

# **Trucking Fleet Concept of Operations for Automated Driving System-equipped Commercial Motor Vehicles**

## **Chapter 5.5 Motor-Carrier Guide to Insuring ADS-equipped Trucks**

**Authors:** Travelers Institute, Camden, M., Parks. L., Ridgeway, C., Krum, A.

**Partners:** Travelers Institute



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## Abstract

Automated Driving Systems (ADS) are set to revolutionize the transportation system. In this project, the research team led by the Virginia Tech Transportation Institute developed and documented a concept of operations (CONOPS) that informs the trucking industry, government agencies, and non-government associations on the benefits of ADS and the best practices for implementing this technology into fleet operations.

The sections of Chapter 5 provide guidance on a range of topics for fleets to consider and apply when preparing to deploy ADS-equipped CMVs in their fleet. The topics cover fleet-derived specifications, ADS installation and maintenance, ADS inspection procedures, driver-monitor alertness management, insuring ADS-equipped trucks, identification of ADS safety metrics/variables, ADS road assessment, and data security/transfer protocol and cybersecurity best practices.

Guidelines on Insuring ADS-Equipped Trucks are provided in this report. The report focuses on insurance practices involving AVs in general, with specific consideration for heavy vehicles. This guideline seeks to answer questions on what the current and future AV trends are, how auto insurance will meet society's needs in an AV world, and what the critical insurance-related components for AV regulation are. A comprehensive review of publicly available information on insurance policies for AVs was conducted. The materials reviewed were based on resources from the Travelers Institute, an education and public policy division of The Travelers Indemnity Company, a home, vehicle, valuables, and business insurance provider. Most of the information herein was released in a position paper published by Travelers in January 2021 titled, "Insuring Autonomy: How Auto Insurance Will Lead Through Changing Risks." We examined the discussions in the paper and modified the findings and conclusions to focus on trucking fleets. We also provided insights based on a technical session hosted by the S.18 Automated Vehicles Study Group at the TMC annual meeting on February 28, 2023. It should be noted that the information and positions stated in this section are shared to inform the developing conversation about insuring AVs. The information is based on the publicly available resources mentioned and is not necessarily representative of positions held by the research team, partners, or the sponsor.

This report may be useful to fleets and manufacturers or developers of vehicles and automation systems that will be used in Class 8 truck freight operations. This guideline can help them consider the many legacy elements of today's approach to insurance that still apply to heavy truck ADS operations and some novel challenges that may arise.

**The following chapter has been extracted from the final report. For access to the full report, see this link:** [https://www.vtti.vt.edu/PDFs/conops/VTTI\\_ADS-Trucking\\_CONOPS\\_Final-Report.pdf](https://www.vtti.vt.edu/PDFs/conops/VTTI_ADS-Trucking_CONOPS_Final-Report.pdf)

## 5. GUIDELINES

### 5.5 MOTOR-CARRIER GUIDE TO INSURING ADS-EQUIPPED TRUCKS

This section provides insights and recommendations regarding insurance practices involving AVs in general with specific considerations for heavy vehicles. It is based on guidance from the Travelers Institute, an education and public policy division of The Travelers Indemnity Company, a home, vehicle, valuables, and business insurance provider. Most of the information herein was released in a position paper published by Travelers in January 2021 titled, “Insuring Autonomy: How Auto Insurance Will Lead Through Changing Risks.”<sup>(1)</sup> The conclusions and discussion were also based on this paper but were modified to focus on trucking fleets. Other insights are provided based on a technical session entitled “Hands-off Insurance: Insurance Guidelines for Automated Vehicles” that was hosted by the S.18 Automated Vehicles Study Group at the Technology Maintenance Council 2023 Annual Conference and Transportation Technology Exhibition in Orlando, Florida, on Tuesday, February 28, 2023. The review is directed towards answering the three questions stated below. *The information and positions stated in this section are shared to inform the developing conversation about insuring AVs. The information is based on the public paper and conference session and is not necessarily representative of positions held by VTTI or the USDOT.*

#### **What are AVs’ current and future states?**

- To support the advancement of AVs, it is important to address public policy questions and challenges in a comprehensive manner that increases public safety, provides peace of mind, protects drivers and pedestrians, and spurs innovation.
- The auto insurance industry should—and will—play a critical role, as lawmakers, regulators and society adapt to the newest mode of transportation.
- There continue to be many unknowns associated with AVs. For example, how long will it take to transition to a fully automated fleet? How long will it take for the anticipated benefits of AVs to be realized? What unintended consequences and disruptions will arise during the transition?

#### **How will auto insurance meet society’s needs in an AV world?**

- Leveraging the existing automobile insurance structure, both commercial and personal, is the best method for compensating crash victims quickly and efficiently—now and in the future.
- The current insurance structure is already designed to adapt to evolving risk environments and would minimize regulatory uncertainty, market disruptions, and consumer confusion.
- Continuing to rely on auto insurance for coverage, regardless of vehicle type, will also help to ensure consistency during the period in which AVs and driver-operated vehicles share the road.

- Whether a vehicle is automated or driver operated, auto insurance offers vehicle owners the most peace of mind when it comes to other concerns such as weather damage or theft.

### **What are the critical insurance-related components for AV regulation?**

- Any proposed legal and regulatory framework governing AVs must include provisions specifically related to auto insurance.
- Vehicle owners should be required to purchase and maintain adequate insurance for their AV, whether it is a personal, ride-hailing, or company-owned vehicle. Coverage limits should be high enough to account for more expensive technology in AVs.
- The insurance industry should play a central role in AV policymaking and stakeholder discussions. Local, State, and Federal lawmakers and regulators must coordinate and seek input from all relevant constituents to ensure a consistent, rational regulatory framework that addresses all potential issues.
- Insurance providers should support the development of a model State law relating to AV insurance that builds on the current State-based regulatory and oversight structure for auto insurance.
- Insurance providers should engage with coalitions that help educate the public and make recommendations on AV-related issues. Insurers have extensive consumer communication programs and can help educate key groups on AV safety.

