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Reassessing the structural covariates of violent and property crimes in the USA: a county level analysis*

ABSTRACT

With a large set of US counties, measures for the subculture of violence theory, economic deprivation, economic inequality, social integration and other structural variables are tested on property and violent crime indices and homicide rates. Prior research based mainly on small samples of highly urban environments produced conflicting results, and was marred by serious methodological and theoretical problems. In addition, the previous literature neglected non-urban areas, race and ethnic correlates of crime, and social integration and other structural factors. Employing a variety of research strategies and techniques, we fail to support the subculture of violence theory as applied to the region of the South or blacks. With an important qualification, we similarly fail to obtain support for economic inequality. Support is found for economic deprivation in the case of homicide and social integration across every dependent variable. Urbanity is the main determinant of property crime, urbanity and population density are important factors in violent crime, and poverty, divorce and density figure strongly in homicide. Poverty and divorce continue to be the strongest determinants of homicide in rural counties, while population mobility and urbanity are the strongest factors in both rural violent and property crime. Unemployment also plays a strong role in rural property crime.

The structural study of crime rates has a long tradition in the West dating back to the early nineteenth century (Beirne 1987). In sociology, the modern systematic examination of crime rates began about a hundred years later with the Chicago school and the work of Shaw and McKay (1931, 1942; Shaw, *et al.* 1929). Recent discussions have focused on three questions: 1) do the region of the South and blacks have a subculture of violence (Gastil 1971; Hackney 1969; Messner 1982a, 1983a,b; Rosenfeld 1986), 2) does economic deprivation/poverty play a role in crime (Bailey 1984; Loftin and Hill 1974;

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Loftin and Parker 1985; Messner and Tardiff 1986; Parker and Smith 1979; Smith and Parker 1980; Williams 1984), and 3) does relative economic deprivation or economic inequality contribute to crime (Blau and Blau 1982; Carroll and Jackson 1983; Jacobs 1981; Sampson 1986a,c; Messner 1989).

An additional question, often ignored in the above literature is whether social integration variables are determinants of crime rates. Based on Durkheim's work, particularly *Suicide* (1897), the work of the Chicago school in which social disorganization figured as the central explanatory factor, and control theory (Hirschi 1969), recent work has shown that some social integration measures are strong predictors of crime and delinquency (Crutchfield, *et al.* 1982; Sampson 1986b, 1987; Sloane and Potvin 1986; Stark, *et al.* 1980; Stark, *et al.* 1983).

Until very recently, researchers working with social integration measures have ignored region, race, poverty and economic inequality. Much of the work in the social integration area has also been based on only one measure of social integration, for example church membership, thus neglecting other conceptually relevant covariates, for example divorce or family disruption. In addition, both literatures are characterized by the use of small samples, large, highly urbanized units of analysis and other potential sources of bias which are discussed below. Moreover, one of the most striking things about the literature on crime rates is that different researchers, often working with the same set of variables but somewhat different research designs, have obtained remarkably different results (see Land, *et al.* 1990).

One common denominator in the previous research on crime rates is the almost exclusive focus on the urban environment. From Quetelet to the present time, urban areas have received virtually all the attention. The result is that we know surprisingly little about crime in non-urban areas. If crime were a uniquely urban phenomenon then this bias would not be inappropriate. But the present research suggests otherwise, especially in regard to homicide. As we shall see, our ignorance on this score is also combined with the discomforting possibility that samples of highly urban areas have biased previous results in important ways. In addition, the exclusive attention paid the urban environment as a setting for high rates of crime has unintended ramifications of an ideological and public policy nature that researchers have ignored.

With some important exceptions, the previous literature has also neglected race and ethnic correlates of crime. Much of the research that is reviewed below included per cent black or non-white as an independent variable, but until recently the black crime relationship was not rigorously explored. Importantly, other race and ethnic correlates have been neglected entirely. This neglect has very serious implications as we show.

The purpose of this research is to correct these problems through an empirical analysis of perhaps the largest set of ecological units ever brought to bear on the study of US crime rates. What follows is a brief review of the recent literature.

PREVIOUS RESEARCH

Region, Race, Poverty and Economic Inequality

Much of the recent interest in crime rates derives from two very similar empirical papers published in different disciplines by Hackney (1969) and Gastil (1971) on the effect of the South on homicide rates. This work had been inspired by Wolfgang and Ferracuti's theoretical book, *The Subculture of Violence* (1967), and the observation that the region of the South has the highest homicide rates in the USA – a distinction that remains intact today. The Gastil-Hackney thesis, as it is sometimes called, appeared to show that the South has a separate value system that accommodates and sanctions violence – a subculture of violence. Controlling for urbanity, education, income and age, Gastil and Hackney found strong multiple correlations for indicators of the South. Their work was based on states (1960 and 1940 respectively, N=48). Beginning with Wolfgang and Ferracuti, the subculture of violence thesis has also been used to explain high black crime rates in urban areas (Curtis 1975; Silberman 1978). Accordingly, large populations of African Americans are said to be characterized by cultural values that promote violence independent of structural factors such as poverty.

Loftin and Hill (1974) responded to Gastil and Hackney's work by showing that a poverty index which included deprivation measures such as infant mortality, illiteracy and low income was the strongest determinant of homicide rates in a set of variables that included percentage non-white, the Gini coefficient of income inequality and South. Neither South nor per cent non-white were significant, while Gini was moderately related to homicide rates. Data for 1960 and 48 states were used in this analysis.

Similar results were presented by Parker and Smith (1979; Smith and Parker 1980). In the first study, Parker and Smith found support for a slightly different poverty index. They included the Gini coefficient in the second study with similar results. Here, Gini was not significant, and in neither study was percentage non-white or region significant. Both studies were based on the 50 states for 1970.

An important methodological innovation was injected into the debate by Jacobs (1981), when he studied a sample of 195 SMSAs for 1970. With this more satisfactory sample, Jacobs found results that appeared to be quite different from those of Loftin, Hill, Parker and

Smith. Absolute poverty (per cent of families below the poverty line) was not significantly related to burglary, larceny or robbery. Relative economic deprivation (Gini) was related to all three crimes.

