



Allianz Motor Day 2025: HANDS OFF – The Safety Promise of Autonomous Driving



Contents

PAGE 3

Foreword:
Klaus-Peter Röhler and
Frank Sommerfeld

PAGE 5

Chapter 1
Status of autonomous
mobility around the world

PAGE 9

Chapter 2
Safety impact of autono-
mous technology

PAGE 13

Chapter 3
Autonomous driving in
Europe: hopes, fears and
the road ahead

PAGE 16

Snapshots on
autonomous
mobility

PAGE 19

Chapter 4
Outlook: The future of
motor insurance

PAGE 22

Chapter 5
Coordinated action for safe
and trusted autonomous
mobility

Foreword

Autonomous driving will change the way we move, and Allianz is ready for the new mobility era



Dr. Klaus-Peter Röhler

The world is on the cusp of a new era of mobility, redefining how people and societies move. What once lived in labs and test tracks is now driving on our roads. Autonomous driving is no longer an experiment: it is becoming reality.

Level 3 vehicles can already be found on European roads, while Level 4 pilots – those that operate entirely autonomously within defined environments – are already in operation in cities from Hamburg to Austin and from Beijing to San Francisco. Allianz is already insuring pilot zones and test fields in Singapore, Oslo, and Germany, helping turn prototypes into safe, real-world services – and this is only the beginning.

Such progress comes with profound questions. How will autonomy transform safety and public trust? How can it widen access to mobility for those previously excluded? What will it mean for sustainability, for the design of our cities, and for the sharing of responsibility when accidents occur?

As one of the world's leading car insurers, we at Allianz have a responsibility to confront the opportunities and risks of autonomy with clarity and evidence. The Allianz Center for Technology (AZT), together with our own claims analysis, confirms that automation can sharply reduce accidents caused by human error – specifically, fatigue, distraction and misjudgment, which remain the root cause of most collisions. But our findings also reveal an important truth: safety gains are greatest when

technology is widely deployed. Progress follows from ambition, not hesitation.

Yet safety alone does not capture the full potential of autonomous mobility. This is also a story about independence – for older adults travelling to medical care, for young people moving safely between school and home, for rural communities better connected to opportunity. It is about environmental responsibility – quieter streets, fewer emissions, smarter logistics. It is about inclusion – creating a system that works for more people, more of the time.

For these promises to take hold, trust must be at the center. Our recent survey shows Europeans are curious but cautious. They want not perfection but proof: open data, strong oversight and clear accountability. Allianz believes one of the principles to ensure this is simple. Victim protection must remain paramount.

Liability should remain with the vehicle owner, while insurers act as an independent safeguard, ensuring that causes are investigated fairly and compensation is delivered swiftly. However, for this model to work, access to accident- and safety-critical vehicle data must remain unrestricted. Without accountability, trust cannot grow.

Autonomous mobility will also reshape insurance. Fewer accidents will mean fewer claims; yet the value of each claim will rise as vehicles become more technologically



Frank Sommerfeld

complex. New forms of risk – from software failures to cyberattacks – will demand new kinds of cover. Allianz is already adapting, redesigning products and pricing so that customers benefit from safety improvements while remaining protected against emerging threats.

Europe now faces a strategic choice. To make autonomy safe, scalable and trusted, we need a harmonized legal framework, sovereignty over critical data and a European licensing model for autonomous systems that not only specifies the requirements that an autonomous vehicle must meet but also sets out which simulations and tests it must pass.

At Allianz, we are committed to helping build that future, not only by insuring risk but also by enabling progress, turning complexity into clarity, and ensuring that autonomy delivers on its extraordinary promise.

Dr. Klaus-Peter Röhler, Member of the Board of Management of Allianz SE, Insurance German Speaking Countries, Central Europe, Global Property & Casualty

Frank Sommerfeld, Chairman of the Board of Management, Allianz Versicherungs-AG



Status of autonomous mobility around the world

Autonomous mobility is no longer just a vision of the future – it is already present on our roads. Advances in artificial intelligence (AI), connectivity and sensors enable vehicles to take over ever more driving tasks, marking a shift in how mobility is designed, delivered and experienced. These capabilities lay the foundation for more accessible, efficient and safer transportation.

What is autonomous driving? The Society of Automotive Engineers (SAE), through its J3016 standard, provides the most widely accepted classification of driving automation. This framework defines six levels, from Level 0, which involves no automation (think Henry Ford’s old jalopies), to Level 5, where a vehicle can perform the entire driving task in all conditions. Humans are no longer drivers but passengers, free to fully devote themselves to other activities.

Today’s practical frontier is Level 4 automation, most commonly implemented in autonomous shuttles and robotaxis rather than private passenger cars. At this stage, a vehicle can manage the entire driving task within specific conditions – for example, in defined urban areas, on certain highways or under favorable

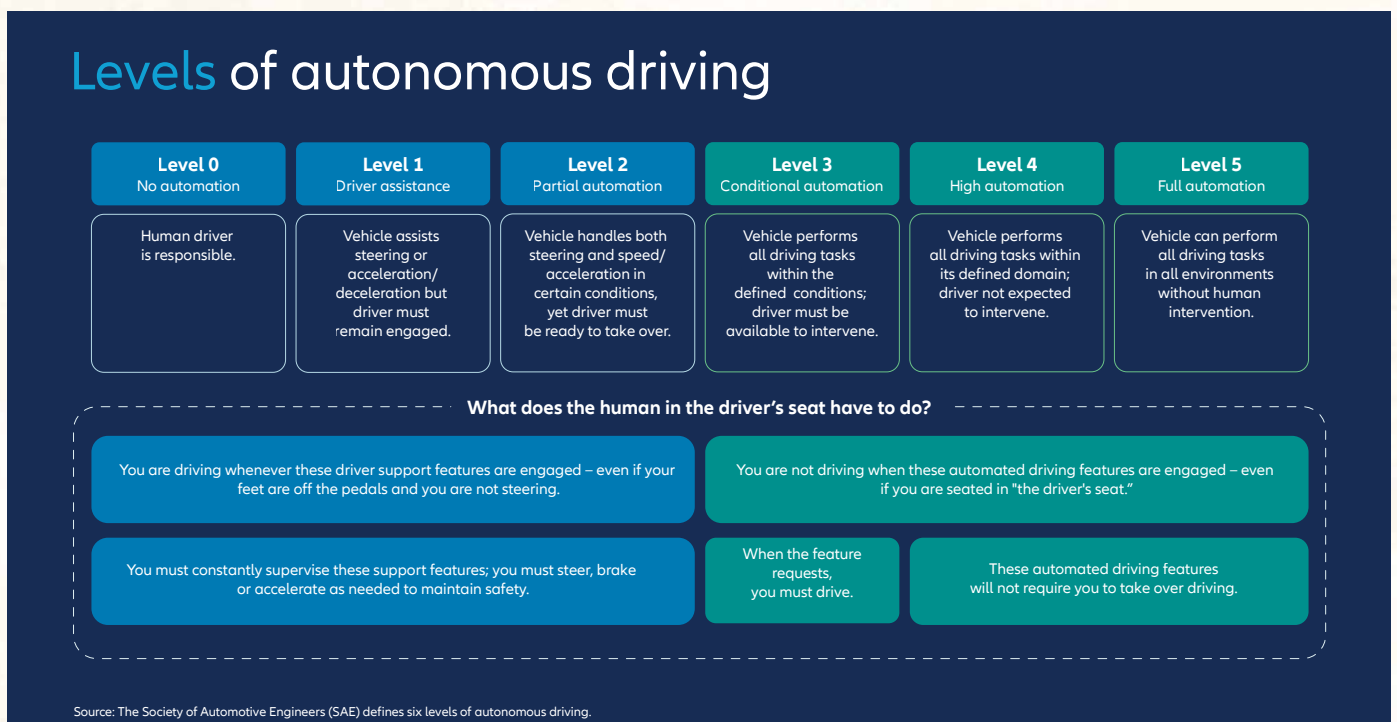
weather conditions. A human driver does not need to intervene when the system is operating within its designated domain; however, outside of this domain, human control is required.

