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CRIME AND FEAR

Evidence from Australia

VANI K. BOROOAH and CARLOS A. CARCACH*

This study, which is based on unit record data from the Queensland Crime Victim Survey of 1991, conducts, using a common set of explanatory variables, a joint analysis of the probabilities of becoming, and of being afraid of becoming, a victim of personal and of housing crime. It then proceeds to analyse the relationship between previous victimization experience and fear of crime (personal and housing). Its broad conclusion is that unlike personal crime, where reducing the fear of crime—over and above concern with reducing the incidence of crime—might be an important policy objective, the policy goal for housing crime should, primarily, be to reduce its incidence. This is because, for personal crime, variations in the probability of being afraid greatly exceeded variations in the risk of becoming a victim: fear of personal crime thus emerges as a problem in its own right. On the other hand, for housing crime, incidence is an accurate reflection of fear. It also concludes that lack of neighbourhood cohesion, neighbourhood incivility and perception of relatively high neighbourhood crime levels contribute significantly to the probability of being afraid of crime and to the risk of victimization. It suggests that, in policy terms, community action might be a more effective means of combating both crime and the fear of crime than a 'leave it to the police, that's what they get paid for' attitude.

Crime survey data shows that young working class males, who tend to spend a considerable part of their leisure time outside the home, are most at risk from being victims of personal crime but would admit to very little fear; on the other hand, women and the elderly who profess great fear of crime are not greatly at risk from being victims of crime. This apparent paradox has been explained in terms of the perceived vulnerability of women and the elderly (Hale 1996); the failure by crime surveys to capture the full extent of women's victimization (Sacco 1990); and, in the case of the elderly, problems with measuring fear of crime (Fattah and Sacco 1989). Previous studies on fear of violent crime have been reported in Taylor and Hale (1986) and Box *et al.* (1988) for Britain, in Murthy and Rao (1989) for the USA and in Carcach *et al.* (1995) for Australia. Analysis of victims of crime—both against the person and against the home¹—has been provided *inter alia* by Mayhew and Maung (1992). Several researchers have also examined the relation between levels of crime and the fear of crime. In general, the conclusion has been that people who live in high crime areas are more fearful (McPherson 1978; Skogan and Maxfield 1981).

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¹ Hereafter, crimes against the person are referred to as 'personal crime' and crimes against the home as 'housing' crimes.

Analysis of this relationship based on unit record data has, however, produced a mixed bag of results: Mawby and Gill (1987) found a positive correlation between fear and victimization risk, whereas Box *et al.* (1988) found that this correlation was negative; on the other hand, Carcach *et al.* (1995) found no direct association between fear and victimization risk. The latter study suggested that the relationship might be mediated by other factors, especially educational level. They found that an 'improvement in educational level will probably make the person feel safer through consequent improvement in his/her life conditions, in such a way that is capable of offsetting the effect of personal crime experiences' (p. 284). The maintained hypothesis in these studies was that increases in the risk of being a victim of crime raised levels of fear about crime. However, in the context of the effects of crime on systemic forms of control in communities, Bursik and Grasmick (1993) suggested that the relationship might run in the opposite direction. They argued that high levels of fear, by weakening the informal social control processes that inhibit crime, served to raise levels of crime and delinquency.

Although burglary is, typically, identified as the crime that causes most anxiety (Skogan and Maxfield 1981; British Crime Survey 1994; Hough 1995), the fear of housing crime has not received much attention in the literature. One of the few studies on this topic, Warr (1987), showed that fear of burglary was enhanced by fear of the offences (such as: assault; threats with a weapon; rape) that might occur as a corollary of burglary. Hale *et al.* (1994) found fear of burglary to be positively associated with: being female; being a resident of inner-city areas with high levels of incivility; having been a victim previously or having knowledge of others' victimization experiences; the risk of crime in the area of residence; and not having friends in the neighbourhood. Nikolic-Ristanovic (1995), analysing the fear of crime in Belgrade, found that the incidence of crime; the respondent's age; and his/her direct experience of victimization, all contributed to the fear of theft and of burglary. McCoy *et al.* (1996) when citing previous research pointed out that 'the elderly have higher levels of fear if asked about being victimized in the street or by crime in general . . . this finding disappears or is reversed when they are asked about being victimized in their home' (p. 193).

Against this background, this paper reports on a quantitative study of the relationship between the fear of crime and the risk of victimization, based on a multivariate analysis of the factors affecting these two phenomena. The first purpose of the study was to carry out an analysis of the probability of:

- being afraid of personal crime
- being afraid of housing crime
- being a victim of personal crime
- being a victim of housing crime

The analysis of these probabilities is based on data contained in the 1991 Queensland Crime Victims Survey (Queensland Government Statistician's Office 1992). The use of this data permitted a common set of variables to be employed in explaining the four probabilities cited above. In effect, this meant that the four probabilities could be drawn together by a common thread, thereby making it possible to draw conclusions about the *differential* impact that a particular variable (say, gender or age) had on the probabilities of being afraid of crime (both personal and housing) and on the probabilities of being a victim of crime (both personal and housing).

The second purpose of the study was to investigate the relationship between *previous experience* of victimization and *subsequent* levels of fear. According to Lewis and Salem (1986) and Hale (1996) the 'victimization' perspective to the fear of crime remains unsubstantiated. However, it is very likely that this is due to the fact that both victimization and fear are explained by the same factors.² Given this, the inclusion of previous victimization as an *additional* explanatory variable for explaining the fear of crime would not, because of the collinearity between victimization and the other explanatory variables, make a significant contribution to explanatory power. Consequently, in studying the fear of crime, attempts to control for previous victimization would, most likely, lead to the conclusion that the fear-victimization relationship was weak.

This study adopted an alternative method for investigating the previous-victimization/fear relationship. This was to examine the correlation structure between the two phenomena, which was equivalent to performing an analysis on the bivariate distribution defined by these variables. The correlation coefficient could be interpreted as a measure of the potential impact that the experience of having been a victim would have on feelings of safety, both outside and within the home. If, further, one allowed the correlation coefficient to depend upon the same set of variables used to explain the probabilities of fear and victimization, the differential impact of these variables on the relationship between fear and previous victimization could be assessed.

