A GIS Model of High-Risk Areas for Drug Crimes within Burlington, Iowa

Abstract

This thesis examines the feasibility of creating a GIS model that outlines projected risk levels for drug crimes in Burlington, IA. The project answers the following question: Can a GIS model be created to identify areas of high risk for drug crimes in Burlington, Iowa? This model used academic research on criminology, crime mapping, and drug abuser profiling to identify five model variables. The five variables were demographics (age, homeless, income, and education) and the density of property crimes. The demographic data were U.S. Census Bureau data, while the property crimes were geocoded street addresses provided by the Burlington Police Department. These variables were then evaluated for their relationship to drug crimes using regression analysis, which confirmed some relationship.

Following the regression analysis, the five variable layers were added together using a raster calculation to produce one overall risk layer. This overall risk layer was then tested for correlation to drug arrests per square kilometer using the Spearman's rank correlation coefficient. The correlation coefficient suggested a link between the risk levels and the amount of drug arrests that occurred in the level of risk. This is significant as the model can be used to assist law enforcement with resource allocation and targeting of high-risk areas.