

**Contextual effects on criminal victimization risks:  
estimating the impact of social disorganization**

Leandro Piquet Carneiro

*Departamento de Ciência Política –Univesridade de São Paulo*

Clifford Young

*IPSOS Brasil*

Seminário Temático 35:

Vitimização: riscos objetivos e percepções do risco ou novos  
dados, novos movimentos

**31º Encontro Anual da ANPOCS  
de 22 a 26 de outubro de 2007  
Caxambu, MG**

## Introduction

One of the firmly established traditions in sociology is the study of the spatial distribution of crime and deviance. Shaw et. al. (1929) and Shaw and McKay (1942) were the first major contributions to this ecological perspective. In direct criticism of the biological explanations of crime and deviance of the period, Shaw et. al. (1929) argued that crime and criminal behavior was a function of social and cultural processes of urban growth *and not* a mere function of the biological characteristics (race, brain size, ethnicity, etc.) of human beings.

Grounded in the *concentric-circle model of urban growth*, first articulated by Park and Burgess (Park and Burgess 1915), Shaw et. al (1929) and Shaw and McKay (1942) postulate that variations in crime rates across space and time result from the process of urban growth and change and its resulting effects on community social organization and organizational capacity. In particular, they show that three structural variables are important in explaining variations in the spatial distributions of crime: (1) low economic status, (2) ethnic heterogeneity, and (3) population instability.

Neighborhoods which are poorer, which are more ethnically heterogeneous, and which possess higher degrees of population instability are, in turn, more likely to have higher crime rates, and, in particular, higher rates in juvenile delinquency. While never measuring the concept, Shaw et. al (1929) and Shaw and McKay (1942) hypothesis that variations in the three structural variables leads, in turn, to variations in neighborhood social disorganization (the ability, or inability, of the neighborhood to organize effectively against crime), which, in turn, mediates the effect of structural variables on variations in crime rates.

Consistent with the Park/Burgess model, Shaw and colleagues (1929; 1942) also demonstrate that neighborhoods maintain their crime and social disorganization profiles over time, independently of changes in the individual characteristics of its inhabitants. In short, their work suggests that the structural characteristics of the neighborhood, *and not necessarily individual characteristics of its inhabitants*, explain geographic variations in crime overtime.

The result of this pioneering research had far-reaching impact on crime prevention policy. Indeed, public policy went from being solely “individual-centric” in focus (emphasis on psychological counseling, psychiatric solutions, crime as a public health issue etc.) to being “community-centric” in focus (emphasis on community organization, community empowerment, improving informal and formal social controls, etc.) (Schlossman et. al. 1984; Rosenbaum 1986).

By the 1960’s however, the ecological perspective lost much of its attraction as new, innovative individual-based theories began to appear with the advent of the new analytical techniques and data collection methodologies (see for an example Cloward and Ohlin 1960; Differential Opportunity Theory). As a result, the ecological perspective—neighborhoods and communities—lost its vigor both as a research agenda as well as a theme for crime prevention policy.

Only in the last 20 years has the ecological model become the focus again of criminologists (Bursik 1986; Reiss 1986; Sampson 1986; Sampson and Groves 1989; Sampson et. al. 1997; Morenoff and Sampson 1998) and policy makers (Rosenbaum 1986). This research, in particular Sampson and Groves 1989 and Sampson et. al 1997, builds upon the initial ecological framework as define by Shaw and Colleagues (1929;1942), using its underlying concepts, while addressing its major weaknesses.

In particular, Sampson and Colleagues (1986; 1989; 1997) make two major contributions to the ecological perspective: (1) they include two additional structural variables—family disruption and urbanization—and (2) they provide direct measures of social disorganization. Unlike Shaw and Colleagues (1929; 1942), this research shows that community social disorganization has a direct effect on crime, providing evidence that the organizational capacity of a neighborhood affects its crime rates. This same research demonstrates that the degree of social disorganization of the neighborhood mediates the structural characteristics of the neighborhood. Simply put, poorer, more heterogeneous, and more unstable neighborhoods have higher crime rates because they are less able to organize themselves against crime.

Here it is important to note that both Shaw and Sampson test the ecological model in the US and Great Britain. No study has directly tested the ecological model in Brazil at an intra-city level (Lima et. al. 2000).