Against this statement of purpose, the organization of this paper is as follows. The next section describes the database used and the construction of the variables relating to victimization and to fear; section 3 contains a detailed discussion, against the backdrop of previous research on fear and crime, of the reasons for selecting the particular set of explanatory variables employed; section 4 sets out the statistical models used for analysing the probabilities of fear and of victimization and for analysing the effects of having been a victim upon levels of fear; sections 5 and 6 present the results for estimating the probabilities of being afraid, and of being a victim, for, respectively, personal and housing crime, while section 7 presents results from estimating the previous-victimization/fear relationship; section 8 then concludes the paper.

Quantifying Fear and Victimization

The Government Statistician's Office (GSO) of Queensland, Australia conducted, for 1991, a Crime Victims Survey at the behest of the Queensland Criminal Justice Commission and it is upon data from this survey that the study, reported in this paper, is based. Details of the survey may be found in Queensland Government Statistician's Office (1992) but, in brief, it used a stratified, multistage, clustered design to obtain from an overall sample size of 7,530 households in the state, a total of 6,315 completed interviews. The scope of the survey was persons over the age of 15 years and resident in private dwellings.

The survey collected *inter alia* data on victimization experiences for the following crimes against the person:

² The identification of which is, as stated above, the first purpose of this study.

- deliberate use of a weapon
- attack or assault
- threats of force or violence
- theft and attempted theft
- deliberate damage to property or tampering by vandals or thieves

Regarding households, data were gathered for a number of property offences of which the following were of relevance to this study:

- the home was broken into and something was stolen or attempted to be stolen
- the home was broken into and vandalized
- an attempt was made to break into the home with intent to steal or to cause damage

For each of the above offences, the respondent was asked if he/she or his/her home had, during the 12 months prior to the survey, been a victim. On the basis of these answers, dichotomous variables were constructed for victimization status. For personal crime, the variable was defined as taking the value unity if the respondent had been, in the 12 months prior to the survey, a victim of any of the personal offences listed above and zero otherwise.³ For housing crime, the dichotomous variable was defined as taking the value unity if the household had been, in the 12 months prior to the survey, a victim of any of the above offences against the home.

The degree of fear of personal crime was inferred from answers to a question on how safe people felt when walking alone after dark in their area and the degree of fear of housing crime was inferred from answers to a question on how safe people felt at being alone at home at night. Answers to both these questions were categorized as follows:

- very safe
- fairly safe
- not very safe
- not at all safe

Persons who felt 'very safe' or 'fairly safe' were regarded as being 'not afraid' of crime (personal and/or household crime, depending on the question); those who felt 'not very safe' or 'not at all safe' were regarded as being 'afraid' of crime (again, personal and/or household crime, depending on the question). A dichotomous variable, which took the value unity if the respondent was afraid of crime and zero if the respondent was not afraid, was then constructed in order to capture these definitions.

Ferraro and LaGrange (1987), among others, have expressed concern about the use of answers to the question relating to personal safety when walking alone after dark, to measure the fear of crime. Their concern stems from the fact that the fear (or lack of it) that this question tries to elicit may be due to aspects other than the fear of criminal attack: indeed, crime is not even mentioned in the question. Notwithstanding these very real concerns, responses to this question continue, in studies of crime, to be the most usual means of measuring the fear of personal crime (Taylor and Hale 1986 *inter alia*).

³ Such an aggregate measure of victimization combines crimes in which the victim and the offender come into direct contact with other 'non-contact' predatory crimes. However, given that a global measure of fear of crime was used, this general measure of personal victimization status was suitable for this study.

The measure of the fear of housing crime, adopted in this study, is prey to the same concerns, expressed above, about the fear of personal crime: the fear of being alone at home at night might also stem from factors wider than the fear of criminal attack and, as with the previous question, no explicit reference to crime is made in the enquiry about fear. As pointed out in Hale (1996), the question is tapping judgements about crime rather than the emotional state of fear. Despite these problems, this was the only question relating in some way to the—relatively neglected⁴—topic of the fear of housing crime.

Factors Affecting the Probabilities of Being a Victim and of Being Afraid of Crime

Since the purpose of this study was a joint analysis of the probabilities of being a victim, and of being afraid, of crime (both personal and household), the set of variables shown in Table 1 was included in the models for the four probabilities.

Sex and age⁵ are considered an integral part of any model of fear of crime and victimization. Lifestyle arguments would suggest that young males are the group with the highest risk of personal victimization; however they will admit to the lowest level of fear. On the other hand, older women have the lowest risk of victimization but experience the highest level of fear. When modelling fear of personal crime, sex and age are used to approximate the notion of vulnerability (Killias 1990); whereas when modelling personal victimization, these variables try to capture the effect of differential lifestyles (Gottfredson 1981) and the fact that more vulnerable people are more attractive as targets to offenders (Wikström 1991).

The relationship between the age of head of household and victimization is such that households occupied by older persons have lower rates of property crime (Smith and Jarjoura 1989) reflecting the greater guardianship of the home by such households. On the other hand, since older persons and women are more vulnerable than their younger male counterparts, and given also that burglary may be perceived as resulting in, other, violent offences, the fear of housing crime may be expected to increase with age and to be greater for women than for men. However, as noted by McCoy *et al.* (1996), it is possible, when considering housing crime, for the age-fear relationship to be reversed.

The inclusion of demographic, social and economic characteristics helps to shed more light on the interaction between vulnerability, attractiveness, opportunity, guardianship and lifestyle in determining the fear of crime and the likelihood of being a victim of crime. The first of such characteristics was the economic position of the respondent. Since the Queensland Crime Victim Survey did not collect data on income, this study assessed a respondent's income according to the nature of the arrangements determining occupancy of his/her home and has defined such arrangements in terms of two variables. The first variable took the value unity if the respondent was renting public sector housing; otherwise it took the value zero. The second variable took the value unity for owner-occupiers and zero for others. People renting public sector

⁴ Though, see Hough (1995).

⁵ Sex was defined as a dichotomous variable taking the value unity for women and zero for men; age was coded as unity if the respondent's age was 35 years or more, as zero otherwise.

