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Homicide and Drug Trafficking in Impoverished Communities in Brazil

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Abstract

Many studies demonstrate that homicides are heavily concentrated in impoverished neighborhoods, but not all socially disadvantaged neighborhoods are hotbeds of violence. Conducted in Belo Horizonte, Brazil, this study hypothesizes that the association between high rates of homicide and impoverished areas is influenced by the emergence of a specific type of street drug-dealing common to *favelas* (slums). The study applies econometric techniques to police data on homicides and drug arrests from 2008 to 2011, as well as 2010 Census data, to test its hypothesis. The findings provide insight into the development of crime prevention policies in areas of high social vulnerability.

Keywords: Homicides, local drug markets, favelas of Brazil, social disorganization, crime prevention

1. Introduction

In the vast field of scientific investigation on criminal activities, the ecological perspective of crime has become anhimportant line of research, demonstrating that crime is not randomly distributed across territory (Anselin, 1989, 2005; Bellair, 1997; Beato Filho, 2012; Bottoms & Wiles, 1992; Bursik & Webb 1982; Silva, 2012; Oliveira, 2009). Research shows not only that crime rates vary according to the characteristics of the physical and socio-geographical environment, but also that specific types of crime have concentration patterns of their own. For example, violent interpersonal crimes, such as youth gang-related homicides and local drug dealing in public areas, tend to concentrate in areas characterized by physical neighborhood disorder and social disorganization, where informal and formal control mechanisms are limited. On the other hand, property crimes such as burglary and larceny tend to concentrate in areas with large volumes of financial transactions and high population density which are characterized by high levels of anonymity, such as large urban centers (Clarke & Felson, 1993; Cohen & Felson, 1979; Chainey & Silva, 2016). This study examines the spatial distribution of homicides and illicit drug markets, as well as analyzing correlated factors that explain the variation in the high incidence of these crimes in specific areas of Belo Horizonte.

Studies based on the ecological theory of Crime point out that the concentration of disadvantage factors like poverty, high residential turnover, and spatial segregation correlate to the high incidence of interpersonal violence in certain areas of the city (Park & Burgess, 1925; Shaw & McKay 1942). These studies ultimately maintain that the structural conditions of the communities are responsible for the variation in the geographical distribution of violence.

However, studies dedicated to exploring the mechanisms through which this association occurs are still limited, particularly in the context of Latin America, making these mechanisms an aspect of ecological studies that warrants further investigation. In addition, the field is lacking in a body of studies discussing the relevance of the drug trafficking dynamics to homicide rates, especially in communities characterized by high social vulnerability (Beato & Zilli, 2012; Sapori, et al., 2012; Misse, 2008a). This article aims to broaden the theoretical debate about this phenomenon, mainly in Brazil, where violence has reached alarming rates, with more than 56,000 deaths in absolute numbers in 2018 alone. In the specific case of Brazil, drug trafficking—especially in the peripheries of large cities—involves the participation of youth gangs competing for territories and customers. This has generated a variety of conflicts that are resolved through the use of firearms. The illegality of the drug markets promotes the institutionalization of violence as an instrument for drug

dealers to control the communities and carry out their illicit activities.

In this sense, the scope of this study is to expand the theoretical debate about the correlation between violence and social vulnerability factors, and to explain why not all socially marginalized communities become homicide hotspots, while homicide is highly prevalent in areas dominated by illegal drug markets. For that purpose, two main hypotheses are presented: the first is that the distribution of homicide hotspots is directly correlated to the spatial concentration of illegal drug markets in communities with a high rate of social vulnerability, while the second is that the structure of the retail market for illicit drugs, based on fixed points of sale known as *redes de bocas* (networks of drug-selling points), is the primary factor in explaining the correlation between high homicide rates, but that the general cause of both the drug marketing and the homicide is the environment of high social vulnerability. To a large extent, retail sales in the form of networks of drug-selling points would contribute to increase fear and violence in these communities, thus creating an environment conducive to the reproduction of characteristics of physical disorder and social disorganization.

2. Illicit Drug Markets and the Process and Consolidation of Systemic Violence

The impact of illicit drugs on crime has been the subject of sociological reflection for some time, and an important theoretical consideration in criminology (Cullen et al., 2013; Tonry & Wilson, 1990). The subject was the focus of conceptual systematization in a referential article by Goldstein (1985), who developed a tripartite framework to explain drug-related violence. A synopsis of this framework illustrated below:

Goldstein's Drug –related Violence Tripartite Explanatory Framework

Goldstein's Drug-related Violence Tripartite Explanatory Framework			
Explanations for drug-related violence	**Causal factors**	**Individuals' behavior motivation**	**Criminal act**
Psychopharmacological Violence	Short or long term use of specific substances (alcohol, barbiturates, stimulants, and PCP)	Irritability Irrationality Excitability Anxiety	Violent victimization and offending
Economic Compulsive Violence	Drug use	Obtain money to purchase drugs	Economically- oriented crime
Systemic Violence	Aggressive patterns of interaction within the system of drug distribution and use	Reinforce normative criminal codes Retaliation Dispute over territories	Systemic use of violence among drug dealers

According to Goldstein's tripartite framework of drug-related violence (1985), "psychopharmacological violence" refers to the relationship between the use of specific substances and violent behavior victimization. Under the influence of alcohol as well as other types of stimulants, offenders and victims tend to act irrationally with a reduced ability to make moral judgments take into account risks. Psychopharmacological violence may also result from irritability associated with chemical dependency syndromes, which can increase the risk of victimization.

In the "economic compulsive" component of the tripartite framework, Goldstein (1985) argues that some drug users are compelled to engage in economic-oriented crimes such as burglary and robbery in order to support the costs of their addiction. Situations in which victims directly react or offenders lose emotional control could lead to homicides.

In the third and final model in Goldstein's framework (1985), the "systemic" model, violence is an intrinsic element of the traditional aggressive dynamics of the illicit drug market, including distribution and use). Individuals' interactions within drug markets are ruled by the use of violence, which is essential to reinforcing criminal codes of conduct and commandments for resolving conflicts. As described by Goldstein & Brownstein (1987):

Systemic violence includes disputes over territory between rival drug dealers; assaults and homicides committed within dealing hierarchies as a means of enforcing normative codes; robberies of drug dealers and the usual violent retaliation by the dealer or his/her bosses; elimination of informers; disputes over drugs and/or drug paraphernalia; punishment for

selling adulterated or phony drugs; punishment for failing to pay one's debts; robbery violence related to the social ecology of coping areas; and so on. (p. 19)

The main empirical evidence in studies on the subject concerns the systemic dimension of the drug-violence relationship (Boyum et al., 2011; Beckert 2013). These studies draw attention to the development of a market that trades in products which are considered illegal and thereby define this market as a whole as illegal; state institutions do not support trade within such a market. As a result, the disagreements and conflicts that emerge in its dynamics tend to be settled through the use or threat of physical force, as mentioned above. In this regard, the use of firearms becomes commonplace among drug dealers as a strategy to boost their reputation among competitors and customers. Homicides tend to become a regular means of both conflict resolution and, consequently, of power assertion in this type of illegal market (Boyum et al., 2011); this is because in illegal markets, problems related to the value of goods, to competition between suppliers, and to cooperation between economic actors have specific contours conductive to the outbreak of violence as compared to within legal markets. In other words, the construction of social order in local illegal markets has singularities that inevitably lead to a context of violence (Beckert, 2013).