The objective of this paper is to test the ecological model and its applicability to Brazil and, in particular, to the city of São Paulo. We believe that testing the ecological model is relevant for three reasons:

- (1) We believe that a neighborhood or community-based perspective can help re-direct the crime control policies' focus from the dominant "government centric" model toward a more "contextual centric" one.
- (2) We want to emphasize a contextual perspective that places central importance on the community and its social context and *not only* on macro-economic processes (i.e., inequality, globalization, etc.). Human beings commit crimes and are victimized in social space. Therefore, crime cannot be considered independently from the social context and the spatial settings in which it takes place. In short, why do crime rates vary among equally poor neighborhoods (or equally rich)?
- (3) The ecological perspective provides a coherent and testable framework upon which future research can be based. We are not implying that the ecological approach is the only road to understanding criminal victimization risks *but* that, at the least, it is a consistent theoretical and empirical approach.

Here it is important to stress that we will not be testing the direct effect of social disorganization variables, such as social networks and collective efficacy, on crime due to survey limitations. Instead, we will focus on the effects of a set of structural variables on crime and victimization risk. With this in mind, we ask two interrelated questions in this paper: (1) Does contextual effects affects the criminal victimization risks at São Paulo? (2) And if not, why?

For this analysis, we used data from multiple sources in order to ensure the validity of results. Our unit of analysis will be the 96 census districts for the city of São Paulo as

defined by IBGE (Brazilian Institute of Geography and Statistics). We use the 2000 Census micro data (IBGE) to measure the five structural variables found in the ecological model: (i) Socio-economic status (SES); (ii) racial heterogeneity; (iii) residential mobility; (iv) family structure; and (v) urbanization.

To measure crime, we use data from two different sources: (1) police incident reports and (2) crime rates based upon a victimization survey of São Paulo households. We use these two different crime data sources in order to ensure data quality and validity. Police incidence reports suffer from underreporting *yet* provide for in-depth analysis by crime type. Victimization surveys, in turn, correct for problems of underreporting *but* do not allow for detailed analysis by crime type and are imprecise in specifying where the crime occurred.

Based upon police incidence reports between January and June of 2002, we measure seven crime types at the census district level: (1) armed car robbery, (2) car theft, (3) street mugging (4) street pick-pocketing, (5) home burglary, (6) home invasion and (7) homicide. Using the IFB “Pesquisa de Condições de Vida e Segurança” Victimization Survey – a probability with quota sample design (Sudman 1967) with 5000 interviews conducted in 2003, we also use a summated index of 6 crime types at the census district level: (i) home invasion, (ii) home burglary, (iii) street mugging, (iv) street pick pocketing, (v) car theft, (vi) armed car robbery.

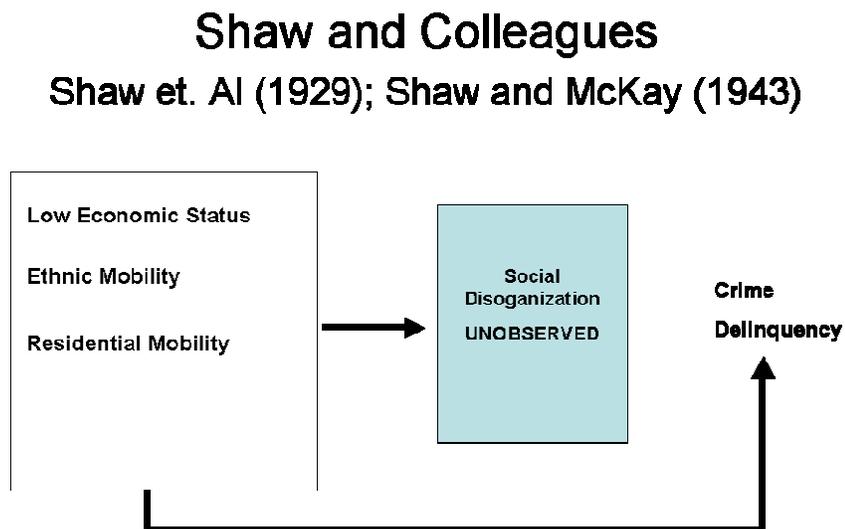
### **Literature review on ecological models**

Shaw and Colleagues (Shaw et. al 1929; Shaw and McKay 1942) first postulate that neighborhoods with lower levels of social disorganization, which they define as the capacity of the given locale to organize itself around a common goal (crime reduction), have correspondingly higher levels of crime. Here it is important to note that Shaw and colleagues were interested primarily in youth crime and delinquency in attempt to understand the production of criminal careers.

According to Shaw and Colleagues, social disorganization, in turn, mediates three structural variables: (1) Low Economic Status; (2) Ethnic mobility, and (3) Residential Mobility (see Figure 1 below). Simply put, poorer, more heterogeneous, and more unstable neighborhoods have higher crime rates because they are less able to organize themselves against crime and, therefore, have correspondingly higher rates of crime in general, and youth crime in particular.

