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**ESTABLISHING THE GENDER GAP IN ILLEGAL DRUG SALES AND DRUG SALE
EARNINGS: A QUANTITATIVE ASSESSMENT USING THE NATIONAL
INCIDENT-BASED REPORTING SYSTEM (NIBRS)**

A Thesis in

Criminology

by

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PROJECT SUMMARY

The central aim of this thesis was to clarify the gender gap in illegal drug sales and drug sale earnings using a unique and underutilized dataset (National Incident-Based Reporting System, or NIBRS). The motivation for this study stems from a debate among scholars regarding the extent of female involvement in drug selling and the gender gap in drug sale earnings. One view is that gender differences in participation and earnings are somewhat small. This view emerged shortly after the introduction of crack-cocaine to North American drug markets in the mid-1980s, and differs from the one traditionally held by drug crime scholars. The traditional (and alternative) view is that the gender gap in drug sale participation and earnings has been and continues to remain large, and that drug markets remain heavily dominated by males. Despite considerable interest in this topic, important gaps the literature remain and the debate has yet to be resolved.

In this thesis, I aimed to go beyond prior literature to establish a more complete picture of a) the gender gap in drug sales (overall and by drug type); b) the gender gap in illegal earnings from drug sales (overall and by drug type); and c) the gendered organization of drug sales (e.g., solo or co-offense, same-sex or mixed-sex). Steffensmeier's (1983) institutionalized sexism framework, which posits that several interrelated forces (i.e., sex-typing, homosocial reproduction, and task environment of crime) exist to both exclude and marginalize women in profit-oriented crime groups, served as the theoretical justification for this thesis.

Data were derived from NIBRS incident-level extract files for the years 2010-2012, and were downloaded from the Interuniversity Consortium for Political and Social Research (ICPSR). The final study population totaled 56,267 incidents involving drug selling arrests.

Key findings from both bivariate analyses and multivariate OLS regression models provided support for Steffensmeier's (1983) framework, as well as the traditional view regarding women's involvement in the drug economy. First, I found a large gender gap in drug sale participation (overall and by drug type). Second, I found the size of the gender gap to vary by type of drug (i.e., marijuana, cocaine, crack, and heroin). Notably, gender differences were smaller for crack and heroin than marijuana and cocaine. Third, there is a large gender gap in illegal earnings from drug sales in both solo and co-offending incidents. Fourth, mixed-gender co-offending groups are found to earn more than all-male groups, net of key demographic and structural controls.

Implications of this thesis are several. First, findings contribute to four important strands of criminological research, namely: a) gender and crime literature; b) the literature on gender and drug crime; c) institutionalized sexism literature; and d) the growing body of literature on illegal earnings. Second, this study offers researchers and policymakers a fresh, quantitative view into the social organization of illicit drug markets. Third, it provides a strong foundation for scholars interested in investigating race and race by gender differences (e.g., white vs. black) in drug selling and drug sale earnings, and how these vary by drug type and type of organization. Fourth, this study has helped establish NIBRS as an important dataset for a) scholars and policymakers interested in drug related issues; and b) scholars interested in exploring how institutionalized sexism varies across type of crime activity.

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The question of how gender shapes the social organization of the illicit drug economy has been, and continues to be, a subject of considerable scholarly interest and debate. Disagreement in particular has centered on the extent of women's involvement and the gender gap in illegal drug selling and in drug sale earnings, and whether their involvement has changed substantially in recent years. One position is that, while women's involvement may have been small in earlier times, the gender gap has narrowed considerably in recent years to the point where gender differences in illegal drug sales and earnings are now small (Sommers, Baskin, and Fagan 1993; Fagan 1994; Mieczkowski 1994). This perspective emerged shortly after the introduction of crack cocaine in North American drug markets in the mid-1980s, and differs from the one traditionally held by gender-and-crime scholars (Maher and Hudson 2007; Steffensmeier 1983; Steffensmeier and Allan 1996). Before the advent of crack, researchers portrayed drug markets as strongly gender stratified and dominated by male dealers and suppliers (Rosenbaum 1981; Adler 1985; Steffensmeier 1983). However, following the introduction of crack, some scholars hypothesized that male dominated networks had weakened—making it easier for females to position themselves in drug selling roles (Baskin et al. 1993; Fagan 1994; Bourgois 1989). As Maher and Hudson (2007) note, new research began to describe women as operating independently from men, taking up leadership positions, and sharing in experiences similar to those of male dealers (e.g., see Baskin, Sommers, and Fagan 1993; Bourgois 1989; Dunlap and Johnson 1996; Mieczkowski 1994).

By contrast, the alternative view is that the gendered organization of drug markets has changed very little (if at all)—but rather that female participation has been and continues to remain small (Maher and Curtis 1992; Maher and Daly 1996; Schwartz and Steffensmeier 2014). Drawing in particular from Steffensmeier's (1983) theoretical framework emphasizing the role

of gender stratification in illegal enterprise as shaping female involvement in more organized and profitable forms of criminal activity, this position questions the emergent view that female involvement in drug sales and the larger drug economy is approaching that of male involvement (either in quantity or in quality). Instead, these scholars contend that women still tend to occupy the lowest ranks in drug-selling networks (Maher and Hudson 2007), continue to be heavily dependent on males for access to drug selling opportunities (Stark 1999), and derive less earnings from drug sales than their male counterparts (Maher and Daly 1994; Steffensmeier and Terry 1986; Steffensmeier and Ulmer 2005).

Despite strong interest in this topic, however, there remain major gaps in the empirical literature and the debate has yet to be resolved. First, prior research on female involvement and the gender gap in involvement in illegal drug markets is largely qualitative. Second, there is a scarcity of research that examines how female involvement in illegal drug sales might vary by a) type of drug (e.g., marijuana vs. cocaine), and b) type of organization (e.g., solo vs. co-offending, all-female vs. mixed-sex groups). Third, there is a lack of research in particular that examines gender differences in *drug sale earnings*; notably, no prior research examines gender differences in drug-sale earnings using *quantitative* data. Fourth, prior studies on the topic are in large part atheoretical and do not provide a basis for hypothesis testing.

In this study, I go beyond prior literature and address these gaps in several important ways. First, I use a unique and rich database to empirically test for gender differences in drug sale participation and earnings (see discussion of NIRBS below). Second, I examine how gender differences in drug sales vary by drug type and by type of organization. Third, I investigate gender differences in illegal drug sale earnings. Fourth, I employ Steffensmeier's (1983) *institutionalized sexism framework* as a foundation for hypothesis testing.

Specifically, my study addresses the following research questions:

- 1) What is the extent of female involvement and the gender gap in illegal drug sales both overall and by type of drug (marijuana, cocaine, crack cocaine, heroin)?
- 2) How does gender affect the organization of drug sales—e.g., solo vs. co-offending, same-sex vs. mixed-sex co-offending groups? How does this vary by type of drug?
- 3) How does gender and/or type of organization affect drug-sale earnings? How does this vary by type of drug?

