



Department
for Transport



Research on automated vehicles and sanctions systems

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Contents

Contents	3
Foreword	5
Executive summary	6
Overview of approach	6
Key findings	6
Research context, aims and methodology	9
Background	9
Aims of the research	9
Methodology	10
Interpreting the findings	10
The lifecycle of compliance	12
Summary	12
Defining the compliance lifecycle	12
Challenges for nascent industries	16
Prevention, monitoring and compliance	18
Summary	18
Types of measures	18
Defining and measuring non-compliance	22
Summary	22
Types of non-compliance	22
Factors influencing thresholds	24
Challenges in defining non-compliance in nascent industries	25
A spectrum of enforcement: responding to non-compliance	27
Summary	27
Types of sanctions	28
Use of assessment frameworks	29
Factors influencing which sanction to apply	31

Impact of different sanctions on compliance	35
Challenges to applying sanctions	37
Outcomes	42
Fostering a culture of compliance	43
Summary	43
Features of a compliance culture	43
Illustrative example 11	45
Considerations for automated vehicles	47
Summary	47
Considerations	48
Next steps	51
Annex A: Methodology	53
Annex B: References	56
Ipsos' standards and accreditations	58

Foreword

This is a report of research carried out by Ipsos on behalf of the Department for Transport.

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Ipsos Public Affairs works closely with national governments, local public services and the not-for-profit sector. Its c.200 research staff focus on public service and policy issues. Each has expertise in a particular part of the public sector, ensuring we have a detailed understanding of specific sectors and policy challenges. Combined with our methods and communications expertise, this helps ensure that our research makes a difference for decision makers and communities.



Executive summary

Overview of approach

The Department for Transport (DfT) commissioned Ipsos to undertake qualitative research to gain insights from other regulated sectors and key stakeholders on how sanctions regimes can be used to promote compliance, particularly in the context of automated vehicles (AVs).

The research findings will help to inform policymaking in relation to the Automated Vehicles Act (2024), which includes the creation of a new safety framework to enable the deployment of AVs and outlines the legal responsibilities of different actors in respect to safety. Under this Act, a range of civil and regulatory sanctions were established that can be applied in response to an incident where an AV may have operated in a manner below the accepted safety standard.

The research employed an iterative, four-phase approach to maximise insights. It began with a familiarisation stage involving scoping interviews with industry stakeholders, followed by an evidence review synthesising information on sanctions regimes in other industries within the UK and internationally. The third stage involved stakeholder consultations, with 13 interviews conducted with industry experts (academics, businesses/trade groups, and regulators) across sectors, exploring various aspects of compliance and enforcement. The final phase involved synthesising the findings from the previous stages.

In the report, the term 'provider' has been used to refer to the entity subject to regulation and enforcement. However, we acknowledge that several synonyms can be used interchangeably, such as organisation, business, company or operator, depending on the specific context and industry being discussed.

Key findings

Through the scoping interviews, evidence review, and stakeholder consultations, we draw several overarching observations.

Defining the lifecycle of compliance

- Compliance is an ongoing process with a number of stages. These involve routine monitoring, investigation and early resolution, and enforcement action, and are all anchored in a regulatory framework and defined as the compliance lifecycle.
- The staged process of the compliance lifecycle facilitates decision-making and promotes a culture of accountability among regulators and providers.
- Culture and data play important roles in the compliance lifecycle, with a learning culture balancing safety and accountability and data supporting risk identification, compliance assessments, and transparency.

Prevention, monitoring and compliance

- Regulators use administrative measures, data and information assessments, and inspections to monitor compliance effectively.
- Self-monitoring tools allow providers to proactively track their own compliance and identify areas for improvement.
- Inspections offer opportunities for proactive risk mitigation and tailored guidance but face challenges such as limited resources and potential resistance from providers.

Defining and measuring non-compliance

- Violations can be grouped into four themes: safety and risk, financial, environmental, and obstruction.
- Factors influencing enforcement thresholds include positive and negative encounters, severity and impact of non-compliance, and perceived intent.
- Regulators use enforcement models and frameworks to define and measure non-compliance consistently and proportionately.
- The context of AVs as an emerging technology and the lack of established benchmarks make defining non-compliance particularly challenging.

Responding to non-compliance

- A variety of civil and regulatory sanctions, which are penalties imposed for non-compliance, are used across sectors to encourage compliance, varying in severity from low to extreme.
- Assessment frameworks guide regulators in selecting appropriate enforcement actions based on criteria such as impact and likelihood of reoccurrence.

- Factors influencing the choice of sanction include the seriousness of the breach, the attitude of the provider, the effectiveness of service management, and previous non-compliance history.
- Challenges in applying sanctions include balancing proportionality and effectiveness, the risk of overreliance on punitive measures, and fostering trust and transparency between the regulator and provider.
- Civil sanctions can result in positive enforcement outcomes, including prevention, remedy, and deterrence.

Considerations for automated vehicles

- The AV industry should consider a collaborative, proportionate approach to sanctions through a graduated framework in which sanctions escalate based on the severity of the violation.
- Within a regulatory framework, comprehensive data recording and sharing and a holistic approach considering the lifecycle of compliance will be important.
- Beyond the regulatory framework, it will be important to encourage open dialogue and balance accountability and innovation.
- Adapting sanctions to the distinctive challenges of AVs will be crucial for creating an effective compliance and enforcement framework.
- Given the range of entities involved in AVs (developers, manufacturers, etc.), sanctions should be designed to account for distributed accountability in the AV ecosystem, potentially holding various entities jointly responsible.
- Further research is needed to deepen understanding of how different sanctions affect compliance, as well as the incentives and behaviours regarding compliance of the AV sector.

Research context, aims and methodology

Background

The Automated Vehicles Act (2024) establishes a legal framework to support the deployment of automated vehicles (AVs). This includes the creation of a new safety framework and the outlining of the legal responsibilities of different actors in respect to safety. This new safety framework encompasses several key elements, such as the Statement of Safety Principles, authorisation requirements, licencing, in-use regulation, and incident investigation.

Under the Act, a range of civil and regulatory sanctions were established that can be applied in response to an incident where an AV may have operated in a manner below the accepted safety standard. This includes compliance notices, redress notices, and fines. Furthermore, the Act grants powers to vary, suspend, or withdraw authorisation.

To better understand how a sanctions regime can effectively promote compliance, the Department for Transport (DfT) commissioned Ipsos to undertake qualitative research to inform policymaking in the context of AVs. This was achieved by gathering insights from other regulated sectors. Regulators, businesses/trade groups, and academics were invited to take part.

In the report, the term ‘provider’ has been used to refer to the entity subject to regulation and enforcement. However, we acknowledge that several synonyms can be used interchangeably, such as organisation, business, company or operator, depending on the specific context and industry being discussed.

Aims of the research

The aim of this study is to improve the understanding of how a sanctions regime can be used to promote compliance. The overarching research objectives were:

- How is compliance measured in other regulated sectors?
- What approaches to applying civil and regulatory sanctions exist in other regulated sectors?
- How do different types of penalty affect compliance with safety standards?

- How do different severities of penalty affect compliance with safety standards?

Methodology

Given the exploratory nature of the research and limited prior work in this area, an iterative approach was adopted involving four phases. The research followed a four-phase approach involving three phases of data collection and a phase of data synthesis and reporting (see Figure 1.1).



Figure 1.1: Illustration of the stages of the research

The familiarisation stage involved conducting three scoping interviews with industry stakeholders in the transport sector to gain an initial understanding of the context of compliance and enforcement. This was followed by an evidence review which aimed to synthesise publicly available information on sanctions regimes in the AV sector and industries in the transport and utilities sector, both within the UK and internationally.

The third stage involved stakeholder consultations, with a total of 13 interviews conducted with regulators, academics, and business representatives/trade groups (see Table 1.4 for a breakdown of the sample). The interviews explored various aspects of compliance and enforcement.

Further information on the methodology for each stage of the research can be found in Appendix A and references can be found in Appendix B.

Interpreting the findings

This report provides an overview of the key findings from each stage of the research including both stakeholder interviews and the evidence review.

When considering the qualitative research findings, it is important to note that a qualitative approach is designed to provide an exploration of the views and opinions of research

participants, here, industry stakeholders. As such, the findings are descriptive and illustrative, not statistically representative.

In the report, the term ‘provider’ has been used to refer to the entity subject to regulation and enforcement. However, we acknowledge that several synonyms can be used interchangeably, such as organisation, business, company or operator, depending on the specific context and industry being discussed.

Where quotes have been included from industry stakeholders, the specific sector that they operate in has not been included to ensure anonymity. Illustrative examples included are based on publicly available data that was generated during the evidence review stage as well as additional desk research that was carried out to build on findings from stakeholder interviews.

The lifecycle of compliance

This chapter explores the concept of a compliance lifecycle, a continuous process that allows both regulators and providers to monitor and achieve compliance. The roles of regulators and providers are examined, as well as the importance of a robust regulatory framework, and the influence of culture and data on compliance outcomes.