The issue of value assignment is one of the first of these singularities mentioned above (in bold). Due to the illicit drug market's high asymmetry of information pertaining to supply versus demand, as well as its lack of institutionalized mechanisms to guarantee the quality of products (such as regulations issued by the state), the buyers, for example, do not have a source of reliable information about the product they are buying. Likewise, they have no way of knowing whether the value assigned to the product is accurate. This uncertainty is mitigated by establishing the reputation of the product and/or of its supplier. As a result, a very common practice in illegal markets is the consolidation of personal networks between suppliers and consumers, so that the former are keen to offer fairly high-quality products in order to keep their customers from defecting to competitors. In this market, the lack of alternatives for purchasing the product tends to lead to a non-contentious attitude of consumers in the face of the uncertainties regarding what they are buying.

Once this local *network* has been established*,* the suppliers (groups of individuals within a clearly demarcated territorial base) seek to maintain the monopoly of their product and avoid competition, which is another singularity of this type of market. As such markets are not supported by the legal mechanisms that usually regulate commerce, they end up resorting to other procedures. One is the demarcation and control of the territory where drugs are sold by just one group or gang. Considering the urban environment of a large city, this does not occur just anywhere. The criminal activity of the illicit drug market thrives and consolidates in such places as are characterized by the weakening of the local community control capacity, thus opening up an entire avenue where individuals gather in structures for the sale of their products. This element contributes to the social order of illegal drug markets insofar as it stabilizes the expectations of economic actors towards the effectiveness of law enforcement. This prerogative of certain public agents becomes a negotiable commodity, which in turn will guarantee territorial control by forcing the competitor out of the respective market. As a result, a third peculiarity of the illegal drug market emerges as a specificity factor: cooperation. In the illegal drug market in particular, cooperation between actors is not only crucial, but is also the very foundation of its existence, since there is no institutional level in the state to secure the fulfillment of contracts. Therefore, personal trust between supplier and consumer takes on a larger importance in the scope of these illegal transactions. In this context, the threat or potential use of violence becomes a mechanism to maintain cooperation and guarantee local order, since it is impossible to resort to any formal procedure to ensure the proper fulfillment of contracts should the trust between parties be violated (Beckert, 2013).

It should be noted that it is not a matter of stating that violence is the routine pattern to induce cooperation between the actors involved in the illegal drug market, but rather that the violence represented by homicides is a high-cost resource that can be triggered by the real possibility of betrayal or non-fulfillment of what was agreed in a given contract or "transaction." Thus, in this scenario, homicides are a commodity of guarantee and predictability in the business dynamic in the event that a contract is breached.

Some studies of illegal drug trafficking and systemic violence—particularly those related to homicides engendered by drug trafficking—show that deaths are not homogeneously distributed across the urban space, despite the recognition that the illicit drug market does extend across the entire city, including urban spaces with better socioeconomic indicators (Grillo, 2008; Sapori et al., 2012; Oliveira et al., 2015; Oliveira & Hsu, 2018). The central issue is that the homicides resulting from the social order produced in this illicit drug market are much more frequent in the most vulnerable regions. This is due to the conflicting nature of the trafficking, which is usually structured in spaces of greater social exclusion with low levels of control, especially the formal control exercised by the criminal justice system; the source of the conflict lies in the fact that the illegal drug market is structured in two different formats of retail networks, with one being the networks of *entrepreneurs* and the second being *networks of drug-selling points* (Sapori et al., 2012). In the first case there is a decentralized structure referenced mainly by *hyperlinks* in a drug-selling network. The dynamic of this network is formed by a set of interconnected nodes, or connections between individuals, represented by the *entrepreneurs*, with the primary objective of obtaining the product they supply. These interrelations within the network of *entrepreneurs* are

characterized by social activities during which drugs are sold and distributed. Given its specific nature, the network of entrepreneurs prevails in the regions of cities where residents have greater purchasing power, essentially because these actors have greater mobility and share common environments with their suppliers. The profile of individuals connected in this network shows that they perform some type of paid professional activity, as well as having average education and a relatively functional family structure. They are entrepreneurs, generally of legal age, with financial backup to support their habit and friends with whom they share their addiction, which they extend to those places where their social activities are carried out (parties, meetings in bars, friends' houses, etc.). An important feature of this marketing network is discretion. Entrepreneurs do not carry firearms overtly and neither buyers nor sellers are restricted to a specific territory. Connections involving sellers and users extend beyond territorial boundaries. Homicides do occur in the network of entrepreneurs, but are perceived as traumatic events that compromise both the profitability and flow of the business. Accordingly, they are considered an undesirable last resort for resolving conflicts (Sapori et al., 2012).

In turn, the main connection point of the marketing network is located not within individuals, but rather in fixed location within the most vulnerable regions; this location acts as a hyperlink in customer relations and is where the arrangement known as *boca* or *biqueira* (drug-selling point) prevails. This hierarchically centralized marketing network known as the "Firm" is recognized as belonging to a boss and is characterized by a stratified power structure and division of labor.

According to Sapori et al., (2012), due to its strong territorial dependence—and given that its existence stems from a specific form of social organization typical of the location—one of the marketing network's driving forces is connections with local residents, especially young people, who seek to join the front line of drug dealing. They may be connected in the capacity of *vapores* or *guerreiros* (drug sellers; literally, "steamers" or "warriors," respectively); *aviões* (delivery boys; literally, "airplanes"); *correria* (who go from one drug-selling point to another running errands; literally "running"), *olheiros* or *fogueteiros* (lookouts who set off fireworks to warn their bosses of the presence of strangers); or *faxineiros* or *ratos* (debt collectors and killers; literally, "cleaners" or "rats," respectively).

It is precisely in this segment of the network of drug-selling points that youth gangs are inserted, making them susceptible to the progressive spread of homicide. The creation of local youth gangs is crucial for maintaining the drug-selling point established through the imposition of a territorial domain by physical force. The violent fear tactics typical of these groups is exacerbated by access to firearms and the systemic violence of the illicit drug market, which usually prevails in places with little local capacity for parochial and public control, in addition to low levels of collective effectiveness. It is also worth noting that in this format of the drug-selling network, the overt operations and consequent visibility of dealers in the territory are trademarks, as opposed to the less overt approach seen among entrepreneurs. Furthermore, the lower purchasing power of local drug users increases the possibility of incurring debts related to this type of transaction, when buyers ask to be "put on the cuff." These debts, in addition to breaking rules, enable the culture of gang violence, for example (Zilli, 2015). In the communities in which they operate, "business agents" flaunt their power mainly through openly carrying their firearms, for all to see the threat.

