No. 209
Economic Transformation and Regional Crime

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Many localities in regional Australia are undergoing economic transformation. In many places, agriculture and mining, together with their related service and processing industries, are being displaced as the dominant economic activity by manufacturing, tourism and recreation, and retirement industries. Economic change affects local communities. Population mobility due to changes in employment disrupts the social structure of localities. This affects the nature and intensity of social interactions among locals, and it influences a community's ability to develop efficient mechanisms of social control. This has a direct impact on local crime rates.

This paper, the third in a series devoted to the study of crime in regional Australia (see Carcach 2000a, 2000b), explores further the effect that interactions between size, location, economic transformation and social attributes have on local crime rates.

Using data for Local Government Areas in the mainland eastern states, this study shows that:
- *Crime rates are lower in localities that are both residentially and socially stable.*
- *Though associated with low local crime rates, factors such as low residential mobility, high average educational level, low income inequality and low unemployment operate differently depending on the population size of local areas and their geographic position relative to major service centres.*
- *Crime rates in small and medium-sized towns that are proximate to a major service centre are highly sensitive to changes in economic and social conditions. This suggests the possibility of crime being diffused from major urban centres to minor surrounding towns.*

This study reinforces the need for localised crime control and prevention initiatives and, more importantly, highlights the need for understanding how the crime patterns of local areas relate to each other.

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Crime does not distribute evenly among individuals, places or geographical areas. Some localities tend to have a large share of criminal activity, while others tend to be relatively crime-free. Attributes of local areas, their environment and characteristics of their residents play a role in shaping local crime rates.

Long-term economic stability leads to lower crime rates but short-term economic fluctuations tend to increase local levels of crime (Rephan 1999). The beneficial effects of long-term stability offset the damaging effects that short-term fluctuations have on levels of regional crime. The magnitude of these effects depends upon the level of residential stability and the population size of an area. The higher the degree of residential stability of a locality and the more stable the local economy, the lower the crime rates (Carcach 2000a).

This paper examines regional differences in crime within an extended social disorganisation framework. It considers the role that structural (economic) change, size of communities and their location relative to major service centres play in explaining regional

differences in crime. The study addresses the following questions:

- Is the effect of economic change on crime rates uniform across localities of different sizes and with different levels of accessibility to major service centres?
- Do residential and social stability mediate the relationship between economic change and crime in a uniform way across localities?

Data and Methods

The unit of analysis for this study was the Local Government Area (LGA). The study included the 497 LGAs of the mainland eastern Australian states (ABS 1996).

Crime rates for LGAs were either obtained directly from published crime statistics (New South Wales Bureau of Crime Statistics and Research 1994–98) or derived from postcode counts of recorded crime (Victoria Police, Queensland Police and South Australia Police, 1994–95 to 1997–98).[1] The crime rates used in this study were based on average counts of crimes over the period from 1994 to 1998, so they roughly correspond to average crime rates for the year 1996. This is not a major problem given the nature of the study. The relationships that may hold between economic change, social disorganisation and local crime are of a permanent nature and are unlikely to experience dramatic change over relatively short periods of time.

Data on actual resident population as well as the other LGA characteristics used to explain regional variation in

violent and property crime rates were either obtained directly or derived from 1996 census statistics (PMP Software 1998).

LGAs were classified into six groups according to the measures of size and accessibility. Table 1 shows the criteria used to define these groups, as well as the number of LGAs classified into each of them.

The relationship between economic change and crime, as well as the mediating role of local stability, was assessed by means of separate regression models for violent and property crime.[2] The dependent variable was the crime rate. The explanatory variables were measures of economic change, residential and social stability, and demographic structure. These also included variables related to the formation of local networks. Change in economic structure was assessed in terms of changes in the location quotients[3] (of employment) for agriculture and mining, manufacturing, and retail trade between 1986 and 1996.

Economic Transformation, Size and Accessibility to Services

Up to a certain extent, size and location influence regional development. Broad sets of economic opportunities accrue to a place by virtue of its size and its access to larger economies (Ghelfi & Parker 1997). These two dimensions are related with the broader set of local processes generating socioeconomic disadvantage, residential stability, quantity and quality of community networks, and local

social capital. The degree of accessibility to larger centres does not have a uniform effect on crime rates across localities of different sizes in Australia.