TABLE 1 *Variables included in the models*

Variable	Values	Description	Proportion in sample
Victimization—personal crime	1	Victim of any personal crime	0.14
	0	Not a victim of any personal crime	0.86
Victimization—housing crime	1	Victim of break & enter, attempted B&E or vandalism	0.06
	0	Not a victim of housing crime	0.94
Fear of personal crime	1	Afraid of personal crime	0.31
	0	Not afraid of personal crime	0.69
Fear of housing crime	1	Afraid of housing crime	0.07
		Not afraid of housing crime	0.93
Gender	1	Female	0.55
	0	Male	0.45
Age	1	35 years or more	0.64
	0	15 to 34 years	0.36
Education	1	Senior secondary and higher	0.45
	0	Junior secondary and lower	0.55
Labour force status	1	Working or in full-time study	0.60
	0	Unemployed or out of the labour force	0.40
Government accommodation	1	Renting from Housing Commission	0.03
	0	Other	0.97
Home ownership	1	Owner-occupier	0.72
	0	Not an owner-occupier	0.38
Household type	1	Single-person household	0.18
		Multiple-person household	0.82
Neighbourhood cohesion	1	People in area get together to help each other (high) or a mixture of helping each other or going their own way (medium)	0.58
	0	People tend to go their own way	0.42
Amount of crime in the area	1	Level of crime in area of residence is perceived as the same or more than the rest of the State	0.26
	0	Level of crime in area of residence is perceived as less than the rest of the State	0.74
Environment	1	High quality (not very common or not at all common signs of incivility)	0.83
	0	Low quality (fairly/very common signs of incivility)	0.17
Rural area	1	Resident of a rural area (less than 1,000 people)	0.16
	0	Resident of Brisbane or other urban area	0.84

accommodation tend to be in the lower tail of the income distribution and, therefore, are likely to be more vulnerable to crime, and, therefore, more afraid of crime, than more affluent persons. Furthermore, depending on the characteristics of their area of residence regarding crime rates and other related factors, they and their homes may be more exposed to the risk of victimization (Cohen *et al.* 1981). As Hale (1996) observed: 'people in lower socio-economic groups are less able to protect themselves and their property or to avoid situations which might produce anxiety' (p. 103).

The relationship between household size and, on the one hand, the risk of victimization, and on the other, the likelihood of being afraid of crime is determined by the personal characteristics of the respondent (age, labour force status and income) as well as by the characteristics of the area in which he/she conducts the bulk of his/her activities. Considering risk of victimization, young persons living alone would tend to spend more time outside the home, thereby placing themselves in greater danger of becoming victims of personal crime; moreover, their lifestyle would result in reduced

guardianship of their home which, in turn, would lead to an increased risk of becoming a victim of housing crime. However, older persons living alone may spend more time at home and, thereby, reduce the risk of becoming victims of personal and of housing crimes (Meier and Miethe 1993).

Explanations for the fear of crime advanced in the literature utilize both individual and community factors to explain how people form their perceptions of fear (Taylor and Hale 1987; Bursik and Grasmick 1993; Hale 1996). A number of studies show that where people live, along with the characteristics of the physical and social environment in which they conduct their daily activities, have an impact on the fear of crime (Taylor and Hale 1987; Box *et al.* 1988; Bannister 1991; Carcach *et al.* 1995; Hale 1996). The interaction between individual-specific and community-wide factors have also been studied in the context of personal and of housing crime. The multilevel opportunity model of Sampson and Wooldredge (1987), in explaining victimization risk, linked the characteristics and lifestyles of individuals with that of the communities in which they lived. Since then, several studies measuring the effect of environmental factors on victimization risk have been published (Smith and Jarjoura 1989; Kennedy and Forde 1990; Miethe and McDowall 1993; Rountree *et al.* 1994; Rountree and Land 1996).

This study took account of the following environmental factors: the respondent's perception of the level of crime in his/her area of residence, relative to the level of crime in the rest of Queensland; whether the respondent lived in a rural, or urban, area; the level of 'neighbourhood incivility'; and the perceived degree of 'neighbourhood cohesion'.

The expectation was that the perception that one's neighbourhood experienced more crime than the rest of the state, would result in increased fear of crime. However, the effects of such a perception on the risks of victimization was uncertain. If, as a consequence of their fear, people took precautionary measures to prevent victimization (for example: staying at home more; installing domestic security devices), we would expect a reduced risk of victimization (Fattah 1991). On the other hand, if perceptions of relatively higher crime levels in one's area of residence were the consequence of relatively more frequent exposure to potential offenders, then such perceptions could co-exist with high victimization risk (Wikström 1991). A binary variable was defined to take the value unity if, in the respondent's opinion, the level of crime in his/her suburb/area was at least as high as in the rest of Queensland; otherwise it was set to zero.

The risk of becoming a victim, and the probability of being afraid, of either personal or housing crime was expected to be less for residents of rural areas, than for their urban counterparts. These expectations derive from the fact that people in rural communities—at least in Queensland—have more conservative lifestyles and are more geographically dispersed than urban dwellers. Partial corroboration of the justness of this expectation may be gleaned from Clemente and Kleiman (1976) who uncovered a positive relationship between community size and fear of crime. Consequently, a dichotomous variable was included that took on the value of unity if the respondent lived in a rural area; otherwise it was coded as zero.

Previous studies have found that the presence of physical and social incivilities in the area of residence tends to increase fear of crime (Taylor and Hale 1986; Box *et al.* 1988; LaGrange *et al.* 1992; Carcach *et al.* 1995). With regard to the effect of such incivilities on victimization, it might be argued that, by raising levels of fear, they induce people to take more precautions against crime and, thereby, reduce the risk of becoming a

victim of crime (Hale 1996). In this study, the perception of respondents, about incivility in their areas of residence, was measured by an index of incivility.⁶ The values of the index were used to define a measure of incivility which took the value unity if, in the respondent's view, the environment in his/her suburb/area of residence was good; otherwise it took the value zero.

Perceptions of increased neighbourhood cohesion tend to decrease the level of fear of crime. According to Hunter and Baumer (quoted in Hale 1996: 114), '... social integration may be significant in ... reducing not only the numbers of strangers on the street but the strangeness of the street'. On the other hand, Taylor and Hale (1987), in discussing the effects of indirect victimization, contend that people with stronger community links might experience increased fear of crime. The relationship between perceptions of neighbourhood cohesion and the risk of victimization, however, has not been extensively analysed. If, as the Queensland Crime Victim Survey found, most of the incidents of personal victimization occurred in the area of residence of the victim, more cohesive neighbourhoods might result in reduced risk of victimization. The value of the cohesion variable was set to unity if the respondent's perception was that he/she lived in an area in which the degree of neighbourhood cohesion was 'high'; otherwise it was set to zero.

The Statistical Model

In situations where one, and only one, of two possible outcomes can occur—a person is either a victim, or not a victim, of crime—the variable defining these outcomes is assigned one of two values: (say) 1, if an event occurs; 0, if it does not. However, underlying the dichotomous observed outcome, one may think of a latent variable, which assumes a continuum of values, such that the event is observed only when the value of this latent variable crosses some critical threshold; otherwise the event is not observed. From the point of view of statistical analysis, the task is to determine the probability of the latent variable crossing this threshold.