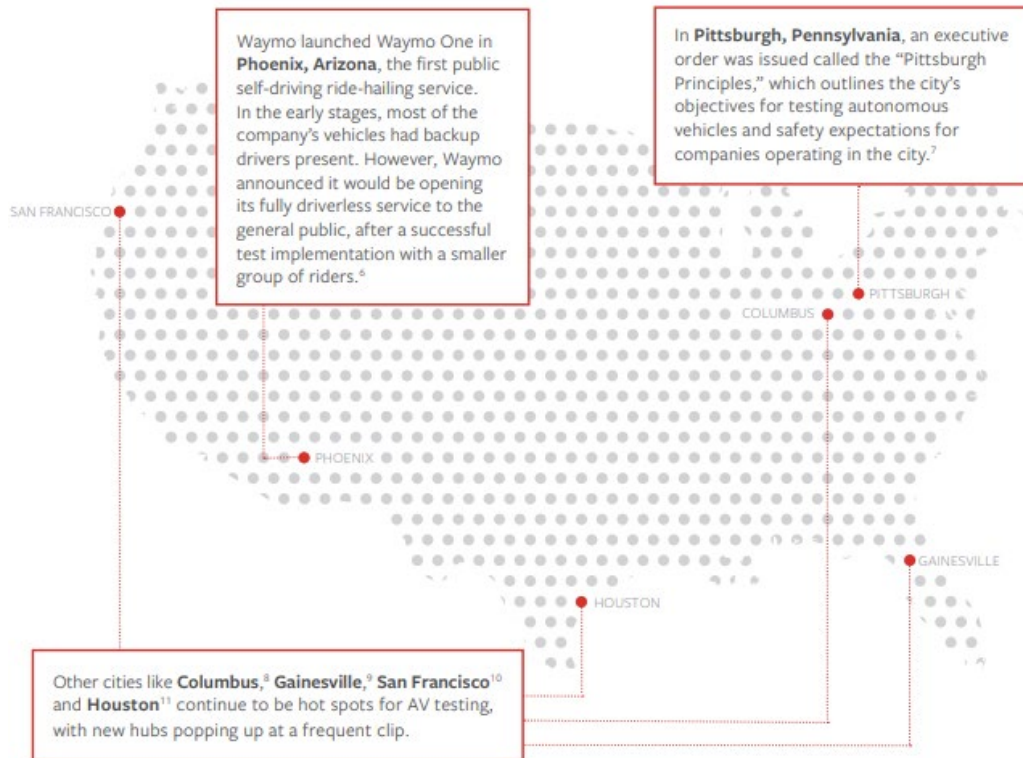
#### **5.5.1 Overview: The AV World Today and Tomorrow**

The growth of the AV industry accelerated significantly in recent years and continues to rapidly expand. As of December 2020, 58 companies had active AV testing permits in the State of California, which was a significant increase since Travelers' Insurance first publication on the insurance of ADS in 2018.<sup>(2)</sup> Those companies collectively drove over 2.8 million miles while utilizing automated driving technology on California roads in 2019.<sup>(3)</sup> As recently as 2018, the most advanced AVs on the road were defined as Level 2 by the SAE levels of vehicle automation. SAE L2 is considered "partial automation" where the human is still considered the driver and is responsible for supervising the AV functionality. The first public autonomous ride-hailing service (Waymo One) was launched at the end of 2018 and began fully driverless rides in 2019.<sup>(4)</sup> While this document focuses on AVs and the insurance system in the United States, it is important to recognize that countries around the world are also making significant progress in autonomous technologies. However, progress does come with its challenges. Consumer sentiment, regulatory considerations, and infrastructure support present challenges to AV adoption and deployment.

In addition, the effects of the COVID-19 pandemic on the transportation industry have been far-reaching. Due to statewide shutdowns, quarantine rules and regulations, pandemic fears, and a large portion of the country working remotely, miles driven were down 14.5% year over year during the first 9 months of 2020, according to preliminary government data.<sup>(5)</sup> While crash frequency also dropped, dangerous new trends emerged. For example, traffic fatalities rose 13.1% in the third quarter of 2020 when compared to the corresponding quarter in 2019, according to preliminary data.<sup>(6)</sup> COVID-19 had a profound impact on automotive transportation

in 2020. Moreover, AVs have the potential to provide transportation in a manner that mitigates exposures arising out of future pandemics.

As expressed in Figure 63, cities across the United States continue to embrace AVs and many may be seen as hot spots for this technology due to their favorable regulatory environment, heavy tech presence and, in some cases, weather.



**Figure 1. Map. Hotspots for AV technology.**

The AV industry continues to attract significant investment from traditional auto manufacturers and technology companies. In the last two years, the AV landscape has changed dramatically, with technology progressing as more companies have entered the industry. Today, every major auto manufacturer takes part in the AV ecosystem in some fashion, but it does not stop there. Countless startups and tech giants are also dedicating resources to this industry.

