



Institute  
and Faculty  
of Actuaries

# A Call to Evidence for Autonomous Vehicles

IFoA response to the House of Lords Science and  
Technology Committee

26 October 2016

## **About the Institute and Faculty of Actuaries**

The Institute and Faculty of Actuaries is the chartered professional body for actuaries in the United Kingdom. A rigorous examination system is supported by a programme of continuous professional development and a professional code of conduct supports high standards, reflecting the significant role of the Profession in society.

Actuaries' training is founded on mathematical and statistical techniques used in insurance, pension fund management and investment and then builds the management skills associated with the application of these techniques. The training includes the derivation and application of 'mortality tables' used to assess probabilities of death or survival. It also includes the financial mathematics of interest and risk associated with different investment vehicles – from simple deposits through to complex stock market derivatives.

Actuaries provide commercial, financial and prudential advice on the management of a business' assets and liabilities, especially where long term management and planning are critical to the success of any business venture. A majority of actuaries work for insurance companies or pension funds – either as their direct employees or in firms which undertake work on a consultancy basis – but they also advise individuals and offer comment on social and public interest issues. Members of the profession have a statutory role in the supervision of pension funds and life insurance companies as well as a statutory role to provide actuarial opinions for managing agents at Lloyd's.



The House of Lords Science and Technology Committee  
Committee Office  
House of Lords  
London  
SW1A OPW

26 October 2016

Dear Sirs

### **IFoA response to Call for Evidence on Autonomous Vehicles**

1. The Institute and Faculty of Actuaries (IFoA) welcomes the opportunity to respond to the Call for Evidence on Autonomous Vehicles from the House of Lords Select Committee on Science and Technology. Members of the IFoA's General Insurance Board and Risk Management Board are jointly responsible for the drafting of this response.
2. The IFoA has taken an active interest in the development of the regulatory, research and policy environment for the development of autonomous vehicles in the UK. We have engaged directly with officials from the Department for Transport (DfT) and the Centre for Connected and Autonomous Vehicles (CCAV). In September 2016 we submitted a response to the DfT/CCAV consultation on proposals to support advanced driver assistance systems and automated vehicle technologies.
3. Most of the Select Committee's questions are not directly related to the IFoA's area of expertise. We would like to focus on questions 12-14.

#### **Question 12: Does the Government have an effective approach on data and cybersecurity in this sector?**

4. Cybersecurity is a growing threat across many different areas of daily and corporate life. In the context of autonomous vehicles, the IFoA believes the key points to consider are that there should be open access to data on both driver behaviour and the functioning of vehicle technology, within the constraints of data protection legislation. Failure to achieve open access is likely to give rise to serious risks. For example, if such data is owned by manufacturers there is a risk that they could try to avoid liability in order to protect their reputations. Similarly if data is owned by the vehicle's insurer this could impede competition.
5. The DfT/CCAV consultation document proposed that insurance cover for hacking of an automated vehicle by a third party could be provided by product liability insurance. In our response we suggested the alternative of cyber insurance. This should preferably be paid for by the manufacturer, not by the driver. Reinsurance of terrorism risks may be needed to cover the risk of many vehicles being hacked simultaneously.
6. We accepted the consultation's comparison of hacking with vehicle theft, since a hacked vehicle would essentially be out of the driver's control through no fault of their own. However,

the liability could be unclear if the owner was negligent in maintaining the security systems within the automated vehicle technology and this gave an opening for the car to be hacked.

**Question 13: Are further revisions needed to insurance, regulation and legislation in the UK to create an enabling environment for autonomous vehicles?**

7. As noted, the IFoA replied in detail to the recent DfT/CCAV consultation and have included a link to that. Given actuaries' expertise in the assessment, quantification and financial/practical management of risks, most of our comments in that response related to insurance. The following is a summary of some of the key points we made there.
8. We believe that revisions are needed to create the right environment for autonomous vehicles. One key guiding principle is that relevant parties involved in an accident should have access to compensation and there should not be potential gaps in insurance coverage which may make it hard for them to obtain this. We believe these outcomes would be best achieved through a combination of traditional motor insurance and product liability cover. We therefore supported the proposals in the recent DfT/CCAV consultation to require product liability insurance for automated vehicles.
9. We believe that proposals for product liability cover may need to cover assisted technology (such as remote control parking or systems for maintaining a vehicle's position on the motorway) as well as full automation. Even though the driver remains 'in the loop', it seems reasonable to imagine that a malfunction of the assisted technology could cause an accident that is hard for the driver to control.
10. In our view, manufacturers, rather than vehicle owners, should take out product liability cover, because it is the manufacturer who should ultimately pay the cost of claims that would fall under product liability. Buyers of automated vehicles should have confidence that it will be the manufacturer, rather than themselves, who will be paying for that product liability cover.
11. The way this would work in practice is that, if a person driving a conventional car is hit by a vehicle in autonomous mode, they should be able to claim against the autonomous vehicle owner's insurance policy. If that policy includes product liability cover, the injured party would be fully compensated including damage to their car. It would then be for the insurer to decide if the manufacturer was at fault, and if so to seek the recovery from the manufacturer. Manufacturers might be nervous about accidents involving automated vehicles, because with traditional cars a single incident would not have repercussions, but a single accident for an automated vehicle could be relevant for all vehicles using certain software. A potential concern would be if a gap emerged, where the manufacturer was unwilling to accept liability and hence the insurer of the driver refused to pay out the repair costs for the damaged car. It is unclear what the balance will be between company and private ownership of autonomous vehicles. A related issue was explained in the DfT/CCAV consultation document (paragraph 2.29): "Currently, the Consumer Protection Act 1987 only applies to property damage where the damaged property is owned by private individuals for personal use – not where it is owned by companies. Where a company's property is damaged by a defective product they currently have to prove that the producer was negligent (rather than just prove that there was a defect in the product)". Changing the law might create unnecessary complexity, but it will be important to clarify how the current legal framework would work in practice for autonomous vehicles.

**Question 14: What, if any, ethical issues need to be addressed in the substitution of human judgement in the control of vehicles by algorithms and Artificial Intelligence?**

12. We would highlight the challenge of pre-programming a decision for the vehicle when it is forced into a collision but has a 'choice' about who or what to hit - how can the so-called 'lesser of two evils' be determined? For a human driver we would not penalise whatever action they chose in these circumstances, since they did not have time to consider all the pros and cons before reacting. However, for a pre-programmed vehicle we believe it is important to think carefully about the feasibility and desirability of considering all of these scenarios in advance.

If you would like to discuss any of the points raised please contact Matthew Levine, Policy Manager at [Matthew.Levine@actuaries.org.uk](mailto:Matthew.Levine@actuaries.org.uk) / 020 7632 1489 in the first instance.

Yours sincerely,



Fiona Morrison  
**Immediate Past President, Institute and Faculty of Actuaries**