



# Implications of Evolving Technology in Auto Insurance: An Expert Panel Discussion

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## An Expert Panel Discussion

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# Implications of Evolving Technology in Auto Insurance:

## An Expert Panel Discussion

### Introduction

Just as the motorized vehicle supplanted the horse and buggy in the early 20<sup>th</sup> century, the rapid advancement of technology today will revolutionize how humans interact with their vehicles in the near future. Vehicle manufacturer initiatives to incorporate new technology into their products should usher in societal benefits such as improved driving safety, enhanced fuel efficiency and potentially lower costs for insurance.

These improvements come with a cost and have potential pitfalls. As the collection, analysis and integration of driving-related data occurs within organizations, the potential for unintended adverse outcomes is high.

In October 2022, the SOA Research Institute assembled a panel of experts, to engage in a discussion to explore these issues. The panel members were drawn from diverse professional backgrounds, to provide a range of perspectives. The panel members' names are included at the end of this report. To encourage candor in the discussion, Chatham House rules were followed — the participants were assured that this report would not attribute comments to specific individuals. The panel members also indicated that the views expressed were their own and were not intended to represent positions of their employers. Likewise, the authors of this paper are summarizing the panel members' views as expressed in the discussion and are not conveying their own perspectives or positions of their employers.

This paper summarizes key points raised during the expert panel's discussion — and may serve as a catalyst for readers to engage in further discussion, to anticipate and prepare for the impact of technology on the evolution of the automobile and insurance industries.



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## Section 1: Autonomous Vehicles

### 1.1 IMPACT OF TECHNOLOGICAL ADVANCES IN AUTO INSURANCE CLAIMS

Auto insurance claims will be impacted by two distinct forms of technological advances: enhanced safety features, and autonomous vehicles. Regarding the development of enhanced safety measures, the panel members noted:

- Rear automatic emergency braking appears to be the most effective technological advance to reduce claim frequency, yet it is not leading to decreases in claim severity. It has resulted in massive reductions in frequencies for the lowest severity band but has had little impact on the higher severity bands.
- In addition, automated emergency braking when driving at low speeds in reverse, functions quite effectively, and the lowest severity band is typically in the low-speed range.
- Front automatic emergency braking delivers significant claim frequency reductions. After September of 2022, the majority of new vehicles will be equipped with this technology. As of calendar 2021, 18% of all registered vehicles were fitted with Front AEB.
- By contrast Rear AEB delivers larger benefits but is fitted to far fewer vehicles.
- Even though further technological advances in safety measures could be possible, the safety measures that are adopted by car manufacturers may be more limited, since added cost may be a prohibiting factor.

Regarding the impacts of autonomous driving on claim experience, the panel members noted:

- It is ironic to observe that technology often helps us the most where we least need such help — and autonomous driving is no exception. While we may arguably need more help maneuvering in parking lots than driving on interstate highways in free flow, the latter is where manufacturers have tended to focus their efforts on technological advances. It has also been observed that claim frequency at least has not increased, in response to adopting automated driving systems.
- It is important to note that even with available automated features, the driver is responsible for the final decision. These features can be misused by drivers, resulting in negligence and/or aggressive driving, such as following closer because the automatic emergency braking will engage sooner than a human, or utilizing adaptive cruise control while being more distracted, etc. For example, while we would have expected fewer auto crashes during the pandemic, crashes in the summer of 2020 apparently increased with even fewer cars on the road — and by analogy, the adoption of autonomous driving technologies may not directly lead to a decrease in claim experience.
- Self-selection for autonomous vehicle drivers can also be an issue; for example, with impaired drivers who let their autonomous vehicle drive them home. Do safer drivers seek out safety features, when selecting a vehicle? Do safety features make aggressive drivers feel safer, thereby prompting them to drive more aggressively? By contrast, if the safest drivers also select the safety features, they may not get tested much, and it may be difficult to determine the effectiveness of the safety feature in real-life driving.
- Compliance issues with autonomous driving systems have often been neglected, such as speeding, and deceleration on approaching yellow lights.

## 1.2 BUSINESS IMPLICATIONS OF AUTONOMOUS VEHICLES

The panel discussion shifted to the potential business implications of more widespread adoption of autonomous vehicles.

