U.S. Department
of Transportation

**Federal Motor Carrier
Safety Administration**

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1200 New Jersey Avenue, SE
Washington, DC 20590

Refer to: MC-RRR

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Dear Mr. Johnston and Ms. Shapiro,

Thank you for your letter concerning the Federal Motor Carrier Safety Administration's (FMCSA) New Information Collection Request: Commercial Driver Individual Differences Study [Docket No. FMCSA–2011–0225]. The following are responses to each section of your letter. I copied the title of each section of your letter and followed that with the response.

I. FMCSA has not provided sufficient background information to allow the public to offer meaningful comments.

The Commercial Driver Individual Differences Study (CDIDS) will collect detailed data on driver characteristics and compare them to driver performance data. FMCSA's mission is to reduce crashes, injuries, and fatalities involving commercial motor vehicles (CMV). Factors contributing to commercial motor vehicle (CMV) crashes can be classified as human, vehicle, or environmental and roadway conditions. Research on the causes of CMV crashes has consistently found that human factors predominate (Treat et al., 1979; Craft & Blower, 2004). The FMCSA Large Truck Crash Causation Study (LTCCS) found that drivers, rather than vehicle defects or environmental conditions, were responsible for about 87 percent of large truck crashes. Driver factors may be related to performance, such as poor recognition of or reaction to hazards; driver decisions, the choice of speed or following distance being prominent examples; or to other factors such as driver fatigue and medical conditions.

Although data are available on the factors that lead to CMV crashes, FMCSA has a critical need to identify factors associated with the personal characteristics of CMV drivers that can affect their risk of being involved in crashes in order to develop data driven countermeasures to prevent CMV crashes and improve CMV driver performance. CMV crash risk can be affected by

drivers' situational factors, such as the amount of their previous nights' sleep; personal constitutional risk factors, such as aggressive personalities; vehicle condition factors; environmental factors, which include weather and road conditions; and, of course, risks created by other drivers and traffic. To meet this research need, FMCSA has developed the CDIDS to collect detailed data on driver characteristics and to compare them to driver performance data.

In an FMCSA-funded, Transportation Research Board (TRB)-sponsored synthesis study of differential driver risk and high-risk commercial drivers, Knipling et al. (2004) presented survey results and statistical findings from several studies that supported the view that CMV driver crash risk varies greatly, and that a relatively small percentage of CMV drivers, 10 to 15 percent, account for a disproportionately large percentage of total fleet risk, 30 to 50 percent of crashes. Moreover, the findings of this report and subsequent analyses (Knipling 2005) imply that relative driver risk, both general and related to specific factors like fatigue, endures over long periods of time. In other words, risk is to some extent a persistent personal trait, in addition to being related to specific situations and conditions. The CDIDS will help verify the significance and stability over time of driver personal traits related to crash risk, and to quantify and otherwise characterize that relationship.

Because a study like this has not been undertaken before, FMCSA determined that a pilot study should be performed with a smaller sample of subjects prior to the full study envisioned. This study (the Commercial Motor Vehicle Driver Risk Factor Study, OMB Control Number 2126-0043) surveyed drivers and included a medical examination for a subset of those sampled. A pilot of methods for this study was conducted and from this, the FMCSA and its chosen research team have been able to select what it believes to be the best methodology for the CDIDS.

The study 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 safety-related events, including preventable crashes, crashes regardless of preventability, moving violations, and vehicle inspection violations. Data on driver characteristics will be collected from three sources: 1) Driver Survey; 2) driving records provided by carriers and 3) medical examinations. The proposed study will collect data from 20,000 drivers to obtain a sample of approximately 3,000 case and 3,000 control drivers.