Prototypes of Level 5 automation – vehicles capable of driving themselves under all conditions without human input – have been demonstrated in controlled settings. However, none are legally or technically available for use on public roads.

The state of play in 2025

At the end of the last decade, autonomous vehicles were still mainly confined to labs and test tracks. Indeed, real-world deployment felt like a distant prospect. By 2025, autonomous mobility has progressed from early demonstrations to tangible deployment across an increasing number of markets. What was once a future promise is now a visible part of transport systems in many regions.

More than 100 autonomous mobility projects are active worldwide, spanning China, Israel, the United Arab Emirates and the United States. Over the past five



years, autonomous shuttles, driverless delivery vehicles and robotaxis have evolved from prototypes into established elements of urban mobility strategies.

Technological progress is equally evident in passenger cars. Level 3 systems, such as Mercedes-Benz's Drive Pilot, BMW's Personal Pilot, and Honda's Sensing Elite, are now available in series-production cars under specific conditions. At the same time, Level 4 systems are being deployed in pilot fleets under real-world conditions. Advances in AI-based object recognition, decision-making logic and sensor technology are enabling stable performance in structured environments such as fixed urban routes or shuttle operations.

Global distribution of autonomous driving projects

Autonomous vehicle deployment is uneven across the globe, with projects concentrated in advanced economies. A recent comprehensive review by the Allianz Center for Technology (AZT) brings together findings from across the field, highlighting both the rapid technological advances and the diverse pace of adoption worldwide. According to the report, five regions stand out:

- **Asia:** China is pursuing autonomous driving as a strategic priority for global technology leadership, heavily subsidizing projects led by AutoX, Baidu, Huawei and Pony.ai. Deployment is concentrated in megacities under controlled operating conditions.
- **Europe:** A regulation-first, safety-oriented approach prevails. Pilot projects in France, Germany, Scandinavia and Switzerland emphasize the integration of shuttles into public transportation, often with significant public funding. Cities such as Hamburg, Helsinki and Paris are early leaders.
- **Middle East:** Governments are actively positioning cities such as Abu Dhabi and Dubai as hubs for robotaxis, shuttles and even air taxis, often tied to climate and smart-city initiatives.
- **North America:** The US is leading with a market-driven, software-focused approach. Companies such as Aurora, Cruise, Tesla, Waymo and Zoox are piloting robotaxis and delivery vehicles. States such as Florida and Texas are adopting innovation-friendly regulations that enable fully driverless testing. Canada, by contrast, focuses on cautious pilot projects in Montreal, Ottawa and Toronto.
- **South America and Africa:** Development remains limited. Chile is testing shuttles for mining applications, while Brazil and South Africa host small-scale pilots. Infrastructure and regulatory gaps remain major obstacles.

This global patchwork underscores the different priorities driving adoption: commercialization and speed in Asia and North America, cautious integration in Europe and slower progress in the Global South.

Allianz in autonomous mobility projects

Allianz is actively shaping the future of autonomous mobility through insurance solutions, research and partnerships in real-world pilots:

Driverless buses in Singapore: Allianz Singapore insures WeRide's autonomous Robobus at Resorts World Sentosa, pioneering insurance models for fully driverless public transport

Shuttles in Europe and beyond: Allianz Worldwide Partners provides insurance for EasyMile's EZ10 autonomous shuttles, used in first-mile/last-mile services in several countries.

Safety and testing in Germany: The AZT conducts research in the fields of advanced driver assistance systems, accident reconstruction and sensor evaluation, laying the technical foundations for safe deployment. This includes support in the context of Hamburg's MOIA robotaxi trials, where questions of safety, liability and public safety are being tested in practice.

Global frameworks for mobility services: Through these projects, Allianz develops risk models and insurance frameworks that enable the commercial rollout of autonomous fleets and shared mobility concepts.



Expert interview:
Susan Poynor
Global Head of Mobility
Allianz Partners

Susan Poynor is the Global Head of Mobility at Allianz Partners, where she steers the global expansion of the automotive insurance segment. She focuses on embedded insurance and solutions for connected and autonomous vehicles.

What is Level 2/Level 2+ assisted driving, and how does adoption differ across markets?

Susan Poynor: Level 2 and Level 2+ assisted driving systems enable vehicles to control steering, acceleration and deceleration, but the driver must remain engaged and monitor the environment. This represents a significant step toward fully autonomous cars and enhanced safety. According to the latest World Economic Forum report, L2 and 2+ systems are implemented in 56 percent of new vehicles in China, 33 percent in Europe and 54 percent in the U.S.*

Assisted and autonomous mobility involves carmakers, tech firms, regulators and insurers. Where do you see the greatest opportunities for collaboration?

Standardized homologation rules will enable scaling across markets, improving risk assessment and accident investigation. Cybersecurity partnerships are equally crucial for safe deployment. As insurers, we act as enablers of the shift to autonomous vehicles, developing fit-for-purpose products with mobility providers and OEMs.



As insurers, we act as enablers of the shift to autonomous vehicles, developing fit-for-purpose products with mobility providers.”



* Autonomous Vehicles: Timeline and Roadmap Ahead. White Paper, World Economic Forum

How is Allianz supporting the transition to AVs, and can you share examples of pilots you have insured?

Allianz has long supported OEMs by tailoring Advanced Driver Assistance Systems (ADAS) insurance offerings in Europe. For example, we provided group insurance for Volvo's Level 2 functions, covering motor own damage up to defined levels. Through our joint venture with Volkswagen Financial Services, we offer insurance that accounts for ADAS features to Audi, VW, Seat, Skoda and Cupra owners, reflecting the positive effect of these systems on expected claims. We also insure selected Level 4 pilots, including EasyMile shuttles and WeRide vehicles, and support smaller players such as INYO Mobility.

