BRINGING THE UNDERGROUND ECONOMY TO LIGHT:

TESTING A REVISED MODEL OF INSTITUTIONAL ANOMIE THEORY

by

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ABSTRACT OF THE DISSERTATION

Bringing the underground economy to light: Testing a revised model of Institutional
Anomie Theory

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Institutional anomie theory (IAT) contends that crime is the result of interplay between
culture that values material success (American Dream), and an institutional imbalance,
where the economy is overvalued in relation to the polity, family, and education (Messner
& Rosenfeld, 2012). Scholars have measured this imbalance at the level of countries or
states via the relative strength of the formal economy (e.g., Gross Domestic Product and
Gini index of inequality). However, by focusing solely on formal, aggregate measures it
neglects the true nature and size of the broader economy that encompasses the informal
(e.g., garage sales, day labor, lemonade stands) and illegal economy (e.g., drug sales, sex
work, gambling). This lack of specification may underestimate the extent of the
institutional imbalance, whose processes are more easily observed and varied at the
neighborhood level.

This dissertation sought to advance Messner and Rosenfeld's (1994) institutional anomie
theory by broadening the economy to include, the formal, informal and illegal economy. It
also examined this reconfiguration at the neighborhood level using a representative sample

of block groups in New York City (n=107). Preliminary examination of this theoretical expansion was tested combining administrative data (census, police, and city records) with primary data collection (e.g., systematic observations and the collection of littered artifacts collected from street segments that were aggregated to the block group level). Between late August and October 2016, trained raters made systematic social observations (SSO) and collected litter artifacts in all of the streets nested within the block groups. Walking on opposite sides of the street and in pairs, raters counted the number of street behaviors, postings and litter artifacts that pointed to the presence and strength of the informal, illegal economy and the American Dream: including: (1) advertisements for "off-the-books" jobs; (2) illegal transactions in public spaces (e.g., drug sales, gambling, prostitution); (3) litter drug artifacts (e.g. small zip lock bags, synthetic marijuana wrappers, 'blunt' wrappers, syringes, crack pipes, glassine envelopes); and (4) public advertisements for free and paid services that are visual cues for the American Dream.

Overall, I find partial support for the theory. The formal economy was related to robbery incidents at the neighborhood level. However, there were no significant association between the informal and the illegal economy and robbery counts. Some of the reasons why this study yielded non-significant findings include the difficulties associated with measuring concepts. I provide additional considerations for a theory retest at a larger unit of analysis (county or borough).

ACKNOWLEDGEMENTS

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CHAPTER 1: INTRODUCTION

Statement of the Problem

Criminologists have long considered the impacts of the formal economy on crime at the macro level, generally finding mixed and inconclusive results (for a review, see Fielding et al., 2000). For example, studies have found that a weak formal economy is related to an increase in crime (Arvanites & Defina, 2006; Raphael & Winter-Ebmer, 2001; Rosenfeld & Fornango, 2007). Alternatively, others have found that the formal economy doesn't have a significant impact on crime (Blomquist & Westerlund, 2014; Chiricos, 1987). Examining the economy and crime link poses methodological hurdles because traditional measurements of the formal economy including the unemployment rate are limited in scope and a lagging indicator (Rosenfeld, 2009). Criminologists have recently moved beyond this measure to include consumer sentiment (Rosenfeld & Fornango, 2007) and inflation (Rosenfeld, 2009; Rosenfeld & Levin, 2016). Along with new indicators, researchers have also explored theoretical explanations and linkages between economy and crime. For example, more recently, Rosenfeld and Levin (2016) argue that when inflation and prices for consumer goods increase, consumers search for cheap goods and services (also known as "trading down"). Some groups turn to large corporate discount stores like Walmart. However, other sections of the population who had already been shopping at lower tier discount stores (e.g., Goodwill and Dollar stores) turn to the stolen goods market, which sell products at even lower prices (Rosenfeld & Levin, 2016). This causes an increase in demand for stolen goods and strengthens the appeal of committing acquisitive crimes including robbery, burglary and theft (Rosenfeld & Levin, 2016).

One of the major limitations facing studies that examine the economy and crime link is that they discount the interplay between culture and social structure. For example, there is a cultural component operating adjacent to the US economy that places an intense pressure on citizens to achieve success and acquire material wealth (i.e., American Dream). Studies can parse out the influence of the economy on crime by applying Messner and Rosenfeld's (2012) institutional anomie theory (IAT), a macro level theoretical framework that examines the interplay between social structure and culture to explain anomie and crime. The theory states that there is an institutional imbalance of power whereby the economy is overvalued in relation to other social institutions including the family, polity, and education (Messner & Rosenfeld, 1994). At the same time, there is a unique cultural component, specific to the US that values *achievement*, *individualism*, *universalism*, and *monetary fetishism* (Messner & Rosenfeld, 1994). Crime occurs when there is an intense cultural pressure towards achieving materialistic goals, and when the economy dominates other social institutions and they become less capable of informally restraining citizens from committing crime (Groß, Hovermann, & Messner, 2018). When non-economic institutions like the family and the educational system are weakened, they are less influential in imposing morality and turning people away from crime (Weld & Roche, 2016). Further, the weakening of non-economic institutions is an important process that leads to crime because they "mobilize and deploy resources for the achievement of collective goals" and "socialize members to accept society's fundamental normative patterns" (Messner & Rosenfeld, 1997, p.65).

Scholars who have tested IAT have generally operationalized the economy using measures that accounts for income reported to the state (e.g., Gross Domestic Product or Gini index of inequality (see for example, Maume & Lee, 2003). However, these measures underestimate the true size of the economy, because the economy can also include income earned from participation in the informal and illegal economy (e.g., illicit drug sales, "off the books" jobs) but not reported to the government. This may be a limitation of the theory. The strength of the economy can be greater when other components are taken into consideration. For example, in developing countries like Nigeria and Peru, the size of the economy would be significantly greater if its informal components (e.g., street vending and housing) were taken into account (Neuwirth, 2011; De Soto, 1989). A similar argument could be made in less affluent neighborhoods in the US that host a variety of informal (e.g., babysitting, home cooking and unlicensed vendors) and illegal transactions (e.g., drugs and sex work) (Venkatesh, 2006).

A major limitation of past qualitative and quantitative criminological work is the focus on specific social contexts (e.g., public housing, minority neighborhoods) or single indicators of the underground economy (e.g., drug sales, self-employment, and prostitution) that has limited the scope of findings and discussion beyond poverty. As a result, the informal and illegal economy have been largely *simplified* as a feature of poor communities (Castells & Portes, 1989), *criminalized*, as essentially representing unlawful behavior anchored on "quality of life" offenses and property crimes (Venkatesh, 2013; Rosenfeld, 2009), or drugs (Bourgois, 2003). It has also been *insulated* from broader debates about how informal and formal institutions operate within neighborhoods. For example, studies examining links

between social structure and the informal and illegal economy are potentially biased in favor of measures and concepts associated with specific communities, such as "hustling" (Valentine, 1978). However, some research suggests that this may not be the case: the underground economy is not always linked to illegal drugs, (e.g., street vending) (Stoller, 2002), or can co-exist with strong formal economies (Sassen, 1988). Other researchers find that the informal economy allows people to bypass the rigid bureaucratic hurdles of the formal economy that burdens business start-ups (e.g., registration licenses and high fees) (de Stoto, 1989), which indicates that both formal and informal economies are driven by the same entrepreneurial spirit. Nonetheless, the illegal economy (especially for illicit drugs) has been linked to problem behavior, namely violence via disputes over unregulated transactions (Goldstein, 1985). The use of cash in the informal and illegal economy increases transactional anonymity while also creating opportunities for predatory crime. To remove the opportunities to commit crime (e.g., theft, robbery, burglary), the state has recently reduced cash as the main medium of formal economic exchange. For example, researchers have found that when welfare payments issued as paper checks were replaced with a paperless Electronic Benefit Transfer (EBT) system there was a significant decrease in burglary, larceny and assault (Wright, Tekin, Topalli, McClellan, Dickinson, & Rosenfeld, 2014).

This dissertation uses income (including how it is earned and reported) as a conceptual starting point in delineating between the formal, the informal, and the illegal economy. The formal economy is all income generating activity that is regulated and monitored by the government. In contrast and following Castells and Portes (1989), the informal economy

is defined as "all income-earning activities that are not regulated by the state in social environments where similar activities are regulated" (Castells & Portes 1989, p. 12). The illegal (or criminal) economy is defined as "the production of goods and services socially defined as illegal" (Castells & Portes, 1989, p. 15). As such, the illegal economy is part of the informal economy (i.e., since drug dealers' activities are not regulated by the government). However, for the purpose of this discussion, the informal economy refers only to unregulated economic activity that is not by its nature defined as criminal and is thus treated as a category distinct to the concept of the illegal economy.

The focus of the dissertation is on the informal and illegal economy in an urban environment (New York City) and actively earned income rather than wealth that can be accrued over time (via savings, investments, etc.). This can include unlicensed vending, garage sales, renting out unpermitted secondary units in a single-family house, and collecting recyclable items (e.g., cans, bottles, etc.) for payments (Herrmann, 1997; Mukhija & Loukaitou-Sideris, 2014; Waldrep, 2014). The formal, informal and illegal economies are interrelated. For example, the formal economy can depend on informal economies for cheap labor (Castells & Portes, 1989). A small gardening business may respond to an uptick in business by hiring day laborers instead of hiring full time staff and paying them "off the books" (foregoing paying taxes and registering employment). Alternatively, the informal economy relies on the formal economy for capital and technology (Castells & Portes, 1989). An informal vendor selling used iPads may rely on Internet classified ads (e.g., eBay) to sell her goods. The illegal economy allows corrupt actors to enter the legal economy ("gatekeeper rents" for state officials) (Castells & Portes,

1989). For example, a construction company may pay graft to a city council member to be awarded a contract bid. Lastly, the informal economy provides cheaper goods to the illegal economy (Castells & Portes, 1989). For example, drug dealers may informally employ day workers to package illicit drugs (e.g., package heroin in glassine envelopes).

Sociologists and historians have noted that what has been labeled "illegal" is often a function of the social forces and cultural norms that have historically shifted. For example, American colonists participated in smuggling enterprises but never formalized criminal laws against it until the early 1800s when they won their independence from Britain (Andreas, 2013). Similarly, scholars have charged that the prohibition of drugs has been used to criminalize ethnicities including the Chinese who used opium (Provine, 2008). The United States has a history of experimenting with prohibition and legalization. For example, after the enactment of the 18th Amendment and the entering into force of the Volstead Act in January 1920, saloons across the United States were no longer permitted to sell alcohol (Okrent, 2009). Alternatively, marijuana has been legalized for sale and recreational use in Colorado, Washington, Oregon and Alaska, and the District of Columbia (De Aenlle, 2016). Today, the reach of the informal economy has moved beyond the street based vendors that are commonly described in the literature to include fortune tellers, street performers, and "off the books" jobs (e.g., baby sitting, dog walking, part time office assistants, etc.). Similarly, there are informal and illegal markets that agglomerate at the neighborhood level. For example, sellers of counterfeit goods (e.g., luxury watches) congregate in lower Manhattan (e.g., Canal Street) (Williams & Milton,

2015). Neighborhood level agglomeration benefits informal vendors by making it easier for buyers to locate them.

Specifying the role of the informal and illegal economy in institutional anomie theory may reveal new insight about how the economy and crime are related. In essence, there are two avenues of thought pursued here, one pertaining to the effects of an economy that is broader than the formal economy, the other raising the question whether different types of economies have different implications for the cultural dominance of the economy. In neighborhoods where the informal, illegal economy, and formal economy is accounted for, the strength of the overall economy may be greater than previously theorized. When this broader economy is overvalued and there is a cultural pressure to accumulate capital, other social institutions may be weakened and unable to impose informal social controls to restrain people from committing crimes. For example, the family, which helps socialize persons and build group cohesion will be weakened. The informal and illegal economy, representing dimensions of the overall economy, may also be used separately to explain links to crime. For example, persons engaged in the informal and illegal economy have access to goods and services that are unregistered or unlicensed, deal with cash and thus may become robbery targets themselves (Contreras, 2012). In other instances, individuals may be the targets of extortion (Chin, 2000). Individuals engaged in crime may be less likely to report victimization for fear of being arrested. Violence is also a feature of neighborhoods where informal and illegal economies are active since there are few legal remedies offered by the state to assist in market and grievance negotiations (Goldstein, 1985). The state cannot assist a drug dealer to file a grievance against a defaulting business

partner who sold him an adulterated batch of heroin. Further, there is a lack of protection for contractual and property rights of illegal entrepreneurs. For example, a heroin dealer cannot trademark their brand even though they have engineered a product with unique adulterants and brand names (Wendel & Curtis, 2000). In this respect, there are several crimes that relate to the informal and illegal economy including assault, burglary, grand larceny and robbery. For example, persons arguing over prices of stolen goods may assault each other. Persons can also burglarize homes or "stash houses" where drugs or money are kept. Finally, robbery has been associated with an increased victimization risk among participants in the illegal and informal economy (e.g., drug dealing) (Contreras, 2012; Topalli, Wright & Fornango, 2002).

This dissertation explores the role of the informal and illegal economy within institutional anomie theory and how a newly formed, more encompassing model can explain variation in robbery counts in a sample of block groups in New York City. Robbery is chosen as the main outcome because as Messner and Rosenfeld (1994) have noted, IAT is attuned to explain "criminal behavior with an instrumental character, behavior that offers monetary rewards" (Messner & Rosenfeld, 1994 p. 68). To test the robustness of this specification, I also model other crimes including grand larceny, assault and burglary.

This dissertation uses block groups as the unit of analysis because it is among the smaller levels of aggregation[1] that can serve as proxy for neighborhoods to examine the strengths

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[1] US Census bureau used various geographical units to enumerate populations including census tracts, block groups and block (US Census Bureau, 2017). Block is the smallest level of administrative aggregation.

of economic and non-economic institutions. For example, while the formal economy values productivity, in some neighborhoods of New York City like East New York, banks have systematically denied housing loans to local residents (Thabit, 2003). Simultaneously, there is neighborhood level variation in advertisements that cue residents to the value orientations of the American Dream, especially pecuniary materialism. For example, workers and tourists in Times Square are bombarded with large advertisements highlighting *achievement*, *individualism*, *universalism* and *pecuniary materialism* (Berman, 2006). However, when they cross to other neighborhoods the number of advertisements decrease. Alternatively, in neighborhoods riddled with crime, there is urban blight, abandoned buildings. Neighborhood level variation of institutions and value orientations in New York City are a result of immigration and ethnic isolation in the preindustrial and postindustrial periods that have created unique neighborhoods including Tenderloin, Five Points, East New York, South Bronx, and Harlem.

Aims

This dissertation has three specific aims:

Aim 1. Document different visible forms of the informal and illegal economy in New York City neighborhoods. This will involve identifying signs of the informal economy (i.e., activities that avoid registration such as day laborers and unlicensed street vending) and illegal economy (i.e., economic activities that are illegal such as prostitution and illegal drug sales).

Aim 2. Develop a revised version of institutional anomie theory at the neighborhood level that expands its core institutional and cultural components to account for multiple forms of economic exchanges and new measurement strategies that include observational, litter and administrative data.

Aim 3. Provide a preliminary test of this revised version of IAT. Compare and contrast findings across crime types, and measures of informal economy, illegal economy and American Dream, and relate to the broader testing of institutional anomie theory.

The aims are anchored on the application of systematic social observation of street behaviors and postings and the collection of discarded artifacts to identify the informal and illegal economy at the neighborhood level. These methodologies have been previously used in a limited capacity to measure collective efficacy (Sampson & Raudenbush, 1999), social and physical disorder (Taylor et al., 1997) and cigarette tax avoidance (Merriman, 2010). I have retooled these methods to apply to a broader set of informal and illegal economies including day labor, fortunetellers, and illicit drug sales, among others. For example, in addition to collecting discarded cigarette packs to measure tax avoidance, raters have also collected and documented paraphernalia (e.g., blunt wrappers, clear zip lock bags, etc.) that point to illegal drug sales.

Data will be collected at the street-level[2] and then aggregated at the block group level and linked to secondary administrative data (e.g., US Census, New York State Board of Elections, New York City Department of Consumer Affairs, and New York City Department of Education) to develop indicators of the formal, informal and illegal economy and key components of institutional anomie theory including the relative strength of local non-economic institutions (e.g., family, education, and polity) and intensity of cultural norms (e.g., American Dream). These measures will build on the past quantitative studies that have used neighborhood proxies approach (Alderslade, Talmage & Freeman, 2006), empirical tests of IAT (Messner & Rosenfeld, 1997), and the empirical assessment of ecological settings (Sampson & Raudenbush, 2002).

Hypotheses

Hypothesis 1

This dissertation hypothesizes that the informal and illegal economy can be measured at the neighborhood level using primary data collection that can then be used to create latent constructs based on a set number of transactions observed on the streets, which are discussed in the literature. For example, the informal economy will include services which persons are not registered to perform including day labor, selling cars, "off the books" jobs, among others. The illegal economy will include drug paraphernalia found on the street, sex

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[2] While the underground economy has been characterized as difficult to observe, this dissertation attempts to identify visual signs (e.g., advertisements for cash for cars) and litter artifacts (e.g., cigarette packs without NYC/NYS tax stamps) that signals its presence.

work, gambling, stolen goods, among others.

Hypothesis 2

I also hypothesize that the strength of the social institutions (e.g. polity, family, education, formal, informal and illegal economy) and culture (e.g., American Dream) will significantly vary across neighborhoods. While there is limited research that exists on neighborhood level variation of the American Dream, research on advertisements is quite telling. At the neighborhood level there is variance in tobacco and alcohol advertising, which is synonymous with the consumerist culture of the United States and the American Dream, because they have been central to the expansion of the American capitalist system and a symbol of morality via the criminalization of "vice" (Brandt, 2009; Lerner, 2009). Alcohol and tobacco has been disproportionally advertised in African American communities. For example, research in Chicago finds that black wards have three times as many tobacco billboards and five times as many alcohol billboards than white wards (Hackbarth, Silvestri, & Cosper, 1995). In a recent study of outdoor advertisements in New York City, Kwate and Lee (2007) found on average 4 ads per 1,000 residents in predominantly African American neighborhoods.

Hypothesis 3

Lastly, I hypothesize that robbery counts will be higher in neighborhoods where there is an institutional imbalance, where the economy (including the formal, informal and illegal) is

overvalued over other social institutions, and there is an increased intensity in the American Dream (operationalized as higher counts of advertisements for product prices on the street). There will be interactions between economic institutions and the American Dream. I expect that the economy (i.e., the formal, informal and illegal) will interact with the American Dream and be associated with higher robbery counts. Similar effects will be observed with other crimes including grand larceny, burglary, and assault.

Research Design

New York City is chosen as the study site because: (1) it is one of the largest and most heterogeneous cities in the United States, (2) it has a history of various thriving informal and illegal economies; (3) has been the site for numerous studies on the underground economy; and (4) it is a convenient site for data collection for the research team.

Following in the footsteps of Sampson and Raudenbush (1999), this study draws a stratified random sample of 107 block groups (2% of all block groups in New York City) across economic strata (i.e., below and above the median percent of persons employed who are 16 years and older) and land use categories (i.e., single family, multi-family, commercial and all others). This approach maximizes variation in land use patterns that allows for a more robust analysis of key ecological differences that can contribute to the presence of businesses involved in the informal and illegal economy. For example, the informal economy that includes "cash only sales" may be localized in neighborhoods that are commercially zoned because that is where businesses are located. Similarly, illegal drug

sales may be more likely to happen in neighborhoods with multi-family units because those neighborhoods have larger populations and places where people are more likely to hang outside. The advantages and disadvantages of this method are detailed more precisely in Chapter 3.

To measure the informal and illegal economy, this dissertation employs systematic social observation (SSO) and collection of litter material at the street level that is aggregated to the neighborhood level (block groups). This research uses block groups as approximations of neighborhoods following Warner (2003) who examined a community level social control model incorporating both culture and structure (p. 79). Warner (2003) suggests that block groups are appropriate measures for neighborhoods because they are homogenous. Secondary data from the US Census Bureau's American Community Survey (ACS), New York State Board of Elections, New York City Department of Consumer Affairs and New York City Department of Education are used to measure key institutions including the economy, polity, family and the school. Using negative binomial regression, I test the ways in which underground economy (operationalized as the informal and illegal economy) can account for main dependent variable (robbery) and supplemental outcome variables (e.g., burglary, assault and grand larceny) as an exercise in theory building and testing.

The street is chosen as the primary site of observations because it is highlighted as the center of illegal and informal transactions (Williams & Milton, 2015; Bourgois, 2003; St. Jean, 2007). The street is also the site of regulation of different policing strategies (e.g., Broken Windows) (Wilson & Kelling, 1982) and the cornerstone of ecological theories

including routine activities (Cohen & Felson, 1979), collective efficacy (Sampson, Raudenbush & Earls, 1997), and territorial functioning (Newman, 1972). In large cities, the street is characterized as the center of life allowing individuals to interact in public spaces, naturally weaving the social fabric of life (Jacobs, 1992). There are some validity issues associated with focusing only on the street because not all types of underground economies operate outdoors (e.g., individuals renting out rooms, illegal gun sales, illegal song downloads, insider trading, etc.) or are easily observed in public spaces (e.g., confidence or "con" games) (Williams & Milton, 2015). For example, in New York City, order maintenance policing (OMP) enforcement may have pushed certain illegal economies (e.g., illegal cigarette sales and sex work) indoors (e.g., bodegas, room rentals). Despite these limitations the proposed approach is important because it measures the informal and illegal economy without interrupting the natural environment. Further, persons engaged in the informal and illegal economy are not prodded with surveys or interviews. The discarded information found in the streets when aggregated to the block groups can provide detailed information about the culture and strength of the informal and illegal economies. This type of data also known as *material culture* is valued by anthropologists who have claimed "…what people have owned—and thrown away—can speak more eloquently, informatively, and truthfully about the lives they lead than they themselves ever may" (Rathje & Murphy, 2001, p. 54).

Systematic social observations and litter collection took place in the late summer/early fall (i.e. late August/October 2016) when persons were more likely to work informal jobs in the outdoors (e.g., house repairs) and sell seasonal items (e.g., water, ice cream, alcohol,

and food) (Williams & Milton, 2015; Lee, 2010). During the summer, children are out of school. The increased foot traffic can facilitate spillover of the informal economy on the street. For example, warm weather might persuade teenagers who are out of school to buy illegal drugs (e.g., marijuana) and use them in public spaces with their friends. There were two waves of data collection that occurred on the weekdays. During Wave I (7 AM to 1 PM), raters primarily collected litter materials (e.g., blunt wrappers, cigarette packs, etc.). Wave I collections reflected discarded behavior that accumulates from the previous day (e.g., late afternoon until the early morning). This time period was preferred because it maximizes the amount of litter that can be found, especially since storeowners, building superintendents and the New York Department of Sanitation may have not yet swept up the sidewalks and the streets. In Wave II, systematic social observations collected data on street transactions (e.g., drug sales) and posted advertisements (e.g., rooms for rent, garage sales). Afternoon observations were preferred because it increases the chances that individuals are outside, which is more likely to occur when they have returned from work, school, and summer camp.

Significance of Study

This dissertation contributes to the advancement of institutional anomie theory and the methodological innovation of systematic social observation and litter collection. First, this dissertation is among the few of its kind to examine the role of the informal and illegal economy in the arrangement of institutional imbalance. It does not treat the informal and illegal economy as an outcome but as components of the broader economy.

Second, this dissertation is the second study that formally examines the feasibility of testing IAT at the neighborhood level (Cancino, Varano, Schafer, & Enriquez, 2007). Previous research has largely tested the theory at the county and state level (Chamlin & Cochran, 1995; Piquero & Piquero, 1998; Maume & Lee, 2003; Schoepfer & Piquero, 2006; Baumer & Gustafson, 2007; Stults & Baumer, 2008).

Third, this study will test whether a revised model of institutional anomie theory incorporating the informal and illegal economy in the broader economic institution can be used to explain robbery counts. Robbery is the ideal instrumental crime because it imposes serious economic and physical violence to its victims (Harrison & Kinner, 1998) and is associated with participation in the informal and illegal economy. Research has also shown there is spatial concentration of robbery incidents across street segments (Braga et al., 2010; Bernasco et al., 2017; Haberman & Ratcliffe, 2015). Further, this study will examine the robustness of this model specification by examining other crime outcomes including assault, grand larceny, and burglary.

Fourth, this dissertation extends the use of systematic social observation and the collection of litter material to measure the prevalence of the informal and illegal economy. It relies on street behaviors, posted signs and discarded artifacts to examine the presence of the informal and illegal economy on the street. Visual cues include persons exchanging money for drugs, sex workers soliciting clients, etc. Littered artifacts included synthetic marijuana ("K2") wrappers, cigarette packs with out of state tax stamps, cigar wrappers (also called

'blunt' wrappers), syringes, glassine envelopes, and crack pipes that provide evidence of illicit conduct such as tax evasion and illegal drug consumption.

Above and beyond criminology and sociology, this work also contributes to the understanding of the informal and illegal economy from other fields. From a public health perspective, this dissertation will provide insight on the role of neighborhoods on the illegal cigarette market. This illegal market is public health hazards given that the increased availability of cheap cigarettes increases consumption and health related consequences of smoking (e.g., lung cancer) (Gandini, Botteri, Iodice, Boniol, Lowenfels, Maisonneuve, & Boyle, 2008). Public health has also been increasingly invested in neighborhood-level research to examine the effects of the built environment, specifically physical disorder on health outcomes. For example, research finds that neighborhood level disorder is a key determinant for gonorrhea (Cohen, Spear, Scribner, Kissinger, Mason, & Wildgen, 2000) and obesity (Burdette & Hill, 2008). From an economics perspective, this dissertation provides a more nuanced understanding of the link between economy and crime. This dissertation goes beyond providing size estimates. Instead, it provides a multi-dimensional understanding of informal and illegal markets, and tests the premise that underground markets are difficult to observe (Feige, 1990). These findings are also important to economists interested in the microeconomic perspective of tax evasion (see for example, Slemrod, 2007).

Policy Implications

This dissertation has the potential to inform public policy. The implications associated with this research include understanding how the strengthening of economic institutions at the neighborhood level impacts robbery rates. This research can be used to further support policies that strengthen social institutions (e.g., polity, family, schools) to operate more effectively (i.e., innovative social welfare programs). At the same time, this research can lend support to policies aimed at changing the consumerist culture that is a relic of the American Dream at the neighborhood level. For example, there can be support for policies that prohibit advertisements of tobacco products in the retail environment that is a known risk factor for smoking initiation among adolescents (Henriksen, Schleicher, Feighery, & Fortmann, 2010).

Outline of the Dissertation

The dissertation is comprised of six chapters. This chapter provided an introduction and overview of the dissertation, summarizing the main problem statement, research questions, hypotheses, theoretical framework, and methods. Chapter 2 describes the theoretical framework for the study using institutional anomie theory (IAT), an assessment of the current literature regarding the elusiveness of defining what is an underground economy, and characterization of informal and illegal economy drawing largely from the sociology, criminology and economics literature. Chapter 3 describes the methods used including study site, sampling procedures, survey instrument and analytical methodology. Chapter 4 presents results using descriptive and bivariate statistics. Chapter 5 presents multivariate

results and sensitivity analyses. Chapter 6 places the findings in context and reengages with

the study's preliminary research questions and hypotheses.

CHAPTER 2: REVIEW OF THE LITERATURE

The Formal Economy

The formal economy is an institution that regulates the transactions of commodities (i.e., goods and services), production of labor (e.g., how long one can work), pay, benefits (e.g., minimum wage, health benefits) and licensing, (e.g., certifications needed to show one is qualified to work). The state imposes a variety of taxes on income, property, and consumables (e.g., clothes, alcohol) to pay for governmental expenditures since it has no system that can generate a profit. In general, income generated by individuals and corporations in the formal economy are taxed and used to provide a variety of social services (e.g., Medicare), socioeconomic development (e.g., roads, schools) and pay the salaries of civil servants (e.g., public university professors, doctors, etc.) (Desilver, 2017).

A common source of discussion about the formal economy is the ways in which persons earn an income. Income can be earned through transactions of money, property or services (IRS, 2018). The most common source of income is generated from employment. For example, a person may be employed by an organization and paid for their labor/services. Income can also come from property and money lending. For example, a person can rent out a room for a monthly payment or lend a loan to real estate builders who will repay with interest. The potential to earn income is also varied across neighborhoods. In some neighborhood there are more opportunities to earn income because of physical features (e.g., commercial businesses) or neighborhood characteristics (e.g., tourist attraction). For

example, residents are more to likely be employed if they live in or near neighborhoods with employment opportunities (e.g., nearby hospitals, colleges, etc.). Neighborhoods are quite dependent on income generating opportunities and when they fail to perform, can become economically depressed. For example, when car manufacturers in Detroit, Michigan like Chrysler and General Motors closed down, it led to an economic crisis in surrounding neighborhoods (Doucet, 2017).

The Economy and Social Control

Scholars have examined the connection between the nature of the formal economy and social control mechanisms (Weber, 2003; Marx, 1904; Durkheim, 1984). For example, Durkheim (1984) examined how changes in the economic institutions impacted social control mechanisms and the regulation of behavior. In his writings, Durkheim believed the main function of social institutions is social control (Rosenfeld & Messner, 2011, p. 125). Durkheim (1951) also believed that society should be able to restrain people's desires that are often unlimited. For example, he writes, "human activity naturally aspires beyond assignable limits and sets itself unattainable limits" (Durkheim, 1951, p. 247). Durkheim also believed that the economic shifts in society led to the loosening of social regulation. Durkheim found that there were societal changes in the divisions in labor from an agrarian type marked by homogeneity of work (mechanical solidarity) to industrialization, when work was heterogeneous and individuals were interdependent of one another (organic solidarity) (Durkheim, 1984). The shift from mechanical to organic solidarity weakened the social regulations that in turn lessened moral regulation and thus led to "anomie" which

is the feeling of normlessness or "derangement" and "an insatiable will" (Durkheim, 1984). Durkheim (1951) characterized different forms of suicide based on loosened regulation and social integration (e.g., altruistic, anomic, egoistic and fatalistic). For example, he found that in France, single Protestant men who were less likely to be socially restrained by society were more likely to commit anomic suicide (Durkheim, 1951).

Merton (1938) also discussed the importance of the economy in the context of structure and unique cultural ethos specific to the United States. Merton (1938) conceptualized the economy quite broadly as "the production, exchange, distribution and consumption of goods and services" (Merton, 1938, p. 677). He believed that participation in the economy was an important "means to an end." Above and beyond participation, Merton also believed that American society placed an undue "stress on pecuniary success and ambitiousness" (Merton 1938, p. 680). For example, some Americans feel that it may not be enough to earn a paycheck and live a modest life. Instead, one has to climb the social ladder, work in a high status position (e.g., corporate lawyer), to be able to afford luxuries (e.g., luxury vehicles, expensive pocketbooks). However, Merton (1938) described inequities in structure that prevented individuals from entering the formal economy. Merton defined, social structure as "the organized set of social relationships in which members of society or groups are variously implicated" (Merton, 1968, p. 216). Merton (1938) recognized that opportunities were unequally distributed across society due to class, education and occupational status differences. In fact, he acknowledged that higher economic standing was "rare and difficult for those handicapped by little formal education and few economic resources" (Merton, 1938, p. 679). When there is friction between the culture and social

structure (e.g., lack of opportunities) individuals find ways to adapt outside of the norm, which can result in crime and delinquency. Individuals sought alternative modes or adjustment of achievement including *conformity*, *innovation*, *ritualism*, *retreatism*, or *rebellion* (Merton, 1938). He found that crime was the more likely outcome when individuals adjusted to the pressure of economic success through innovation (e.g., participating in drug sales rather than legal forms of employment). Using this theory, Merton furthered Durkheim's notion of *anomie* and defined it as a result of *contradictions* and *disjunctions* between the culture and social structure (Messner & Rosenfeld, 2011, p. 128).

Borrowing from Merton (1938), Cloward and Ohlin also developed a theory of juvenile delinquency and gang formation focusing on access to legitimate and illegitimate opportunities (Cloward & Ohlin, 1960). Their theory of differential opportunity theory laid claim that lower class juveniles who lacked access to legitimate opportunities, all the while facing increased access to illegitimate opportunities committed acts of delinquency. Further, their theory describes three pathways for gang formation (e.g., criminal, conflict and retreatist) and specialization varies across neighborhoods. The basis of their theory is that certain neighborhoods afford different opportunities for crimes. For instance, criminal gangs might, thrive in neighborhoods where is a lack of legitimate opportunities and where there is organized crime. Juveniles are drawn to theft in particular because it is a crime that is "exemplified by adult criminal figures" (Shoemaker, 2017). Alternatively, retreatist gangs are more likely to use and sell drugs because they may have been abandoned by both

traditional gangs and law abiding society (e.g., they are viewed as "double failures") (Shoemaker, 2017).

Institutional Anomie Theory

In 1986, Stephen Messner and Richard Rosenfeld assembled at the American Society of Criminology (ASC) meeting motivated to "put sociology to work" (Rosenfeld & Messner, 2011). Together they developed a set of ideas that would be later published in the monograph, *Crime and the American Dream* (Messner & Rosenfeld, 1994; Rosenfeld & Messner, 2011). Messner and Rosenfeld (2007) claimed that their macro level theory could explain serious crimes including "violations of criminal law involving significant bodily injury, the threat of bodily injury, or, in the case of non-violent offenses, significant economic harm to victims, both individual and collective" (p. 49). While the theory has been mostly used for violent and property crime because of its instrumental character (Chamlin & Cochran, 1995), more recent research has used it to explain student cheating (Muftic, 2006), unethical business practices (Cullen et al. 2004) and embezzlement (Schoepfer & Piquero, 2006).

Messner & Rosenfeld (2006) follow Merton (1938) and identify the links between structure and culture through institutions. Nonetheless, they are critical of Merton (1938) because he only considered inequality as an impediment to legitimate means. Messner and Rosenfeld (1994) move beyond stratification and "observe criminal activity up and down the class structure, not just those who are 'locked out of the American Dream' " (Rosenfeld

& Messner, 2011, p. 125). They push Merton's (1938) work forward by examining the power imbalance across institutions. In fact, their "functionalist" perspective is heavily influenced by Talcott Parsons (1951) who focused on the interactions among institutions, the agreements over values and beliefs that were important for the overall function of society. Their new macro-level theory was coined "institutional anomie theory" by Chamlin and Cochran (1995).[3]

Messner & Rosenfeld (2006) noted that there were additional strains imposed by social institutions and generally a lack of interdependence among them that caused different types of crime. In IAT, they move beyond Merton (1938) work, whose work focused primarily on the economy, by considering other social, non-economic institutions. Social institutions are the "building blocks of whole societies". They are also defined as "broad value patterns and accompanying beliefs goals, norms that coalesce around a society's basic needs" (Rosenfeld, 2006, p. xii). Overall, institutions have several benefits for societies including adaptation, collective goal attainment, integration, and pattern maintenance (Messner & Rosenfeld, 2011, p. 122). The main institutions that Messner and Rosenfeld (2012) describe include the economy, family, education and polity and religion. However, they recognize that this is not an exhaustive list of all institutions. Each of these institutions has a special role in society and provide varying levels of formal social control. The economic institution, defined as "activities organized around the production and distribution of goods and service" dominates other social institution (Messner & Rosenfeld, 2006, p. 72). The economy helps individuals buy their physical and material needs (e.g., food, shelter, and

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[3] This is refuted by Richard Rosenfeld who recalls coming up with the term first (Rosenfeld & Messner, 2011 p. 133).

clothing). The polity regulates how individuals can meet those goals. Finally, religion, the family and education help individuals become integrated into society and are used for pattern maintenance.

The size and strength of social institutions are unequal in society. Messner and Rosenfeld (2004) note that unequal size and influence cause different types of crimes. For example, when the polity is overvalued in society, there is a lower incidence of street crime, but greater incidence of corruption (official and unofficial) (Rosenfeld, 2006, p. xiii). When the size of the economy is larger than the family, education and the polity, there is a weakening of social control. These social institutions are protective because they increase social bonds and decrease propensity to commit crime. For example, teenagers are less likely to look for opportunities to make extra cash, when they are engaged in afterschool activities (e.g., Kumon math).

According to IAT, the economy supersedes and has *invaded* other social institutions such as the family, polity, education and religion "…making it harder for them to do what they were originally intended to do" (Messner & Rosenfeld, 2007 p. 85). The economic institution has been overwhelmingly valued and subjects other institutions to its control. For example, the goal of these social institutions (e.g., education) is to provide students with "human capital" and the knowledge to survive in the workplace (Messner, Thome, & Rosenfeld, 2008). Schools enable the reproduction of employment based on incentives;

pushing students to pursue high education to allow them to get better paying jobs. The family regulates the behaviors of individuals by teaching them the rules of society, how to act, and what behavior is acceptable (Messner & Rosenfeld, 2012).

In IAT, the economy is a larger institution that dominates other social institutions (Messner & Rosenfeld, 2009). For example, Messner and Rosenfeld (2009) write, "the dominance of the economy in the institutional balance of power undermines the vitality of non-economic institutions reducing their capacity to control disapproved behavior and support approved behavior (p. 84). The strength of the economy varies in time and space. Along these same lines, when the economy becomes stronger in underdeveloped countries, there is a rise in property related crimes. Alternately, in countries like Albania, the polity is the more important institution, which explains different sets of crime (e.g., high levels of corruption). The economy exerts dominance through *devaluation*, *accommodation*, and *penetration* (Messner & Rosenfeld, 2009). For example, the educational system is devalued as a source of knowledge, but valued solely for the training it provides to students who need to advance in the economy (e.g. political districts value schools because it increases the number of students who end up employed after graduation) (Bjerregard, 2014). In other instances the non-economic institutions accommodate the economy. For example, educational institutions have extended afterschool programs for students whose parents work late. The logic of the economy also penetrates other institutions. For example, parents purposively videotape their children's soccer practices looking for bloopers or mishaps to post to online (e.g., YouTube) to generate views that in turn generate income. Lastly, the economy may penetrate into other social institutions. For example, colleges that treat

students like clients, and value is placed on their satisfaction (e.g., firing instructors who do not bend to students' demands for easier grades).

The American Dream

Messner and Rosenfeld (1994) examine interaction between institutions and culture. Similar to Merton (1938) they evaluate the unique culture of America and the importance it places on material success. Messner and Rosenfeld (1994) hypothesize that there is a particularly strong value consensus in the American Dream which is "a broad and cultural ethos that entails a commitment to the goal of material success, to be pursued by everyone in society, under conditions of open, individual competition" (Messner & Rosenfeld, 1994, p. 6). This "American exceptionalism" which is a unique arrangement of cultural values that include: *achievement*, *individualism*, *universalism* and *pecuniary materialism* (Messner & Rosenfeld, 2006, p.129). Achievement highlights the value in success, having goals and the plans to achieve them. Part of the achievement orientation focuses on "not how you play the game; it's whether you win or lose" (Messner & Rosenfeld, 2012, p. 69). Failure to achieve goals leads to a failure to make a contribution to society (Messner & Rosenfeld, 2012, p. 69). Individualism is based on the idea that individuals are self-reliant and free to pursue monetary success. Succeeding in society requires self-sacrifice. Universalism is based on the idea that everyone can attain monetary wealth and be successful regardless of class, race or gender. Lastly, pecuniary materialism (or "fetishism of money") focuses on the accumulation of money and associated rewards. Money is an important metric because it is easily measured and is limitless (i.e., one can never have

enough) (Messner & Rosenfeld, 2012, p. 70). This fetish has been cultivated by the media who broadcasts advertisements to buy and "cultivat[es] these anomic pressures associated with a consumerist culture" (Messner & Rosenfeld, 2012, p. 70).

Prior Relevant Research on Institutional Anomie Theory in the United States

When compared to other sociological theories of crime (e.g., social disorganization theory), IAT is fairly young and has only been tested since 1995. As a macro theory, IAT's unit of analysis has included nations, and involved meso level analysis including states, counties, block groups (Messner & Rosenfeld, 1997; Piquero & Piquero, 1998; Baumer & Gustafson, 2007; Cancino et al., 2007); and more rarely, the individual level (Muftic, 2006; Stults & Falco, 2014). Nonetheless, there has been a call to extend this theory in a multi-level format, linking micro to macro (Messner, Thome, & Rosenfeld, 2008). Below I review several studies testing IAT in the US context. While there are more cross-national studies, they are not useful source of comparison because they are more concerned with cross national differences.

Overall, empirical tests of institutional anomie theory in the US are cross sectional and have focused on how the institutional imbalance affects property and violent crimes. There have been fewer studies testing the full model, incorporating cultural components (i.e., American Dream). Studies within the United States find partial support for IAT (Chamlin & Cochran, 1995; Maume & Lee, 2003; Baumer and Gustafson, 2007; Schoepfer & Piquero, 2006). Chamlin and Cochran (1995) were among the first to test IAT on property

crime rate (that includes robbery, burglary, larceny and auto theft per 1,000 population in 1980) across the fifty states using data from the State and Metropolitan Areas Data Book by the US Census Bureau in 1980. They found that higher levels of voting (proxy for polity), lower levels of divorce (family), and increased participation in church membership (religion) decreased the effect that poverty had on property crime rate. They also found that there is interplay between economic and noneconomic institutions that impact anomie which in turn impacts crime (Chamlin & Cochran, 1995, p. 423).

