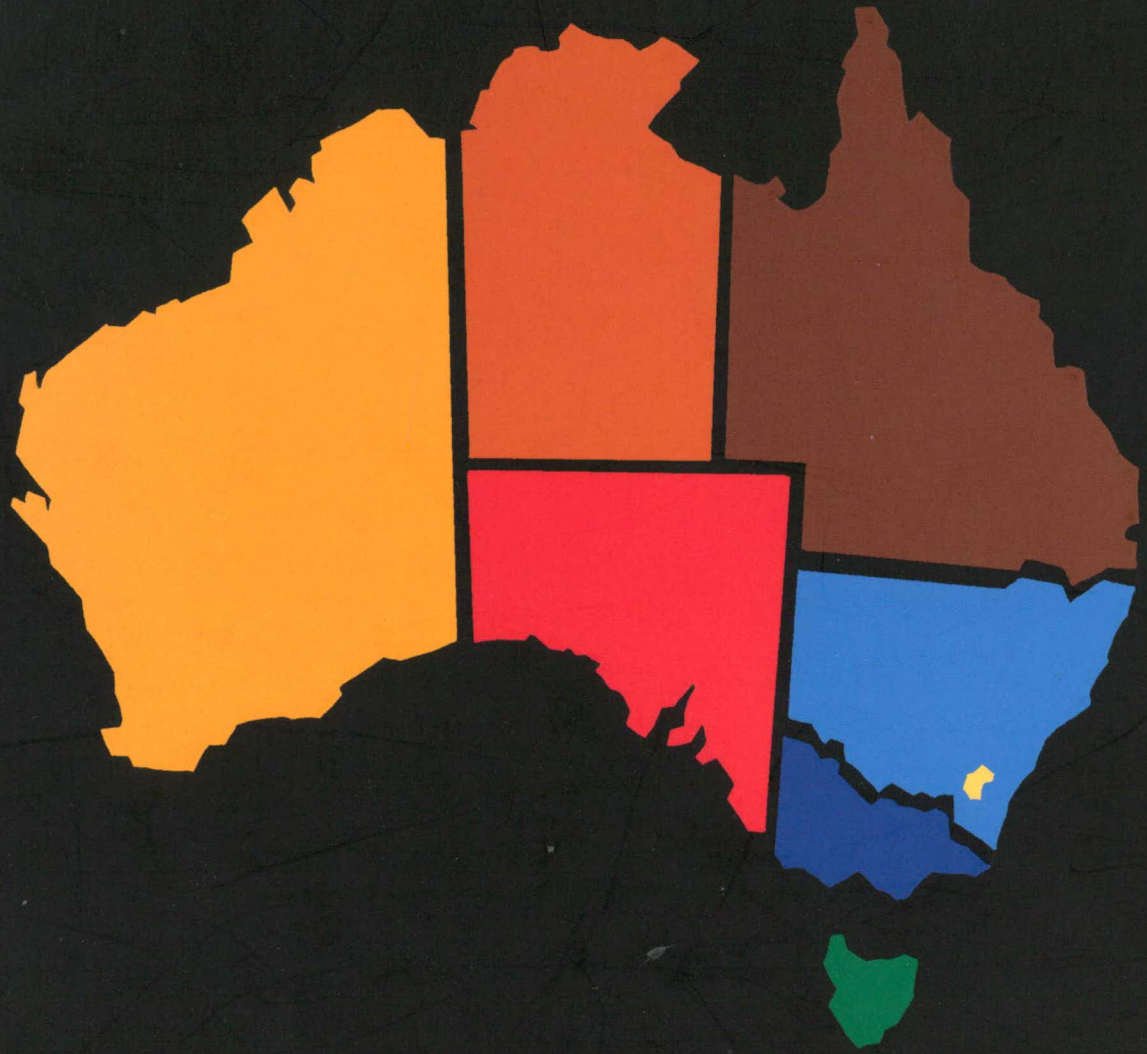
Atlas of Crime in Australia 2000



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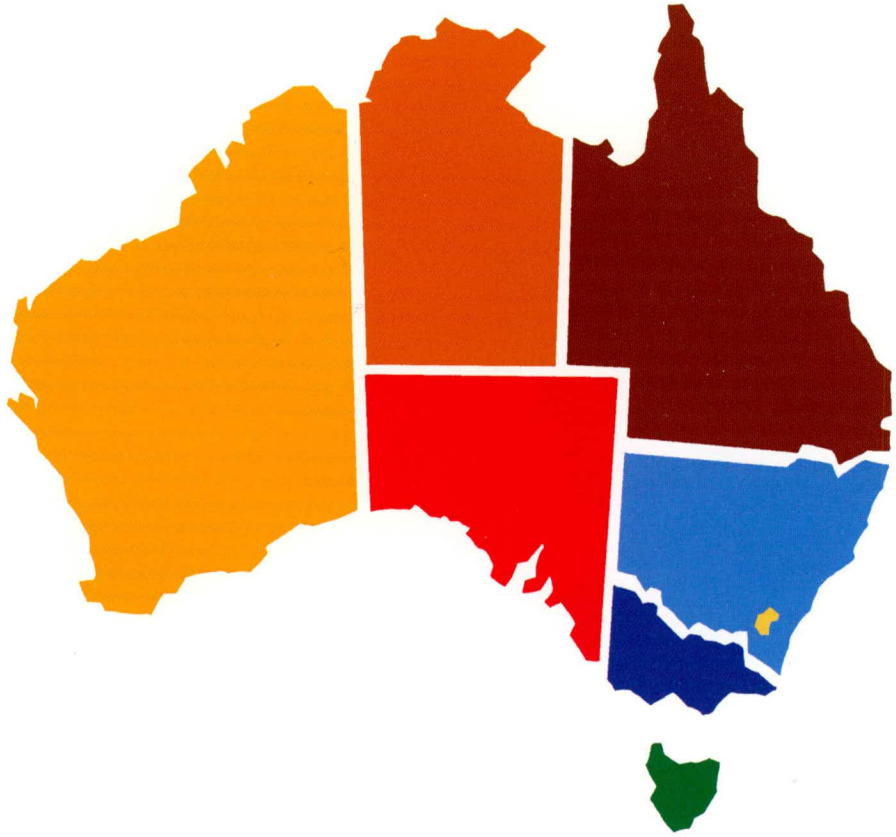

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FOREWORD

Maps have played a fundamental role in public policy in fields such as public health, agriculture and the environment. Recent advances in computing and related areas have enabled policy and decision makers to benefit from research findings obtained from using sophisticated computerised mapping applications.

In the United States and the United Kingdom, and more recently in Australia, computerised mapping has emerged as a significant tool in crime and justice. Police services have put in place sophisticated crime analysis and crime mapping units as tools to understand and combat crime in their jurisdictions. Traditionally, crime and its control have been seen as local issues requiring local solutions. This focus on the local situation has lead agencies to ignore an important reality; namely that crime is not solely a local problem. Although police powers end at the borders of the jurisdiction, criminals are able to quickly and easily cross the borders to escape apprehension. Crimes take place over time and space, therefore the only way to understand and fight crime is by understanding the regional pattern and nature of criminal activity.

This first edition of the Atlas of Crime in Australia, published by the Australian Institute of Criminology, illustrates the incidence and prevalence of crime in the Statistical Local Areas of the five mainland states, and also in Tasmania and the Territories. The maps included in this publication help us in understanding the spatial pattern of five major crimes in Australia, namely armed robbery, unarmed robbery, residential break and enter, non-residential break and enter, and motor vehicle theft. Together, these five crimes contribute about half of the recorded crimes that are published by the Australian Bureau of Statistics.

Crime is fundamentally a social problem and its links with other areas of the social and economic life of communities cannot be neglected. This Atlas illustrates the relationship between crime prevalence and a number of socioeconomic characteristics of the Statistical Local Areas within each of the mainland states, so users can start identifying policy issues that may be relevant to crime prevention and control.

The Australian Institute of Criminology is a Commonwealth Government research agency devoted to the study of crime and its associated factors with an aim to assist informed policy and decision making in the fields of crime prevention and control. This Atlas is another step in the process of building a significant and policy relevant knowledge base about the regional distribution of crime in Australia.

The Australian Institute of Criminology will continue to develop and apply tools like this Atlas to inform and enhance public policy for crime prevention and control.

The support of Senator the Hon. Amanda Vanstone, Minister for Justice and Customs, who provided the funding through the National Crime Prevention Program, is gratefully acknowledged.

Adam Graycar

Director

September 2000

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INTRODUCTION

The *Atlas of Crime in Australia* is published by the Australian Institute of Criminology. It aims to raise awareness of the variation in incidence and prevalence of crime within the states and territories of Australia. The Atlas concentrates on the following five types of offences:

- Armed robbery,
- Unarmed robbery,
- Residential break and enter,
- Non-residential break and enter, and
- Motor vehicle theft.

The Atlas illustrates the form, magnitude, associations and spatial distribution of these crimes during the 1994-98 period. The document is organised in three major sections:

Section 1 Introduction

Section 2 Crime Maps

Section 3 Technical Appendix

The objective of the Atlas is to illustrate incidence and prevalence of selected crimes in the regions of Australia. Information is presented for Statistical Local Areas, the lowest level geographical divisions comprising the whole of Australia for which crime data could be processed. The locations of the Statistical Local Areas within each mainland state are shown in the following maps:

State	Maps
New South Wales	21-22
Victoria	39-40
Queensland	62-63
South Australia	85-86
Western Australia	108-109

The Australian Bureau of Statistics uses the SLA as the base spatial unit for the collection and dissemination of statistics other than those collected from the Population Censuses. In aggregate, SLAs cover the whole of Australia without gaps or overlaps, and they aggregate directly to form larger spatial units such as Statistical Subdivisions or Local Government Areas. These features made SLAs a convenient choice as the units of analysis for this Atlas. However, SLAs are far from being the ideal spatial unit for crime mapping. Some of the reasons for this are:

- Since the SLA was developed as a unit for collection and dissemination of statistics, its boundaries have not been defined on the basis of demographic, socio-economic or any other substantively relevant criteria. This may not be a problem in urban areas where SLAs are small in area, and often coincide with identifiable localities such as suburbs. In rural areas, SLAs tend to cover broad extensions of land and they can therefore mask important social or economic features of their residents.

- SLA boundaries are not permanent. As the boundaries of a SLA must fall within the boundaries of a LGA, modifications to the boundaries of a LGA carry over correspondent changes to the boundaries of the SLAs within it.

- Cloropeth maps, such as those included in this Atlas, illustrate the distribution of crime rates by uniformly colouring the area of each SLA to reflect predefined classifications of the underlying risk of crime. Due to the visual dominance exercised by large areas, users of these maps may have the wrong impression that the area of a SLA is representative of its level of crime. In urban areas, small SLAs, with little visual impact, tend to have relatively high levels of some crimes. On the other hand, in regional and remote areas there are some very large SLAs, which dominate the maps and grab the attention of the reader, but that may represent smoothed rates based on very small numbers of crime incidents. Dorling (1998) discusses this problem in more detail.

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INTRODUCTION

Despite these problems, the SLA was kept as the unit of analysis for this Atlas due to the variety of geographic formats for which the crime data were available. Table A1 in the Appendix shows that in some states, data on crime counts were available for postcodes, while in others they were available for spatial units larger than the SLA. In Queensland, data were available for police divisions. The SLA was the smallest non-overlapping spatial base to which the data could be standardised.

The data used to construct the maps included in this Atlas consisted of counts of the number of crime incidents reported to police and which were recorded in the police statistical systems. This data were used to compute the smoothed crime rates shown in the maps. Readers should be aware that the maps included in the Atlas illustrate the level of crime as recorded by police and that this does not represent the true level of crime in the SLAs within each state. Not all crimes are reported to police, and police do not always record all the reported incidents.

Definitional issues are always a problem when dealing with crime data for the states and territories of federal countries like Australia. The type of offences that can be included in publications like this Atlas is restricted to those for which definitional differences do not exist or if so, they are of insufficient size to affect any state comparisons. The crimes that are mapped in the Atlas are not subject to gross state definitional differences.

The crimes included in the Atlas tend to be more prevalent in:

- Areas that concentrate a significant amount of retail and/or key service industry activity; or
- Areas with high concentrations of social and economic disadvantage.

The former type of area usually attracts large numbers of visitors and provides potential offenders with the right opportunities and access to suitable targets for crime. The latter type of area is characterised by a number of attributes that tend to impair communities in their effort to develop formal and informal mechanisms of social control.

The geographic distribution of crime can therefore be explained by a number of characteristics associated with social, economic and residential stability. The Atlas also provides readers with a graphic illustration of the relationship between the different types of crime and relevant indicators of community stability and socio-economic stucture.

The maps included in this Atlas illustrate crime rates for SLAs. The relationship between crime rates and socioeconomic measures shown in the scatter diagrams hold for SLAs as a whole. Such relationships, as well as the absolute or relative risks illustrated by the maps, may not hold for the individual residents of specific SLAs.

The maps included in this Atlas may not reflect the spatial distribution of crime in the official statistics, as they are constructed from estimates developed at the AIC using the smoothing procedures described in the Technical Appendix.

Atlases that illustrate the social make up of areas have been published recently. The maps in the Australian Bureau of Statistics Social Atlases (1997-98), focusing in metropolitan areas, and Country Matters (Bureau of Resource Sciences, 1999), focusing in rural and regional areas, constitute useful supplements to the maps included in this Atlas.

Technical details on the cartographic conventions and projections used for the development of the maps presented in this Atlas are provided in full in the Technical Appendix.

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INTRODUCTION

The maps included in this Atlas are the result of the effort of a team in the Crime Analysis and Modelling Program at the Australian Institute of Criminology, with the co-operation of the National Key Centre for Research and Teaching in Social Applications of GIS (GISCA) based at the University of Adelaide. The following team members contributed to the development of the maps included as part of the Atlas:

- *Carlos Carcach* (Head, Crime Analysis and Modelling Program, Australian Institute of Criminology)

  Project coordination, smoothing of crime rates, using the Atlas, comments to the maps and Section 1, Appendix.

- *Ibolya Losoncz* (Research Assistant, Crime Analysis and Modelling Program, Australian Institute of Criminology)

  Cartographic specifications, preparation of maps, graphical design and desktop publishing.

- *Glenn Muscat* (Research Assistant, Crime Analysis and Modelling Program, Australian Institute of Criminology)

  Data management and processing, smoothing of crime rates.

- *Marcus Blake* (Senior GIS Specialist, GISCA)

  Cartographic and projection advice, preparation of maps and graphs, and Section 2, Appendix.

The critical input of *Dr. Peter Grabosky*, Director of Research at the Australian Institute of Criminology, and *Prof. Graeme Hugo*, Director, The National Key Centre for Research and Teaching in Social Applications of GIS based at the University of Adelaide (GISCA) is acknowledged. They contributed useful comments and suggestions, as well as assisting with the editorial work of the document.

ACKNOWLEDGMENTS

The following are thanked and acknowledged for the contributions in the production of this Atlas:

- Dr. Don Weatherburn, Director, New South Wales Bureau of Crime Research and Statistics for the provision of the postcode crime data used to compute crime rates for Local Government Areas with multiple Statistical Local Areas.
- Ms. Anna Ferrante, Research Fellow, and Mr. John Fernandez, Research Officer, Crime Research Centre, University of Western Australia for provision of crime data.
- Mr. Theo Sarantaugas, Manager, Statistical Services, South Australia Police for provision of crime data.
- Mr. Peter Danka, Manager, Information Resource Centre, and Sgt. Dennis Shepherdson, Statistical Services, Queensland Police for provision of crime data.
- Ms. Sue Steinbauer, Department of Police and Public Safety, Tasmania, for the provision of crime data.
- Ms. Marianne James, Australian Institute of Criminology, for editorial assistance.

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Australian Bureau of Statistics 1997-98, *A Social Atlas,* Catalogue Nos 2030.1 - 2030.8, Canberra.

Bureau Of Rural Sciences 1999, *Country Matters: Social Atlas of Rural and Regional Australia,* Canberra.

Dorling, D. 1996, Area cartograms: their use and creation, *Concepts and Techniques in Modern Geography,* no. 59, University of East Anglia: Environmental Publications.

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Using the Atlas

Maps are orientated conventionally with north at the top of the page, and each map is accompanied by a legend showing the colour and values for each class of the mapped data. The map legend identifies the colours used to shade each class on a map. Five classes have been used so that readers are able to identify the level of crime in each area. Values of the class limits for the classes were determined by using the Dalenius-Hodges procedure (Dalenius and Hodges, 1959).

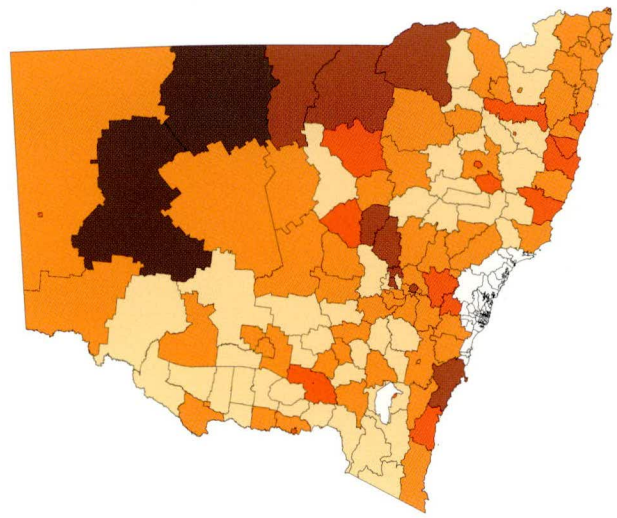
Two types of maps are included in the Atlas. Crime rate maps show smoothed rates for the Statistical Local Areas within each mainland state, the whole territory in the Northern Territory and the ACT, and police districts in Tasmania. Relative rate maps show SLAs crime rates relative to the state average. The latter maps show Statistical Division boundaries as well as SLA boundaries.

The Atlas includes relative frequency polygons to illustrate the distribution of crime rates and graphs containing crime rates and 95%-confidence intervals for Statistical Divisions within each mainland state.

Scatter plots that illustrate the strength and direction of the relationship between relative crime rates and selected socioeconomic characteristics are also included for each of the mainland states.

Crime Rate Maps

Crime rates are mapped using different colours according to their smoothed values. The intensity of the colours in the legend increases with the value of the crime rate. The darker the colour the higher the crime rate in a Statistical Local Area.



Maps for a specific offence use the same legend irrespective of the state. **Note however that the maps included in the Atlas SHOULD NOT BE USED TO MAKE COMPARISONS AMONG THE STATES, as different sets of variables may have been used in each state to smooth the crime rates. The purpose of the maps is to provide a visual representation of the geographical pattern of crime WITHIN EACH STATE. Any comparisons should be made between regions that belong to the same state.**

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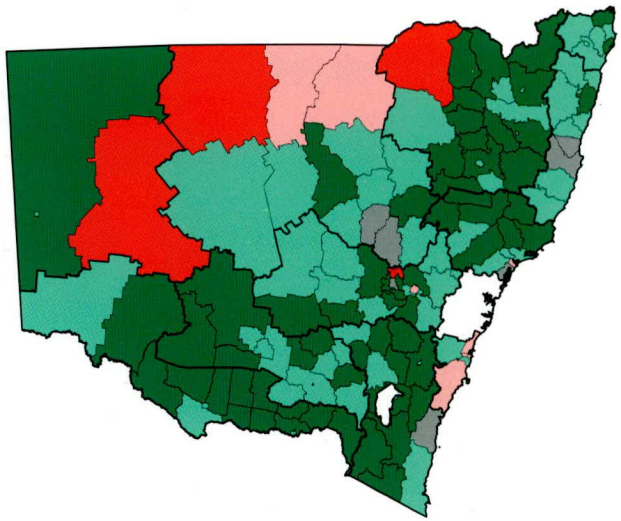
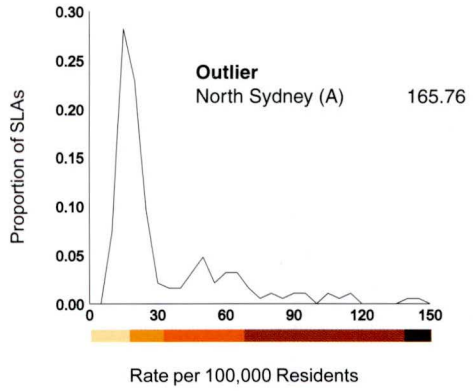
Using the Atlas

Relative Crime Maps



These maps show the crime rate in a SLA relative to the crime rate in the state. Tones of ***green*** are used to shade SLAs with rates below the state average, whereas tones of ***red*** are used to shade SLAs with rates above the state average. SLAs with the crime rates similar to the state average are shaded in ***grey***.

Relative Frequency Polygons



Relative frequency polygons illustrate the main features of the distribution of crime rates for each offence and mainland state. For example, the above figure shows the relative distribution of rates of armed robbery in New South Wales. This distribution is skewed towards low values of the crime rate, which reflects the fact that the majority of SLAs in the state had low rates for this offence. In fact, 21% of the SLAs in New South Wales had rates of armed robbery below 19 per 100,000 residents. As can be seen from this graph, the distribution has several peaks. This suggests that SLAs tend to form groups in terms of their rates of armed robbery.

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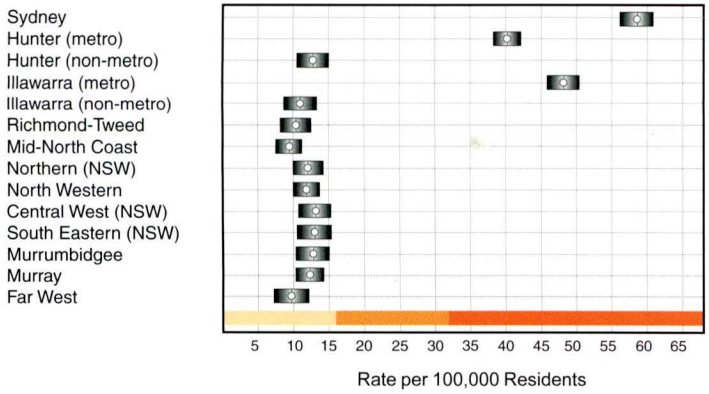
Using the Atlas

Confidence Intervals

This graph shows the smoothed crime rates for the Statistical Divisions of each mainland state together with 95%-confidence limits. Confidence intervals are useful to compare regions in terms of their smoothed rates. Regions with overlapping intervals have crime rates that are not significantly different. Non-overlapping intervals indicate that the rates of the relevant regions are statistically different.



Note however that these graphs SHOULD NOT BE USED TO MAKE INTER-STATE COMPARISONS, as different sets of variables may have been used in each state to smooth the crime rates. The graphs provide a visual representation of regional differences WITHIN EACH STATE.

The graph displays confidence intervals for the rate of armed robbery in the Statistical Divisions of New South Wales. It shows that this offence tends to concentrate in the Sydney Statistical Division and in the metropolitan parts of the Hunter and Illawarra Statistical Divisions. The remaining regions are not significantly different in terms of their rates of armed robbery.

Scatter Plots

The purpose of scatter plots is to provide users with a visualisation of the strength and direction of the relationship between a variable and the relative risk of a specific crime within each mainland state. Values of the relative risk, measured as the crime rate for a Statistical Local Area (SLA) divided by the crime rate for the state, are represented in the vertical axis. The horizontal axis represents the relative concentration of an area characteristic, measured as the value of the characteristic for the SLA divided by the value of the characteristic for the state. The following Table shows the values of the rate of residential break and enter, together with relative risks and relative concentrations of unemployment and home ownership for three SLAs in New South Wales:

Local Area	Absolute Measures			Relative Measures		
	Residential Break and Enter Crime Rate Per 100,000 Residents	Unemployment Rate	Households in Owner Occupied Dwellings as % of Total Households	Relative Risk of Residential Break and Enter	Relative Concentration of Unemployment	Relative Concentration of Home Ownership
Tweed (A) Part A	507.4	15.4	67.0	0.47	1.76	0.99
Lake Macquarie	1089.3	10.6	76.0	1.00	1.21	1.12
Botany	1386.7	7.5	62.3	1.27	0.85	0.92
New South Wales	1089.3	8.8	67.7	1.00	1.00	1.00

The crime rate for the Tweed SLA was 0.47 times that for New South Wales. This value was obtained by dividing the crime rate for Tweed of 507.4 by the rate for New South Wales of 1089.3 incidents per 100,000 residents. This indicates that, in general, in the Tweed (A) – Part A SLA, the risk associated with residential break and enter is half the risk for the whole state. Similar calculations indicate that Lake Macquarie has an average risk of this offence, whereas for Botany, the risk is 27% above the state average.

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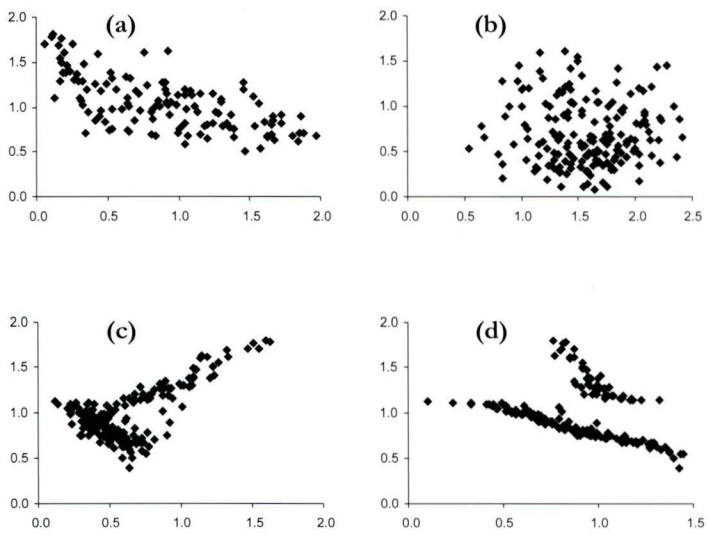
Measures of relative concentration of unemployment and home ownership have a similar interpretation. The data in the Table show that the unemployment rate for Tweed is 76 per cent above the state unemployment rate, and that home ownership in Botany is 8 per cent below the state average.

Scatter plots can display three types of pattern. Figure 1a shows a pattern where there is a negative association between the measure of relative concentration of a socioeconomic characteristic and the relative risk. Figure 1b displays the situation when there is no apparent association between the two variables, and Figure 1c shows the case of positive association.

Figure 1: Association Patterns Displayed by Scatter Plots



Scatter plots can also show other features of the relationship between two variables. Figure 1d shows the case where SLAs seem to form two groups in terms of the relationship between the measure of relative concentration of a socioeconomic characteristic and the relative risk.

Scatter Plots Display Bivariate Relationships Only

Scatter plots may suggest the absence of association between a given concentration measure and relative risk. This apparent lack of association must be interpreted with caution, as the relationship between a variable and relative risk can be mediated by another variable. The scatter plots next to Maps 11 and 12 (pp 26-27) indicate that there is no association between concentration of unemployment and relative risk of residential break and enter. Note that this relationship could be mediated by the proportion of males 18-24 years in the SLAs. SLAs with above average proportions of young males might also have above average rates of youth unemployment, which would suggest that there might be a relationship between relative unemployment and relative crime risk.

Reference

Dalenius, T. and J.L. Hodges 1959, "Minimum Variance Stratification", *Journal of the American Statistical Association*, Vol. 54, pp 88-101.

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New South Wales

MAP

1	Armed Robbery – Rate per 100,000 Residents (NSW)	16
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6	Unarmed Robbery – Rate per 100,000 Residents (NSW – Enlargement 3)	21
7	Unarmed Robbery – Rate per 100,000 Residents Relative to State Average (NSW)	22
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Armed Robbery (MAPS 1-4)

Armed robbery tends to be more prevalent in areas where there is large concentration of retail and other key service industries such as finance and communications. Official statistics show that 48.7% of the armed robberies recorded in New South Wales during 1999 occurred in retail and service industry locations, which are mostly in or around areas that attract large transient populations (Australian Bureau of Statistics, 2000). These areas foster environments that allow offenders to operate under conditions of anonymity, therefore reducing the perceived risk of being detected and/or caught by police.

It is no surprise that armed robbery is more prevalent in the metropolitan areas that belong to the Statistical Subdivisions of Inner Sydney, Eastern Suburbs, Lower Northern Sydney, Northern Beaches and Hornsby-Ku-ring-gai. Among these, armed robbery rates in the Inner Sydney and North Sydney Statistical Local Areas are highest and reach values above 140 per 100,000 residents.

The remaining Statistical Local Areas in the Inner Sydney Statistical Subdivision (ie Leichhardt, South Sydney, Marrickville and Botany), as well as those in the Eastern Suburbs (ie Woollahra, Waverley and Randwick), Lower North Sydney (ie Lane Cove, Mosman and Willoughby), Manly in the Northern Beaches, Hornsby and Ku-ring-gai record rates of armed robbery between 66 and 140 incidents per 100,000 population.

Unarmed Robbery (MAPS 5-8)

Unarmed robbery tends to follow a similar geographic distribution to that of armed robbery. There are however some remarkable differences arising from the fact that individuals are the more likely victims of this offence. Official statistics indicate that 91.3% of all the unarmed robberies recorded in New South Wales were perpetrated on individuals, compared to 59.4% of armed robberies. In contrast with armed robbery, only 15.6% of unarmed robberies recorded in New South Wales during 1998 occurred in retail and service industry locations. One out of two incidents of unarmed robbery took place in the street or an open area (Australian Bureau of Statistics, 2000).

Unarmed robbery tends to be more prevalent in the Inner Sydney and Leichhardt Statistical Local Areas where the rate exceeds 140 incidents per 100,000 residents.

Two factors operate quite independently of each other to produce a high local rate of unarmed robbery. The first is opportunity and target availability, reflected by indicators such as a relatively large concentration of retail and other key service industries such as finance and communications. The second factor is termed supply of offenders; this in general, tends to be larger in areas with above average levels of socio-economic disadvantage as manifested by high unemployment and percentage of single parent households. Maps 5-6 suggests that, in New South Wales, the former factor has a stronger effect on the rate of unarmed robbery than does socio-economic disadvantage.

Socio-economic disadvantage tends to be more of a factor in explaining rates of unarmed robbery in country areas of New South Wales than in metropolitan ones.

Residential Break and Enter (MAPS 9-12)

At the level of individual households, the risk of being the victim of break and enter, also referred to as residential burglary, is directly associated with factors such as degree of guardianship, length of residence in the local area, and home ownership, which among others determine their suitability and attractiveness as targets (Cohen and Felson, 1979). At the level of communities, factors such as low levels of residential stability and relatively high concentration of socio-economic disadvantage have been found to

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affect rates of residential burglary via their impact on the communities' ability to develop and maintain mechanisms of formal and informal social control (Bursik and Grasmick, 1993).

Residential break and enter tends to be more prevalent in North Western New South Wales and within it, the Statistical Local Areas of Central Darling and Bourke record rates above 1,800 per 100,000 residents. Other SLAs in the same region, such as Brewarrina and Walgett, as well as Moree Plains in the Northern region, have rates of residential burglary that can be considered high given their relatively small populations. These SLAs are located in geographical areas with high levels of unemployment and relatively large proportions of people of Indigenous origin, which makes it reasonable to associate high rates of residential burglary with above average levels of social disadvantage and material deprivation.

There is a relatively large concentration of residential burglary activity in the Central Macquarie and Bathurst-Orange regions, where the Orange SLA has an above average prevalence of this offence. This SLA as well as others that belong to these regions, such as Bathurst, Dubbo and Wellington, are relatively major regional centres with an above average proportion of people of Indigenous origin and a below average proportion of owner-occupied households.

The SLAs in the regions of Sydney, Hunter and Illawarra tend also to have a relatively high prevalence of residential burglary, in particular the Statistical Local Areas of South Sydney, Marrickville, Canterbury and Auburn, which have rates that are at least 40% above the state average. These are peri-urban areas with high unemployment rates, a below average proportion of owner-occupied households, and high residential mobility.

Non-Residential Break and Enter (MAPS 13-16)

Non-residential break and enter, also referred to as non-residential burglary, represented 32% of all the unlawful entries with intent (UEWI) recorded during 1999 in New South Wales. Half of these incidents occurred in locations corresponding to retail and other key service industries, including wholesale and warehousing (Australian Bureau of Statistics, 2000). These locations offer a great deal of opportunity to potential offenders and have highly transient populations. It is not surprising that this offence is more prevalent in the Sydney – Inner and Sydney – Remainder Statistical Local Areas.

Socio-economic disadvantage and material deprivation are also associated with the prevalence of non-residential break and enter. SLAs located in geographical areas with high levels of unemployment and relatively large proportions of people of Indigenous origin have above average rates of residential burglary (*see* Maps 13 and 15).

Motor Vehicle Theft (MAPS 17-20)

At an individual level, the risk of this offence is associated with the use and effectiveness of security measures adopted by car owners and the places where cars are garaged or parked. Official statistics show that 83% of the incidents of motor vehicle theft recorded in New South Wales during 1999 occurred in non-residential locations, 85% of which occurred on the street or a transport-related location.

Map 18 shows that motor vehicle theft is more prevalent in the Statistical Local Areas of Randwick, South Sydney, Sydney (Inner and Remainder) and North Sydney.

When prevalence of motor vehicle theft is calculated relative to the average rate in the state, the SLAs of Burwood, Willoughby and Manly also tend to have high rates for this offence (*refer to* Map 20).

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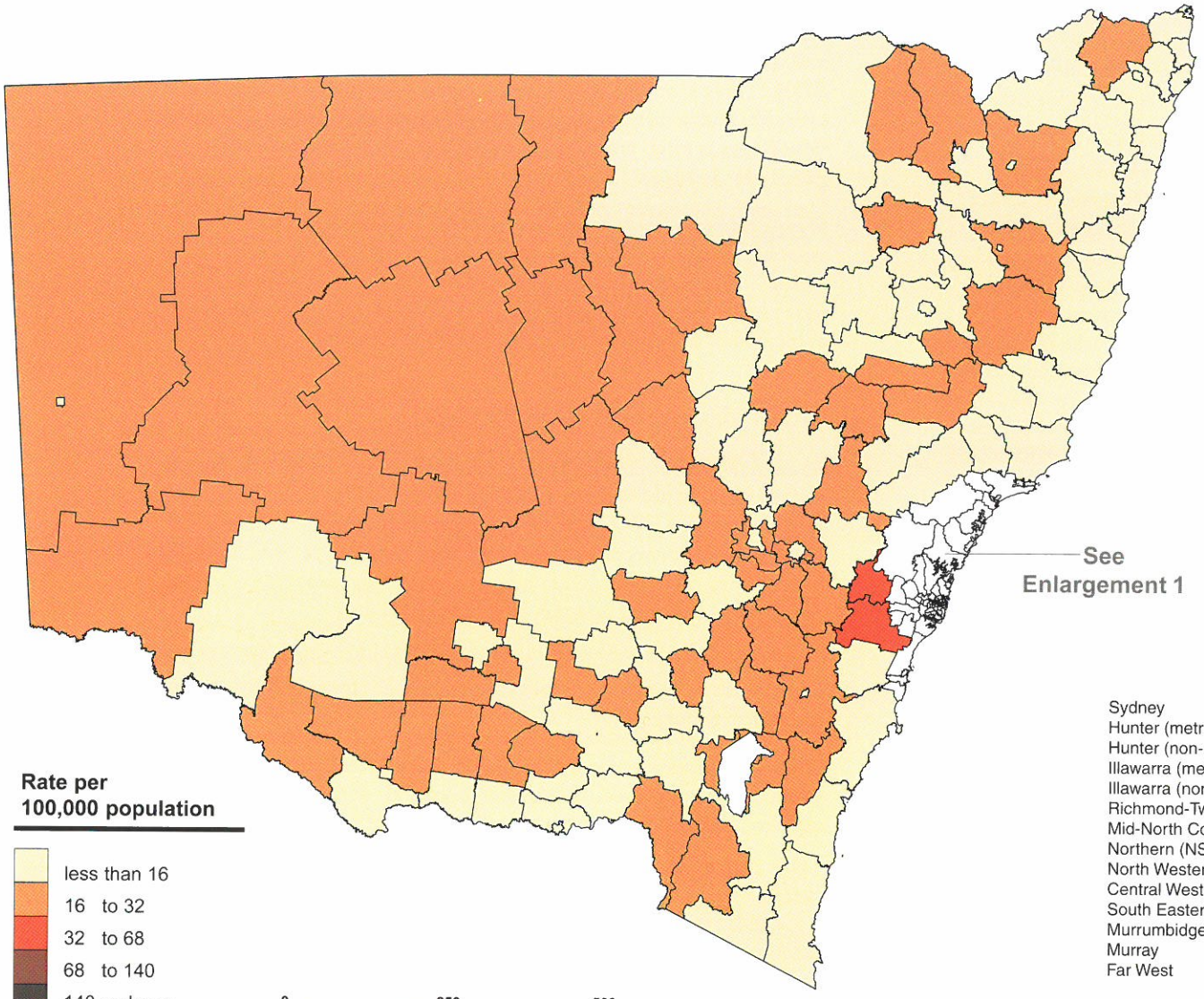
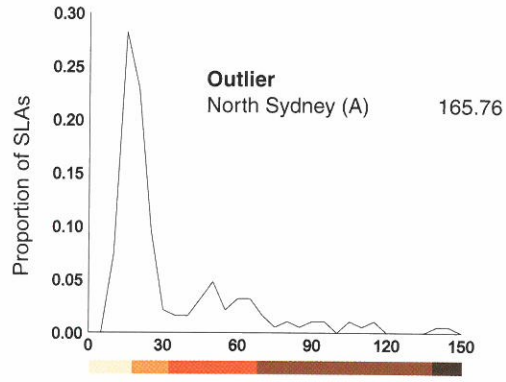
MAP 1

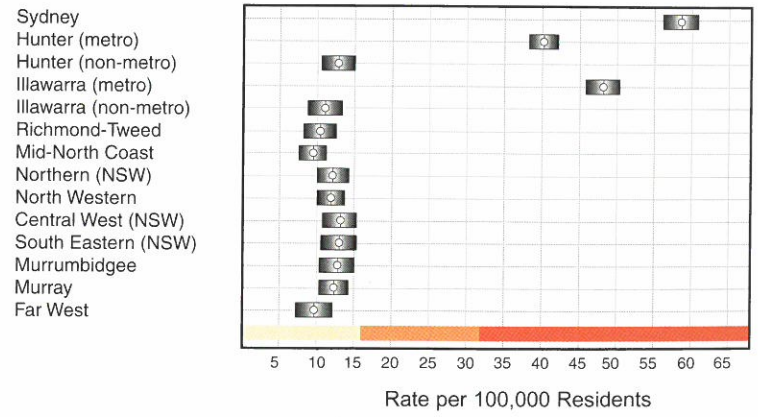
New South Wales
Armed Robbery - Rate[1] per 100,000 Residents



Distribution of Statistical Local Areas (SLAs) According to Rate of Armed Robbery



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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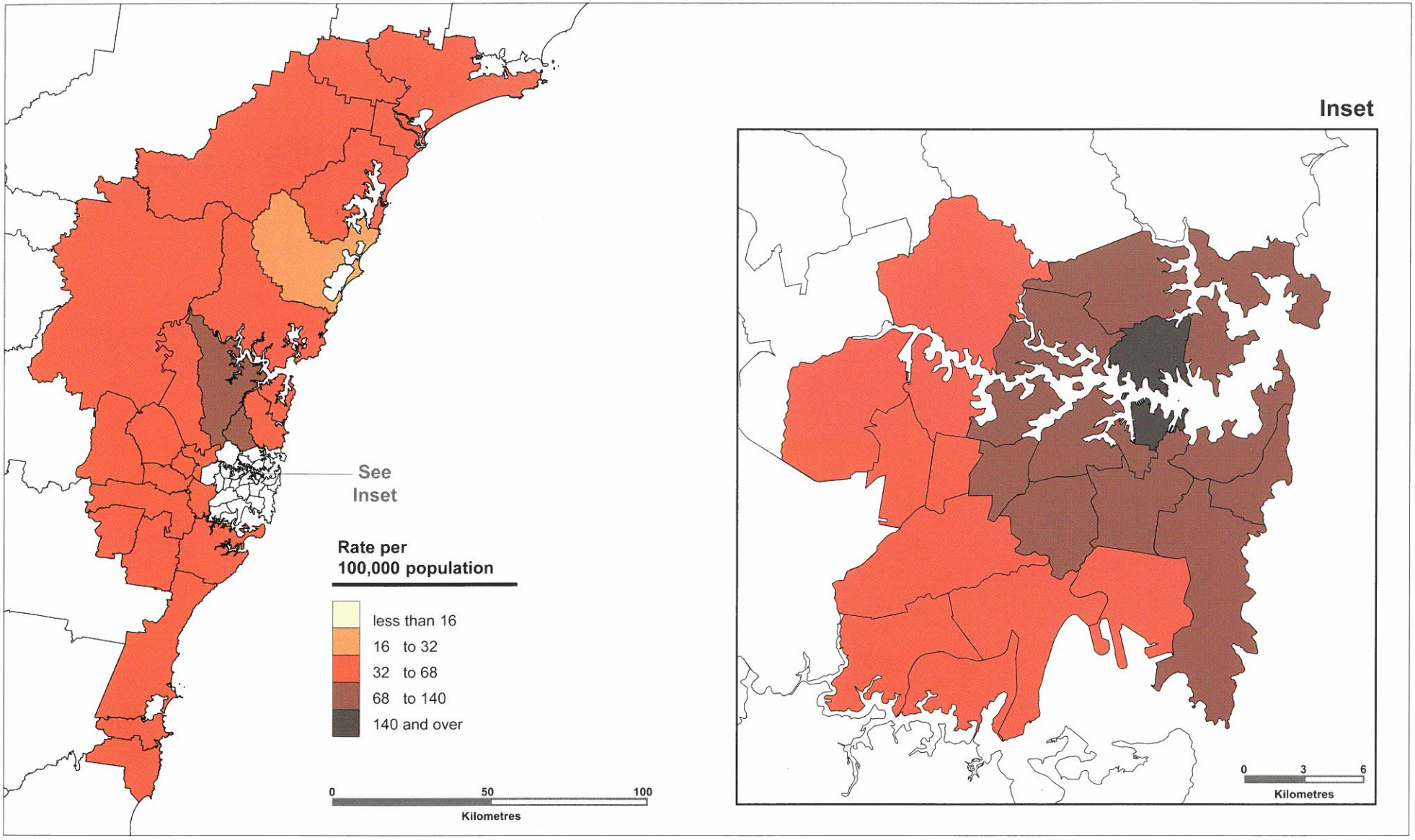
MAP 2

NEW SOUTH WALES - ENLARGEMENT 1
ARMED ROBBERY - RATE[1] PER 100,000 RESIDENTS



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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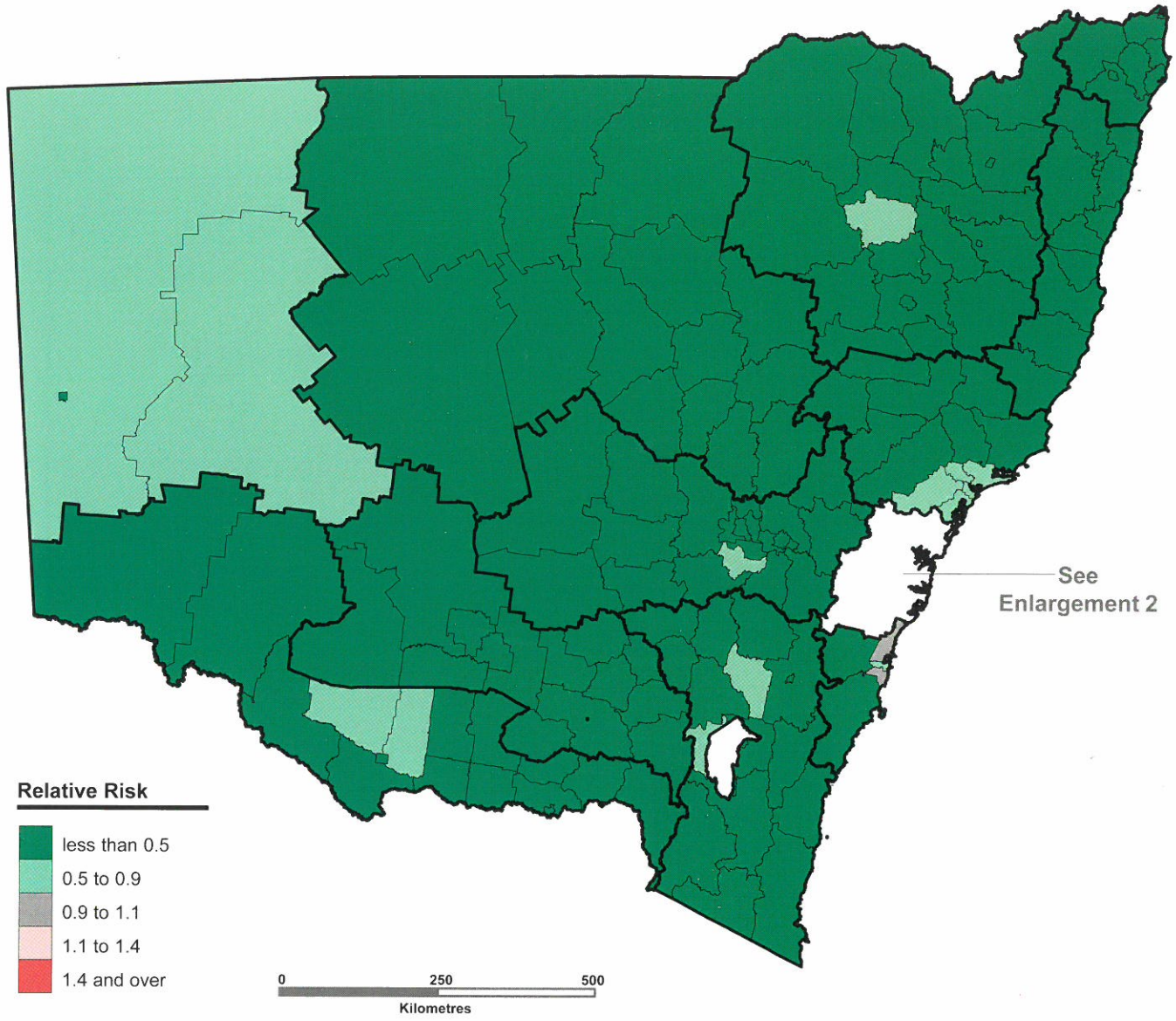
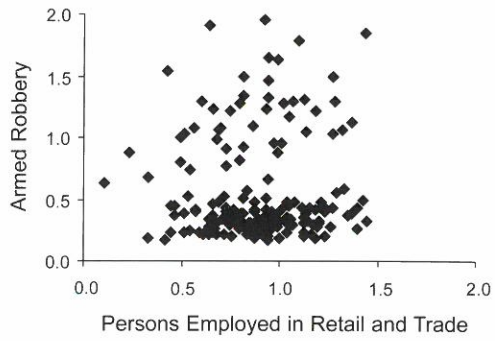
MAP 3

NEW SOUTH WALES

ARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics



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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

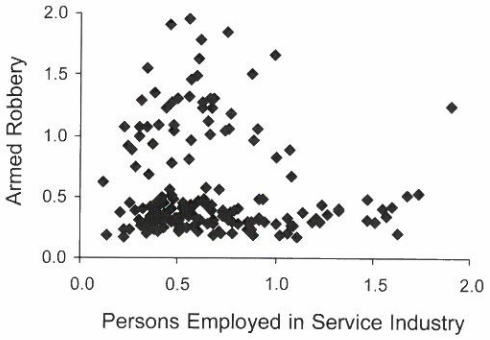
Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

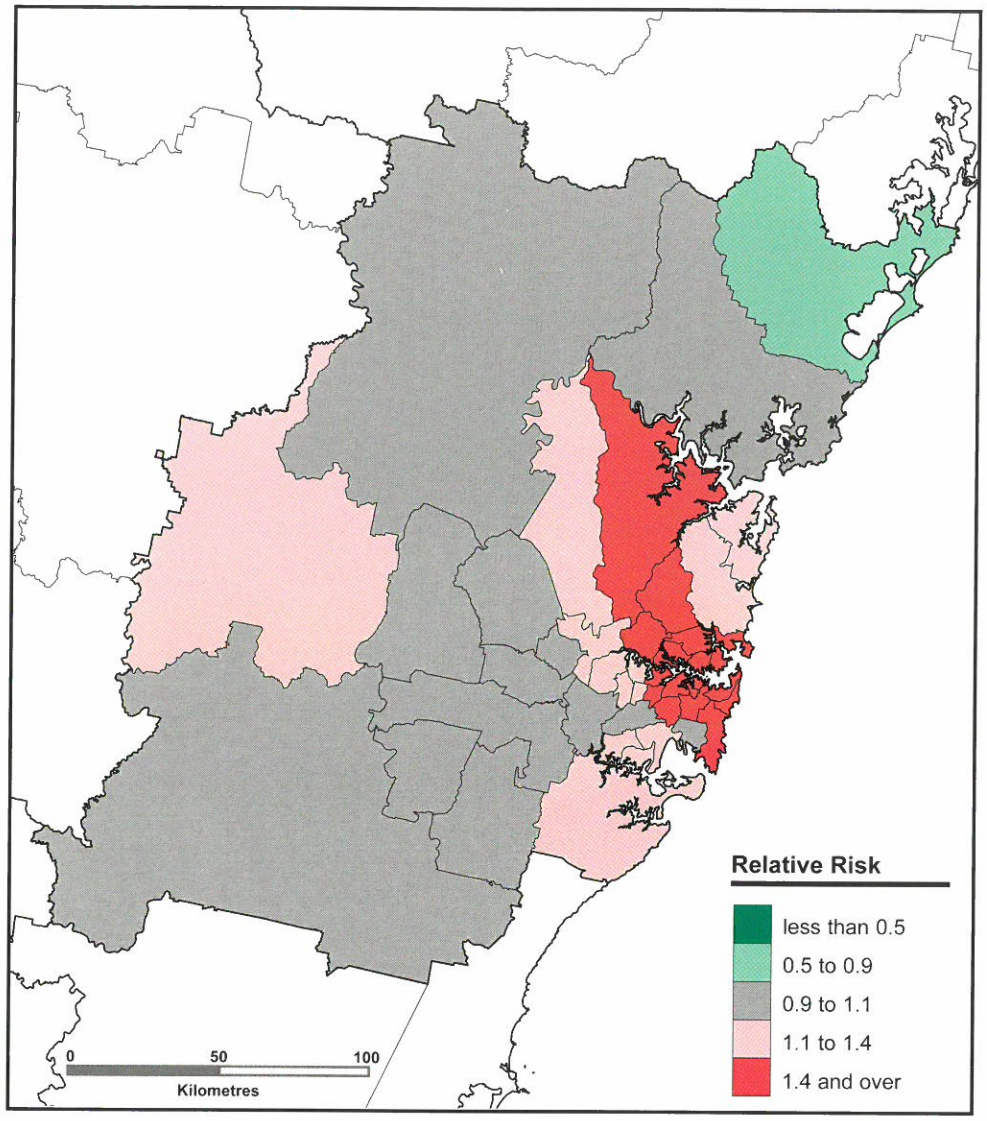
MAP 4

NEW SOUTH WALES - ENLARGEMENT 2

ARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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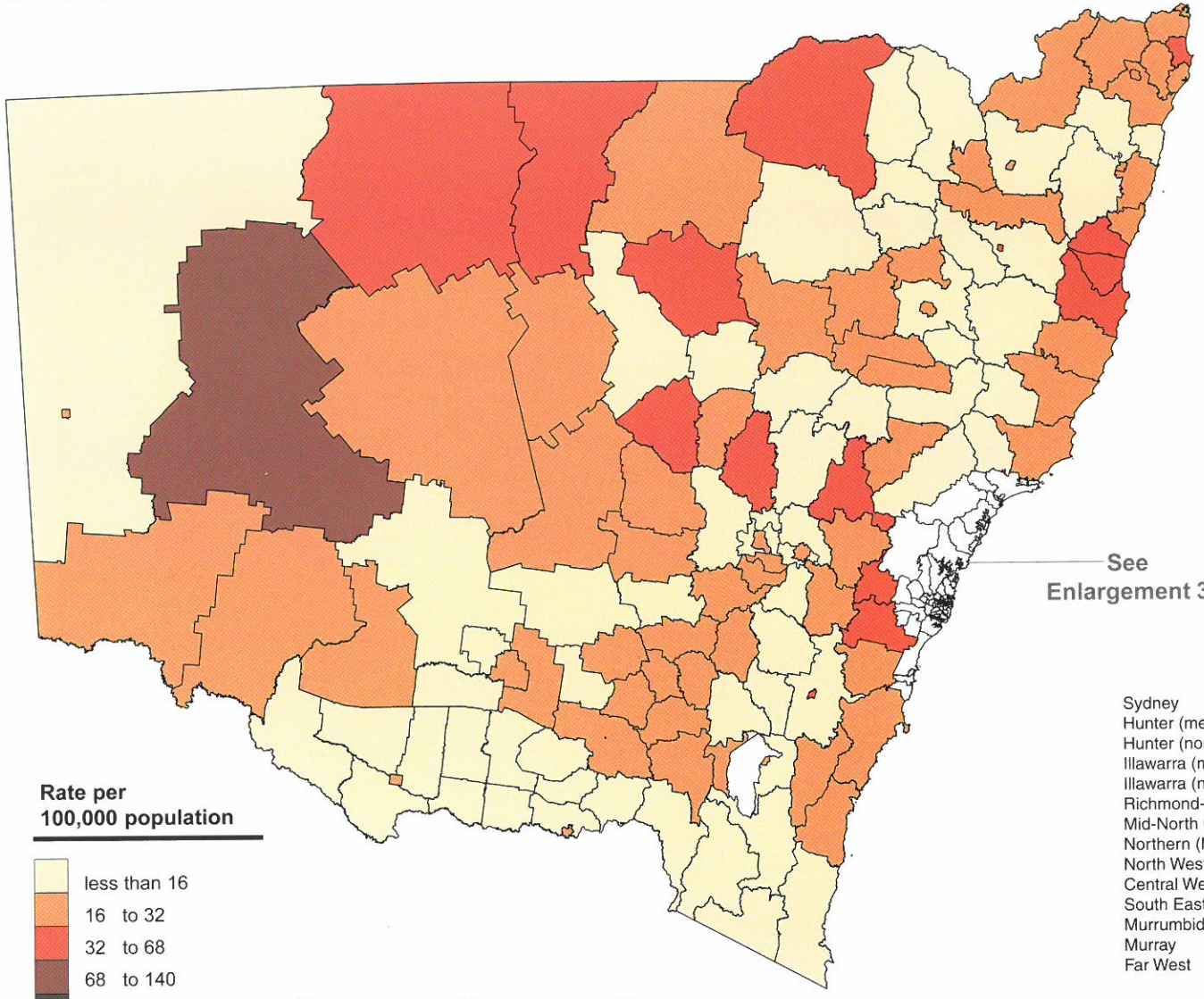
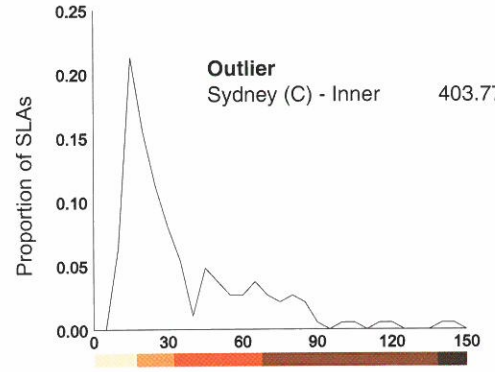
MAP 5

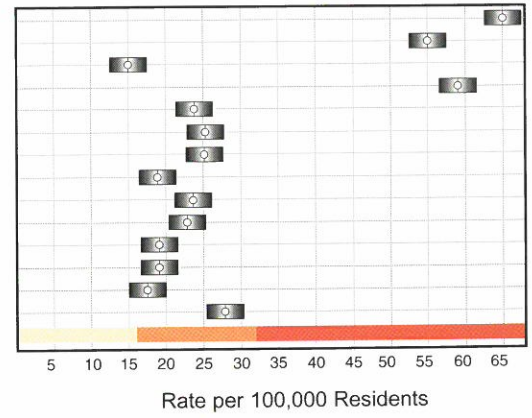
New South Wales
Unarmed Robbery - Rate[1] per 100,000 Residents



Distribution of Statistical Local Areas (SLAs) According to Rate of Unarmed Robbery



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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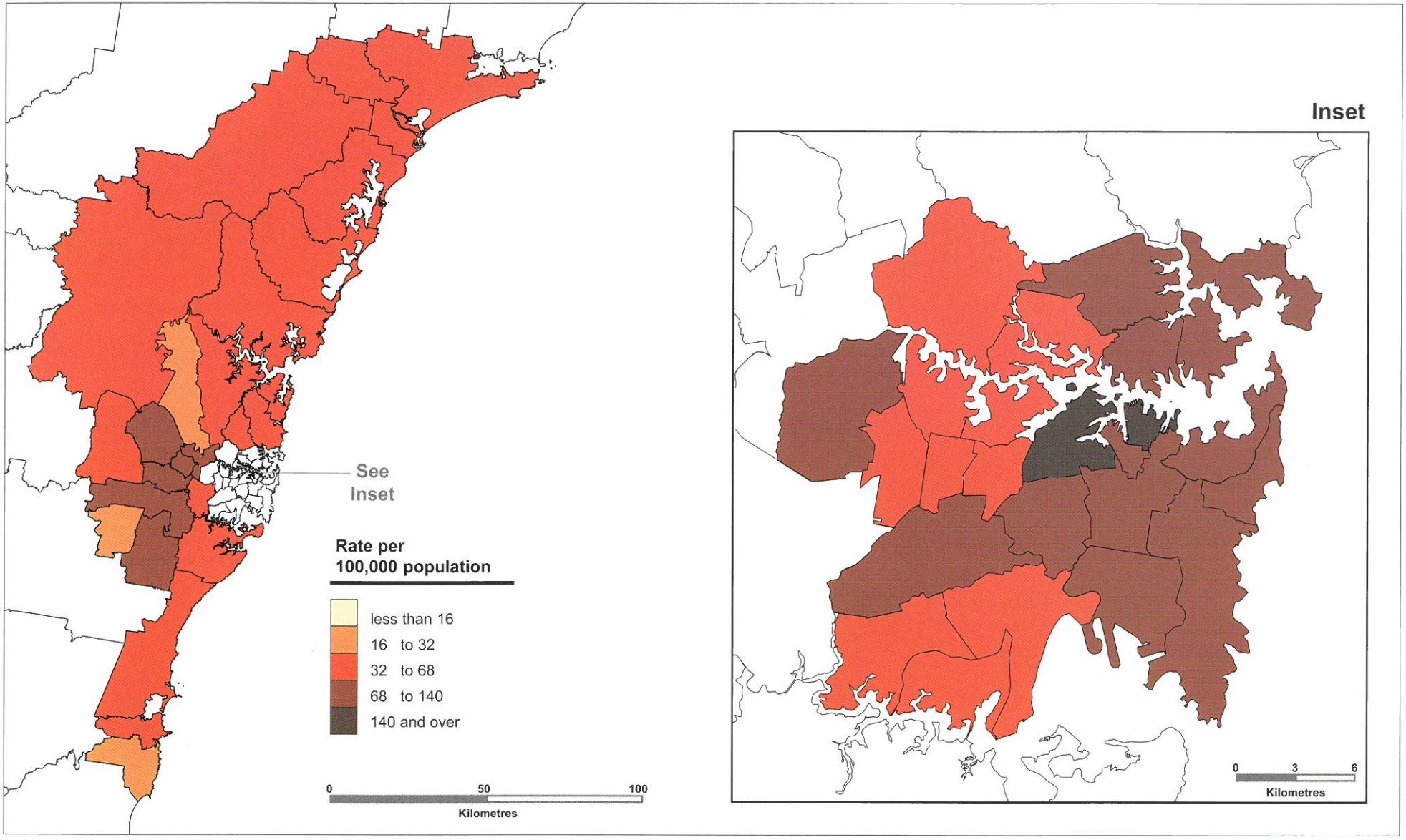
MAP 6

NEW SOUTH WALES - ENLARGEMENT 3
UNARMED ROBBERY - RATE[1] PER 100,000 RESIDENTS



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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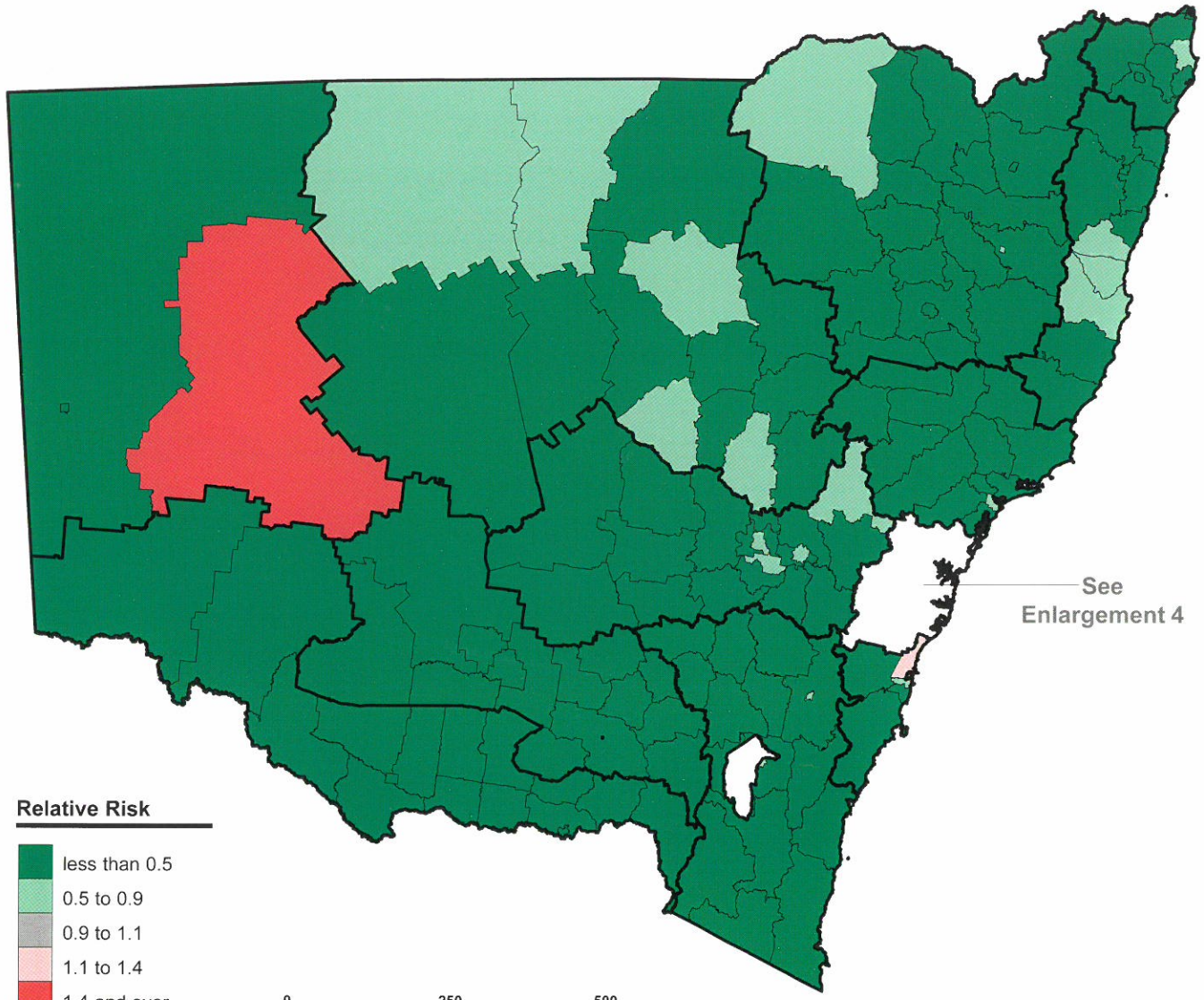
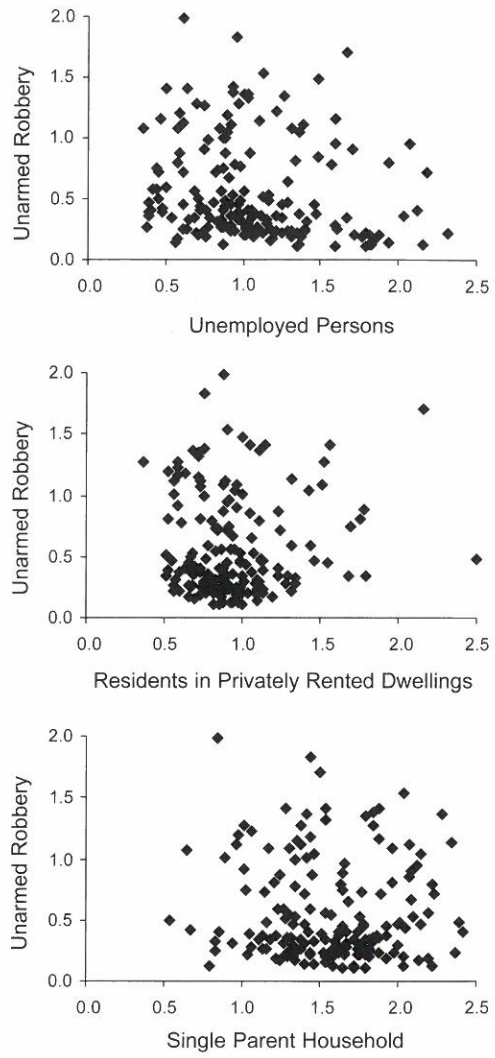
MAP 7