The following year, two often cited papers by the Blaus and Messner extended these results (Blau and Blau 1982; Messner 1982a). Derived from Blau's (1977) general macrosociological theory, the Blaus sought to test the hypothesis that inequality is related to criminal activity. The set of variables included inequality measures, region, per cent black and poverty. Results showed that inequality was significantly related to the total rate of violent crime, homicide, robbery and assault. Poverty was unrelated to these crimes with the surprising exception that it was negatively related to robbery. South was unrelated to all the crimes studied with the exception of homicide, to which it was less strongly related than inequality. Per cent black was significantly related to violent crime, homicide and assault. Importantly, the Blaus included a social integration measure, divorce, in one of the first papers to consider this class of factors. They showed that divorce was the strongest determinant of the total rate of violent crime, rape and assault. It was also strongly related to robbery and homicide. The study was based on the largest 125 SMSAs, 1970.

Messner (1982a) studied 204 SMSAs for 1970. Contrary to the research of Loftin, Hill, Parker and Smith, Messner showed that poverty was negatively related to homicide rates, and in an important departure from the two previous studies, he found that the Gini coefficient was not related to homicide. More surprisingly, Messner showed that the South was strongly related to homicide rates and that percentage black was the strongest determinant.

Messner (1983a,b) buttressed these results with two additional studies. In the first, Messner sought to replicate the earlier study of Loftin and Hill (1974). He constructed a similar poverty index and controlled for all relevant variables. Again he showed strong support for South and per cent black in determining homicide rates and no support for Gini. Yet, contrary to his previous study and that of the Blaus, in this work poverty was significantly related to homicide rates in the expected direction. To further explore the subculture of violence thesis, Messner divided his SMSAs into non-southern (N=143), and southern (N=61) groups. He found that, while per cent black was the strongest determinant of homicide rates in non-southern SMSAs, it was unrelated to homicide in the South. This seemed to lend support for the southern subculture thesis, as it suggests that violent values apply to all segments of the population in the South, but only to those that have a southern origin, namely blacks. As in his previous study, Messner used 204 SMSAs, 1970.

In the second paper, Messner (1983b) focused on 256 non-southern and 91 southern cities in separate samples for 1970. He showed that poverty was only related to homicide rates in the sample

of non-southern cities, and that again Gini failed to predict homicide in either region. He also contradicted his previous paper by showing that per cent black was just as strongly related to homicide in the South as it was in the rest of the country.

In a study primarily aimed at testing the routine activities approach (Cohen and Felson 1979), Carroll and Jackson (1983) appeared to complicate matters even more. In this study based on 93 non-southern cities for 1970, the effects of Cohen and Felson's household activity measure on burglary, robbery and an index composed of homicide, rape and assault, were entirely mediated by the effects of two economic inequality measures, the most important of which was the Gini coefficient.

Noting that in some previous studies poverty failed to predict homicide rates, Williams (1984) suggested that the relationship was non-linear. In a study of 125 SMSAs for 1970, Williams argued that the failure to find support for poverty was not a matter of linearity but rather the unit of analysis, the SMSA. Despite the findings of Messner (1983a) who found support for poverty with SMSAs, Bailey argued that the city is a better unit of analysis because there is less variation in crime rates across cities. With 153, 73 and 137 cities for 1970, 1960 and 1950 respectively, Bailey presented results that generally support the poverty thesis. But contrary to Carroll and Jackson's (1983) study, which was also based on cities, Bailey found that economic inequality (Gini) was not related to homicide. South was also unrelated, but per cent black was a strong predictor.

Loftin and Parker (1985) suggested yet another reason why the Blaus (1982) and Messner (1982a) had failed to support poverty. They argued that the poverty indicator used in these papers, per cent below the poverty level, contains measurement errors that are confounded with variables such as per cent black and South. With homicide as the dependent variable and a sample of 49 cities for 1970, Loftin and Parker used instrumental variable estimation procedures to incorporate what they suggest is a more reliable poverty correlate, i.e., infant mortality, to the analysis. They showed that while OLS produces insignificant results for poverty, IV estimation yields significant results. Other findings were that, regardless of the estimation procedure used, South was not related to homicide. In addition, contrary to Bailey (1984), percentage non-white, which was significant with OLS, was not related to homicide. Note that with 204 SMSAs and 256 non-southern cities, Messner (1983a,b) found robust poverty effects without recourse to non-linearity, a different unit of analysis or IV estimation.

A new tack was taken by Sampson (1985a,c) when he introduced disaggregating crime rates by age, sex and race. In both of these studies Sampson showed that percentage black had no effect on either black or white crime rates, once other structural measures were

controlled. These included population size, poverty, racial income inequality and unemployment. This tends to disconfirm the subculture of violence thesis because the relative size of the black population should facilitate the maintenance of subcultural values. In fact, Curtis (1975) has argued that, in order for a subculture to flourish, a critical threshold must be reached. For economic inequality, mixed results were obtained. Racial income inequality failed to have a positive effect on crime, while Gini was a strong predictor. In addition, poverty failed to be an important factor. Both studies were based on the 55 largest cities (>250,000 pop.), in 1970.

A recent study by Rosenfeld (1986) has given a new life to the subculture of violence thesis. With controls for population size, unemployment and inequality, a dummy variable for South was a significant factor in murder and assault. Moreover, in a separate analysis, percentage black was a strong determinant of murder, robbery and assault rates. The study was based on the largest 125 SMSAs, 1970.

In summary, the region, race, poverty and inequality literature has produced conflicting results. Early studies which seemed to support a southern subculture of violence were disputed, only to be resurrected later by Messner. More recent work, including that of Messner, has contradicted the southern subculture thesis, but with Rosenfeld (1986) we have seen its second coming. The early work which challenged the southern subculture thesis found no support for percentage non-white. Most of the work which followed found support for either percentage non-white or black, regardless of whether support for South was obtained. The most recent work has produced mixed results.

Studies which appeared to establish poverty as an important determinant were later contradicted. In turn, these studies were disputed, often in ingenious ways, and poverty made a comeback but at a cost to methodological consistency. Failing to account for non-linearities, inappropriate units of analysis and measurement errors have all been blamed, and yet some studies have salvaged poverty without any recourse to any of these devices.

