

Trends & issues

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Foreword | *It is well-documented that crime rates and the prevalence of mental illness are both higher in areas with pronounced levels of social disorganisation. Far less is known about the association of disadvantaged community conditions with criminal behaviour and mental illness. This study aimed to identify the influence of residential location (characterised by degrees of socioeconomic disadvantage, residential mobility, ethnic heterogeneity and internal inequality) on the prevalence of schizophrenia and incidence of arrests in urban and rural postcode areas of Western Australia between 1985 and 1996. It found that the socio-structural characteristics of an area were related to the incidence of arrest, the prevalence of diagnosed schizophrenia and the incidence of arrest of diagnosed schizophrenics. The results suggest that schizophrenia did not have a multiplier effect on arrest levels but that the same socio-structural characteristics that generated high arrest rates for individuals with schizophrenia also generated high arrest rates for the population as a whole. These findings have important implications for policy and program development in both criminal justice and mental health. They suggest that geographic areas characterised by high levels of social disorganisation require more investment in crime prevention, mental-health services and criminal justice responses.*

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Schizophrenia and offending: area of residence and the impact of social disorganisation and urbanicity

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Schizophrenia is the most common of the psychotic disorders and is characterised by fundamental distortions of thought (delusions), perception (hallucinations) and emotional response. It is a disabling illness, with a lifetime population prevalence of 0.5 to 1.7 percent (Jablensky et al. 1992). The estimated one-month treated prevalence of psychotic illness in Australia is 4.7 per 1,000 estimated resident population aged 18–64 years (Jablensky et al. 2000). The place in society and the care of people with severe mental illness such as schizophrenia constitutes one of the thorniest issues in public health and social policy worldwide. In recent years, changes in the management of this disorder have made it possible for an increasing number of individuals with schizophrenia to lead semi-dependent or independent lives in the community. However, irrespective of the deinstitutionalisation of mental health care and the concomitant focus on the human rights of the mentally ill, the capacity of communities and of society at large to deal with emerging problems of marginalisation, homelessness, poverty, victimisation and criminal behaviour has been put to a severe test. This has been compounded by widespread stereotyping and stigmatisation of individuals with mental illness. The 1996 General Social Survey (US) revealed 'an underlying negative attitude toward persons with mental health problems, an exaggeration of the impairments or "threat" associated with these disorders, and a startling negativity toward individuals with substance dependence problems' (Pescosolido et al. 1999: 1345). Information on the prevalence of police contact for individuals diagnosed with schizophrenia and other psychiatric disorders is of vital importance for public policy. Resources are available in courts and corrective services to identify and provide support for individuals with mental health problems. However, the adequacy of service levels and their geographic coverage is unknown. There is a corresponding need to identify trends in the demand for services over time. These issues are increasingly important in the context of deinstitutionalisation, with some arguing that inadequate specialist and community support



has led to the criminalisation of mental illness (Coid, Lewis & Reveley 1993). However, little is known in Australia about the social ecology of offending by persons with schizophrenia.

Internationally, revised social disorganisation models have been increasingly called upon to explain associations between disadvantaged community conditions and criminal behaviour. Social disorganisation has been conceptualised as the inability of a community to realise the common values of its residents and maintain social controls (e.g. Silver 2000). Pioneering studies of community effects in Chicago have examined the impact of social disorganisation on *both* schizophrenia and crime. Faris and Dunham (1939) found high rates of schizophrenia in inner city areas and proposed that a deficiency in social integration combined with individual characteristics to produce these observed rates. Furthermore, in Connecticut, Hollingshead and Redlich (1954) found that rates of schizophrenia prevalence were highest in areas of lowest social class. These authors found no evidence that the prevalence of treated schizophrenia was associated with personal geographical mobility or with a downward drift in social status. However, they found that patients in areas of lower social class were more likely to come to the attention of a psychiatrist through coerced legal referral and more likely to receive public, rather than private, treatment. For many years, there has been an expectation that needs for services will be connected with neighbourhood characteristics (Goldsmith, Holzer & Manderscheid 1998). A recent study (Lögdberg et al. 2004) found that the prevalence of schizophrenia covaried with indices of social disorganisation. Nevertheless, the relative importance of individual and area-based factors in determining needs has been questioned (Allardyce & Boydell 2006). Recently, several studies have shown that area characteristics significantly influence schizophrenia prevalence, even though they are attenuated when a range of individual and household factors are included in the predictive models

(Goldsmith, Holzer & Manderscheid 1998; Silver, Mulvey & Swanson 2002; Van Os et al. 2000).