New South Wales
Unarmed Robbery - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics



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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

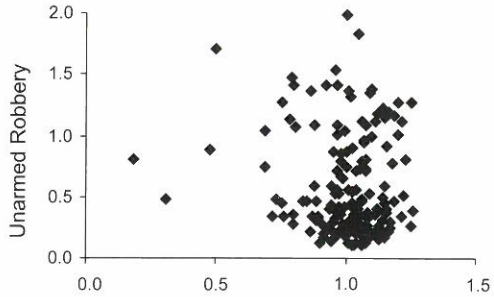
Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

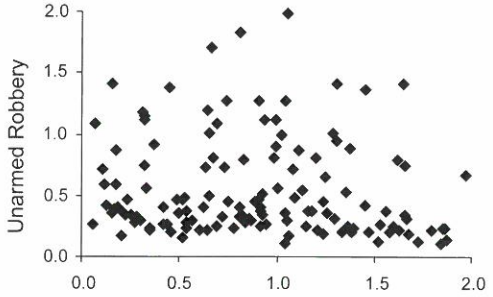
MAP 8

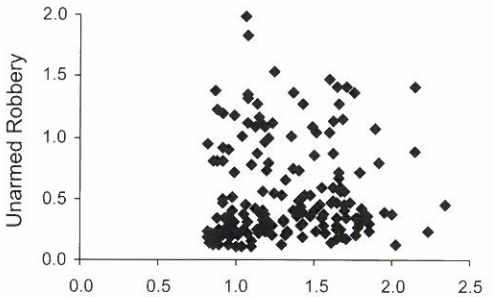
New South Wales - Enlargement 4

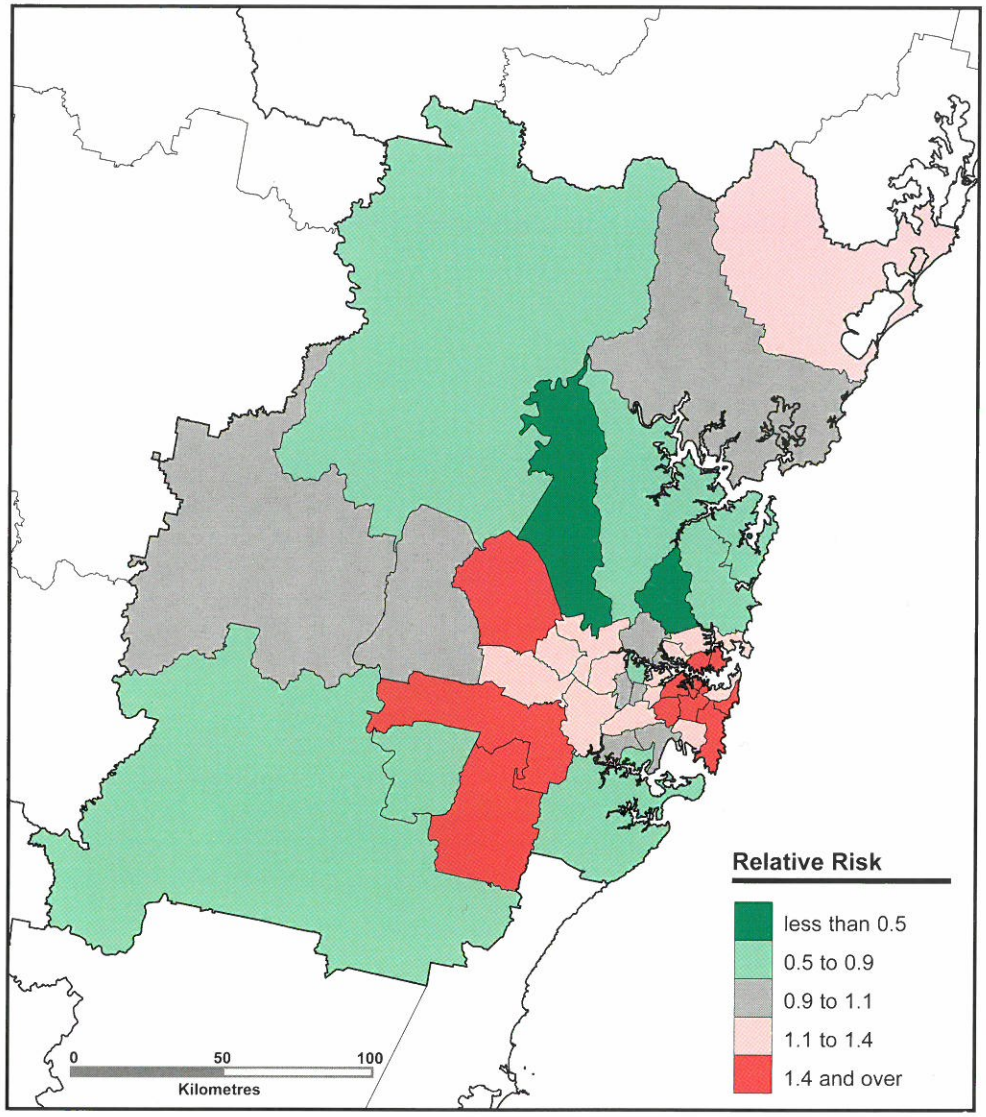
Unarmed Robbery - Rate per 100,000 Residents Relative to State Average

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics









[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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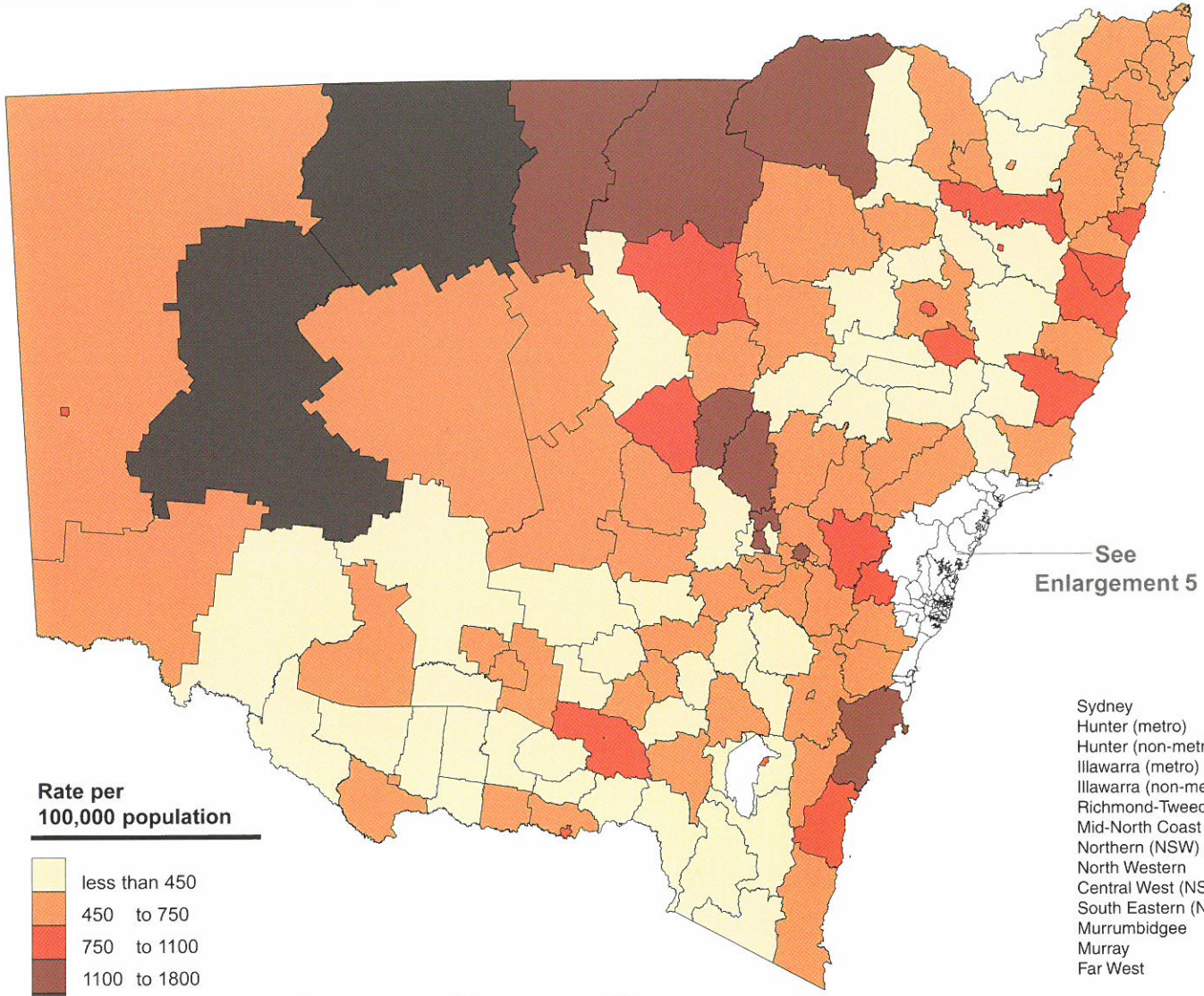
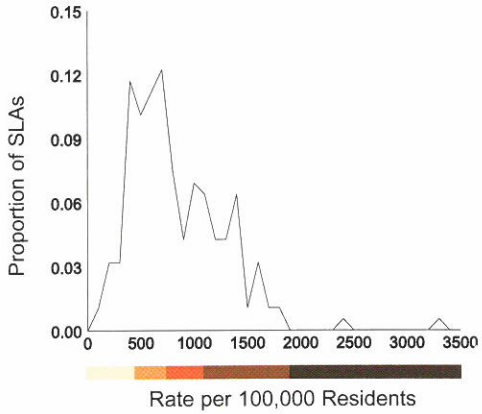
MAP 9

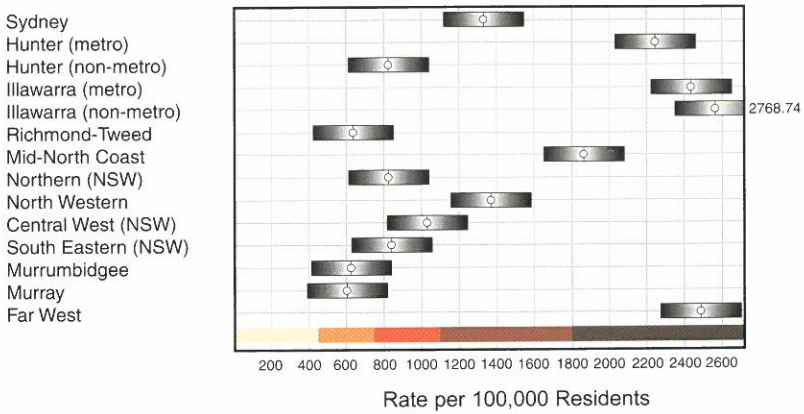
New South Wales
Residential Break & Enter - Rate[1] per 100,000 Residents



Distribution of Statistical Local Areas (SLAs) According to Rate of Residential Break & Enter



Statistical Divisions 95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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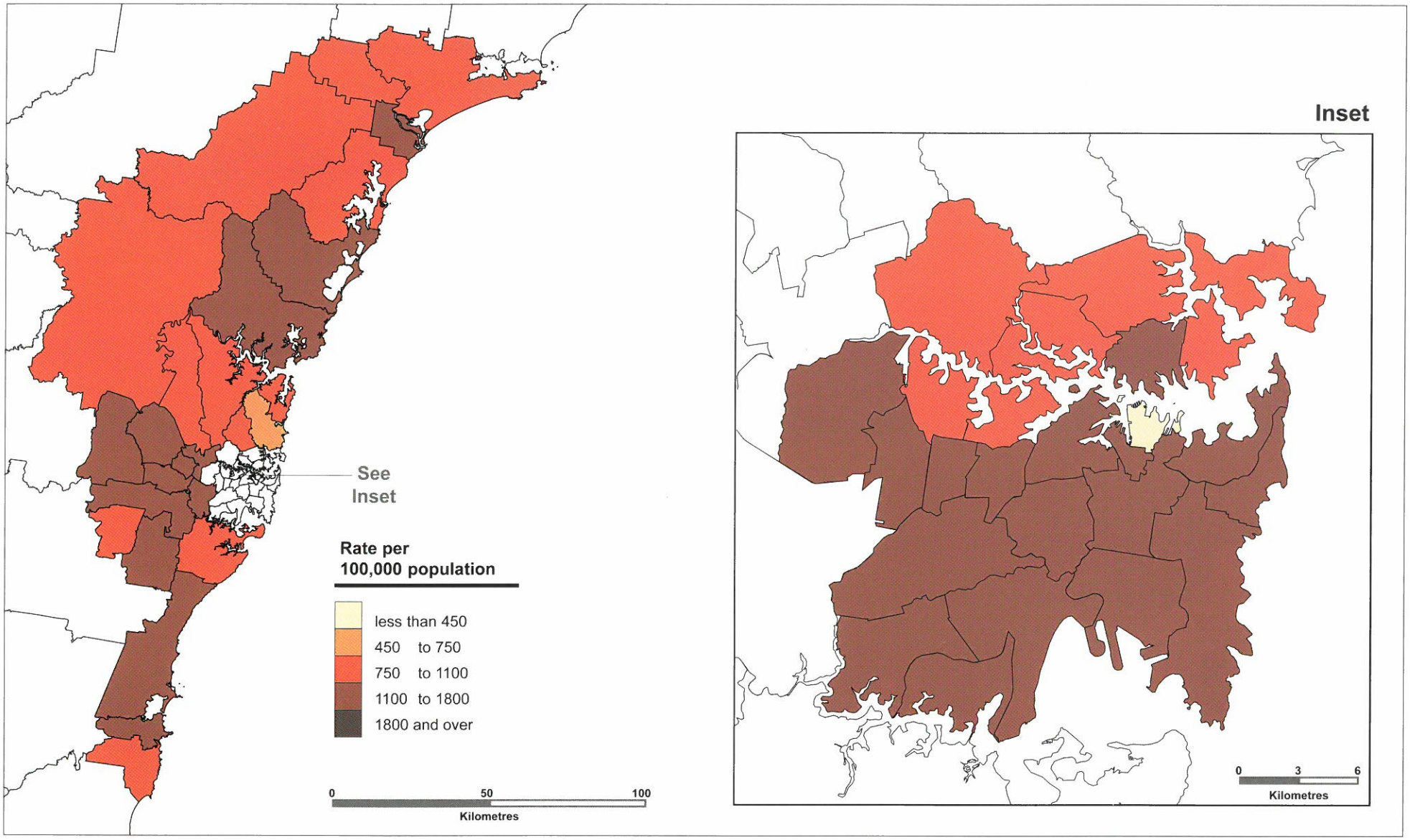
MAP 10

New South Wales - Enlargement 5

Residential Break & Enter - Rate[1] per 100,000 Residents



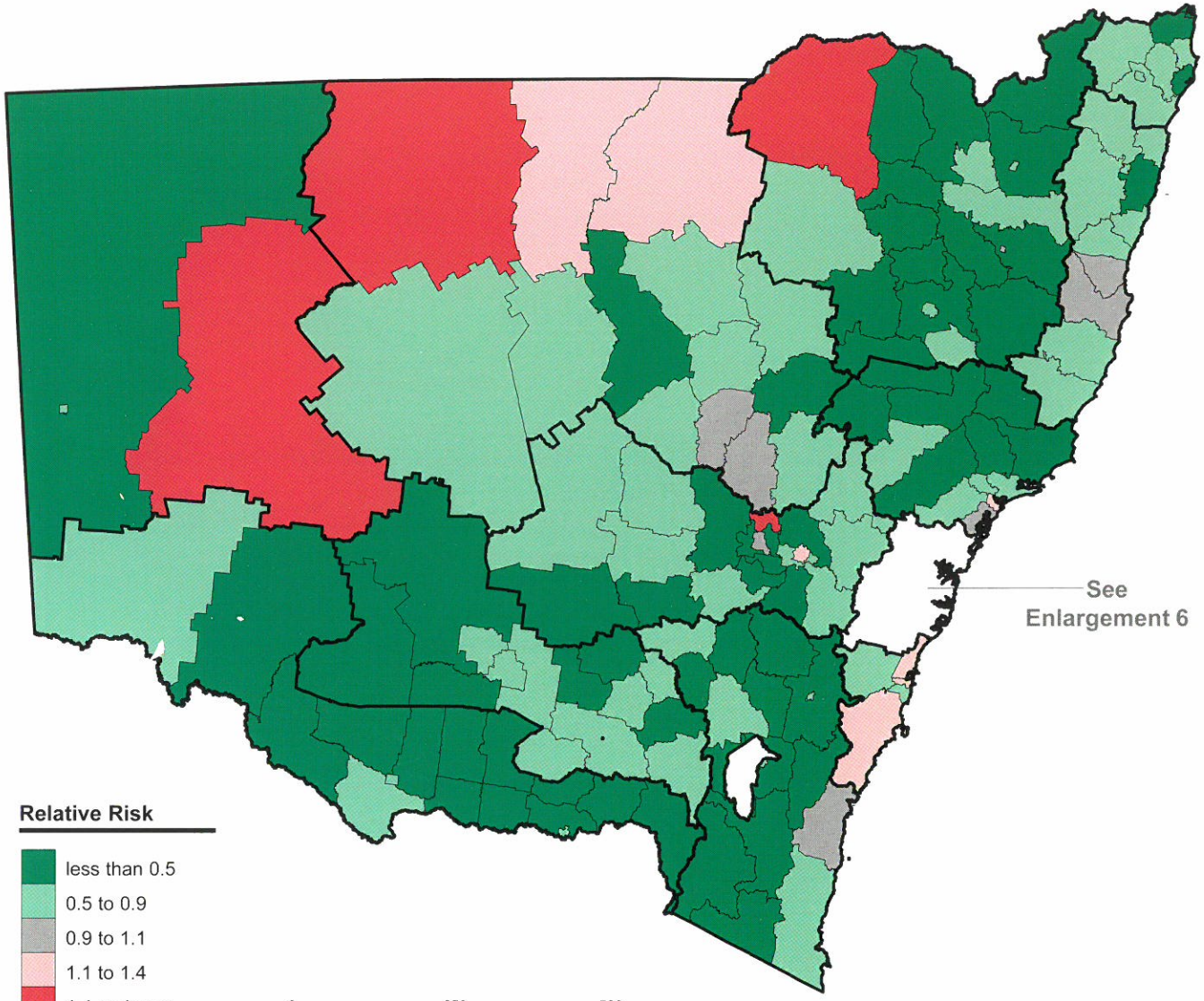
[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

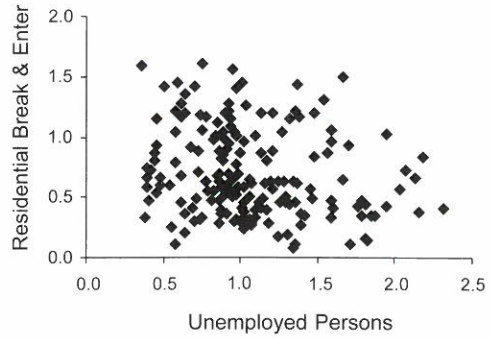
©Australian Institute of Criminology 2000

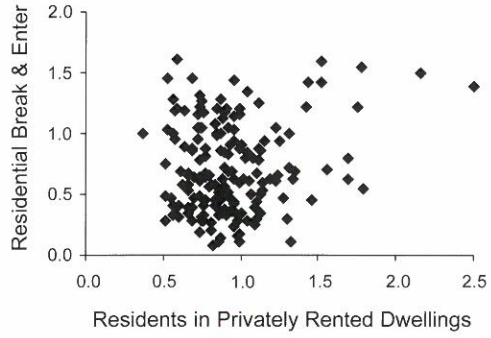
MAP 11

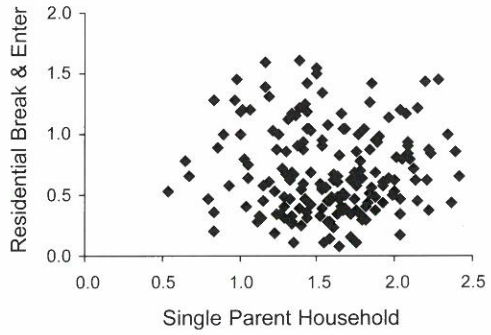
New South Wales
Residential Break & Enter - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

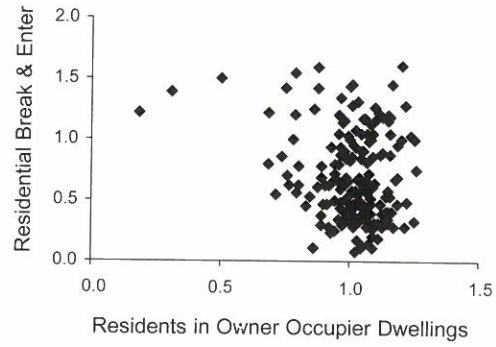
Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

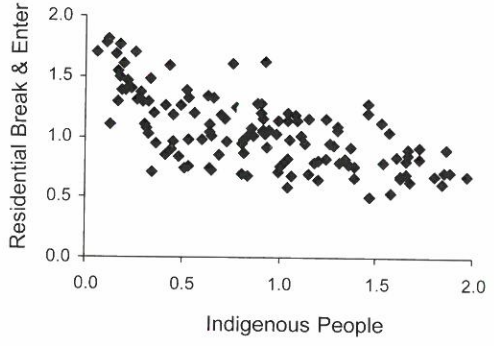
MAP 12

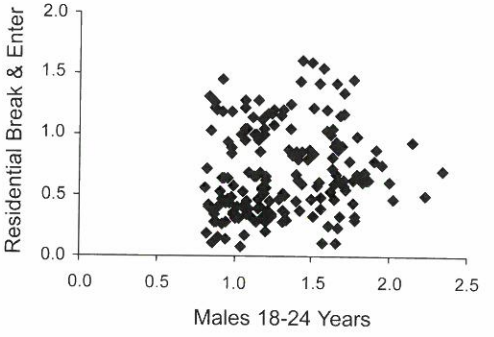
NEW SOUTH WALES - ENLARGEMENT 6

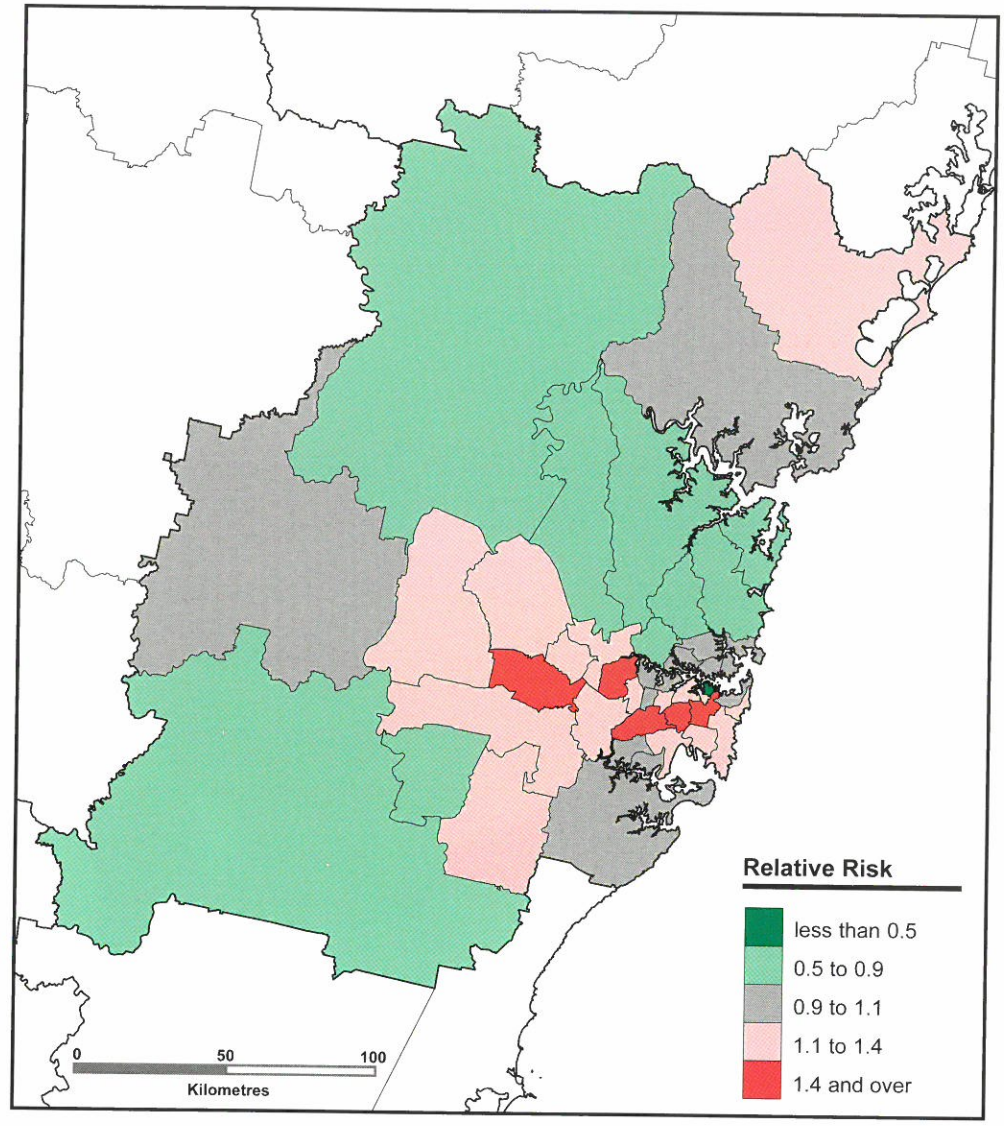
RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics









[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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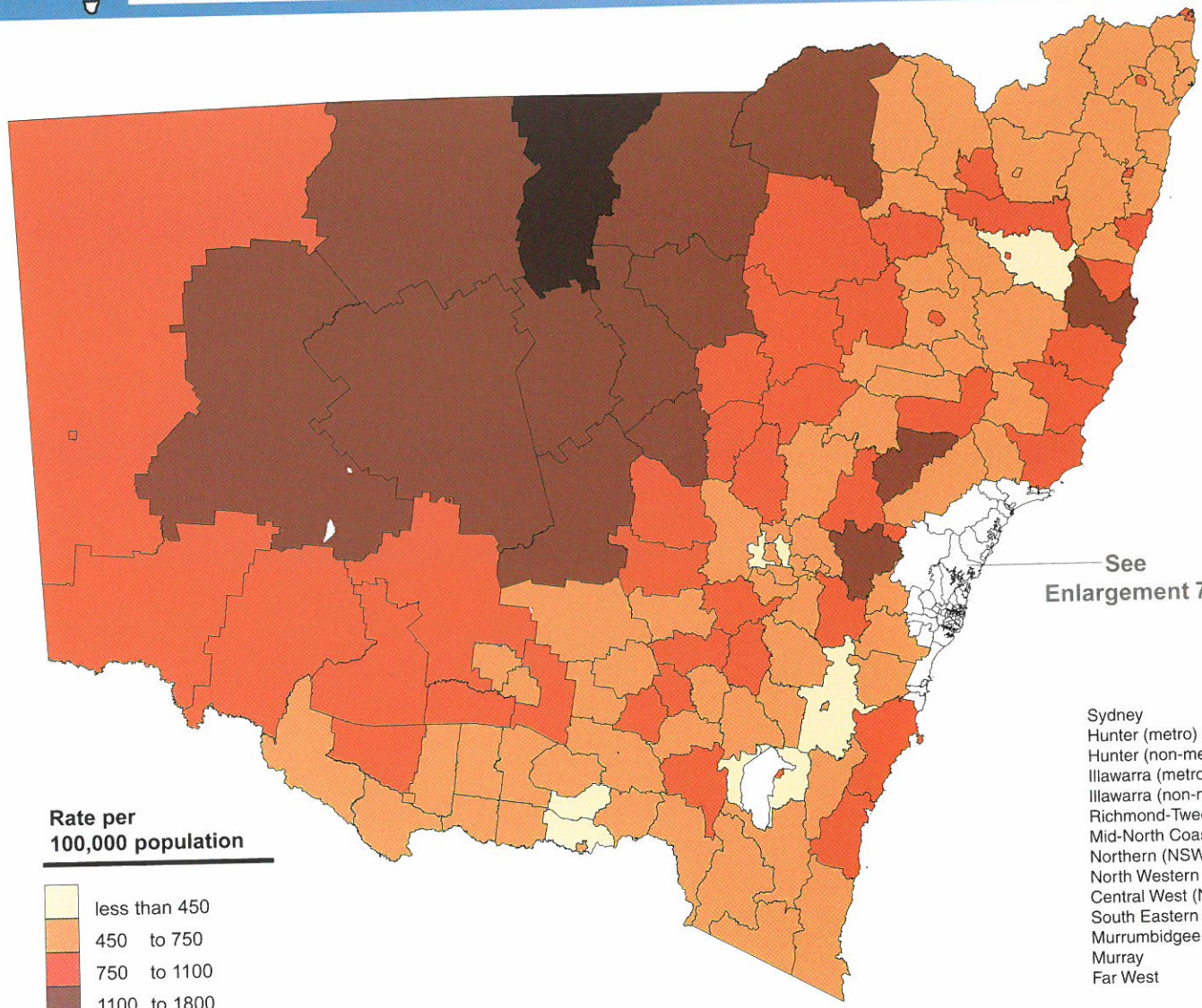
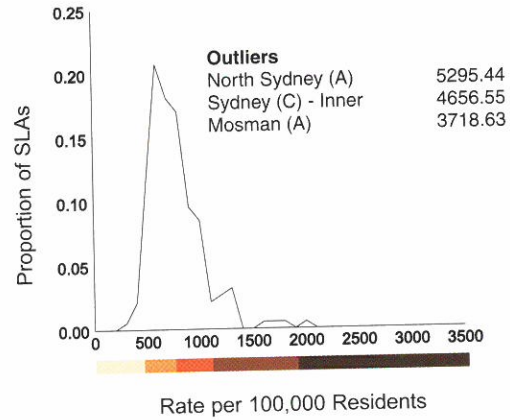
MAP 13

New South Wales
Non-Residential Break & Enter - Rate[1] per 100,000 Residents

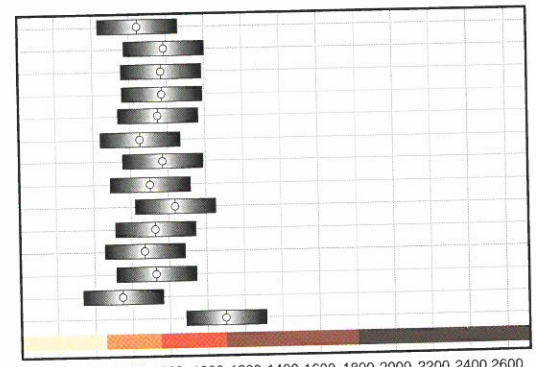


Distribution of Statistical Local Areas (SLAs) According to Rate of Non-Residential Break & Enter



Statistical Divisions 95 Percent Confidence Intervals

Sydney
Hunter (metro)
Hunter (non-metro)
Illawarra (metro)
Illawarra (non-metro)
Richmond-Tweed
Mid-North Coast
Northern (NSW)
North Western
Central West (NSW)
South Eastern (NSW)
Murrumbidgee
Murray
Far West



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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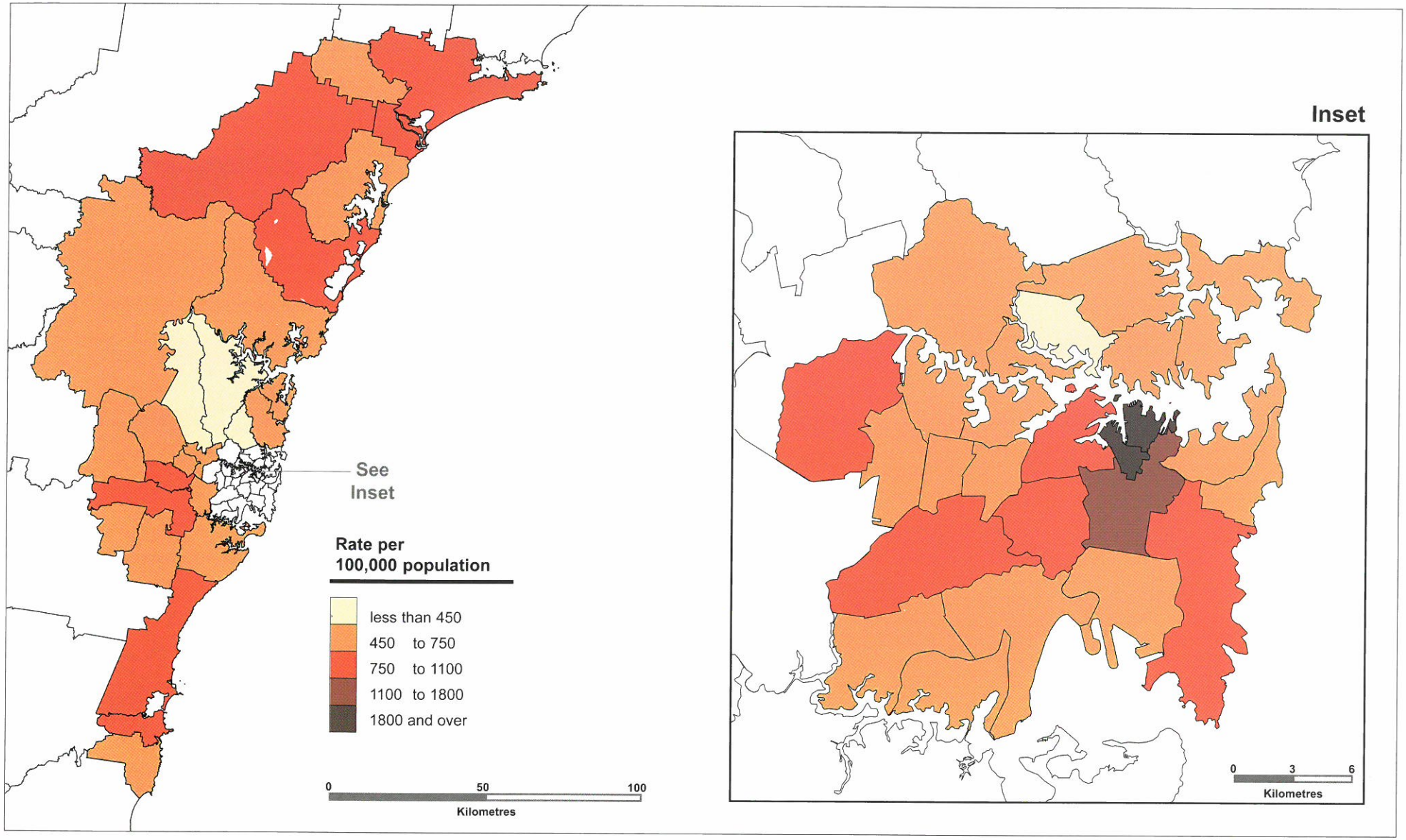
MAP 14

New South Wales - Enlargement 7
Non-Residential Break & Enter - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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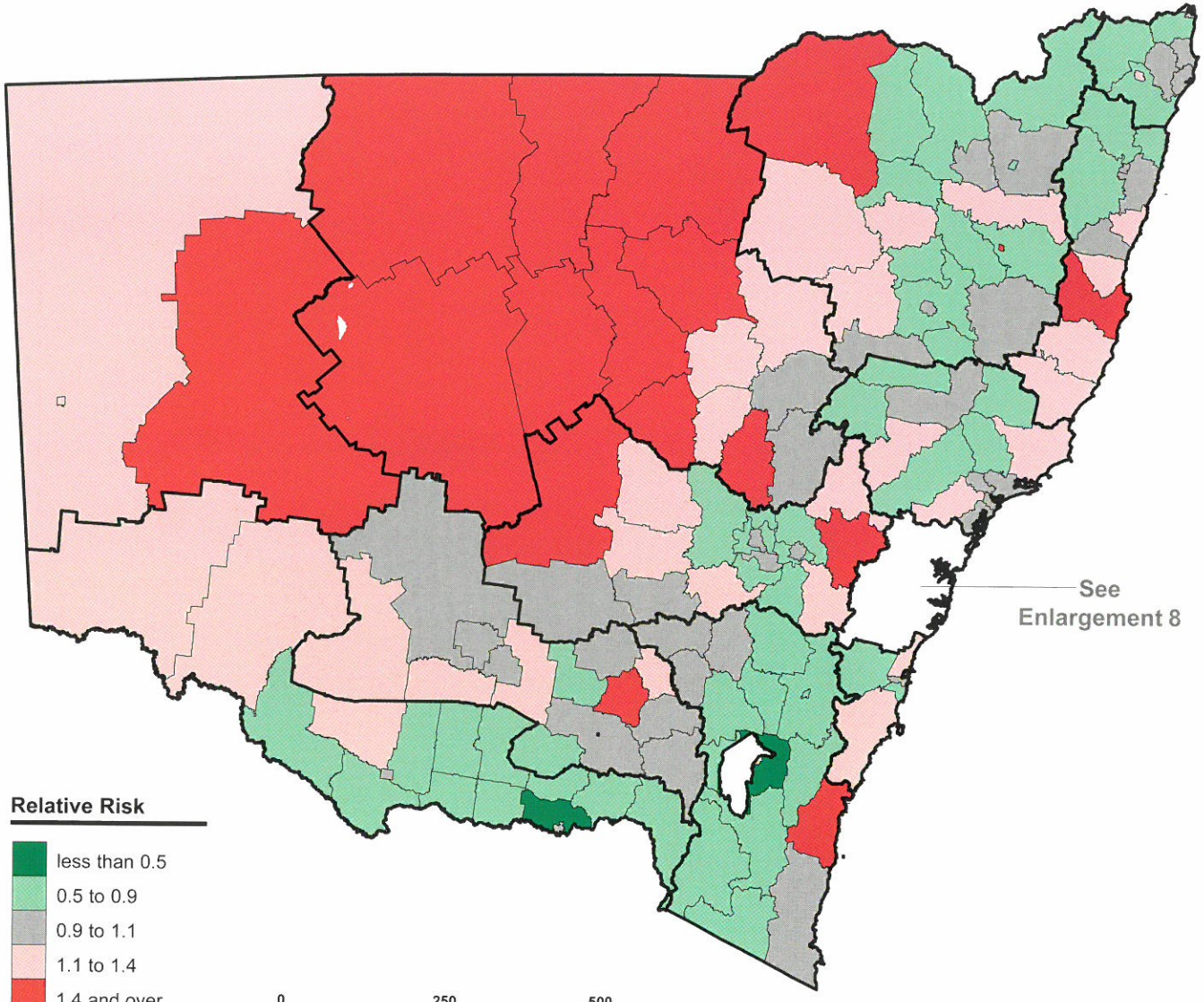
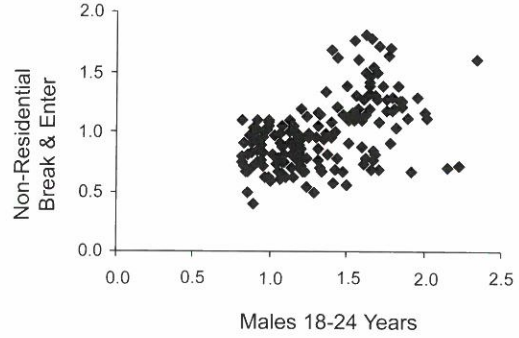
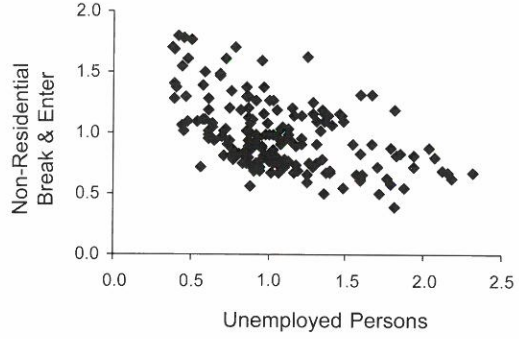
MAP 15

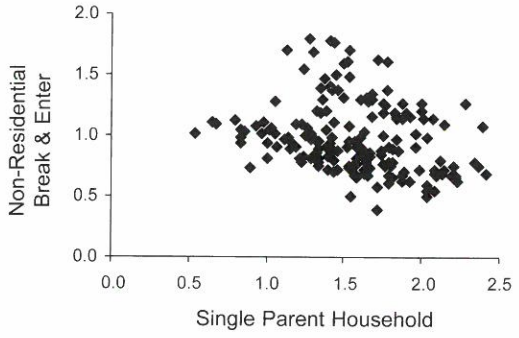
New South Wales
Non-Residential Break & Enter - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

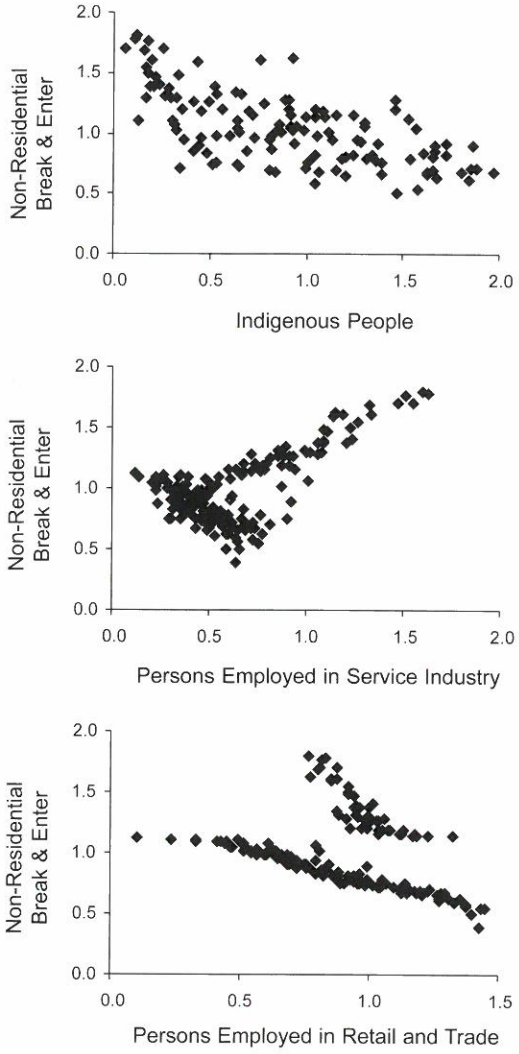
Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

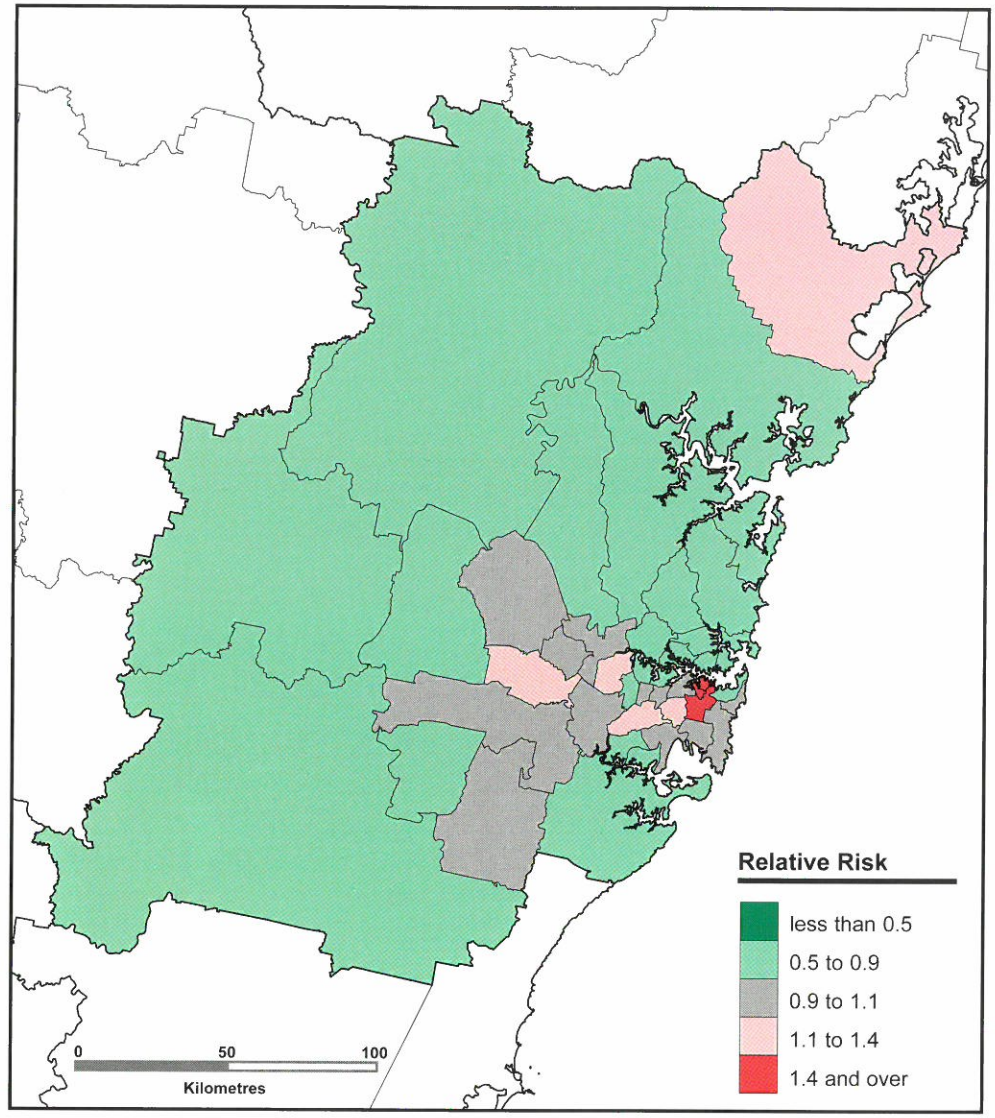
MAP 16

NEW SOUTH WALES - ENLARGEMENT 8

NON-RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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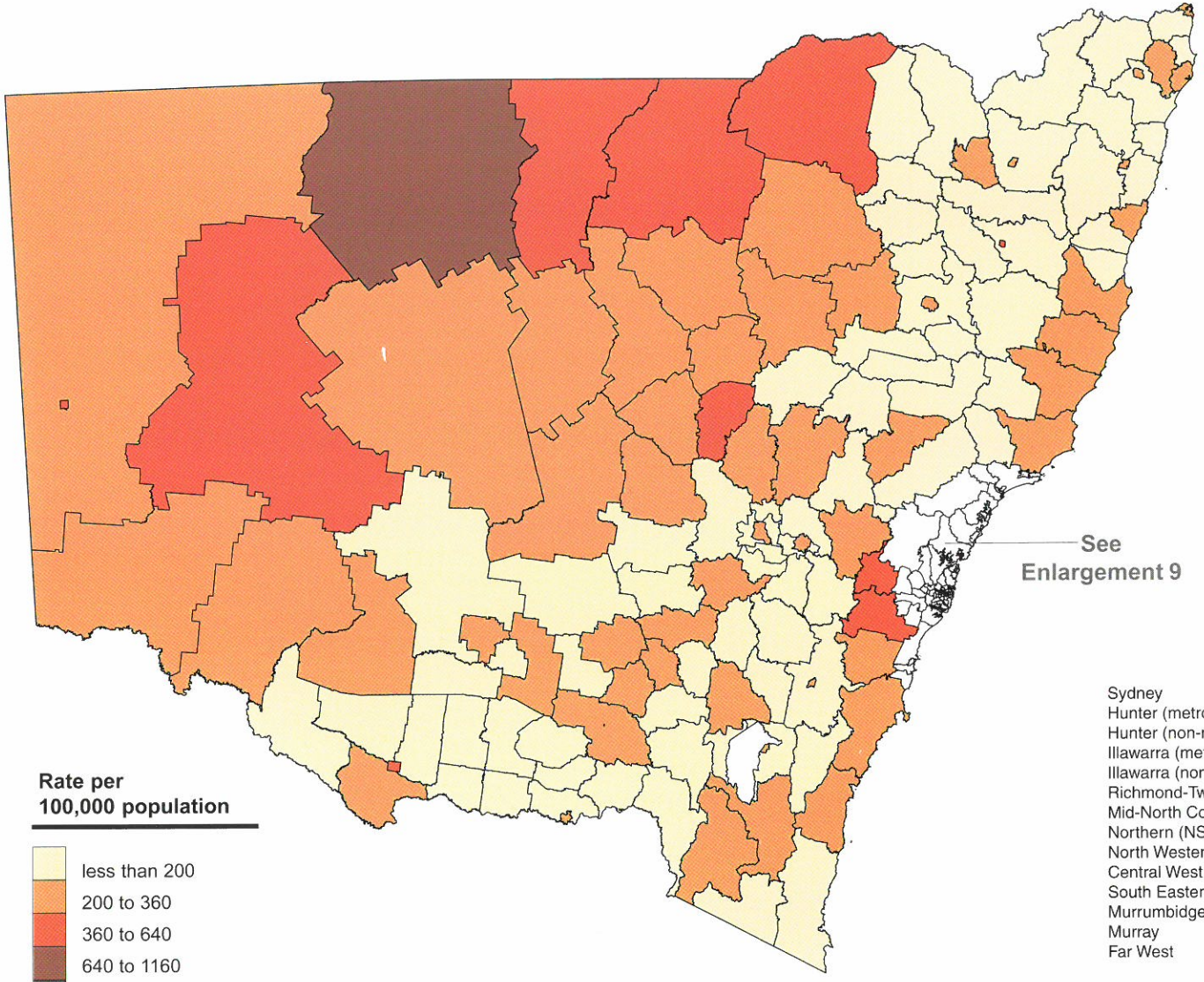
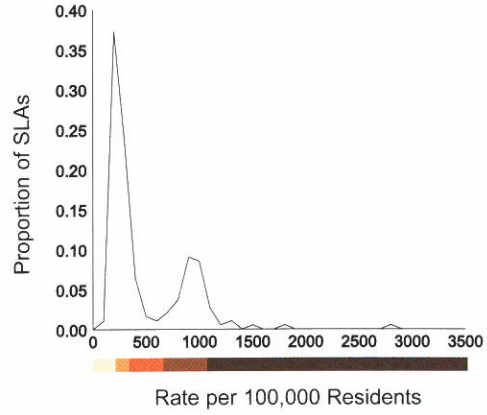
MAP 17

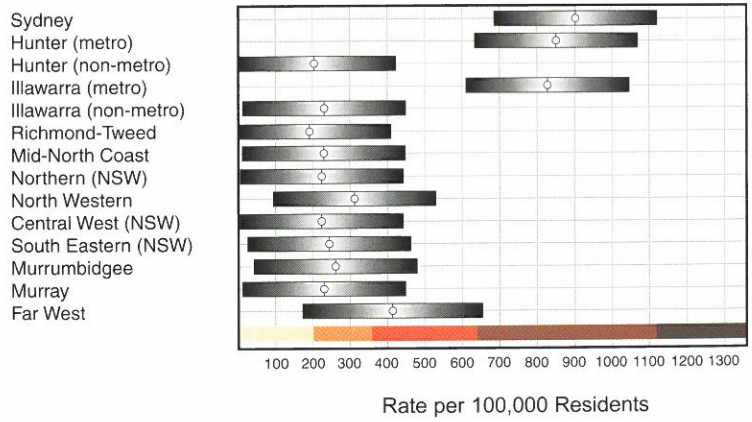
New South Wales
Motor Vehicle Theft - Rate[1] per 100,000 Residents



Distribution of Statistical Local Areas (SLAs) According to Rate of Motor Vehicle Theft



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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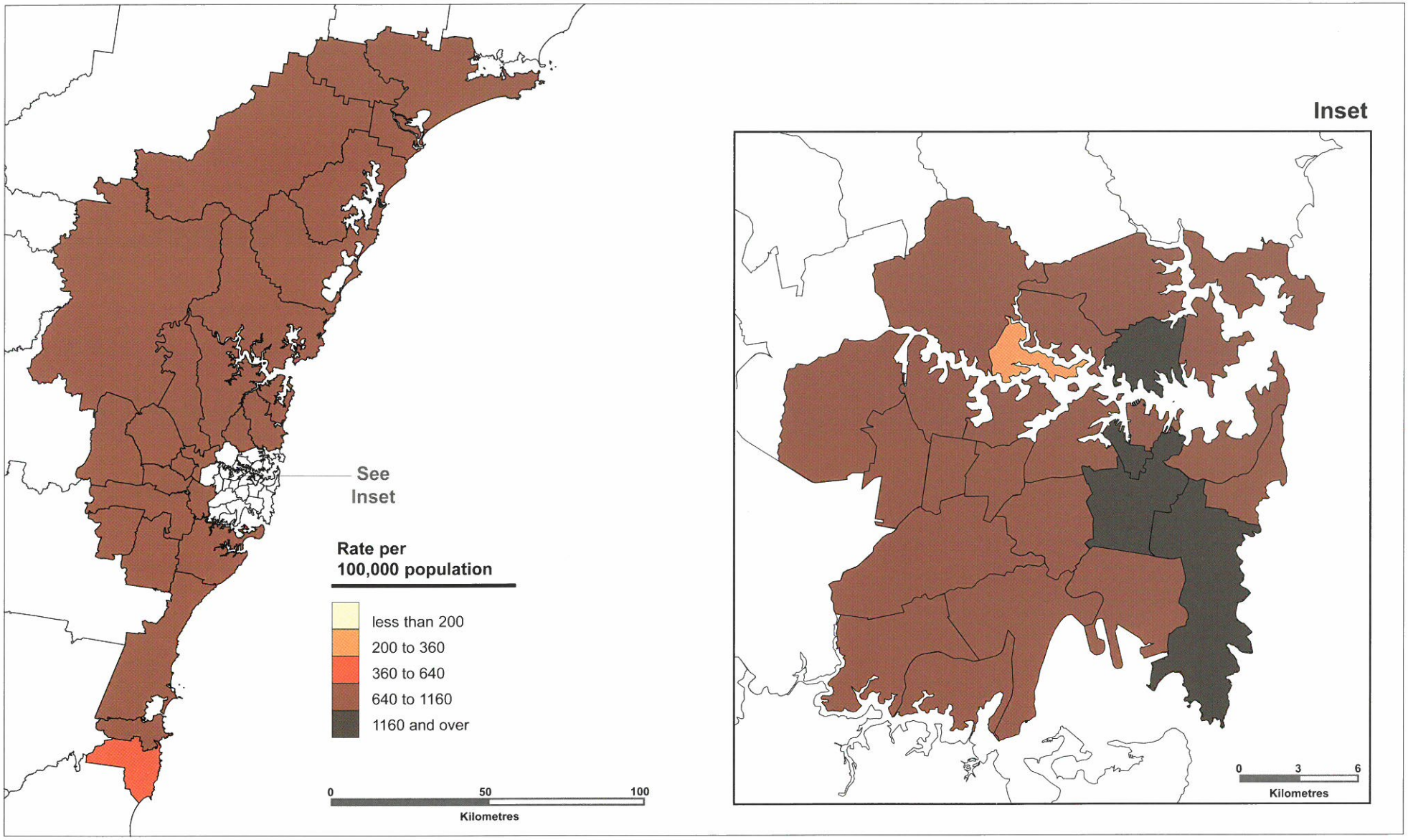
MAP 18

New South Wales - Enlargement 9
Motor Vehicle Theft - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1995 to 1998.

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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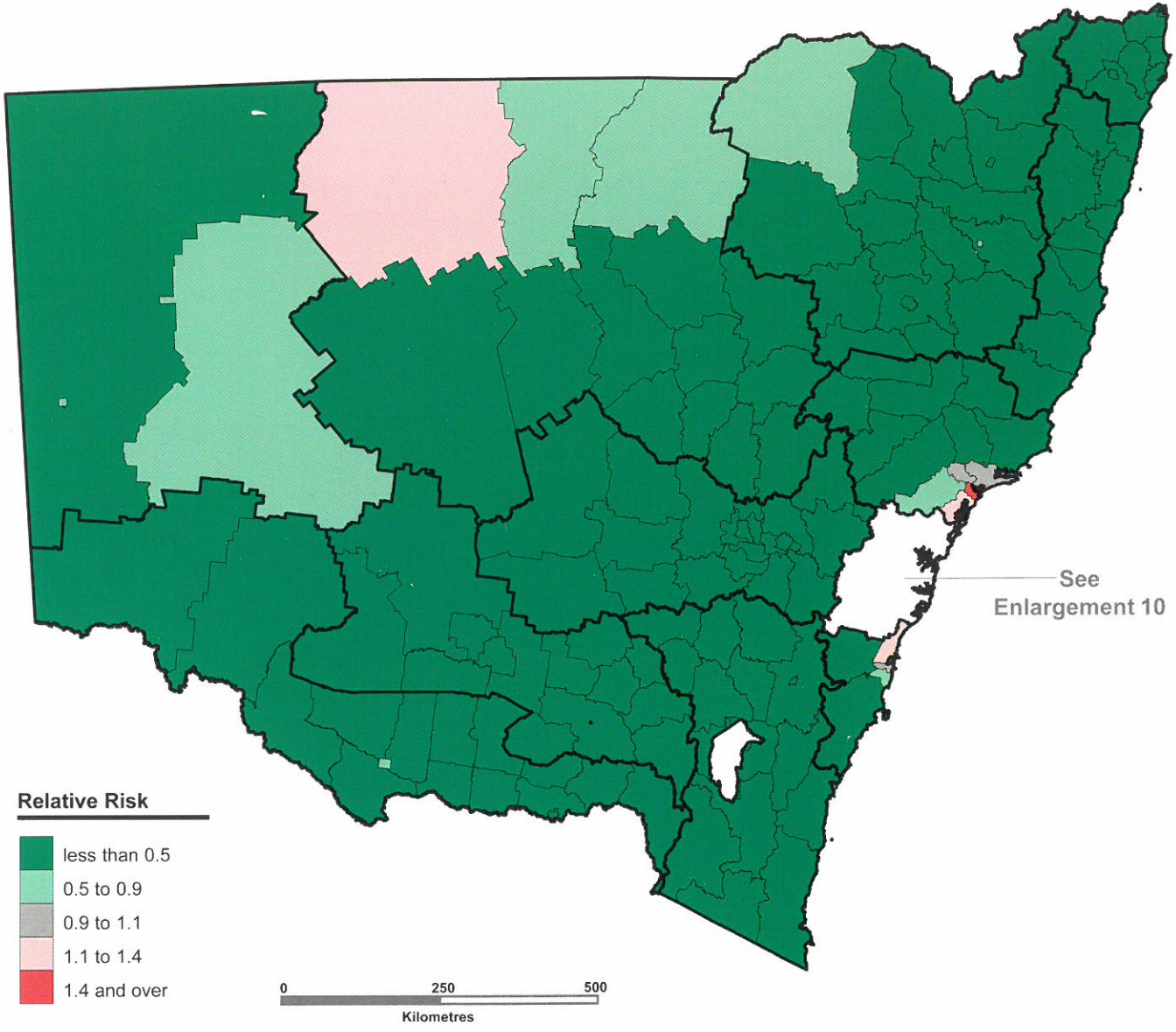
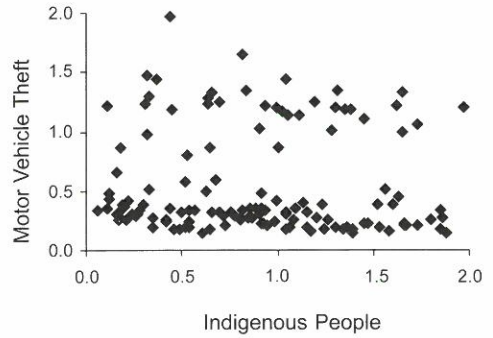
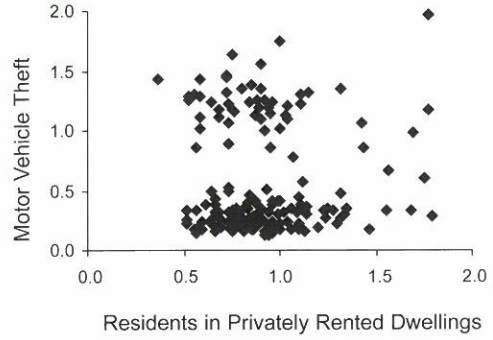
MAP 19

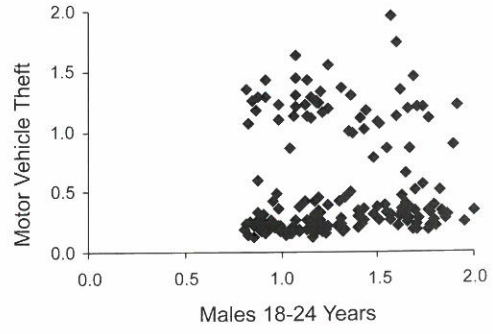
New South Wales
Motor Vehicle Theft - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

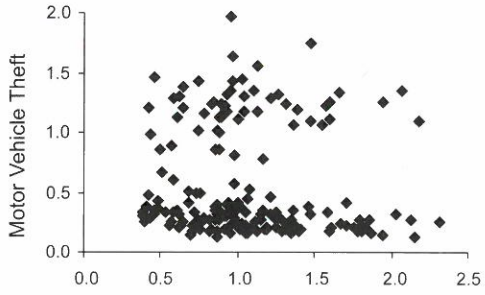
Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

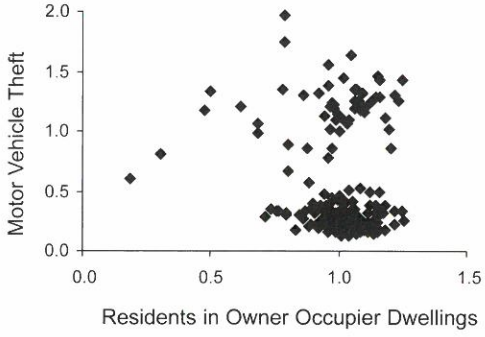
MAP 20

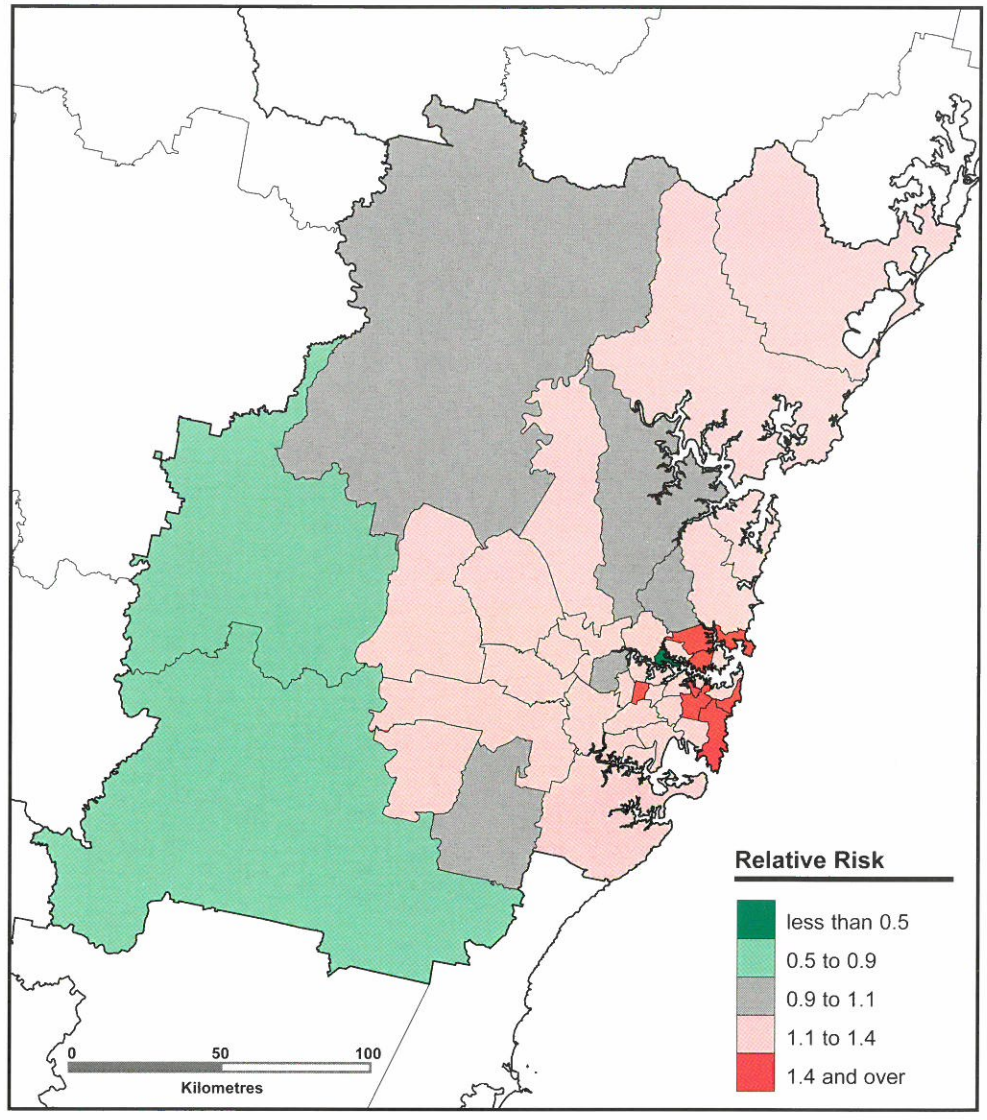
NEW SOUTH WALES - ENLARGEMENT 10

MOTOR VEHICLE THEFT - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: New South Wales Bureau of Crime Statistics and Research (*refer to* Table A1, p.146).