Maume and Lee (2003) examined the extent to which IAT predicted homicide rates in 454 US counties with a population of 100,000 or more using data from the Supplemental Homicide Reports and US Census of Population and Housing for 1999. They also test mediation/moderation effects of noneconomic institutions on the economy. For example, they operationalize the economic institution as the Gini coefficient of family income inequality. They measure polity using the average voter turnout for the 1988 and 1992 presidential election. They also measure the family using the rate of divorce among people 15 years and older. Maume and Lee (2003) find that noneconomic institutions mediate the relationship between income inequality and violent crime. For example, when noneconomic institutions were added to their models, it reduced the strength of the economy (Maume & Lee, 2003).

Baumer and Gustafson (2007) test IAT with a sample of 77 US counties in 1976 using individual data from the General Social Survey (GSS). They measure *educational and economic attainment* using a multi-item scale. For example, *educational attainment*

included: (1) percentage of persons aged 16 to 19 who are not high school graduates or currently in school; (2) percentage of persons aged 25 and older who did not finish high school; (3) percentage of persons in the labor force who are employed in non- management and nonprofessional jobs, (4) percentage of families with incomes below the poverty line; and (5) community average self-reported social class standing (Baumer & Gustafson, 2007, p. 635). A second measure of *economic attainment* included combining Gini index of income inequality and Gini index of educational inequality. These two measures were standardized and summed to create a reliable scale. Baumer and Gustafson (2007) found that strong beliefs towards material success and low level of commitment to legitimate means lead to high rates of instrumental crimes (including robbery, burglary, larceny and auto thefts, per 100,000). Using interaction terms they also found that the strength between instrumental crime and material success increased if there was a weak commitment to legitimate means. They also found that commitment to monetary crimes was strengthened in relation to instrumental crimes if education was low (Baumer & Gustafson, 2007)

Schoepfer and Piquero (2006) examine embezzlement rates across the fifty states in the United States in 1991. Their dependent variable was embezzlements per 100,000 citizens, derived from the FBI Uniform Crime Reports. Using data from the US Census Bureau, they operationalized the economy as the percent of the population that was unemployed (Schoepfer & Piquero, 2006). The study also modeled interaction effects between the economy and noneconomic institutions (e.g., economy x education; economy x family, and economy x polity). Schoepfer and Piquero (2006) find support for IAT. For example, they found that higher levels of voter participation (polity) decreased embezzlement rates. They

found that higher rates of unemployment were associated with lower embezzlement rates. This is not surprising given that employment provides opportunities to offend (Schoepfer & Piquero, 2006, p.233). When examining interactions between the institutions, the authors found that a stronger polity weakened the effects that unemployment (economy) had on embezzlement (p. 233).

Another US based study by Cancino and colleagues conducted a partial test of institutional anomie theory on property crime rate as well as violent crime across 1,016 census block groups in San Antonio, Texas (Cancino et al., 2007). They found that noneconomic institutions (polity) measured in terms of voter turnout rate reduced the influence economic institutions had on crime. However, they found mixed results for interactions between economic and noneconomic institutions. For example, interactions between welfare generosity and concentrated disadvantage (proxy for economy) were significant and negatively associated with property and violent crime (Cancino et al., 2007).

Stults and Baumer (2008) used the General Social Survey (GSS) and the FBI Uniform Crime Reports (UCR) to examine 74 major metropolitan areas and examine the ways in which IAT models explain spatial variation in homicide rate (between 1976 and 1978). They measure value commitments with percent agreeing to (1) "next to health, money is the most important thing" (Stults & Baumer, p. 233) They incorporate social structural positions including limited job availability, low educational and economic attainment and educational and income inequality (Stults & Baumer, 2008, p. 233). Stults and Baumer (2008) found that there were direct effects: when homicide rates were higher, there was

commitment to monetary success together with weak commitment to legitimate means, controlling for other factors (Stults & Baumer, 2008, p. 241). However, when other pathways were introduced, including drug arrests and property crimes, the direct effect no longer held. Finally, they found that monetary success and weak commitment to legitimate means and homicide was weak in metropolitan areas with increased welfare spending (Stults & Baumer, 2008).

In summary, more than two decades of work on IAT have found partial support for the theory (Chamlin & Cochran, 1995; Maume & Lee, 2003; Schoepfer & Piquero, 2006). Some of the issues regarding these findings are related to measurement. Generally, there have been two ways to measure the social institutions including: (1) government spending (e.g., decommodification index) (Rosenfeld & Messner, 2009) and (2) survey questions measuring attitudes, values and time spent (Chamlin & Cochran, 2007; Jensen, 2003; Weld & Roche, 2017). New measurement strategies including use of time may remedy some of these issues because it provides standardization. For example, Weld and Roche (2017) estimate the economic institution (the number of minutes spend in paid work) at the national level using survey data from the Organization for Economic Co-operation and Development's (OECD) compilation of 29 national time use surveys.

Controversies

Most studies have only partially tested the main components of IAT. In some cases, the theorists have taken issue with some of the research conducted because of their improper

operationalization of key concepts. For example, Rosenfeld and Messner (2011) argue against using local schools as proxies of education institutions, which they argue are organizations instead. They counter that, "institutions are broader, deeper, and are more abstract than the organizations that comprise them. They establish the 'rules of the game' within which organizations operate more or less effectively" (Rosenfeld & Messner, 2011, p. 127). Fortunately, some researchers have experimented with several operationalization schemes that have been widely adopted. For example, researchers have used the Gini index of inequality to measure the strength of the economy (see for example, Baumer & Gustafson, 2007; Bjerregaard & Cochran, 2008a).

Another issue related to IAT is the limited theoretical discussion of the economy. There has been no previous discussion whether the economy should be expanded to incorporate the informal and the illegal. In fact, previous research has relied on administrative data to measure the strength of the formal economy using the GDP or the Gini Index of Inequality (for example, Baumer & Gustafson, 2007; Bjerregaard & Cochran, 2008a). This limitation poses a challenge because the predictive validity of IAT may be undermined in neighborhoods where the informal and illegal economy is larger than the formal economy.

Another issue confounding formal tests of IAT is whether the American Dream varies within the United States. Some scholars have assumed that the American Dream is constant across geographical units (e.g., states and counties) within the United States, and thus have not measured it (see for example, Maume & Lee, 2003). However, more recent research have attempted to measure its variability, albeit partially. For example, Baumer and

Gustafson (2007) use the General Social Survey (GSS) whereby they aggregate individual

level responses to specific geographies. They operationalize the American Dream as: "(1)

the degree of commitment to pursuing monetary success" and (2) "the degree of

commitment to legitimate means of pursuing monetary success goals among members of

the communities in our study" (Baumer & Gustafson, 2007, p. 633). Issues with using these

measures are that they neglect other values of the American Dream such as *universalism*

and *individualism*. These values are important to the concept because they are central to

the belief that the American Dream is attainable regardless of one's social standing.

Some cross-national research has included the American Dream in their analyses, however,

the items used to measure the American Dream are controversial (Cao, 2004; Groß &

Haußmann, 2011). For example, Cao (2004) who uses the World Values Survey (WVS)

spanning 28 nations finds that the United States may not be as 'anomic' as previously

characterized under IAT. In response, Messner and Rosenfeld (2011) argue that the items

used may not be reflective of the theory and urge researchers to employ measures that are

rooted in historical context. More recently, Groß and Haußmann (2011) have measured the

American Dream across three value orientations including success orientation, money

fetishism and helping others. However, like Baumer & Gustafson (2007) they fail to

account for other value orientations: *universalism* and *individualism.*

Units of Analysis: From Nations to Neighborhoods

Institutional anomie theory has been tested cross-nationally. However, there have also been

attempts to examine variation using states (Chamlin & Cochran, 1995; Piquero & Piquero, 1998; Maume & Lee, 2003; Schoepfer & Piquero, 2006) and counties (Baumer & Gustafson, 2007; Stults & Baumer, 2008) as the units of analysis that are large enough to to explain macro level processes, including the "devaluation of noneconomic institutions functions and roles" (Messner & Rosenfeld, 2006, p. 76). More recently, however, there have been attempts to examine individual level variation of IAT (Muftic, 2006). The original theorists have positively viewed this micro-level approach. In fact, they have advocated for further research to connect micro to the macro level (Messner, Thome, & Rosenfeld, 2008). Nonetheless, there has been only one recent attempt to examine IAT at the neighborhood level (Cancino et al., 2007) who have found partial support for the theory. Further testing at this level of analysis is needed because some components of IAT have never been integrated into the wider theory. For example, neighborhood level research has uncovered varying cultural values and codes of conduct (Anderson, 1999) and the role of local institutions and organizations (Slocum et al., 2013).

One reason why researchers have disregarded the neighborhood level approach is that the original theorists themselves argue that neighborhoods are not well suited for IAT because "neighborhoods ordinarily do not exhibit variation in the structure of institutional rules" (Messner & Rosenfeld, 2004, p. 99). However, they point out that neighborhood level analysis could be justified if institutional variation can be found. The exception they make include "if immigrant populations settle in different neighborhoods of the city and sustain the distinctive institutional arrangement of their countries of origin" (Messner & Rosenfeld, 2004, p. 99).

Neighborhood level research of IAT is possible in New York City because there is cultural and institutional variation. For example, in the South Bronx, Harlem, and East New York, key institutions like the economy and education have been cordoned off. Concentrated disadvantage and social isolation has reconfigured the arrangement of these institutions. For example, in the 1930s, the Federal Housing Administration (FHA) and other private lending institutions redlined the South Bronx, disallowing investors to borrow loans to improve the structural conditions of buildings (Gonzales, 2013). The banking authorities deemed the area "high risk", discriminating against residents because of their race and ethnicity, fearing that the loans would not be repaid. Education was also weakened in the 1960s in East New York, Brooklyn, when the City refused to build a single school despite the need for eight additional schools due to the influx of black and Puerto Rican migrants (Thabit, 2003, p.4). Due to the inefficiencies of these institutions, residents ventured outside of their neighborhoods. For example, Harlemites in the 1920s who did not have access to regular banking "trek[ed] considerable distances to institutions on the margins of Harlem" (White et al., 2010, p. 202).

The Underground Economy

Presumably, Messner and Rosenfeld's (2009) focus is on the formal economy that is regulated by society and requires government reporting (e.g., for tax purposes). The informal and illegal economy, while also generating income is not a feature of this institution. The informal economy or the illegal economy (e.g., illicit drug sales) are not included in their theoretical models or formal testing.

However, other researchers have attempted to factor illegal markets, operationalized as arrests for the sale or manufacture of illicit drugs per 100,000 and number of drug-induced deaths per 100,000, as a mediator between institutions, culture and homicide (Stults & Baumer, 2008). Using the US General Social Survey (GSS) aggregated to metropolitan counties and for years 1975-1976, Stults & Baumer (2008) examine whether an unbalanced value system predicated on amassing material wealth impacts illegal drug markets and in turn homicide (Stults & Baumer, 2008). They found no evidence of moderation. Despite these null findings, a broader operationalization of illegal markets (other than illegal drugs) may be needed to tease out significant findings. Also, relying on police data may bias results, as arrests may be more indicative of where police go, rather than where illegal markets are established.

This dissertation hypothesizes that the economy should be redefined in IAT to include the informal and illegal. However, unlike the formal economy, a consensual definition of the underground economy remains elusive (Gerxhani, 2004). In fact, its meaning has changed over time and is quite heterogeneous across disciplines. Discrepancies over the exact definition may not be just a matter of semantics but rather the case of disciplinary influences, levels of analysis, methods employed, and the nature of questions that researchers are seeking to answer. For example, in economics, researchers are often concerned with attempting to measure the size of the informal and illegal economy at multiple units of analysis including households, states and nations (Feige, 1990), whereas in sociology, researchers have been concerned with identifying structural characteristic of

the neighborhoods (Venkatesh, 2006; 2013), global paradigm shifts (Sassen, 1989) or focus on 'thick' descriptions of the subculture operating in neighborhoods, characterized as "hustling", "conning", or "wheeling and dealing" (Valentine, 1978; Williams & Milton, 2015). These varying frameworks may lead certain researchers to use different rubrics on what can be labeled "underground".

Despite the lack of a consensual definition earnest attempts have been made to define some of its manifestations, focusing on the degrees of visibility, taxation and criminality. However, definitions have caused debates, especially in economics. For example, some have classified the underground economy as encompassing: non-market, illegal market and hidden legal markets (Dixon, 1999). Others, like Feige (1990; 1991), however, have expanded to include four subtypes: (1) illegal, (2) unreported, (3) unrecorded, and (4) informal. The illegal economy includes goods and services whose distribution and production is legally prohibited, including prostitution, drug trafficking and illegal gambling (Feige, 1990). The unreported economy produces goods and services that "circumvent or evade established fiscal rules as codified in the tax code" (Feige 1990, 1991). This may include earning money from secondary employment, yet failing to pay the personal income tax (PIT). The unrecorded economy includes earned income that is not reported to the government. Lastly, informal economy includes economic actions that bypass governmental control, in the form of registration (e.g., unlicensed street vendors).

In the tradition of the Chicago School of Sociology, Venkatesh (2006) has qualified that persons living in poverty and who participate in the underground economy embrace a

different work ethic, and cultural norms known as "hustling" which "coined in popular discourse to refer to the indefatigable and creative attempts by the down-and-out to find work, make a buck, and make ends meet" (Venkatesh, 2006, p.17-18). Participation in the underground economy encompasses licit and illegal work. For example, individuals could be participating in the underground economy but perform *licit* work, working "off the books" (i.e., not reporting income to the government) as nannies, cooks, gypsy cabs, psychics, tax preparers, wedding consultants and hairstylists (p. 26). Alternatively, *illegal* work includes exchanging food stamps for cash, prostitution, drug dealing, and acting as lookout during drug sales. Similarly, Valentine (1978) classifies underground work is generally synonymous to "hustling" conceptualized as "a wide variety of unconventional, sometimes extralegal or illegal activities, often frowned upon by the wider community but widely accepted and practiced in the slum and the ghettos" (Valentine, 1978, p. 43).

A categorical and conventional classification of underground economies, and one in which this dissertation subscribes to, is provided by Castells and Portes (1989) who bifurcate it into: (1) informal and (2) criminal economies based on the legality of production, distribution and sale (Castells & Portes, 1989; Portes & Haller, 2005)[4]. This definition captures a wide range of transactions. It moves beyond Stults & Baumer (2008) to consider economies that span across social strata including garage sales in middle-income communities, car sales in high-income areas, and day laborers along commercial strips (Herrmann, 1997; Ordonez, 2015). In the context of IAT, when the size of the informal and

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[4] It should be noted that one of the difficulties with this classification is that there is overlap between what is labeled 'criminal' and 'informal'. For example, informal activities that avoid the payment of taxes are criminal according to some federal statutes.

illegal economy is greater than other social institutions, there is a weakening of informal social control and that creates an imbalance in the social structure.

The Informal Economy

Research and interest in the informal economy has been the topic of inquiry in classical sociological works such as Whyte's (1943) study of the Italian slum he called "Cornerville" and Liebow's (1967) study of African American men in "Tally's corner"[5]. It has also centered on examining economic systems from a sociohistorical context (Marx, 1859; Weber, 1905). Sociologists and criminologists have examined specific extensions of the underground economy including trust among criminal networks (Gambetta, 1996). However, interest in the informal economy is most often attributed to Keith Hart, a British anthropologist, who in 1971, who identified a new type of economy in Accra, Ghana that was unregulated by the state (Hart, 1973). In his paper, commissioned by the International Labor Office (ILO), he coined the concept "informal sector." Hart (1973) distinguished between the informal and formal economy as "whether or not labour is recruited on a permanent and regular basis for fixed reward" (Hart, 1973, p. 68). He argued that the informal sector was the sum of the self-employed, family workers and domestic servants (Hart, 1973). Hart (1973) characterized this newly discovered sector as synonymous with self-employment operated in urban settings in the "Third World" and remained outside the scope of the formal labor market (Hart, 1973).

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[5] The informal economy has not been reserved only for urban areas. In fact, contemporary research finds that individuals residing in rural areas are also likely to participate in informal economy given their access to larger spaces (Slack, 2007).

The first set of studies after Hart's (1973) discovery, devoted to examining this newly discovered concept focused on developing countries. In fact, scholars previously thought that informal economies would be much more likely to be present in "developing" countries rather than already "developed countries." Thus the International Labor Office, along with other agencies sponsored numerous studies in poor underdeveloped countries. However, in the 1980s, researchers expanded their interest to developed countries as well (Portes & Sassen-Koob, 1987; Sassen-Koob, 1989; Stepick, 1989).

Some scholars have heralded the informal economy because it helps people bypass unnecessary government regulation that can stifle economic growth (De Soto, 1989). Other times, regulations are ineffective or nonexistent, and are purely symbolic. Others, however, view the informal economy as a form of exploitation of governmental resources by individuals/entities who avoid taxes and regulation (Levy, 2008). In some ways, the informal economy has been a prejudiced term drawing up conjectures of developing countries. However, researchers have noted that the informal economy is not an artifact of poverty nor is it causally related to immigration (Castells & Portes, 1989; Portes & Borocz, 1988). Instead, the informal economy can be a response to increases in state regulation. Persons in affluent communities may choose to sell items informally given the ease in transactions, especially when there are no tax burdens. In the past developing countries have participated in informal economies including illegal homeworkers in the Netherlands and the factory workers of Emilia Romagna in Italy (Castells & Portes; Renooy, 1984; cited in Sassen, 1991). The informal economy has sprouted in capitalistic and state socialist

countries (e.g., former Soviet Union) alike (Sassen-Koob, 1989; Grossman, 1989).

Quantitative research in the form of self-report surveys on the informal sector in the US has been concentrated in rural areas (such as Pennsylvania), broadly finding no statistically significant relationship between the informal sector and income (Jensen, Cornwell, & Findeis, 1995; Tickamyer & Wood 2003; Slack, 2007). In urban areas like New York City, Sassen (1991) finds the informal economy present in the industrial sector (e.g., footwear, toys, construction, etc.) and to a lesser extent in packaging jobs, distribution activities, etc. However, informal work tended to occur in densely populated immigrant communities. In her fieldwork in the early 1990s, she believed that residential and commercial gentrification was going to displace "traditional" activities (e.g., garments) and expand into new areas (Sassen, 1991, p.88). Since then, other popular informal sectors have proliferated including selling water in the summer, sidewalk vendors, street performances, panhandling, etc. (Williams & Milton, 2015).

In the United States' suburbs, the informal sector has been characterized by the proliferation of garage sales (particularly among middle-income families) across the United States (Herrmann, 1997). Since the 1980s, this is an informal activity that has flourished. The elements that brought about this change were the consumption culture of the 1960s, when people were more likely to buy products that were mass-produced in the 1950s (Crawford, 2014). In the 1960s, used objects "acquired a cult value," and were valued as "vintage" rather than "old" (Crawford, 2014, p. 26). Buying used objects became fashionable. This trend, in conjunction with dwindling economy of the 1970s, created a

garage sale mentality that flourished well through the 1980s and into today (Crawford, 2014).

The Internet has made it easier to engage in the informal economy. The Internet has enabled self-employed entrepreneurs to produce and sell items in what is referred to as the "gig economy" or the "1099 economy" (Scheiber, 2015). Participation in this economy entails that earnings are individually reported to the Internal Revenue Service (IRS). The start up costs for these "gigs" are negligible. For example, entrepreneurs can apply for a tax ID number or create a limited liability company (LLC). The extent to which persons report their earnings can depend on the mode of payment. For example, those who are self-employed may be less likely to report their income if their clientele pays for services in cash, whereas reporting may be higher with credit cards, check or Pay Pal payments. The latter type of payments is more likely to show up during IRS audits. Alternatively, the Internet allows individuals to sell items using online classified advertisements through websites such as craigslist.com and backpage.com. The income earned using this online platforms may be unreported because items are largely sold using cash and certain companies like craigslist.com are not compelled to report the number of seller transactions to the IRS. The Internet and the creation of social networks have allowed the "sharing economy" to flourish whereby individuals lease or rent parts their properties to others through classified ads or online companies like Airbnb.com (Morrissey, 2015). Similar to the "gig economy", individuals whose earnings come from the "sharing economy" also have to fill out the appropriate tax forms (depending on the laws of their state). For

example, Airbnb.com sends out tax forms to hosts who have annual earnings exceeding $20,000 and who have had more than 200 transactions in the calendar year (Airbnb, 2018).

In the United States, participation in certain sectors of the informal economy are linked to race, class, age and gender. For example, high school or college students are hired to perform household chores (including lawn maintenance, shopping, etc.) or caretaking activities (e.g., babysitting) (Entwisle, Alexander, & Olson, 2005). Another common example is young children who are encouraged to sell lemonade[6] on the sidewalk (Gupta, 2002). Students are usually paid cash and their income is not reported to the government. Along race and ethnicity lines, in San Francisco, Latin American migrants are hired to perform manual labor (Ordonez, 2015).

Participation in the informal economy may help instill a work ethic centered on individualism, achievement and material rewards. Alternatively, there is a stigma associated with hiring migrant workers, from Latin American countries, to perform the same tasks as college students (Ordonez, 2015). For example, day laborers are negatively viewed given their immigration status, race/ethnicity and income. Informal cab services are also discriminated against. Neighbors may drive each other to the airport for extra cash or in exchange for services. However, persons who perform the same informal duties but who come from other neighborhoods are referred to as "gypsy cabs" (Hernandez, 1992). In these cases, outsiders engaged in the informal economy are stigmatized. More recent

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[6] Lemonade stands were popularized in the United States in the late 1800s. A New York Times article describes that its popularity grew when persons decided to offer a cheaper (5 cents), more expedient service to individuals who would otherwise have to purchase it inside bar rooms and pay 15 cents (Chronicles of a Hot Day, 1880).

differences are stark amongst those who sublet their apartments to students versus those who sublet to working class immigrants (Fahim, 2007).

Characteristics of Informal Economies in Urban Areas

Informal and formal economies share many similarities (Neuwirth, 2011). Much like the formal economy, each segment of the informal economy has its own methods of operation, seasons, startup costs, and targeted consumer demographics. But they also have many differences. In terms of spaces, informal economies operate on the streets, indoors, and in semi-public spaces (e.g., inside corner stores). For example, unlicensed street vendors sell bottled water in the summertime along busy intersections. During traffic stops, vendors solicit thirsty customers (Williams & Milton, 2015). Similarly, day laborers solicit work along highways and commercial districts that sell home equipment (Ordonez, 2015). Alternatively, room rentals are advertised in neighborhoods with an influx of migrant workers and college students seeking temporary shelter. Advertisements range from posting flyers on lamp posts, classified section of newspapers and websites (e.g., craigslist.com; backpage.com) and via social networks (e.g., friends, co-workers, family). The locales and strategies of the formal economy are different: for example they are more openly advertised and accessible to all. They are strategically located in venues that might attract the most customers.

The informal economy mirror segments of the formal economy whose hours of operation are shaped by demand (e.g., shift work). For example, Ordonez (2015) finds that day

laborers take multiple *turnos* (turns) during the day; the first shift starts from early morning and lasts until 1 PM, while the second starts in the later afternoon (p. 32). Although men work seven days a week, there are less day laborers propositioning themselves on weekends as work becomes scarce (possibly because employers are more likely to spend time with their family than renovate their homes). Similarly, unlicensed ice cream vendors operate in mid to late afternoon when students get out of school, during the warmer months (May through June).

Informal economies, like legal economies, agglomerate to reduce consumer search costs. Unlike the formal economy, there are smaller number of informal firms. Alternatively, the formal economy is not dependent on a particular location, although it has patterns of concentration. For example, in Oakland, California, Ordonez (2015) found that day laborers typically congregated in streets that make it easier to locate. Much like their legal counterparts, informal economies rely on the predictability of routine activities and the rationality of customers. For example, the water seller relies on routine activities of drivers who are more likely to travel longer distances in the summer and take major highway routes. Water sellers position themselves along highway entrances and during the hottest time of day (usually mid to late afternoon), so that they can reach thirsty customers (Williams & Milton, 2015).

The informal economy is a nuisance to formal businesses who view them as signs of disorder (Duneier, 1999). Conversely, the informal economy may not burden residents because they may take advantage of the cheap goods and services offered. For example,

day laborers often congregate in places where construction supplies are sold (Gold, 2010). In some cases, the informal economy is a welcome addition to the neighborhood. For example, Duneier (1999) finds that book dealers in Greenwich Village "serve an important function in the lives of their customer" (p. 20). Book dealers help individuals find appropriate reading material and engage them in conversation about their day-to-day life.

The informal economy also relies on interdependence among actors in the informal economy and the formal economy. For example, Stoller (2002) finds that the survival of the informal African market in Harlem was dependent on the relationship between African vendors and other immigrant groups who participated in the informal economy. For example, African vendors provided credit to one another. West African vendors also relied on purchasing a cheaper version of *kente,* a famous cloth worn in South Africa, from Asian merchants who ran sweatshops in lower Manhattan. One vendor embodied this relationship by stating "[t]he Asians like doing business with us Africans. We pay them cash, or if they extend us credit, we pay them back quickly. No funny business" (Stoller, 2002, p. 50).

Due to the nature of operations, the informal economy is regulated through informal social control mechanisms including trust, familiarity, reciprocity and sometimes violence. Actors rely on informal social control because the legal system does not provide any legal remedies. Informal entrepreneurs cannot make formal complaints for fear of being under criminal probe (often for not paying taxes). Similarly, when payments are not made, persons can threaten to call the police or use violence. Values inherent in the informal economy (e.g., cooperation, trust) run counter to the American Dream. For example,

competition for material success does not value cooperation. Thus, a more complex system of exchanges characterizes the informal marketplace compared to the formal marketplace.

The informal economy has been subject to law enforcement intervention over the years, especially in cities that have used order maintenance policing as their main strategy (e.g., New York City, Los Angeles, etc.). This policing strategy criminalized activities that were once part of the informal economy or minor nuisances. In New York City, for example, according to the Local Law 33 of 1982 individuals who sell written materials (such as books) are exempt from registration (Duneier, 1999). However, in the early 1990s, the NYPD's order maintenance policing strategy led the ticketing and arrests of street vendors in Greenwich Village. Officers who followed the "letter of the law" penalized vendors who did not have all goods laid out on the table, their tables attended, or were located a proper distance from the doorways (Duneier, 1999 p. 95).

Finally, the informal economy embodies the American dream spurred by the Protestant work ethic (Weber, 2003). Participation in the informal economy can be instilled at a young age. For example, in the United States young children are encouraged to be entrepreneurial and operate a lemonade stand. This practice in capitalism is supposed to teach children about operating a business and self-sacrifice: working when others would vacationing. This business model is quite mainstream in the US. For example, Thompson and Siegler (2000) use questions about operating a lemonade stand to experimentally assess whether children between the ages of 5, 7 and 9 year old understand basic economic principles. They found that 7 and 9 year olds have an informal theory of economics that include an understanding

of profit seeking, competition, acquisition of desired goods and economizing (Thompson & Siegler, 2000).

Spatial Variation in New York City

Since the late 1700s, New York City's informal markets have been spatially concentrated in neighborhoods marked by immigration, ethnic heterogeneity and poverty. For example, the Five Points section of lower Manhattan was a popular site for Irish, German and Jewish immigrants. Moreover, informal labor in the Five Points area of lower Manhattan persisted over time, starting with Jewish sweatshop workers, Irish day laborers, children of Italian immigrants who worked under a *padrone*, and Chinese immigrants who sold "Chinese candy" and handmade cigars on the streets (Anbinder, 2001).

The informal economy remains a feature of these neighborhoods despite the "white flight"[7] of immigrant groups. For example, in the 1920s the arrival of train lines allowed many immigrant groups who participated in the informal economy to leave the South Bronx. Ethnic/racial groups (e.g., Hispanic and African Americans) who stayed behind continued to work in the informal labor market as they suffered economic and social disadvantage (Gonzalez, 2013).

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[7] During this period, historians have acknowledged that some immigrant groups felt that "it was a sure sign of status to leave the old neighborhood" (Gonzalez, 2013, p. 102).

Research confirms that there is spatial clustering of informal markets in New York City. These markets are spatially located in dense neighborhoods, where there is an influx of tourists looking to buy goods at discounted prices (Williams & Milton, 2015). Sassen (1989) provided empirical evidence that the informal economy has been located in densely populated neighborhoods of New York City comprised primarily of Hispanic, Chinese and South Koreans immigrants. For example, her research identified markets based on occupational safety and health administration violations (Sassen, 1989). Moreover, there were some ethnic neighborhoods in Brooklyn (e.g., Brighton Beach) that had an "advanced informal economy" made up of Russian emigres (Sassen, 1988). Similarly, Stoller (2002) found that West African immigrant vendors capitalized on the increased foot traffic of 125th street in Harlem to selling clothing items. At the same time, Chinese and Senegalese vendors placed themselves in Canal Street in lower Manhattan to sell electronic goods at discounted prices (Williams & Milton, 2015). Other major tourist areas that attract buyers include Greenwich Village (Duneier, 1999). In such areas, informal sellers agglomerate to attract tourists who may unfamiliar with the locations. This allows informal sellers to profit. Borrowing from studies on illegal drug dealing, spatial agglomeration decreases the search costs and allows all vendors to benefit from selling items nearby (Taniguchi et al., 2009).

The informal economy can be part of a broader economic institution. Like the formal economy, it regulates the behavior of sellers and buyers. For example, informal vendors are aware of the rules of the game regarding where to occupy spaces in Harlem to sell wares (Stoller, 2002). They also follow basic economic principles of supply and demand. Consumers are also aware of ways in which to approach storeowners in order to buy cheap

cigarettes and what specific phrases or postures to use (von Lampe et al., 2016). At the same time, this economic institution overrides other social institutions. For example, informal vendors in Harlem who are practicing Islam forego their faith by selling knockoff goods or items featuring foul language. They also are not selective about who they sell following the old adage that, "money has no smell" (Stoller, 2002).

Measuring the Informal Economy

Qualitative research has yielded thick descriptions regarding the lived realities of individuals engaged in the informal trade. For example, Ordonez (2015) work on day laborers in California describes that shifts that are allotted so that people can participate in informal labor. Other researchers including Paul Stroller describe how West African immigrants set up shop in Harlem selling West African wares (Stoller, 2002). Conversations coupled with participants observations allow qualitative researchers identify the sights and sounds or the marketplace by spending time in spaces inhabited by those who are either selling or buying informal goods. Rich qualitative descriptions detail how transactions take place and the ways in which buyers interact with sellers, and how their presence is perceived in the neighborhood (Dunieir, 1999).

Quantitative measures of the informal economy typically use self-report surveys and secondary data. Some models rely on secondary data sources include census data, presence of businesses. Others rely on confidential administrative data including, tax data audits. The analyses and models include labor market analysis, currency demand analysis,

electricity consumption, dynamic multiple indicators/multiple causes modeling (DYMIMIC), income versus expenditure discrepancies, and neighborhood proxies approach (Alderslade, Talmage & Freeman, 2006).

Scholars have also used self-report surveys as a direct method to measure the informal economy. These surveys include asking individuals about their participation in the informal economy. For example, in 2004, Slack (2007) used a telephone survey of 476 nonmetropolitan households in Pennsylvania to ask about participation in formal and informal work. He found that informal work is more likely to be pursued in tandem with formal work (Slack, 2007). While self-report surveys yield important findings, they are criticized for their accuracy. Individuals may be unlikely to answer truthfully about informal ways of earning money (Tickamyer & Wood, 1998). In fact, individuals who participate in the informal economy may be less likely to report their income on self-report surveys for fear of being reported to the government and having their government benefits withdrawn (e.g., Medicaid, SNAP, etc.). Formal surveys may also discount populations that are transient, but nonetheless, participate in the informal economy (e.g., the homeless and incarcerated individuals, college students, etc.).

Tax auditing has also been a popular method of examining national rates of informal employment. For example, between 1963 and 1988, the United States Internal Revenue Service (IRS) ran the Taxpayer Compliance Measurement Program (TCMP), whereby they would draw a random sample of the tax paying population to conduct intensive audits comparing what the resident reported versus what the auditor found to be true (Slemrod,

2007). This type of auditing was disbanded in 1995 due to budget constraints and complaints from US Congress about its fairness. Those who were subjected to the intensive audits dubbed it "the audits from hell" (Johnston, 1995). There were several issues with the audits. For example, the auditors were unsuccessful in uncovering all informal transactions. There was also sampling bias because the sample only included persons who filed IRS tax forms thus excluding undocumented immigrants or those who irregularly filed taxes (i.e., once every couple of years).

At the macro level, the informal economy has also been estimated via electricity consumption models. This method is based on the assumption that informal businesses can be detected by the amount of electricity being used (Alderslade, Talmage & Freeman, 2006). It examines the correlation between a nation's gross domestic product (GDP) and electricity consumption. For example, countries with high electricity use and low GDP show signs of a sizable informal economy. This method is limited because not all informal economies use electricity. For example, individuals may serve as caretakers and work in someone else's home. Another example is the sale of goods on the street that do not require the use of electricity (e.g., pushcart only). For example, people selling cold water on the street do not need access to electricity, but rather a water cooler, ice and store bought water bottles (Williams & Milton, 2015).

Another approach to estimating the informal economy is to use neighborhood proxies approach (Alderslade, Talmage & Freeman, 2006). For example, Social Compact, a non-profit organization based in Washington D.C., identifies eight proxies (e.g., percentage of

households with incomes of less than $30,000; percent foreign born; prevalence of check-casher operations, etc.) via self-report surveys and interviews with community developers in Chicago (Alderslade, Talmage & Freeman, 2006). One of the main issues with using proxies is that it does not directly measure the informal economy. It only provides estimates about the populations that are likely to participate in the informal economy. It makes no inferences on its size (Alderslade, Talmage & Freeman, 2006). Also, the approach is highly reliant on public and privately available datasets that may be unreliable.

Labor market analysis is another measure used to estimate the size of the informal economy. This type of analysis relies on publicly available data on the number of jobs available versus the number of people employed (Alderslade, Talmage & Freeman, 2006). For example, Joassart-Marcelli and Flaming (2003) used this same approach to estimate the informal market in Los Angeles. Drawing from secondary data sources, including the US Census' Current Population Survey (CPS) and the Employment Development Department (EDD), they subtracted the total employed residents and by the total number of available jobs. Their estimates ranged between 496,091 persons and 1.5 million informally employed residents (Joassart-Marcelli & Flaming, 2003).

Another approach used to measure the informal market is the currency demand approach. Overall, this approach seeks to measure the number of cash transactions that occur. It is based on the idea that most informal transactions use cash. This method has several drawbacks given that cash is not always used. For example, persons may barter for services (e.g., food for car repairs) (Venkatesh, 2007). Alternatively, with the rise of the online

businesses and the transactions in the "dark web", cryptocurrency can also be used (Bartlett, 2014). Lastly this method is typically used to examine macro trends and incapable of assessing "neighborhood level" informal activity (Alderslade, Talmage & Freeman, 2006).

Dynamic multiple indicators/multiple causes modeling (DYMIMIC) is also used by economists to measure the informal economy. Unlike previous measures that only use one indicator, the DYMIMIC approach uses multiple indicators to tap into unobserved variables. This model has the ability to use multiple data sources and to examine the trajectory of the informal market (Alderslade, Talmage & Freeman, 2006). However, it is typically used at the national level, although some have used it to provide information at the neighborhood level (e.g., neighborhood proxy research).

Estimating income over expenditure is another popular method used. This econometric model is based on the assumption that those who participate in the informal economy will spend more than their reported earnings. On average, Americans who earn below the median income typically spend almost all of their earnings. These models are further complicated when credit cards are factored in, given that individuals can spend more than they earn (e.g., expansive credit limits). While this method is relatively easy and can provide information as to the size of the informal economy, it does not provide any information on its determinants (Alderslade, Talmage & Freeman, 2006).

Lastly, what makes the informal economy difficult to measure is the proliferation of Internet based transactions. For example, individuals can make monetary and non-monetary transactions over the Internet without reporting their income to the government. The Internet hosts websites whereby anyone can advertise used and unused items including Craigslist and eBay. This has left some to argue that the revitalization of Web 2.0 has created the "Cult of the Amateur" whereby anyone can participate in the economy without much investment in startup costs (Keen, 2008). This online business model has bypassed much of the informal ways people used to sell items, including classified newspaper ads. For this reason, companies like craigslist.com have been called the "newspaper killer" (Weiss, 2006). For example, posting a "for sale" sign on a car is antiquated. In fact, a seller can attract a wider audience by advertising on the Internet (e.g., Facebook Marketplace). These online networks have also changed the nature of sex work and given the rise of amateur pornography. Individuals, mostly women, can sign up to be "cam girls" where they advertise peer shows online and offer their viewers financial incentives via BitCoins to perform various sexual and nonsexual acts (Bartlett, 2015).

Illegal Economy

Unlike informal economies, a higher degree of consensus surrounds what is labeled the "criminal" or "illegal" economy (Sassen, 1991). Generally, the illegal economy "encompasses the production and distribution of legally prohibited goods and services" (Portes & Haller, 2010, p. 405). Essentially, these are services and goods that are prohibited by the government because they are linked with direct or indirect harm to the overall

functioning of society including health and the economy. Along this line of reasoning, for example, the illegal sale of drugs is prohibited because it fuels addiction, which tears families apart, causes health issues including the spread of infectious disease such as HIV (Schoenbaum et al., 1989). Along the same vein, prostitution is illegal because it is tied to "loose morality" and is a danger to the spread of infectious disease (Weitzer, 2012). Other illegal economies that are observable at the neighborhood level include gambling, sale of stolen goods and sale of counterfeit goods (e.g., handbags, medicine, and cigarettes).

Among the visible illegal economies, the stolen goods marketplace has outlets where fenced goods are sold (e.g., pawn shops). Pawnshops are popular outlets for stolen goods because it attracts a variety of clientele and provides a legal front for operation. Offenders' report one of the motivations behind choosing to steal certain items is that they are easily sold (Schneider, 2006). Interviews with burglars in Texas find that almost a quarter (18%) of offenders use pawnshops as their main method of disposing stolen goods. This study also finds that of the 100 most prolific pawn shop sellers who have sold more than 250 goods, 58 had arrest records for theft (Fass & Francis, 2004).

Illegal commodities like drugs, gambling, and prostitution are heavily policed by the state and have been historically prohibited because of a few moral crusaders. For example, in 1971 the United States publicly waged a 'war' against illegal drugs (Clear & Frost, 2014). Policies tied to the "War on Drugs" included harsher penalties for the sale of illegal drugs that directly caused an unprecedented increase in the US prison population (Clear & Frost, 2014). Because the War on Drugs was largely launched in poor, communities of color

America's understanding of where illegal economies are concentrated is distorted. In fact, illegal drug sales do not only occur in the South Bronx, but are popular also in Atlanta suburbs (Contreras, 2012; Jacques & Wright, 2015). Most recent evidence from Jacques and Wright (2015) find that high school students in wealthy Atlanta suburbs also sell drugs, mainly marijuana, to be "cool" (i.e., increased likeability and attractiveness).

Researchers have long recognized the negative impacts of criminalizing commodities on price and overall wellbeing. Thus, there is continued discourse on whether it is wiser to push for decriminalization. This debate has centered on legalizing marijuana and prostitution. The United States outlawed prostitution in the 19th century. Since then, an array of models and or solutions have been proposed including: (1) legalization; (2) abolition; (3) criminalization and decriminalization of sex work (Brents & Hausbeck, 2005; Weitzer, 2014). There are some counties in Nevada that have legalized brothels. These brothels are regulated much like regular businesses, and require that women have weekly or monthly checks for sexually transmitted infections (STIs) and when there is sexual violence, the police are called (Brents & Hausbeck, 2005). Recent research on Nevada's brothel system finds that it fosters a stronger connection between sex workers and law enforcement and in turn minimizes the level of violence (Brents & Hausbeck, 2005). Other direct benefits include increased access to healthcare. For example, women interviewed in Nevada brothels claim that, "I would much rather see girls working in here, and doing it the healthy way and getting checked every week and using condoms, rather than being on the street, having pimps, getting beat-up, raped, some end up dead. You know, there's a certain protection" (Brents & Hausbeck, 2005, p. 289).

Prohibiting the sale and production of some illegal commodities can be counterproductive. For example, regulating sex work can reduce public health harm because risky services are controlled (i.e., use of condoms is enforced) and the population of sex workers can be offered medical services without the fear of being prosecuted. Rates of sexual violence may also decrease. For example, in Rhode Island, despite sex work being illegal, in 2003 persons took advantage of a legal loophole that temporarily legalized indoor sex work, until 2009, when the law was changed. Recent research finds that this temporary decriminalization (between 2003 and 2009) significantly decreased the rates of sexual violence and incidence of gonorrhea (Cunningham & Shaw, 2017).