Shaw and Colleagues, however, do not measure *social organization* directly, which is one of the central criticisms of later research (Sampson and Groves 1989). As result of methodological limitations o the period, they restrict their analyses to testing the effect of the three structural variables—low economic status, ethnic mobility, and residential mobility—on crime. To draw the link between crime and social disorganization, they rely on extensive qualitative work conducted in parallel to their quantitative analysis as well as extensive practical experience on the subject (e.g., Shaw 1930).

Figure 1



In direct criticism of Shaw and Colleagues, Sampson and Groves (1989) add two important components to the original model. First, they test two additional structural variables: (1) family disruption and (2) urbanization. Second, unlike Shaw and Colleagues,

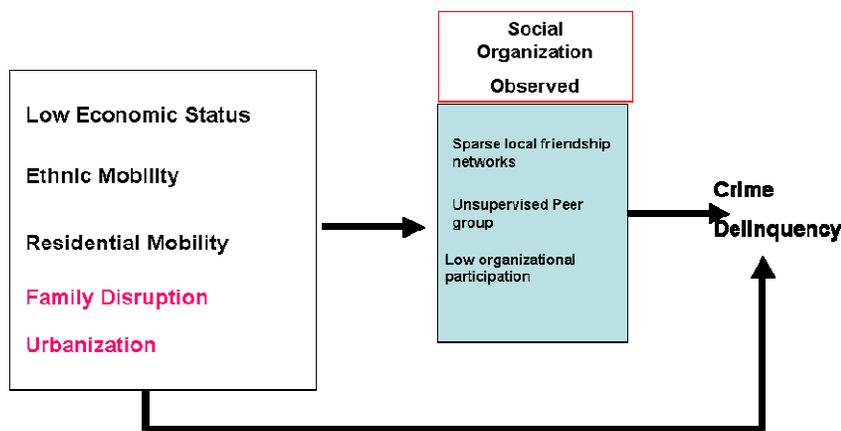
they include 3 *proxy* measures of social disorganization, providing direct measures of the concept: (1) sparse local friendship networks, (2) unsupervised peer groups, and (3) low organization participation (see Figure 2).

Their work, in turn, provides the first strong evidence for the effect of social disorganization on crime rates. Additionally, this same research demonstrates empirically the indirect effect of structural variables, mediated through social disorganization, on differential crime rates across neighborhoods. In short, they demonstrate how structural variables affect crime rates through neighborhood social disorganization.

It is important to note, though, the social disorganization measures in which their research employs are *proxy* variables taken from a pre-existing survey. Later research would have to sort out the exact theoretical implications and correct methodological application.

Figure 2

### Sampson and Groves 1989 (Mediated Effects)

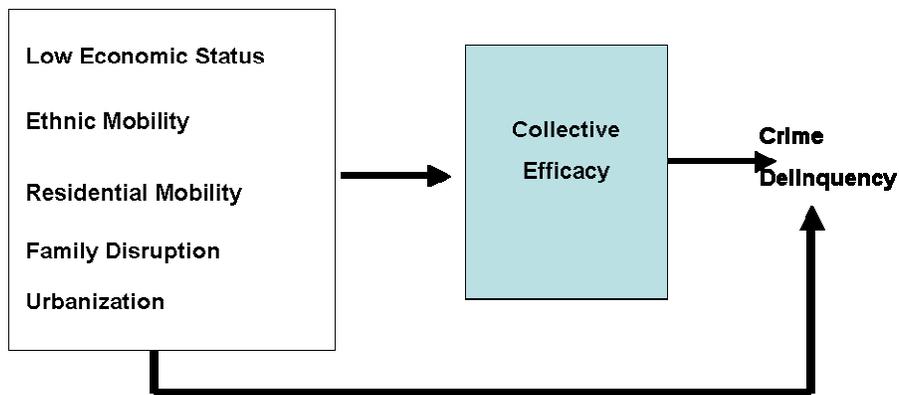


Still later, Sampson et. al (1997) modify further the existing ecological model by arguing that social disorganization can be best conceptualized by what they call, *collective efficacy*, or the perception of a given community concerning its capacity to organized and

later confront crime. Specifically, they replace their “social disorganization variables” with attitudinal measures of collective efficacy and find significant relationships between the measure (collective efficacy) and crime rates (see Figure 3).