Summary

- Compliance is an ongoing and dynamic process that requires continuous effort from both regulators and regulated entities to ensure adherence to standards and best practices.
- The compliance lifecycle consists of three main components: routine monitoring, investigation and early resolution, and enforcement action.
- Culture is a critical component of effective compliance, balancing the need for safety and accountability while promoting a proactive approach to identifying and addressing potential risks.
- Data also plays a role in the compliance lifecycle, helping to identify risks, support compliance assessments, inform enforcement actions, and promote transparency and accountability.
- The effectiveness of compliance lifecycles varies across industries and is dependent on the maturity of a sector as well as broader strategic objectives of regulators.

Defining the compliance lifecycle

The research findings highlighted the compliance lifecycle (illustrated in Figure 1.2), a continuous process involving proactive and reactive measures to ensure adherence to relevant regulations, industry standards, and internal organisational systems. The lifecycle of compliance allows regulators to facilitate and achieve compliance in a particular industry and in turn, ensure the safety of those using service(s).

There are three components to the compliance lifecycle anchored in a regulatory framework: routine monitoring, investigation and early resolution, and enforcement action.

This involves multiple mechanisms and procedures which delineates the roles and responsibilities of both providers and the regulatory bodies overseeing them.

This staged approach to enforcement and compliance facilitates decision-making and promotes a culture of accountability among all parties involved.

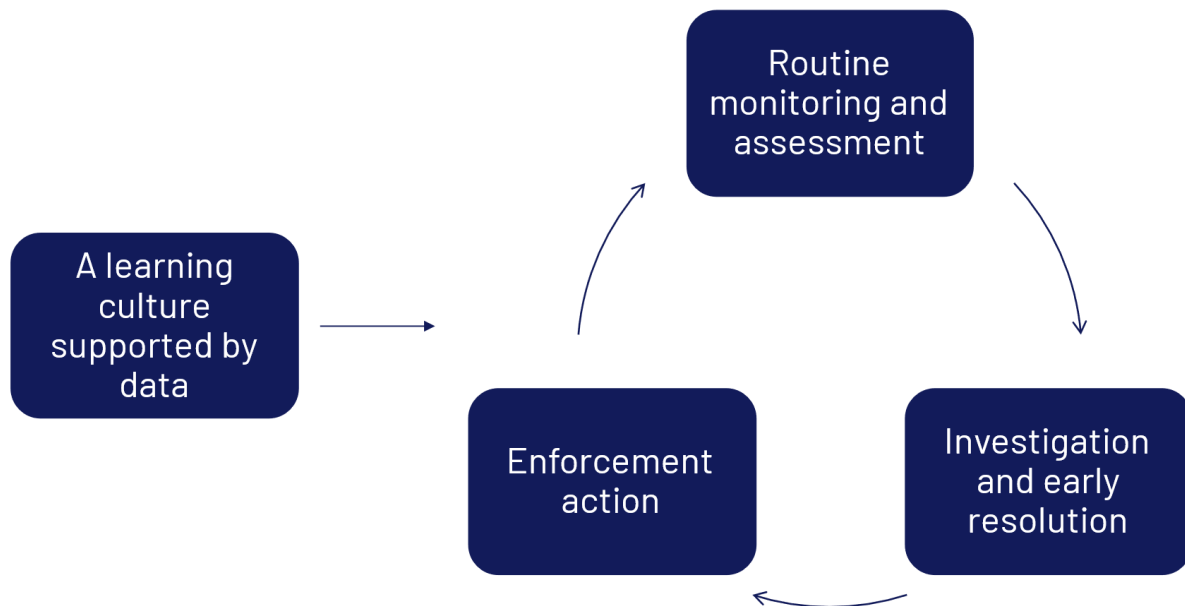


Figure 1.2: Chart showing the lifecycle of compliance

Routine monitoring and assessment

The research found that the routine monitoring and assessment stage is designed for regulators to oversee provider compliance with legal obligations. Providers are expected to proactively adhere to regulations and identify potential breaches.

“Effectively, we have different stages. We have routine monitoring, then we have enhanced monitoring, and then we have enforcement. The bulk of the work goes into the first level... It is all about that, having regular conversations, making sure we get the relevant data and information, being able to then follow up appropriately where we have questions...”

Regulator

Investigation and early resolution

If a breach is identified, this is investigated informally by regulators to resolve an issue before escalating to more formal action. This stage offers an opportunity for regulators to engage with providers in improving their compliance without resorting to official enforcement actions. During this process, regulators explain the context of the violation,

present the rationale behind their findings, and evaluate the steps taken by the provider to rectify the situation.

“We do a lot of supervision with a lowercase ‘S’ – monitoring what is going on, speaking to firms, understanding why things might have happened and typically that resolves problems. If it does not, we might consider opening an investigation. If we do not open an investigation, we may send a warning letter that we are concerned and we reserve the right to come back to it if the problem grows in the future.”

Regulator

Enforcement action

The research findings highlighted that if preventive measures are ineffective and informal resolution is unsuccessful, then enforcement action is used to remediate the situation. Depending on the severity and context of the violation, a wide range of civil or regulatory sanctions may be used. Once non-compliance has been addressed, routine monitoring and assessment recommences.

The objectives of enforcement action are to:

- ensure accountability and prompt action to address serious risks
- guarantee the delivery of safe and effective services
- encourage and maintain long-term compliance
- deter future instances of non-compliance

“The punitive approach is to try and alter behaviour (...) It is trying to make you aware of the risks and safety requirements and that there is a risk of losing something. Fundamentally, you are trying to change the way people behave.”

Business/trade group

A learning culture supported by data

Data and a learning culture are crucial for ensuring compliance and managing safety and risks.

A learning culture is defined as an environment in which all concerns raised are used as a source of continuous learning and improvement. The aim of this is to balance safety and accountability and serve as a mechanism for compliance through ‘safety first’ behaviours and open reporting. As a result, this allows providers to achieve a high standard of safety which is used as evidence of effective compliance.

The research found that data also plays an important role, helping with identifying risks and potential issues, supporting compliance assessments, informing enforcement actions, and promoting transparency and accountability. From the regulator's perspective, data and information powers are embedded in regulatory frameworks that enforce a legal Act. This allows for regulators to set expectations regarding the frequency of information sharing.

Often, regulators have the flexibility to request information on a case-by-case basis. Failure to provide appropriate data when requested can be deemed as a breach. This data is used to ensure a provider is effectively delivering to the requirements set out in a regulatory framework.

Illustrative example 1

The Care Quality Commission (CQC) incorporates a learning culture into its guidance and regulatory framework¹. This approach ensures that the services delivered prioritise the safety of staff and service users. The culture is based on the principles of openness, transparency, and the commitment to learn from incidents that have either exposed individuals and staff to potential harm or have resulted in actual harm.

This is achieved by encouraging staff to be confident to raise concerns and report incidents, including near misses, without blame or fear of being treated negatively. The aim of this is to proactively identify and manage risks before safety events occur. Risks are proactively approached and used as an opportunity to learn and improve.

Managers and leaders are expected to set the standard, taking ownership of any accidents and incidents. Senior leadership also has the responsibility of empowering junior staff to identify risks and implement any changes that may be needed.

In practice

A provider that is regulated by the CQC improved their internal reporting system through its intranet, enabling staff to raise incident cases². Oversight mechanisms, present at all levels of the organisation, ensured that any incidents or near misses were reported. A daily report of all cases opened was sent to the senior management team, giving them an opportunity to review cases.

To further monitor and address incidents, a dedicated quality assurance team monitored any incidents that breached resolution targets on a monthly basis. The criteria for a breach included little to no investigation and/or no action plan. For serious, high risk incidents, a multidisciplinary team would meet to review on a monthly basis and was supplemented by detailed investigation reports.

Among junior staff, a working group was established to explore the most effective approach to a situation as well as a learning log. This allowed staff to reflect on everyday activities and evaluate what is working well and what could be improved.

This ongoing process of reflection and assessments across the provider's organisation fostered a culture of continuous learning and improvement of their approaches to minimising risk.

Challenges for nascent industries

The research findings suggested that the dynamic landscape of regulations presents both opportunities and challenges for regulatory bodies and providers, particularly in nascent industries.

¹ Care Quality Commission (2024) [Learning culture](#)

² Skills for Care (2022) [Learning culture](#)

Regulatory frameworks and enforcement in well-established industries, such as workplace health, safety and welfare, and health and social care, have had the opportunity to develop and refine over time because these industries have been in operation for much longer. In industries where culture and data are embedded in compliance, such as aviation, there is a process of continuous improvement established.

In contrast, more nascent industries, such as artificial intelligence, face a rapidly evolving regulatory environment. Emerging sectors and their respective regulatory frameworks that are still evolving will require time to reach a state of maturity and stability. In the meantime, both industry and regulators are likely to experience early-stage challenges and growing pains. During this period of adjustment, the regulatory frameworks will need to be flexible and adaptable to account for technological advancements and availability of more data. Consequently, cultivating an environment that prioritises continuous improvement, frequent data analysis, and open reporting may be challenging until the sector and its regulations have settled into a more established state.

As a result, there is an opportunity for nascent industries to learn from more established sectors to ensure regulations protect users effectively while still supporting growth and enabling innovation.

Prevention, monitoring and compliance

This chapter examines the various approaches used to monitor compliance, focusing on administrative measures, data and information assessments, and on-site inspections.