For certain goods, illegal and legal commodities run parallel to one another and can compete for domination. For example, in some neighborhoods individuals are more likely to purchase an illegal version of the lottery known as the "number running" or "policy racket" (Williams & Milton, 2015). This illegal version of the lottery functions much like the lottery (e.g., picking numbers that are randomly generated) but not controlled by the state but by a set of criminal entrepreneurs. The payouts may be lower and winning odds higher when compared to the state run multi-million dollar lottery. In certain neighborhoods, this illegal commodity has been a staple in the community when lottery was illegal in New York and when banks were prejudiced against customers based on race/ethnicity (White, Garton, Robertson, & White, 2010). Other commodities that offer the same level of competition include stolen and counterfeit goods. In Canal Street, vendors compete with luxury commodities like Louis Vuitton and Prada, by selling "knock offs"

or counterfeit goods (Williams & Milton, 2015). Similarly, stolen goods are sold by fences who bypass the high prices charged by stores who profit from high mark ups (Cromwell, Olson, & Avary, 1991).

Characteristics of Illegal Markets in Urban Areas

Criminologists have widely focused on illegal commodities, with more substantial research in illegal drugs (Levitt & Venkatesh, 2000) and sale of stolen goods (Steffensmeier, 1986), among others. These illegal markets share common threads including ways they enforce informal social control (e.g., threat of violence) and the demographics of the clients they serve. Contrary to popular belief, illegal drug markets are prevalent in both urban and rural areas. However, criminologists have largely focused on urban markets where drugs are more likely to be sold out in the open, called "open air drug markets" (St. Jean, 2007; Bernasco & Jacques, 2015).

Neighborhoods that harbor illegal economies have higher rates of violence because of the lack of legal remedies, cash transactions and patterns of victimization. For example, when two drug dealers compete for working on a corner, there are no administrative tribunals to solve the dispute. Likelihood of retaliation is also greater, given that persons participating in the trade have no legal recourse to seek monetary damages (Goldstein, 1985; Jacobs and Wright, 2006). Thus, with illegal drug markets, research indicates that they are a harbinger of violence (Zimring & Hawkins, 1997). However, more recent research suggests that disputes occurring in drug markets can also be settled through non-violent means including

negotiation, avoidance, and toleration (Jacques & Wright, 2008). Neighborhoods can also have higher rates of violence because the cash transactions perpetuate victimization. Persons who deal in illegal markets may prefer to use cash because it maintains anonymity unlike credit card transactions. Robbers may target individuals living in neighborhoods because known cash transactions and their unwillingness to report victimization to the police (Contreras, 2012).

The illegal economy may flourish in areas of economic deprivation. For example, Philippe Bourgois' (1999) conducted an ethnographic study of street level crack dealers in East Harlem. During the height of the crack epidemic, Bourgois (1999) aligned himself close to East Harlem's El Barrio to understand the structural characteristics at play that could explain drug dealing. In addition to institutional racism, Bourgois (1999) found that there was the demise of legitimate employment opportunities among drug dealers who held middle-class values. Others scholars, focused on the plight of South Bronx residents, find that the goals of the American Dream and the blocked opportunities lead individuals to innovate and create novel ways to earn money (Contreras, 2013). For example, Contreras (2013) finds that 'stick up kids,' armed robbers who target drug dealers, find themselves caught up in the American Dream despite their limited opportunities in the declining drug market.

The illegal economy operates as institutions and comes with its own rules of the game. In some neighborhoods, this institution is quite powerful and regulates human behavior. For example, persons engaged in the illegal trade abide by a certain code of conduct that values

trust and secrecy (Gambetta, 1996). Further, in certain neighborhoods there are campaigns where it is normative not to call the police or engage in "snitching" (Carr, Napolitano & Keating, 2007).

Spatial Variation in New York City

Historically, criminal (illegal) economies are concentrated in transient neighborhoods of New York City. The informal economy is also present in these neighborhoods. In fact, there is quite a bit of spatial overlap. In these neighborhoods, participants engaged in the illegal economy may be likely to support informal workers (Venkatesh, 2008). One of the main reasons why the illegal economy is concentrated in certain areas include racial/ethnic discrimination and lack of integration into other social institutions that supported the legal economy (i.e., school and polity). However, affluent areas have not been immune to illegal economies, but rather immune from arrests or prosecution. Some of the places that have been historically tied to illegal economies since the mid-1800s include Five Points, Tammamy Hall, and Tenderloin district (also called Satan's Circus) of Manhattan, which all served as the center of activity for brothels, gambling, and sale of stolen goods, among others (Anbinder, 2001; Burrows & Wallace, 1999). While the tenements were torn down in the late 1800s, and immigrant groups moved in and out of the neighborhoods, crime persisted. For example, once the Irish and Italians moved out of Five Points, Chinese immigrants who were driven out of California moved in the neighborhood and were embroiled in crime (Anbinder, 2001).

Research on drug markets in New York City has largely focused on socially isolated immigrant neighborhoods including East Harlem, South Bronx, among others (Bourgois, 1999; Contreras, 2013). Thus, their findings may be biased because they provide no useful comparisons or controls. Steinfeisser and colleagues (2007) who conduct a more geographically comprehensive study on marijuana sales find that it can be purchased throughout New York City (in poor and affluent areas alike). Moreover, they find the quality of marijuana purchased was dependent on geography (Steinfeisser et al., 2007). For example, higher income areas had a preference for brand name marijuana. Variations in marijuana sales are also reflected in the official NYPD data. According to Drug Policy Alliance, a nonprofit agency promoting sensible drug policy, between January and August 2014, the number of marijuana arrest were disproportionate across precincts. Summonses were highest (1,128 per 100,000) in the 23rd Precinct (East Harlem), which is predominantly Latino and black, while there were 8 arrests in the 112th Precinct (Forest Hills), which is predominantly white (Drug Policy Alliance, 2014).

There is historical evidence of geographic variation. Since the 1800s, prostitution has been clustered in a few neighborhoods in New York City (Gilfoyle, 1994, p. 34). Brothels have been located in seedy areas (e.g., Five Points) and affluent neighborhoods (e.g., Church and Chapel Street) alike (Gilfoyle, 1994). Brothels located in affluent areas have demanded higher prices, motivated in large part by their high real estate prices. For example, in the 1830s, rents for prostitution houses in Anthony Street (Five Points section) were cheaper ($2,750), when compared to those in Church Street ($4,300) (Gilfoyle, 1994, p. 48). In the late 19th century, "parlor houses" were erected. They were more expensive brothels that

mimicked private houses, providing more anonymity and serviced a select clientele (Anbinder, 2002). In contrast, the Five Points section had "public houses" that were less discreet and "did their best to satisfy their customers" (Anbinder, 2001, p. 212). Landlords throughout Manhattan benefited from these parlors because they could charge exorbitant rents (Gilfoyle, 1994). This illegal economy expanded from at least two hundred brothels in 1820, to six hundred by the end of the Civil War (Gilfoyle, 1994, p. 31). Times Square, known for its rampant sex workers, also underwent stark changes in the 1990s with significant progress in removing illegal economies (Traub, 2004).

The illegal economy in New York City has had periods of expansion and implosion. For example, numbers running was popular in Harlem in the 1920s and 1930s and generated a steady unreported income for "Policy Queens" and "Policy Kings" (individuals who managed numbers running) (White, Garton, Robertson, & White, 2010). This illegal economy overshadowed the legal lottery system that had been disbanded in New York in 1837. As this illegal lottery system gained notoriety, Dutch Shultz (also known as the "Dutchman"), a German Jewish-American mobster, muscled in and took control of this illegal enterprise and expanded it to the Bronx, Brooklyn and Queens (White, Garton, Robertson, & White, 2010). Today, however, this illegal economy has become a relic of the past (Wilson, 2013). Other illegal economies have experienced changes in where markets have sold illegal goods. For example, in the 2000s, illegal cigarette sales dominated East Harlem, where they were openly advertised along commercial districts (Shelley et al., 2007). However, as the prices for cigarettes increased, bodegas and grocery stores entered the illegal trade and dominated sales because consumers felt more at ease

operating indoors away from the prying eyes of law enforcement (von Lampe et al., 2016). This illegal trade is so pervasive that most recent accounts find that almost half of all cigarettes consumed in New York City are trafficked from outside of the city (Davis et al., 2014).

The illegal economy is also facilitated by the Internet. Individuals can trade/buy illegal items in secluded parts of the Internet, called the "dark web," where entry is restricted by technological know-how. Gaining access to the "dark web" requires the use of Tor (The Onion Route), a web browser that hides individuals' Internet Protocol (IP) address via onion routing (Wiser & Carvajal, 2014). Within Tor there are websites that cater to pedophile networks, websites that sell drugs, weapons, stolen credit cards, etc. For example, online websites on Tor such as Blue Sky, Silk Route 2.0, Mr. Quid's Forums and Cannabic Road Markets, sell drugs, guns, and sex using cryptocurrency (e.g., BitCoins) (Wiser & Carvajal, 2014).

Measuring the Illegal Economy

Illegal markets have been traditionally measured using large population-based self-report surveys like the Monitoring the Future Survey (MTF), crime rates, arrest data, and hospital admissions. For example, in a study examining concentrations of drug markets in Philadelphia, Taniguchi and colleagues (2009) use arrest data as proxy for illegal drug markets. Researchers have also measured drug use with data from the Drug Abuse Warning Network (DAWN), a database of drug related visits to hospitals across the United States

(Brookoff, Campbell, & Shaw, 1993). Researchers estimating illegal markets have surveyed users directly about their purchasing patterns (Caulkins & Pacula, 2006). More recent estimations use methods used in conservation biology including network sampling techniques such as capture-recapture and respondent driven sampling (RDS) (e.g., Bouchard, 2007; Dombrowski, Khan, Wendel, McLean, Misshula & Curtis, 2012). Crime rates for stolen goods have also been used as a proxy for the illegal market (Rosenfeld, 2009). Some of these measures, including auto theft have been heralded as more accurate than other crime trends because people are more likely to accurately report theirs cars stolen for insurance purposes. In fact, Van Dijk and colleagues found that in Australia there was a high rate of concordance between self-reported victimization of auto theft and crimes reported to the police (Van Dijk, Mayhew, & Killias, 1990). All of these methods pose issues regarding internal and external validity. For example, representative self-report surveys may be representative of a population that is least likely to be deviant (e.g., occasional drug users). Drug arrests may not be an accurate measure of drug activity, but rather of a measure of police activity, because it may rely on where police are active on patrol and calls for service. Lastly, RDS may not be capture the full spectrum of the population despite drawing samples from different seeds.

Research on the earnings of criminal actors is limited to certain illegal markets, such as sex work and illegal drug sales. Descriptions of drug dealers' earnings can be found in ethnographies (Levitt & Venkatesh, 2000; Padilla, 1992; Bourgois, 1995) or self-report studies (Thompson & Uggen, 2012). For example Levitt & Venkatesh (2000) find that "officers" (persons those who report to gang leader) earned between $2,600 and $3,300 a

month over a period of four years. Foot soldiers earned between $3,600 and $29,000 a month. Broken down by hourly wages, gang leaders earn, on average, between $25.20 and $65.40 an hour, whereas foot soldiers earned between $1.70 and $5.60 an hour (Levitt & Venkatesh, 2000). In their sample of offenders who provide retrospective information regarding their income, between 1975 and 1979, Thompson & Uggen (2012) find that the average monthly income from drug proceeds (in 2004 dollars) is only $384. They also find that illegal earnings complement rather than substitute offenders' total income (Thompson & Uggen, 2012, p. 1079).

Applying Institutional Anomie Theory to Robbery

Research on institutional anomie theory have focused on examining predatory and instrumental crime as crime indexes. For example, Chamlin and Cochran (1995) construct a property crime rate that includes robbery, burglary, larceny and auto theft per 1,000. Some researchers, however, have claimed that it is important for theory development to disaggregate crime by type. In other words, I test the generalizability of the theory by examining several crime types individually. One of the more interesting crimes that relate to IAT, and would be interested to dissect as a singular crime measure is robbery. When compared to other predatory crimes, robbery is particularly interesting is in the past, research has found that IAT is modest in explaining robbery rates at the state level (see, for example, Messner & Rosenfeld, 1997; Chamlin & Cochran, 1995). Given that one of its main motives is profit, it fits well within a framework that is embedded in *pecuniary materialism* and overvaluation of the economy. Central to explaining variation in robbery

rates is identifying how the underground economy interacts with the American Dream and institutional imbalance. Robbery, can arguably be used as part of the illegal economy since it involves earning income using actions that are prohibited. However, I argue that robbery does not fit within the economic framework employed in this study since it is not transactional. Other illegal economies measures in this study focuses on income earned through transactions of goods and services (e.g., sex work, gambling, drugs, etc.).

Spatially, robbery, like other property crimes are concentrated in micro-places (e.g., street segments). For example, Braga and colleagues (2010) found that in Boston between 1980 and 2008, a small number (8.3%) of streets accounted for large percentage of (65.6%) of street robbery incidents. More recent research in The Bronx, New York finds that three robbery clusters yielded over 500 robbery incidents (Herrmann, 2015). Additional studies examining the impacts of time in the selection of robbery targets found that places mattered more so than time. Robbery targets were largely facilities that places that generated a large number of activity (Bernasco et al., 2017; Haberman & Ratcliffe, 2015). An examination of publicly available robbery data by the NYPD, show geographic concentration in the South Bronx, East and Central Harlem and South Brooklyn (City of New York, 2018). These findings serve as the basis for investigating the ways in which theoretical factors covered in IAT can explain the concentration of robbery incidents in New York City. This dissertation hypothesizes that the concentration of robbery incidents can be explained by the variation in the operation of institutions and culture at the neighborhood level. This new model will assess whether the formal, informal and illegal economy is related to robbery and if the American Dream mediates this relationship.

Expanding theory testing with additional crimes

It is a useful exercise to examine whether a revised version that incorporates the formal, informal and illegal can be expanded to crimes other than robbery including assault, grand larceny, and burglary. These crimes are appropriate outcome variables for theory testing because they are in line with the theorists claim that IAT can explain "criminal behavior with an instrumental character, behavior that offers monetary rewards" within the United States (Messner & Rosenfeld, 1994; p. 68, 85). Below I describe each crime and a brief exploration of the main motivators and links to IAT.

a. Grand Larceny

Grand larceny is legally defined as the theft of goods and services that are valued over $1,000 (N.Y. Penal Law § 155.30). Unlike robbery, it does not involve the use or threat of physical force. For the purposes of this analysis I use the broader offense category that includes grand theft auto. Some criminological studies separate simple theft from grand theft auto, because of the differences in motivation and places of occurrence. For example, vehicles may be stolen for the purposes of enjoyment rather than pecuniary gain. Nonetheless, I use the combined category since this study involves looking at aggregated crime statistics at the block group level and not entirely concerned with motivation. Overall, in 2016 there were 50,516 incidents of grand larceny reported to the NYPD

(NYPD, 2017). The number of grand larceny has remained relatively stable in the past four years: 51,526 in 2014 and 51,337 in 2015 (NYPD, 2017).

Grand larceny is an instrumental crime occurring in a variety of spaces including public streets and private residences. For example, people's routine activities online has increased the potential for individuals to steal identities and credit card information (Pratt et al., 2010). Similarly, theft of consumer goods may be more likely to occur in commercial areas than residential areas. Within this crime there are differences in motivation. For example, motor vehicle thefts are committed for monetary or enjoyment. Youth may want to steal vehicles for the purposes of joyriding. Alternatively, people may want to steal cars to sell for spare parts to chop shops (Clarke & Harris, 1992; Roberts & Block, 2013). Some geographies have different risk factors for specific subset of grand larceny. For example, research on motor vehicle theft finds that cars are likely to be stolen in residential and commercial areas with parking lots (Lu, 2006). In a more recent study in Colorado Springs, Piza and colleagues (2017) find that risk factors for motor vehicle theft included multi-family housing complexes, hotels and motels, sitdown restaurants, parks and commercial zoning. Grand larceny can also occur in public when individuals leave property behind. Individuals may also be conned into paying for false services (Williams & Milton, 2017). Grand larceny is part of a larger category of property crime used previously to measure IAT across states in the US (Chamlin & Cochran, 1995)

b. Burglary

Burglary is an instrumental crime that does not occur on the street nor include force. Burglars avoid using force by selecting unoccupied homes as targets. When compared with other crimes like assault it is more feared and purported more likely to happen (Warr, 2000). Research has shown that burglars are driven by hedonistic pursuits and quite rational often taking various considerations prior to committing a burglary. In fact, an examination of selected targets indicates that they look for vulnerable households to decrease the chances of them being caught. Research also finds that burglars look for unoccupied homes (Shover, 1991). Interviews with convicted burglars has found that they use environmental cues available at the scene of the crime to impact their decision making (Bernasco & Luykx, 2003).

One of the limitations in using this variable is that research has shown that burglars are more likely to target single-family dwellings than other types of residences (Bernasco & Nieuwbeerta, 2005). However, burglars prefer low-income dwelling (Evans, 1989) and manicured houses alike (Bowers & Johnson, 2005). Given the stratification of the sample, results may be biased towards single-family block groups.

c. Assault

Assault is the use of physical force that can cause non-fatal injury. Assaults are concentrated in geography due to certain features of the built environment and opportunities to commit crimes that include alcohol outlets (Gruenewald et al., 2006). Reasons for assaults are varied but can include interpersonal conflict, or abuse and can be caused by a single offender or as part of group behavior. The person to whom violence is

directed towards can include strangers or victims known to the offender. For example, intimate partner violence often occurs in private spaces and is directed towards individuals whom the perpetrator has relationship with. Certain persons are more likely to be assaulted. Research finds that individuals who are affiliated with gangs are more likely to experience assault (Taylor, Peterson, Esbensen, & Freng, 2007). In the context of IAT, assaults are caused by an institutional imbalance and interaction with cultural ethos.

Applicability of Alternate Theories

There are other theories that can explain the spatial distribution of crimes that are of interest to this study (e.g., robbery, grand larceny, burglary, and assault) including routine activities theory and social disorganization theory. However, these theories discount the importance of culture and social institutions that is central to IAT. Routine activities theory (RAT) focuses on how social structural changes impact individuals' routine activities. The theory focuses on the convergence of a motivated offender, a suitable target and absence of capable guardians (Cohen & Felson, 1979). According to RAT, as individuals time away from home increases there will be an increase in street robbery because they have an increased chance of becoming a suitable target and coming across a motivated offender. Moreover, certain locations have shown to areas where these elements converge. For example, robberies tend to cluster nearby drug dealing, sex work locations, abandoned buildings, and vacant properties (Bernasco & Block, 2011; Scott & Dedel, 2006). Groff (2007) tested RAT using agent based model and found that robberies increase as

individuals spend more time away from home. Social disorganization also provides theoretical explanations of where crime occurs focuses on the lack of informal social control brought about by ethnic heterogeneity, poverty and residential instability. Researchers have tested whether dimensions of social disorganization predict illegal drug activity and then violent crimes like robbery (Martinez, Rosenfeld & Mares, 2008). Martinez and colleagues (2008), find partial support for the theory. For example, they find that only residential instability is related to robbery. Other theoretical indicators like poverty (conceptualized as deprivation) are unrelated to robbery (Martinez, Rosenfeld & Mares, 2008). The authors contend that street robbers are more likely to seek targets in higher income areas. One of the drawbacks of using routine activities and social disorganization theory to understand robbery is that they lack a comprehensive understanding of social structures and their interaction with culture ethos that is quite unique in the US. For example, IAT provides a more robust understanding of what motivates individuals to commit robbery, and where it is likely to happen. Under IAT, robbery occurs in neighborhoods where the economy overrides other institutions and there is an interplay with American Dream that values among other things pecuniary gains.

Summary

This chapter explored the major tenets of Messner and Rosenfeld's institutional anomie theory (IAT) and the ways it has been empirically tested. Review of the literature found that IAT in the context of the United States has been primarily examined at the state and county level. Further, neither theorists nor empiricists have included the informal and

illegal economy as part of the broader economy. In this regard, expanding the economy to include these components may broaden the importance of the economy and would be a novel contribution to the literature. In keeping with the traditions of testing this theory, I test an expansion of this theory using outcome variables that provide monetary rewards (e.g., robbery, grand larceny, burglary, etc.). In subsequent sections I detail measurement strategies and provide results of this expanded version of the economy across a representative sample of neighborhoods in New York City (n=107).

CHAPTER 3: METHODS

Study Site

New York City is the chosen study site because: (1) it is among the largest and most racially/ethnically heterogeneous cities in the United States; (2) it has a history of informal and illegal markets (Okrent, 2010); (3) it is the aspirational symbol of money making (e.g., the "capital of capital") (Jaffe & Lautin, 2014) and (4) it is a convenient site for data collection because the principal investigator is a New York City resident and quite familiar with the City's landscape. It has also attracted criminologists who have examined the causes of the 1990s crime decline (Rosenfeld, Fornango, & Rengifo, 2007; Zimring, 2011). New York City is also the main site where policing tactics have been invented (e.g., Order Maintenance Policing) and used to proactively regulate public spaces (Rosenfeld & Fornango, 2014).

New York City is one of the largest cities in the United States. In 2010, New York City comprised of 2.6% of the US population, with about 8.1 million residents (New York City Department of Urban Planning, 2011). New York City is among the most heterogeneous cities in the United States in terms of race, ethnicity and income, which afford us the ability to examine how these demographics affect institutions and in turn the creation of underground markets. As of 2010, 33% of the population in New York City was White non-Hispanic, 22.8% Black/African American, non-Hispanic, 12.6% Asian non-Hispanic, 28.6% Hispanic origin, and 3% other (New York City Department of Urban Planning, 2011). In 2010, 23.7% of census tracts in New York City were populated by white

residents (whereby more than 50% of the population is White and all other racial groups are less than 20% each) (Furman Center for Real Estate, 2012). Similarly, 18% of the census tracts were predominantly black, 5.1% Hispanic and 1.8% Asian (Furman Center for Real Estate, 2012). When compared against Los Angeles, Chicago, Houston and Philadelphia, New York City is the only major city that has at least 10% of the population in each of the four major racial and ethnic groups (i.e., White, Black, Hispanic, Asian and Pacific Islander, and Other) (Furman Center for Real Estate, 2016). Further, when compared against the national average, New York City has a slightly higher level of income inequality with 36.6% earning less than $20,000 and 0.4% earning more than one million dollars (New York City Comptroller's Office, 2012). When using Gini Index of Inequality as a metric of economic inequality, New York City has the highest (0.50) index compared to other major metropolitan cities in the US including Chicago (0.46) and Los Angeles (0.48) (US Census Bureau, 2017). New York City also boasts a high immigrant population. In fact, in 2011, 37.2% of New York residents were foreign born, which is significantly higher than the US average (13%) (New York City Department of Urban Planning, 2013).

Historically, New York City has had an influx of immigrants and various sectors of the informal economy, including sweatshops (Rosen, 2002), tenement housing (Riis, 1890), street vendors (Burnstein, 1996), and day laborers (Bayor & Meagher, 1997). It has also had a history of illegal economy, including prostitution (Gilfoyle, 1994), untaxed cigarette sales (Arnold, 1966), numbers running (also known as the "policy racket") (White, Garton, Robertson, & White, 2010) and alcohol bootlegging (Lerner, 2009). These informal and illegal economies have thrived in times of prosperity and financial crisis. For example,

during the Great Depression, some Harlemites participated in the informal economy by selling fuel, running "policy numbers" and working as psychics (Harris, 2011).

Since the mid-1600s, New York City residents have been exposed to vice and corruption that has undermined the legitimacy of the local governance. For example, in the 1800s, New York City's politics were undermined by William "Boss" Tweed, one of the most corrupt politicians in early America who stole millions of dollars from City taxpayers (Ackerman, 2011). The level of graft heightened during Prohibition (1920-1933), when there was an increase in protection payoffs, extortion, and the proliferation of organized crime. During this period, the law also proved quite difficult to enforce, as Samuel Hopkins Adams wrote in the Collier's about prosecuting liquor bootlegging cases: "the jurymen would have to be drawn at the rate of 18,000 per day to keep up with the rate of arrests" (Okrent, 2010, p, 242). Along the same lines, Magistrate Joseph Corrigan once noted that prohibition "debauched the police force of this city and caused an orgy of graft, perjury, and corruption" (Lerner, 2009, p. 83).

Participation in the informal economy in New York City has cut across social class. Poor working class artists once lived in informal residences to avoid paying higher rents. For example, in the 1960s, artists who informally occupied lofts in SoHo (South of Houston Street) thwarted zoning restrictions by blacking out their office space windows and using their friends' and families' home addresses to receive mail (Waldrep, 2014). Eventually, in 1971, they successfully lobbied the City of New York to redistrict SoHo to an M1 zone that allowed them to receive "artist in residence" (AIR) designations permitting them to

legally reside in large lofts as long as they used the space for producing artworks (Waldrep, 2014). Similarly, some affluent New Yorkers today claim to reside outside of New York City (e.g., New Jersey, Connecticut) in effort to skirt New York City's personal income tax (PIT) obligations (Buckley, 2011). More recent innovations in the informal economy include individuals sharing goods and services (as part of the "sharing economy"). For example, homeowners rent out their apartments to others using online advertisements and websites like Aribnb.com, craigslist.com, among others (Zervas, Prosperio, & Byers, 2017). Persons engaged in these transactions may underreport their income to City, state and federal authorities, especially if payments are made with cash (particularly on craigslist.com).

New York City has been described as the "capital of capital" (Jaffe & Lautin, 2014). In 1784, the Bank of New York was the second bank founded in the United States with an initial stock of $500,000 in gold and silver (Jaffe & Lautin, 2014, p.12). New York City also houses two of the most important stock exchanges in the United States: the New York Stock Exchange and NASDAQ (National Association of Securities Dealers Automated Quotations). New York City banks have been at the center of innovation including issuing personal loans and mortgage backed securities (Jaffe & Lautin, 2014). Since the 19th century, Wall Street has been integral to the growth of the US economy and imprinted in the imagination of Americans as the center for "arrogance and callousness; conspicuous display of influence" (Jaffe & Lautin, 2014, p.3). In more recent times, it has been the site of discontent regarding the economy downturn (e.g., Occupy Wall Street protests in 2011).

New York City is the ideal laboratory for examining crime because it has experienced changes in crime rates and policing practices. For example, in the 1990s, New York City experienced a reduction in violent and property crimes (Zimring, 2011). During this time period, New York City created policing initiatives (Order Maintenance Policing) that were informed by broken windows theory (Kelling & Wilson, 1982). This theoretical orientation argues low-level crimes (i.e., graffiti) should be targeted to avoid escalation into more serious ones (Wilson & Kelling, 1982). Policing practices focused on regulating crime in public places (e.g., arresting and ticketing panhandling, public drinking, etc.). Experts who have analyzed the decline in crime trends have found these interventions brought modest declines in the overall crime rate (Rosenfeld & Fornango, 2014; Rosenfeld, Fornango & Rengifo, 2007; Sharkey, 2018).

New York City has also been the study site for numerous in depth research on informal (Sassen, 1988; Stoller, 2002; Duneier, 1999; Williams & Milton, 2015) and illegal markets (Venkatesh, 2013; Bourgois, 1999), and for which data can be compared against. These studies have examined sweat shops (Sassen 1988), street vending (Stoller, 2002; Duneier, 1999; Williams & Milton, 2015), sex work (Venkatesh, 2013) and drug dealing (Bourgois, 1999). These works serve as useful references for different manifestations of the illegal and informal economy across space and time. For example, Duneier's (1999) research findings provide great detail on the effects of order maintenance policing, at its nascent stage (e.g. early 1990s), on street vendors. In his more recent investigation of the underground economy in New York City, Venkatesh (2013) finds that individuals who operate in New York City are linked together despite their racial, social and cultural

differences and one could easily "float" through these informal networks. These studies examine different manifestations of the underground economy in New York City relying on in depth information of participants all the while making structural arguments about race, class and poverty.

Lastly, New York City is a convenient place to collect data given my residency status and past research experience. I have lived in the Belmont section of the Bronx since 1995 and witnessed various forms of underground activity including sex work, extortion, gambling, drug sales, illegal tobacco sales, unlicensed vending, etc. Since 2011, I have been involved in a couple of projects in the South Bronx that collect discarded cigarette packs (see for example, Kurti, von Lampe & Johnson, 2015). Being familiar with the sights, smells and sounds of the underground economy and the hardships associated with primary data collection allowed me to spearhead this project.

Beyond the Formal Economy

Economists have found that the informal and illegal economy are difficult to measure at the meso (neighborhood) and macro level (nation) because of limited economic indicators (Gerxhani, 2009). However, urban sociologists have focused on specific exchanges and features of broader "markets" to draw conclusions about the structure of these economies. For example, through interviews and participant observations with active offenders, researchers have developed "thick" descriptions that can be used to identify participants and what clues/artifacts they leave behind (Williams & Milton, 2015). Following in the

anthropological tradition, studying material culture can provide clues as to where the illegal economy is concentrated (Consroe et al., 2016). For example, drug paraphernalia littered on the streets and sidewalks can point to areas where drugs are sold (e.g., small zip lock bags, blunt wrappers, lighters, etc.). Similarly, postings on utility poles (e.g., "off the books" employment opportunities like babysitting, dog walking, etc.) can point to the presence of the informal economy. The scholarly literature is an appropriate starting point for identifying street behavior, postings and discarded artifacts that point to the presence of the informal and illegal economy. For example, the recent works of Williams and Milton (2015) provide clues on how to identify the behaviors of street hawkers who sell counterfeit goods on Canal Street and the methods they use to lure customers (via "whispering"). Other researchers have collected empty cigarette packs from the streets and sidewalks to estimate the extent of tax avoidance, by looking at the proportion of packs with tax stamps from states other than where collection took place (Merriman, 2000). Researchers have also identified pawn shops as outlets where stolen goods are sold (Fass & Francis, 2004). In the past, studies using SSO have collected indicators of social disorder (e.g., smell of marijuana) that can also be used as proxy for illegal drug markets (Hoeben, Steenbeek & Pauwels, 2018).

Historically, informal and illegal markets have been continuously advertised in a variety of public spaces in New York City. In the case of illegal markets, as early as 1794, sex workers were "found in the streets, particularly after ten o'clock at night, soliciting men and proudly flaunting their licentiousness in the most shameless manner" (Gilfoyle, 1994, p. 24-25). Similarly, informal markets have a long history of operating in ethnic enclaves

like Little Italy, Chinatown, Little Odessa, among others. For example in the Belmont section of the Bronx, waves of Italian immigrants informally sold imported goods on push carts along its main avenue (Arthur Avenue). It wasn't until 1940 when Mayor Fiorello La Guardia opened the Arthur Avenue Retail Market pushing the vendors indoors (Haller, 2016). Along the same lines, West African vendors in Harlem sell African wares, counterfeit apparel and videos along its main avenues (Stoller, 2002). In the 1800s, stolen horses were dyed different colors and resold to unassuming customers (Zacks, 2012). Despite increased waves of enforcement these illegal markets remain resilient, and continue to operate in the City. For example, cars, which replaced horses as the main mode of transportation, are stolen and sold to unassuming customers via "chop shops" (Healy, 2004). Similarly, despite law enforcement crackdowns, sex work is still openly advertised in certain neighborhoods (Kilgannon, 2011). At the same time, informal labor has been a central feature of the US economy and a source of anti-immigrant sentiment aimed at Chinese, Irish, and Latino immigrants (Anbinder, 2001; Ordonez, 2015). Some illegal markets continue to operate in semi-public spaces of New York City. For instance, since the 1960s, untaxed cigarettes have been sold in stationary stores (Arnold, 1966; Shelley et al., 2007). Lastly, illegal and informal markets continue to operate in private settings with strict entry requirements. During the Prohibition era (1920-1933), persons wanting to consume alcohol operated in stealth would access speakeasies (illegal clubs that served alcohol) through the use of "membership cards, passwords, peepholes and hidden entrances" (Lerner, 2009, p.153). Today, there are still "afterhours bars" that serve liquor to patrons past hours licensed by the state's liquor authority.

Some of the aforementioned illegal markets have served customers in times when Americans openly experienced racism, classism, sexism and homophobia. Underground markets for the most part have provided opportunities to buyers across levels of stratification, whether it was wealthy white men who wanted to engage in sex with black sex workers, black men who wanted to drink in speakeasies, or gay men who wanted to dance in bars (Gilfoyle, 1994; Okrent, 2009; Crawford, 2015). Arguably, Prohibition changed the life of New York City, especially its entertainment and social mores (Okrent, 2010). For example, historians have noted that some speakeasies weakened segregation barriers between blacks and whites. Journalists of the time commented, "night clubs have done more to improve race relations in ten years than the churches, white and black, have done in ten decades" (Okrent, 2010, p. 212). Similarly, the mafia helped establish the New York City gay bar scene by paying off police officers to announce when they raided gay clubs; thus, allow gay men to skirt discriminatory laws preventing them from dancing and drinking in public establishments (Carter, 2004).

Analytical Strategy

Overview

This dissertation selected a stratified random sample of block groups (n=107) in New York City. This sample represents 2% of block groups in New York City. Stratification focused on land use patterns (e.g., single family, multi-family) and employment (above and below median percent of civilian population employed. This stratification strategy was chosen

because other factors yielded categories that were too small for selection (i.e., small cell sizes). In ensuing sections of this chapter, the selection strategy will be discussed in more detail.

Between late August and October 2016, along all street segments nested within the selected block groups, raters walking in pairs and collected litter (Wave I) and observational data (Wave II). After data was collected, counts for each item were then aggregated to the block group level and merged with secondary data from official sources (e.g., New York City Police Department, New York City Department of Education, New York City Department of Consumer Affairs, and US Census Bureau). Following institutional anomie theory, secondary data were used to construct the formal economy, polity, education, and family. I examine whether robbery counts in 2016 can be understood using a broader definition of the economy within the IAT framework that includes the formal, illegal and informal economy. I also examine the interaction between the informal and illegal economy and the cultural ethos at the heart of the theory: the American Dream. Given the distributional properties of the dependent variable, I use negative binomial regression with population size as the exposure variable. Negative binomial regression models are appropriate for robbery counts because it accounts for over dispersion and has been used in previous studies that have tested institutional anomie theory (Maume & Lee, 2003).

Wave I observations that include collection of discarded drug paraphernalia follow in the anthropological tradition of material culture. Anthropologists find that what people discard can describe the lived realities of individuals (Reid, Rathje, & Schiffer, 1974). Researchers

who have estimated the size of the illegal cigarette market have collected discarded cigarette packs (Merriman, 2000). I have amended this data collection tool to include the collection of drug paraphernalia (e.g., blunts, zip lock bags, etc.). Wave II observations relied on systematic social observation (SSO), a methodology brought into mainstream sociology by Albert Reiss (1971) who advocated systematically observing behaviors in their natural environment. This method has been used by criminologists to study: police and citizen interactions; social and physical disorder; and the patterning of drug dealing (Sampson & Raudenbush, 1999; Piza & Sytsma, 2017). SSO observes behaviors and experiences that residents have difficulty recounting in surveys and interviews. For example, instead of asking residents to recount the quantity of litter found in their neighborhood, it is easier to walk the streets and count or weigh the pieces of litter. When compared to ethnography, SSO poses a lower risk of being subjective, provided that specific research protocols are put into place (e.g., research instrument; rater training). Unlike ethnography, multiple raters can be used and validate observations at the same time. For example, Taylor and colleagues (1995) had several raters determine whether they observed signs of disorder. However, there are caveats associated with SSO. For example, raters may perceive disorder differently (Mastrofski, Parks, McCluskey, 2010). Raters may also provide biased responses because of fatigue or different socialization (Spano, 2005).

When multiple raters are used, this method allows researchers to measure interrater reliability. This method can be adapted quite easily to observe street behaviors. Streets are public places where there are no entry requirements. Raters can walk through a street segments and examine social life without arousing suspicions, especially if they do not

deviate from the social mores of the neighborhood (not staring at individuals for an extended period of time). Given that one of the aims of this study is to measure informal and illicit behavior, relying on self-report surveys or arrest data may underrepresent these events. For example, Hoeben, Steenbeek, and Pauwels (2018) found that the counts of marijuana smoking in a sample of 1,422 street segments in Hague to be quite low in comparison to other observations including loitering of adults and teenagers.

Variables

Dependent Variable

Robbery counts at the block group level in 2016 is the main outcome variable. Robbery is commonly used in IAT research because it is a crime that is motivated by material gain (e.g. another's possessions) (Cancino et al., 2007). Robbery is also linked to the illegal and the informal economy because participants may be targeted because they deal primarily in cash transactions. For example, Contreras (2012) highlights that drug dealers are robbery targets because they are unlikely to report being victimized.

Robbery counts are collated from incident level complaint data from the New York Police Department (NYPD) that is publicly available (City of New York, 2018). I selected robbery incidents (n=12,690) that occurred between January 1 and December 31, 2016 in New York City. All of the data points were successfully geocoded using ArcGIS 10.4. Then, I counted the number of robbery incidents (n=242) that fell within the boundaries of the block groups

in the sample (n=107). The study sample represents 2% of all block groups and 1.9% of robberies in New York City in 2016.

To test the robustness of the theory, in subsequent models I examined main effects and interactions using other crimes including grand larceny, assault and burglary. Additional variables are important for assessing whether results can be expanded to other crimes that are driven by pecuniary gain and it follows in the tradition of measuring IAT using property and violent crimes (Chamlin & Cochran, 1995; Maume & Lee, 2003). These variables were extracted from the New York Police Department and geocoded (X, Y data) at the street segment. Overall, higher number of crimes across the sample were for grand larceny (M=8.38, SD=17.3), followed by assault (M=2.93, SD=4.71), and burglary (M=2.14, SD=3.55).

Independent Variables

Independent variables were created from the primary collected in Wave I and II and secondary data from city (e.g., New York City Department of Education, New York City Department of Consumer Affairs and New York City Campaign Finance Board), state (New York State Board of Elections), and federal agencies (US Census Bureau). I hypothesized that some of the independent variables could be classified as latent variables described in IAT's original conception. For example, the American Dream, illegal economy, and informal economy can be composed of variables that speak to its dimensions and indicators. However, this requires supplemental analysis to determine if these concepts

can hang together as a larger construct because there has been no previous attempts to measure them at the block group level. There is only one previous study that has conducted an analysis of IAT at the block group level in San Antonio, Texas but has not developed a latent variable of culture (Cancino, Varano, Schafer, & Enriquez, 2007). Below I detail their definitions and operationalization.

Institutions

Messner and Rosenfeld's (1994) define institutions as "relatively stable sets of norms and values, statuses and roles, and groups and organizations" whose main goal is regulat conduct and meet basic needs (e.g., shelter, food) (Messner & Rosenfeld, 1994, p. 72; Dolliver, 2015, p.751). Institutional anomie theory pay particular attention to four main institutions: the family, polity, education, and the economy. They recognize that their list does not "exhaust the institutional structure of modern societies, nor are they the only institutions with relevance to crime" (Messner & Rosenfeld, 2012, p. 75). For example, there are other institutions that can be accounted for, including religion and mass communication (Dolliver, 2015). However, following the majority of empirical tests of IAT, this dissertation incorporates only the economy, polity, family and education.

I. Economy Measures

    A. Formal Economy

According to Messner and Rosenfeld, the economy "consists of activities organized around the production and distribution of goods and services" (Messner & Rosenfeld 2012, p. 75). The economy is capitalistic and defined by "both private ownership and control of property and free market mechanisms for the production and distribution of goods and services" (Messner and Rosenfeld, 2001, p. 68). Measuring this free market institution has been debated, but in US based studies it is usually measured as either percentage of families below the poverty level or the Gini index of income inequality (e.g. Chamlin & Cochran 1995; Bjerregaard & Cochran 2008a; Zhao & Cao 2010; Cochran & Bjerregaard, 2011; Maume & Lee, 2003; Savolainen, 2000). At the block group level, Gini Index is difficult to measure and can be unreliable. For example, estimates at the block group level would come from the American Community Survey, which is based on a cross sectional sample of New York City and has been shown to yield unreliable estimates (Spielman, Folch, & Nagle, 2014). Instead, I relied on percent of individuals who are more than 31% in debt for using credit (New York City Department of Consumer Affairs, 2016). There were other percentile cutoffs available, (e.g., 50%) however, 31% was chosen because it is a moderate cutoff percentile and lower than other measures (New York City Department of Consumer Affairs, 2016). Estimates for percent of persons more than 31% credit debt were drawn at the Community District level and then disaggregated to the block group level. Percent of persons with high credit debt is a useful measure of the economy because it can account for spending in the formal economy. However, it is limited because it may not account for individuals who do not own credit cards. In fact, there is evidence that shows over 360,000 residents of New York City do not own bank accounts (Ratcliffe, McKernan, Kalish, & Martin, 2015). Nonetheless, the percentage of persons who do not own banks has decreased

in recent years. For example, in 2011 14.3% of persons in New York City did not have an opened bank account, but that decreased to 11.7% in 2013 (Ratcliffe, McKernan, Kalish, & Martin, 2015).