I address research questions using arrest-incident data from the National Incident-Based Reporting System (NIBRS). The NIBRS database is uniquely suited to address these questions and advance our understanding of gender differences in drug selling crime because it provides information on: a) type of drug for which the offender was arrested in the drug-selling incident; b) the quantity of each drug seized by law enforcement in the incident so that researchers can approximate the dollar value of the drug sale; c) whether the drug-sale incident involved the arrest of a solo offender vs. two or more offenders (i.e., sale involved arrest of co-offenders); and d) the sex/gender of each arrestee. Taken together, the information in NIBRS proffers important details for each drug selling incident which allow researchers to study gender and organizational differences in criminal incidents (see review in Steffensmeier, Harris, and Painter-Davis 2015).

Steffensmeier's (1983) *institutionalized sexism framework* serves as the main theoretical justification for this thesis. The institutionalized sexism framework posits that several interrelated forces coexist to systematically exclude women and marginalize their involvement in profit oriented crime groups. In particular, Steffensmeier proposes that *homosocial reproduction* and *sex-typing* keep women from gaining a foothold in more organized, for-profit crime activity. He also argues that sex-segregation is likely to fluctuate depending on changes in market

condition and the *task environment of crime* or illegal enterprise. Support for the framework has been found across a variety of crime types (e.g., burglary/theft, fencing, robbery, violent street-crime, ganging, racketeering, human trafficking, and white collar crime). But few studies have applied the framework toward a *quantitative assessment* of women's involvement in illegal drug sales and gender differences in drug-sale earnings, in particular.

In sum, the importance of this study is threefold. First, it uses a unique and rich database to quantitatively examine the extent of female involvement in drug selling incidents. Second, it is among the first to examine the extent of female participation by type of drug *and by type of organization* (e.g., solo versus co-offending). Third, it uses a measure of illegal drug sale earnings as a benchmark for considering gender stratification in the drug economy.

In what follows, I provide some background on the gender-crime relationship. I then turn to a brief explanation of the social organization of crime (in general) and the organization of drug sales (in particular) before discussing prior research on women's involvement in illicit enterprise, the theoretical motivation(s) of this study, and shortcomings of prior research. I then present hypotheses, methods, and findings.

BACKGROUND

The Gender-Gap in Crime

An overarching aim of the current thesis is to examine the extent of the gender gap in drug selling crime. Therefore, it is important to first a) establish what the term “gender gap” in crime means; and b) provide some discussion of the gender-crime relationship (in general). I note the following. First, criminologists use the term *gender gap* when referring to differences in offending between men and women (Schwartz and Steffensmeier 2014). Historically, men have been shown to commit more crime than women across nearly every society and subgroup, and

for almost any type of offense (Schwartz and Steffensmeier 2014). This gender difference is one of the most robust findings in criminology and can be found across multiple sources of crime data—including official statistics, self-report surveys, victimization surveys, and case studies (Schwartz and Steffensmeier 2014).

That said, the size of the gender gap in crime varies depending on the seriousness of the offense and/or its potential for profit. Specifically, gender differences tend to be the largest for more serious (i.e., violent) and lucrative offenses and smallest for minor offenses (Steffensmeier and Allan 1996; Schwartz and Steffensmeier 2014). In the United States in 2010, for example, men accounted for approximately 89 percent of arrests for murder, 88 percent for robbery, and 85 percent for burglary (U.S. Department of Justice 2012).

On the other hand, the gender gap is narrower for less serious forms of offending. As Schwartz and Steffensmeier (2014) note

...nearly as many women as men drink alcohol, experiment with marijuana, and take prescription drugs in ways not prescribed. Further, almost as many girls as boys shoplift each year, and data indicate that females embezzle from work or other organizations nearly as often as men do. Women engage in minor violence almost as often as men, particularly when it comes to violence that is less injurious or occurs in more private settings (231).

Schwartz and Steffensmeier (2014) also point out that most offending (for both sexes) is minor in form (e.g., DUI, larceny-theft, drug offenses, minor assaults, disorderly conduct, harassment, criminal mischief), and that male rates of offending (for most offenses) are almost always higher than female rates. According to annual arrest figures, prostitution is the only offense “...for which women outnumber men” (Schwartz and Steffensmeier 2014:232).

The Social Organization of Criminal Enterprise

A feature of the gender-crime relationship that is central to the current thesis is the large gender gap in more organized, for-profit criminal enterprise (see review in Steffensmeier 1983; Steffensmeier and Ulmer 2005). In what follows, I first provide a brief discussion of the social organization of crime (as a concept) and the social organization of drug distribution groups in particular. I then discuss relevant literature on women's involvement in the illegal drug economy.

The organization of illegal enterprise can be conceptualized as a series of ideal types that vary along a continuum of sophistication (Cressey 1972; Best and Luckenbill 1980; Steffensmeier 1983). This continuum ranges from solo offenders and small *workgroups* of criminal actors to relatively sophisticated criminal organizations or *syndicates* (Steffensmeier 1983). Generally speaking, crime organizations that fall on the “higher” end of the continuum are more permanent, have many members, a division of labor, stratification, and enforceable rules or codes of conduct. They also tend to be deliberate in their planning and striving toward goals (Best and Luckenbill 1980). As some prominent criminologists point out (Cressey 1972; Best and Luckenbill 1980; Steffensmeier 1983), these features play an important role in making crime organizations *more efficient*—and the greater an organization's efficiency, the greater it's potential to generate larger profits.

On the opposite or “lower” end of the continuum are solo offenders, small co-offending groups, and less sophisticated crime organizations. These organizations lack many of the features exhibited by more sophisticated groups (e.g., they are typically non-permanent and lack a hierarchy and division of labor). As such, less-sophisticated criminal enterprises are thought to be *less efficient* and therefore less profitable (Steffensmeier 1983).

The Social Organization of Drug Selling

Prior research indicates that there are several organizational models (i.e., types) of drug selling. These types range from independent freelance distributors to syndicated crime organizations.

Curtis and Wendel (2000) propose that there are three ideal types of drug selling organization: 1) *freelance distributors*; 2) *socially bonded businesses*; and 3) *corporate-style businesses*. Freelance distributors are the least sophisticated (i.e., least efficient) organization type. They typically operate independently and lack a formal hierarchy and division of labor (Curtis and Wendel 2000). Although alliances sometimes form between freelancers, ties tend to be weak and rather short-lived. Freelance distributing is common in street-level drug markets, where competition from other drug dealers and risks of violence and arrest are high. According to Curtis and Wendel, freelancers' drug usage (and dependence) plays an important role in limiting their opportunities in becoming more organized and successful (i.e., profitable) entrepreneurs.

The second most sophisticated organization type is the socially bonded business. As Curtis and Wendel (2000) explain,

...organizations of this type are usually based upon extra-economic social ties – typically kinship, race, ethnicity, nationality, and/or neighborhood. Those who make up the group share some common feature (or set of features), beyond simply making money, that binds members of the group together (2000: 133).

Close bonds help to ensure high levels of trust and cohesion among group members, giving them a competitive advantage over others (Curtis and Wendel 2000). That said, the structure of socially bonded businesses varies considerably. Some groups exhibit a clearly defined hierarchy

and division of labor (often by gender and age) while others exhibit more of an egalitarian structure (Curtis and Wendel 2000).