Social Integration and Crime

Several recent studies have begun to explore the relationship between social integration and crime rates. In a study by Stark and his colleagues (Stark, *et al.* 1980) based on 193 SMSAs for 1970, significant partial correlations between church membership, a measure of religious integration, and crime rates controlling for percentage black were obtained. This study also showed stronger church membership effects on property crime than on violent crime, and the authors suggest that this reflects the intentional versus impulsive nature of

property and violent crime respectively. Accordingly, social integration is less of a factor in impulsive, spur-of-the-moment acts of deviance because these are less easily governed by social bonds and the moral order.

Following this study, similar research was published by Crutchfield, *et al.* (1982). This work was based on the largest 65 SMSAs for 1970. Here, the social integration measure studied was population mobility. The argument is that high population mobility reduces social integration because over time people are less able to maintain strong relationships with one another. With controls for poverty, unemployment, education and per cent black, all of which were insignificant, results showed that for property crime, mobility was the strongest determinant. For violent crime, per cent black was the strongest factor followed by mobility. Similar results were obtained with homicide rates as the dependent variable.

A year later, a study by Stark and his colleagues (Stark, *et al.* 1983) added support. In this study, which was also aimed at exploring older sources of data, the authors present moderately strong zero-order correlations between criminal offenses, including delinquency rates, and rates of population mobility and church membership for states in 1926 (N=41–48). Again, social integration was more highly associated with property crime, but in this case mobility was not significantly correlated with violent crime.

This line of research was recently strengthened by work which showed that family disruption plays a key role in crime (Sampson 1986b, 1987; Wilson1987). In the first study, Sampson showed that, with some exceptions, divorce rate is a strong determinant of robbery and homicide over age, sex and race categories. In this study poverty failed to predict black offending, but racial income inequality and occupational status were significant factors. In the most recent study, Sampson (1987) demonstrated that race-specific robbery and homicide rates for blacks and whites are strongly determined by family disruption, which in turn is the result of joblessness and poverty. Thus, the effects of economic deprivation are mediated by family disruption. Apart from lending support to the disorganization thesis, this study suggests that, contrary to the subculture of violence notion, black urban ghettos are not characterized by a unique subculture. Blacks and whites are similarly affected by family disruption. In both studies, cities with populations in excess of 100,000 were used.

Methodological Issues

The first issue we would like to raise is that of model specification. As mentioned above, social integration measures are largely ignored in the region, race, poverty and inequality literature, and with some notable exceptions, these measures and other important variables are

ignored by those who have focused on social integration. In addition, both literatures typically neglect other important controls: unemployment (Wilson 1987), population density (Roncek 1981), urbanity (Archer and Gartner 1976; Flango and Sherbenou 1976) and other at risk minority groups (Wilson 1987). Moreover, in the social integration literature, insufficient attention has been paid to controlling for a wider set of conceptually dissimilar social integration measures. Based on the previous literature, we would expect all such measures to be correlated with crime rates. Thus, studies which have shown strong family disruption effects may be contradicted if church membership and population mobility were also added to the equation. The failure to include important controls is itself a significant problem in this literature, but it is typically combined with other serious defects.

One such defect in much of this research is the use of small samples. Even in studies based on the full set of SMSAs or cities with a population of greater than 100,000, sample size is an issue because of the interrelatedness of independent variables. By their very nature, region, per cent black, poverty and economic inequality tend to be subject to multicollinear inefficiencies. In one study aimed in part at separating the effects of per cent black and poverty, and for which a zero-order matrix was published, these variables were highly related r=.81. Highly correlated variables do not necessarily produce inefficient estimates, but in such cases it is essential to have both large samples and good measurement (Blalock 1979; Kelejian and Oates 1983). In research on crime rates, measurement has often been questioned, and the exclusive focus on the urban environment has kept sample sizes down.

Equally suspect is the reliance on large, highly urban, ecological aggregates. Part of the reason for the high multicollinearity in some studies is the use of SMSAs and large cities as units of analysis. Variables such as per cent black and poverty have relatively little variation within large urban areas. This truncated variation inflates correlations and may distort results. In addition, while SMSAs were chosen over states in recent studies partly because they represent lower levels of analysis, ecological studies should be based on the lowest units for which equivalent measures are available (Bogue and Bogue 1976). Primarily because cities only provide us with information about urban environments, the US county is the focus of the present research.

Because SMSAs and large cities are not representative of the country as a whole, there are important theoretical reasons why samples involving these aggregates may provide distorted results. The best empirical evidence that highly urban units of analysis may potentially bias results comes from recent studies by Jackson (1984)

and Byrne (1986). For example, in research aimed at testing Cohen and Felson's (1979) household activity measure, Jackson divided her sample of cities into those greater than or equal to a population of 50,000 (N=265), and those with a population between 25,000 and 50,000 (N=143), 1970. While some variables behaved similarly across the samples, notably per cent black and unemployment (both of which were positively related to most index crimes), poverty and population size differed substantially. Poverty was positively related to homicide and auto theft, and negatively related to robbery and larceny in the sample of large cities, but unrelated to every index crime in the other sample. Population size was positively related to all violent crimes in large cities, but negatively related to homicide in the smaller cities. Since Jackson's sample of small cities was small and contains only a tiny fraction of medium size to small cities and no rural areas, one is left to wonder what effect the inclusion of such areas would have had on the results. Similar disparate results for various property crimes were obtained in Byrne's study, which also investigated cities greater than 25,000 population.

Apart from the fact that these examples suggest ways in which samples of urban areas may distort results, they also reveal our surprising lack of knowledge about crime in places other than urban areas. For example, if poverty genuinely contributes to crime as some recent studies based on urban areas appear to show, then many impoverished rural areas should also have high crime rates. However, our present understanding does not permit us to draw such a simple inference.

In addition, while we may believe that poverty correlates such as crime, delinquency, drug abuse, welfare dependence and families headed by females are not necessarily the sole province of cities, our focus on highly urban areas reinforces the view that it is the city, with its large minority population, that is pathological. At best this tends to distract attention from what may be the real causes of social problems; at worst it is a source of conflict, racism, discrimination and bad public policy.