B. Informal Economy

Measures of underground economy were identified through an exhaustive list of contemporary studies on the illegal and informal marketplace in New York City including peer-reviewed articles, books, and agency commissioned reports (e.g., New York State Department of Taxation and Finance). However, in accordance with the definition used in this dissertation, the underground market is bifurcated to include goods that are prohibited by the government (i.e., illegal) and those that are not prohibited but whose sales are unreported (i.e., informal) (Castells & Portes, 1989).

The informal economy was measured on the street via systematic observations of street behaviors (e.g., individual that is panhandling) and postings (i.e., paper advertisements for single occupancy rooms for sale attached to the light pole) with the intention of creating a frequency scale (Appendix B). Some indicators of the informal economy are more nuanced and can vary depending on geography and cultural context. For example, some of the telltale signs of panhandling including performing small tasks for pay, washing a person's windows when they are temporarily stopped at a gas station, etc. But in some areas, the same transaction is an act performed by gas station staff as part of the larger services. Another example: in some commercial zones water is handed out to advertise products,

whereas in other areas, water is sold informally. Description of these visual cues were detailed in a fieldwork manual for raters.

C. Illegal Economy

The illegal economy includes prostitution, stolen goods, gambling, drug sales, drug paraphernalia and untaxed cigarette sales that were measured using collection of litter (Wave I) and systematic social observation (Wave II). These are common illegal economies (e.g., sex work, gambling, drug sales and illegal cigarette sales) in which City, State and federal laws prohibit the sale and production of services. Many raters acknowledged having already observed the solicitation of prostitution and sales of illegal drugs. The measurement of localized drug markets was supplemented by the collection of K2 wrappers, glassine envelopes, "blunt" wrappers, clear zip-lock bags, and syringes that point to illegal drug sales (Appendix A). Drug paraphernalia found pointed to a specific drug market. For example, stamped glassine envelopes (also known as 'dope stamps') are specific to heroin (Wendel & Curtis, 2000). Whereas, blunt wrappers are linked to marijuana use (Giovenco et al. 2016).

Finally, I also include a measure of the number of pawnshops in a neighborhood as a proxy for the stolen goods marketplace. Research finds that pawnshops are a popular venue for fencing stolen goods (Fass & Francis, 2004). Pawnshop data from the New York City Department of Consumer Affairs on store locations was geocoded and counts were

aggregated to the block group level (New York City Department of Consumer Affairs, 2014). There were 9 pawnshops located in the sample of block groups selected.

II. Family

The family is an important non-economic institution whose function is to socialize family members. The family is serves as a refuge from the harsh conditions of life (Messner and Rosenfeld, 2012, p. 75). In prior IAT studies, the strength of the family has been measured as the divorce to marriage ratio (Dolliver, 2015). I follow past measures and also create a divorce to marriage ratio, whereby I divide divorces by marriages. However, I do not standardize by 10,000 because block groups sizes are much smaller (less than 5,000) (US Census Bureau, 2015). I rely on divorces because as Bjerregaard & Cochran (2008a) have mentioned, it is "one of the most consistently utilized measures of the weakening of the family units is the divorce rate" (p. 188). This variable is created from data are derived from the 2016 American Community Survey, five-year estimates (US Census Bureau, 2016).

III. Polity

The polity is the political institution that has a formal responsibility in regards to the distribution of power and resources (Messner & Rosenfeld, 2012, p. 74). The polity was measured as the level of involvement in local politics. For congruity, this study focused on the 2013 mayoral election because it indicates an interest in New York City politics (New

York City Board of Elections, 2013). The data however, was only available by election districts. Election districts may be more meaningful representation of a local institution because it represents the level of geography used by campaign staff. Residents of each district are assigned to one voting area (e.g., local elementary public schools). There were some cases where a block group was located between two election districts. In these cases I assigned values in the district that covered greater land area. Prior IAT studies have measured the polity in different ways: including the lack of voter turnout (Bjerregard & Cochran, 2008a); percent of voting age individuals who voted in the congressional contests (Chamlin & Cochran, 1995), and average voting rates in the presidential elections (Maume & Lee, 2003). However, the use of local voting data is more closely associated with other theories including social capital (Temkin & Rohe, 1998).

IV. Education

Education serves to socialize persons and transmit cultural standards (Messner & Rosenfeld, 2012, p. 75). To measure the strength of the educational institution, I include a singular measure that captures its investment in success at various levels (i.e., elementary school, middle school and high school): per capita spending per student (2014-2015)[8]. This data was provided at the district school level. There are 32 school districts in New York City.

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[8] This is the most recent year for which data was publicly available.

Data at the district level was disaggregated to the block group level because of the structure of the New York City Department of Education. Students who wish to attend public schools are largely limited within their district. There are exceptions in terms of special needs and gifted students who place out of their districts through medical evaluations or specialized exams. Parents could also apply to transfer their children to another school based on a set of reasons including, hardship, safety, siblings, and guidance transfers (New York City Department of Education, 2017). Using district level data conforms to Messner and Rosenfeld's (2011, p.127) prior apprehensions of using local schools as proxies of the education institution, when instead they should be identified as organizations. This measure falls in line with previous research that uses educational expenditures to measure educational institution (Maume & Lee, 2003).

V. American Dream

The American Dream is characterized as an ethos centered on the accumulation of wealth (Messner & Rosenfeld, 2006). I attempt to measure the American Dream using four value orientations identified in Messner and Rosenfeld (2006) as concepts at the street level that are then aggregated to the block group level. One of the limitations of this measure is that it does not account for popular media sources that advertise the American Dream using radio, television, Internet and film. For some age groups, the Internet and social media may be more frequently relied upon for advertisement.

(a) <u>Achievement</u> is a value orientation that encourages individuals "to make something of themselves, to set goals, and to strive to reach them" (Messner & Rosenfeld, 2012, p. 69). Researchers have attempted to measure this concept at the individual level by using self-report surveys. For example, using a sample of college students, Muftic (2006) measured achievement by querying: (1) "I will sacrifice a lot of other things to have a lot of money"; (2) "I don't need help from others to succeed"; (3) "I am getting a college education because it's expected by my friends" (4) "Success is measured by the amount of money a person makes" and (5) "I am getting a college education because it's expected by my parents" (Muftic, 2006, p. 642). Using self-report surveys, Cullen and colleagues (2004) measure achievement in a sample of 3,450 managers from 28 countries using the World Values Survey asking respondents three questions: whether respondents disagreed with the following two statements: (1) "the respect a person gets is highly dependent on their family background", (2) "the most important thing in life is to think and act in the ways that best suit the way you really are, even if you do not get things done"; and the percent of people who agreed with the following statement: (3) "One does not have the duty to respect and love parents who have not earned it by their behavior and attitudes"

I operationalize this value orientation by counting the (1) number of streets within the block group named after wealthy businessmen/women (e.g., Astor Avenue in the Bronx named after the wealthy 19th century New York landowner, John Jacob Astor); and (2) number of businesses or places established for more than 10 years (e.g., since 2007, established in 2007, founded in 2007). This measure has face validity because consumers may pass by stores and note that they have been operating for an extended period of time. Consumers

might marvel at the length of ownership since non-chain stores turn over rather quickly in New York City. The length of time a store has been open speaks to the owner's business acumen. Similarly, famous street names of wealthy businesspersons focus on fame and wealth. Individuals, who have streets named after they have made an indelible mark on society.

(b) <u>Individualism</u> is a value orientation that encourages persons "to make it on their own" (Messner & Rosenfeld, 2012, p. 69). Muftic (2006) measures this concept by asking students about the importance of success to one's happiness, necessity of sacrifices, and devotion. Baumer and Gaustafson (2007) used the General Social Survey (GSS) to measures the degree of commitment to pursuing monetary success by asking individuals the degree to which they agreed with the following statement "next to health, money is the most important thing." (p. 633). Cullen and colleagues (2004) measure individualism including three items that inquire about quality of life issues. The issues and items were (1) quality of life: ("It is obvious that if individuals have as much freedom as possible and the maximum opportunity to develop themselves, the quality of their life will improve as a result"), (2) typical job: ("Everyone is allowed to work individually and individual credit can be received") and (3) negligence of a team member ("The person causing the defect by negligence is the one responsible") (Cullen, Parboteeah, & Hoegl, 2004).

I measure this concept by counting: (1) number of independently owned businesses (e.g., Bob's Cigar Store, Andres' Pastry Shop) and (2) number of publicly available handicapped parking spaces (i.e., not counting those on private property like McDonald's). Individual

ownership of stores is novel given the economic landscape where large corporations dominate (e.g., Walmart, Macy's, etc.). Choosing these locations indicates individual ownership of economic spaces.

(c) <u>Universalism</u> is a value that encourages everyone to "aspire to social ascent" (Messner & Rosenfeld, 2012, p. 69). Muftic (2006) measures this concept with questions measuring beliefs about working hard and not blaming others for ones' failures (Muftic, 2006, p. 642). Cullen and colleagues (2004) measure this concept by posing two dilemmas: one focused whether respondents would testify truthfully in a trial where their friend sped and caused an accident, and the other asked whether a journalist should write a positive review for a friend's restaurant.

This dissertation operationalizes universalism by counting the number of: (1) international flags and (2) businesses advertisements in a foreign language (e.g., "salas", "拍卖", "ت خ ف يض"). Both these measure underscore the inclusion and integration of persons from other countries to the US. These signs can be seen in popular ethnic enclaves of New York City that have woven themselves into the fabric of society. For example, Chase bank sign in Mandarin in lower Manhattan, or Polish business signs in Greenpoint, Brooklyn.

(d) <u>Materialism</u> is defined as the pressure to accumulate wealth by any means necessary (Messner & Rosenfeld, 2012, p. 70). Muftic (2006) measures this concept with survey items pertaining to the importance of money and how the real goal of education is to accumulate wealth. Similar rankings were used by Cullen and colleagues (2004) who asked

respondents to prioritize goals for the nation: "stable economy" and "progress toward a society where ideas count more than money (Cullen et al., 2004).

This concept is measured by counting the number of (1) money lending establishments (e.g., pawnshops, ATMs, banks, check cashing places, money wiring services), (2) legal advertisements that encourage the accrual of wealth and spending (e.g. tax services and personal injury attorneys) and (3) stores that advertise prices and sales (e.g., "buy 2 get 1 free"). These stores and advertisements are visual cues related to purchasing. For example, viewing ATMs can cue someone to take out cash from the bank to buy items. This visual cue may be more relevant today when carrying cash is not commonplace.

Exposure Variable

The negative binomial models used block group population size as the exposure variable. Population size is a relevant exposure variable to include in the model because some block groups are purposed for commercial use and therefore do not have high number of residents as for example, residential block groups. Population size is more meaningful exposure variable than area size because it is linked to the possible number of targets available. This is also an appropriate exposure variable as there are no block groups with population counts of 0. This data was drawn from the 2012-2016 American Community Survey, five-year estimates (US Census Bureau, 2017). In subsequent sensitivity analysis, area size (sq. feet) was used as an alternate exposure variable. This alternate specification was chosen based on the premise that certain economies may thrive in areas with greater land mass. This data

was drawn from the New York Department of Urban Planning, 2016 PLUTO files (New York Department of Urban Planning, 2016).

Control Variables

Consistent with prior studies of IAT and neighborhood crime, the following variables were specified as controls:

I.   Persons Aged 15-24

In accordance with research that illustrates a greater propensity to commit crime among teenagers to early adulthood (Steffensmeier & Harer, 1987; 1999), I control for individuals who are most prone to instrumental crimes: those between the ages of 15-24. Estimates are obtained from the 2012-2016 American Community Survey, five-year estimates (US Census Bureau, 2017).

II.   Percent Foreign

This study controls for percent of the population in the block group that is foreign. Informal economies are more prevalent in foreign communities that do not have access to legal employment (e.g., undocumented) or distrust the formal banking systems (Ratcliffe, McKernan, Kalish, & Martin, 2015). Estimates are obtained from the 2016 American Community Survey, five-year estimates (US Census Bureau, 2017).

Data: Observations

This study measures attributes of underground economies (i.e., informal and illegal economies) using Wave I (collection of litter material) and Wave II (systematic social observation (SSO)). Combined, these methods unobtrusively measure the informal economy, illegal economy and the American Dream ethos. Below I describe why the street is an important level of analysis for criminological theorizing and explore the use of systematic social observation and collection of litter material, noting their strengths and limitations.

The Street as the Center of Observation

Street level observations (that are then aggregated to the block groups) are focus of this dissertation because: (1) historically, it has served as the major hub for informal and illegal marketplaces; (2) ease of access to make unobtrusive observations; (3) center of advertisements; (4) center of public interactions and (5) proxy for social control from neighbors who keep an eye on the streets to maintain a sense of safe and orderly environment (collective efficacy) (St. Jean, 2008).

Historically, public areas have served as hubs for the sale of illegal drugs and stolen items. Busy streets provide cover and anonymity to drug dealers. It also allows them to change locations (from one street to the next) without hassle or loss of payment from renting

private property (e.g. apartments). They operate in streets where they are less likely victimized because there are eyes on the street. The street also benefits buyers who do not have access to illegal markets via friendship or kinship networks (for example, as has been documented with marijuana) (Caulkins & Pacula, 2006). Illegal drug sales in urban areas tend to cluster (an artifact of agglomeration economies) in order to attract customers who have imperfect knowledge of the marketplace (Taniguchi, Rengert & McCord, 2009). In other words, drug dealers stick together to make it easier for users to find them. In urban areas, law enforcement officers may overestimate the number of individuals operating an open-air illegal market. For example, David Kennedy finds that in High Point, Long Island an area that law enforcement claimed was brimming with drug dealers, there were only sixteen active drug dealers (Kennedy, 2011).

In the purview of public spaces, sidewalks are an important part of the urban landscape. In her examination of American city life through the lens of Greenwich Village, Jane Jacobs finds that sidewalks have "self-appointed public character" because of their ability to draw in an array of different people (Jacobs, 1961). Sidewalks provide a circulation of people who are residents and non-residents in areas that are dense and where individuals are essentially strangers. A sidewalk that is properly constructed can facilitate a "street ballet" of sorts where everyone has their own part and each enforce order (Jacobs, 1961). Years later, Duneier's (1999) ethnography of street sellers challenge Jacobs' findings by examining the changes that occurred in Greenwich Village, including greater income inequality and cultural differences (p. 120). Duneier (1999) finds that individuals who informally work on the sidewalk have their own senses of order and complex relationship

amongst themselves, customers and residents. New York City is similar to other dense metropolitan areas like Chicago, where residents are known to hang out in alleys and lots because of limited indoor spaces (Venkatesh, 2008).

When streets are aggregated they provide a great deal of information about neighborhoods including availability of social capital, presence of underground economies, culture, and the functioning of institutions. For example, scenes that exude social capital include people watching over their neighbors' double parked car, or neighbors greeting each other. Individuals selling bootlegged DVDs or a garage sale can also point to the operation of the informal and illegal economy. Banks that are open for extended hours and have parking accommodations signal that the economy is highly valued in the neighborhoods. Collectively, the street level observations can be aggregated to the neighborhood level and can provide information critical to testing institutional anomie theory including how American culture is expressed or advertised on the streets.

Logistically, it is easier to make systematic observations of human interaction on the street than in semi-public or private spaces. Generally, there are no admissions requirements to participate in street life nor prohibitions on whom you can or cannot observe. Observations on public streets are exempt from Institutional Review Board (IRB) scrutiny and do not require consent forms for those who are observed (45 Code of Federal Regulations 46.101(b). Alternatively, in semi-public or private places, oral or written consent and general disclosure is needed to make observations or participate in the setting.

Nonetheless, there may be rules governing how one interacts in public space. Generally in the US, these rules are common knowledge. It is impolite to point at someone with one's index finger, wearing clothing that is not reflective of the season (e.g., wearing down jacket in the summer), invading someone's personal space, picking your nose, etc. However, other rules may also depend on geography and local culture. In some neighborhoods where gangs rule the drug trade, norms include "avoiding eye contact, not standing near dealers or their stashes of drugs and weapons and not speaking unless spoken to" (Duck, 2015, p. 5). An observer has to be "streetwise" and averse to the street code making sure that those observed don't feel disrespected or "dissed" (Anderson, 1999, p. 34). Researchers need to be attuned to in-group behavior in public settings. For example, studies have uncovered the bystander apathy effect, whereby people do not offer help to those in need when others are present (Latane & Darley, 1968). Despite the various social customs that operate in the streets, if adequately trained, researchers can blend in with the natural environment.

Systematic social observations are cumbersome in semi-private places (e.g., department stores) because there are place managers (e.g., store clerks) who can point out those who do not belong. These place managers are quite attuned to the length of time one spends in these spaces. For example, a person who decides to spend hours inside a store recording observations may raise suspicion. Spending an extended period of time requires special access. For example, researchers have used gatekeepers and protectors to gain access to these protected spaces (see for example, access to "shooting galleries") (Inciardi, Lockwood, & Pottieger, 1993).

(a) Systematic Social Observation

Systematic Social Observation (SSO) is an unobtrusive method that makes systematic observations of social phenomenon and human interactions in their natural state (Reiss, 1971). More succinctly, Sampson and Raudenbush (2004) define it as "observation and recording [that] are conducted according to explicit rules that permit replication, and that the means of observation are independent of that which is observed" (p. 325). This method originated with scholars studying child development (Thomas, Loomis, & Arrington, 1933). In the early 1930s, Thomas, Loomis, & Arrington (1933) created a statistically reliable method for systematically recording children's behaviors using various raters. Albert Reiss Jr., a sociologist at Yale University, popularized this method in the sociological literature in the late 1960s and first used SSO to study police and citizen interactions (Reiss, 1968; 1971). Contemporary studies using SSO have focused on measuring physical and social disorder (Sampson & Raudenbush, 1999), examining public encounters with the police (Mastrofski, Parks, Reiss, Worden, DeJong, Snipes & Terrill, 1998), shoplifting (Dabney, Hollinger, & Dugan, 2004), defensive actions of drug dealers in open-air markets (Piza & Sytsma, 2015), and selection of drug sites (Bernasco & Jacques, 2015).

This method is relevant for this dissertation since it has also been used to measure disorder at the block level (Taylor et al. 1995; Taylor, 1997; Sampson & Raudenbush, 1999) and examined the link between community organizations and crime (Slocum et al., 2013). For example, Taylor and colleagues (1995) used teams of raters to make independent

observations in twenty percent of street blocks (n=808) in a sample of 66 neighborhoods randomly selected from Baltimore City, Maryland. In each block, pairs of raters were tasked with independent assessments of land use and the extent of deterioration. Specifically, they recorded "housing layout, setback, street length, street width, traffic volume, instances and types of nonresidential land use, graffiti, litter, persons hanging out, vacant lots, vacant buildings" (Taylor et al., 1995, p. 265). Prior to making assessments, the raters were trained in a small commercial area. They were then given slides of street fronts and asked to rate them. Then, they would publicly discuss why and how they rated each items. After they had been trained, the raters were allowed to rate the selected streets. To assess the quality of the observations, Taylor and colleagues (1995) made repeated trips to monitor their progress.

Building on the methodology used by Taylor and colleagues (1995), Sampson and Raudenbush (1999) started the Project on Human Development in Chicago Neighborhoods (PHDCN) in 1995 that included surveys and systematic observations made via video taped recordings. Between June and September 1995, trained researchers from the National Opinion Research Center (NORC) at the University of Chicago, slowly drove through the sample streets and recorded the conditions of the street block on either side. This produced an observation of 23,816 face blocks. However, only 15,141 face blocks were selected for visual coding that included 126 variables including physical conditions, housing characteristics, etc. Prior to the coding, raters were trained by using 90-block faces and the interrater reliability was assessed.

Strengths

In comparison to survey and in depth interviews, systematic social observation relies on prospective information, which is less biased by recall error (Reiss, 1971; Mastrofski, Parks, & McCluskey, 2010). In other words, persons rate the actions of individuals as it is occurring. Observations can be rated in real time or by reviewing video recordings. For example, Piza and Sytsma (2015) systematically reviewed CCTV camera footage from the Newark Police Department to explore the ways in drug dealers avoid detection.

SSO can tap into dimensions related to social life and the environmental characteristics of the neighborhoods that make it difficult for residents to accurately answer via surveys or interviews (Sampson & Raudenbush, 1999). Presumably, people find it difficult to describe neighborhood conditions as they have become accustomed to everyday social processes. For example, residents may find it difficult to characterize their neighborhoods as "disorderly" (Sampson & Raudenbush, 1999). More so, being a "native" of the neighborhood may desensitize residents to the conditions occurring in their neighborhoods. They may be unwilling to classify teenagers playing soccer on the street as a symptom of social disorder. Also, how residents view their neighborhood may be a function of the length of their residency. The longer a person resides in the neighborhood, the higher the likelihood they may be desensitized. For example, Sampson and Raudenbush (2004) found that younger people who are more exposed to neighborhood conditions were more likely to report disorder.

Systematic social observations made by multiple raters can yield reliable observations. Advances in statistics have made it possible to assess the level of agreement among multiple raters observing the same phenomenon (e.g., social disorder) (Raudenbush & Sampson, 1999). To bolster higher levels of agreement, raters participate in training exercises before the official start of the study. For example, Taylor and colleagues (1995) held several training sessions that required raters to assess sample neighborhoods and together discuss how and why they rated certain features of the environment. There has also been a push by researchers to introduce more rigorous methods of establishing reliability when evaluating neighborhoods, essentially creating a subfield, as an offshoot of psychometrics called "ecometrics" infusing item response modeling, generalizability theory, and factor analysis (Raudenbush & Sampson, 1999).

Limitations

Systematic social observation has its own set of limitations including: (1) lack of in-depth information, (2) difficult to observe rare events; (3) indeterminate length of time in the field; (4) and (4) shirking.

First, systematic social observation cannot obtain in-depth information on what is being observed, because it may require additional prodding in the form of interviews. For example, raters who are observing an event (i.e., individuals exchanging products for money) from a distance can only rely on their primary senses (e.g., vision and hearing). They cannot interrupt the environment and ask questions as to what is going on, how

negotiations are made, for fear of tainting raters' observations. However, relying solely on observations may lead to biased interpretations of activity.

A second limitation posed by SSO is that certain observable events are seasonal and time specific. For example, raters wanting to observe children playing basketball in April would be wise to make such observations on the weekends, rather than the weekdays. Other events may be more frequent. For example, Buckman and Lamberth (2001) were able to record the number of motorists who violated traffic laws (e.g., speeding) because it is a frequent activity. Some informal and illicit events are more likely to occur indoors to thwart being surveilled by law enforcement. For example, heroin users may choose "shooting galleries" as their main hangout spot (Bourgois & Schonberg, 2009). Similarly, sex workers may use apartments as sites where they host clients. While these acts occur indoors, there may also be limited clues available on the streets which lead to undercounting of these informal/illegal activities.

A third limitation is that raters may need to spend a prolonged period observing rare events (Mastrofski, Parks, & McCluskey, 2010). For example, raters have to closely observe drug dealing because dealers are careful and often hide drugs in nearby stash location (Piza & Sytsma, 2015). An unintended consequence of observing the street for a prolonged period of time is that raters may disrupt the natural environment. Persons on the street may grow weary of people watching them for a significant amount of time, and may think that they are affiliated with law enforcement. Thus, raters require a safe distance from the subjects.

However, the further away observations are made, the safer the rater is from harm, but the less accurate the observations are made.

Finally, raters can provide false observational data on purpose ("fudging") or via neglect ("shirking"). For example, raters may succumb to experimenter bias by claiming to observe an underground economy simply because it is central to proving the studies main hypothesis. Alternatively, raters may also participate in "shirking" by failing to make extensive observations (Mastrofski, Parks, & McCluskey, 2010). This can be often attributed to "burn out" when raters spend an extended time on the field. To minimize this effect raters can be routinely assessed to ensure that they are not exhausted and that they maintain observational reliability in comparison to their partner.

Research Instruments

There were two instruments used in this dissertation that guided raters during Wave I and Wave II data collection. Prior to data collection, all of the raters who participated in the study pilot tested both instruments in neighborhoods surrounding Fordham University. Raters (n=32) were first provided with a field manual that detailed how to complete worksheets related to the project and the visual cues specific to each informal and illegal market. Raters were advised to carry a copy of this guide with them during data collection. The fieldwork manual helped identify illegal transactions that may have been unfamiliar to some students (e.g., playing cee-lo). Undergraduate students had varying experiences with some of these underground markets. Recruiting undergraduate students from Fordham

University was helpful because students were comfortable with navigating the urban terrain and had prior experience traveling in New York City. Many of the students had resided at least one year on campus and had taken public transportation in various sections of New York City (e.g., Manhattan, Brooklyn, Bronx, etc.). However, students had limited experience with traveling to Staten Island (the furthest borough from the Bronx).

In Wave I, data was collected between early mornings until mid-afternoon (7 AM to 1 PM). On opposite sides of the street, raters were instructed to look for discarded litter on their side of the street. At each street segment, raters recorded starting street, time and temperature (Appendix A). As they walked the street they were instructed to document various forms of litter including zip lock bags, blunt wrappers, cigars, syringes, etc. Cigarette packs and blunt wrappers were the only litter item raters were instructed to collect (with gloves). At the end of the street segment they met their research partner and together tallied the number of items they found. Once all of the streets within a block group were counted, they placed all of the discarded packs in one plastic bag and marked its block group ID derived from the US Census Bureau.

In Wave II, that occurred in the afternoons and evenings (4 PM-10 PM) raters, who often had not collected Wave I data, were instructed to walk in pairs and make visual assessments of the built environment of each street segment. On average, raters who completed Wave I did not collect Wave II data. Raters often took mass transit (e.g., bus and train) to the location. Once they arrived to the block group, they selected a street segment that would be their starting point. At the start of their observations, they noted the starting street, time,

and temperature. They then assessed the general block group characteristics including car traffic and people count. For example, counting the number of cars passing by required that they stand on corner of the street and count the number of cars that are passing by (10 seconds) (Appendix B). They were instructed not to count the cars that are double parked or standing. As they walked both sides of the street, they were instructed to look for various signs of informal and illegal activities. Earlier in their training, raters noted that some of the informal advertisements were often found behind stop signs, lamp posts and telephone poles. For example, this included "off the books" advertisements and cash rewards. When walking through the neighborhood, raters paid particular attention to these locations and then focused their attention on street behaviors. Raters had to becarful not to walk up too closely to persons whom they were observing as to not arouse suspicion. For example, if raters suspected a group of young women smoking marijuana, they had to walk searching for the smell of burnt marijuana. Similarly, if elderly men were sitting outside and playing dominoes, they could try to identify from a closer distance if there was money being exchanged or a ledger with winnings visible. Some of these observations took longer than others. In particular, drug transactions took longer because dealers purposively delayed their transactions to make sure that they were not caught exchanging drugs. Other items were associated with physical landscape. Raters were careful to screen single family homes for American flags and commercial areas for prices advertisements. The length of time it took individuals to assess each street segment varied by land use type (commercial, residential, etc.), weather, time of day and persons present on the street. For example, in commercial areas with many people on the streets took longer because there were more behaviors to observe and posting on businesses and lampposts. Alternatively, longer time

was spent in residential streets when there was low visibility. Raters had to walk at a slower pace and spend more time making careful observations. In Appendix C, I include the list of items raters were tasked with collecting and the specific instructions of how to identify such items.

(b) Litter Material

This dissertation collected litter data in Wave I that served as a proxy for illegal drug markets (e.g., heroin, marijuana, crack cocaine). The collection of discarded material, found in the streets or trashcans, to learn about modern society has been unused by criminologists. Contrastingly, analysis of discarded material is quite popular among archaeologists who use it to learn about the past (Rathje & Murphy, 2001). Archaeologists have found that discarded material represents material culture, which is physical evidence that can provide information about the lives of individuals (past or present), including what they find to be important. For example, several empty beer cans found in one room can point to a celebration. Cut flowers near a wooded region might cue a burial site. Scholars have claimed, "what people have owned—and thrown away—can speak more eloquently, informatively, and truthfully about the lives they lead than they themselves ever may" (Rathje & Murphy, 2001, p. 54). Scholars have found links between material culture and illegal drug markets like heroin or "dope" stamps in New York City (Wendel & Curtis, 2000; Goldstein, Lipton, Preble, Sobel, Miller, Abbott, Paige, & Soto, 1984). For example, Wendel & Curtis (2000) find that dope (heroin) bags are indigenous to the inner city heroin use culture and can provide clues as to its changes over the years. Moreover, dope stamps

are expressive because their unique brands and labels detail the attitudes of users and dealers.

More recently economists and public health scholars have collected litter cigarette packs to examine tax avoidance in Chicago, Philadelphia, Washington D.C. and New York City (Chernick & Merriman, 2013; Davis et al., 2014; Merriman, 2010). Litter pack surveys (also called discarded pack surveys or empty pack surveys) is a method, popularized by the tobacco industry and independent researchers to measure the prevalence of the illegal cigarette market. Typically, this includes collecting empty cigarette packs in geographical regions (e.g., census tracts, transportation analysis zones, TAZs) that are representative of a larger geography (e.g., city, state, and nation). Raters walk on opposite sides of the street and collect all discarded packs found in public property. Once all of the packs are collected, only the cigarette packs with cellophane are examined because they usually are affixed with a state tax stamp that indicates where the pack was initially purchased. There are several variations of this method, with some researchers not covering all of the streets within block groups (e.g., stopping when a sample size of 9 packs has been reached) and other covering all of the streets within the census tracts (Chernick & Merriman, 2013; Kurti et al., 2015). Researchers often partner up with law enforcement agencies who examine the tax stamps and can verify whether the tax stamps are counterfeit (Kurti et al., 2016). Until recently, researchers could not independently verify if the cigarette packing materials were counterfeit (Kurti, He, von Lampe & Li, 2017).

Litter studies used to estimate illegal behavior have never taken into account other paraphernalia besides cigarette packs. However, I argue that this method can be extended to include the collection of a wide range of discarded drug paraphernalia (e.g., vials, zip-lock bags, blunt wrappers, K2 wrappers, syringes, etc.). This idea was born during my earlier fieldwork in the South Bronx, where I observed that there were litter on the streets and sidewalks that pointed to the illicit drug economy. Reasons why drug paraphernalia may not have been collected previously include the lack of interest in analyzing refuse for criminological research and because fieldwork is costly and poses health hazards to collectors (e.g., needle stick injuries).

Public health and government agencies concerned about drug use have traditionally used self-reported surveys (e.g., Youth Risk Behavioral Surveillance System, Monitoring the Future Survey). Illegal markets have relied on analyzing human behavior via interviews, surveys and arrests (see for example, Caulkins & Pacula, 2006). In rare cases, they have collected drugs from users to examine its purity, price, and geographical availability (Sifaneck, Ream, Johnson, & Dunlap, 2007).

Litter data was collected in Wave I, where raters were instructed to walk on opposites sides of the street and count the following paraphernalia from the streets and sidewalks: (1) zip lock bags, (2) glassine bags, (3) vials, (4) syringes, (5) K2 wrappers, (6) blunts wrappers, (7) wrapping paper, (8) glassine envelopes and (9) crack pipes. At the end of each street, raters got together and filled out one Wave I sheet. Raters tallied the selected drug paraphernalia and cigarette packs found. They then placed selected items into one plastic

bag (cigar, cigarillo, blunt wrapper and cigarette packs) and labeled with a unique ID specific to the block group. Raters were not allowed to collect needles, zip lock bags and other paraphernalia for fear that remnants of drugs might hold them criminally liable for drug possession. Hazardous paraphernalia like syringes and crack pipes, typically used by heroin and crack users, were simply counted because they would pose a threat to health of the research team, especially in the event of a needle stick injuries that could transmit blood borne pathogens including HIV, Hepatitis B and C.

The litter collected accounted for different illegal drug economies (e.g., cocaine, crack cocaine, marijuana, and heroin) and illegal cigarette. For example, I collected discarded cigarette packs and examine the tax stamps on the bottom to measure cigarette tax evasion. Discarded cigarette packs with a cellophane wrapper provided an indication of whether the cigarettes are avoiding the required NYC/NYS taxes. Absence of the required NYC/NYS tax stamp will point to evidence that they have been purchased or trafficked from other sources where cigarettes are cheaper. Litter found on the street can be linked to localized drug markets including heroin, crack cocaine, cocaine, and marijuana. For example, heroin stamps are typically packaged in glassine bags with a logo or stamp. Wendel and Curtis (2000) note that since the 1970s placing stamps on heroin came into prominence due to the change in the way the drug was sold stamping provided "the illusion of stability and product stabilization" (p. 247). Crack dealers have also used zip lock bags since the 2000s (Johnson, Williams, Dei, & Sanabria, 1990). Other drugs such as marijuana have a longer history of being packaged in zip-lock bags, although more recent designer-strains of

marijuana are packaged in plastic boxes called "cubes" (Sifaneck, Ream, Johnson, & Dunlap, 2007).

Cigar, cigarillo[9], and blunt wrappers and rolling paper were collected. Blunt wrappers and rolling paper are mostly used for marijuana consumption[10]. Cheap cigars and cigarillos can also be used to smoke marijuana by removing the tobacco leaves and using the outer wrapper (Giovenco et al., 2016). This form of smoking marijuana started in the 1990s, and steadily became popular; by the early 2000s about half of marijuana users aged 12-17 smoked blunts (Golub, Johnson, & Dunlap, 2005). In New York City, blunt wrappers that cost less than three dollars cannot be sold in individually wrapped packages (NYC Local Law 97 of 2013). However, there is cause to believe that blunt wrappers and some cigar products (notably Dutch, White Owl and Philly) can still be purchased in individually wrapped packages in New York City because just like untaxed cigarettes they are trafficked from nearby states, where taxes are considerably cheaper and there are no packaging laws.

Finally, we collected K2 wrappers. K2 (also called "Spice", "Green Giant", "Caution", etc.) is synthetic marijuana that has recently appeared in New York City. Since 2015, the New York City Department of Health and Mental Hygiene has documented increases in emergency room visits in Upper Manhattan and Central Brooklyn (New York City Department of Health and Mental Hygiene, 2015). Persons who use this synthetic drug often experience adverse clinical symptoms, similar to phencyclidine (PCP) including

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[9] Cigarillo is a shorter cigar (3-4 inches) that contains about 3 grams of tobacco (CDC, 2018).
[10] Persons who smoke marijuana can also combine it ("lace") with other drugs including Phencyclidine (PCP).

"agitation, anxiety, nausea, vomiting, high blood pressure, tremor seizures, hallucinations, paranoia, and violent behavior" (New York City Department of Health and Mental Hygiene, 2015).

Strengths

The main advantages associated with the collection of litter materials is that it can unobtrusively point to the presence or absence of consumption/sales of illegal drugs and untaxed cigarettes. Litter materials have physical characteristics that can signal that they are illegal. These physical characteristics are described in the wider literature on illegal drug use (see for example, Sifaneck, Ream, Johnson, & Dunlap, 2007). For example, a syringe in a local park may point to drug use, since needles used for medical reasons are not typically discarded in recreational spaces. Similarly, clear zip lock bags with a white powdery remnants point to cocaine or crack cocaine than sugar or other household cooking items. Researchers can collect these artifacts without interrupting the social environment or asking individuals who discarded them about the nature of their contents. In this way, the artifacts themselves can speak to the nature of their use, without the various biases that plague surveys. For example, researchers find that asking respondents about their purchasing of untaxed cigarette may suffer response bias and recall error (Merriman, 2010; Ross, 2015).

While there has been no attempt to systematically collect discarded material to measure the illegal economy, I draw from the experiences of scholars measuring the illegal cigarette

market to expand this direct measurement to other illegal drug markets. These studies indicate the superiority of using discard method when compared to surveying respondents. Litter pack collection is part of several direct measurements including pack swap surveys that measure the share of illegal trade in a given geography (absence of local tax paid). When compared to direct measurement that rely on user participation (e.g., pack swap surveys), litter pack surveys are superior, in some ways because there are no risks of users refusing to reveal the packs they smoke. For example, pack swap surveys involve asking users to reveal the current cigarette pack that they are smoking and allow researchers to examine markings that indicate illegal use (e.g., absence of cigarette tax stamp) (Ross, 2015). While this method is similar to the litter pack method, because it relies on the physical markings of the pack to indicate its legality, asking users to participate by showing their packs muddles the method. For example, some studies that have employed the pack swap survey method find that a significant portion of smokers do not show their packs when asked (Joossens et al., 2014). Also, in certain places individuals who are purchasing untaxed cigarettes are aware that this is a violation of the law and may be unwilling to show their packs to researchers, whom they may fear are undercover law enforcement agents.

Limitations

A major limitation with collecting litter material is that it is not be representative of all persons who use illegal drugs and purchase untaxed cigarettes. For example, it is unlikely that all illegal drug use/sale occurs in public places. More importantly, not all drug paraphernalia (often sealed in tiny clear zip-lock bags) are discarded on the street and

sidewalks. Instead, a small number of individuals can discard paraphernalia on the street. More so, littering behavior can vary across illicit drug types, taking into account if public use is socially acceptable (e.g., marijuana). For example, marijuana may be more likely to be used in public spaces given that the NYPD has reduced enforcement efforts (Moore, Parascandola, & Siemaszko, 2014). Alternatively, drugs like heroin are more likely to occur in private spaces like "shooting galleries" (Bourgois & Schonberg, 2009).

Individuals who use illegal drugs in public spaces may be more likely to discard material in trashcans to avoid detection. While there has been no data to support these claims, research on discard behavior of untaxed cigarettes finds there an equal proportion of untaxed cigarette packs are in public garbage cans (Merriman, 2010). This methodology poses another limitation: lack of generalizability due to the lack of uniformity in littering behavior across New York City block groups. For example, if some block groups do not have litter, then there will be no data to assess cigarette tax avoidance or compliance. This may reduce sample size of block groups and bias estimates. Also, certain land use features (e.g., commercial areas) may have more littering than residential areas, due to population density and cues to smoke (e.g., outdoor cigarette ashtrays, smoking designated area).

Another issue with collecting drug paraphernalia littered on the streets and sidewalks is that it may be indicative of places where drugs are used rather than where they are sold. For example, individuals may purchase illegal drugs outside of their neighborhood and consume them in the hallways of their building. In fact, this is common for the purchase ("score") of heroin outside of a users' neighborhood. Further, there is no information on

illicit drug packaging (e.g., zip lock bag) that detail where illegal drugs are purchased. Only littered cigarette packs provide information of where cigarettes were purchased. For example, the tax stamp on the bottom of the pack can identify as which state the pack was purchased from.

Finally, the list of illegal drug paraphernalia that was collected in Wave I was not an exhaustive list of all that is used. One reason is that some paraphernalia is time consuming to collect. For example, it is difficult to collect small items including tin foil, small spoons, and cut up drinking straw that are indicative of heroin use. Another reason is that some of these items are also used by non-drug-users. Also, the limited resources do not allow this study to forensically determine which drugs are enclosed in zip lock bags and glassine envelopes (e.g., cocaine, marijuana, ecstasy or heroin). A more precise method would be to subject the samples to toxicological analysis (e.g., Gas Chromatography Mass Spectrometry, GC-MS).

Secondary Data

The control, exposure and institutional variables (e.g., population counts, age, percent foreign, etc.) were obtained from the US Census' American Community Survey (ACS). This is an annual survey that provides population estimates on social issues at 1, 3 and 5-year intervals. The purpose of this survey is to "measure the changing social and economic characteristics of the U.S. population" (US Census Bureau, 2008, p 4). The reliability of this survey varies. For example, the five-year estimates have higher reliability than single

year estimates (US Census Bureau, 2015). For this study, the census figures are drawn from the 2016 ACS, five-year estimates (US Census Bureau, 2017).

As others have noted, there are limitations associated with using the American Community Survey (Spielman, Folch, Nagle, 2014). For example, estimates at the block group are derived from small samples with low response rates. Nonetheless, this data source provides information that can be used to create variables that are proxies for institutions at the block group level (e.g., family). Block groups are also used by research examining neighborhood effects (Gorman et al., 2001; McNutly & Holloway, 2000).

I follow other researchers in constructing institutional and control level variables. For example, to account for the strength of the family, I create a divorce-marriage ratio (see Bjerregaard & Cochran 2008). Data on the educational institution was obtained from the New York City Department of Education including the amount of spending per student (New York City Department of Education, 2017). This data source is reliable because it is used internally to assess the impact that spending has on the quality of instruction.

Finally, I obtained count data on the main dependent variable (robbery) and supplemental outcome variables (burglary, assault and grand larceny) from the New York Police Department (NYPD) (City of New York, 2018). Police complaint data can be problematic because of the possibility of non-reporting bias, especially in disadvantaged neighborhoods. However, Baumer (2002) finds no evidence that reporting of robberies is tied to neighborhood level disadvantage. Another issues faced with relying on police data

in New York City, is that research has found that COMPSTAT meetings has pressured police commanders to reclassify robberies (downgrade from felonies to misdemeanors) (Eterno & Silverman, 2012). However, this practice may be limited to certain precincts. Robbery arrests may be a valid indicator of crime because Rosenfeld and Lauritsen (2010) who compare National Crime Victimization Survey (NCVS) data to NYPD robbery data find the same general patterns in terms of the crime decline (Rosenfeld & Lauritesen, 2010; Xie, 2014).

