EMB America

Usage Based Insurance from Theory to Practice

Robin A. Harbage, FCAS, MAAA

March 2009

Antitrust Notice

- The Casualty Actuarial Society is committed to adhering strictly to the letter and spirit of the antitrust laws. Seminars conducted under the auspices of the CAS are designed solely to provide a forum for the expression of various points of view on topics described in the programs or agendas for such meetings.
- Under no circumstances shall CAS seminars be used as a means for competing companies or firms to reach any understanding – expressed or implied – that restricts competition or in any way impairs the ability of members to exercise independent business judgment regarding matters affecting competition.
- It is the responsibility of all seminar participants to be aware of antitrust regulations, to prevent any written or verbal discussions that appear to violate these laws, and to adhere in every respect to the CAS antitrust compliance policy.

Usage Based Auto Insurance

PURPOSE:

- Provide overview of necessary steps to implement **driving behavior rating** for auto insurance

OUTLINE:

- Regulatory environment
- Current users
- What is monitored?
- How important is it?
- Challenges
- Summary

Common Themes

- Regulatory bodies have “Great Expectations”
- Induce drivers to reduce mileage
- Lower the cost of insurance
- Reduce greenhouse gas emissions
- Generally very open to the concept

Regulation

- Many states have implemented regulation to encourage mileage rating
  - California – required rating variable
  - Texas – specific regulation; HB 45, 2001
  - Oregon - tax rebate; HB 2043, 2003

California "Pay As You Drive" Scorecard

Can California Drivers Save By Driving Less?

"C“	21st Century	11	1000
	AAA N. Cal	11	1000
"C-"	Mid-Century	9	1000 or 2000
	Farmers	9	1000 or 2000
	Allstate	8	1000 or 2000
"D"	Progressive	8	1500
"D-"	Infinity	6	2000 or 2500
	Mercury	5	2000 or 3000
	AAA S. Cal	4	2500 or 5000
"F"	State Farm	2	7500

Data from insurance company filings with Ca. Dept. of Insurance

Monitored Driving Programs

- Aviva – Canada
- AIOI - Japan
- Hollard – SA
- Axa - Ireland
- Norwich Union – UK (discontinued)
- Royal & Sun Alliance - UK
- Coverbox – UK (pending)
- Progressive – US
- GMAC - US
- Safeco – US
- American Family – US
- Milemeter – US (pending)
- Unigard – US (pending)

GMAC Mileage Discount

- Only available to OnStar subscribers in 34 states
- Odometer readings sent from OnStar to GMAC with subscriber's permission
- Average initial discount of 26%
- Maximum discount of 54%
- High mileage receive 5% discount for subscribing

Source: The Plain Dealer - July 17, 2008; WSJ - June 26, 2008

Progressive's MyRate℠

- "Progressive is introducing an optional car insurance program … that offers lower rates on vehicles that are driven in less risky ways."
- Wireless device plugged into OBD II port
- Records "how, how much, and when the car is being driven"
- Insureds can select which vehicles to enroll
- Up to a **40 percent discount** when they renew with the program
- **$30 technology expense charged each policy term** for the cost of the device and data transmission

Source: Progressive Insurance www.progressive.com - July 8, 2008

Hollard in South Africa

- Includes a minimum fixed premium and a variable premium based on the mileage of the vehicle for the specific month

- **Fixed premium includes coverage for at least 417 kilometers,** a GPS tracking device, and non-collision losses.

- **Extra mileage is subject to a 'small tariff' per kilometer**

"You can thus control how much you spend on vehicle cover premiums."