Beyond auto manufacturers and tech companies, academia and insurance companies are also engaging in the AV industry. For example, Carnegie Mellon University in Pittsburgh, Pennsylvania, has been a long-standing contributor to AV technology. In June 2019, it announced a multiyear partnership with AV startup Argo AI, which committed \$15 million to AV sponsored research.<sup>(7)</sup> The Massachusetts Institute of Technology (MIT) launched its Advanced Vehicle Technology Consortium in 2015 to, among other goals, better understand how drivers engage with vehicle automation and driver assistance technologies. This academic and industry partnership brings together stakeholders including automakers, insurance companies, Tier 1 suppliers, and research organizations.<sup>(8)</sup>

AV research and development is now well established. However, one of the largest barriers is consumer readiness to embrace AV technology. In a 2020 survey conducted by Partners for Automated Vehicle Education, of which the Travelers Institute is a member, nearly three-quarters of respondents stated they believe “AV technology is not ready for primetime,” with 20% of respondents saying they believe AVs will never be safe.<sup>(9)</sup> While the promise of safer roads and more leisurely drives appeals to some, the difficulty of producing and deploying AV technology still looms in the present.

In 2018, an Uber autonomous test vehicle crash in Tempe, Arizona, resulted in a fatality, and the automated system was found partially at fault. In the case of this crash, which killed a pedestrian crossing the street, it was deemed that the vehicle programming did not include consideration for jaywalking pedestrians, and therefore, did not recognize the pedestrian in its path soon enough to engage emergency braking.<sup>(10)</sup> How systems handle scenarios like this will be a subject for important discussion as AV adoption becomes more widespread.

With 94% of crashes attributed to driver error as the final, critical reason for the crash, an obvious goal is for AVs to increase roadway safety.<sup>(11)</sup> However, lower levels of automation that rely partially on automated systems and partially on a human driver can present risks related to misuse, including driver distraction and lack of attention on the road. DMS and driver attention reminder methods may be key factors in maintaining safety during this transition.<sup>(12)</sup>

NHTSA reports that there were 36,096 motor vehicle fatalities in the United States in 2019 alone, which is visualized in Figure 64.<sup>(13,14)</sup> In addition, as previously noted, early estimates show a 13.1% year-over-year increase in traffic fatalities in the third quarter of 2020, during the COVID-19 pandemic.<sup>(15)</sup>

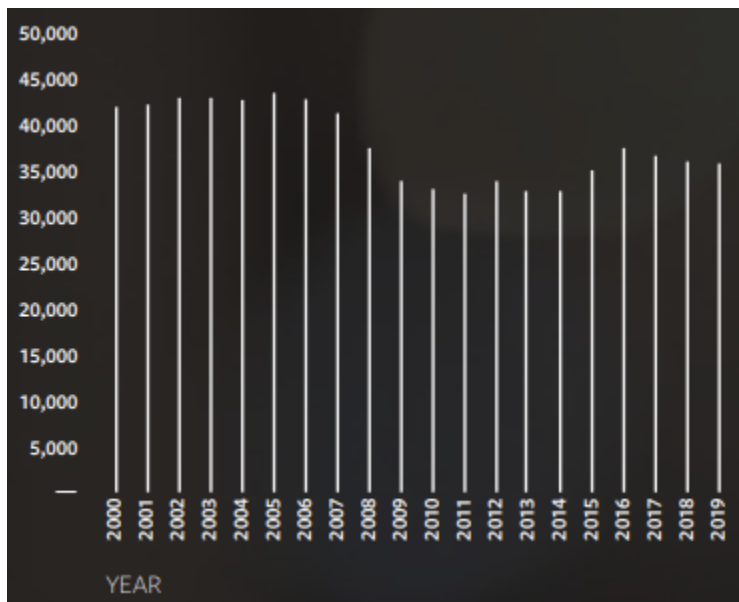


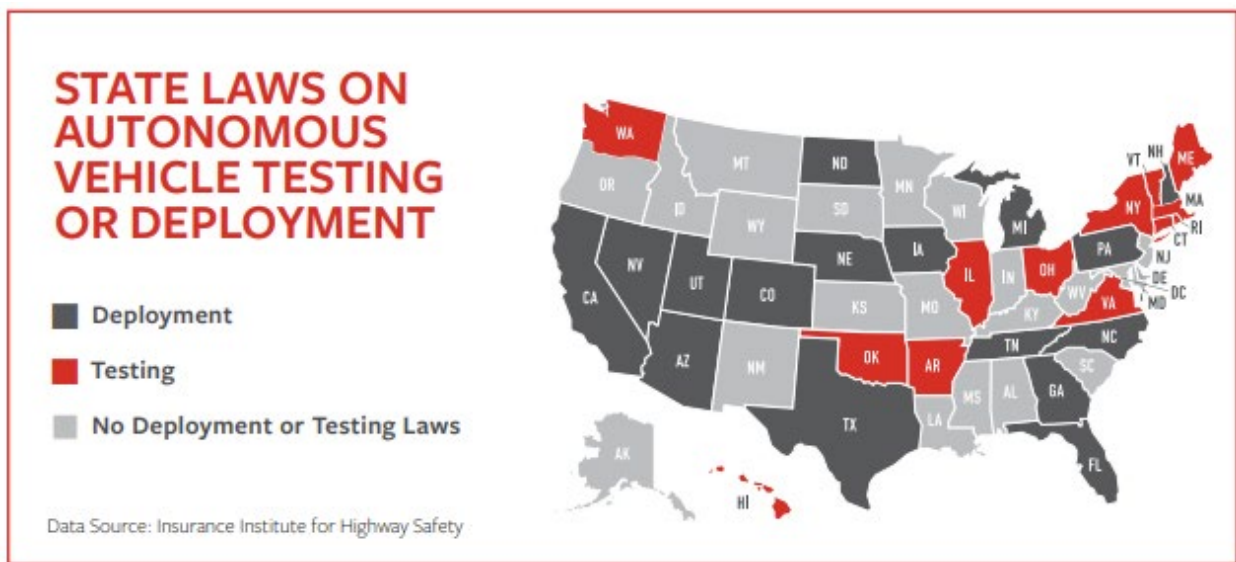
Figure 2. Graph. Total U.S. motor vehicle traffic fatalities.