Therefore, one of the main differences between the contrasting kinds of drug dealers' profiles outlined above is that the socioeconomic indicators dictate a very different *modus operandi*. The restriction on the marketing network's freedom to move around the city is clearly one of the characteristic components of the type of trafficking most associated with violence. This restriction is due less to the sale of drugs and more to the segregation associated with the economic and social condition of the poorer classes. This shows that violence is promoted not only by drug trafficking, but also by a set of structural disadvantages that isolate population groups.

From this theoretical perspective, we seek to demonstrate the association between contexts of social vulnerability, drug trafficking, and violence, taking as a starting point the spatial dynamics of homicides in Belo Horizonte, a large city in Brazil.

3. Notes to Understand Violence in Socially Disorganized Communities

In the context of modern criminology, the debate on the relationship between community characteristics and crime distribution in urban spaces was originally introduced by Shaw & McKay's (1942) Social Disorganization Theory (Shaw & McKay, 1942). These authors follow the theoretical tradition of human ecology expressed by the Chicago School developed by Park & Burgess (1925) when studying the growth of American cities. By making an analogy to the ecological environment, Park and Burgess (1925) consider cities to be a "natural ecological niche," identified as a "living super-organism" and not just a geographical niche. They are therefore subject to change through the same processes that explain changes in the natural ecological environment, such as the process of "invasion, domination, and succession."

Formed by certain segments called "natural areas," cities take on a segmented shape that reflects, in general terms, aspects specific to each region. Thus, the assumptions of human ecology embodied in Shaw & McKay's (1942) ecological theory of crime help to demonstrate that each community, as a "natural area of the city," has peculiar characteristics not only in terms of socio-demographic characteristics, but also of more general social behavior, such as physical neighborhood

disorder and social disorganization. In this sense, certain communities—not individuals—would develop an environment more conducive to the emergence of criminal activities, which would explain the unequal distribution of crime in the urban space of large cities.

Shaw (1929), and later Shaw & McKay (1931, 1942), investigated the chronic problem of high rates of juvenile delinquency in the city of Chicago in the first half of the twentieth century. Their work demonstrates that the involvement of young people in deviant behavior and criminal activities is associated with a variety of social problems typical of communities marked by social and physical neighborhood disorder. These are areas whose main structural characteristics can be described by high rates of poverty, social heterogeneity, and residential mobility. In addition, Shaw & McKay (1931, 1942) indicate that high rates of juvenile delinquency also correlate with a number of other characteristics typical of these contexts of exclusion, such as dilapidation of the physical environment, alcoholism, the sale and use of illicit drugs, high rates of child mortality and diseases (e.g. tuberculosis), and prostitution, among other factors. Most of these communities are also comprised of ethnic minorities with low educational and economic levels.

In addition to these initial analyses, Bursik & Grasmick (1993) propose their systemic reformulation of the social disorganization theory by stating that juvenile delinquency in areas of social exclusion is a result of the failure of both formal and informal social control mechanisms. Local institutions like the family and the school as well as traditional public entities, would have a very limited capacity to control the behavior of young people, thus hindering the prevention of delinquent and criminal behavior. A typical illustration of these communities is one in which children and adolescents spend most of their free time playing on the streets, without the supervision of adults capable of influencing them positively. Consequently, these young people are easily attracted by the numerous opportunities available for participating in criminal activities, such as local drug dealing and stealing goods to sell. This environment would also contribute to rendering these young people more vulnerable to the influence of and recruitment by adult and more experienced offenders. With this in mind, these authors conclude that juvenile delinquency is culturally transmitted from one generation to another in socially disorganized communities (Bursik & Grasmick, 1993).

More recently, advances in the social disorganization theory (Bursik, 1988; Sampson, 1995, 2012; Sampson & Groves, 1989) have shown that crime, particularly among young people, correlates not only to the failure of informal social control mechanisms, but also to community members' lack of common values and expectations, and therefore extends to the resulting inability to organize around a solution to collective problems. This idea, translated from the concept of collective efficacy developed by Sampson et al., (1997), integrates the concept of mutual trust and social cohesion. The first concept, mutual trust, is based on shared expectations for values and norms that regulate individual behavior and interaction between people. The second concept, social cohesion, refers to the effort of individuals to act to solve common problems. In this framework, "collective efficacy is an essential means through which urban locations inhibit the occurrence of violence" (Sampson, 1997, p. 919).

As with the spatial pattern of crimes, it is important to emphasize that the level of collective efficacy achieved by individuals varies from one community to another and can be either enhanced or limited by mutual trust or the lack thereof. That is, collective efficacy as a potential resource in crime prevention implies the existence of cohesion and trust, as explained earlier. Thus, in communities where social mobilization-related resources for promoting collective actions are scarce and social expectations and values are not clearly understood or shared, the individuals' ability to intervene for the common good tends to be minimal and therefore ineffective.

The theoretical framework which explains the spatial variability of crimes, especially in terms of interpersonal violence, can be summed up thus: there are multiple community factors, ranging from structural characteristics (such as racial heterogeneity or socioeconomic status) to more subjective factors typical of human interaction (such as mutual trust and social cohesion). This combination of factors is related to both a concentration of structural disadvantages and the ineffectiveness of formal and informal community control mechanisms for the social protection and security of the local population. This in turn, as Elliott et al. (1996) note, contributes to creating a favorable environment for the emergence of "illegitimate opportunity structures and dysfunctional lifestyles." Cohen & Machalek (1988) have observed that, as a result, socially marginalized communities often foster the creation of alternative behavior strategies, like the formation of youth gangs. The involvement of gangs in recurring delinquent activities and criminal actions would imply these groups' territorial domination of the community through violence and consequent intimidation of local residents.

The scholarly debate on the association between social disorganization and criminal activities is also common in Brazil where patterns of violence devastate poor communities such as the so-called *favelas* (slums) in large metropolises. The incidence of violence in these contexts results from the relativization of respect for or the exercise of legal normative parameters (Misse, 2008b), as well as from precarious access to mechanisms of justice. The combination of these factors becomes essential in explaining the correlation between socially marginalized communities and high violence rates (Beato & Zilli, 2012). To a large extent, this line of reasoning corroborates modern social disorganization theory (Morenoff et

al., 2001; Sampson, 2012), which emphasizes the correlation between crime and (a) reduced collective efficacy, (b) failure of formal and informal control mechanisms, and (c) the transmission of juvenile delinquency from one generation to another as part of youth learning.

Based on the review of the above-described theories, this article maintains that factors related to crime in contexts of exclusion, such as social vulnerability indicators, are not enough to explain the concentration of homicide rates in some urban communities of the Brazilian metropolises. We argue that this unequal distribution of violence in the spaces of large cities is due not only to issues of territorial social vulnerability, but also to the structure of local networks of drug-dealing points established in those places where the illegal drug trade prevails. This peculiar phenomenon in the *favelas* of Brazil is verified by the existence of the so-called *bocas de fumo* (drug-selling points) (Sapori et al., 2012).