Corporate-style distributors are the third most sophisticated organization type. Much like legitimate corporations, these groups are heavily stratified and have a clear division of labor (Curtis and Wendel 2000). At the highest level are business owners, followed by top and middle levels of management and “foot soldiers.” Membership in corporate-style networks is larger than that for socially bonded businesses. Members tend to be similar in gender, race, ethnicity, and neighborhood affiliation (Curtis and Wendel 2000). Distribution operations also tend to be larger in size and often extend well beyond the neighborhood level (e.g., corporate distributorships can cross state or international boundaries). Finally, because corporations are at such high risk from law enforcement (e.g., especially the Racketeer Influenced and Corrupt Organizations (RICO) statute) (Curtis and Wendel 2000) and other crime organizations, high-levels of trust among members is required and members are expected to strictly adhere to rules.

Denton and O’Malley’s (1999) description of drug selling organizations in Melbourne, Australia closely resembles Curtis and Wendel’s (2000) description of socially bonded businesses. Consistent with other research (Dobinson and Poletti 1989; Manderson 1993), they find that drug markets are mostly populated with small, competitive enterprises which are owned and operated by independent entrepreneurs (i.e., drug market as a cottage industry). They, too describe kinship and close personal ties as key features of a successful organizations. Similarly, Eck and Gersh (2000) suggest that the drug economy is structured more like a cottage industry than a monopoly or oligopoly.

Others note the prominence of social network sales (Griffin and Rodriguez 2005; Rodriguez and Griffin 2011; Davis, Johnson, Randolph, Liberty 2005). According to Davis et al.

(2005), social network sales “...occur when distributors know their buyers” (117). This differs from the “business-model” (Davis et al. 2005) in which buyers are unknown to sellers. Because both parties know one another in these types of transactions, this is considered the “safest” method of drug selling, or the one least likely to result in violence or arrest (Eck 1995).

Finally, it is important to note that the organization of drug selling will vary based on a variety of factors, including: a) type of drug being sold; b) the level at which the drugs are being sold (e.g., retail, wholesale); c) when the drug was “introduced” to the market; d) socio-structural factors (e.g., geographic location); and e) clientele or customer base (e.g., addicts and recreational users). For example, the structure of upper-level (i.e., wholesale) differs from street and retail-level dealing (Adler 1985). Also, the sale of “party drugs” (at the retail level) (e.g., MDMA; “molly”) is more likely to happen at the social network level than in business-like transactions (Lenton and Davidson 1999).

Gender, the Social Organization of Criminal Enterprise, and Institutionalized Sexism

Now that I have provided some background on the organization of criminal enterprise and the organization of drug dealing, I turn next to discuss *women’s involvement* in illegal enterprise and *institutionalized sexism* in the underworld.

Steffensmeier (1983, 1986) was the first to suggest that women’s lack of access to crime opportunity is a function of *institutionalized sexism* in the underworld. His *institutionalized sexism framework* posits that three key elements—*sex typing*, *the task environment of crime*, and *homosocial reproduction*—work together to a) exclude from, or limit women’s access to crime networks organized for illicit gain; b) relegate women toward lower status, gendered positions or roles; and c) diminish women’s illegal earnings.

First, *sex-typing* speaks to the tendency of males to perceive females as lacking the qualities or *criminal capital* necessary to make an effective crime partner. Women are seen as too weak (both physically and emotionally), unreliable, unstable and unskilled to conduct business in what is considered a coarse, violent, and physically demanding task environment of crime (Steffensmeier 1983; Steffensmeier and Ulmer 2005).¹

The second element is the *dangerous task environment of crime*. In contrast to conventional employment, the task environment of illicit enterprise is both violent and physically demanding. Underworld figures are always in danger of being discovered by authorities and other criminals (Steffensmeier 1983). To mitigate these threats and to help ensure secrecy, order, and conformity among group members, underworld figures employ threats of violence and physical harm (Steffensmeier 1983).² Potential recruits are thus expected to possess certain *masculine* attributes considered compatible with this environment—e.g., qualities that can make for a quick reaction if a drug deal or hustling scheme goes wrong (Steffensmeier and Ulmer 2005). Physical strength, speed, prowess, psychological toughness, and stoicism are examples of highly valued attributes (Steffensmeier and Terry 1986).

Third, *homosocial reproduction* in the underworld speaks to the tendency for males to “reproduce themselves” when selecting or recruiting others with whom to co-offend. Because males dominate the underworld and perceive the task environment of crime to be dangerous, they generally prefer to “do business” with those they consider trustworthy, reliable, and

¹ Distrust for female accomplices arises in part from the view that women are loyal, foremost, to their children. Men believe that women are likely turn against crime partners and provide information to police if threatened with the possibility of being separated from their families. There is also the fear that women will inform on a romantic partner who is also an accomplice if she believes or learns he is being unfaithful to her (Steffensmeier et al. 2005; Steffensmeier et al. 1986).

² As Steffensmeier (1983) explains, this threat of violence is more so a threat of *contingent violence*, which “...implies that violence is threatened as a consequence of specific actions, designed as an incentive, or as a symbolic rather than an expressive act” (1015).

physically capable (i.e., qualities characterized as *male* and qualities they believe themselves to possess). This is especially important when selecting others for leadership and skilled positions within crime groups (Steffensmeier 1983).

However, despite men's unwillingness to "conduct business" with women, most male offenders admit to committing crime alongside them at least at some point in their criminal careers (and at times even frequently) (Steffensmeier and Ulmer 2005). According to Steffensmeier (1983), men make two exceptions when it comes to working with female accomplices: a) when a woman is romantically involved with a male offender; and b) when women are perceived as being useful in the commission of a crime. To the first point, male offenders tend to view "their woman" as personally loyal and trustworthy, and thus unlikely to jeopardize the relationship with "their man" (Steffensmeier 1983). To the second point, the *utility* of a female accomplice depends on the extent to which she can assist in committing a crime "...more safely or profitably" (Steffensmeier and Ulmer 2005:221). For example, women might be involved in certain support roles such as a "cover" or "sexual distraction," "...especially in situations where women create less suspicion, have access to helpful information, or attract a more willing or less fearful clientele" (Steffensmeier and Ulmer 2005:223). Women also might be recruited to participate in crime operations based on an immediate or situational basis. Such would be the case if an opportunity for a certain crime operation (e.g., drug deal, theft, or hustle) came along and no other male accomplices were available.

Finally, an important feature of the theory that often goes overlooked is the proposition that sex-segregation fluctuates depending on: a) changes in market condition; and b) the task environment of crime or illegal enterprise. First, Steffensmeier (1983) posits that broad changes

in society—e.g., changes in currency, transportation, or demand for illicit products or services—are likely to alter the nature of illicit enterprise and in some cases “...increase the utility of women for establishing successful crime organizations” (1983:1025). For example, the introduction of crack-cocaine to North American streets led to a significant shift in the nature of the drug economy. Demand for crack increased rapidly among mostly poor, inner-city residents. Because so many new drug users were female, it is plausible that women were (and perhaps still are) more useful in its sale.