Let p_i denote the probability, for the i^{th} person ($i=1 \dots N$), of the event occurring. Given the dichotomous nature of the outcome of interest, it is possible to express the logit transform of this probability as a linear function of some determining variables X_1, X_2, \dots, X_k . Thus the logit model is:

$$\log[p_i / (1 - p_i)] = \sum \beta_k X_{ki} = Z_i \quad i=1 \dots N, k=1 \dots K \quad (1)$$

where β_k is the coefficient (assumed to be the same across all persons) attached to the k^{th} determining variable and X_{ki} is the value of the k^{th} determining variable for the i^{th} person.

It follows from equation (1) that:

$$p_i = \exp(Z_i) / [1 + \exp(Z_i)] = L(\beta_1, \dots, \beta_k, X_{1i}, \dots, X_{ki}) \quad (2)$$

Given a knowledge of the coefficients, β_k , and the values of the determining variables, X_{ki} , ($k=1, 2, \dots, K$ and $i=1, 2 \dots, N$) one can, from equation (2), compute for the i^{th}

⁶ See Carcach *et al.* (1995) for details of how this index was constructed.

person, the probability of the event occurring. Data from the Queensland Crime Victim Survey were used to estimate the regression coefficients and these estimates, in conjunction with information on the determining variables for each respondent to the survey, allowed the probabilities of being afraid of crime, and of becoming a victim of crime, to be computed.

An interesting question relates to the degree of association between the measures of victimization and of the fear of crime, as well as the impact that factors suggested by theory may have on this correlation. Attempts to shed light on this area leads to the analysis of the joint distribution of victimization and fear. Let p_{1i} denote the (marginal) probability of the i^{th} individual being a victim of crime and let p_{2i} denote his/her (marginal) probability of being afraid of crime.⁷ Denote, by p_{12i} , the probability of the i^{th} individual being both a victim of crime and also afraid of crime. Then from results in Kendall and Stuart (1969), ρ_{12i} , the correlation coefficient between victimization and fear, can be computed from the following expression:

$$\rho_{12i} = (p_{12i} - p_{1i} p_{2i}) / [p_{1i} (1 - p_{1i}) p_{2i} (1 - p_{2i})]^{1/2} \quad (3)$$

If victimization and fear are independent, $\rho_{12i} = 0$; otherwise, $\rho_{12i} \neq 0$, with the expectation that it is positive. The only unknown quantity in equation (3) is p_{12i} , and it can be estimated from a cumulative logit model for a variable W_i with three ordered outcomes (Pendergast *et al.* 1996) defined as follows:

- $W_i = 0$, if the person has not been a victim and is not afraid of crime
- $W_i = 1$, if the person has not been a victim but is afraid, or has been a victim but is not = 1, afraid
- $W_i = 2$, if the person has been a victim and is afraid.

From this model, we can estimate the probability that the person has been a victim, and is also afraid, of (personal/housing) crime (that is, the probability that $W_i = 2$), and use it to obtain an estimate of the correlation coefficient in equation (3).

The estimated correlation coefficient can be made to depend upon the covariates in a model for the covariance between victimization and fear. A parameterization that forces the estimated correlation to lie within the closed interval $[-1, 1]$ is the logistic transform proposed by Prentice and Zhao (1991) which yields the following model for the covariance:

$$\sigma_{i12} = \{ \exp(\alpha_{12}' \mathbf{x}_i) - 1 \} \{ \exp(\alpha_{12}' \mathbf{x}_i) + 1 \}^{-1} (\sigma_{i11} \sigma_{i22})^{1/2} \quad (4)$$

where σ_{i12} is the covariance between victimization and fear for the i^{th} individual, with associated vector of covariates \mathbf{x}_i , σ_{i11} is the variance of the victimization risk and σ_{i22} is the variance of the measure of fear. The regression parameters α_{12} measure the (average) effect that each covariate, \mathbf{x}_i , has on the correlation (therefore on the covariance) between victimization risk and the fear of crime.

⁷ These marginal probabilities refer to the probability of an event (say, fear) occurring, irrespective of whether the other event (victimization) did, or did not, occur.

*The Probabilities of Becoming, and of Being Afraid of Becoming, a Victim of Personal Crime:
Empirical Results*

The results for estimating a logit model for the risk of being a victim of personal crime are shown in Table 2 and corresponding results for the probabilities of being afraid of personal crime are shown in Table 3. Since all the variables in the model were dichotomous, a category was deleted (or 'aliased') for each variable, by being assigned the value of zero if the observation happened to be in that category. Collecting these 'aliased' categories then defined the reference person for this model.⁸ The probability of this reference person being a victim of personal crime was 24 per cent and the probability of him being afraid of personal crime was 10 per cent.

TABLE 2 *Logit model for personal victimization*

Variable	Coefficient	Standard error	t-ratio
Constant	-1.148	0.117	
Gender	-0.366	0.079	-6.07
Age	-1.730	0.128	-13.51
Education	0.299	0.079	3.78
Labour force status	-0.124	0.106	-1.17
Government accommodation	0.479	0.188	2.55
Neighbourhood cohesion	-0.229	0.078	-2.93
Amount of crime in the area	0.206	0.087	2.36
Environment	-0.713	0.092	-7.75
Rural area	-0.403	0.121	-3.33
Age/labour force status interaction	0.977	0.161	6.07
χ^2 (10)		535.3	

TABLE 3 *Logit model for fear of personal crime*

Variable	Coefficient	Standard error	t-ratio
Constant	-2.199	0.114	
Gender	1.842	0.073	25.23
Age	0.717	0.094	7.63
Education	-0.159	0.066	-2.41
Labour force status	0.050	0.107	0.47
Government accommodation	0.606	0.163	3.72
Neighbourhood cohesion	-0.423	0.064	-6.61
Amount of crime in the area	0.721	0.073	9.88
Environment	-0.812	0.085	-9.55
Rural area	-1.082	0.106	-10.21
Age/labour force status interaction	-0.906	0.133	-6.81
χ^2 (10)		1532.1	

⁸This reference person was male, aged between 15 and 34 years, living in an urban area, not renting government accommodation, not in the labour force nor a full-time student, living in an area with poor physical environment, living in an area with low social cohesion, and perceiving his area of residence as having more crime than the rest of Queensland.

