Usage Based Insurance:
The Actuary in the Driver's Seat

CASE Meeting
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Usage Based Insurance ("UBI") is…

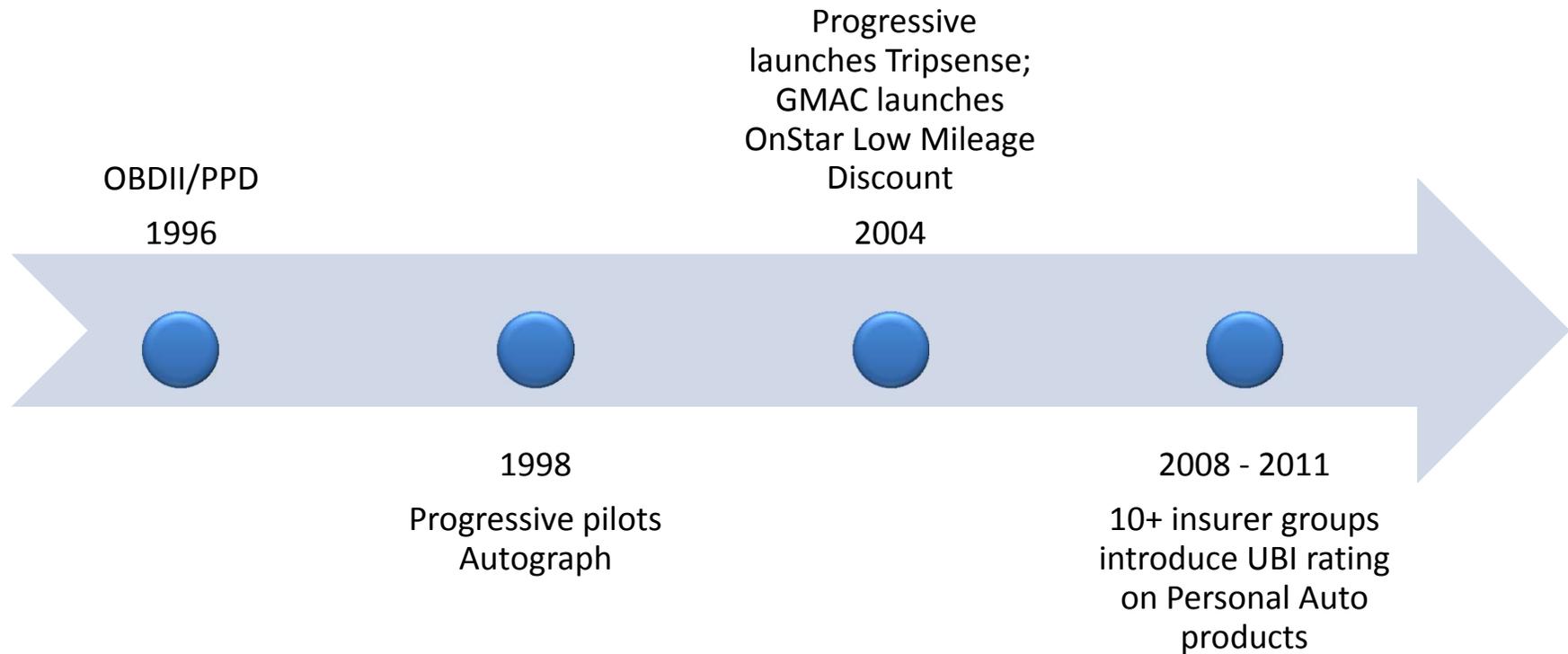|	
Defined as	• A rating structure based on data, from a device installed in a motor vehicle, in which an individual's driving habits are used to determine premium.
Also Known As	• Telematics • Pay as you drive
Revolutionary	• Allows for rating on actual driver behavior rather than proxy data.

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The Added Value of UBI

Value Added Service	Benefits Insured	Benefits Insurer
Driving Feedback	X	X
Vehicle Tracking	X	X
Roadside Assistance	X	X
Geo-fencing	X	X
Vehicle Diagnostics	X	X
Claim Validation		X
Improved Marketability		X
Improved Persistency		X

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History of UBI

Progressive launches Tripsense; GMAC launches OnStar Low Mileage Discount

OBDII/PPD

1996

2004

1998

Progressive pilots Autograph

2008 - 2011

10+ insurer groups introduce UBI rating on Personal Auto products

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Presentation Outline/Scope

Vendor Selection	Device Selection	Data Capture	Competitor Monitoring
Rating Plan Design	Regulatory/Rate Filing Support	Predictive Modeling	Results Monitoring

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Vendor Selection

Telematics Ecosystem

Web Portal for Program Enrollment	**Device Packaging, Inventory, Fulfillment**	**In-Vehicle Telematics Device**	**Location Based Services**	**Data Transmission**
Data Warehouse	**Web Portal for Dashboard Reporting**	**Customer Service**	**Facility to "Recycle" Devices**	**Data Analysis**