Finally, except for recent studies by Sampson, the relationship between race and crime has been neglected in this literature. Per cent black has either been included as a seemingly innocuous 'control' or it has been seen as lending support to the subculture of violence theory. Other race and ethnic crime correlates have been entirely neglected. Despite evidence that other disadvantaged groups have high crime rates, their omission from this literature may have had the effect of reinforcing the subculture of violence theory as applied to blacks. It is facile if not convenient to argue that blacks are characterized by a subculture of violence when they are the only segment of the population that is singled out for scrutiny.

DATA AND METHODS

Bivariate and multiple linear and non-linear and OLS, and WLS regression analyses are performed on the data. Three dependent variables are used: indices of property and violent crime and homicide rates (per 100,000 pop.). The independent variables are taken from the literature reviewed with the exceptions noted below. They are region (a dummy variable for the Confederate South), per cent black, poverty (per cent below the poverty level), economic inequality (the Gini coefficient of income inequality), per cent church membership, divorce rate (per 1,000 pop.), per cent migrants, 1975–80, per cent population change, 1975–80, per cent unemployed, per cent high school graduates, per cent professional workers (a measure of occupational status), per cent Hispanic, per cent Native American, median age, and per cent young people age 5–17. Four other variables, median family income, rate of infant mortality, per cent female headed households, and per cent births to mothers under 20 years of age are included for additional analyses.

The year for the analysis is 1980. The sample includes 3,076 US counties for which complete data are available. This represents slightly more than 98 per cent of all counties. In addition to the reasons provided above, counties are preferable to cities in the present research because data for some measures either are not available for cities (i.e., church membership) or only available for non-rural cities (i.e., homicide). The indices for property and violent crime come from the US Bureau of the Census and are taken from unpublished FBI *Uniform Crime Reports* data. The property crime index includes data for burglary, larceny and motor vehicle theft. The violent crime index includes aggravated assault, rape, robbery and homicide.

The validity of UCR data has been hotly debated by both opponents and proponents (Gove, *et al.* 1985; Hindelang 1974; Kituse and Cicourel 1963; McCleary, *et al.* 1982; Seidman and Couzens 1974; Skogan 1975; Wolfgang 1968). The position taken here is that there is not sufficient empirical evidence of serious measurement errors which would preclude the use of official data for present research purposes. First, the relevant studies that have been done are based on very small samples. In general, evidence from work of this nature is notoriously weak, and the evidence that is proffered in this case is equivocal. Based on a sample of 26 cities for which survey data are available, low correlations between *National Crime Survey* (NCS) victimization and UCR data have been obtained for some crimes, notably aggravated assault and rape (Booth, *et al.* 1977; Cohen and Land 1984; Cohen and Lichbach 1982; Decker 1977, 1980; Nelson 1979; O'Brien, *et al.* 1980; O'Brien 1983). Such a sample size is far too small to adequately determine the usefulness of either UCR or NCS data.

Importantly, this line of research cannot tell us which data are invalid. It may be that NCS data are at fault; they too have been the subject of spirited criticism (Gove, *et al.* 1985; Hood and Sparks 1970; Levine 1976; Skogan 1976; Wolfgang and Singer 1978). Of course, the truth of the matter is that both UCR and NCS data are subject to measurement errors. But the real issue is not whether measurement errors exist (most researchers are convinced that they do) but rather whether they are serious enough to preclude the use of either UCR or NCS data in ecological research. We lack evidence on this issue. In order to reject UCR or NCS data, what would be required is evidence of systematic bias across large samples of ecological aggregates.

The homicide data come from the US National Center for Health Statistics (1984–86). They are supplied by coroners across the country and are regarded as highly reliable. Because murder is an uncommon event, the homicide data are averaged over three years, 1979–81 for stability.

With the exception of church membership and infant mortality, the data for the independent variables are from the US Bureau of the Census (1983). The church membership data are from Quinn, *et al.* (1982). Because these data are subject to minor reporting errors, they were corrected using the procedure described by Breault (1986). The data for infant mortality are from the US National Center for Health Statistics (1984–86).

In addition to the 3,076 county sample, other county groups are investigated. Following the literature reviewed above, a set of highly urban counties is analysed. In order to investigate the determinants of crime in rural areas, a set of 1,681 counties with populations less than 25,000 is also investigated. To more fully explore the southern subculture of violence thesis, a set of 1,058 southern counties is analysed. A set of 405 counties with per cent black greater than or equal to 25 is also explored. This cutoff point is approximately one standard deviation from the mean for per cent black. Finally, small sets of Hispanic and Native American counties are analysed.

ANALYSIS AND RESULTS

In order to anchor the present research in the prior literature, we first present results for homicide based on urban counties. Table I presents OLS regression estimates for the 408 largest counties, those with populations in excess of 100,000 in 1980. Both standardized and unstandardized coefficients are presented. In this sample, about 80 per cent of the population is located in urban areas. Consistent with some of the prior literature, percentage black, Gini, divorce and population change are among the strongest determinants of homicide in the sample. In addition, per cent Hispanic is a strong factor.

TABLE I: *Regression results for homicide, counties > 100,000 pop.*

Variable	b	Beta	t	Sig.	Mean	SD
South	−1.056	−.069	−1.6	.1098	.3	.4
Black	.474	.739	15.0	.0000	9.8	10.7
Poverty	−.188	−.119	−2.0	.0465	10.5	4.4
Gini	33.963	.177	3.6	.0003	.4	.1
Church	−.006	−.012	−.4	.7287	48.9	13.2
Divorce	.591	.187	6.0	.0000	5.5	2.2
Migrants	−.102	−.123	−3.1	.0022	12.7	8.3
Population change	.036	.131	3.2	.0015	18.8	25.2
Urban	.024	.062	1.8	.0808	78.0	17.9
Density	2.087	.126	4.3	.0000	1147.4	4148.8
Unemployment	−.188	−.026	−.7	.4682	3.0	.9
Education	−.034	−.027	−.4	.6796	40.1	5.5
Professional workers	−.282	−.15	−2.8	.0058	9.9	3.7
Hispanic	.200	.265	6.9	.0000	4.8	9.1
Native American	.140	.037	1.5	.1398	.5	1.8
Median age	.065	.031	.8	.4278	29.8	3.3
Age, 5–17	−.149	−.050	−1.3	.1947	21.0	2.3

Notes:
N = 408, R^2 = .78. South = dummy variable for Confederate states, Black = per cent black, Poverty = per cent below the poverty level, Gini = Gini coefficient of income inequality, Church = per cent church membership, Divorce = rate of divorce per 1,000 pop., Migrants = per cent migrants, 1975–80, Population change = per cent population change, 1975–80, Urban = per cent urban population, Density = population density, Unemployment = per cent unemployed, Education = per cent high school graduates, Professional workers = per cent professional workers, Hispanic = per cent Hispanic, Native American = per cent native American, Median age = median age, Age, 5–17 = per cent aged 5–17.