Figure 3

### Sampson et. al 1997 (Mediated Effects)



It is important - once again -to emphasize that, in this paper, we will only analyze the effect of the structural variables on crime and not the effect of intervening variables, such as social disorganization and collective efficacy, on crime.

Following we offer more details about the expected relationship between each of the five structural variables and the response variables. These variables should be taken as structural variables, although at the original model proposed by Shaw and McKay these variables come out as independent variables.

**Ethnic Mobility**, as measured by the degree of ethnic heterogeneity—cumulative distribution of ethnic groups—and percentage of immigrants, is expected positively correlated with crime: the more ethnically heterogonous the neighborhood, the higher the crime rate (Shaw et. al 1929; Shaw and McKay 1942; Sampson 1986; Sampson and Groves 1989; Sampson et. al. 1997).

**Residential stability**, as measured by the average number of years lived in a given household and the percentage of people born in a given neighborhood, is positively correlated with crime; that is, the less time people live in a given neighborhood, the higher the crime rates (Shaw et. al 1929; Shaw and McKay 1942; Sampson 1986; Sampson and Groves 1989; Sampson et. al 1997).

**Family Disruption**, as measured by the proportion of separated and divorced parents and the proportion of households with only one parent, is positively correlated with crime: that is, the higher the proportion of disrupted families, the higher the crime rates (Sampson 1986; Sampson and Groves 1989; Sampson et. al. 1997).

**Urbanization**, as measured by being in an urban region, is negatively correlated with crime: that is, the more urban the area, the higher the crime rates (Sampson 1986; Sampson and Groves 1989; Sampson et. al. 1997).

**Low Economic Status:** Here the empirical evidence has been mixed with certain types of economically motivated crimes, such as home burglary and street robbery being negatively correlated with low economic status in the UK (Sampson and Groves 1989) *yet* positively correlated with crime in the US (Sampson 1986 and Sampson et. al. 1997). The literature offers no clear explanation for differences in the correlations between the American and Non-American contexts.

In contrast, this same research is consistent with respect to violent (homicide) and youth crime (household vandalism), showing a positive relationship with low economic status, independently of country (Sampson and Groves 1989 and Sampson et. al. 1997). Linking two different theoretical perspectives, St Jean (2002) argues that, while the *ecological model* accounts for between neighborhood variations in crime, within neighborhood variations can be explained by the given *criminal opportunity structure* for that neighborhood, as defined by three variables which must coincide in time and place: victim, offender, and lack of a proper guardian.

Commonly referred to as *routine activities theory*, Cohen e Felson (1989) demonstrate that the coinciding of three variables at the same place and time is essential for a crime to occur: (1) there must be a victim; (2) there must be a person to commit the crime (criminal), and (3) there must be a lack of a proper guardian.

They argue that there must be an *opportunity structure* for a crime to occur (victim, offender, and lack of proper guardian)—in short, a given geographic area must be attractive for an individual. We believe that such opportunity structures are important for explaining crimes rates across neighborhoods in São Paulo, given the large disparities in attractiveness of regions given huge variations in wealth (Young and Olsen 2003).

### **Data and Variables**

For this analysis, we used data from multiple sources in order to ensure the validity of results. Our unit of analysis will be the 96 census districts for the city of São Paulo as defined by IBGE (Brazilian Institute of Geography and Statistics). We use the 2000 Census micro data (IBGE) to measure the five structural variables proposed by the ecological model as showed at Figure 4. Income concentration, a variable not included in the ecological model could be specified as a proxy for criminal opportunity (victims near criminals), this variable can be justified using Cohen and Felson's (1989). Inequality is actually used in Brazilian's literature as a proxy for crime opportunity (Lima et. al. 2000). Lastly, we include a summated index based upon a factor score of the number of banks, schools, and restaurants—all proxy variables for crime opportunity shown to be correlated with economically motivated crimes (Young and Olsen 2003).

Income concentration, a variable not originally included in the ecological model could be specified as a proxy for criminal opportunity (victims near criminals), this variable can be justified using Cohen and Felson's (1989). Inequality is actually used in Brazilian's literature as a proxy for crime opportunity (Lima et. al. 2000). Lastly, we include a summated index based upon a factor score of the number of banks, schools, and restaurants—all proxy variables for crime opportunity shown to be correlated with economically motivated crimes (Young and Olsen 2003).