Device Selection

Original Equipment Manufacturer ("OEM") Solution	Hard Wired Device	Mobile Device	OBDII Plug In Device
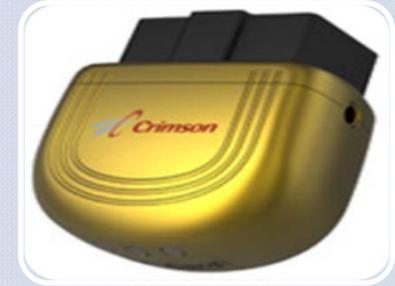
Device Selection

Multiple Vendor Offerings

Device Costs Dropping

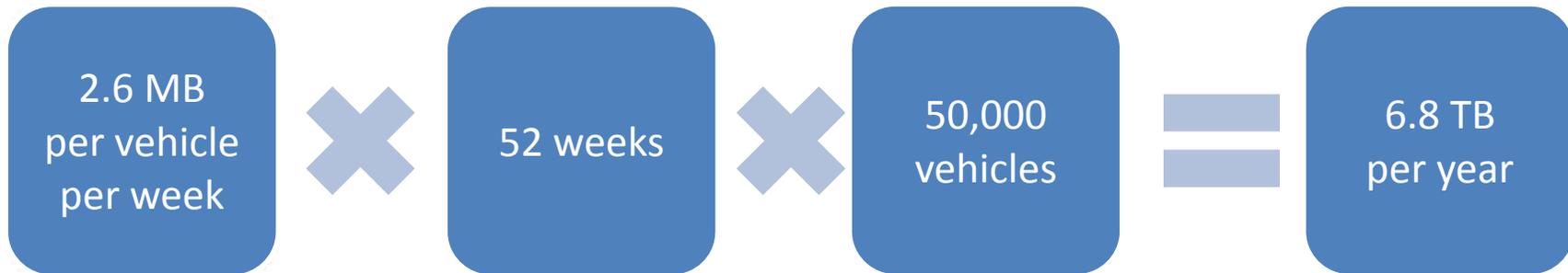**Mileage, GPS Standard**

Additional Monitoring Capabilities

- Acceleration
- Hard-Braking
- Turning G-Forces

Data Capture

Sample Trip Summary Data – One Day

State Date	Start Time	Motorway Yards	Urban Yards	Other Yards	Motorway Seconds	Urban Seconds	Other Seconds	Total Speeding Yards	Total Speeding Seconds
3/3/2012	12:12:00	-	31	-	-	13,713	-	-	-
3/3/2012	14:17:11	-	3,355	-	-	7,934	-	-	-
3/3/2012	14:34:03	39,566	39,010	69,042	1,328	1,922	2,864	1,379	38
3/3/2012	15:47:59	-	11,346	907	-	858	60	-	-
3/3/2012	17:21:11	31,426	43,634	57,937	1,020	2,141	6,916	-	-
3/3/2012	19:36:07	-	4,501	5,401	-	2,912	330	-	-
3/3/2012	21:57:27	-	14,255	1,394	-	22,466	60	-	-
3/3/2012	22:24:43	-	-	-	-	386	-	-	-

2.6 MB per vehicle per week ✕ 52 weeks ✕ 50,000 vehicles = 6.8 TB per year

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Competitor Monitoring

Assessing the Landscape

- Identify your competitors
- Monitor your competitor's use of UBI, e.g. geographical coverage, market
- Learn how your competitors are using UBI, e.g. mileage, driving patterns

Competitive Positioning

- Determine your competitive position without UBI
- Estimate how various UBI program designs will change your competitiveness
- Ensure selected UBI program allows you to compete

Impact Monitoring

- Review conversion rates for changes
- Compare actual vs. expected results
- Monitor competitor response, program changes

Rating Plan Design

Design Options

- Mileage Monitor
- Credits/Surcharges based on Driver Behavior
- Driver Score/Grade

Considerations

- Establishing Initial Factors/Credits/Surcharges
- Affected Coverages
- Impact of "Opt-In" Program on Overall Rate Adequacy
- Reduced Impact of Other Rating Variables
- Patent/Trademark Infringement

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Regulatory/Rate Filing Support - Overview

Current Regulatory Climate
- DOIs Recognize Benefits/Have Concerns
- Some Restrict Use
- Ask Many Questions

Support Requirements
- Rating Manual
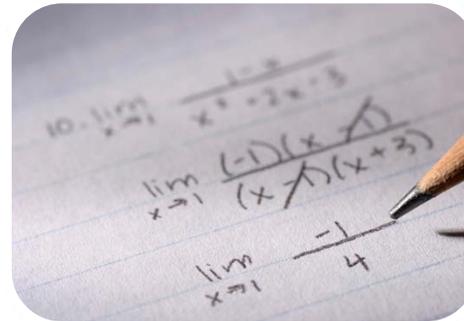- Statistical or Competitive Justification
- Prove not "Unfairly Discriminatory"