Second, Steffensmeier (1983) predicts that sex-segregation will vary across a spectrum of crime activities and the task environment of crime. In particular, sex-segregation should be greater in crime groups where: 1) the environment is uncertain; 2) the *modus operandi* of the enterprise requires force or fear; 3) motivations are rational or instrumental; 4) the complexity of the crime is higher; and 5) the degree of professionalism is greater (Steffensmeier 1983).

Support for the institutionalized sexism framework has been found across a variety of crime activities, including burglary/theft (Steffensmeier and Terry 1986; Resindiz 2001); fencing (Steffensmeier and Ulmer 2005); robbery (Miller 1998); violent street crime (Chin 1996; Miller 2001; Schwartz, Conover-Williams, 2015); ganging (Bowker, Gross, and Klien 1980); racketeering (Commonwealth of Pennsylvania 1990); gambling (Steffensmeier and Ulmer 2006); syndicated crime (Siebert 1996); human smuggling (Zhang, Chin, and Miller 2007); drug selling (Maher and Daly 1996; Rodriguez and Griffin 2005); and white collar crime (Steffensmeier, Schwartz, and Roche 2013). This research demonstrates how sex-typing, the task environment of crime, and homosocial reproduction work in order to exclude women from certain for-profit crime networks.

Based on 49 interviews with incarcerated male thieves, Steffensmeier and Terry (1986) find that males perceive or sex-type females as lacking in the qualities necessary to be good burglars. Men stereotype women as untrustworthy, weak, emotionally unstable, and lacking in the “heart” or courage required for the successful commission of risky burglaries and thefts. Male opinions are found to be similar in other work on more organized, professional burglary and fencing rings (Steffensmeier 1986; Steffensmeier and Ulmer 2005).

Most crucial for the purpose of this thesis, perhaps, are Steffensmeier (1983; 1986) and Steffensmeier and Terry’s (1986) conclusions that a) men perceive women as less oriented toward acquiring enhanced earnings from illegal activities; and b) male offenders who co-offend with women do not share profits equally with them but instead pocket a large portion of the illegal earnings. To the first point, men tend to view female accomplices as being more oriented toward *helping* or *assisting* romantic partners in the commission of a crime rather than being motivated to participate strictly for financial purposes. To the latter, research indicates that the “take” or “share” of the profits is almost never evenly distributed between males and females (net of their low-level positions). Female accomplices nearly always receive less financial reward than males, and will often have their shares included or “lumped-in” with their romantic partner’s cut (Steffensmeier and Ulmer 2005).

In line with Steffensmeier’s (1983) assertions, research indicates that when women participate, they do so in cases where they are useful in the commission of a crime, when they have a close personal relationship to a male accomplice, and/or they are “situationally available” (Steffensmeier 1986; Steffensmeier and Ulmer 2005). For example, Miller (1998) finds that when men and women participate in street robbery together, female accomplices are often used as a way of distracting unsuspecting male victims (e.g., sexual distractions). Zhang et al. (2007)

also find women to play gendered roles within human smuggling enterprise. Main findings from 129 interviews of smugglers involved in China-to-US smuggling operations reveal that even though human smuggling remains a male-dominated activity, women have secured key roles as caregivers to Chinese smuggled migrants and to children and women migrants in particular.

Regardless of the crime activity, studies generally find women to be relegated toward supportive and less lucrative roles in illegal networks. For example, in the case of professional auto-theft networks, Resendiz (2001) reports that women almost never take up specialized positions (e.g., those who “break into” and start cars), but rather perform as “drop-off” drivers and the drivers of stolen vehicles. Steffensmeier and Terry (1986) and Steffensmeier and Ulmer (2005) note similar findings in their research on burglary/fencing crews—in which women predominately assume positions as drivers, look-outs, merchandise holders, and gun-carriers.

Gender segregation is also well documented in the co-offending literature. Since the late 1980s, scholars have consistently reported gender homophily among co-offending groups (Reiss 1988; Reiss and Farrington 1991; Daly 2005; Malm, Bichler and Nash 2011; Warr 2002; van Mastrigt and Carrington 2014; Carrington 2015b; but see van Mastrigt and Farrington 2011; McGloin and Nguyen 2012). Specifically, males are shown to co-offend with other males far more frequently than with females. Females, however, rarely co-offend with other females, but instead are much more likely to commit crime alongside men (i.e., heterophily) (Carrington 2002; Sarnecki 2001; Warr 1996; van Mastrigt and Carrington 2014). As Carrington (2015) points out, gender heterophily likely plays an important role in introducing (or advancing)

women's criminal careers (i.e., via tutelage, recruitment, or mentoring), even though others have questioned this assumption (see especially McGloin and Nguyen 2012).³

Women's Involvement in the Illicit Drug Economy

Next, I turn to a discussion of the literature that is centered on the issue of women's involvement in the illicit drug economy. In particular, I focus on two conflicting perspectives regarding the extent of female involvement and the gender gap in drug sales and drug sale earnings. The one position is that women's participation in drug selling is similar to that of men's, and the gap in involvement in drug sales and level of illegal earnings has declined considerably in recent years because of changing gender roles toward greater female equality and changes in the drug market that favor greater female involvement. This perspective emerged shortly after the introduction of crack-cocaine in the 1980's (see below), and differs from the perspective traditionally held by criminologists. The contrasting, or "traditional view," suggests that gender differences in involvement in drug sales and drug sale earnings have been and continue to remain quite large. Scholars who share this view portray drug markets as heavily sex-segregated and sex-stratified, with women much less likely to be involved in drug sales and as occupying the lowest-ranking positions in drug distribution networks (e.g., steerers, look-outs, drug-holders). In the following paragraphs, I discuss these conflicting perspectives in detail before highlighting the existing gaps in the literature.

³ Using data on 1,399 inmates in the Colorado Department of Corrections, McGloin and Nguyen (2012) sought to identify the instigating factors of co-offending. In contrast to prior co-offending literature (e.g., Steffensmeier 1983, Alarid et al. 1996), they do not find support for the notion that female offenders are drawn into crime by males. Rather, they find females to be just as likely to instigate co-offending as males.

Gender Gap in Drug Sales & Drug Sale Earnings is Small

The perspective that the gender gap in drug selling (and drug sale earnings) is fairly small emerged shortly after the introduction of crack to North American drug markets in the 1980s. Before the advent of crack, researchers portrayed drug markets as heavily sex-segregated and hierarchical (Rosenbaum 1981; Adler 1985). Hardly ever were women described as taking up important or long-term drug selling roles in distribution networks. Instead, women (especially in street-level networks) were commonly depicted as being reliant on romantic partners and combining a number of street hustling activities (e.g., prostitution, shoplifting, short-term drug dealing) to support their drug usage and/or take care of their dependent children or families (Rosenbaum 1981; Valentine 1978).