**Figure 4**  
Explanatory Variables

Dimension	Variable Description
Socio-economic status	<i>Proportion of household below the poverty line</i>
Racial heterogeneity	<i>Racial concentration</i>
Residential mobility	<i>Number of years living in the same house</i>
Family structure	<i>Proportion of single female family household</i>
Opportunity structure	<i>Number of bars, restaurants, banks and shopping-centers</i> <i>Dummy for downtown district</i>
Income concentration	<i>HH index</i>
Urbanization	<i>Proportion of households with sewage system</i> <i>Proximity to slums</i>

Table 1 shows the descriptive statistics and number of valid cases for the eight explanatory variables used to test the hypothesis about the contextual effects on criminal victimization and the number of crimes reported by the police.

**Table 1**

Descriptive Statistics for Explanatory Variables

Dimension	Operational variable	variable label	N	Minimum	Maximum	Mean	Std. Deviation
Poverty	1 Percent of the pop. below the poverty line	pct1sm	96	0,01	0,20	0,06	0,03
Income concentration	2 HH concentration index of income distribution	hh	96	0,164	0,413	0,24716	0,04
Racial Heterogeneity	3 Racial fractionalization	racial_h	96	0,15	0,61	0,42	0,12
Residential stability	4 Average time of residence	avgresid	96	12,41	29,54	21,89	3,89
Urbanization	5 Percent of household with sewage	sewage	96	0,00	1,00	0,88	0,16
Proximity to slums	6 Number of slums	slums2	96	0,00	141,00	19,64	29,08
Family Disruption	7 Percent of households head by women	pctwomen	96	0,16	0,44	0,30	0,06
Opportunity structure	Total number of banks, educational institutions, 8 bar and restaurants	target	96	1,00	934,00	225,56	192,71

Based upon police incidence reports between January 2002 and June of 2004, we measure seven crime types at the census district level: (i) armed car robbery, (ii) car theft, (iii) street mugging, (iv) street pick-pocketing, (v) home burglary, (vi) home invasion, and (vii) homicide.

Using the IFB “Pesquisa de Condições de Vida e Segurança” victimization survey – a probability with quota sample design (Sudman 1967) with 5000 interviews conducted in 2003, we also use a summated index of 6 crime types at the census district level: (i) home invasion, (ii) home burglary, (iii) street mugging, (iv) street pick pocketing, (v) car theft, (vi) armed car robbery.

Table 2 presents the partial correlation coefficients for the eight explanatory variables with the crime and victimization response variables. Crime (with the exception of homicide) and victimization risks are negatively correlated with poverty, racial heterogeneity and to the proximity of slums, although positive coefficients were expected here. The income concentration and opportunity structure run at the expected direction and a fuzzy pattern was observed for family disruption and urbanization indicators.

Table 2

Bivariate Correlations

Dimension	Correlation with Crime Variables								
	Operational variable	Armed car robbery	Car theft	Street mugging	Street pick pocket	Home invasion	Home burglary	Homicide	Victimization
Poverty									
1 Percent of the pop. below the poverty line		-0,27	-0,58	-0,37	-0,26	-0,43	-0,54	0,32	-0,13
Income concentration									
2 HH concentration index of income distribution		0,23	0,39	0,44	0,34	0,45	0,50	-0,09	0,17
Racial Heterogeneity									
3 Racial fractionalization		-0,45	-0,76	-0,20	-0,08	-0,44	-0,68	0,45	-0,27
Residential stability									
4 Average time of residence		0,49	0,48	-0,05	-0,14	0,11	0,28	-0,56	0,23
Urbanization									
5 Percent of household with sewage		0,36	0,47	0,28	0,20	0,23	0,42	-0,46	0,13
Proximity to slums									
6 Number of slums		-0,21	-0,42	-0,24	-0,19	-0,35	-0,55	0,26	-0,20
Family Disruption									
7 Percent of households head by women		0,03	0,51	0,54	0,43	0,38	0,72	-0,15	0,28
Opportunity structure									
8 Total number of banks, educational institutions, bar and restaurants		0,20	0,61	0,56	0,43	0,36	0,65	-0,19	0,28

## Results

At this part we present the main results of the OLS regression models with robust estimators for the standard error for various crime and victimization rates as explanatory variables. Following the reviewed literature on contextual effects and crime we put together a set of hypothesis designed to evaluate the determinants of victimization risks:

*Hypothesis 1:* The larger the proportion of households below the poverty line, the higher the crime rates. The expected relation is that the greater the proportion of poor the greater will be the incentives for participate in criminal activities.

*Hypothesis 2:* Income inequality is positively correlated to crime because its lower the crime opportunity costs (Fajnzylber, Lederman and Loyaza; 1999). In this way, it is expected that an increase in inequality will have a potential positive impact on the propensity of individuals to commit crimes by lowering its costs.