### 5.5.1.1 Trends to Watch

Distracted driving related to technology may be one of many factors contributing to collisions and fatalities. This issue may take on more relevance in the near term as new semi-autonomous technologies requiring driver interventions are rolled out to the public.

The insurance industry may see collision rates decline as AV adoption rises. However, while the industry had been experiencing some level of favorable frequency over the last few years, early predictions of dramatic reductions have not materialized as of 2021.

Although some experts predict that market saturation for full AVs may not occur for a few more decades, the market is clearly moving in that direction, and policy and regulatory regimes (along with industries like insurance) must adapt now. According to the IIHS, as of January 2021, 28 States and the District of Columbia have already passed some form of AV legislation.<sup>(16)</sup> Those States are shown in Figure 65. However, State laws vary in their content and do not currently provide comprehensive AV regulatory frameworks. Some authorize operation of AVs, some promote and/or liberalize requirements for AV testing, and others direct further study on how best to safely deploy AV technology on public roadways.



**Figure 3. Map. States that have passed AV legislation.**

To date, only a few States have begun to address insurance-specific issues with respect to AVs, and most of those are focused on AV testing requirements. Similarly, only a few States have begun to address insurance requirements for AVs for personal use.

At the Federal level, in January 2021, the U.S. Department of Transportation released a set of updated guidelines for AVs, the Automated Vehicles Comprehensive Plan. The framework is organized around three goals: promoting collaboration and transparency to stakeholders and the public, modernizing the regulatory environment to remove unnecessary barriers, and preparing the transportation system to safely evaluate and integrate ADS.<sup>(17)</sup>

In the policy arena, early State-level movement underscores the need for a comprehensive, rational, and uniform AV regulatory structure (recognizing that State law likely will continue to govern both insurance and any compensation/liability system). For the reasons we will discuss on the following pages, any regulatory structure should explicitly address insurance-specific issues and needs in the new AV landscape, which will be vital to ensuring a fair and efficient compensation scheme.

## **5.5.2 Auto Insurance Can Meet Society’s Needs in an AV World**

Auto insurance may be well suited to address the compensation issues (e.g., bodily injury, property damage, cyber incidents) arising from the emerging AV world. The following section discusses some of the major advantages of using the current insurance structure, versus alternative models (e.g., product liability), as the primary compensation method.

### ***5.5.2.1 Auto Insurance Compensates Victims Quickly, Fairly, and Efficiently, Especially When Compared to Other Risk Transfer Mechanisms***

Leveraging the current auto insurance structure as the primary risk transfer mechanism in a new AV world allows for greater speed, fairness, and efficiency from a consumer’s perspective. The existing insurance structure is designed to quickly get vehicle owners back in vehicles and efficiently compensate crash victims for both bodily injury and property damage. In addition, most vehicle owners are familiar and comfortable with the existing insurance structure (e.g., purchasing coverage, having a basic understanding of coverage and policy documents, filing claims) and know how to take advantage of its benefits.

Moreover, the existing auto insurance structure can adapt more effectively than alternative structures to the evolving regulatory and legal environment by creating or enhancing insurance products. Given auto insurers’ deep understanding of compensation systems, they are uniquely positioned to assist policymakers in developing or modifying such systems.

While there has not been widespread attention paid to how liability and compensation will be addressed as AVs multiply, product liability has been raised as the inevitable default option. That presumption should be challenged.

Unlike auto insurance, alternative risk transfer mechanisms, such as product liability, are not structured to be primary, comprehensive solutions. In a recent study, the RAND Corporation found that a critical component of an insurance framework for AVs is how effectively it will compensate the victims of collisions.<sup>(18)</sup> A product liability-type regime for AVs that is in lieu of, or with primacy over, the current auto insurance structure could force consumers and victims to pursue complex, lengthy lawsuits to seek compensation. Such suits involve intensive and drawn-out investigative and evidentiary hurdles before anyone sees a day in court.

Further, the product liability legal and regulatory environment is ill-suited for handling auto collisions as the sheer number of discrete incidents would bog down court systems and significantly delay compensation. Victim compensation, if it happens at all, could take years. The RAND Corporation report also states that the large number of automobile crashes that occur today requires “a vast infrastructure of specialists who resolve, adjudicate and repair these



claims,” and that insurance companies have built teams of experts who specialize in doing just that.<sup>(19)</sup>

The Takata air bag case is an example of the limitations of product liability in compensating victims. It has taken well over a decade for this case to proceed through the report filing, regulatory investigation, recall, and compensation phases of the product defect regime that governs automakers and equipment manufacturers. Some auto companies have settled with consumers, but others are still embroiled in litigation. This is a particularly striking fact given that the initial product problems and driver injuries occurred in 2004.

Notably, and not surprisingly, the primary risk transfer and compensation mechanism for even more sophisticated modes of transportation (e.g., trains, airplanes, boats) goes beyond product liability and is based upon insurance. For consumers, businesses, and regulators, it makes sense that AVs will follow suit, but the final answer as to the best path forward for insuring AVs, considering the current auto insurance structure and product liability, may require more research and analysis.

#### ***5.5.2.2 Using Existing Auto Insurance Systems Minimizes Consumer Confusion, Regulatory Uncertainty, and Market Disruptions***

Fundamentally, there is a high level of certainty and stability for consumers, businesses, regulators, and legal systems in the current auto insurance structure. For example, we know that generally all vehicles and drivers are covered with some liability protection. Coverage can be through insurance (most common with the vast majority of drivers), bonds or cash deposits in place of traditional insurance, or proof of ability to pay for an at-fault accident (e.g., in New Hampshire). And auto insurance has a robust legal and regulatory infrastructure with proper, comprehensive consumer protections in place to govern insurance providers and policyholders.