We see very different speeds of adoption across China, Europe, the US and other regions. What explains these differences?

China is ahead, driven by smart city initiatives and the integration of autonomous vehicles into urban planning. Europe focuses heavily on regulation and

safety standards, supporting widespread adoption. The US is advanced in developing robotaxis and trucks. Cultural factors matter. Chinese consumers show more curiosity and enthusiasm, while other regions tend to be more cautious.

Looking ahead five to ten years, what will be the biggest drivers and barriers for scaling autonomous mobility?

Timelines vary by region, but L3 and L4 vehicles are expected to scale in the coming years. Mercedes and BMW already offer L3 models in Germany. In Europe, momentum is strong: MOIA plans to deploy 1000 L4 shuttles in Hamburg. Governments in China, Saudi Arabia and the United Arab Emirates target higher L4 penetration by 2030. Manufacturers are moving quickly: Waymo is scaling production, Lyft targets a 2026 Europe launch and Tesla signals a 2027 cybercab. Barriers remain – notably regulation and public acceptance – yet with significant investment and commitments from public transport operators, the outlook is dynamic.



Allianz insures Singapore's first fully driverless bus

Allianz Insurance Singapore has become the first insurer to cover a fully driverless shuttle service in the country. Operated by WeRide at Resorts World Sentosa, the eight-seater electric bus runs on a fixed 1.2km route and is monitored remotely. The policy covers both vehicle damage – including sensors and cameras – and third-party liability.

The initiative marks a step forward in adapting insurance to autonomous transport, addressing risks such as system failures, cybersecurity threats and remote operations. Allianz's assessment included vehicle components, maintenance procedures and safety systems to ensure comprehensive protection.

As Singapore prepares to launch autonomous public shuttles in housing estates by late 2025, challenges remain around liability, regulation and data standards. Allianz's early involvement positions it to shape the insurance framework for this emerging mobility sector.

Safety impact of autonomous technology

Autonomous vehicles can significantly improve road safety by reducing accidents, particularly deadly collisions caused by human error. They could also lower the overall number of accidents, leading to fewer insurance claims even as the average cost of each claim rises.

One of the most important promises of autonomous mobility is its potential to make roads safer. According to studies by the US National Highway Traffic Safety Administration (NHTSA), human error is the triggering factor in approximately 90–95 percent of cases. However, environmental and system conditions play a role. This makes automated driving a powerful lever for safety, as autonomous systems are designed to avoid precisely these types of mistakes (NHTSA, 2008; Stanford Law School, 2013).

Allianz has examined the issue from two complementary angles: first, by analyzing its proprietary claims data with a focus on driver assistance systems, and second, through a comprehensive review of global research conducted by the AZT. Together, these two approaches provide an evidence-based picture of the potential of accident prevention, risk shifts and insurance implications of automated and autonomous driving.

Real-world claims data confirm the promise of driver assistance systems

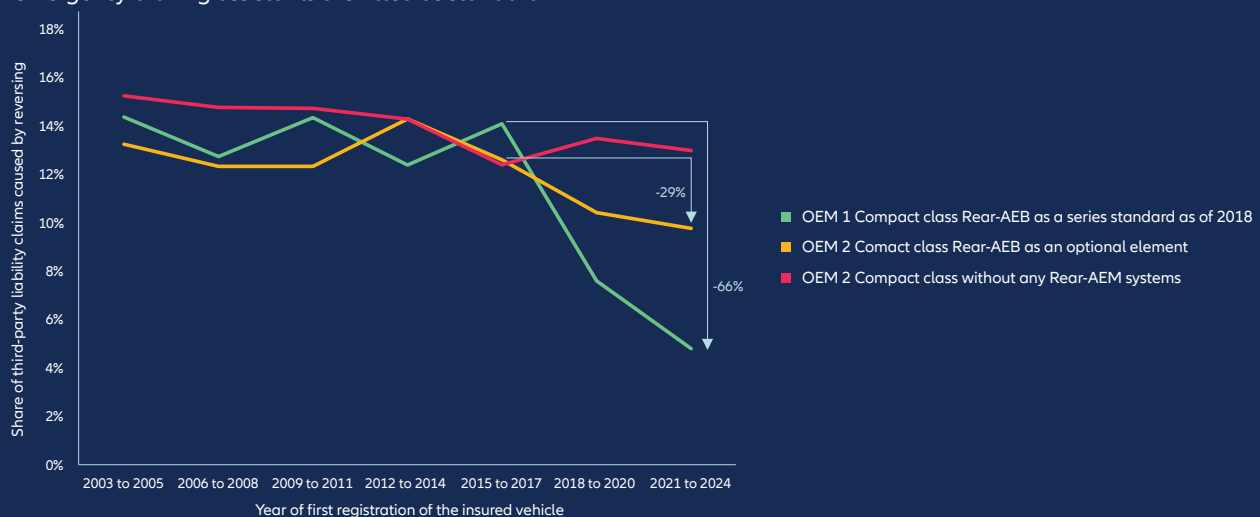
AZT has analyzed more than two years of Allianz liability claims (2022–2024) for compact cars in Germany, focusing on two common accident types: low-speed backwards maneuvering and rear-end collisions in moving traffic. Both are accident categories where assistance systems, such as autonomous emergency braking (AEB), are expected to make a difference – and the data now show they do.

For maneuvering accidents, the effect is striking. One manufacturer that introduced rear AEB as a standard feature in 2018 saw reverse parking collisions fall by almost two-thirds. A second manufacturer that only offered the system as an optional extra shows a much smaller reduction of around 30 percent. By contrast, models without the function see virtually no improvement at all.

Rear-end collisions tell a similar story. Across compact class vehicles, Allianz data reveal a 30 percent average decline in rear-end crashes for the newest models compared with those from a decade earlier. The scale of improvement depends on how early and how broadly AEB was rolled out: some models show

Automated assistance systems improve safety

Impact of Emergency Braking Systems in “reverse parking collisions”. An analysis of more than 6,500 reversing accidents claims based on real traffic accidents shows that up to 66 percent of all collisions when reversing can be avoided if active emergency braking assistants are fitted as standard



Source: Proprietary claims analysis of Allianz Center for Technology, October 2025.

only single-digit declines, while others achieve reductions of up to 46 percent.

The message is consistent: when effective technology is deployed as standard, safety gains are immediate and significant. Where deployment is partial or left to optional packages, benefits remain modest. For Allianz, this underscores the importance of broad, standardized implementation of driver assistance systems – and it signals that insurance risk models must increasingly shift from focusing on vehicle type alone to accounting for the presence and performance of specific assistance technologies.

Evidence from AZT research

The AZT reviewed more than 50 international publications and accident datasets focusing on SAE Levels 3 and 4. Across these studies, the picture is consistent: autonomous systems outperform human drivers in key accident categories.