Bocas de fumo are fixed and geographically defined places for the sale of illicit drugs like marijuana, cocaine, and crack cocaine. The conflicts generated in the commercial transactions that take place in these locations (due either to drug debts or the culture of violence perpetuated among gang members) are crucial for understanding and analyzing the chronic homicide problem in these areas; in particular, these conflicts illuminate the correlated, complementary factors typical of environments defined by high social exclusion and low collective efficacy. The relationship between these factors—and particularly the role that drug trafficking and illegal drug markets play in engendering violence within these urban communities—is the subject of the following section of this paper.

4. Method

This study's hypothesis asserts that the spatial distribution of homicides in the city of Belo Horizonte is highly correlated to the presence of drug dealing networks in specific impoverished and social disorganized communities. In addition, these two correlating phenomena—which, although different by nature, share criminal similarities—flourish in urban environments characterized by differentiated degrees of social vulnerability in the territories where this illicit market prevails. In other words, this paper aims to verify the magnitude of the association between the three factors (drug trafficking, social vulnerability, and homicide) based on spatial visualization and exploratory statistical analyzes.

For empirical verification, we took as a unit of analysis the cartographic base of the census tracts defined by the Brazilian Institute of Geography and Statistics (IBGE), which corresponds to the territorial network used to conduct the 2010 census. Herein, the city of Belo Horizonte is subdivided into 3,895 tracts; however, for the purposes of this research, the census tracts corresponding to the center of the city were excluded due to specificities that make it difficult to visualize the real situation of the other neighborhoods in the city. The center of Belo Horizonte is characterized by a large flow of non-residents, as well as by a concentration of shops and services, and as a result, the area reflects a different kind of criminal behavior which could lead to biased interpretations for the rest of the municipality. The database, as utilized in this study, contains 3,900 inhabited census tracts of Belo Horizonte considered to be neighborhoods with the intention of validating the effect of neighborhood contexts and their relationship to the crimes studied.

First, we analyzed the spatial pattern of homicides and illicit drug arrests and seizures in the city of Belo Horizonte between 2008 and 2011. The criminal data officially known as the Register of Social Defense Events (REDS) corresponds to police reports filed with the Military Police of Minas Gerais (PMMG) and the Civil Police (PCMG). From the addresses and their geographical attributes recorded in the reports, we sought to estimate the frequency of these crimes in the city, as well as the existence of spatial clusters.

One of the limitations of this study is the use of reports of illicit drug arrests to measure the presence of these illegal markets, due to two debatable arguments found in the literature. On the one hand, the reports fail to capture the actual total number of commercial transactions carried out by those involved in the illicit drug market. On the other hand, this measure tends to reflect the responsiveness of law enforcement and control agencies (Ousey & Lee, 2002) and is therefore also subject to biased police behavior, in addition to factors such as corruption and impunity. Despite potential validity issues, the use of illicit drug arrests has been used as a meaningful empirical measure of the relative levels of drug market activity (Warner, 2003; Oliveira, Silva, & Prates, 2015).

Thus, we chose to use data on illicit drug arrests and seizures as a representative of different formats of illegal drug dealing networks. Despite the fact that illegal drug dealing and use occurs throughout the city, we started with the hypothesis that illicit drug arrests and seizures by the police tend to be higher in regions of the city where networks of drug-selling points prevail. This is justified by the fact that, in the networks of drug-selling points, the youth groups involved in drug sales are quite visible in the territory, generally boasting firearms as well as illegal drugs—in contrast to the more subtle approach seen in the networks of entrepreneurs. Due to the greater visibility of the actors involved in

the network of the illegal drug market, police action tends to identify and seize more easily the drugs sold in territories where drug-selling points prevail. Therefore, the variable denominated "trafficking in drugs" corresponds to the rate of drug trafficking seizures, carried out by public security institutions, and considering different types of sale; however, it is

believed that a large part of the arrests accounted for corresponds to what we call *bocas de fumo* ("smoke mouths").

A second analytical strategy used in this study involved implementing a set of socio-demographic variables in order to identify urban spaces based on their level of social vulnerability. The construction of this variable and its use as a proxy for levels of social disorganization or low collective efficacy enabled its spatialization in the territory of the city of Belo Horizonte with the intent of visualizing its variations in the distinct spaces of the city. The same methodology was previously employed in a study by Oliveira et al. (2015), in which an exploratory factor analysis combined the following variables: household density, household ownership, income inequality, residential heterogeneity, the proportion of male youths, and household infrastructure. This statistical procedure resulted in a single indicator that captures these dimensions simultaneously and reflects the areas' level of social vulnerability.

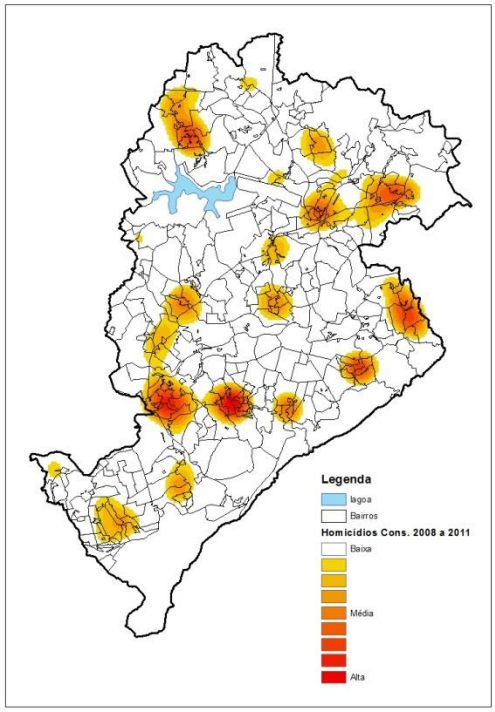
5. Research Findings

5.1 Different Problems, Similar Patterns

In order to identify the spatial pattern of the incidence of homicides and their spatial association with the illicit drug market, we used illicit drug arrests and seizures to map estimated spatial density of these incidents. This technique is advantageous in that, regardless of the absolute difference in the number of events for each type of information, the incidence spatial pattern can be compared through concentration maps—that is, through smoothed estimation of the probability density per unit of area (Santos & Assunção, 2003).

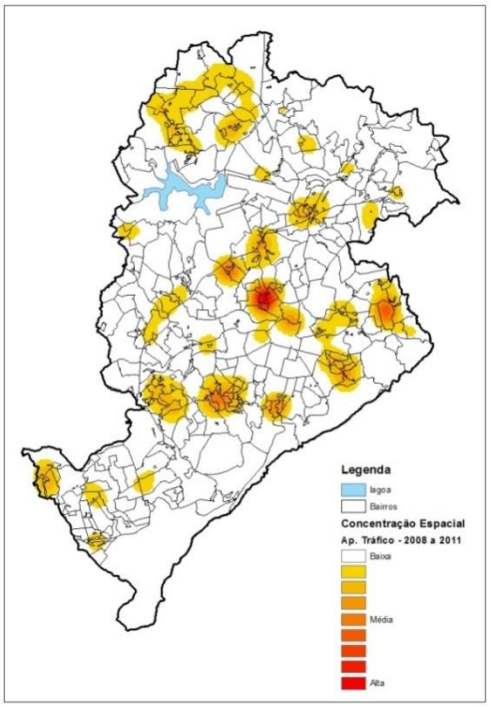
After determining the spatial variability of drug trafficking and homicide rates in the city of Belo Horizonte, we sought to determine the spatial relationship between these two sets of attributes. This procedure was performed through the SpatialAnalyst module implemented in the ArcMap10.3 program via the Multivariate-Band Collection Statistics tool, which generated the correlation matrix between the spatial density estimation maps.