Summary

- Administrative measures focus on verifying licences to ensure providers meet the necessary requirements and conditions, and may involve self-monitoring tools for regulated entities.
- Data and information assessments involve examining the accuracy and completeness of data submitted by regulated entities.
- Inspections, both routine and targeted, allow regulators to verify compliance with conditions and regulatory requirements.
- Inspections offer opportunities for proactive risk mitigation and tailored guidance to providers.
- Limited resources often result in a selective approach to investigations, posing challenges such as potentially missing violations.

Types of measures

The findings highlighted that regulators use a range of approaches to monitor compliance, including administrative measures, assessments of data and information, and inspections. By combining these methods, regulators can assess compliance effectively, identify and address breaches early, and uphold the integrity of the regulatory framework within their industry.

From the perspective of regulators, providers have a duty to be accountable for identifying and managing any risks that could undermine confidence in the services they provide through prevention and monitoring. This responsibility extends to addressing potential issues that may hinder the company's ability to achieve the outcomes expected by both regulators and the public.

Administrative

The research found that administrative monitoring primarily involves verifying a licence to ensure the regulated entity meets all requirements or that conditions are met. Providers may also include self-monitoring tools to proactively track and manage their own compliance. These systems help providers to assess how well they adhere to relevant regulations and identify any potential gaps or areas for improvement.

Data and information sharing

Regulatory bodies monitor compliance by thoroughly examining data and information submitted by regulated entities as part of their licensing or conditional requirements. They aim to ensure the accuracy and completeness of these submissions. To verify the information, they may cross-reference it with other independent data sources or draw on shared information from partner agencies. This process enables effective oversight of a regulated industry, as regulatory bodies regularly review the robustness and reliability of data through ongoing sharing and validation.

“If we are in receipt of information, we are expected to check it... It is not good enough for us to say, ‘They promised us they were fine.’”

Regulator

This also includes identifying incidents or events that could warrant enforcement action. Across industries, regulators monitor sources such as safeguarding alerts, whistleblowing reports, Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) or coroners’ reports, complaints, and information from the public.

Illustrative example 2

The Civil Aviation Authority (CAA) conducts a series of self-assessments which are overseen by the business assurance section³. These assessments involve monitoring the Occurrence Reporting system to identify potential issues and take necessary interventions, as well as investigating reports from whistleblowers⁴. This approach ensures staff can effectively identify potential risks and feel empowered to report any risks with confidence and in turn, maintain high standards of safety.

³ Civil Aviation Authority (2024) [Safety culture](#)

⁴ Civil Aviation Authority (2024) [Occurrence reporting campaign](#)

Illustrative example 3

The Environment Agency (EA) launched a whistleblowing portal in March 2024, allowing water company staff to report environmental wrongdoing by their own organisations and industry⁵. Building on the EA's existing arrangements for whistleblowing, the portal provides a safe and confidential route for workers in the water industry to report concerns witnessed at work. This provides EA the ability to gather evidence to identify potential breaches in regulations and strengthen oversight of the water industry.

Inspections

Another form of prevention and monitoring discussed by stakeholders involves regulatory officers conducting routine on-site inspections. They visit sites to verify compliance with conditions and overall legislative requirements. The frequency and nature of these inspections vary depending on the specific context and objectives. In some industries, routine inspections play a crucial role and provide assurance to consumers and the broader public that the industry is operating responsibly and transparently.

In addition to routine inspections, regulators may conduct targeted inspections if their risk assessments and information gathering indicate potential compliance issues. These focused inspections ensure that areas of concern receive the necessary attention and scrutiny, with resources efficiently allocated.

“When we do an investigation, it is very much like a police investigation (...) and we can put together a case that ends up in a court of law and we can prosecute a company...”

Regulator

The findings highlighted that inspections and on-site visits offer a valuable opportunity for proactive risk mitigation and tailored guidance to providers. In sectors where provider risk varies, regulators may prioritise high risk sites which enables them to maximise their time and resourcing.

Inspections also allow regulators to identify potential hazards before they escalate, allowing for timely intervention and prevention. During these visits, inspectors may provide advice and resources based on their specific needs and industry, promoting a targeted approach to compliance.

However, the findings suggested that there are a few challenges associated with inspections. Firstly, regulators may miss some violations due to the need for a selective approach to investigations. They often focus on high risk, high impact violations due to strategic objectives and the prioritisation of staffing and resources as low or negligible risk

⁵ Environment Agency (2024) [Water company employees: How to report serious wrongdoing to the Environment Agency](#)

or impact violations are often due to oversight rather than deliberate non-compliance. While limited resourcing means regulators focus on the most serious breaches, its overall impact on compliance is unclear.

Furthermore, providers may resist inspections and enforcement actions due to perceived costs and the potential negative impact on their reputation and future opportunities. Providers worry about the financial costs associated with inspections, such as monetary penalties or fees for intervention (see Table 1.2 for definitions). Regulators strive to ensure that these inspections are proportionate to the level of risk involved and are aimed at addressing potential risks before they materialise into more serious issues,

Inspections can also cause operational disruption, leading to lower productivity and potential delays in delivering services, further increasing the financial impact on providers. However, these impacts are typically short-term in nature. Public scrutiny from enforcement action could put a provider at a disadvantage compared to competitors, impacting the ability to secure contracts, partnerships, or funding opportunities in the long-term. Thus, while inspections may cause some short-term disruption, they serve as an important tool for regulators to address risks and prevent non-compliance.

It is also important to consider that an inspection provides a limited view of a provider's compliance, and several visits may be required to reveal a more complete understanding of a provider's compliance over time. Providers may perceive enforcement as arbitrary if regulators cite different violations on subsequent visits, even if those violations reflect legitimate changes in their activities. Providers may feel that the enforcement process lacks consistency and fairness, leading to frustration. Regulators suggested shorter, more regular check ins at different times to capture a more dynamic and continuous picture of compliance.

“An inspection is a snapshot of what you see at the time. You would write and serve a notice based on the now. It can mean I go back six months later and highlight something different because a different activity was taking place.”

Regulator

Defining and measuring non-compliance

This chapter explores how non-compliance is defined and measured across various industries. The chapter also examines the challenges in defining non-compliance, particularly in the context of emerging technologies like AVs. In addition, the chapter investigates the factors influencing enforcement thresholds to shed light on the nuances and complexities of determining when enforcement action is warranted.

Summary

- Regulators use specific enforcement models and frameworks to ensure consistent, proportionate, and transparent decision-making when defining and measuring non-compliance.
- Common types of non-compliance include failing to adhere to legal requirements, breaching industry-specific rules, and not meeting performance benchmarks.
- Violations can be grouped thematically, such as safety and risk, financial, environmental, and obstruction.
- Defining non-compliance in the context of AVs is challenging due to limitations in current safety assurance methods, the absence of established benchmarks, and the complexities of AV behaviour and decision making.
- Factors influencing enforcement thresholds include positive and negative encounters, severity and impact of non-compliance, and perceived intent behind the non-compliance.

Types of non-compliance

The research revealed several types of non-compliance, such as failure to adhere to legal obligations, breaching industry-specific rules, and failure to meet performance benchmarks.

Non-compliance with legal requirements is a common characteristic of violations across industries. Failing to adhere to mandatory legal obligations, such as data privacy laws, constitutes a violation because it involves breaking the law and is subject to penalties.

“In terms of proportionate, safety is higher than the property rights. Any risk to safety, we are on much firmer ground...”

Regulator

Breaching industry-specific rules is another common element of violations. Violating sector-specific standards, such as minimum brake performance requirements for heavy goods vehicles, is considered a violation because it compromises safety and requires immediate corrective action. The thresholds used to define industry-specific standards were a point of tension among stakeholders in the automotive industry. While safety is a top priority, the strict nature of standards means that a marginal variation in performance can determine whether a vehicle is allowed to operate on the road. This raised concerns that a lack of flexibility may limit who is able to participate in the market.

“If an HGV is doing a brake test and it is 50%, it passes and that is it. If it is 49%, that is a serious defect that you have got to take the vehicle off the road immediately. That is 1% done on a machine that has a +/- 3% calibration. That is a 6% variation and we go from nothing at all to ‘it is a dangerous vehicle.’ That is nonsense and there should be a scale.”

Business/trade group

Failure to meet performance benchmarks is also a common violation. Violations can be linked to not achieving certain performance metrics, with negative encounters contributing to a lower compliance score and potential enforcement action.

While the specific definitions of violations may vary across industries, they generally share common elements such as non-compliance with legal requirements, breaching industry-specific rules, failing to meet performance benchmarks, causing actual or potential harm, and exhibiting repeated or systemic issues.

The types of violations can be grouped thematically (see Table 1.1).

Theme	Example of violation
Safety and risk	<ul style="list-style-type: none"> • Failure to meet general conditions attached to licence • Failure to adhere to the specific conditions of licence, such as operating more vehicles than permitted within the transport sector • Failure to make required safety improvement after being notified • Vehicle safety and maintenance issues • Inadequate operating centre facilities

	<ul style="list-style-type: none"> • Serious injury or harm of a person or group of people
Financial	<ul style="list-style-type: none"> • Failure to demonstrate sufficient financial standing
Environmental	<ul style="list-style-type: none"> • Noise, pollution or improper waste management
Obstruction	<ul style="list-style-type: none"> • Failure to cooperate during an investigation or provide evidence • Falsification of evidence

Table 1.1: Type of violation by theme

Factors influencing thresholds

The findings suggested that the types of thresholds used to determine when non-compliance warrants enforcement action vary across sectors. By understanding the various factors that influence enforcement thresholds, and the approaches used in different sectors, policymakers can work towards developing effective and proportionate compliance and enforcement frameworks for emerging technologies like AVs. This approach balances the need for accountability with the flexibility to adapt to the unique challenges and opportunities presented by AVs.