Comparing the equation for the probability of being a victim of personal crime with that for the probability of being afraid of personal crime, the following features are worthy of note:⁹

1. Women were over six times more likely to feel unsafe when walking alone after dark than men, and young persons felt less fear than older persons. These results are consistent with previous research findings regarding vulnerability (Taylor and Hale 1986; Box *et al.* 1988; Carcach *et al.* 1995). However, the joint characteristic of being female over 35 years of age, had associated with it a lower probability of being a victim of personal crime.
2. People on low incomes (proxied by those who were renting public sector accommodation) were 60 per cent more likely to be victimized than others. The relationship between income and victimization risk is according to Fattah (1991) 'a much more complex one than that assumed by current models of victimization' (p. 337). Cohen *et al.* (1981) found income to be inversely related to risk of assault and directly related to the risk of personal theft. They also found that when variables related to proximity, guardianship and exposure are considered, the income-victimization relationship changes, giving some support to our findings. The higher probability of being a victim was mirrored in higher levels of fear which is consistent with the notion that people in low socioeconomic groups are less able to protect themselves or to manage situations leading to anxiety (Hale 1996: 103). A related finding was that, among people in the older age group, those not in the labour force were twice as likely to feel fear and again this might reflect the heightened vulnerability brought on by age and by straitened economic circumstances (Killias 1990).
3. Improvements in the environment of an area reduced the probability of victimization, with respondents who perceived their area as having high levels of incivility being twice as likely to be victims compared to those who felt that the level of incivility in their area was low. This may be due to the fact that areas that showed signs of social and/or physical deterioration offered better opportunities for crime than more salubrious neighbourhoods (Bursik and Grasmick 1993).

Unfavourable perceptions about one's area of residence—whether relating to incivility, cohesion or (relative) crime levels—served to increase fear of personal crime. The effects of incivility and poor cohesion on fear of crime are well recorded (see Carcach 1995 and Hale 1996). The fact that adverse perceptions of crime levels in one's area of residence heightens the fear of crime, begs the question of how such perceptions are formed. Perceptions of crime levels might be determined by an on-going process of neighbourhood deterioration, which then provides the link with increased levels of fear (Shannon 1991); or it might be the case that perceptions of crime levels are largely formed by learning about others' victimization experiences (the indirect victimization perspective); or such perceptions might be fed by media reporting and this would serve to increase the fear of crime among the residents of certain areas (Taylor and Hale 1988).

⁹ All comparisons are with respect to deviations from the characteristics of the 'reference' person.

4. There was much greater variation in the probability of being afraid of personal crime (from 1 per cent, for the most favourable combination of circumstances,¹⁰ to 73 per cent, for the least favourable combination¹¹) than there was for the probability of being a victim of personal crime (from 2 per cent for the most favourable combination of circumstances,¹² to 46 per cent for the least favourable combination¹³).
5. The presence of certain characteristics served to move the probabilities of becoming, and of being afraid of becoming, a victim of personal crime in opposite directions. Prominent among these characteristics were: sex; age; and education. The probability of becoming a victim of personal crime was higher, but the probability of being afraid of personal crime was lower for men than for women; the young¹⁴ than for the old; the better educated than for the poorly educated. This would suggest that those who regarded themselves as vulnerable to attack upon their persons circumscribed their life-style so as to avoid situations where they might be most vulnerable and, thereby, reduced the probability of their becoming victims.
6. The presence/absence of certain characteristics served to move the probabilities of becoming, and of being afraid of becoming, a victim of personal crime in the same direction but this presence/absence had quantitatively different effects upon the two probabilities. Prominent among these characteristics were: area cohesion; perceptions of area crime level; area incivility; rural location; and public sector housing tenant. In each case, the presence (or absence) of the characteristic in question had a greater effect on the probability of being afraid than it did upon the probability of being a victim.

From this analysis, one can subdivide respondents into two groups: those for whom the probability of becoming a victim of personal crime exceeded the probability of being afraid (of becoming a victim) of personal crime—the 'risk-lovers'; and those for whom the probability of becoming a victim of personal crime was less than the probability of being afraid (of becoming a victim) of personal crime—the 'risk-avoiders'. Prominent in the former group were young, urban males; prominent in the latter group were older women. Members of the former group, led by an absence of fear, adopted an unconstrained life-style which, in turn, led them to suffer what they did not fear. Members of the latter group, prompted by an excess of fear, adopted a constrained life-style which, in turn, led them to avoid the outcome which they feared.

¹⁰ Men, aged below 35 years, of high/moderate education, not living in public-sector rented housing, but residing in a rural area in which the physical environment was good, social cohesion was high and the perceived level of crime was lower than elsewhere in the state.

¹¹ Women, aged 35 years or more, of low education, not in the labour force, living in public-sector rented housing, in a urban area in which the physical environment was poor, social cohesion was low and the perceived level of crime was at least as high as elsewhere in the state.

¹² Women, aged above 35 years, of low education, in the labour force, not living in public-sector rented housing, but living in a rural area in which the physical environment was good, social cohesion was high and the perceived level of crime was lower than elsewhere in the state.

¹³ Men, aged below 35 years, of high/moderate education, not in the labour force, living in public-sector rented housing, in a urban area where the physical environment was poor, social cohesion was low and the perceived level of crime was at least as high as elsewhere in the state.

¹⁴ Less than 35 years of age.

*The Probabilities of Becoming, and of Being Afraid of Becoming, a Victim of Housing Crime:
Empirical Results*

The results for estimating a logit model for the risk of becoming a victim of housing crime are shown in Table 4 and corresponding results for the probability of being afraid (of becoming a victim) of housing crime are shown in Table 5. The definition of the 'reference' person was identical to the definition adopted for personal crime (see previous section). The probability of this reference person becoming a victim of housing crime was 7 per cent and the probability of him being afraid of housing crime was 3 per cent.

Comparing the results for the probability of becoming a victim of housing crime with that for the probability of being afraid of housing crime, the following features are worthy of note.

