Title: Analysis of Houston Police Department Officer-Involved Shootings (OIS) in Comparison with a Previous Study Using Machine Learning Techniques

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Abstract:

Officer-Involved Shootings (OIS) continue to be prevalent issues, causing many debates and protests around the country. In an effort to increase transparency, on September 1st, 2015 the Texas State Legislature passed Art. 2.139 of the Texas Code of Criminal Procedure that requires law enforcement agencies to report all shootings. Since then, police shootings in Houston have greatly decreased. A previous study published by researchers at Northwestern University analyzed many different trends in the Houston OIS dataset up to 2015. The purpose of this report, in contrast, is to analyze many of the same trends in the data from after the passage of the law in 2015 and compare them with the trends from the previous study. In addition, the report makes new analyses on the data and creates machine learning models that predict factors such as suspect race and injury. The results in this report align closely with the trends found in the previous study, except for certain differences regarding the percentage of male officers and officer ages. Notable trends in the data include white suspects are on average around 10 years older than black and Hispanic suspects, and there is a disproportionate number of black suspects compared to suspects of other races. Using machine learning techniques such as Support Vector Machines, the report is also able to predict suspect injury and race with 83.33% and 95.83% accuracy, respectively. The results in this report provide a greater understanding of the factors contributing to Houston officer-involved shootings, and they may be useful for the Houston Police Department when deciding future policies.