

FleetCAT – A trial of an Advisory Collision Warning System in Government Fleet Vehicles

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Abstract

Forward Collision Avoidance Technology has been estimated to prevent up to 40 per cent of all fatal crashes and up to 50 per cent of all injury crashes. The FleetCAT Project installed advisory forward collision warning technology into 34 NSW government shared-pool vehicles to determine the effectiveness of an advisory collision avoidance system. Lane departures, headway distance warnings, forward collision warnings and pedestrian collision warnings were compared before, during and after active deployment of the technology. During the active phase, reductions in alerts per 100 km travelled were seen for lane departures, headway distance warnings and forward vehicle collision warnings.

Background

The Centre for Automotive Safety Research (CASR) estimated in 2012 that between 20 and 40 per cent of all fatal crashes and between 30 and 50 per cent of all injury crashes could be prevented with a Forward Collision Avoidance System (Anderson et al., 2012).

The New South Wales government fleet consists of more than 27,000 vehicles, making it the largest government fleet in Australia. Crashes in state-owned vehicles are estimated to cost the government more than \$110 million annually (Transport for NSW, 2012).

Method

The FleetCAT Project was a three-stage Field Operational Test (FOT) consisting of an initial data collection period of 12 weeks, followed by a 12-week active period and a final four-week data collection stage. During the initial and final data collection stages both visual and audible alerts provided by the technology were disabled, thus providing no warnings to the drivers. The number of lane departures, headway warnings, forward vehicle warnings and pedestrian collision warnings were compared between stages to determine whether the technology was effective in reducing collision risk. The technology used included the Mobileye 560 camera-based collision avoidance warning device and a data acquisition system. The Mobileye 560 provides lane departure, headway monitoring, forward collision, pedestrian detection and speed sign warnings to drivers via an audible and visual display. The data acquisition system was used to record the time, date and location of lane departure and headway warnings as well as forward vehicle and pedestrian collision warnings. Speeding alerts were not collected during the trial.

A sample of five vehicles were also fitted with a dashboard camera during the active warning period. The dashcam recorded approximately 10 seconds of forward-facing video when activated by a headway warning from the Mobileye device. The video data will be analysed to determine if headway warnings were being triggered by other drivers inserting their vehicle into the gap left between test vehicles and the vehicles they were following.

Drivers and Fleet Managers were surveyed during the final stage of the project to gain an understanding of their acceptance of the technology and perception of its benefits. Results of the survey will be published in a future paper.

Results

Vehicles participating in the FleetCAT Trial travelled over 363,000 km during the FOT and recorded almost 117,000 alerts from the Mobileye 560 device.

Initial analysis indicated that between the initial blind stage and active phase of the trial, reductions in alerts per 100 km travelled were achieved for lane departures, headway distance warnings and forward vehicle collision warnings. There was a slight increase in the number of pedestrian collision warnings but very few alerts of this type were recorded during the entire trial.

Conclusion

The use of a retro-fitted forward collision and lane departure warning system was effective in positively influencing driver behaviour by increasing headway distances, decreasing unintended lane departures and reducing the likelihood of a forward collision. The deployment of this technology in fleet vehicles has the potential to reduce the cost of work-related crashes and associated injuries.

References

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