



Editorial

Letter from the Editors



The *Journal of Safety Research* is pleased to publish in this special issue the proceedings of several papers presented at the 4th International Conference on Road Safety and Simulation convened at Roma Tre University in Rome, Italy, October 2013. This conference serves as an interdisciplinary forum for the exchange of ideas, methodologies, research, and applications aimed at improving road safety globally.

Conference proceedings provide the opportunity for research in its formative stages to be shared, allowing our readers to gain early insights in the type of work currently being conducted and for the researchers to receive valuable feedback to help inform ongoing activities. This conference in particular offers an array of research topics not often covered by this journal from researchers practicing in over 11 countries. As is common with publishing conference proceedings, the papers published in this issue did not go through the normal *JSR* review process. Each paper included in this issue did meet the Road Safety and Simulation conference review requirements. They reflect varying degrees of scientific rigor, methodological design, and groundbreaking application.

The proceedings published in this special issue of *JSR* draw from the following road safety research sectors represented at the conference: driving simulation, crash causality, naturalistic driving, and new research methods.

It is our hope that the publication of these important proceedings will stimulate vigorous dialogue, rigorous research, and continuing innovative initiatives and applications, leading, ultimately, to fewer traffic fatalities, injuries, and crashes.

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Assessing characteristics related to the use of seatbelts and cell phones by drivers: Application of a bivariate probit model



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ABSTRACT

Introduction: The effects of cell phone use and safety belt use have been an important focus of research related to driver safety. Cell phone use has been shown to be a significant source of driver distraction contributing to substantial degradations in driver performance, while safety belts have been demonstrated to play a vital role in mitigating injuries to crash-involved occupants. **Method:** This study examines the prevalence of cell phone use and safety belt non-use among the driving population through direct observation surveys. A bivariate probit model is developed to simultaneously examine the factors that affect cell phone and safety belt use among motor vehicle drivers. **Results:** The results show that several factors may influence drivers' decision to use cell phones and safety belts, and that these decisions are correlated. **Practical applications:** Understanding the factors that affect both cell phone use and safety belt non-use is essential to targeting policy and programs that reduce such behavior.

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1. Introduction

Changing the behavior of motor vehicle drivers continues to be one of the most challenging issues facing the traffic safety community. Two specific aspects of driver behavior that have been central to recent research efforts are the use of cell phones and safety belts. Various studies have sought to examine the prevalence of these behaviors among the driving population, as well as to quantify their effects on the frequency and severity of traffic crashes.

Cell phone use continues to increase throughout the United States and it is estimated that over 330 million cell phones are now in use nationwide, with 31.6% of households using cell phones exclusively in lieu of a landline (Cellular Telecommunications Industry Association, 2012). While 70% of drivers consider handheld cell phone use to be unacceptable (AAA Foundation for Traffic Safety, 2009), it is estimated that 9% of U.S. drivers were using cell phones during a typical daylight moment in 2010 (Pickrell & Ye, 2011a). Additionally, a recent estimate indicates that drivers below the age of 30 spent approximately 16% of their driving time talking on cell phones (Farmer, Braitman, & Lund, 2010).

Research has shown that cell phone use significantly deteriorates the ability to drive safely (Caird, Willness, Steel, & Scialfa, 2008; Horrey &

Wickens, 2006) and a meta-analysis of 33 studies showed cell phone use to increase mean reaction time by 0.25 s (Caird et al., 2008). While early research suggested that the effects were particularly pronounced for handheld phones (Brookhuis, de Vries, & de Waard, 1991), subsequent work has shown the impacts to be similar, regardless of whether a handheld or hands-free device is used (Caird et al., 2008). Charlton (2009) found that performance suffered during cellphone conversations as well as remote passenger conversations in a study using a driving simulator. Performance degradation has been shown to be predominant among older drivers, during conversations that require greater concentration, or in more complex driving environments (Kawano, Iwaki, Azuma, Moriwaki, & Hamada, 2005; McKnight & McKnight, 1993; Törnros & Bolling, 2006). Overall, it has been estimated that the risk of crash involvement is up to four times greater when drivers are using a cell phone (McEvoy et al., 2005; Redelmeier & Tibshirani, 1997). In response to these findings, 12 states have enacted legislation that prohibits all drivers from using handheld cell phones while driving and, while no state has instituted an outright ban on all forms of cell phone use by drivers, 37 states forbid cell phone use by novice drivers (Governors Highway Safety Association, 2013).

In contrast to cell phones, traffic safety and epidemiological research have conclusively demonstrated that increasing the use of safety belts is one of the most effective means of reducing traffic injuries and fatalities. The National Highway Traffic Safety Administration (NHTSA) estimates that 69,302 lives were saved between 2006 and 2010 due to the use of safety belts (NHTSA, 2012). While substantial efforts have been made to increase safety belt use, national observations have found that 16% of drivers and front seat passengers continue to travel unrestrained

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