Decreases in agricultural employment have been shown to be associated with increases in both property and violent crime rates (Carcach 2000a, 2000b). On the other hand, increases in manufacturing activity correlate negatively with crime rates. While the effect that changes in agricultural activity have on property crime rates is uniform across areas, this is not the case for manufacturing activity. The results indicate that for those LGAs classified as either moderately accessible or remote, a change in manufacturing activity results in increasing rates of property crime, irrespective of population size.

In general, rates of violent crime are not sensitive to whether the local economy is dominated by primary industries or not. What matters is whether this share changes over time, and this depends on the size and location of the area, and the relative importance of manufacturing and service industries in the local economy. Increases in the share of manufacturing in local employment lead to increased rates of violent crime. On the other hand, rising crime rates were associated with declines in the relative importance of service industries in the local economy.

Manufacturing

Increases in the share of manufacturing in local employment tend to increase both violent and property crime in the smaller LGAs (i.e. population less than 4,000) irrespective of their location relative to a major service centre. The same effect was observed for medium-sized LGAs (i.e. population between 4,000 and 50,000) that are accessible from a major service centre.

Until recently, many small Australian towns depended heavily on the fate of the agricultural and farming economy. Shifts towards structures

**Table 1:** *Classification of LGAs according to measures of size and accessibility*

Group	Size (population)	Accessibility (ARIA index*)	Number of LGAs
1	Over 50,000	Less than 1.84 (HA)	95
2	4,000–50,000	Less than 1.84 (HA)	105
3	4,000–50,000	1.84 to less than 5.80 (A)	137
4	4,000–50,000	5.80 or over (R)	16
5	Less than 4,000	1.84 to less than 5.80 (A)	98
6	Less than 4,000	5.80 or over (R)	46
Total			497

HA = highly accessible, A = accessible, R = remote
* See DHAC & GISCA 2000.
Source: Australian Institute of Criminology, Regional Crime database, mainland eastern states, 1994–98.

Figure 1: *Effect of a one per cent increase in manufacturing on crime rates, medium and small LGAs, by category of access to services*
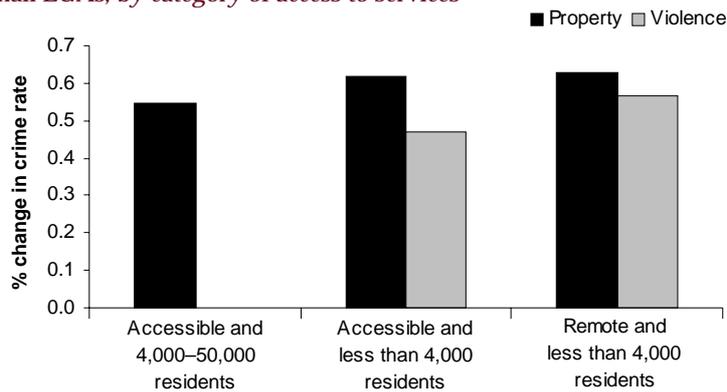
Note: Increases in manufacturing activity do not affect violent crime rates in *highly accessible* LGAs and in *remote* LGAs with *4,000 to 50,000* residents.

Source: Australian Institute of Criminology, Regional Crime database, mainland eastern states, 1994–98.

dominated by service industries seem to result in declines in the rates of both violent and property crime, whereas shifts toward manufacturing seem to be associated with increases in crime. These results can be explained by the fact that manufacturing requires the substantial development of infrastructure and this causes major transformation to local areas. The impact that such transformations make on the local population will influence their decisions regarding out-migration or willingness to mix with the new residents attracted by the new opportunities arising from economic growth.

As shown by the data in Figure 1, economic change does not have a uniform effect on the local levels of crime. Small towns, whether remotely located or not, seem to be more affected by the forces of change compared to large ones. One might speculate that given the reduced size of the population base, local economies are not strong enough to deal with structural adjustment. Note that crime rates in areas classified as either highly accessible (irrespective of population size) or remote with population between 4,000 and 50,000 are not affected by changes in manufacturing activity.