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MAP 21

New South Wales
Statistical Local Areas

1	Albury (C)	63	Forbes (A)
2	Armidale (C)	64	Gilgandra (A)
3	Ashfield (A)	65	Glen Innes (A)
4	Auburn (A)	66	Gloucester (A)
5	Ballina (A)	67	Gosford (C)
6	Balranald (A)	68	Goulburn (C)
7	Bankstown (C)	69	Grafton (C)
8	Barraba (A)	70	Great Lakes (A)
9	Bathurst (C)	71	Greater Lithgow (C)
10	Baulkham Hills (A)	72	Greater Taree (C)
11	Bega Valley (A)	73	Griffith (C)
12	Bellingen (A)	74	Gundagai (A)
13	Berrigan (A)	75	Gunnedah (A)
14	Bingara (A)	76	Gunning (A)
15	Blacktown (C)	77	Guyra (A)
16	Bland (A)	78	Harden (A)
17	Blayney (A) - Pt A	79	Hastings (A)
18	Blayney (A) - Pt B	80	Hawkesbury (C)
19	Blue Mountains (C)	81	Hay (A)
20	Bogan (A)	82	Holbrook (A)
21	Bombala (A)	83	Holroyd (C)
22	Boorowa (A)	84	Hornsby (A)
23	Botany (A)	85	Hume (A)
24	Bourke (A)	86	Hunter's Hill (A)
25	Brewarrina (A)	87	Hurstville (C)
26	Broken Hill (C)	88	Inverell (A) - Pt A
27	Burwood (A)	89	Inverell (A) - Pt B
28	Byron (A)	90	Jerilderie (A)
29	Cabonne (A) - Pt A	91	Junee (A)
30	Cabonne (A) - Pt B	92	Kempsey (A)
31	Cabonne (A) - Pt C	93	Kiama (A)
32	Camden (A)	94	Kogarah (A)
33	Campbelltown (C) (NSW)	95	Ku-ring-gai (A)
34	Canterbury (C)	96	Kyogle (A)
35	Carrathool (A)	97	Lachlan (A)
36	Casino (A)	98	Lake Macquarie (C)
37	Central Darling (A)	99	Lane Cove (A)
38	Cessnock (C)	100	Leeton (A)
39	Cobar (A)	101	Leichhardt (A)
40	Coffs Harbour (C)	102	Lismore (C)
41	Conargo (A)	103	Liverpool (C)
42	Concord (A)	104	Lockhart (A)
43	Coolah (A)	105	Maclean (A)
44	Coolamon (A)	106	Maitland (C)
45	Cooma-Monaro (A)	107	Manilla (A)
46	Coonabarabran (A)	108	Manly (A)
47	Coonamble (A)	109	Marrickville (A)
48	Cootamundra (A)	110	Merriwa (A)
49	Copmanhurst (A)	111	Moree Plains (A)
50	Corowa (A)	112	Mosman (A)
51	Cowra (A)	113	Mudgee (A)
52	Crookwell (A)	114	Mulwaree (A)
53	Culcairn (A)	115	Murray (A)
54	Deniliquin (A)	116	Murrumbidgee (A)
55	Drummoyne (A)	117	Murrurundi (A)
56	Dubbo (C)	118	Muswellbrook (A)
57	Dumaresq (A)	119	Nambucca (A)
58	Dungog (A)	120	Narrabri (A)
59	Eurobodalla (A)	121	Narrandera (A)
60	Evans (A) - Pt A	122	Narromine (A)
61	Evans (A) - Pt B	123	Newcastle (C) - Inner
62	Fairfield (C)	124	Newcastle (C) - Remainder

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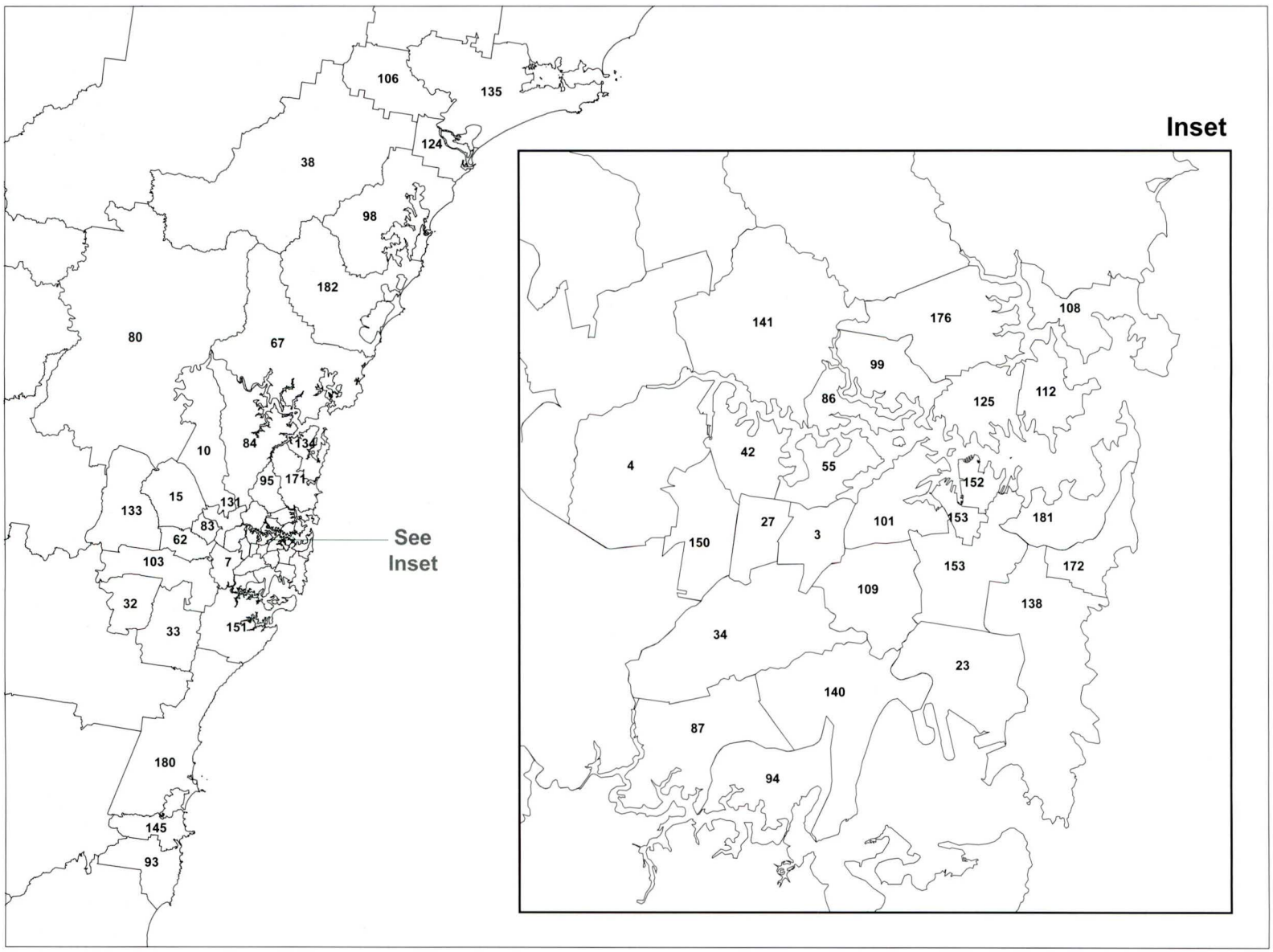
MAP 22

NEW SOUTH WALES - ENLARGEMENT 11
STATISTICAL LOCAL AREAS

125 North Sydney (A)
126 Nundle (A)
127 Nymboida (A)
128 Oberon (A)
129 Orange (C)
130 Parkes (A)
131 Parramatta (C)
132 Parry (A)
133 Penrith (C)
134 Pittwater (A)
135 Port Stephens (A)
136 Queanbeyan (C)
137 Quirindi (A)
138 Randwick (C)
139 Richmond River (A)
140 Rockdale (C)
141 Ryde (C)
142 Rylstone (A)
143 Scone (A)
144 Severn (A)
145 Shellharbour (A)
146 Shoalhaven (C)
147 Singleton (A)
148 Snowy River (A)
149 South Sydney (C)
150 Strathfield (A)
151 Sutherland Shire (A)
152 Sydney (C) - Inner
153 Sydney (C) - Remainder
154 Tallaganda (A)
155 Tamworth (C)
156 Temora (A)
157 Tenterfield (A)
158 Tumbarumba (A)
159 Tumut (A)
160 Tweed (A) - Pt A
161 Tweed (A) - Pt B
162 Ulmarra (A)
163 Unincorp. Far West
164 Uralla (A)
165 Urana (A)
166 Wagga Wagga (C)
167 Wakool (A)
168 Walcha (A)
169 Walgett (A)
170 Warren (A)
171 Warringah (A)
172 Waverley (A)
173 Weddin (A)
174 Wellington (A)
175 Wentworth (A)
176 Willoughby (C)
177 Windouran (A)
178 Wingecarribee (A)
179 Wollondilly (A)
180 Wollongong (C)
181 Woollahra (A)
182 Wyong (A)
183 Yallaroi (A)
184 Yarrowlumla (A) - Pt A
185 Yarrowlumla (A) - Pt B
186 Yass (A)
187 Young (A)



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MAP 23

New South Wales Statistical Divisions

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VICTORIA

MAP

24	Robbery – Rate per 100,000 Residents (Victoria)	41
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27	Residential Break & Enter – Rate per 100,000 Residents (Victoria)	44
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31	Non-Residential Break & Enter – Rate per 100,000 Residents (Victoria)	48
32	Non-Residential Break & Enter – Rate per 100,000 Residents (Victoria – Enlargement 4)	49
33	Non-Residential Break & Enter – Rate per 100,000 Residents Relative to State Average (Victoria)	50
34	Non-Residential Break & Enter – Rate per 100,000 Residents Relative to State Average (Victoria – Enlargement 5)	51
35	Motor Vehicle Theft – Rate per 100,000 Residents (Victoria)	52
36	Motor Vehicle Theft – Rate per 100,000 Residents (Victoria – Enlargement 6)	53
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Robbery (MAPS 24-26)

Separate data for the offences of armed robbery and unarmed robbery were not available for Victoria.

Robbery tends to concentrate, both in absolute and relative terms, in the Statistical Local Areas located in the Melbourne, Gippsland and Barwon Statistical Divisions, which contain 81% of the entire state population. Note however that rates of robbery are relatively low, with the highest falling within the 32-68 per 100,000 total resident bracket.

The frequency polygon and the confidence intervals of page 41 illustrate a remarkable split between relatively low and high robbery SLAs. Robbery is more prevalent in the metropolitan than in non-metropolitan SLAs of Victoria. As shown by the scatter diagrams in pages 42 and 43, none of the area socioeconomic characteristics, available from the 1996 Census of Population data, seem to be correlated with robbery rates in the SLAs of Victoria.

Residential Break and Enter (MAPS 27-30)

Residential break and enter tends to be more prevalent in the Statistical Local Areas within the Melbourne statistical region. Port Phillip recorded the highest rate for this offence.

Fifty-seven per cent of all the dwellings in Port Phillip are flats or units, and 66% of the persons counted in that area at Census night in 1996 lived in a different place five years earlier. In addition, 56% of households are not in owner-occupied dwellings, which is probably associated with high labour mobility, explainable by a relatively large share of service industries in the total employment of the area residents. Key service industries, such as communications and finance, account for 38% of total employment in the Port Phillip area.

Relative to the state average, all the SLAs in the Melbourne region tend to have high rates of residential burglary.

Non-Residential Break and Enter (MAPS 31-34)

Non-residential break and enter represented 32% of all the unlawful entries with intent (UEWI) recorded during 1999 in Victoria. Sixty-five per cent of these incidents occurred in locations corresponding to retail and other key service industries, including wholesale and warehousing (Australian Bureau of Statistics, 2000).

Rates of non-residential burglary exhibit a relatively large amount of regional variation, with the larger concentrations occurring in the Statistical Local Areas of Melbourne-reminder, Yarra-North, Yarra-Richmond, Frankston-West, Hume-Broadmeadows and Darebin-Preston. Socio-economic disadvantage and material deprivation seem to be associated with the high prevalence of non-residential break and enter in these areas. These SLAs have unemployment rates and proportions of one-parent families with dependent children well above the state average.

Non-residential break and enter tends to be more prevalent the closer an area is to the Melbourne-Inner SLA.

Motor Vehicle Theft (MAPS 35-38)

Eighty-eight per cent of the incidents of motor vehicle theft recorded in Victoria during 1999 occurred in non-residential locations 71% of which occurred on the street or a transport-related location.

Map 36 shows that motor vehicle theft is more prevalent in the Statistical Local Areas that belong to the Inner Melbourne Statistical Subdivision, and the SLAs of Moreland (C) – Brunswick, Darebin (C) – Northcote and Preston, and Monash (C) – SouthWest. In general, these areas are characterised by having above average unemployment rates, above average proportion of one-parent families, and below average proportion of households in owner-occupied dwellings.

When prevalence of motor vehicle theft is calculated relative to the average rate in the state, other SLAs belonging to the Melbourne region and Robinvale in the East Mallee region also tend to have high rates for this offence (*refer to* Maps 37-38).

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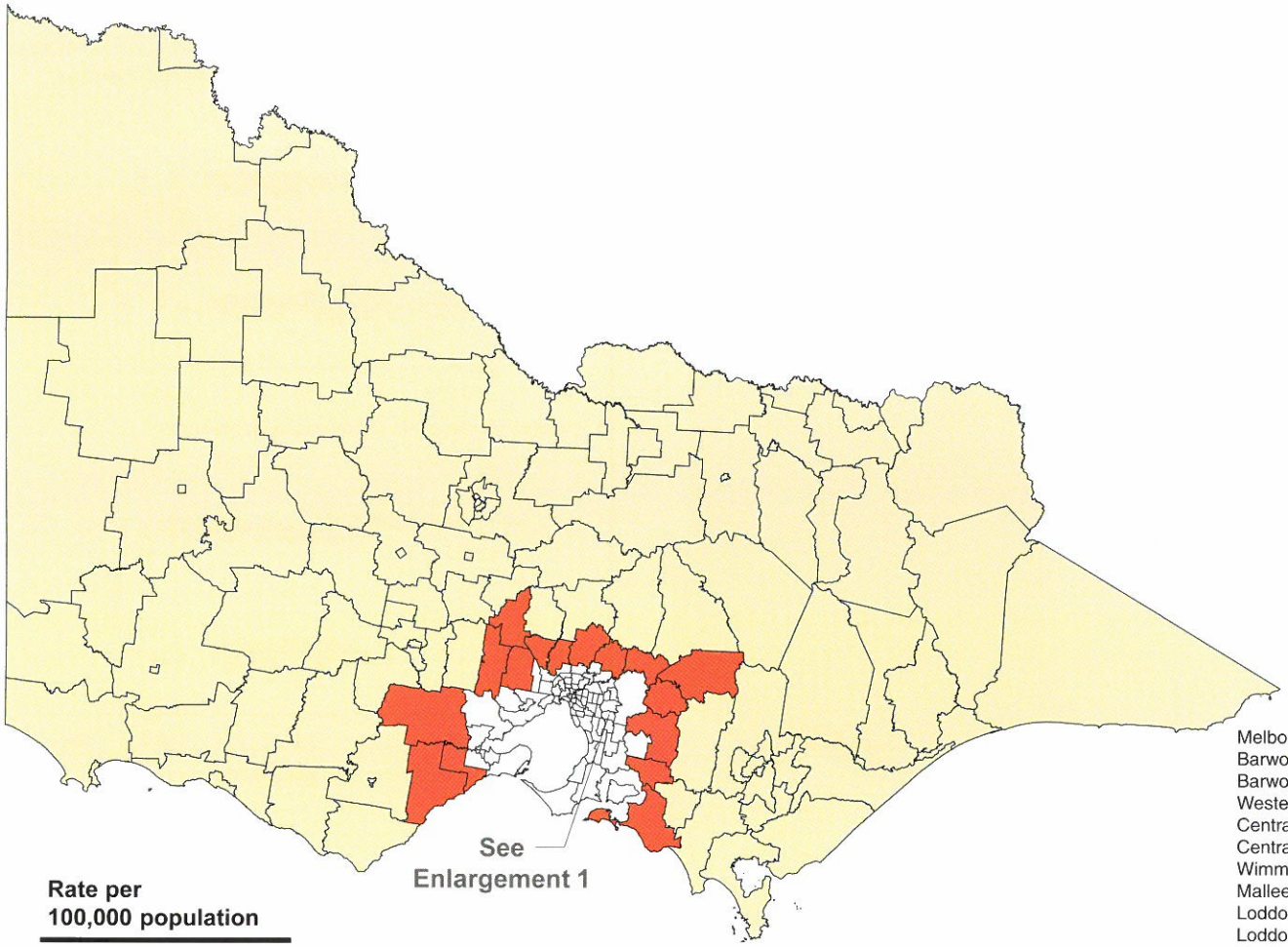
MAP 24

VICTORIA

ROBBERY - RATE[1] PER 100,000 RESIDENTS

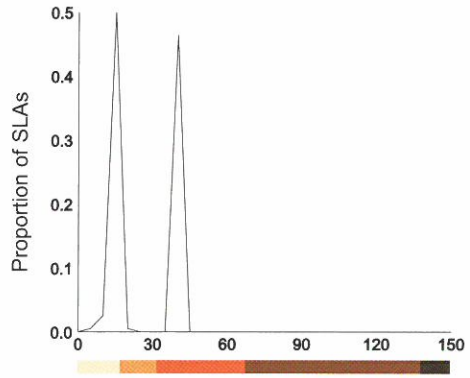


Rate per 100,000 population

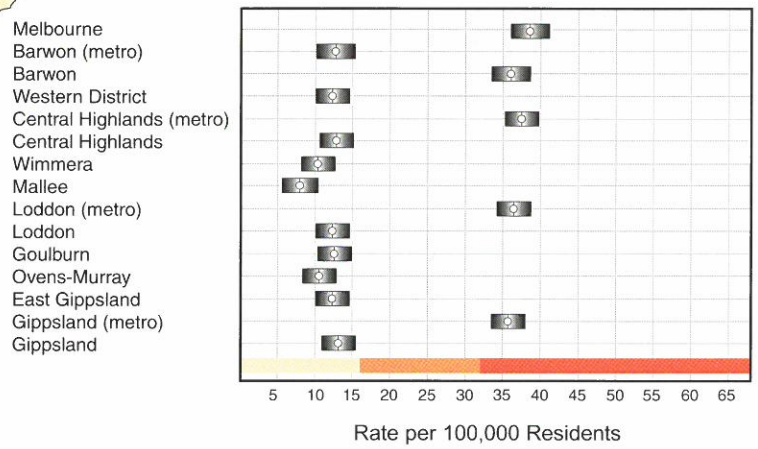
- less than 16
- 16 to 32
- 32 to 68
- 68 to 140
- 140 and over

0 100 200
Kilometres

Distribution of Statistical Local Areas (SLAs) According to Rate of Robbery



Statistical Regions 95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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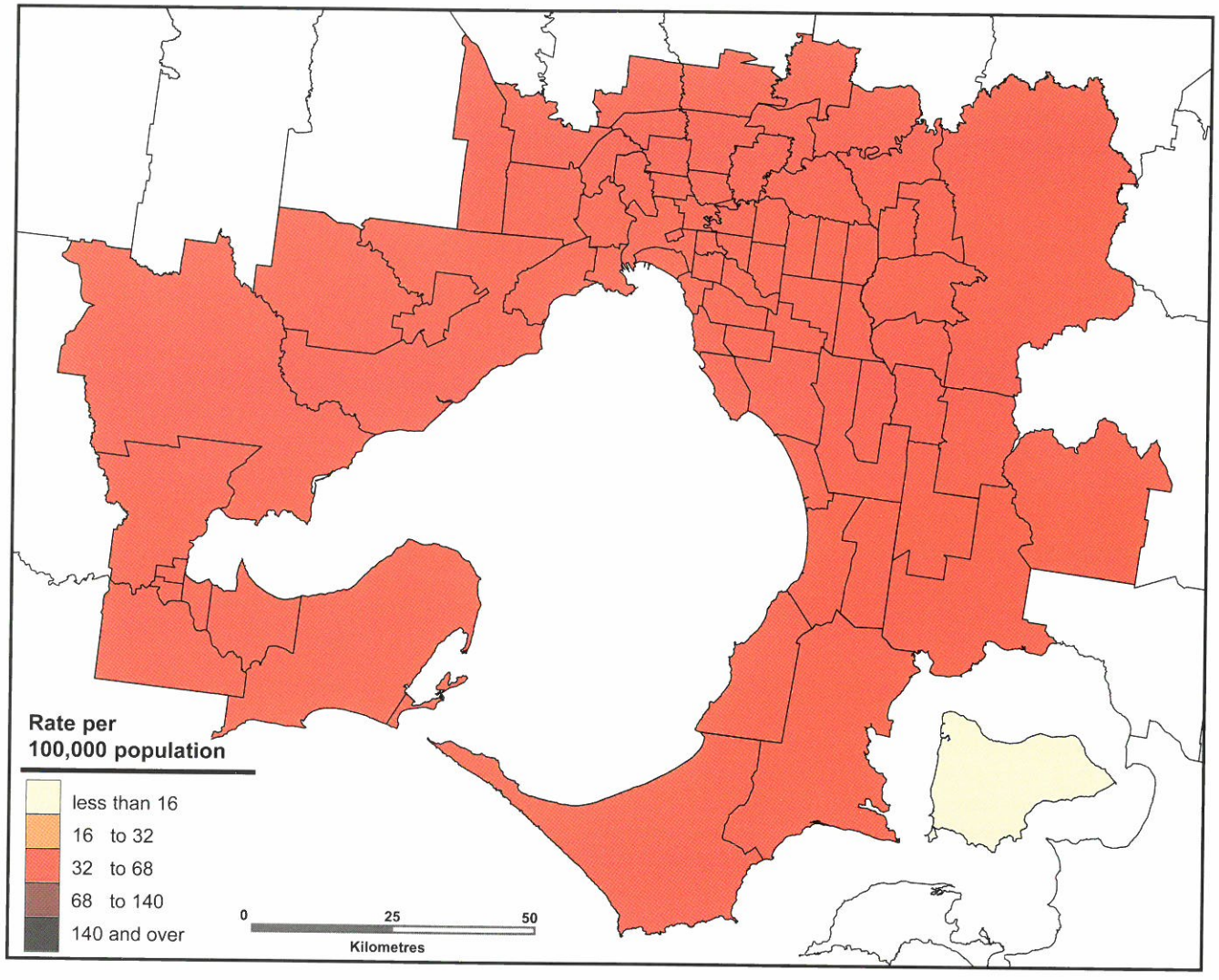
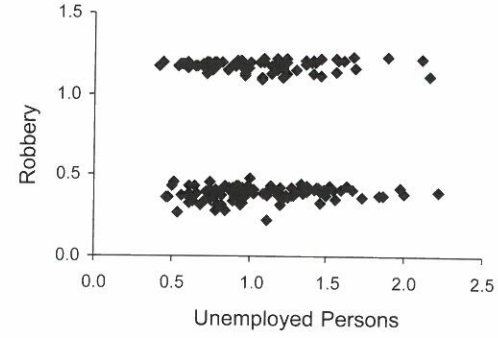
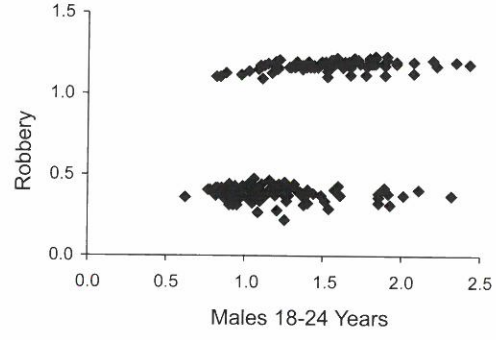
MAP 25

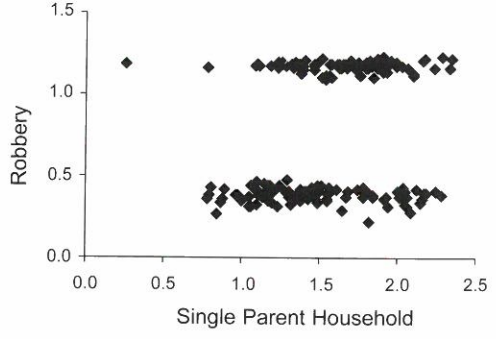
Victoria - Enlargement 1
Robbery - Rate[1] per 100,000 Residents



Relative Crime Rate[2] and Relative Concentration[3] of Selected Socioeconomic Characteristics







[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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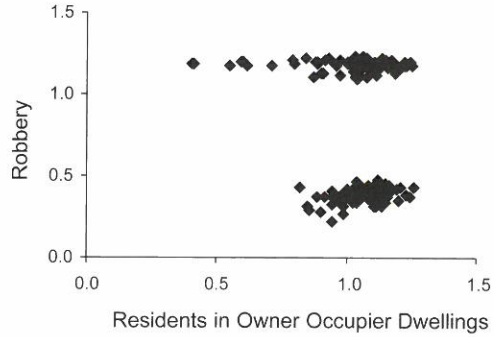
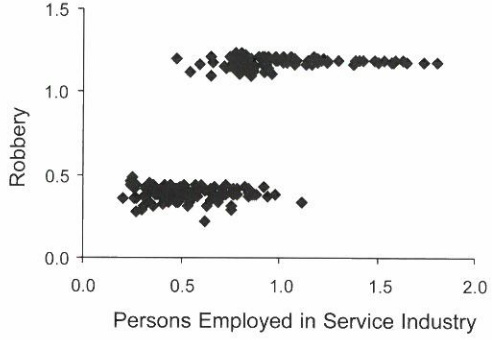
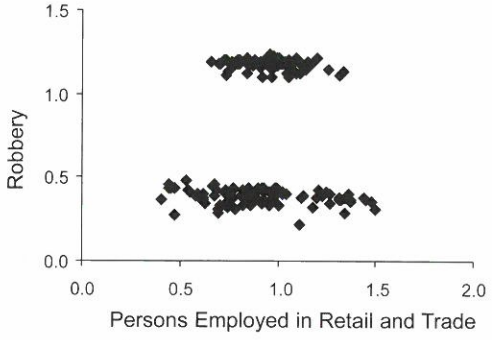
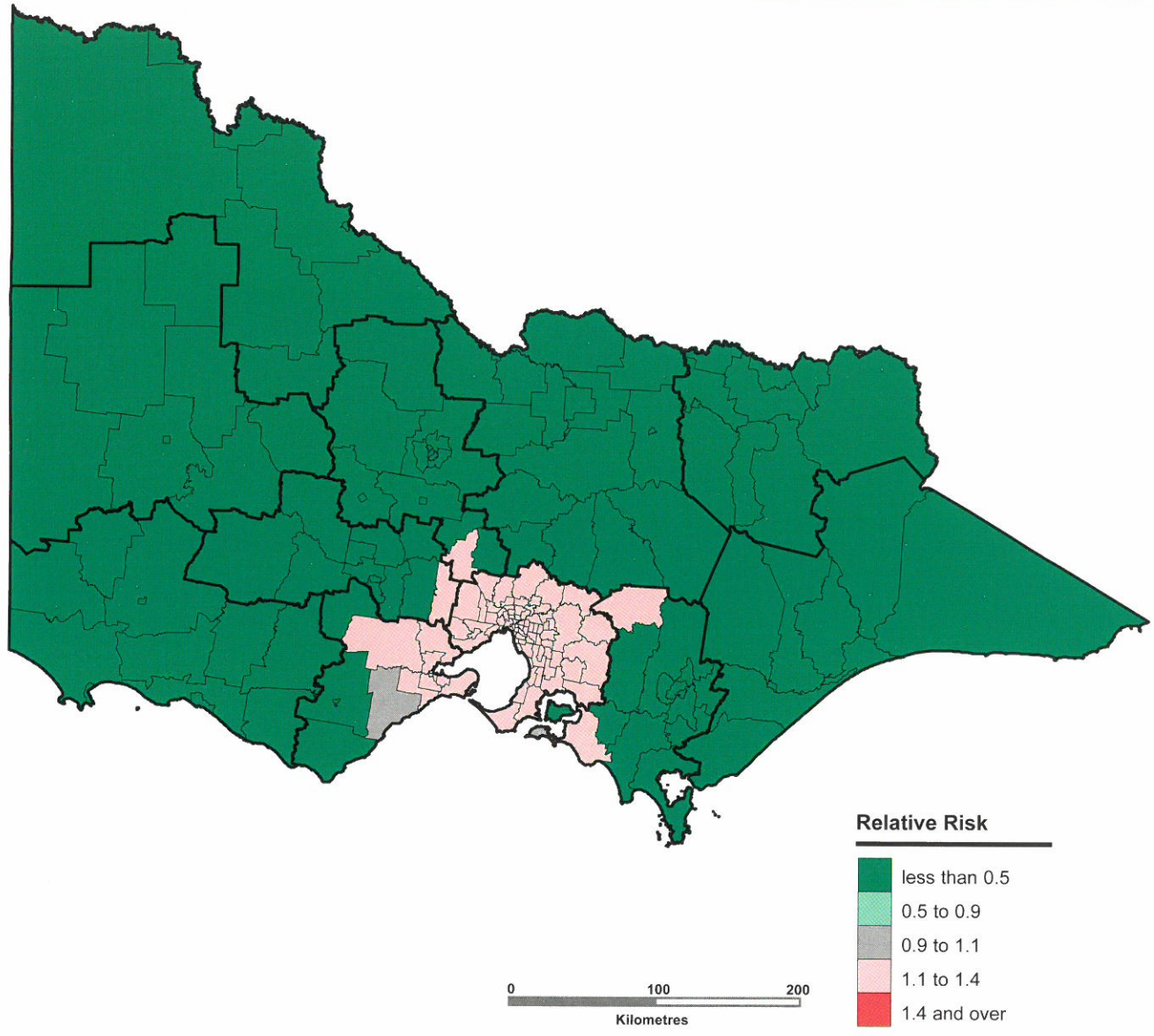
MAP 26
VICTORIA
ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics









[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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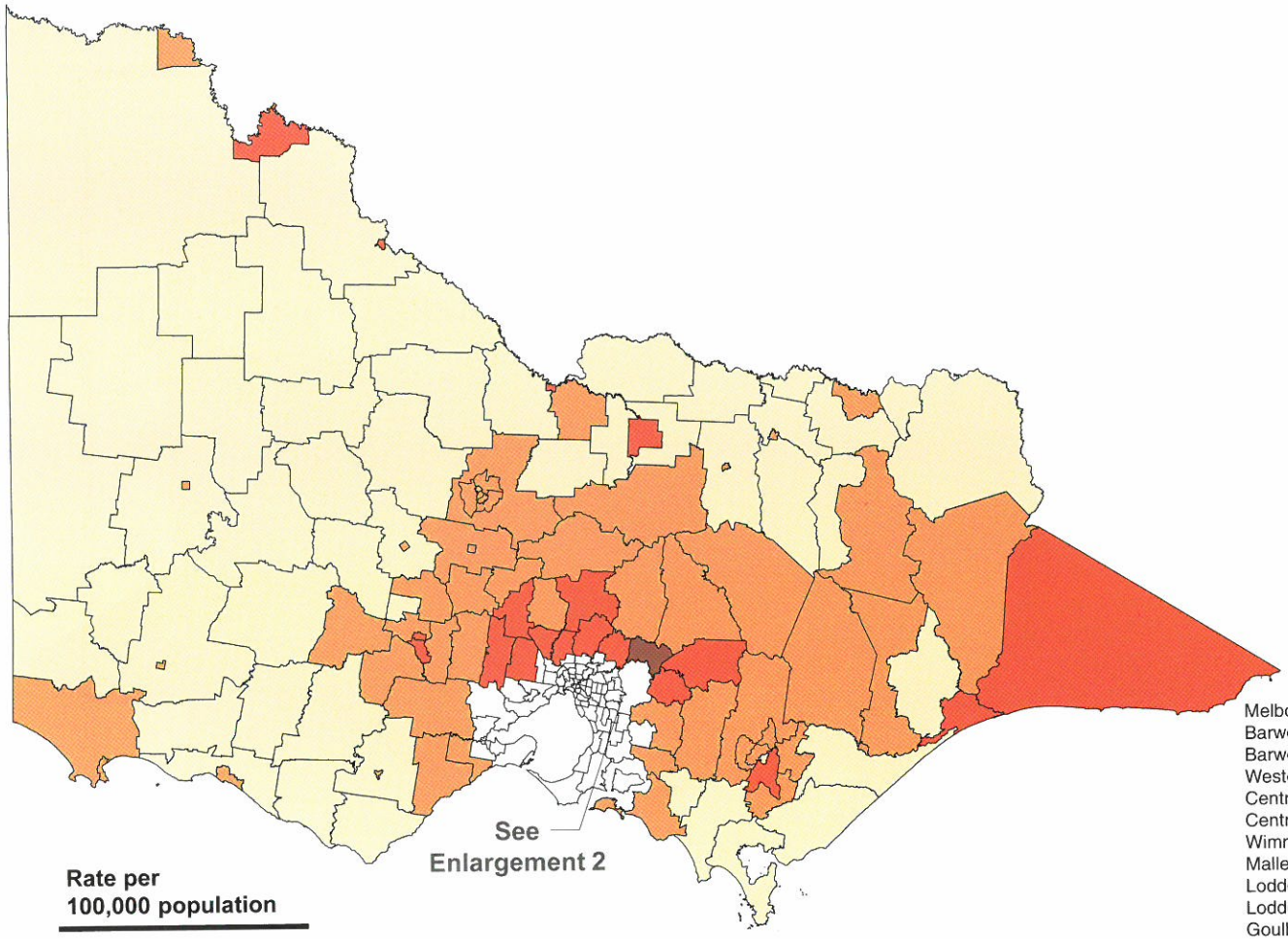
MAP 27

VICTORIA
RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



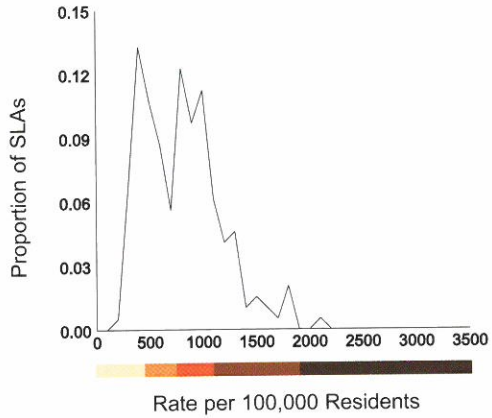
Rate per 100,000 population

- less than 450
- 450 to 750
- 750 to 1100
- 1100 to 1800
- 1800 and over

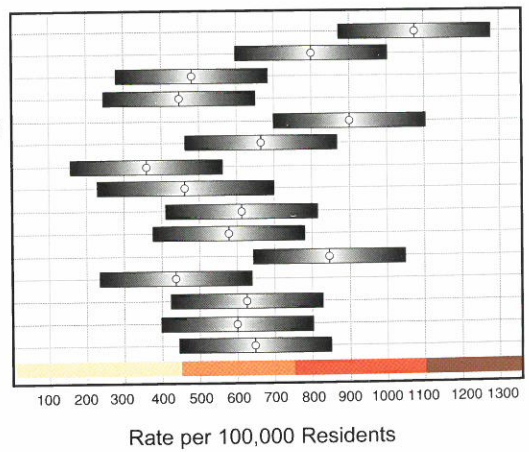
0 100 200
Kilometres

Melbourne
Barwon (metro)
Barwon
Western District
Central Highlands (metro)
Central Highlands
Wimmera
Mallee
Loddon (metro)
Loddon
Goulburn
Ovens-Murray
East Gippsland
Gippsland (metro)
Gippsland

Distribution of Statistical Local Areas (SLAs) According to Rate of Residential Break & Enter



Statistical Regions 95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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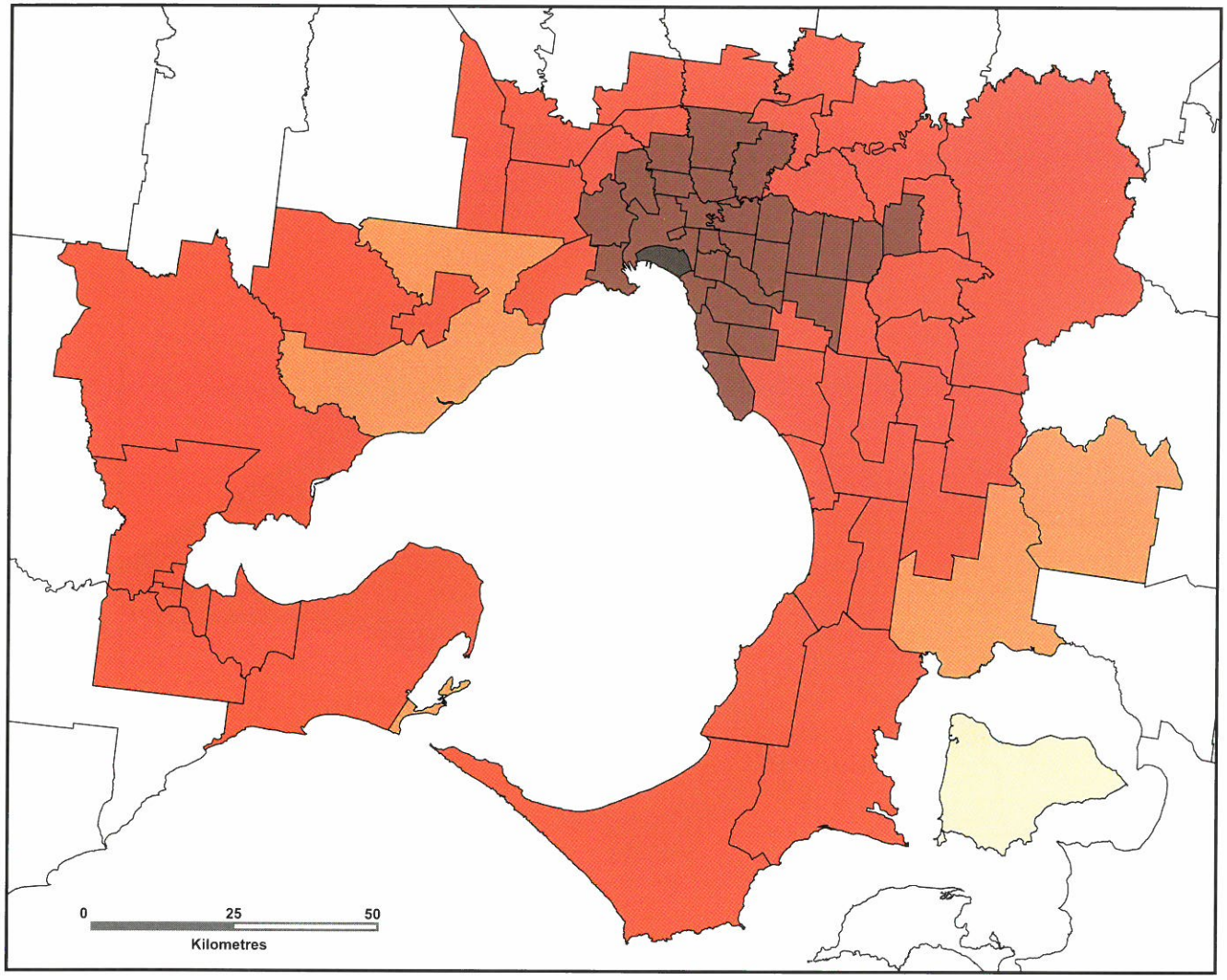
MAP 28

VICTORIA - ENLARGEMENT 2

RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



Rate per 100,000 population

- less than 450
- 450 to 750
- 750 to 1100
- 1100 to 1800
- 1800 and over

[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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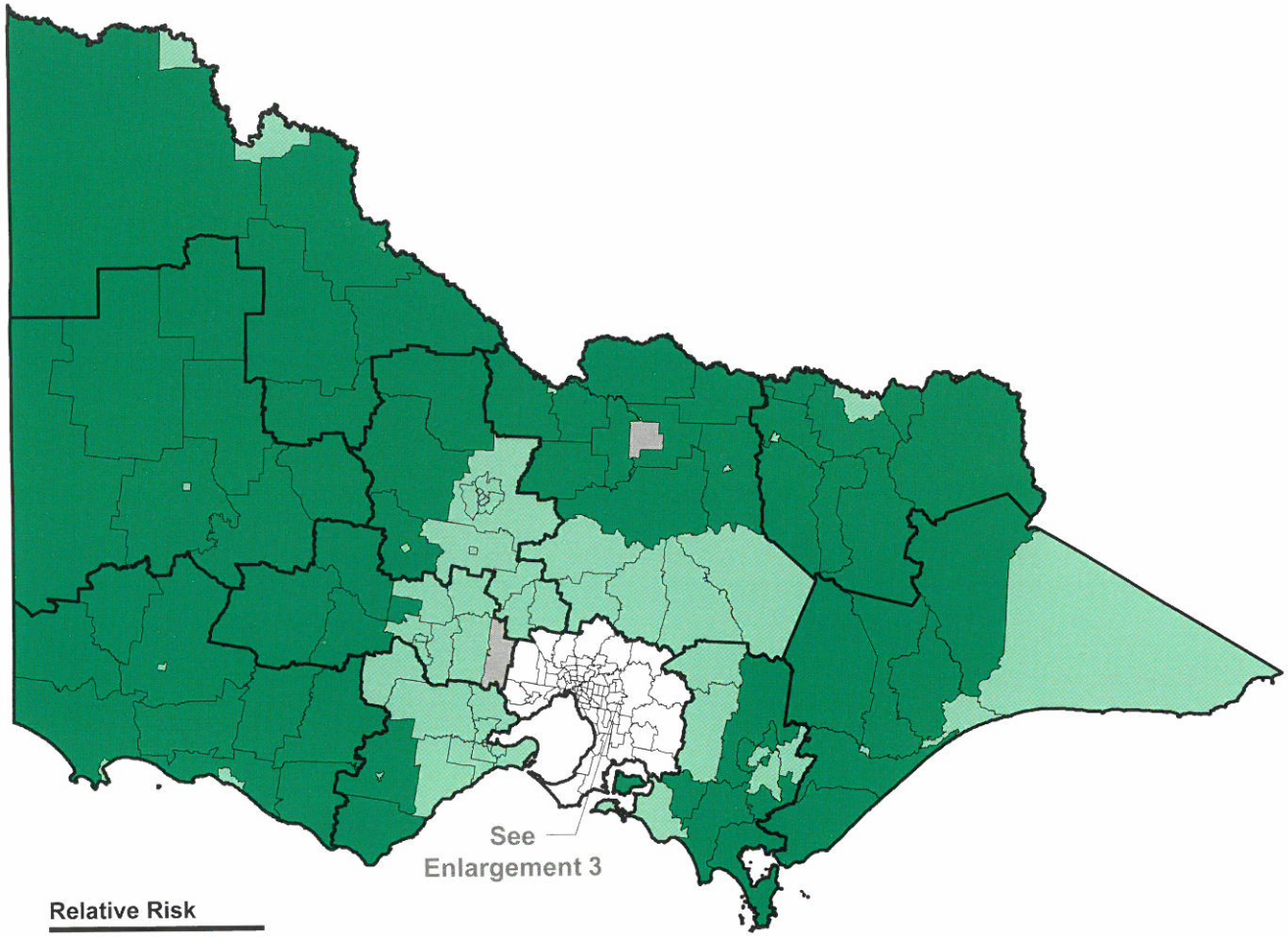
MAP 29

Victoria
Residential Break & Enter - Rate per 100,000 Residents Relative to State Average

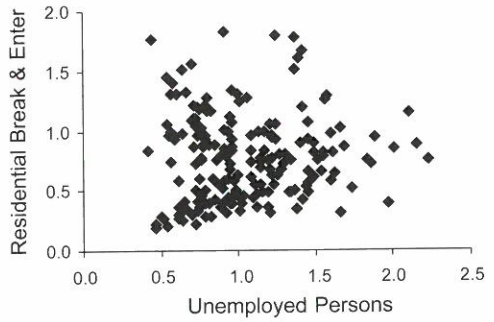


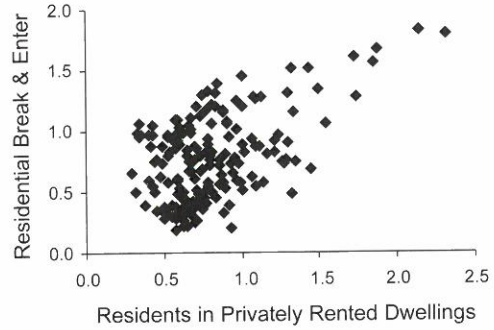
Relative Risk

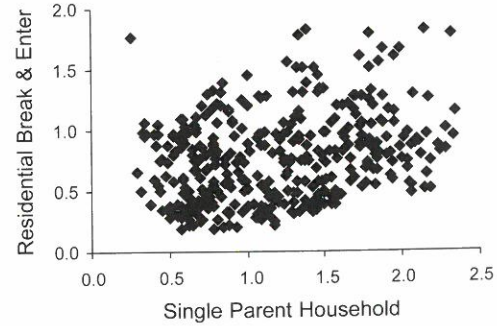
- less than 0.5
- 0.5 to 0.9
- 0.9 to 1.1
- 1.1 to 1.4
- 1.4 and over

0 100 200
Kilometres

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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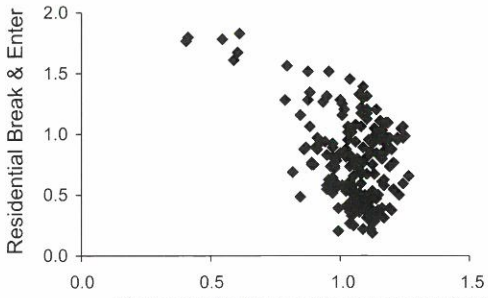
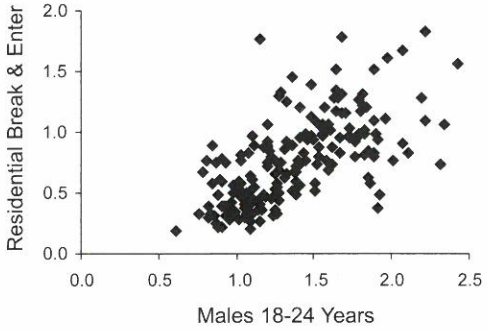
MAP 30

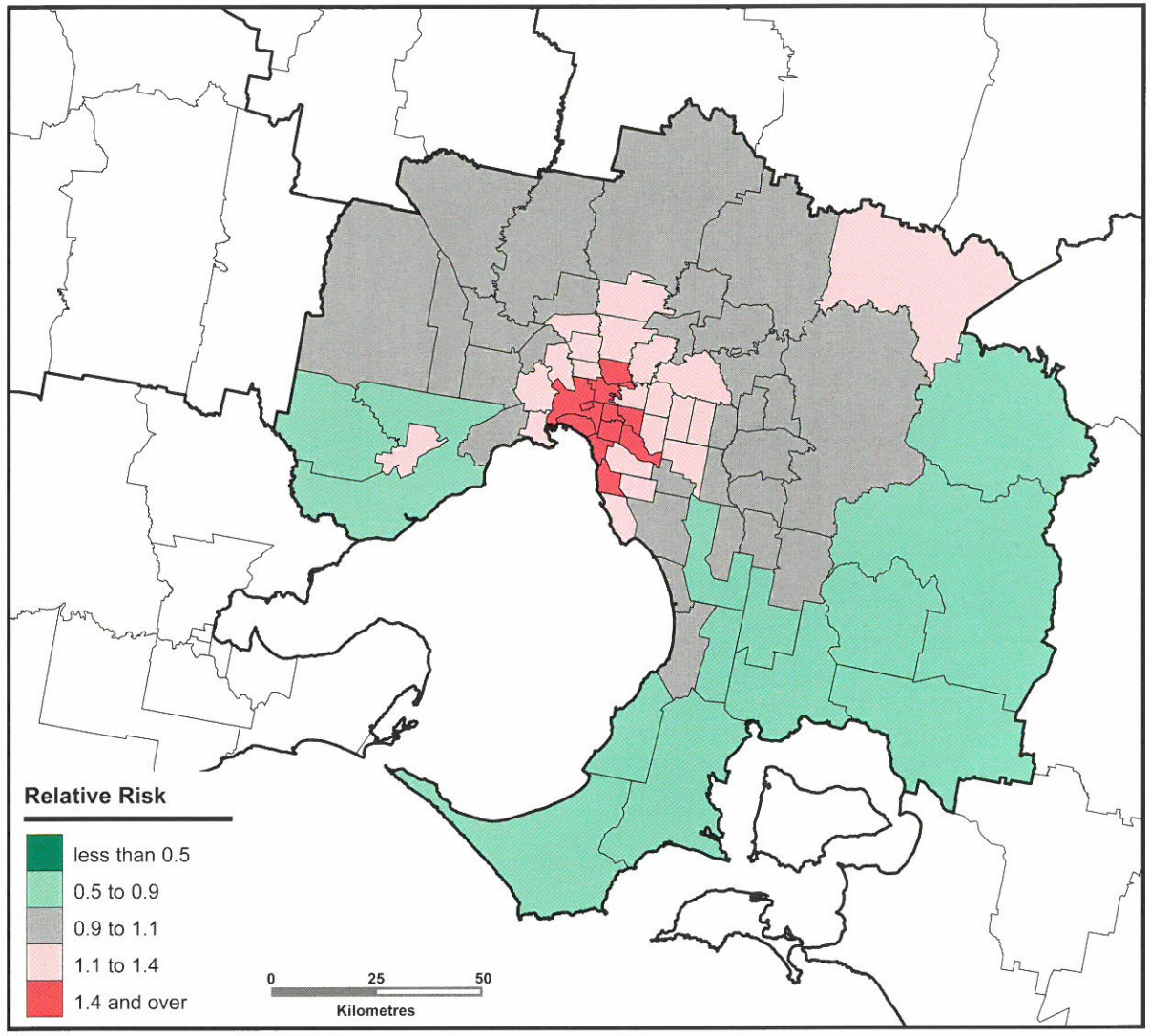
VICTORIA - ENLARGEMENT 3

RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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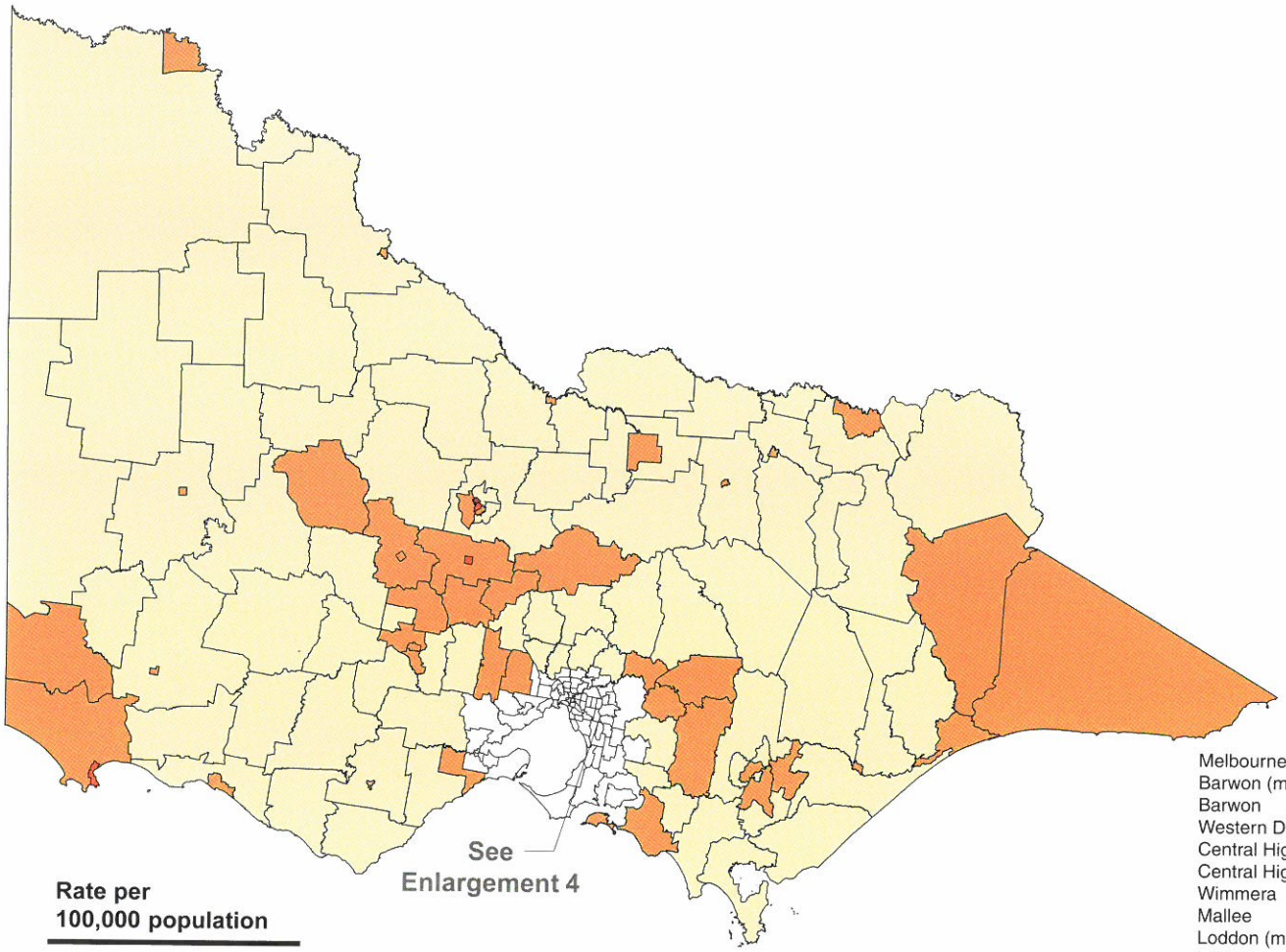
MAP 31

VICTORIA
NON-RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



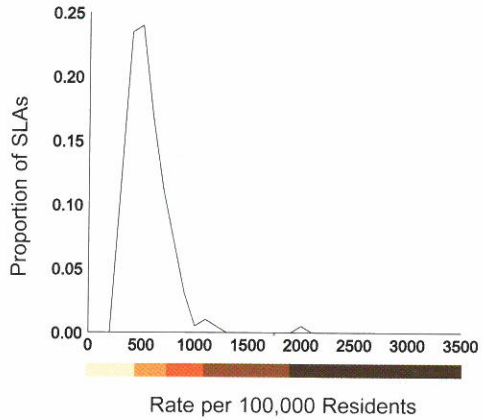
Rate per 100,000 population

- less than 450
- 450 to 750
- 750 to 1100
- 1100 to 1800
- 1800 and over

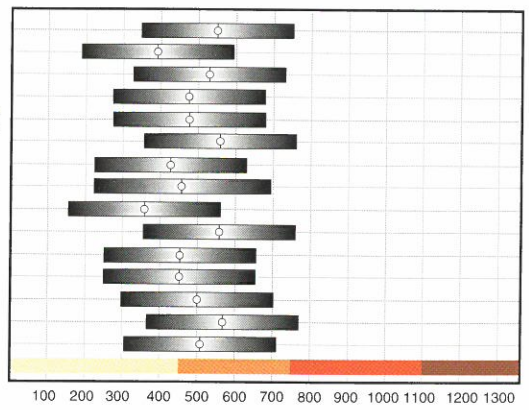
0 100 200
Kilometres

Melbourne
Barwon (metro)
Barwon
Western District
Central Highlands (metro)
Central Highlands
Wimmera
Mallee
Loddon (metro)
Loddon
Goulburn
Ovens-Murray
East Gippsland
Gippsland (metro)
Gippsland

Distribution of Statistical Local Areas (SLAs) According to Rate of Non-Residential Break & Enter



Statistical Regions 95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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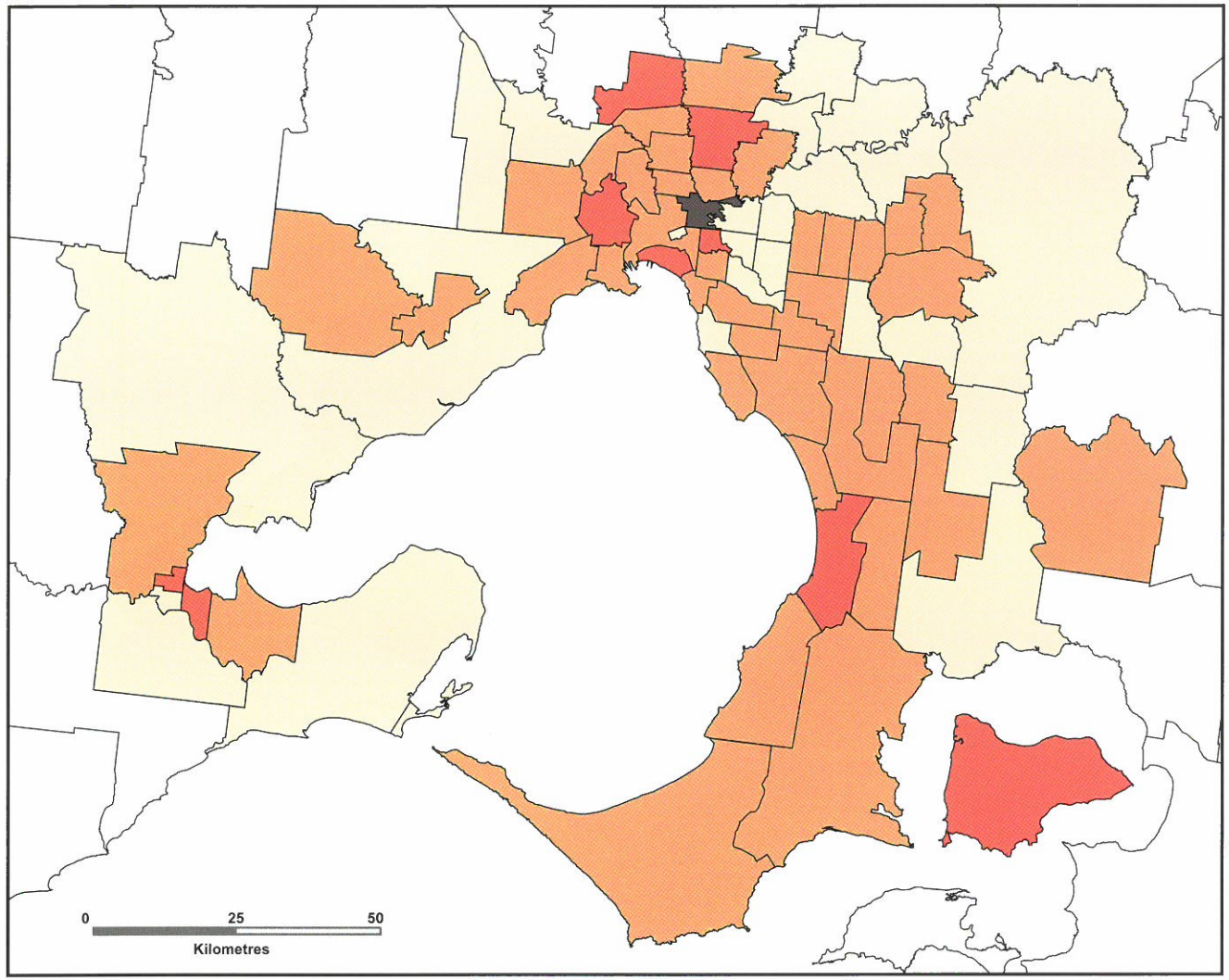
MAP 32

VICTORIA - ENLARGEMENT 4

NON-RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



Rate per 100,000 population

- less than 450
- 450 to 750
- 750 to 1100
- 1100 to 1800
- 1800 and over

[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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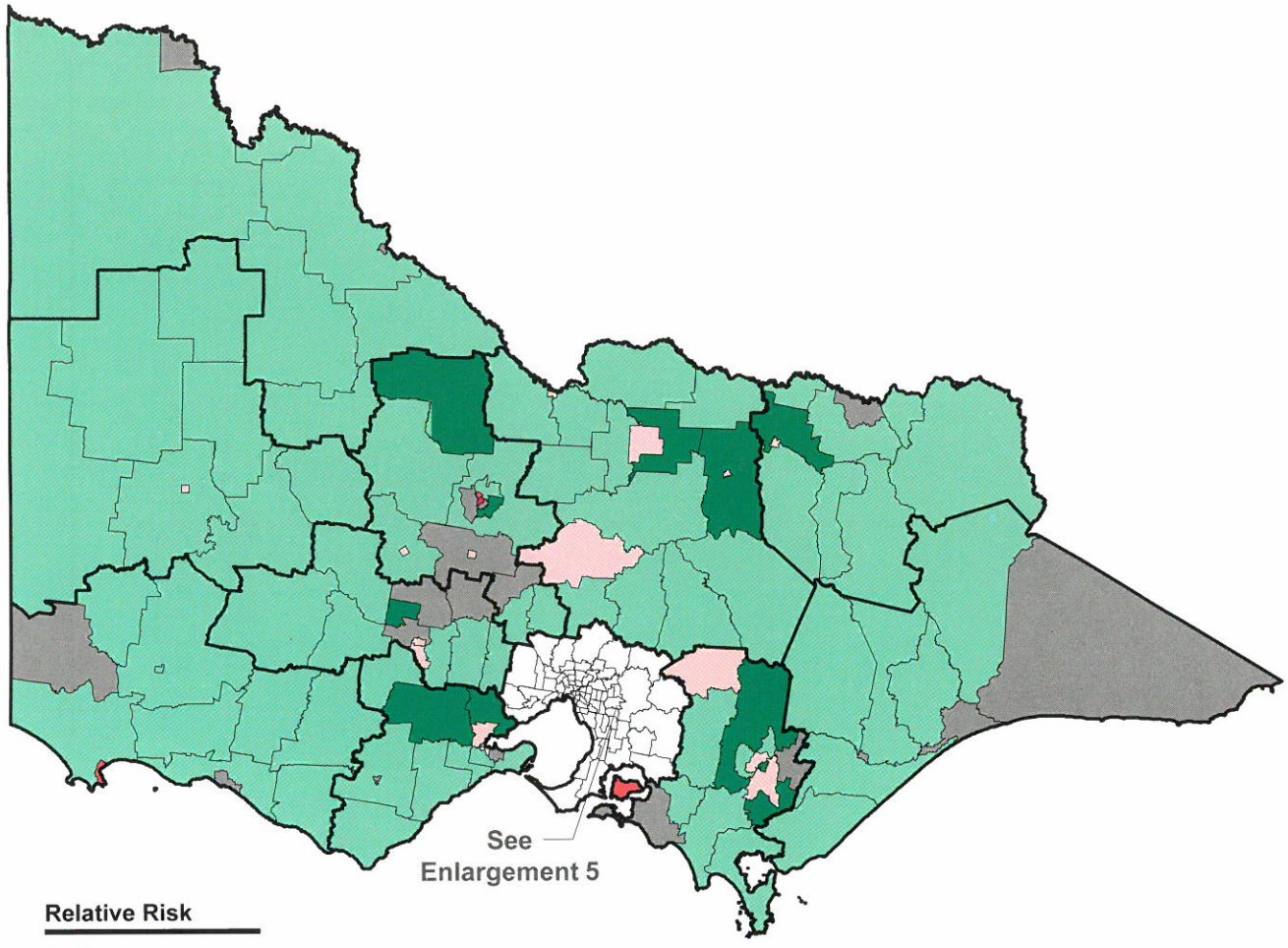
MAP 33

