Vehicle Telematics & Usage-Based Insurance

AN OVERVIEW FOR POLICYMAKERS

Tuesday, June 21, 2 p.m. EDT
CSG eCademy webcast presented in collaboration with The Griffith Insurance Education Foundation
CSG & The Griffith Foundation

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Agenda

• Steven Bayless, Intelligent Transportation Society of America
• Kevin Shaver, Ph.D., Duquesne University
• Your comments & questions
ITS America is an association of public and private organizations that are focused on advanced vehicle technology, smart cities, and new models for mobility.

Our members include auto, telecomm, traditional IT and emerging tech, and consumer apps and industrial electronics.

We also include public agencies and non-profits, such as road, transit and other transportation infrastructure operators and the research community focused on bringing new technology from the lab to our roads, cars, buses and trucks.

ITS America is in the process of introducing its policy roadmap for 2017 this fall
Vehicle Telematics

The surface transportation system as we know it is preparing for a dramatic organizational redesign
- In 2008, 5.8 million crashes occurred
- 34,017 of which were fatal
- Congestion is spreading, infrastructure assets are deteriorating
- Lack of data/or stovepiped data
- Lack of coordination between transportation and other national, local and regional goals and operations (energy, environment, security, land use planning)

Telematics - Increased communication amongst system elements with technology
- Personnel Subsystem – Drivers
- Technological Subsystem – Vehicles
- Environmental Subsystem – Infrastructure, Weather
- Organization Design
  - Top-down: Policy, Laws, Enforcement, Education
  - Bottom-up: Individual Driver Behavior

Communications between elements
1) Short Range Real Time Crash Avoidance
2) Long Range Telematics

source: Dr. Greg Fitch, Virginia Tech – ITSA Safety Forum (adapted)
Telematics Services Fragmentation

- Products (Integrated OEM vs. Aftermarket vs. Consumer Electronics)
- Services (Business Fleet vs. Direct Consumer, Indirect Consumer)

Combination of features – Infotainment, navigation, traffic, parking, crash avoidance (Sensor and V2X), tolling, commercial credentialing, remote vehicle diagnostics, fleet management, logistics, insurance telematics, ride/vehicle sharing
**ITS Potential in Vehicles**

- **Driver Assistance Systems – The Vehicle Subsystem is improving performance**
  - Travel advisory systems to improve driver expectation
    - Route selection, road and weather conditions
  - Indirect viewing systems to improve spatial awareness
  - Collision warning systems to direct attention to crash threat (autonomous and cooperative)
  - Collision avoidance systems to initiate avoidance maneuver if driver fails to do so

- **Driver-Optimized Interfaces are coming**
  - Needed to safely deliver information and mitigate driver distraction

- **Workload management may need to be implemented**
  - Needed to adjust/deactivate technological components when driving task demands are high

- **Combination of efforts will improve safety**
  - Help to uphold driver reliability
  - Increase total system reliability by adding redundancy from Systems

*Source: Greg Fitch, Virginia Tech – ITSA Safety Forum (adapted)*
ITS Potential for Drivers

- Safe driving relies too much on personnel subsystem components arranged serially
  - Driver is the only component that can perceive, decide, and initiate driving response for a vehicle
  - Total reliability always at or below the weakest link
    - Driving task demands can exceed driver capabilities
    - Driver error accounts for 45% - 75% of roadway crashes

- Technology can increase system reliability by arranging components in parallel to driver functions
  - Both driver and vehicle sensors can perceive threats
  - Both driver and algorithms can decide responses

- Technology can re-enforce safe driving behaviors
  - Provide feedback after “near crashes” or other events
  - Coach and incentivize drivers for consistent safe driving
  - Cooperative Crash Avoidance to coordinate between drivers (V2V)
  - Some suggest that artificial intelligence can entirely replace human “drivers”

Source: Greg Fitch, Virginia Tech – ITSA Safety Forum (adapted)
Federal Policy on Automated Vehicles – NHTSA May 2013

- NHTSA is responsible for Federal motor vehicle safety standards (FMVSSs). Policy is “recommended principles” for states to apply in new testing/licensing regimes.*
  
  - **Level 0 – No Automation** - Driver is “solely responsible” for road monitoring and operating the vehicle controls (e.g. may include crash warning-only systems)
  
  - **Level 1 – Function-specific Automation** - Driver is still “solely responsible” but may temporarily “cede limited authority” of steering, braking etc. (e.g. ACC)
  
  - **Level 2 – Combined Function Automation** - Driver “solely responsible”, but may relinquish the controls of steering and the foot pedals (e.g. Traffic Jam Assist)
  
  - **Level 3 – Limited Self-Driving Automation** – Driver can “cede full control of all safety-critical functions,” *but only under certain conditions*
    
    - Driver must still be available to reestablish control, but with “sufficiently comfortable transition time”
  
  - **Level 4 – Full Self-Driving Automation** - Driver is occupant and not “expected to be available for control at any time”
State Law/DMV Regulation on Autonomous Vehicles

2016 NHTSA Update
NHTSA will propose best-practice guidance to industry on establishing principles of safe operation for fully autonomous vehicles (vehicles at Level 4 on the scale established in NHTSA’s 2013 preliminary policy statement).