Crime rates in medium-sized towns whose residents have relatively good access to a major service centre are also sensitive to change. Residents of accessible medium-sized towns travel regularly to major service centres

for employment, shopping, health care, entertainment and other activities, all of which takes time, loyalty and identity away from their own locality (Aldrich, Beale & Kassel 1997). The diffusion of crime across communities is an interesting possibility. This may lead to increased crime rates in localities that are adjacent to major service (urban) centres (Heitgerd & Bursik 1987; Osgood & Chambers 2000).

Increases in employment and manufacturing industries are often associated with mass movements of population between smaller and larger (urban) centres (Bardhan & Udry 1999). Areas that are accessible from major service centres and that experience a change in manufacturing activity are vulnerable to population movements, so their communities lose capacity to develop mechanisms of social control.

Residential and Social Stability

Residentially stable areas have lower crime rates than those which experience high residential mobility (see, for example, Veysey & Messner 1999; Carcach 2000a). Measures of social stability (such as the proportion of single-parent families in the locality, income inequality and level of education) explain regional variation in crime (Glaeser, Sacerdote & Scheinkman 1996; Lederman, Loayza & Menendez 1999; Jobes, Donnermeyer & Weinand 1999; Carcach 2001).

Residential stability was measured in terms of the proportion of persons who in June 1996 lived at the same address as in June 1991. As shown by the data in Figure 2, crime rates decline as residential stability increases. Neighbourhood stability facilitates the development of deep and lasting effective relational networks (Bursik & Grasmick 1993).

International research has focused mostly on the roles that racial and ethnic heterogeneity play in explaining neighbourhoods' capacity to exercise social control (see Veysey & Messner 1999 and references therein). However, social stability also depends on other factors related to the functioning of communities such as family cohesion, family structure and composition, income and human capital resources.

The average level of education of the residents of the local area was assessed from the number of

Figure 2: *Effect of a one per cent increase in measures of residential and social stability on local crime rates*
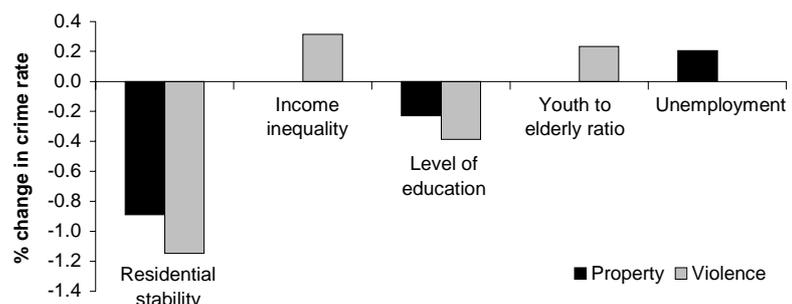
Source: Australian Institute of Criminology, Regional Crime database, mainland eastern states, 1994–98

residents attending an institution of tertiary education per 1,000 residents who left school at the age of 17 or younger. The larger this index, the higher an area's average level of education. Both property and violent local crime rates tend to decrease as the level of education of the resident population increases. As shown by the data in Figure 2, LGAs with high average levels of education are associated with lower crime rates, compared to LGAs with low average educational levels. The higher the level of education among the residents of local areas, the higher is their participation in community activities and their willingness to participate in the solution of local problems (Bursik & Grasmick 1993; Veysey & Messner 1999).

Income inequality was measured from the ratio of the number of low-income residents (i.e. less than $300 a week) to the number of high-income residents (i.e. $800 a week and over). The data in Figure 2 show that local rates of violent crime increased as the inequality index increased. Income inequality did not, however, explain local variation in rates of property crime. These results are consistent with findings from overseas research (Patterson 1991; Fajnzylber, Lederman & Loayza 1999). Income inequality is a source of social heterogeneity (Ehrlich 1973).

Increases in unemployment rates were associated with increases in local rates of property crime. In general, fluctuations in unemployment reflect short-term changes in economic activity (Hale 1998); however, in some areas persistent unemployment may be itself part of the process of structural adjustment. Local unemployment rates are linked to factors such as residential stability and education. Persistent unemployment may lead to out-migration, which causes residential instability and arguably has an impact on local crime rates.