1. The age of the head of household was associated with the risk of becoming a victim of housing crime through the interaction between age and home ownership; home ownership, in turn, interacted with the household head's perception of the physical environment in his/her area of residence. Among

TABLE 4 *Logit model for household victimization*

Variable	Coefficient	Standard error	t-ratio
Constant	-2.604	0.146	
Age	-0.384	0.135	-2.84
Education	0.279	0.108	2.58
Labour force status	0.004	0.121	0.03
Owner-occupied household	-0.664	0.215	-3.09
Household type	0.058	0.198	0.29
Neighbourhood cohesion	-0.369	0.106	-3.48
Amount of crime in the area	0.775	0.112	6.92
Environment	0.006	0.157	0.04
Rural area	-0.542	0.146	-3.71
Age-owner occupied interaction	0.474	0.245	1.94
Environment-owner occupied interaction	-0.680	0.249	-2.73
Labour force status/household-type	-0.691	0.261	2.65
χ^2 (12)		164.75	

TABLE 5 *Logit model for fear of housing crime*

Variable	Coefficient	Standard error	t-ratio
Constant	-3.528	0.174	
Age	-0.476	0.111	-4.29
Labour force status	-0.294	0.107	-2.75
Gender	1.660	0.140	11.86
Government accommodation	0.561	0.198	2.83
Neighbourhood cohesion	-0.324	0.103	-3.15
Amount of crime in the area	0.419	0.114	3.68
Environment	-0.294	0.107	-2.75
Rural area	-0.459	0.269	-1.71
Age/rural area interaction	0.676	0.324	2.09
χ^2 (9)		365.78	

households where the head was less than 35 years of age, tenants were almost twice as likely to be victims of housing crime as owner-occupiers. However, for households where the head was over 35 years, the gap between tenants and owner-occupiers, in their respective risks of becoming victims of housing crime, narrowed to around 20 per cent. Moreover, households with older heads, irrespective of the nature of their tenure arrangements, had a lower risk of becoming victims than households with younger heads. This finding—possibly due to the fact that older persons make better guardians of their homes—supports previous results on this topic (see references in Smith and Jarjoura 1989 and the results in Kennedy and Forde 1990 and Rountree *et al.* 1994).

The relationship between age and the fear of housing crime depended on whether, or not, the household lived in a rural area. People whose age was less than 35 years living in rural areas were 24 per cent *more* likely to be afraid than those living in urban areas. On the other hand, for older persons, residents of rural areas were about 37 per cent *less* likely to be afraid than their urban counterparts. This result corroborates the age-fear reversal noted by McCoy *et al.* (1996). Set against this is the fact that households in urban areas were 70 per cent more likely to be victims of housing crime than households in rural areas, a result consistent with previous findings on the regional variation in crime rates (see Fattah 1991).

The finding that persons between 15 and 34 years of age, residing in rural areas, felt less safe being alone at home during the night than older rural residents is interesting in itself and deserves further examination. Figures 1a and 1b show the distribution of the measure of fear for rural and other areas, by sex and age of the head of the household.

Figures 1a and 1b show, for urban areas, for both males and females, the level of fear decreasing with age. This trend was also observed for males in rural areas. The level of fear of females in rural areas, however, increased with age, peaking at the 25–34 years band before declining. A possible explanation for this pattern of fear is that the measure of fear employed captured feelings associated with the possibility of victimization for crimes other than, but consequent upon, burglary (Ferrante *et al.* 1996: 105) and that such fears were heightened by the sense of vulnerability accompanying the geographical isolation of rural areas in Queensland. All this suggests the need for more research into the fear of crime among women living in rural Australia.

2. Non owner-occupied homes in 'poor quality' areas were almost twice as likely to be victims as their owner-occupied counterparts. However, there was no difference in risk, according to the tenure of the occupier, in 'high quality' areas. This suggests a parabolic (and convex) relationship between household income and victimization (Miethe *et al.* 1987).
3. Our results suggested that disadvantaged single-person households (that is, persons who were sick, disabled or unemployed) and single-person pensioner households were more vulnerable to housing crime than households that did not possess these characteristics. This would indicate that offenders selected

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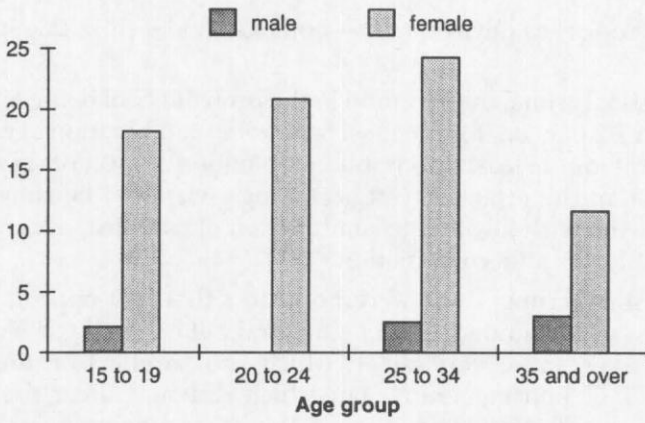


FIG. 1a Rural areas: Percentage distribution of fear of housing crime by age group

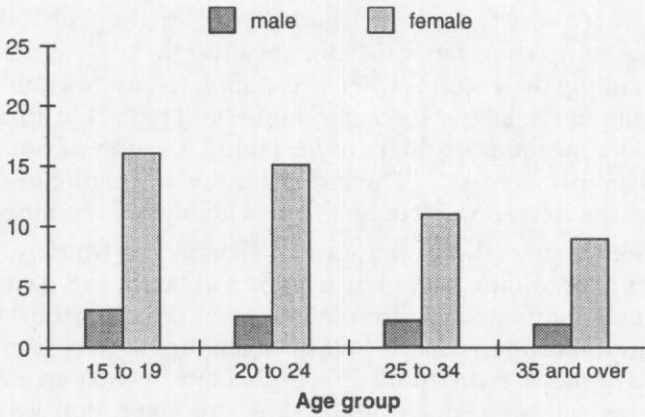


FIG. 1b Urban areas: Percentage distribution of fear of housing crime by age group

particularly vulnerable targets, notwithstanding the relatively greater time spent at home by such targets. This was reflected in relatively greater fear levels among persons who, on the preceding analysis, could be regarded as vulnerable targets.

4. Area incivility, low neighbourhood cohesion and (relatively) high area crime levels significantly increased both the risk of becoming a victim of housing crime as well as the probability of being afraid of housing crime. Bursik and Gasmick (1993) pointed out that the fear of residents in less cohesive areas was increased by the fact that such areas were less able to create mechanisms for reducing crime opportunities while Nikolic-Ristanovic (1995) has stressed the role of evaluating trends in crime in one's area, relative to other areas, in determining levels of fear of housing crime. Lastly, Hale *et al.* (1994) have also emphasized

the role of poor area environment—both social and physical—in raising levels of fear.