Source: www.payasyoudrive.co.za/articles/cheap-car-insurance.html

Aviva Canada ‘Autograph’ Program

- “…**customer attaches a small, matchbook-sized device to the car**.”
- “…delivers what most people want from their insurance - a lower price - **but** demands in turn a price that some may find too high to pay: **real-time monitoring of every move behind the wheel**.”
- “…an **automatic five per cent discount** to all drivers who try it and send in their information.“
- “…**average discount so far is 20.2 per cent**”

Source: Michael Bettencourt - Backbone Magazine, Nov 05

Usage Based Products for Youthful Drivers

- "…soften the blow of adding a young driver to a family policy"
- "…help nurture future customers"

- **Safeco's 'Teensurance' program** for drivers up to age 25
- 15% discount
- Participants pay $15 a month for a satellite-tracking service
- Parents can track vehicle location and disable the car remotely if
  - driven outside set boundaries
  - exceeds a preset speed limit
  - drives past a curfew

- **American Family Mutual 'Teen Safe Driver'**, video and audio surveillance cameras monitor both the driver and the road

Source: WSJ - March 27, 2008

Levels of Monitoring

How far? Simple mileage rating

How? Driving behavior

Where? Location data with GPS

Who? Driver specific

How Far?

- Mileage rating
  - Self reported mileage
  - Self reported odometer reading
  - Verified odometer
  - On-board device with manual transmission
  - On-board device with cellular

How?

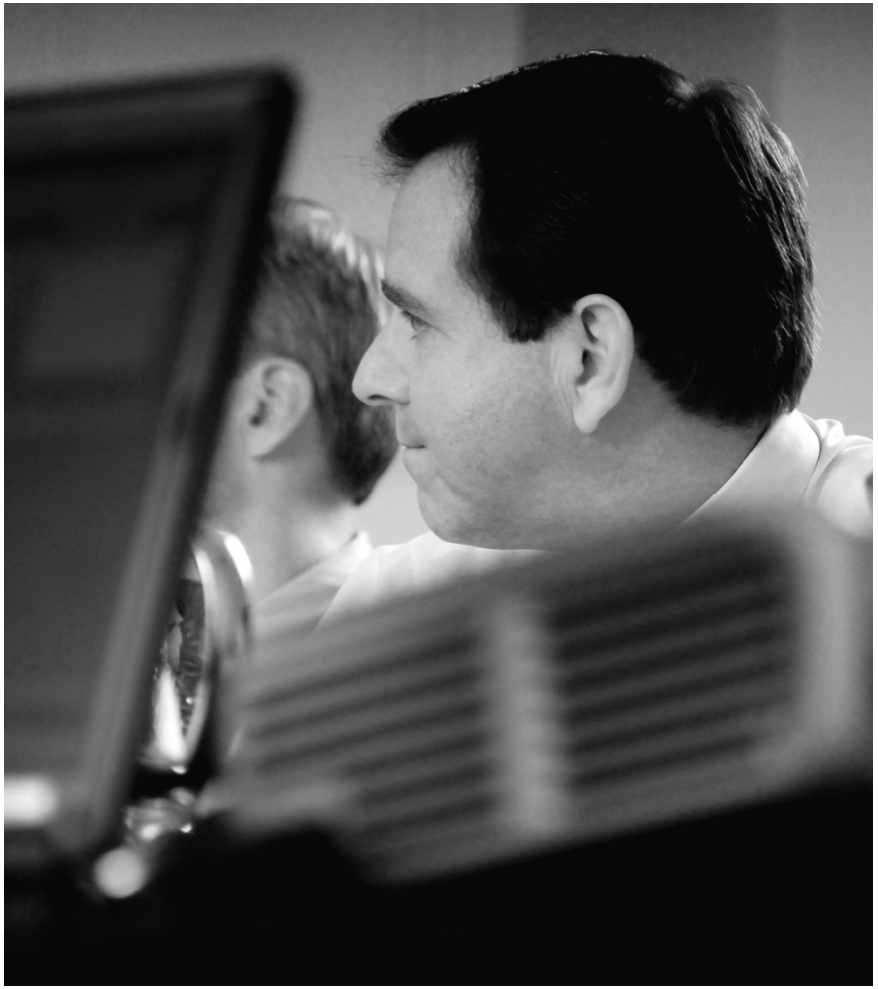
- Speed
- Braking
- Acceleration
- Time of day
- Day of week
- Cornering

Where?