Research into the distribution of crime across areas also has a long history, and social disorganisation theory has made an important contribution to our understanding of the ways in which neighbourhoods influence crime rates (Shaw & McKay 1942). Key structural correlates include economic deprivation, residential mobility and ethnic heterogeneity, which are hypothesised to destabilise neighbourhood cohesion, trust and regulatory capacity. Following a period of disinterest, a revised social disorganisation theory has re-emerged strongly in criminology over the past 20 years (Bursik & Grasmick 1993a; Sampson, Raudenbush & Earls 1997). The revised theory has introduced direct survey measures of community social cohesion and resident willingness to intervene, as well as the structural measures available for this study.

There is little research on whether social disorganisation and other community factors have a differential impact on offending by persons with schizophrenia compared with those without a mental illness. Silver (2000) hypothesised that potential guardians were less likely to intervene directly to control disruptive behaviour by residents who are mentally ill than they were for other residents. The hypothesis was linked with: stigma attached to mental illness and perceptions that the mentally ill were dangerous; and beliefs that mentally ill persons were best managed by family members or officially sanctioned experts such as police. Socially disorganised communities may therefore be particularly lacking in their ability to control mentally ill residents.

In one of the most ambitious studies of the association between violence and mental illness, the MacArthur Study (Steadman et al. 1998) found that the prevalence of violence committed by patients and non-patients living in the same neighbourhoods was similar – in the absence of substance abuse. Silver's (2000) study used data from the MacArthur Study, and found that neighbourhood disadvantage

and mobility predicted violence after hospital release, even when individual-level factors were taken into account. However, while area of residence may affect timely access to appropriate services, Silver (2000) found that violence was not mediated by the availability of social support.

Social disorganisation has been a productive basis for recent international research. The theory has traditionally assumed that the influence of local-area economic characteristics is mediated by residential stability, heterogeneity and the regulatory capacity of these areas. However, within this framework, there is debate about the extent to which disadvantage and inequality have direct effects on crime (Bursik & Grasmick 1993b).

Aims

The aims of this study were to identify the influence of area of residence on arrests and on recorded diagnoses of schizophrenia. Area of residence was characterised according to indicators of social disorganisation, inequality and urbanicity. Specific questions include:

- What is the prevalence of schizophrenia and arrest in Western Australia, and in different types of areas within Western Australia?
- Does area of residence influence the joint prevalence of arrest and schizophrenia?

Methods

This study takes advantage of prior record linkage between two population-based registers – the Western Australian Mental Health Information System and the Western Australian Arrestee Database. An independent third party, the Data Linkage Unit within the Department of Health, Western Australia, undertook the linkage, ensuring that only anonymised data were provided to the researchers.

The Mental Health Information System commenced in 1966 and covers inpatient and ambulatory care contacts with the range of public mental health services across Western Australia, as well as inpatient contacts at private hospitals.

Arrestee information is also available state-wide, and comprises charge data and basic sociodemographic information on individuals arrested between 1985 and 1996.

Study populations

Three study populations were identified for analysis: all individuals on the Mental Health Information System with a diagnosis of schizophrenia; individuals on the Arrestee Database who were charged between 1985 and 1996; and individuals with both a schizophrenia diagnosis and an arrest recorded between 1985 and 1996.

Diagnostic classification

Psychiatric disorders were classified using the diagnosis made at the time of the last contact recorded on the mental health register. If this diagnosis was not available, the most recent diagnosis recorded on the register was used. The ICD-9 diagnostic classification system (World Health Organization 1978) was used. In this arm of the study, diagnoses were limited to schizophrenia (ICD-9 295). The reliability of register diagnoses on the mental health register, including the best method of extracting a register diagnosis for epidemiological research, has been validated independently (Jablensky et al. 2005).

Area-based measures

Population data and indicators of social disorganisation, inequality and urbanicity were taken from the 1991 Census of Population and Housing, the approximate mid-point of the study period. Disadvantage, inequality, mobility, ethnic heterogeneity and urbanicity were constructed at the postcode level. Postcodes were coded into quartiles for each indicator except for *urbanicity*. This was coded into three levels rather than four: towns or rural areas with a population of less than 8,000; towns with populations from 8,000 to 20,000; and cities and towns with populations of over 20,000. Most individuals were assigned to the last category because 74 percent of Western Australians live in metropolitan Perth (ABS 2007). *Socioeconomic disadvantage* was measured using the

1991 Socio-Economic Indexes For Areas (SEIFA) Index of Relative Socio-Economic Disadvantage (ABS 1994). In addition to the SEIFA score, a measure of *within-postcode inequality* was generated, by calculating the variance of the SEIFA scores for collection districts within each postcode. *Residential mobility* was based on the percentages of householders who were at a different address five years ago, and *ethnic heterogeneity* was determined using the formula: $1 - \sum(P_i^2)$, where P_i are proportions and i is defined according to the factors: (1) percentage whose first language is not English; and (2) percentage who are Indigenous. This measure is at its greatest when the diversity within a population is highest.