Utilizing the existing insurance structure for AVs and non-AVs alike avoids complex jurisdictional and enforcement issues. Additionally, auto insurance industry distribution systems are already in place and will evolve to accommodate new technologies and risks. Pricing and underwriting will likely shift to include both driver- and vehicle-based systems. This will allow insurers to play their traditional role in risk mitigation by sending pricing signals vis-a-vis premium differentiation among covered autos to encourage AV technological improvements. In a December 2020 report published by the RAND Corporation, one auto manufacturer is quoted as saying there is “no reason that the current system cannot keep working.” Other experts weighed in, stating that historically the auto insurance industry has remained resilient in the face of technological improvements and innovation.<sup>(20)</sup> Given the technology and data capture that is occurring in real time, insurance policies addressing data sharing may be implemented to help ensure that premiums are appropriately matched to exposures. Further, AVs may present new risks and liabilities (e.g., cybersecurity threats) that may need to be addressed by a new generation of insurance products and coverages.

During the period in which AVs and non-AVs will likely be sharing the road, auto insurance systems must, and will, be able to accommodate and adequately address both types of vehicles. During this transition, a thoughtful compensation system is needed to prevent consumers from becoming mired in lengthy and expensive legal and technical disputes about whether human error or technological malfunction caused a collision. Significantly, the lack of a timely and

efficient compensation system could also hinder the more widespread adoption of AVs. Consistency in delivery, customer experience, and expectations, with clear “rules of the road” (e.g., regulatory oversight, legal requirements, etc.), are vital to a rational risk transfer regime. If AVs and other vehicles are governed by different primary insurance structures or different liability standards, the resulting consumer confusion and regulatory/enforcement uncertainty may increase expenses associated with contentious liability determinations and market disruptions. Dividing the market in such a way would create a veritable patchwork on the roadways with respect to who is covered, for what, and under which regulatory and legal framework.

Moreover, if separate compensation and liability structures govern and/or have primacy over different types of vehicles and their owners, questions and uncertainty may arise around issues such as appropriate forum, liability and evidentiary standards, and the application of various no-fault-type systems. During the period in which AVs and non-AVs will likely be sharing the road, auto insurance systems must, and will, be able to accommodate and adequately address both types of vehicles.

### ***5.5.2.3 Subrogation Is Already an Important Element of the Auto Insurance System***

Today, insurers compensate crash victims for personal injuries and property damage and then, if appropriate, seek to recover those payments from vehicle manufacturers if some defect caused the loss. This process is called subrogation. Several years ago, Toyota faced numerous “sudden acceleration” cases, which were alleged to have been caused by product defects. As there were both property damage and bodily injury claims associated with these Toyota vehicles, auto insurers paid the claims even if there was evidence that the crash might have been caused by a sudden acceleration defect. Subsequent to paying the claims, some of the insurers filed subrogation actions against Toyota.<sup>(21)</sup> This is an important element of the auto insurance system: the claimants are promptly compensated by the insurer, and the insurer then assumes the burden (and has the resources) to pursue the product manufacturer to recover those losses.

These product liability claims can be complex and expensive. Potential product liability claims involving AVs could involve additional complexity and related cost. A system that prioritizes compensation over resolving whether an AV was defective provides the most consistency and certainty to consumers and leverages the existing legal and regulatory frameworks that have routinely adapted to technological advances. Avoidance of these subrogation actions also creates an incentive for AV manufacturers to design and build safer vehicles, which is a key benefit of this system.

### ***5.5.2.4 Insuring AV Risks in the Commercial Insurance Sector Today***

Insurers should make a concerted effort to better understand emerging risks and provide marketplace solutions for their insureds. Building partnerships with companies in the AV industry is an excellent example of this. There is a growing market in the commercial insurance sector for AV risks among technology developers, operators, support services, etc. Through extensive research, engagement with experts, industry-related partnerships, and thoughtful underwriting, it is possible that these risks present opportunities for insurers. For progress to continue, it is imperative that insurance markets have solutions for these emerging risks.

### ***5.5.2.5 Auto Insurance Will Have an Important Role to Play in an AV World***

AV owners will still need coverage for non-collision-related incidents such as weather and theft. Even with full AVs, human involvement will not disappear, and individuals will still need auto insurance. For the foreseeable future, vehicles with some driver involvement will continue to face issues around liability for crashes. As increasingly distracting technologies are employed in partial AVs, liability insurance may become even more important.

Also, vehicle maintenance by owners (e.g., getting tires and brakes fixed, installing technology/software updates, sensor maintenance) can result in personal responsibility and liability, which is properly addressed through insurance. Further, AV owners will still need coverage for non-collision-related incidents such as theft and weather damage. Product liability simply does not cover the entirety of essential coverage areas related to vehicle operation and ownership.

Finally, AV owners—like all other vehicle owners—want peace of mind that they are protected against the costs of unforeseen events. Auto insurance provides consumers with 24/7 protection, unlike other risk transfer systems that are dependent upon specific legal criteria and/or circumstances (e.g., a provable mechanical or design product malfunction/defect).

### **5.5.3 Critical Insurance-related Components for AV Regulation**

Any comprehensive AV legal/regulatory structure must include insurance-specific policies. The following are recommended to address pressing insurance-related issues associated with AVs.

