

ORGANIZED CRIME ACTIVITY AND THE SPATIAL VARIATION
OF PROPERTY AND VIOLENT CRIME RATES¹

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Most empirical generalizations of the spatial variation of crime rates have focused on population and environment. Population characteristics are most commonly analyzed in sociological studies of the distribution of crime. This research argues that concentrations of residents possessing certain socioeconomic and demographic characteristics influence areal crime rates by creating crime-prone populations. Factors examined most frequently are age structure, poverty, race, and unemployment (Brown, 1982; Markides and Tracy, 1976; Mladenka and Hill 1977).

Environmental characteristics have received equal attention, most commonly in research with an ecological perspective. These studies hypothesize that the physical properties of an area affect crime rates by creating atmospheres conducive to crime. This research focuses on factors such as population size and density, land use patterns, residential deterioration, and environmental design (Harries, 1981; Stahura, 1980; Pyle, 1974; Jeffery, 1971; Boggs, 1965).

Together these two research perspectives have made significant strides in explaining the spatial variation of crime rates, and have resulted in several pragmatic benefits. Planners and policy makers have incorporated researchers' empirical evidence to attempt to prevent crime. However, traditional factors such as age structure, population size, or population density are temporally persistent, and hence difficult to change. Whereas this does not suggest the abandonment of analyses of population and environmental characteristics, it does argue for additional studies which incorporate factors that may be of greater applied value for policy makers. Initial studies have already been undertaken concerning factors of this nature, including police patrols (Sherman, 1983) and criminogenic commodities (Moore, 1983). Their results suggest continued research of similar "controllable determinants" of crime.

The purpose of this study is to reexamine the relationships between areal crime rates, and environmental and population characteristics, while also examining the influence exerted by a factor with potentially greater applied value, organized crime activities. Two questions are addressed: (1) do organized crime activities serve to mediate the influence of population and environmental characteristics on areal crime rates; and (2) do organized crime activities play a direct role in determining the distribution of crime rates across geographical units?

A path analytic approach is employed to test the existence, direction, and strength of the hypothesized causal links between the environmental, population, and organized crime factors, and the areal crime rates. Violent and property crime rates by counties are examined.

The relationship between organized crime activities and property and violent crime may appear obvious, but this relationship has been little studied empirically. Further, a formal examination of the influence of organized crime on other criminal offenses can produce results beyond a simply confirmation of the presence or absence of a relationship. If the influence of organized crime is primarily spurious, or interactive with the traditional determinants, it can be concluded that organized crime is merely an additional consequence of crime-prone populations and environments. If the strength of the relationship is weak or insignificant, it can be concluded that the presence of organized crime activities does not result in an increase in other

criminal offenses, and hence not worthy of any special attention from policy makers. However, if the causal influence of organized crime is demonstrated as direct and strong, policy makers will have a determinant which when controlled may lead to a decrease in other crimes.

Study Area and Data Source

The sixty-seven counties of Florida were chosen for analysis. Counties are used to minimize the "spatial spillover" of crime rates. Previous research has suggested that the journey to crime experiences friction of distance (Hakim, 1980). Most crimes appear to take place within a mile or two of the criminal's residence (McIver, 1981; Pyle, 1974). However, the spillover phenomenon continues to be a problem in analyses using small units of observation such as municipalities (Hakim, 1979). This is most notable when crimes occur beyond the official boundaries of the criminal's place of residence. The use of larger spatial units, here counties, should reduce the effects of spatial spillover, although tests for spatial autocorrelation will be conducted.

The selection of counties of the same state, rather than a cross sectional sample of counties across the nation, was implemented to maintain consistency in the classification and recording of criminal offenses. Florida was selected because Florida's counties provide a diverse sample of the population and the environmental characteristics used in this analysis, and because Florida, unenviably, has a high crime rate.² Furthermore, organized crime activity, by no means unique to Florida, is extremely conspicuous in the state, and has long been a major concern of local, state, and federal law enforcement agencies.

