Future of transport data

RoSPA's response to Transport Select Committee

August 2023

Response to Transport Select Committee's call for evidence: Future of transport data

Introduction

This is the response of The Royal Society for the Prevention of Accidents (RoSPA) to the Transport Select Committee's call for evidence on the future of transport data. It has been produced following consultation with RoSPA's National Road Safety Committee. We have no objection to our response being reproduced or attributed.

The consultation seeks views on potential uses of data to improve planning and delivery of transport services, maintenance and management of transport assets, and helping transport users get around more quickly, efficiently and safely.

Digital connectivity speeds and coverage are expected to rapidly expand by 2030. It is thought that by this time, the UK will have 5G coverage and gigabit capable broadband for most of the population. These developments open the new possibilities of using real-time asset, vehicle and other kinds of data to improve the safety and reliability of the road network. RoSPA believes that there is a need for accurate and reliable road and road safety data. Without good data, it is challenging to identify patterns and trends and make informed decisions about road safety policies and practices. By prioritising the use of data in our decision-making, we can work towards creating safer roads for all.

Safety

Data could unlock crucial insights for safety, as there is currently a reliance on lag data, such as STATS19, to identify and understand incidents on our roads. New sources could be used to predict where collisions could happen in future, so that the road safety can be proactive rather than reactive in introducing appropriate measures. We are beginning to see a move towards digital infrastructure, but road users can also collect data that will be useful for understanding the usage of and improving the safety and reliability of the road network. This comes in the form of modern vehicles, which collect considerable amounts of data, and technology that can be fitted to non-motorised modes, such as cycles.

One example of how data can be used to improve the safety of our roads is the Cycle Smart Brum project[1]. In 2020, RoSPA worked with See.Sense, a technology company that supplies bike lights, to explore how data collected by cyclists can be used. The project, aimed to identify cycling conditions across Birmingham and provide a wider understanding of unreported collisions.

More than 200 cyclists across Birmingham took part, and the hope was that the data they collected could be used to anticipate where and how cycling incidents may occur – before they actually happen.

Each cyclist received a See.Sense ACE Intelligent Rear Light. In exchange, they agreed to have data insights collected from their rides, covering speed and dwell times, surface condition, movement patterns, swerving, heavy braking and, crucially, near-miss incidents.

The project also examined the Department for Transport's reported road casualty data for cyclists and compared this with the measurements collected by the See.Sense lights to establish the relationship between reported and unreported incidents with a view to developing a predictive model.

Over the period of the study, 42,161km was travelled by the cyclists, representing 798,292,700 individual sensor readings for swerving, braking and surface condition. It was not practical to consider each reading individually, so

[1] RoSPA & See.Sense (2021) 'Cycle Smart Brum project: Summary report'
https://www.rospa.com/media/documents/road-safety/Cycle-Smart-Brum-Project-Report-v2.pdf
Date accessed: 15/08/2023.

we split a map of Birmingham into 10-metre squares to create 172,471 aggregate data collections, which can be mapped to visualise and analyse the data. In areas where there were three or more cyclists making 15 or more journeys, we observed that cyclists were 2.4 times more likely to experience a heavy brake or swerve event in the immediate vicinity of recorded collisions involving cyclists.

This is just one example of how data could be used to improve safety on our roads. We would propose that this could form the basis for a useful investigative tool to quickly identify the most hazardous cycling areas. Or alternatively, this could be used as a tool to analyse an area based on other indicating data, such as reports from cyclists. We hope to see more data collected by road users being analysed in this way in future to improve the safety of our roads.

Journey reliability

Although improving safety is the most crucial benefit of transport data for RoSPA, good use of data also has the potential to improve journey reliability for motorists. For example, detailed traffic data can help motorists plan their journey in advance. Receiving more information on road closures and restrictions ahead of the journey helps the public and those working in freight to choose alternative routes and factor delays into their plans, reducing disruption and economic impact for commercial operators. Data made available during the journey on digital information boards, such as a delay due to heavy traffic can also help motorists select the best route. Data shared could include information such as alternative routes, or as the number of electric vehicles increases, available charging points.

Increasing availability of data could also be useful to public transport users. It is expected that with better data, it will be possible to provide real-time progress updates to passengers. The benefits of this include reduced wait times, as users can check their app and time their walk to their stop or pick-up point and reduced travel time, as people can adjust their trip choices. If passengers can learn about delays before they arrive at the stop, they can make informed decisions about taking alternative routes or modes [2].

A 2012 study of the Chicago Transit Authority bus routes on which real-time passenger information had been added found that the average daily number of users on those routes increased by two per cent. Similarly, a 2015 study for New York City's bus system also found that after three years, there was a two per cent increase in users attributable to the real time passenger information system[3].

[2] Medium. The real benefits of real-time transit data. https://medium.com/sidewalk-talk/the-real-benefits-of-real-time-transit-data-1fee19988b73. Updated June 2018.

[3] Papercast. 5 biggest benefits of real-time passenger information and digital bus stops https://www.papercast.com/insights/5-biggest-benefits-of-real-time-passenger-information-and-digital-bus-stops/ Updated July 2017.

New data sources may also be helpful for the maintenance and renewal of assets. Data concerning the condition of roads and assets can help the Government and Highways Authorities to prioritise funding maintenance and renewals where the need is greatest. As assets become increasingly digital, real-time performance information can be shared, allowing Highways Authorities to keep roads open, safe and serviceable, with less need for physical inspections of assets.

Connected and autonomous vehicles

Another way in which data is likely to play a role in the future of transport is through connected and autonomous vehicles. It is thought that 75 per cent of new cars will have some automated and data-sharing capability by 2050[4]. These increasingly connected vehicles will work with digital infrastructure on the roads. There will be much work required to install compatible infrastructure to enable early-adopters of this technology to see the benefits of it.

However, although additional data and interconnectivity comes with a number of benefits, it also brings significant risks. The UK will need to work to improve cyber security to prevent malicious individuals from being able to access data or systems and bring disruption to the network. Some breaches may lead to disruption for road users, but if safety critical features are compromised, there could be a risk of collisions, serious injury and even death. Much work is needed to ensure that the future network is safe and can be trusted by users.

This could be a particular issue for connected and autonomous vehicles, as they are software driven. These vehicles are vulnerable to software related security flaws and cyber-attacks. Large amounts of data will be processed and collected by these vehicles, including personal information about passengers and the vehicle's location in real-time. This means that there is the need to implement data privacy and security measures[5]. There are other risks, such as remote hacking through software vulnerabilities, tampering with sensor data and tampering with software updates, which could allow an attacker unauthorised access and control of the vehicle.

More work is also required to link up data sources. There is need for better data sharing and collaboration. Different organisations collect road safety data, but often this data is not shared, leading to duplication of effort and inconsistencies in the data.

[4] National Highways (2023) 'Strategic road network initial report: 2025-2030'
https://nationalhighways.co.uk/media/mjzibdrt/cre22_0102-srn-initial-report-2025-2030_vn.pdf
Date accessed: 14/08/2023.

[5] Cyres Consulting (2023) 'Autonomous vehicle cybersecurity considerations at a glance'
https://www.cyres-consulting.com/autonomous-vehicle-cyber-security-overview/
Date accessed: 15/08/2023.

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RoSPA has no further comments to make on the consultation process, other than to thank the Transport Select Committee for the opportunity to comment. We have no objection to our response being reproduced or attributed.