- Rear-end collisions, lane departures and intersection errors can be reduced by up to 85 percent when automated systems are in control.
- In one simulation, replacing human drivers with a Waymo virtual driver that operates the vehicle without human input would have prevented 82 percent of accidents and mitigated an additional 10 percent in real-world fatal crashes in Arizona.
- Support these findings: Waymo’s rider-only vehicles, covering 56.7 million miles, reported a 96 percent reduction in injury-causing intersection accidents compared to human drivers.

While these results are striking, effectiveness depends on the operational design domain (ODD). AVs perform best on well-mapped urban routes and structured environments. Performance is less reliable in mixed traffic where human drivers are also present and when there are poor visibility or unpredictable scenarios.

Findings from the studies in the United States suggest key mechanisms that are also relevant for Europe, particularly in reducing accidents linked to human error. Yet the transferability of US data has limits. German roads, for example, tend to be narrower, regulations are stricter, and drivers often adopt new technologies with greater caution.

Forecasts and long-term outlook

Many studies model the potential impact of widespread AV deployment:

A German analysis (GDV 2021) forecasts a 35 percent reduction in liability claims and a 27 percent reduction in compensation payments by 2040 in optimistic scenarios.

However, projections vary widely: optimistic timelines suggest mass adoption by the early 2030s, while more cautious scenarios see slower penetration extending into the 2040s.

Global research suggests AVs could prevent millions of crashes per year and cut traffic fatalities by a third or more once large-scale adoption occurs.

Key takeaway: The safety potential is clear, but the speed of impact will depend on regulation, market penetration and public acceptance.



Expert interview:
Christian Sahr
Managing Director
Allianz Center for Technology (AZT)

Based on Allianz claims analysis, driver assistance systems already show a measurable impact in reducing accidents. Christian Sahr, Managing Director of the AZT, explains which technologies make the most significant difference, why public trust still trails behind technical progress, and what Europe must achieve to scale Level 4 automation.

From claims to reality: Which driver assistance systems have proven most effective in reducing accidents?

Christian Sahr: Our data show clear results. For passenger vehicles, two automated brake systems stand out. The first is front Autonomous Emergency Braking (AEB), which was incentivized within the framework of the German type class system since 2013 and became mandatory for all new vehicle types in 2022 in the EU. Another effective system is Rear AEB, which activates during maneuvering. Since 2017, vehicles equipped with it have shown a 66 percent reduction in rear parking accidents compared to that year. This system significantly lowers claim frequency, influences type classes and thereby reduces insurance premiums. Looking ahead,



Studies show that autonomous vehicles could eliminate the majority of rear-end crashes and significantly reduce lane-departure and intersection accidents – some of the deadliest collision types.”



automated braking in corners shows strong potential for protecting vulnerable road users, particularly for vans and trucks in urban areas.

Where do autonomous systems still face their greatest safety challenges?

Frankly, we do not yet know in detail – that is why we need data from large-scale test fields across Europe. Mixed traffic is a clear challenge: AVs share the road with human drivers, who may make mistakes or react unpredictably. Some reported rear-end accidents have been caused by human drivers colliding with autonomous cars. In Europe, we take a cautious approach. We require redundant sensor equipment and a combination of technologies – cameras, radar and at least one lidar sensor.

Which accident types remain most difficult to prevent?

In our global study of existing research, we analyzed test field data from China and the US, though much of it comes from OEMs. Still, one pattern is evident: accidents involving pedestrians or cyclists in towns are drastically reduced. However, collisions with human-

driven vehicles remain stable or even increase – largely due to human error.

How do insurers balance fewer accidents against higher repair costs?

Currently, lower claim frequency is offset by higher repair bills, mainly due to the cost of sensors and rising prices for parts and labor. So, total claims costs have not fallen. But with Level 4 automation, we expect claims frequency to drop so sharply that overall claims costs will decrease, even if repair costs continue to rise.

What must be achieved before Level 4 or 5 vehicles scale in Europe?

We need harmonized homologation procedures – essentially a driving license for automated vehicles. Current methods do not allow consistent assessment, particularly for insurers evaluating risk. At Allianz, we are ready to add our own risk scoring based on claims experience to complement official approvals. Europe must move quickly: if we lag China and the US, we risk losing competitiveness in the technology race.

Autonomous driving in Europe: Hopes, fears and the road ahead

To assess European views on autonomous driving, Allianz conducted a representative online survey across Austria, France, Germany, Italy, Switzerland, the Czech Republic and the United Kingdom. More than 8000 participants – all active traffic users – shared their perspectives. The results reveal a Europe that is both intrigued and cautious concerning the technology, with enthusiasm for potential benefits tempered by reservations about control, safety and trust.

Safety perceptions and concerns

Despite extensive media coverage, public familiarity with autonomous driving is limited. One in three Europeans describes themselves as “not at all familiar” with autonomous driving, while only a small minority feels very familiar with it. First associations reveal both promise and anxiety: references to artificial intelligence and progress appear alongside mentions of accidents.

More than half of respondents (56 percent) expect autonomous cars to be safer or at least as safe as human-driven vehicles (see figure below). A European

comparison shows that Italians have the highest level of confidence in the safety of autonomous vehicles (65 percent). Respondents in the United Kingdom are most critical (44 percent). Germans fall in the middle at 57 percent.

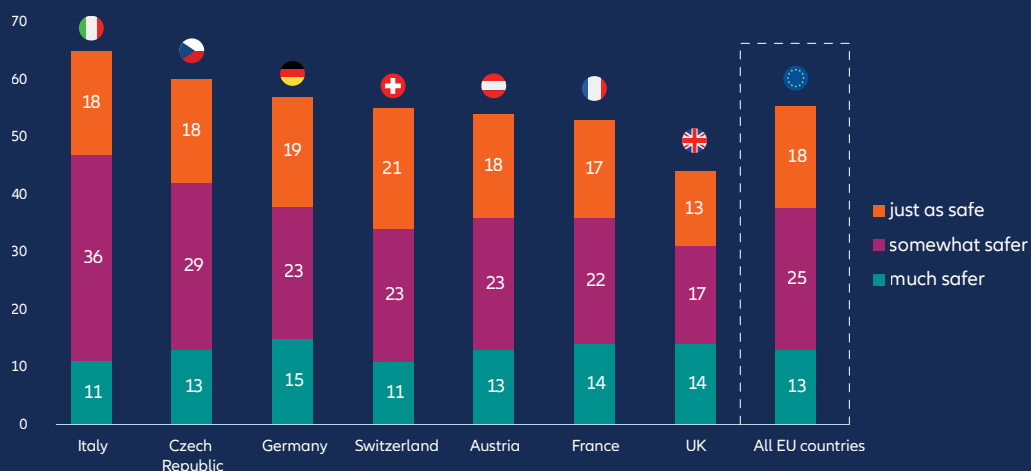
At the same time, concerns about autonomous driving persist, with 69 percent of respondents worried about system reliability in unexpected situations and 72 percent viewing the technology as still “too new and untested.” Nearly two-thirds (64 percent) say they would feel comfortable in autonomous vehicles only if they could take back control whenever necessary.