The environmental and population characteristics used in this analysis were ascertained from the Florida Statistical Abstract for 1979. The violent and property crime rates were obtained from the state Uniform Crime Report for 1980. Data concerning organized crime activities were also obtained from this source for 1979. Whereas several problems arise from the use of UCR statistics, most notably the underrepresentation of white collar crimes, they do represent the most consistent, timely, and complete data source available (Decker, 1977; Hindelang, 1974).

Development of Causal Links

The causal model to be tested (Fig. 1) attempts to explain spatial variation in violent and property crime rates of Florida counties. It utilizes several population and environmental characteristics, and the presence of organized crime activities as explanatory factors. The model is recursive and consists of six exogenous and three endogenous variables. Single headed arrows represent a hypothesized positive relationship between the variables.

Specific population subgroups have been shown to represent crime prone or generating populations. High crime rates are disproportionately found in areas of high unemployment, low socioeconomic status, and concentrations of minorities and young adults. Three variables represent population characteristics in this analysis: unemployment rate (UNEMPLOY), percent black (PCTBLACK), and percent males aged 15-24 (YNGPERSN). UNEMPLOY, defined as the average annual employment rate, and PCTBLACK, defined as the percentage of black population, are utilized to represent the degree of poverty and low personal resources among residents. Previous studies have documented the influence of these factors on crime rates within the context of economic needs (Beasely and Antunes, 1974). Moreover, it has been suggested that certain social accompaniments of poverty and low income, when considered geographically, may result in crime (Sutherland and Cressey, 1978). YNGPERSN, the percentage of resident males aged 15-24, is used as a surrogate of age structure. The findings

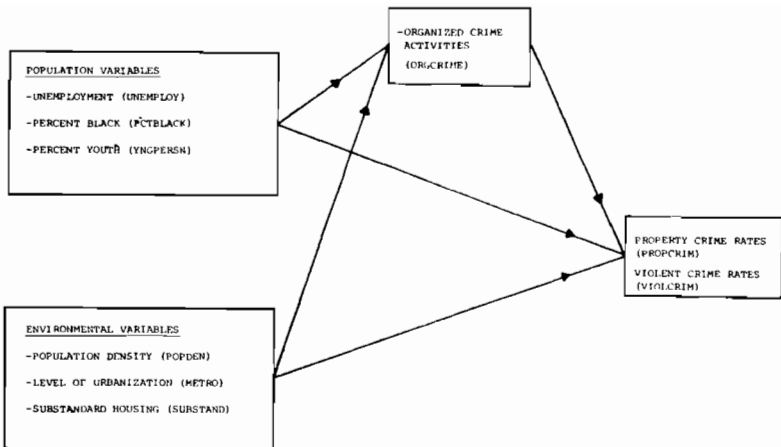


Fig. 1

of previous research, and empirical evidence from arrest data, have shown that the age composition of a population plays a critical role in determining the distribution of crime rates (Markides and Tracy, 1976). More specifically, crime rates have been found to be higher in areas with large youth populations, especially males in their teens and twenties. Thus, it is hypothesized that UNEMPLOY, PCTBLACK, and YNGPERSN will exert a positive causal influence often the violent and property crime rates.