#### ***5.5.3.1 Specifically Address Insurance Liability Standard as the Primary Risk Transfer Mechanism.***

Today, there are several risk transfer and liability schemes governing and impacting the auto market. These include insurance, common law negligence, various no-fault and personal injury protections, statutory systems, product liability, Federal Trade Commission representation and advertising regulations, State claims practice acts, fraud laws, and licensing requirements. This will likely be seen in an AV world as well. Auto insurance should play the same primary risk transfer role in that world as it does now for non-AVs.

Notably, legal systems are already considering how to address novel compensation issues surrounding AV collisions. For example, in its review of a fatal crash involving a Tesla vehicle, the National Transportation Safety Board determined that use of the Tesla autopilot feature contributed to the crash, along with the two drivers involved.<sup>(22)</sup> The decision demonstrates the ability of our existing legal system to evaluate the complex and varied risks presented by the emerging AV world.

Thus, public policy proposals regarding governance of AV liability may consider addressing compensation systems and insurance liability standards, including who is responsible for obtaining coverage. As with the current auto insurance system, AV owners should be responsible for obtaining and maintaining adequate insurance. This should apply whether the vehicle is for personal, ride-hailing, or company use.

Because there may be many possible approaches to liability and compensation for AVs, including systems that may not exist today, a framework is needed to evaluate various options.

An AV liability system should be evaluated on its ability to achieve the best balance of the following three objectives:

- **Provide full and timely compensation for victims** – Injured parties should be made whole without delay.
- **Efficient claim resolution** – Minimize expensive and protracted liability determinations for most crashes.
- **Encourage adoption of AVs and increased safety of AVs** – A liability system should encourage the AV industry to achieve safer outcomes. Insurers have encouraged safer vehicles for decades through risk pricing, safety research conducted by the Insurance Institute for Highway Safety, and other efforts.

### *5.5.3.2 Provide for Sufficient Coverage Limits at the Vehicle Level*

It is anticipated that eventually fewer collisions will occur with more AVs on the road, but the collisions that do occur could be more costly, particularly with respect to vehicle damage. The parts used in vehicles with AV technology are more costly to repair or replace. The industry is seeing this today as more and more vehicles are coming equipped with the latest in ADAS technology. Therefore, any insurance scheme must require sufficiently high coverage limits, including adequate limits for property damage to address more expensive technology in AVs. Higher minimum limits, especially for bodily injury, may also provide peace of mind and remove barriers to societal adoption of AVs.

### *5.5.3.3 Standardize Data Governance and Cybersecurity Requirements*

AVs present new questions and opportunities with respect to data collection and management, which have only been heightened by recent developments related to social media data and privacy. Standardization (via legislation or regulation, for instance) of data collection, sharing, storage, and security requirements could prove valuable in streamlining the coverage process. To facilitate an effective and efficient AV auto insurance system, public agencies may consider providing guidance on timely data sharing (by auto manufacturers and others who obtain data on crashes and AV performance) with insurance providers, while ensuring adequate protections for consumer privacy. Sharing data with insurers has the potential to help facilitate insurance coverage in several ways, including:

- Establishing liability/causation in the event of a crash (a function performed by the insurance carrier, not the customer).
- Assisting with accurate underwriting and pricing of insurance policies.
- Supporting risk mitigation and control activities (e.g., via software updates).

Ultimately, standardization of data governance and assurance of data sharing with insurers benefit all parties involved, including vehicle owners, collision victims, manufacturers, and insurance providers.

NHTSA introduced the Automated Vehicle Transparency and Engagement for Safe Testing (AV TEST) Initiative in June 2020. This initiative includes a platform that allows companies to

voluntarily share information about any current on-road testing.<sup>(23)</sup> This is a positive step toward companies making testing information more widely available to the public and signals that NHTSA understands the importance of a centralized, publicly available data collection system. Further, insurers should support the creation of an expert advisory board or committee to help address data and cybersecurity issues, including how these issues are related and how they can effectively be addressed together. Insurer representation on any such body would be essential.

Strong cybersecurity requirements for AVs should be developed. This is an issue that is intertwined with the creation of data management standards. Cyber-related risks impact the safety of our communities in an AV world, and thus must be addressed. This also highlights the need for appropriate data sharing protocols. If a cyber incident occurs, it will be important to have the data explaining what happened, not only for insurance-related purposes, but also for future risk mitigation and preventive efforts.

#### ***5.5.3.4 Ensure Representation of the Insurance Industry in Policymaking and Stakeholder Forums***

Insurers should use advisory boards and task forces comprising private and public sector experts to help inform AV policymaking processes and content and should encourage public policies that ensure the insurance industry has a seat at the table. Many stakeholder groups beyond insurers will have an interest in the development and implementation of new AV policies, including consumer groups, manufacturers, technology developers and suppliers, attorneys, regulators, legislators, public policy academics/researchers, and countless others. Insurers will have unique and valuable insights into several key issues that will likely arise from AV technology, such as risk assessment and mitigation, big data analysis, the functioning of comprehensive liability regimes, and navigating State-Federal coordination issues. Insurers should position themselves to contribute to these policymaking discussions.

#### ***5.5.3.5 Promote Communication and Coordination Between Policymakers and Other Stakeholders***

Many lawmakers and regulators at the local, State, and Federal levels are grappling with the policy challenges and opportunities related to the AV world, as are private industry groups and individual companies. Coordination among these players is essential to develop a coherent and rational regulatory structure that will promote growth and adoption of AV technology, as well as public safety, during the transition to AVs. One important step is public-private cooperation via standing advisory boards or similar structures. Such bodies generally promote consensus building and creation of best practices, while also recognizing the need for flexibility to promote consumer-driven, private-market competition and innovation.

