



## Chapter XVII

# Routine Activities of Youth and Neighborhood Violence: Spatial Modeling of Place, Time, and Crime

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## Abstract

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*This chapter discusses how a geographic information system (GIS) and spatial analysis are used to model the relationship between the daily routine activities of youth and rates of violence, and provides an example of how these techniques can be applied to analytical studies examining violence in places. Most research informing hotspots and related crime prevention efforts focuses on the contribution of places and the physical environment to crime levels. Yet very little is known about how time influences patterns of crime across places and environments. This chapter discusses how time of day, week and year can be incorporated into spatial analysis of crime patterns to further inform crime prevention. A model of opportunity factors is developed to predict the spatial and temporal relationship among violence, schools, youth hangouts, retail properties*

*and neighborhood disorganization across census blocks. Instrumental variables regression is used to estimate spatial lag models of violence.*

## **Introduction**

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Over the past few decades, spatial analysis has gained prominence within criminological research (Anselin, Cohen, Cook, Gorr & Tita, 2000; Taylor, 1998). Researchers often use spatial analysis to examine environmental and contextual factors that influence the distribution of crime and violence across neighborhoods. An increasing number of studies are examining how areas smaller than neighborhoods—places such as blocks or street corners—either inhibit crime or create opportunity for it (Block & Block, 2000; Brantingham & Brantingham, 1982; 1995; LaGrange, 1999; Roncek, 2000; Smith, Frazee & Davison, 2000).

Many of these place-based studies are examining whether places and particular facilities such as schools, bars, liquor stores, transit stations and public housing complexes are generating crime in their surroundings. These studies often examine how place features interact with larger neighborhood characteristics, such as residential mobility and economic deprivation, to determine the structure of opportunity for crime. This small-area research is a needed step to inform the neighborhood-place-crime nexus. Studying this nexus narrows the long list of characteristics associated with high-crime areas and provides guidance to a broad range of program initiatives and public safety strategies.

However, the body of empirical literature informing crime opportunity in places rarely takes into account how opportunity structures vary by time of day. Examining how crime clusters in both space and time can lead to more effective crime prevention and suppression policies. Furthermore, many of the crime and place studies examine bars, liquor stores and other retail establishments in isolation from each other and other potential crime-generating institutions. In addition, relatively little attention has been given to institutions that are present in all types of communities where people congregate, such as schools, recreation centers and malls. This is a critical oversight because these institutions are not zoned or restricted to certain neighborhoods, as bars or liquor stores are. Examining risk of crime in places across varying times of the day will allow for the assessment of a greater variety of interactions between places and their social context, and, in turn, allow for more insight into possible causal mechanisms that create the opportunity for crime. Effective crime prevention requires identification of times and places where people are likely to gather as potential criminal offenders or victims.

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