- Location data with GPS
- Mapping latitude/longitude
- Speed relative to speed limits
- Traffic congestion
- Road type
- Population density
- Weather

Who?

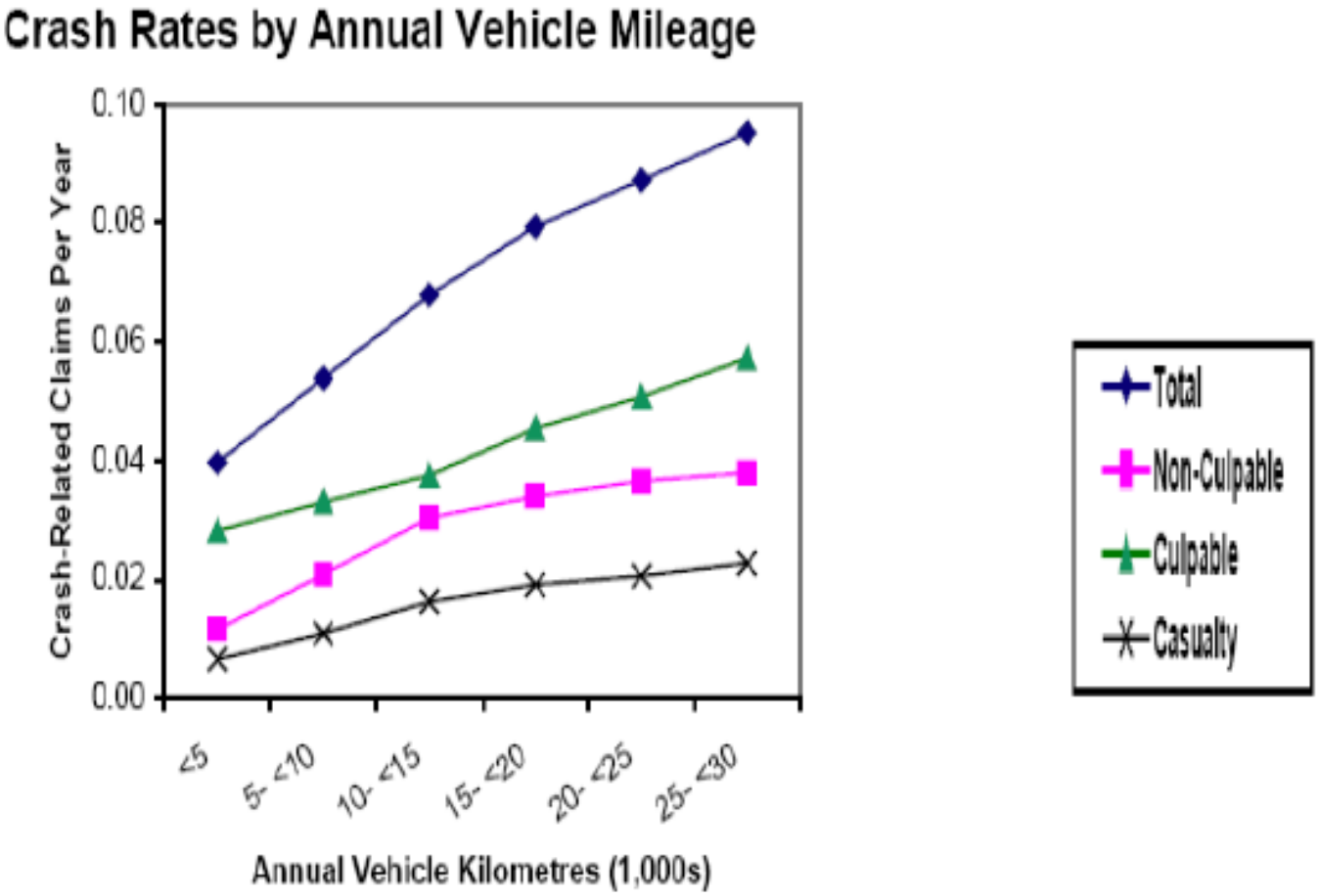
- Driver login
- On-board cameras
- Retinal scan
- Driver “fingerprint”



Benefits

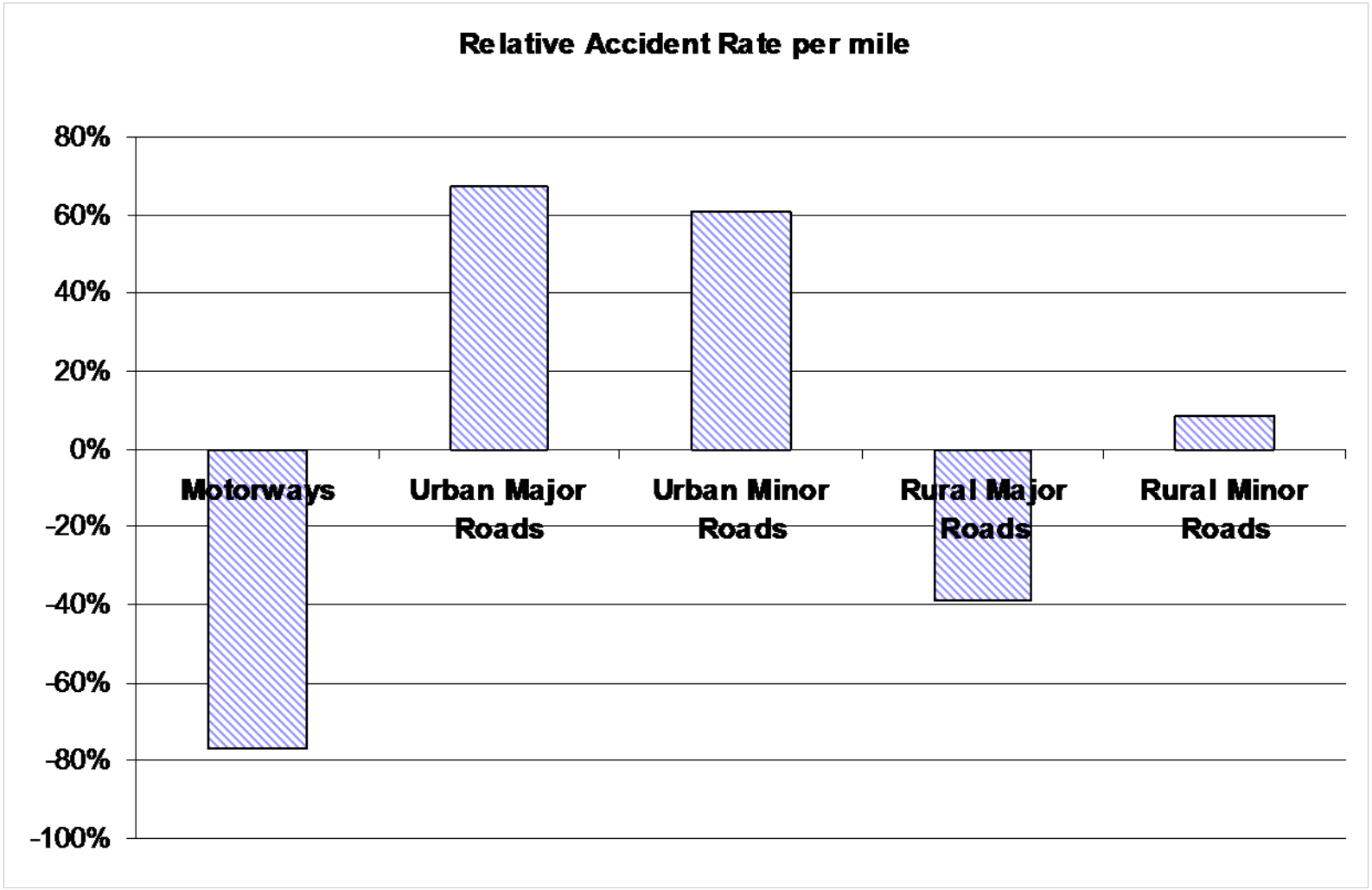
- Consumer understanding
- Political acceptance
- Correlation with losses
- Segmentation
- Competitive advantage
- Customer loyalty

Correlation of Crashes Per Vehicle and Annual Mileage



Distanced-Based Vehicle Insurance Feasibility, Costs, and Benefits: Comprehensive Technical Report, Todd Litman, 2004.