Location of residence and of offender

The relevant postcode for schizophrenia prevalence was postcode of residence at the time of first contact with mental health services within the prevalence period. For arrest prevalence and also for analysis of the linked schizophrenia-arrest cases, the relevant postcode was postcode of arrest for the time of first arrest in the prevalence period.

Prevalence analysis: definitions and population denominators

The analysis that follows is based on the prevalence of schizophrenia diagnosis, arrest, and both schizophrenia and arrest for the period 1985–96. For arrest prevalence rates, and for the linked arrest and schizophrenia diagnosis rates, the

denominator was the total population in each postcode. For rates of schizophrenia diagnosis prevalence, the population aged 15–54 years was used, matching the age group used in the schizophrenia diagnosis numerator.

Results

The first aim of the study was to separately determine the prevalence of arrest, the prevalence of schizophrenia and the prevalence of arrest in persons diagnosed with schizophrenia in Western Australia for the period 1985–96. The state-wide findings are shown in Table 1.

Table 1 shows the high prevalence of arrest in Western Australia. Over 12 years, 14.5 percent of the population had been arrested. *Schizophrenia diagnosis*, by comparison, was much less prevalent, and the *joint prevalence of having a diagnosis of schizophrenia and an arrest* was rarer still.

Offence-specific arrest prevalence is shown in Table 2. Specific forms of arrest prevalence add up to a higher figure than total prevalence for persons arrested because an individual may appear in the prevalence column for more than one offence category. Serious traffic offences – dominated by drink-driving charges – made a major contribution to total arrest prevalence and were more than three times the rate of offences against the person.

The current study was particularly focused on the extent to which urbanicity and

Table 1: Population prevalence of arrest, of a diagnosis of schizophrenia, and joint prevalence of having an arrest and a diagnosis of schizophrenia in Western Australia, 1985–96 (rate per 1,000 relevant population)

	Persons arrested	Persons with a diagnosis of schizophrenia	Persons with a diagnosis of schizophrenia who were arrested
All persons	145.3	2.0	1.1
Males	227.1	2.9	1.8
Females	64.5	1.3	0.3

Table 2: Broad offence category for arrest prevalence in Western Australia, 1985–96 (rate per 1,000 total population)

	Offences against the person	Property offences	Drug offences	Traffic offences	Other offences
All persons	21.0	53.2	27.3	68.8	35.5

structural antecedents of social disorganisation were correlates of arrest, schizophrenia diagnosis, and schizophrenia diagnosis and arrest. To show the influence of area characteristics most clearly, figures 1–3 are normalised so that the value of the lowest level of each variable is set to 1 and the values of successive levels are expressed as rate ratios with respect to this reference point. The charts allow easy visual assessment of the relative influence of each variable on a single prevalence measure, and the sensitivity of each prevalence measure to variations in a single variable. In short, they permit comparisons to be made horizontally and vertically.

Figure 1 shows that *prevalence of arrest* was correlated with the indicators of social disorganisation at postcode level. In particular, the rise in arrest prevalence is strongest in the highest quartile of each indicator. An exception to this pattern is urbanicity where there is little variation in arrest prevalence by urban size. Postcodes within the Perth metropolitan area and country towns with a population of 20,000 or more exhibited lower rates of arrest than postcodes associated with smaller towns. This pattern held for most offence categories (not shown) except for offences against the person, where there was a gradual but very small rise in prevalence with increasing

urban size. Most notably, for disadvantage, arrest prevalence is almost five times as high in the highest quartile as it is in the lowest quartile.

