

Chapter 17

Visual Criminology: Making Sense of Crime Data and Analysis for Criminology Students

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ABSTRACT

An understanding of crime data and analysis is central to any Criminology degree. Graduates need to know how and where to access a wide variety of secondary data sources, and understand how to read and critically evaluate crime statistics, crime maps, and quantitative research publications, and through assessment, know how to apply this learning to understanding crime rates within a community. This chapter reviews the various types of data and analysis that form a substantial part of content within a Bachelor of Criminology degree. Several types of assessment are described as examples of how to engage students in practical exercises to show them how data and analysis can provide fascinating insight into the social life of their own community.

INTRODUCTION

Research is a critical part of Criminology and underpins criminal justice policy and practice. It encompasses a wide and varied range of research methods to account for the diversity of social and crime issues of interest which involves the rigorous exploration and testing of disciplinary assumptions and theories through systematic empirical inquiry (Chamberlain 2013:1). Data visualization techniques are central to this endeavour to analyse, explain and present research findings (Wheeldon & Harris 2013). Wheeldon and Harris (2013) define this *Visual criminology* as: ‘Techniques for the collection, presentation, and interrogation of data on crime and social control’.

Data visualization is increasingly important for operations for police and other agencies of the criminal justice system. It is also an important tool for teaching and explaining data analysis to students. In the sections that follow, the ways in which data visualization is employed with criminology is outlined. The nature and extent to which criminal justice agencies, especially the police, employ data visualization in developing policy and practice and evaluating ‘what works’ for effective crime control is also

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described. The value of data visualization for teaching quantitative methods to Criminology students is emphasized through a description of the design, implementation, and assessment of Criminology units that employ an experiential learning model (Kolb 1984). The chapter concludes with a call for more awareness of the need for quantitative skills that focus on data visualization, particularly spatial crime analyses as these capabilities are increasingly required by employers within the criminal justice system, and within academia.

BACKGROUND

Data Visualization Within Criminology

Criminology is a highly diverse and fragmented discipline that draws on a wide range of diverse theoretical perspectives to explain crime and other social problems (Chamberlain, 2013:1). Yet there is a common commitment among criminologists to undertaking rigorous and systematic empirical research to explore and test disciplinary assumptions and theories (Chamberlain, 2013:1, 2). Criminological research is undertaken for scholarly inquiry but also to influence government and lobby for change in social policy and within the criminal justice system. The potential to effect social change makes research in criminology a rewarding experience. However, this goal can only be achieved by conducting high-quality research (Chamberlain, 2013:2). Criminologists tend to take a positive approach to research which promotes a value-neutral and objective method of systematic observation and experiment to gather statistical evidence of ‘what works’ in relation to a range of criminal justice policy initiatives, interventions and crime reduction strategies (Chamberlain, 2013:2).

Data visualization plays a key role in this process through the use of graphs, plots, charts, maps, timelines, multi-level modelling and the mapping of data using GIS programs. For example, data visualization is key to the analysis and explanation of Social Network Analysis examining the ecology of crime. Social Network Data can be employed to examine the spatial distribution of crime such as the social networks among drug users (see for example Mitchell, 2000) and for drug trafficking (see Bright et al., 2012).

Similarly the graphical representations of Path Analyses provide invaluable insight into the examination of crime trajectories. For example, Jones et al. (2012) used data visualization to explain a path analysis that examined gender differences in pathways into juvenile offending.

Data Visualization is also essential for analysis of secondary data sources, such as the merging of Census Data and Official Crime Data to study socio-economic status and crime. Studies have shown that the characteristics of a neighborhood or small community can influence rates of offending (Sampson et al 1997), units of analysis such as neighborhoods, counties, or as in Australia, Local Government Areas, have geospatial properties that cannot be visualized effectively by merely using basic statistical software packages (Ferandino 2015).

Data visualization allows the data to tell its own story in the initial stages of an analysis (Maltz 2010). Visualization may identify outliers, which could be due to human error during data entry or it may mean there are some exceptional cases that require closer examination (Maltz 2010; Wheeldon & Harris 2013). Visualization can also highlight patterns or relationships in the data that can define particular groups of individuals, generate possible hypotheses, and guide subsequent analyses (Maltz 1998; Wheeldon & Harris 2013).

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