VICTORIA
NON-RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

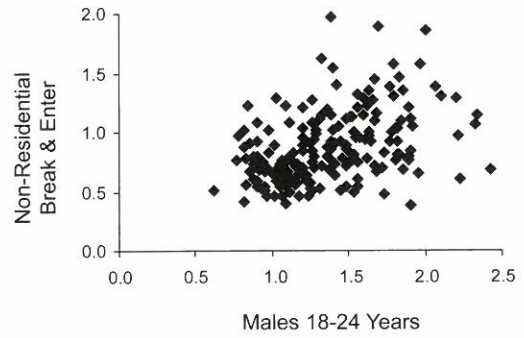


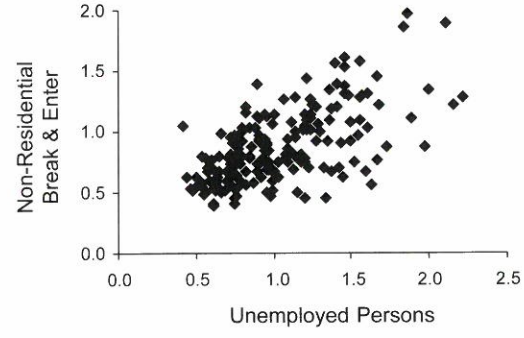
Relative Risk

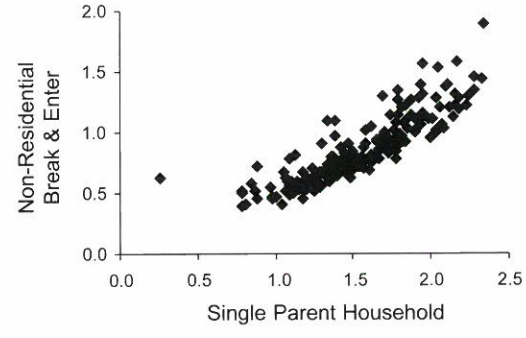
- less than 0.5
- 0.5 to 0.9
- 0.9 to 1.1
- 1.1 to 1.4
- 1.4 and over

0 100 200
Kilometres

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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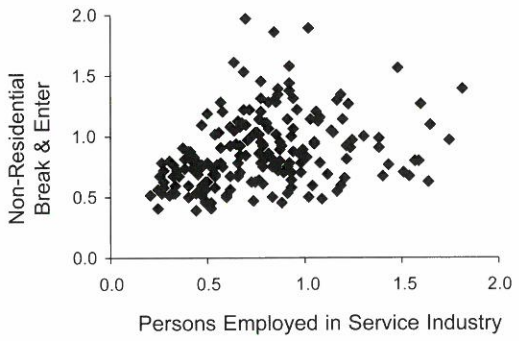
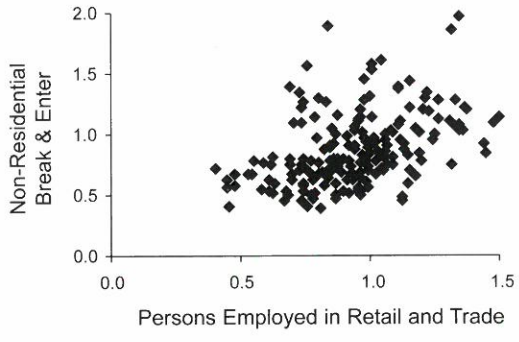
MAP 34

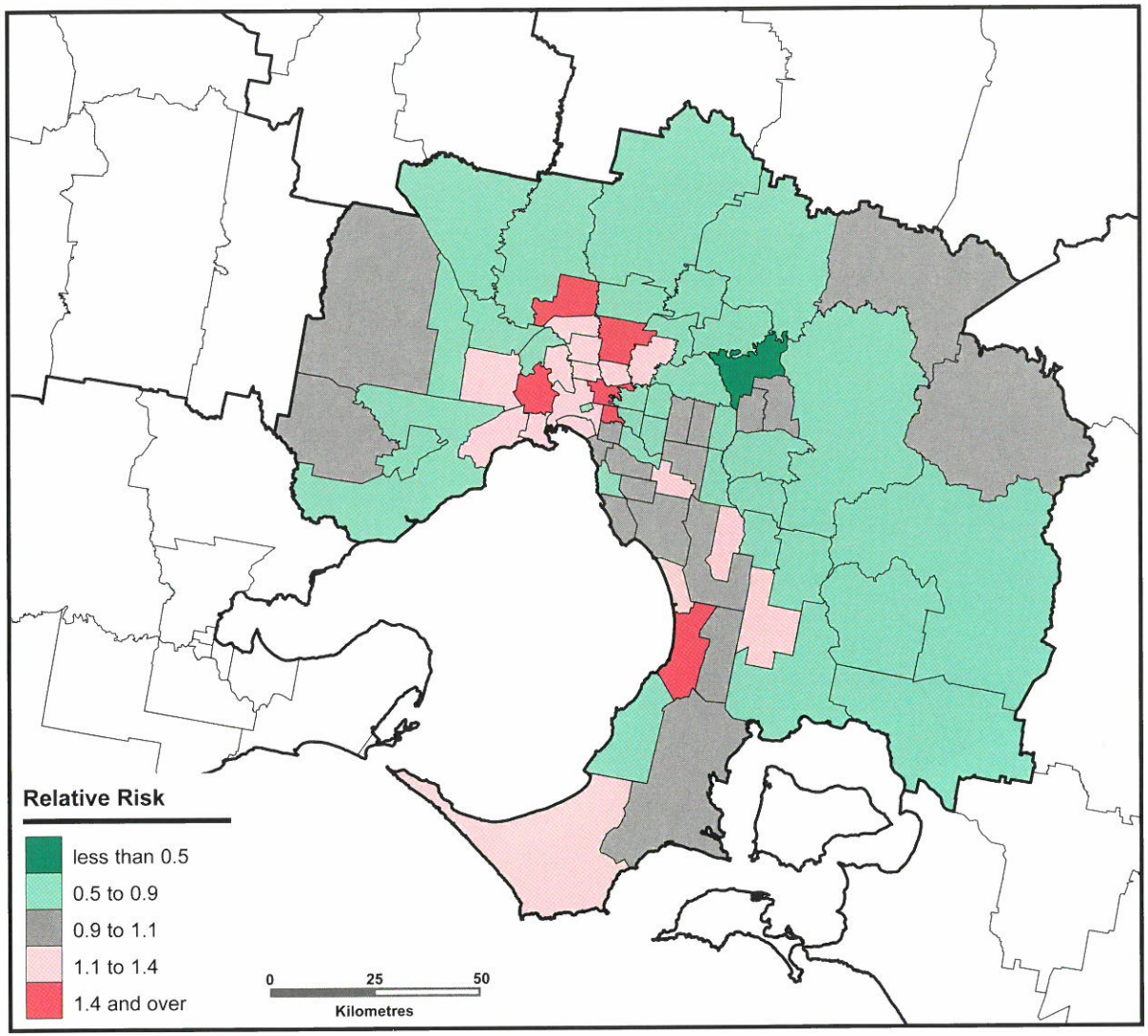
VICTORIA - ENLARGEMENT 5

NON-RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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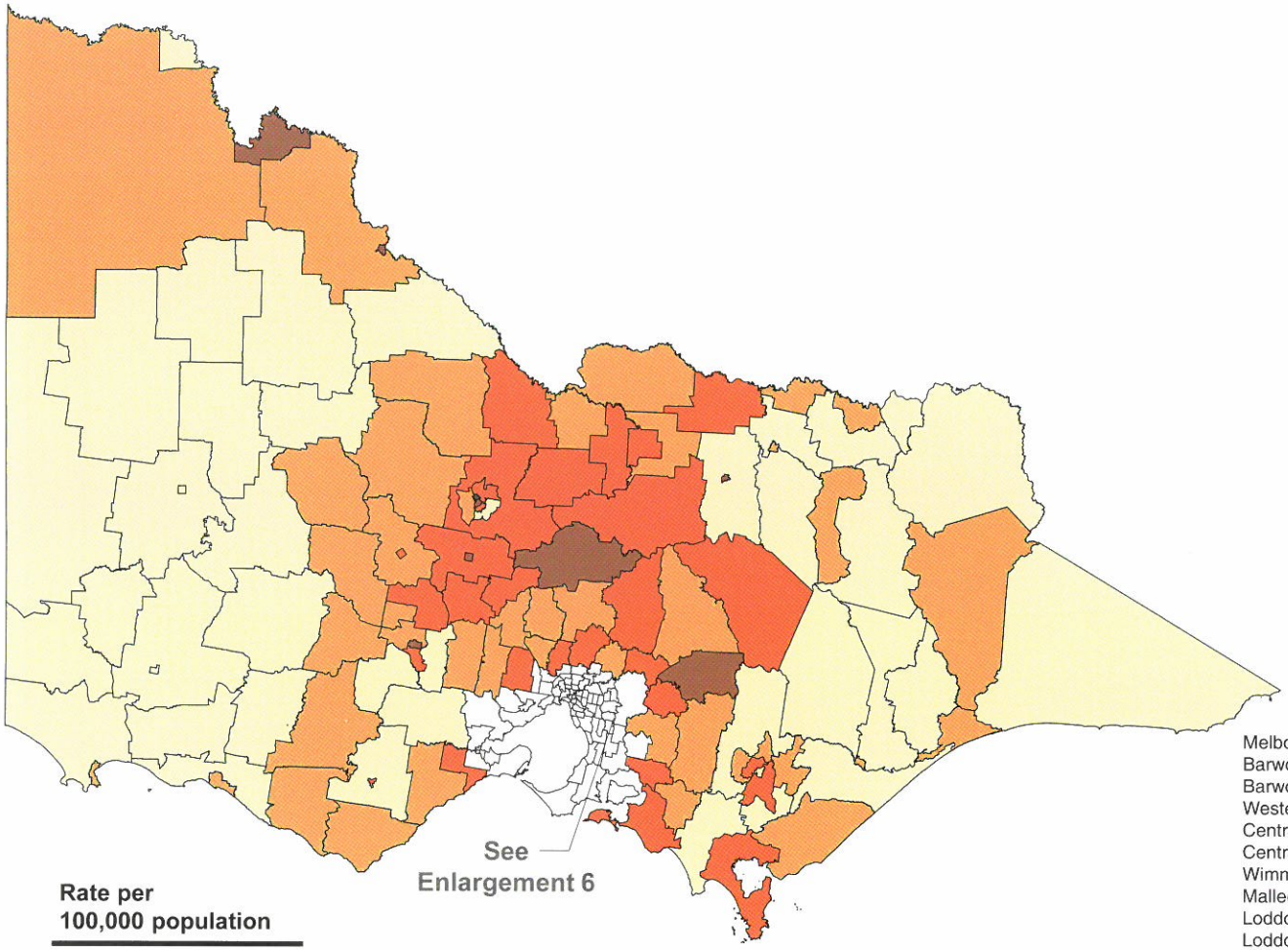
MAP 35

VICTORIA
MOTOR VEHICLE THEFT - RATE[1] PER 100,000 RESIDENTS

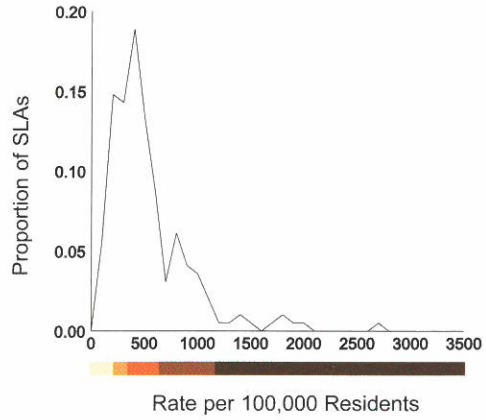


Rate per 100,000 population

- less than 200
- 200 to 360
- 360 to 640
- 640 to 1160
- 1160 and over

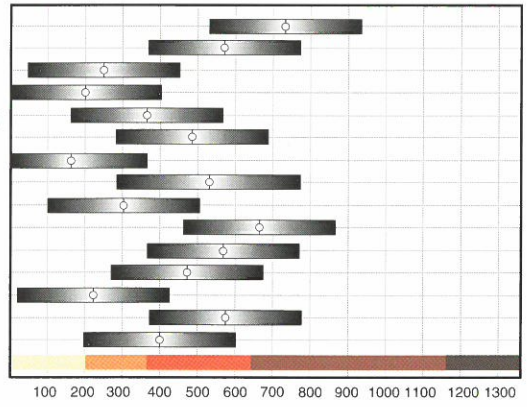
0 100 200
Kilometres

Distribution of Statistical Local Areas (SLAs) According to Rate of Motor Vehicle Theft



Statistical Regions
95 Percent Confidence Intervals

Melbourne
Barwon (metro)
Barwon
Western District
Central Highlands (metro)
Central Highlands
Wimmera
Mallee
Loddon (metro)
Loddon
Goulburn
Ovens-Murray
East Gippsland
Gippsland (metro)
Gippsland



[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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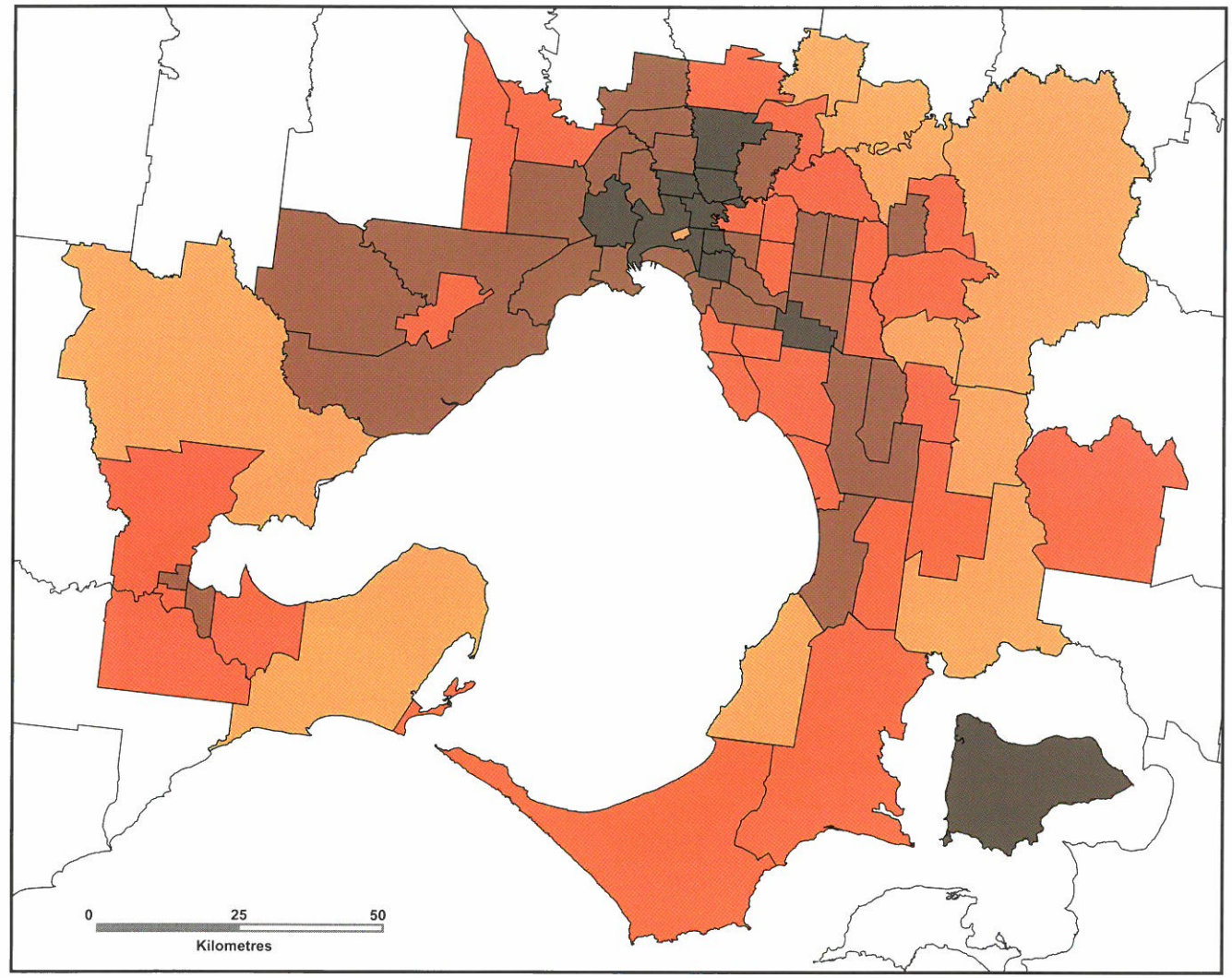
MAP 36

VICTORIA - ENLARGEMENT 6

MOTOR VEHICLE THEFT - RATE[1] PER 100,000 RESIDENTS



Rate per 100,000 population

- less than 200
- 200 to 360
- 360 to 640
- 640 to 1160
- 1160 and over

[1] Rates are averages calculated over the period from 1994-95 to 1997-98.

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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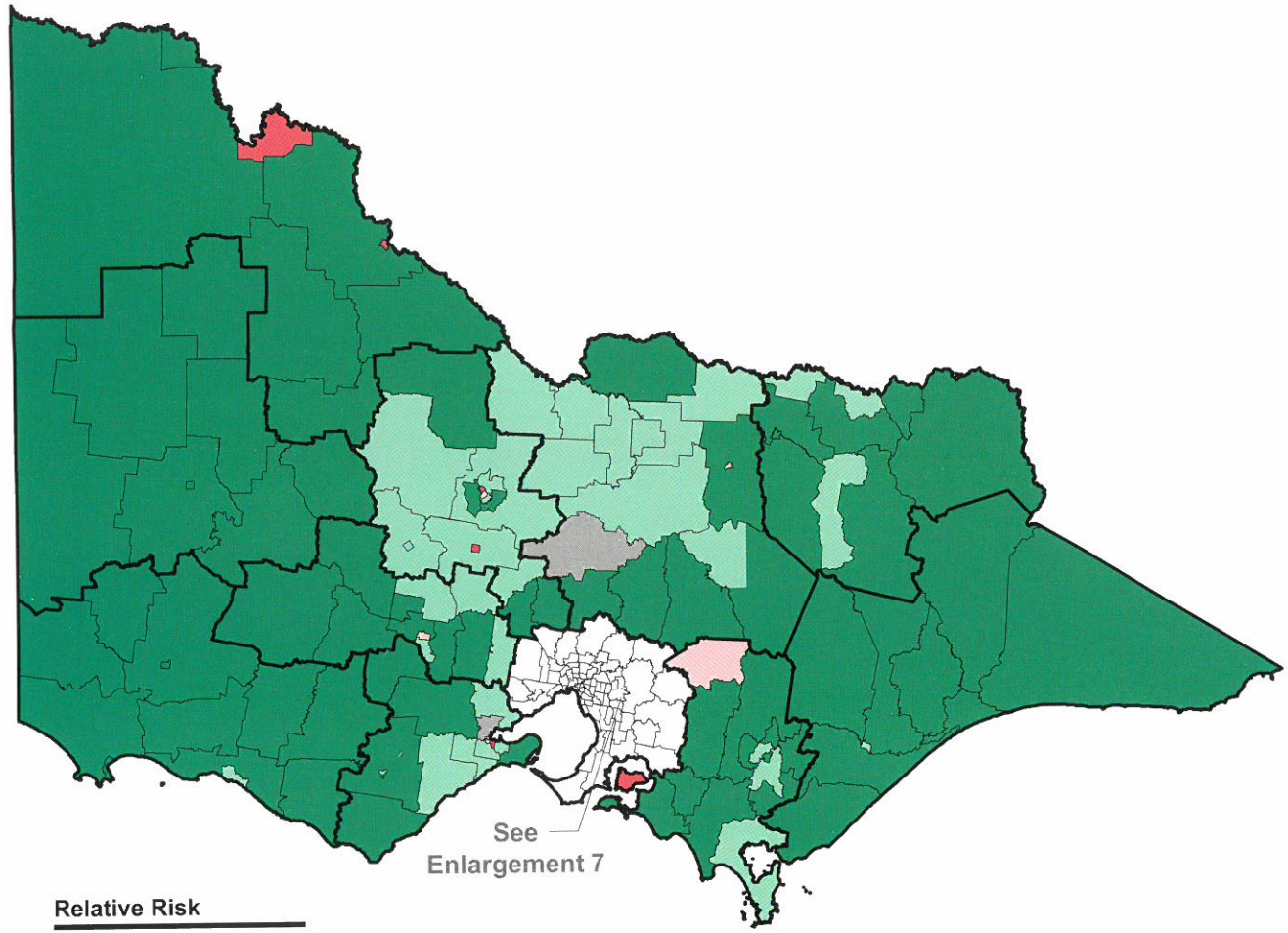
MAP 37

Victoria
Motor Vehicle Theft - Rate per 100,000 Residents Relative to State Average

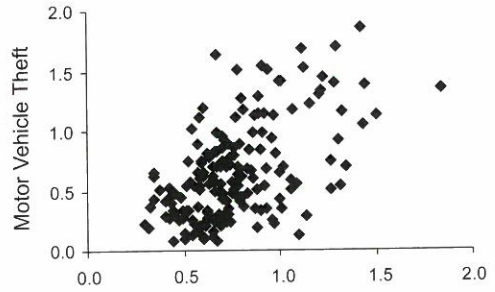


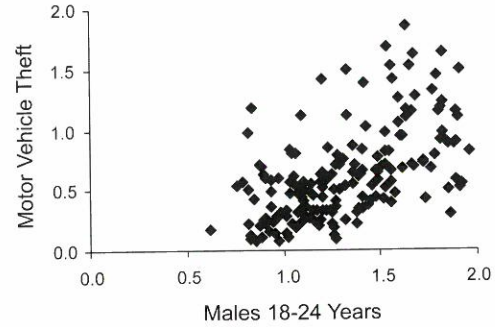
Relative Risk

- less than 0.5
- 0.5 to 0.9
- 0.9 to 1.1
- 1.1 to 1.4
- 1.4 and over

0 100 200
Kilometres

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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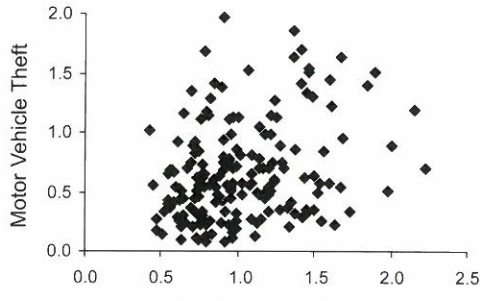
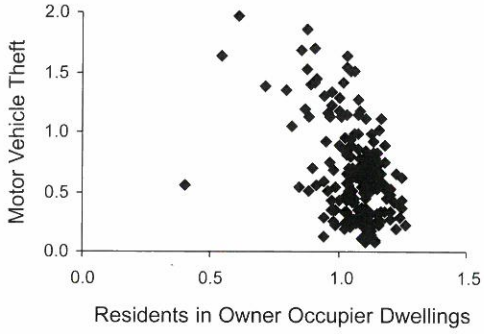
MAP 38

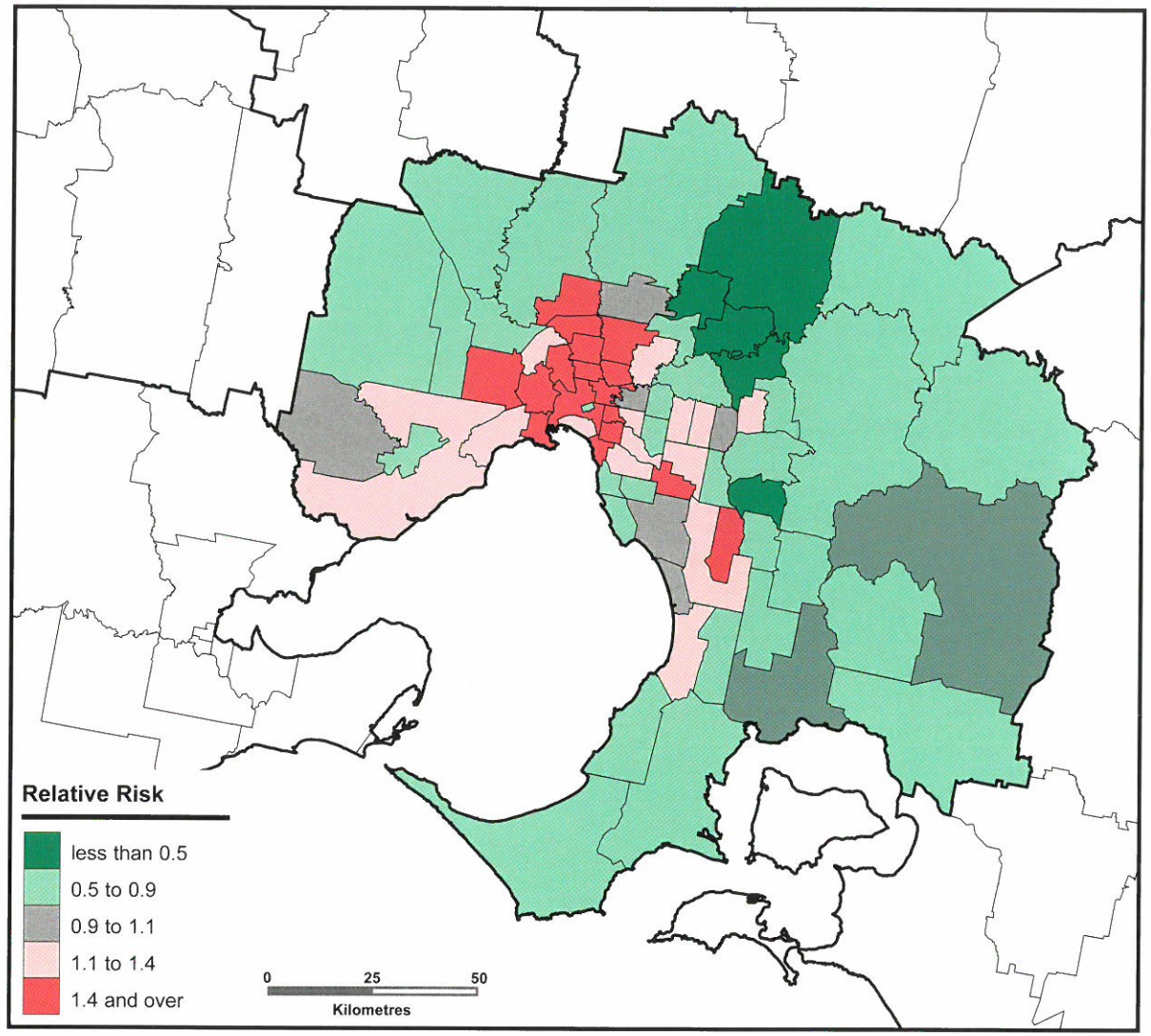
VICTORIA - ENLARGEMENT 7

MOTOR VEHICLE THEFT - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: Victoria Police, Statistical Services Branch (*refer to* Table A1, p.146).

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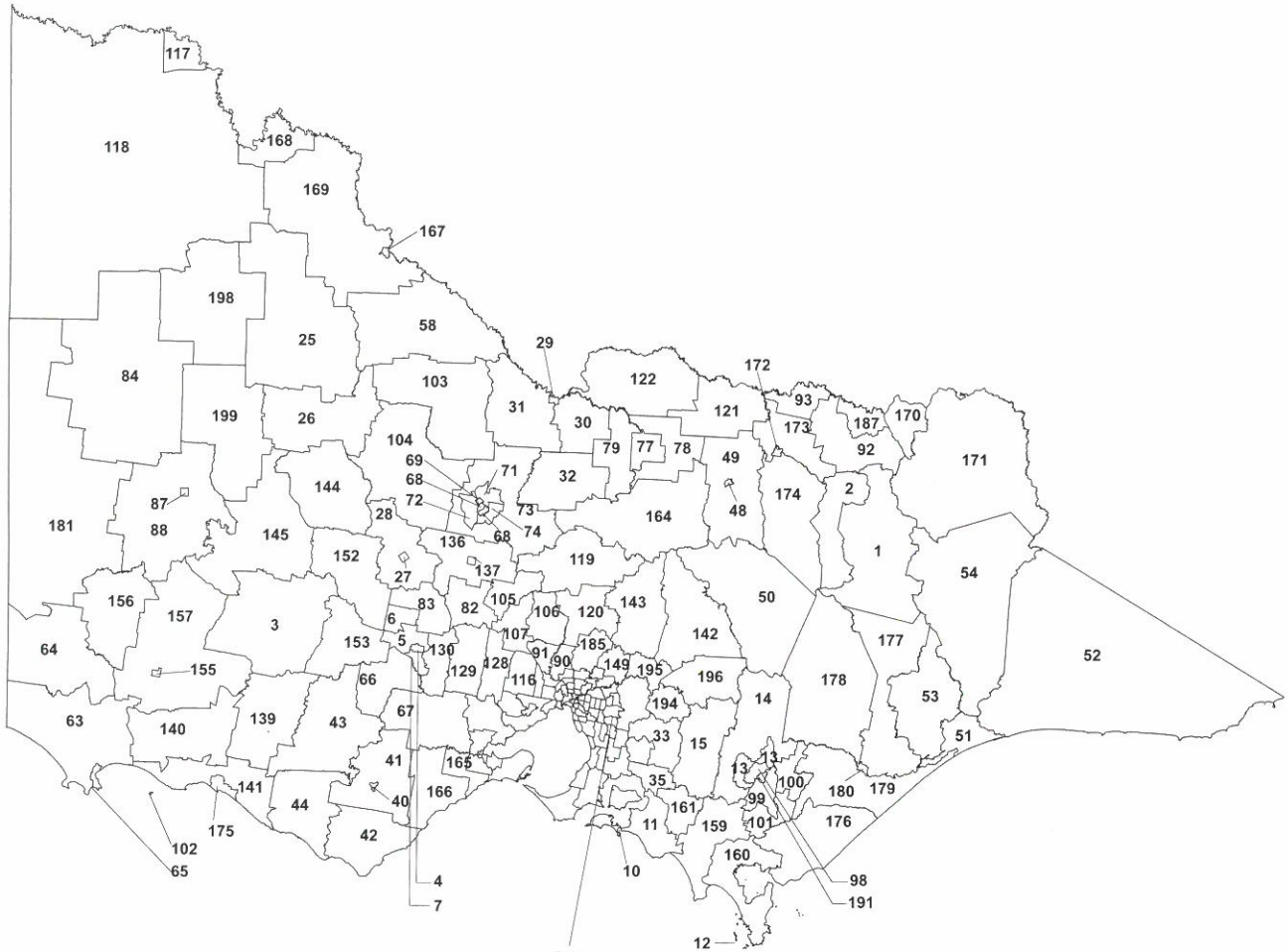
MAP 39

VICTORIA
STATISTICAL LOCAL AREAS



1	Alpine (S) - East	63	Glenelg (S) - Heywood
2	Alpine (S) - West	64	Glenelg (S) - North
3	Ararat (RC)	65	Glenelg (S) - Portland
4	Ballarat (C) - Central	66	Golden Plains (S) - North-West
5	Ballarat (C) - Inner North	67	Golden Plains (S) - South-East
6	Ballarat (C) - North	68	Gr. Bendigo (C) - Central
7	Ballarat (C) - South	69	Gr. Bendigo (C) - Eaglehawk
8	Banyule (C) - Heidelberg	70	Gr. Bendigo (C) - Inner East
9	Banyule (C) - North	71	Gr. Bendigo (C) - Inner North
10	Bass Coast (S) - Phillip Is.	72	Gr. Bendigo (C) - Inner West
11	Bass Coast (S) Bal	73	Gr. Bendigo (C) - Pt B
12	Bass Strait Islands	74	Gr. Bendigo (C) - S'saye
13	Baw Baw (S) - Pt A	75	Gr. Dandenong (C) - Dandenong
14	Baw Baw (S) - Pt B East	76	Gr. Dandenong (C) Bal
15	Baw Baw (S) - Pt B West	77	Gr. Shepparton (C) - Pt A
16	Bayside (C) - Brighton	78	Gr. Shepparton (C) - Pt B East
17	Bayside (C) - South	79	Gr. Shepparton (C) - Pt B West
18	Bellarine - Inner	80	Greater Geelong (C) - Pt B
19	Boroondara (C) - Camberwell N.	81	Greater Geelong (C) - Pt C
20	Boroondara (C) - Camberwell S.	82	Hepburn (S) - East
21	Boroondara (C) - Hawthorn	83	Hepburn (S) - West
22	Boroondara (C) - Kew	84	Hindmarsh (S)
23	Brimbank (C) - Keilor	85	Hobsons Bay (C) - Altona
24	Brimbank (C) - Sunshine	86	Hobsons Bay (C) - Williamstown
25	Buloke (S) - North	87	Horsham (RC) - Central
26	Buloke (S) - South	88	Horsham (RC) Bal
27	C. Goldfields (S) - M'borough	89	Hume (C) - Broadmeadows
28	C. Goldfields (S) Bal	90	Hume (C) - Craigieburn
29	Campaspe (S) - Echuca	91	Hume (C) - Sunbury
30	Campaspe (S) - Kyabram	92	Indigo (S) - Pt A
31	Campaspe (S) - Rochester	93	Indigo (S) - Pt B
32	Campaspe (S) - South	94	Kingston (C) - North
33	Cardinia (S) - North	95	Kingston (C) - South
34	Cardinia (S) - Pakenham	96	Knox (C) - North
35	Cardinia (S) - South	97	Knox (C) - South
36	Casey (C) - Berwick	98	La Trobe (S) - Moe
37	Casey (C) - Cranbourne	99	La Trobe (S) - Morwell
38	Casey (C) - Hallam	100	La Trobe (S) - Traralgon
39	Casey (C) - South	101	La Trobe (S) Bal
40	Colac-Otway (S) - Colac	102	Lady Julia Percy Island
41	Colac-Otway (S) - North	103	Loddon (S) - North
42	Colac-Otway (S) - South	104	Loddon (S) - South
43	Corangamite (S) - North	105	Macedon Ranges (S) - Kyneton
44	Corangamite (S) - South	106	Macedon Ranges (S) - Romsey
45	Corio - Inner	107	Macedon Ranges (S) Bal
46	Darebin (C) - Northcote	108	Manningham (C) - East
47	Darebin (C) - Preston	109	Manningham (C) - West
48	Delatite (S) - Benalla	110	Maribyrnong (C)
49	Delatite (S) - North	111	Maroondah (C) - Croydon
50	Delatite (S) - South	112	Maroondah (C) - Ringwood
51	E. Gippsland (S) - Bairnsdale	113	Melbourne (C) - Inner
52	E. Gippsland (S) - Orbost	114	Melbourne (C) - Remainder
53	E. Gippsland (S) - South-West	115	Melton (S) - East
54	E. Gippsland (S) Bal	116	Melton (S) Bal
55	Frankston (C) - East	117	Mildura (RC) - Pt A
56	Frankston (C) - West	118	Mildura (RC) - Pt B
57	French Island	119	Mitchell (S) - North
58	Gannawarra (S)	120	Mitchell (S) - South
59	Geelong	121	Moira (S) - East
60	Geelong West	122	Moira (S) - West
61	Glen Eira (C) - Caulfield	123	Monash (C) - South-West
62	Glen Eira (C) - South	124	Monash (C) - Waverley East

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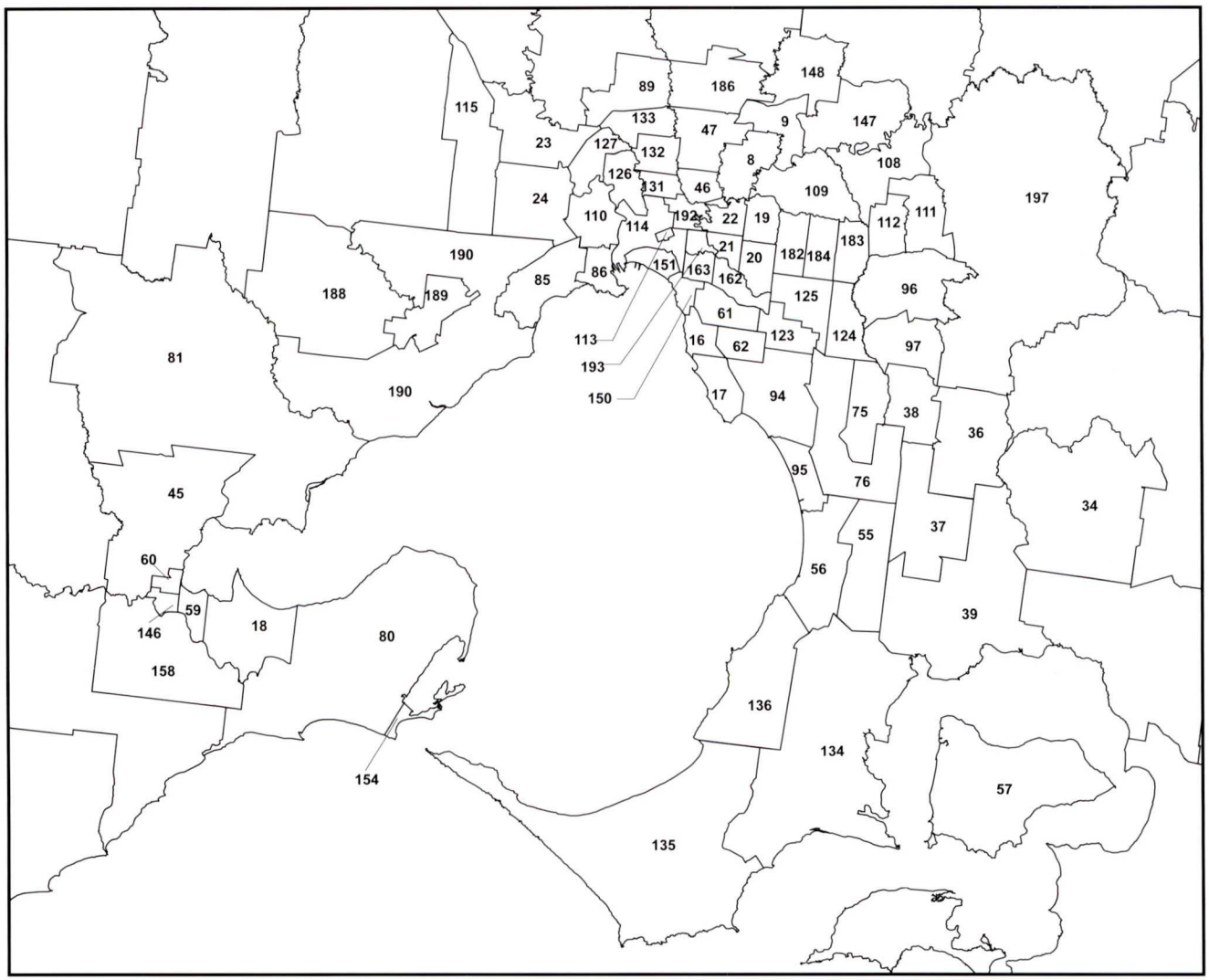
MAP 40

VICTORIA - ENLARGEMENT 8
STATISTICAL LOCAL AREAS

125 Monash (C) - Waverley West
126 Moonee Valley (C) - Essendon
127 Moonee Valley (C) - West
128 Moorabool (S) - Bacchus Marsh
129 Moorabool (S) - Ballan
130 Moorabool (S) - West
131 Moreland (C) - Brunswick
132 Moreland (C) - Coburg
133 Moreland (C) - North
134 Mornington P'sula (S) - East
135 Mornington P'sula (S) - South
136 Mornington P'sula (S) - West
137 Mount Alexander (S) - C'maine
138 Mount Alexander (S) Bal
139 Moyne (S) - North-East
140 Moyne (S) - North-West
141 Moyne (S) - South
142 Murrindindi (S) - East
143 Murrindindi (S) - West
144 N. Grampians (S) - St Arnaud
145 N. Grampians (S) - Stawell
146 Newtown
147 Nillumbik (S) - South
148 Nillumbik (S) - South-West
149 Nillumbik (S) Bal
150 Port Phillip (C) - St Kilda
151 Port Phillip (C) - West
152 Pyrenees (S) - North
153 Pyrenees (S) - South
154 Queenscliffe (B)
155 S. Grampians (S) - Hamilton
156 S. Grampians (S) - Wannon
157 S. Grampians (S) Bal
158 South Barwon - Inner
159 South Gippsland (S) - Central
160 South Gippsland (S) - East
161 South Gippsland (S) - West
162 Stonnington (C) - Malvern
163 Stonnington (C) - Prahran
164 Strathbogie (S)
165 Surf Coast (S) - East
166 Surf Coast (S) - West
167 Swan Hill (RC) - Central
168 Swan Hill (RC) - Robinvale
169 Swan Hill (RC) Bal
170 Towong (S) - Pt A
171 Towong (S) - Pt B
172 Wangaratta (RC) - Central
173 Wangaratta (RC) - North
174 Wangaratta (RC) - South
175 Warrnambool (C)
176 Wellington (S) - Alberton
177 Wellington (S) - Avon
178 Wellington (S) - Maffra
179 Wellington (S) - Rosedale
180 Wellington (S) - Sale
181 West Wimmera (S)
182 Whitehorse (C) - Box Hill
183 Whitehorse (C) - Nunawading E.
184 Whitehorse (C) - Nunawading W.
185 Whittlesea (C) - North
186 Whittlesea (C) - South
187 Wodonga (RC)
188 Wyndham (C) - North-West
189 Wyndham (C) - Werribee
190 Wyndham (C) Bal
191 Yallourn Works Area
192 Yarra (C) - North
193 Yarra (C) - Richmond
194 Yarra Ranges (S) - Central
195 Yarra Ranges (S) - North
196 Yarra Ranges (S) - Pt B
197 Yarra Ranges (S) - S-West
198 Yarriambiack (S) - North
199 Yarriambiack (S) – South



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MAP 41

VICTORIA
STATISTICAL DIVISIONS

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QUEENSLAND

MAP

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Armed Robbery (MAPS 42-45)

In general, Statistical Local Areas in Queensland tend to have low rates of armed robbery, with no locality exceeding 68 per 100,000 residents.

Relative to the overall rate in the state, armed robbery tends to concentrate more in SLAs that belong to the Brisbane and Gold Coast City-Part B Statistical Subdivisions. SLAs in these areas also tend to have a significant concentration of the state's retail and service activity. Official statistics show that 53.5% of the armed robberies recorded in Queensland during 1999 occurred in retail and service industry locations (Australian Bureau of Statistics, 2000).

Unarmed Robbery (MAPS 46-49)

Unarmed robbery tends to be more prevalent in metropolitan Statistical Local Areas that are located in or around the Brisbane and Townsville Central Business Districts. In particular, SLAs such as City – Inner and Remainder (Brisbane), Spring Hill, Red Hill, Bowen Hill and City (Townsville) are among the places with the highest rates of unarmed robbery. These areas have a significant share of retail and services activity, and as such they attract large amounts of visitors. Unarmed robbery is primarily perpetrated on individuals. Official statistics show that individuals were the victims of 88.7% of all unarmed robberies recorded in Queensland during 1999 (Australian Bureau of Statistics, 2000).

This offence also concentrates in some rural SLAs such as Aramac, Croydon, Isisford and Warroo. These areas are small in population terms and agriculture-based, however they tend to have relatively high unemployment rates and an above average proportion of Indigenous people, which makes it reasonable to attribute, at least partially, their high rate of unarmed robbery to their high level of social and economic disadvantage.

Residential Break and Enter (MAPS 50-53)

The prevalence of residential break and enter tends to be high in some Statistical Local Areas of the Brisbane City Statistical Subdivision, particularly in Dutton Park, Fortitude Valley, Inala, Kangaroo Point, Lutwyche, Milton, Newstead, St Lucia and Taringa. In addition, the SLA of Woodridge in the Logan City Statistical Subdivision also belongs to the group with highest rates of residential break and enter. All these places record rates above 1,800 per 100,000 residents.

A high prevalence of residential break and enter is related to high levels of unemployment, relatively large proportions of people of Indigenous origin, low home ownership and a high proportion of one-parent households. It seems reasonable to associate the high rates of residential burglary in these areas with above average levels of social disadvantage and material deprivation.

Measured in relative terms, some areas have an above average risk of break and enter. These areas tend to correspond to SLAs that are located in the Brisbane City, Gold Coast City, Logan City and Townsville City Statistical Subdivisions. Except for the latter, the SLAs in all the other Subdivisions are located along the commuter train lines and/or major roads.

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Non-Residential Break and Enter (MAPS 54-57)

Non-residential break and enter, also referred to as non-residential burglary, represented 34% of all the unlawful entries with intent (UEWI) recorded during 1999 in Queensland. Fourty-four per cent of these incidents occurred in locations corresponding to retail and other key service industries, including wholesale and warehousing (Australian Bureau of Statistics, 2000).

In general, non-residential burglary exhibits a fair degree of regional variation and tends to be concentrated in a few SLAs of the Brisbane City Statistical Subdivision, in particular Fortitude Valley, Milton, Newstead, Paddington and Red Hill. Employment in these SLAs tends to be highly concentrated in services industries, including retail and wholesale.

There are some non-metropolitan SLAs with relatively high rates of non-residential break and enter. They correspond to very isolated areas with relatively small populations.

Motor Vehicle Theft (MAPS 58-61)

Official statistics show that 71% of the incidents of motor vehicle theft recorded in Queensland during 1999 occurred in non-residential locations. Fifty-three per cent of these occurred on the street or a transport-related location, and 29% in a retail or service related location.

Map 59 shows that prevalence of motor vehicle theft is highest in some Statistical Local Areas that belong to the Brisbane City Statistical Subdivision, in particular City-Remainder (Brisbane), Fortitude Valley, Indoroopilly, Kangaroo Point, Kelvin Grove, Lutwyche, Milton, Newstead, Paddington, Red Hill, St Lucia, Taringa and Toowong.

When compared to the statewide rate of motor vehicle theft, SLAs in the Brisbane City, Gold Coast City, Logan City and Townsville City Statistical Subdivisions emerge as having a disproportionate risk for this offence. (*refer to* Map 61).

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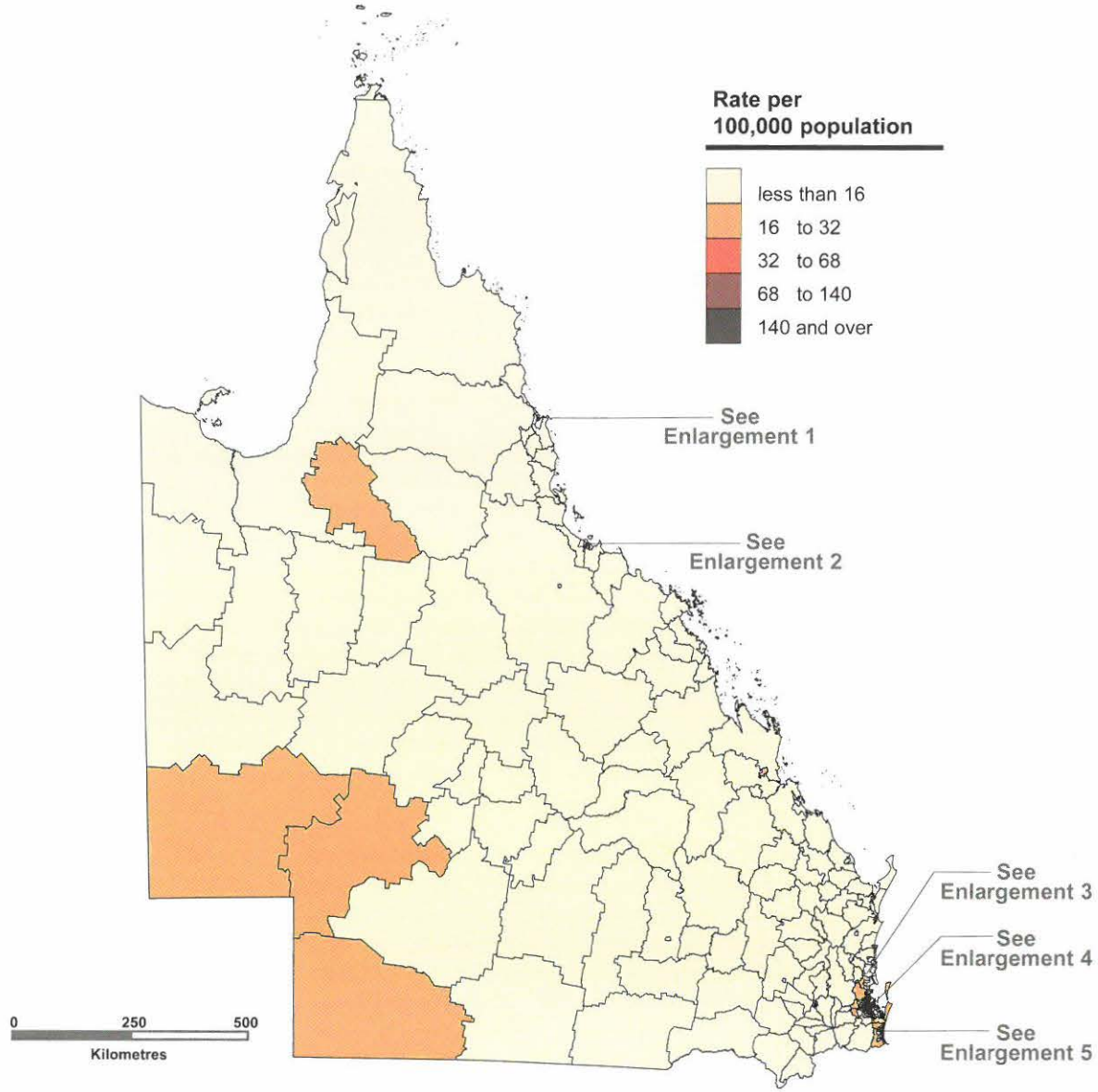
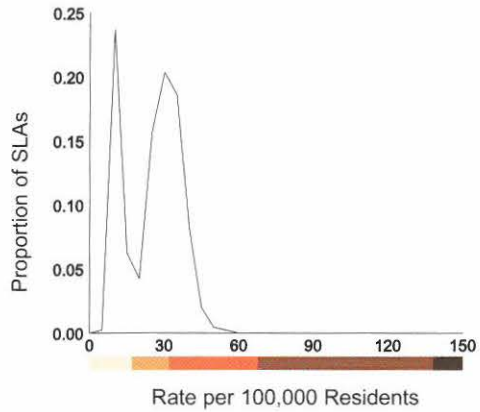
MAP 42

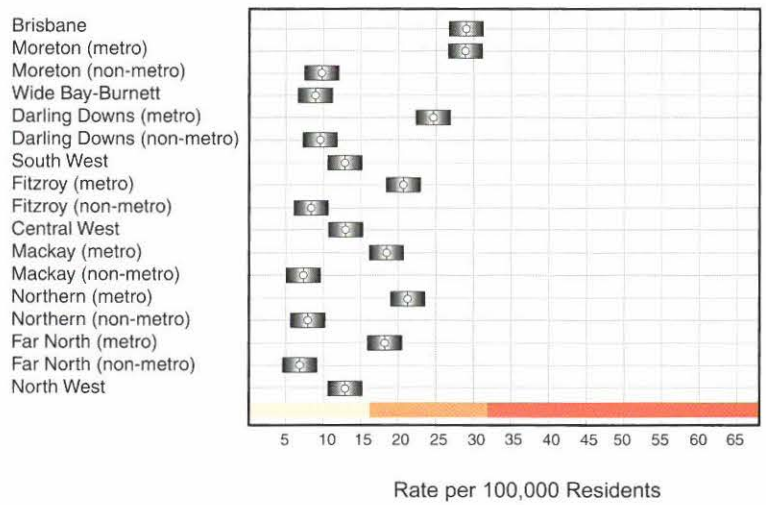
QUEENSLAND
ARMED ROBBERY - RATE[1] PER 100,000 RESIDENTS



Distribution of Statistical Local Areas (SLAs) According to Rate of Armed Robbery



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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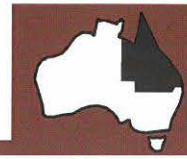
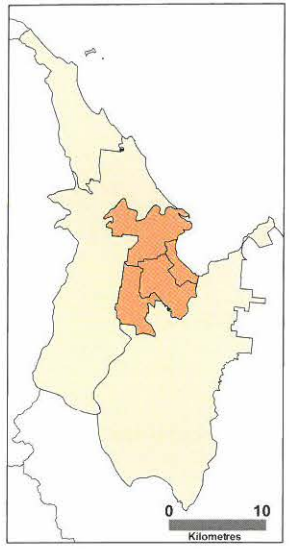
MAP 43

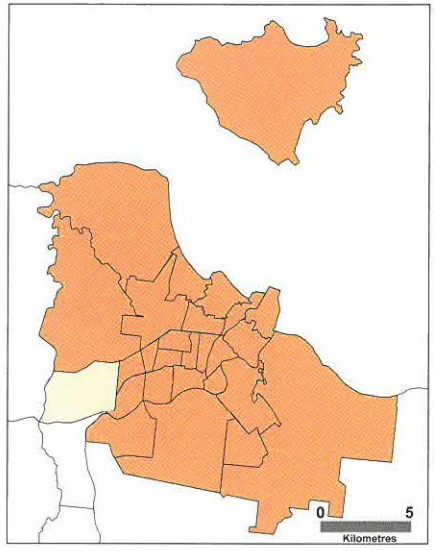
QUEENSLAND - ENLARGEMENTS 1-5
ARMED ROBBERY - RATE[1] PER 100,000 RESIDENTS



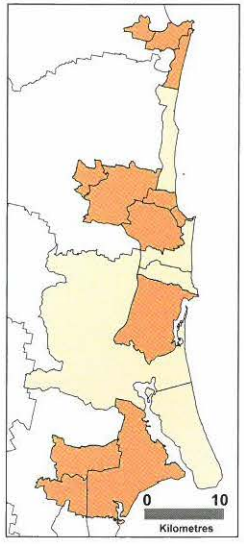
Enlargement 1



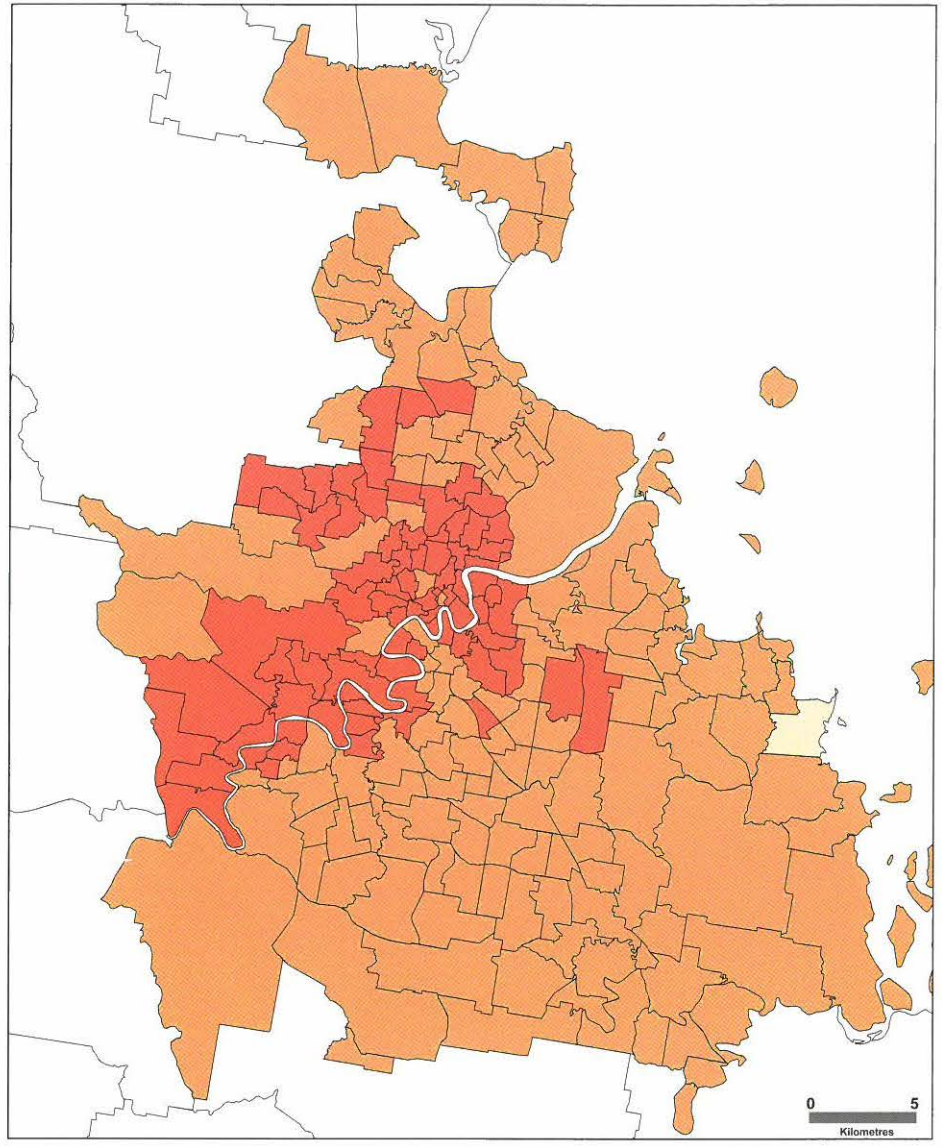
Enlargement 2



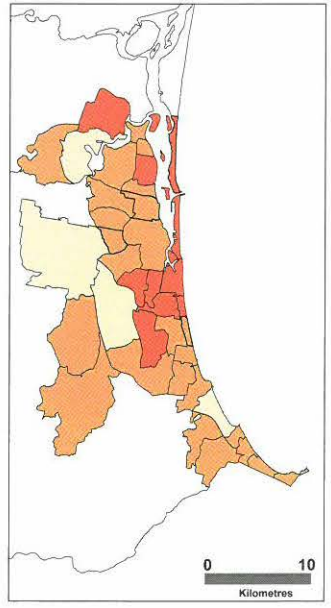
Enlargement 3



Enlargement 4



Enlargement 5



Rate per 100,000 population

- less than 16
- 16 to 32
- 32 to 68
- 68 to 140
- 140 and over

[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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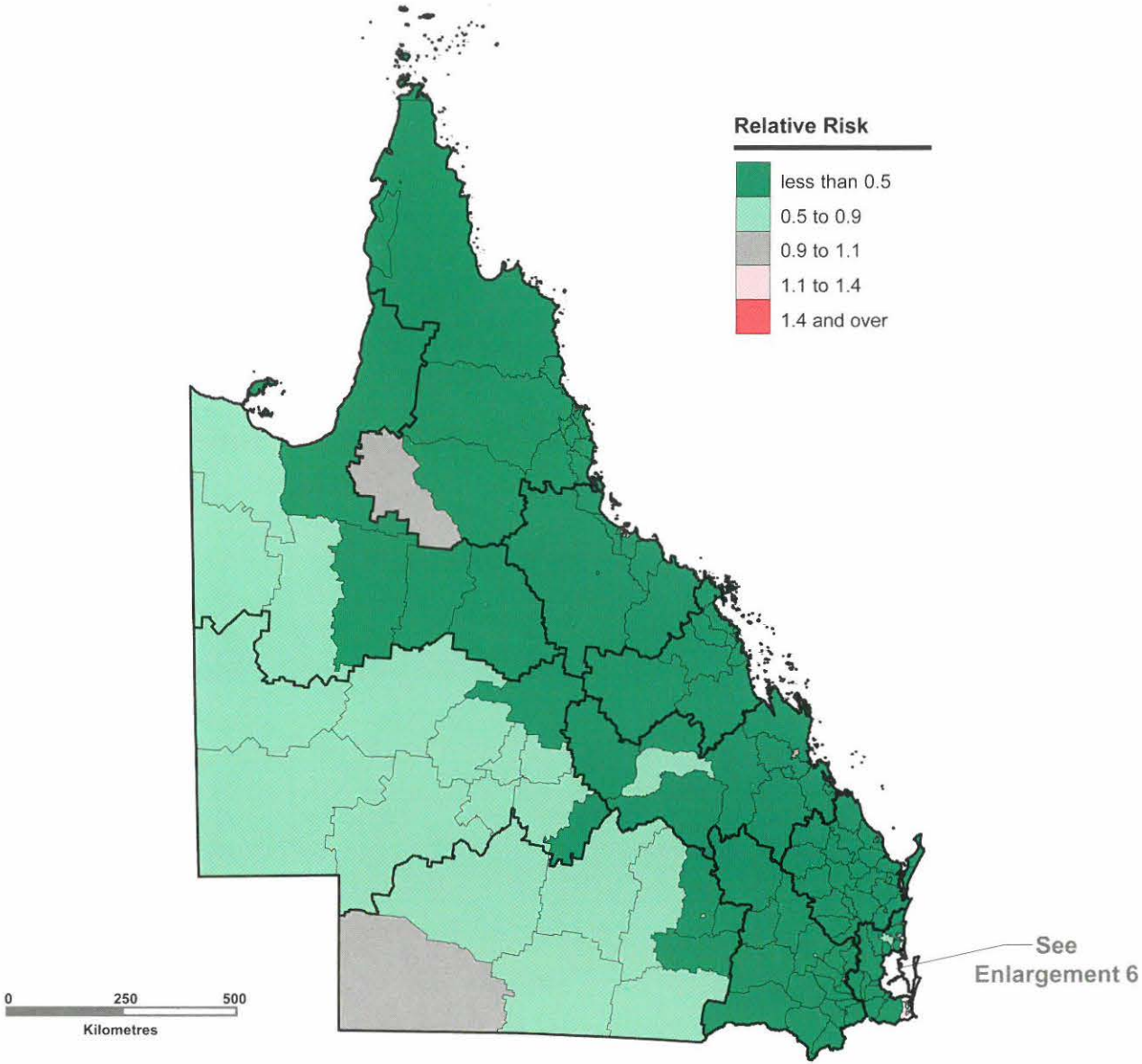
MAP 44

QUEENSLAND

ARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics

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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

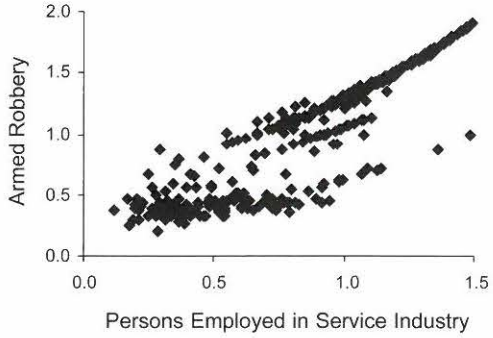
Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