5. Unlike personal crime, the variation in the probability of being afraid of housing crime (from 1/2 per cent for the most favourable combination of circumstances,¹⁵ to 29 per cent for the least favourable combination¹⁶) was not very different from the variation in the probability of becoming a victim of housing crime (from 1 per cent for the most favourable combination of circumstances,¹⁷ to 30 per cent for the least favourable combination¹⁸).
6. Unlike personal crime, there were no factors that had opposite effects on the probabilities of becoming, and of being afraid of becoming, a victim of housing crime. However, there were factors which had an effect on the probability of being afraid of housing crime, but which did not affect the probability of becoming a victim. Prominent among these were: being a woman; living as a public sector housing tenant; area incivility; and being in the labour force. The first three of these factors served to raise the fear of becoming a victim of housing crime.¹⁹ The last factor (belonging to the labour force) served to reduce the probability of being afraid of housing crime.

Conversely, there were factors which had an effect on the probability of becoming a victim of housing crime, but which did not affect the probability of being afraid. Prominent among these were: owner-occupation; education; and the interaction between being in the labour force and household type. The first of these had a negative effect on the probability of becoming a victim of housing crime; the second had a positive effect.²⁰ The last factor (i.e. belonging to the labour force and living alone) served to increase the probability of becoming a victim.

7. Unlike personal crime, there were, save one, no factors which, while moving the probabilities of becoming, and of being afraid of becoming, a victim in the same direction, had quantitatively different effects on the two probabilities. Thus for example, rural location reduced both probabilities by 1 percentage point; age (i.e. 35 years or more) reduced the first probability by two percentage points and the second by one percentage point. The one exception was perception of (relative) crime levels in one's area of residence. The perception that levels of

¹⁵ Men, aged 35 years or more, in the labour force, not living in public-sector rented housing, but residing in a rural area in which the physical environment was good, social cohesion was high and the perceived level of crime was lower than elsewhere in the state.

¹⁶ Women, below the age of 35 years, not in the labour force, living in public-sector rented housing, in a urban area in which the physical environment was poor, social cohesion was low and the perceived level of crime was at least as high as elsewhere in the state.

¹⁷ Owner occupiers, aged above 35 years, of low education, either not in the labour force or not living alone, living in a rural area in which the physical environment was good, social cohesion was high and the perceived level of crime was lower than elsewhere in the state.

¹⁸ Aged below 35 years, of high/moderate education, in the labour force and living, in rented accommodation, as a single-person household, in a urban area in which cohesion was low and the perceived level of crime was at least as high as elsewhere in the state.

¹⁹ That is, women were more afraid than men, tenants of public-authority housing were more afraid than those living in other forms of housing and persons living in areas in which the physical environment was poor were more afraid than those living in other areas.

²⁰ That is, persons who were owner-occupiers had a smaller probability, and persons who were better educated had a higher probability, of being victims than others.

crime were at least as high in one's neighbourhood as elsewhere in the state, was borne out by the fact that the probability of becoming a victim of housing crime, on this account, would double from 6 per cent to 12 per cent; however, the probability of being afraid of becoming a victim would only rise from 30 per cent to 40 per cent.

Previous Victimization and Fear of Crime: Empirical Results

The relationship between previous victimization and fear of crime is of a complex nature and the results reported in the literature are shrouded in ambiguity: consequently, the 'victimization' perspective to the fear of crime remains unsubstantiated (cf. Lewis and Salem 1986 and Hale 1996). As observed in section 1, it is very likely that this is due to the fact that both victimization and fear are explained by the same factors.

An alternative means of investigating the previous-victimization/fear relationship is to examine their correlation structure, which is equivalent to performing an analysis on the bivariate distribution defined by these variables. The correlation coefficient can be interpreted as a measure of the impact that previous victimization has on feelings of safety, either in terms of one's person or one's home. If, further, the correlation coefficient is allowed to depend upon a set of variables (as identified in the preceding sections) it is possible to assess how they might affect the nature of the previous-victimization/fear relationship.

This section presents the results of an analysis of the correlation between fear and previous victimization using the bivariate model described in section 3. The results from this model are shown in Table 6 for personal crime and in Table 7 for housing crime. In anticipation of these results, the size of the correlation coefficients calculated for the relationship between previous victimization and fear of crime is consistent with the weakness of the previous-victimization/fear relationship that Hale (1996) has noted, though our results indicated that the relationship was substantially weaker for personal than for housing crime. Our results suggest that the effect of having been a victim of

TABLE 6 *Regression model for the correlation coefficient between previous victimization and the fear of personal crime*

Variable	Coefficient	Standard error	t-ratio
Constant	0.102	0.013	
Gender	0.090	0.004	22.52
Age	0.033	0.006	5.10
Education	0.130	0.004	32.48
Labour force status	0.098	0.006	15.04
Government accommodation	0.049	0.011	5.52
Neighbourhood cohesion	-0.053	0.004	-13.59
Amount of crime in the area	0.088	0.004	19.68
Environment	-0.172	0.012	-14.59
Rural area	0.029	0.007	4.07
Age/labour force status interaction	-0.137	0.008	-16.44

TABLE 7 *Regression model for the correlation coefficient between previous victimization and the fear of housing crime*

Variable	Coefficient	Standard error	t-ratio
Constant	0.237	0.008	
Gender	-0.061	0.002	-32.05
Age	-0.020	0.004	-5.30
Education	-0.056	0.002	-29.76
Labour force status	0.007	0.002	3.01
Government accommodation	0.069	0.005	12.73
Owner-occupied household	0.304	0.109	27.93
Household type	-0.011	0.003	-3.38
Neighbourhood cohesion	-0.053	0.002	-28.57
Amount of crime in the area	0.134	0.002	62.88
Environment	-0.087	0.008	-10.97
Rural area	0.257	0.005	51.25
Age/rural area interaction	-0.361	0.007	-53.04
Age/owner occupied interaction	0.051	0.004	11.88
Environment/owner occupied interaction	-0.364	0.011	-33.201
Labour force status/household interaction	0.135	0.005	27.59

housing crime had a measurable effect on the subsequent fear of housing crime. This would suggest that respondents who had been a victim of personal crime either put it down to bad luck or saw it as an event that could, in future, be avoided. On the other hand, those who had been victims of housing crime might have had a sense of being 'targeted' and, given this, their anxiety would be compounded by the fact that they could not easily escape future targeting.