Sampling

According to the US Census Bureau, New York City is comprised of 6, 493 block groups (American Community Survey, 2015). Overall, the majority of block groups are comprised of tax lots that are single and double family residential units (27.1%) and (12.2%) are multifamily residential units (New York City Department of Urban Planning, Primary Land Use Tax Lot Output, 2013). To provide a generalizable sample, I selected a stratified random sample of New York City block groups. A similar approach has been employed by other studies using systematic social observation (Sampson & Raudenbush, 1999). Other studies are based on observations of certain illicit economies (e.g., crack) in homogenous neighborhoods (Bourgois, 2002). Other researchers have taken an alternate approach and selected neighborhoods with wider variability. For example, Sampson and Raudenbush (1999) stratified their sample of neighborhoods by three layers of socioeconomic status which was six item index (that included median income, percent college educated, percent with household income over $50,000, percent families below the poverty line, percent on

public assistance, and percent with household income less than $5,000) and seven categories of race/ethnicity to attain a heterogeneous sample. This study did not follow in their approach because of low cell counts. Further, it was more important to stratify the sample of New York City block groups by land use because it was previously hypothesized that the types of informal and illegal economy would differ (e.g., yard sales in residential neighborhoods whereas there is panhandling in commercial neighborhoods).

< Insert Table 1>

First, block groups were stratified according to the percent of the noninstitutionalized population 16 years old and over who were employed in the civilian sector (e.g., above and below median percent) (American Community Survey, 2014). This stratification was used as a proxy for socioeconomic status, and allowed me to examine the extent to which persons participate in the formal labor market. Individuals employed in the military were excluded because they are likely to be away for a prolonged period of time for work related tasks (including training).

Second, block groups were stratified across four land use categories (i.e., residential, multi-family, commercial, and all other). Block groups were stratified by land use because past research has identified links between crime and land use patterns. For example, there is a positive association between commercial areas and violent crime (Miethe & McDowall, 1993; Rountree, Wilcox, Land, & Miethe, 1994). Other researchers have also found a

positive and significant association between schools and crime (Roncek & LoBosco, 1983; Roncek & Faggiani, 1985).

This stratification approach is suitable for a number of reasons. First, it allows for a robust analysis of the dependent and institutional variables in a sample of block groups that vary in land use patterns (e.g., single family, commercial, etc.) and economic standing (e.g., above and below median percent employed). Most of the research on the informal and illegal economy focuses on poor areas (Venkatesh, 2007). However, this might be an oversimplification of the phenomenon or social science's perversion towards romanticizing the ghetto as places defined by extreme poverty and joblessness (Pattillo, 2003). However, there is evidence that the informal economy exists across social stratas. A diverse sample, can examine the presence of the informal and illegal economy across segment of the population that is employed above and below the median. Further, it is also important to assess differences in the manifestation of the illegal and informal economy in affluent and poor, alike. For example, pawnshops that sell stolen jewelry may be more likely to be concentrated nearby commercial areas.

<Insert Table 2 >

< Insert Figure 1>

Finally, I randomly selected a proportional sample of the strata (n= 127 block groups) (Table 2; Figure 2). This sample size reflects 2% of all census tracts. This is the smallest

sample size that could yield reliable estimates at the 95% confidence level given the number of variables. In the section below I detail power calculations used to arrive at this sample size.

Power Calculations

Over six thousand block groups makeup New York City. Selecting an adequate number of block groups to detect statistical significance is an important first step. It is widely known that power increases as sample size increases (VanVoorhis & Morgan, 2007) However, given the financial constraints of data collection power calculations can help researchers select an appropriate sample size. To determine the adequate power necessary for statistical significance I used a Stata user created program called *powerreg*. I specified that the dependent variable would be continuous variable and the full model was expected, based on previous research to yield a R^2 between a 0.42 and 0.48. I also specified that the model would include nine independent variables. I ran three simulations with power estimated at 0.7, 0.8, and 0.9. Based on the series of power analyses, the number of observations needed to yield statistical power was between 110 and 187.

Study Procedure

Rater Selection/Training

Thirty two raters were recruited to assist with data collection on two separate occasions. Of the raters, 19 were female and 13 were male. In the first occasion, nine students were recruited via convenience sampling in a summer anthropology course held at Fordham University and through referrals from their friends. These students were paid for helping collect the data ($11.50 an hour and a two way MetroCard valued at $5.50). In three weeks, the self-allotted PI budget was depleted (~$4,000) and unpaid RAs were subsequently recruited. In late August, students (n=20) were recruited via snowball and convenience sampling in six undergraduate Anthropology and Sociology classes at Fordham University. Almost all of the raters were current undergraduate students from Fordham University in the Bronx. The other rater was a recent high school graduate who is a lifelong resident of the Bronx. Students were incentivized to participate by being given the opportunity to use parts of the data collected for their own projects and the chance to collectively present findings to the Fordham University Undergraduate Research Symposium in Spring 2017.

Selecting raters with knowledge of New York City neighborhoods was critical to minimizing cultural bias. This research protocol recruited raters who were attuned to the patterns of social life in urban areas. I also selected raters who were comfortable with street observations and blended with the neighborhood (minimizing their footprint in the setting). All raters were trained how to collect data for Wave I and II. Subsequently, they were divided in their tasks into two teams: (1) data collection and (2) logistics team. The data collection team was primarily responsible for collecting primary data, while the logistics team entered the data.

Prior to the start of the study, raters were given reading materials, lectured on data collection practices and later hands on instruction. Students were given a fieldwork manual that detailed each item on the Wave I and Wave II instrument sheet and pictures of the phenomenon. For example, they were given a list of K2 (synthetic marijuana) brand names. After they had a chance to read the manual, they were then invited to participate in a one-day training seminar held at Fordham University. During the seminar, students were taught what to look for, how to code items, fill out worksheets, and tips on what to do in case of an emergency. As part of the training exercise, raters completed collected Wave I and Wave II data on one block group (10 streets segments) near Fordham University. The accuracy of their observations in relation to their partner was assessed using interrater reliability. At each street segments, raters who did not agree with their partners were given the space to discuss their disagreements and come to an agreement (see similar arrangements in Taylor et al., 1995; Sampson & Raudenbush, 1999)

Data Collection

Data were collected during the weekdays between August and October 2016. Each day there were at least two pairs of raters who were dispatched to two or more block groups. Raters covered all of the street segments within each block group. Data collection did not occur on days when it rained or subsequent days to prevent the deterioration of physical evidence collected (e.g., wet cigarette packs, blunt wrappers, K2 wrappers, etc.). Inclement weather might alter the social environment. For example, people may be less likely to hang

outside and publicly engage in illegal activity when it is raining (e.g., solicit clients for sex work, gamble outside).

The first round of data collection occurred between 7:00 AM and 1:00 PM. Raters picked up all of the empty discarded cigarette packs, blunt wrappers, cigar and cigarillo wrappers found on the streets and sidewalk. They also counted the number of discarded artifacts (e.g., K2 wrappers, glassine envelopes, zip lock bags, crack pipes, etc.) (Appendix A). These artifacts were not collected because they were bio hazardous and illegal to possess. Wave II data collection occurred between 4:00 PM and 10:00 PM, and walking in pairs raters documented street behaviors and postings that signaled informal and illegal economy. Raters tallied their counts observations on a paper checklist (Appendix B).

Forensic Analysis

Wave I of data collection was used to measure the extent of illegal drug sales and cigarette tax evasion (untaxed cigarettes). Examining the legality of the cigarette tax stamps required forensic analysis to determine the authenticity of tax stamps and the source of sale. Recent research finds that a small share of cigarettes purchases in New York City bear a counterfeit New York City/New York State tax stamp (Silver et al., 2016). Without forensic tools, these tax stamps would be incorrectly coded as legal. Previous studies have relied on law enforcement agencies to verify whether tax stamps are counterfeit (Kurti et al., 2013, Kurti et al. 2015). In line with these previous studies, in February 2017, I sought the assistance of the New York City Sheriff's Office. All of the cigarette packs that bore a tax stamps

were subjected to a long wave ultra violet irradiation (365 nm). New York City/New York State tax stamps are produced by Meyercord Revenue Inc. and have a covert feature that fluoresce under ultraviolet irradiation if they are genuine (Kurti et al., 2015). The tax stamps also have an additional safety feature that can be verified using a penlight provided to law enforcement agencies only. When tax stamps are genuine, the penlight shines a green light over the tax stamps. When the packs are counterfeit, no light is shown.

Data Entry

Wave I and II observations were recorded on paper sheets. For each street segment there were three data sheets (two rater observations sheets for Wave II and one sheet for Wave I). Four students (part of the logistics team) were assigned to collate Wave I and Wave II data sheets by street and then enter the data in an excel spreadsheet. Once this was completed, I spot-checked for accuracy where 100 streets were selected at random and I examined discrepancies between what was written in the paper copies and what was entered on the spreadsheet database. There were minimal errors noted.

Recoding

All of the coding of items remained unchanged except street names after businessmen/women. Upon a review of the data and speaking with raters regarding their coding experiences it was apparent that their historical knowledge was limited. Thus, posthoc, I recoded all of the streets based on historical archives, scholarly literature and

consultation with well-known historians for each borough (for example, Bronx: (McNamara, 1984), Manhattan (Rogerson, 2013), Brooklyn (Benardo & Weiss, 2006), Staten Island (Bayles, 1887; Leng & Davis, 1933) and Queens (consultation with Richard Hourahan, Collections Manager at the Queens Historical Society) and coded which streets were named after businessmen/women. For example, Jerome Avenue in the Bronx was named after Lornard W. Jerome, a "financier, stockholder in the New York Times and founder of the Academy of Music" (McNamara, 1984, p.117).

Human Subjects

Given that individual level data was not collected, exempt review was granted from the Rutgers University Institutional Review Board on August 16, 2016. This research qualified as exempt review because we made observation in public spaces, without interfering with the natural environment or prodding residents using interviews or surveys (45 Code of Federal Regulations 46.101(b)). The raters did not initiate interaction with people in the sampled settings. Raters only responded, when persons asked questions or made comments. Some raters were questioned during their observations. During those situations raters responded that they were working on a study that attempted to understand the environments of neighborhoods in New York City. During these encounters staff members were courteous and took note of the questioning. Raters did not report any adverse events including police stops, victimization or confrontation with residents.

Required Exams and Vaccinations

Prior to the start of the project, raters were required to have health insurance that covered emergency hospitalization and appointments with medical specialists including infectious disease physicians in the case of an emergency that included coming into contact with infectious waste (i.e., fecal matter). Raters also provided the telephone numbers of one family member in case of an emergency.

Prior to the start of project, students were required to have received vaccinations for Hepatitis A (HAV), B (HBV), and tetanus. It was required that students and staff have had a Td (tetanus and diphtheria) or Tdap (tetanus, diphtheria, and pertussis) booster every ten years (CDC, 2015). It was also required that raters had received a booster shot between 2007 and the start of the project. A booster vaccine for Hepatitis B was not required since longitudinal studies (10-22 years post vaccination) report rare cases of transmission (Shepard, Simard, Finelli, Fiore, & Bell, 2006). Generally, these vaccines are quite effective in preventing diseases associated with picking up waste. However, they do not protect against blood borne pathogens that can be acquired via needle stick injuries including but not limited to HIV, HCV and HBV.

Safety Precautions

Due to the nature of observations, exceptional care was provided to the undergraduate assistants during data collection. For example, I checked in with the undergraduate

assistants before and after their collections to ensure they were safe and well hydrated. Assistants were given at least one bottle of water (12 oz.) per collection session (lasting ~ 3 hours) to prevent dehydration. This important in August, given high temperature, humidity and UV index. These factors can impact raters' performance, burnout and the potential to shirk. All undergraduate assistants were urged to carry a fully charged cellphone with them at all times in case they had to get in contact with the Principal Investigator or report witnessing or being a victim of a crime. Raters were encouraged to voice any discomforts they experienced with the Principal Investigator or Rutgers Institutional Review Board.

Given that participants collected discarded cigarette packs, blunts, cigars, and cigarillo wrappers from the sidewalk and streets they were required to wear ReliOn™ Nitrile Exam Examination Gloves for their protection. They were instructed to wear these gloves at all times. When they took off their gloves they were required to thoroughly wash their hands with antibacterial soap in nearby available bathrooms. Raters were also given alcohol free-hand sanitizer to use each time they took off their gloves in case there were no bathrooms accessible nearby (e.g., residential neighborhoods).

I developed a strategy in case of an emergency situation that was shared with all raters. In the event that students experience adverse events including needle stick injury, for example as a result of picking up cigarette packs, they would be immediately be send to the emergency room of the nearest hospital whereby they will consult an infectious disease

specialist. If warranted, to protect against HIV, under the direction of a physician students would be advised start pre-exposure prophylaxis (PrEP) like Truvada (Gilead Sciences).

Data Collection Experiences

None of the students who collected Wave I and Wave II data reported any adverse events including being the victim of or a witness to a crime (e.g., assault, robbery, etc.). However, some students reported feeling uneasy at times. For example, two students reported to a Fordham University news reporter, who wrote an expose of the study, that during Wave II collection in Brooklyn they were hassled by residents while boarding a bus (Ordonez, 2017). Despite being offered directions and materials needed to navigate New York City (e.g., maps), some felt there were areas that were difficult to navigate because a lack of public transportation (e.g., trains, buses). Other times, public transportation was sporadic causing students to return home late. In those instances, I drove students to the study site. For example, I drove a team of students to Staten Island to alleviate the burden of having to travel for two hours via public transportation.

Students reported that collecting data in pairs made them feel safe (Ordonez, 2017). This allowed them to look out for one another. Camaraderie was facilitated early on in the research process as raters were urged to be responsible for one another. The importance of teamwork was highlighted and cemented when raters understood that they would be travelling and collecting data together. We also named ourselves the UMS (underground market study team). In some cases, raters walked in pairs with persons whom they had

classes with. This was especially the case for many of the raters who had majored in the premedical sciences. Other cases, raters became friends as a result of participating in the study. Students may have felt the least safe during the night time in some residential neighborhoods because a lack of street lights and the lack of public transportation nearby. There also may have been some pressure to get collection completed early so that they were able to use public transportation (especially buses that run inconveniently at night time).

Resident/Research Interactions

After the data were collected, some raters recounted that in certain neighborhoods (e.g., South Bronx) residents were skeptical of raters' activity. On one occasion residents were skeptical that raters worked for the government and were surveilling their activities. In contrast, on several occasions residents were helpful with recommendations on how to improve the data collection instrument. Residents who believed that raters were looking for "physical evidence" even suggested better times to collect data "come later today". Alternatively, residents were comfortable with raters and did not suspect they were affiliated with law enforcement. For example, while I was walking through East Harlem, two young men were smoking marijuana and observed that I was picking up blunt wrappers near them. They asked me what I was doing and I mentioned that we were measuring the social environment and picking up anything drug related. They laughed and retrieved an empty blunt wrapper that they had previously tossed under the car. On another occasion, a resident advise me to pick up litter during the weekends because that's when drug activity

was at its highest. On many occasions, residents carefully observed what raters were doing, especially those armed with a clipboard, gloves and trash bag. Conceivable, some residents may have thought that raters were part of collecting physical evidence as part of a criminal case (i.e., crime scene investigators).

CHAPTER 4: DATA EXPLORATION

Objectives

The main objectives of this chapter are to examine the distributional properties of the independent and dependent variables used in this dissertation, and to explore their relationship. Before exploring these properties, I will assess the interrater reliability of the observational data—particularly for the SSO—and examine whether items can be used to construct latent forms of the American Dream, the informal economy and the illegal economy.

Overview

At the outset of the study, I selected a random sample of 127 block groups in New York City stratified in terms of employment and land use category. This represented about 2% of all block groups in New York City. Between August and October 2016, trained raters walked in pairs and collected Wave I and II observations from all of the street segments nested within block groups. In November, there were only 107 block groups that had complete data. This reduction (15.7%) in sample size was caused by logistic and communication errors during data collection. Some teams were misinformed about which block group had been completed. Teams also incorrectly reported that they had completed assigned collection when in fact they had not. To ensure that the analysis were not skewed by missing data, block groups were removed from the analysis if they had a missing wave

(Wave I or Wave II) or were missing more than two street segments within block groups (n=18).[11] Another two block groups were removed because they did not correspond with land use patterns selected. In sum, there were 20 block groups that were removed from the original sample.

As mentioned in Chapter 3, the data was stratified according to employment and land use type. This sampling method essentially created eight strata. The largest number of sampled block groups were characterized as single-family units with above median percent of persons employed in the civilian labor force (n=24). In contrast, the lowest number of sampled block groups were characterized as commercial land use block groups with above (n=1) and below (n=1) median percent of persons employed in the civilian labor force (Table 3). Overall, the highest number of block groups sampled were located in Brooklyn (n=43, 40.2%), followed by Queens (n=24, 22.4%), Bronx (n=21, 19.6%), Manhattan (n=15, 14.1%) and Staten Island (n=4, 3.7%). There were, on average, 15 street segments per block group (SD=10, Min=4 Max=61). The average number of persons living per block group according to the US Census Bureau was 1,433 (SD=781, Min=46, Max=5,558) (American Community Survey, 2016).

< Insert Table 3>

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[11] There were no significant differences observed between the full data (n=107) ssing data sample (n=18). For example, on average in 2016, there were 1.44 robbery incidents. (SD=2.2). Missing data were largely in Queens (n=7) Brooklyn (n=7), Bronx (n=2), Manhattan (n=1), and Staten Island (n=1).

Wave I Descriptive Statistics

Wave I data collection primarily focused on counting various types of litter and the number of garbage cans per block group. On average, clear zip lock bags (M=4.5, SD=5.6), and cigars (M=6.2, SD=8.2) were the more frequently documented litter. There was only one observation per block group for Wave I because collection occurred in pairs. This is consistent with prior work that has collected discarded cigarette packs in Chicago to estimate tax evasion (Merriman, 2000). Less frequently documented litter included syringes (M=0.1, SD=0.5) and crack pipes (M=0.1, SD=0.5) (Table 4). Cigars were the most commonly found drug paraphernalia alluding that marijuana is likely smoked in public spaces. Consumption of heroin in public spaces is rare, because consumers cannot walk while they do it. Also, heroin consumption and associated drug delivery devices (e.g., syringes) are more stigmatized than marijuana blunts. We also collected 1,666 cigarette packs with cellophane wrappers across 107 sampled census block groups. This large sample of discarded cigarette packs is congruent with past research in New York City (Davis et al., 2014). For example, Davis and colleagues (2014) collected 253 empty cigarette packs in a random sample of 30 census tracts. Davis and colleagues (2014) collection yielded lower number of packs because of the counting rules they employed. For example, they limited their collection to 9 packs per census tracts. In contrast, we collected every pack found within each block group (Min=1, Max=71, Mean=14.5, SD=12.8).

<Insert Table 4>

On average, there were 6.9 public garbage cans per neighborhood (SD=13.5, Min= 0, Max=90). The highest number of garbage cans (90) were found in Manhattan, nearby Madison Square Park and the Flatiron building. I explored whether the number of public garbage cans were negatively associated with amount of litter documented/collected. Block groups where there are more trash cans may have less litter because people are more likely to discard their trash in receptacles. However, a formal test using Spearman's correlation found a positive and significant relationship between the number of public garbage and litter (r=0.31, p<.001), and population size (r=0.24, p<.01). There was non-significant relationship between the number of public garbage cans and area size (square feet) (r=0.09, ns). Findings suggested that where there were trash cans, there was also an abundance of litter. This positive and significant correlation may explain why garbage cans are strategically placed by the New York City Department of Sanitation in densely populated neighborhoods. In fact, the New York City Department of Sanitation boasts that there are well over 23,500 litter baskets in New York City (New York City Department of Sanitation, 2016).

Wave II Descriptive Statistics

Wave II observations collected in the afternoons and evenings (4 PM -10 PM) focused on street behaviors and street postings. More than 30 different items were documented with the aim of constructing latent variables for the informal economy, illegal economy and American Dream. Each item was counted by a pair of raters at the street level and then

summed to the block group. Then the median number of observations from both raters were calculated. Due to extreme outliers, I relied on summating each item at the median, rather than the mean.

< Insert Table 5>

Wave II observations included the collection of 15 different street behaviors, 14 public street postings and 7 businesses at the street level that were then summed to the block group level. Raters counted the number of times they observed each item (continuous measures). Street behaviors typically involved exchanges of informal or illegal goods/services between two or more people. It also included the use of illegal drugs (e.g., marijuana, heroin, etc.). Observations inside public parks and in private spaces (e.g., back yards) were excluded from the analysis because access was restricted during hours when observations were scheduled (e.g., parks closed at dusk). Street behaviors included: (1) panhandling, (2) litter collectors, (3) day laborers, (4) non-advertised car repair, (5) sales of CDs, DVDs (on street), (6) sale of loose/cheap cigarettes (on street), (7) street vendors without license, (8) drug sales, (9) gambling, (10) prostitution, (11) fortune tellers, (12) solicitations of pedestrians for rides, (13) persons passing out flyers/pamphlets, (14) drug use (e.g., smoking, injecting, rolling up), and (15) street performance (with tip jar).

Most of the street postings (e.g., "Cars for Cash" advertisements, cash rewards, etc.) that were counted were found on light, utility poles, phone booths, and on the windows of local grocery stores (also called bodegas). Similarly, in residential areas (e.g., single family

homes) US flags were hung on poles, garage/yard sales were posted on lampposts and "cars for sale" advertisements posted on car windows. There were fifteen types of street postings raters looked for including; (1) "for sale" signs on parked cars, (2) garage/ yard sales, (3) stores with "Cash Only" signs, (4) advertisements for "off the books" jobs, (5) "Cars for Cash" advertisements, (6) cash rewards (lost dog), (7) moving company advertisements, (8) apartment/room rentals advertisements, (9) money advertisements (in foreign language), (10) prices advertised (larger than 6 inches), (11) advertisements for "free" or "salas" services, (12) advertisements promoting diversity, and (13) US flags and (14) number of street signs of wealthy businesspeople and (15) number of handicap parking spaces.   Lastly, raters were instructed to count the presence of certain physical locations including (1) banks, (2) tax services, (3) personal injury attorneys' offices/advertisements, (4) check cashing places/ money wire, (5) businesses established longer than 10 years, (6) number of independently owned businesses, and (7) pawn shops

Overall, there was a higher count of street postings than street behaviors. Among street postings, U.S. flags had the highest counts per neighborhood (M=10.3, SD=20.5). There was also a moderate number of advertisements for "off the books" jobs (M= 5.3, SD= 13.5). There were lower counts for certain signs including "for sale" signs on parked cars, money advertisements in foreign language, and physical locations of tax services, pawn shops, etc. Alternatively, the highest counts of street observations were for street vendors without licenses (M=0.48, SD=1.9), while the lowest counts were found for gambling, and sale of loose/cheap cigarettes on the street (Table 5).

<Insert Table 5>

Lower counts of street behavior may be an artifact of the nature of observations. For example, while raters were taught what visual clues to look for, there may be nuances particular to a specific neighborhood that has not been previously described in the literature. For example, in the case of sex work, for which no event was recorded, pimps may solicit clients themselves to screen for law enforcement officers. This may be why there were no acts of prostitution observed by any of the raters. Alternatively, street postings had discernable patterns that made it easy to locate. For example, posting were commonly found on utility poles. Raters could quickly scan lampposts as they walked through each street segment. Alternatively, street observations required lengthier observations. For example, it took a couple of minutes of observation to discern whether a group of men were gambling with playing cards in Brooklyn. Raters needed to pay closer attention to see if winnings were recorded on a leger and if money was exchanged. Raters may have been unwilling to make lengthy observations because it placed them at risk of being labeled suspicious and interrupting the flow of activity. In some residential block groups, nighttime observations (~8-10 PM) were difficult because of low visibility from the lack of public street lights. For example, in low-lit areas even counting the number of U.S. flags were difficult.

Rater Agreement: Intraclass Correlation Coefficient (ICC)

I examined inter rater reliability of the observations collected in Wave II using intra-class correlation (ICC). This method was chosen because the data was collected independently, by each rater. The inter rater reliability for Wave I data was not assessed because raters were collectively tasked with documenting and collecting physical evidence on the streets and sidewalks.

ICC is a statistic used to compare the variability between two raters against general ratings. There are various versions of the ICC that depend on the selection of the targets and the raters. Researchers need to carefully choose the configuration that matches with the methodology used to select raters and targets. Shrout & Feiss (1979) provide valuable guidance on ICC selection. Given that the targets (i.e., block groups) were randomly selected from a complete sampling frame and the raters were selected from a pool of raters, I selected a "two-way ANOVA, mixed effects" (called mixed effects under Stata *icc* module). Interpretation of the ICC coefficients are relatively simple with 1.00 indicating perfect agreement and 0.00 indicating no agreement among raters. There is variance across studies in terms of what is considered an acceptable level of agreement. For example, Fleiss (1986) finds acceptable values to range between 0.40 and 0.75.

Overall, highest agreement among raters was found for moving company advertisements (ICC=0.93, p<.001), advertisements for "off the books" jobs (ICC=0.89, p<.001), among others. Acceptable reliability was found for check cashing places/ money wire (ICC=0.73, p<.001), businesses established longer than 10 years (ICC=0.49, p<.001), etc. Generally, advertisements and establishments had high rates of reliability because, as previously

mentioned, raters had identified areas where they were likely posted. Unlike other street behavior (e.g., drug dealing) it did not require a closer examination and interpretation of what was happening. Also, establishments like ATMs featured large signs that make it easier to identify from various distances.

Low levels of rater agreement were observed for drug use (ICC=0.26, p<.001), sale of loose or cheap cigarettes (ICC=0.25, p<.001), stores with "Cash Only" signs (ICC=0.38, p<.001), pawn shops (ICC=0.28, p<.001), and money advertisements in foreign language (ICC=0.11, p<.0001). Pawn shops had low reliability because many jewelry stores also operate as pawn shops. However, storefront signs that advertise "We Buy Gold" may have confused raters. Money advertisements in foreign language also yielded low reliability because of language barriers. Presumably, because the advertisements were not in languages known by the raters (e.g., Arabic, Mandarin).

Low values and non-significant findings were reported for street performance (with tip jar), day laborers, and number of handicap parking spaces. One of the reasons why there was no support for agreement is because of differences in how raters conceptualized the items. For example, some raters may have been more inclined to count parking spaces in private lots of large companies (e.g., handicap parking in Burger King's lot). They may have conceptualized it as public space due to the lack of signs identifying it as private property. Raters may have had a difficult time identifying day laborers because persons standing near home improvement stores could be persons waiting to be picked up to carpool with coworkers or friends. ICC was unavailable for prostitution because there was no instance

of such transactions being observed (Table 6). Other ICC values were low because of low cell counts.

< Insert Table 6 >

The challenges faced with using independent raters are well documented in the SSO literature. For example, Raudenbush and Sampson (1999) find modest ICC values for constructs including social disorder. Alternatively, Raudenbush and Sampson (1999) study yielded higher ICC values for physical disorder that include graffiti, litter, drinking in public, etc. Some of these observations are similar to the data collected in Wave I. Observations of the illegal or informal economy can be just as rare as the perceived levels of violence recorded in Raudenbush and Sampson (1999). One of the main differences between Raudenbush and Sampson (1999) and this study is that raters had more time to contextualize the sights and sounds of the neighborhood, rather than review short video recordings. Also, this study collected data during the times of day appropriate for observing specific informal and illegal economies. For example, Hoeben and colleagues (2016) advise that social disorder should be observed later in the afternoon. In fact, they found that social disorder depends on the time, day, and the length of observation.

Nonetheless, differences in ICC values for certain items are worrisome. In particular because they reflect phenomenon that is difficult to observe by raters despite training. They also call into question whether additional fieldwork was needed prior to the launch of the study to verify that the manual was correct in its description. This may have included

interviewing residents about how they identified illegal economies or interviewed offenders themselves. To rectify this issue, these items (i.e., street performance (with tip jar), day laborers, and number of handicap parking spaces) were not included in subsequent scale or index creation.

Dependent Variable Descriptive Statistics

Robbery is a felony in New York City and included as one of the seven major index crimes (NYPD, 2017). Robbery rates in New York City have significantly declined since the early 2000s (Zimring, 2011). In 2016, there were 15,500 robberies reported to the NYPD (NYPD, 2017). Some researchers have attributed this decline to policing tactics (e.g., Stop, Question and Frisk, (SQF)) and police accountability systems (e.g., COMPSTAT) (Zimring, 2011). However, others have found that the effects of these policing practices, SQF in particular, are limited (Rosenfeld & Fornango, 2013). Overall, robbery rates have declined in New York City from 32,526 in 2000 to less than half (15,500) in 2016 (NYPD, 2016; Figure 2). This decline is also reflected in victimization data from the National Crime Victimization Survey (NCVS), that finds a decline in robberies in urban areas in the Northeast from 79,328 in 2000 to 32,567 in 2016 (NCVS, 2018).

< Insert Figure 2>

There has been limited empirical research examining the spatial distribution of robbery in New York City. For example, Herrmann (2015) who conducted a spatial analysis of

robbery incidents in the Bronx (2006-2010) found that robbery incidents were close to subway stops. He also found temporal variation with an increased number of robbery incidents on the weekdays. Publicly available incident level data (XY coordinates) from the NYPD between January 1, 2016 and December 2016 reveal spatial concentration of robbery incidents across block groups (City of New York, 2018). Using the optimized hot spot analysis tool in ArcGIS v. 10.4, point level data was automatically aggregated to the block group level (created aggregate counts) and then using the Getis Ord Gi* statistic to identify statistically significant spatial clusters: hot spots (areas of high counts) and cold spots (areas of low values). Findings illustrated in Figure 3 show that block groups located in the South Bronx, Bronx, Central Harlem, Manhattan, and Bedford Stuyvesant, Brooklyn were hot spots. Alternatively, there were block groups with the lowest robbery counts (cold spots) located in the South Shore of Staten Island and Northeast portion of Queens (City of New York, 2018).

< Insert Figure 3>

Overall, in the selected sample of block groups, there were a total of 248 robbery incidents in 2016 (New York City Police Department, 2017). On average, there were 2.26 robbery incidents per block group (SD=3.23). Robbery incidents in this sample were also spatially concentrated. For example, there were six block groups with 9 or more robbery counts. Similar to the concentration of robberies in the universe of New York City block groups (described above), one of the highest block group counts was located in the South Bronx, which had 17 robbery incidents.

<Insert Table **7**>

Ancillary Dependent Variable Descriptive Statistics

Grand larceny is one of the major crimes reported by the NYPD that has not experienced a steep decrease. For example, in 2000, there were 49,631 incidents when compared to 43,150 in 2016 (NYPD, 2017). To examine the spatial distribution of grand larcenies, complaint data from the NYPD in 2016 were plotted and aggregated to the block group level. Grand larceny was the only crime profiled whose hot spots were geographically concentrated in block groups in mid to lower Manhattan, including Chelsea, East Village, Chinatown, Tribeca, SoHo, among others. There were no cold spots reported (Figure 4).

< Insert Figure 4 >

During the same time period and in the sample collected, there were 8.3 incidents of grand larceny per block group (SD= 17.3). The minimum number of incidents reported was 0, while the highest was 161. There were only 2 block groups that did not experience any grand larcenies in 2016. Alternatively, there were 3 block groups that had 50 or more grand larceny incidents located in the South Bronx, and Chelsea, Manhattan.

Assault

Overall, there were 15,500 assaults in New York City in 2016 (NYPD, 2017). This was a decrease from the previous years: 16,539 assaults in 2014 and 16,931 in 2015 (NYPD, 2017). A geographic analysis of incidents in 2016 revealed that hot spots for assaults were located in block groups in Harlem, South Bronx, North Bronx, Midtown, Manhattan, Crown Heights and Brownsville Brooklyn. Alternatively, there were cold spots in block groups located in Borough Park, Brooklyn, the Upper East Side and the Upper West side of Manhattan (Figure 5).

<Insert Figure 5>

In the selected sample, there were 2.9 assaults per block group (SD=4.7). In some block groups there were no assaults, while others were as high as 38. There were six block groups that had more than 10 assaults, with four of them located in the South Bronx.

Burglary

The number of burglaries significantly decreased in the last five years from 19,168 in 2012 down to 12,083 in 2016 (NYPD, 2017). Burglary hot spots were found in block groups located in SoHo (South of Houston Street), Greenwich Village, and Midtown West, Manhattan. Other areas included South Bronx, Crown Heights, Bedford Stuyvesant and Far Rockaway. Alternatively, cold spots were found in block groups in Bensonhurst, and Borough Park, Brooklyn (Figure 6).

< Insert Figure 6>

On average, there were 2.14 burglary incidents per sampled block group (SD=3.55). Some block groups had no burglary incidents while the highest reported was 29. There were three block groups with more than 10 incidents in the South Bronx, Chelsea, Manhattan and Williamsburg, Brooklyn.

Independent Variable Descriptive Statistics

Across the sampled neighborhoods there were, on average, 24.91% of the block group population voted in the 2013 mayoral election (SD=9.7). There were 7 neighborhoods that had more than 40% voting located in Brooklyn and Manhattan. Block groups on average had 46.6% credit debt that exceeded 31% (SD=27.9). The average school spending was $20,036 (SD=$1,347) (Table 5). The average marriage and divorce ratio was 0.26 (SD=0.25). Population size per block group was, on average, 1,443 (SD=781). The average percent of persons aged 15-24 was 13.4% (SD=6.49) (Table 5). Of the independent variables, school spending and population size had smaller standard deviations. One of the reasons for this includes that money allotment and population size perimeters are fixed by agencies including the New York City Department of Education and the US Census Bureau.

Exploratory Factor Analysis

Prior to examining the relationships between the theoretical variables, main dependent variable (robbery) and supplemental outcome variables, I sought to create several latent variables to account for multidimensionality including: the American Dream, Informal Economy, and Illegal Economy. Latent variables were created because Messner and Rosenfeld (2007) had described the cultural ethos as a multidimensional concept consisting of value orientations including: *achievement*, *individualism*, *universalism*, and *monetary fetishism* (Messner & Rosenfeld, 1994).

Similarly, there are various manifestations of the informal and illegal economy at the street level. These forms of the economy have to be measured indirectly because they operate in ways to avoid detection. For example, previous research has used pawn shops as indicators of the stolen goods marketplace (Rosenfeld & Levin, 2016). However, relying on one indicator may underestimate the extent of informal economic activity across a sample that varies in land use. For example, day laborers are more likely to agglomerate in commercial areas next to hardware stores and highways (Ordonez, 2015). Thus, using day laborers as the sole proxy of the informal economy, would discount informal activity that is popular in residential neighborhoods (e.g., babysitting services, cars for sale, etc.). In an effort to account for variation in the type of informal activity across land use categories, latent variables were constructed using several items from the Wave I and Wave II collection. For example, the informal economy included thirteen items collected during Wave II observations (people selling clothing items on the street) and postings (e.g., job postings,

etc.) including: (1) street car repair, (2) street sales of CD/DVD, (3) loose cigarettes, (4) yard sale signs, (5) for sale signs, (6) cash only signs, (7) job advertisements signs, (8) cars for cash signs, (9) fortune teller signs and flyers, (10) persons soliciting pedestrians for cash, (11) room rental advertisements, and (12) cash rewards, and (13) moving company advertisements.

Prior to conducting a factor analysis, I examined bivariate correlations of variables that to inform the construction of latent variables. For example for the illegal economy, zip lock bags were positively related to crack vials (r=0.359, p<.001), wrapping paper (r=.210, p<.05), and cigars (r=0.286, p<.05) (Table 8). In relation to the informal economy, "off the books" advertisements were positively correlated with cash rewards (r=0.310, p<.001), moving company advertisements (r=0.781, p<.001) and street performances (r=.315, p.001) (Table 9). For the American Dream, ATMs were positively correlated with banks (r=68, p<.001), tax services (r=.46, p<.001), check cashing (r=.40, p<.001), and street signs (r=0.46, p<.001) (Table 10).

< Insert Tables 8-10>

To examine which set of observables can be used to construct these latent variables, I utilize exploratory factor analysis, which is useful when researchers are unaware of the number of dimensions (Kim & Mueller, 1978). The relation of factors was examined using varimax rotations (Acock, 2013). I examined which factors had loadings greater than 0.5 and together yield high rate of reliability as measured by Cronbach's alpha. I also examined

how well the variables related to each other using principal components analyses. While there is no consensus as to what constitutes a reliable score there are rules of thumb. For example, "strong scale" is greater than 0.50, "moderate scale" 0.40 to 0.49, and "weak scale" 0.30 to 0.39 (Garson, 2001). Additional analysis was conducted using polychoric correlations, with no significant findings.

Overall, none of the theorized latent variables could be constructed with the data collected. Individual factors did not "hang" together in a meaningful way with an acceptable Cronbach's alpha score. All of the latent variable yielded Cronbach's alpha score of less than 0.60 which made them undesirable to include in subsequent models to test the theory. For example, for the illegal drug economy, I factored the number of drug paraphernalia (e.g. syringes, zip lock bags, blunts, cigars, cigarillo, etc.), visual signs of drug sales and drug use. For the American Dream, I factored street signs, businesses owned more than ten years, everyone advertisements, US Flags, ATMs, attorneys' offices and check cashing locations. None of the variable transformations performed (i.e., winsorization, ordinal scales, and dummy coding) yielded meaningful latent variables. I also examined creating constructs that would be informed by theory using Confirmatory Factor Analysis (CFA). However, this approach did not yield reliable latent variables. One of the possible reasons why latent variables were difficult to create was that some of the items were not related to each other. This might be related to the fact that street level observations were difficult to capture. Alternatively, these concepts may be operating at different times. Although attempts were made to make street level observations during the late afternoon, some illegal transactions, could happen much later and in private spaces (e.g., selling drugs inside

buildings, prostitution happening inside apartments). For example, none of the raters witnessed an act of prostitution. Another reason why latent variables were not created is that some of the variables selected did not conceptually fit together.

Reformulation of Theoretical Variables

While it was not possible to create latent variables selected singular measures guided by theory and created summative indexes where appropriate. To proxy the informal economy, I relied on a single measure: number of "off the books" job advertisements. These advertisements varied and included services like babysitting, construction, tutoring services, etc. What makes these services informal is that workers are usually paid in cash and do not report their income to the government and pay taxes. Also, jobs are usually short term and do not provide any long-term benefits or protections (e.g., unemployment insurance). This measure focuses on employment that is a key feature of any economic system and key to my stratification procedure used to select the sample. There are several advantages to using this measure. This measure has had a high degree of reliability among raters (ICC=0.89, p<.001) because it was easy to locate (mostly found on lamp posts and business windows). In comparison to other indicators such as car repair on the street, this item experiences less temporal variation. Postings are usually placed year round and are replaced with other job advertisements throughout the year. Some sectors of the informal economy are seasonally posted. For example, requests for tutors may increase in the months when school is in session (e.g., September through June). There were 7.1 advertisements for "off the books" jobs per block group (SD=14.1, Min= 0, Max, 120).

For the illegal economy I relied on two different data sources: illegal drugs and stolen goods. To form the illegal markets variable I relied on Wave I litter collection of artifacts found on the streets and sidewalks that are used to consume drugs (e.g., blunts, crack pipes, syringes). Separately, I also included counts of pawnshops, as a proxy for the stolen goods illegal economy based on prior research that examines their role in the proliferation of underground markets and their link to violence (Rosenfeld, 2009). I did not include the percent of untaxed cigarettes as a measure of illegal economy because it cannot be determined whether the packs are legally purchased in low tax states for personal consumption or it is evidence of tax evasion. The only information that is available from the packs are the tax stamps or lack thereof. The tax stamps provide clues as to where they were originally purchased. It does not provide information regarding the intention of the buyer, whether it was for self-consumption or for resale. For example, consumers visiting another state are allowed to legally purchase a small number of cartons (typically 5 cartons). Alternatively, persons can travel to nearby states, purchase low tax cigarettes in bulk and resell them on the streets and through stores. It is difficult to deduce from the packs collected whether they were purchased in bulk by criminal entrepreneurs as a form of tax evasion or persons travelling to nearby states as tax avoidance (Consroe et al., 2016).

For the American Dream, I chose one item (i.e., prices advertised on the street) that most closely resembled the root of the American Dream. This item signaled pecuniary materialism. Individuals who walk on the streets are constantly confronted by advertisements buy items. Price advertisements are the hallmark of consumerism, which

lures persons to buy items based on low prices. Prices are arranged in ways that are most attractive. For example, one of the ways in which discount stores are attractive to people is that they advertise their selection of items that are priced at less than a dollar (e.g., 99 cents). The inter rater reliability of prices advertised on the street was moderately acceptable (ICC=0.68, p<.001). On average, there were 8.9 prices advertised per block group (SD=18.3, Min=0, Max=150).

