

Spatial Correlation of Seatbelt (non)Use in Louisiana

Jeff Dickey, Ph.D.

Acknowledgment

- I would like to acknowledge the Louisiana Department of Transportation and Development for their support of research and services conducted by the Highway Safety Research Group.



Seatbelt Use

- Louisiana seatbelt use improving but below US average.
- Lower use for trucks, gender(male), and age(18-24).
- General safety campaigns may not resonate in specific areas.
- Is there a spatial correlation in seatbelt use/non-use?

Outline

- Goal
- The Framework
- Data Wrangling
 - Excel
 - GIS
- Spatial Correlation
 - Getis-Ord G_i^* Statistic
 - Optimized Hot Spot Analysis
- The Maps!

Goal

- Examine seatbelt use data for spatial correlation
- Map the results
- Use the results to target seatbelt use messaging

Framework

- ArcMap 10.2
 - Zip code (ZCTA) feature class
 - Moderate and serious injury and fatal crashes 2010-2013
 - Spatial Statistics Tools, Mapping Clusters, Optimized Hot Spot Analysis
- Excel 2013

Data Wrangling in Excel

- Clean driver's home zip code data
- Select for Louisiana

Data Wrangling in ArcMap

- Calculate centroids of ZCTA's
- Import crash data
- Join crashes to ZCTA by driver home zip
- Calculate seatbelt use rate

Spatial Correlation

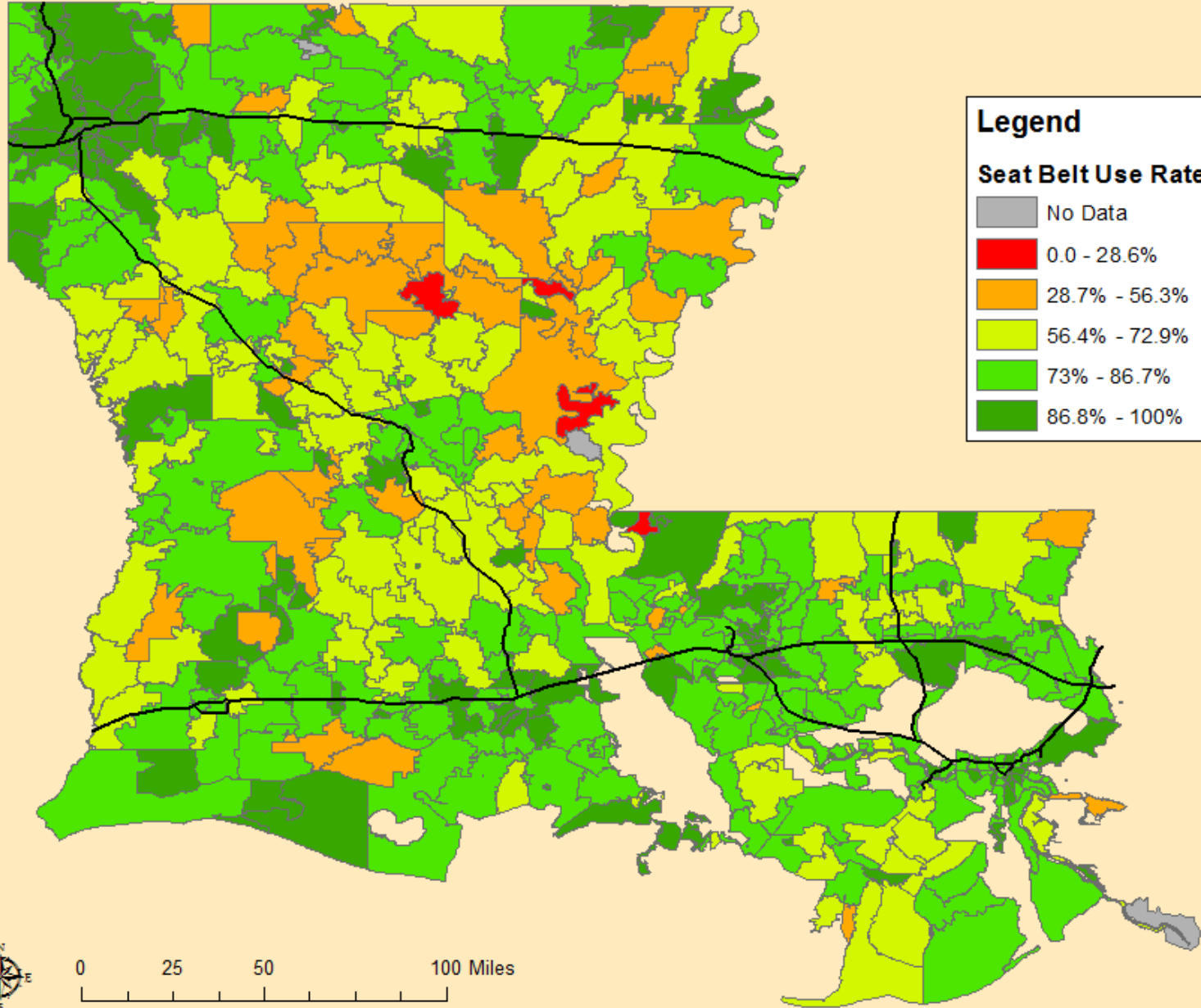
Getis-Ord G_i^* statistic identifies clusters of data points with values higher in magnitude than you might expect to find by random chance

