Gun Violence in Delaware from 2004-2013: A Geodemographic Survey  
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**Background**
Gun violence is the second leading cause of death of children [1]. Males are more likely to be victims than females, and African American male children are especially at risk. Further analysis indicates that victims are most frequently found in low-income urban settings. The purpose of this study is to characterize the gun violence in Delaware using a geodemographic approach.

**Study Design**
A retrospective study using GIS software.

**Setting**
The state of Delaware with focus on urban centers.

**Sample**
The data were gathered from the Delaware State Trauma Registry for the years from 2004-2013. Age of victims ranged from 6-101 years and was log-normally distributed with a mode of 20.6 years. By gender, 90.8% of victims were male. By race, the victims were 74.3% black, 15.5% white, 5.3% Hispanic, 0.3% Asian, and 4.5% other or unknown.

**Methods**
Shootings were mapped using collected geographic information and victim demographics. Kernel density methods were used to locate hot spots by year, age, and race. Based on where 2010 Zip Code Tract Area population (ZCTA) densities were greater than 2500 per square mile, data were binned as urban or rural. Using chi-squared analysis, data were examined for frequency differences between combinations of urban setting, gender, age group ( < 8, 9-12, 13-18, 19-35, 36-65, > 65 years), children versus adults, intent (suicide, assault, accident) and race.

**Results**
The highest rate of violence was for urban black males in their 20s. For blacks, 97% of incidents were assaults compared to 59% for whites and 96% for Hispanics. Accidents and suicides comprised 15 and 26% of incidents for whites compared to 1.8 and 0.8% for blacks. Incidents were 2.86 times more likely to be urban for blacks versus 2.23 for Hispanics and 0.47 for whites. Only 5 shootings involved children or adolescents. Teenaged blacks were victims 9.4 times more often than whites. For young adults, blacks were victims 6.6 times more often than whites, and for middle aged adults, 1.8 times more often. Females were less likely to be shot than men although rural women were shot at a higher rate than urban women.

**Conclusion**
Results indicate that African American males between the ages of 13-35 are more likely to be victims of gun violence in Delaware, particularly in the urban centers of Wilmington and Dover. This conclusion is consistent with national data on gun violence, as young black males are disproportionately affected by gun violence across the country [2]. Although most victims of gun violence in this study were adults, African American minors were more likely to be injured from gun violence than children of any other racial group. Lastly, we conclude that GIS is a useful modality to analyze gun violence in the state of
Delaware. Reported trends indicate that death by gun violence is rising, and it is imperative not only to prepare emergency departments, but also to prevent gun violence in the most vulnerable populations.

References:

[1] CDC