The summed variable that measured the extent of illegal drugs included, zip lock bags, glassine envelopes, crack vials, syringes, K2 wrappers, wrapping paper, crack pipes, cigars, cigarillos, and blunt wrappers. On average there were 16.2 drug litters per block group (SD=21.5, Min=0, Max= 147). One of the limitations of using these variables is that they only focus on drug use/sale. There are other sectors of the illegal economy that were not captured, yet still occur (e.g., prostitution). Another issue is that paraphernalia may be more indicative of use than sale.

Counts of pawnshops at the block group level were used as proxy for stolen goods marketplace. This secondary data was acquired from the New York City Department of Consumer Affairs, who licenses pawnbrokers in New York City (NYC Department of Consumer Affairs, 2014). I relied on this data rather than observations made by raters given their aforementioned low reliability (ICC=0.28, p<.001). It also allowed me to cross-reference if there were more pawnbrokers than currently licensed. In the past research has found that pawnbrokers have been used to fence goods (Fass & Francis, 2004). Others

have also theorized that the sales of stolen goods are an integral part of the link between acquisitive crime and the economy (Rosenfeld, 2009).

< Insert Table 11>

Bivariate Analyses

To examine bivariate relationships, I conducted a correlation matrix as a primary step in my analysis. Spearman's rank order correlation is a non-parametric test used when data is continuous (Acock, 2008). All of the variables used in multivariate models in the next chapter (Chapter 5) are continuous (ratio level variables). Results indicated that there was a positive and significant relationship between robbery, economy, illegal drug economy, and American Dream (Table 12). Alternatively, there was a negative and significant relationship between robbery and polity ($r=-0.21$, $p<.05$). There were no significant relationship between robbery and education, informal economy and stolen goods market. Several of these findings run contrary to the expected relationships in IAT. For example, it is expected that there is a negative relationship between education and robbery.

Ancillary dependent variables (i.e., burglary, grand larceny and assault) were also examined to determine the robustness of the theoretical expansion. For assault there was a positive and significant relationship with economy, American Dream, illegal drug economy, illegal stolen market, and family ($r=0.21$, $p<.05$). For grand larceny, there was a positive and significant relationship only with the American Dream ($r=0.47$, $p<.001$).

Finally, for burglary there was a positive and significant relationship with the formal economy (r=0.46, p<0.001) and the American Dream (r=0.31, p<0.001).

< Insert Table 12>

CHAPTER 5: MULTI VARIATE ANALYSES

Robbery in New York City

The main outcome of interest in this study is robbery counts at the block group level. Using IAT as the main theoretical framework, I expect there will be differences in associations between different measures of economic activity. For example, I expect the formal economy (measured as the percent of persons more than 31% in credit debt) will be positive and a significant predictor of robbery counts. Similarly, the informal economy and illegal economy will be associated with an increase in robbery counts as they are part of the broader economy. Further, I expect significant interactions between the American Dream and the formal, informal and illegal economy that are linked to increases in robbery counts. Robbery is chosen as the main outcome variable because it is a crime often committed for pecuniary gain and has been used as a dependent variable in prior tests of IAT (Piquero & Piquero, 1998; Chamlin & Cochran, 1995). It is also a crime type that may be influenced by the cultural pressures to attain wealth.

Analytical Strategy

To examine the relationship between various institutions and robbery, count models were used because: (1) they are more appropriate than standard regression techniques (e.g., OLS); (2) the distribution of the dependent variable was not normal, and (3) the variance (3.2) exceeded the mean (2.26). The data used for this model is cross sectional. Despite the

fact that this model examines spatial distribution of robbery, there is no need to control for spatial autocorrelation because the sampled block groups are not contiguous. To accurately assess which count model to use, I graphed various count model distributions over the dispersion of robbery counts including negative binomial, Poisson, zero inflated Poisson, and zero inflated negative binomial. The negative binomial model was a better fit because it controlled for over dispersion, which was observed in my dependent variable. For example, there were no robbery incidents in 39% (n=42) of the sampled block groups. Subsequently, I conducted a formal test between the negative binomial and Poisson model using all of the independent and control variables finding that its Bayesian Information Criterion (BIC) values were lower in a negative binomial model (436) when compared to Poisson model (502). I was unable to run the Likelihood Ratio (LR) test of alpha to assess model fit because Stata does not provide this statistic when robust standard errors are used[12] (Stata, 2018). Instead, I relied in the Wald X^2 statistic to assess model fit. Negative binomial regression model is a form of maximum likelihood estimation with properties that rely on asymptotic theory. Some researchers might have issue with using negative binomial regressions because of the low number of observations in the sample (n=107). The sample may not have enough power to detect statistical significance. However, models are appropriate given the low number of independent variables included in the model (10 variables) over the total number of observations (n=107). Also prior to running the models, power was calculated (see Chapter 3).

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[12] Tests without robust standard errors revealed that the models were appropriate fit for Model 1 (LR=171. 56, p<.001) Model 2 (75.59, p<.001), Model 3 (LR=69.98, p<.001).

The independent variables included social institutions such as the polity, family, education, and formal, informal and illegal economy. Prior to examining the main effect models, illegal economy was logarithmic transformed because it was not normally distributed (ln(variable+1). None of the other variables were transformed. There were no issues with the variance inflation factor in the full model (VIF values were lower than 4) (Kutner, Nachtsheim, & Neter, 2004). The exposure variable for the models was population size. This was chosen as a proxy for the possible number of targets or incidents that could occur in the sampled block groups. In subsequent sensitivity tests, block group area size (square feet) was used as the exposure variable. This was an important sensitivity analysis as some informal and illegal economies may be dependent on area size. For example, car repairs may occur in block groups with larger spaces.

All of the models use robust standard errors clustered in block groups. Robust standard errors are used to account for block group clustering. I analyze incidence rate ratios (IRR) rather than the unstandardized coefficients, because they provide a meaningful description of the findings. Generally, an IRR of greater than 1, points to an increase in the risk of the outcome (e.g., robbery). Alternatively, an IRR less than 1, illustrates a decreased risk of the outcome occurring (Diamond, Jennings, & Piquero, 2018). IRRs were converted into a percentage change in the dependent variable per one unit increase in the predictor variables by subtracting 1 from IRR value and then multiplying by 100 (Cameron & Trivedi, 2013).

The analysis will proceed as follows: In the first model I will examine impact of control variables on robbery counts; in the second model, I will add institutional variables and the

American Dream. In the third model, I will examine control and institutional variables and the American Dream on robbery counts. This stepwise method is helpful because it allows me to examine main effects. In all three models, population size was included as the exposure variable. In Model 1, only the control variables were included in the equation. None of the main control variables were significantly related to robbery. The goodness of fit test indicated that the model was not an appropriate fit (Wald X^2= 1.88, ns).

In Model 2, only the social institutions and the American Dream were modeled against robbery. In this model, the formal economy was significantly related to having higher robbery counts (IRR= 1.01, RSE=.006, p<.05). Stated differently, a unit increase in the formal economy was associated with a 1% increase in robbery counts, holding all else constant. This model yielded a goodness of fit test statistic that indicated it was an appropriate fit (Wald X^2= 49.5, p<.001)

In Model 3, all of the social institutions, the American Dream and control variables were added. The economy remained significantly related to higher robbery counts (IRR= 1.01, RSE=.007, p<.05). An alternate interpretation of findings suggest that when holding all the other variables constant, a one-unit increase in the formal economy is associated with a 1% increase in robbery (IRR= 1.01, RSE = .007, p<.05). All of the other institutional and control variables remained insignificant (Table 13). Lastly, the Wald X^2 statistic indicated that Model 3 (Wald X^2= 77.48, p<.001) was an appropriate fit for the negative binomial model. In comparison to the other models, Model 3 was a better model fit. This finding provides partial support for institutional anomie theory that supports a positive relationship

between the formal economy and robbery (Messner & Rosenfeld, 1994). This finding is also in line with Chamlin and Cochran (1995) who found property crime rates were higher in states with high poverty rates.

< Insert Table 13>

In subsequent analyses, I modeled interactions between the illegal economy, informal economy formal economy and the American Dream. Consistent with the theoretical framework and hypotheses (see Chapter 1 and 2), I wanted to examine the ways in which the American Dream can have an interactive effect on robbery counts through the broader conceptualization of the economy (e.g., formal, illegal and informal economy). Each sector of the broader economy when interacted with the American Dream is expected to be linked to an increase in robbery counts. However, given the differences in measurement, these variables cannot be added into an index. Instead, they will be tested individually, but are expected to have similar results. However, the several interactions I modeled did not produce significant findings for any of the interactions in either the partial models that include the social institution variables only (Model 2) full models (Model 3) that included American Dream x Economy (IRR= 0.99, RSE=0.003, ns), American Dream x Informal Economy (IRR= 1.00, RSE=0.006, ns), American Dream x Illegal Drug Economy (IRR= 1.00, RSE=0.003, ns), and American Dream x Stolen Markets (IRR= 0.99, RSE=0.007, ns) (Tables 14-17). The first set of findings is in contrast to the original framework of the theory, where it is expected that there be an interaction between the formal economy and the American Dream. The second set of findings run counter to what was previously

hypothesized that the informal and illegal economy would be positively associated to robbery counts as the formal economy.

<Insert Tables 14-17>

To examine further expansion of Institutional Anomie Theory, I examine additional outcome variables (e.g., assault, grand larceny, burglary). These variables were included to examine whether they would mirror the findings yielded with robbery. I hypothesized that there would be no differences in that the institutions should be linked to these crimes in the same way they are purported to be linked to robbery. Variables were created from complaint data made available by the New York Police Department during the same time period and data source used in the previous robbery models (between January 1, 2016 to December 31, 2016) (City of New York, 2018).

   a. Assault

One of the first sensitivity analysis used assault, which is an expressive crime, within the revised theoretical framework. Prior to running the models, I assessed which count model was the appropriate fit. I chose negative binomial models based on the distribution of assault counts and noting the size of BIC values (453) relative to the Poisson model (504). As in previous models, I examined the ways in which economic and non-economic institutions impact assault counts. I also include several interaction terms including: American Dream x Informal Economy; American Dream x Formal and American Dream

x Illegal Drug Economy and American Dream x Stolen Goods Market.). The Wald X^2 statistic indicated that Model 2 (Wald X^2= 89.7, p<.001) and Model 3 (Wald X^2= 47.41, p<.001) were an appropriate fit for the negative binomial model. In Model 1 and Model 2 there were no significant findings. However, in Model 3 the American Dream (IRR=1.01, RSE=0.004, p<.001) and divorce marriage ratio (IRR=3.74, RSE=2.349, p<.001) was significantly related to higher assault counts. For example, one-unit increase in the American Dream, is related to a 1% increase in assault, holding all other variables in the model constant. Alternatively, holding the other variables constant, a one-unit increase in the Divorce-Marriage ratio is associated with a 74% increase in assault (IRR = 3.74, RSE = 2.349, p < .05) (Table 18). Subsequent analysis using interaction terms between the formal economy and illegal and informal economy yield no significant differences (See Tables 19-22).

< Insert Tables 19-22>

b. Grand Larceny

Similar to previous models, I replaced the main dependent variable with grand larceny. Prior to running the negative binomial regression, I assessed model fit that included graphing various distributions of the dependent variable for over dispersion and examining its BIC values. Results indicated that negative binomial regression is the optimal modeling strategy because of lower BIC value (Poisson=1048 vs. Negative Binomial=435.3). Borrowing the analytical methods using in previous crime categories, I examined the ways

in which the institutional and cultural ethos impacted grand larceny counts in New York City. I also included the following interaction effects: American Dream x Informal Economy, American Dream x Formal Economy and American Dream x Illegal Economy. In Model 1 and Model 2 there were no significant findings. In Model 3, however, percent voted and percent foreign born were significant predictors of grand larceny. A more meaningful interpretation of the incidence rate ratios illustrate that when all variables are held constant, a one unit increase in foreign born, grand larceny would decrease by a factor of 0.97 (IRR= 0.97, RSE=0.007, p<0.001) (Table 23). Similarly, a one unit increase in percent voted would result in a decrease in grand larceny by a factor 0.97 (IRR= 0.97, RSE=0.009, p<0.05). Lastly, the Wald X^2 statistic indicated that that Model 1 (Wald X^2= 9.1, p<.001) Model 2 (Wald X^2= 13.8, p<.001) and Model 3 (Wald X^2= 25.8, p<.001) are an appropriate fit for the negative binomial model. In subsequent models, when interaction terms were entered in the models there were no significant findings.

< Insert Tables 23-27>

c. Burglary

I reran the negative binomial regression models using burglary as the dependent variable. Burglary was chosen as an outcome of interest because it is an instrumental crime. I assessed model fit prior to running the models by examining the distributional properties of burglary counts and the BIC values (453) relative to Poisson (454). While there was no significant variation between the two models, negative binomial model interpretation is

more comprehendible. As in the previous models I examined interactions between American Dream and economy measures. In Model 1 and 2 there were no significant findings. However, in Model 3 burglary was a significant predictor of burglary. When all variables are held constant, a one unit increase in the percent voted would decrease burglary by a factor of 0.96 (IRR= 0.96, RSE=0.014, p<0.05) (Table 24). The Wald X^2 statistic indicated that that Model 2 (Wald X^2= 21.6, p<.001) and Model 3 (Wald X^2= 27.2, p<.001) are an appropriate fit for the negative binomial model (Table 28). Only one of the interaction terms yielded significant findings. For example, in Table 32, there was an interaction between stolen goods and American Dream was significant predictor of burglary. Stated another way, accounting for the stolen goods and American Dream show a decrease in burglary by a factor of 0.97 (IRR= 0.97, RSE=0.008, p<0.05).

< Insert Tables 28-32>

Sensitivity Analyses

As an additional check on the robustness of the main findings, I reran the models using an alternate measurement of the formal economy. In previous tests of IAT, this institution is usually measured as the Gini index of income inequality (e.g. Chamlin & Cochran 1995; Bjerregaard & Cochran 2008; Zhao & Cao 2010; Cochran & Bjerregaard, 2011). This variable, however, is only available at the census tract level. I created an estimate of the Gini Index at the block group level using a robust Pareto midpoint estimator (RPME) (von Hippel, 2014). Income at the block group level featured in categories made available by

the US Census Bureau also known as "bins" was mined using a Stata user created program (*rpme*) (Von Hippel, Scarpino, & Holas, 2014). Findings suggest that formal economy, in this new reformulation is not a significant predictor of crime. This is contrary to previous findings where the formal economy was operationalized as 31% credit debt (see Table 13).

First, I examine model fit which indicates that the negative binomial model is the appropriate fit. Results indicate that in Model 2 and Model 3, American Dream is a significant predictor of robbery. Stated in another way, in Model 3, American Dream increases robbery counts by 1%, holding all other variables constant (IRR=1.01, RSE=0.004, p<.001) (Table 33). There were no significant interaction effects to report in Tables 34-37.

< Insert Tables 33-37>

Another sensitivity analysis included modeling a three year average of robbery counts in the selected sample. Robbery count data was drawn from the New York City Police Department, geocoded to the street segments, and then the counts were aggregated to the block group. The three-year robbery count average was 2.3 (SD=2.8). As in previous analysis, The Wald X^2 statistic indicated that Model 2 (Wald X^2= 94.16, p<.001) and Model 3 (Wald X^2= 187.95, p<.001) were an appropriate fit for the negative binomial model (Table 38). Results indicated that the American Dream, the Formal Economy and Divorce Marriage is a significant predictor of robbery. In Model 3, the Formal Economy increases

robbery counts by 1%, holding all other variables constant (IRR=1.01, RSE=0.004, p<.001).

For the last robustness check, I use block group area measured in square feet as the exposure variable in the negative binomial model. Results were similar to previous models where population size was used as the exposure variable. For example, in Model 3, the formal economy was significantly related to higher robbery counts (IRR= 1.02, RSE=.007, p<.05). An alternate interpretation of findings suggest that when holding all the other variables constant, a one-unit increase in the formal economy is associated with a 2% increase in robbery. Subsequent iterations of the model using interaction terms between different forms of the economy and the American Dream yielded similar findings in the association and direction.

< Insert Tables 43-47>

Summary

To examine the expansion of IAT, I modeled several institutional variables including the formal, informal and illegal economy and American Dream to examine robbery outcomes using negative binomial regression. Overall, models found partial support that the economy leads to increase in robbery counts. To examine whether these findings were robust, I extended the analysis to other crime outcomes including grand larceny, burglary, and assault. I wanted to examine whether the significant findings for robbery would hold true

for other expressive and instrumental crimes. For assaults, the American Dream was a significant predictor of increased counts. Whereas for grand larceny, foreign born decreased larceny counts. Lastly, percent voted was related to decreased burglary counts. As an additional check on the robustness of robbery, I changed the operationalization of the formal economy to include traditional measures (e.g., Gini Index). This new model did not illustrate the same predictors as the first model that used 31% debt credit. Instead, it found that the American Dream was a significant predictor of robbery counts. Non-significant changes were also reported when the exposure variable changed from population size to area size (measured in square feet).

CHAPTER 6: DISCUSSION AND CONCLUSION

Overview

This dissertation attempted to make three major contributions to the criminological literature. The first contribution centered on documenting visible forms of the underground economy (i.e., informal and illegal economy) using systematic social observation and collection of littered artifacts. Second, I attempted to expand the economy as described in Messner and Rosenfeld's (2007) institutional anomie theory (IAT) to include the informal and illegal economy. Lastly, I tested this model expansion using a stratified random sample of block groups in New York City (n=107).

The economy is an institution that Messner and Rosenfeld (2001) have defined as "activities organized around the production and distribution of goods and services" (Messner & Rosenfeld, 2006, p. 72). The function of this social institution is to provide "basic material requirements for human existence" (Messner & Rosenfeld, 2001, p. 65). However, I argue that the economy is broader than previously theorized and encompasses the formal, informal and illegal economy. Traditional measures used to measure the strength of the economy (e.g., GDP, Gini Index of Inequality) do not take into account income that is earned but not formally reported. There are various informal and illegal activities that produce a sizable income. What sets these economic sectors apart is licensing, regulation and prohibition. For example, the informal economy is defined as goods and services that are unregulated (e.g., selling loose cigarettes without a cigarette license) (Castelles & Portes, 1989). Income is derived from unlicensed transactions for

which taxes are not paid. Alternatively, the illegal economy includes goods and services that are prohibited by the state including sex work, gambling, and illicit drug sales (Weitzer, 2002). Another broad theme that describes these economic measures is that they are transactional and based on a contractual agreement for good/services. For example, illicit drugs are sold to willing users. Stolen goods are sold to consumers who want to buy low priced items. This definition excludes crimes such as theft, robbery, and burglary where income may be earned where a person is directly victimized and there is no contractual agreement for goods/services.

Another point of theoretical expansion is using IAT to account for neighborhood level crime. The theory has been applied at the macro and meso level (e.g., counties and states) (Chamlin & Cochran, 1995; Maume & Lee, 2003). As of this writing, only one study has examined this theory at the block group level (Cancino et al., 2007). I argue that IAT can be used to explain robbery and other related crimes (e.g., burglary, grand larceny and assault) at the neighborhood level (operationalized as block groups) because there is meaningful local variation in economic and non-economic institutions. Also, I hypothesized that neighborhoods where the broader economy is stronger than other institutions, robbery counts are expected to be higher. The American Dream, which also varies at the neighborhood level is expected to mediate the relationship between the broader economy and robbery counts.

Robbery is an appropriate outcome variable to examine this expanded model of IAT because it is an instrumental crime that focuses on pecuniary gain. Money is a main

motivator for robbery (Miller, 1998). Robbery has also been used in previous studies (as part of a broader category of property crimes) that were supportive of IAT (Chamlin & Cochran, 1995). To examine the robustness of these findings, I also included other crimes including burglary, assault and grand larceny.

New York City is the ideal site to test this expanded model because it features variance in the strength of economic and noneconomic institutions. Ethnic enclaves in New York City have historically shielded immigrants from mainstream American values and social influences. For example, in the Hasidic Jewish community in Borough Park, Brooklyn the family institution is quite strong. The community maintains familial traditions and members are taught to practice modesty (Fader, 2009). Further, economic institution is weak in certain communities because of racial discrimination (e.g., loans for housing and education development are declined). For example, bank loans were notoriously difficult to obtain in redlined districts of East New York, Brooklyn (Thabit, 2003). When these economic systems discriminated against residents, residents turned to the informal marketplace. For example, under similar circumstances the "numbers game" became popular in Harlem as a substitute for formal bank loans (Light, 1977).

Given the geography of New York City, the American Dream is espoused differently across neighborhoods. For example, there are neighborhoods whose main aim is to attract visitors and consumers (e.g., Times Square, Fifth Avenue). At the same time, there are neighborhoods that have been the source of blight (e.g., East New York, South Bronx) (Thabit, 2003; Gonzalez, 2007). Neighborhoods that attract visitors often have a strong

economic institution accommodated by other social institutions (e.g., students are let out of school earlier to avoid tourist traffic). In contrast, there are neighborhoods in East New York that have been socially neglected and allowed some social institutions to wither (limited the amount of funding for education) (Thabit, 2003). Nonetheless, the power of institutions do not remain constant. For example, developers have tried to change the appeal of the South Bronx, by fighting for redistricting and appealing to its past as the location of the piano industry, calling it the *Piano District* to attract capital investors (Gonzales, 2017).

Measuring various sectors of this broader economy (i.e., formal, informal and illegal) is an arduous task. After an extensive review of the literature, I developed a research instrument that identified street behaviors, postings and discarded material that reflect specific dimensions of the informal and illegal economy. Dimensions refer to different aspects of these economies that are observable (i.e., based on street/public behaviors, business establishments and activities). For example, I counted the number of discarded cigars, cigarillo, crack pipes, syringes, among others, per block group that could point to illegal drug economy. The informal economy was operationalized as the number of "off the books" advertisements. The number of pawnshops per block group was a proxy for the illegal stolen goods economy. I argue that these measures are consistent with prior research and theory on IAT. For example, the American Dream was conceptualized as the number of advertisements on the streets that advertised prices. This item relates closely to the American Dream's main focus on pecuniary materialism, where money is the main metric of success (Messner & Rosenfeld, 2007).

I merged publicly available crime data from the NYPD with secondary data from the New York State Department of Elections, New York City Department of Education, New York City Department of Consumer Affairs, and US Census Bureau that characterized the other key institutions featured in the revised IAT model (e.g., formal economy, family, polity, and education). Many of these variables were measured in accordance to previous research on institutional anomie theory in the US. For example, Maume & Lee (2003) measure polity using average voter turnout in the 1988 and 1992 presidential elections, while I examine the percentage of voters in the 2013 New York City mayoral election.

Exploration of Findings

This dissertation explored three main hypotheses. First, I hypothesized that the informal and illegal economy can be measured at the neighborhood level using primary data collection that can be used to create latent constructs. This hypothesis was tested by collecting data in two Waves. In Wave I, litter artifacts including drug paraphernalia such as zip lock bags, blunt wrappers, among others were collected and documented. These drug paraphernalia were meant to signal illegal drug sales. In Wave II, street behaviors and postings were collected in the afternoon that included "off the books" jobs, yard sale signs, drug sales, etc. These observations were used to create the informal economy, illegal economy and the American Dream. I found partial support for my initial hypothesis. Using the litter artifact collection, I found there were 16.2 discarded items signaling the relative size of the illegal economy across neighborhoods (Min=0, Max=147; SD=21.5).

Alternatively, the items collected using SSO did not yield reliable latent variables for the aforementioned constructs. Instead, I relied on using a proxy for the informal economy (number of "off the books" job advertisements), American Dream (number of advertisements for prices). On average, I found, 7.1 "off the books" advertisements (Min=0, Max=120; SD=14.1) per block group. I also supplemented the illegal economy to include the stolen goods marketplace (count of pawn shops per block group).

Second, I hypothesized that the social institutions (e.g., polity, family, education, formal, informal and illegal economy) and culture (e.g., American Dream) would significantly vary across neighborhoods. I found partial support for this hypothesis. Overall, social institutions including the economy, polity, and culture identified as the American Dream were spatially concentrated in select block groups. However, other institutions including education did not show neighborhood variation. For example, there were no significant differences in the capita spending per student across block groups (e.g., education institution). In terms of the American Dream, operationalized as the number of postings for price advertisements, there were, on average there were 4.5 counts of the per neighborhood, with some neighborhoods as low as 0 and others as high as 29. However, the size of the American Dream was closely related to the land use category. Counts of the American Dream were higher in block groups that were commercially zoned. The informal and illegal economy also varied across neighborhoods. Results indicated that the illegal economy (operationalized as the number of drug paraphernalia and pawn shops) and informal economy (operationalized as the number of "off the books" transactions) were spatially concentrated in certain New York City neighborhoods. There was quite a bit of

variance however. There were 35 neighborhoods that had more discarded materials than the average neighborhood. This spatial concentration is linked to the broader literature on the locations of illicit drug markets (St. Jean, 2007; Taniguchi et al., 2009).

Third, I hypothesized that the revised version of IAT (that included the informal and illegal economy) would better account for robbery incidents. To examine the impact that social institutions and American Dream had on robbery, I conducted a negative binomial regression. This count model was preferred over others given the distributional properties of the dependent variable (count variable) and because it accounts for over dispersion. The main findings lend partial support to the theory that the formal economy is linked to robbery. None of the non-economic institutions were associated with changes in robbery counts. For example, only the formal economy was significantly related to higher counts of robbery. Results confirm past US cross sectional studies that find that an increase in robbery was related to the size of the economy (operationalized as Gini Index of inequality) (Maume & Lee, 2003). Other studies find support for IAT using a broader crime category (e.g. property crimes) (Chamlin & Cochran, 1995).

This dissertation did not yield statistical significant findings for the non-economic institutional variables (e.g., polity, education and family) in the direction consistent with the theory. For example, social institutions like the family and education should be related to a decrease in robbery counts. One of the possible reasons for this null outcome is that the level of analysis used might have been insufficient in teasing out this effect. Previous studies measuring IAT have used larger ecological unit using including states (Chamlin &

Cochran, 1995; Piquero & Piquero, 1998; Maume & Lee, 2003; Schoepfer & Piquero, 2006) and counties (Baumer & Gustafson, 2007; Stults & Baumer, 2008). The conceptualization of neighborhoods may be inaccurate. For example, East New York area in Brooklyn is not defined by block group boundaries but by the racial categories of neighborhoods. As the number of African American households increased, so did the conceptualization of East New York (Thabit, 2003). This illustrates that population boundaries and neighborhoods by extension, are in a constant flux. Another issue with using block groups is it may only refer to an individual's space where they reside, not where they remain active (e.g., activity spaces) (Jones & Pebley, 2014). For example, persons may live in one block group but spend more of their time in other block groups where they are more likely to be exposed to advertisements that urge them to spend money (e.g., the American Dream).

Another possible is that institutional variables were not properly measured. Measuring the formal economy at the block group level is difficult even when using traditional measures. For example, the Gini index of inequality high margins of error at that level of analysis based on the data yielded from the American Community Survey (Spielman, Folch, & Nagle, 2014). Measuring the formal economy using percent of population that has high percentage of debt from credit card use may also be problematic because there are individuals who do not hold credit cards. For example, there are over 360,000 households in New York City that are unbanked (Ratcliffe, et al., 2015).There are issues with alternative methods of measuring the formal economy. For example, counting the number of businesses in a street may be a proxy for the land use type rather than the proliferation

of the local economy. Businesses are more likely to be found in block groups zoned for commercial real estate than residential areas. Counting the number of illegal and informal acts may also be difficult to measure because they rarely occur. While these acts may be described by ethnographers in detail, they may be difficult to locate by outsiders. Some behaviors are rooted in social context. For example, the ways individuals sell drugs in Newark, NJ may be different in the West Village (Piza & Sytsma, 2016).

The operationalization of the American Dream may require revision. Muftic (2006) attempted to measure this concept at the individual level asking respondents about their beliefs rather than the visual cues they were exposed to during the course of their day. It is difficult to gauge the extent to which what is posted on the streets reflects the lived realities of individuals. This is partly because exposure to posted signs is dependent on one's routine activities and activity spaces. Research finds, for example, that individuals have different activity spaces outside the context of the neighborhood that they live in. For example, Jones and Pebley (2014) find that that the characteristics of the census tracts in which individuals live are different from those where individuals routinely move through and spend time in. Finally, the chosen sample may have lacked heterogeneity. For example, in a previous study using block groups in San Antonio, Texas, the sample included over one thousand block groups that would yielded more statistical power and variation in economic and non-economic institutions (Cacino et al., 2007).

Theoretical Implications

This dissertation has implication for the development of institutional anomie theory. This study found partial support for IAT at the neighborhood level: formal economy was linked to an increase in robbery counts at the neighborhood level. However, the increase in robbery count associated with the formal economy was quite low (1%). Subsequently, there were no significant findings for the informal and illegal economy. These findings could be a feature of the data collected or the theory. The data collected may not accurately account for the informal and illegal economy and the ethos of the American Dream. While this dissertation hypothesized that there would multidimensionality to the constructs, the data did not support this argument. There are potentially other factors that were not considered that could be connected to the IAT. Below I provide a more detailed explanation of the theoretical considerations.

I. IAT at the Neighborhood Level

This study finds preliminary evidence that IAT can be used at the neighborhood level because there is institutional variance. However, further considerations regarding how to measure this unit of analysis is needed. For example, cross national research yields more refined findings because country boundaries are rigid. For example, there are clear demarcations (e.g., border, ports of entry) that separate the United States from Canada. At the neighborhood level, these physical distinctions are not so apparent. A person living in the Belmont section of the Bronx is less likely to be attuned to the boundaries of the block

group they live in. Neighborhood boundaries may be more pronounced in ethnic enclaves where it is quite apparent that there is neighborhood change. For example, in southern Brooklyn, there is one block (Marcy Avenue) that separates the Hasidic Jewish Community from the public housing projects.

II. Expansion of the economy

The study did not find significant links between the informal and illegal economy and any of the crime variables (e.g., robbery, burglary, assault and grand larceny). However, theoretical expansion of the broader economy should not be disregarded despite the null findings. Instead, theoretical expansion may require that researcher pay more attention to measurement strategies for the informal, formal and illegal economy. One of the main problems that may have led to null results is that the economic variables were constructed using data sources that might have tapped into different components of the economy. In turn, because of their differences these economic variables could not be added together in one model.

Methodological Implications

Lessons learned from this study could be applied to other studies that use unobtrusive data collection (e.g., SSO and litter artifacts). When primary data collection entails observing more than 10 items, it may be helpful to break the activities in two distinct waves. Dividing the data collection in two waves was helpful for this study for several reasons. First, it

decreased rater burnout, especially during the summer months. By assigning raters to either the morning or afternoon shift, it alleviated the burden of collecting data for an extended period of time (generally no more than five hours per day). Organizing data collection by where the information is located (e.g., streets and sidewalks vs. lamp posts) or the methods used to retrieve it are important (e.g., collection vs. documentation). For example, raters also expressed relief at not having to collect data for both instruments simultaneously because there were many items to collect and observe. Wave II data collection could have been easier if both raters collected data on one side of the street and at the end merged their findings. Raters felt that they were more likely to miscount observations because they were tasked with both sides of the street. Additionally, there might have been too many items for individuals to look for.

Many of the items on Wave II were found on utility poles especially for "rooms for rent", and "off the books" job advertisements. Persons were less likely to post items on private property (e.g., doors). When measuring illicit activities, more reliable methods including artifacts left behind rather than observation of street behavior. Despite ethnographic accounts, this study found it rare to observe illicit activities. One of the reasons why this may be the case is that ethnographers who spend a prolonged period of time in the field learn the nuances and the clues to look for. Also, their observations are carried out for a prolonged period of time. In many SSO studies, researchers are pressed for time and have limited resources available. It may be helpful to identify areas where postings are more frequent and then rely on those locations. The advent of new technologies has made it difficult to solely extrapolate from street advertisements. Many youth and young adults

rely on social networking sites (e.g., Facebook, Twitter, etc.) to obtain information about the world, including advertisements about products to purchase and visual cues that are related to the American Dream. For example, there are popular Instagram accounts of rich young adults showing off their extravagant wealth (e.g. Rich Kids of Instagram) (Greenfield, 2012). Television also plays a key role in flaming the American. For example, there has been an increase in reality television shows that feature the lives of contemporary wealthy persons (e.g., Kardashians, Real Housewives of New York City, etc.). Future research should examine person's exposure to the American Dream through these media. This can include surveying persons and asking them about the length of time that they spent on social media sites and watch television.

Policy Implications

Some of the study's findings are relevant for social policy. For example, policies can focus on changing the cultural norms surrounding the American Dream. This study found that the American Dream, conceptualized as the number of prices advertised on the streets, is linked to an increase in assault. Policy can focus on changes in advertising practices. For example, neighborhoods can enact ordinances that can limit the types of advertising displayed on store fronts. Such advertisement limitations may impact residents' perception and cues pertaining to the American Dream ethos. These advertisements may reinforce values that are a part of the American Dream including pecuniary materialism.

Limiting the number of advertisements that highlight consumerism may reduce sources of

strain at the neighborhood level. They can be replaced by advertisements from other social institutions. More recently, the New York City Department of Health and Mental Hygiene have purchased advertisements spaces ordinarily used by businesses to advocate for smoking cessation and reduced soda intake (Fairchild, Bayer, & Colgrove, 2015). Other social institutions, like religion, have promoted church attendance in the form of outdoor advertising, handing out pamphlets, and direct mail (Hines, 1996). When other social institutions place advertisements on the street, they can reinforce values (i.e., social restrain and moral order).

Creating laws that limit the number or style of advertisements will certainly be fought over by American industries (e.g., soda and tobacco companies). Some of these industries have socially engineered the way consumers think about consumption. The ubiquity of the internet complicates this policy, Advertisements are not only posted on the streets. What appears on the streets of New York City, may be quite different than what appears on residents' smart phones or computer screens. Online advertisements paired with social media can effectively target more precise audiences. For example, Facebook allows companies to target specific demographic categories (Ramsaran-Fowdar & Fowdar, 2013).

Limitations

Hawthorne Effect

Methods used in this study are not without flaws. Conceivably, while raters noted observations using clipboards, they may have interrupted the natural flow of the environment (also known as the "Hawthorne effect" in which respondents change or modify their behavior as a consequence of being observed). For example, in the presence of raters some drug users may have hidden their marijuana cigar from plain sight, or dealers would have temporarily suspended drug sales. Past research has minimized this bias by concealing the data collection instrument. In a recent study measuring unsafe food handling practices, Vandeputte and colleagues (2015) found that using smartphones bypassed concerns about being identified as a researcher. In light of these findings, future researchers are advised to use smart phones equipped with survey software to minimize the Hawthorne effect.

Language Barriers

Another limitation of this study were language barriers. Most of our raters only spoke English. As part of the research protocol, some raters were dispatched in ethnic enclaves where the language spoken and street postings were not in English (e.g., Brooklyn Chinatown). Nonetheless, raters were urged to take pictures of advertisements posted in other languages and forward this information to the logistics team. Several members of our research team that were fluent in Spanish were called on to translate these pictures. It is conceivable that raters covering ethnic enclaves were less likely to take pictures and inquire about its message. This may be one of the reasons why the rater agreements for price advertisements in a foreign language were low.

Operationalization of Neighborhoods

Our study operationalized neighborhoods using administrative boundaries (e.g., block groups) set by the US Census Bureau. Block groups may be an imprecise measure of neighborhoods because it not linked to the actual boundaries set by residents. Researchers, however, have attempted to more closely approximate neighborhoods using activity spaces (Jones & Pebley, 2014). While this methodology may yield more precise measures it would be difficult to link it with administrative data used to approximate social institutions (e.g., divorce rates to measure family). Furthermore, using block groups as neighborhood units may be problematic given that the social and demographic information provided by the US Census Bureau's' American Community Survey have high margin of error (Spielman, Folch, & Nagle, 2014). Choosing smaller level units (e.g., street segments) would be inappropriate because it would be difficult to disaggregate administrative data to the street level and may result in ecological fallacies.

Limited Litter Collection

Collecting litter solely from the streets and sidewalks also poses limitations. One of the main criticism is that it may not be representative of the total trash discarded in neighborhoods. Collecting litter from public and private trash cans (e.g., households) may be more representative of residents at the neighborhood level. We were unable to collect litter from public trash cans because of safety concerns, thus, we were not able to examine

the discrepancies between street and trash cans data. We were also unable to collect trash from households due to privacy concerns. These concerns may be unfounded because prior research on the illegal cigarette market in Chicago found there was no difference in tax avoidance between packs found on the floor and in public trash cans (Merriman, 2010).

Timing of Data Collection

The study's findings may have also been biased because that data were collected only during the weekdays. Some of drug paraphernalia that we used to construct our illegal economy scale might have been undercounted. Perhaps, a higher number of paraphernalia could be found during the weekends when people were more likely to consume drugs recreationally. In fact, while I was collecting Wave I data in Harlem in early September, one of the residents encouraged me to collect litter on the weekends when residents of her neighborhood were more likely to use drugs and party.

Some of the observations made in the late afternoons and early evenings were difficult due to low visibility. For example, starting from sundown (~ 9 PM), raters found that it was difficult to observe street behaviors and identify street postings. On one occasion in Brooklyn, I found it difficult to discern whether teenagers who had congregated by the steps of a multi-family building were playing dice game because I could not see the dice from across the street. To get a closer look, I crossed the street to more closely observe the teenagers. The decision I made to cross the street and walk closer to the teenagers is problematic because looking too closely may disrupt their natural environment. At night

time, walking around with a clipboard raises more suspicions about being associated with law enforcement than during the daytime when it is conceivable that workers are surveying the neighborhood for architectural purposes. Future research should look at alternate ways of measuring illegal transactions on the street in the dark without raising suspicion including using crowdsourcing methods of individuals who live in the block groups or sampling locations that have more visibility (i.e., more street lights and high number of visitors).

Location Sites of Systematic Social Observations

Wave II data collection only recorded street behaviors on the street. It did not include observations inside public parks or retail stores. Focusing solely on the streets is a limitation because it is not the only site where only informal and illegal behavior occurs or where advertisements are posted. For example, in some neighborhoods residents post advertisements inside coffee shops or small grocery stores (also called bodegas). Advertisements are also posted on classified websites like craigslist.com, backpage.com and reddit.com. Online advertisements are more appealing because it affords greater confidentiality and wider marketability (not just those within geographical proximity to the physical advertisement). Extending observations in these spaces may also provide a more thorough understanding of their impact on crime. For example, the American Dream operationalized as prices advertised, would be even greater if what is posted in stores is also counted. For example, there may be limited number of prices advertisements passing by on Macy's located on 34 Street. However, the number of prices advertised are greater

cues as the store boasts over 1.1 million square foot of retail space (Pleven, 2015). Future research should incorporate store audits into street level observations. In residential areas, local stores may play an important role because they may be frequented much more than those in commercial areas. For example, bodegas in Elmhurst, Queens may be more likely to be frequented than Macy's in Herald Square.

List of Informal Businesses

The list of businesses that participated in the informal economy was not exhaustive. During the course of data collection I identified more businesses that participate in the informal economy where tips and cash transactions are the norm and where hiring informal labor is common (i.e., car washes, valet parking, wait staff, barbershops, strip clubs, and bars). For example, waiters are paid a base salary that is below the minimum wage, but most of their income comes from cash tips. While current tax laws require that persons report the income earned from tips, there is frequently underreporting. In other instances, businesses may underreport the number of employees and actual sales. These businesses escape scrutiny by only dealing with cash transactions.

Length of Systematic Social Observations

This study did not require raters spend an extended period of time making observations at each street segment. On average, raters spent less than 10 minutes per street segment. There are some street behaviors that might take an extended period of time to unravel. Further,

these events are more likely to occur at night time when data collection is more difficult because of low visibility and the Hawthorne effect (walking around in clipboards raises suspicions). Future research should take advantage of emerging opportunities to examine illegal markets using public CCTV. For example, Piza and Sytsma (2016) uncover much more granular data on the tactics used by drug sellers using police sponsored CCTV. Use of CCTV has alleviated the time constraints of real time SSO, and given raters more control over their observations (e.g., rewind, fast forward, pause). CCTV is more unobtrusive; and can be record activity in spaces where it may be difficult for raters to go unnoticed (e.g., stairways, hallways). CCTV also has the potential to increase in popularity and become an important tool in criminological research (Lindeegard & Bernasco, 2018). As of this writing, many CCTVs are strategically placed in areas with high property and violent crime; thus, the data is highly skewed towards criminogenic places. It may take a couple of years until CCTV is available across all land use types (especially residential streets).

Validating Measures

This study faced additional limitations regarding measurement, including inability to create multidimensional constructs and validate the measures used in the main regression models. To measure the informal, illegal and American Dream, there were numerous data points collected at the street level in an effort to create latent variables. These variables were selected because there were described in the ethnographic literature on informal and illegal markets. For example, "off the books" employment was a key theme in Venkatesh's

ethnography of the working poor in Chicago (2006). The data collected was also logically linked to the informal/illegal economy. For example, the Illegal drug economy consisted of a number of different drug paraphernalia found in the streets and sidewalks. The number of prices advertised was linked to the American Dream, specifically the value of pecuniary materialism (e.g., material possessions and monetary spending).

