Spatial Distribution of Alcohol Involved Crashes in Louisiana

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Highway Safety Research Group

• Funded by Louisiana Department of Transportation and Development
• Research group within the Stephenson Department of Entrepreneurship & Information Systems (SDEIS) at LSU
• Developed LaCrash application to electronically capture crash reporting information
• Collect, correct and analyze crash data for the state and other stakeholders
Previous Research

• Seat belt use
• Drugged driving
• Crashes on curves on local roads
• Automated map spotting
• Data mining
• Traffic data extraction from video
Alcohol Involved Crashes

• Alcohol-impaired driving accounts for 31% of all traffic-related deaths in the USA – CDC

• Half of Youth Car Crash Deaths Involve Alcohol – medpagetoday.com/pediatrics February 13, 2017

• Every 2 minutes, a person is injured in a drunk driving crash – MADD
Spatial Analysis of Alcohol Involved Crashes

• Use driver’s home zip code
• Drinking and driving as a risky behavior
• Cultural norms “Laissez les bon temps rouler”
• “Left of boom”
Data for Spatial Analysis

• All moderate injury, severe injury, and fatal crashes on local and state roads for 2005-2014
• Removed out of state drivers and records with incomplete driver zip code (ZCTA)
• Accumulated crashes by ZCTA
• Merged ZCTA with < 10 crashes into surrounding or adjacent area
• Calculated rate of recorded and predicted alcohol involvement
Tools for Spatial Analysis

• ESRI ArcMap 10.4
• Spatial Statistics Tools
• Mapping Clusters
• Optimized Hot Spot Analysis (Getis-Ord Gi*)
Recorded Alcohol Crash Rate
Correlation of Recorded Alcohol Crash Rate
Predicted Alcohol

• Crash – hour, day of week
• Driver – alcohol, condition, age, sex, protection system, violations
• Pedestrian – alcohol, condition
• Vehicle type, number of vehicles, parish code
Predicted Alcohol Crash Rate
Correlation of Predicted Alcohol Crash Rate
Correlation of Difference Predicted minus Recorded Alcohol Crash Rate
Interesting Findings

• Predicted alcohol generally higher across the state
• Highest recorded and predicted alcohol in the Houma area
• Alcohol involvement appears to be under reported in north Louisiana
Future Research

• Incorporate socioeconomic data from American Community Survey
• Administer survey of behavior and perceptions of risk
• Examine assumptions underlying the predicted alcohol algorithm
Questions & Discussion

Thank you!

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