Maps 1 and 2 below represent the spatial concentration of completed homicides and illicit drugs arrests and seizures between 2008 and 2011, using the technique described above. When comparing the two maps, it is clear that most of the areas where the phenomena are concentrated coincide and are highly associated, which is confirmed by the spatial correlation coefficient of 0.731. In the case being analyzed, this coefficient emerges from the correlation matrix of the values of the raster cells on one map in relation to the other. Furthermore, this technique entails a measure of spatial dependence between the two attributes and has proven to be highly correlated.



Map 1. Hot spots of homicides in Belo Horizonte, 2008 - 2011

Source: REDS – Tabulated by the authors.

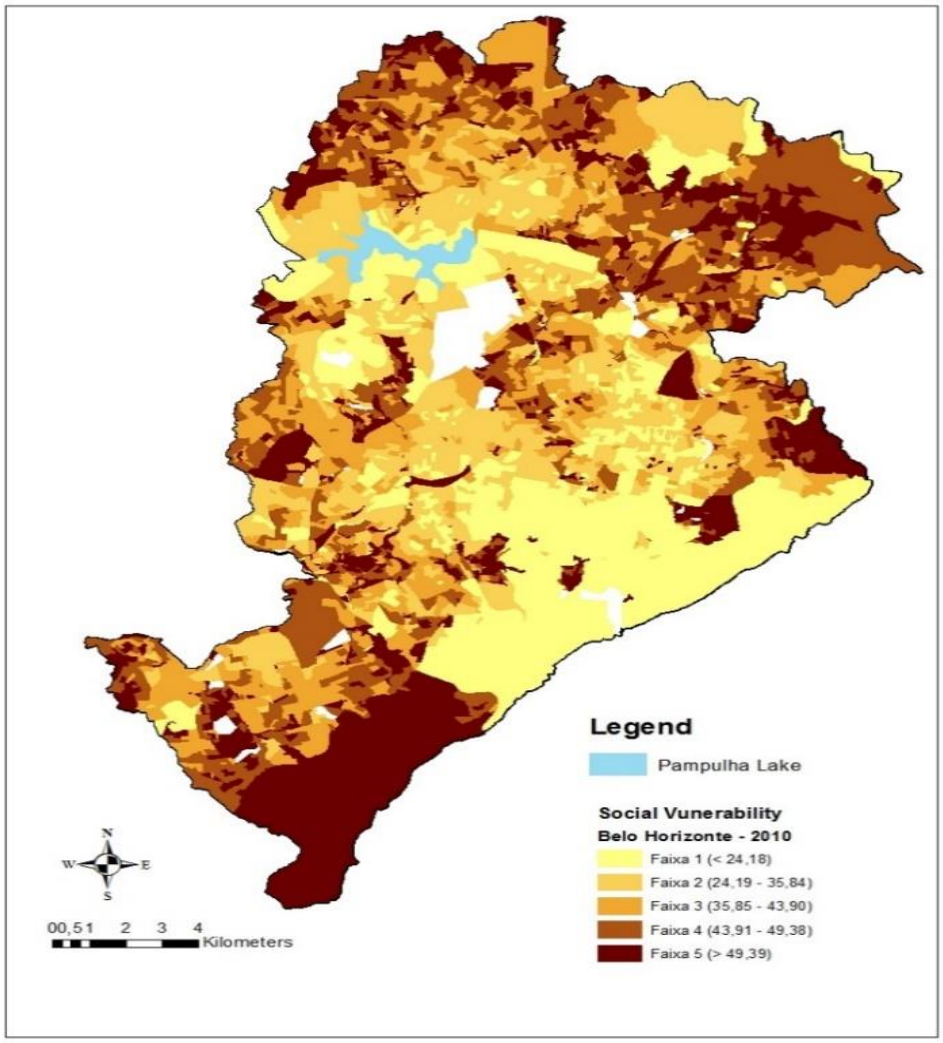


Map 2. Hot spots of illicit drug arrests and seizures in Belo Horizonte, 2008 - 2011

Source: REDS - Tabulated by the authors.

5.2 Different Problems, Similar Community Characteristics

The central hypothesis of this article seeks to investigate not only the level of overlap between the incidence of homicides and the illicit drug market, but also how these problems have common community characteristics. Map 3, below, displays the spatial distribution of the social vulnerability index in Belo Horizonte between 2008 and 2011.



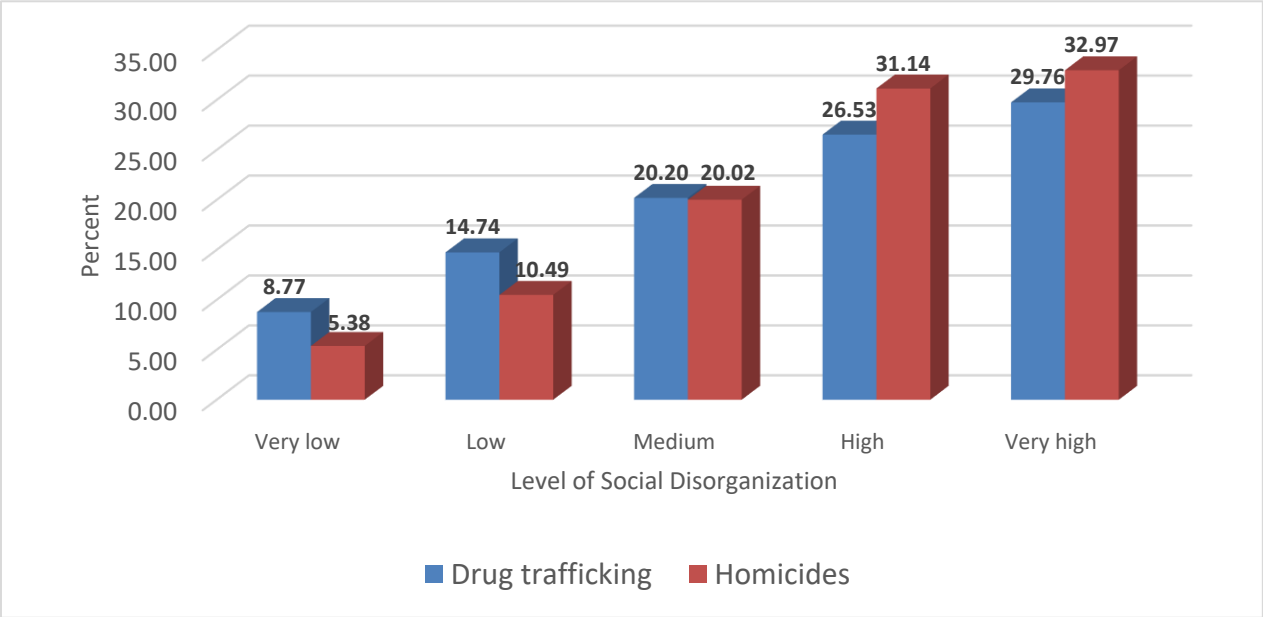
Map 3. Spatial distribution of the social vulnerability in Belo Horizonte, 2010

Source: IBGE - Tabulated by the authors.