However, following the introduction of crack and the subsequent expansion of the drug economy, some scholars hypothesized that male dominated distribution networks had weakened, ultimately increasing drug selling opportunities for women (Baskin, Sommers, and Fagan 1993; Fagan 1994; Inciardi, Lockwood, and Pottieger 1993; Mieczkowski 1994). According to Fagan (1994), three key factors helped bring about change to the social/gendered organization of drug sales: 1) socio-structural and economic change in inner-cities;⁴ 2) the increased availability of low-cost, easy to use (i.e., “smokable”), and highly addictive cocaine products; and 3) the fact that existing drug-distribution networks could not keep up with increased demand.

Consequently, Fagan (and others) suggested that women had begun taking advantage of these

⁴ Fagan (1994) argues that the near elimination of the manufacturing industry in large metropolitan areas during the period from 1960 to 1980 led to significant change in the sociodemographic make-up of inner-city residents (e.g., younger residents, higher proportion of females to males, and a greater number of female headed households). He posits that this change led to the weakened influence of “old-heads” in communities, making it easier/sociably acceptable for young people to take advantage of new-found illegitimate opportunity (i.e., drug selling).

newly-available opportunities, thereby shrinking the gender gap in both drug sale participation and drug sale earnings.

As Maher and Hudson (2007) note, beginning in the 1990s some analysts began to project images of women as operating independently from men, taking up leadership positions, and sharing in experiences similar to those of male dealers (Baskin, Sommers and Fagan 1993; Dunlap and Johnson 1996; Mieczkowski 1994; Morgan and Joe 1996; Waldorf and Murphy 1991). For example, using in-depth interviews of 311 females from two New York City neighborhoods, Fagan (1994) concludes that women have made significant advances in the drug economy. Specifically, he writes

While women were consigned secondary, gender-specific roles in these businesses in the past, the size and seemingly frantic activity of the current drug markets has made possible for women new ways to participate in street networks. Their involvement in drug selling at high income levels defies the gendered norms and roles of the past, where drug dealing was an incidental income source often mediated by domestic partnerships. If the highest status in street networks is accorded to people who sell cocaine or heroin (Agar 1973; Preble and Casey 1969), the expansion of drug markets in the cocaine economy has provided new ways for women to escape their limited roles, statuses and incomes in previous eras (Fagan 1994:210).

That said, Fagan is careful to note that some features of the drug economy remain similar to those in the past (e.g., women still tend to be positioned in lower status, non-ownership roles, and are typically involved in a diverse set of income generating crimes). Nevertheless, he firmly argues that the expansion of the drug industry has indeed opened new and more lucrative opportunities for women—and that women are (in fact) taking advantage of these opportunities.

Mieczkowski's (1994) ethnographic study of 23 female crack and heroin dealers in Detroit provides yet another example of female advancement in the illegal drug industry. Key findings from this study suggest that a) women operate at many levels in drug distribution

networks, ranging from low-level errand runners to top-level “executives” or leaders; and b) female drug dealers encounter many of the same problems as their male counterparts (e.g., threats, violence). Morgan and Joe (1996) note similar findings. Examining the roles of 141 women in illicit methamphetamine markets of three U.S. cities (i.e., San Francisco, San Diego, and Honolulu), their findings suggest that women participate in a variety of different roles, including low-level dealers, manufacturers, importers, and even “owners” of illegal drug businesses. Although most women had been introduced to the illegal drug industry through boyfriends or husbands, some had broken away from these male sponsors and were successfully operating as independent entrepreneurs (Morgan and Joe 1996). Dunlap and Johnson’s (1996) ethnographic study of Rachel, an African-American women living in Harlem, provides one such example of a successful female “business owner.” Operating primarily from her home, Rachel orchestrated a lucrative crack-selling operation over the course of several years.

To summarize, a number of criminologists posit that women’s participation in drug selling has increased since the 1980s (Baskin, Sommers and Fagan 1993; Dunlap and Johnson 1996; Mieczkowski 1994; Morgan and Joe 1996; Waldorf and Murphy 1991), while others provide reports of women experiencing success in managing their own low to mid-level drug selling operations (Mieczkowski 1994; Morgan and Joe 1996). Taken together, this research suggests that women’s participation in drug selling is fairly high, and that the gender gap in both drug sales and drug sale earnings is somewhat smaller.

Gender Gap in Drug Sales & Drug Sale Earnings is Large

The alternative view is that the gendered organization of the drug economy has not changed very much (if at all)—but rather that female participation has been small and continues to remain small (Maher 1992; Maher and Daly 1996; Maher and Curtis 2007; Steffensmeier and

Ulmer 2005). Scholars who share this view argue that drug markets are still heavily sex-segregated and hierarchical, that women have not experienced any significant increase in autonomy in the illegal market since the advent of crack, and that no evidence exists showing that women are catching up with men in their drug earnings.

Maher and Curtis (1992) were among the first to question the “new opportunities thesis” (Maher and Hudson 2007). Drawing from the accounts of 211 female drug users (i.e., heroin and crack-cocaine) living in New York City between 1988 and 1992, they asked whether the expansion of the drug economy had actually led to the “emancipation of females” or “...whether they were simply more visible—crack having pushed many poor inner-city women out of their homes and onto the streets” (Maher and Curtis 2007:806; Maher 1992; Maher and Curtis 1992). Their research indicates that women’s positions in the drug economy had not changed—but that drug distribution networks were still overwhelmingly dominated by men, and that women continued to be marginalized toward less lucrative peripheral roles and the sex trade (Maher 1992; Maher and Curtis 1992).

Maher and Daly (1996) reach a similar conclusion in a more direct examination of women’s “progress” in the drug economy. Drawing from Steffensmeier’s earlier work, most notable is their assertion that

Underworld institutionalized sexism was the most powerful element shaping the Bushwick women’s experiences in the drug economy; it inhibited their access to drug business work roles and effectively foreclosed their ability to participate as higher-level distributors. For that most crucial element, we find no change from previous decades (Maher and Daly 1996:484).

They suggest that others (e.g., Fagan) might be correcting in claiming that the introduction of crack had increased the *possibilities* for women in drug markets, but made a mistake in arguing that a sizable population of women had actually taken advantage of these possibilities.

More recently, Grundetjern's (2015) study of 34 female drug sellers in the "hard drug market" in Norway notes similar findings. Although some women had been successful in carving out niches for themselves as female dealers, women did not have a sizable presence in the market. Instead, Grundetjern describes markets as still heavily male dominated and hierarchical.

Thus, considerable uncertainty regarding the extent of women's participation in drug selling remains. In a recent attempt to illuminate the issue, Maher and Hudson (2007) conducted a review of 15 qualitative studies focusing on women's roles in the drug economy. Findings from their "qualitative metasynthesis" suggest that the drug economy continues to be heavily sex-stratified, with women occupying the lowest-ranking positions. Specifically, they identify six key themes present throughout the literature: 1) the drug economy is gender-stratified and hierarchical; 2) female roles in the drug economy have a sexualized quality; 3) women primarily access and sustain roles in the drug economy through links with men; 4) family/kinship ties are important resources for women dealers, and successful female dealers appear to have increased social capital; 5) "feminine" attributes and institutional sexism can work to the advantage of women; 6) some women are diversifiers and able to juggle different roles both within the drug economy and in relation to dealing and domestic responsibilities.

