Predicting Crime Rates in the Metro U.S. Based on Crowding and its Implications on the U.S. Prison System



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**Abstract**

**Introduction**

A social problem that has received a large amount of attention for many years, and is arguably one of the most important in 2014, is crowding, or overpopulation, and its implied deleterious effects on quality of life. Many studies have been conducted for at least the past 40 years, in all aspects of crowding and its effects, both physical and psychological. With regard to the law, one of the biggest areas seeing concerns with crowding is the U.S. prison system. Overcrowding in prisons causes many problems, which is why it is a serious concern. Once the causes of crowding have been established, researchers can begin to address the problems it causes and deal with them.

In the current study, a dataset comparing population density and crimes in metro cities in the U.S. from 1970 was used to complete a hierarchical clustering analysis in R. As expected, the analytical prediction method accurately clustered cities with similar population densities and relation to crime rates, supporting the hypothesis that crowding will increase the rate of crime. This is incredibly important because over the years, scientists have found confusing results on the topic of crowding, and crowding is an important issue with regard to the public at large, but specifically the prison system. As prisons across the country continue to increase in population, more violent crimes will be committed, making order difficult to maintain. This will completely defeat the purpose of the system. Let this finding be a warning to the justice system.

**Research Problem**

Understanding where crime happens can be a key to understanding why it happens. Models that predict the occurrence of crime by geographical area often use data on the characteristics of the inhabitants (e.g. income, race, family structure) of that area. However, population density has also received considerable attention as it relates to crime. Jane Jacobs, in 1961, contradicted the popular wisdom of city planners with her claim that crowded city streets and sidewalks could be effective deterrents to criminal behavior. A number of national studies tested the relationships between density and crime, with differing results. Some studies found positively correlated relationships between crime and density, while others found the opposite types of relationships. Still, others (e.g. Freedman, 1975) found non-significant relationships between the two variables.[[1]](#footnote-1)

1. *See* Brian Christens & Paul W. Speer, *Prediciting Violent Crime Using Urban and Suburban Densities*, Behavior and Social Issues, 14, 113-127 (2005). [↑](#footnote-ref-1)