Certain environmental characteristics have been shown to create opportunities for, and atmospheres conducive to crime. Criminal activity has been found to be most frequent in older deteriorating urban areas with large heterogeneous populations. Three variables are used to represent the environmental characteristics of counties: population density (POPDEN), level of urbanization (METRO), and substandard housing (SUBSTAND). POPDEN, defined as the resident population per square, is employed to represent the physical population density of the county. Previous analyses utilizing this variable have generated ambiguous results concerning its effect on crime rates. However, several studies have shown that high density at certain geographic scales results in social pathologies, including crime, due to the greater levels of stress and anxiety it creates (Corstairs, 1976; Winsborough, 1965). Furthermore, population density per square mile provides a crude approximation of the age of political units within counties, another factor which may influence crime rates (Brown and Oldakowski, 1983).³ METRO, a dummy variable which distinguishes between SMSA core counties and contiguous and non-SMSA counties, is a surrogate of the general level of urbanization and population size of an area. Whereas crime rates do not necessarily increase or decrease with proportionate changes in urban population, the loss of local autonomy and fragmentation of local normative order in large urban areas can result in an increase in crime (Stahura, 1980). SUBSTAND, the percentage of population residing in housing units with inadequate plumbing facilities, represents the degree of physical deterioration in a county.⁴ Physical deterioration creates crime conducive environments in several ways. Most notably, it represents dwelling units which are less secure, and housing which is commonly occupied by the crime prone population subgroups noted above. Thus, POPDEN, METRO, and SUBSTAND are hypothesized to exert a positive causal influence on violent and property crime rates.

The inclusion of organized crime activities in the hypothesized models represents an attempt to introduce a "controllable determinant" into a causal analysis of crime rates. Although this factor has received little attention as a determinant of areal crime rates, sociological and criminological literature does provide some guidance concerning the activities it encompasses, and its relationship to other criminal offenses. Organized crime can be conceptualized in several contexts (Abadinsky, 1981): (1) as a corporate bureaucracy, (2) as a kinship network, and (3) as a patron-client relationship. Whereas the first two dominate among popular perceptions, the latter is in reality most frequent. As a patron-client relationship, organized crime provides goods and services that are illegal yet in demand among certain elements of society (Albini, 1971). Thus organized crime is present whenever and wherever an attempt is made to gain money and/or power without regard for law, in an extension of the free enterprise system (Messick and Goldblatt, 1972). Traditionally, organized crime has operated in areas of illicit behavior, such as loan sharking, extortion, gambling, prostitution, and narcotics (Quinney, 1975). Data concerning the latter three offenses, commonly called vice crimes, are easily obtainable.⁵ Hence ORGCRIME, a surrogate for the presence of organized crime activities in an area, is defined as the number of narcotics possessions, narcotics sales, illegal gambling, and prostitution offenses per 10,000 population.⁶

Because the majority of these offenses are classified as misdemeanors and are hypothetically "victimless crimes," they often receive limited attention from researchers and law enforcement officials. However, research of criminal behavior has shown that persons involved in these activities often commit other more serious criminal offenses, such as those classified as property and violent crimes in UCR statistics. For example, drug addiction has been shown to be an important motivational factor in crimes such as robbery or burglary (Harries, 1981). The very nature of organized crime also suggests the use of force or violence whenever necessary (U.S. Senate, Governmental Affairs Committee, 1980). Furthermore, many communities have begun rigorously to enforce laws against vice crimes such as prostitution or narcotics to reduce overall crime rates. Thus ORGCRIME is hypothesized to have a positive causal influence on the violent and property crime rates. ORGCRIME is also hypothesized to be positively affected by the population and environmental characteristics, because these factors, which are thought to be positively related to the violent and property crime rates, should also result in a greater abundance of organized crime activities.

The dependent variables, property and violent crime rates (PROPCRIM and VIOLCRIM), are operationalized on the basis of their Uniform Crime Report definitions, which is the precedent of past studies. PROPCRIM is the number of burglaries, thefts (of \$50 or more), and auto thefts per 10,000 population. VIOLCRIM is the number of murders, forcible rapes, robberies, and aggravated assaults per 10,000 population.

Methodology

Before performing a path analysis,⁷ the hypothesized links of the causal model are tested by the Simon-Ballock method. This method determines if the partial correlation between two variables provides sufficient evidence of the existence of a path. Both the Simon-Ballock method and path analysis are based on regression procedures, thus the standard conditions of ordinary least squares regression should be met. Multiple regression is utilized to obtain the necessary correlation and path coefficients, and to determine their significance levels. Three multiple regressions will be executed, one for each endogenous variable. Independent variables will be entered in a simple stepwise fashion, and residuals will be calculated to facilitate the tests for spatial autocorrelation.