*Hypothesis 3:* The greater the racial heterogeneity, the higher the crime rates. Since Brazil shows low levels of racial spatial segregation, racial heterogeneity tends to be an inaccurate proxy for ‘proximity effect’ (the distance between victims and aggressors), which are normally attributed to this variable. In racially segregated societies residential mobility tends to be limited, and minority groups are bounded - or show a cultural propensity to it - and so remain in more homogeneous areas which can increase the proximity between potential aggressors and victims and lower the ‘protection effect’ (the ability of victims to undertake self protection measures).

*Hypothesis 4:* The greater the residential instability and the greater the family disruption, the higher the crime rates. Residential stability affects victimization risks through different social process. Life cycle and family structure are directly correlated to residential stability. Stable areas tend to have a higher proportion of families with children with less time available for leisure activities and higher propensity to get involved with community affairs. Otherwise, unstable neighborhoods are more likely to present a higher share of singles adults and single parent’s families which affect the community ability to exercise basic forms of social controls such as teenager’s or young adults’ supervision. The result of a low residential turnover is as an average increasing in the exposition to risk situations.

*Hypothesis 5:* The greater the proportion of households served by the public sewage systems, the lower the crime rates. The extension of the public swage system is the only indicator of public services that shows some variation across districts in São Paulo. The idea was to use the proportion of households connected to the public sewage system as a proxy to public interventions at the district, which could straightly affect the context in which offenses happen.

*Hypothesis 6:* The greater opportunity for crime, the higher the crime rates. Banks, malls, restaurants and schools among other facilities supply attractive victims to motivated offenders. The more instrumental (oriented toward economic rewards) is the aggressor's motivation for the crime, the greater the effect of the opportunity structure in determining the probability of victimization.

*Hypothesis 7:* All crime types will be correlated with each of the 5 structural variables and the 2 opportunity variables in the same direction. This hypothesis aim to test the internal consistency of the above propositions.

Crime statistics were converted to rates per 100 thousand inhabitants at the census' district level and victimization appear as percentages of victims during the last year. The explanatory variables included in the models were selected as proxies of the following four dimensions: (1) opportunity structure; (2) social disorganization; (3) income; (4) urban infrastructure. The empirical tests performed will allow us to discuss the cross sectional correlation between victimization risk and contextual effects in the presence of structural controls.

**Table 3**

## Regression models with crime determinants

Explanatory Variables	Response Variables							
	Street mugging		Street pick-pocking		Home invasion		Home burglary	
	Beta	<i>t</i> sig.	Beta	<i>t</i> sig.	Beta	<i>t</i> sig.	Beta	<i>t</i> sig.
Poverty	,068	,489	,121	,774	-,050	-,304	,279	2,766 **
Income concentration	,240	2,887 **	,191	2,044 **	,259	2,663 **	,125	2,078 **
Racial Heterogeneity	,066	,413	,072	,402	-,496	-2,654 **	-,617	-5,343 **
Residential stability	-,107	-,855	-,188	-1,335	-,085	-,582	-,109	-1,196
Poor Urban Conditions	,012	,101	,069	,501	-,114	-,801	-,124	-1,400
Proximity to slums	-,062	-,725	-,079	-,813	-,046	-,456	-,173	-2,776 **
Family Disruption	,048	,384	,047	,335	-,058	-,401	,475	5,310 **
Opportunity Structure	,390	3,452 **	,300	2,370 **	-,101	-,769	,014	,175
Dummy for commercial downtown dist	,403	4,620 **	,410	4,182 **	,406	3,974 **	,231	3,660 **
(Constant)		-1,278		-1,007		2,473 **		2,211 **
F		13,75		8,94		7,48		35,03
R <sup>2</sup>		0,590		0,484		0,439		0,786