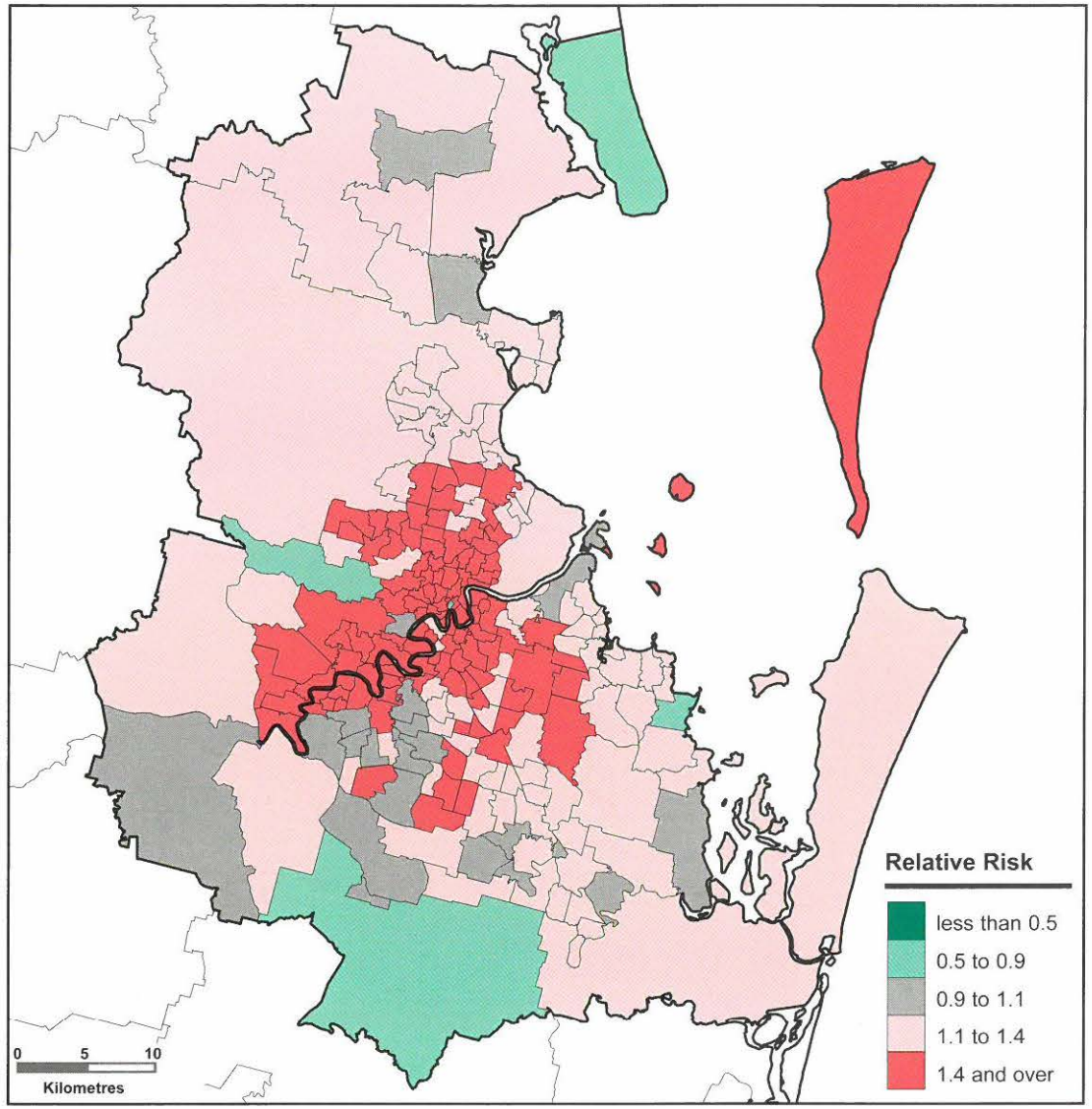
MAP 45

QUEENSLAND - ENLARGEMENT 6

ARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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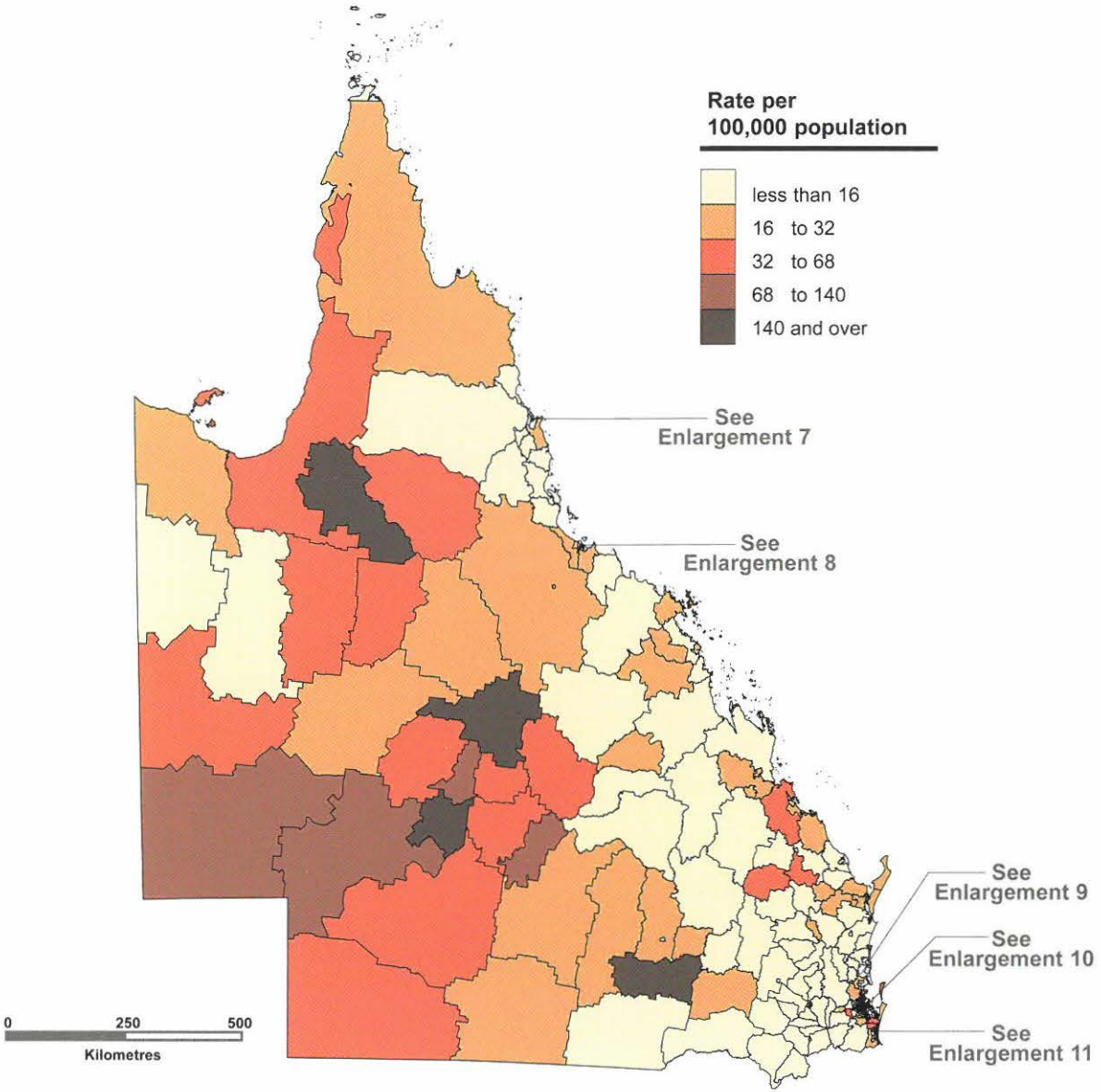
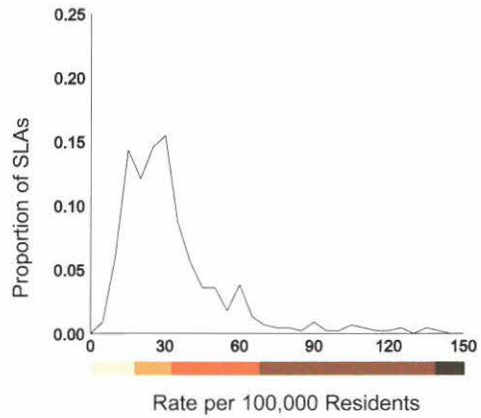
MAP 46

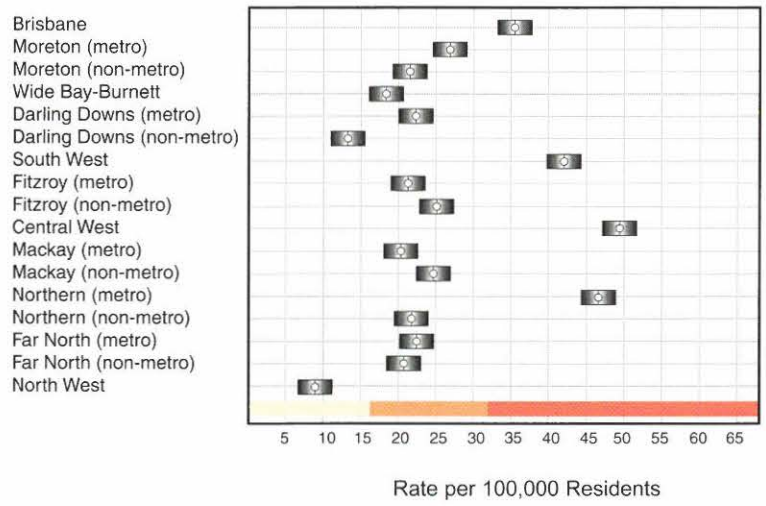
QUEENSLAND
UNARMED ROBBERY - RATE[1] PER 100,000 RESIDENTS



Distribution of Statistical Local Areas (SLAs) According to Rate of Unarmed Robbery



Statistical Divisions 95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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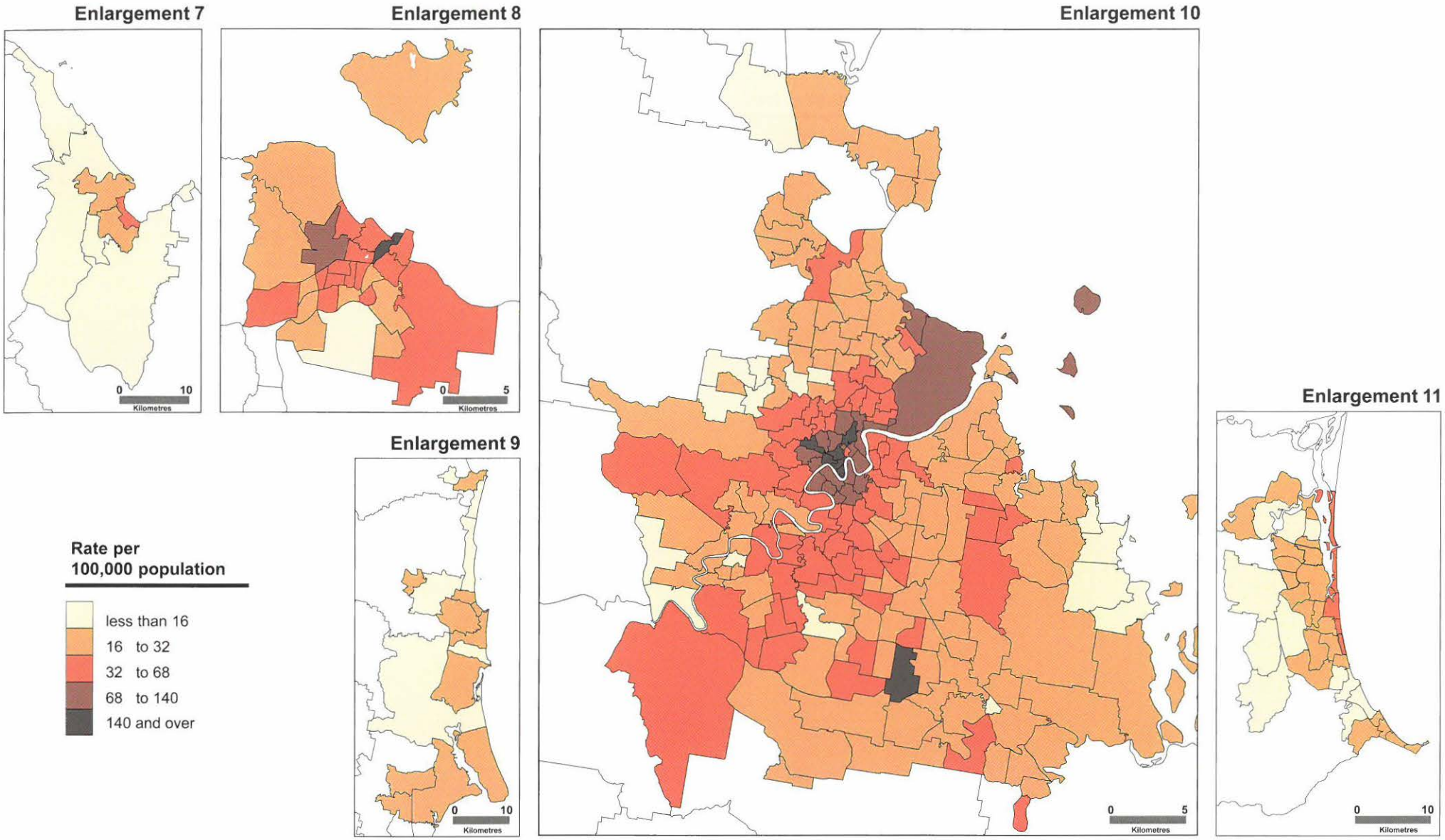
MAP 47

QUEENSLAND - ENLARGEMENTS 7-11
UNARMED ROBBERY - RATE[1] PER 100,000 RESIDENTS



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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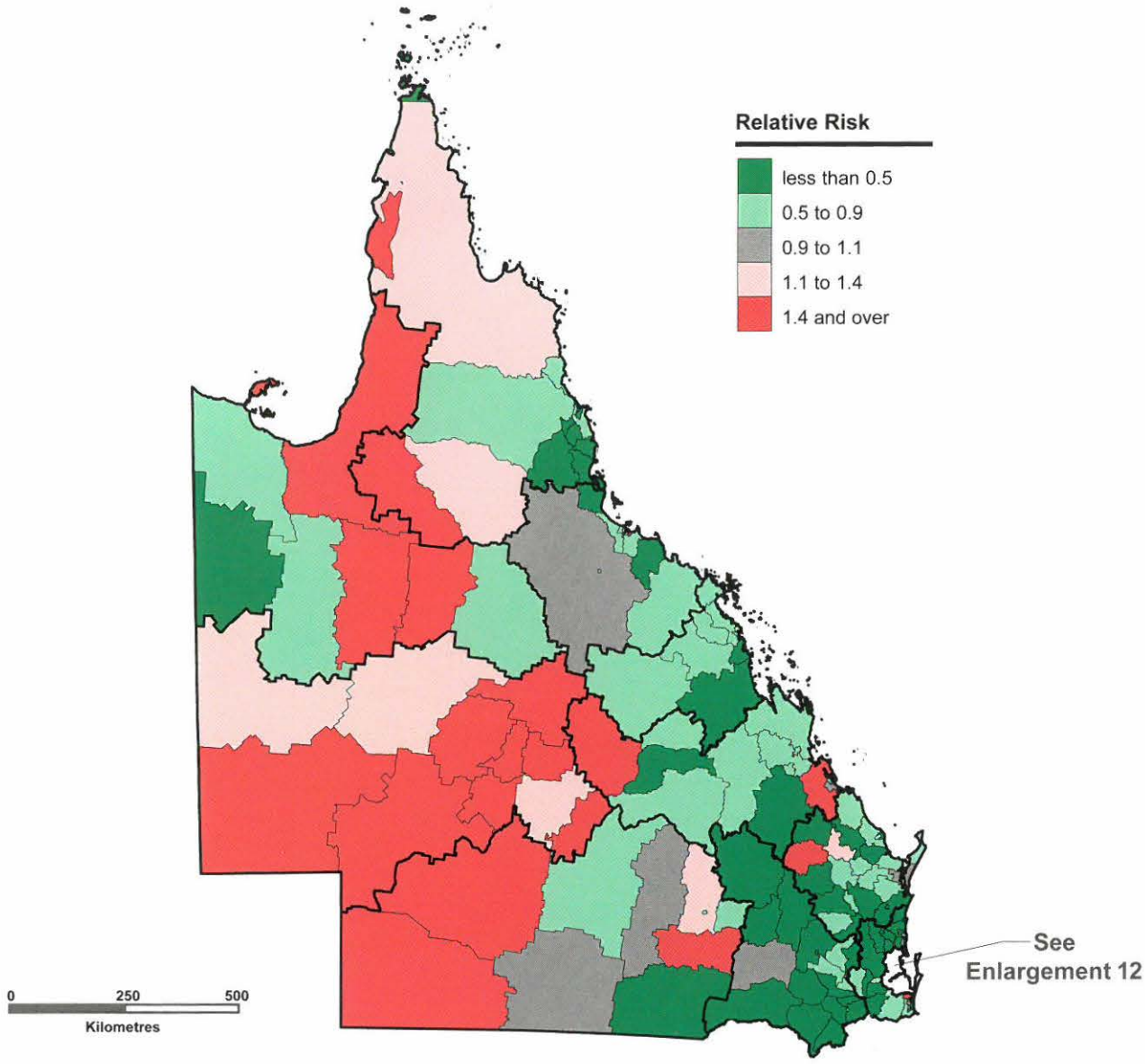
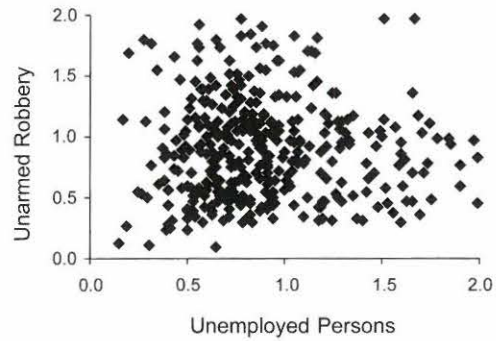
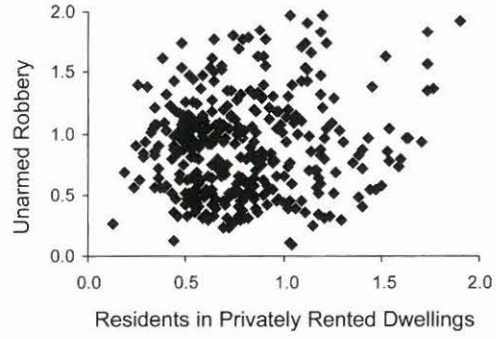
MAP 48

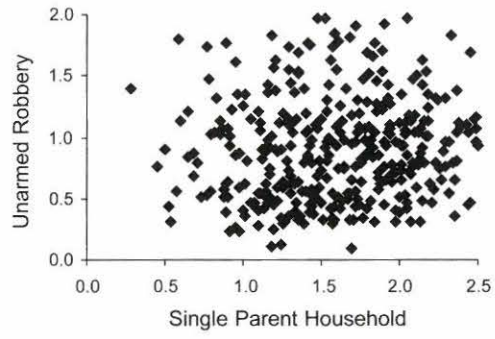
QUEENSLAND
UNARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

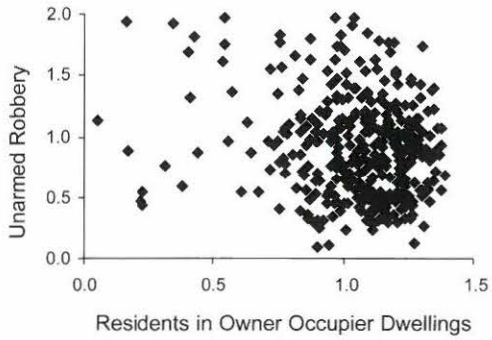
Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

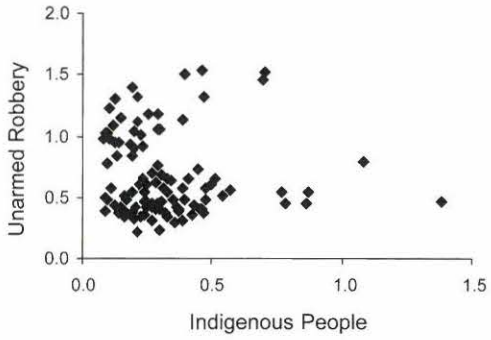
MAP 49

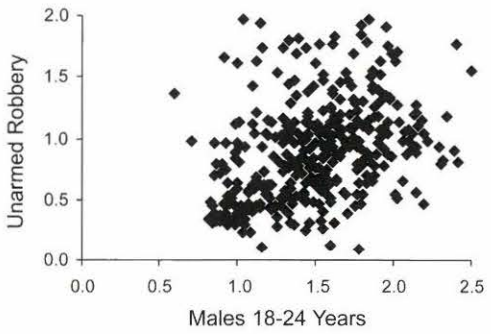
QUEENSLAND - ENLARGEMENT 12

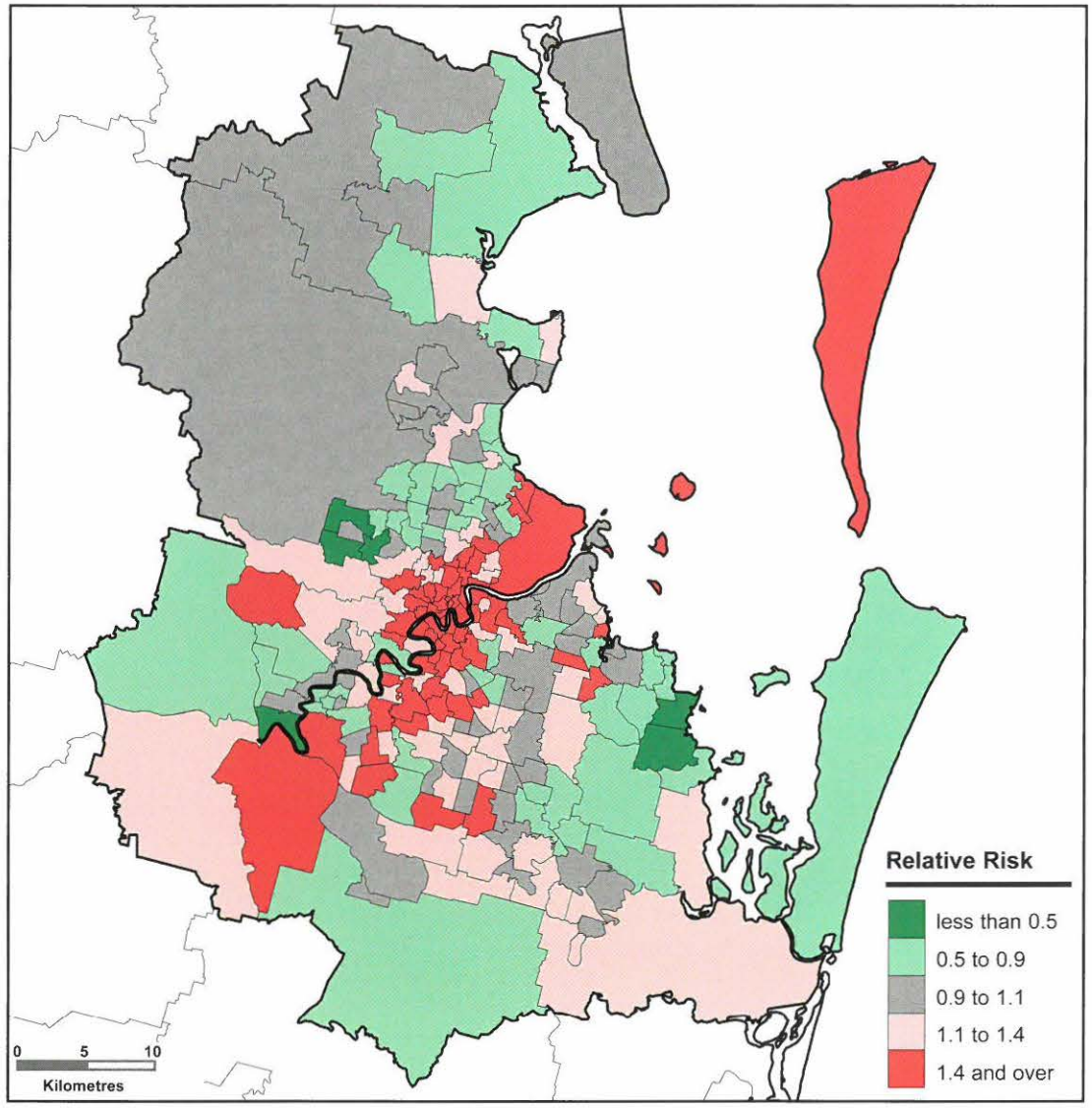
UNARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics









[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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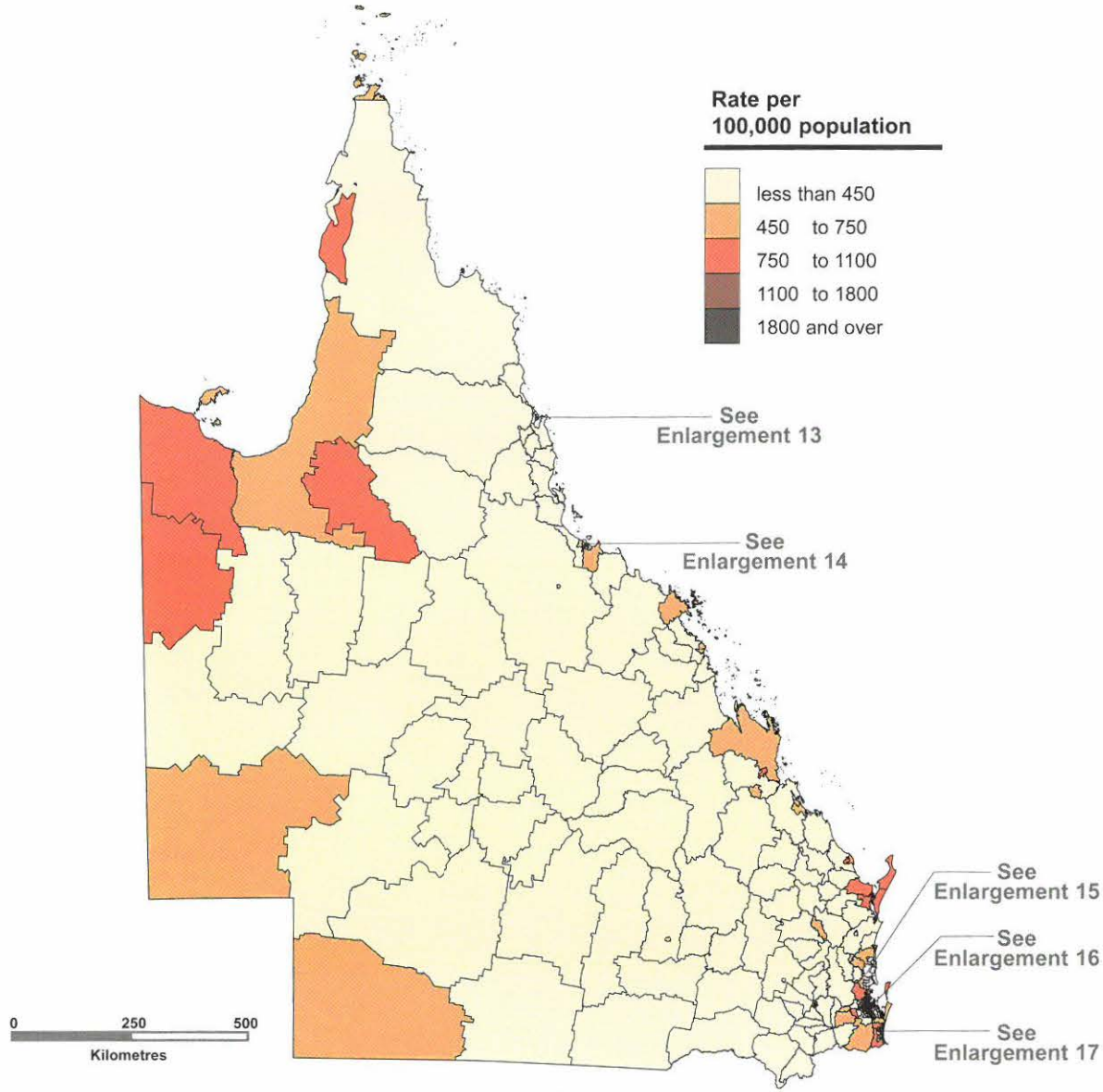
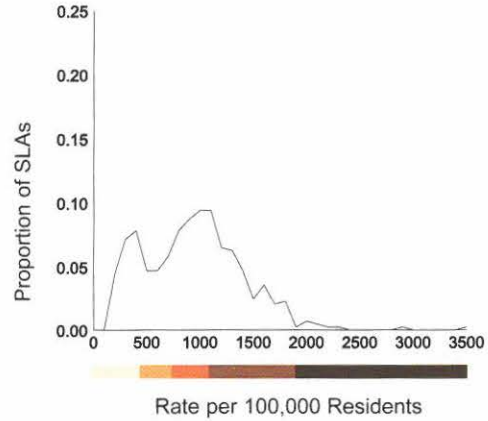
MAP 50

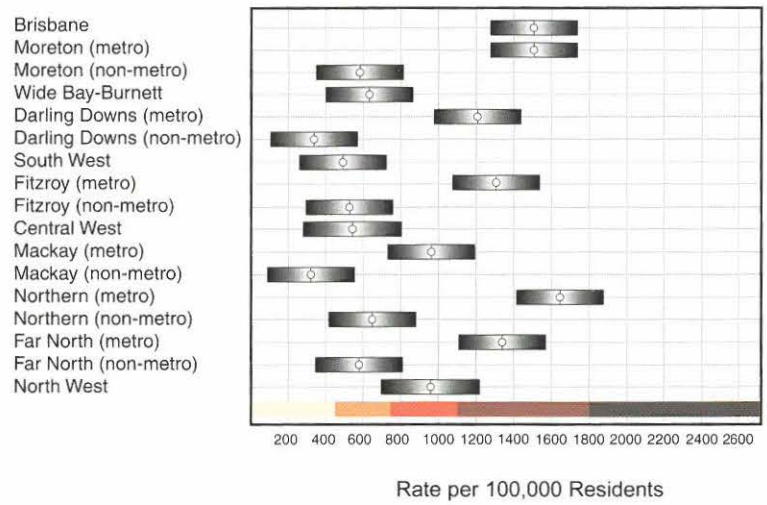
QUEENSLAND
RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



Distribution of Statistical Local Areas (SLAs) According to Rate of Residential Break & Enter



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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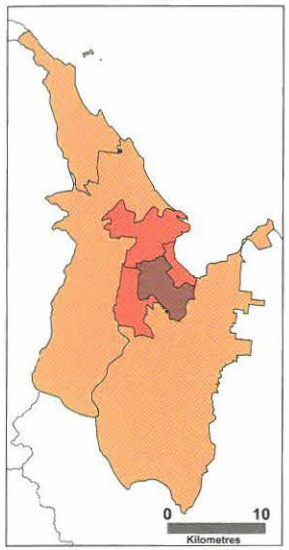
MAP 51

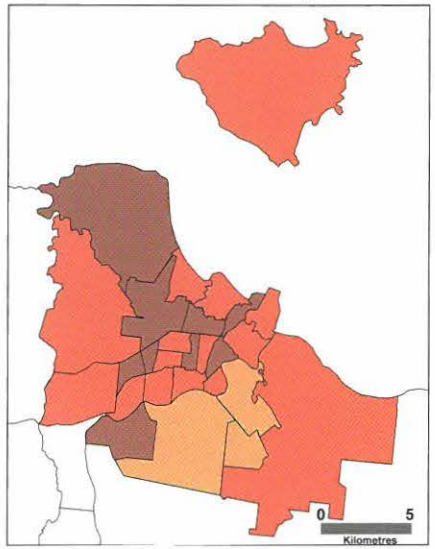
QUEENSLAND - ENLARGEMENTS 13-17

RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS

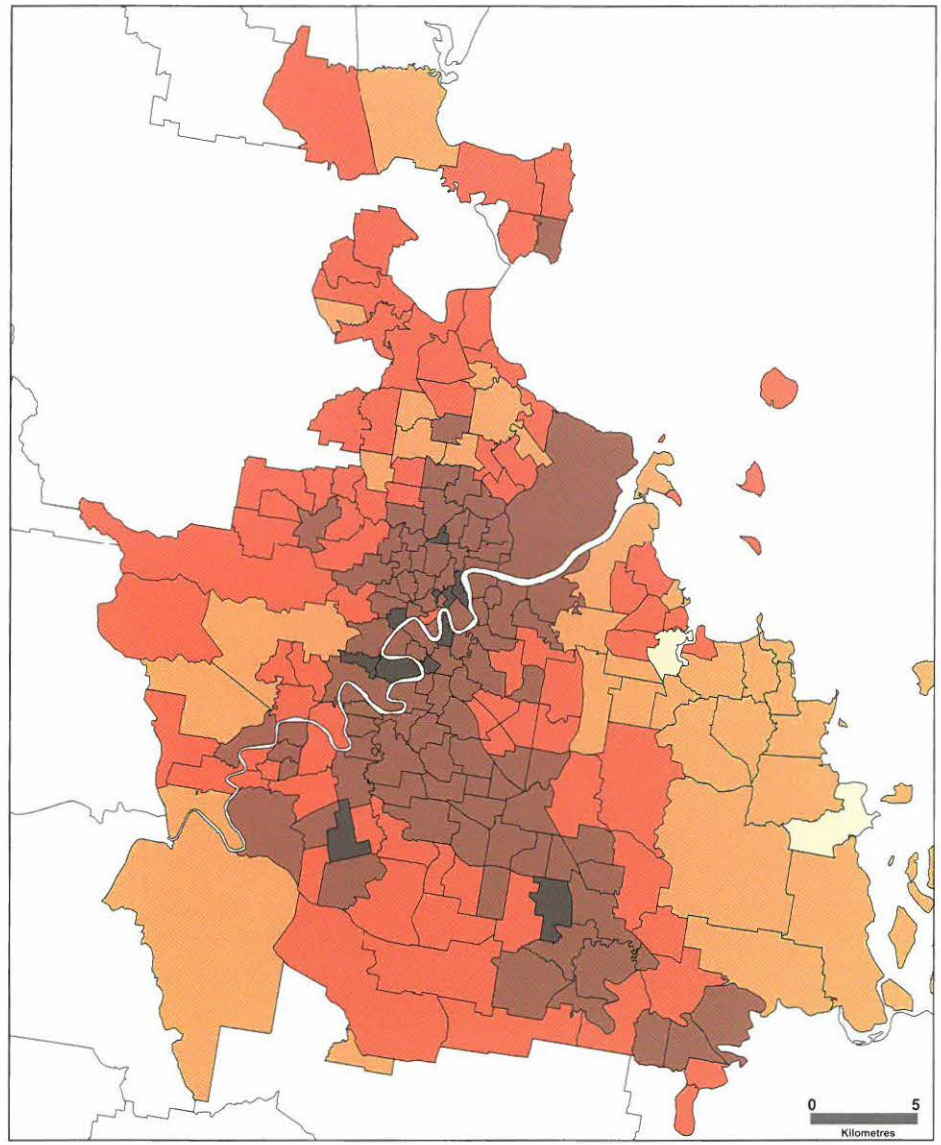
Enlargement 13



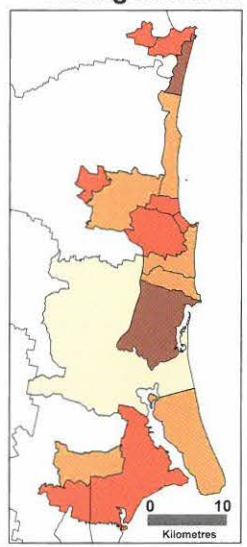
Enlargement 14



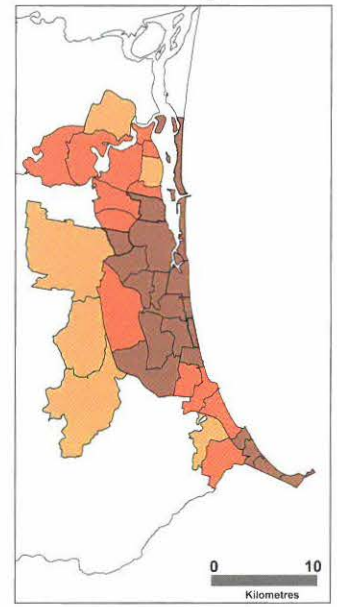
Enlargement 16



Enlargement 15



Enlargement 17



Rate per 100,000 population

- less than 450
- 450 to 750
- 750 to 1100
- 1100 to 1800
- 1800 and over

[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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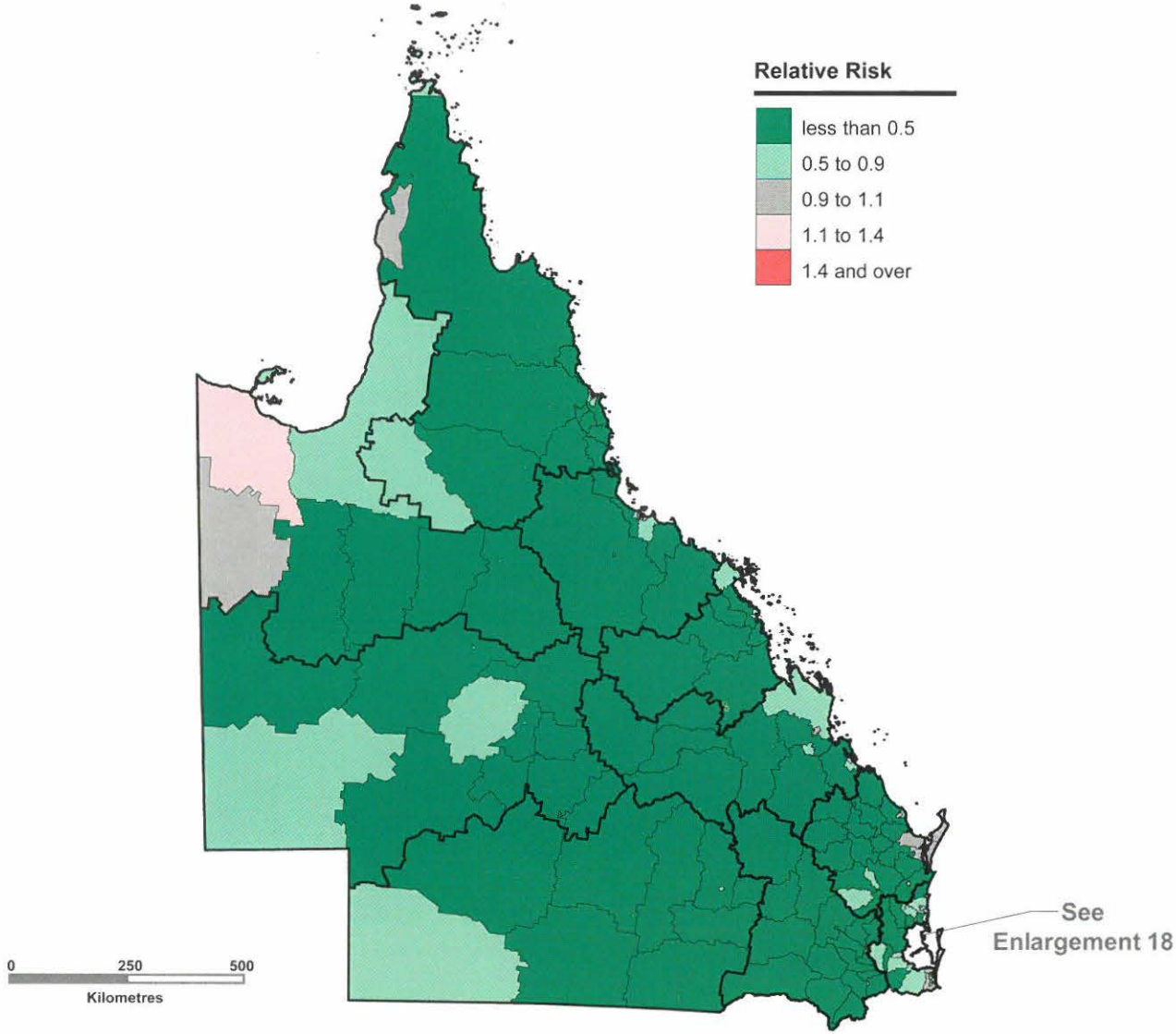
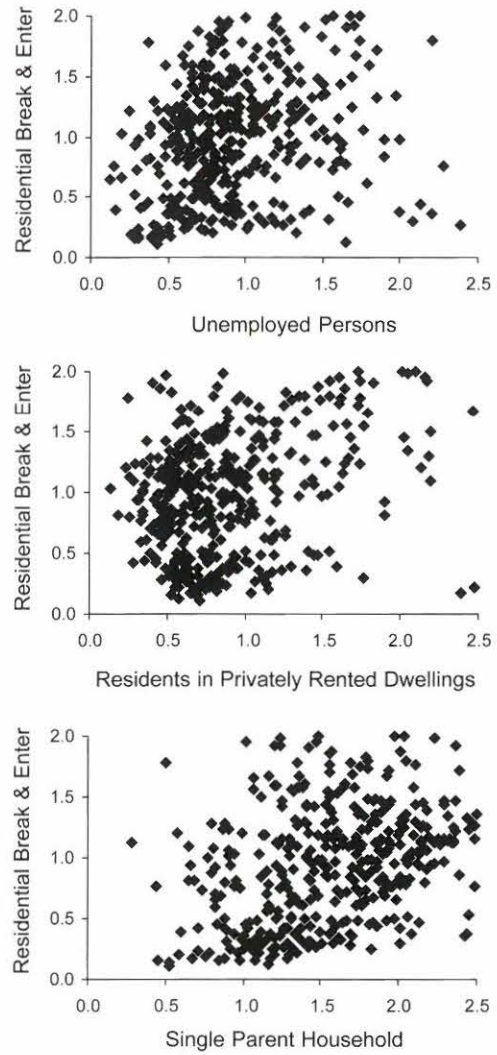
MAP 52

QUEENSLAND
RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics



[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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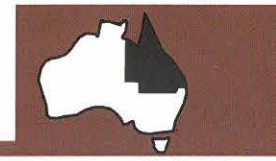
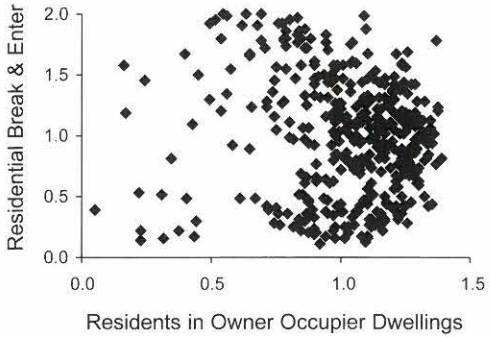
MAP 53

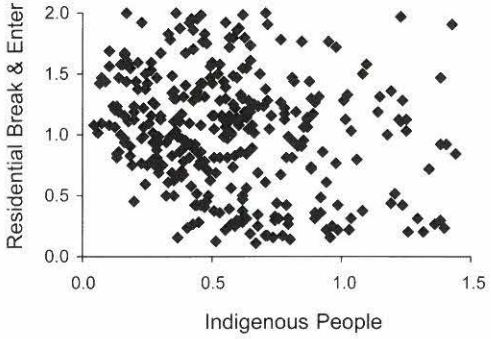
QUEENSLAND - ENLARGEMENT 18

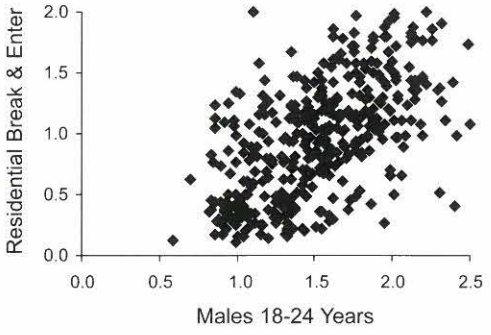
RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

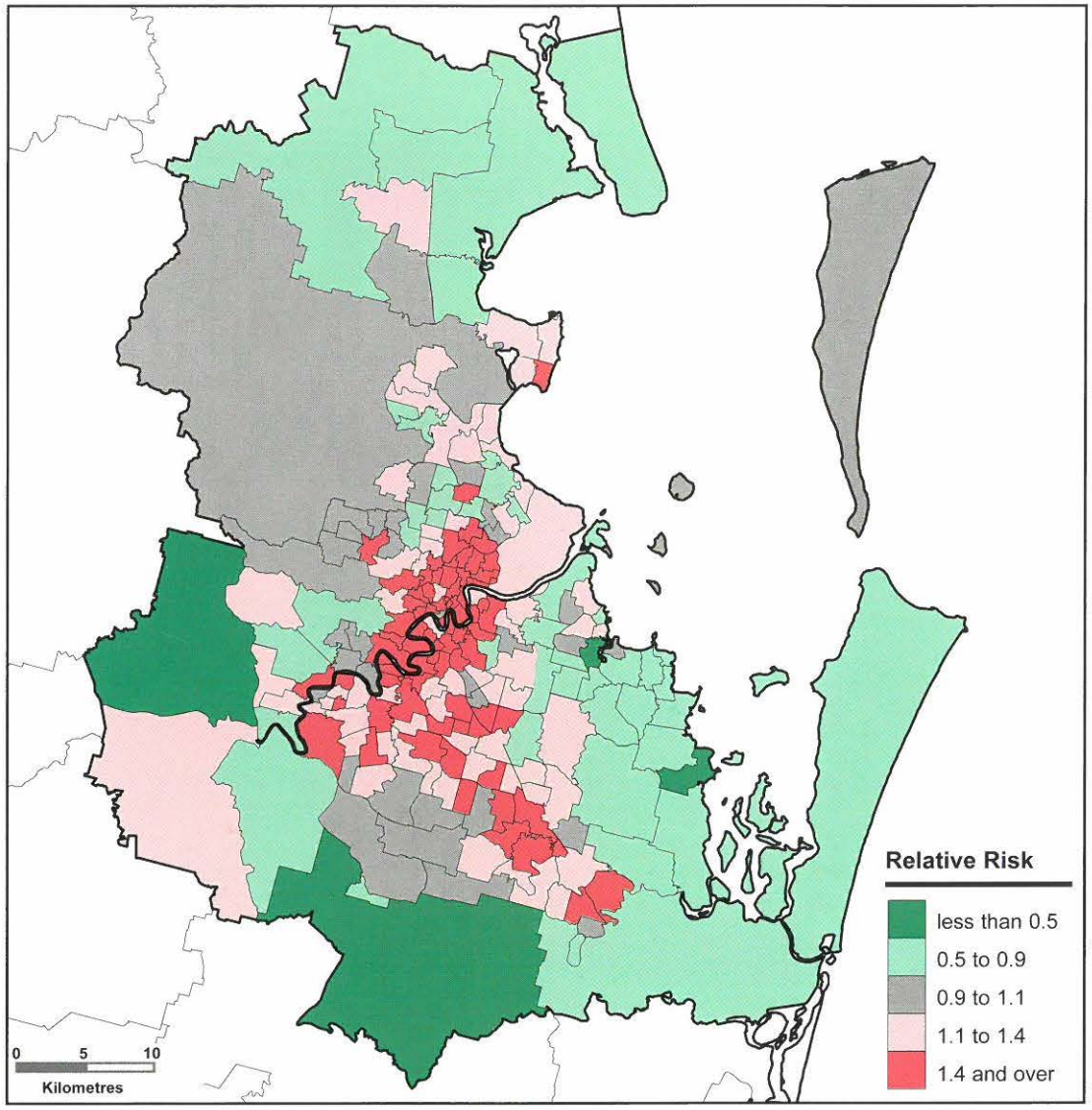


Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics









[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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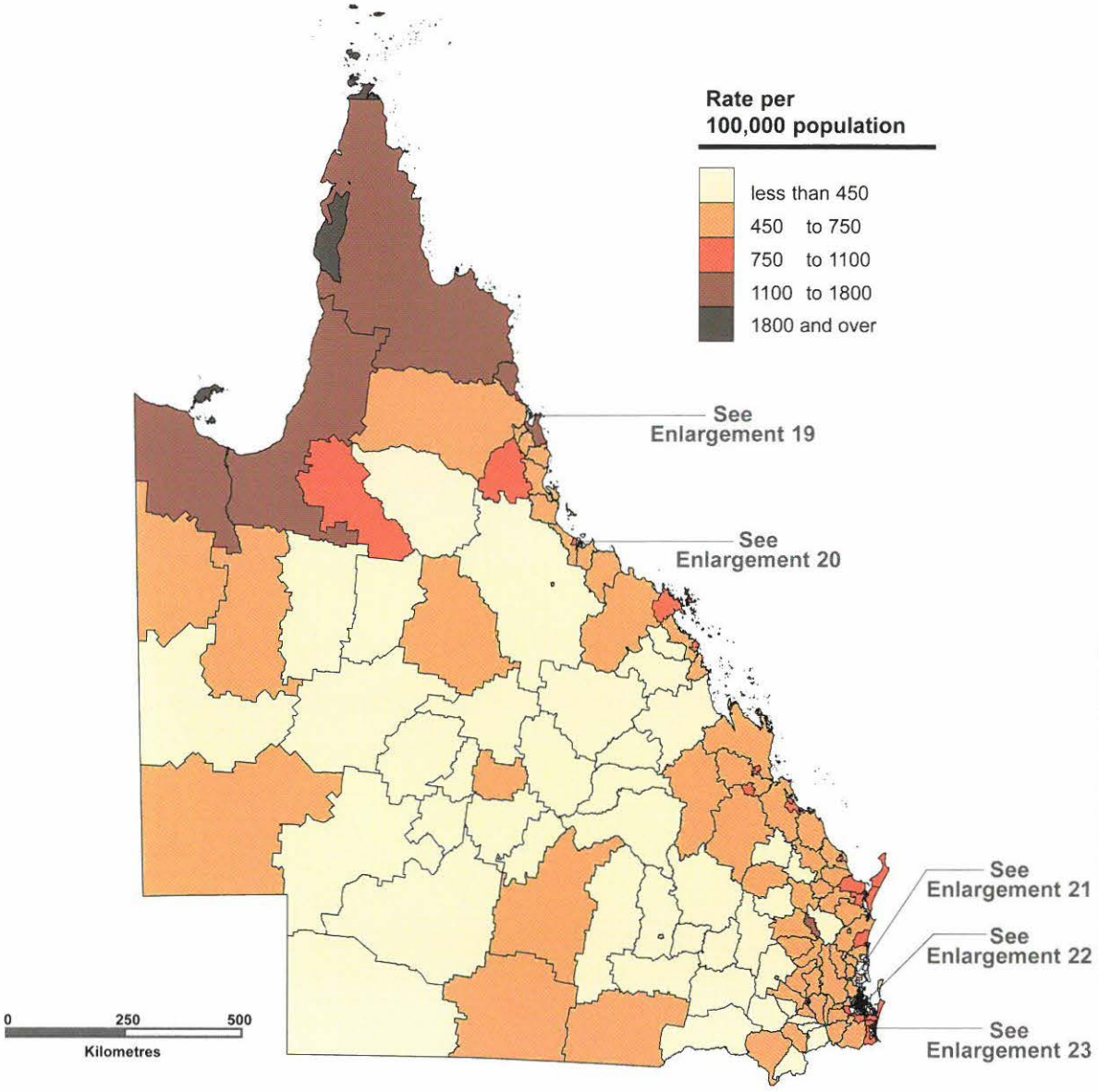
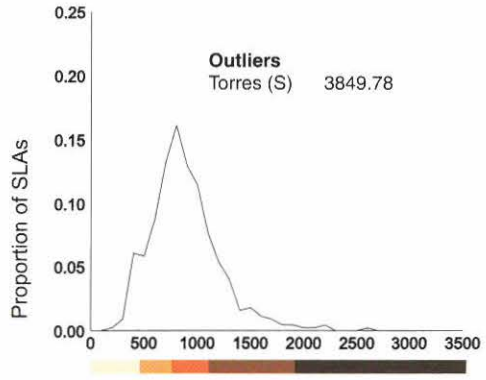
MAP 54

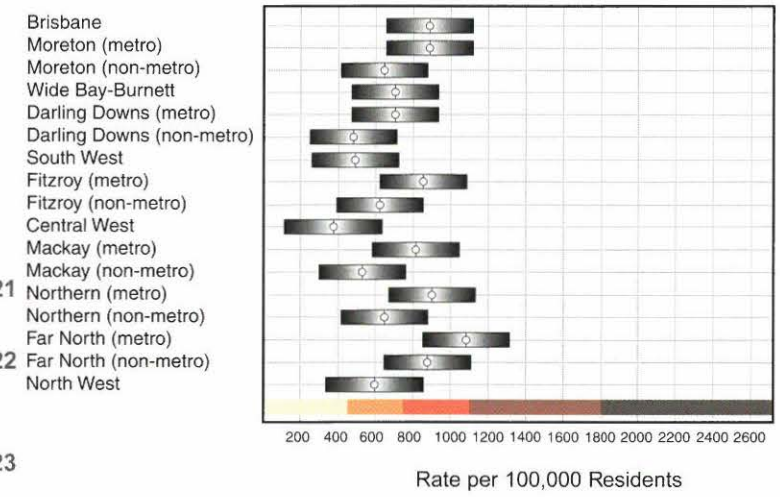
QUEENSLAND
NON-RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



Distribution of Statistical Local Areas (SLAs) According to Rate of Non-Residential Break & Enter



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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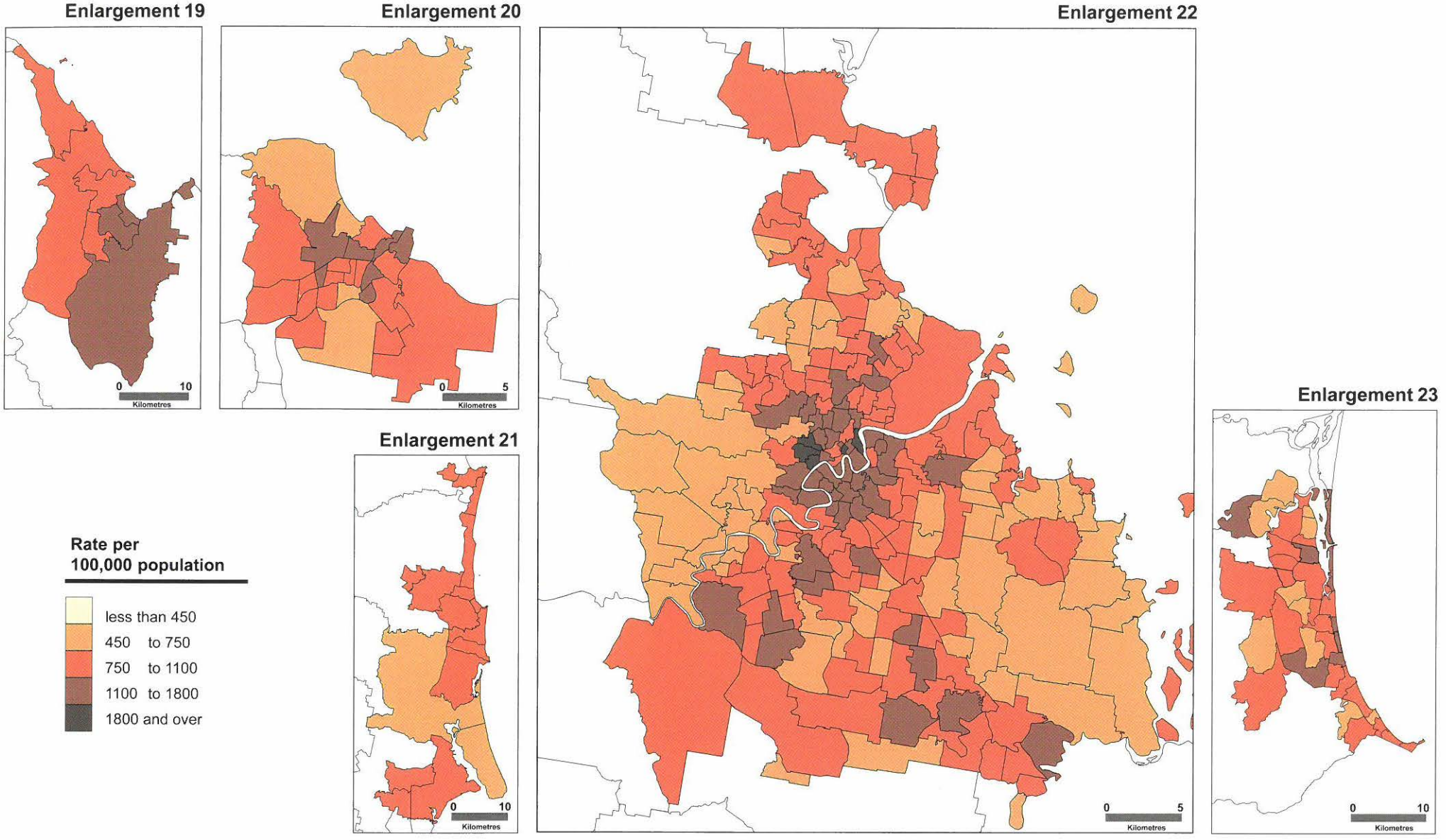
MAP 55

QUEENSLAND - ENLARGEMENTS 19-23

NON-RESIDENTIAL BREAK & ENTER - RATE[1] PER 100,000 RESIDENTS



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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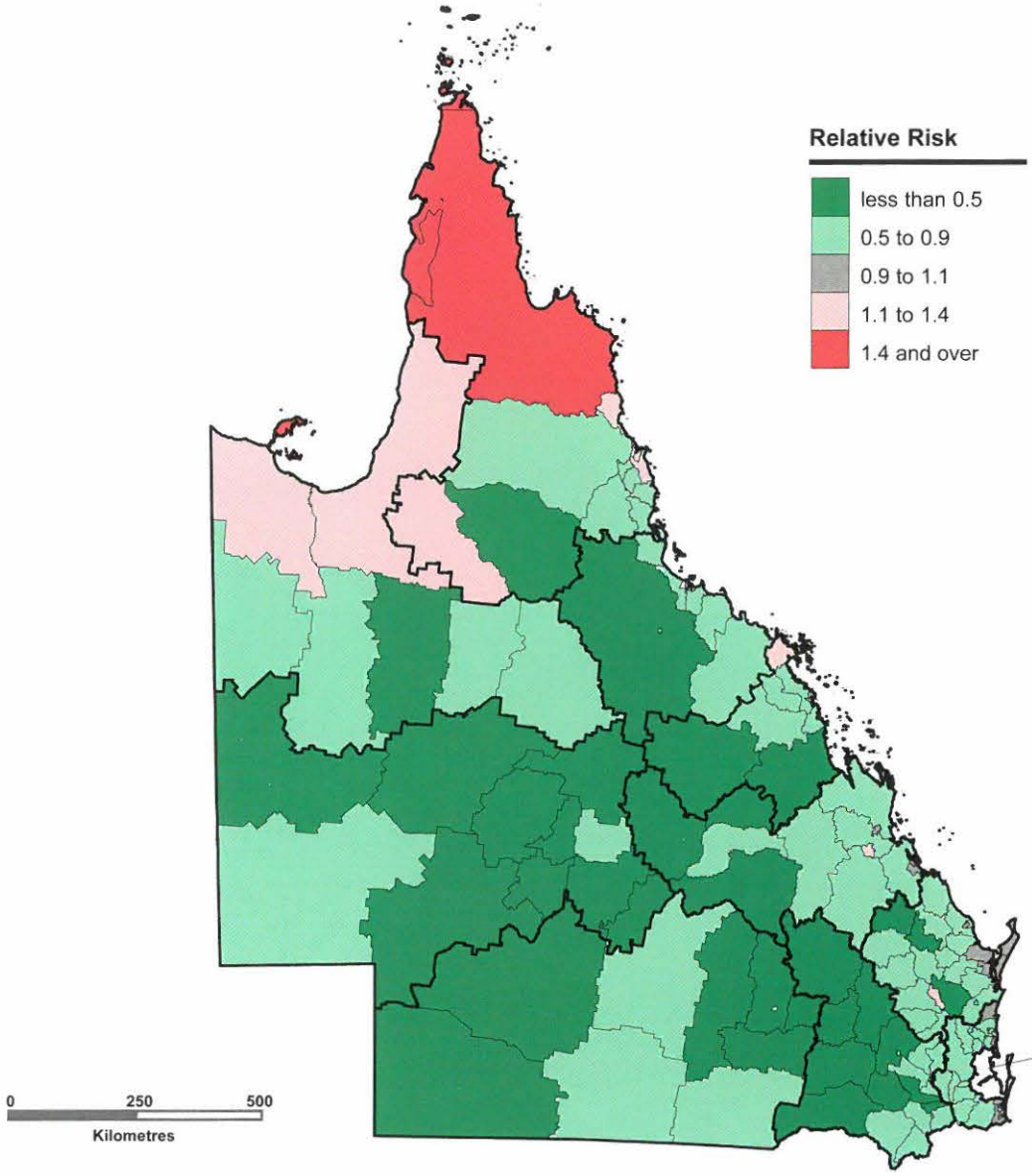
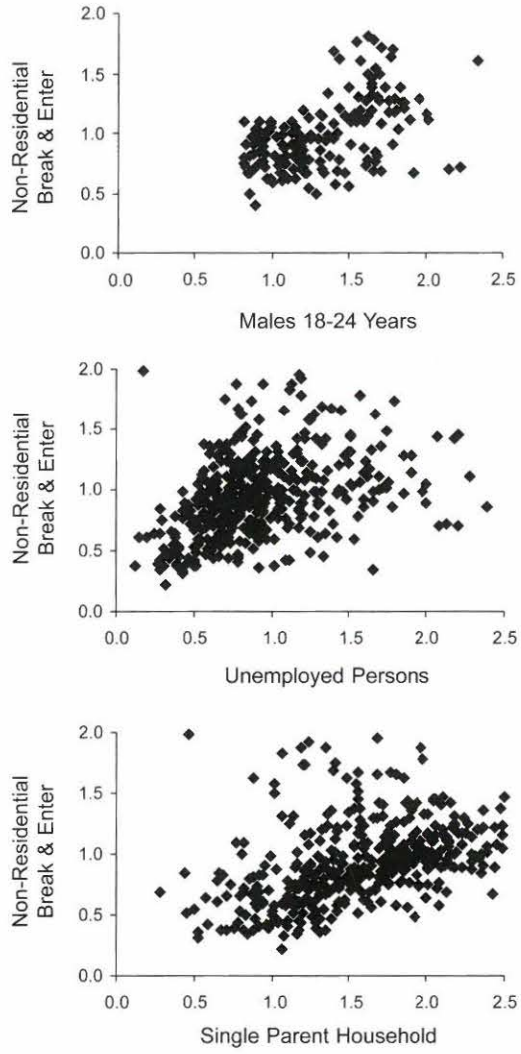
MAP 56

QUEENSLAND
NON-RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics



[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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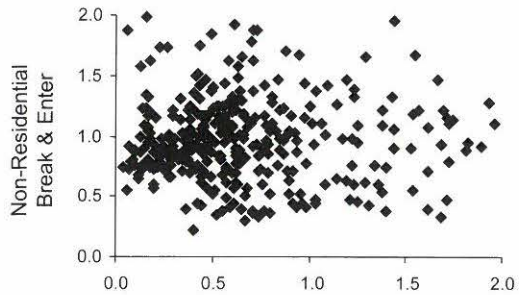
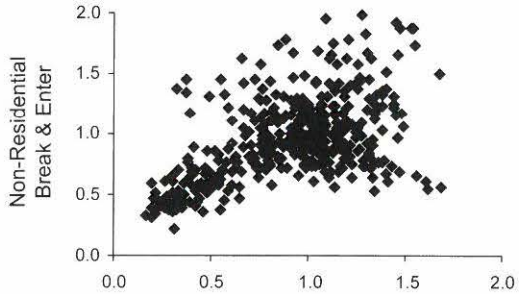
MAP 57

