UNIVERSITY TRANSPORTATION RESEARCH CENTER

RESEARCH BRIEF

PROJECT TITLE: A SIMULATION-BASED ASSESSMENT APPROACH TO INCREASE SAFETY AMONG SENIOR DRIVERS

PRINCIPAL INVESTIGATORS: DR. KEVIN F. HULME

INSTITUTION: UNIVERSITY AT BUFFALO, SUNY

COMPLETION DATE: MARCH 2013

SPONSOR: RESEARCH AND INNOVATIVE TECHNOLOGY ADMINISTRATION / USDOT

In the U.S., there are about 38 million licensed drivers over age 65; about 1/8 of our population. By 2024, this figure will DOUBLE to 25%. The current research is intended to address the driving capabilities of our older population, as accident and injury risk has been statistically shown to increase with advanced age. Our primary objective was to perform a preliminary Pilot Study (N=10) that allows our team to analyze the impact of supplementing traditional driver evaluation using state-of-the-art driving simulation technologies. Within a simulator, driving scenarios can be implemented that can SAFELY measure, capture, and analyze vital driver performance metrics. Each driver was evaluated at Erie County Medical Center using a conventional driver evaluation mechanism: in-clinic (to measure cognitive, motor and visual skills) and in-vehicle (to measure mechanical ability to operate a vehicle). Prior to these examinations, each driver was evaluated in a motion-based driving simulator located at the University at Buffalo. Anecdotally, this pilot study cohort was useful for the ECMC evaluators to formalize a performance evaluation "system", and place some measures on in-clinic items that have been historically quantified by "feel". There were numerous elements of the simulator that demand improvement. As an example, much can be learned about senior driving behaviors while driving in a straight path at a relatively constant speed. Such would minimize the need for braking behavior and multi-screen turning – two areas that seemed to induce simulator sickness symptoms. Moving forward, additional data collected could indicate that current driving evaluation protocols, alone, are not sufficient – particularly for older drivers with cognitive impairment. As such, a driving simulator can serve as a safe and cost-effective evaluation mechanism for drivers within this growing demographic, with the long-term hope of increasing safety and minimizing negative driving outcomes.

Figure 1. ECMC Test Vehicle

Figure 2. UB Driving Simulator

Pending Publications:

Hulme, K.F., and Thorpe, L., (2013). "Not just for Kids – Simulation for Evaluation of Senior Drivers", The Interservice/Industry Training, Simulation and Education Conference (I/ITSEC), Orlando, FL, December, 2013. (abstract accepted)