Positive and negative encounters

In the transportation industry, the Operator Compliance Risk Score (OCRS) system uses a traffic light-style framework to assess an operator's compliance risk based on both positive and negative encounters. This system employs a nuanced, multifaceted approach to determining when intervention is necessary, taking into account a range of factors beyond simple binary metrics.

Severity and impact

Stakeholders noted that the severity and potential consequences of non-compliance also play a significant role in determining when enforcement action is warranted. Severe breaches, such as those resulting in a prohibition notice, are likely to trigger targeted investigations and enforcement action. The transparency of the system allows operators to understand the relationship between the seriousness of non-compliance and the likelihood of intervention.

"If you issue a prohibition for a serious failure, the enforcement agency will target their investigations based on the company's compliance risk score (CRS). The process is quite transparent in the eyes of the enforcement agency."

Regulator

Regulators establish hierarchical enforcement thresholds, with different levels of intervention based on the severity and impact of the non-compliance. They ensure that enforcement actions are proportional to the level of harm caused by non-compliance, reserving more severe consequences for critical events involving fatalities or significant damage.

“Enforcement thresholds for non-compliance should be proportional to the severity of the incident. While minor collisions or issues might warrant a lower-level response, we recognise that critical events resulting in fatalities or major damage necessitate more serious consequences.”

Business/trade group

Perceived intent

Furthermore, the findings suggested that perceived intent behind non-compliance and the responsible party's willingness to address issues may influence the threshold for enforcement action. It is important to distinguish between wilful non-compliance and unintentional or isolated incidents, with the threshold for enforcement potentially higher when the responsible party cooperates and takes proactive steps to resolve issues.

“The difference is when you are actively not complying and causing harm versus the technology experiencing an anomaly or outlier issue while functioning as designed. The latter probably does not warrant being penalised, as long as the manufacturer works transparently with the regulator to address and fix the problem.”

Regulator

Challenges in defining non-compliance in nascent industries

A few challenges in defining non-compliance were identified in the research, particularly in the context of AVs.

The context of emerging technologies

The findings highlighted that there are limitations in current methods for safety assurance and verification of AVs. Where raised, stakeholders suggested that using only quantitative metrics, like accident rates, fails to capture the complexities of AV behaviour and decision-making, making it difficult to define violations clearly.

“My concern is on the statistical analysis. The statistical analysis looks at the numbers but the problem here is that the numbers do not reveal everything. We are talking about a safe or trustworthy AV. What a trustworthy AV means here is just the number of crashes (or lack thereof).”

Academic

Absence of established benchmarks

Moreover, the lack of established benchmarks and criteria for evaluating the performance and safety of AVs further complicates the process of defining violations. While there is widespread agreement that an AV injuring a person or group of people is unacceptable, there is a lack of consensus in other areas where an action may be technically illegal but morally justifiable given the specific circumstances. The absence of industry-wide standards or guidelines makes it difficult for regulators and manufacturers to reach a consensus on what specific behaviours or outcomes should be considered non-compliant or unacceptable.

“Another problem that we have with AVs at the moment is that we do not have any reference or any benchmark to validate responsible behaviour of the AV in public routes.”

Academic

A spectrum of enforcement: responding to non-compliance

This chapter examines the range of civil and regulatory sanctions used across various sectors to encourage compliance, and the factors that influence a regulator's decision when selecting the most appropriate enforcement action. The chapter also explores the challenges faced by regulators in applying sanctions, including balancing proportionality and effectiveness, the risk of overreliance on punitive measures, and the importance of fostering trust and transparency throughout the enforcement process.

Summary

- A variety of civil and regulatory sanctions are used across sectors to encourage compliance, ranging in severity from low to extreme.
- Regulators use assessment frameworks to guide the selection of appropriate enforcement actions based on specific criteria.
- Factors influencing the choice of sanction include the seriousness of the breach, the attitude of the provider, the effectiveness of service management, previous non-compliance history, and overlap with other laws/regulations.
- Balancing proportionality and effectiveness is a challenge in applying sanctions, as punitive actions can cause significant reputational damage and stifle innovation.
- Overreliance on punitive measures, particularly monetary penalties, can have a disproportionate impact on smaller companies compared to larger ones.
- Fostering trust and transparency while enforcing sanctions is challenging, but transparent processes and communication are important for the integrity of the sanctions regime.
- Appeals are an expected and strategically considered aspect of an enforcement strategy, and regulators consider the potential for appeals and the associated time and resources needed to address them.

Types of sanctions

The findings highlighted that there is a range of civil and regulatory sanctions used in various sectors, each designed to encourage providers to enhance their practices and achieve compliance (see Table 1.2). These sanctions vary in severity, from low to extreme. By strategically leveraging this range of enforcement powers, regulators seek to create an incentive for providers to proactively identify and address areas for improvement either through obligation (forcing) or pressure (requiring).

Type of sanction	Definition	Use	Severity	Improvement type
Prohibition notice or suspension	A formal document that orders an activity to cease immediately due to an imminent risk to safety	If a serious risk of or impact to personal injury or a serious deficiency in measures is identified; no breach in law or regulation	E	Forcing
Imposing, varying or removing condition(s)	The introduction of new conditions, editing of existing conditions, or removal of conditions to a provider's licence to prevent or minimise risk	Breach in requirement	H	Forcing
Monetary penalty (fixed or variable)	A financial punishment levied against a provider for violating a regulation	Breach in requirement	H	Requiring
Redress notice	A requirement for a provider to take specified actions to rectify, mitigate, or compensate for any loss, damage, inconvenience, or annoyance caused as a result of their actions	Breach in requirement that has impacted people; the purpose is to advance consumer protection	M	Requiring
Undertaking(s)	A voluntary offer made by a provider to commit to specific regulations and conditions related to a provider's licence	Breach in requirement; voluntary by provider	M / L	Forcing
Improvement notice or Action Plan request	A formal document that directs a provider to take certain actions, or to refrain from certain actions	Breach in law or regulation that needs to be remedied	M	Requiring
Fees for intervention	A fee to cover the time spent during an inspection for a regulator to identify the breach and help the provider address this	Breach in law; technical or trivial breaches where verbal advice may suffice is not subject to this	M	Requiring

Warning letter	A letter which is issued when it is considered that compliance is likely to improve or to avoid the sanction intended to apply	No breach in law; moderate risk	L	Requiring
Verbal warning	A provider is verbally told that in the event that their behaviour or actions do not change or improve, further action may be applied	No breach in law; minimal risk	L	Requiring

Use of assessment frameworks

When selecting the most appropriate enforcement action, regulators consider all available civil and regulatory sanction options as part of their decision-making process. They may use an assessment framework to guide this process, helping them choose the most suitable enforcement measure based on specific criteria.

An assessment framework is designed to promote consistency by setting out a structured and logical pathway for enforcement decision-making. It also provides a transparent and accountable process by setting out the approach inspectors or enforcement officers will use. A range of regulators use assessment frameworks to aid decision-making with the desk review identifying Office for Rail and Road's Enforcement Management Model (EMM), Health and Safety Executive's Enforcement Management Model (EMM), and the Care Quality Commission's enforcement decision tree.

The criteria used by regulators broadly considers:

- the impact on people or the severity of harm caused
- the number of people affected
- the likelihood for the violation to reoccur

"We have a very settled administrative priority framework (...) We look, first of all, at the strategic significance of the issue, and the potential impact of the case. Secondly, we look at the level of consumer harm or the seriousness of the issue (...) We then work out the cost and the level of resources that would be needed to investigate this."

Regulator

Illustrative example 4

Office for Rail and Road (ORR) use an Enforcement Management Model (EMM) as an assessment framework to guide decision-making when considering the appropriate enforcement action for non-compliance⁶. It is a three step process:

Gap analysis

First, the risk gap is determined. The benchmark represents the tolerable level of risk that remains after a provider (duty holder) has taken all reasonably feasible measures to mitigate the risk in question. This acceptable risk threshold may differ depending on the specific risk being evaluated. The actual is the level of risk that exists, taking into consideration any measures that the duty holder has implemented to address the risk. This represents the real-world risk present in the situation.

To determine the risk gap, the actual level of risk is compared against the benchmark. The comparison quantifies the extent to which the duty holder is below the acceptable risk threshold set by the benchmark. The risk gap measures how much additional work or improvement is needed to bring the actual risk level to the benchmark standard. This is defined as either extreme, substantial, moderate, or nominal.

The consequence is the harm risked. This is defined as either serious, significant, or minor. Likelihood is the chance of the identified consequence occurring, with the categories being probable, possible, remote, or nil/negligible.

If there is a risk of serious personal injury, this stage is skipped and a prohibition notice is issued.

Initial enforcement expectation

Secondly, the initial enforcement expectation (IEE) is determined. This involves comparing the risk gap to the standard. There are three standard authorities: defined, established, and interpretive. A higher level of enforcement is expected where the standard is well known and established. The initial enforcement expectation ranges from a verbal warning to an improvement notice.