Keen but conflicted: the acceptance gap

Interest grows with higher levels of automation, but commitment is uneven. Across all surveyed countries, an average of 83 percent of respondents consider being able to regain control of the car at any time to be important or very important. This highlights the strong desire for human oversight even when using autonomous driving technologies.

Safety perception of autonomous driving

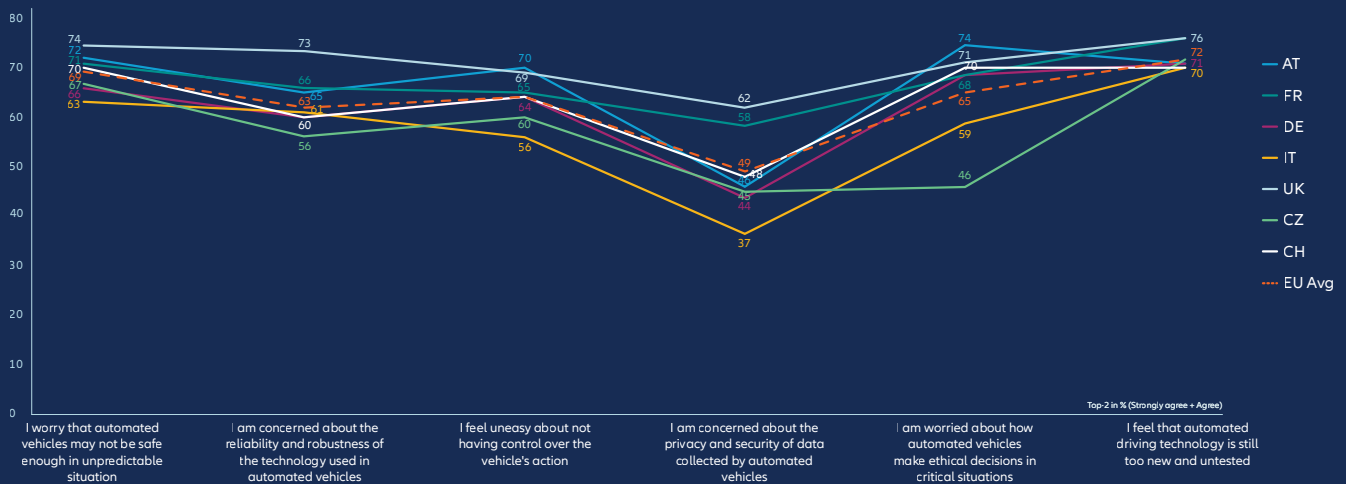
Automated vehicles are perceived as “just as safe”, “somewhat safer”, “much safer” than human-driven cars



Basis: Consumer survey across seven European countries in June/July 2025. Germany (n=1.215), Italy (n=1.206), France (n=1.207), United Kingdom (n=1.214), Austria (n=1.207), Switzerland (n=1.206), Czech Republic (n=1.209). Question: How do you feel about the safety of automated vehicles in comparison to human-driven vehicles?

Concerns and trust drivers of automated driving

Concerns on automated vehicles



Basis: Consumer survey across seven European countries in June/July 2025. Germany (n=1.215), Italy (n=1.206), France (n=1.207), United Kingdom (n=1.214), Austria (n=1.207), Switzerland (n=1.206), Czech Republic (n=1.209). Questions: To what extent do you agree or disagree with the following statements about automated vehicles? What would need to happen for you to have sufficient trust automated vehicles?

Expectations for widespread adoption are cautious. Half or more in each country believe that automation will be common within the next ten years (“definitely yes” and “probably yes”). In Italy, 67 percent expect this to be the case and 57 percent in the Czech Republic. In Germany, it is 52 percent. A third expect it later, while another fifth doubt it will ever occur. The prevailing mood is wait-and-see.

Promise on the road: expected benefits

People recognize both personal and collective gains. For individuals, reduced stress and productive travel time were the most frequently mentioned benefits.

At the societal level, respondents mention smoother logistics, fewer traffic jams, lower emissions and improved mobility for elderly or impaired drivers. Yet optimism is modest. Environmental gains rank below safety and convenience, which emerge as conditions for acceptance everywhere.

Trust on trial: conditions for adoption

Safety is the top concern. Autonomous vehicles will only be accepted if they are demonstrably safer than human-driven vehicles. Respondents demand large-scale testing, strict regulation, and transparent

information. Maintaining the possibility for human control is regarded as essential by many.

Trust issues run deep: worries about technical failures and ethical dilemmas abound. Many doubt that transparency will be prioritized.

Differences across Europe

Cross-country contrasts are sharp. Italians are the most enthusiastic (more than 70 percent of the respondents with experience of automated systems are interested in using L3 and L4), highlighting affordability as crucial. UK respondents are among the most skeptical, with only 44

One in three Europeans describes themselves as “not at all familiar” with autonomous driving



percent perceiving automated vehicles as “just as safe” or safer than human-driven cars (65 percent of Italians agree). For 57 percent in Austria and France, it is “very important.” Austrians and the French (57 percent) have the highest rates of wanting the ability to regain control over the car anytime.

The Czech sample associates automation more with innovation and future progress. However, the Czech and French have the highest number of people professing no or limited familiarity with automated driving (68 percent). Italian and UK respondents accounted for 55 percent.

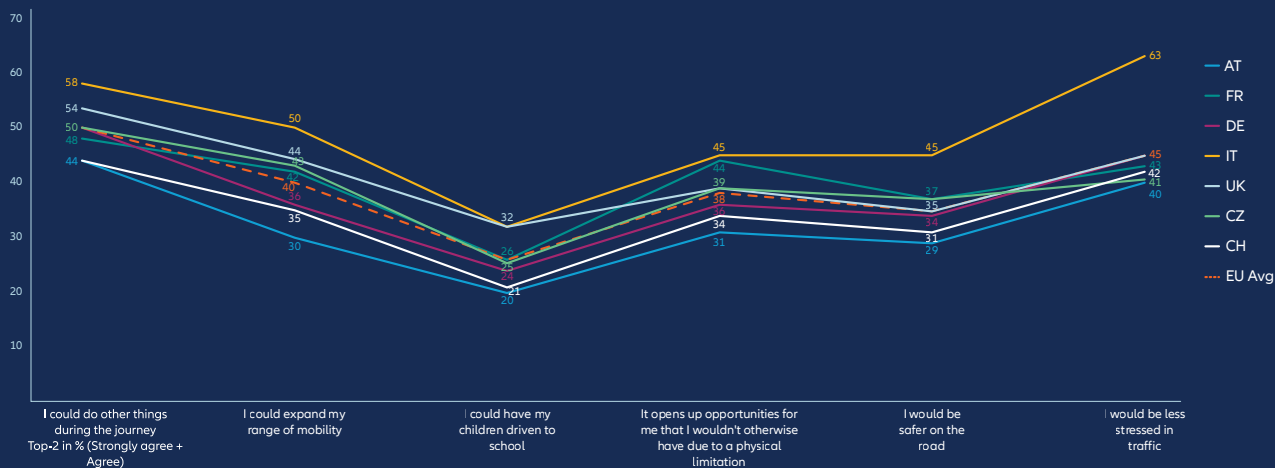
Progress on people’s terms

Europeans are not yet ready for wholesale adoption of autonomous driving. They balance optimism with skepticism. Adoption will hinge on three conditions: affordability, proven safety and transparent technology and data use. Without them, trust will remain fragile.