A priori, the informal economy, illegal economy and the American Dream was hypothesized to consist of a variety of variables. For example, the American Dream was comprised of several variables that were in line with respective values (i.e., achievement, individualism, universalism, pecuniary materialism). However, in formal tests using Principal Component Analysis (PCA), factor loadings scores were quite low and did not produce reliable measures. Thus, I relied on using a single variable to serve as proxy for the informal and the American Dream. Alternatively, the illegal economy included a summative score of the counts for drug paraphernalia. While these variables were used in the main models, the measures were not examined to determine validity in measuring what they were intended to.

Generally, the variables chosen to measure the informal, formal and illegal economy provide face validity because on they are logically linked. For example, it is logical that the illegal drug economy is measured by data that is linked to drugs. For example, marijuana and cocaine are sold in zip lock bags. Heroin is intravenously delivered via syringes. Additional research is needed to examine the construct validity of these measures that include its correlation to between observed items and reported crimes. For example,

the extent of correlation between the illegal drug economy (operationalized as the number of drug paraphernalia collected) and street level drug arrests can be examined. Specific drug paraphernalia (e.g., heroin, cocaine, synthetic marijuana) can also be examined in the context of drug overdoses and emergency room visits. Similarly, the number of infractions for illegal employment can be used to examine the predictive validity of number of "off the books" job advertisements.

Alternate Theoretical Explanations

This study collected data that could be used to test ecological theories of crime including crime pattern theory, routine activities theory and social disorganization theory. However, I did not test these theories nor compare their explanatory powers in relation to IAT. This is a shortcoming because these theories can explain variation in robbery counts at the neighborhood level.

Using crime pattern theory as the theoretical framework, data on businesses and illicit street activity can be used to examine the extent to which they are crime attractors or generators. For example, ATMs, banks, and shopping sites (denoted by increased number of prices advertised) can serve as crime generators because they generate an increased flow of individuals passing through the block group (Brangtingham & Brangtingham, 1995). Along the same lines, Levy and Tartaro (2010) found that motor vehicle thefts were more likely to occur near establishments like ATMs, bars, and bus stops (termed *activity nodes*). Places where the informal economy occurs (including off the books employment) can serve

as crime attractors because they create opportunities for victimization. For example, they may be at increased risk of robbery because they are likely to deal with cash and less likely to report their victimization to the police.

This study could have also tested routine activities theory in part by using some of the data collected as proxy for suitable robbery targets including the number of drug paraphernalia, ATMs, banks, etc. (Cohen & Felson, 1979). Some of these physical environments, like bus stops, have their own unique social ecology that includes "tempo, pace and rhythm of human activity" that can increase the opportunities for motivated offenders to come across suitable targets (Hart & Miethe, 2014). Lastly, this dissertation can also use the data collected to test social disorganization theory and to examine what neighborhood level characteristics that can be used to predict robbery including ethnic heterogeneity, poverty, and population turnover (Martinez Jr., Rosenfeld, & Mares, 2008). Some of the primary data collected could be used to facilitate theory testing including the number of rooms for rent as measure of population turnover.

Omitted Variable Biases

This study also suffers from omitted variable biases. For example, negative binomial models examining robbery counts may be incomplete because they discount the impact of policing and demographic changes in the neighborhood. As previously mentioned, New York City has experienced a significant decline in robbery. For example, there has been a 50% reduction in crime from 2000 to 2016 (NYPD, 2017). While crime rates have

decreased throughout the US, some of the decline in robbery in New York City has been attributed to policing practices (Rosenfeld, Fornango & Rengifo, 2007; Zimring, 2011). Therefore, policing measures should be included in the models. Variables that could be added to the model include number of police officers assigned to patrol each neighborhood, and resources (e.g., police spending per neighborhood). Increase in police presence or spending is expected to be significantly associated with a decrease in robbery counts at the neighborhood level.

Another variables of interest that could provide context to the changing demographics of neighborhoods is gentrification, the process whereby neighborhoods change in racial and economic demographics (i.e., urban restructuring) (Sutton, 2018). In the context of New York City, gentrification represents spatial inequality whereby White affluent residents displace poor or working class non-White residents (e.g., Hispanic, Black/African American). For example, sections of New York City where data was collected that have been impacted by gentrification include Harlem, Williamsburg, and the South Bronx. Gentrification may impact robbery rates by increasing the level of victimization (greater number of targets who have resources) or decreases robbery counts given greater access and availability of policing resources. There is limited empirical evidence to support causal pathways. However, recent research in New York City has found a negative association between gentrification and violent crime (including robbery) across time (1980-2009) (Barton, 2016). Variables used to control for gentrification could include the number of coffee shops per block group acquired from the New York City Department of Consumer Affairs (Papachristos et al., 2011).

Full Theoretical Testing of Institutional Anomie Theory

This dissertation did not fully test IAT. This limitation is also a feature of many past studies (Chamlin & Cochran, 1995; Maume & Lee, 2003). For example, one of the core propositions of IAT is the imbalance of institutions. Messner and Rosenfeld (2012) theorized that a key part of the arrangement of social structure where the economy was overvalued in relation to other institutions. However, this part of the theory was untested in this study. One of the difficulties associated with this comprehensive test (i.e., full test) is developing innovative measures at the neighborhood level to measure these processes. Available administrative data may not capture this process. One of the potential ways the institutional imbalance of power can get measured and tested includes collecting information on the number of advertisements for material success posted nearby schools (education), government offices (polity), and family gatherings (family). Another method of measuring this imbalance is using self-report surveys where respondents are specifically asked questions regarding how non-economic institutions are devalued and the economy penetrates and or devalues them. For example, these questions can include asking respondents questions regarding whether schools should accommodate parents who work late nights, or religious communities to provide job training to youth, etc. Lastly, testing could also include the presence of public private partnerships at the block group level (e.g., Harlem School Zone).

Raters Recruitment

Signs of the informal and illegal economies can be context specific. Employing raters that are unfamiliar with the neighborhoods where observations are recorded has some disadvantages. For example, there may be nuances specific to the neighborhood that outside visitors may not be attuned to. This can include for example, specific times of day, or locations on the street where informal and illicit activity occurs. There may be signs and posting used by informal and criminal entrepreneurs unbeknownst to outsiders. For example, in some neighborhoods, store owners facilitate income underreporting by keeping their cash register open, only using it storing cash, without recording the sale took place (e.g., also known colloquially as "ringing up a sale"). This ensures that if the register is seized during the course of a tax fraud investigation it does not provide information on the exact amount of income earned. However, in other neighborhoods, to avoid registering earned income, retailers may publish signs that their debit card machine is not working and thus they only handle cash. This is to thwart investigations that may be targeted towards businesses that purposively deal with cash only (e.g., pizza stores). Changes to how the informal and illegal economy operate may be more noticeable by residents. For example, sex workers may disband soliciting clients on the street and move to online advertisements services (e.g., craigslist.com). Given these shortcomings, it is advised that in subsequent studies neighborhood residents are recruited to collect data and participate in the identification of public postings, behaviors and businesses that signal the informal and illegal economy. Residents can share insights and generate ideas about measurement through focus groups.

Future Research

This study encourages future research to continue to develop method and theory. In regards to methods, future studies should focus on collecting artifacts left behind that allude to the illicit economy, rather than observations of street behavior. The data my research team and I collected illustrate that street behaviors are less common and more fickle to social and environmental conditions (e.g., weather, Hawthorne effect, etc.). Recruitment and training of raters becomes even more important in regards to ensuring that they are familiar with the neighborhoods where data is collected (e.g., neighborhood context and language spoken).While the list of informal and illicit activities were drawn from the ethnographic literature (e.g., drug dealing, off the books jobs), raters found that some were difficult to identify, even after receiving extensive training. It is more prudent and cost effective to employ data collection tools that document physical clues left behind that point to the informal and illicit marketplace (e.g., paraphernalia and postings). However, the type of data found are dependent on the artifacts generated by these informal and illegal activities (e.g., syringes for heroin users), and the stealth of informal and illegal entrepreneurs.

Future research should also examine how the formal, informal and illegal economy can be uniformly measured and applied to IAT. For example, developing a measure that identifies the ratio of the informal, illegal and formal economy. This measurement strategy will allow researchers to examine how the broader economy functions when the three sectors are added together. The current methodology where unstandardized variables are used, may

be measuring different dimensions of the same concept. For example, the number of individuals who sell drugs on the street may also be working part time in a restaurant and hold a morning job as a porter. Additional theorizing is warranted to examine how a broader conceptualization of the economy fits in to IAT. This broader measure can be reexamined using cross national data incorporating underdeveloped countries that have been included in prior studies of IAT and which have a booming informal and illegal economy.

TABLES

Table 1. Block groups per county in New York City compared to the selected sample

County	Number of Block Groups	Number of Block Groups Sampled
New York	1,171	15
Richmond	338	4
Kings	2,085	49
Bronx	1,154	24
Queens	1,746	32
Total	6,493	127

Source: American Community Survey, 2015

Table 2. Characteristics of Sampled Block Groups in New York City (n=127)

Land Use Category	Percent of Population Currently Employed in Civilian Labor Force (16+)	
	Above Median (63%)	Below Median (63%)
Single Family	25	22
Multi Family	19	21
Commercial	1	1
Other Land Use	17	21
Total	62	65

Table 3. Characteristics of Completed Sampled Block Groups in New York City (n=107)

Land Use Category	Percent of Population Currently Employed in Civilian Labor Force (16+)	
	Above Median (63%)	Below Median (63%)
Single Family	24	17
Multi Family	15	16
Commercial	1	1
Other Land Use	15	18
Total	55	52

Table 4. Wave II count variables across block groups (n=107)

Variables	Mean	Std. Dev.	Min.	Max.
Public garbage cans	6.9	13.5	0	90
% Tax avoidant cigarette packs[13]	78.2	22.4	0	100
Zip lock bags	4.5	5.6	0	27
Glassine envelopes	0.6	0.3	0	3
Vials	0.8	6.8	0	69
Syringes	0.1	0.5	0	4
K2 wrappers	2.4	8.3	0	69
Blunt wrappers	0.9	1.4	0	8
Cigars	6.2	8.2	0	45
Cigarillos	0.6	1.1	0	5
Wrapping paper	0.3	0.8	0	6
Crack pipes	0.1	0.5	0	5
Total Litter	29.6	28.2	0	198

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[13] Tax avoidant cigarette packs include packs with a cellophane wrapper and possessing either no tax stamp, counterfeit tax stamp or from another state e.g., Virginia, New Jersey, etc.) or country.

Table 5. Wave II count variables across block groups (n=107)

Variables	Mean	Std. Dev.	Min.	Max.
Panhandling	0.2	0.5	0	3.5
Litter collectors	0.4	0.7	0	4.0
Day laborers	0.1	0.1	0	0.5
Non-advertised car repair	0.1	0.5	0	4.5
Sales of CDs, DVDs (on street)	0.01	0.09	0	0.5
Sale of loose/cheap cigarettes (on street)	0.02	0.17	0	1.5
Garage/ Yard sales	1.00	2.12	0	12.5
"For Sale" signs on parked cars	0.5	0.9	0	6.0
Street vendors without license	0.48	1.9	0	15.0
Drug sales	0.08	0.3	0	2.0
Gambling	0.05	0.3	0	2.5
Prostitution	0	0	0	0
Stores with "Cash Only" signs	0.10	0.3	0	2.0
Advertisements for "off the books" jobs	5.3	13.5	0	120.5
"Cars for Cash" advertisements	3.6	6.2	0	33
Fortune tellers	0.16	0.63	0	5
Solicitations of pedestrians for rides	0.05	0.23	0	1.5
Persons passing out flyers/pamphlets	0.11	0.55	0	4.5
Drug use (e.g., smoking, injecting, rolling up)	0.44	1.02	0	6.5
Apartment/room rentals advertisements	5.13	14.5	0	123.5
Cash rewards (lost dog)	1.17	2.08	0	12
Moving company advertisements	9.4	25.7	0	225.5
Street performance (with tip jar)	0.08	0.54	0	4.5
Money advertisements (in foreign language)	0.4	1.13	0	8
Prices advertised (larger than 6 inches)	8.7	18.1	0	150.5
Advertisements for "Free" or "Salas" services	2.7	8.8	0	83.5
Pawn Shops	0.15	0.46	0	2.5
ATMs	3.4	5.2	0	27
Banks	0.49	1.5	0	13
Tax Services	0.45	0.96	0	5
Personal injury attorneys' offices/advertisements	0.27	1.1	0	10
Check cashing places/ money wire	0.37	0.98	0	8
Number of street signs of popular persons	0.52	1.7	0	16.5
Businesses established longer than 10 years	0.30	1.0	0	7
Number of independently owned businesses	2.0	3.1	0	12.5

Number of handicap parking spaces	0.02	0.24	0	2.5
Everyone or All Advertisements	0.59	2.3	0	15
US flags	10.3	20.5	0	144

Table 6. Rater agreement for observational data (Wave II)

Variables	ICC
Panhandling	0.48***
Litter collectors	0.54***
Day laborers	<.01
Non-advertised car repair	0.66***
Sales of CDs, DVDs (on street)	-0.0009
Sale of loose/cheap cigarettes (on street)	0.25***
Garage/ Yard sales	0.88***
"For Sale" signs on parked cars	0.64***
Street vendors without license	0.69***
Drug sales	0.74***
Gambling	0.77***
Prostitution	<.01
Stores with "Cash Only" signs	0.38***
Advertisements for "off the books" jobs	0.89***
"Cars for Cash" advertisements	0.88***
Fortune tellers	0.75***
Solicitations of pedestrians for rides	0.44***
Persons passing out flyers/pamphlets	0.76***
Drug use (e.g., smoking, injecting, rolling up)	0.26***
Apartment/room rentals advertisements	0.87***
Cash rewards (lost dog)	0.77***
Moving company advertisements	0.93***
Street performance (with tip jar)	<.01
Money advertisements (in foreign language)	0.06**
Prices advertised (larger than 6 inches)	0.68***
Advertisements for "Free" or "Salas" services	0.93***
Pawn Shops	0.28***
ATMs	0.89***
Banks	0.74***
Tax Services	0.68***
Personal injury attorneys' offices/advertisements	0.84***
Check cashing places/ money wire	0.73***
Businesses established longer than 10 years	0.49***
Number of independently owned businesses	0.87***
Number of handicap parking spaces	<.01
Everyone or All Advertisements	0.42***
US flags	0.87***

Table 7. Selected block group variables (n=107)

Variables	Mean	Std. Dev.	Min.	Max.
Robbery, 2016	2.26	3.23	0	17
Assault, 2016	2.93	4.71	0	38
Grand Larceny, 2016	8.38	17.3	0	161
Burglary 2016	2.14	3.55	0	29
American Dream (Prices Advertised)	4.3	6.5	0	29
Informal Economy	15.9	28.3	0	238
Illegal Drug Market (Litter)	16.2	21.5	0	147
Stolen Goods Market (Pawn Shops)	0.1	0.34	0	3
Formal Economy (31% Credit Debt)	46.69	27.92	5	84
% Voted in the 2013 Mayoral Election	24.91	9.77	2.60	73.10
Student Spending	$20,036	$1,347	$17,549	$25,393
Divorce-Marriage ratio	0.26	0.25	0	1.81
% 15-24 years old	13.44	6.49	0	40.32
% Foreign	36.08	23.60	1.0	15
Population size	1,443	781	46	5,558

Sources: New York Police Department; American Community Survey 2014-2016; New York State Board of Elections; New York City Department of Education, and New York City Department of Consumer Affairs

Table 8. Correlation Matrix of the Illegal Economy Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Zip lock bags	1												
2. Glassine env.	-0.108	1											
3. Vials	0.359***	0.121	1										
4. Syringes	0.0811	-0.0373	-0.0194	1									
5. K2	-0.229*	0.681***	0.129	-0.0583	1								
6. Wrapping paper	0.210*	-0.0444	0.0894	-0.0333	-0.0342	1							
7. Crack	-0.0393	0.602***	0.329***	-0.0379	0.753***	-0.0535	1						
8. Cigar	0.286**	0.381***	0.404***	0.0959	0.561***	0.0947	0.471***	1					
9. Cigarillo	0.00224	0.231*	-0.0219	-0.0435	0.332***	0.0750	0.203*	0.450***	1				
10. Blunts	0.0327	0.410***	0.0989	0.170	0.651***	0.0826	0.533***	0.578***	0.501***	1			
11. Drug sales	-0.0697	0.0958	-0.0306	-0.0573	0.230*	0.0223	0.00128	0.114	0.142	0.0987	1		
12. Drug use	0.111	-0.0365	-0.0540	0.0180	-0.0551	0.166	-0.0661	-0.108	0.0164	-0.0452	-0.00888	1	
13. Gambling	0.0326	-0.0371	-0.0201	0.412***	0.124	-0.000188	0.0187	0.131	-0.0273	0.328***	0.0911	0.0761	1

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 9. Correlation Matrix of the Informal Economy Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Panhandling	1										
2. Day laborer	0.226*	1									
3. Car repair	0.533***	0.0666	1								
4. DVD sales	0.323***	-0.0388	0.418***	1							
5. Loosie sales	0.334***	0.245*	0.213*	0.107	1						
6. Yard sales	-0.0838	-0.0919	-0.0776	0.139	-0.0732	1					
7. For sale signs	0.00448	-0.0954	0.0594	0.00275	-0.0499	0.0399	1				
8. Street vendors	0.663***	0.304**	0.629***	0.392***	0.470***	-0.0830	0.0442	1			
9. Cash only signs	-0.0228	-0.0692	-0.0291	0.0918	-0.0551	0.00596	-0.0408	0.00868	1		
10. Off the books job ads	-0.0171	-0.0419	0.00276	-0.00678	-0.0198	0.0279	0.0848	0.0564	0.0681	1	
11. Cars for cash	-0.0550	0.0619	0.0118	0.0382	-0.0871	-0.0202	0.219*	-0.0800	-0.0747	0.173	1
12. Fortune tellers	0.0638	0.0624	-0.0465	-0.0534	0.0805	-0.0431	0.252**	0.115	0.108	0.226*	0.379***
13. Solicit pedest.	0.0968	-0.0460	-0.0401	-0.0460	-0.0367	-0.0897	0.00326	-0.0394	-0.0821	0.0149	0.0593
14. Flyers	0.594***	0.225*	0.0400	0.00125	0.274**	-0.103	-0.0646	0.319***	0.0890	-0.0450	-0.0600
15. Room rentals	0.469***	0.00247	0.151	0.0748	0.0319	-0.0507	-0.0900	0.142	-0.0552	0.187	-0.00853
16. Cash rewards	0.106	-0.0873	0.154	0.348***	-0.0133	0.228*	-0.0155	0.135	-0.00791	0.312**	0.288**
17. Moving company ads	-0.0781	-0.0642	-0.0213	-0.0632	-0.0269	0.0142	0.0671	0.0103	0.0869	0.789***	0.227*
18. Street performance	-0.0102	-0.0320	-0.0279	-0.0320	-0.0255	-0.0335	0.250**	-0.00839	-0.0571	0.315***	0.334***

Note: *p<.05, **p<.01, ***p<.001

Table 9. Correlation Matrix of the Informal Economy Variables (Continued)

	12	13	14	15	16	17	18
1. Panhandling							
2. Day laborer							
3. Car repair							
4. DVD sales							
5. Loosie sales							
6. Yard sales							
7. For sale signs							
8. Street vendors							
9. Cash only signs							
10. Off the books job ads							
11. Cars for cash							
12. Fortune tellers	1						
13. Solicit pedest.	0.166	1					
14. Flyers	0.120	0.143	1				
15. Room rentals	0.0350	0.125	0.625***	1			
16. Cash rewards	-0.151	-0.0943	-0.00250	0.0565	1		
17. Moving company ads	0.201*	0.0197	-0.0545	0.106	0.353***	1	
18. Street performance	0.560***	-0.0380	-0.0359	0.0306	-0.0199	0.285**	1

Note: *p<.05, **p<.01, ***p<.001

Table 10. Correlation Matrix of American Dream

	1	2	3	4	5	6	7	8	9	10
1. ATMs	1									
2. Banks	0.68***	1								
3. Tax Services	0.46***	0.44***	1							
4. Law offices	0.48***	0.45***	0.84***	1						
5. Check Cashing	0.40***	0.34***	0.13	0.21*	1					
6. Street Signs	0.46***	0.71***	0.47***	0.46***	0.22*	1				
7. Personal Owned Business	0.06	0.06	0.18	0.31**	0.06	0.10	1			
8. Handicap Parking	0.34***	0.37***	0.12	0.14	0.30**	0.35***	0.06	1		
9. Diversity Advertisement	0.08	0.23*	0.08	0.06	0.16	0.29**	-0.01	0.20*	1	
10. US Flags	0.28**	0.21*	-0.06	0.02	0.42***	0.02	-0.03	0.15	0.01	1

Note: *p<.05, **p<.01, ***p<.001

Table 11. Descriptive statistics for theoretical variables

Variable	*Mean*	*Std. Dev.*	*Min.*	*Max.*
Informal Economy				
Advertisements for "off the books" jobs	7.1	14.1	0	120
Illegal Drug Market	16.2	21.5	0	147
Zip lock Bags	4.5	5.6	0	27
Glassine envelopes	0.1	0.4	0	3
Crack vials	0.8	6.7	0	69
Syringes	0.1	0.5	0	4
K2 wrappers	2.4	8.3	0	69
Wrapping Paper	0.3	0.7	0	6
Crack pipes	0.1	0.5	0	5
Cigar	6.1	8.2	0	45
Cigarillo	0.6	1.1	0	5
Blunt Wrappers	0.9	1.4	0	8
Stolen Goods Market				
Pawn Shops	0.1	0.3	0	3
American Dream				
Prices advertised on the street	8.9	18.3	0	150

Table 12. Correlation Matrix of Theoretical Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Robbery, 2016	1													
2. Assault, 2016	0.68***	1												
3. Grand Larceny, 2016	0.46***	0.44***	1											
4. Burglary, 2016	0.48***	0.45***	0.84***	1										
5. Formal Economy	0.40***	0.34***	0.13	0.21*	1									
6. American Dream	0.46***	0.71***	0.47***	0.46***	0.22*	1								
7. Informal Economy	0.06	0.06	0.18	0.31**	0.06	0.10	1							
8. Illegal Drug Economy	0.34***	0.37***	0.12	0.14	0.30**	0.35***	0.06	1						
9. Illegal Stolen Market	0.08	0.23*	0.08	0.06	0.16	0.29**	-0.01	0.20*	1					
10. Divorce-Marriage Ratio	0.28**	0.21*	-0.06	0.02	0.42***	0.02	-0.03	0.15	0.01	1				
11. Percent Voted	-0.21*	-0.17	-0.04	-0.17	-0.21*	-0.14	-0.09	-0.18	-0.06	-0.23*	1			
12. Student Spending	-0.02	-0.07	0.04	0.01	0.22*	-0.03	-0.08	-0.11	-0.05	-0.02	0.11	1		
13. % Aged 15-24	-0.01	0.14	-0.18	-0.09	0.32*	0.05	0.01	0.17	0.01	0.21*	0.24*	0.20*	1	
14. % Foreign Born	-0.06	-0.05	-0.12	-0.06	-0.01	0.12	0.17	0.18	0.12	0.04	-0.39*	-0.01	0.18	1
15. Population size	0.18	0.20	0.36***	0.37***	-0.06*	0.13	0.41***	0.17	-0.03	-0.14	-0.03	-0.16	-0.16	0.11

Note: *p<.05, **p<.01, ***p<.001

Table 13. Negative Binomial Regression for Robbery Count, 2016

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.001)	0.99 (0.002)
American Dream		1.00 (0.004)	1.02 (0.003)
Illegal Drug Markets (Log)		1.18 (0.246)	1.20 (0.249)
Illegal Stolen Goods		0.645 (0.320)	0.681 (0.338)
Formal Economy		1.01* (0.006)	1.01* (0.007)
Divorce Marriage Ratio		3.42 (3.080)	3.27 (2.895)
Percent Voted		0.99 (0.017)	0.98 (0.015)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.039)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	49.5***	77.48***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 14. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.03 (0.027)	1.04 (0.027)
Illegal Drug Markets (Log)		1.17 (0.245)	1.19 (0.258)
Illegal Stolen Goods		0.612 (0.277)	0.640 (0.275)
Formal Economy		1.01* (0.007)	1.01* (0.008)
Formal Economy x American Dream		0.99 (0.001)	0.99 (0.003)
Divorce Marriage Ratio		3.31 (2.977)	3.07 (2.698)
Percent Voted		0.99 (0.017)	0.98 (0.015)
Student Spending		0.99 (0.001)	1.00 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.041)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	43.99***	59.91***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 15. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.006)	0.99 (0.002)
American Dream		1.00 (0.006)	1.00 (0.006)
Illegal Drug Markets (Log)		1.18 (0.243)	1.20 (0.257)
Illegal Stolen Goods		0.63 (0.318)	0.68 (0.338)
Formal Economy		1.01* (0.006)	1.01* (0.008)
Informal Economy x American Dream		0.99 (0.001)	1.00 (0.006)
Divorce Marriage Ratio		3.44 (3.107)	3.27 (2.894)
Percent Voted		0.99 (0.017)	0.98 (0.015)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.040)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	50.45***	77.86***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

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Table 16. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Illegal Drug Market)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.002)
American Dream		0.99 (0.014)	1.02 (0.163)
Illegal Drug Markets (Log)		1.17 (0.246)	1.19 (0.260)
Illegal Stolen Goods		0.62 (0.325)	0.66 (0.346)
Formal Economy		1.01* (0.007)	1.01* (0.008)
Illegal Drug Market x American Dream		1.00 (0.003)	1.00 (0.003)
Divorce Marriage Ratio		3.33 (2.961)	3.23 (2.829)
Percent Voted		0.99 (0.016)	0.98 (0.015)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.039)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	74.23***	82.50***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 17. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.00 (0.007)	1.00 (0.006)
Illegal Drug Markets (Log)		1.18 (0.243)	1.20 (0.254)
Illegal Stolen Goods		0.55 (0.327)	0.61 (0.356)
Formal Economy		1.01* (0.007)	1.01* (0.008)
Illegal Stolen Goods x American Dream		1.00 (0.001)	1.00 (0.007)
Divorce Marriage Ratio		3.44 (3.125)	3.30 (2.945)
Percent Voted		0.99 (0.016)	0.98 (0.015)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.040)		1.00 (0.039)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	97.25***	94.79***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 18. Negative Binomial Regression for Assault Count, 2016

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.005)	0.99 (0.004)
American Dream		0.99 (0.005)	1.01** (0.004)
Illegal Drug Markets (Log)		1.25 (0.202)	1.24 (0.210)
Illegal Stolen Goods		1.145 (0.333)	1.16 (0.272)
Formal Economy		1.00 (0.006)	1.00 (0.005)
Divorce Marriage Ratio		4.59 (3.080)	3.74* (2.349)
Percent Voted		0.99 (0.017)	1.00 (0.012)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.047)		1.04 (0.030)
% Foreign Born	0.98 (0.015)		0.99 (0.008)
Population size (exposure)	1	1	1
Wald X^2	2.86	89.74***	47.41***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 19. Negative Binomial Regression for Assault Count, 2016 (American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.005)	0.99 (0.004)
American Dream		1.00 (0.029)	1.04 (0.029)
Illegal Drug Markets (Log)		1.25 (0.197)	1.24 (0.209)
Illegal Stolen Goods		1.15 (0.345)	1.17 (0.287)
Formal Economy		1.00 (0.006)	1.01 (0.006)
Formal Economy x American Dream		1.00 (0.001)	0.99 (0.003)
Divorce Marriage Ratio		4.68 (3.277)	3.07* (2.698)
Percent Voted		0.99 (0.017)	0.98 (0.015)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.047)		1.04 (0.030)
% Foreign Born	0.98 (0.015)		0.99 (0.008)
Population size (exposure)	1	1	1
Wald X^2	2.86	90.15***	43.73***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 20. Negative Binomial Regression for Assault Count, 2016 (American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.008)	1.00 (0.007)
American Dream		1.01 (0.009)	1.02* (0.009)
Illegal Drug Markets (Log)		1.25 (0.203)	1.23 (0.209)
Illegal Stolen Goods		1.12 (0.319)	1.19 (0.263)
Formal Economy		1.00 (0.006)	1.00 (0.005)
Informal Economy x American Dream		0.99 (0.001)	0.99 (0.001)
Divorce Marriage Ratio		4.70* (3.340)	4.07* (2.710)
Percent Voted		0.99 (0.018)	1.00 (0.013)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.047)		1.04 (0.030)
% Foreign Born	0.98 (0.015)		0.99 (0.008)
Population size (exposure)	1	1	1
Wald X^2	2.86	101.42***	52.11***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 21. Negative Binomial Regression for Assault Count, 2016 (American Dream x Illegal Drug Market)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.005)	0.99 (0.004)
American Dream		1.01 (0.012)	1.02 (0.013)
Illegal Drug Markets (Log)		1.26 (0.206)	1.28 (0.228)
Illegal Stolen Goods		1.14 (0.343)	1.22 (0.309)
Formal Economy		1.00 (0.006)	1.01 (0.005)
Illegal Drug Market x American Dream		0.99 (0.002)	0.99 (0.002)
Divorce Marriage Ratio		4.53* (3.098)	3.80* (2.387)
Percent Voted		0.99 (0.018)	1.00 (0.012)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.047)		1.04 (0.031)
% Foreign Born	0.98 (0.015)		0.98 (0.008)
Population size (exposure)	1	1	1
Wald X^2	2.86	218.76***	308.99***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 22. Negative Binomial Regression for Assault Count, 2016 (American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.005)	0.99 (0.004)
American Dream		1.00 (0.007)	1.01* (0.007)
Illegal Drug Markets (Log)		1.26 (0.202)	1.26 (0.219)
Illegal Stolen Goods		1.16 (0.458)	1.43 (0.456)
Formal Economy		1.00 (0.006)	1.01 (0.005)
Illegal Stolen Goods x American Dream		0.99 (0.008)	0.99 (0.008)
Divorce Marriage Ratio		4.52 (3.079)	3.67* (2.237)
Percent Voted		0.99 (0.018)	1.00 (0.012)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.01 (0.047)		1.04 (0.031)
% Foreign Born	0.98 (0.015)		0.98 (0.008)
Population size (exposure)	1	1	1
Wald X^2	2.86	180.35***	221.92***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 23. Negative Binomial Regression for Grand Larceny Count, 2016

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	1.00 (0.003)
American Dream		1.01 (0.006)	1.01 (0.006)
Illegal Drug Markets (Log)		1.17 (0.198)	1.26 (0.205)
Illegal Stolen Goods		1.00 (0.209)	1.27 (0.309)
Formal Economy		1.00 (0.005)	0.99 (0.004)
Divorce Marriage Ratio		2.15 (1.940)	2.61 (2.523)
Percent Voted		0.99 (0.016)	0.97* (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.98 (0.035)		0.98 (0.030)
% Foreign Born	0.97** (0.007)		0.97*** (0.007)
Population size (exposure)	1	1	1
Wald X^2	9.13**	13.85	25.86***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 24. Negative Binomial Regression for Grand Larceny Count, 2016
(American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	0.99 (0.003)
American Dream		1.00 (0.015)	1.02 (0.016)
Illegal Drug Markets (Log)		1.17 (0.199)	1.25 (0.206)
Illegal Stolen Goods		1.00 (0.208)	1.26 (0.272)
Formal Economy		1.00 (0.005)	0.99 (0.005)
Formal Economy x American Dream		1.00 (0.001)	0.99 (0.002)
Divorce Marriage Ratio		2.16 (1.960)	2.52* (2.460)
Percent Voted		0.99 (0.016)	0.97 (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.98 (0.035)		0.98 (0.030)
% Foreign Born	0.97** (0.007)		0.97 (0.007)
Population size (exposure)	1	1	1
Wald X^2	9.13**	13.09**	32.71***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 25. Negative Binomial Regression for Grand Larceny Count, 2016
(American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.01 (0.007)	1.01 (0.007)
American Dream		1.02 (0.007)	1.02* (0.007)
Illegal Drug Markets (Log)		1.17 (0.192)	1.25 (0.301)
Illegal Stolen Goods		0.99 (0.217)	1.21 (0.301)
Formal Economy		1.00 (0.005)	0.99 (0.004)
Informal Economy x American Dream		0.99 (0.001)	0.99 (0.001)
Divorce Marriage Ratio		2.42* (2.193)	2.70* (2.594)
Percent Voted		1.00 (0.016)	0.98 (0.008)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.98 (0.035)		0.99 (0.031)
% Foreign Born	0.97** (0.007)		0.97 (0.006)
Population size (exposure)	1	1	1
Wald X^2	9.13**	39.99***	48.00***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 26. Negative Binomial Regression for Grand Larceny Count, 2016
(American Dream x Illegal Drug Market)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	1.00 (0.003)
American Dream		1.02 (0.017)	1.02 (0.015)
Illegal Drug Markets (Log)		1.18 (0.200)	1.29 (0.212)
Illegal Stolen Goods		1.03 (0.214)	1.33 (0.335)
Formal Economy		1.00 (0.005)	1.01 (0.005)
Illegal Drug Market x American Dream		0.99 (0.003)	0.99 (0.004)
Divorce Marriage Ratio		2.29* (2.137)	2.80 (2.780)
Percent Voted		1.00 (0.016)	0.97* (0.008)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.98 (0.035)		1.04 (0.031)
% Foreign Born	0.97** (0.007)		0.98*** (0.030)
Population size (exposure)	1	1	1
Wald X^2	9.13**	85.64***	83.03***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 27. Negative Binomial Regression for Grand Larceny Count, 2016 (American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	0.99 (0.003)
American Dream		1.01 (0.010)	1.01* (0.007)
Illegal Drug Markets (Log)		1.17 (0.199)	1.27 (0.209)
Illegal Stolen Goods		1.19 (0.306)	1.77 (0.568)
Formal Economy		1.00 (0.005)	0.99 (0.004)
Illegal Stolen Goods x American Dream		0.99 (0.010)	0.98 (0.008)
Divorce Marriage Ratio		2.16 (1.957)	2.53* (2.445)
Percent Voted		0.99 (0.016)	0.97 (0.008)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.98 (0.035)		0.98 (0.030)
% Foreign Born	0.97** (0.007)		0.97 (0.007)
Population size (exposure)	1	1	1
Wald X^2	9.13**	180.33***	144.97***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 28. Negative Binomial Regression for Burglary Count, 2016

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.003)	1.00 (0.003)
American Dream		1.01 (0.006)	1.01 (0.009)
Illegal Drug Markets (Log)		0.93 (0.155)	0.95 (0.164)
Illegal Stolen Goods		0.96 (0.160)	1.10 (0.256)
Formal Economy		1.00 (0.005)	1.00 (0.005)
Divorce Marriage Ratio		1.32 (0.759)	1.22 (0.719)
Percent Voted		0.97 (0.015)	0.96* (0.014)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.02 (0.027)		1.01 (0.028)
% Foreign Born	0.99** (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.59	21.66**	27.28***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 29. Negative Binomial Regression for Burglary Count, 2016 (American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.003)	1.00 (0.003)
American Dream		1.02 (0.016)	1.04 (0.017)
Illegal Drug Markets (Log)		0.93 (0.155)	0.95 (0.166)
Illegal Stolen Goods		0.95 (0.153)	1.10 (0.237)
Formal Economy		1.01 (0.006)	1.01 (0.006)
Formal Economy x American Dream		0.99 (0.001)	0.99 (0.001)
Divorce Marriage Ratio		1.28 (0.739)	1.14* (0.676)
Percent Voted		0.97 (0.016)	0.96 (0.015)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.02 (0.027)		0.98 (0.030)
% Foreign Born	0.99** (0.007)		1.01 (0.028)
Population size (exposure)	1	1	1
Wald X^2	1.59	24.94	34.87***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 30. Negative Binomial Regression for Burglary Count, 2016 (American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.01	1.01
		(0.007)	(0.007)
American Dream		1.02	1.02***
		(0.007)	(0.007)
Illegal Drug Markets (Log)		1.17	1.25
		(0.192)	(0.301)
Illegal Stolen Goods		0.99	1.21
		(0.217)	(0.301)
Formal Economy		1.00	0.99
		(0.005)	(0.004)
Informal Economy x American Dream		0.99	0.99
		(0.001)	(0.001)
Divorce Marriage Ratio		2.42*	2.70
		(2.193)	(2.594)
Percent Voted		1.00	0.98*
		(0.016)	(0.008)
Student Spending		1.00	1.00
		(0.001)	(0.001)
% Ages 15-24	1.02		0.99
	(0.027)		(0.031)
% Foreign Born	0.99**		0.97*
	(0.007)		(0.006)
Population size (exposure)	1	1	1
Wald X^2	1.59	39.99***	48.00***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 31. Negative Binomial Regression for Burglary Count, 2016 (American Dream x Illegal Drug Market)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.003)	1.00 (0.003)
American Dream		1.03** (0.011)	1.04*** (0.012)
Illegal Drug Markets (Log)		0.97 (0.179)	1.00 (0.204)
Illegal Stolen Goods		1.02 (0.167)	1.23 (0.294)
Formal Economy		1.00 (0.005)	1.00 (0.005)
Illegal Drug Market x American Dream		0.99 (0.002)	0.99 (0.002)
Divorce Marriage Ratio		1.37 (0.780)	2.53* (0.726)
Percent Voted		0.97 (0.016)	0.96* (0.014)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.02 (0.027)		1.02 (0.026)
% Foreign Born	0.99** (0.007)		0.98* (0.008)
Population size (exposure)	1	1	1
Wald X^2	1.59	53.04***	63.81***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 32. Negative Binomial Regression for Burglary Count, 2016 (American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.003)	1.00 (0.003)
American Dream		1.02** (0.006)	1.02*** (0.005)
Illegal Drug Markets (Log)		0.95 (0.165)	0.97 (0.184)
Illegal Stolen Goods		1.48 (0.353)	2.25* (0.865)
Formal Economy		1.00 (0.005)	1.00 (0.005)
Illegal Stolen Goods x American Dream		0.98** (0.006)	0.97*** (0.008)
Divorce Marriage Ratio		1.28 (0.699)	1.11 (0.604)
Percent Voted		0.97 (0.016)	0.96** (0.014)
Student Spending		0.99 (0.001)	0.99 (0.001)
% Ages 15-24	1.02 (0.027)		1.02 (0.027)
% Foreign Born	0.99 (0.007)		0.97* (0.008)
Population size (exposure)	1	1	1
Wald X^2	1.59	72.55***	91.54***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 33. Negative Binomial Regression for Robbery Count, 2016