This study will examine several driver and situational safety factors to determine the prevalence of these factors and changes in crash risk associated with them. The major analysis paradigm of the study is "frequency of risk." Project data will measure the frequency, incidence, magnitude, or range of each safety factor examined and then compare the baseline incidence of the factor to the frequency and incidence associated with crashes or other measures of risk. Comparison of cases of crash involvement to a control group with no crash involvement will permit the derivation of odds ratios and other statistics quantifying the risk associated with various driver factors. The risk associated with individual factors will be determined and assessments of individual risk factors will be combined into a multiple factor prediction of increased risk. The relationship between safety and risk factors will be modeled using the state-of-the-practice Poisson, Negative Binomial, or logistic regression models depending on the nature of the data. The model will provide a quantified assessment for the impacts of individual risk factors. The associated crash risk for individuals with a combination of risk factors can also be predicted.

This is a ground breaking research study that could provide data for potential FMCSA rulemakings and provide information to motor carriers, via the Agency outreach efforts, to assist them in identifying factors that are important to improving highway safety. The results could inform driver training, management-driver interactions, behavioral safety management techniques, and engineering solutions to reduce truck crashes and their associated injuries and fatalities, thereby making the road safer for all drivers.

II. The information collected is unlikely to have a beneficial impact on highway safety.

The Driver Survey is designed to assess various aspects of personality and self-reported risky driving behaviors. The survey is made up of validated measures of personality traits and behaviors. The first part of the Driver Survey will be designed to obtain demographic information about the participant, as well as basic medical, behavioral, and life history information known to be relevant to driving safety. The remainder of the Driver Survey will be designed to assess various aspects of personality and self-reported risky driving behaviors.

The International Personality Item Pool is a validated measure of the "Big Five" personality traits (50 items). The Big Five are considered the basis of human personality, and research supports this model as predictive of a wide range of behaviors. The Big Five traits are Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness to Experience. The Dula Dangerous Driving Index (DDDI; 31 items) assesses various aspects of one's driving behavior, including hostility felt and expressed while driving. The survey also includes 18 items related to one's overall satisfaction at work. Research suggests that individuals who are disgruntled or otherwise unsatisfied with their work may be more prone to crash involvement than those who are satisfied with their work.

FMCSA appreciates your concern that the survey responses "will not produce reliable cause and effect data that might be useful in guiding future safety initiatives." FMCSA agrees that the survey questions will not produce cause and effect data. The analysis will provide associations with crash risk which can inform safety outreach programs for CMV drivers and carriers.

Again, this is a ground breaking research study that could provide data for potential FMCSA rulemakings, it could provide information, via the Agency outreach efforts, for motor carriers to assist them in identifying factors that are important to improving highway safety. The results could inform driver training, management-driver interactions, behavioral safety management techniques, and engineering solutions to reduce truck crashes and their associated injuries and fatalities, thereby making the road safer for all drivers. We disagree with OOIDA's characterization on the safety benefits; FMCSA believes that this study has the potential to identify factors that could greatly improve highway safety.

III. The involvement of fleet managers will result in deceptive responses.

Drivers in the prospective approach will be recruited by a member of the research team (not fleet managers) during the driver orientation program at carriers during their first week of employment. During driver orientation new drivers are administrated a DOT medical

examination (i.e., Form 649-F) and various safety and administrative training. Members of the research team or fleet staff (not fleet managers) will recruit volunteer participants at the orientation program and distribute study materials to potential participants. Each packet of study materials will include a summary of the study's purpose and requirements, an Informed Consent Form, and the Driver Survey and response sheet. Drivers will be instructed to review and complete the materials on their own time, away from the fleet terminal. CMV drivers will be informed that all survey responses will be kept strictly confidential. If they agree to participate, drivers will return their sealed survey response packet to the research team or fleet personnel (not fleet managers) and that person will distribute compensation to the driver (a $20 debit card). Drivers can also opt to mail their survey responses and compensation will be mailed to them.