Figure 2 indicates a much shallower gradient for urbanicity and social disorganisation factors at postcode level in the case of *schizophrenia prevalence*. In particular, there is little difference in prevalence for different quartiles of residential mobility. Urbanicity has a modest effect, although there is a more consistent gradient than there is for arrest, with prevalence increasing slightly with increasing urban size. Postcode inequality has a more even gradient for schizophrenia

Figure 1: Arrest prevalence rate-ratios, 1985–96

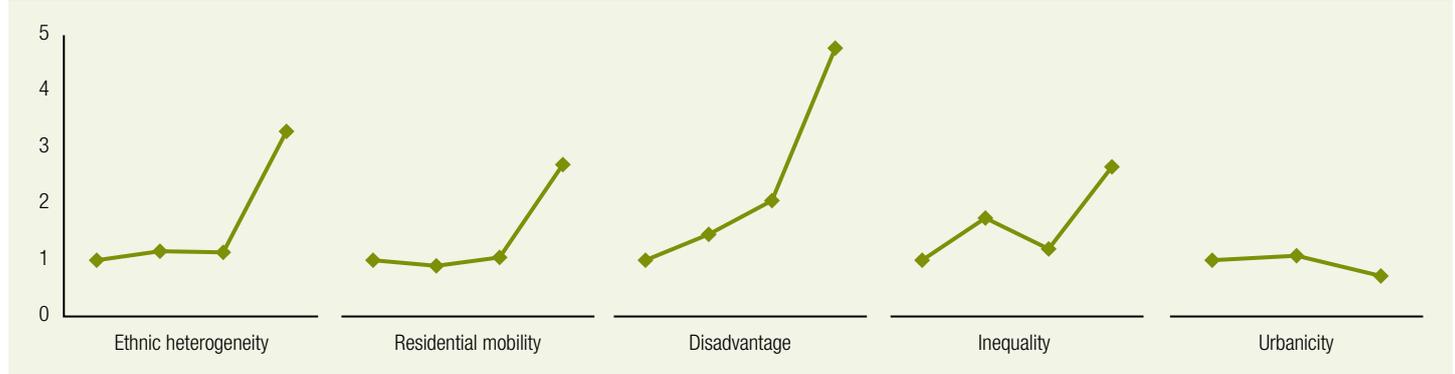


Figure 2: Schizophrenia prevalence rate-ratios, 1985–96

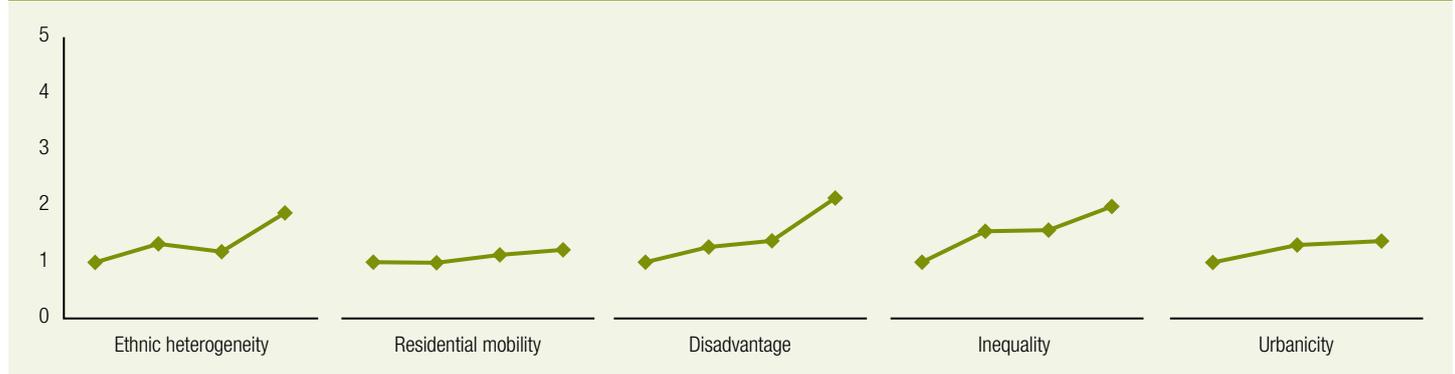


Figure 3: Rate-ratios for the joint prevalence of schizophrenia diagnosis and arrest, 1985–96



Note: In figures 1–3, ethnic heterogeneity, residential mobility, disadvantage and inequality are plotted in increasing quartile order. Urbanicity is plotted in increasing area size.

prevalence, although the prevalence ratio between the highest and lowest quartiles is not as great as it is for arrest. Schizophrenia prevalence doubles as postcodes increase from quartile 1 to quartile 4 for ethnic heterogeneity, disadvantage and inequality.

The *joint prevalence of arrest and schizophrenia diagnosis* is shown in Figure 3 – these charts more closely resemble the arrest profiles than the schizophrenia profiles. As for arrest, the largest differences across postcodes occur between the highest quartile of each indicator and the other three. Furthermore, there is little evidence of a multiplier effect for the joint distribution of schizophrenia and arrest prevalence. The rate ratios for arrest, and for the joint distribution of arrest and schizophrenia diagnosis, are comparable with each other.