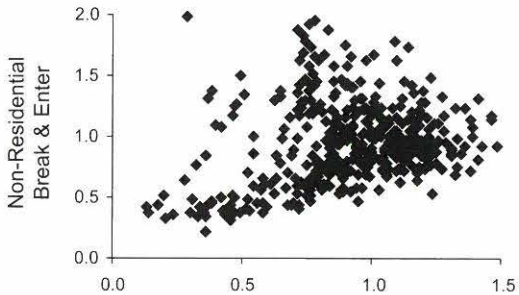
QUEENSLAND - ENLARGEMENT 24

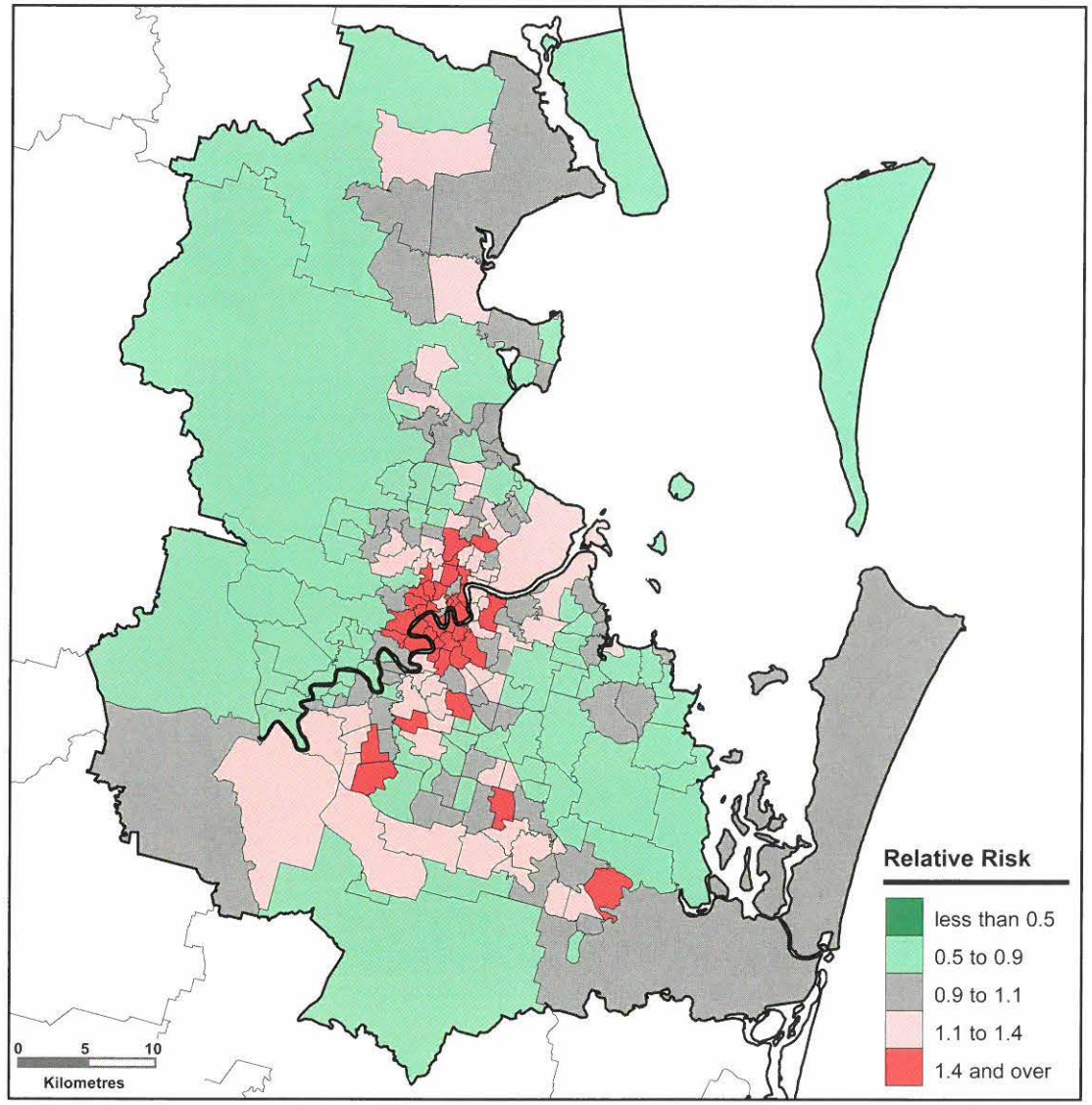
NON-RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics









[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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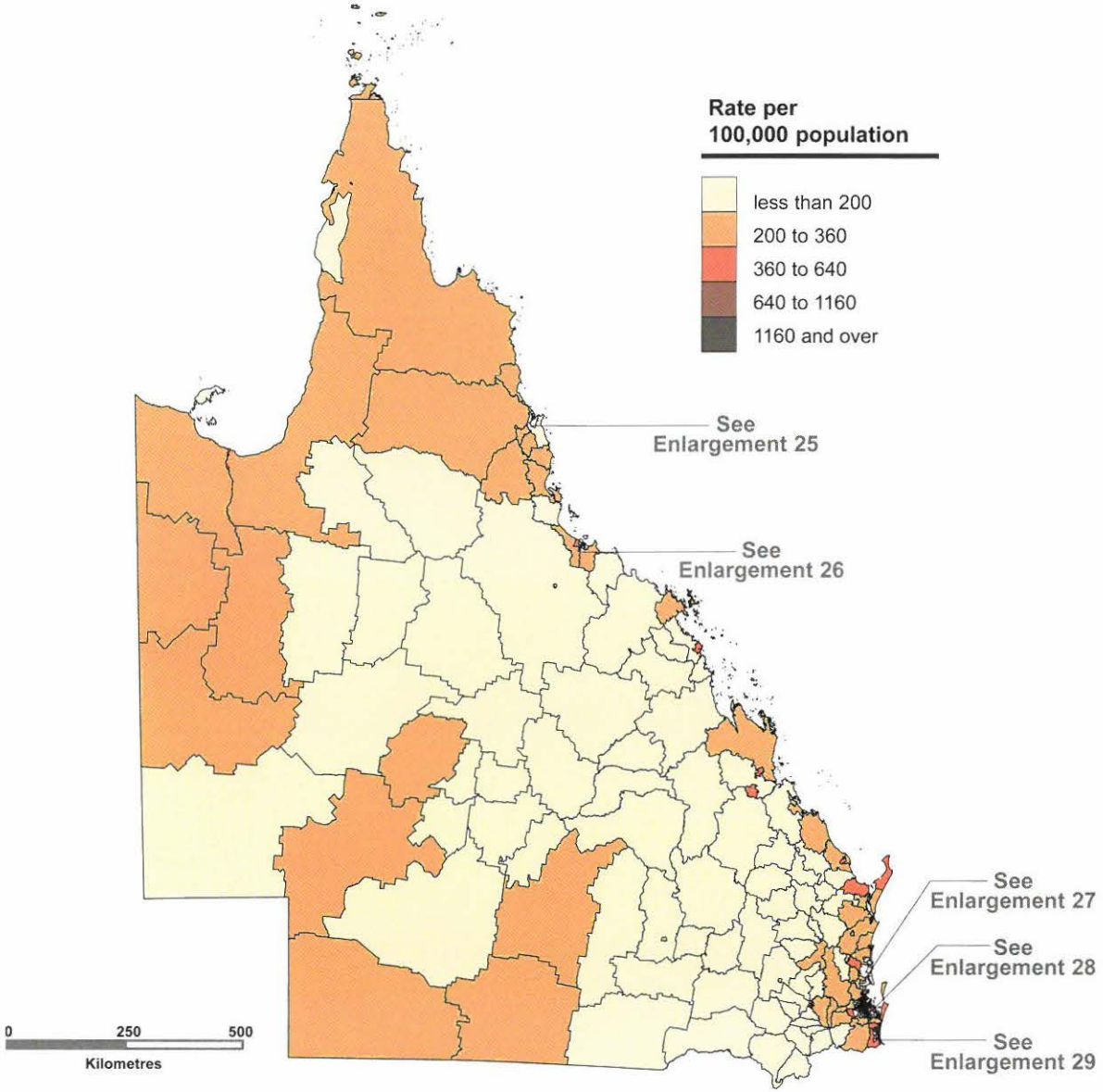
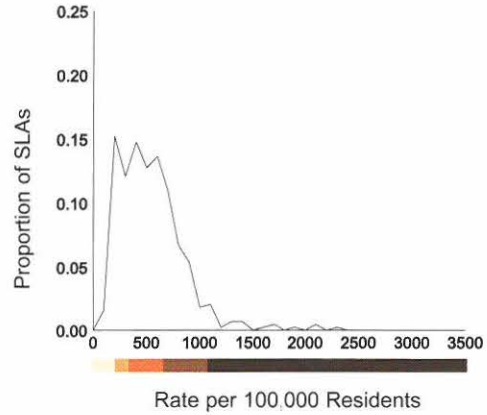
MAP 58

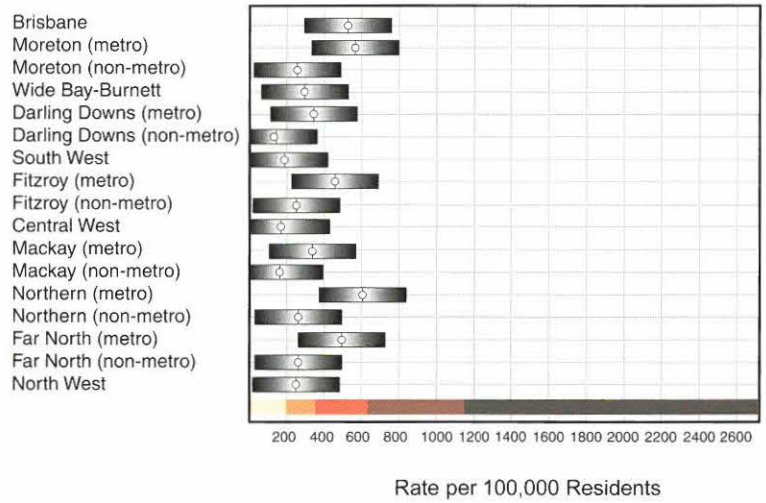
QUEENSLAND
MOTOR VEHICLE THEFT - RATE[1] PER 100,000 RESIDENTS



Distribution of Statistical Local Areas (SLAs) According to Rate of Motor Vehicle Theft



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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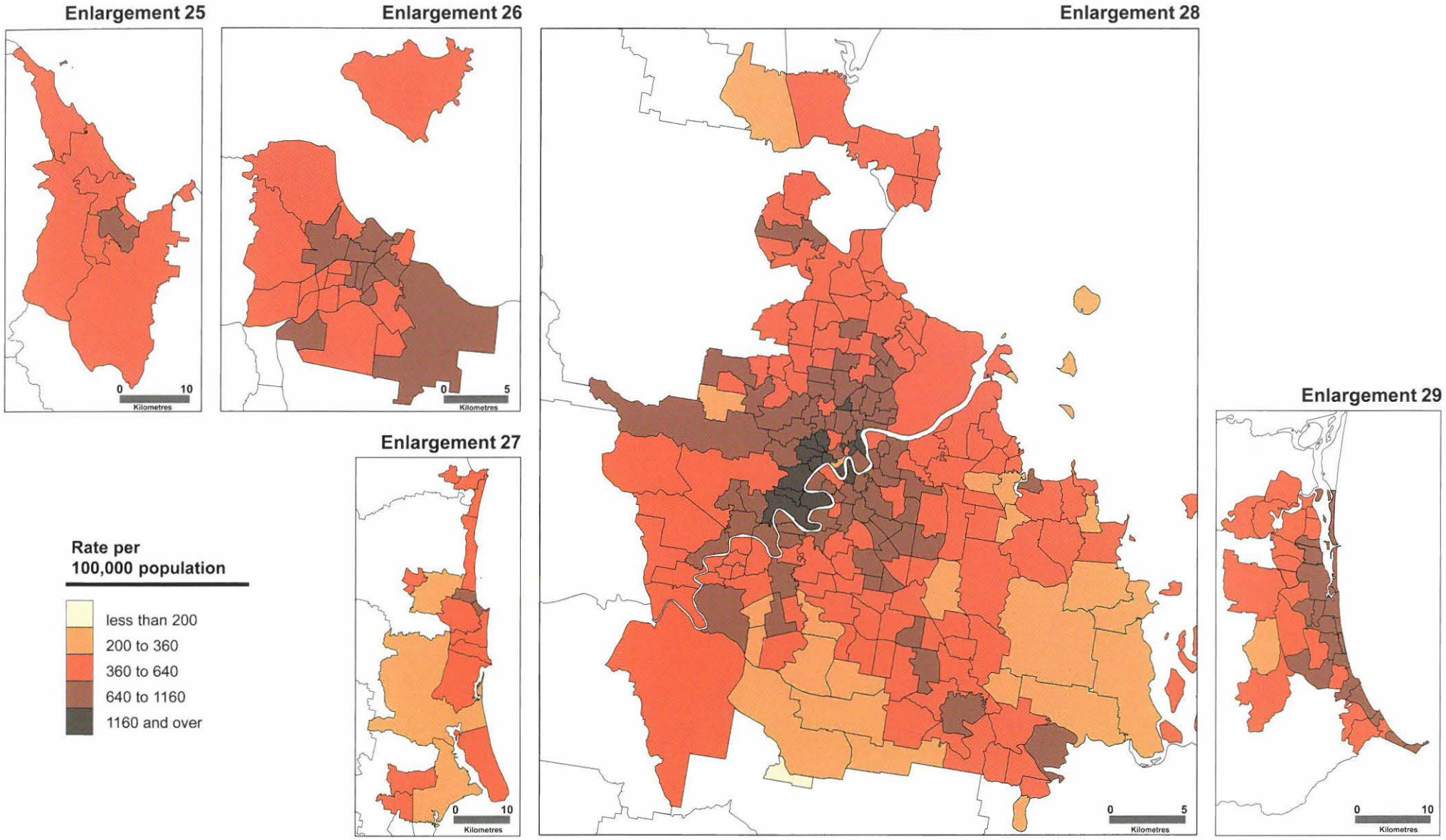
MAP 59

QUEENSLAND - ENLARGEMENTS 25-29
MOTOR VEHICLE THEFT - RATE[1] PER 100,000 RESIDENTS



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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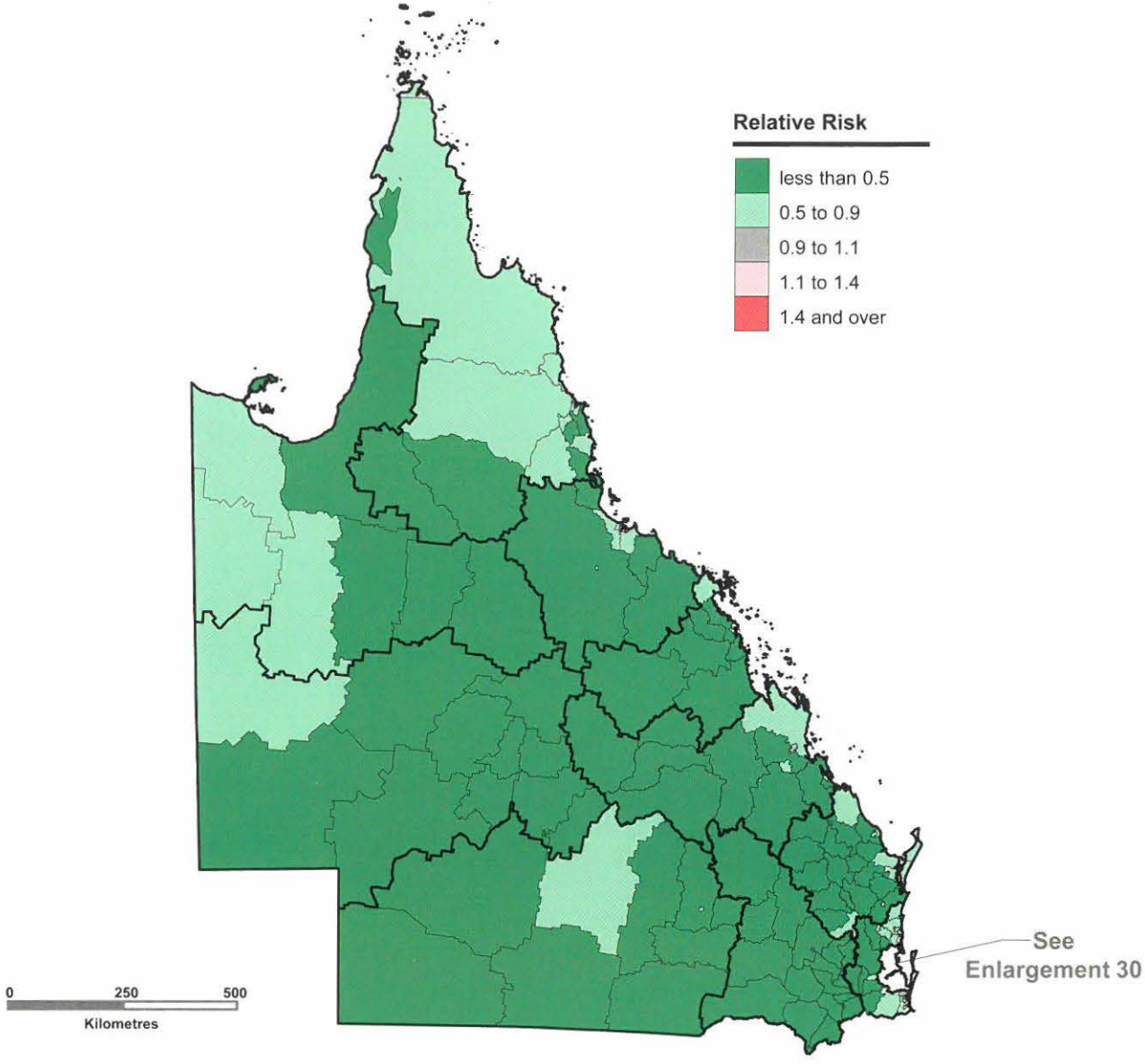
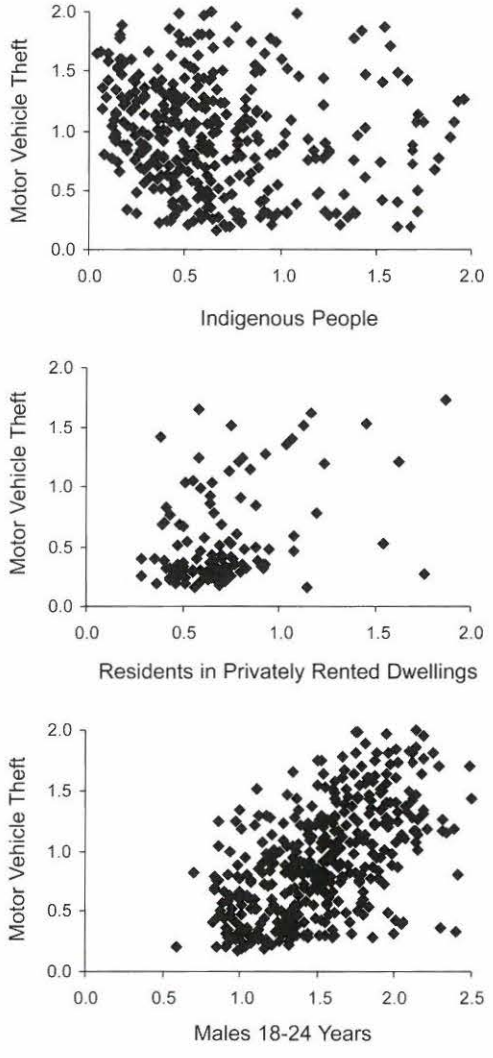
MAP 60

QUEENSLAND
MOTOR VEHICLE THEFT - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics



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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

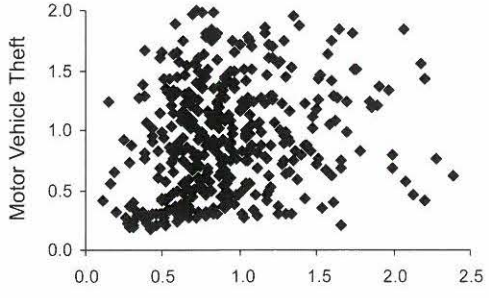
Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

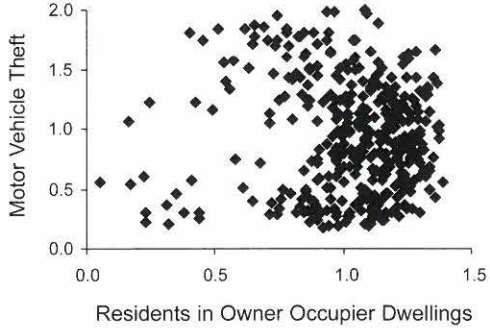
MAP 61

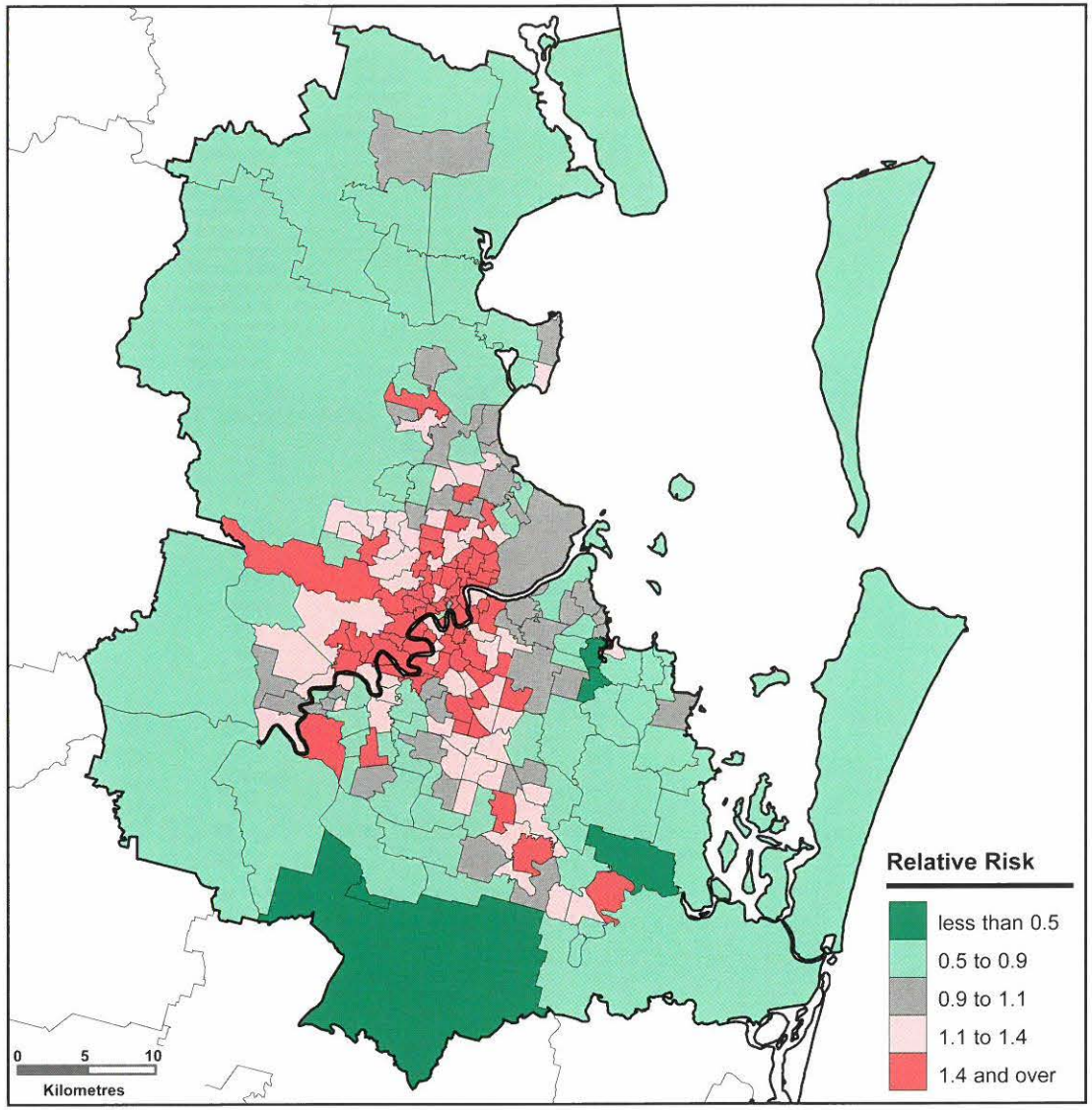
QUEENSLAND - ENLARGEMENT 30

MOTOR VEHICLE THEFT - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: Queensland Police Service, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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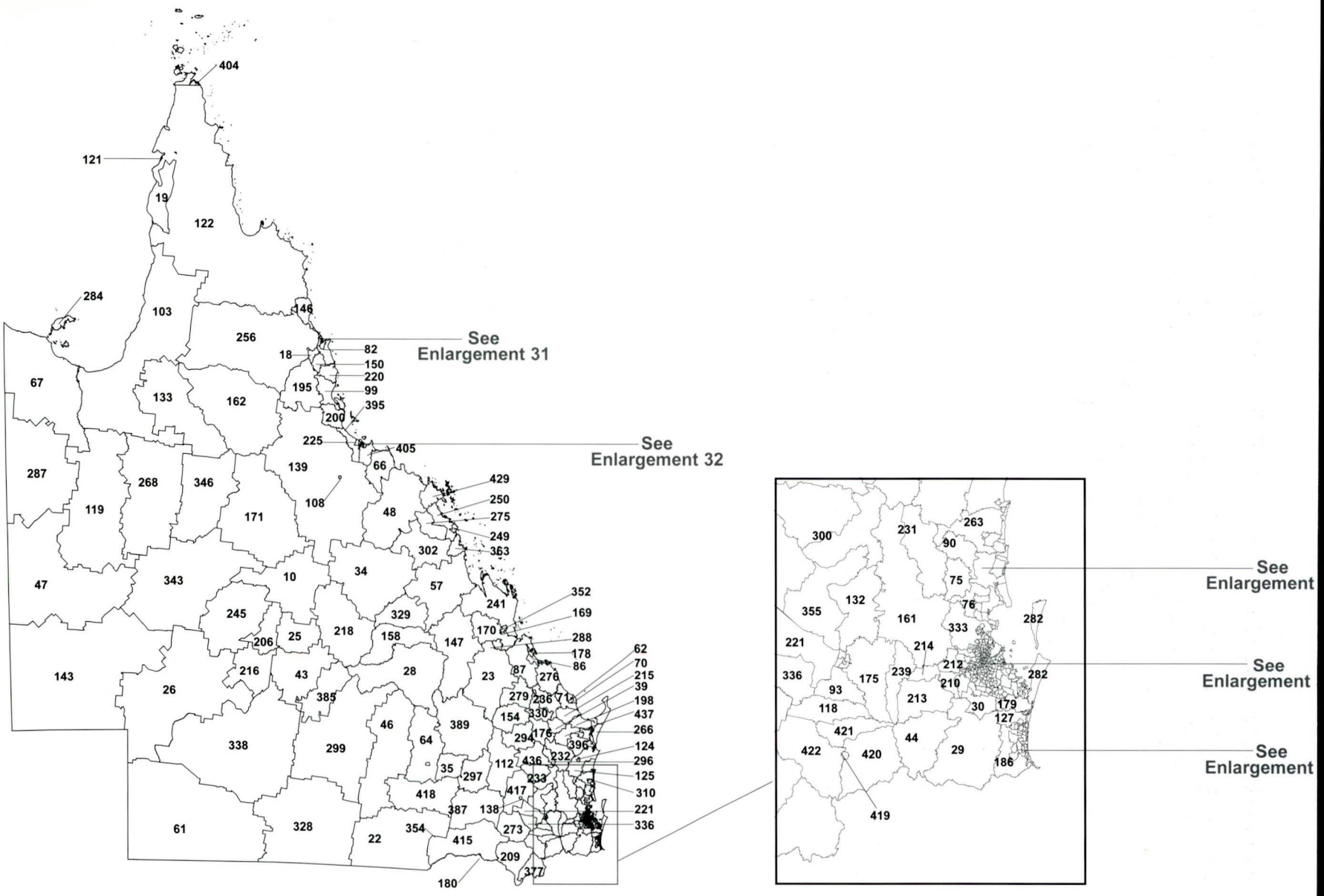
MAP 62

QUEENSLAND
STATISTICAL LOCAL AREAS



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10	Aramac (S)
18	Atherton (S)
19	Aurukun (S)
22	Balonne (S)
23	Banana (S)
25	Barcaldine (S)
26	Barcoo (S)
28	Bauhinia (S)
29	Beaudesert (S) - Pt B
30	Beaudesert (S) Bal in BSD
34	Belyando (S)
35	Bendemere (S)
39	Biggenden (S)
43	Blackall (S)
44	Boonah (S)
46	Booringa (S)
47	Boulia (S)
48	Bowen (S)
57	Broadsound (S)
61	Bulloo (S)
62	Bundaberg (C)
64	Bungil (S)
66	Burdekin (S)
67	Burke (S)
70	Burnett (S) - Pt A
71	Burnett (S) - Pt B
75	Caboolture (S) - Pt B
76	Caboolture (S) Bal in BSD
82	Cairns (C) - Pt B
86	Calliope (S) - Pt A
87	Calliope (S) - Pt B
90	Caloundra (C) - Hinterland
93	Cambooya (S)
99	Cardwell (S)
103	Carpentaria (S)
108	Charters Towers (C)
112	Chinchilla (S)
118	Clifton (S)
119	Cloncurry (S)
121	Cook (S) - Weipa only
122	Cook (S) (excl. Weipa)
124	Cooloola (S) - Gympie only
125	Cooloola (S) (excl. Gympie)
127	Coomera-Cedar Creek
132	Crow's Nest (S)
133	Croydon (S)
138	Dalby (T)
139	Dalrymple (S)
143	Diamantina (S)
146	Douglas (S)
147	Duaringa (S)
150	Eacham (S)
154	Eidsvold (S)
158	Emerald (S)
161	Esk (S)
162	Etheridge (S)
169	Fitzroy (S) - Pt A
170	Fitzroy (S) - Pt B
171	Flinders (S)
175	Gatton (S)
176	Gayndah (S)
178	Gladstone (C)
179	Gold Coast (C) Bal in BSD
180	Goondiwindi (T)
186	Guanaba-Currumbin Valley
195	Herberton (S)
198	Hervey Bay (C)
200	Hinchinbrook (S)
206	Ilfracombe (S)
209	Inglewood (S)
210	Ipswich (C) - Central
212	Ipswich (C) - North
213	Ipswich (C) - South-West
214	Ipswich (C) - West
215	Isis (S)
216	Isisford (S)
218	Jericho (S)
220	Johnstone (S)
221	Jondaryan (S)
225	Kelso
231	Kilcoy (S)
232	Kilkivan (S)
233	Kingaroy (S)
236	Kolan (S)
239	Laidley (S)
241	Livingstone (S)
245	Longreach (S)
249	Mackay (C) - Pt A
250	Mackay (C) - Pt B
256	Mareeba (S)
263	Maroochy (S) Bal
266	Maryborough (C)
268	McKinlay (S)
273	Millmerran (S)
275	Mirani (S)
276	Miriam Vale (S)
279	Monto (S)
282	Moreton Island
284	Mornington (S)
287	Mount Isa (C)
288	Mount Morgan (S)
294	Mundubbera (S)
296	Murgon (S)
297	Murilla (S)
299	Murweh (S)
300	Nanango (S)
302	Nebo (S)
310	Noosa (S) Bal
328	Paroo (S)
329	Peak Downs (S)
330	Perry (S)
333	Pine Rivers (S) Bal
336	Pittsworth (S)
338	Quilpie (S)
343	Redland (S) Bal
346	Richmond (S)
352	Rockhampton (C)
354	Roma (T)
355	Rosalie (S)
363	Sarina (S)
377	Stanthorpe (S)
385	Tambo (S)
387	Tara (S)
389	Taroom (S)
394	Thuringowa (C) - Pt A Bal
395	Thuringowa (C) - Pt B
396	Tiaro (S)
399	Toowoomba (C) - Central
400	Toowoomba (C) - North-East
401	Toowoomba (C) - North-West
402	Toowoomba (C) - South-East
403	Toowoomba (C) - West
404	Torres (S)
405	Townsville (C) - Pt B
415	Waggamba (S)
417	Wambo (S)
418	Warroo (S)
419	Warwick (S) - Central
420	Warwick (S) - East
421	Warwick (S) - North
422	Warwick (S) - West
429	Whitsunday (S)
434	Winton (S)
436	Wondai (S)
437	Woocoo (S)

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QUEENSLAND - ENLARGEMENTS 31-35
STATISTICAL LOCAL AREAS

1	Acacia Ridge
2	Aitkenvale
3	Albany Creek
4	Albion
5	Alderley
6	Alexandra Hills
7	Algester
8	Annerley
9	Anstead
11	Arana Hills
12	Archerfield
13	Arundel
14	Ascot
15	Ashgrove
16	Ashmore
17	Aspley
20	Bald Hills
21	Balmoral
24	Banyo
27	Bardon
31	Beenleigh
32	Bellbowrie
33	Belmont-Mackenzie
36	Benowa
37	Berrinba-Karawatha
38	Bethania-Waterford
40	Biggera Waters
41	Bilinga
42	Birkdale
45	Boondall
49	Bowen Hills
50	Bracken Ridge
51	Bray Park
52	Bribie Island
53	Bridgeman Downs
54	Brighton
55	Broadbeach
56	Broadbeach Waters
58	Brookfield (incl. Mt C'tha)
59	Browns Plains
60	Bulimba
63	Bundall
65	Burbank
68	Burleigh Heads
69	Burleigh Waters
72	Burpengary-Narangba
73	Caboolture (S) - Central
74	Caboolture (S) - East
77	Cairns (C) - Barron
78	Cairns (C) - Central Suburbs
79	Cairns (C) - City
80	Cairns (C) - Mt Whitfield
81	Cairns (C) - Northern Suburbs
83	Cairns (C) - Trinity
84	Cairns (C) - Western Suburbs
85	Calamvale
88	Caloundra (C) - Caloundra N.
89	Caloundra (C) - Caloundra S.
91	Caloundra (C) - Kawana
92	Caloundra (C) - Rail Corridor
94	Camp Hill
95	Cannon Hill
96	Capalaba
97	Capalaba West
98	Carbrook-Cornubia
100	Carina
101	Carina Heights
102	Carindale
104	Carrara-Merrimac
105	Carseldine
106	Chandler
107	Chapel Hill
109	Chelmer
110	Chermside
111	Chermside West
113	City - Inner (Brisbane)
114	City - Remainder (Brisbane)
115	City (Townsville)
116	Clayfield
117	Cleveland
120	Clontarf
123	Coolangatta
126	Coombabah
128	Coopers Plains
129	Coorparoo
130	Corinda
131	Cranbrook
134	Currajong
135	Currumbin
136	Currumbin Waters
137	Daisy Hill-Priestdale
140	Darra-Sumner
141	Deagon
142	Deception Bay
144	Doolandella-Forest Lake
145	Douglas
148	Durack
149	Dutton Park
151	Eagleby
152	East Brisbane
153	Edens Landing-Holmview
155	Eight Mile Plains
156	Elanora
157	Ellen Grove
159	Enoggera
160	Ernest-Molendinar
163	Everton Hills
164	Everton Park
165	Fairfield
166	Ferny Grove
167	Ferny Hills
168	Fig Tree Pocket
172	Fortitude Valley - Inner
173	Fortitude Valley - Remainder
174	Garbutt
177	Geebung
181	Graceville
182	Grange
183	Greenbank - Pt A
184	Greenbank - Pt B
185	Greenslopes
187	Gulliver
188	Gumdale
189	Hamilton
190	Hawthorne
191	Heatley
192	Helensvale
193	Hemmant-Lytton
194	Hendra
196	Hermit Park
197	Herston
199	Highgate Hill
201	Holland Park
202	Holland Park West
203	Hollywell
204	Hope Island
205	Hyde Park-Mysterton
207	Inala
208	Indooroopilly
211	Ipswich (C) - East
217	Jamboree Heights
219	Jindalee
222	Kallangur
223	Kangaroo Point
224	Kedron
226	Kelvin Grove
227	Kenmore
228	Kenmore Hills
229	Keperra
230	Kerrydale-Stephens
234	Kingston (QLD)
235	Kirwan
237	Kuraby
238	Labrador
240	Lawnton
242	Logan (C) Bal
243	Loganholme
244	Loganlea
246	Lota
247	Lutwyche
248	MacGregor (QLD)
251	Magnetic Island
252	Main Beach-Broadwater
253	Manly
254	Manly West
255	Mansfield
257	Margate-Woody Point
258	Maroochy (S) - Buderim
259	Maroochy (S) - Coastal North
260	Maroochy (S) - Maroochydore
261	Maroochy (S) - Mooloolaba
262	Maroochy (S) - Nambour
264	Maroochy (S) Bal in S C'st SSD
265	Marsden
267	McDowall
269	Mermaid Beach
270	Mermaid Waters
271	Miami
272	Middle Park
274	Milton
277	Mitchelton
278	Moggill
280	Moorooka
281	Morayfield
283	Morningside
285	Mount Gravatt
286	Mount Gravatt East
289	Mount Ommaney
290	Mt Louisa-Mt St John-Bohle
291	Mt Warren Park
292	Mudgeeraba
293	Mundingburra
295	Murarrie
298	Murray
301	Nathan
303	Nerang
304	New Farm
305	Newmarket
306	Newstead
307	Noosa (S) - Noosa-Noosaville
308	Noosa (S) - Sunshine-Peregian
309	Noosa (S) - Tewantin
311	Norman Park
312	North Ward-Castle Hill
313	Northgate
314	Nudgee
315	Nudgee Beach
316	Nundah
317	Oonoonba-Idalia-Cluden
318	Ormiston
319	Oxenford
320	Oxley (QLD)
321	Paddington
322	Pallara-Heathwood-Larapinta
323	Pallarenda-Shelley Beach
324	Palm Beach
325	Paradise Point
326	Parkinson-Drewvale
327	Parkwood
331	Petrie
332	Pimlico
334	Pinjarra Hills
335	Pinkenba-Eagle Farm
337	Pullenvale
339	Railway Estate
340	Ransome
341	Red Hill (QLD)
342	Redcliffe-Scarborough
344	Redland Bay
345	Richlands
347	Riverhills
348	Robertson
349	Robina-Clear Island Waters
350	Rochedale
351	Rochedale South
353	Rocklea
356	Rosslea
357	Rothwell-Kippa-Ring
358	Rowes Bay-Belgian Gardens
359	Runaway Bay
360	Runcorn
361	Salisbury
362	Sandgate
364	Seventeen Mile Rocks
365	Shailer Park
366	Sheldon-Mt Cotton
367	Sherwood
368	Slacks Creek
369	South Brisbane
370	South Townsville
371	Southport
372	Spring Hill
373	Springwood
374	St Lucia
375	Stafford
376	Stafford Heights
378	Strathpine
379	Stretton
380	Stuart-Roseneath
381	Sunnybank
382	Sunnybank Hills
383	Surfers Paradise
384	Taigum-Fitzgibbon
386	Tanah Merah
388	Taringa
390	Tarragindi
391	The Gap (incl. Enoggera Res.)
392	Thorneside
393	Thornlands
397	Tingalpa
398	Toowong
406	Tugun
407	Underwood
408	Upper Brookfield
409	Upper Kedron
410	Upper Mount Gravatt
411	Victoria Point
412	Vincent
413	Virginia
414	Wacol
416	Wakerley
423	Waterford West
424	Wavell Heights
425	Wellington Point
426	West End (Brisbane)
427	West End (Townsville)
428	Westlake
430	Willawong
431	Wilston
432	Windaroo-Bannockburn
433	Windsor
435	Wishart
438	Woodridge
439	Woolloongabba
440	Wooloowin
441	Worongary-Tallai
442	Wulguru
443	Wynnum
444	Wynnum West
445	Yeerongpilly
446	Yeronga
447	Zillmere

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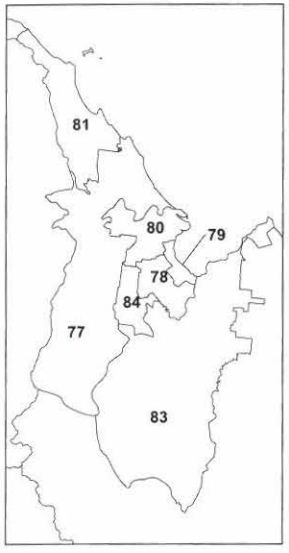
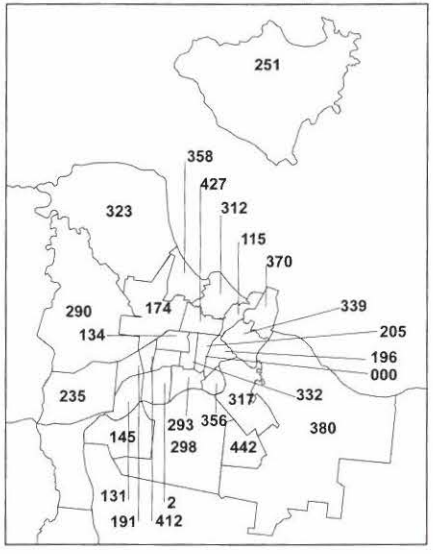
MAP 63

QUEENSLAND - ENLARGEMENTS 31-35
STATISTICAL LOCAL AREAS

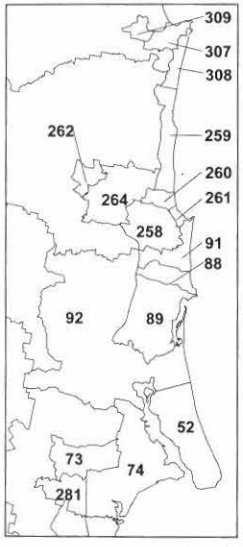
Enlargement 31

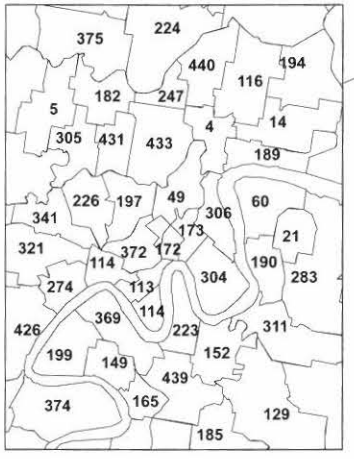


Enlargement 32

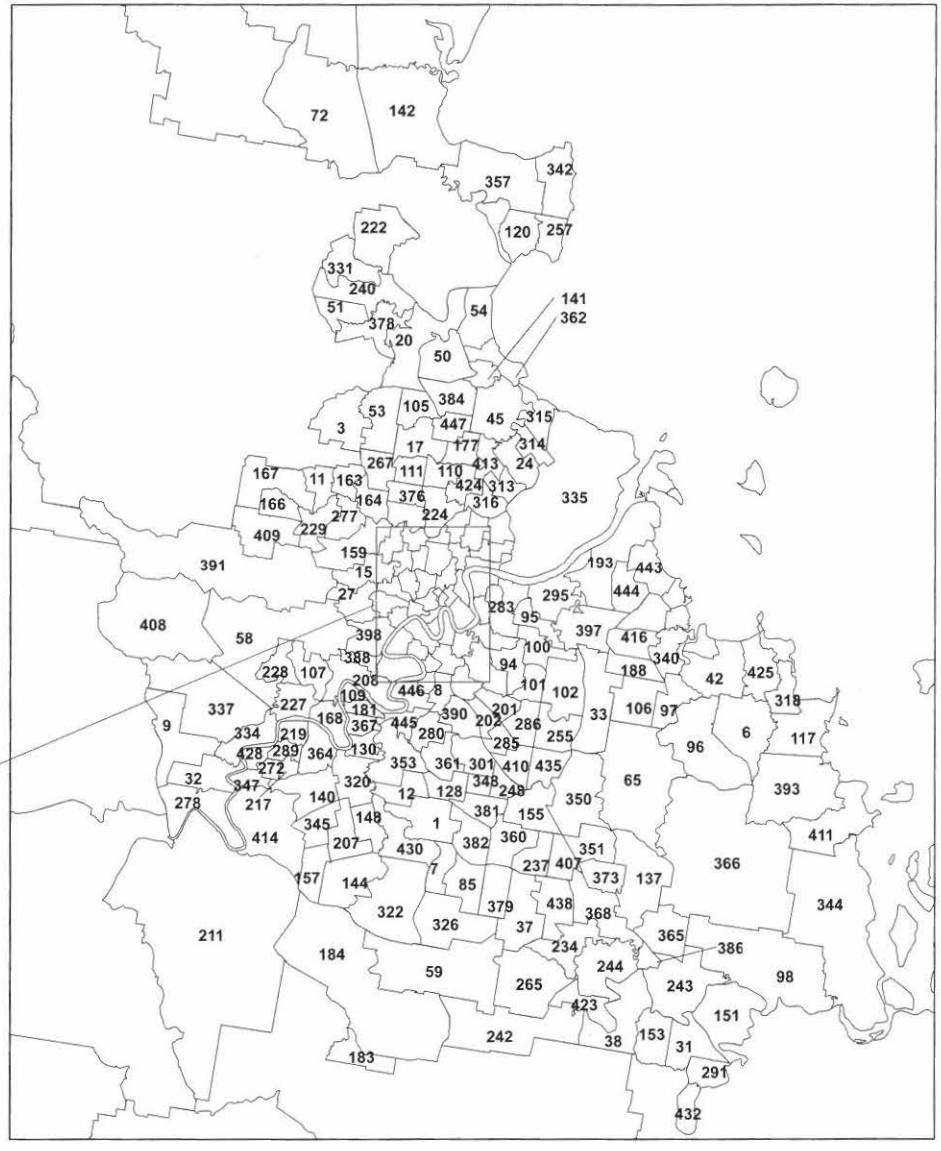


Enlargement 33

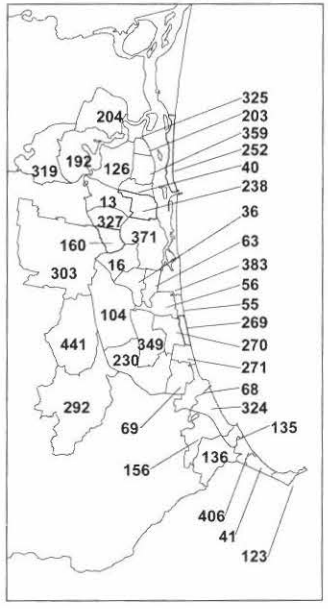




Enlargement 34



Enlargement 35



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MAP 64

QUEENSLAND STATISTICAL DIVISIONS

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SOUTH AUSTRALIA

MAP

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Armed Robbery (MAPS 65-68)

In general, Statistical Local Areas in South Australia tend to have low rates of armed robbery, with no locality exceeding 32 per 100,000 residents.

Official statistics show that 39.8% of the armed robberies recorded in South Australia during 1999 occurred in retail and service industry locations and that 30.3% took place in street, open space and transport locations (Australian Bureau of Statistics, 2000).

Relative to the overall rate in the state, armed robbery tends to concentrate more in the Adelaide Statistical Division. SLAs in this region also tend to concentrate a significant amount of the retail and service activity in the state, and to attract large amounts of visitors.

Unarmed Robbery (MAPS 69-72)

In general, Statistical Local Areas in South Australia tend to have low rates of unarmed robbery, with most localities not exceeding 140 per 100,000 residents.

The Enfield (C)-Part B is the only SLA that has a rate of unarmed robbery above 140 per 100,000 residents. This SLA is characterised by relatively high unemployment, an above average proportion of Indigenous people, a low level of home ownership and an above average proportion of sole parent households. All these indicators make it reasonable to explain the high rate of unarmed robbery by the relatively high level of social and economic disadvantage.

Relative to the overall rate in the state, unarmed robbery tends to concentrate in SLAs that belong to the Northern and Western Statistical Subdivisions. SLAs in this region tend to have high levels of social and economic disadvantage among their residents.

Residential Break and Enter (MAPS 73-76)

Residential break and enter tends to be more prevalent in Statistical Local Areas with relatively high unemployment, an above average proportion of Indigenous people, a low level of home ownership and above average proportion of sole parent households.

Socio-economic disadvantage is the key factor associated with the high rates of residential break and enter in the SLAs of Elizabeth (C), Enfield (C)- Part A and B, Hindmarsh and Woodville (C), Port Adelaide (C) and Thebarton (M). These SLAs are characterised by all of the above factors.

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Non-Residential Break and Enter (MAPS 77-80)

Non-residential break and enter represented 30% of all the unlawful entries with intent (UEWI) recorded during 1999 in South Australia. 47% of these incidents occurred in locations corresponding to retail and other key service industries, including wholesale and warehousing (Australian Bureau of Statistics, 2000).

The highest rates of non-residential burglary occur in the Statistical Local Areas of Port Augusta and Thebarton. Both SLAs have above average rates of unemployment, an above average proportion of one-parent households, and a below average home ownership ratio. Given its metropolitan nature, Thebarton has higher employment in service industries than Port Augusta, while Port Augusta has a much higher proportion of people of Indigenous origin than Thebarton.

Motor Vehicle Theft (MAPS 81-84)

Seventy-three per cent of the incidents of motor vehicle theft recorded in South Australia during 1999 occurred in non-residential locations, 63% of which occurred on the street or a transport-related location.

Map 82 shows that motor vehicle theft is more prevalent in the Statistical Local Areas that belong to the Adelaide Statistical Division, in particular Adelaide (C), Kensington & Norwood (C) and Thebarton (C) in which the rate for this offence reaches values above 1,160 incidents per 100,000 residents.

When the prevalence of motor vehicle theft is calculated relative to the state average, other SLAs belonging to the Adelaide region also tend to have high rates for this offence (*refer to* Map 84).

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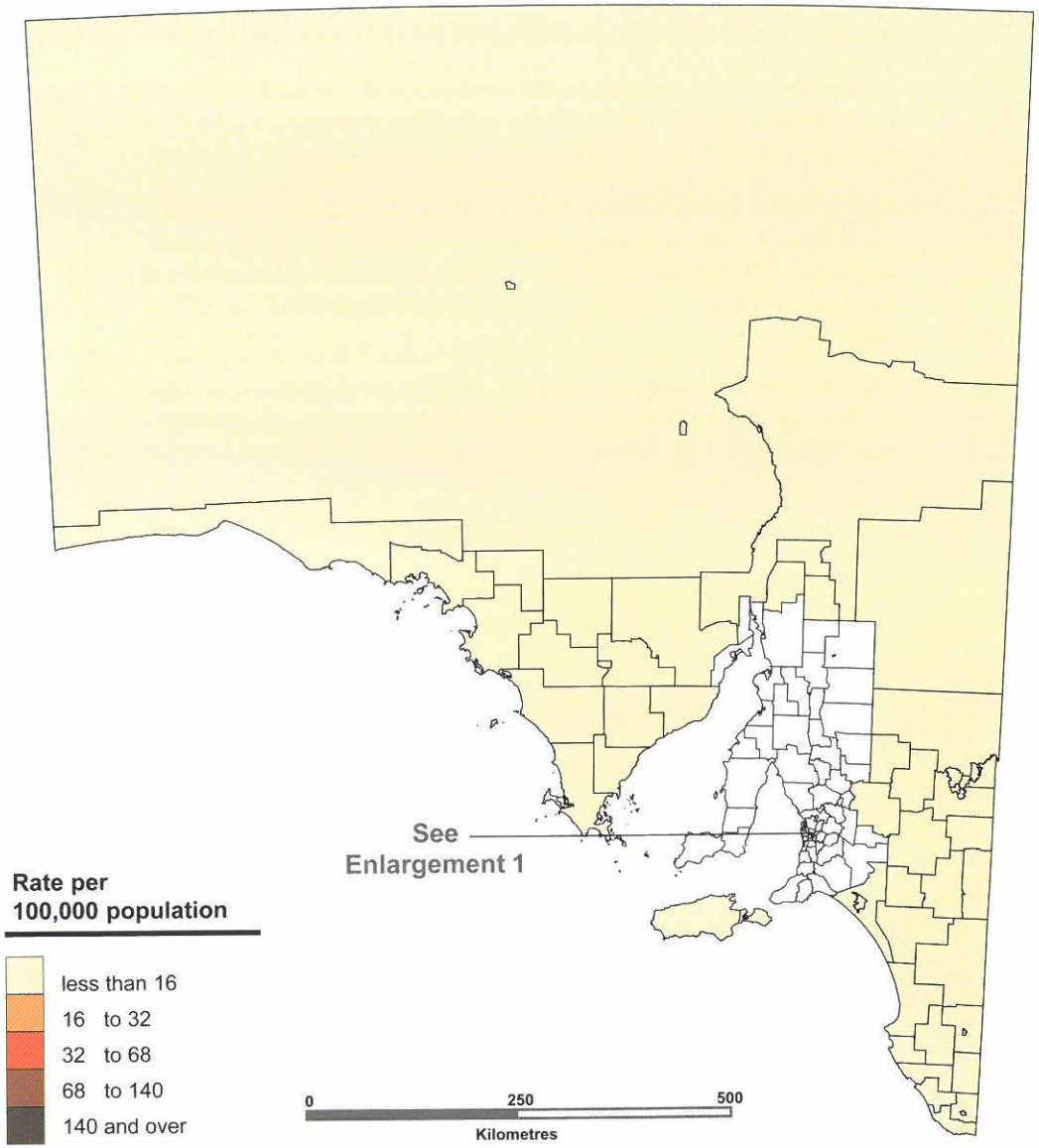
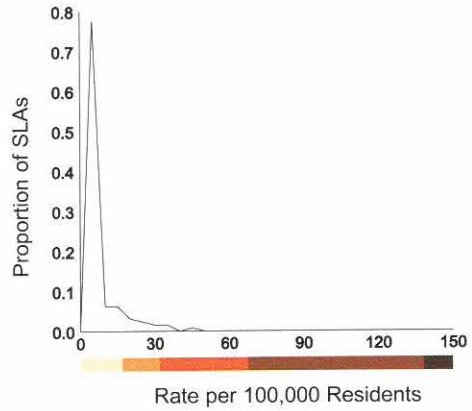
MAP 65

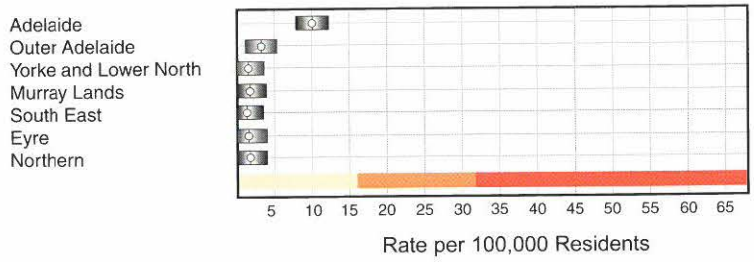
South Australia
Armed Robbery - Rate[1] per 100,000 Residents



Distribution of Statistical Local Areas (SLAs) According to Rate of Armed Robbery



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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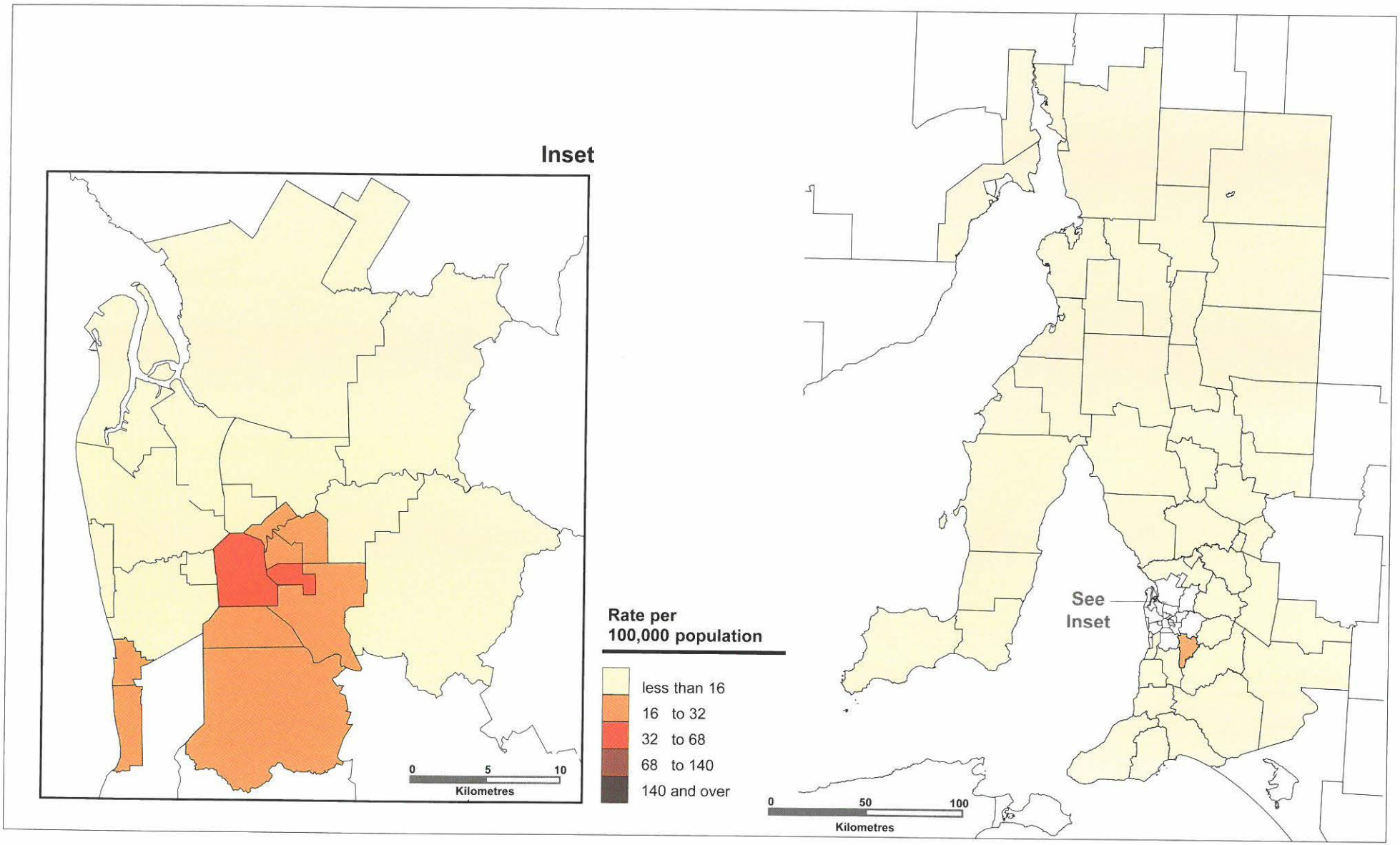
MAP 66

South Australia - Enlargement 1
Armed Robbery - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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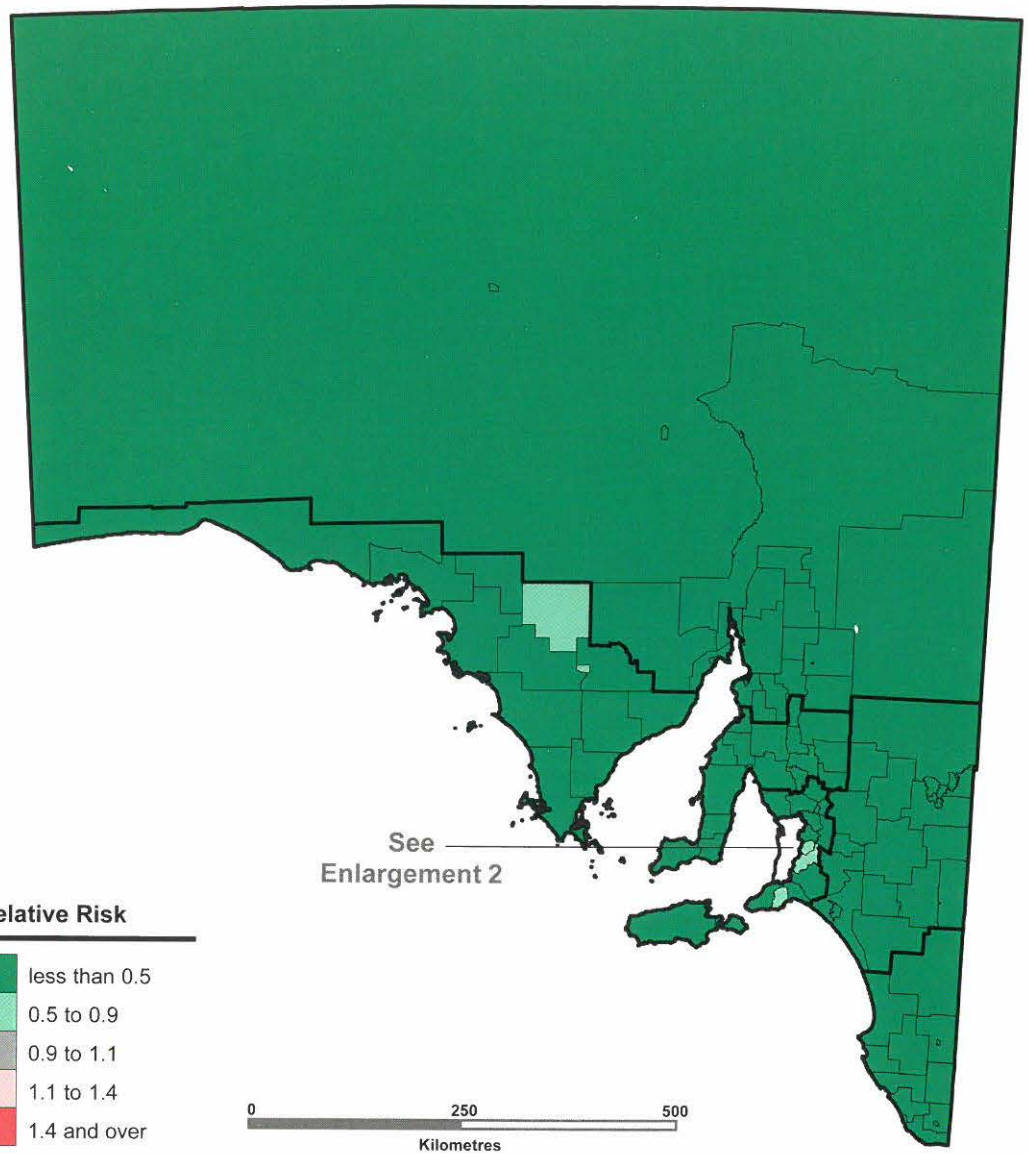
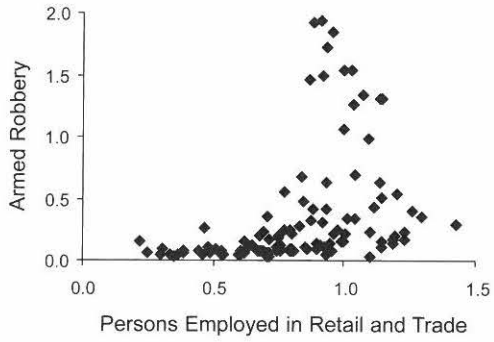
MAP 67

South Australia
Armed Robbery - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics



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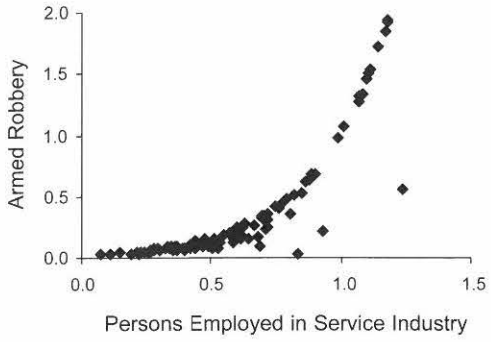
[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

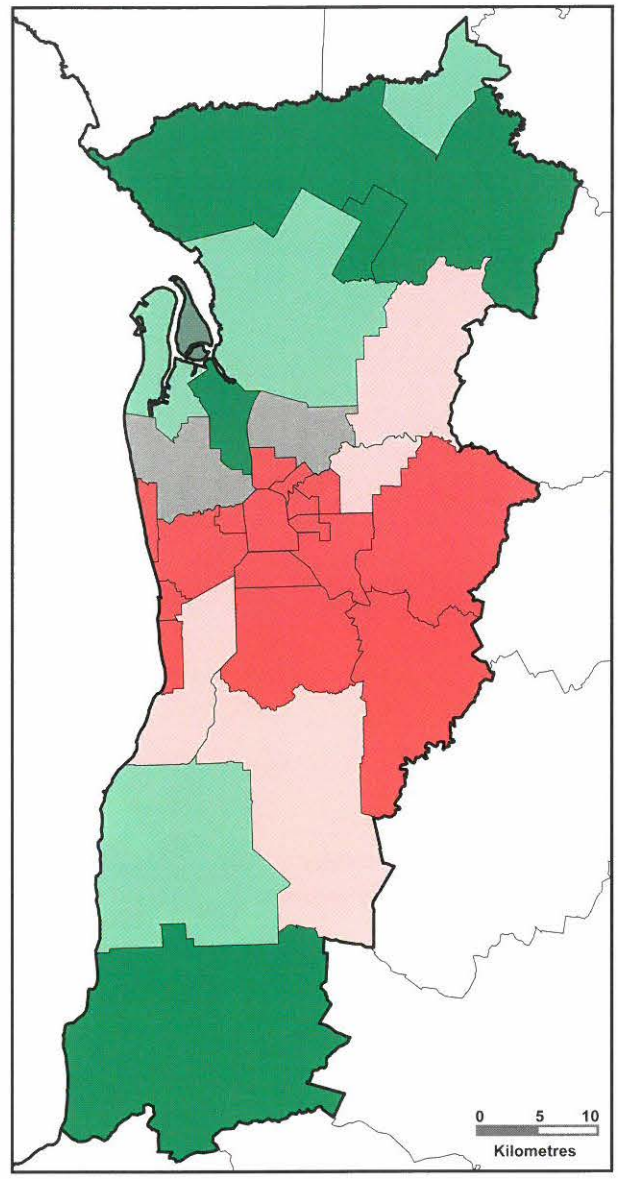
[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

