

NEW BUSES IN LONDON WILL BE FITTED WITH INTELLIGENT SPEED ASSISTANCE TECHNOLOGY FOLLOWING SUCCESSFUL TRIALS

Case Study: Intelligent Speed Assistance (ISA) on London Buses

In June 2015, Transport for London (TfL), the body responsible for the transport system in Greater London, began testing an after-market ISA system on buses serving two routes in London.¹ This was part of its commitment to halve the number of people killed and seriously injured on London's roads by 2020 and came amid growing concerns about the safety of pedestrians and cyclists in the city.

THE TRIAL ROUTES WERE SELECTED BASED ON DATA ANALYSIS OF BUS ROUTES THAT FEATURED:



HIGH NUMBERS OF COLLISIONS

with pedestrians and cyclists;



LOW BUS COMPLIANCE

with speed limits;



+/-30KM/H

The most 20mph streets



THE LEAST OPPORTUNITIES

for cars to overtake buses.

Issues with speed compliance were found to be most common at night and in 20 mph (30 km/h) zones. 20mph zones are being widely introduced and currently cover around a quarter of London's roads. The mayor of London has recently announced plans to make 20mph the default speed limit throughout London as part of a new Vision Zero road safety action plan.

Similarly, TfL wanted to assess the impact on other road users and the potential of ISA to improve the compliance of other vehicles with the speed limit.

The trial used a mandatory type of ISA, using GPS data matched against an on-board map and speed-limit database² to prevent any equipped vehicle from exceeding the local speed limit, by controlling the amount of acceleration that was possible. Drivers were not able to override the system, except in case of an emergency.

¹ The trials of Bus ISA were carried out on route 19 (from Battersea to Finsbury Park) and route 486 (from North Greenwich to Bexleyheath).

² The speed limit data that is incorporated into the ISA technology comes from TfL's Digital Speed Limit map of London, which is updated for accuracy and freely available from the TfL website. The data can be incorporated into navigation devices and GPS systems to provide all drivers for free with the best information on the speed limit of the roads they are travelling on. <https://bit.ly/2xjm7dr>

AN IMPROVEMENT IN SAFETY

Data collected during the trial was compared with pre-trial data to evaluate the system's effectiveness. ISA was particularly effective when travelling through 20mph zones - helping to ensure other vehicles in the area adhered to the limit.

All buses fitted with ISA remained within the speed limit 97-99% of the time. The few incidences of speeding occurred on downhill sections, as acceleration was the result of gravity. The trialled system did not automatically apply the brakes; it just prevented acceleration over and above the posted speed limit.

The percentage of time spent travelling above the speed limit reduced from a range of 15-19% to 1-3% in 20mph zones and 0.5-3% to 0-1% in 30mph zones (+/-50km/h).

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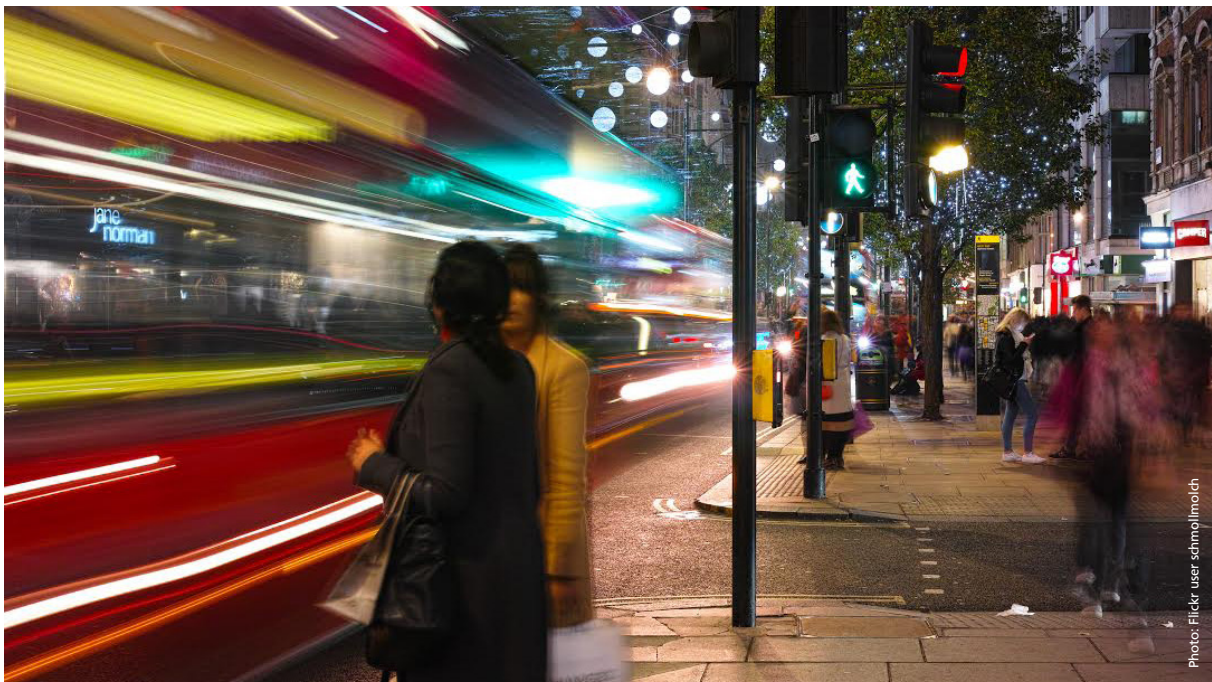
No adverse effect on behaviour was recorded, despite an expected increase in riskier overtaking by surrounding traffic. An increase in platooning from vehicles behind the buses was noted which led to a reduction in average speeds in 20mph zones. A marginal increase in journey times was also reported.

