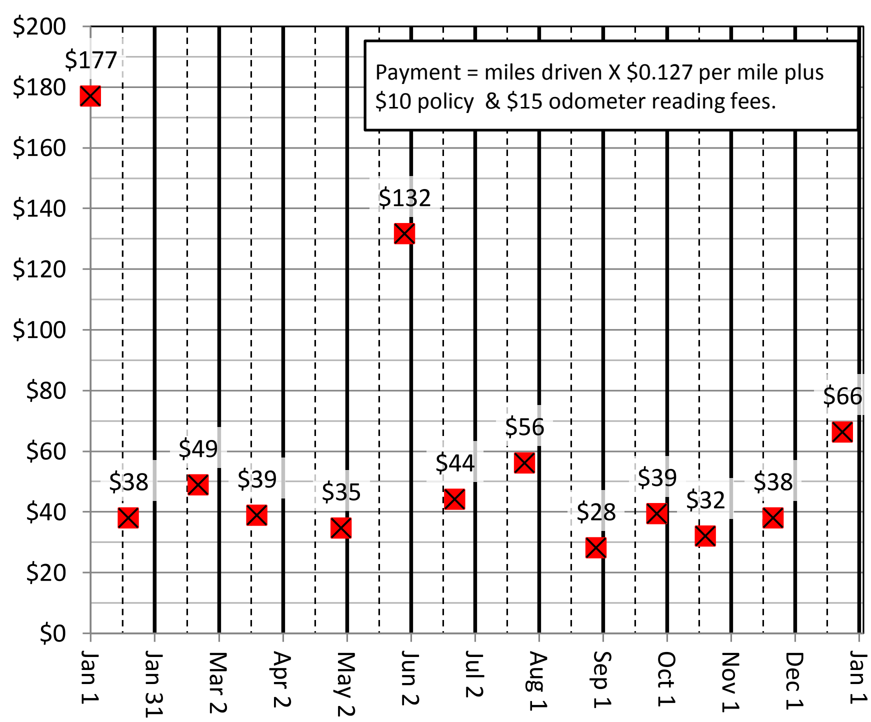
Date	Prepaid Limit
Jan 1	100,000
Jan 1	101,000
Jan 19	101,000
Jan 19	101,102
Feb 21	101,102
Feb 21	101,290
Mar 21	101,290
Mar 21	101,399
Apr 30	101,399
Apr 30	101,475
May 30	101,475
May 30	102,314
Jun 23	102,314
Jun 23	102,465
Jul 26	102,465
Jul 26	102,710
Aug 29	102,710
Aug 29	102,734
Sep 27	102,734
Sep 27	102,847
Oct 20	102,847
Oct 20	102,902
Nov 21	102,902
Nov 21	103,004
Dec 24	103,004
Dec 24	103,329

Odometer Values



Advance payment for next 1-month policy term

(made in 2nd half of previous term)



COMPETITIVE PAYMENT PROFILE

At policy start up the teen-miles method charges the same kind of high initial payment as do the current arrangements for teens' cars ($177 in the example). However, while competing premiums stay at the same high initial rate month after month, in contrast the premium paid each month under the teen-miles method depends almost entirely on the number of miles they drive the car.[4] In fact, teens can pay as little as $30 for a month, with the policy fee plus odometer reading fee ($25 total) forming the lower limit.

AGENT REVENUE

In the example above, agent compensation for a full year with fees plus 10% commission on earned premium equals ($40 + 11 * $15) + (10% * 2329 miles * $0.127 per mile) = $205 + $30 = $235.

This example highlights the major role fees play in compensating agents. Here fees (including start up and odometer reading) amount to 87% of the $235 total, while commission on premiums is 13%.

CARRIER REVENUE

Annual revenue in the example—taking account of the 10% agents commission—would be (12 * $10) policy fees plus (2329 miles * $0.127 * 90%) which = $120 + $266 = $386.