Optimized Hot Spot Analysis

Executes hot spot analysis tool using parameters derived from characteristics of the input data identifying an appropriate scale of analysis to yield optimal hot spot results

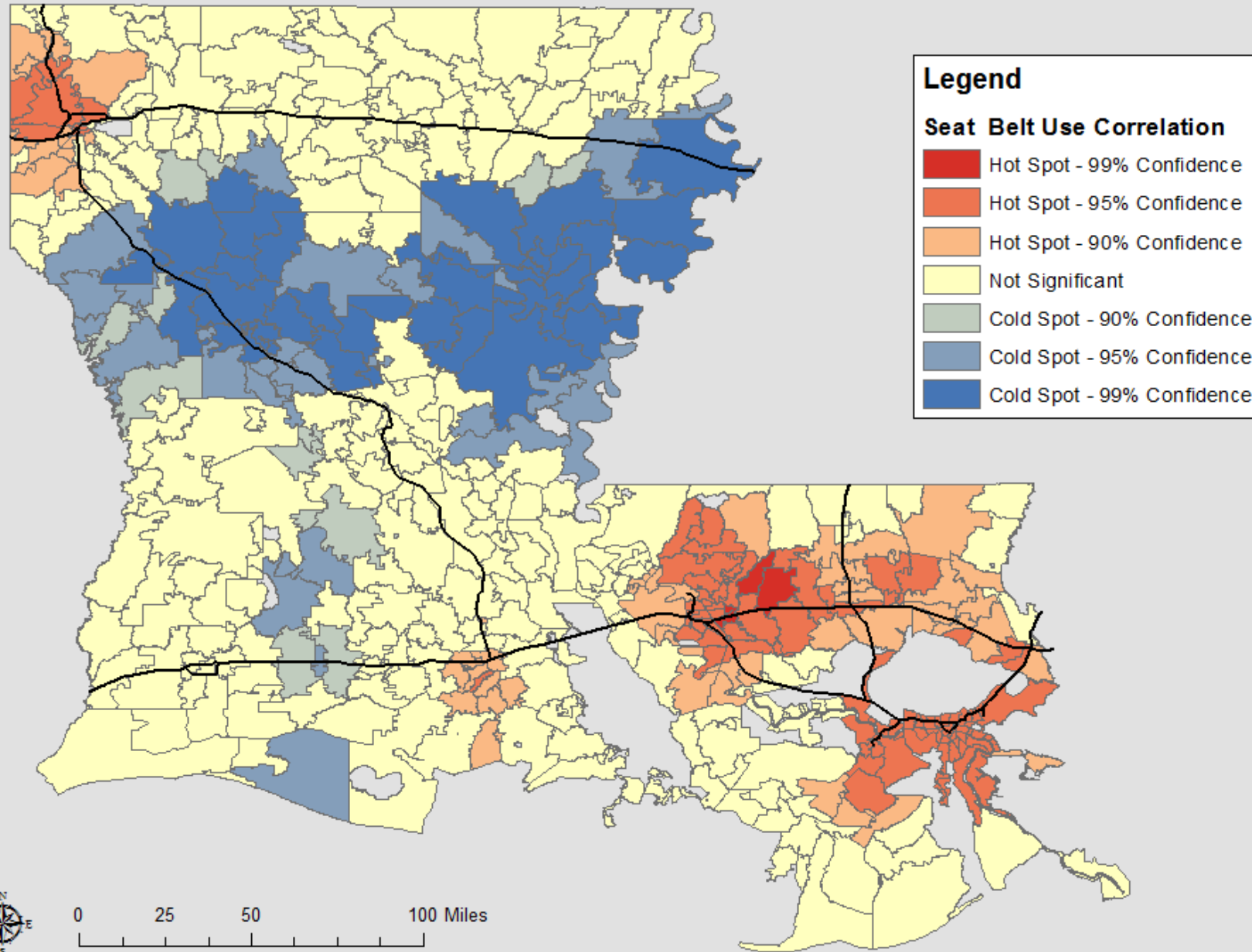
Seatbelt Use in Crash by Driver Home Zipcode

2009-2012 Fatal, Serious Injury or Moderate Injury Crashes



Seatbelt Use in Crash by Driver Home Zipcode

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Thank You

- Questions, comments and constructive criticism appreciated