South Australia - Enlargement 2
Armed Robbery - Rate per 100,000 Residents Relative to State Average

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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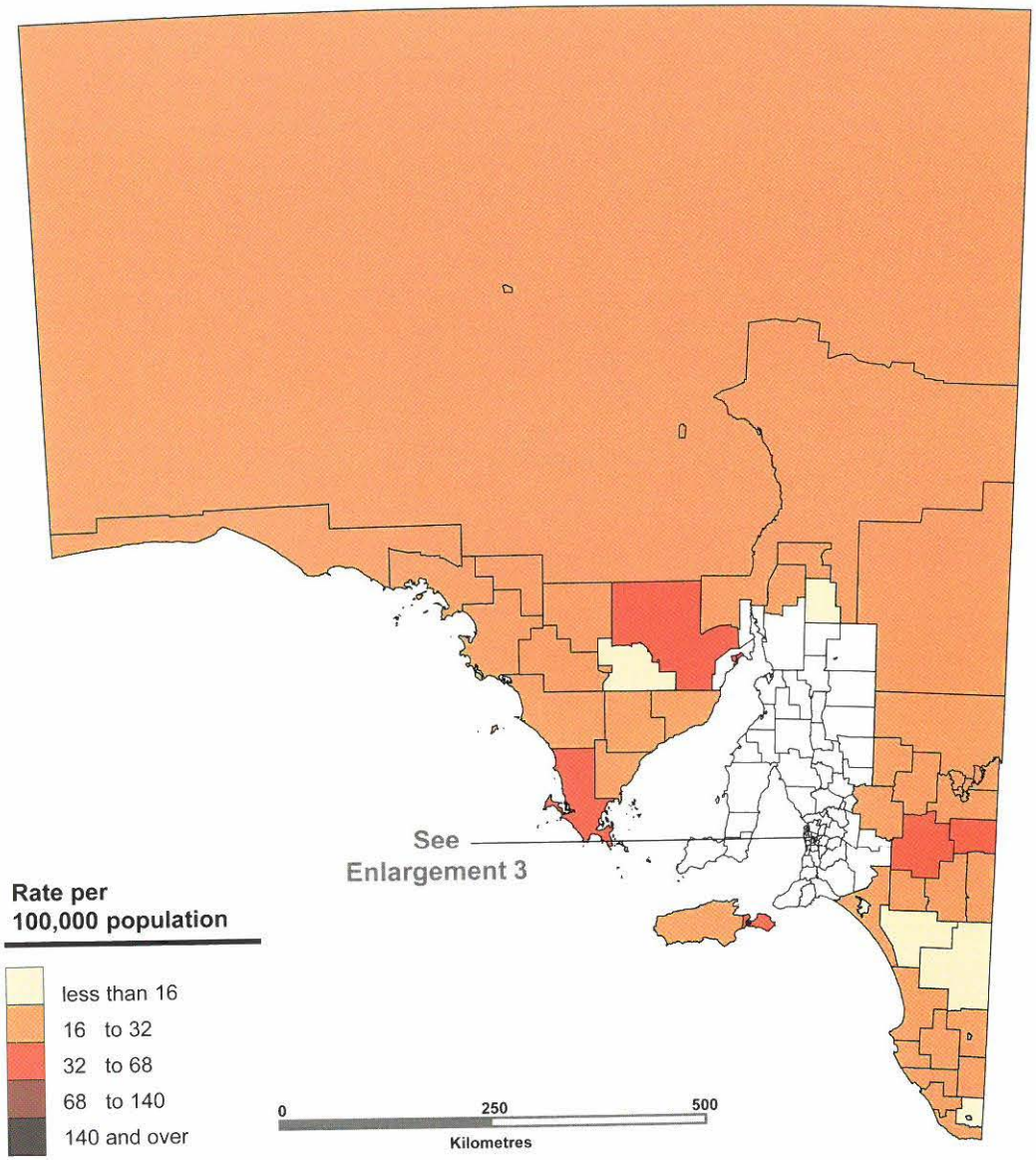
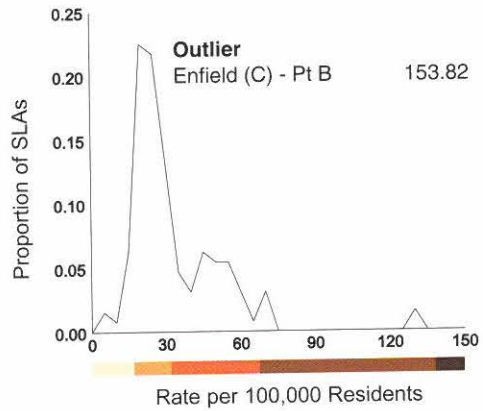
MAP 69

South Australia
Unarmed Robbery - Rate[1] per 100,000 Residents

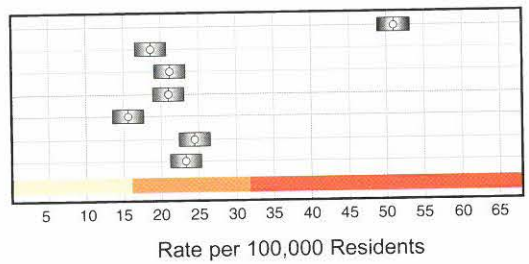


Distribution of Statistical Local Areas (SLAs) According to Rate of Unarmed Robbery



Statistical Divisions
95 Percent Confidence Intervals

Adelaide
Outer Adelaide
Yorke and Lower North
Murray Lands
South East
Eyre
Northern



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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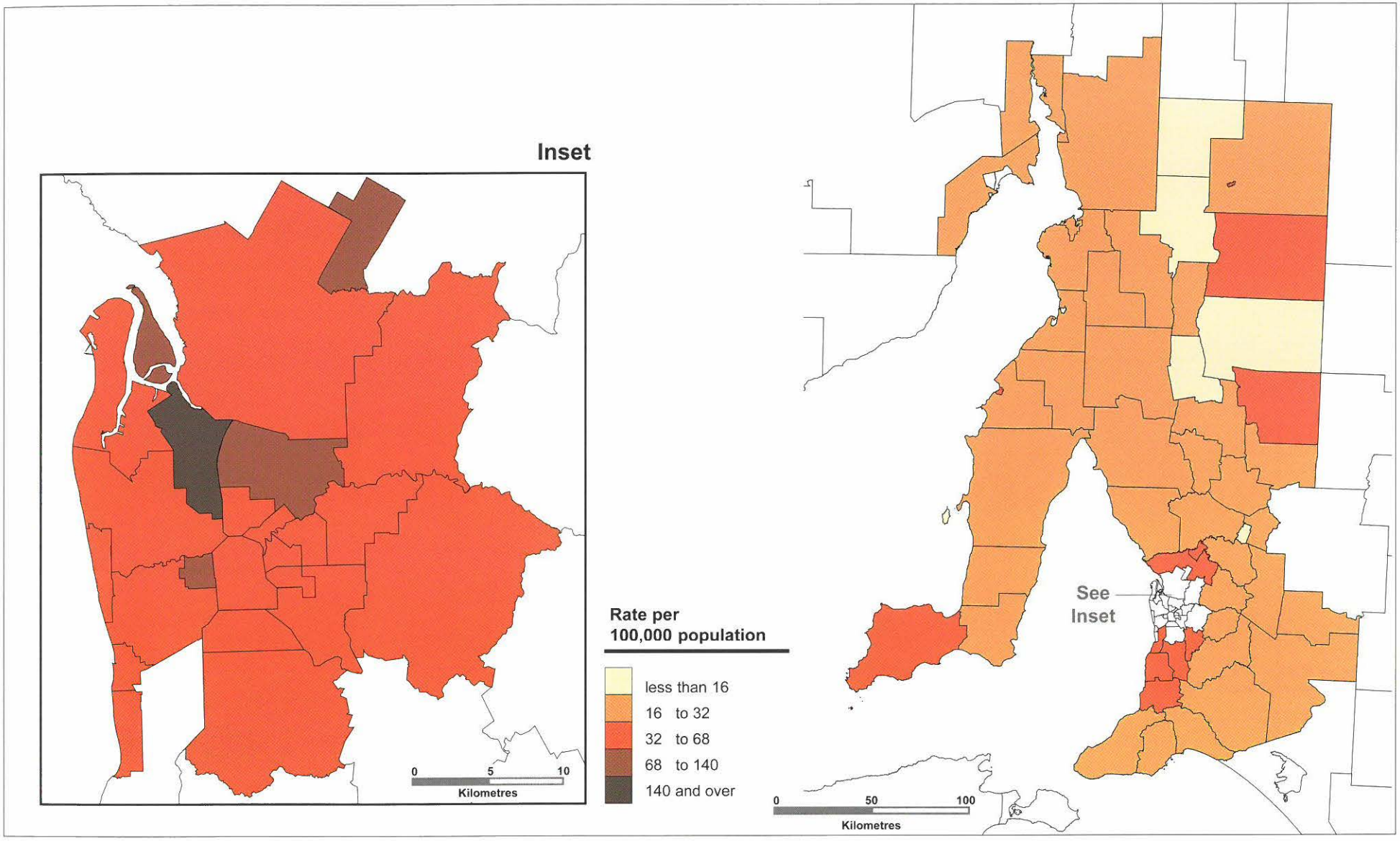
MAP 70

South Australia - Enlargement 3
Unarmed Robbery - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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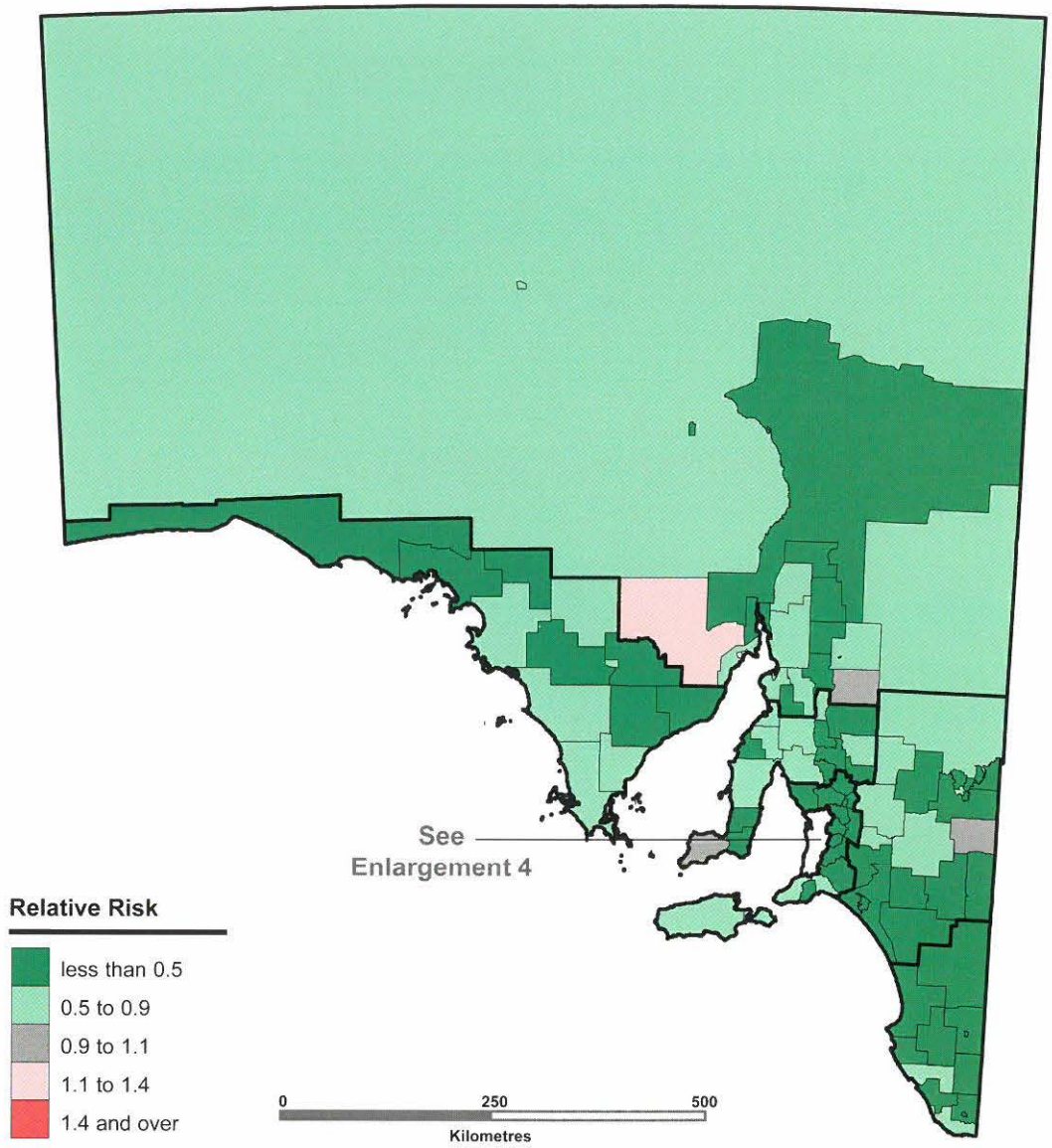
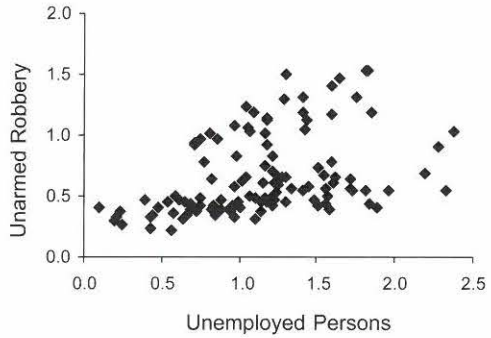
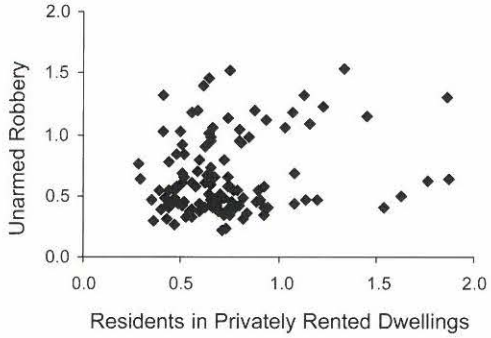
MAP 71

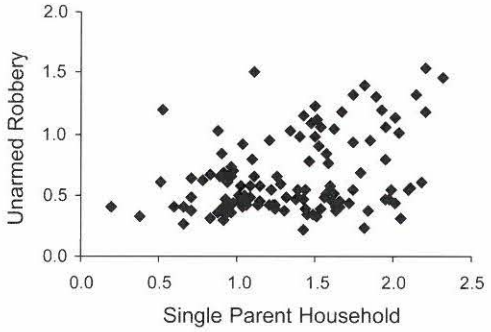
South Australia
Unarmed Robbery - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

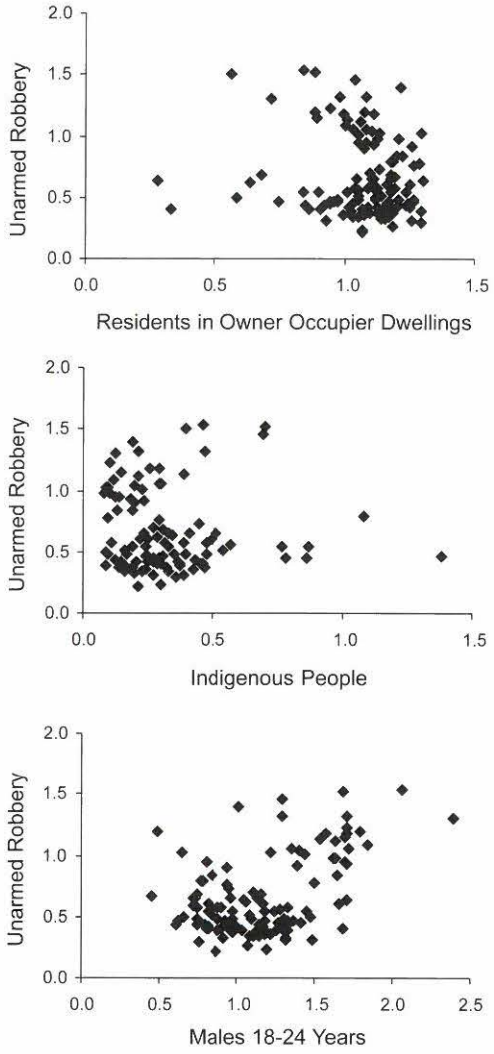
Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

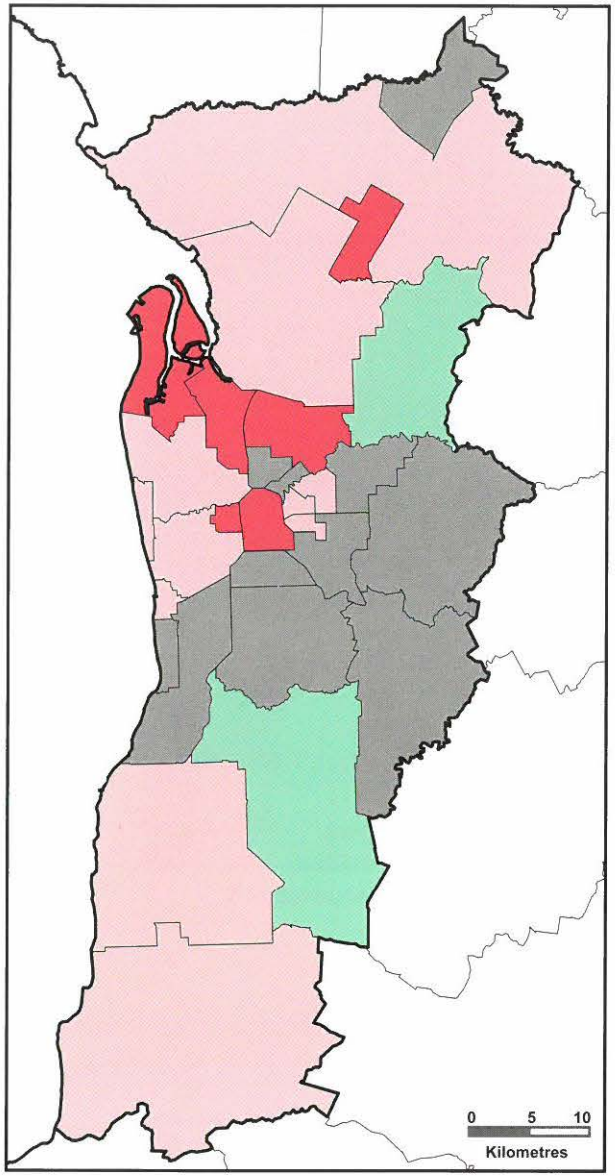
MAP 72

SOUTH AUSTRALIA - ENLARGEMENT 4

UNARMED ROBBERY - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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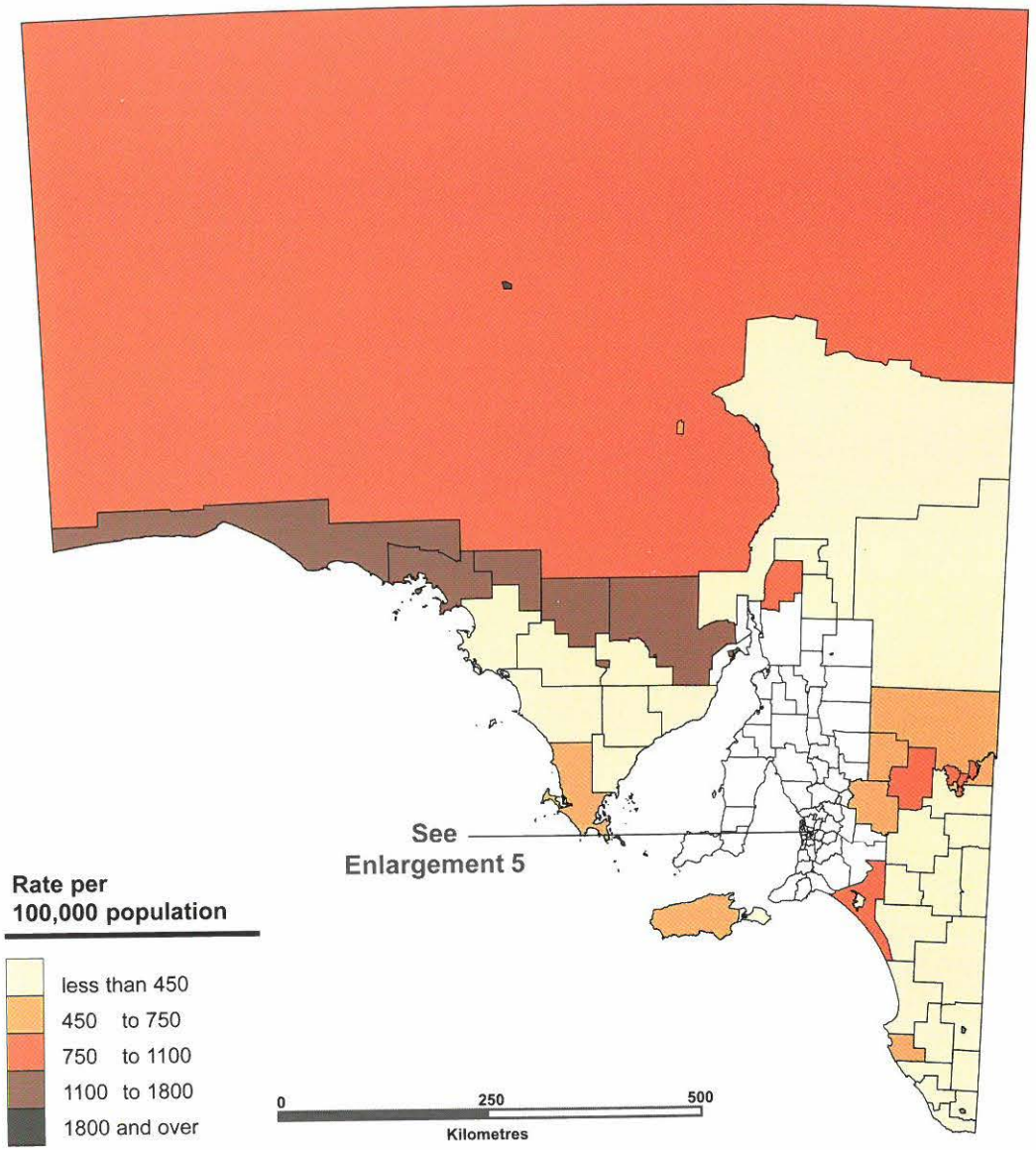
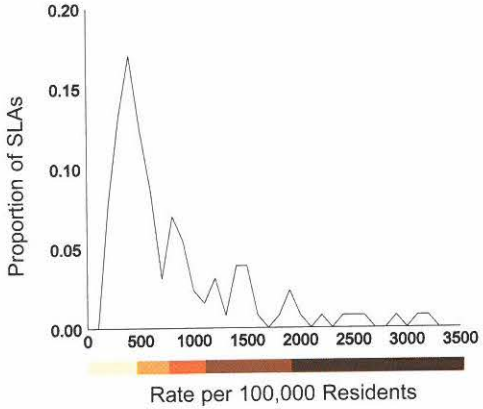
MAP 73

South Australia
Residential Break & Enter - Rate[1] per 100,000 Residents

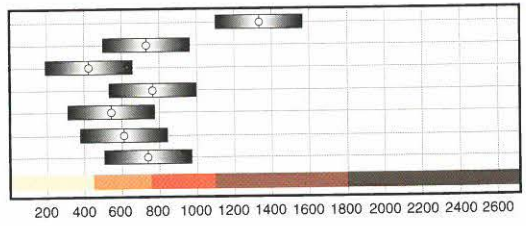


Distribution of Statistical Local Areas (SLAs) According to Rate of Residential Break & Enter



Statistical Divisions
95 Percent Confidence Intervals

Adelaide
Outer Adelaide
Yorke and Lower North
Murray Lands
South East
Eyre
Northern



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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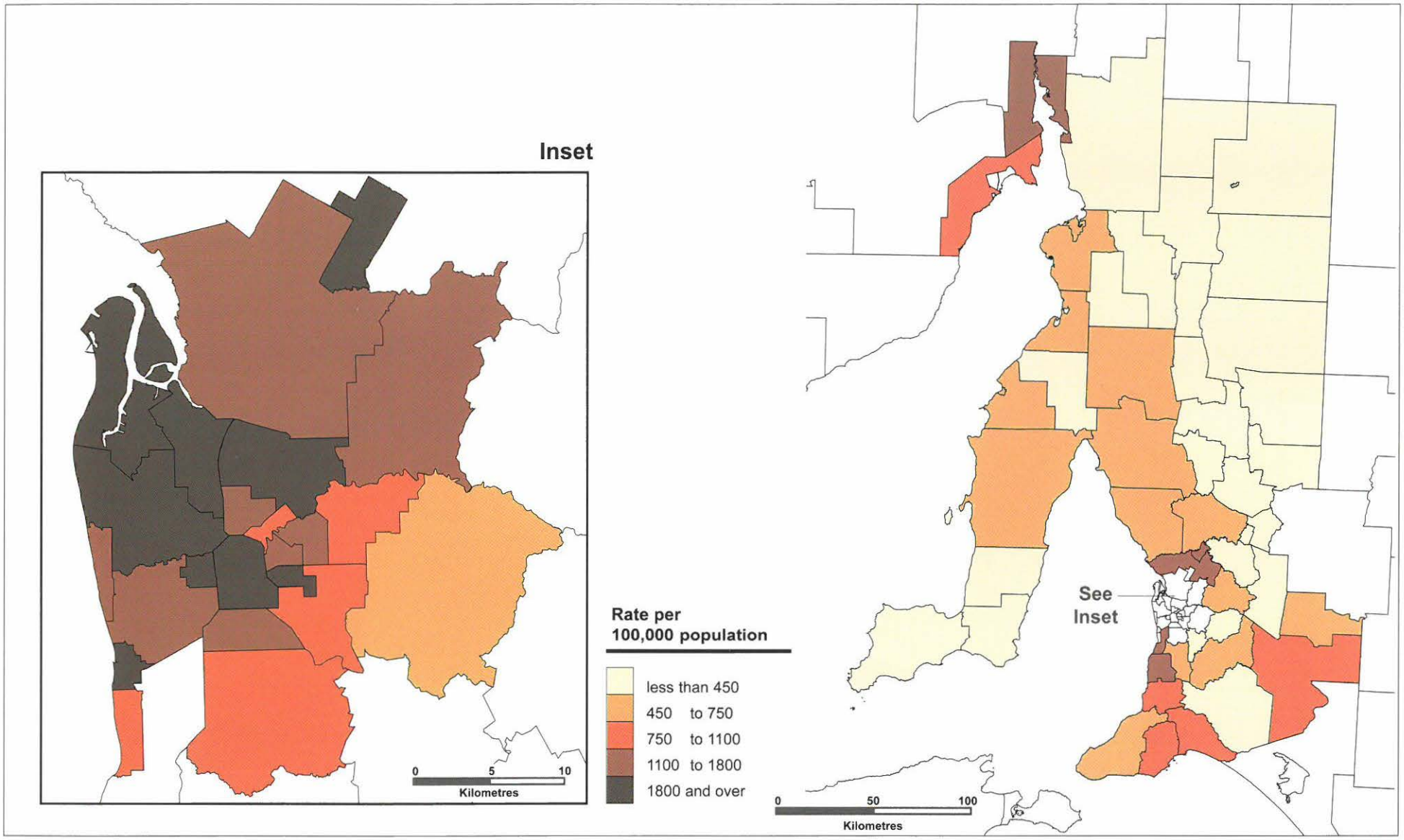
MAP 74

South Australia - Enlargement 5

Residential Break & Enter - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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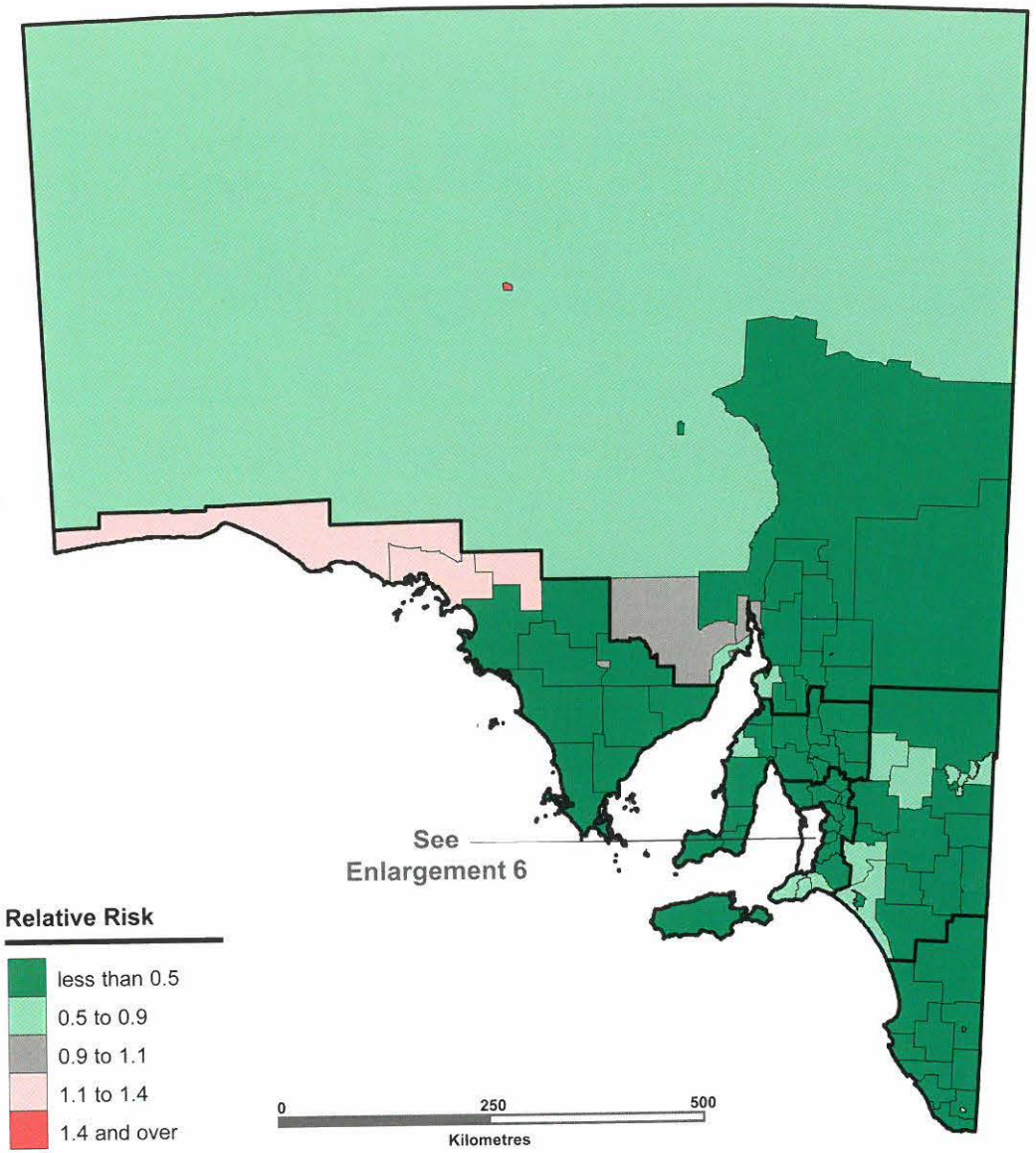
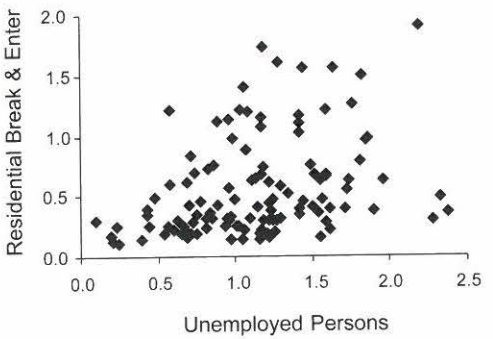
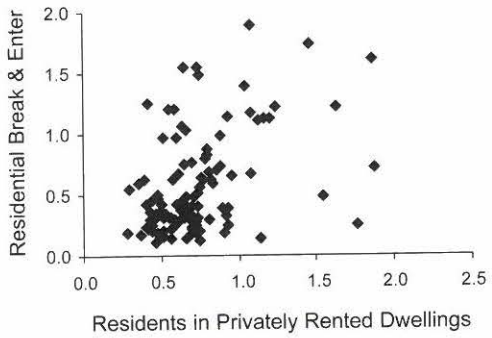
MAP 75

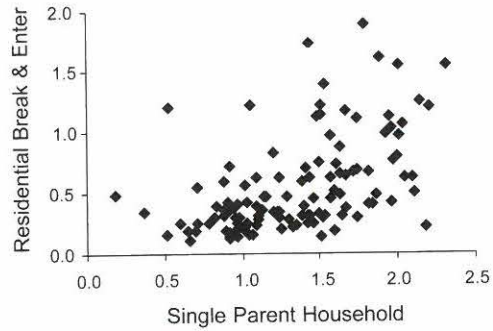
South Australia
Residential Break & Enter - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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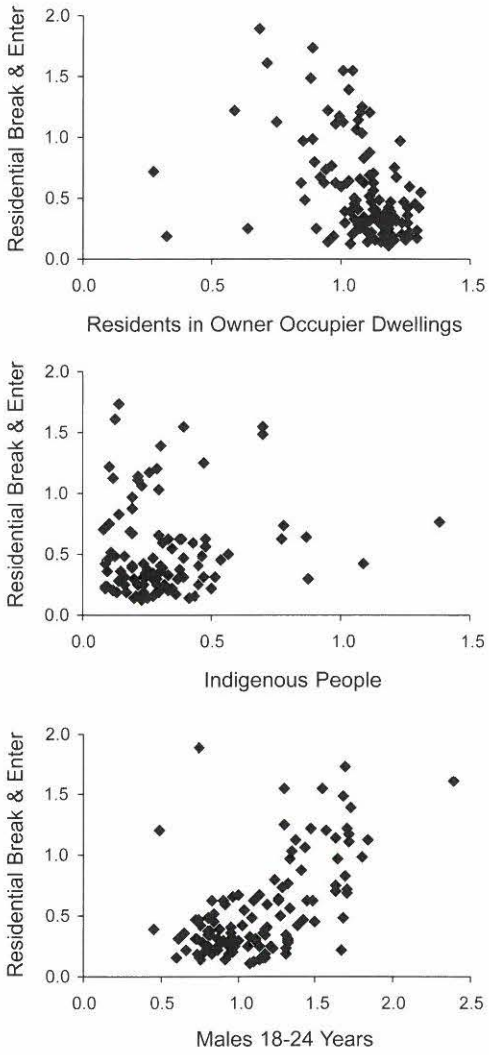
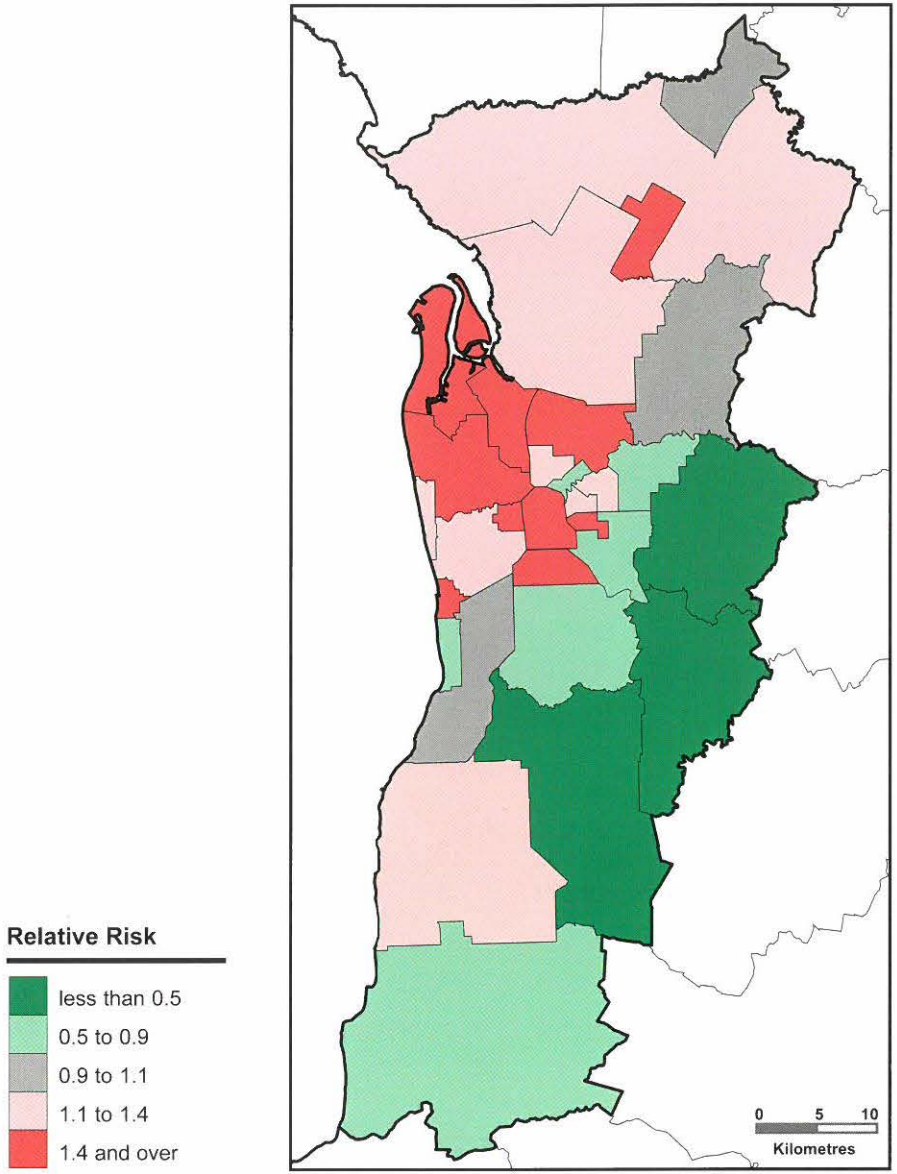
MAP 76

South Australia - Enlargement 6

Residential Break & Enter - Rate per 100,000 Residents Relative to State Average

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics





[1] Relative crime rate = $\frac{\text{Smoothed rate for SLA}}{\text{Smoothed rate for State}}$ [2] Relative concentration = $\frac{\text{Value of characteristic for SLA}}{\text{Value of characteristic for State}}$

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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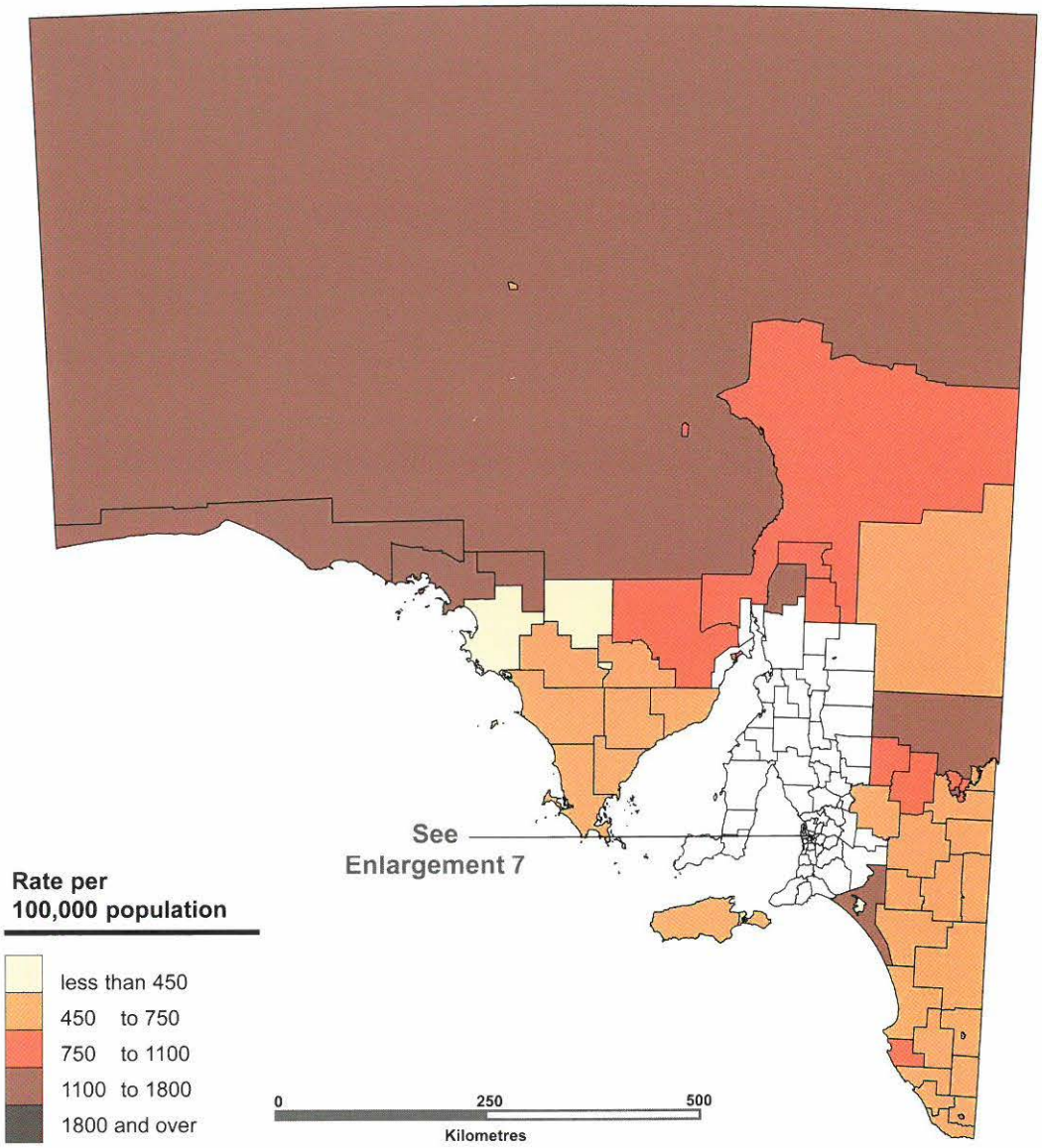
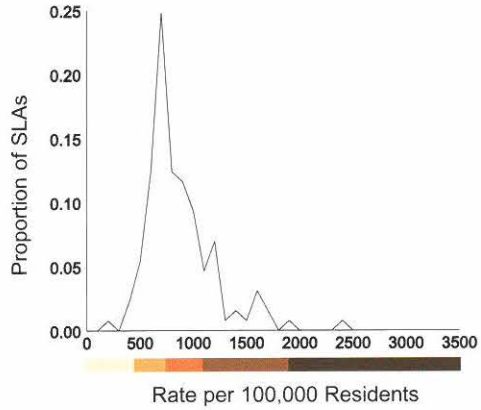
MAP 77

South Australia
Non-Residential Break & Enter - Rate[1] per 100,000 Residents

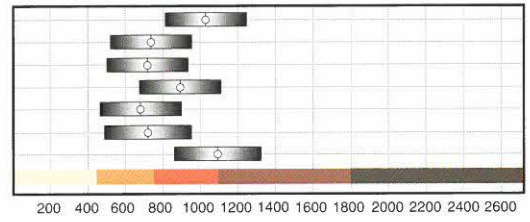


**Distribution of Statistical Local Areas (SLAs)
According to Rate of Non-Residential Break & Enter**



**Statistical Divisions
95 Percent Confidence Intervals**

Adelaide
Outer Adelaide
Yorke and Lower North
Murray Lands
South East
Eyre
Northern



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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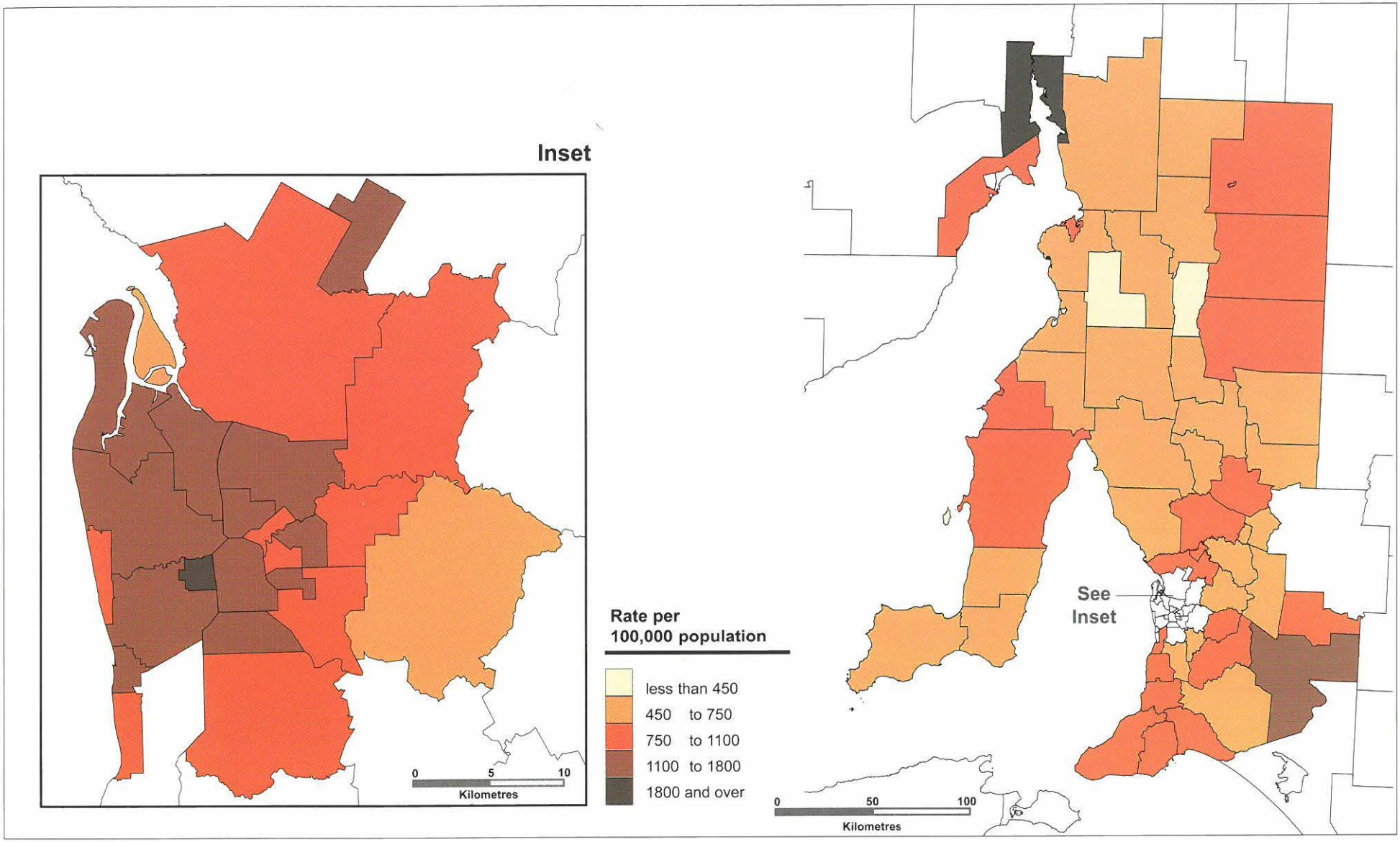
MAP 78

South Australia - Enlargement 7
Non-Residential Break & Enter - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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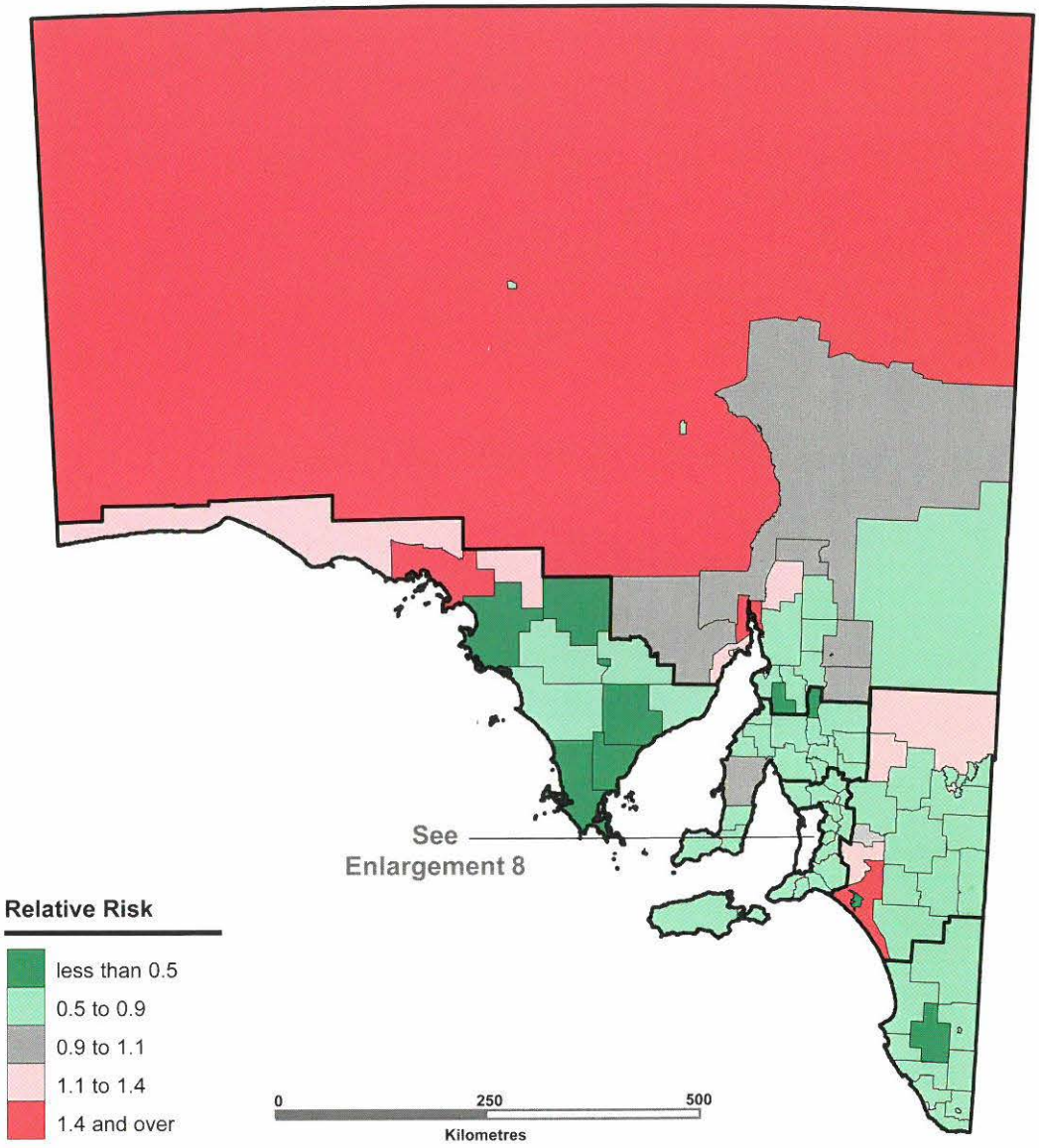
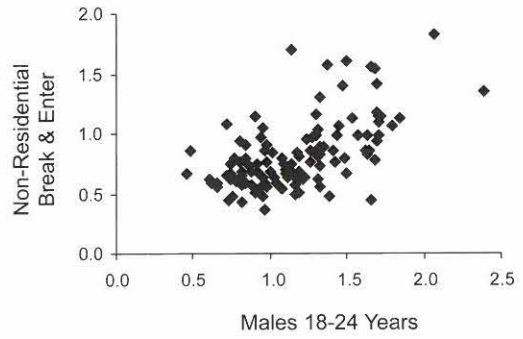
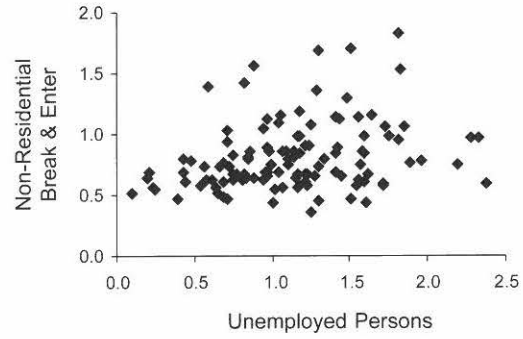
MAP 79

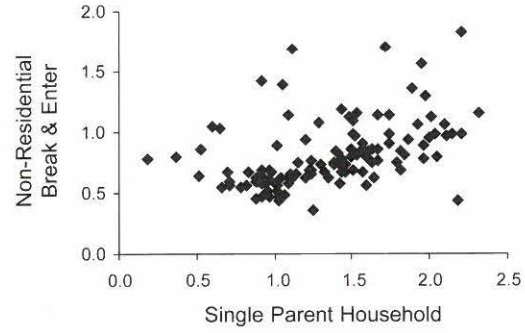
South Australia
Non-Residential Break & Enter - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

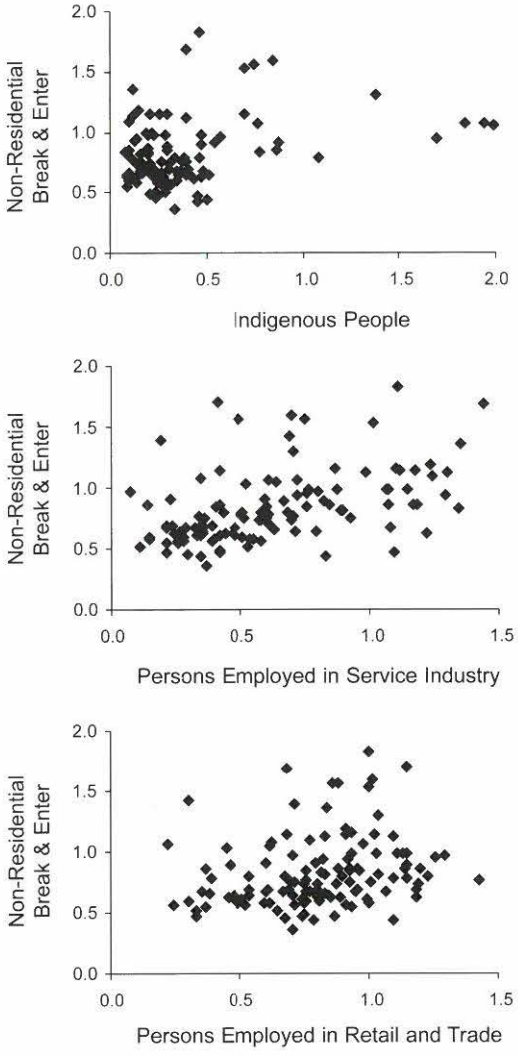
Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

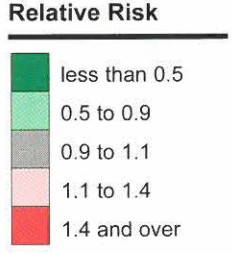
MAP 80

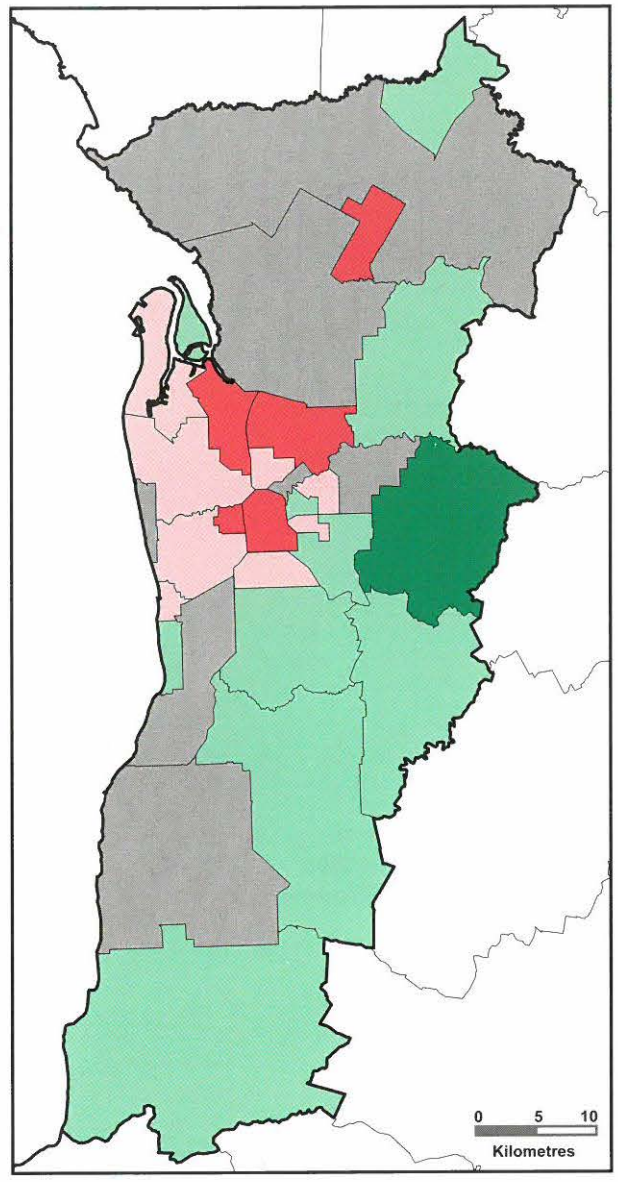
SOUTH AUSTRALIA - ENLARGEMENT 8

NON-RESIDENTIAL BREAK & ENTER - RATE PER 100,000 RESIDENTS RELATIVE TO STATE AVERAGE

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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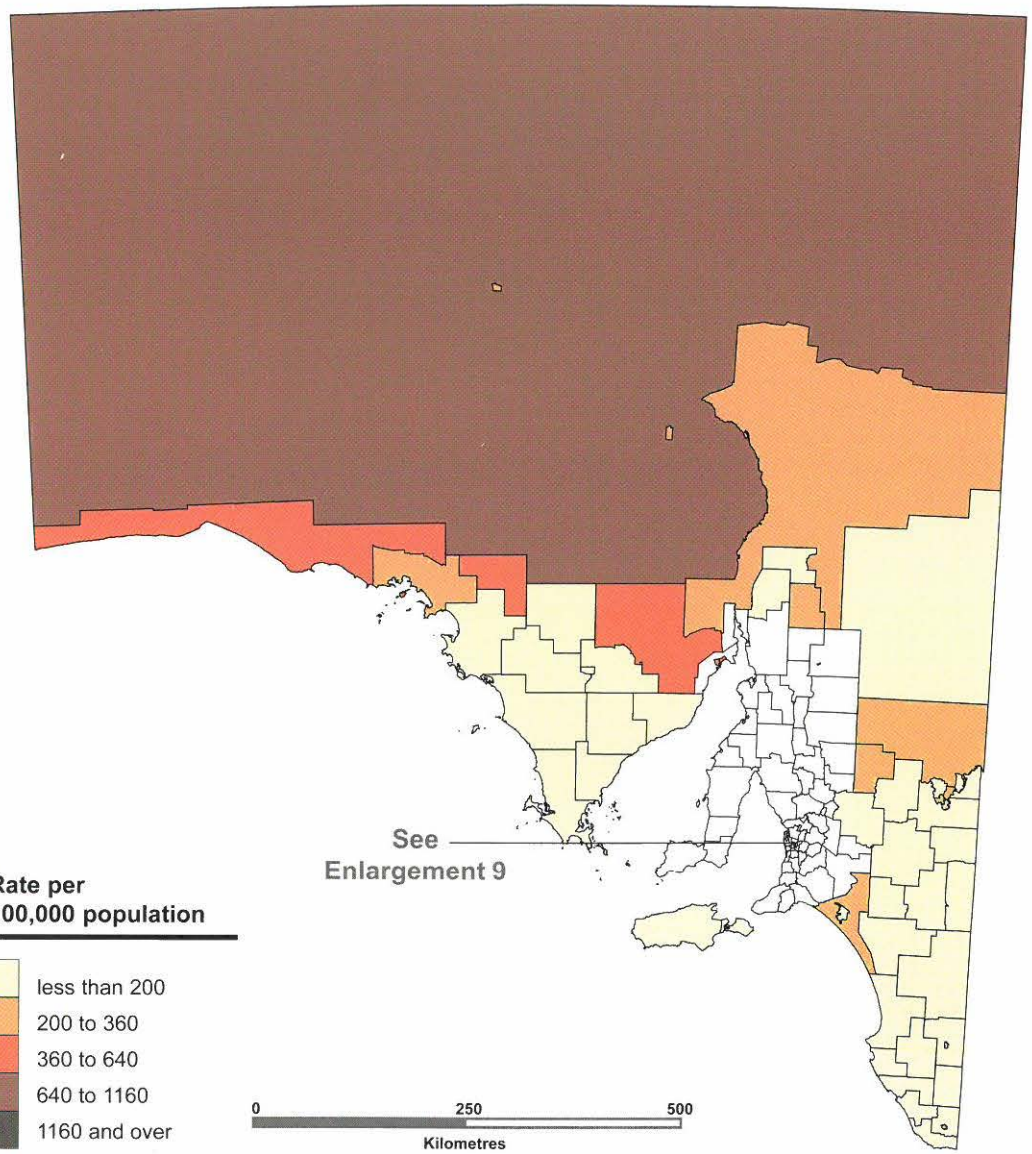
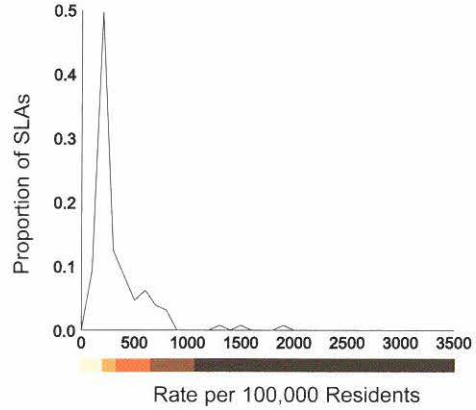
MAP 81

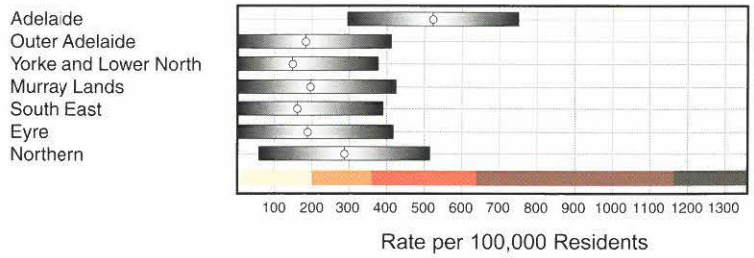
South Australia
Motor Vehicle Theft - Rate[1] per 100,000 Residents



Distribution of Statistical Local Areas (SLAs) According to Rate of Motor Vehicle Theft



Statistical Divisions
95 Percent Confidence Intervals



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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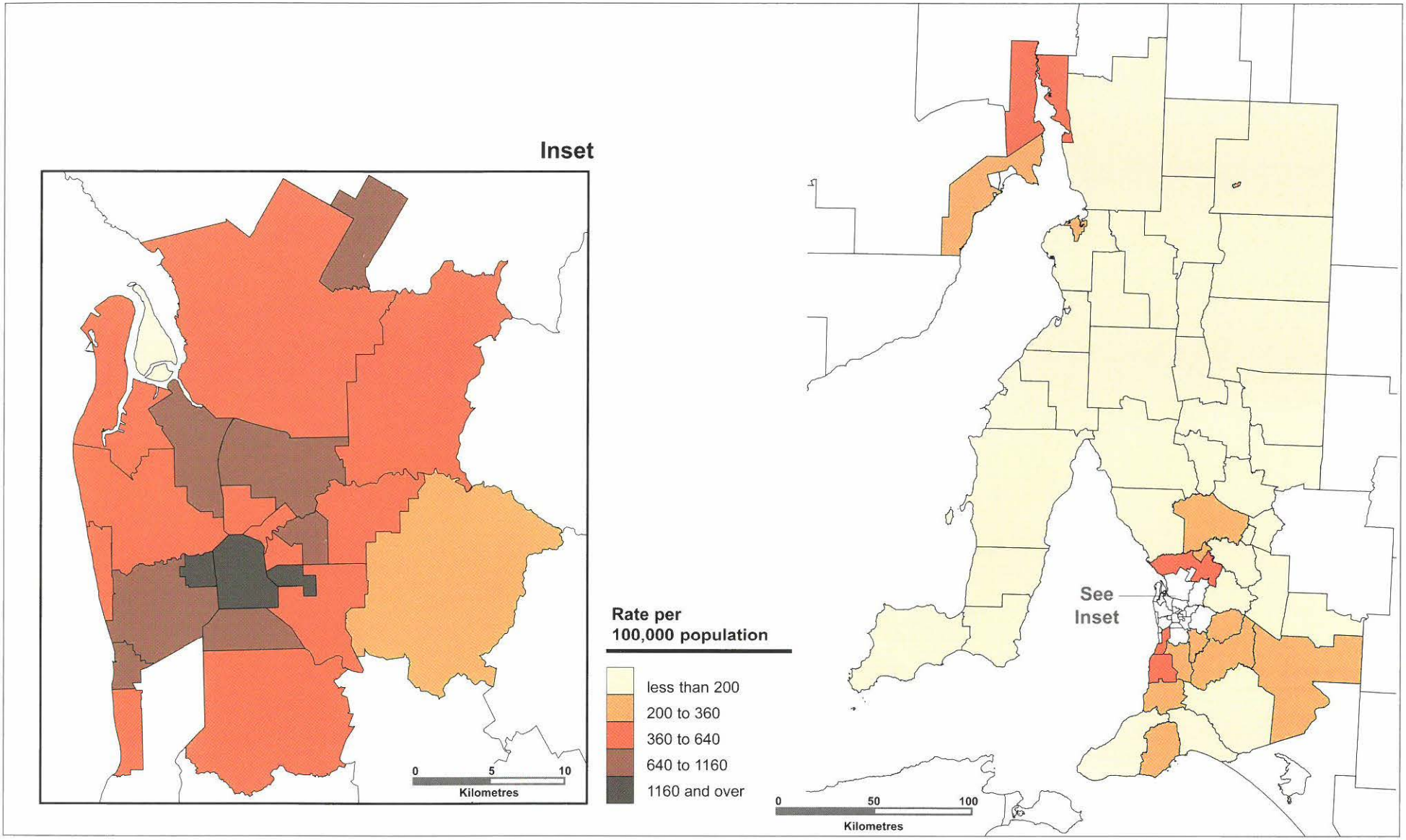
MAP 82

South Australia - Enlargement 9
Motor Vehicle Theft - Rate[1] per 100,000 Residents



[1] Rates are averages calculated over the period from 1994-95 to 1998-99.