CONTROLLING PREMIUM FRAUD

Classification and underwriting. Because teens experience the highest accident involvement rate per million miles, their cars would warrant the highest cents per mile price. Therefore, an agent need spend little effort on policing driver classification. For the same highest-price reason, agents need not provide a named-driver exclusion endorsement for teen cars.[5]

Exposure units. The agent may concentrate on preventing odometer reading mistakes and fraud. (Agents will recognize that this is actually exposure base fraud—familiar in worker's comp, CGL, and other audited exposure base lines.) This fraud can be controlled through use of one-month policies that require a physical odometer audit and maintaining a 1000-mile deposit premium as conditions of monthly renewal.

REMINDERS

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[4] The broad range in monthly miles teens' cars are driven is illustrated by an IIHS study of teen driver reactions to real-time warnings when GPS telematics detects speeding, high-G acceleration, and non-use of seatbelts.

> "The total number of miles driven during the study [24 weeks long] varied widely by participant [n=85], from a low of 338 to a high of 10,345. The baseline period was especially variable, ranging from 8 to 1,031 miles driven during the initial 2 weeks. Six participants did not register any miles during the [two weeks] post-treatment phase; four of these either sold or scrapped their vehicles before the post-treatment phase began."

C.M. Farmer et al. / Journal of Safety Research 41 (2010) 39–45. Note that a car getting 20 mpg with the cost of gasoline at $3 a gallon makes the cost of driving it 15 cents per mile. The cost of driving this car would be roughly doubled by paying cents-per-mile insurance.

[5] Although the named driver exclusion would serve no purpose for a teen car policy, the insurer of the other cars in a household may offer an endorsement excluding the teen from coverage by the policies on these cars. The difference in claim rates per 100 car years between cars rated by men and cars rated by women are very largely an effect of men as a group averaging more miles annually. Accident involvements per million miles are virtually identical for men and women at all driver ages, as established by researchers at IIHS. *See* Figure 2 in Ferguson, S. A., Teoh, E. R., & McCartt, A. T. (2007). "Progress in teenage crash risk during the last decade." Journal of Safety Research, 38, 137−145.

The agency may issue small reminder tags to be hung from the car's steering column or dashboard. A tag—with agency address and phone number—would read "Refill your miles on 11th to 25th of month" for a policy term running from the 25th of one month to the 25th of the next month. At the start of the 3rd week in the policy term—the 18th in this example—the agency may begin sending renewal reminders via email, text message, and telephone.

ODOMETER & OTHER CONTINGENCIES[6]

One product of Mile Station's field research is discovering contingencies that can occur when using an odometer-miles exposure base. Some of these contingencies result from the public's unfamiliarity with metering when applied to auto insurance. While there are Mile Station clients who immediately understood that cars with faulty odometers are ineligible for per-mile coverage, others—having given up trying to make sense of auto insurance prices—were somewhat surprised at this. But any confusion soon will be overcome by the monthly refill visits to an agency. Familiarity will do the trick.

Car not insured for initial drive to agency: The carrier may provide an agency with telephone binding authority limited by a number of miles as well as a one day term that legally governs the duration of coverage. By telephone or email, a CSR asks for the odometer reading when the trip is started from home to agency as a condition to get coverage bound for the trip. At the agency these miles are added to the 1000 miles to be paid for at start up.

As verification, CSR obtains the road distance between the home and agency from the web. (Free distance calculators using street addresses are provided by several sites, e.g., www.randmcnally.com/mileage-calculator.do.)

Non-renewal by client: If the teen client chooses not to renew at the end of a monthly policy period,[7] they can return to the agency for a final odometer reading and refund of unearned miles less an odometer reading fee ($15 in the example). If the car has been driven 200 miles since the last reading and refill, 800 miles will be refunded. In the example, the refund to the client would be 800 * $0.127 - $15 = $87. (The 10% commission on unearned premium owed by the agent to the carrier amounts to 0.10 * 800 * 0.127 = $10.)