The study also examined the temporal relationship between schizophrenia diagnosis and arrest across postcodes. For the majority of individuals in Western Australia with both an arrest and a diagnosis of schizophrenia, the arrest will precede the schizophrenia diagnosis (Jablensky et al. 2004). This study has examined sequences of arrest and diagnosis across postcodes, and found some inconsistency and complexity in the results across different indicators of social disorganisation. While the tabulations are not presented here, there is some evidence of a shift in sequence across areas, with diagnosis being more likely to precede arrest as postcodes become more socially disorganised. However, this matter requires further research.

Discussion

Measurement issues must be considered when examining the study findings. For schizophrenia, treated prevalence is lower than true prevalence. However, national prevalence data suggest that the percentage living in marginalised circumstances not in contact with mental health services over a one-year period is low (Jablensky et al. 2000).

For arrest, measurement is also problematic. It has been claimed that crime is less likely

to be reported to police in rural areas than in metropolitan areas, although the evidence is equivocal. Conversely, the detection and arrest of offenders may be more effective in regional areas, as suggested by the correspondingly higher ratio of police to population. For example, Harding et al. (1997) showed that the ratio of arrest prevalence to reported crime in non-metropolitan regions of Western Australia was approximately double the ratio for the Perth metropolitan region. Overall, this means that patterns of arrest do not necessarily correlate strongly with patterns of offending. Similar distortions of arrest patterns have also been suggested regarding the mentally ill, in comparison with other citizens (Robertson 1988). On balance, the results of this study inevitably reflect the relative availability of police and mental health services, and their labelling potential.

This study found a high prevalence of arrest in Western Australia, with 14.4 percent of the population arrested over a 12-year period. The prevalence of schizophrenia was low, and the joint prevalence of having a diagnosis of schizophrenia and an arrest, at 0.1 percent, was rarer still. The results are consistent with a recent review of major mental disorders and violence, which found that only a small percentage of violence was attributable to major mental disorders even though violence risks for individuals with these disorders were elevated (Joyal et al. 2007).

In this study, arrest prevalence was measured over a 12-year period in contrast to typical one-year prevalence calculations. Longer prevalence periods illuminate more clearly the relatively large percentage of the general population that has been charged with a criminal offence. In the context of international research, the results are not surprising. For example, research in the United Kingdom revealed that 33 percent of males and nine percent of females born in 1953 were convicted of an offence by the age of 46 (Prime et al. 2001). Australian studies have revealed high rates of juvenile contact with authorities. Morgan and Gardner (1992) and Skrzypiec and Wundersitz (2005) found that between

16.7 and 21.1 percent of different juvenile cohorts in South Australia had some form of police contact up to the age of 18 years.

Finally, the study found that the socio-structural characteristics of areas are associated with the prevalence of arrest, the prevalence of a diagnosis of schizophrenia, and the joint prevalence of schizophrenia diagnosis and arrest. However, further analysis of a full range of influences is required to determine whether the correlations are driven by individual-level or area-level generating mechanisms for crime or schizophrenia.

The findings indicate that the same area or community processes that generate high arrest rates for individuals with schizophrenia produce high crime rates for the general population. For example, homelessness, drug and alcohol abuse, unemployment, and lack of family support are associated with criminality and victimisation for all citizens, not only those with mental disorders. However, the Low Prevalence (Psychotic) Disorders Study (Jablensky et al. 2000) showed that these 'burdens of everyday life' are far more prevalent in individuals with psychoses than in the general population. Only 19 percent of persons with psychosis were currently employed, 85 percent were on a government pension or other social benefit, 59 percent had impaired social functioning and 49 percent had impaired capacity to undertake basic household activities. The self-reported rate of victimisation in the past year was 18 percent.

Conclusion

Social disorganisation indicators have maximum impact on arrest prevalence at the highest quartile level. This is consistent with studies by Gordon (1967) and Bursik and Grasmick (1993a). This finding held true for both groups of offenders. Thus, even though the joint prevalence of schizophrenia and offending is rare, rates of offending in

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persons with schizophrenia are influenced by area characteristics similar to those that influence rates in the general population. People with schizophrenia are more likely to be exposed to these influences and to other risk factors for offending behaviour. Crime prevention considerations point to a greater need for services for people with serious mental illness living in areas characterised by social disorganisation or inequality.

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