The road to autonomous driving in Europe appears to be a gradual one. Europeans may welcome progress – but only if it delivers on their terms: fair, reliable and safe.

Expected benefits of automated driving

Personal effects of Level 4 highly automated driving



Basis: Consumer survey across seven European countries in June/July 2025. Germany (n=1,215), Italy (n=1,206); France (n=1,207); United Kingdom (n=1,214); Austria (n=1,207); Switzerland (n=1,206); Czech Republic (n=1,209); Questions: To what extent do you personally agree with the following statements related to level 4 automated driving? Level 4 automated driving can lead to...

Countries snapshots on autonomous mobility



Jörg Hipp, Chief Product Officer, Allianz Austria

In Austria, progress is proceeding cautiously, shaped by strict requirements and step-by-step testing. But the direction is clear: once legal and infrastructural hurdles are removed, autonomous driving will profoundly change our everyday lives.



Alexandra Wyard, Director of Technical Underwriting, Allianz UK

Access to data from vehicles is going to be a necessity to help law enforcement and insurers know what happened and who is liable.



Marcello Zacchetti, Head of Motor, Allianz Italy

Concerns expressed by Italian consumers are comparatively lower than in other EU markets. Nevertheless, for autonomous driving to scale, either a significant infrastructure upgrade or highly sophisticated AV technologies will be necessary to allow a real transition from current ADAS-phase to higher levels of automation (L3+).



Béatrice Najean-Lenormand, Head of Personal Auto Risk, Allianz France

Level 1–3 tech is everywhere in France; Level 4–5 is emerging in controlled pilots. With cautious optimism among drivers, our job is to reshape risk and deliver the next generation of protection.



Frank Sommerfeld, Chairman of the Board of Management, Allianz Versicherungs-AG

For autonomous mobility to thrive, we need clear communication about the advantages and disadvantages. And the advantages are obvious: an automatic system usually reacts much faster and better than humans. Autonomous technology saves lives.



Expert interview:

Michael Praxenthaler

Traffic Psychologist

Allianz Center for Technology

To realize the potential of autonomous mobility, people must feel confident using it. Michael Praxenthaler, traffic psychologist from the AZT, discusses the results of the Allianz Motor Day Representative Online Survey.

What were the most striking findings from the Allianz survey?

Respondents showed strong curiosity about autonomous driving and high expectations. Many emphasized potential benefits such as reduced stress, greater comfort and improved mobility for elderly or disadvantaged groups. At the same time, people are looking for more clarity on safety and reliability. This suggests that the public is open to automated mobility – but needs reassurance through information and proof points.

Did the survey show differences between countries or populations?

Overall, answers were similar across markets. Comfort and stress reduction were consistently identified as critical advantages, while safety improvements were mentioned less frequently. Italy stood out, with more respondents confident that



People must experience autonomous driving as safe, useful and reliable – only then will trust grow step by step.



automation could make roads safer compared with Austria and Switzerland.

Which features most influence willingness to use autonomous vehicles?

Convenience was top of mind. Respondents liked the idea of making travel time more useful and less stressful. Safety, while valued, was less frequently cited.

From a psychological perspective, what makes it difficult for people to embrace automated driving fully?

Several aspects play a role. First, most people have little direct experience with automated systems – what is unfamiliar takes longer to trust. Second, driving is closely tied to a sense of control, so handing this over to a machine feels odd. Third, accidents involving autonomous cars are highly visible in the media, shaping perception more strongly than the many uneventful journeys we take. Finally, people want to know what the car is doing and how it decides, and uncertainty here creates hesitation.

How important is transparency in building trust?

It is central. Clear communication about what systems can do – and their limits – helps people feel more secure. When interaction between driver and machine is predictable, acceptance increases.

Did experience with driver assistance systems make a difference?

Yes. Respondents with prior experience of automated driving or precursor systems were more willing to try higher levels of automation. First-hand familiarity helps transform abstract technology into tangible safety and comfort benefits.

What risks matter most to consumers?

Everyday reliability dominates concerns. People want assurance that vehicles can handle unexpected situations. Cybersecurity and protection against hacking are also top of mind. Ethical dilemmas appear often in public debate, but for most users, consistent performance and safety are the decisive factors.

What should policymakers and industry focus on to win the European public over?

Trust needs to be earned. This requires open communication, education campaigns and opportunities for people to try the technology in pilot projects or shared mobility schemes. Insurers can provide incentives for vehicles equipped with modern assistance systems and share transparent safety data. But technical progress alone is not enough. People must experience autonomous driving as safe, useful and reliable – only then will trust grow step by step.



Outlook: The future of motor insurance

The rise of autonomous mobility is fundamentally reshaping the foundations of motor insurance. For over a century, insurance law has placed responsibility squarely on the human driver – or more precisely, the vehicle's owner. With Level 3 and Level 4 systems now operating in real traffic, this foundation is shifting.

Mixed-traffic scenarios illustrate the challenge: a Level 4 robotaxi swerves to avoid a pedestrian but collides with another vehicle. Was the human driver at fault, the AV's sensors or the software? Increasingly, responsibility could be spread across multiple actors, from the vehicle manufacturer to the developer of an algorithm or even the operator of remote supervision.

Yet liability is only one dimension. Insurers must also rethink how risk is modeled, priced and covered. Traditional actuarial models, built on historical accident frequency, are no longer sufficient. Future frameworks must capture new dynamics: fewer collisions overall but higher repair costs per claim, shifting responsibilities between humans and machines and the emergence of cyber and system-failure risks. Together, these changes signal a fundamental rethinking of how motor insurance is structured and delivered.

Evolving insurance: modeling, pricing and affordability

What autonomous vehicles promise is fewer accidents overall. Several studies model the potential impact of

widespread AV deployment. A German Insurance Association (GDV, 2023) study projects a reduction of up to 35 percent in the frequency of liability claims by 2040. Still, it warns that higher repair costs could offset much of the savings.

The Insurance Institute for Highway Safety (IIHS, 2020) finds that while automation could theoretically prevent about one-third of fatal crashes, real-world benefits will depend on how widely the technology addresses human error – and on whether repair and replacement costs continue to rise.

Already, the balance between frequency and severity of claims (also known within the industry as the 'claims cost curve') is shifting. While the frequency of minor collisions is declining, when damage does occur, the cost of repairs can be significantly higher than in the past.