As can be seen, the darker-colored areas represent the communities with the highest level of social vulnerability, which in this study is an indicator used to measure greater social disorganization and lower control or collective efficacy ability. The areas with the highest levels of social vulnerability are located mainly on the upper and lower sides of the map, with emphasis on two very significant areas in the eastern region: Alto Vera Cruz, Serra, Conjunto California, Barreiro Sul, Serra do José Vieira (Barreiro Region), Morro das Pedras, Morro do Papagaio, Vila Cafezal, Paulo VI, and Serra Verde. The map reveals the presence of slums, a history of urban sprawl, and also indicates that many of them underwent a process of late urbanization or irregular occupation.

One way to associate the indicator of vulnerability with crime measures (homicide and drug trafficking) is to divide the city according to the social vulnerability index in 5th percentiles (Range IVS) and then to verify the incidence of crimes in those ranges. As can be seen, 40% of the census tracts with lower social vulnerability (categorized as "very low" and "low") account for 23.52% of illicit drug seizures and arrests and 15.87% of homicides. On the other hand, the most problematic areas as regards this indicator (represented by "high" and "very high") correspond to 56.28% and 64.11% of these crimes, respectively. Tests indicated statistically significant differences between the very low and low social disorganization groups compared to the high and very high category groups.

Undoubtedly, the urban space of the city of Belo Horizonte displays significant variations in the incidences of homicides and the illicit drug market in accordance with the factors that make up social vulnerability. In other words, the higher incidence of these phenomena is concentrated in areas characterized by a high level of social disorganization, as shown below.



Graph 1. Proportion of drug trafficking and homicides by category/range of social disorganization in Belo Horizonte

Another methodology used to explore the relationship between the constructs that comprise the focus of this study consists in the attempt to predict the behavior of one variable based on the behavior of the other. To that end, we used the partial correlation that, in brief, measures the strength of association between two variables by isolating the effect of a third variable (Montgomery et al., 2009).

As a prerequisite for conducting this procedure, the distribution of variables must be approximately normal. Since data on homicides and drug trafficking consist of counting data—i.e., ad hoc and asymmetric data distribution—we chose to use empirical Bayesian estimators for rate smoothing and approximation of normality in the distribution of data (Assunção et al., 1998). This smoothing can be understood as a contraction or approximation of the gross rates observed in a relatively small area towards the average rate of its neighbors. In this study, the local empirical Bayesian estimator was used to smooth the gross rates of illicit drug arrests and seizures and of homicides. The neighborhood was defined by a number of nearest k-neighbors (k=10), while normalization was achieved through the logarithmic transformation (the logarithm base =10) of the variables for meeting the proposed goal. Thus, in this specific analysis, the variables related to the distribution of illicit drug arrests and seizures as well as homicides are the logarithm of the local Bayesian rate.

First, the association of the analytical variables was measured from a statistical perspective through the simple correlation analysis. Table 1 shows the degree of association between the social disorganization construct and the statistically transformed variables of drug trafficking and homicides. As shown, there is a positive linear association between the three variables being examined in this study. This resource once again corroborates the previous results demonstrating that the higher the level of social disorganization of an area, the greater the incidence of illicit drug arrests and seizures and homicides.

Table 1. Degree of association between social vulnerability index, rate of illicit drug arrests & seizures and homicide rate

Correlation Coefficient			
	Social Dev. Index	Drug Trafficking	Homicides
Social Vulnerability Index	1	0.485**	0.414**
Drug trafficking rate	0.485**	1	0.410**
Homicides rate	0.414**	0.410**	1

** Correlation is significant at the 0.01 level.

Source: CENSUS/IBGE, REDS - Tabulated by the authors.

However, the ultimate interest in this study is to verify and measure the association between illicit drug seizures and

arrests (representing the existence of an illicit drug market) and the rate of homicides, controlling for the social disorganization factor (IVS). Table 2 shows the results of this correlation when the influence of the disorganization dimension is isolated. In this case, the coefficient of association between the criminal constructs decreased from 0.410 to 0.263. This result indicates that 37% of the correlation observed initially between the presence of the illicit drug market and homicides is due to the fact that they are associated with specific socially disorganized environments. Another considerably high portion of this association is explained by the simultaneous presence of these two criminal factors.

Table 2. Degree of association between rates of illicit drug seizures and arrests and homicide rate, controlled by the social vulnerability index

Correlation Coefficient			
Control Variable		Drug Trafficking	Homicides
Social Vulnerability Index	Drug Trafficking rate	1	0.263**
	Homicides rate	0.263**	1

** Correlation is significant at the 0.01 level

Source: CENSUS/IBGE, REDS - Tabulated by the authors.

Overall, the results indicate that homicides are predominantly concentrated in areas of high social vulnerability (i.e. social disorganization), especially where there is a significant presence of drug trafficking. However, because of the very nature of the social relations inherent in the phenomenon of violence in degraded areas, findings in this field are still far from being exhausted, and further investigation of this triad relationship is necessary.

6. Policy Implications

This study offers new insights for the design and implementation of public policies aimed to reduce homicide rates concomitant with the reduction of drug trafficking in areas of high social vulnerability. The presented analysis makes clear that we cannot comprehend these criminal actions by focusing on only one aspect of the problem. As discussed in this paper, although proportions may vary, drug trafficking and contexts of social vulnerability are firmly associated with homicides.

Due to the complexity of the problem of violence in socially marginalized and disorganized communities dominated by drug trafficking, policies should focus on multi-causal action. Currently, Brazilian policies put much of their effort into the fight against drug trafficking, and these actions have not resulted in an actual decrease in homicide rates since they only cover a single aspect of the problem (Law nº 11.343, of August 23, 2006). The increase in the number of arrests for drug trafficking merely removes the most visible individuals from society, and accordingly, there is no structural action that actually mitigates the problem of homicides in the medium-or-long term. Indeed, designing crime prevention policies for the security area based on the short-term is like "beating a dead horse," as it often results in frustration not only for society but for security professionals as well.