In another instance, a client may non-renew a policy, and then within the next month apply unearned insurance miles left on the odometer when they do decide to renew again. For example, if the car has been driven 450 miles since the last refill, then 550 unearned miles remains in the account so that the renewal charge would be 450 * $0.127 + ($10 +$15) = $82. Of course, since in-force coverage is governed solely by policy dates, there would be no coverage for miles driven after the policy terminates at the end of its one-month term. In the example, if 250 of the 450 miles driven were within the policy period, then the 200 miles driven after the policy termination provided no insurance coverage. Hence agents would encourage teen clients to seek refunds, or to renew again, shortly after the policy term ends.

Car not available for odometer reading:

[6] I expect to expand and refine this section in response to questions and comments from agents.
[7] After being served by the teen-miles method for a year or two, a teen may switch to a six months policy with fixed premiums, which does not require a monthly odometer check.

Q. What happens if the car breaks down and cannot be driven to the insurance agency in time for a policy renewal odometer reading?
A. In consultation with the agent the teen would be allowed to photograph the odometer reading, send it to the agency, pay for miles used, and so renew the policy for the coming policy period.

Q. What if the car has been taken out of town for several months, say away at school?
A. An odometer photo and credit card could be used as above, or cooperating local agencies may do the reading.
A. Alternatively, at the end of a number of renewals – say six – the insured could be allowed to text or email a cell phone photo of the odometer reading, and pay for the refill miles by credit card.

Q. What if the car is out of town for all of its two-week renewal period?
A. In consultation with the agent, a client can photograph the odometer with a cell phone and send it in as an MMS message. Payment may be made with a credit card.

Odometer malfunctions: A policy condition states that the car will no longer be eligible for odometer-based insurance until the odometer is repaired and proper operation can be demonstrated. Average past monthly mileage can be used to determine the miles to be refunded at the end of the policy term in which the odometer failure occurred.

Where there may be a question of odometer reliability at the start up, the CSR may ask that the teen car be driven a specified route of several miles to confirm the odometer's accuracy.

Varying time between "monthly" readings: Given the two week range in which the odometer readings are allowed, the time period between readings could vary from as little as two weeks up to six weeks. Doesn't this distort the number of miles paid for during a policy period? Yes, but the combined readings in successive months – late and early, or early and late – to produce the extremes of short and long spans between readings cannot follow each other in successive months. Therefore the effect must be to average out the miles of driving between the readings over several months.

Car goes more than 1,000 miles between odometer readings: Say the car travels 1,500 miles between readings. The refill miles required for renewal payment would be 1,500 miles. (In the example above, the renewal payment would be 1500 * $0.127 + $25 in fees = $216.) This large premium may cause some clients to non-renew, but the carrier would bill for the unpaid 500 miles (500 * $0.127 = $64) for already earned premium. (Instances of non-renewing clients not seeking return of unearned premiums—despite agency notification—are bound to occur.)

AUTO INSURANCE R & D BY PATRICK BUTLER

R & D guideline followed: Costs of both administration and risk should be charged to insureds when each cost is incurred. This means that administrative costs incurred by carrier and agency are charged as fees when a service is rendered. In regard to risk—just as each mile a car travels consumes gasoline and produces exhaust gases—each mile it travels unavoidably produces accident risk. To the extent a car is insured against accident loss, this risk is transferred to the carrier mile by mile. As the risk is transferred, it is charged for—i.e., prepaid premium is earned—at a cents-per-mile class rate.