Results

The Simon-Blalock method resulted in the removal of eight of the thirteen originally hypothesized causal links in both the property and violent crime models. Concerning the property crime rates (Fig. 2), the variables YNGPERSN, PCTBLACK, and SUBSTAND were found not to be significantly different

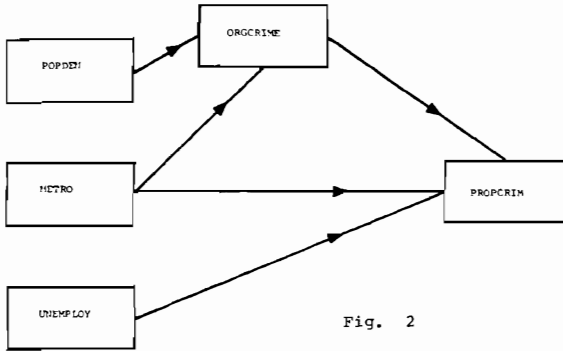


Fig. 2

from zero. The links between POPDEN and PROPCRIM, and UNEMPLOY and ORGRIME were also removed for this reason. Regarding the violent crime rates (Fig. 3), the variables YNGPERSN, UNEMPLOY, and SUBSTAND were removed from the model. The links between POPDEN and VIOLCRIM, and PCTBLACK and ORGRIME were also deleted.

These results indicate that at the county level, age structure does not significantly influence either organized crime activity, or the property and violent crime rates. It is suspected that the causal effect of this variable was represented by the general level of urbanization (METRO), as Florida's largest youth populations are found in metropolitan areas. Similarly, SUBSTAND exerted no significant influence on either of the three crime rates. This is not surprising in the case of property crime, as substandard housing represents for the most part low valued rewards. The inclusion of UNEMPLOY in the property crime model, and PCTBLACK in the violent crime model, indicates that poverty does indeed influence crime rates. However, violent and property crimes may be affected by different dimensions of economic need. The absence of a direct relationship between population density and the property and violent crime rates, and the presence of a direct link between population density

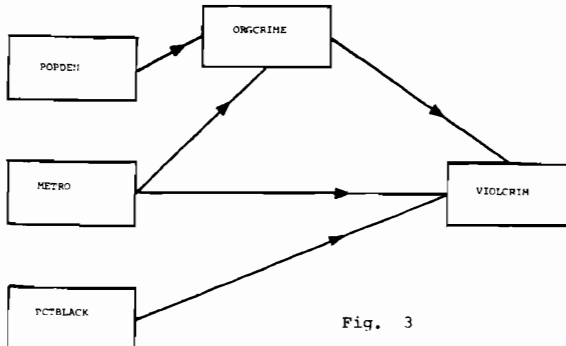


Fig. 3

and organized crime activities, raises further questions regarding the influence of that factor on crime. Finally, the lack of significant links between ORGCRIME and both PCTBLACK and UNEMPLOY indicates that organized crime activities are not spatially restricted to poverty areas. In fact, the bivariate correlations between ORGCRIME and PCTBLACK (-.027) and UNEMPLOY (-.136) suggest that organized crime may be more common in areas where there is a significant amount of income to support these activities.

The overall R-squares (Table 1) indicate that the revised models are quite successful at explaining rates of property, violent, and organized crime. METRO, UNEMPLOY, and ORGCRIME account for slightly more than 40 percent of the variance in the property crime rates. Over 50 percent of the variance in the violent crime rates is explained by METRO, ORGCRIME, and PCTBLACK. Concerning organized crime activities, POPDEN and METRO accounted for over 41 percent of the variance.