California DMV – 2015 draft rules—explicitly ban cars without human drivers, as well as the commercial use of the technology, until further notice.
ITS Potential for Infrastructure

- Driver/vehicle factors contribute to the causation of many more crashes than road infrastructure factors.

- Road agencies can benchmark safety by road segment and reallocate resources across strategies (e.g. road improvements, greater enforcement etc..) based on risk.
  - US Road Assessment Program (usRAP) to incorporate historical crash data and safety-relevant roadway inventory data.
  - Risk maps based on fatalities, “Star Rating” based on protection measures found in infrastructure inventory data.

- For driver, route choice may rely on combinations of factors, optimizing between efficiency (fuel cost, toll/parking cost, time), environmental impact, and even safety.

- Road authorities may evaluate competing transportation projects not just by impact on mobility, but also on overall contribution to improved safety.

- Intersection crashes high, and V2X Cooperative Crash Avoidance key.
Crash Avoidance Features Drive Down Claims

- New Vehicle crash avoidance technologies are beginning to show impact on insurers: Studies by IIHS show connection between reduced claims and crash avoidance features
- Property damage liability claim frequencies for the 2010 Volvo XC60, equipped Automatic Braking, have been lower than for equivalent category vehicles
- 14 percent fewer claims under property damage liability than when compared to the same models without the features
New Technology Gaining Momentum

- Twenty automakers will make automatic emergency braking a standard feature on virtually all new cars no later than 2022 (IIHS/NHTSA)

- Long range Telematics - OEM Connected vehicles 11.4 million, now, 60 by 2017 – Vehicles become “managed devices”

- Lyft and GM announce Express Drive to help the pair lay the infrastructure for fleets of self-driving cars down the road

- Legislative proposals for new NHTSA rulemaking authority to address self driving systems

- Vehicle-to-Vehicle (V2V) Cooperative crash avoidance is mature, and GM announces first in Cadillac in 2017. Other OEMs waiting for regulation

- Proposed Regulation on V2V stuck at White House and FCC with potential steps backward because of spectrum battle with Cable industry
White House 2016 Decision on V2V Crash Avoidance

- White House may not allow NHTSA to move forward with V2V rule despite past administration policy, in order to satisfy cable industry desires to expand outdoor Wi-Fi use in same spectrum band.
  - President’s FY17 budget: “$4B for pilot programs to test connected vehicle systems.. And ensure a common multistate framework for connected/autonomous vehicles.”
  - In White House Office of Science and Technology and National Economic Council report “Strategy for American Innovation” in October 2015:
    - “Advancing connected-vehicle technology to ensure every lightweight vehicle has the ability to communicate critical life-saving information”
    - Cable industry letter to the President, and reports critical of NHTSA V2V research, privacy and security cannot be answered on the record by NHTSA while V2V is under White House review
      - If no answer from White House by July, then Autos and others must address process of how to move forward with V2V without a national standard.

- Along with FCC, White House has opportunity to provide regulatory foundation for future vehicle technologies, if it can follow through
Insurance Telematics Objectives

- **Reduced claims volume**: Crash Avoidance Technology reduced claims
- **Reduced claims processing costs**: More information coming from vehicle
- **Overcome Regulatory hurdles**: Some states require carriers to publicize their underwriting models, others limit parameters for product pricing
- **Overcome Business Model Constraints**: While regulators favor lower premiums for good driving, they do not have a clear stand on raising premiums for bad driving, impacting carriers’ competitiveness
ITS Potential for the Insurance Industry

- What kind of driver, vehicle, or road data can be collected? what new insights can be generated on risks factors?
- How can technology companies or insurance providers identify risky behaviors and provide useful driver feedback?
- How are risks analyzed and priced for user-based insurance? What are business model considerations for insurance providers?
- Transparency, education and consumer acceptance - How is customer service linked and how are services bundled or packaged?
Key Questions

• Will regulators be comfortable with how insurance companies evaluate risks and charge?