Notably, some of the factors that are not significant are South, church membership and per cent Native American. Poverty is just barely significant but, as in Messner's (1982a) paper, it is in the negative direction. Similar results are obtained when the sample is restricted to counties with populations greater than 200,000.

In part to assess whether highly urban counties may be a source of bias, and in addition to investigate crime in non-urban areas, a sample of rural counties is analysed. Table II presents OLS regression estimates for the 1,681 smallest counties, those with populations less than 25,000. Here, only about 20 per cent of the population is located in urban areas. Factors such as South, poverty and percentage Native American, which failed to be determinants in the urban sample, are now significant with rural counties. Per cent black and Hispanic, divorce and population change continue to be determinants of homicide while church membership is not significant.

Similar disparities across these urban and rural samples are found with the violent and property crime indices. For violent crime, church membership, divorce, population change and per cent Native American are all significant with rural counties, but insignificant with

TABLE II: *Regression results for homicide, counties < 25,000 pop.*

Variable	b	Beta	t	Sig.	Mean	SD
South	1.958	.122	3.7	.0002	.4	.5
Black	.149	.300	9.7	.0000	8.1	15.6
Poverty	.234	.228	6.3	.0000	17.1	7.5
Gini	−6.708	−.048	−2.0	.0428	.4	.1
Church	−.012	−.30	−1.3	.2080	58.1	19.8
Divorce	.345	.108	5.0	.0000	4.2	2.4
Migrants	.068	.063	2.1	.0340	8.8	7.1
Population change	.030	.088	3.1	.0017	13.4	22.8
Urban	.002	.007	.3	.7506	21.1	23.0
Density	.005	.012	.5	.6185	22.8	19.5
Unemployment	−.019	−.004	−.2	.8797	2.7	1.5
Education	.007	.007	.2	.8798	33.6	8.2
Professional workers	−.209	−.067	−2.0	.0413	5.8	2.5
Hispanic	.065	.095	3.9	.0001	4.1	11.2
Native American	.239	.227	10.3	.0000	1.6	7.3
Median age	−.048	−.026	−.7	.4566	32.0	4.1
Age, 5–17	.035	.012	.3	.7482	21.9	2.6

Notes:
N = 1,681, R^2 = .39.
See Table I for description of variables.

counties greater than 100,000 population. Poverty, which is significant in the sample of urban counties is insignificant with rural counties. For property crime, population change and per cent Hispanic, which are significant in rural counties, are insignificant in urban counties. Church membership and divorce, which are significant with urban counties, are insignificant in the sample of rural counties.

We turn now to the complete sample of 3,076 US counties. We started first by inspecting the data, listing out counties as to how they ranked on the dependent variables, and then examining scattergrams of bivariate relationships. This initial work provided some surprising results. For example, while we tend to assume that urban areas are places especially characterized by violent crime and homicide, we find that property crime is more related to urbanity than violent crime. Moreover, homicide is much less related to urbanity than property crime. As an illustration, of the 100 highest ranking counties on homicide, fully 71 are rural counties. Moreover, this is a conservative figure as it is based on counties in excess of 3,000 population. For reasons having to do with the instability of homicide rates in small populations, these smallest counties were eliminated in this preliminary analysis. The finding that urbanity is a less important determinant of homicide than property or violent crime was confirmed at the zero-order level and with multiple regression.

TABLE III: *Regression results for property crimes*

Variable	b	Beta	t	Sig.
South	−98.318	−.023	−1.1	.2782
Black	25.177	.178	8.6	.0000
Poverty	−16.168	−.057	−2.0	.0509
Gini	−1760.490	−.038	−1.9	.0626
Church	−6.907	−.060	−3.7	.0002
Divorce	53.605	.060	4.0	.0001
Migrants	−15.333	−.058	−3.0	.0025
Population change	16.230	.179	9.7	.0000
Urban	29.600	.412	22.9	.0000
Density	.010	.008	.6	.5410
Unemployment	280.239	.169	11.4	.0000
Education	63.896	.240	7.5	.0000
Professional workers	45.352	.069	3.0	.0030
Hispanic	21.459	.105	6.8	.0000
Native American	17.058	.046	3.3	.0012
Median age	−65.440	−.123	−5.9	.0000
Age, 5–17	−133.536	−.162	−8.1	.0000

Note:
$N = 3{,}076$, $R^2 = .54$.

The 100 highest ranking counties on homicide also show that 63 counties are located in the South. Most interesting perhaps is that, of the top six counties, four have very large populations of Native Americans and are in fact Indian reservations. Corson, South Dakota leads the list of counties on homicide with a rate of 63.5 per 100,000 population. About half the population is Native American.

In view of the interest in non-linear functional forms, we were somewhat surprised when we failed to find them. For example, while Williams (1984) suggests that a non-linear function best describes the poverty-homicide relationship, we could not find it. In addition, while Curtis (1975) suggests a non-linear relationship between per cent black and violent crime, we were similarly unable to detect it.

Table III presents OLS regression estimates for property crime. By far the strongest determinant of property crime is urbanity. Among other strong determinants are per cent black and Hispanic, population change and unemployment. The result for unemployment is interesting because previous studies have failed to obtain it (e.g., Cantor and Land 1985). These and other findings presented below suggest that the unemployment measure taps temporary as opposed to chronic deprivation – which, compared to violent crime and homicide, is most easily alleviated through property-directed criminal participation.