The data in Figure 2 also show that regional variation in violent crime is explained by differentials in demographic structure as

Figure 3: *Net effect of size and relative location on local crime rates*
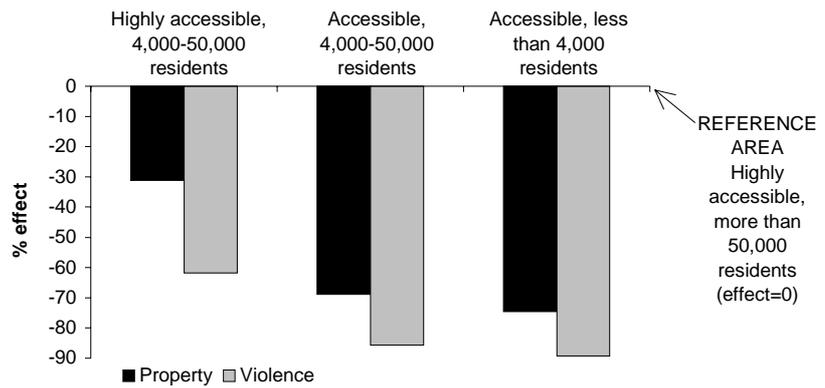
Source: Australian Institute of Criminology, Regional Crime database, mainland eastern states, 1994–98

measured from the youth–elderly ratio.[4] This result is consistent with previous research (see, for example, Osgood & Chambers 2000) but contrary to expectations, this variable was not associated with local rates of property crime. More detailed analysis found that this variable had an effect on violent crime rates only in small towns that are accessible from a major service centre (i.e. accessible LGAs with less than 4,000 residents). This result seems to give support to the hypothesis of diffusion (Cliff et al. 1981).

Size and Location Effects are Persistent

Size and location affect crime rates even after controlling for the effects of factors such as economic change, residential stability, income inequality, education and demographic structure.

Three types of LGAs had crime rates below the crime rates for highly accessible LGAs with more than 50,000 residents (Figure 3):

- highly accessible with population between 4,000 and 50,000 residents;
- accessible with population between 4,000 and 50,000 residents; and
- accessible with population less than 4,000 residents.

Crime rates for *remote areas*, irrespective of their size, were not statistically different to the rates for *highly accessible LGAs with more than 50,000 residents*.

Economic Change and Social Disorganisation Factors Do Not Operate Uniformly Across Local Areas

Many localities in regional Australia are undergoing economic change. Natural factors such as drought, flooding and salinity, as well as a variety of economic factors have caused dramatic changes to farming in Australia. During the 10 years between 1980 and 1990, national farming income decreased by 23 per cent (Bureau of Industry Economics 1993) and about 10,000 family farms across Australia ceased operating (ABARE 1993, 1995). According to the latest census of population and housing, 2,691,763 Australians lived in rural areas which, to a certain extent, are dependent upon the success (or failure) of the farming families who encircle their communities (ABS 1997). Farm businesses generate indirect employment in towns throughout country Australia via their expenditure on farm inputs and farm household goods and services (Garnaut 2000).

There is strong correlation between population and employment. The agricultural and mining sectors, and their related service and processing industries, are still the dominant activities in many country areas. This is despite a considerable reduction in both the level and share of total employment in the primary industry sectors due to growth in

manufacturing, tourism, recreation and retirement industries. In areas where there has been little diversification into other industries, the population has declined in the local towns as well as on farms (Garnaut et al. 2000).

Technological and economic changes in the rural sector have resulted in fewer employment opportunities, which in turn has led to reduced demand for goods and services. The wide differences in opportunities and standards of living between rural and urban areas that have arisen from these changes make people, particularly the young, migrate out of country areas. This contributes to an older age structure in rural towns and localities (Hugo 2000).

It is clear that the nature and magnitude of economic and technological change affects social interaction among locals, participation in local activities, migration, and employment opportunities. The social and economic role of localities may change. Small localities, not necessarily remote ones, may be less successful in coping with these processes, which may weaken communities' ability to regulate social norms and behaviours of residents (Bendtro, Brokenleg & van Backim 1990; Aldrich, Beale & Kassel 1997; Gallaher 1980; Hobbs 1995).

