

Digital Advertising Billboards and Driver Distraction

Daniel Hester and Aref Motamedi Lamouki, Graduate Research Assistants, and Dr. Virginia Sisiopiku, Faculty Advisor
Civil, Construction, and Environmental Engineering, University of Alabama at Birmingham

Objective

The research will determine the correlation between the presence of Digital Advertising Billboards (DBBs) and driver distraction.



Work Plan

- ❖ State-of-Practice-Synthesis: Summarize findings from existing studies on DBBs and driver distraction
- ❖ Epidemiological Study: Analyze crash records from the states of Alabama and Florida and establish statistical correlations between crash location occurrence and proximity to billboards
- ❖ Survey of Road Users: Develop a questionnaire survey and use it to collect data on road users' perceptions and attitudes related to digital and static billboards
- ❖ Driving Simulator Study: Design and conduct an experiment using a driving simulator with representative driver samples in various roadway settings with and without the presence of DBBs

Background

Given their characteristically bright and dynamic displays, DBBs may divert drivers' glances from the forward roadway. Earlier research sponsored by the outdoor advertising industry concludes that the presence of DBBs is not detrimental to drivers' visual behavior, speed maintenance, or lane keeping. However, the debate is still ongoing as other studies suggest that drivers' diminished attention in the vicinity of DBBs could result in more crashes.

State-of-Practice Findings

- Studies in general agreed that the relationship between DBBs and driver distraction is very complex.
- Many studies provided evidence of distraction but often disagreed about whether or not the distraction increases traffic safety risk.
- Overall, there is evidence of a correlation between DBBs and increased driver distraction, but local conditions, experimental settings, and other factors may play a role in the impact that DBBs have on safety.

PAC

- Formed Project Advisory Committee (PAC); representatives from ALDOT; FDOT; FHWA-AL

Epidemiological Study

- Team is in the process of identifying suitable study corridors in AL and FL
- Locations of crashes and DBBs will be superimposed on maps
- Possible correlations between DBB presence and crash occurrence will be established

Survey of Road Users

- Post-card service for obtaining drivers addresses
- Solicit input in AL, FL, GA
- Questions focus on:
 - Demographics
 - Experience/Exposure
 - Behavior changes in the presence of DBBs
 - Perception about safety of DBB
 - Preferences on restrictions on billboard locations, display formats, size, frequency

Driving Simulator Study

Team designed and implements a data-informed empirical driving simulator study to assess impact of DBBs on driving performance. Statistical analysis is employed to evaluate whether DBB present visual and/or cognitive distraction and driving performance decrements.

Steps include:

- Simulation scenario development and testing
- Development of data collection protocol
- Obtaining IRB approvals
- Recruitment of 60 drivers to participate
- Conducting driving simulator experiment including data processing and analysis
- Conducting distracted driving questionnaire survey of study participants



Acknowledgments

Funding for this study was provided by NCTSPM UTC, ALDOT, and FDOT. The authors also wish to acknowledge the contributions of Dr. Gan (FIU), Dr. Stavrinou (UAB), Mr. Sullivan (UAB) and Mr. Ball (UAB) to this study.