

Abstract

Evaluation of feedback to drivers of light- and intermediate-size trucks to increase safe driving behaviors
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Feedback consisting of video clips and summary reports on unsafe driving behavior to drivers from electronic on-board monitoring systems using a naturalistic study approach has resulted in 2-fold reductions in critical safety driving events in some preliminary studies. SmartDrive is a company that provides on-board monitoring equipment and collision reduction services to fleet safety programs. The on-board systems use a) cameras to record video clips of the cab and roadway, and b) an in-cab indicator light that changes from green to yellow to red upon a trigger event associated with excessive g-forces or speed of the vehicle. Trigger event data are uploaded daily to a server through cellular or wifi networks. Trained SmartDrive staff then review and code the video clips associated with triggered events. Based on the findings from the review, supervisors are then presented risk profiles of each driver based on the observed behavior. Based on the Company safety guidelines they can then prioritize which drivers to proactively work with and what area that driver needs additional training to improve driving habits. Additionally, the SmartDrive system records miles driven and fuel consumption obtained from the vehicle's computer system.

The National Institute for Occupational Safety and Health has entered into a partnership with DHL Supply Chain, FMC Technologies, and SmartDrive to conduct a study of the effectiveness of the two types of driver feedback from the SmartDrive system to improve driving habits. The purpose of this study is to evaluate the feedback from the in-cab indicator light and weekly supervisory coaching of drivers on safety critical driving events (SCEs). Research questions are a) whether indicator light only or indicator light plus the supervisory coaching reduces the risk of SCEs including near misses and collisions, b) is the reduction in SCEs sustained when coaching ends, c) do the feedback programs reduce fuel consumption and maintenance costs and what is the return on investment, d) what is the attitude of the drivers and supervisors toward use of an on-board monitoring system in their fleet safety program, and e) does the program improve safety climate.

The target populations for this study are drivers of 150 intermediate size (26,000 lb.) trucks employed by DHL Supply Chain and drivers of 150 light truck (350 class) employed by FMC technologies, Inc. DHL drivers deliver goods to a chain of convenience stores nationwide. FMC drivers service gas and oil equipment at pump sites throughout the U.S. The study for this project has a three-group, 4 period cross-over design including a control group. Fifty drivers from DHL and fifty from FMC will be assigned to each group. Group 1 drivers will receive 5 months of baseline (no indicator light or supervisory coaching), followed by 5 months of light only, followed by 7 months of supervisory coaching, and ending with 3 months of baseline (no light or coaching). Group 2 will receive the 5 months of baseline, followed by 5 months of supervisory coaching, 7 months of light only, and ending with 3 months of baseline. Group 3 will receive baseline (no light or coaching) for the entire 20 month trial. In addition to the light and supervisor feedback to individual drivers, supervisors will provide weekly group-based feedback on the branch performance to all drivers in weekly safety meetings. Each week a chart of the percentage of drivers without any severe events will be posted, plus encouraging and supportive statements will be communicated to reinforce safe driving behavior.

The study began at DHL in April, 2012 and at FMC in May, 2012. SmartDrive data collected will include trigger events and coded safety observations on all events, and fuel consumption and miles driven. Company records collected will include driver demographics and driving record, and truck maintenance history. Practical challenges in designing the study and baseline patterns of SCEs will be presented.

Disclaimer: Mention of company names or products does not imply endorsement by the National Institute for Occupational Safety and Health.

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