The individual path coefficients generated by the path analyses (Table 1) represent the direct causal influence of the independent variable upon the dependent variables. These coefficients indicate that all significant links represent a positive direct influence on the crime rates, as was hypothesized. In the analyses of both violent and property crime, ORGCRIME was found to have the largest direct causal influence (B=.470 and B=.351 respectively). METRO demonstrated the next largest direct influence, and was also slightly more powerful in explaining the violent crime rates than the property crime rates (B=.330 and B=.267 respectively). The surrogate measures of poverty demonstrated the weakest causal influence in these two analyses, although the influences of UNEMPLOY on PROPCRIM (B=.180) was slightly greater than that of PCTBLACK on VIOLCRIM (B=.162). Concerning organized crime activities, POPDEN was found to have the greatest direct causal influence (B=.533), while a moderate influence was exerted by METRO (B=.196).

TABLE 1
Path Coefficients

	PROPCRIM	VIOLCRIM	ORGCRIME
METRO	.267	.330	.196
ORGCRIME	.351	.470	---
UNEMPLOY	.180	---	---
POPDEN	---	---	.533
PCTBLACK	---	.162	---
R-Square	.401	.504	.410
Residual	.773	.704	.768

*-all coefficients significant at .05 level

These path coefficients were then used to decompose the original correlation between the linked variables into direct causal, indirect causal and spurious components. The direct causal influence is the path coefficient itself. The indirect causal influence represents the effect of the independent variable upon the dependent variable through intervening variables. The spurious influence represents the effect of missing links, and is utilized as an indicator of the validity of the causal model.

The decomposed coefficients for the hypothesized models (Table 2) indicate that in all but two instances the original correlation between linked variables was comprised primarily of causal influence. Thus for the most part, the models consist of factors which do affect the crime rates. Concerning

TABLE 2
Decomposed Correlation Coefficients

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PROPCRIM with:	METRO	ORGCRI	UNEMPLOY	POPDEN
	-----	-----	-----	-----
a) Original r	.533	.511	.358	.425
b) Direct Causal	.267	.351	.180	---
c) Indirect Causal	.070	---	---	.187
d) Total Causal (b+c)	.337	.351	.180	.187
e) Spurious (a-d)	.226	.160	.178	.238
VIOLCRIM with:	METRO	ORGCRI	PCTBLACK	POPDEN
	-----	-----	-----	-----
a) Original r	.593	.627	.292	.422
b) Direct Causal	.330	.470	.162	---
c) Indirect Causal	.092	---	---	.251
d) Total Causal (b+c)	.422	.470	.162	.251
e) Spurious (a-d)	.171	.157	.130	.171
ORGCRI with:	METRO	POPDEN		
	-----	-----		
a) Original r	.432	.618		
b) Direct Causal	.196	.533		
c) Indirect Causal	---	---		
d) Total Causal (b+c)	.196	.533		
e) Spurious (a-d)	.236	.085		

property crime, these factors include METRO, ORGCRIME, and UNEMPLOY. The total causal effect of the latter two was due solely to direct links, whereas the total causal effect of METRO on PROPCRIM also included its indirect causal influence through ORGCRIME. The majority of the correlation between PROPCRIM and POPDEN was due to spurious influences. Regarding violent crime, all correlation coefficients were comprised primarily of causal influence. The total causal effect of ORGCRIME and PCTBLACK was due solely to direct links, whereas the total causal effect of METRO once again included its indirect influence through ORGCRIME. The correlation between POPDEN and VIOLCRIM, despite no direct link, was primarily due to indirect causal influences through ORGCRIME. Concerning organized crime activities, the original correlation between ORGCRIME and POPDEN was predominantly a result of direct causal influence. The majority of the correlation between METRO and ORGCRIME, however, was due to spurious influences. This suggests that a missing variable may be affecting both METRO and ORGCRIME, resulting in their covariation.