The problem of violence also requires greater intervention as pertains to the demand for drugs which is one of the reasons for the establishment and sustainability of local drug dealing in socially disorganized communities. Dismantling drug-selling points requires increasing police surveillance of drug dealers, traffickers, and distributors in addition to carrying out preventive action with the user population; the latter entails extending efforts beyond criminal justice agencies. Making the drug market less profitable by raising the costs for dealers requires police intervention and both preventive and socio-educational measures within the potential population. In this sense, more investment would be required in the form of government interventions targeted at local users as well as drug buyers who go to the community (known as "foreigners"). These policies would require a multidisciplinary team of social workers, psychologists, and health agents to provide local assistance to drug users in these communities, as well as educational policies directly aimed at this population. Another effective approach would be to focus on at-risk members of the youth population, as well as teens and individuals actively involved in local drug-related gangs. An approach focused exclusively on this population would require a better understanding and categorization of the youths' behavior and cognitive patterns through qualitative methods. This would help to develop specific interventions and mentoring programs aimed at offering and supporting path-life alternatives for youths—delinquents as well as at-risk individuals—based on their needs and individual characteristics. This could combine the integration and systematic evaluation of a variety of preventive governmental strategies and programs in addition to community actions, thereby enhancing collective efficacy—a key factor in crime prevention. This would garner stronger results than the current paradigm of addressing the problem of violence as, essentially, a police problem and nothing more.

Furthermore, the social vulnerability inherent in areas of systemic violence could also be addressed by boosting the local

economy, educational institutions, and the urban infrastructure. The revitalization of the physical and building environment of socially disorganized areas would contribute to increasing informal mechanisms of control as well as reduce situational opportunities for the emergence of networks of drug-dealing points.

7. Conclusion

This article's primary contribution is its statistical evidence offered with the aim of understanding the spatial concentration of homicides in urban contexts of high social disorganization, typical of the contexts of both developed countries such as the U.S. and developing countries like in Brazil and other Latin-American countries. First, the study shows the strong spatial association between homicides and illicit drug seizures and arrests, used here as a proxy for illicit drug markets. Second, it shows that a considerable part of this association stems from the high social vulnerability of the areas where both homicides and drug trafficking occur. In this sense, the study points to a promising line of research within the scope of criminological theories: how does the presence of drug trafficking affect or become affected by the structural characteristics of the neighborhoods in which they exist, and how does this dynamic result in different levels of interpersonal violence represented by homicides?

Few empirical research studies in the area of criminology have promoted so much debate on the relationship between the structural and/or ecological factors of urban environments and crime. In Latin America and particularly in Brazil, these efforts have focused on trying to demonstrate the theoretical explanatory potential of these correlating factors, despite some particularities. While the concept of social disorganization as originally proposed by Shaw & McKay (1942) seems to be closer to the reality of Latin-American countries, the more recent propositions emerging from this theoretical perspective—for example, concerning collective efficacy—still need to be further explored in their distinctive contexts due to the fact that, in Latin America, conflict and crime coexist in urban environments characterized by dense networks of friendship and cohesion, even if informal control is still a good predictor of crime (Silva, 2014). Furthermore, drug lords and dealers have established an ambiguous relationship with community residents. On one hand, they are born in and residents of the community, and they therefore foster social bonds by supporting friends, family members, acquaintances, and local business by providing armed protection (Zaluar and Alvito, 1998). On the other hand, illicit drug markets breed situations in which violence is a necessary resource for the markets' maintenance; by using force and intimidation to sustain their criminal activities, they reinforce a culture of fear and violence, which in turn engenders an atmosphere of uneasy silence among residents (Souza, 2010). This can negatively affect individuals' ability to feel safe and to act collectively for their mutual benefit. Furthermore, systematic exposure to structural violence generated by high levels of social vulnerability might also contribute to the perceived banality of violence in impoverished communities, compromising social capital and disempowering communities.

The field of criminology would benefit from a deeper understanding of communities such as the impoverished *favelas* of Brazil, which are characterized by intense social cohesion in spite of high levels of social vulnerability; future research should uncover and examine the reasons why such communities have not been able to generate social capital and empower local residents to organize around the solution of common problems, such as the presence of gangs and drug trafficking. A greater grasp of the intricacies of this issue requires qualitative investigation into the impact of the networks of drug-dealing points (*bocas de fumo* or "smoked mouth") on the social dynamics of marginalized communities.

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References

_____(2008b). Sobre a construção social do crime no Brasil. In M. Misse (Ed.). *Acusados e acusadores: estudos sobre ofensas, acusações e incriminações*. Rio de Janeiro: Revan.

_____ & Brownsteing, H. H. (1987). Drug related crime analysis– Homicide. A report to the National Institute of Justice Drugs, Alcohol and Crime Program. Retrieved from https://www.ncjrs.gov/pdffiles1/Digitization/111510NCRJRS.pdf

_____ & Hsu, K (2018). Exploring places of street drug dealing in a downtown area in Brazil: An analysis of the reliability of Google Street View in international criminological research. *International Journal of Criminology and Sociology, 7,* 32-47. https://doi.org/10.1080/1478601X.2019.1600818

_____(2014). Social disorganization and crime: searching for the determinants of crime at the community level. *Latin American Reseach Review*, 218-230.

_____ & Zilli, L. F. (2012). A estruturação de atividades criminosas: Um estudo de caso. *Revista Brasileira de Ciências Sociais (RBCS), 27*(80), 71-88.

Anselin, L. (1989). What is special about spatial data? Alternative perspectives on spatial data analysis. *Technical Report*, pp. 89-4. National Center for Geographic Information and Analysis, University of California, Santa Barbara, CA.

Anselin, L. (2005). *Exploring Spatial Data with Geoda™: A Workbook*. Spatial Analysis Laboratory, Department of Geography: University of Illinois, Urbana-Champaign; Center for Spatially Integrated Social Science.

Assuncao, R. M., Barreto, S. M., Guerra, H. L., & Sakurai, E. (1998). Mapas de taxas epidemiológicas: uma abordagem Bayesiana. *Cad. Saúde Pública, 14*(4), 713-723. ISSN 1678-4464. https://doi.org/10.1590/S0102-311X1998000400013

Beato Filho, C. C. (2012). *Crime e Cidades*. Belo Horizonte, MG: Editora UFMG.

Beckert, J. (2013). Capitalism as a System of Expectations: Toward a Sociological Microfoundation of Political Economy. *Sage Journals, 41*(3), 323-350. https://doi.org/10.2139/ssrn.2464021

Bellair, P. E. (1997). Social Interaction and Community Crime: Examining the Importance of Neighborhood Networks. *Criminology, 35,* 677-703.

Bottoms, A. E., & Wiles, P. (1992). Explanations of Crime and Place. In D. J. Evans, N. R. Fyfe, & D. T. Herbert (Eds.), *Crime, Policing and Place: Essays in environmental criminology*, pp. 11-35. London: Routledge.