Duty holder factors

Finally, duty holder factors are considered. This includes attitude, capability, performance, cooperation, and strategic importance. These are then applied to the initial enforcement expectation to determine the final enforcement action.

⁶ Office for Rail and Road (2023) [Enforcement Management Model](#)

Factors influencing which sanction to apply

When deciding the most appropriate civil and regulatory sanction to apply, regulators consider a range of factors. In summary, the type of sanction that may be applied depends on the severity of the circumstance (Table 1.3).

Less severe	More severe
Provider assessed and acted on known risk	Failure to assess or act on known risk
Few or no other breaches	Multiple breaches
No history of breaches	History of breaches
Effective leadership and governance	Inadequate leadership and governance

Table 1.3: Type of civil enforcement action based on severity of circumstances

Seriousness of a breach

One factor considered is the seriousness of the breach; this involves evaluating the potential impact on people or the severity of harm caused as well as the number of individuals affected. In cases where a service is carried out inappropriately without effective risk management, stronger enforcement measures are typically warranted.

The attitude of the provider

Another factor considered is the attitude of the provider. If a provider is actively seeking advice, pursuing solutions, and communicating effectively, this is deemed as positive and it is more likely that a less severe sanction will be imposed. However, if the provider appears uninterested and does not engage in dialogue with the regulator, this may negatively impact the enforcement decision.

When evaluating the attitude of the provider, the size of the business is taken into consideration. For large organisations in particular, the attitudes of both the senior management and local management levels are considered. This is because it is important to recognise that the attitudes of these two levels of management may differ and each can influence the inspector's perception.

Effectiveness of service management

The research findings highlighted that regulators also take into account a provider's effectiveness in managing a service. For example, inspectors consider if the provider has disregarded previous advice, intentionally delayed the implementation of remedial actions, or demonstrated a regression from an initially positive attitude or set of actions.

This also covers attempts to circumvent legal requirements and the provision of false or misleading information. Such actions demonstrate a lack of commitment to compliance and may necessitate more punitive civil and regulatory sanctions. Conversely, evidence of effective management may result in a less severe sanction.

In cases where the provider has contributed to a violation by delaying the adoption of new or revised standards despite a regulator's recommendations, inspectors take this attitude or set of actions into account when assessing effectiveness of service management.

Previous history of non-compliance

The findings highlighted that regulators consider the evidence of multiple and/or persistent breaches. If a pattern of non-compliance emerges, or if a regulated entity fails to act on previous advice and recommendations, it may indicate a systemic issue that requires more robust enforcement action. This also includes reviewing non-compliance in relation to events that may be under the jurisdiction of other enforcement authorities.

"We also look at if this a first time offence or if it is persistent. Is it something that company's done before?"

Regulator

Overlap with other laws and/or regulations

Regulators often have overlapping responsibilities for incidents. For example, the Health and Safety Executive, the Office of Rail and Road (ORR), the Driving and Vehicle Standards Agency (DVSA), and the Traffic Commissioner may all be involved in a road safety incident. This requires clear protocols and communication to avoid confusion and gaps in oversight.

Competitiveness of sector

The findings suggested that the competitiveness of a sector does not significantly affect the use of different types of civil and regulatory sanctions. This is because sanctions are applied proportionately considering the context of the violation rather than market power.

However, the overall regulatory strategy may differ based on the level of competition. In a competitive sector, regulations may be light touch and focus on general rules and legislations. However, in a monopolistic market, application may be more intensive and may result in different types of enforcement decisions.

“I am not sure the competitiveness of the sector makes an enormous difference. I think what you probably see there from (regulator) is a different approach to regulation depending on how competitive the sector is (...) But we would not necessarily calibrate the enforcement choices because of the competitiveness of the sector.”

Regulator

Illustrative example 5

Ofcom has statutory duties to promote competition and to protect consumers from harm. In sectors where there is little to no competition, such as postal services, a rigorous approach is used. For example, Ofcom fined Royal Mail £50 million in 2018 for breaching competition law as it was deemed that the provider abused its dominant position by discriminating against its only major competitor delivering letters⁷.

Size of business

The findings also revealed that the effectiveness of compliance measures and sanctions may vary depending on the size of the business.

Overall, regulators may consider how the size of the business can affect its tendency to commit breaches, the reasons behind those breaches, and its ability to respond when determining the most appropriate enforcement measure.

Larger companies tend to be more sophisticated, well-resourced, and have a better understanding of their regulatory obligations. This is because they tend to have greater access to legal advice and often have internal risk and compliance teams. As a result, they were less likely to commit breaches relative to their size. However, this does not mean that they do not commit any breaches. If a breach does occur, it is more likely due to oversight rather than deliberate non-compliance but that can vary depending on the context.

Smaller businesses may be less well-advised due to limited access to internal legal and compliance teams but often still eventually reach a cooperative outcome as well. Moreover, larger companies are often more able to absorb the impact of different civil and regulatory sanctions, particularly fines, whereas smaller businesses would be greatly impacted by a monetary penalty.

⁷ Ofcom (2023) [Supreme Court rejects Royal Mail appeal against Ofcom fine for competition law breach](#)

“A larger company is more likely to attract a larger fine. That does not matter here. What you tend to see, particularly with the larger companies that my side of the team engages with, are sophisticated, well-advised, highly regulated companies that understand their obligations and understand the importance of complying with them.”

Regulator

“Often, you see those very large, well-advised companies very quickly looking to settle (a sanction) because they want to put the thing behind them and move on. Smaller companies are perhaps less well-advised, but often they will get to the same place anyway.”

Regulator

Public interest

When regulators are making enforcement decisions, they consider if enforcement action coincides with public interest. This ensures that their actions result in a net benefit to the wider community. This involves targeting resources effectively to meet the public’s expectations of the regulatory body.

The seriousness of the breach and the resulting harm are key factors in enforcement decisions, with more serious violations more likely to warrant a civil or regulatory sanction. However, regulators also assess whether taking enforcement action would serve the public interest. If a sanction fails to address risks, ineffectively targets resources, or falls short of public expectations, it may result in a net disadvantage to the wider community and in such cases, may not be pursued.

“We have this model that we take ourselves through and we also have to think, ‘Is it in the public interest?’”

Regulator

Illustrative example 6

The Health and Safety Executive (HSE) uses an Enforcement Policy Statement (EPS) to guide decision-making when considering the appropriate enforcement action for health and safety breaches⁸. The EPS outlines common public interest factors that should be considered, and if present, would lead to a recommendation for prosecution. Factors include:

- Death as a result of a breach in legislation
- Seriousness of actual or potential harm
- Disregard of health and safety requirements
- Poor history of non-compliance, such as repeated breaches
- Operation has been carried out without an appropriate licence or safety case
- Standard of managing health and safety far below the requirements by law, creating significant risk
- Failure to comply with an improvement or prohibition notice; or repetition of a breach that was subject to a formal warning
- Providing false information or an intent to deceive in relation to a significant risk
- Obstruction of inspectors carrying out duties

The EPS acknowledges that there may be occasions where the above factors may be present but public interest does not require a prosecution.

Impact of different sanctions on compliance

The research findings suggested that the type of sanction used is dependent on the severity of the breach as well as the aggravating and mitigating factors. The overall impact of a sanction, regardless of severity, results in positive enforcement outcomes and compliance is either established or restored.

It is difficult to draw firm conclusions about whether some sanctions lead to positive outcomes more quickly or more effectively than others, as this depends on the specific circumstances of each case.

⁸ Health and Safety Executive (2015) [Enforcement Policy Statement](#)

Restricting operations

Sanctions which restrict activities and operation, such as prohibition notices and imposing, varying, or removing conditions, are typically enforced with immediate effect due to the imminent risk of harm. The aim of restricting operations is for remediation and to prevent further non-compliance.

This results in a positive outcome in the long term as providers are required to address non-compliance before resuming operations. However, this has a short-term negative impact on a provider's operations and reputation and may be difficult to manage compared to less punitive sanctions.

Illustrative example 7

Enforcement notices issued by the Health and Safety Executive (HSE) are available to access on a database for a period of 5 years⁹. This includes prohibition notices and improvement notices issued to providers for breaching regulations.

Financial costs

Stakeholders reflected that a regulatory fine is the clearest indicator of a provider failing to comply with regulatory standards, as it represents a formal finding of non-compliance. Financial penalties also tend to attract media attention, which reinforces their visibility. This includes fixed or variable monetary penalties, redress notices, and to a lesser extent, fees for intervention.

The research suggested that sanctions which entail financial costs need to be severe enough to outweigh any benefits a provider may get from non-compliance. These are often imposed proportionately, with the aim of deterring further non-compliance, and can offer a learning opportunity for other providers in a regulated sector to understand what is acceptable and what is unacceptable to avoid similar consequences,

However, financial penalties may not always lead to positive compliance outcomes as the associated costs can damage a provider's financial health and reputation, making it harder to achieve lasting improvements. In cases where providers are struggling to address non-compliance, repeated enforcement actions may divert company resources towards addressing enforcement rather than making operational changes. As a result, exploring alternative sanctions that focus on addressing compliance issues and improving industry practices may be more appropriate.

⁹ Health and Safety Executive (2025) [Public register of enforcement notices](#)

Illustrative example 8

Thames Water is an example of a provider who has raised concerns about the impact of financial penalties issued for non-compliance.