Economic change affects the functioning and dynamics of local communities beyond its impact on industrial or employment structure. In- or out-migration, or both, may be one result from such a change. Increasing mobility changes the social structure (Routledge & von Amsberg 1999), which has a negative effect on the quantity and quality of interactions among community members (Weening, Schmidt & Midden 1990). The nature and intensity of social interactions influence a community's ability to develop efficient social networks and mechanisms of social control. This link is crucial to an explanation of local variation in crime using concepts from social disorganisation theory (Sampson & Wilson 1995; Elliot et al. 1996; Sampson, Raudenbusch & Earls 1997; Veysey & Messner 1999).

Residential Stability

Residential stability was associated with declines in local crime rates (refer to Figure 2) but, as the data in Table 2 show, this was not so for all types of areas. In small, accessible LGAs, a one per cent increase in the measure of residential stability led to increases in the rates of violent crime, but did not have an effect on the rates of property crime. These findings suggest the possibility of processes of crime diffusion that may be operating from major urban centres toward proximate small towns.

In remote LGAs with less than 4,000 residents, a one per cent increase in residential stability led to a five per cent decline in the rate of property crime (Table 2). This indicates that small isolated towns are more vulnerable to changes in population than larger and more accessible places.

Social Stability

Property crime rates in remote localities with less than 4,000 residents, and in highly accessible LGAs with between 4,000 and 50,000 residents, were particularly sensitive to variations in income inequality (Table 2).

Improvements in education are associated with declines in crime rates. Violent crime in small remote localities and property crime in highly accessible medium-sized LGAs were the exception. In these locations, crime rates increased as income inequality increased (Table 2).

These results confirm previous findings about the vulnerability of remote small towns to changes in their social fabric as a result of economic transformations. As such, residents of these communities seem to have lower efficacy in dealing with social change than the residents of larger and less isolated areas.

Conclusion

This paper has examined the role that economic change, size and location play in shaping local crime rates. These results suggest that:

- local levels of crime are affected in different ways by structural change;
- it is not necessarily true that the crime rates in remote small towns are more sensitive to economic change and derived social problems when compared to other types of towns;
- changes in economic activity have a stronger effect on the crime rates of small and medium-sized towns located near major (urban) service centres, compared to smaller and more isolated localities or larger towns;
- residential stability, education and income equality contribute to declines in both property and crime rates; however,

Table 2: *Effect of residential stability, income inequality and education on local crime rates**

Factor and type of LGA	Net effect of one per cent increase in social organisation measures	
	Property crime	Violent crime
Residential stability		
Accessible and less than 4,000 residents	No effect	+3.8%
Remote and less than 4,000 residents	–4.5%	No effect
Other types of LGAs	No effect	No effect
Income inequality		
Highly accessible and 4,000–50,000 residents	+35.0%	No effect
Remote and less than 4,000 residents	+32.0%	No effect
Education		
Highly accessible and 4,000–50,000 residents	+0.5%	No effect
Accessible and 4,000–50,000 residents	–0.4%	–0.6%
Accessible and less than 4,000 residents	–2.3%	No effect
Remote and less than 4,000 residents	–2.5%	+1.3%

* Relative to the crime rate of highly accessible LGAs with more than 50,000 residents
Source: Australian Institute of Criminology, Regional Crime database, mainland eastern states, 1994–98.

there are localities, in particular small towns close to major (urban) service centres, where these factors tend to operate in the opposite direction—this suggests the presence of crime diffusion from major localities to minor localities; and

- size and location matter—it is clear that different types of communities react differently toward economic change.

These results have important implications for crime prevention and control at the community level:

- context is an important factor to be taken into consideration when designing crime prevention programs for local areas—a single set of crime prevention measures might not work across all types of localities;

- the study of the relationships between the social and economic factors within and between localities is an important step in understanding processes of crime displacement and diffusion; and

- small and medium-sized localities that have good access to major service centres are a priority, as they seem to absorb the outcomes of processes taking place in major urban centres and in minor remote towns.

Acknowledgments

Notes

1. Postcode-level data were converted to LGA-level data using concordance rules obtained from the Australian Bureau of Statistics.
2. Details about the specification of the model and its testing are available from the author on request.
3. The location quotient is calculated as the percentage that an industry contributes to the total employment in a region divided by the percentage it contributes to the total employment in the State.
4. Number of persons 16–24 years to number of persons 65 years and over.

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