Boyum, D. A., Caulkins, J. P., & Kleiman, M. A. R. (2011). Drugs, crime, and public policy. In J. Q. Wilson, & J. Petersilia (Eds.). *Crime and public policy*, pp. 368-410. New York, NY: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195395082.013.0010

Bursik, R. J. (1988). Social Disorganization and Theories of Crime and Delinquency: Problems and prospects. *Criminology, 26*(4), 519-552. https://doi.org/10.1111/j.1745-9125.1988.tb00854.x

Bursik, R. J., & Grasmick, H. G. (1993). *Neighborhood and Crime: the dimensions of effective community control*. San Francisco: Jossey-Bass Inc.

Bursik, R. J., & Webb, J. (1982). Community Change and Patterns of Delinquency. *American Journal of Sociology, 88*(1), 24-42. Chicago: University of Chicago Press. https://doi.org/10.1086/227632

Chainey, S. P., & da Silva, B. F. A. (2016). Examining the extent of repeat and near repeat victimisation of domestic burglaries in Belo Horizonte, Brazil. *Crime Sci 5, 1.* https://doi.org/10.1186/s40163-016-0049-6

Clarke, R. V., & Felson, M. (1993). Introduction: Criminology, routine activity, and rational choice. In R.V. Clarke and M. Felson (Eds.), *Routine Activity and Rational Choice*, pp. 259-294. New Brunswick, NJ: Transaction Publishers.

Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A Routine Activity Approach. *American Sociological Review, 44,* 588-608. https://doi.org/10.2307/2094589

Cohen, L. E., & Machalek, R. (1988). A General Theory of Expropriative Crime: An Evolutionary Ecological Approach. *American Journal of Sociology, 94*(3), 465-501. Chicago: University of Chicago Press.

Cullen, F. T., Agnew, R., & Wilcox, P. (2013). *Criminological Theory: Past to Present: Essential Readings*. New York: Oxford University Press.

Elliott, D. S., Wilson, W. J., Huizinga, D., Sampson, R. J., Elliott, A., & Rankin, B. (1996). The Effects of Neighborhood Disadvantage on Adolescent Development. *Journal of Research in Crime and Delinquency, 33*(4), 389-426. https://doi.org/10.2307/2094589

Goldstein, P. J. (1985). The Drugs/Violence Nexus: A Tripartite Conceptual Framework. *Journal of Drugs Issues, 15*(4).

Grillo, C. C. (2008). O "morro" e a "pista": Um estudo comparado de dinâmicas do comércio ilegal de drogas. *Dilemas: Revista de Estudos de Conflito e Controle Social, 1*(1), 127-148. Rio de Janeiro, RJ. https://doi.org/10.1177/002204268501500406

Misse, M. (2008a). Sobre a acumulação social da violência no Rio de Janeiro. *Civitas, Porto Alegre, 8*(3), 371-385. https://doi.org/10.15448/1984-7289.2008.3.4865

Montgomery, D. C., Runger, G. C., & Hubele, N. F. (2009). *Engineering Statistics, Student, Study Edition*. New York: Wiley.

Morenoff, J. D., Sampson, R. J., & Raudenbush, S. W. (2001). Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence. *Research Report: Population Studies Center at the Institute for Social Research, 39*(3), 517-558. University of Michigan.

Oliveira, E. S., Silva, B. F. A., & Prates, M. O. (2015). Street drug markets beyond favelas in Belo Horizonte, Brazil. *Crime Science, 4*(36). https://doi.org/10.1186/s40163-015-0048-z

Oliveira, V. C. (2009). *Revisão Sistêmica da Teoria da Desorganização Social: Um estudo sobre vitimização em Belo Horizonte, Rio de Janeiro e Curitiba* (Master's thesis, Universidade Federal de Minas Gerais, Minas Gerais, Brazil). Retrieved from http://hdl.handle.net/1843/EJAO-8KNGK4

Ousey, G., & Lee, M. R. (2002). Examining the Conditional Nature of the Illicit Drug Market-Homicide Relationship: A Partial Test of the Theory of Contingent Causation. *Criminology, 40*(1), 73-102.

Park, R. E., & Burgess, E. W. (1925). *The city*. Chicago: Chicago University Press.

Sampson, R. J. (1995). *Crime in the making: pathways and turning points through life*. Cambridge, MA: Harvard University Press paperback edition.

Sampson, R. J. (2012). *Great American City: Chicago and the Enduring Neighborhood Effect*. Chicago: University of Chicago Press. https://doi.org/10.7208/chicago/9780226733883.001.0001

Sampson, R. J., & Groves, W. B. (1989). Community structure and crime: testing Social Disorganization Theory. *American Journal of Sociology, 94*(4), 774-802. Chicago: University of Chicago Press. https://doi.org/10.1086/229068

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and violent crime: a multilevel study of Collective Efficacy. *Science, 277,* 918-924. https://doi.org/10.1126/science.277.5328.918

Santos, A. A. C., & Assunção, R. M. (2003). Aplicação de Estruturas de Dados Espaciais Eficientes na Estimação de Intensidade de Processos Pontuais. In *Simpósio Brasileiro De Geoinformática, 5. (GEOINFO)*. Campos do Jordão. Retrieved from http://urlib.net/83LX3pFwXQZ3V9uMbiY/Mipqu.

Sapori, L. F., Sena, L. L., & Silva, B. F. A. (2012). Mercado do Crack e Violência Urbana na Cidade de Belo Horizonte. *Dilemas: Revista de Estudos de Conflito e Controle Social, 5*(1), 37-66. Rio de Janeiro, RJ.

Shaw, C. R. (1929). *Delinquency Areas*. Chicago: University of Chicago Press.

Shaw, C. R., & Mckay, H. D. (1931). Social Factors in Juvenile Delinquency. Report on the Causes of Crime, v. 2, of the *National Commission on Law Observance and Enforcement*. Washington, DC, U.S. Govermment Printing Office.

Shaw, C. R., & Mckay, H. D. (1942). *Juvenile delinquency and urban areas*. Chicago: University of Chicago Press. https://doi.org/10.1126/science.277.5328.918

Silva, B. F. A. (2012). *Desorganização, Oportunidade e Crime: Uma Análise "Ecológica" dos Homicídios em Belo* (Ph.D. dissertation). Universidade Federal de Minas Gerais, Belo Horizonte, Brazil.

Souza, E. (2010). *Situational Factors in Homicides in a Hot Spot Brazilian Favela.* (Ph.D. dissertation). Rutgers the State University of New Jersey.

Tonry, M., & Wilson, J. Q. (1990). Drugs and crime. In M. Tonry & J. Q.Wilson (Eds.). *Crime and Justice: A Review of Research, 13,* 1-574. Chicago: University of Chicago Press.

Warner, B. D. (2003). Neighborhood drug arrest rates: Are they a meaningful indicator of drug activity? A research note. *Journal of Research in Crime and Delinquency, 40*(2), 123-138. https://doi.org/10.4000/etnografica.4074

Zilli, L. F. (2015). O "mundo do crime" e a "lei da favela": aspectos simbólicos da violência de gangues na região metropolitana de Belo Horizonte. *Etnográfic*a, *19*(3). https://doi.org/10.4000/etnografica.4074