In 2024, Ofwat fined three water companies a total of £168 million for failing to manage their wastewater treatment works and networks¹⁰. The three companies were Thames Water, Yorkshire Water, and Northumbrian Water.

Thames Water was also fined £18 million for breaking shareholder payment rules in 2024, the first time Ofwat used such enforcement powers to ensure companies link shareholder payment to company performance¹¹.

In Thames Water's response to Ofwat's draft determination, the provider considered that Ofwat's targets were unachievable, exposing them to penalties that would impact the financial health and the future of Thames Water¹².

Making improvements

Less punitive enforcement actions, such as warnings and improvement notices, allows providers to make improvements based on a regulator's suggestions. The details of what needs to be implemented, who is responsible for remedying the contravention, and the timeframe within which the required improvements must be implemented are provided.

Although a warning or improvement notice does not require immediate action, the expectation is for remedial action to take place. This results in a positive outcome as providers are given a deadline to show evidence of compliance before escalating to more punitive measures.

Challenges to applying sanctions

Stakeholders noted that there are several challenges to applying sanctions, including balancing proportionality with effectiveness, risk of overreliance on punitive measures, transparency and trust between regulators and providers, and appeal mechanisms.

Balancing proportionality and effectiveness

Across the interviews, stakeholders emphasised the importance of achieving a balance between proportionality and effectiveness when applying sanctions within a regulatory framework. This is because more punitive actions can cause significant reputational damage to the provider.

¹⁰ Ofwat (2024) [Thames, Yorkshire and Northumbrian Water face £168 million penalty following sewage investigation](#)

¹¹ Ofwat (2024) [Ofwat finds Thames Water has broken dividend payment rules](#)

¹² Thames Water (2024) [TMS-DD-036: Strategic Narrative](#)

The findings suggest that regulators should adopt a graduated and transparent approach to applying sanctions. Stakeholders viewed this approach as beneficial because it enables regulators to address non-compliance issues of varying severity while maintaining regulatory certainty. Moreover, they considered it a more effective way to foster cooperation between regulators and regulated entities, encouraging proactive problem-solving.

“An accident can be easily investigated (...) and then the punishment should be set proportionally to that.”

Academic

Sanctions have further implications: regulators have to consider how this may impact the future of the particular sector. The goal is not to simply penalise a provider, but to clarify policies, establish precedents, and signal to industry the consequence of non-compliance. It can positively influence industry behaviour by promoting clarity of regulations and innovation which enables providers to meet requirements more efficiently and effectively.

“For example, we carried out an investigation of (provider) a few years ago, which was on a particular point about the behaviour of such a large monopoly with respect to potential competitors. We have seen that that point play out in other sectors when people have come to talk to us about it.”

Regulator

Conversely, stakeholders highlighted that if a regulator lacks the authority or is hesitant to use its enforcement powers when necessary, it may send mixed signals to regulated entities, as well as the public. For a sanctions regime to be effective, stakeholders suggested that there must be meaningful consequences for non-compliance; otherwise, the credibility of the regulatory framework may be undermined.

“An enforcement regime that has no teeth or is a little bit shy in enforcing is worse than not having an enforcement regime in the first place because it sends all the wrong signals and taxpayers’ money is wasted.”

Business/trade group

Risk of overreliance on punitive measures

Findings suggest that enforcement actions should follow a graduated approach, and stakeholders expressed concerns regarding the overreliance on more punitive measures in sanctions regimes. There was a consensus among stakeholders that more punitive measures can have the potential to stifle innovation and be financially or reputationally detrimental.

Monetary penalties in particular were mentioned by stakeholders. These serve as an effective deterrent, encouraging providers to proactively address offences. However, these can have a disproportionate impact on smaller companies compared to larger ones. A large company is often able to absorb a financial setback, however the same penalty is more likely to deplete the resources of a smaller, lower turnover company.

"If you are a smaller company, (a fine) could be make or break for you versus a larger company that can afford to absorb that."

Business/trade

The ultimate goal of civil and regulatory sanctions is to incentivise compliance, not only for the provider directly involved but also for the broader industry. As a result, regulators consider more punitive measures, such as monetary penalties, as a last resort. Among regulators that do impose fixed and/or variable monetary penalties, a thorough assessment is conducted before this is determined as the most appropriate sanction for a violation.

Illustrative example 9

The Care Quality Commission (CQC) has the power to serve a range of fixed monetary penalties¹³. Some examples include:

Offence: Failure to comply with regulations about quality and safety related to the Health and Social Care Act 2008

Penalty: £4,000 fine to provider, £2,000 fine to registered manager

Offence: Failure to comply with conditions of registration

Penalty: £4,000 fine to provider, £2,000 fine to registered manager

Offence: Continuing operations while registration is suspended

Penalty: £4,000

Offence: Failure to make required notifications

Penalty: £1,250 fine to provider, £625 fine to registered manager

Offence: Obstructing entry and inspection

Penalty: £300

¹³ Quality Care Commission (2025) [Penalties and fines for offences](#)

Illustrative example 10

The Environment Agency follows a graduated approach to calculate a variable monetary penalty¹⁴.

The starting point for the most serious, deliberate offences by a large organisation is £1 million. The general range for monetary penalties is between £300,000 and £3 million, and the EA can impose a variable monetary penalty up to the same level as the maximum fine for a Crown Court Case (unlimited fine).

In cases where the maximum fine that can be imposed by the Crown Court for a specific violation is limited, the starting point is adjusted to reflect the lower minimum fine allowed under regulations.

This process involves a step-by-step approach to ensure a fair and consistent calculation of the penalty amount.

Step 1: Compensation

The EA will take into account any compensation paid to victims for personal injury or loss or damage resulting from an offence.

Step 2: Determining the offence

Guidelines are used to assess culpability and harm factors. This helps EA determine how serious the offence is.

Step 3: Category range

To determine the appropriate variable monetary penalty, the EA considers the size of the organisation or financial circumstances of the individual, and aggravating and mitigating factors are also considered.

Aggravating factors include: repeated incidents; history of non-compliance; offence committed for financial gain; previous convictions; ignoring risks identified by staff or others; established evidence of wider impact; deliberate concealment of offence; location of offence; and obstruction of justice.

Steps 4-9: Review and considerations for reduction

The penalty is reviewed for proportionality, removal of economic benefit, and other factors that may warrant adjustment. Cooperation and early admissions may lead to a reduced penalty. The variable monetary penalty may also be adjusted if the provider will face financial expenditure as a result of a compliance notice.

Step 10: Proportionality

The EA will take into account whether the variable monetary penalty is proportionate to the offence.

Step 11: Justification

Finally, the EA will explain how the variable monetary penalty was calculated alongside reasonings. When dealing with very large organisations, the EA may consider them as a separate category and it may be deemed that a systematic increase or reduction is not considered helpful.

Fostering trust and transparency

Stakeholders agreed that transparent processes and communication are essential to maintaining the integrity of a sanctions regime. This includes building trust not only between regulators and regulated entities, but also with the public.

“There is not a one-off point in time where we get a concern, do an investigation, impose a fine and then walk away. We think very carefully about how we manage that relationship. For example, I could be part of an investigation of [provider] which could lead to a penalty, alongside them having very different conversations with the policy team about reviewing the regulatory rules or with the research team about a piece of research that we might be gathering from another team.”

Regulator

For providers, clear frameworks are essential for promoting transparency and predictability. This includes clearly defining standards and units of violation, while offering flexibility where possible, which allows for accurate measurement of non-compliance.

Encouraging compliance with the duty of candour, through clear guidance on the type of information and behaviours expected during investigations, can help to avoid inadvertent non-compliance and ensure all parties are operating with the same understanding of their obligations and responsibilities. However, it is important to avoid overwhelming providers with data and information requests as this may signal a lack of trust in providers.

“Regulators are pushing for so many data sets and types of data about these systems, data that they do not need nor is going to help them with their job.”

Business/trade group

Stakeholders noted that it is important to achieve the right balance as an overemphasis on transparency could result in a loss of trust among the public. Public communications about enforcement actions might hinder a provider's performance improvements and affect the regulator's reputation. This highlights the need for a balanced approach to communication, ensuring transparency while promoting a culture of continuous improvement.

¹⁴ Environment Agency (2025) [Annex 1: RES Act – the Environment Agency's approach to applying civil sanctions and accepting enforcement undertakings](#)

"I think there is a real danger if you hint at what is, in effect, running commentary. So, something starts to go wrong, so you make a public statement about it that then makes it much harder to get it put right because you lose trust."

Regulator

Appeal mechanisms

Stakeholder interviews indicated that handling appeals is a regular part of the enforcement process. Rather than seeing appeals as an obstacle, regulators treat them as an expected and planned part of their enforcement strategy. As a result, they factor in the likelihood of appeals and the time and resources required to manage them.

"The case I talked about recently was appealed through a tribunal and all the way up to having permission to appeal refused from the Supreme Court. So, (appeals) happen and that is part of the end-to-end strategic decision at the start. You might go into your case knowing that making this decision could have that impact. You recognise you might add three or four years of appeal on the end of it."