At the policymaker level, insurers should encourage local, State, and Federal officials to work together to the greatest extent possible. The current State-based regulatory and oversight structure for insurance is well established and provides certainty for businesses and consumers. To build upon this existing structure and promote uniformity between AV-related insurance approaches, both during the AV transition/testing phase and after full AVs are publicly available, insurers could support development of a model State law, as well as collaboration between the U.S. Department of Transportation and State regulators (perhaps through the National Association of Insurance Commissioners). Finally, it is recommended that all policymakers

communicate openly and regularly with the public as policy discussions are conducted and decisions are made. Transparency in the process will encourage public trust with respect to evolving AV technology and related safety measures.

#### ***5.5.3.6 Utilize Existing Insurer Delivery Systems to Communicate with Consumers***

As noted, AVs will likely require some level of human involvement for the foreseeable future. Accordingly, there may be opportunities to increase safety by educating drivers about the evolving technology and their roles and responsibilities with respect to driving functions. To the extent that government officials develop consumer notification standards and requirements regarding AV technology, safety guidelines, distracted driving notifications, and other important information, insurers can use their extensive delivery systems to facilitate communication of those standards to consumers.

#### ***5.5.3.7 Unsafe Driving Behaviors, Like Distracted Driving, Will Continue to Present Challenges***

The evolution toward AVs may eventually help reduce collisions that occur today due to distracted driving. In the meantime, unsafe driving behaviors will continue to present challenges. A Travelers survey in September 2020 found that 37% of American consumers reported using social media while driving, and another 36% reported shopping online behind the wheel.<sup>(24)</sup> In the lead-up to a fully automated transportation system and during the transition period, Travelers is taking on roadway safety issues like distracted driving through its Every Second Matters® education campaign, led by the Travelers Institute, its public policy division. The key principles to this initiative are highlighted in Figure 66. The campaign, which launched in 2017, recognizes that every driver, passenger, cyclist, and pedestrian has a role to play in combating distraction and enhancing roadway safety. Programs held at universities, industry and transportation safety conferences, and other public events provide valuable insights on distracted driving risks.



The *Every Second Matters*® initiative stands on three key principles:

- Creating a **social stigma** around distracted driving.
- Increasing understanding about **situational awareness** by all roadway users, including elevating the conversation about **pedestrian and cyclist safety**.
- Examining scalable **technology** and InsurTech solutions.

**Figure 4. Slide. Key principles to Travelers' Every Second Matters initiative.**

#### **5.5.4 Considerations for ADS-equipped CMVs**

A mini-technical session entitled, "Hands-off Insurance: Insurance Guidelines for Automated Vehicles," was hosted by the S.18 Automated Vehicles Study Group at the TMC 2023 Annual Conference and Transportation Technology Exhibition in Orlando, Florida, on Tuesday, February 28. During this session, experts from the trucking industry discussed implications of insuring ADS-equipped trucks in today's freight market, including representatives from TMC, Koffie Financial (<https://getkoffie.com/>), Paul Hanson Partners (<https://www.paulhanson.com/>), and KOOP Technologies (<https://www.koop.ai/>). The session was moderated by a representative from Kenan Advantage Group, a tanker trucking fleet, and opening comments at this session were provided by Earl Adams, Jr., Chief Counsel at the FMCSA. This section focused on the discussion from industry experts regarding insuring ADS-equipped CMVs and most specifically trucks. The panel identified some core topics that should be addressed or require further investigation. The following are high-level summaries of topics discussed in the session. Additionally, other leading trucking insurance experts were asked to provide further insight regarding the article from Travelers and the technical session mentioned above. The insight will be used to supplement the recourse provided in the following section and this insight will be called out specifically to separate it from material that was obtained from the session.

##### ***5.5.4.1 Evaluating ADS-equipped CMV Risk***

Clearly defining the ODD of AVs provides valuable information to the policy holder in understanding the degree of risk they may be accepting. For example, delineating procedures such as a "safe stop" or how a vehicle should react in a situation that it does not understand allows a policy holder to better utilize their equipment to meet expectations of risk. It is recommended that policy holders clearly understand the ODD of the technology they use so that no assumptions are made as to the technology's functionality.

##### ***Additional Expert Insight***

Through addressing public policy questions and challenges, it is important to consider cargo in terms of risk mitigation. This is in addition to improving safety for the public, and more specifically drivers and pedestrians. Safety is the core concern, but loss of cargo, due to the nature of trucking, is paramount for consideration.

##### ***5.5.4.2 Liability for ADS-equipped CMVs***

Due to the integration of AI in ADS-equipped CMVs, fleet maintenance will play a large role in the liability writing process. Typically, significant focus is placed on drivers regarding liability. The single-point focus of driver operation for liability determination will be blurred across AV function and maintenance. For example, if equipment is maintained but not kept to manufacturer specifications, fleets are responsible.

OEMs may need to start to carry product liability of their own. These types of policies would have to account for large crashes or patterns of behaviors across many vehicles that all operate similarly. However, many claims are related to property damage only, and it makes less sense to apply product liability. Panelists commented that they did not see the framework for the product

liability now. In early adoption, theoretically, fleets will have 10% automated and 90% manual driven CMVs. The question that appears is, how do you have a product liability that is mixed? It is important to also recognize that product liability is difficult to litigate. Will it be financially viable to pay the claim? It would be useful to create regulations that guide affected organizations on responsibility and payments.

#### *Additional Expert Insight*

Insurance coverage regarding AVs will require different approaches when utilizing existing automobile insurance structure. Coverage will need an acute focus on liability. Additionally, the level of automation will likely procure varying approaches from Level 1 to Level 5 autonomy. The question of liability is a large focus for insurance coverage of AVs. There are many variables to consider: is the manufacturer at fault, the software designer, or the individual that was driving? The level of autonomy pairs with this question. As autonomy increases, is the driver less liable? It is suggested that coverage incrementally evolves as levels of automation are engaged.