Modelling based on the trial predicted a safety improvement following the introduction of ISA. Given the short duration of the trial, it was not possible to examine actual casualty data. Although there was no significant difference in fuel usage, there was some evidence of improved emissions in some of the 20mph zones.³

A POSITIVE REACTION FROM DRIVERS AND PASSENGERS

Initially, drivers indicated a negative experience towards ISA, due to problems with its calibration and installation. However, once these issues were rectified, the results improved and far fewer issues were raised by drivers. Nevertheless, a few concerns were still raised relating to off-peak conditions when the traffic is lighter and the perception that other road users would become frustrated at the buses complying with the speed limit.

Passengers were unaware of the effect of ISA on their journeys but, once it was explained, they reacted positively.



³ TRL (2016), Intelligent Speed Assistance on London Buses A trial on two London bus routes, <https://bit.ly/2MOpTUQ>

ISA MANDATORY ON ALL NEW BUSES AS PART OF NEW SAFETY STANDARDS

Following the success of the trial, the Mayor of London announced in late 2017 that TfL would require all new buses to be fitted with ISA. It is expected that by the end of 2018, over 500 buses will have the technology fitted. Following this, ISA will be introduced onto new buses at the point of manufacture. As TfL buys around 900 buses a year, it is expected that by 2028 the whole London fleet of 9000 buses will be renewed.

The Mayor also announced that a range of other technologies and improvements would be trialled, including Autonomous Emergency Braking (AEB), a redesign of the bus cab to reduce collision impact and improve visibility, changes to bus interiors and audio and visual warnings for pedestrians and other road users.⁴

These all form part of TfL's new Bus Safety Programme which seeks to develop a world leading bus safety standard for London, with a range of safety technologies and products being developed and tested by manufacturers on London Buses throughout 2016/17. The standards will be incorporated into bus operator contracts from the end of 2018.

TfL has also been working closely with London's bus operators to develop a new type of training for bus drivers. The training, called 'In the Zone', encourages greater awareness of the risks that we take when we're on the road, whether as a driver or a vulnerable road user such as a pedestrian, cyclist or motorcyclist. With this training, drivers are encouraged to change how they assess risks, with the aim of reducing the number of incidents on London's roads.



THE BUS SAFETY PROGRAMME WILL CONTRIBUTE TOWARDS NEW BUS SPECIFIC ROAD SAFETY TARGETS PROPOSED IN THE DRAFT MAYOR'S TRANSPORT STRATEGY:

**VISION
ZERO
BY 2030**

**AN OPERATIONAL TARGET TO ACHIEVE
ZERO PEOPLE KILLED IN OR BY A
LONDON BUS BY 2030;**



**AN OPERATIONAL TARGET OF A 70%
REDUCTION IN THE NUMBER OF PEOPLE
KILLED OR SERIOUSLY INJURED IN OR BY A
BUS, BY 2022 FROM THE 2005-09 BASELINE.**

⁴ <https://bit.ly/2NLSiap>

LONDON AS A ROLE MODEL FOR OTHER CITIES

A comprehensive set of test protocols, guidelines and a timeline for implementation have been developed by TfL's independent research consultants, the Transport Research Laboratory (TRL). TRL has had the support of the bus manufacturing industry and the London bus operators, as well as various user groups to develop and deliver this research.

This comprehensive research programme builds on TfL's interest in the proposed revision of the General and Pedestrian Safety Regulations adopted by the European Commission in May 2018 and seeks to expand safety technology and measures available or proposed for cars, vans and heavy goods vehicles to be inclusive of buses, and to address new areas for casualty reduction. In support of the Vision Zero approach, TfL seeks to encourage the wide adoption of the bus safety standard throughout the UK and Europe.

"We're committed to making sure everyone gets home safely every day, so we are determined to take action to make our world class bus network even safer. The Bus Safety Standard has the potential to reduce road danger not just in London, but in cities across Europe."

Claire Mann, Director of Bus Operations at Transport for London

In May 2018, the European Commission published a proposal for an entirely new set of vehicle safety requirements to include several advanced technologies such as overridable Intelligent Speed Assistance (ISA) on new vehicles. The legislation now needs to be passed by the European Parliament and EU Member States.⁵



⁵ <http://etsc.eu/mobilityiii>



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