DIGITAL SIGNAGE AND TRAFFIC SAFETY: A STATISTICAL ANALYSIS
When it comes to studying the impact of digital signage on traffic safety, a simple measure of crash frequencies before and after sign installation doesn’t provide a complete picture. That’s why a group of researchers from Texas A&M University incorporated the Empirical Bayes (EB) statistical analysis method, allowing for better control of external factors. Their work is believed to be the first comprehensive and scientifically based research on the issue.

The safety analysis included 135 sign locations based on the following criteria:

- The signs were located in Washington, North Carolina, Ohio or California.
- The signs were installed in 2006 or 2007 in order to have adequate time in both the before and after analysis periods to compare crash histories.
- The signs were located on major roads, as the Highway Safety Information System (HSIS) crash dataset usually does not include crashes that are located on minor roads or private driveways.

As the use of digital on-premise signs continues to increase, so, too, have efforts to regulate the way digital messages are displayed. Jurisdictions often cite traffic safety impact as justification for local sign codes and ordinances. This research, however, provides a scientifically based, national analysis to help all involved better understand the true impact of on-premise digital signage on safety.

The 2012 study was performed by H. Gene Hawkins, Jr., Ph.D., P.E., associate professor and research engineer, Zachry Department of Engineering, Texas A&M University; Pei-Fen Kuo, graduate research assistant, Texas A&M Transportation Institute; and Dominique Lord, Ph.D., associate professor and research engineer, Zachry Department of Engineering, Texas A&M University. It was funded by a grant from the Signage Foundation.
USING THE ANALYSIS OF VARIANCE (ANOVA), THE TEAM ALSO EXPLORED THE IMPACT OF ON-PREMISE DIGITAL SIGN COLOR, DIMENSION AND BUSINESS TYPE ON SAFETY.

- ANOVA is a collection of statistical models used for comparing several groups or variables for statistical significance.

- Hawkins, Kuo and Lord compared single color and multi-color signs as part of the study; 89 were single and 37, multi-colored. They found no significant difference in the mean of safety index among signs having single or multiple colors.

- The study considered small, medium and large signs. In the final dataset, 36 signs had a sign area of less than 10 ft²; 56 had a sign area from 10-15 ft²; and 34 had a sign area greater than 15 ft². Sign size was delineated based on the area of the electronic display, not the overall size of the complete sign. Here, too, the researchers found no statistically significant difference among the categories in terms of safety.

- The researchers looked at business type, such as restaurants (seven); pharmacies and retail stores (18); hotels (three); gas stations (three); auto shops (seven); and others (84). Once again, there was no statistically significant difference among the population means.