#### ***5.5.4.3 Improving Collaboration and Communication***

It may be beneficial to increase the degree of communication or functionality between ADS-equipped CMVs and traffic agencies or law enforcement. If a vehicle is unable to reach a decision on how to react to its environment, features are needed that allow an external party to guide the vehicle to a safe stopping place.

Additionally, if an ADS-equipped CMV is connected to its insurance provider, as well as traffic agencies and law enforcement, in the instance of a collision the vehicle will immediately be able to communicate with dispatchers and agents to potentially reduce the time it could take to get emergency services on the scene to increase safety. Also, claims could be set up immediately utilizing AV data to reduce some of the hassle that arises from filing claims.

#### ***5.5.4.4 Collecting, Sharing, and Using ADS Data***

AVs produce a tremendous amount of data that has the potential to impact the insurance industry. Further investigation is necessary to determine how this data can best be utilized.

Providing data such as types of actions and frequency of actions could prove beneficial in reducing rates for consumers by rewarding drivers or, in this case, ADS operators, for safe driving habits.

Not all ADS developers allow fleets to collect their own data from the vehicle. There is a trust factor involved in the communication of data between developers and owners. This data could prove critical in delineating the right to repair, as well as further understanding the operating boundaries or ODD. Furthermore, there is a need for consideration regarding how second- or third-party technicians affect liability regarding the right to repair.

#### ***5.5.4.5 Costs***

The cost of ADS-equipped CMVs will be considerably higher than for current trucks. The availability of equipment and technicians for repair is valuable in reducing the time and cost of



returning ADS-equipped CMVs to service. From the fleet perspective, improvements need to be made in this domain to advance the viability of ADS-equipped CMVs.

#### **5.5.4.6 Infrastructure**

##### Additional Expert Insight

When questioning the unknowns of AVs, such as how long it will take to transition to autonomous fleets or when will the benefits of AVs be truly realized, infrastructure is a topic that is sometimes forgotten. It should be addressed that roadway infrastructure will likely need to adapt in some way to accept AVs. How long will it take for this change to occur?

#### **5.5.4.7 Cybersecurity and Cargo Theft**

There are some inherent risks regarding theft and cybersecurity for ADS-equipped CMVs since no individual is present to prevent tampering with the systems or cargo theft. Since these vehicles can operate at all hours and typically have a 360-degree view, this may be a deterrent to potential transgressors.

#### **5.5.4.8 Software Updates**

Updates to software may become mandatory in the future. Individual vehicle performance may be affected by mandatory “over the air” updates. Additionally, this occurrence may become more prevalent as technology transitions from driver assistance systems to full ADS autonomy. The benefits of this are valuable, allowing users to remain current with the most effective software versions for their hardware. The exception is that when or if there is an issue or malfunction with an update, the issue could potentially lead to sub-optimal driving behaviors and affect many vehicles at the same time.

#### **5.5.4.9 Can the Current Insurance Structure Hold with the Introduction of AVs?**

##### Additional Expert Insight

Some professionals disagree on whether the current automobile insurance structure can be utilized when covering AVs. Though the current system has been effective at addressing innovation and adapting to current technology so far, AVs propose a different process to addressing the driving task and overall automobile utilization. Additionally, AVs change the landscape of risk exposure (such as the introduction of cybersecurity threats) and the context of risk exposure is adapting with it. To adequately address risk, carriers are going to need to review their entire value stream to identify risk, such as if real-time data or new data sources propose avenues for risk.

#### **5.5.4.10 Additional Topics for Further Review**

Some topics in the session were brought up but not discussed in detail. These topics are mentioned here to recognize the need for further examination and should receive continuing discussion and investigation as automation technology evolves and becomes more commonplace on the roadways. They are as follows:

- How should legislation be created and reformed to manage ADS technology?

- How could public awareness and image be improved for ADS-equipped CMVs?
- What should the limitations be for ADS-equipped CMVs?

ADS technology is developing at a rapid pace. These discussions only scratch the surface regarding impacts and solutions for insuring ADS-equipped CMVs. It is important for broad collaboration to elevate and resolve issues as the ADS-equipped CMV industry continues to evolve.

### Additional Expert Insight

To expand upon the article written by Travelers, it is valuable to consider the date when it was written. The article was produced in 2021 and may contain outdated information about the AV sector. The industry is evolving rapidly, and the AV stage looks different today than it did three years ago. For example, on December 13, 2022, Waymo acquired the permits necessary to drive fully autonomously in California, and as of October 2023 Cruise pulled all of their robotaxis off of the road to perform a full safety review in the wake of a pedestrian suffering injuries due to a Cruise robotaxi. Additionally, ArgoAI, a company investigating AV technology shut down in October of 2022 after Ford and VW pulled their funding for this company. The lidar technology used on AVs has continued to improve drastically since 2021 with improved range, accuracy, data collection, and more (<https://www.electronicsforu.com/technology-trends/latest->).

Lastly, it is important to note that though ADAS technology is being implemented on a continuously larger and more available scale, there is no guarantee that individual drivers will use the full extent of the technology. Some drivers disengage ADAS features with user preferences and some report distrust of these systems.

### **5.5.5 Summary of Findings**

In summary, auto insurance can meet society's needs in an AV world by continuing to compensate affected consumers with speed, fairness, and efficiency. Also, any comprehensive AV legal/regulatory structure must include insurance-specific components, including:

- Addressing insurance liability standards as the primary risk transfer mechanism;
- Providing sufficient coverage limits at the vehicle level;
- Standardizing data governance and cybersecurity requirements; and

Ensuring representation of the insurance industry in policymaking and stakeholder forums and discussions.

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