Because we fail to support poverty in this analysis, alternative analyses were performed. First, various non-linearities were formally

TABLE IV: *Regression results for violent crimes*

Variable	b	Beta	t	Sig.
South	−20.076	−.036	−1.4	.1563
Black	6.941	.369	15.1	.0000
Poverty	−1.687	−.044	−1.3	.1921
Gini	106.458	.017	.7	.4708
Church	−1.550	−.101	−5.3	.0000
Divorce	6.342	.053	3.1	.0023
Migrants	1.147	.033	1.5	.1467
Population change	1.116	.093	4.3	.0000
Urban	3.031	.317	15.0	.0000
Density	.033	.196	12.4	.0000
Unemployment	16.939	.077	4.4	.0000
Education	2.547	.072	1.9	.0553
Professional workers	−6.265	−.071	−2.6	.0101
Hispanic	4.399	.161	8.9	.0000
Native American	4.291	.086	5.2	.0000
Median age	.875	.012	.5	.6117
Age, 5–17	−10.391	−.095	−4.0	.0001

Notes:
N = 3,076, R^2 = .36.
See Table I for description of variables.
See Table III for means and standard deviations.

investigated with little evidence as suggested above. Second, because it has been argued that the official poverty threshold is too low and fails to pick up a significant proportion of the poor population (e.g., Loftin and Parker 1985), median family income was substituted for poverty with similar insignificant findings. Finally, infant mortality and per cent births to mothers under 20 years of age were also substituted for poverty with similar results. We are confident, then, that economic deprivation is unrelated to property crime.

Two measures for population mobility were included in the regression equations and they produced opposite results. It is therefore legitimate to examine them separately. Consequently, when per cent population change is eliminated (previously it was significant in the predicted direction), per cent migrants also becomes significant in the positive direction. Some of the other important variables that fail to predict property crime are South, Gini, and population density. Note that the Gini coefficient comes close to the .05 significance level.

Table IV presents OLS regression estimates for violent crime. Among the strongest determinants of violent crime are per cent black and Hispanic, church membership, urbanity and population density. Notably, violent crime is unrelated to South. The measure of South included here is that of the original Confederate states, but alternative measures including additional states failed to improve results. Again,

TABLE V: *Regression results for homicide*

Variable	b	Beta	t	Sig.
South	1.622	.116	5.0	.0000
Black	.170	.363	16.4	.0000
Poverty	.161	.169	5.5	.0000
Gini	−3.186	−.021	−1.0	.3417
Church	−.019	−.050	−2.9	.0038
Divorce	.396	.132	8.4	.0000
Migrants	−.003	−.003	−.2	.8739
Population change	.021	.071	3.6	.0003
Urban	.021	.089	4.6	.0000
Density	5.391	.128	9.0	.0000
Unemployment	−.021	−.004	−.2	.8739
Education	−.099	−.111	−3.3	.0011
Professional workers	−.049	−.022	−.9	.3718
Hispanic	.086	.126	7.6	.0000
Native American	.261	.210	14.0	.0000
Median age	.052	.029	1.3	.1872
Age, 5–17	−.039	−.014	−.7	.5056

Notes:
N = 3,076, R^2 = .48.
See Table I for description of variables.
See Table III for means and standard deviations.

poverty failed to be an important determinant and the alternative procedures described above were tried once again with similar insignificant results. As before, when population change is removed from the equation, per cent migrants becomes significant once more. Other important variables that fail to affect violent crimes are Gini, education and median age.

Table V presents OLS regression estimates for homicide. Here in addition to measures such as per cent black, Hispanic, Native American and divorce, both South and poverty are strong determinants. This time when population change is omitted, per cent migrants fails to be a predictor. Following the prior literature, unemployment also fails to predict homicide here. Other important factors that fail to be determinants are occupational status, media age and per cent 5–17 years of age. Note that, unexpectedly, median age is only a factor in property crime, and per cent 5–17 does not predict any dependent variable in the hypothesized direction.

Alternative regression procedures and samples were explored in order to provide greater confidence in the results. First, WLS regression estimates were not significantly different from those with OLS. Second, the smallest counties with populations less than 3,000 were omitted (leaving a sample size of 2,882) for the reason that crime rates in these counties have the least stability and the possibility that

TABLE VI: *Regression results for homicide, southern counties*

Variable	b	Beta	t	Sig.	Mean	SD
Black	.137	.384	8.9	.0000	20.3	7.7
Poverty	.216	.253	4.2	.0000	19.1	7.4
Gini	−11.841	−.088	−2.1	.0393	.4	.1
Church	−.020	−.049	−1.5	.1454	54.6	5.3
Divorce	.250	.093	2.9	.0035	4.9	2.4
Migrants	−.123	−.150	−3.4	.0006	9.6	7.8
Population change	.021	.078	1.9	.0571	21.7	23.8
Urban	.017	.075	1.8	.0722	36.5	27.6
Density	.002	.115	3.6	.004	110.4	323.3
Unemployment	−.232	−.033	−1.0	.3199	2.6	.9
Education	.128	.124	1.7	.0811	28.8	6.1
Professional workers	−.343	−.144	−2.7	.0065	5.8	2.6
Hispanic	.040	.081	2.0	.0423	5.0	12.9
Native American	.212	.050	1.8	.0653	.4	1.5
Median age	−.108	−.070	−1.5	.1361	30.6	4.1
Age, 5–17	−.218	−.089	−1.9	.0589	22.4	2.6

Notes:
N = 1058, R^2 = .23.
See Table I for description of variables.

this may be a source of bias. However, this change in sample size provided negligible differences.

Because South is a strong predictor of homicide, a subsample of southern counties was analysed. Table VI presents OLS regression estimates for homicide with a sample of 1,058 southern counties. The strongest determinants here are per cent black and poverty. The support for per cent black provides strong evidence against the southern subculture of violence thesis. The southern subculture of violence theory suggests that blacks outside the South should have high rates of violent criminal participation, but blacks and other racial and ethnic groups in the South should not. To buttress these results per cent white was added to the equation with the result that it is a strong determinant of homicide rates in the negative direction. These findings do not of course belie the black subculture of violence theory, they in fact support it, but they do suggest that the southern subculture of violence thesis is not tenable.

