

# ROADWAY ADVERTISING AND TRAFFIC SAFETY

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## SCOPE

- Investigate links between Advertising Billboards-Distracted-Traffic Safety Risk
- Synthesis of studies on billboard advertising and traffic safety
- On-going efforts to address issue at UAB and FIU



# ROADSIDE ADVERTISING OPTIONS: Conventional Billboards

- Static billboards
  - the oldest form of mass media
  - 400,000 in US alone
- Advantages:
  - relatively low entry and operating costs
  - ability to appeal to the local market

## ROADSIDE ADVERTISING OPTIONS: Digital billboards (DBB)

- Utilize light-emitting diode (LED) technology to provide vivid displays that can be updated every few seconds using computer input.
  - Fast growing market
  - 4,000 in US
- Advantages:
  - single board can advertise to far more clients than a traditional board
  - clients can update their advertisements frequently, and
  - targeted messaging

## DBB UNIQUE FEATURES

- Brightness and contrast with surroundings
- Messages changing suddenly
- Large, imposing sizes
- Realistic imagery
- No driver acclimation with message
- Potential for message sequencing
- Potential for interactivity with driver

## RESEARCH METHODS

- Meta-analysis studies
- Crash studies of historical trends
- Laboratory studies
- Naturalistic studies of driving behavior

## NOTABLE RECENT META-ANALYSIS STUDIES AND FINDINGS

- Farbry et al., 2001
- Wallace, 2003
- Coetzee, 2003
- Birdsall, 2008
- Wachtel, 2009
- Molino et al., 2009 ...
- **Meta-analysis studies** confirmed an association between crash rates and billboards at intersections

## NOTABLE RECENT CRASH STUDIES AND FINDINGS

Examples include:

- Smiley et al., 2005
- Tantala and Tantala, 2010
- Yannis et al., 2012 ...
- Most **crash studies** involving statistical analyses of historical data near DBB locations reported **no statistically significant** relationship with crash occurrence



## NOTABLE RECENT LABORATORY STUDIES

Examples include:

- Young and Mahfoud, 2007
- Bendak and Al-Saleh, 2010
- Edquist et al., 2011
- Divekar et al., 2012
- Marciano and Yeshurun, 2012 ...

## LABORATORY STUDIES FINDINGS

- **Laboratory studies** confirmed that that the presence of DBBs **decreased driver control, increased mental workload, and increased response time**
  - Driver response to road signs delayed by .5-1 sec with advertising billboard presence
- DBBs caused drivers to be less observant of stopping cars ahead of them, and contributed to vehicle drifting into adjacent lanes.

## NOTABLE RECENT NATURALISTIC STUDIES AND FINDINGS

Examples include:

- Akagi et al., 1996
- Kettwich et al., 2004
- Beijer et al., 2004
- VA Tech Transportation Institute, 2007
- Lee et al., 2007
- Ballidis, 2012 ...

## NATURALISTIC STUDIES FINDINGS

- **Naturalistic studies** reported mixed findings
  - Some concluded that there was **no substantial distraction** caused by the advertising signs, and that gaze duration towards signs decreases as driving complexity increased
  - Other studies provided evidence of increased number of glances per sign and longer gazes in the presence of DDBs compared to static counterparts

## LITERATURE REVIEW CONCLUSIONS

- Overall, the literature synthesis suggests that **there is evidence** for a correlation between DDBs and increased driver distraction.
- However, local conditions, experimental settings, and other factors may play a role in the actual impact that advertising DDBs have on traffic safety
- **Existing research is limited** due to a lack of standardized methods and practices, data reliability, appropriate assumptions, relevant hypotheses, and objective intentions.

## NEW RESEARCH ON THE WAY

### DIGITAL ADVERTISING BILLBOARDS AND DRIVER DISTRACTION STUDY

- Project funded by the National Center for Transportation System Productivity and Management (NCTSPM, the Georgia Tech-led UTC)
- **UAB** and **FIU** Partnership with support from **ALDOT** and **FDOT**

# PROJECT TEAM

Name	Title	Department	Agency
<b>Faculty</b>			
<b>Virginia Sisiopiku</b>	Associate Professor	Civil, Construction, & Env. Engineering	UAB
<b>Albert Gan</b>	Associate Professor	Civil and Environmental Engineering	FIU
<b>Andrew Sullivan</b>	Instructor	Civil, Construction, & Env. Engineering	UAB
<b>Despina Stavrinou</b>	Assistant Professor	Psychology	UAB
<b>PAC</b>			
<b>Timothy E. Barnett</b>	State Safety Operations Engineer	State Safety Office	ALDOT
<b>Felix H. Delgado,</b>	Safety Specialist	Florida Division	FHWA
<b>Linda Guin</b>	Safety & Technology Engineer	Alabama Division	FHWA
<b>Joseph B. Santos</b>	State Safety Engineer	State Safety Office	FDOT

# APPROACH

## Multi-state and multi-facet approach

- State-of-Practice-Synthesis
- Epidemiological Study
- Survey of Road Users
- Driving Simulator Study

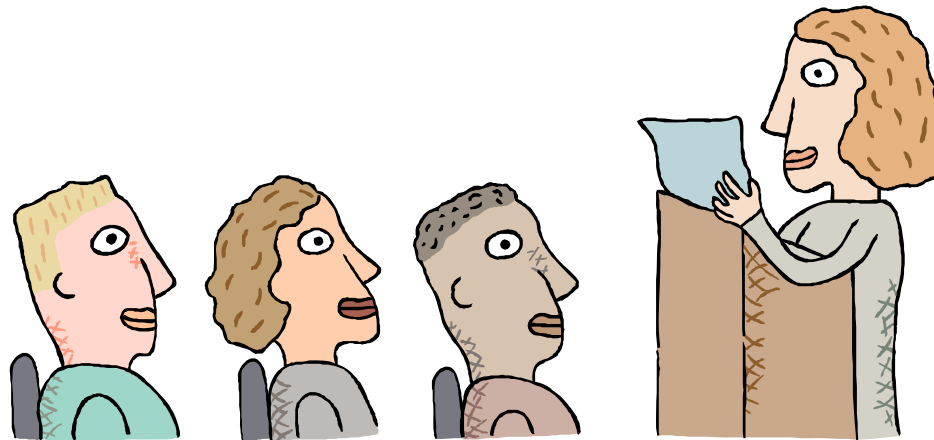


## PROJECT TASKS

- **Task 1:** Literature Review [UAB]
- **Task 2:** Project Advisory Committee [FIU/UAB]
- **Task 3:** Billboard Location and Crash Data Analysis [UAB/FIU]
- **Task 4:** Driver Questionnaire Survey [FIU/UAB]
- **Task 5:** Design of Driving Simulator Experiment [UAB]
- **Task 6:** Driving Simulator Data Collection and Analysis [UAB]
- **Task 7:** Technology Transfer [UAB/FIU]
- **Task 8:** Final Report [UAB/FIU]

## PROJECT STATUS AND NEXT STEPS

- Finalize driver survey instruments
- Distribute survey and summarize responses
- Select appropriate corridors in AL and FL for the crash data analysis
- Obtain IRB clearance and proceed with recruitment of subjects for the driving simulator study
- Update on progress at **the Regional UTC Conference April 4-5, 2013.**



# QUESTIONS AND COMMENTS