Regulator

Outcomes

In summary, the use of civil and regulatory sanctions results in the following positive enforcement outcomes:

- Prevention – where action is needed to address and prevent the repeating of the action which caused the violation
- Remedy – the provider may need to take action to correct the contravention of legislation or other duties
- Deterrence – whether an offence can be remedied or not, a sanction may be appropriate to punish the provider and act as a deterrent

"The incentives to comply firstly is the risk of an investigation because they are not painless and they are not costless; procedurally they take a while to complete. We send out lots of information requests. It is not a lot of fun; it is a lot of stress on the organisation. Secondly, we impose financial penalties in cases at a level that is appropriate and proportionate (...) and we will expect to have a penalty that is considerably in excess of any financial gain they might have made. Lastly, reputationally (providers) want to protect their relationship with (regulator). As much as we are able to maintain conversations with those companies at different levels, I think they recognise it is not helpful for them to be in a non-compliant space in lots of different areas."

Regulator

Fostering a culture of compliance

This chapter briefly explores the features that constitute a culture of compliance, including open reporting, proactive risk management, and continuous improvement.

Summary

- A culture of compliance involves setting a strong set of behaviours and practices that align with regulations, exercising proactive risk management, and maintaining oversight of compliance risk.
- A just culture, which encourages open reporting of safety issues, is important for identifying and addressing potential risks, promoting safety, and continuous improvement.
- Data plays a role in promoting safety and compliance, with sanctions considering a company's culture and assessed through indicators such as safety prioritisation, internal feedback mechanisms, and whistleblowing procedures.

Features of a compliance culture

The research findings highlighted that culture and data are part of the lifecycle of compliance. A culture of compliance involves a clear commitment to adhering to the legal obligations and regulatory requirements set out in a particular industry.

In summary, this involves both regulators and providers:

- setting a strong compliance culture
- exercising proactive risk management
- maintaining oversight of compliance risk

Culture

The findings emphasised the role of culture and data in promoting compliance and safety across industries, in particular, a just culture system which encourages open reporting of

safety issues without fear of unfair punishment. This is essential for identifying and addressing potential risks as this encourages transparency, problem-solving, and improves safety outcomes.

The aviation sector, which has long operated within such a culture, can serve as a model for the AVs sector. By adopting a similar approach, the AVs sector can build trust in its safety and compliance systems by enabling transparent reporting, learning from incidents, and adapting practices over time. A no-blame culture would support learning and innovation while still holding individuals and organisations accountable.

The findings highlighted the tension between ensuring accountability and creating room for learning. A purely punitive approach could discourage the reporting of near misses and minor incidents, hindering the identification of systemic safety issues. Therefore, a sanctions system that incorporates mechanisms to protect individuals who report safety concerns in good faith is essential. The findings suggested that this approach should be coupled with performance-based oversight, which requires trust between the regulator and the regulated body, as well as a mature system for assessing risk.

Illustrative example 11

The Civil Aviation Authority (CAA) is an example of how a strong safety culture and data driven decision making can contribute towards a safer and more compliant industry. The organisation's just culture balances proactive enforcement with a fair, learning oriented environment. This has been achieved through several initiatives¹⁵.

The CAA has worked towards a just culture is through the reformation of the Infringement Coordination Group (ICG) who are responsible for the regulator's violation investigations. Each ICG meeting operates with a range of stakeholders, including pilots, air traffic controllers, and flight examiners, ensuring a high and fair standard of expertise. The process used to deal with violations were reviewed to ensure decisions reached by the ICG are fair.

A Just Culture Champion from its General Aviation Unit was also appointed and is actively engaged with organisations such as Confidential Human Factors Incident Reporting Programme (CHIRP) as well as being co-chair of the ICG.

Data from each report sent to the CAA is routinely categorised and the statistics are used to identify safety trends and where necessary, implement safety mitigating measures. To assist with this, the CAA created its internal Occurrence Reporting Governance Group with the aim of ensuring there is a standardised approach within the organisation regarding legal compliance to regulations.

Outcomes from a just culture and similar processes has resulted in educational or training activities in the large majority of cases. However, to maintain or improve aviation safety in the cases of gross negligence or wilful violations, further action may be necessary. When safety-related issues are addressed within a just culture by the CAA, investigations and decisions are fair and timely and all reasonable efforts are made to decide upon remedial actions without delay.

This has encouraged a shared responsibility for safety and promotes continuous improvement by learning from incidents and data analysis. This approach is applied as part of its mandatory occurrence reporting system, as well as during surveillance activities.

Data

Data also plays a critical role in promoting compliance and safety. The findings suggested that sanctions should reflect a company's safety culture and trustworthiness, which can be assessed through indicators such as the prioritisation of safety from the beginning of the product lifecycle, the implementation of internal feedback mechanisms, and the establishment of whistleblowing procedures. These features serve as indicators of a safety-orientated culture and should be evaluated when assessing a company's attitude towards compliance.

¹⁵ Civil Aviation Authority (2024) [Just Culture](#)

Furthermore, the findings highlighted that regulators must set clear data sharing requirements between AV developers and regulators. Concealing crucial information from regulators can lead to serious consequences, such as licence suspension, reinforcing the need for open communication and transparency. Regulators should establish well-defined rules on when and how AV developers must share data at each stage of the AV lifecycle are essential. These rules will ensure a sanctions system that all actors understand and can engage with effectively.

Overall, the findings suggested that by fostering a just culture that encourages open reporting, while also ensuring accountability through performance-based oversight and clear data sharing requirements, the industry can create a robust and effective sanctions system. This approach will enable the identification and mitigation of risks, promote continuous improvement, and ultimately ensure the safe deployment of autonomous vehicles on our roads.

Considerations for automated vehicles

This chapter explores what the AV industry should consider when developing a sanctions regime following learnings from other industries identified through the research, such as the importance of a collaborative and proportionate approach. The chapter also brings together findings related to the challenges of balancing accountability and innovation, stressing the importance of finding enforcement mechanisms that promote accountability without creating an overly burdensome regulatory environment.

Summary

- A collaborative, proportionate approach to sanctions is crucial for developing an effective compliance and enforcement framework for AVs, fostering a culture of transparency, learning, and continuous improvement.
- A graduated response, with sanctions escalating based on the gravity of the violation and the operator's willingness to cooperate and rectify issues, is essential for maintaining a fair and effective compliance regime.
- Establishing clear communication channels and fostering open dialogue between regulators and AV companies is vital for a collaborative sanctions regime, helping prevent violations and identify potential issues early.
- Accountability should not be sacrificed for innovation, and finding enforcement mechanisms that promote accountability without creating an overly burdensome regulatory environment is crucial.
- Comprehensive data recording and sharing are essential for an effective sanctions regime, enabling thorough incident investigation, informing appropriate sanctions, and fostering transparency and accountability.
- Adapting sanctions to the distinctive challenges of autonomous vehicles is necessary, requiring a more flexible, collaborative, and context-specific approach.
- Sanctions should consider not just the occurrence of a violation, but also the steps taken by AV companies to mitigate risks and ensure safety throughout the development and deployment process, incentivising proactive risk management and continuous improvement.

Considerations

In summary, the research identified several factors for the AV industry to consider when thinking about developing an effective sanctions system.

A proportionate approach to sanctions

A collaborative, proportionate approach to sanctions is crucial for developing an effective compliance and enforcement framework for AVs. As this transformative technology is still in its early stages, regulators must work closely with AV developers to investigate incidents, understand their causes, and determine appropriate sanctions. This collaborative approach is essential for fostering a culture of transparency, learning, and continuous improvement in the AV industry.

"Generally speaking, escalation over level of severity is probably the right way to think about this. It would seem unreasonable to demand that a manufacturer completely floors its fleet because there has been a particular incident."

Business/trade group

Sanctions may have significant reputational and financial impacts on AV companies, which may in turn affect their ability to innovate and bring new technologies to market. As such, it is crucial that sanctions are applied in a way that is proportionate to the offence and takes into account the potential unintended consequences.

"The potential impact of sanctions and enforcement measures in the UK regulatory framework incentivises the industry to cooperate and proactively share information and data about any incidents that have occurred."

Business/trade group

Graduated framework

A graduated response, with sanctions escalating based on the gravity of the violation and the operator's willingness to cooperate, take responsibility and improve compliance going forward, is important for maintaining a fair and effective compliance regime based on research findings. While sanctions are necessary for ensuring compliance, they must be applied judiciously and under a well-defined regulatory framework. The UK's approach to sanctions in the AVs industry, compared to other markets which are more reactive, suggests the model is proportionate and flexible.

“I am talking quite speculatively, but I think generally speaking we recognise sanctions enforcement are important. We think what is in the UK framework makes sense.”

Business/trade group

Collaboration and open dialogue

Stakeholders stated that establishing clear communication channels and fostering open dialogue between regulators and AV companies is vital for a collaborative sanctions regime. Regular engagement and information sharing can ensure all parties understand their responsibilities, identify potential issues early and help prevent violations. By working together in a spirit of partnership, regulators and AV developers can create a sanctions system that prioritises safety, accountability, and public trust while allowing room for innovation and growth.

“The stick of sanctions mean that the incentive is on us to work with the regulator to avoid these things, but also to be transparent about it if it occurs.”

Business/trade group

Balancing accountability and innovation

Accountability should not be sacrificed in the name of innovation. AV companies must still be held responsible for the safety and compliance of their vehicles. The challenge is finding enforcement mechanisms that promote accountability without creating an overly burdensome or hostile regulatory environment in terms of time and cost. A graduated system of sanctions, with penalties proportional to the severity of the incident, allows for necessary accountability while still providing space for learning, especially from lower-impact events.