Thus, despite considerable interest in this topic, the debate has yet to be resolved and several gaps remain in the literature. First, research is mostly qualitative. Indeed, there exists some quantitative research on women's involvement in drug markets, but these studies mostly

focus on the differences in *purchasing behavior* between men and women, not drug sales (Rodriguez and Griffin 2005; Griffin and Rodriguez 2011).

A second shortcoming of prior literature is the scarcity or lack of research that examines how female involvement in drug selling might vary by drug type and type of organization. Most studies focus exclusively on crack markets and pay little attention to the way in which drug sales are organized. Third, there is little to no research that specifically examines the gender gap in drug sale earnings. Finally, prior research on the topic is largely atheoretical and there is very little in the way of hypothesis testing.

Expectations

Drawing from prior theorizing about the nature of gender stratification in illegal markets (e.g., Steffensmeier 1983) and from empirical research (mostly qualitative) on female participation in illegal enterprise and drug sales in particular, my thesis goes considerably beyond prior research in the area and seeks to test the following hypotheses:

H1) Drug selling activity is heavily segregated by gender (i.e., with male involvement and illegal earnings far greater than that for females).

H2) Although males are likely to dominate drug selling activity, females will have higher levels of participation in sales of crack rather than other drugs such as marijuana or cocaine.

H3) Solo-male offenders will have greater drug sale earnings than solo-female offenders.

H4) All-male co-offending groups will have greater drug sale earnings than all-female and mixed-gender groups.

METHODS

Data Description

To test these hypotheses, I use data on arrest incidents involving drug sales from the National Incident-Based Reporting System (NIBRS). NIBRS is an extension of the FBI's Uniform Crime Reporting Program (UCR). Established in 1929, the UCR was the first program in the U.S. designed to provide reliable and consistent (i.e., uniform) national crime statistics. In years since, it has become one of the most widely used and trusted measures of crime (Steffensmeier, Harris, and Painter-Davis 2015). Among the UCR's advantages is its long-standing national coverage on arrests and offenses known to police. These data have allowed researchers to study crime levels and trends across 29 offenses (i.e. eight Part I offenses or "serious" crimes; and 21 Part II offenses) for the U.S. (as a whole) as well as for different subsets of the population (e.g., males, females, whites, blacks, etc.). The program's extensive geographic coverage has also allowed for the study of crime trends across various spatial units (e.g., regions; states; rural vs. urban census places; counties; cities; towns; etc.) (Steffensmeier et al. 2015), ultimately helping to inform crime policy and legislation.

Despite these benefits, the UCR has several drawbacks—many of which the NIBRS is designed to address. Foremost are its broad offense categories. Because the UCR is modeled to uniformly cover a range of offenses across thousands of jurisdictions, crimes under specific offense categories tend to vary in type, nature, and degree of seriousness (Steffensmeier et al. 2015). Offenses classified under "fraud," for instance, include minor offenses (e.g. writing bad checks, minor forms of tax fraud) as well as more serious crimes (e.g., insider trading, various forms of accounting fraud, Ponzi schemes, etc.). Categories too broad in scope prevent researchers from understanding crime patterns and trends of more specific crime types.

Another limitation of the UCR is the lack of information that goes beyond an arrest or police contact to also include information about the crime incident. With the exception of arrestee demographic characteristics (e.g., gender, age, race), almost no other details surrounding a crime event (arrest or offense) are recorded (e.g., offender's relationship to victim; location where drugs were sold or purchased, etc.). This information is crucial for understanding key correlates of crime. A loss of detail also comes as a cost of the UCR's hierarchy rule, which stipulates that only the most serious Part I offense will be recorded in incidents where more than one occurs (U.S. Department of Justice 2004)⁵.

Seeking a more detailed system of crime reporting, the FBI implemented the NIBRS Program in 1991 as a voluntary supplement to the UCR. NIBRS provides a considerable amount of detail for each criminal offense, including: 1) incident date, time, and location type; 2) demographic characteristics of victims and offenders; 3) type of relationship between victim and offender; and 4) information regarding type and value of property lost, stolen, or seized (NACJD 2010). Another key benefit of the NIBRS program is that it helps to overcome the problem of broad offense categories by providing information on types of crime within a broad category (e.g., for larceny provides arrest and incident information for shoplifting, theft from motor vehicles, bicycle theft, etc.) (Steffensmeier et al. 2015). Furthermore, because NIBRS does not follow a hierarchy rule, multiple "serious" offenses are recorded per incident.

Of particular value to the current study is NIBRS data on drugs/narcotics offenses. No other publicly-available data on drug offending are as detailed. First, a variety of drug types are recorded (i.e., 16 distinct types). Second, varied types or forms of involvement in drug crimes are covered, including the unlawful cultivation, manufacture, distribution/sale, purchase, use,

⁵ Note that in such cases, offenders will be charged with multiple crimes but only the most serious will be reported.

possession, transportation, and importation. Third, for each drug arrest-incident police are to record the quantity (i.e., weight) of seized drugs, which then allows researchers to calculate their value. Fourth, officials can report up to three drug types per offender if more than one drug type is seized upon arrest. For these reasons, NIBRS drug data are far superior to other publicly available drug crime data.

The data collection and publication process of the NIBRS closely mirrors that of the UCR. Participating law enforcement agencies compile and register monthly statistics directly with FBI's UCR Program or through a state UCR Program. Data are then inspected by administrators to ensure local agencies are compliant with collection rules and guidelines (U.S. Department of Justice 2004). Subsequently, the FBI publishes crime statistics in the annual report titled *NIBRS* (U.S. Department of Justice 2016).

Although the benefits of the NIBRS are considerable, shortcomings of the data set exist. First, its population coverage is not as extensive as the UCR. According to the Bureau of Justice Statistics (BJS), law enforcement agencies contributing to NIBRS in 2012 "...served approximately 30 percent of the U.S. population and accounted for 28 percent of all crime reported to the UCR Program" (Bureau of Justice Statistics 2012). By comparison, the UCR covered around 80 percent of the entire U.S. population in 2012. Second, the police agencies of many of the country's large metropolitan areas do not report to the NIBRS (Tillyer and Tillyer 2015). Agency transitions are thought to be slow due in part to a lack of resources required to implement a more rigorous system of crime reporting (U.S. Department of Justice 2016). Despite these coverage issues and other problems inherent to official crime statistics (e.g., the dark-figure of crime; arrest bias; shifts in enforcement policies), NIBRS remains one of the best

sources of data on drug crimes in the U.S. and it is particularly well-suited to address research questions investigated in the current study.

Study Population

The study population for my thesis is derived from NIBRS incident level extract files for the years 2010-2012.⁶ Extract files differ from that of other NIBRS files in that they contain one record per crime incident.⁷ Nested within each record are administrative, arrestee, property, offense, offender, and victim variables. Extract files also differ from larger NIBRS segments (i.e., administrative; arrest; property; offense; offender; victim) in the maximum number of records they hold. Whereas the program "...records up to 10 offenses, 999 victims, 99 offenders, and 99 arrestees" (IPCSR 2010) per incident, extract files only contain up to three records per crime incident. So, if ten individuals were arrested in the same crime, the extract file would indicate ten arrests but include information only for the first three arrestees. Because approximately 99 percent crime incidents have three or fewer arrestees (ISPSR 2010), this restriction is unlikely to bias results.