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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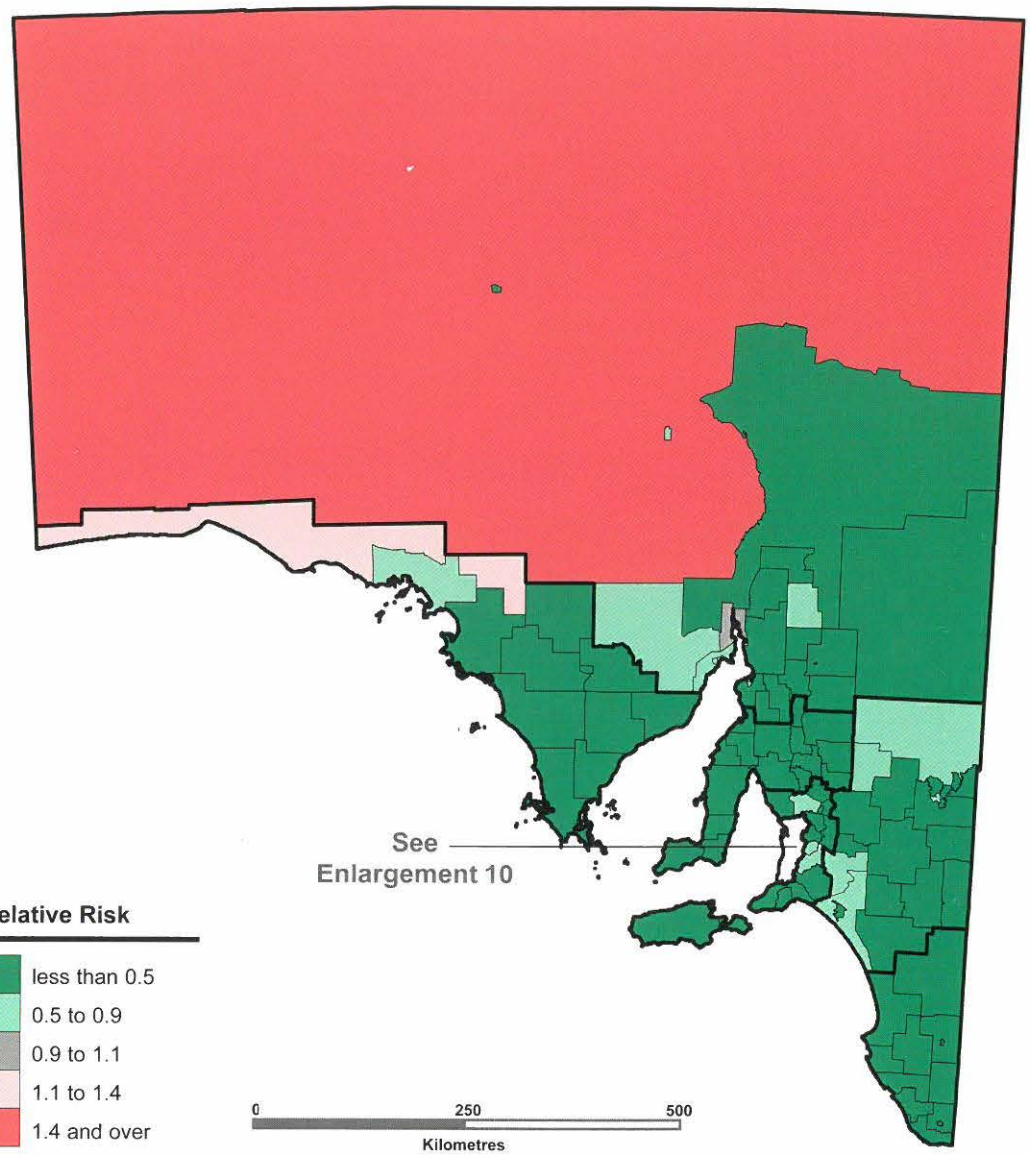
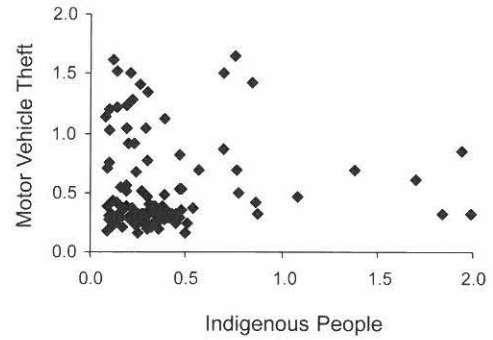
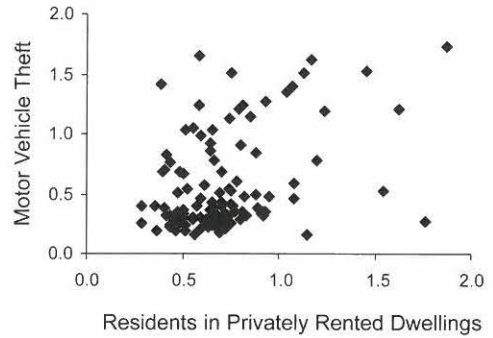
MAP 83

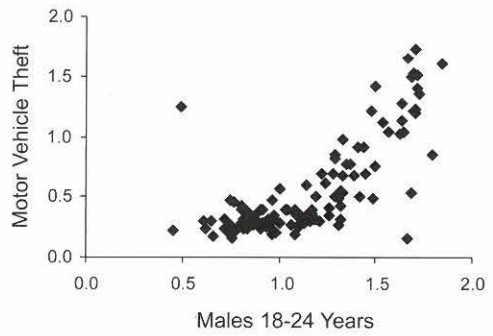
South Australia
Motor Vehicle Theft - Rate per 100,000 Residents Relative to State Average



Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







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[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State

[2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

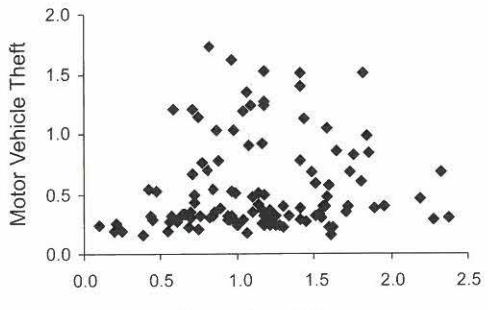
Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

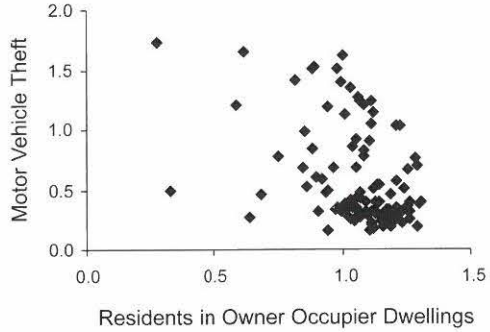
MAP 84

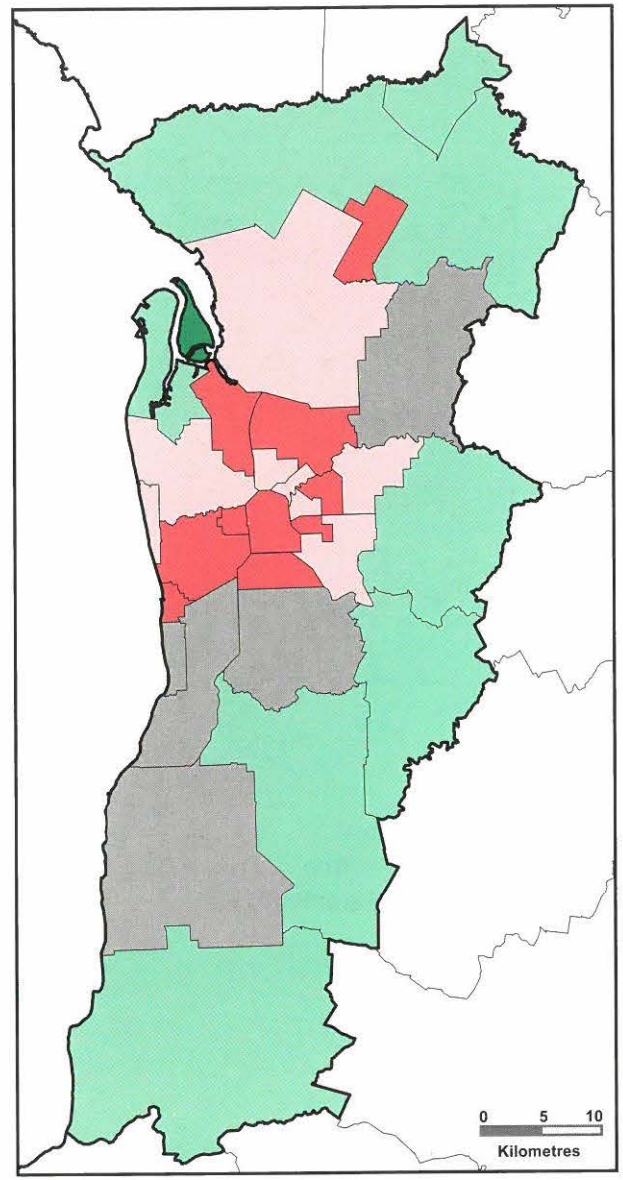
South Australia - Enlargement 10

Motor Vehicle Theft - Rate per 100,000 Residents Relative to State Average

Relative Crime Rate[1] and Relative Concentration[2] of Selected Socioeconomic Characteristics







[1] Relative crime rate = Smoothed rate for SLA / Smoothed rate for State [2] Relative concentration = Value of characteristic for SLA / Value of characteristic for State

Source: South Australia Police, Statistical Services Section (unpublished data, *refer to* Table A1, p.146).

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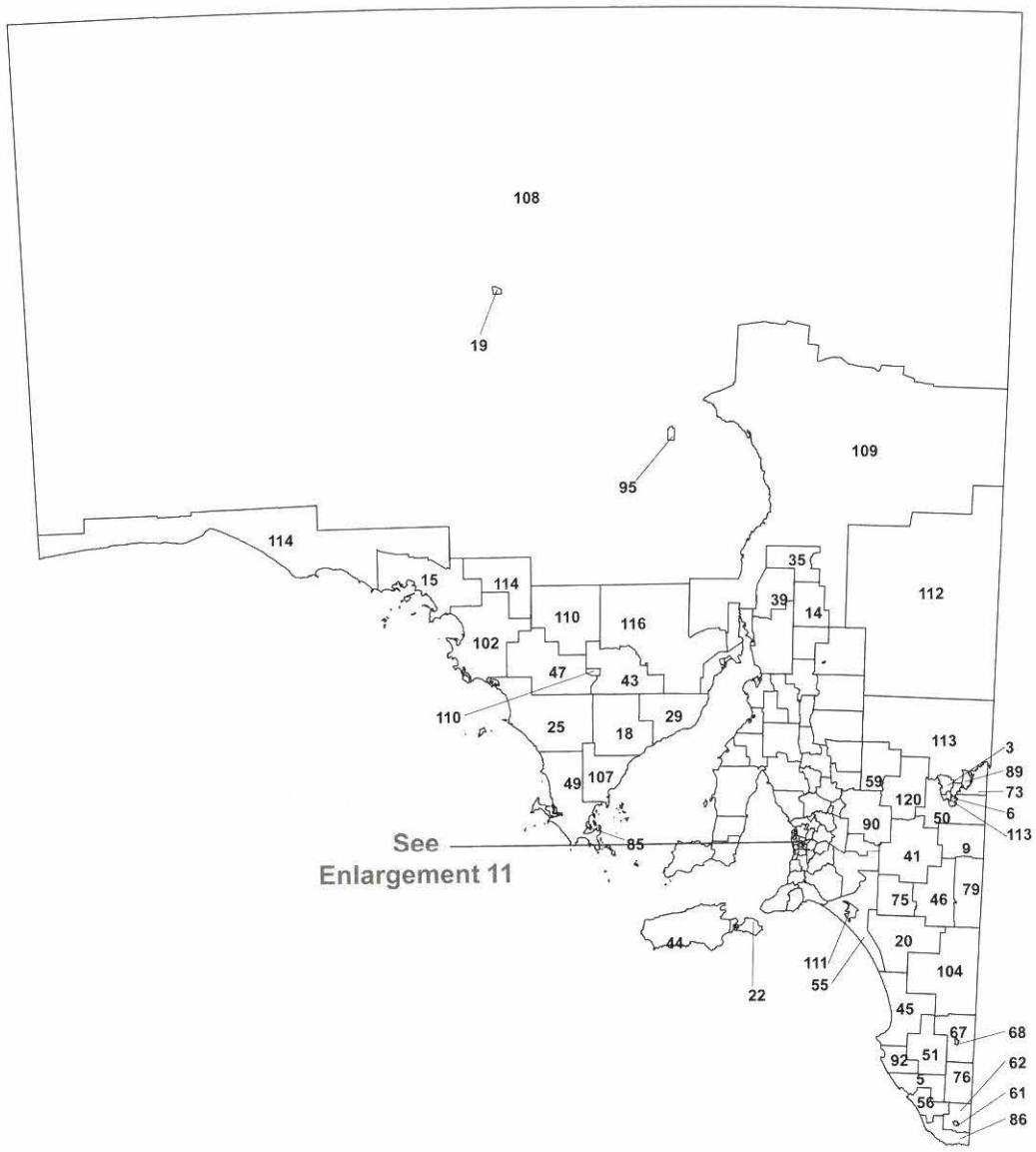
MAP 85

South Australia
Statistical Local Areas



1	Adelaide (C)
2	Angaston (DC)
3	Barmera (DC)
4	Barossa (DC)
5	Beachport (DC)
6	Berri (DC)
7	Blyth-Snowtown (DC)
8	Brighton (C)
9	Browns Well (DC)
10	Burnside (C)
11	Burra Burra (DC)
12	Bute (DC)
13	Campbelltown (C) (SA)
14	Carrieton (DC)
15	Ceduna (DC)
16	Central Yorke Peninsula (DC)
17	Clare (DC)
18	Cleve (DC)
19	Coober Pedy (DC)
20	Coonalpyn Downs (DC)
21	Crystal Brook-Redhill (DC)
22	Dudley (DC)
23	East Torrens (DC)
24	Elizabeth (C)
25	Elliston (DC)
26	Enfield (C) - Pt A
27	Enfield (C) - Pt B
28	Eudunda (DC)
29	Franklin Harbor (DC)
30	Gawler (M)
31	Glenelg (C)
32	Gumeracha (DC)
33	Hallett (DC)
34	Happy Valley (C)
35	Hawker (DC)
36	Henley & Grange (C)
37	Hindmarsh and Woodville (C)
38	Jamestown (DC)
39	Kanyaka-Quorn (DC)
40	Kapunda (DC)
41	Karoonda East Murray (DC)
42	Kensington & Norwood (C)
43	Kimba (DC)
44	Kingscote (DC)
45	Lacepede (DC)
46	Lameroo (DC)
47	Le Hunte (DC)
48	Light (DC)
49	Lower Eyre Peninsula (DC)
50	Loxton (DC)
51	Lucindale (DC)
52	Mallala (DC)
53	Mannum (DC)
54	Marion (C)
55	Meningie (DC)
56	Millicent (DC)
57	Minlaton (DC)
58	Mitcham (C)
59	Morgan (DC)
60	Mount Barker (DC)
61	Mount Gambier (C)
62	Mount Gambier (DC)
63	Mount Pleasant (DC)
64	Mount Remarkable (DC)
65	Munno Para (C)
66	Murray Bridge (RC)
67	Naracoorte (DC)
68	Naracoorte (M)
69	Noarlunga (C)
70	Northern Yorke Peninsula (DC)
71	Onkaparinga (DC)
72	Orroroo (DC)
73	Paringa (DC)
74	Payneham (C)
75	Peake (DC)
76	Penola (DC)
77	Peterborough (DC)
78	Peterborough (M)
79	Pinnaroo (DC)
80	Pirie (DC)
81	Port Adelaide (C)
82	Port Augusta (C)
83	Port Broughton (DC)
84	Port Elliot & Goolwa (DC)
85	Port Lincoln (C)
86	Port MacDonnell (DC)
87	Port Pirie (C)
88	Prospect (C)
89	Renmark (M)
90	Ridley-Truro (DC)
91	Riverton (DC)
92	Robe (DC)
93	Robertstown (DC)
94	Rocky River (DC)
95	Roxby Downs (M)
96	Saddleworth & Auburn (DC)
97	Salisbury (C)
98	Spalding (DC)
99	St Peters (M)
100	Stirling (DC)
101	Strathalbyn (DC)
102	Streaky Bay (DC)
103	Tanunda (DC)
104	Tatiara (DC)
105	Tea Tree Gully (C)
106	Thebarton (M)
107	Tumby Bay (DC)
108	Unincorp. Far North
109	Unincorp. Flinders Ranges
110	Unincorp. Lincoln
111	Unincorp. Murray Mallee
112	Unincorp. Pirie
113	Unincorp. Riverland
114	Unincorp. West Coast
115	Unincorp. Western
116	Unincorp. Whyalla
117	Unincorp. Yorke
118	Unley (C)
119	Victor Harbor (DC)
120	Waikerie (DC)
121	Wakefield Plains (DC)
122	Walkerville (M)
123	Wallaroo (M)
124	Warooka (DC)

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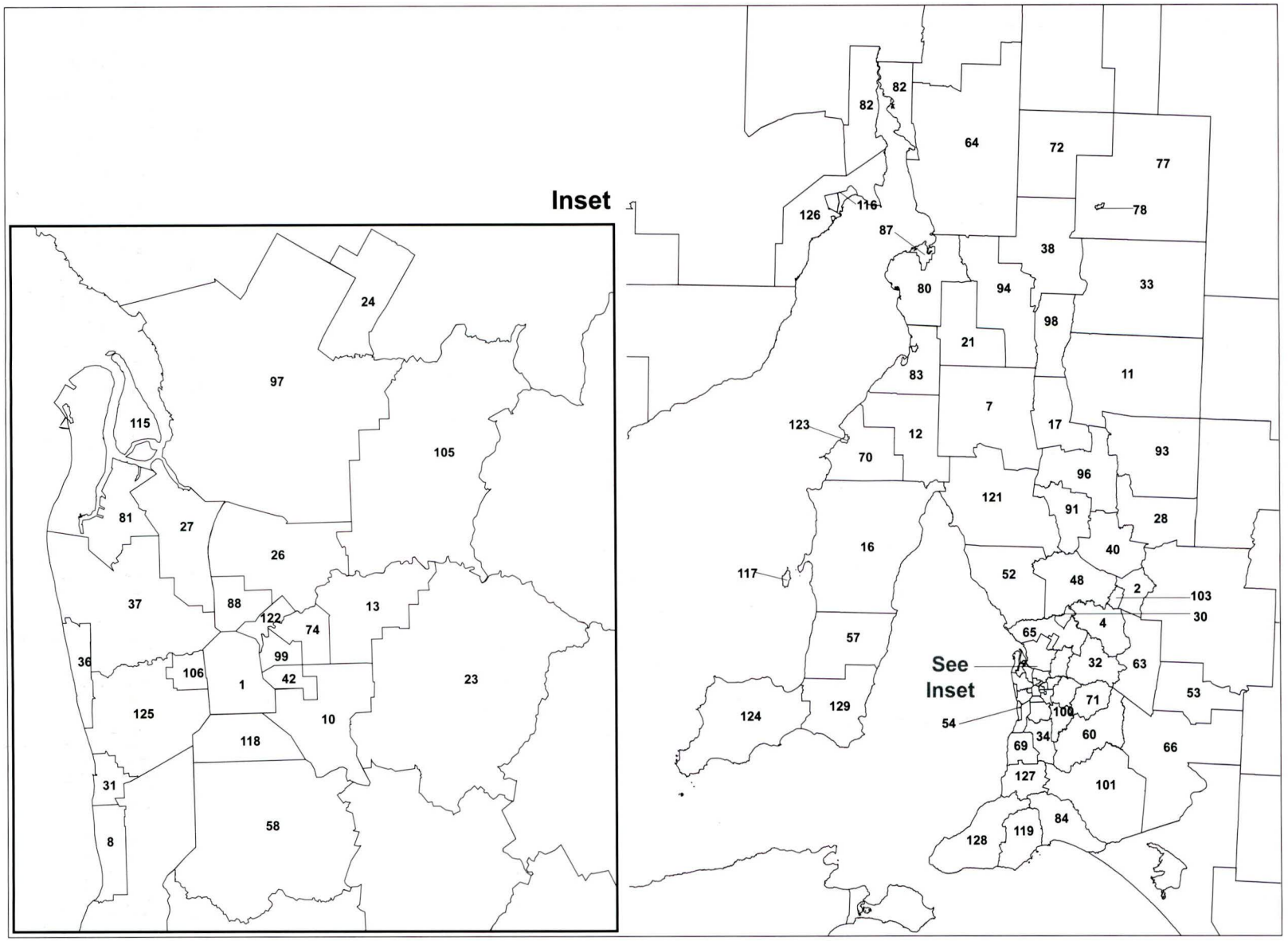
MAP 86

South Australia - Enlargement 11
Statistical Local Areas

125 West Torrens (C)
126 Whyalla (C)
127 Willunga (DC)
128 Yankalilla (DC)
129 Yorketown (DC)



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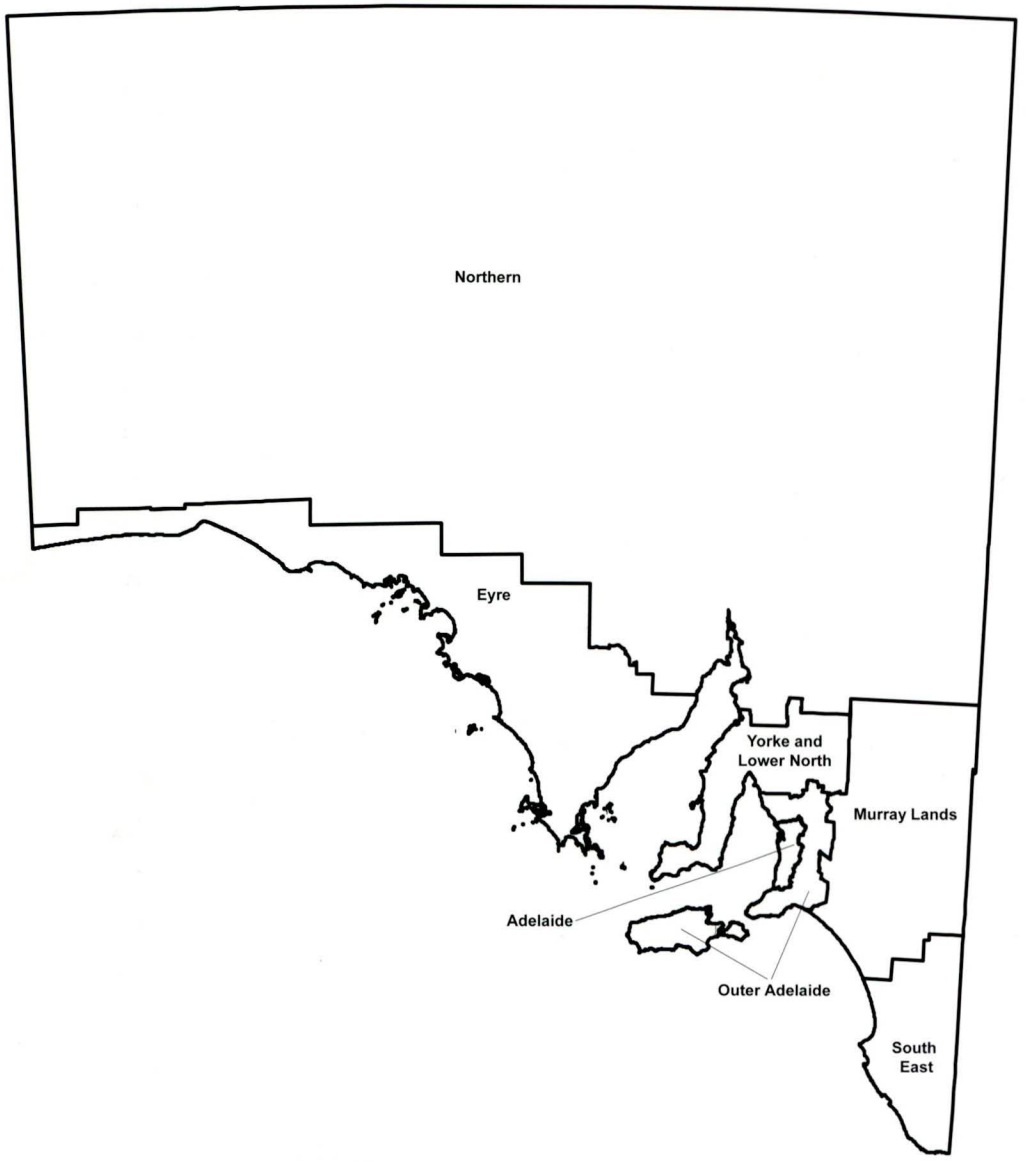
MAP 87

South Australia
Statistical Regions



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Tasmania, Northern Territory & Australian Capital Territory

MAP

111-112 Offence Rates per 100,000 Residents (Tasmania, Northern Territory and Australian Capital Territory) 141

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Tasmania, Northern Territory & Australian Capital Territory
Main Features of Crime Maps

Maps showing crime data on Tasmania, the smallest of the Australian states, and the two territories are included for completeness. The crime rates shown in Maps 112 and 113 are unsmoothed, as data were not available for geographical areas lower than the territory in the case of the Northern Territory and the ACT, and police districts for Tasmania.

Data for Tasmania were obtained from the Department of Police and Public Safety for the financial years from 1994-95 to 1998-99. The rates are based on average counts over the period. Population data used as denominators for the rates were extracted from the 1996 Census and Housing (PMP Software, 1998).

The crime rates for the Northern Territory and the ACT are averages of those published in the respective police annual reports over the period from 1994-95 to 1998-99.

Rates of armed robbery tend to be low in Tasmania and the territories. Among these jurisdictions, the highest rates were observed in the ACT and the Southern Police District of Tasmania that contains Hobart. Note that these relatively high rates did not exceed the level of 32 per 100,000 residents.

Rates of unarmed robbery are also relatively low, though in general they tend to be higher than rates of armed robbery. The Northern Territory and the Southern Police District of Tasmania are the regions with the highest rates of unarmed robbery. However, these rates were in general below the level of 68 per 100,000 residents. In Tasmania, rates of unarmed robbery exhibit a definite spatial pattern with a tendency to increase in the South East direction.

Rates for residential break and enter, in particular those for the Eastern Police District of Tasmania, are among the highest in the country. The reasons for such a high prevalence of residential burglary are different for Tasmania and each of the territories. In the Northern Territory, high rates are associated with an above average Indigenous population, in particular among youth. In the ACT, the high rate of residential burglary can be associated with relative concentration of disadvantage in some areas of the territory and to a relatively high drug activity in the Central Business District which causes its neighbouring areas to have the highest rates in the territory. Census data show that the unemployment rate and the proportion of one-parent families with dependent children for Tasmania are above the national average. On the other hand, household income per capita is below the national average. These data suggest that in general, residents of Tasmania are more socially disadvantaged than those of other states and the ACT. These may provide a partial explanation to the high rates of residential burglary in this state.

Non-residential break and enter tends to be less prevalent in the territories than in Tasmania. Rates in the eastern police districts tend to be among the highest in the country, which may be explained by a set of factors similar to those used to explain the high rates of residential burglary.

Proximity between the ACT and New South Wales, and the relatively high concentration of population in the Eastern and Southern Districts of Tasmania may explain the relatively high rates of motor vehicle theft in these regions.

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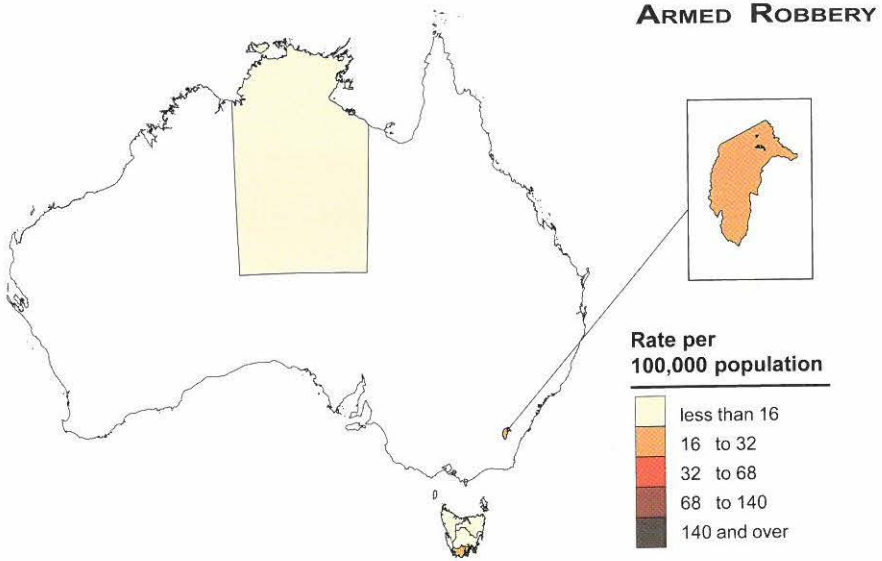
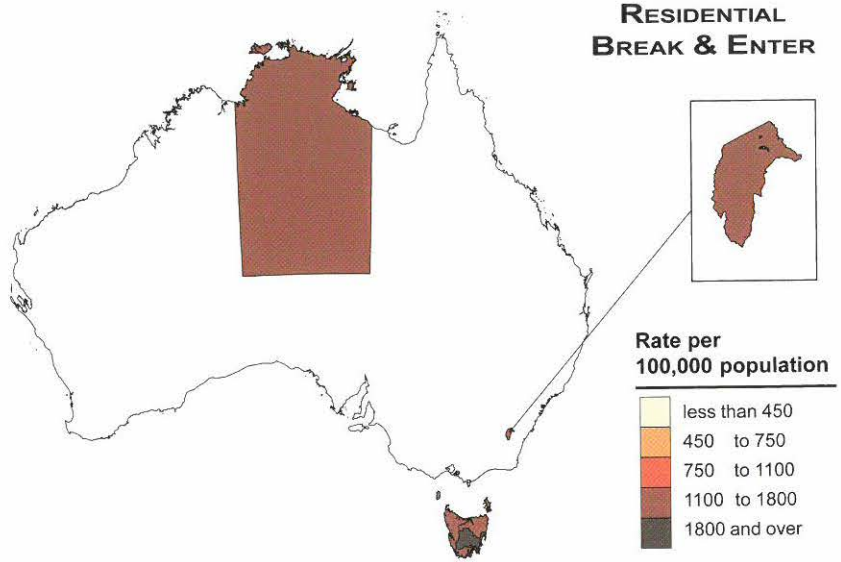
MAP 111

Tasmania, Northern Territory & Australian Capital Territory
Offence Rates[1] per 100,000 Residents

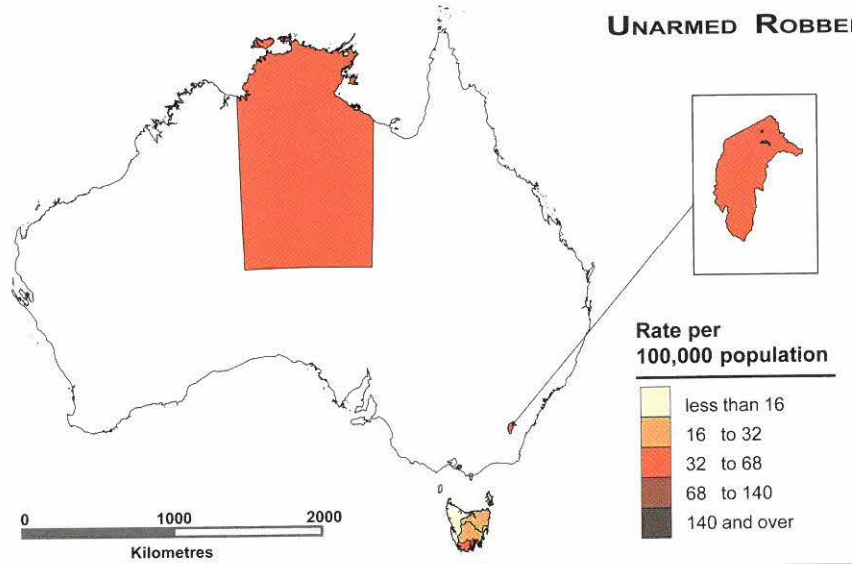
Armed Robbery



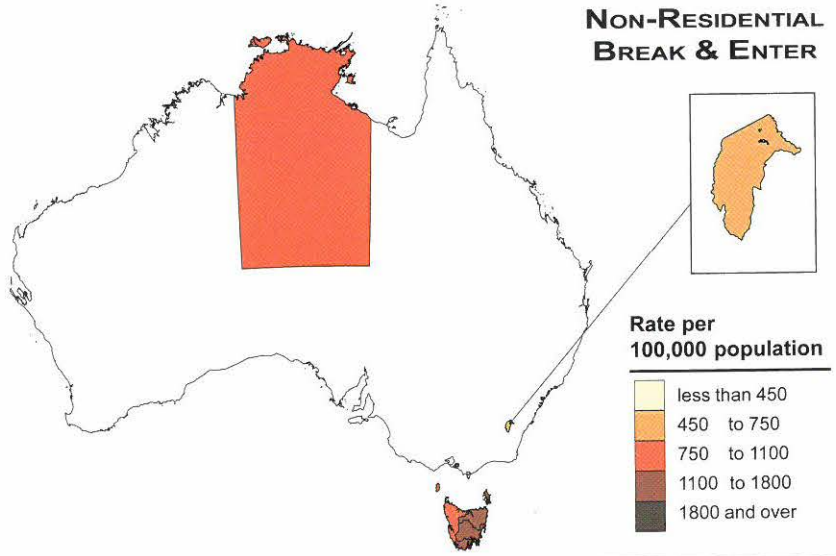
Residential Break & Enter



Unarmed Robbery



Non-Residential Break & Enter



[1] Actual rates.

Source: *Refer to* Table A1, p.146.

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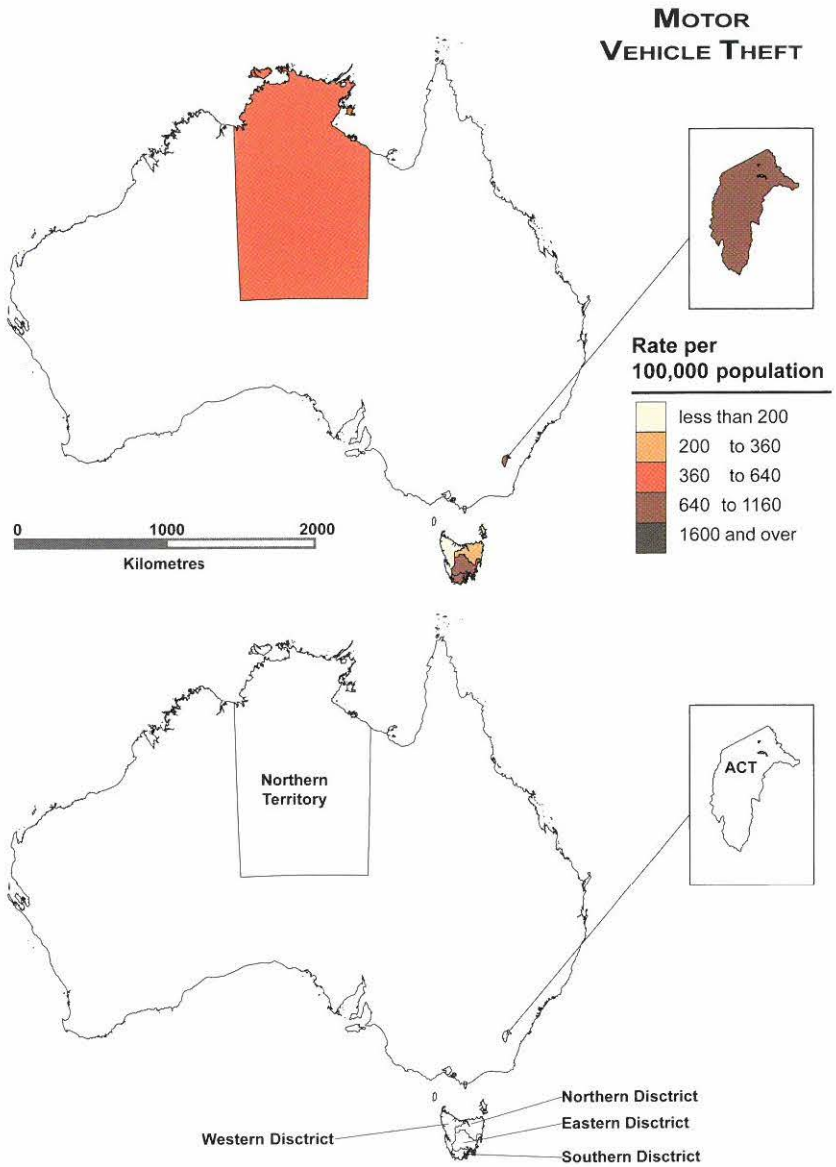
MAP 112

Tasmania, Northern Territory & Australian Capital Territory
Offence Rates[1] per 100,000 Residents



[1] Actual rates.

Source: *Refer to* Table A1, p.146.

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Technical Appendix to the Atlas

The over 120 maps and 60 graphs, included in this Atlas, are the result of a number of interrelated processes. Overall the preparation of this Atlas involved a data collection stage where data were derived from a variety of different sources and in a variety of different formats. These data were then processed and modelled before being integrated with spatial boundaries within a geographical information system to produce cartographical and graphical output. These outputs were then transferred to graphic and page design software for colour correction and final editing before being printed using a four colour (CYMK) process. The aim of this appendix is to provide the reader with a technical description of the main features of these processes.

The Appendix is organised in two sections. The first section, dealing with the crime data processing & modelling processes, highlights the problems inherent in mapping regional crime rates and describes the methodology used to minimise these problems. The second section, dealing with map creation, describes the cartographical design process and provides technical details about the main features of the maps included in the Atlas.

1: Crime Data Processing & Modelling - The Rate Smoothing Procedures

1.1 Introduction

Computerised mapping is emerging as a significant tool for both exploratory research and policy decisions in crime and justice. Maps display information that may help in understanding the relationships between geographic areas, crime and a number of risk factors. Crime mapping has proved useful in assisting police operations and supporting crime prevention initiatives (*see* Weisburd and McEwen, 1997). Maps can also assist in the assessment of the regional distribution of crime.

People's perceptions of crime differ across geographical areas. This may result in regional differences in the reporting of crimes and the way that police officers, working in different geographical settings, process reported incidents. Such differences may have an impact on the levels of crime as reported in official statistics and may influence regional comparisons.

Crime rates calculated from official statistics tend to give the impression that they have relatively large regional variability. Regions with small populations, and low population density, often appear as having higher crime rates than regions with large populations, and high population density. There are obvious differences in the volume of recorded crime in small-population and large-population communities. In addition, regions may differ in terms of social and economic factors that are related to their levels of crime.

The rates used to develop the maps shown in this Atlas were calculated relative to the total population of Statistical Local Areas, as counted on census night on 30 June 1996.

The following issues must be taken into consideration when mapping regional crime rates that are based on counts of total population:

- Among-region variation in the size of resident populations which constitutes the denominator of the regional crime rates;
- Regions differ from each other not only in terms of population size but also with regard to a number of social and economic factors, many of which have a correlation with regional levels of crime;
- Spatial trends may be present in the data that cause neighbouring areas to be more alike in terms of crime-related factors.

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Regional crime rates must be adjusted to account for the likely effect of these factors so when mapped, they provide users with a more accurate view of regional differences. This is known as regional *smoothing*. This paper describes the process followed to obtain the set of smoothed crime rates displayed in the maps included in this volume.

1.2 Problems with Mapping Population-Based Crime Rates

Population sizes

Population-based rates can give an inaccurate representation of the geographic distribution of crime due to variations in the size of at-risk populations in the regions. Crime rates for regions with small populations are more variable than rates for larger regions, and can be misleading as they fail to account for among-area differences in population sizes and other factors associated with crime.

The problem arises when the regions have substantially different numbers of residents. In general, regions with small populations are likely to have recorded crime rates that fluctuate greatly about the true (unknown) crime rate. It is clear from this Atlas that a major problem with using crime rates for regional comparisons is the dependency on the denominators, usually the total resident population.

Regional Differentials in Factors Associated with Crime

There has been much recent research on community differences in crime rates. Despite contradictory results, there are some conclusions that can be drawn with confidence from this research. High-crime communities tend to be economically deprived (Land, McCall and Cohen 1990, Sampson, Raudenbush and Earls 1997). These communities tend to be large in size and high in population density, overcrowding and residential mobility. Economic deprivation is usually measured by variables such as income, poverty, unemployment, welfare, occupation, education, inequality, home ownership and housing type. Family disruption, measured by divorce/separation rates and/or the proportion of female headed households is a variable that mediates the relationship between certain indicators of economic deprivation and community crime rates (Sampson, 1995). Several explanations have been offered for the observed relationship between economic deprivation, family disruption and community crime.

Independently of the theoretical approach chosen to explain regional differences in crime, crime rates must be standardised in some way to account for regional differences in the factors associated with crime.

Spatial Trend

The data used to develop the maps included as part of this Atlas represent crime counts for regions that may be subject to spatial dependence. Spatial dependence contributes to increase the portion of systematic variation in regional crime rates. Neighbouring areas may be more similar in terms of crime-related factors than areas that are located far apart. This feature, if not taken into account, may contribute to misinterpretation of the pattern displayed in the maps. Data need to be smoothed to remove any impact due to spatial dependence.

1.3 Data Issues and Data Sources

Data used to develop the maps included in this volume were obtained from different sources and in a variety of formats. Table A1 contains a brief description of the data types and sources for the states and territories.

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TECHNICAL APPENDIX TO THE ATLAS

Table A1: Data Sources for the Rates Mapped in the Atlas of Crime in Australia

State/Territory	Data Source	Lowest Area for which Crime Counts were Available	Data Processing
New South Wales	New South Wales Bureau of Crime Statistics and Research, New South Wales Recorded Crime Statistics 1995-1998, LGA Supplementary Tables.	Local Government Area	In most cases, Local Government Areas (LGAs) correspond to Statistical Local Areas (SLAs).
	New South Wales Bureau of Crime Statistics and Research	Postcode	The following LGAs contained more than one SLA: Blayney (A), Cabonne (A), Evans (A), Inverell (A), Newcastle (C), Sydney (C), Tweed (A), and Yarrowlumla (A). Postcode crime counts were converted to SLA counts by implementing the concordance rules defined by the Australian Bureau of Statistics (1997).
Victoria	Crime in Victorian Postcodes, Total Crime, Yearly Comparison of Offences Recorded from 1994/95 to 1997/98, Victoria Police, Statistical Services Branch.	Postcode	Postcode crime counts were converted to SLA counts by implementing the concordance rules defined by the Australian Bureau of Statistics (1997).
Queensland	Queensland Police Service, Statistical Services Section, Crime Counts for Queensland Police Divisions, 1994-95 to 1998-99.	Police Division	Boundaries for the 280 police divisions were matched with the 1996 boundaries for the 449 SLAs in Queensland using MapInfo. Where an exact match did not occur, offences were allocated to a SLA on the basis of an estimate of the proportion of the SLA population who were resident of the Queensland Police Division.
Western Australia	Crime Research Centre, University of Western Australia, Unit Record Data on Incidents Reported to Police, 1997 and 1998.	Incident by postcode	Data were aggregated up to the postcode level. Postcode crime counts were converted to SLA counts by implementing the concordance rules defined by the Australian Bureau of Statistics (1997).
South Australia	South Australia Police, Statistical Services Section, Crime Counts for Postcodes, 1994-95 to 1998-99.	Postcode	Postcode crime counts were converted to SLA counts by implementing the concordance rules defined by the Australian Bureau of Statistics (1997).
Tasmania	Department of Police and Public Safety, Counts by Police Division, 1994-95 to 1998-99.	Police District	Data from these jurisdictions were included in the Atlas for completeness. The crime rates shown in Maps 111 and 112 are unsmoothed, as data were not available for geographical areas lower than the territory in the case of the Northern Territory and the ACT, and police districts for Tasmania.
Northern Territory	Northern Territory Emergency Services, Northern Territory Police, Fire & Emergency Services, Annual Report, 1994/95 to 1998/99.	Whole Territory	
Australian Capital Territory	Australian Federal Police, Annual Report of Policing in the Australian Capital Territory, 1994/95 to 1998/99	Whole Territory	

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1.4 Smoothing Procedures

As mentioned in the introduction, population-based crime rates, hereafter referred to as raw or crude crime rates, were adjusted or smoothed to:

- take account of regional variations in population sizes and regional characteristics that might have an impact on the prevalence of crime; and
- remove any spatial trend that might be present in the data.

The data used in this application consisted of counts of incidents of crime available only in geographically aggregated form. The purpose of the spatial smoothing procedure is to approximate the unknown spatial function that is assumed to generate the observations. The target function is a smooth intensity function, that conditional on the total number of observations, will aid the study of the spatial distribution of crime in the mainland states of Australia.

It is assumed that the locations of crime incidents are determined by a Poisson process with intensity function $g(x)$ over a compact set, $A \subset \Re^2$, that corresponds to the geographic area over which crime incidents occur, with g a smooth real function defined on A, and where x represents points over A. Suppose that the target area, A, which in this case is represented by a state, is partitioned into m aggregation areas (Statistical Local Areas) $A_1, A_2, \mathrm{K}, A_m$. The observation for each aggregation area, A_i, consists of a noisy measurement representing the crime rate, Y_i. Conditioning on the total number of crimes recorded, $N = \sum_{i=1}^{m} N_i$, the function $g(x)$ takes the role of the density of locations where crimes occur, such that the expected number of crimes in A_i is given by $N_i = N\int_{A_i} g(x)dx$.

Let $f(x)$ be a real smooth function representing a density that determines the locations of the (unobservable) points where the original crimes are located before they have been aggregated. The total number of points corresponding to the crime locations, n, and the number of actual crime locations, n_i, within the SLA, A_i, are assumed to be fixed and determined by $n_i = n\int_{A_i} f(x)dx$.

Following Muller, Stadtmuller and Tabnak (1997), interest focuses on estimation from the data $(Y_i, A_i), i = 1, \mathrm{K}\ m$, of the intensity function

$$\lambda(x) = p\frac{g(x)}{f(x)}, x \in A. \qquad (1)$$

The total number of incidents in a given Statistical Local Area, N_i, arises from an aggregation of individual incidents, which themselves are random variables. Let C_i be the random number of crime incidents recorded in area, A_i. The observed rate for a given SLA, Y_i, corresponds to the quotient $Y_i = C_i / n_i$. Conditional on the Statistical Local Area, A_i, individual incidents are independent and C_i has a binomial distribution with parameters N and $\int_{A_i} g(x)dx$, with expected value given by

$$E(Y_i) = \frac{N_i}{n_i} = \frac{N\int_{A_i} g(x)dx}{n\int_{A_i} f(x)dx}, \qquad (2)$$

and variance

$$Var(Y_i) = \frac{N\left(\int_{A_i} g(x)dx\right)\left(1 - \int_{A_i} g(x)dx\right)}{\left(n\int_{A_i} f(x)dx\right)^2}, \qquad (3)$$

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which implies a variance function, denoted as $v(E(Y_i))$, of the form

$$v(E(Y_i)) = \frac{N}{n} \times \frac{\int_{A_i} g(x)dx}{\int_{A_i} f(x)dx}\left(1 - \int_{A_i} g(x)dx\right) = E(Y_i)\left[1 - \frac{n_i}{N_i}E(Y_i)\right] \quad (4)$$

If the $|A_i| \to 0$, then $v(E(Y_i)) \approx E(Y_i)$, and the C_i are approximately Poisson. Unobserved heterogeneity of observations within aggregation areas may cause overdispersion; however, this is not measurable from the data. Because data were not available below the SLA level, it was impossible to observe its true distribution over the Statistical Local Areas, or even to elicit one. This leads to make the simplifying assumption that the unobserved, but unknown, recorded incidents are uniformly spaced on the domain. This assumption implies the choices $p = |A|^{-1}$ and $f \equiv |A|^{-1} 1_A$, in (1), where 1_A denotes the indicator function.

Note that this leads to $\lambda(x) = g(x)$, which is a regression function.

The fact that the observed data for each aggregation area are crime rates per 100,000 residents, together with the above results, motivated the use of a simple procedure suitable for spatial smoothing and adjustment of crime rates. In each state except for Western Australia, crime counts were available for 5 yearly periods from 1994 to 1998. The procedure aims to estimate crime rates for the year at the centre of the period that in this case, was 1996. This was a convenient choice because 1996 was a census year and data on socioeconomic variables were readily available for each aggregation area. In the case of Western Australia, data were available for 1997 and 1998. The centre of this period was between 31 December 1997 and 1 January 1998.

The smoothing procedure not only takes account of spatial variation but also adjusts regional crime rates for differences in associated area characteristics. SLA characteristics, as recorded on 30 June 1996, were used to smooth the rates. Among-SLA variation in the resident population, used as the denominator of the crime rates, cause these rates to be highly unstable, in particular for small areas. Also, given the count nature of the original data, a logarithmic transformation was used to remove possible dependence of the variance on the mean (Cressie, 1993).

Consider the following decomposition of the crime rate observed for the *i-th* Statistical Local Area (SLA):

$$\log(Y_i) = \mu + \sum_{k=}^{p} \beta_k z_{ik} + \delta(w_{i1}, w_{i2}) + \varepsilon_i, \quad (5)$$

where μ represents a general mean, z_{ik} represents the value of the *k-th* characteristic for the *i-th* SLA $(k = 1,..., p; i = 1,\mathrm{K}, A)$, β_k is the regression coefficient associated with z_{ik}, and $\delta(w_{i1}, w_{i2})$ represents the effect due to spatial variation with w_{i1} and w_{i2} being the North-South and East-West components respectively. Finally, ε_i represents a random component accounting for unexplained variation, which is assumed to have 0 mean and constant variance, σ^2.

The above model was fitted to the data by ordinary least-squares (OLS). Note that given the use of the variance stabilising transform $\log(Y_i)$, and inclusion of the $\delta(w_{i1}, w_{i2})$ term to control for spatial variation, OLS is in a sense equivalent to the more complex locally weighted least-squares (LWLS) algorithm with a uniform kernel in Muller, Stadtmuller and Tabnak (1997). Predicted values, transformed back to the original scale, were used to prepare the maps in this Atlas.

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Technical Appendix to the Atlas

Crime rates were smoothed separately for each offence and within each state. The process started with the fitting of a model containing the overall mean and the spatial term. This term consisted of the absolute distance between the coordinates of each SLA and the coordinates of the SLA that corresponded to the capital city. At the next stage, covariates for the indicators of economic activity and social disorganisation were included once at a time until the terms corresponding to the absolute North-South and East-West distances became non significant.

The whole idea was to remove the effect of spatial variability by including theoretically relevant covariates that varied spatially in either direction. The predicted values of the resulting model were in fact smoothed standardised rates, where standardisation was achieved by using the set of relevant covariates. The reference area was one possessing the average values for the characteristics included in the model.

Social disorganisation theory guided selection of the variables included as part of the models. Indicators of community stability and community integration were used to define the variables included in the different models (Land, McCall and Cohen 1990, Sampson 1995, Sampson and Wilson 1995, Elliot *et al* 1996, Sampson, Raudenbush and Earls 1997, Veysey and Messner 1999). Social disorganisation theory predicts that factors such as income, poverty, unemployment, welfare, occupation, education, inequality, home ownership, housing type and family disruption weaken a community's ability to control crime by allowing for the development of delinquent peer groups.

Table A2 shows the variables included in the models for each offence and state together with the associated R^2.

Table A2: Variables Included in Smoothing Models and Model Statistics

	Armed Robbery	Unarmed Robbery	Residential Break and Enter	Non-Residential Break and Enter	Motor Vehicle Theft
New South Wales					
SLA is in a Metropolitan Area	X	X			X
Share of Retail and Trade of Total Employment	X	X			X
Share of Communication, Finance and Service Industries of Total Employment		X			
Share of Agriculture of Total Employment			X		
Unemployment Rate		X	X	X	
Males 15-17 as a Proportion of Total Male Population	X			X	X
Males 20-24 as a Proportion of Total Male Population	X			X	X
Indigenous People as a Percentage of Total Population	X			X	X
One-Parent Households as a Percentage of All Households		X			
Owner-Occupied Households as a Percentage of Total Households			X		
R^2	0.67	0.54	0.98	0.57	0.67
Queensland					
SLA is in a Metropolitan Area	X				
Share of Communication, Finance and Service Industries of Total Employment	X		X		X
Share of Agriculture of Total Employment		X	X	X	
Unemployment Rate		X	X	X	X
Males 15-17 as a Proportion of Total Male Population				X	
Males 20-24 as a Proportion of Total Male Populatation			X		X
Males 25-34 as a Proportion of Total Male Population		X			
Females 20-34 as a Proportion of Total Male Population				X	
Indigenous People as a Percentage of Total Populaation				X	
One-Parent Households as a Percentage of All Households		X			X
Owner-Occupied Households as a Percentage of Total Households					
Households on Rented Government Accommodation as a Percentage of Total Households		X			
R^2	0.49	0.55	0.73	0.62	0.66

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Table A2: *Continued*

	Armed Robbery	Unarmed Robbery	Residential Break and Enter	Non-Residential Break and Enter	Motor Vehicle Theft
South Australia					
SLA is in a Metropolitan Area	X	X			
Share of Retail and Trade of Total Employment		X			
Share of Communication, Finance and Service Industries of Total Employment	X				
Share of Agriculture of Total Employment			X		
Unemployment Rate		X	X		X
Males 15-17 as a Proportion of Total Male Population				X	
Males 20-24 as a Proportion of Total Male Population					X
Indigenous People as a Percentage of Total Population				X	X
Owner-Occupied Households as a Percentage of Total Households			X		
R^2	0.61	0.55	0.77	0.65	0.57
Western Australia					
SLA is in a Metropolitan Area	X	X			X
Share of Retail and Trade of Total Employment	X	X		X	
Share of Communication, Finance and Service Industries of Total Employment	X		X		
Share of Agriculture of Total Employment				X	
Unemployment Rate		X		X	X
Males 20-24 as a Proportion of Total Male Population					X
Males 20-34 as a Proportion of Total Male Population				X	
Indigenous People as a Percentage of Total Population			X		
Owner-Occupied Households as a Percentage of Total Households			X		
R^2	0.59	0.53	0.78	0.49	0.74

Table A2: *Continued*

	Robbery	Residential Break and Enter	Non-Residential Break and Enter	Motor Vehicle Theft
Victoria				
SLA is in a Metropolitan Area	X	X		
Share of Communication, Finance and Service Industries of Total Employment	X	X		
Males 15-17 as a Proportion of Total Male Population			X	X
Males 20-24 as a Proportion of Total Male Population				X
One-Parent Households as a Percentage of All Households			X	X
Owner-Occupied Households as a Percentage of Total Households				X
R^2	0.35	0.65	0.42	0.75

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Technical Appendix to the Atlas

2: Map Creation

2.1 Spatial Data Source

Two sets of spatial boundaries are used within this Atlas; Statistical Local Area (SLA) and Statistical Division (SD). These spatial units form part of the Main Structure of the Australian Standard Geographical Classification (ASGC). SLAs and SDs are administrative units and are updated as the distribution of the population changes. The ASGC is revised on a yearly basis. The boundaries used in this Atlas are as defined by the 1996 Census edition of the ASGC (ABS, 1996) and were originally derived from the Public Sector Mapping Agency (PSMA) digital topographic database.

The smallest units within the Main Structure of the ASGC are Collector's Districts (CD). CD boundaries are aligned to the PSMA digital topographic database, which has an accuracy of between 4 metres in urban areas and 250 metres in remote areas. Both the SLA and SD boundaries are formed by aggregation of Collector District boundaries.

Detailed SLA and SD boundaries were obtained from MapInfo Ltd.

Regions not covered in the Atlas

Neither the Other Territories or the SLA Lord Howe Island are included within this Atlas. The Other Territories consists of three SLAs, Jervis Bay Territory, Territory of Christmas Island, and Territory of Cocos (Keeling) Islands. No data were available for these SLAs.

Lord Howe Island is part of the New South Wales Mid-North Coast SD. It was not included in the maps of New South Wales (Maps 1 – 23) as it is indiscernible at the scale that these maps are reproduced. For completeness, the rate and relative risk figures for Lord Howe Island are provided in Table A3.

Table A3: Smoothed crime rate and relative risk figures for Lord Howe Island

Crime	Rate per 100,000	Relative Risk
Armed robbery	22.65	0.49
Unarmed robbery	6.89	0.12
Residential break & enter	163.90	0.15
Non-residential break & enter	283.81	0.40
Motor vehicle theft	167.60	0.23

Spatial Data Manipulation

For the purposes of this Atlas, the original MapInfo data provides more detail than is required. When individual States are scaled to the size of an A4 page the majority of the detail provided by the MapInfo data is redundant. Also using the raw MapInfo data would increase both file sizes and processing time and therefore hinder the cartographic design process. To reduce the level of detail the MapInfo boundary files were generalised using the Douglas – Peucker algorithm (Douglas & Peucker, 1973) with a weed tolerance of 20m.

2.2 Map Projections & Scales

Features on the Earth's surface cannot be represented on a flat surface without distortions. To minimise these distortions a multitude of mathematical algorithms, called projections, have been developed. A datum is a framework that enables a geographic coordinate system (longitude and latitude) to be defined.

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The framework includes the ellipsoid (a model of the shape of the Earth) and other parameters.

Projections take the geographic coordinates defined by a datum (longitude and latitude) and convert them to cartesian coordinates (X & Y) that can be displayed on a flat surface. The results of any projection are dependent on the model of the shape of the Earth (a datum) that is used to generate the geographic coordinate system.

In 1988 the Intergovernmental Committee on Surveying and Mapping (ICSM) decided that Australia would move to the earth-centred datum called the Geocentric Datum of Australia (GDA). Since this date the States, territories and many Federal Government organisations have been slowly converting their spatial data holdings to this new datum.

This new datum (GDA94) is based on the Geodetic Reference System 1980 (GRS80) ellipsoid. The GRS80 ellipsoid was designed to be a best estimate of the earth's shape globally, and therefore integrates better with international conventions and satellite positioning systems. When a 'Universal Transverse Mercator' (UTM) projection is applied to the GDA94 geographic coordinates a cartesian coordinate system known as Map Grid of Australia 1994 (MGA94) is created.

All the maps within this Atlas have been created using the Map Grid of Australia 1994. The UTM zones used for each State/Territory are listed in Table A4.

The States and Territories of Australia vary considerably on size. To best present these States/ Territories on A4 sized paper required each State/Territory to be drawn using a different scale. Map units shown on the scale bar are kilometres.

Table A4: The UTM zones used to display each State/Territory and capital city

State	UTM zone
New South Wales	55
Sydney	55
Victoria	54
Melbourne	54
Queensland	54
Brisbane	54
South Australia	53
Adelaide	53
Western Australia	51
Perth	51
Tasmania	55

2.3 Colour

Colour is important in cartography, partly because of its aesthetic character, but more because of its utility as an aid to the clarity of a map. The thematic or choropleth maps presented in this Atlas have been designed to present their information as clearly as possible. To this end, considerable thought went into the selection of the colours used to represent the classifications used in both the crime rate maps and the relative crime maps.

Colour can be discussed in terms of three main dimensions, *hue*, *value* and *chroma*. *Hue* is the actual colour, the spectral colours of the rainbow and all the vast number of variants. *Value* is the sensation of darkness (high *value*) and lightness (low *value*). *Chroma* is the actual reaction of the eye so that some colours are brilliant and intense, others are dull, pastel, even 'washed out'; this, in fact, is the amount of hue in the colour.

The general accepted practice when constructing choropleth maps showing a single data series is that changes in the magnitude of the data are represented by changes in *value* with the highest magnitude

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being represented by the highest *value*. The smoothed crime rates are a single data series that are classified into five classes. Each class is represented by different *values* of the colour orange. Orange was selected purely for aesthetic reasons.

The relative crime maps represent a data series centred on a mean crime rate for the state. This series was classified into five classes. One class representing the mean and two classes representing data above and below the mean. To distinguish between data values that are above, below or equal to the mean value three different hues (colours) are used. Data values above the mean are represented by *values* of red and data values below the mean are represented by *values* of green. Values close to the state mean are represented by a grey *hue*.

In an attempt to maintain consistency in colour reproduction all the colours used in this Atlas were selected from the PANTONE MATCHING SYSTEM (see Table A5).

Table A5: Colour Definition for Crime Rate and Relative Crime Maps

Crime Rate Colour Sequence	Relative Crime Colour Sequence
PANTONE 155 CVC	PANTONE 1787 CVC
PANTONE 157 CVC	PANTONE 1767 CVC
PANTONE 158 CVC	PANTONE Cool Gray 5 CVC
PANTONE 159 CVC	PANTONE 570 CVC
PANTONE 161 CVC	PANTONE 569 CVC

2.4 Software Tools

The construction of this Atlas required a wide range of statistical, geographical, graphic design and general computing skills and involved the use of the following software systems;

- SAS (statistical, SAS Institute Inc.)
- Mapinfo 5.5 (geographical information system, Mapinfo Corporation)
- Adobe Illustrator 8.0 and Pagemaker 6.5 (graphic design, Adobe Systems Inc.)

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