If the results in Table VI provide support for a black subculture of violence, the overall evidence is quite contrary. While per cent black is a strong determinant of all three dependent variables, so is per cent Hispanic, and per cent Native American is an especially strong determinant of homicide rates. Thus, if there is evidence for a black subculture of violence, there is equally good evidence for Hispanic and Native American subcultures of violence. The reader can now more fully appreciate the serious implications of ignoring racial and ethnic groups other than blacks.

TABLE VII: *Regression results for homicide, counties > 25% black*

Variable	b	Beta	t	Sig.	Mean	SD
South	−2.325	−.066	−1.1	.2726	1.0	.2
Black	.073	.121	1.7	.0880	40.4	11.7
Poverty	.437	.468	4.7	.0000	23.7	7.6
Gini	−31.179	−.224	−3.2	.0015	.4	.1
Church	−.045	−.082	−1.6	.1117	55.7	13.1
Divorce	6.708	.001	.0	.9962	4.3	2.5
Migrants	−.089	−.082	−1.3	−.1947	7.1	6.6
Population change	−.002	−.003	−.1	.9525	9.5	12.8
Urban	.056	.219	3.1	.0018	33.0	27.8
Density	4.433	.145	1.8	.0722	368.7	232.6
Unemployment	.425	.047	.9	.3721	2.8	.8
Education	.268	.179	1.8	.0662	26.1	4.8
Professional workers	−.282	−.069	−.8	.3997	5.3	2.0
Hispanic	−.007	−.002	−.0	.9774	1.3	2.2
Native American	.078	.021	.5	.6460	.3	1.9
Median age	.202	.076	1.1	.2698	29.1	2.7
Age, 5–17	.012	.004	.1	.9593	23.3	2.2

Notes:
$N = 405$, $R^2 = .48$.
See Table I for description of variables.

Even though blacks, Hispanics and Native Americans cannot be said to have similar cultures, it is at least conceivable, if not likely, that these groups may share subcultural values of violence. However, based on the above analyses we suggest that there are more plausible factors that these groups share, notably poverty, divorce and population density in the case of homicide, urbanity and population density for violent crime, and at least urbanity for property crime. Moreover, if race- and ethnic-specific explanations of crime are superfluous, then we would expect such variables to be crime factors in areas where these groups are strongly represented.

To explore this issue more fully, a subsample of counties with high per cent black was investigated. Table VII presents OLS regression estimates for homicide with a sample of 405 counties in which per cent black is greater than 25 per cent. This cutoff point is suggested first because it represents a substantial proportion of the population and second because it closely approximates one standard deviation from the mean for per cent black nationally (8.8 per cent). The mean for per cent black in this sample is 40.4 per cent. As expected, results indicate that poverty is the most important determinant. The only other significant factor is urbanity. The divorce measure and population density are not factors.

Note that per cent black is also unrelated. This is not conclusive evidence against the subculture theory, but neither is it support. An implausible but nevertheless consistent interpretation is that once a critical mass of people is reached, additional population increments, no matter how large, will not increase crime rates. Accordingly, crime is a step-function of per cent black. However, this speculation is contradicted by the finding of a linear relationship between per cent black and homicide.

Because divorce failed to be a determinant of homicide in this sample, we substituted another family integration measure, per cent female headed households, which has previously been shown to predict homicide with disaggregated race data (Sampson 1987). With this new equation, per cent female headed households is a strong predictor of homicide rates.

Employing the same sample (405 countries with per cent black greater than 25), OLS regression estimates were computed. Results (not shown) indicate that the major determinant of violent crime is population density, followed by urbanity. Poverty is not significant, but per cent black is marginally significant at the .045 level. Next, property crime was substituted as the dependent variable. Results (not shown) suggested that in this case density and urbanity are the strongest determinants of property crime. Virtually identical results for all three dependent variables were obtained when the sample cutoff point for per cent black was changed to 20 to 30 per cent.

Similar results were obtained for a small set of 102 Hispanic counties, i.e., poverty in the case of homicide, urbanity for violent and property crime. With an even smaller sample of 48 extremely rural Native American counties, poverty was the dominant factor in homicide. Indeed, the four highest ranking Native American counties on homicide are among the very poorest counties in the USA. Because there is insufficient variation on urbanity and population density in this small sample, we were not surprised when these measures failed to predict violent and property crime.

In sum, the weight of the evidence suggests that the major causes of crime in areas in which blacks, Hispanics and Native Americans are strongly represented are the same factors that explain crime elsewhere. Thus these data suggest that race- and ethnic-specific explanations of crime are not necessary. We fail to support the subculture of violence thesis.

Finally, the finding that economic deprivation plays a strong role in homicide suggested yet one additional analysis. When we transformed the regression equation such that poverty was the dependent variable, per cent black, Hispanic and Native American were among the strongest determinants as expected.

SUMMARY AND DISCUSSION

This paper has analysed crime rates over what is perhaps the largest set of ecological units ever brought to bear on the subject, nearly the universe of US counties. This is a departure from the previous literature, most of which was based on relatively small samples of highly urban areas. The use of these samples raises a host of methodological and theoretical issues. Small, highly urban samples tend to be characterized by the untoward effects of extreme or unusual cases, truncated variation on independent variables, heteroscedasticity, and multicollinearity. More importantly, the use of urban areas, was a source of some bias in previous work and we understood little about how suggested crime correlates would fare in representative samples. Furthermore, we knew virtually nothing about the determinants of crime rates in non-urban areas.

The exclusive focus on the urban environment also tends to shift attention away from the causes of crime to its highly visible manifestations on the urban landscape, and the perception that it is the large minority population of US cities that is responsible for urban decay and social pathology. This has important implications beyond the academy, but as we have seen, one major perspective in the field of criminology, the subculture of violence theory, suggests this very thing. Despite the subculture of violence theory, the black crime relationship has until recently gone largely unexplored, and other minorities have been entirely neglected. Thus, when some previous researchers found that per cent black was a crime determinant, they were able to argue that this was evidence for violent black cultural values, even though other race and ethnic groups were not included in the analysis. To no small degree, the subculture of violence theory was contingent on the omission of other groups. The theory loses credibility once similar evidence can be used to support the existence of Hispanic and Native American subcultures of violence. Finally, the prior literature neglected other important crime correlates, notably conceptually different measures of social integration.