I restrict my study population of drug incidents as follows. First, I limit the population to incidents involving an arrest. Second, I limit the data to incidents with three arrestees or less in order to ensure that only incidents with information on all offenders are included. Because 98.7 percent of incidents having at least one drug violation include three arrestees or less, this restriction is unlikely to affect analyses.

⁶ Files were downloaded from the Inter-university Consortium for Political and Social Research (ICPSR).

⁷ As opposed to multiple crime records per crime incident across multiple NIBRS segments (i.e. administrative; arrestee; property; offender; offense files)).

Third, I limit the study population to include only incidents where at least one arrestee was charged with a drug/narcotics selling violation.⁸ This restriction was made after careful consideration. Unlike the UCR, NIBRS does not follow a hierarchy rule. Therefore, there is no sure way of knowing which offense within an arrest incident is “most important” (i.e., if there are multiple offenses per one incident). However, within the current study it is reasonable to assume that drug selling is indeed the most serious offense—as 97 percent of arrest incidents involve drug/narcotics violations *only*. Moreover, because only 0.11 percent of arrest incidents represent a pair of arrestees involved in both a selling and a buying transaction, I am confident that the arrest of more than one individual represents an actual drug *selling* co-offense rather than the arrest of a buyer and a seller.

Fourth, I limit the study population to incidents where illicit substances were seized at time of arrest. This is particularly important because law enforcement officials only record drug quantity if the substance was taken into custody.

Fifth, I include incidents involving only *one drug type* in the analysis: a) marijuana; b) cocaine; c) crack-cocaine; or d) heroin. This restriction allows me to test for gender differences in drug selling by drug type. Also, by restricting the study population to incidents involving these particular drugs, it is possible to calculate the average price per gram for each substance. Finally, because missing data on variables did not exceed 4.2 percent, these data were handled through list-wise deletion. The final population for my analysis includes a total of 56,267 arrest incidents involving drug sales.

⁸ Note that only one arrest offense per arrestee is recorded in the extract files.

For reasons of parsimony, I hereafter use the terms “offenses,” and “sales” interchangeably when referring to arrest incidents involving drug sales. I also use the terms “offenders” and “arrestees” when referring to individuals arrested in incidents involving drug sales.

Measures

Dependent Variables

The dependent variables are measures of illicit drug sale earnings: 1) *marijuana earnings*; 2) *cocaine earnings*; 3) *crack earnings*; 4) *heroin earnings*; and 5) *aggregate drug earnings*.⁹ Each is a continuous measure of the dollar value of the illicit drug/narcotic seized by police at time of arrest. In other words, outcomes are an *estimation of offenders’ illegal earnings had the drugs been sold prior to being seized by authorities*. Although this is not a “true” measure of illegal earnings but instead is likely a robust approximation, I hereafter refer to these measures as *earnings from drug sales* in order to reduce clutter. Because these measures were not originally included in the NIBRS data, I describe the process by which they were created next.

The first four measures of earnings (i.e., marijuana earnings, cocaine earnings, crack earnings, and heroin earnings) were constructed in several stages. First, I calculated the average price per pure gram for each substance from 2010-2012 using drug prices from the Office of National Drug Control Policy’s (ONDCP) 2014 National Drug Control Strategy Report. Because “retail” prices (i.e., purchases of 10 grams or less) are lower than “wholesale” prices (i.e., purchases of more than 10 grams), two averages were calculated per substance. Next, drug/narcotic quantities originally measured in kilograms, pounds, and ounces were converted

⁹ Note the aggregate drug value is the summed measure of marijuana, cocaine, crack, and heroin.

into grams.¹⁰ A single quantity variable for each drug type (measured in grams) was then created. To account for drug quantities less than one gram on each of the four newly created variables (classified as zero values on this variable), I replaced these values with the average quantity of drugs falling below the one gram threshold.¹¹ Drug quantities were then multiplied by the appropriate price per gram (i.e., 10 grams or less or more than 10 grams) to prevent inflating the values of larger drug quantities.

To summarize, *marijuana earnings*, *cocaine earnings*, *crack earnings*, and *heroin earnings* are estimates of the dollar value of illegal drugs/narcotics seized at the time of arrest—adjusted to account for variation in drug price. The last dependent variable, *aggregate drug earnings*, is a summed or aggregate measure of the four illegal earnings variables.

Before moving to a description of the independent variable measures, I note three important points regarding the measures of drug earnings. First, it is possible that more than one drug seizure (of the same drug type) exists per one incident. For parsimony and manageability, I *only* use the first recorded a) drug type and b) quantity measurement. This is unlikely to have an effect on findings, as very few incidents are documented as having more than one arrestee possessing the same type of drug. Second, in multivariate analyses each dependent variable (except the aggregate drug measure) is truncated at the 99th percentile to minimize the impact of extreme illegal earnings values for some drug sale incidents. Influential observations were also removed after being identified through the Cook's D procedure in Stata 14. Because of high

¹⁰Police have an option of recording drug/narcotic quantities using ten measurement types: grams; kilograms; ounces; pounds; milliliters; liters; fluid ounces; gallons; dosage units/items; and number of plants. However, because kilograms, ounces, and pounds are the only types of measurement that could easily be converted into grams, all incidents with other measurement types (e.g. milliliters; liters; fluid ounces; gallons; dosage units/items; and number of plants) are excluded from analyses.

¹¹ These quantities are as follows: a) .28 grams for marijuana; b) .41 grams for cocaine; c) .37 grams for crack; and d) .3 grams for heroin.

skewness to the right (i.e., most drug transactions yielded small earnings), the earnings distributions were logged transformed.

Table 1. Description of Variables

	Mean / %	Median	S.D.	Min.	Max.	N
Overall drug value (\$)	4,980	196.3	29,207	4.4	311,310	56,267
Marijuana value (\$)	7,214	230.6	37,105	4.4	311,310	33,102
Cocaine value (\$)	3,680	530.8	15,730	72.3	133,002	5,757
Crack-Cocaine value (\$)	506	196.3	881	73	5,977	13,180
Heroin value (\$)	3,205	531.3	11,286	161.9	102,918	4,228
Solo-male	0.7	1.0	0.45	0	1	56,267
Solo-female	0.1	0	0.26	0	1	56,267
All-male co-offending	0.1	0	0.32	0	1	56,267
All-female co-offending	0.0	0	0.07	0	1	56,267
Mixed-gender co-offending	0.1	0	0.26	0	1	56,267
Black	0.5	1.0	0.50	0	1	56,267
White	0.4	0	0.49	0	1	56,267
Other	0.0	0	0.09	0	1	56,267
Mixed	0.0	0	0.19	0	1	56,267
Age	28.6	26	10.06	11.0	99	56,267
Location type (1=outdoor)	0.6	1	0.50	0	1	56,267
New England	0.1	0	0.30	0	1	56,267
East North Central	0.2	0	0.40	0	1	56,267
West North Central	0.1	0	0.25	0	1	56,267
South Atlantic	0.4	0	0.48	0	1	56,267
East South Central	0.2	0	0.38	0	1	56,267
West South Central	0.0	0	0.19	0	1	56,267
Mountain	0.0	0	0.20	0	1	56,267
Pacific	0.0	0	0.17	0	1	56,267

Independent Variables

One set of five binary independent predictors is included in the analysis: 1) *solo-male*; 2) *solo-female*; 3) *all-male groups*; 4) *all-female groups*; and 5) *mixed-gender groups*. These categories represent the type of arrestee organization in a drug sale, hereafter referred to as drug sale organization (DSO).

