Case Study: Arriva North West

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Reduction in at-fault incidents after coaching based on Bus Driver Risk Index™

Introduction

Arriva North West took part in a study to investigate whether bus driver coaching using the Bus Driver Risk Index™ led to improved safety as measured by crash involvement. This report details the findings relating to this study.

The Bus Driver Risk Index™ is an online assessment of bus driver behaviour. As part of a three year research programme funded by the ESRC and Arriva Bus UK, the Bus Driver Risk Index™ was developed by a research team headed by Dr Lisa Dorn at Cranfield University.

Bus Driver Risk Index™ consists of four sections:

- **Situational risk** – identifying risk factors such as age, experience, incident history, etc.
- **Behavioural risk** – measuring behavioural traits associated with at-risk bus driving behaviour, such as aggression, anxiety, fatigue etc.
- **Coping risk** – reflecting drivers' tendencies to employ positive or negative coping strategies under particularly demanding driving conditions
- **Socially desirable responding** – establishing the accuracy of the way a driver has responded to the assessment questions

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Drivers log in to the system individually and complete the assessment, which takes around 25 minutes. A personalised report is produced which explains all the behavioural factors and highlights the areas where bus drivers report elevated risk. This report forms the basis for a coaching conversation between the driver and a coach.

At Arriva North West, driving instructors were trained as part of a Cranfield University course to interpret Bus Driver Risk Index™ results. The instructors were also trained in using a client-centred approach to educating drivers and how to develop a coaching conversation to identify behavioural goals for each bus driver.

Procedure

There were 74 bus drivers at Arriva North West that took part in this study. All bus drivers had been involved in a crash and were asked to take part in a Bus Driver Risk Index™ led coaching conversation as part of Arriva's fleet risk management programme.

Bus drivers were asked to complete the Bus Driver Risk Index™ online during 2007 and 2008. Incident data relating to the bus drivers was provided for three years before and after each driver took part in the coaching conversation.

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Results

The incident frequencies were analysed using paired-samples t-tests to identify statistically significant differences between the 3 years pre-intervention and the 3 years post-intervention. There was typically a gap of 1 to 3 months between completing the Bus Driver Risk Index™ and completing the coaching intervention.

Table 1. Means pre and post the Bus Driver Risk Index™ coaching intervention by incident type, and significance values of t-test

	Pre-Coaching	Post-Coaching	t	df	Sig.
At-fault incidents	3.03	2.28	2.536	73	0.013
Non-fault incidents	2.93	3.15	-0.501	73	0.618

Table 2. Means, standard deviations and standard error of the mean

	Mean	Std. Dev	Std. Error Mean
Non-fault incidents Pre coaching	2.93	2.253	0.262
Non-fault incidents Post coaching	3.15	3.568	0.415
At-fault incidents Pre coaching	3.03	1.696	0.197
At-fault incidents Post coaching	2.28	1.962	0.228

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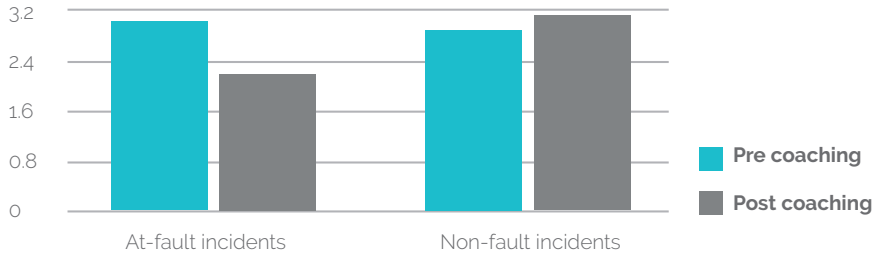
The results showed a significant reduction in at-fault incidents after taking part in the Bus Driver Risk Index™ coaching intervention (t=2.536; Sig. < 0.05). This finding equates to bus drivers having almost one third fewer incidents after the coaching intervention compared with the same time period prior to completing the Bus Driver Risk Index™

Fig. 1. Bar chart of mean incident frequencies by incident type, pre and post coaching intervention

Mean incident frequency pre and post coaching based on Bus Driver Risk Index™



The frequency of non-fault incidents increased very slightly suggesting that bus drivers had an increased risk of being involved in non-fault crashes over the time period of the study.

These crashes were attributable to other road users and other factors outside the control of Arriva bus drivers.

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It was also found that all the drivers in the dataset remained with the company for at least the five year period after the intervention occurred.

Conclusion

The significant decrease in at-fault incidents as a result of the Bus Driver Risk Index™ coaching intervention suggests that this approach has a beneficial effect on bus driver safety and possibly staff retention. Increasing bus driver awareness of the behavioural aspects of driving a bus that might increase their personal risk appears to have led to a change in behaviour that has had a significant impact on the frequency with which the bus drivers have been involved in a reportable incident for the next three years.

Based on the incident reductions reported by Arriva North West, the costs (based on a standard claims reserving policy) equates to a saving of over £300k.

These cost savings have been calculated by taking the 55 fewer fault incidents reported over the time period for the participants in this case study multiplied by the standard reserve for a single incident (£5.5k). This far outweighs the cost of the coaching intervention. All Arriva regions across the UK are now actively engaged in the developing coaching interventions based on the Bus Driver Risk Index™.

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developed at Cranfield University