Examining the Relationship between Crime and Alcohol Outlets in Eau Claire County, WI

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Abstract

The goal of this study is to explore the geographic relationships between crime occurrences and alcohol outlets within Eau Claire County, Wisconsin through both spatial and socio-demographic regression. Independent variables include alcohol license density, a suite of socio-demographic attributes (race, age, education, and income), and 3 crime types (battery, burglary, and vandalism). Type of crime is a categorical dependent variable. Data is obtained directly from the Eau Claire County Sheriff’s Office and Department of Public Safety. Incidents include juvenile and non-intensive offenses.  Five years of data (2004-2008) are used to analyze the relationship between alcohol outlets and crime. The study is divided into two parts. The first part is a spatial regression analysis that creates a map of the relationship between alcohol outlets and crime. The second part is a regression analysis using socio-demographic characteristics. The results show that crime density is predicted by density of alcohol outlets, and socio-demographic factors such as race and education. Socio-demographic variables are significant predictors of crime density and alcohol outlet density.

Introduction

Wisconsin has long been associated with a heavy drinking culture, commonly linked to the state’s Germanic history and heritage. From 2004 to 2005, Wisconsin led the nation in high school drinking (Wisconsin Department of Health and Human Services, 2006). However, crime also tends to occur more often in areas where there is a significant amount of drinking alcohol. Over the past several years, a number of studies have examined the spatial relationship between crime and alcohol outlets. The results of these studies have demonstrated a clear spatial relationship between alcohol outlets and crime (Wisconsin Department of Health and Human Services, 2006). However, the specific relationship between crime and alcohol outlet density has not been extensively studied in Wisconsin. This study aims to fill this gap by examining the relationship between alcohol outlets and crime in Eau Claire County, Wisconsin.

Objectives

1. Map crime occurrences (2004 and 2005) and alcohol outlets in the County of Eau Claire, WI.
2. Obtain socio-demographic data (2005 Census Data) and aggregate crime and alcohol outlets to the Census block group level.
3. Use Ordinary Least-Squares Regression and Spatial Regression to explore the relationship between the dependent variables (socio-demographic variables and alcohol outlet density) and crime density.
4. Determine if the relationship varies by crime type.
5. Identify crime hot spots in Eau Claire County.

Methodology

1. Crime data for 2004 and 2005, provided by the City of Eau Claire Police Department, were geocoded using ArcGIS 9.2 software. Available crime data categories include assault, battery, burglary, drug, fraud, vandalism, and theft.
2. Socio-demographic data were collected at the Census block group level, based on available 2005 Census data. Variables included race, sex, and education. Data was validated using Census block group level crime data from Eau Claire County Sheriff’s Office.
3. A regression analysis was conducted using ArcGIS 9.2 software.
4. Ordinary Least-Squares Regression (OLS) was used to identify the relationship between crime density and alcohol outlet density.
5. Spatial Regression (Spatial Regression with Spatially Autocorrelated Errors, Spatial Autocorrelation Analysis) was used to identify spatial patterns in crime and alcohol outlet density.

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Crime Analysis

2007 Crime and Alcohol Outlet Locations

2003 Crime and Alcohol Outlet Locations

Crime and Socio-demographic Data by Census Block Group

Population Statistics of Eau Claire County

Spatial Clustering of Total Crime for 2007 in Eau Claire County

Regression Results

Crime Density

Eau Claire 2007

Eau Claire 2003

Legend

Legend

Legend

Regressor

Low-Low

Low-Med

Med-Med

Med-High

High-High

Source: