

# MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 18-369 (project 532) | October 2018

## Further Validation of Safety Culture Measurement Tool for Improving Safety in Commuter Rail Operations



### the **ISSUE**

Safety culture is one of the more important areas of focus for safety improvement in the transportation industry. The development and implementation of a standard metric of safety culture is needed. Such a metric would enable before and after comparisons for safety interventions as well as normative comparisons of organizations to each other. In addition, such an instrument will aid greatly in the identification of areas within an organization, such as departments, relationship between management and labor, training programs and other areas that are in need of improvement relative to establishing a strong safety culture. Essentially, such a tool could be used to create a road map toward the development of a more robust culture within in an organization.

### the **RESEARCH**

Further validation of a measure of safety culture for the transportation industry using a simplified two factor model of meaning and behavior by establishing reliability and validity based on odds of reporting accidents and near misses as a function of low scores on safety culture measures was undertaken. Researchers continued efforts to develop and validate a measure of corporate safety culture for the transportation industry. A measure of safety culture developed in earlier studies for the transportation industry (Sherry & Colarossi, 2016) was used in this study of a large rail transportation company. An effort was made to continue to validate the instrument by demonstrating that there were significant relationships between scores on the scale and external behavioral indicators of the safety in the measured organizational setting.

The ten-scale instrument was administered on two different occasions to the employees of a large rail transportation company. Reliability and internal consistencies of the subscales of the instrument were calculated. Scores on the safety culture survey subscales were correlated with numbers of reported injuries, accidents and near misses. The relative risk of injuries, accidents and near misses was also computed.



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## Project Title

Further Validation of Safety Culture Measurement Tool for Improving Safety in Commuter Rail Operations

## Sponsors | Partners

Keolis Commuter Rail Services, Inc.

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## the FINDINGS

Results demonstrated the reliability and internal consistency of the Safety Culture Assessment Scale (SCAS). Validity of the scale was demonstrated by the finding that persons scoring low on the safety culture measure were also likely to have been observed performing unsafe acts at work. Results of the risk analyses found that strong safety culture in the form of top management commitment to safety, as measured by the SCAS, was associated with a lower risk of actual workplace accidents or injuries. Further, results suggest that the odds of reporting an accident are 5 times more likely if there is a weak safety culture where top management does not have a strong commitment to safety.

## the IMPACT

It is too early to assess the full impact of the Safety Culture Assessment Survey. However, based on the promising results and additional development and validation of the survey, other organizations have agreed to use the instrument. A large transit agency has agreed to use the instrument to assess its safety culture.

The present results point strongly to the importance of senior level and front-line management commitment to safety as a significant factor in the reduction of risk of the likelihood of reporting a near miss. The report on this study presents a series of “Recommendations for Practice” which describe how senior level and front-line management can improve safety culture leading to reduced work-related injury and death.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=942>

For more information or additional copies, visit the Web site at [www.mountain-plains.org](http://www.mountain-plains.org), call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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