

Feasibility Of Using Truck Sensor Data for Prioritising Safety Measures

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BACKGROUND

- Road traffic accident levels have fallen to the point where few black spots remain and other methods are required to identify where accident reduction measures should be focussed.
- Trucks have many sensors fitted as standard, including those that record incidents of harsh braking and cornering.
- If these incidents reflect potential safety risks, it is possible they could be used by road safety and maintenance engineers to help identify sites of increased accident risk, without depending on past accident records.

AIMS AND OBJECTIVES

The aim of this work is to determine if truck sensor outputs can be used by highway authorities, alongside other data, to identify sites of potential accident risk.

CURRENT WORK

We have identified sites with high and low occurrence of harsh braking incidents. Figure (1) shows an example location of a grade separated roundabout with many occurrences of harsh braking. These locations will be taken forward for further study.

Using a truck instrumented with accelerometers, we have undertaken test track trials to characterise driving that triggers a harsh braking response, see Figure (2).



Figure (1)

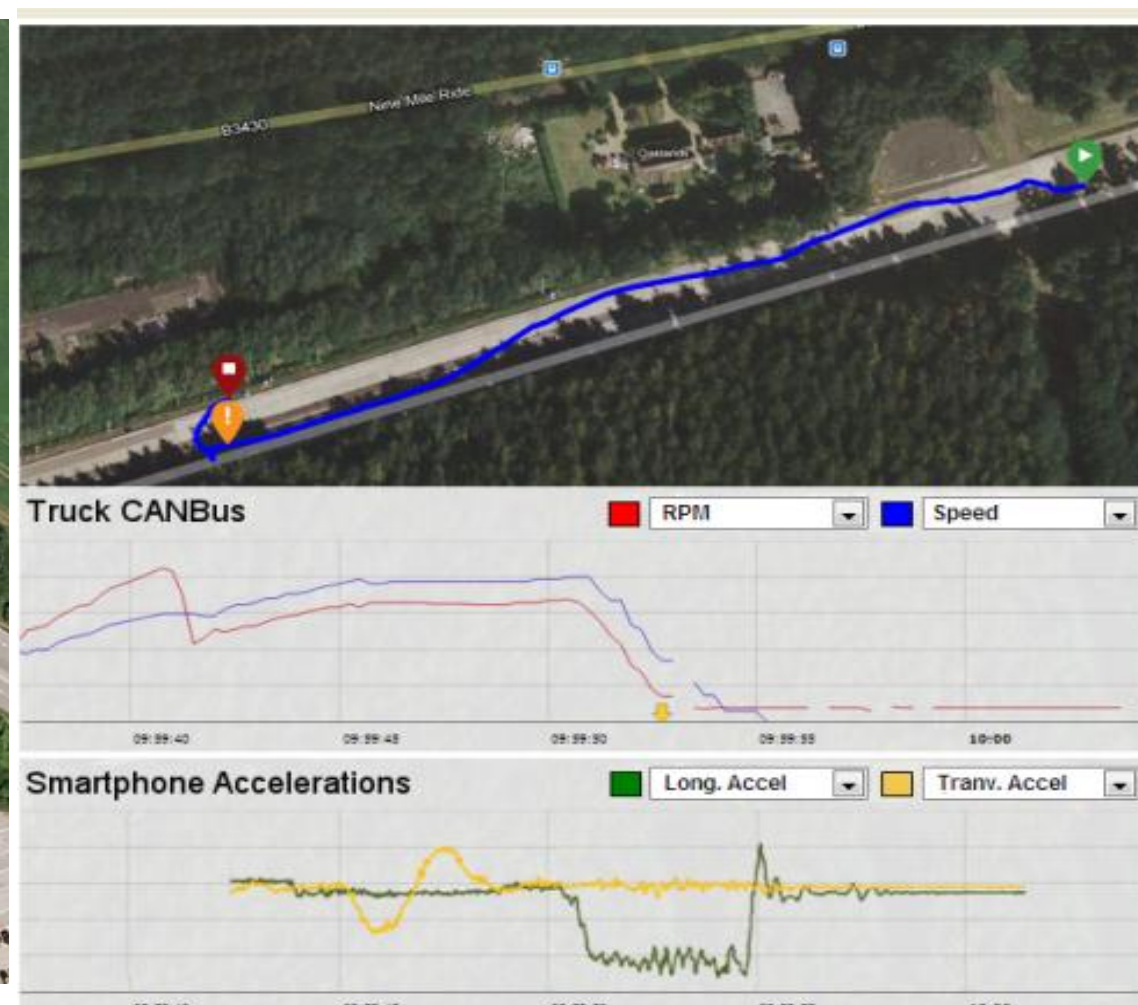


Figure (2)

METHODOLOGY

Having identified sites of high occurrence of harsh braking, the next step has been to identify similar sites, with low occurrence, for comparison.

For selected sites in each class, the next step is to find other relevant data for these sites, including accident data, road condition data (including skidding resistance) and traffic data.

The study may be extended to include truck sensor outputs indicating incidence of harsh cornering.

Next, site investigations will be made, to interpret the sensor data in terms of potential future accident risk.

This will be followed by a network analysis to establish a methodology that highway authorities could use to identify sites of higher accident risk, using truck sensor data.

CONCLUSION

For the current study, it was found that all the sites with high occurrence of harsh braking were high-speed roundabouts, with up to 150 incidents in a two year period. Work on the test track confirmed that a harsh braking incident requires a severe braking manoeuvre, which could represent a significant accident risk.

FUTURE WORK

- Analyse accident data for accidents that could be associated with, or result from harsh braking.
- Analyse road condition data, alongside weather data, to determine if condition could contribute to the need for harsh braking.
- Site investigation and interpretation of the data with respect to accident risk.