**Table 4**

## Regression models with crime determinants (CONT.)

Explanatory Variables	Response Variables							
	Homicide		Victimization		Armed car robbery		Car theft	
	Beta	<i>t</i> sig.	Beta	<i>t</i> sig.	Beta	<i>t</i> sig.	Beta	<i>t</i> sig.
Poverty	0,424	2,749 **	-0,405	-2,098 **	-0,247	-1,439	-0,108	-0,809
Income concentration	0,148	1,616	-0,020	-0,195	0,116	1,140	0,055	0,687
Racial Heterogeneity	-0,21	-1,192	-0,143	-0,623	-0,181	-0,923	-0,427	-2,792 **
Residential stability	-0,431	-3,108 **	0,131	0,812	0,332	2,153 **	0,129	1,078
Poor Urban Conditions	-0,161	-1,194	0,181	1,266	0,148	0,987	-0,071	-0,606
Proximity to slums	0,159	1,670	0,008	0,071	0,047	0,439	-0,057	-0,686
Family Disruption	0,083	0,606	0,198	1,273	-0,511	-3,364 **	0,068	0,577
Opportunity Structure	-0,057	-0,460	-0,415	-2,910 **	0,098	0,703	0,216	2,004 *
Dummy for commercial downtown dist (Constant)	0,349	3,613 **	-0,026	-0,230	0,038	0,357	-0,062	-0,748
		2,569 **		0,949		1,481		1,477
F		9,52		4,95		5,87		15,93
R <sup>2</sup>		0,499		0,346		0,381		0,625

The estimations presented at Table 3 and Table 4 indicates that street crimes, burglary and home invasion are positive and significantly correlated with income inequality and the presence of banks, malls and other commercial units (the opportunity structure and the dummy for the downtown district), what was expected. But racial heterogeneity is negatively correlated with burglary and home invasion what isn't at the predicted direction. The estimations presented at Table 3 show that fewer burglaries and home invasions are expected at more heterogeneous districts with a greater number of slums (home invasion).

Homicide is the only variable that positively correlates with poverty and the dummy for the downtown district and negatively correlated with residential stability. These results are clearly according to the proposed hypothesis but the victimization variable and car robbery and theft shows odd correlations with poverty, opportunity, family structure and racial heterogeneity. The crime measure obtained with the victimization survey point to a more intricate correlation. Poorest districts show lower victimization risks - similar result was found in previous studies (Cruz;,1999; Gaviria and Páges, 1999).

## **Discussion**

The results, in general, *do not* allow us to confirm the presence of contextual effects on criminal victimization risks. All five of the structural variables show inconsistent relationships and the only crime that consistently follows the predicted model is the homicide which correlates in the expected direction with its three significant predictors.

For five crimes including homicide, the opportunity structure – captured by the dummy for downtown district -- is positively and strongly correlated with crime rates in the city of São Paulo.

What might explain these results? These results may suggest that we must make a distinction between theories that explain the “creation” or “socialization” of criminals and criminal careers from theories that explain criminal behavior within a geographic opportunity structure. Indeed, differently than Shaw, Sampson and Colleagues (1989; 1997) have treated their modified ecological model as *both* a theory to explain the “creation” or “supply” of criminals *and* a theory to explain criminal behavior.

The central underlying assumption of the modified ecological model is that once a criminal is “produced” by the prevailing social processes, he or she will commit a crime in the same neighborhood or economically similar neighborhoods. In short, crimes should be positively correlated with factors associated with the “supply” of criminals

In this sense, the ecological model implies that there is very little spatial mobility for the criminal. In an American context, perhaps reduced spatial mobility is quite possible given high levels of racial segregations and strict urban planning, which is not necessarily the same experience of other countries, in particular Brazil.

Indeed, the non-American experience may be different. For instance, results from the Sampson and Groves’ (1989) study in the UK show a negative correlation between poverty and crime, suggesting that richer neighborhoods are more attractive targets. In Brazil, the positive relationship between the opportunity variables and crime may also suggest that economically motivated crime occurs in certain neighborhoods because they are more “attractive” and policing are inadequately supplied.

One possible explanation for homicide in a Brazilian context is that it occurs in very restricted spaces—poor slum areas with high levels of drug trafficking—following a similar segregation model to that of the US. These results have far-reaching implications both theoretically and methodologically for future inquiries. First, these results may suggest that there is not a direct causal link between the structural prior variables and the intermediary social disorganization variables (see Figure 3). Instead, the two sets of variables might be theoretically distinct—with one measuring criminal opportunity and attractiveness and the other measuring the “socialization” and “production” of criminals. Further research is required to tease out the effect of the two set of variables. However, the first logical step would be to include direct measures of social disorganization.

Second, to test the above-two theory hypothesis, it would be necessary to measure theoretically distinct response variables. The “socialization” variables could include vandalism, juvenile delinquency and truancy, while the “opportunity” variables could include economically motivated crimes. This distinction in dependent variables would more closely align future research with the initial intents of Shaw and Colleagues who were worried about explaining the socialization and creation of criminal careers.

Third, future research will need to explain why there exist differences in results between the US and UK/Brazil. Initial hypotheses include higher levels of racial segregation in the US versus the other countries, more overt racisms by residents used for exclusion, more aggressive urban planning by government to inhibit the expansion of certain types of neighborhoods, and finally clearer property laws not allowing for squatter settlements alongside affluent areas.