After establishment of the participating carriers, researchers will train fleet staff (not fleet managers) on Institutional Review Board (IRB) human subject protection. After fleet staff is fully IRB trained, they will introduce the CDIDS study to potential participants using a script provided by the research team. Fleet staff will introduce and recruit drivers during driver orientation according to the recruitment protocol and training that they received from the research team. A recruitment video was produced for use at all research sites. The video provides an overview of the CDIDS, participants' rights, information on how to participate in the CDIDS, and compensation.

The fleet managers will not be distributing the Driver Survey to the drivers. The CDIDS also includes a Fleet Manager Survey. The Fleet Manager Survey is done independently of the Driver Survey.

IV. The participants do not fairly represent the majority of CMV drivers.

The 20,000 drivers who will be participating in the CDIDS will be from commercial vehicle fleets who express interest in participating in the project. This is essentially a convenience-based sample. The choice of carrier fleet and terminal was based on the following factors: carrier willingness and commitment to the CDIDS, budget constraints, and the carrier's ability to successfully implement the requirements of the CDIDS. The findings from the information collection effort will only represent the views of the participating drivers from the participating fleets. The findings from the survey will not be generalized to the entire CMV industry. This will avoid making erroneous inferences about the larger population.

The study team is collecting demographics from the drivers participating in this study and will assess whether that sample is significantly different than the demographics of the population of commercial motor vehicle drivers. If they are not different, there would no reason to conclude that the sample is biased in anyway. If they are different, there are a number of statistical weighting techniques that can be used to weight the sample to mirror the population of commercial drivers. We believe that owner operators will be represented in this sample because many of the carriers participating require owner operators to follow the same process as do company drivers. Preliminary data assessing the driver characteristics in the participating fleets has shown the population from which we intend to obtain a convenience sample matches the national distribution of truck drivers with respect to gender, age, ethnicity, and independent operators.

V. The costs of the study are not justified by the benefits.

Respondents will be compensated with a $20 debit card for completing the Driver Survey packet, which takes no more than one hour to complete. If they are requested to complete the Follow-Up Survey and do so, they will be compensated with a $12 debit card. The Follow-Up Survey should take approximately 30 minutes to complete and a minimum of 29% of the sample (6,000 drivers) will complete this phase. Respondents will be encouraged to complete the survey on their own time, away from the fleet terminal. Participation in the CDIDS is voluntary.

Again, this is a ground breaking research study that could provide data for potential FMCSA rulemakings, it could provide information, via the Agency outreach efforts, for motor carriers to assist them in identifying factors that are important to improving highway safety. The results could inform driver training, management-driver interactions, behavioral safety management techniques, and engineering solutions to reduce truck crashes and their associated injuries and fatalities, thereby making the road safer for all drivers. We disagree with OOIDA's characterization on the safety benefits; FMCSA believes that this study has the potential to identify factors that could greatly improve highway safety.

VI. Safety improvements may be more effectively obtained through other means.

Many of the views expressed by OOIDA in this section are not directly related to the Information Collection Request (ICR).

FMCSA appreciates OOIDA's comments on this information collection effort. FMCSA's Research Division is actively managing this study along with 30+ other research efforts designed to improve commercial motor vehicle safety. The research projects proposed and ultimately selected to be funded and conducted are vetted through a cross-sectional group within FMCSA (Research Executive Board); then approved by FMCSA's Senior Management; then the Office of the Secretary of Transportation; then Office of Management and Budget (OMB) and then our budget request with research project summaries go to Congress for funding. This project was highly rated and cleared all of the above levels of approval. The project has tremendous merit and the FMCSA expects that this study will help with the Agency's safety mission and improve commercial motor vehicle safety.

Should you need additional information or assistance, please contact Theresa Hallquist, Mathematical Statistician, FMCSA Research Division, at (202) 366-1064 or theresa.hallquist@dot.gov.

Sincerely,

Dr. Martin R. Walker

Dr. Martin R. Walker, Chief of Research,
Federal Motor Carrier Safety Administration