• How are all these aspects built into telematics UBI platforms? What flexibility can be built in to accommodate change in business or regulatory policy, or new service models?

• Will insurance telematics incentivize adoption of new technology in cars?

• How will fully automated and connected vehicles be insured, especially in the early years when not enough miles have been driven to establish safety assurance and prove risk reduction?
Questions?

Please submit them in the question box of the GoToWebinar taskbar.
Kevin Shaver, Ph.D.
Categories of Telematics Models Used in Auto Insurance

**Dongle** – An insurer provided, self-installed device, used for a limited time:
- The most commonly used model in U.S. markets.
- Progressive’s Snapshot, Allstate’s Drivewise & Nationwide’s SmartRide.

**Embedded** - Automobile manufacturers install telematics equipment that comes with vehicles, e.g., OnStar:
- State Farm’s Drive Safe & Save, National General’s Low Mileage Discount.

**Smartphone** - Smartphones used as stand-alone devices or linked to vehicles’ systems:
- State Farm’s Drive Safe & Save, RSA Insurance’s MORE TH>N DRIVE, Direct Line’s DrivePlus.

**Black box** - A professionally installed device that provides the richest data:
- Admiral’s ApplyDriver System.
Potential Benefits and Costs of Telematics in Insurance

Consumers:

- Reduced cross-subsidies between high and low risk drivers:
  - Premium reductions for drivers through insurer participation discounts.
  - Premium increases for those who chose not to participate.
- Expenses may become more easily measurable allowing drivers to better balance the costs and benefits of driving.
- Incentivizes drivers to improve safety when driving.

Insurers:

- Costs associated with technology and use of the resulting data.
- Higher accuracy in pricing allows underwriters to better segment drivers by risk type:
  - First movers gain a competitive advantage.
- Reduced claims costs because data allows for improved accident damage assessment and increased ability to identify fraud.

Society:

- Improved driving safety for drivers and pedestrians.
- Reduction in congestion on highways and city streets.
- Reduction in automobile emissions.
Contemplating Ways to Ensure Efficient Insurance Markets

Encourage consumer buy-in by addressing telematics concerns:
- Create standards for permitted and prohibited uses of consumer data.
- Develop nationwide standards for data ownership and privacy.

Promote the free flow of information so that all parties can make informed decisions:
- Make it possible for consumers to compare rates across companies using own telematics data.
- Ensure the disclosure of the impact of telematics on rates so consumers receive feedback and alter behavior.
- Increase resources and improve organizational structure for DOI’s to:
  • Support the analysis of increasingly complex insurance products.
  • Assure that products are consistent with statutes.

Promote innovation and competition that aligns consumer, insurer, and society’s interests:
- Target balanced competition over the long-run:
  • Identify market structure that is robust to some choosing not to use telematics products.
  • A critical mass of insurers must use telematics products in order for constructive competition to prevail.
- Provide the necessary protection to incentivize insurers to innovate at the optimal level:
  • Proprietary knowledge protections.
  • Staggered arms race.
- Maintain a broad perspective on the potential scope of telematics when writing regulations.
Telematics in the U.S., May 2014

Use of telematics is already significant:

- 5 markets did not have companies using UBI programs:
  - CA allows only very limited programs based on mileage only
- 10 markets have less than 5 companies offering UBI.
- 15 markets have between 5 and 11 insurers offering UBI programs.
- 8 markets have 12+ companies offering UBI programs.
- 9 markets were unable to give a precise number of insurers using telematics.

6 states have specific legislation regarding the use of telematics and privacy concerns and/or rating issues:

- Virginia – Specifies pricing and renewal standards.
- Washington – Use of data and exempts some UBI data from becoming public.
- Delaware – Allows use only for premium discounts and requires consumers to be informed about who can use their data.

Several Markets in Greater Detail

California:
- Several required ratings factors and other acceptable factors insurers can use are set out in regulations:
  - Currently telematics devices in CA can only gather mileage data.
- Specific concerns about the validity of telematics data for setting rates.

Illinois:
- Insurers can innovate as they please, as long as they are transparent:
  - Promotes the use of mileage-based rates that are verified by telematics devices.
- 2011 statute grants protection to insurer proprietary trade secrets.

New York:
- Requires prior approval and public disclosure of the filing and supporting information following approval:
  - Seeks to be very accommodating to firms looking to utilize telematics.
- No specific protection is guaranteed for filed algorithms used by insurers offering UBI.
  - Limits innovations by firms that can be copied by competitors.

Questions?

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