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Methods overview of the commercial driver individual differences study

Introduction: The Commercial Driver Individual Differences Study (CDIDS) affords a unique opportunity to examine a wide array of Commercial Motor Vehicle (CMV) driver and situational factors to determine the prevalence of these factors and their relationship to being involved in a crash.

Purpose: To identify and prioritize CMV driver individual differences with respect to risk factors. Primarily, these risk factors will consist of personal factors, such as demographic characteristics, medical conditions, sleep history, personal attitudes, job satisfaction, and behavioral history. The CDIDS will identify risk factors by linking the characteristics of individual drivers with their driving records during the duration of the study, especially the occurrence or absence of preventable, on-road crashes.

Methods: Medical and driving records will be collected for 21,000 CMV drivers. Surveys, including questions about personal attitudes and lifestyle behaviors, driving history, recent life experiences, and driving behavior will also be collected on a subset of these drivers. Drivers with documented crashes (identified through carrier and federal safety data) will be considered "cases" for analysis to evaluate crash risk factors. Extreme groups based on crash risk outputs (e.g., low-risk drivers with no case events versus high-risk drivers with case events) will be investigated to maximize the contrast between groups and thus associations with driver and situational factors. The comparison of cases to controls (3,000 of each) will permit the derivation of odds ratios and other statistics to quantify the increased probability of being involved in a crash associated with various driver and situational factors. Following case events, those drivers will be asked to complete a follow-up survey to aid in determining if any recent life events/stressors may have been a contributing factor to the case event. For each case driver, four control drivers will be asked to also complete the follow-up survey. Driver participants may be monitored for up to three years to track their driving records.

Anticipated Results: We anticipate the findings of this study will provide insight into the following research questions:

- (i) Do individual factors, or coupling of factors, such as demographic characteristics or medical conditions result in increased crash risk?; and
- (ii) What are the contributing factors leading to a preventable CMV crash? The CDIDS provides a unique opportunity to examine a wide array of driver and situational factors among a large sample of CMV drivers. Findings from the CDIDS will enable researchers to determine the prevalence of these factors as well as their relationship to being involved in a crash. Long-term monitoring of crash events and follow-up with drivers will provide valuable insight into the health and safety profiles of CMV drivers and contributing factors that influence high vs. low-risk drivers. Opportunities exist to continue and expand the CDIDS into a longitudinal study with more drivers, additional survey measures, and extended monitoring and follow-up.

Biography

Richard J Hanowski is a Senior Research Scientist and serves as the Director of the Center for Truck & Bus Safety (CTBS) at the Virginia Tech Transportation Institute. He has been involved in transportation research since 1991, and has led many light vehicle and heavy vehicle safety studies for government and industry. He has served as the Principal or Co-Principal Investigator on over $50 million of contract research and has authored over 200 publications. His research focuses on safety and health issues associated with commercial vehicle operations. Findings from his research have generated practical, in-depth knowledge that has benefited government, commercial vehicle operations (including drivers and fleet management), equipment manufacturers, academia, and the public. His 2009 research on driver distraction in commercial vehicle operations helped foster an international dialogue that led to policies and regulations designed to reduce driver distraction and improve safety.

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