Additionally, purpose-built regulations tailored to the unique challenges of AVs, rather than simply extending existing frameworks for human-operated vehicles, can help avoid overly restrictive rules that stifle innovation.

“Otherwise, I think there is a danger that you are going to end up with too prescriptive regulation that will stifle innovation.”

Business/trade group

Comprehensive data recording and sharing

The findings suggested that comprehensive data recording and sharing are essential for an effective sanctions regime. By mandating the collection and sharing of data from AVs, regulators can enable thorough incident investigation, inform appropriate sanctions, and

foster a culture of transparency and accountability. Establishing standardised, mandatory data sharing requirements ensures regulators have access to the information needed for incident investigation and sanction decisions.

Avoiding excessive data and information requests is important, as they may signal a lack of confidence in providers' ability to operate and comply. Striking a balance between necessary oversight and provider autonomy is key to fostering a collaborative and trusting relationship between regulators and providers.

"Literally everything (can be shared). What the cameras have seen, all the signals in the system, what decision was made by the autonomous driving system, the status of the hardware of the computer on board."

Academic

"It should be mandatory and it should be somehow standardised... If there is an accident, to automatically package the data of the last 30 minutes of driving and be shared with the appropriate authorities for investigation."

Academic

Defining roles and responsibilities

Adapting sanctions to the distinctive challenges of autonomous vehicles is crucial for creating an effective compliance and enforcement framework. AVs present unique complexities for designing sanctions, requiring a more flexible, collaborative, and context-specific approach compared to traditional vehicles.

"Accountability now that there is no driver should go to the original equipment manufacturer (OEM) or to the developers."

Academic

Sanctions must be designed to account for this distributed accountability, potentially holding various entities jointly responsible based on their roles and culpability in any incidents. This requires developing new methods for investigating and attributing fault that consider the entire AV ecosystem.

A holistic approach considering the lifecycle of compliance

Stakeholder interviews suggested that regulators also need to adapt their approaches to assessing compliance, looking beyond just the end result to examine the diligence and good faith efforts of AV companies throughout the development and deployment process.

Sanctions should not just consider the occurrence of a violation, but also the steps taken by AV companies to mitigate risks and ensure safety. This could involve assessing factors

such as the robustness of testing protocols, the implementation of fail-safe mechanisms, and the responsiveness to identified issues. Sanctions should incentivise proactive risk management and continuous improvement, not just punish bad outcomes.

“Compliance becomes crucial because regulators and authorities must seek sufficient evidence to determine if those responsible have been diligent and acted in good faith to the best of their abilities when putting a vehicle on the road.”

Business/trade group

Trustworthiness

The research findings highlighted that a sanctions system for AVs should be built on principles that support public trust. Although the primary purpose is to ensure accountability and compliance, the design and enforcement of sanctions should also shape public confidence in AV safety. As AVs are still relatively new, trust in their safety and in the accountability of developers and operators is essential for wider adoption.

Trustworthiness should be embedded in how breaches are handled and how the sanctions system is applied in practice. A sanctions framework for AVs can support this by setting clear expectations for how AVs must respond in safety-critical situations, and for developers and operators to report safety incidents promptly, accurately, and transparently.

Sanctions should also match the severity of a breach, especially where trust is at risk. For example, knowingly withholding safety information could be treated as a serious offence due to its broader impact on public confidence.

Next steps

Given the development of AVs, it will be important for the in-use regulatory scheme to reflect a holistic approach to compliance in the context of a broader sanctions regime that incorporates insights gained from stakeholders. Recognising the complexity of this, there will be universal elements that contribute to or demonstrate compliance that will be important in supporting the regulatory framework for AVs.

Based on the findings, regulators have a good understanding of the industry that they monitor. Similarly, providers have a good understanding of the industry that they operate in. Establishing a working relationship characterised by open dialogue and trust could be the root for developing thinking around compliance.

We recognise that this research could not summarise all the aspects of a sanctions regime due to the complexity of enforcement and the array of activities involved. However, this research provides a foundation for DfT to work from, with practical insights and clear gaps highlighted which can shape future research.

Opportunities for future research include:

- Conducting scenario testing to understand how sanctions might be applied in different situations, from minor breaches to serious failures, to assess what an appropriate response would look like.
- Mapping behaviours of providers to identify what encourages or discourages responsible conduct and transparent decision-making.
- Determining appropriate responses to these potential incentives and behaviours within remit.
- Exploring the informal, or often unspoken, enablers that may exist within organisations to support a culture of compliance.
- Implementing a system to track and monitor potential areas of mistrust in the compliance system.
- Developing a channel for government, regulators, and the AV sector to discuss challenges, co-develop guidance, and share best practice.
- Monitoring key public concerns and taking steps to address public misconceptions through education and clear communication to prevent the development of distrust in regulation
- Investigating how providers react to different sanction types.

Annex A: Methodology

A culture of compliance involves setting a strong set of behaviours and practices that align with regulations, exercising proactive risk management, and maintaining oversight of compliance risk.

Phase 1: Familiarisation

The familiarisation stage aimed to provide an initial understanding of sanctions systems and key themes relevant to the research.

Scoping interviews with three industry stakeholders (with a regulator, academic, and business representative/trade group) were conducted on Microsoft Teams, with each session lasting approximately 30 minutes. The purpose of these interviews was to gain an understanding of the context of compliance and enforcement.

It is important to acknowledge that these interviews were exploratory in nature and did not aim to provide a complete picture of compliance and enforcement. Additionally, the views expressed by the interviewees may not be representative of all stakeholders in the field. Despite these limitations, the scoping interviews provided valuable context and direction for the subsequent stages of the research.

Phase 2: Evidence review stage

The purpose of the evidence review was to bring together evidence that is available on sanctions regimes within the AV industry and other related areas, within the UK and internationally. Alone, it is not intended to provide a conclusive view of sanctions regimes but to offer a broader perspective on how sanctions are structured and enforced in other highly regulated industries. The evidence review also set out to identify best practices and innovative approaches that could be applied to the AV sector and used effectively to support compliance, manage risks, and maintain safety standards.

The methodology for the review of current civil and regulatory sanctions regimes was comprehensive and systematic, designed to encompass a wide range of literature. Search terms included general keywords, sanctions-specific keywords, and thematic keywords on effectiveness, metrics, and reporting. Analysis of international legislation was light touch, focusing on a comparison of key features across legislative frameworks and the core lessons they offer, rather than an expert legal appraisal.

It is important to note that there were some limitations to the evidence review. Firstly, the review itself revealed significant evidence gaps in relation to the effectiveness and reporting of compliance, especially around reporting on outcomes in regulated sectors. To help build a broad picture of sanction regimes, the evidence review included literature from international examples and sectors with a more limited focus on safety. Whilst valuable, it is useful to reflect that the contexts of the examples may mean they are less directly applicable to the UK and AVs.

The initial parameters for the review were:

- **Key literature sources:**
 - Government documents
 - Relevant materials from regulators and organisations
 - Acts and legislations in the UK and internationally (e.g. the United States, the European Union)
- **Search strategy:**
 - “compliance” AND “regulation” AND “enforcement” AND “accountability”
 - “risk management” AND “risk mitigation strategies”
 - “safety standards” AND “safety culture”
- **Category-specific search terms:**
 - **Sanctions specific:** “civil penalties for safety breaches” OR “civil sanctions” OR “regulatory sanctions” AND “suspension” OR “suspend authorisation” OR “withdraw authorisation” OR “vary authorisation” OR “administrative orders” OR “warning letters” OR “restorative conferences” OR “corrective action plans” OR “compliance notices” OR “redress notices” OR “monetary penalties/fines” OR “decision rules”
 - **Effectiveness:** “deterrence” OR “recidivism/reoffences” OR “compliance improvement” OR “risk reduction” OR “impact assessment” OR “success factors” OR “failure analysis” OR “monitoring and reporting on outcomes” OR “cooperation/collaboration with regulators” OR “incentivising compliance”
 - **Regimes:** “enforcement mechanisms” OR “regulatory frameworks” OR “legal precedents” OR “international standards”
 - **Metrics and reporting:** “safety performance indicators” OR “compliance rates” OR “incidence rates” OR “audit findings” OR “inspection results” OR “insurance claims” OR “metrics for regulatory compliance” OR “reporting standards compliance” OR “post-incident compliance actions” OR “just culture”
 - **Risk management:** “transport sector risk governance” OR “proactive safety management” OR “incident and accident reporting in transport”

Phase 3: Stakeholder consultations

The stakeholder consultations aimed to understand how the AV sector can learn from existing regulatory and enforcement approaches across different industries.

A total of 13 stakeholders participated. 12 semi-structured interviews were conducted between 23rd December 2024 and 27th February 2025 with regulators, academics, and business representatives/trade groups (see Table 1.4 for a breakdown of the sample). Due to stakeholders being time poor, we offered the completion of a form with a set of questions as an alternative. An additional stakeholder participated via this method.

The interviews explored current compliance mechanisms, violation types, sanctions, reporting, metrics, and the elements of an effective sanctions system.

Stakeholder type	Number of interviews
Regulators	6
Academics	2
Business/trade group	5
Total	13

Table 1.4: Stakeholder consultations sample

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