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.01*** (0.004)	1.01*** (0.004)
Illegal Drug Markets (Log)		1.21 (0.277)	1.24 (0.297)
Illegal Stolen Goods		0.636 (0.289)	0.687 (0.320)
Gini Index		3.31 (7.284)	1.81 (4.163)
Divorce Marriage Ratio		6.99 (7.153)	6.53 (6.75)
Percent Voted		0.98 (0.016)	0.97 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.031)
% Foreign Born	0.98 (0.007)		0.98 (0.008)
Population size (exposure)	1	1	1
Wald X^2	1.88	40.9***	64.82***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 34. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.01 (0.025)	1.02 (0.023)
Illegal Drug Markets (Log)		1.21 (0.278)	1.24 (0.301)
Illegal Stolen Goods		0.635 (0.292)	0.698 (0.331)
Gini Index		3.16 (7.870)	2.47 (6.00)
Gini Index x American Dream		1.00 (0.052)	0.97 (0.047)
Divorce Marriage Ratio		3.31 (2.977)	6.49 (6.760)
Percent Voted		0.98 (0.017)	0.98 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.041)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	86.47***	123.90***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 35. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.008)	0.99 (0.008)
American Dream		1.00 (0.007)	1.00 (0.007)
Illegal Drug Markets (Log)		1.21 (0.274)	1.25 (0.296)
Illegal Stolen Goods		0.63 (0.289)	0.70 (0.327)
Gini Index		3.35 (7.439)	1.95 (4.532)
Informal Economy x American Dream		1.00 (0.001)	1.00 (0.001)
Divorce Marriage Ratio		6.96 (7.192)	6.28 (6.468)
Percent Voted		0.98 (0.017)	0.97 (0.017)
Student Spending		0.99 (0.001)	1.00 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.033)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	41.91***	55.63***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 36. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Illegal Drug Market)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.00 (0.014)	1.00 (0.014)
Illegal Drug Markets (Log)		1.23 (0.279)	1.23 (0.305)
Illegal Stolen Goods		0.62 (0.294)	0.68 (0.330)
Gini Index		2.57 (5.753)	1.63 (3.708)
Illegal Drug Market x American Dream		1.00 (0.003)	1.00 (0.003)
Divorce Marriage Ratio		6.83 (6.840)	6.50 (6.632)
Percent Voted		0.98 (0.017)	0.97 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.032)
% Foreign Born	0.98 (0.007)		0.98 (0.009)
Population size (exposure)	1	1	1
Wald X^2	1.88	55.17***	57.85***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 37. Negative Binomial Regression for Robbery Count, 2016 (American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.00 (0.008)	1.01 (0.006)
Illegal Drug Markets (Log)		1.21 (0.276)	1.20 (0.254)
Illegal Stolen Goods		0.57 (0.309)	0.67 (0.366)
Gini Index		2.87 (6.487)	1.77 (4.101)
Illegal Stolen Goods x American Dream		1.00 (0.009)	1.00 (0.008)
Divorce Marriage Ratio		7.06 (7.243)	6.55 (6.85)
Percent Voted		0.98 (0.017)	0.97 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.01 (0.040)		0.99 (0.031)
% Foreign Born	0.98 (0.007)		0.98 (0.008)
Population size (exposure)	1	1	1
Wald X^2	1.88	88.84***	80.92***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 38. Negative Binomial Regression for Robbery Count, 2014-2106 (Average)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.002)	0.99 (0.004)
American Dream		1.00*** (0.002)	1.00*** (0.002)
Illegal Drug Markets (Log)		1.22 (0.228)	1.22 (0.212)
Illegal Stolen Goods		1.218 (0.232)	1.200 (0.231)
Formal Economy		1.01** (0.004)	1.01** (0.004)
Divorce Marriage Ratio		2.67 (1.064)	2.67** (0.976)
Percent Voted		0.99 (0.010)	0.99 (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.00 (0.038)		0.97 (0.024)
% Foreign Born	0.99 (0.006)		1.00 (0.006)
Population size (exposure)	1	1	1
Wald X^2	0.38	94.16***	187.95***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 39. Negative Binomial Regression for Robbery Count, 2014-2106 (Average) (American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.002)	1.00 (0.002)
American Dream		1.04** (0.015)	1.04*** (0.014)
Illegal Drug Markets (Log)		1.22 (0.226)	1.23 (0.214)
Illegal Stolen Goods		1.20 (0.204)	1.21 (0.215)
Formal Economy		1.01*** (0.004)	1.01*** (0.004)
Formal Economy x American Dream		0.99* (0.001)	0.99* (0.001)
Divorce Marriage Ratio		2.52 (0.945)	2.52** (0.872)
Percent Voted		0.99 (0.010)	0.99 (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.00 (0.039)		0.97 (0.029)
% Foreign Born	0.99 (0.006)		0.99 (0.005)
Population size (exposure)	1	1	1
Wald X^2	0.38	282.81***	254.61***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 40. Negative Binomial Regression for Robbery Count, 2014-2106 (Average) (American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.004)	0.99 (0.004)
American Dream		1.00 (0.004)	1.00 (0.004)
Illegal Drug Markets (Log)		1.22 (0.231)	1.22 (0.213)
Illegal Stolen Goods		1.22 (0.236)	1.22 (0.234)
Formal Economy		1.01** (0.004)	1.01** (0.004)
Informal Economy x American Dream		1.00 (0.001)	1.00 (0.001)
Divorce Marriage Ratio		2.66* (1.094)	2.63** (0.985)
Percent Voted		0.99 (0.011)	0.99 (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.00 (0.038)		0.99 (0.033)
% Foreign Born	0.99 (0.006)		0.97 (0.028)
Population size (exposure)	1	1	1
Wald X^2	0.38	93.35***	158.91***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 41. Negative Binomial Regression for Robbery Count, 2014-2106 (Average)
(American Dream x Illegal Drug Market)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.002)	0.99 (0.003)
American Dream		1.01 (0.009)	1.01 (0.011)
Illegal Drug Markets (Log)		1.26 (0.256)	1.23 (0.305)
Illegal Stolen Goods		1.24 (0.256)	1.22 (0.261)
Formal Economy		1.01** (0.004)	1.01** (0.005)
Illegal Drug Market x American Dream		0.99 (0.002)	0.99 (0.003)
Divorce Marriage Ratio		2.74* (1.085)	2.75*** (0.984)
Percent Voted		0.99 (0.010)	0.99 (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.00 (0.038)		0.99 (0.032)
% Foreign Born	0.99 (0.006)		0.97 (0.031)
Population size (exposure)	1	1	1
Wald X^2	0.38	464.80***	438.87***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 42. Negative Binomial Regression for Robbery Count, 2014-2106 (Average) (American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		0.99 (0.002)	0.99 (0.002)
American Dream		1.01 (0.004)	1.02 (0.004)
Illegal Drug Markets (Log)		1.24 (0.240)	1.24 (0.227)
Illegal Stolen Goods		0.99 (0.005)	0.99 (0.005)
Formal Economy		1.01** (0.004)	1.77** (0.005)
Illegal Stolen Goods x American Dream		0.99 (0.002)	0.99 (0.002)
Divorce Marriage Ratio		2.68 (1.01)	2.69 (0.956)
Percent Voted		0.99 (0.010)	0.99 (0.009)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	1.00 (0.038)		0.99 (0.031)
% Foreign Born	0.99 (0.006)		1.00 (0.006)
Population size (exposure)	1	1	1
Wald X^2	0.38	591.44***	592.54***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 43. Negative Binomial Regression for Robbery Count, 2016 (Square feet)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	1.00 (0.005)
American Dream		1.00 (0.007)	1.00 (0.005)
Illegal Drug Markets (Log)		1.15 (0.195)	1.10 (0.157)
Illegal Stolen Goods		0.716 (0.456)	0.685 (0.409)
Formal Economy		1.02** (0.006)	1.02*** (0.006)
Divorce Marriage Ratio		2.15 (1.856)	2.21** (1.736)
Percent Voted		0.99 (0.014)	0.99 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.97 (0.025)		0.94** (0.018)
% Foreign Born	1.01 (0.009)		1.01 (0.009)
Square Feet (exposure)	1	1	1
Wald X^2	3.22	26.90***	41.67***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 44. Negative Binomial Regression for Robbery Count, 2016 (Square feet)
(American Dream x Formal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	1.00 (0.005)
American Dream		1.08** (0.031)	1.07*** (0.026)
Illegal Drug Markets (Log)		1.12 (0.189)	1.09 (0.160)
Illegal Stolen Goods		0.59 (0.268)	0.61 (0.289)
Formal Economy		1.02*** (0.007)	1.03*** (0.006)
Formal Economy x American Dream		0.99** (0.001)	0.99** (0.001)
Divorce Marriage Ratio		1.88 (1.597)	1.99 (1.659)
Percent Voted		0.99 (0.014)	0.99 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.97 (0.025)		0.94* (0.019)
% Foreign Born	1.01 (0.009)		1.00 (0.009)
Square Feet (exposure)	1	1	1
Wald X^2	3.22	36.89***	43.22***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 45. Negative Binomial Regression for Robbery Count, 2106 (Square feet) (American Dream x Informal Economy)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.02* (0.009)	1.01 (0.010)
American Dream		1.02 (0.012)	1.01 (0.013)
Illegal Drug Markets (Log)		1.13 (0.187)	1.08 (0.154)
Illegal Stolen Goods		0.67 (0.439)	0.64 (0.386)
Formal Economy		1.02** (0.006)	1.02** (0.006)
Informal Economy x American Dream		0.99 (0.001)	0.99 (0.001)
Divorce Marriage Ratio		2.20 (1.873)	2.23 (1.690)
Percent Voted		0.99 (0.015)	0.99 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.97 (0.025)		0.95* (0.019)
% Foreign Born	1.01 (0.009)		1.01 (0.009)
Square Feet (exposure)	1	1	1
Wald X^2	3.22	28.07***	43.20***
n	107	101	101

Robust standard errors in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table 46. Negative Binomial Regression for Robbery Count, 2106 (Square feet) (American Dream x Illegal Drug Market)

|	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	1.00 (0.005)
American Dream		1.02 (0.020)	1.01 (0.018)
Illegal Drug Markets (Log)		0.99 (0.004)	0.99 (0.003)
Illegal Stolen Goods		0.74 (0.465)	0.69 (0.426)
Formal Economy		1.02** (0.006)	1.02*** (0.006)
Illegal Drug Market x American Dream		0.99 (0.004)	0.99 (0.003)
Divorce Marriage Ratio		2.21 (1.937)	2.23 (1.771)
Percent Voted		0.99 (0.014)	0.99 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.97 (0.025)		0.94** (0.019)
% Foreign Born	1.01 (0.009)		1.01 (0.009)
Square Feet (exposure)	1	1	1
Wald X^2	3.22	33.70***	50.07***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 47. Negative Binomial Regression for Robbery Count, 2106 (Square feet)
(American Dream x Illegal Stolen Goods)

	Model 1 IRR RSE	Model 2 IRR RSE	Model 3 IRR RSE
Informal Economy		1.00 (0.005)	1.00 (0.005)
American Dream		1.01 (0.009)	1.00 (0.009)
Illegal Drug Markets (Log)		1.15 (0.195)	1.10 (0.158)
Illegal Stolen Goods		1.00 (0.737)	0.77 (0.524)
Formal Economy		1.02** (0.006)	1.02*** (0.006)
Illegal Stolen Goods x American Dream		0.98 (0.010)	0.99 (0.010)
Divorce Marriage Ratio		2.08 (1.798)	2.18 (1.728)
Percent Voted		0.99 (0.014)	0.99 (0.016)
Student Spending		1.00 (0.001)	1.00 (0.001)
% Ages 15-24	0.97 (0.025)		0.94** (0.019)
% Foreign Born	1.01 (0.009)		1.01 (0.009)
Square Feet (exposure)	1	1	1
Wald X^2	3.22	32.96***	51.32***
n	107	101	101

Robust standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

FIGURES

Figure 1: Selected Sample of Block Groups in New York City (n=127)
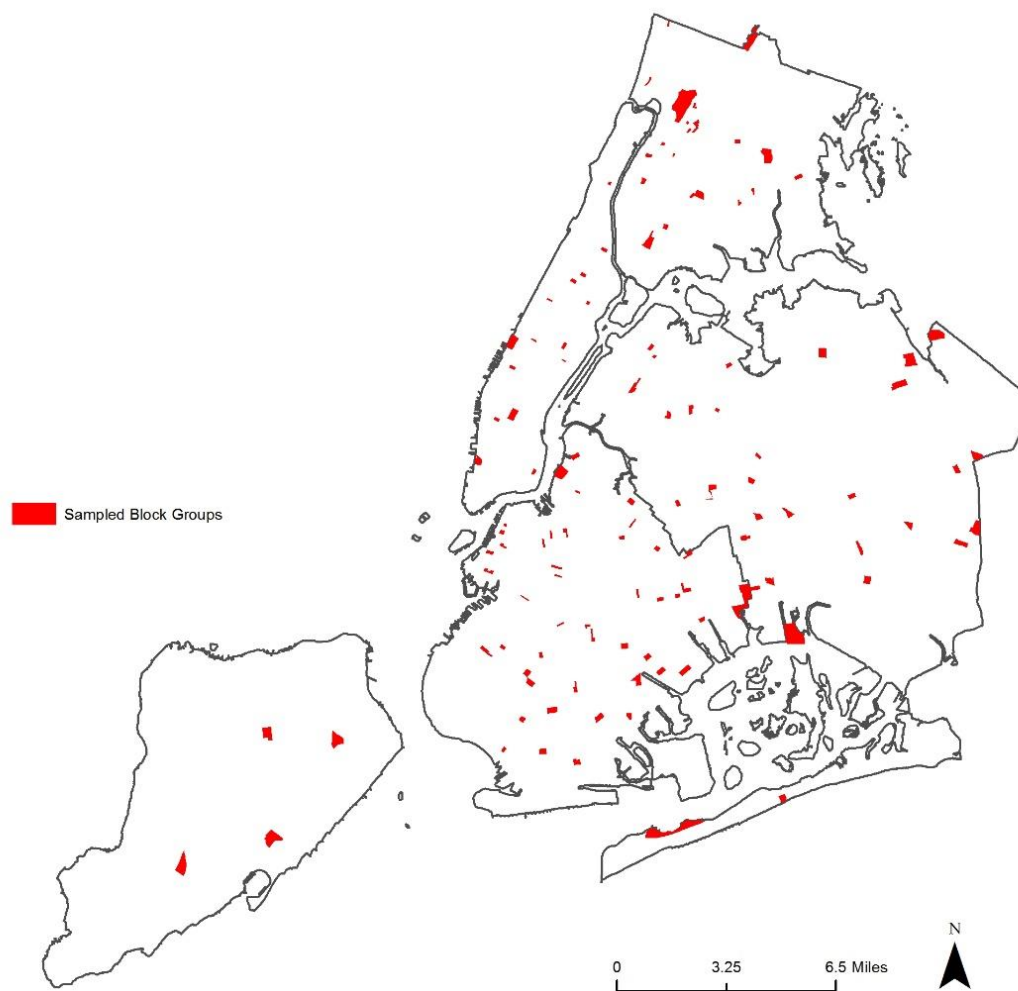
Source: Marin Kurti, 2018

Figure 2: Robberies in New York City, 2000-2016
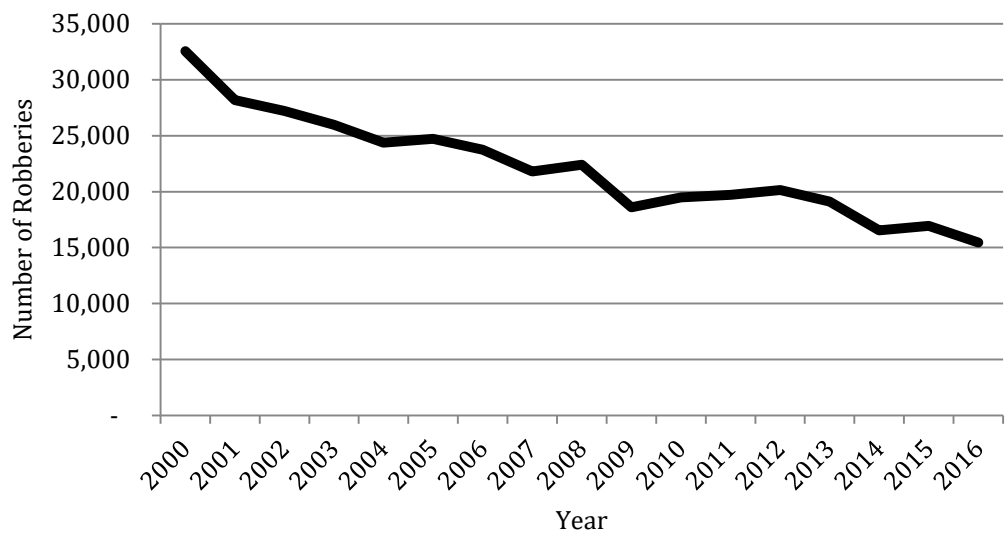
Source: New York City Police Department, 2017

Figure 3: Robbery Hot Spots in New York City Block Groups, 2016

Robbery Hot Spots, 2016
Block Groups

- Cold Spot (90-99% CI)
- Non-Significant
- Hot Spot (90-99% CI)

0   3   6 Miles

N
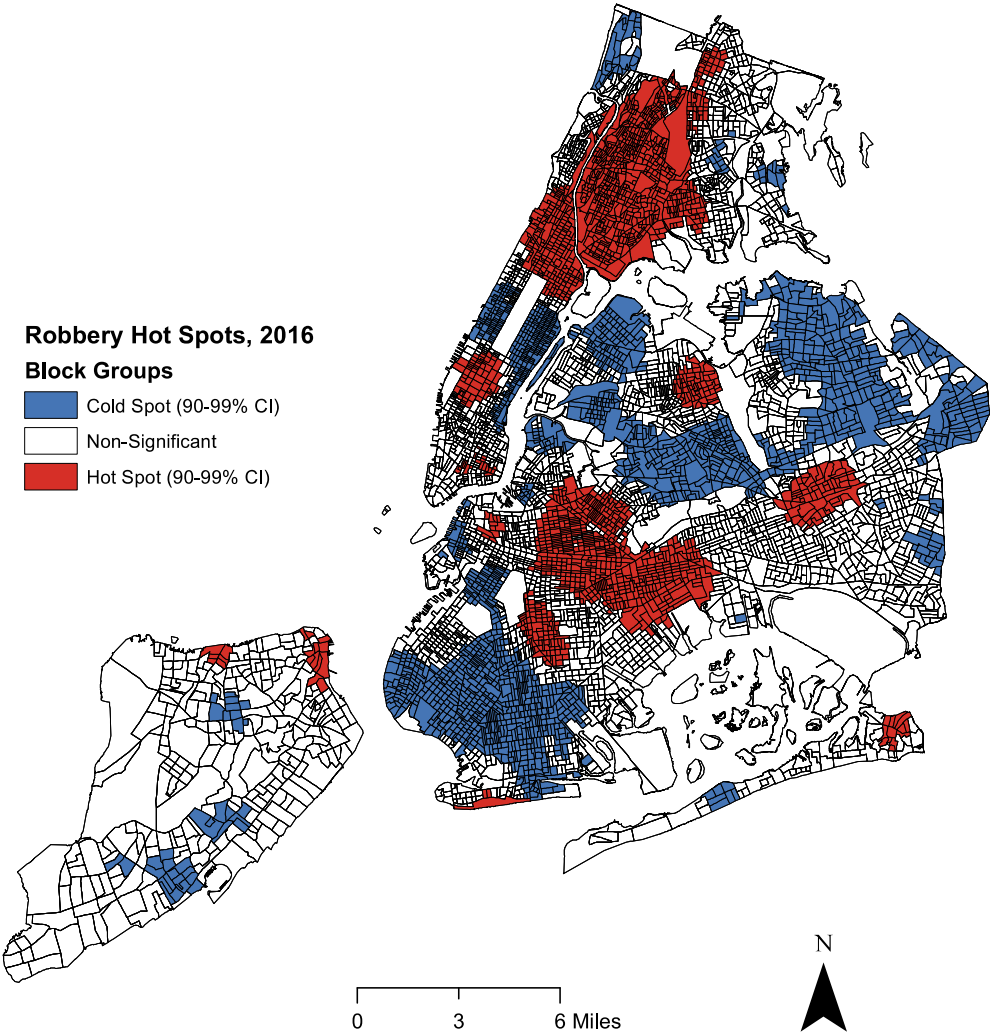
Source: New York City Police Department, 2017

Figure 4: Grand Larceny Hot Spots in New York City Block Groups, 2016

Grand Larceny Hot Spots, 2016
Block Groups

- Cold Spot (90-99% CI)
- Non-Significant
- Hot Spot (90-99% CI)

N

0   3.5   7 Miles
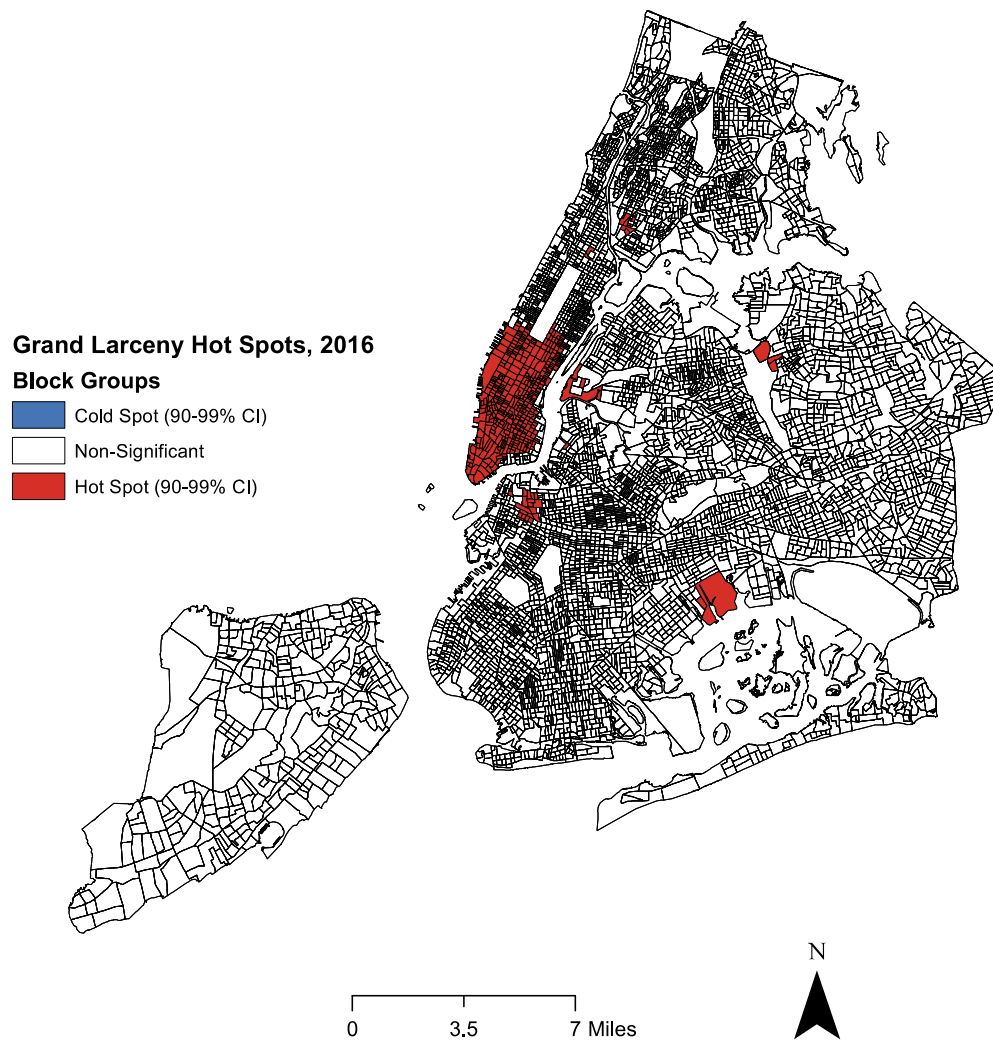
Source: New York City Police Department, 2017

Figure 5: Assault Hot Spots in New York City Block Groups, 2016

Assault Hot Spots, 2016
Block Groups
Cold Spot (90-99% CI)
Non-Significant
Hot Spot (90-99% CI)

0   3   6 Miles

N
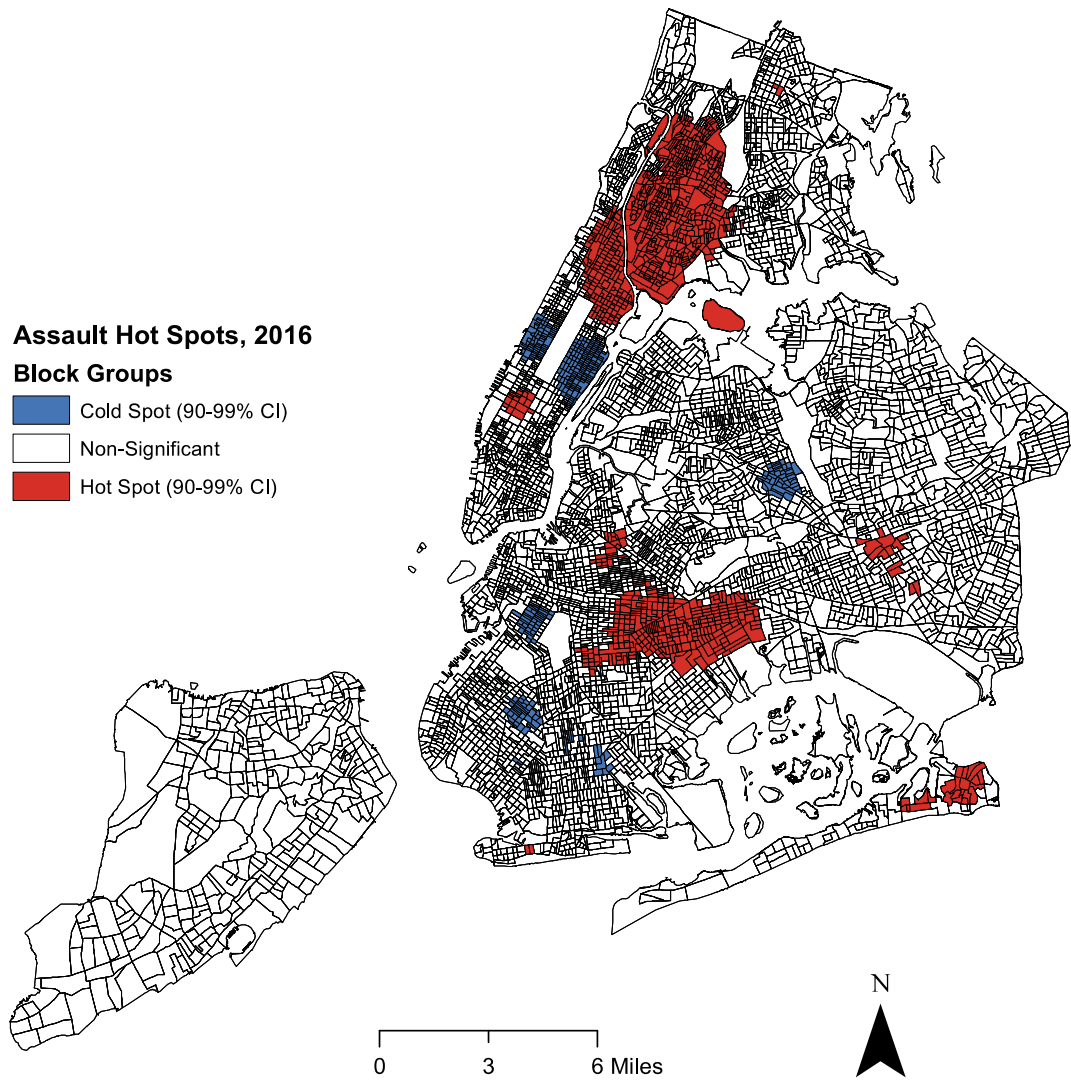
Source: New York City Police Department, 2017

Figure 6: Burglary Hot Spots in New York City Block Groups, 2016

Burglarly Hot Spots, 2016
Block Groups

Cold Spot (90-99% CI)

Non-Significant

Hot Spot (90-99% CI)

N

0   3   6 Miles
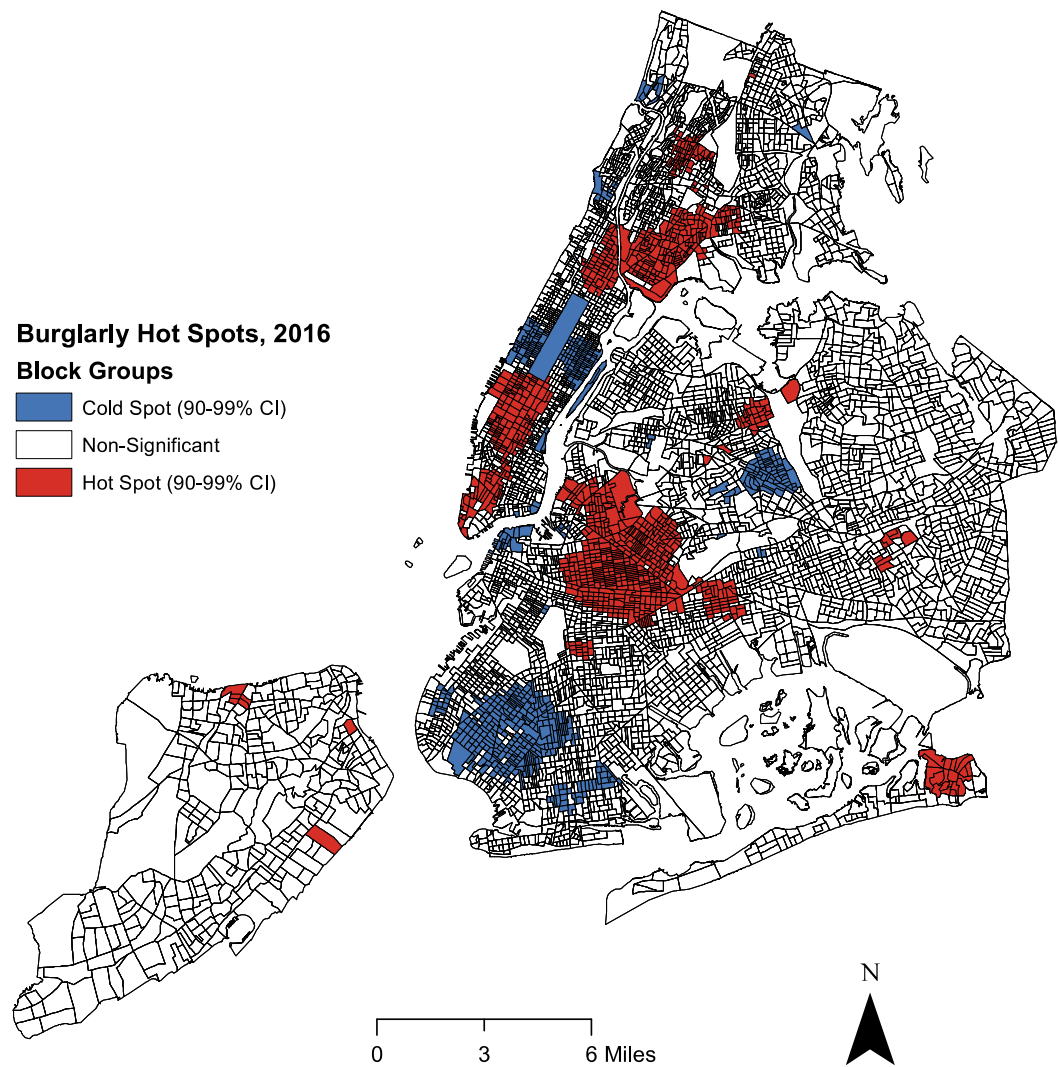
Source: New York City Police Department, 2017

APPENDIX A: RESEARCH INSTRUMENT, WAVE 1

RATER INFORMATION			
Team Name/ Rater (Last Name)		Block Group Code	
Date (dd/mm/yy)		Temperature (F)	

GENERAL BLOCK GROUP CHARACTERISTICS	
1. Public Garbage Cans	
None	
1 garbage	
2 garbage	
3 garbage	
4 garbage	
More than 4	

CIGARETTES

	Total Packs	Tax Stamps									
		No Stamp	NYC/ NYS	NYS	VA	NJ	CT	GA	PA	FL	MO
2. Empty Cigarette packs											

DRUGS

	Quantity										
3. Zip Lock Bags											
4. Vials											
5. Syringes											
6. K2 Wrappers											
7. Blunt Wrappers											
8. Wrapping Paper											
9. Glassine envelopes											
10. Crack pipes											

APPENDIX B: RESEARCH INSTRUMENT, WAVE 2

RATER INFORMATION			
Team Name/ Rater (Last Name)		Block Group Code	
Date (dd/mm/yy)		Temperature (F)	

GENERAL BLOCK GROUP CHARACTERISTICS			
1. Car Traffic Count (10 sec.)		2. People Count (10 sec.)	
None		None	
1-5		1-5	
6-20		6-20	
21-50		21-50	
51-100		51-100	
More than 100		More than 100	

BLOCK GROUP ENVIRONMENT I			
How many of the following do you	Quantity	How many of the following do you observe?	Quantity
3. Panhandling (e.g., asking for change)		15. Stores with "Cash Only" signs	
4. Litter collectors (e.g., empty bottles on cart)		16. Advertisements for jobs (e.g., baby sitting, dog walking, home computer)	
5. Day laborers		17. "Cars for Cash" advertisements	
6. Non-advertised car repair (e.g., on street, sidewalk)		18. Fortune tellers (e.g., tarot cards, palm readers)	
7. Sales of CDs, DVDs (on street)		19. Solicitations of pedestrians for rides (cars without TLC plates)	
8. Sale of loose/cheap cigarettes (on street)		20. Persons passing out flyers/pamphlets	
9. Garage/ Yard sales		21. Drug use (e.g., smoking, injecting, rolling up)	
10. "For Sale" signs on parked cars		22. Apartment/room rentals advertisements	
11. Street vendors without license (i.e., cold water, Ice cream, flowers, etc.)		23. Cash rewards (lost dog)	

12. Drug sales (e.g., exchanging hands, solicitation)		24. Moving company advertisements	
13. Gambling (e.g., card games, dice games, three card Monty)		25. Street performance (with tip jar)	
14. Prostitution			

BLOCK GROUP ENVIRONMENT II		**BLOCK GROUP ENVIRONMENT III**	
How many of the following do e?	Quantity	How many of the following do you observe?	Quantity
26. Money advertisements (in foreign language)		35. Number of street signs of popular persons	
27. Prices advertised (larger than your hand or 6 inches)		36. Businesses established longer than 10 years	
28. Advertisements for "Free" or "Salas" services		37. Number of independently owned businesses	
29. Pawn Shops		38. Number of handicap parking spaces	
30. ATMs		39. International flags	
31. Banks			
32. Tax Services			
33. Personal injury attorneys			
34. Check cashing places			

APPENDIX C: Detailed Guide on Identifying Informal and Illegal Economies for Wave II

1. <u>Car traffic count</u>: Standing on corner of the street and while counting to 10 (e.g., one Mississippi, two Mississippi…), count the number of cars that are passing by. Do not count the cars that are double parked or standing.

2. <u>People count</u>: Standing on corner of the street and while counting to 10 (e.g., one Mississippi, two Mississippi…), count the number of walking/standing/sitting on the sidewalks and street.

3. <u>Panhandling</u>: This activity includes people asking for money without providing entertainment (e.g., dancing) or services (e.g. washing car windows). Individuals who ask for money may do so by walking the street, sitting or standing on the sidewalk or at intersections. Some may have a sign.

4. <u>Litter collectors</u>: Litter collectors are persons who collect recyclable material (e.g., empty cans, bottles) that they turn in for cash. They are commonly distinguished as wearing gloves, combing through public and private trash cans, carrying garbage bags, and shopping carts full of recyclable material.

5. <u>Day laborers</u>**:** Day laborers are persons who are employed on a part time basis to perform a variety of labor and are primarily paid for their services in cash. Day laborers can be identified as individuals standing nearby gas stations, hardware stores, and busy highways carrying book bags and wearing heavy-duty clothes (e.g., jeans, knee pads) not appropriate for the summer time.

6. <u>Non-advertised car repair</u>: This is the observation of watching individuals fix the cars of others on the street. Fixing cars on private property (e.g., garages) does not count as this.

7. <u>Sales of CDs, DVDs</u>: This includes persons selling CDs or DVDs on the street. Persons may display a variety of CDs on the floor (on top of a blanket, cardboard box) or solicit passerbys by advertising "CDs DVDs?" or by asking "Movies?" Persons may also be carrying a backpack

8. <u>Sale of loose/cheap cigarettes (on street)</u>- Individuals standing on corners advertising "loosies" or "Newports!". It can also include individuals who open up their pack of cigarettes to sell one to another (single cigarettes are called "loosies" or "bones"). Persons may also be carrying a backpack.

9. <u>Garage/ Yard sales</u>: Garage sales can be identified in the form of advertisements or activity. Advertisements will include details of the event (i.e., location, time, etc.) and will be located on lawns, light poles, and cars. Events can also be directly observed by having a variety of used goods advertised in front of private houses or on the street.

Note: This does not include flea markets or stores that sell used goods (e.g., Salvation Army).

10. For Sale" signs on parked cars: Signs are posted on car windows or written with white chalk. These signs include information pertinent to the sale: year, model and make of the car, mileage and telephone number of the seller.

11. Street vendors without license (i.e., cold water, Ice cream, flowers, etc.): Unregulated vendors are individuals who sell items without a New York City vendor's license. Only count individuals who do not have a license hanging from their neck or affixed on the side of their pushcart. Unlicensed vendors may be posted on the sidewalk or on the street walking in between cars. This is popular along highways and busy intersections for certain goods (e.g., flowers, water, and fruits). *Be careful with observations because sometimes individuals may pay others who own the license to remain nearby while they engage in sales.*

12. Drug sales (e.g., exchanging hands, solicitation): The sale of illegal drugs include persons who exchange money for illegal drugs. These transactions occur on the street or in front of buildings and stores. In some instances money may be exchanged but the transaction takes a while, because the drug dealer may have "stashed" the drugs in an alternate locations. In some neighborhoods, drug dealers may approach passerbys and solicit for drugs.

13. Gambling (e.g., card games, dice games, Three Card Monty): Visual signs of gambling include individuals who are gathered around playing popular games like Three Card Monty on top of a piece of cardboard or milk crate. It also includes persons playing cee-lo where three dice are thrown on the floor and money is exchanged after each turn.

14. Prostitution: Typically females approaching stopped cars, loitering, trying to engage people.

15. Stores with "Cash Only" signs: These signs will be posted on store windows. Do not walk inside stores or ask store clerks if they only take cash.

16. Advertisements for jobs (e.g., baby sitting, dog walking, and home computer): Typically these advertisements are plastered on light poles or fences. In some neighborhoods, advertisements might be in a foreign language. Note: If you see a sign that you suspect is advertising such services but you do not know the language, take a photo and text it to Marin. Please make sure to include the location where it was found.

17. "Cars for Cash" advertisements: Typically these advertisements are plastered on light poles or fences.

18. Fortune tellers (e.g., tarot cards, palm readers): Fortune tellers can be identified as individuals sitting with a chair outside soliciting passerbys asking them to "read your

palm" or "finding your luck". It can also include individuals passing out flyers advertising fortuneteller, or store signs.

19. Solicitations of pedestrians for rides (cars without TLC plates): Cars that without a TLC license plate or Uber/Lyft insignia that honk at you and ask you or others if they need to go somewhere. They may also be observed picking up persons who look like they are waiting for a cab.

20. Persons passing out flyers/pamphlets: Individuals handing out flyers for services (e.g. free phones, massage parlors). They may be dressed in costumes (e.g., Statue of Liberty).

21. Drug use (e.g., smoking, injecting, and rolling up): The smell of burnt marijuana. It can also include observing individuals rolling up drugs (not cigarettes, typically marijuana), preparing heroin (e.g., burning spoon, or tinfoil).

22. Apartment/room rentals advertisements: Advertisements looking to rent rooms without the use of a broker. Typically these advertisements are plastered on light poles or fences. Note: Apartment signs that are posted in Spanish are labeled as "Renta Cuartos" (meaning rent rooms).

23. Cash rewards: Signs posted that offer reward for lost pets and items. Typically these advertisements are plastered on light poles or fences.

24. Moving company advertisements: Signs posted that offer moving services. Typically these advertisements are plastered on light poles or fences.

25. Street performance (with tip jar): Individuals performing some form of art (dancing, singing) with a tip jar or a hat nearby.

26. Money advertisements (in foreign language): Advertisements for purchasing items in another language including Spanish, Mandarin, Arabic. This could include "Buy Now!"

27. Prices advertised (larger than your hand or 6 inches): Number of each distinct advertisement for a price product (e.g. "$5 only"). They may also include the name of the store (especially with 99 cent stores). When evaluating these signs use the Hand Test: Is the price easily observable across the street? Is it larger than your hand? If both answers are yes, count each individual sign.

28. Advertisements for "Free" or "Salas" services: Number of each distinct advertisement advertising "Free" services. They may be posted in another language.

29. Pawn shops: Stores that are distinctly characterized as selling gold and other jewelry related products.

30. <u>ATMs</u>: Standalone ATMs that are visible on the street. Do not count ATMs that are inside banks (e.g., Chase). Signs may also be posted outside of stores. Signs will also be counted. Signs may be posted on store windows or hang from awnings.

31. <u>Banks</u>: Banks where money is stored (e.g., Chase, Bank of America, etc.)

32. <u>Tax Services</u>: Stores that advertise tax services including H&R Block and other stores that specifically mention tax documents.

33. <u>Personal injury attorneys' offices/advertisements</u>: Stores and advertisements for personal injury attorneys. Such signs may be posted on bus stops or on buildings.

34. <u>Check cashing places/ money wire</u>: These are identifiable as stores that offer services where checks can be cashed and money can be wired to other locations domestically and internationally. These stores can be identified by looking at the name on the awning (e.g., "NYC Check Cash Express"). However, stores that sell other goods may also offer similar services. Thus, it is important to look out for signs posted on stores that have these services available (e.g., "MoneyGram Inside", "Ria"). For example, in some pharmacies money wire services (e.g., MoneyGram, Western Union) is offered.

35. <u>Number of street signs of popular persons</u>: Look at the cross streets and determine whether they are named after famous people (e.g. Astor Avenue after John Jacob Astor, real estate magnate).

36. <u>Businesses established longer than 10 years</u>: Look at the awnings of stores for signs highlighting when it was established. Number the signs that are established 2006 and earlier. Note: Do not walk inside stores and ask manager when the store was established.

37. <u>Number of independently owned businesses</u>: Look at the name of the stores and identify ones who are named after individuals and show possession (e.g., Andres' Coffee Shop, Rick's Tattoo Parlor).

38. <u>Number of handicap parking spaces</u>: Count the number of public parking spots that are for handicap drivers. Note: Do not count those in private parking lots

39. <u>Everyone Advertisements</u>: Count the number of advertisements that include pictures of persons from various ethnicities. Also count advertisements with the word "everyone" "everybody" and "all."

40. <u>US flags (non-Puerto Rico)</u>: Count the number of US flags on the street posted on stores, apartment buildings, private houses, etc. Do not count flags from Puerto Rico.

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