On the prospect of a new business model, where (in addition to designing and assembling new vehicles) automobile manufacturers retrofit older model year vehicles with autonomous vehicle features, several potential implications were noted:

- This might not be easy to implement in the near future – as it would require adjustable architecture and restructuring of a vehicle, and integration of multiple parts such as sensors, actuators, computers, and software.
- There are some companies that provide so-called ‘stand-alone retrofit solutions’ that may include forward collision warning, lane departure warning and functionality. There is a distinction however between warning technologies and actuation technologies, and it is the warning technology retrofit solutions that are seen currently.
- Large commercial trucks are an example of the types of vehicles that can benefit immediately from simple retrofit solutions.

Ride sharing services may have a significant impact on vehicle ownership:

- Ride service business models have achieved success in large cities (although with limited profitability), but similar success is more challenging in smaller communities and rural areas, with less population density.
- The availability of autonomous vehicles might encourage vehicle ownership, since the purchase of an autonomous vehicle is equivalent to hiring a driver for a traditional vehicle (provided there is sufficient quality of automated driving).
- Behavioral change may be more likely to impact commercial lines than personal lines.

## Section 2: Telematics

### 2.1 INFLUENCE OF TELEMATICS ON AUTO INSURANCE CLAIMS

Telematics have been widely adopted, yet there is ongoing debate on whether this has been successful or not. Some argue that there is a bias and discrepancy in telematics rating plans, while others insist that telematics provide an optimal risk classification strategy for motor insurance carriers:

- The impact of telematics on auto claims is a limited success thus far, in light of the improved underwriting results of insured drivers that opt into the telematics insurance program. These drivers not only tend to have reduced driving exposure, but also exhibit more careful driving behaviors.
- The current data from telematics may potentially be skewed or may be misinterpreted. It is challenging to take into account all the conditional variables such as traffic conditions and other dynamic variables. The telematics algorithms and computations appear not to be flexible enough to consider external risk factors.

## 2.2 RELATED ISSUES AND CONCERNS

Thus far, telematics has been an optional rating plan for drivers. Some states have imposed regulations restricting the use of telematics, while other states allow more latitude. Beyond the regulatory environment, the panelists discussed several concerns relating to privacy and discrimination:

- Risk classification of auto insurance differs by state. For example, in California, state law does not allow telematics for use in rating. Tesla has been implementing its own telematics as a prescribed rating plan in ten of the eleven states where it operates; and more insurers are starting to implement telematics in their rating plans.
- In most cases, the telematics rating plans are optional. Some drivers do not favor telematics due to privacy concerns and therefore choose not to opt in. Those who believe they are good drivers are more likely to opt in, while those who drive more aggressively will not.
- Recently several manufacturers have started collecting various data on braking and steering.
- Some drivers are concerned that their personal data may be breached, so they opt out of the telematics program or choose not to give permission for the use of their data.
- Data collected from vehicles may have multiple interpretations, given different analytical assumptions and methods. For example, various insurers could define risk variables such as hard braking, rapid acceleration and nighttime driving differently, resulting in differing risk ratings and customer confusion.

## 2.3 TELEMATICS DATA

To ensure appropriate consumer protection and fair risk classification, the panelists discussed the importance of data privacy and setting clear guidelines on telematics rating variables:

- For telematics-based insurance, all aspects of an individual's driving must be monitored. The volume and variety of data generated by this monitoring is enormous.
- Records such as the accident history of an insured are shared reciprocally between states for risk profiling; however, the driving data collected and maintained through telematics are owned by manufacturers or insurers. One suggestion advanced in the panel discussion is for telematics data for drivers to be shared from a central repository.
- The discussion highlighted that there is a lack of consistency and transparency on telematics rating factors across different insurers.

## Section 3: Loss Trends

### 3.1 LOSS TRENDS

The panelists exchanged perspectives on loss trends of newer vehicles, and the potential trade-off between decreased claim frequency and higher claim severity:

- It was noted that the motor industry has focused on the decreased incidence of collisions and deaths due to motor accidents.
- Both telematics and automated technologies are focused on enhancing safety to avoid crashes. While adopting completely different approaches, these two technologies share a common goal of decreasing frequency and severity and ultimately eliminating crashes. To achieve this goal, the insurance industry should proactively identify and pursue initiatives that build on these changes and advancements, not just passively follow the technological trends.
- It was noted that the number of vehicles with technology for collision reduction is increasing. Because of the wider prevalence of such technology, claim losses are trending down. For instance, cars equipped with front automatic emergency braking show a 14% reduction of claim frequency; to date, only 18% of U.S. vehicles are fitted with this technology.
- There is a clear trade-off between claim frequency and costs. As vehicles are becoming more crash-resistant, they are also being driven faster and some states are increasing speed limits. SUVs are heavier and, in a collision, cause more damage to other vehicles.
- Enhanced assistance features could have unintended consequences, as some drivers may become overly reliant, and drive less cautiously.