## BIBLIOGRAPHY

- ADORNO, S. (1993), A Criminalidade urbana violenta no Brasil: um recorte temático. BIB, Rio de Janeiro, n.35. 1º semestre, pp. 3-24.
- BEATO F., C. C. (1998), Determinantes da criminalidade em Minas Gerais. São Paulo, Revista Brasileira de Ciências Sociais, vol. 13, nº 37, pp. 74-87.
- CARNEIRO, L. Piquet (2007), Para medir a violência, In: Dulce Pandolfi et al., Cidadania justa e violência, Rio de Janeiro, FGV.
- COHEN, D. KLUEGEL, J.R. e LAND, K.C. (1981), Social Inequality and Predatory Criminal Victimization: An Exposition and Test of a Formal Theory. *American Sociological Review*, 46, 505-524.
- CRUZ, J. M.. (1999), La victimización por violencia urbana: niveles y factores asociados en ciudades de América Latina y España. *Revista Panamericana Salud Publica* Año 78, vol. 5, nº 4/5, abril/maio.
- DELLASOPA, E.; BERCOVICH, A. e ARRIAGA, E. (1999), Violência, direitos civis e demografia no Brasil na década de 80: o caso da área metropolitana do Rio de Janeiro. *Revista Brasileira de Ciências Sociais*, Anpocs, vol. 14, nº 39, fevereiro.
- FATTAH, E. A. (1991), *Understanding Criminal Victimization*. Ontario, Prentice-Hall Canada Inc.
- GAROFALO, J. (1986). Reassessing the lifestyle model of criminal victimization. In M. Gottfredson and T. Hirschi (Eds.), *Positive criminology*, Beverly Hills: Sage Publications.
- GAVIRIA, A. and PAGÉS, C. (1999). Patterns of crime victimization in Latin America, Inter-American Development Bank, mimeo, novembro.
- GLAESER, E and SCAERDOTE, B. (1996), Why there is more crimes in cities. National Bureau of Economic Research, Working Paper.
- GLAESER, E., SACERDOTE, B. E SCHEINKMAN, J. A. (1995). Crime and social interactions. National Bureau of Economic Research, Working Paper nº 5026.
- HINDELANG, M.; GOTTFREDSON, M., and GAROFALO, J. (1978), *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Cambridge, Ma: Ballinger Publishing Company.
- LIMA, R. K., MISSE, M., MIRANDA, A. P. M. (2000). Violência, criminalidade, segurança pública e justiça criminal no Brasil: uma bibliografia. BIB, Rio de Janeiro, n. 50, 45-124.
- REISS, A. J., TONRY, M. (1986). *Communities and crimes*. Chicago, Chicago University Press.
- SAMPSON, R. J., (1986). Crime in Cities: The effects of formal and informal social control, in: A. J. REISS and M. TONRY, *Communities and crimes*. Chicago, Chicago University Press.
- SAMPSON, R. J., GROVES, W. B. (1989). Community structure and crime: testing social-disorganization theory. *The American Journal of Sociology*, vol. 94, no. 4, 774-802.
- SAMPSON, R. J., LAURISTSEN, J. L. (1990), Deviant lifestyles, proximity to crime and the offender - victim link in personal violence. *Journal of Research in Crime and Delinquency*, 27(2), 110-139.
- SAMPSON, R. J., RAUNDENBUSH, S.W., EARLS, F. (1997), Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science*, vol. 277, 918-924.

SCHLOSSMAN, S., ZELLMAN, G., SHAVELSON, R., COBB, J. Delinquency prevention in South Chicago: a fifty year assessment of the Chicago Area Project, Santa Monica, Calif.: Rand.

SHAW ET. AL. (1929) Delinquency Areas: A Study of the Geographic Distribution of School Traunts, Juvenile Delinquents, and Adult Offenders in Chicago, The University of Chicago Press, Chicago Press.

SHAW AND McKAY. (1942) Juvenile Delinquency and Urban Areas, The University of Chicago Press, Chicago Press.

TORRES, H. G., (2004). Segregação residencial e políticas públicas: São Paulo na década de 1990. Revista Brasileira de Ciências Sociais, v.9, n54, 41-56.

US Department of Justice (1992), Criminal victimization in the United States. Washington, US Department of Justice.

YOUNG, C.A. and OLSEN, Orjan (2003) “The São Paulo Crime Analysis Project: Analysis and Methodology” International Criminology Association, Rio de Janeiro.