As expected, the present data suggest that for property crime there is no southern subculture of violence. South is insignificant and in the negative direction. However, even in the case of violent crime, where we might expect to see a relationship, none exists between South and crime. Yet, contrary to many studies based on urban samples, South is a significant factor in homicide. This finding led to an analysis of southern counties, in which per cent black is a strong determinant of homicide rates. This may constitute support for a black subculture of violence but it is strong evidence against the southern subculture of violence theory. According to the southern subculture theory, blacks outside the South should have high homicide and violent crime rates, but blacks and other race and ethnic groups in the South should not.

We therefore reject the southern subculture of violence thesis as an explanation of US crime rates.

If the positive finding for per cent black in the sample of southern counties lends support to a black subculture of violence, the data also provide support for Hispanic and Native American subcultures of violence. Per cent Hispanic is a strong determinant of all three dependent variables, and is a significant factor in the southern sample. Per cent Native American is a significant factor in property and violent crime, and is an especially strong determinant of homicide rates. As mentioned above, some previous researchers who found support for per cent black argued in favor of a black subculture of violence without studying other race and ethnic groups. Because blacks, Hispanics and American Indians have dissimilar cultures, the subculture of violence thesis is an unlikely explanation for the high rates of criminal participation that characterize these disparate groups.

For more plausible factors we looked to the other determinants of crime rates identified here. We find that the strongest determinant of property crime is urbanity. Urbanity and population density are particularly strong factors in violent crime, and poverty followed by divorce and population density are factors in homicide. Accordingly, in samples in which blacks, Hispanics and Native Americans are strongly represented, these factors should be relevant. The most reliable evidence we offer on this issue is based on a comparatively large sample of counties in which blacks make up a significant proportion of the population. As expected, poverty is the strongest determinant of homicide, and while divorce and population density fail to be predictors, an alternative measure of family disruption, per cent female headed households, is a strong factor. Similarly, urbanity and population density are strongly related to violent crime. In the case of property crime, urbanity and population density are again the most important measures. Similar results are obtained with much smaller samples of Hispanic and Native American counties. Thus, the factors that explain crime in areas in which these groups are highly represented are the same factors that explain crime elsewhere. We conclude that race- and ethnic-specific explanations of crime are unwarranted and that the subculture of violence thesis as applied to blacks in particular is untenable.

Generally negative results for economic inequality are found. While the Gini coefficient of income inequality is a homicide covariate in the sample of urban counties, it fails to be related to the dependent variables in the main sample of 3,076 counties. In the case of property crime, Gini, like poverty comes close to being significant in the negative direction. In addition, while it is clear that Gini is unrelated to violent crime, there is reason to be cautious about the homicide results. Even though multicollinearity inefficiencies were not a serious problem in the largest sample, Gini and poverty are sizably collinear. While

the present results indicate that when poverty is controlled, Gini fails to be a homicide factor, a more circumspect interpretation is that the variables are too highly related for a definitive decision about economic inequality. We are suggesting that ecological analysis, no matter how adequate, cannot by itself provide a clear-cut answer to the question of the relative merits of absolute economic deprivation versus relative economic deprivation as causes of homicide.

Support is found for the social integration measures. Church membership, divorce and population change are significant determinants of all three dependent variables, and per cent migrants is a significant factor in property and violent crime. However, some previous claims for these variables could not be confirmed. First, with the exception of population change as a factor in property crime, divorce in the case of homicide, and the subset of rural counties, the social integration measures are not as strong as some previous studies have suggested. Second, we fail to support the thesis that, for reasons of social control, social integration is more strongly related to property crime than violent crime. While the population mobility measures generally follow this pattern, the measures for Durkheim's religious and family integration variables behave differently. Church membership is a strong factor in violent crime, and divorce is an especially strong determinant of homicide. An alternative explanation is equally plausible, that because of their seriousness, the most violent crimes will be subject to social control, but we cannot support this thesis either.

The measure of urbanity, per cent urban population, is a very strong predictor of property crime, a strong factor in violent crime, but a much less strong homicide determinant. These results are surprising because we tend to associate urban areas most with high rates of violent crime and homicide. We find that many rural areas, particularly ones with high levels of poverty, have very high homicide rates. In the sample of rural counties, urbanity is unrelated to homicide, while it is related to violent crime and is an especially strong property crime covariate.

In the national sample, unemployment is a strong factor in property crime, somewhat less strong in the case of violent crime and unrelated to homicide rates. In rural, southern and black counties, unemployment is related to property crime but unrelated to both violent crime and homicide. Together, these findings suggest that the unemployment measure is tapping a more temporary form of economic deprivation.

We predicted that with the possible exception of homicide rates, age would have a negative effect on crime. We found that while it is negatively related to property crime in most county groups, including the national group, it generally fails to predict violent

crime or homicide. The exception here is in the South, where age has a moderately strong negative impact on violent crime. However, in no sample is age positively related to the dependent variables.

Contrary to our predictions, per cent 5–17 years of age is similarly related to the dependent variables. In the national set of counties, as well as the rural and southern groups, this measure is negatively related to property crime. In the national county group and in the South, it is negatively related to violent crime, and in no sample is it positively related to the dependent variable. The results of the two age measures suggest that in the case of property crime, the age bracket 18–31 (the upper limit is the median) is a strong positive determinant as would be expected. If the data were more sensitive, we would be able to determine the median or mean age that corresponds to the various crime measures. The present data suggest that the more violent the crime, the lower the mean age correlate. Since poverty varies in a similar way over the three dependent variables, with poverty almost significantly related to property crime in the negative direction and related to homicide in the positive direction, age is a covariate of poverty across the dependent variables in a manner one would expect.

In a number of ways, the determinants of crime in the set of rural counties are similar to those in the large group of 3,076 counties. Notably, poverty and divorce are the strongest predictors of homicide in the rural sample, and urbanity is a strong factor in both rural violent and property crime. Interestingly, however, per cent population change and per cent migrants are the strongest predictors of violent and property crime in the rural county group. Thus, social integration has a greater effect on rural crime than it does on non-rural crime. A plausible reason for this, originally suggested by Stark, *et al*(1982), is that social integration has its greatest inhibitory effect on crime where there already exist strong sources of social integration.

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