Advanced components, such as cameras, radar units, sensors and software modules, must often be recalibrated or replaced after even minor impacts. According to studies by the American Automobile Association (2018), repair costs can be 25-35 percent higher compared with conventional vehicles, even for relatively small claims.

The Allianz Center for Technology (AZT) has been documenting this for years. Its crash tests at low speeds developed decades ago to highlight repair costs from seemingly minor accidents – form the very basis of



Allianz research: safety gains do not guarantee lower claims

Drawing on in-house data and a broad review of global studies, Allianz concludes that autonomous technology will sharply reduce accidents caused by human error, such as fatigue, distraction or misjudgment. The AZT forecasts a 20 percent drop in road-traffic accidents in Europe by 2035, rising to more than 50 percent from 2060 onwards, using 2023 as the base year, as the mix of conventional (Levels 1 and 2) and automated (Levels 3 and 4) vehicles scales up.*

today's vehicle type classifications used in motor insurance pricing. That same forward-looking approach now applies to new challenges: the high cost of EV battery replacement, the vulnerability of connected cars to cyberattacks, and the complexity of assigning liability in autonomous driving scenarios.

What is clear from their research is that while accident frequency may fall, the severity and complexity of individual claims are rising. Traditional actuarial models that rely on frequency-based pricing will also need to evolve, incorporating both the lower accident probability and the higher unit repair costs.

Victim protection must stay central

Despite these changes, Allianz holds to one non-negotiable principle: victim protection must stay central. An injured pedestrian should first receive compensation without delay. Allianz supports the principle that liability should continue to rest with the vehicle owner, with insurers compensating victims promptly and seeking recourse from manufacturers if a product defect is proven.

Questions of liability between manufacturers, their insurers, and potential suppliers can then be addressed afterwards. In such cases, the manufacturer – together

with its product liability insurer – would assess responsibility and decide whether recourse against software or sensor suppliers is appropriate.

Allianz motor insurance for autonomous vehicles compensates road accident victims regardless of whether the damage was caused by human error on the part of the driver or a failure of the autonomous system. We want to ensure that innocent victims are compensated swiftly and fairly, and also to help clarify the circumstances surrounding an accident.

If driver assistance systems fail and defects are not corrected, we can pursue recourse against the manufacturer and adjust premiums for that vehicle type. Vehicles with higher risk profiles will continue to attract higher premiums, creating pressure on manufacturers to improve their systems – an outcome Allianz actively supports.

This stance builds on AZT's historic role: from campaigning for mandatory seatbelts in the 1970s to shaping anti-theft standards in the 1990s, Allianz has consistently acted on the belief that safety and victim protection come first – and that insurers must take responsibility, not deflect it.

Insurance for a new era of mobility

The transition to autonomy is also an opportunity to rethink product design. Allianz is piloting modular AV insurance products in Germany that combine:

Hybrid coverage for mixed driving conditions (manual, assisted, autonomous).

Fleet solutions that are tailored for robotaxi and shuttle operators.

Cyber and system failure protection to address risks unique to autonomous technology.

Such solutions recognize that liability will be more distributed, risks will be more diverse and customer expectations will be more digital. The future of mobility requires insurers to strike a balance between innovation and protection – ensuring that safety improvements are passed on to consumers while maintaining the social promise of swift and fair compensation for victims.

* This outlook incorporates the future market penetration of active operating systems under conservative to progressive scenarios and the impact of mixed traffic with vehicles without autonomous systems will have on overall accident risk – rather than solely the technical potential, based on in-house modeling as well as a study of the German insurance association GDV.



Expert interview:
Lucie Bakker
Board Member
Allianz Versicherungs-AG

Lucie Bakker, Board Member of Allianz Versicherungs-AG for Claims, discusses how automation will change accident patterns, repair bills and data needs across Europe.

What developments in the field of motor claims can be expected in connection with autonomous driving?

We are confident that the widespread adoption of relevant driver assistance systems has significant potential to reduce the occurrence of certain types of accidents. This is already evident in the latest studies by the AZT, which show that the number of collisions when reversing can be reduced by up to 66 percent when appropriate autonomous emergency-braking systems are installed. Another factor is claim costs. If an accident occurs despite assistance systems, we expect higher damage costs, as repairs tend to be more expensive.

Why are AVs repairs getting more expensive?

AVs require numerous sensors to function, many of which are in areas of the vehicle at risk of collision. Accordingly, additional costs are likely in the event of damage – for replacement or at least calibration of these sensors. These ADAS sensors serve as the ‘eyes and ears’ of the vehicle, comprising radar, lidar, cameras and ultrasonic sensors, which enhance safety and driving comfort through features such as adaptive cruise control and lane-keeping systems. Spare part prices for ADAS sensors can range from under EUR 100, for example, an ultrasonic sensor, to several thousand EUR for lidar sensors or night vision cameras. Calibration adds work in the body shops, ranging from a few minutes to several hours, depending on the respective vehicle manufacturer and model.

What role will data access play in claims handling and customer trust?

Data access is key to fair and efficient claims handling in autonomous driving. It enables insurers to understand what happened quickly, determine liability, and protect victims – without uncertainty or delay. Allianz therefore advocates for transparent and secure data sharing among carmakers, insurers and regulators. And drivers see it the same way: in a recent survey conducted by Allianz in seven European countries, about six in ten respondents said that it was important to them to know which country their data was stored in. That is why a secure and harmonized EU data framework is essential for building lasting trust in this technology.



Expert interview:

Matthias Trüstedt

Head of Global Property & Casualty

Allianz SE

Matthias Trüstedt, Head of Allianz Global Property & Casualty (P&C), discusses navigating liability, affordability and opportunity in the age of autonomous mobility.

How do you see liability evolving as autonomous vehicles move from pilots to mass deployment?

Autonomous mobility is a complex and fast-moving ecosystem highly relevant to our business. It involves many different actors, such as original equipment manufacturers, AI providers and fleet or technical supervision operators, each with liability exposures.

We believe that strict liability will remain the most viable solution across the European Union and many other countries, including China. It offers comprehensive victim protection, clear accountability and a manageable way to address the inherent complexity of claims. That complexity results from multiple root causes, ranging from hardware or software errors, driver negligence and poor maintenance to wear and tear (for example, tire wear) and external factors such as storms, hail or marten bites.



The disruption of autonomous mobility to classic motor insurance is both a fundamental challenge and an opportunity; we are well placed to remain successful.

Technical excellence in insurance and the right product proposition will remain key. This means understanding risk drivers, such as software reliability, sensor precision and cybersecurity threats, and evolving motor third-party liability insurance to reflect the risk shift from human to automated systems.

A motor insurance system with functions and processes comparable to today, including adequate risk assessments, pricing, product offerings and claims management, will provide the most effective and efficient solution.

Do you see AV insurance as a threat to the traditional motor business – or an opportunity to grow into new mobility ecosystems?

The disruption of autonomous mobility to classic motor insurance is both a fundamental challenge and an opportunity; we are well placed to remain successful.