## Section 4: Regulation

### 4.1 REGULATION OF TELEMATICS, RISK RATING, DISCLOSURE TO CONSUMERS, AND INDUSTRY DATA AGGREGATION

The panel discussed the impacts of technology on auto insurance from a regulatory perspective. A range of perspectives emerged from the discussion:

- Telematics needs definitive regulation.
- The marketing strategy of some automobile manufacturers focuses on drivers enjoying the driving experience. This could encourage vehicle owners to drive in a way that may result in drivers being less focused on safety.
- Distance driven is an important metric in risk rating, and the annual distance directly impacts the premium charged. An alternative approach might be to offer a “per usage” form of insurance, related to amount driven.
- Insurance programs exist that enable a driver to pay by the mile, but monitoring is required for this to work. Reporting distance driven does not result in a significant premium reduction for the driver, without monitoring verification. The safest drivers would want monitoring verification (privacy considerations aside).

- Vehicle use information is not necessarily considered personal information. Miles driven can be validated, but not the identity of the driver, where multiple users have access to a vehicle. More direct personal validation would reduce privacy but would enhance the insurer’s ability to rate risks more accurately on an individualized basis. Might these privacy issues be an area for which regulation can provide guidance?
- An argument was made that there should be more regulation focusing on increased transparency, which would enable more informed decisions to be made by consumers. In this context, increased transparency could include more specific definitions of hard braking, acceleration and deceleration, disclosed to the consumer. Consumers need to understand the metrics influencing their premium rates, and there should be more consistent standards for risk rating across companies. Increased transparency on rating approaches would be helpful for insureds.
- Use of behavioral variables is not as precise, without someone with behavioral science training involved in the process. If an insurer does not fully understand the factors influencing driver behaviors, there is a risk of misinterpreting the associated variables. Clear and well-reasoned standards would enhance transparency and fairness. Regulations to tighten definitions, and ensure they make sense, is important.
- A panelist noted that consumers are willing to pay more, to insurers that are more transparent with their rating / pricing process. This comment originated from a finding from a Consumer Reports study.
- Based on the names used for some telematics variables, it can be difficult to deduce what the variable means.
- A potential solution may be suggested by considering a similar challenge in the U.S. health care field — where an agency (Medical Information Bureau) compiles a significant amount of information that insurers can draw from. A regulatory entity such as the NAIC could pursue an initiative to have an agency such as MIB build a store of data for insurers to use.
- Because a driver’s telematics data are currently not portable from one insurance company to another (to demonstrate a favorable driving history), having a single repository to collect relevant information could be beneficial.
- An MIB-like repository would store a significant volume of data. Telematics data are not stored in a “black box” on each car, but instead are uploaded to the current insurer. Data aggregation would be needed – and could be feasible, with sufficient participation by insurers. In this context, it is envisioned that the driver will eventually own the data.

## Section 5: Conclusion

While the early indications of technology’s impact on the improved safety of vehicles are clear, the proportion of more technologically advanced vehicles on the road remains relatively small. This affords automobile manufacturers, insurers and regulators time to be deliberate in addressing the types of issues and concerns discussed by the expert panel participants.

We hope this paper offers readers a helpful starting point for continued conversation. As the adoption of technology gains pace, enhanced clarity and consistency will be vital for achieving a smooth transition and meaningful benefits for all stakeholders.



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## Section 6: Acknowledgments

The General Insurance Research Committee expresses its gratitude to those without whose efforts this project could not have come to fruition — for their work to structure an agenda and a series of questions to prompt a productive discussion amongst the expert panel participants, and for their work to synthesize the themes and commentary emerging from the discussion and prepare and review this summary report.

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## About The Society of Actuaries Research Institute

Serving as the research arm of the Society of Actuaries (SOA), the SOA Research Institute provides objective, data-driven research bringing together tried and true practices and future-focused approaches to address societal challenges and your business needs. The Institute provides trusted knowledge, extensive experience and new technologies to help effectively identify, predict and manage risks.

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