Pennsylvania auto insurance: In a six months study in 1992, I produced the report entitled "*Operation of an Audited-Mile/Year Automobile Insurance System Under Pennsylvania Law*." (It was published in the

Casualty Actuarial Society's 1993 Summer Forum: pages 307-338.)[8] This study developed the representative transaction-by-transaction approach—charted on page 3 above—for subsequent operational studies. Although odometers were mechanical and annual policies were assumed, the methods and principles were the same as now. These are expressed in the 1992 study's Executive Summary:

> This review examines the practical implications for insurance companies and Pennsylvania car owners of converting premium calculation for most coverages from dollars-per-year to cents-per-mile class rates. The purpose is to provide an operational model for evaluating proposed legislation mandating this conversion (SB 775 and HB 1881). Operation of a mile/year system is described through a sequence of transactions for a hypothetical car over four policy years.
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> Advance payment continues to be required for keeping insurance protection in force. Administrative expense and premium for nondriving coverages (theft, fire, hail) at year rates are paid at policy-year renewal time. Premium for driving coverages (liability, medical, collision) at mile rates is prepaid in mileage amounts and at intervals chosen by the car owner. The car's insurance ID card displays the odometer-mile and date limits to prepaid protection.
>
> Policy renewal is conditional on taking the car to a garage designated by the company for the annual physical audit of its odometer. The odometer is calibrated and read, and tamper-evident seals are applied at the initial audit. Tampering with the odometer voids the insurance protection.
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> The possibility of stealing insurance protection under the mile/year system is explored. Control measures are described using two examples: a 10,000-mile roll back and stopping the odometer for 10,000 miles. (Driving with the cable unhooked, surprisingly, does not steal insurance protection, because it usually would be detected after an accident and tampering voids protection.)
>
> The opposite possibility under the current year system is examined: policyholders having to pay premiums during nondriving periods when their cars are not consuming insurance protection and do not need it. Current "suspension of coverage" provisions for periods of non driving appear to be cumbersome, inadequate, and inconsistently applied. The present administrative handling of premium refunds for non-driving periods is compared to the mile/year system's automatic response to non-driving periods.
>
> The review concludes by examining compulsory-insurance enforcement and compliance under the year and mile/year systems respectively. Attention is given to the negative effect that year-system enforcement has on ability to pay for insurance in comparison to the positive effect of the mile/year system on car owners' ability to comply with requirements.

At the time, however, further pursuit of exposure unit legislation was discontinued until a causal reason could be determined for the high PDL frequencies in some Southeastern Pennsylvania zip codes. Subsequent research provided a coherent explanation—which applies to credit-score rating as well[9]—with reference to high frequency zip codes in Texas.

Texas auto insurance: The research findings are presented in my 2000 Report to the Texas Legislature "*Why the Standard Automobile Insurance Market Breaks Down in Low-Income Zip Codes*" (39 pages)[10].

In late 2000, on the basis of this report, the Legislature introduced HB 45 which in 2001 was enacted into law. Although HB 45 sunset in 2005, the legislative validation of per-mile insurance as an optional

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[8] Available at www.centspermilenow.org/Reprints/486.pdf , 30 pages, or as an article included in a 500-page volume at www.casact.org/pubs/forum/93sforum/93sforum.pdf .

[9] A two page explanation sheet with cartoons is available at http://www.centspermilenow.org/Reprints/811.pdf

[10] Available at www.centspermilenow.org/633b-4522.pdf

alternative to the per-car-year exposure unit led to regulatory approval for the MileMeter Insurance Company to become a licensed carrier in 2008, and to sell coverage at cents-per-odometer-mile rates. (As noted above, the company does not cover cars with drivers less than 18 years old.)

Coincidentally with the start of my research in Texas in 1999, Progressive Insurance began testing its "Autograph" telematics-GPS product in Texas. It was an early PAYD ("pay-as-you-drive") product, which has been replaced by a revised product Progressive calls "Snapshot." My report to the Texas Legislature in 2000 briefly comments on "Autograph".

Teen-miles method is agency centric: Apparently PAYD systems and existing telematics systems for monitoring teen drivers are tied to six-month policies. In contrast, the Teen-Miles method centers on monthly face-to-face, fully-compensated servicing directed by insurance agents.