Lastly, the efficiency of the direct causal links and the accuracy of the overall explanatory power of the causal models were evaluated by testing the independence of the residuals obtained from the three multiple regression equations. Using county contiguity (represented by values of 0 or 1) as weights, a Moran's I statistic was calculated for each of the sets of residuals. The results (Table 3) indicate that no spatial autocorrelation exists among the distribution of the three sets of regression residuals. Thus, the

TABLE 3
Spatial Autocorrelation Analysis of Regression Residuals

	Moran's I	Expected I	Standard Deviation of I	Z-score
VIOLCRIM	-.037	-.015	.044	.79
PROPCRIM	-.012	-.015	.042	.62
ORGCRIME	-.064	-.015	.044	.97

path coefficients and overall R-squares may be interpreted confidently. Furthermore, it has been confirmed that using counties as units of analysis helps to alleviate the problem of spatial spillover of crime rates.

Discussion and Conclusion

This study provides preliminary answers to two research questions posed above. Organized crime activities do serve as a mediator of the influence of certain population and environmental characteristics on crime rates. This was most clearly evident in the relationships between population density, and violent and property crimes. Population density does not directly influence crime rates through the stress and anxiety it creates; rather, its effect on crime may be the result of an indirect relationship through organized crime activities, by generating the threshold population necessary for free enterprise illicit behavior to exist. A similar situation was demonstrated concerning the relationship between the general level of urbanization and the crime rates, although to a lesser degree.

Organized crime activities also exert a direct causal influence on crime rates. On both violent and property crime, the organized crime variable demonstrated the greatest direct and total causal influence. These findings support several contentions: first, patrons of organized crime may also be involved in other criminal offenses necessary for the survival of their enterprise; and second, the need to obtain goods and services offered by organized crime may serve as a motive for other criminal offenses committed by clients.

This study shows that traditional environmental and population characteristics such as general level of urbanization and poverty influence crime rates directly. These factors should continue to be used in future analyses. The influence of other traditional characteristics such as age structure remains debatable, as little or no influence on violent and property crime rates was demonstrated. However, they also should continue to be considered because their influence on crime may be mediated through other factors not included in this analysis.

Finally, the significant influence of organized crime demonstrated here has created the potential for future research. The causal effects of this factor should be examined in subsequent analyses utilizing different spatial scales or individual crime rates. Also, this study has produced a preliminary indication that a decrease in the incidence of organized crime activities (more specifically, vice crimes) may lead to a significant decrease in the rate of other criminal offenses.

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1. The author wishes to thank Marilyn Brown and Curtis Roseman for their comments on earlier drafts of this paper, and all anonymous reviewers for their constructive evaluations.
2. Florida ranked second only to Nevada in the index crime rate for 1980 (U.S. Federal Bureau of Investigation, 1981). The state has had a consistently high ranking in both violent and property crime for over a decade.
3. It is not possible (nor is it the intent of this research) to resolve the debate over the validity of population density as a determinant of crime. However, because this research attempts to reexamine the relationships between population and environmental characteristics and areal crime rates, and because population density measures have frequently been utilized in past studies, its inclusion appears relevant.
4. A single measure, inadequate plumbing, has been chosen rather than an index to represent substandard housing. This is because variables commonly used in conjunction with inadequate plumbing to formulate indices (e.g. age of housing unit and persons per room) have received considerable criticism as accurate measures of substandard housing.
5. Unfortunately, neither UCR statistics nor victimization surveys provide adequate data on other illegal offenses appropriate in developing an organized crime activities index.
6. Because of their "victimless" nature, vice crimes are rarely reported. Thus, offense rates for these activities were estimated from county arrest data and offense/arrest ratio.
7. Path analysis is a method of decomposing and interpreting linear relationships among sets of variables. The procedure is comprised of (1) generating one structural equation for each endogenous variable in the causal model, (2) utilizing regression procedures to ascertain the appropriate correlation and path coefficients, (3) using the F-test to determine significance levels, and (4) decomposing correlation coefficients into their direct causal, indirect causal, and spurious components.

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