The results in Table 6 show that the correlation between previous victimization and fear is affected by a number of factors. Apart from perceiving the area of residence as highly cohesive and as having a good physical and social environment, all the other variables are associated with increases in the correlation coefficient.

According to the model, previous victimization experiences are capable of generating more fear among females than among males. The correlation coefficient between victimization and fear for females (0.096) was almost twice that for males (0.051).²¹ This suggests that once women have been victims of personal crime, their perceptions of personal safety deteriorate faster than among men.

The relationship between victimization and fear depended upon age, both directly and also through the interaction between age and labour force status. Among persons unemployed, or not in the labour force, the correlation between victimization and fear for young people (15-34 years) was almost identical to that for older people (35 years and over). However, among those who were employed, or were full-time students, the correlation between victimization and fear for people in the younger age group (0.0998) was almost twice that for older people (0.0511). The results reported in section 5 above showed that young people at work or in full-time study were more at risk of becoming victims but admitted to less fear than older people. Our finding regarding the

²¹ The correlation coefficients are computed from equation (4) which implies: $\log\{(1+p)/(1-p)\} = a'x$ or $p = \{\exp(a'x) - 1\} / \{\exp(a'x) + 1\}$. So, for the reference person in Table 6, $p = \{\exp(0.102) - 1\} / \{\exp(0.102) + 1\} = 0.051$.

previous-victimization/fear relationship suggests that once people had experienced victimization, the fear of crime among young persons increased more rapidly than it did for older persons.

Previous victimization experiences had a more marked effect on the fear of crime among the medium/highly educated (correlation coefficient: 0.1155), those who were renting government accommodation (correlation coefficient: 0.075) and people perceiving their areas as having more crime than the rest of Queensland (correlation coefficient: 0.095). Fear of crime in rural areas was more sensitive to previous victimization than for Brisbane and other urban areas. The correlation coefficient for a resident of a rural area was 28 per cent higher than for residents of Brisbane and other urban areas (0.0656 and 0.0511 respectively).

Perceiving one's own area as having a good physical and social environment and a high level of cohesion was associated with a reduced impact of previous victimization on fear of crime (correlation coefficient: 0.024), a result that shows that the benefits derived from more cohesiveness and a better social and physical environment went a long way in offsetting the negative effects that previous victimization might have had on the fear of crime.

Table 7 shows that the relationship of the correlation coefficient (between having been a victim of housing crime and the subsequent fear of housing crime) with age (of the household head) was influenced by home ownership. Among households that owned their homes, previous experiences with housing crime had a greater effect on fear of housing crime among young people (correlation coefficient: 0.2644) than it did among older people (correlation coefficient: 0.1759). Home ownership also interacted with the quality of the neighbourhood's social and physical environment. The perception that the area of residence was environmentally of poor quality was associated with an increased impact of previous victimization on fear of housing crime. For owner-occupied households, being in a low quality environment resulted in a correlation coefficient between victimization and fear that was nearly five times greater than that for households in high quality environments (0.2644 and 0.0456, respectively); however, non-owner occupiers in low quality environments reported a correlation only twice that for households in high quality environments (0.1179 and 0.0751 respectively). The vulnerability of owner-occupied households, who are both anxious about their investment and also perhaps see themselves as 'misfits' living in areas with poor physical and social environment, may increase considerably when such anxieties and feelings are seen to be confirmed by victimization.

The effect of household type on the correlation coefficient between previous victimization and fear depended upon its relationship with the labour force status of the household head. Among those working, or in full-time studies, the correlation for single-person households (0.1817) was one and a half times that for multiple-person households (0.1212).

Previous (housing crime) victimization experience had a more marked effect on fear of crime among the lowly educated (correlation coefficient of 0.1179), those who were renting government accommodation (correlation coefficient of 0.1516) and people perceiving their areas as having more crime than the rest of Queensland (correlation coefficient of 0.1834).

Perceiving one's area as having a high level of cohesion had almost no impact on the correlation between previous victimization and fear. Households in areas perceived as

highly cohesive had a correlation of 0.0916 which was only 80 per cent that for other households (0.1179). This result, combined with a similar result for perceived crime levels in one's area of residence, suggests that sensitivity of the fear of housing crime to previous victimization experience depends more on what happens outside one's area of residence than within it and lends support to an indirect victimization perspective to the fear of housing crime.

Conclusion

This study, which was based on unit record data from the Queensland Crime Victim Survey of 1991, conducted, using a common set of explanatory variables, a joint analysis of the probabilities of becoming, and of being afraid of becoming, a victim of personal and of housing crime. The study then proceeded to analyse the relationship between previous victimization experience and fear of crime (personal and housing). The broad conclusion was that unlike personal crime, where reducing the fear of crime—over and above concern with reducing the incidence of crime—might be an important policy objective, the policy goal for housing crime should, primarily, be to reduce its incidence. This is because, for personal crime, variations in the probability of being afraid greatly exceeded variations in the risk of becoming a victim: fear of personal crime thus emerged as a problem in its own right. On the other hand, for housing crime, incidence was an accurate reflection of fear.

The study also concluded that lack of neighbourhood cohesion, neighbourhood incivility and perception of relatively high neighbourhood crime levels contributed significantly to the probability of being afraid of crime and to the risk of victimization.²² This suggests that, in policy terms, community action might be a more effective means of combating both crime and the fear of crime than a 'leave it to the police, that's what they get paid for' attitude. Such a strategy may have several components. Community justice, based on victim-offender mediation—for example, the programme in Australia which replaces formal prosecution with 'family group conferences' designed to shame the offender and explain to him/her the full impact of the crime—might be one such component. Community generated programmes to improve the appearance of neighbourhoods²³ might be another. Communities working with the police might provide a third component.²⁴ The management of social situations—for example, enforcing loitering and public drinking laws—could be a fourth. In all this, government and communities could, and should, be active partners.²⁵ Our statistical analysis, if anything, lends support to initiatives designed to mobilize communities against crime, through partnership with the police and other criminal justice agencies.

²² This has been graphically described by Weisel and Harrell (1996): 'There are no children in the playground or older people sitting on their porches. Instead, seemingly ubiquitous groups of young men congregate idly on street corners. Taken together these components constitute the visible indicators of rising crime and fear.'

²³ See Weisel and Harrell (1996) for a description of the Neighborhood Housing Services organization.

²⁴ For example, Chicago's Joint Community-Police Training.

²⁵ See for example, Conly and McGillis (1996) for a review of areas of co-operation.

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