Frequency by Road Type



UK Government Road Casualties Great Britain 2006

Can It Change Behavior?

- “Norwich Union noticed that young drivers were far more likely to be involved in accidents between 11pm and 6am - so it hiked premiums for that age group accordingly.”

- “They can continue to drive at night if they wish but cover for those trips will cost more - as easily seen in monthly itemised bills.”

- “The effect of this imaginative offer on casualty rates and costs has been dramatic. The number of claims made by drivers aged between 18 and 23 has fallen by more than 30%...”

Source: Daily Telegraph; Dec. 22, 2007

Challenges

1. Build an appealing proposition
2. Customer selection
3. Dealing with patent rights
4. Technology
5. Managing the cost
6. Additional revenue
7. Data integrity
8. Translating data into risk exposure
9. Integration with existing systems
10. Billing and customer interactions

Build an appealing proposition

- Break “commodity” status
- Customer in control
- Reduced price
- Ease of use (“Plug & Play”)
- Understandable model
- Reduced risk
- Acceptable restrictions
- Cost to consumer
- Overcome privacy objection
- Two way price changes

Customer selection

- Will identify risks as better or worse than current perception
- Need to target risks likely to be happy with product
- Significant advantage for high premium customers (youthful)
- How to attract new customers with no data
- What to do with higher cost customers

Dealing with patent rights

- Some broad patents exist

U.S. Patent 5,797,134 (Progressive Insurance)

European Patent EP0700009B1 (Salvador Minguijon Perez)

- Patent rights vary by country

- Need for legal advice

Technology

- Device
- Data transmission
- Data storage
- Data compression

Managing the cost

- Trade-off between costs and data granularity
- Trade-off between costs and system sophistication
- Usage based running costs are significant
- Retention rates need to be high

CarChip™ from Davis Instruments

- Plugs into the OBD II port
- Measures time, speed, and connection

Mileage Logger ™

- Commercial device from Vulocity
- Advertised for IRS mileage tracking
  - Mileage and Location
  - History Available Online
  - No Installation
- “Plug it into your car and put it in your cup holder, center console or on the sun visor. You don’t have to remove it since it sends all of your mileage records over the **cellular** network.”

https://mileagelogger.com

Additional revenue

- Additional revenue streams are attractive
  - Emergency response
  - Youthful geo-fences
  - Anti-theft
  - Attractive customer reports

- Distraction of additional features can blur cost and delay implementation

Data integrity

- Both customers and insurer need to trust
- Risk of fraud
- Risk of revenue loss
- Customers need accurate bills

Translating data into risk exposure

- Pricing model needs additional data to be collected
- Key relationship between data detail and pricing advantage
- Pricing needs to be intuitive and motivational

Integration with existing systems

- The data is not standard insurance data
- High data volume
- Numerous IT challenges

Billing and customer interactions

- Regular billing with itemized charges
- Policy term and expiration
- Opportunity to “coach” safer driving
- Choice to participate or share data
- Privacy – Who owns the data?

Who Owns the Data?

- Ruling issued by NHTSA in the 1/14/2008 Federal Register for OEM “Black Boxes”
- Applies to all vehicles manufactured in September 2012 or later
- For all vehicles collecting event data, manufacturers are required to collect a minimum set of standard pre-crash and crash data.

Source: Injury Sciences LLC; www.injurysciences.com

Contact us

EMB
12235 El Camino Real
Suite 150
San Diego, California
92130

T +1 (858) 793-1425
F +1 (858) 793-1589
www.emb.com