Additional Considerations
- Strategic Timing
- Confidentiality

Regulatory/Rate Filing Support - DOI Questions

Device Functionality

Data/ Support

Transparency

Privacy

Predictive Modeling

Data Challenges
- Data is unrefined
- Unique data anomalies
- Credibility issues
- Link to third party data

Variable Selection
- Basics: mileage, when you drive, where you drive, fuel used
- Advanced: #of hard brakes, lane changes, minutes over 80mph
- Out of the box: behavior patterns, unlimited possibilities…

Modeling
- Find strongest predictors of frequency/severity /loss ratio
- Watch for correlation with "legacy" rating variables
- Test on hold-out data

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Results Monitoring

| Review/Analyze Experience	Behavior Modification	Assess Cost vs. Benefit
• Test both UBI participants and Non-UBI participants • Watch for variable correlation, changing participation • Consider new variables	• Driver feedback may change driving pattern • How often to re-evaluate a risk? • Any limit to rate impact of a UBI rescore?	• Costly data capture needs to pay-back with improved loss ratio/increased profit • Hidden cost of not participating is adverse selection

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Steering Through UBI

Revise → Capture Data → Analyze → Implement → Monitor → Revise
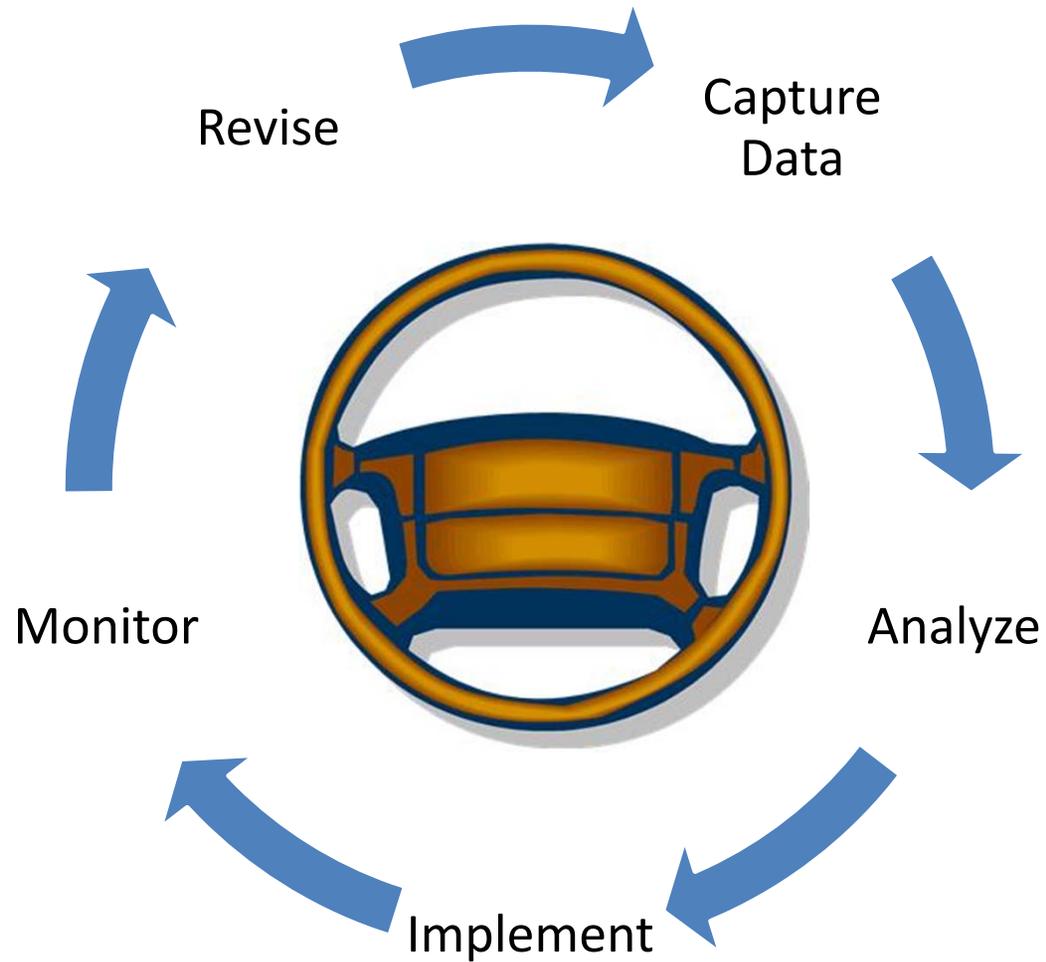
Questions

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