



## Chapter XIV

# Web GIS for Mapping Community Crime Rates: Approaches and Challenges

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## **Abstract**

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*This chapter describes a prototype Web geographic information system (GIS) and spatial model application for mapping person crime rates in Brisbane, Australia. Our application, which integrates GIS functionality, a clustering model, client/server technology and the Internet, can generate useful documents such as maps and tables to examine and present crime patterns in space and time. Our chapter also demonstrates the usefulness and appeal of the Web GIS application as an information dissemination and spatial data analysis tool for promoting public awareness of social*

*conditions. This chapter argues that Web-based data access is a better approach to delivering large volumes of crime data and geographical information to the public. We expect that police, community workers and citizens could utilize the application and associated maps to facilitate and enhance crime prevention activities. We note, however, that further development of Web-based GIS applications need to answer a number of pertinent questions regarding system maintenance, data integrity and neighborhood crime prevention.*

## **Introduction**

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Over the last decade, Australian crime rates have risen noticeably. With the exception of homicide, Australia's crime rates are among the highest in the industrialized world (Graycar & Grabosky, 2002; Morgan, 2003). Among the more serious property offences, the crime rate for unlawful entry with intent increased 13% between 1995 and 2000 (Australian Bureau of Statistics, 2002). During the same period, motor vehicle theft increased by 9% and the rate of "other theft" increased by 38%. In the year 2000, one in 28 persons would have been a victim of "other" theft (Australian Bureau of Statistics, 2002)<sup>1</sup>. Numerically, crimes against property outweigh crimes against the person by about 10 to one and while homicide rates have not changed markedly over the last seven years, non-aggravated assaults and sexual assaults have shown some increase (Morgan, 2003).

Commensurate with the rise in crime rates in Australia, crime mapping and spatial analysis, which is the process of turning raw data into useful information (Longley, Goodchild, Maguire & Rhind, 2001), for examining urban crime have grown in importance across Australia in recent years (Morgan & Fernandez, 2000; Murray, McGuffog, Western & Mullins, 2001). This trend mirrors the growing interest British and American policing has shown in crime mapping over the last decade (Rich, 1995; McEwen & Taxman, 1995; Anselin, Cohen, Cook, Gorr & Tita, 2000). Indeed, crime mapping has become an integral tool in the development and advancement of problem oriented policing in particular and crime prevention in general (Maltz, Gordon & Friedman, 1991; Weisburd & Green, 1995; McEwen & Taxman, 1995). With ready access to inexpensive and easy to use spatial analysis and crime mapping programs, police agencies throughout the world can easily produce computer generated crime maps that can help the police in partnership with the public to identify and respond to ongoing crime problems (Green, 1994; McEwen & Taxman, 1995; Maltz et al., 1991; Rich, 1995).

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