Regulation is evolving rapidly in our core markets, with liability shifting between owners, operators and manufacturers. However, we expect third-party liability insurance to remain mandatory in key markets for self-driving solutions and autonomous mobility. The transition from human-centric vehicles to fully autonomous systems without human intervention will take many years and will be as interesting as challenging. We refer to this as the “mad middle” of mixed traffic.

To address these challenges consistently across Allianz, we have established the new Center of Competence for Motor & Mobility. Global P&C works with major Allianz Operating Entities, the Allianz Center of Technology and Allianz Partners to build the skills and forward-looking expertise for smart & decisive action.

We take a holistic approach, covering motor third-party liability while incorporating product liability, professional

indemnity and cyber elements into a future product that offers comprehensive customer protection.

How can insurers ensure that premiums remain affordable as repair costs rise?

In recent years, labor and spare part prices have risen significantly above overall inflation, driving higher claims costs and the need to increase motor premiums. This makes keeping car insurance affordable increasingly challenging. We are continuously investing to control claims cost while securing strong coverage and service for our customers:

We measure, benchmark and optimize our claims processes using best-practice frameworks to improve efficiency, effectiveness and customer service. We also invest in accident research and push for repairability to avoid costly, unnecessary replacements in the event of a claim. For example, replacing an electric vehicle battery or a damaged headlight only when repair or refurbished parts are not suitable. This keeps claims costs in check, serves customers’ interests and is far more sustainable in terms of the CO2 footprint – a real win-win.

We are also strengthening fraud detection and prevention, especially as the spread of generative AI has made fraud easier and more sophisticated. We protect the interests of our honest customers and ensure they do not pay for fraudulent or unwarranted claims.

As autonomous-vehicles claims grow more complex, data access and availability will be essential for proper root cause assessment. Claims forensics will matter more to identify potential faults or faulty system components and to determine whether recourse actions against manufacturers, service providers or software providers are warranted.

Coordinated action for safe and trusted autonomous mobility

Autonomous mobility is no longer a question of if, but of how fast, how fair and how safe. To strengthen Europe's competitiveness and ensure road safety, Allianz sees three priorities that must be implemented without delay.

#1 A harmonized EU 'driving license' for autonomous systems

While Regulation EU 2022/1426 has set out procedures for approving automated driving systems, national implementation remains fragmented. As a result, automakers face inconsistent requirements across markets, from testing standards to technical inspections.

Allianz calls for a European approval model for autonomous vehicles with uniform technical type approval (homologation) and testing procedures across all Member States – effectively a European 'driving license' for L4 autonomous systems.

This would:

- Simplify market access and reduce legal uncertainty for manufacturers.
- Ensure consistent safety assurance across borders.
- Increase safety and accelerate innovation by replacing fragmented national approvals with a single EU-wide certification.

#2 EU-wide uniform standards for access to accident- and safety-related vehicle data for insurers and regulatory authorities, with critical data remaining within European jurisdiction and treated as a strategic asset.

Uniform access to vehicle safety and accident data is critical to improving road safety and public confidence. The European Commission's Data Act (Regulation 2023/2854) provides a crucial foundation, but further coordination is needed.

Allianz proposes that data-sharing use cases be assessed in terms of both benefits and costs. For accident- and safety-relevant data, the benefits are clear. A common framework developed jointly by insurers, manufacturers and regulators would:

- Enable data-driven risk analysis and proactive prevention measures.
- Strengthen transparency and public trust in autonomous systems.
- Support faster learning cycles by allowing each stakeholder to contribute to safety improvement.

Insurers could contribute hotspot data on high-risk scenarios, while manufacturers could disclose where systems face limitations. Whether or not they share detailed solutions should remain at their discretion – healthy competition for safer systems will persist.

#3 Joint European shared database of critical traffic situations for autonomous vehicles

To enhance system validation and public safety, Europe should establish a shared database of critical traffic situations, including all accidents and near-misses involving autonomous mode. This would:

- Allow manufacturers to simulate and validate performance against real-world challenges.
- Support regulators in defining minimum performance thresholds.
- Provide the empirical foundation for the European 'driving license' for autonomous systems.

Such a model is already standard in aviation and would create a virtuous circle of learning and safety improvement across the mobility ecosystem.

By advancing these measures, Europe can enhance the global competitiveness of its automakers while improving safety for all road users.

Autonomous driving is not only a technological transformation but a social contract – a shared responsibility to build safer roads, cleaner cities and more inclusive mobility. Allianz's role is clear: not only to insure vehicles, but to insure trust.

In close collaboration with manufacturers, regulators and technology partners, Allianz will continue to translate trust into measurable, verifiable and transparent safety outcomes, ensuring that even as mobility becomes autonomous, safety remains in human hands.

Allianz Center for Technology: Shaping the future of mobility

The AZT has long anticipated how technological change reshapes risk and the insurance industry. In the 1970s and 1980s, it championed the introduction of mandatory seatbelts in Germany. This measure that helped reduce annual traffic fatalities from around 15,000 to fewer than 3000 today. AZT's early low-speed crash tests revealed the high cost of seemingly minor collisions and established the foundation of the vehicle type classes used in motor insurance.

That same forward-looking approach now informs current work on issues such as the cost of EV battery replacement, the resilience of connected cars against cyberattacks and the liability challenges introduced by autonomous systems. The goal is to anticipate how technological shifts will influence motor insurance, road safety and repair costs – and to translate that foresight into practical solutions.

By analyzing real-world claims data, conducting crash tests and publishing cross-market recommendations, AZT shapes industry standards and ensures claims handling that is fair and efficient



for both customers and manufacturers. Its traffic psychology studies, accident research projects and safety campaigns have helped to make Europe's roads markedly safer – a legacy that continues as mobility enters the era of electrification and automation.

For more than five decades, AZT has been a catalyst for change. Its mission remains constant: to create safe, sustainable and affordable mobility for citizens, while equipping insurers and policymakers to navigate the transformations ahead.



Disclaimer & Copyright Copyright

© 2025 Allianz SE. All rights reserved.

The material contained in this publication is designed to provide general information only. While every effort has been made to ensure that the information provided is accurate, this information is provided without any representation or warranty of any kind about its accuracy and neither Allianz SE, nor any other company of Allianz Group can be held responsible for any errors or omissions. All descriptions of insurance coverage are subject to the terms, conditions and exclusions contained in the individual policy. Any queries relating to insurance cover should be made with your local contact in underwriting and/or broker. Any references to third-party websites are provided solely as a convenience to you and not as an endorsement by Allianz of the content of such third-party websites. Neither Allianz SE, nor any other company of Allianz Group is responsible for the content of such third-party websites and neither Allianz SE, nor any other company of Allianz Group does make any representations regarding the content or accuracy of materials on such third-party websites.

Allianz SE | Group Communications | Königinstr. 28 | 80802 Munich, Germany

Commercial Register: Munich, HRB 208312 October 2025