Control Variables

I control for key demographic and structural variables available in NIBRS to account for potential confounders. Demographic characteristics include the age and the racial composition of offenders in the drug sales incident. *Racial composition* is a set of binary variables: *white*;

black; and *other*.¹² *Age* is a single, continuous measure representing the mean age of: a) solo offenders; b) co-offending pairs; and c) co-offending triads.

To mitigate contextual effects, I control for *census division* and *location type*. *Census divisions* are subdivisions of the four census regions of the U.S. There are nine divisions in total, including: 1) New England; 2) Middle Atlantic; 3) East North Central; 4) West North Central; 5) South Atlantic; 6) East South Central; 7) West South Central; 8) Mountain; and 9) Pacific. Except for the *Middle Atlantic* region, all divisions are included as binary predictors.¹³ *Location type* (0=indoor; 1=outdoor) is included to capture potential differences in the type of environment in which males and females (and blacks and whites) sell drugs/narcotics.

Analytic Methods

The analysis proceeds in the following stages. First, I provide a detailed descriptive analysis of gender differences in both drug selling participation and drug sale earnings, observing variation across drug type (i.e., aggregate drug measure, marijuana, cocaine, crack, and heroin). Descriptive analyses address the following hypotheses: 1) drug selling markets are heavily segregated by gender, with male involvement much greater than female involvement; 2) although males dominate selling activity, females will have higher levels of participation in sales of crack rather than marijuana and cocaine; 3) solo-male offenders will have greater drug sale earnings than solo-female offenders; and 4) all-male co-offending groups (i.e., pairs and triads) will have greater drug sale earnings than all-female and mixed-gender groups. In descriptive analyses, a number of chi-squared tests were used to test for statistically significant differences.

¹² Note that “*other*” includes: a) Asians; b) Native Indians or Alaskan Natives; and c) Native Hawaiians or Pacific Islanders.

¹³ The states that make up the Middle Atlantic region, Pennsylvania, New York, and New Jersey, do not submit to the NIBRS program.

Second, I conduct multivariate analyses, using Ordinary Least Squares (OLS) Regression to estimate the effects of organization type on illegal drug sale earnings using Stata 14. OLS regression is well suited for the present analysis because outcome variables are continuous. Regression models help clarify descriptive findings and provide additional testing for Hypotheses 3 and 4. Specifically, I regress the illegal earnings measures (logged) on type of drug sale organization (DSO) (i.e., all-male; all-female; mixed-gender; solo-male; solo-female) using “all-male” as the reference category. Unpacking the aggregated drug earnings variable will allow me to tease out whether patterns of drug sale participation and drug earnings differ by drug type.

RESULTS

The central aim of this thesis is to establish 1) the gender gap in drug sales (overall and by drug type); and 2) the gender gap in illegal earnings from drug sales (overall and by drug type). Also at issue is the *organization* of the drug sale (i.e., solo or co-offense; same-sex or mixed-sex), and how organization intersects with participation and size of illegal earnings.

My presentation of results unfolds by first describing gender differences in participation in drug sales (overall and by drug type) and how this participation varies depending on how the drug sale is organized. I then discuss gender differences in earnings from drug sales and how the earnings vary depending on the organization of the drug sale (i.e., solo or co-offense; same-sex or mixed-sex). Following this as a backdrop, I present the results of a multivariate analysis in which illegal earnings are regressed onto drug-sale organization.

Gender Differences in Drug Sales (Overall and by Drug Type)

Table 2 provides a breakdown of gender differences in drug sales by drug type. Note that mixed-gender incidents are excluded from Table 2. Key findings are as follows. First, marijuana is the most frequently sold drug (58.7 percent of all arrests), followed by crack-cocaine (23.7 percent), cocaine (10.4 percent), and heroin (7.2 percent) ($p < .001$) (see column 2).

Second, there is a large gender difference or gap in drug selling incidents both overall and by drug type. This pattern can be observed in column 7, which shows that only 8.7 percent of *all arrest incidents* are female ($p < .001$). Similarly, females comprise *only* 7.3 percent of arrests for marijuana ($p < .001$); 9 percent for cocaine; 10.7 percent for crack ($p < .001$); and 13.7 percent for heroin ($p < .001$). In sum, gender gaps are smallest for heroin and crack sales and largest for marijuana and cocaine ($p < .001$) (although the gap for cocaine sales was not statistically significant at $p < .05$). These results support Hypotheses 1 and 2.

Table 2. Gender Differences in Drug Sales (Overall and by Drug Type) (N=52,189)

Drug Type	N	Percentages	N		Profiles		Gap
	Total	Total	M	F	Male	Female	Female
Marijuana	30,633	58.7	28,411	2,222	59.6	48.9	7.3
Cocaine	5,417	10.4	4,932	485	10.4	10.7	9.0
Crack	12,381	23.7	11,053	1,328	23.2	29.2	10.7
Heroin	3,758	7.2	3,245	513	6.8	11.3	13.7
Total	52,189	100.0	47,641	4,548	100.0	100.0	8.7

Note that all-male and all-female incidents include both solo and co-offending incidents. The female gap in column 7 can also be explained as the female “share.”

Gender Differences in Organization Type (Sales Overall and by Drug Type)

Turning next to Table 3, I present gender differences in drug selling arrests by organization type for drugs overall, by drug type, and by gender. Findings are as follows. First,

as shown in columns 1 and 2 the majority of cases involve solo-offenses (86.5 percent),¹⁴ followed by pairs (11.5 percent) and triads (2 percent) ($p < .001$). This pattern also holds for different types of drugs (columns 3-6) ($p < .001$). However, when comparing proportion sizes across drug types, some small differences are observed. Notably, the proportion of solo arrests is somewhat higher for cocaine and crack ($p < .001$), while the proportion of co-offending arrest incidents is somewhat higher for marijuana and heroin ($p < .01$).

Second, turning to gender effects (columns 12-13), I find that these overall distributional patterns for solo vs. pair vs. triad arrest incidents hold for both male and female drug offenders but with some differences as well. For both sexes, solo offending comprises the very large majority of drug sales, followed by pair and triad offending. What is notable, however, is the somewhat higher level of solo offending among female drug sellers (94 vs. 85 percent ($p < .001$)) and their lower level of co-offending (6.5 vs. 14.1 percent ($p < .001$)) as compared to male sellers.

Third, gender gap findings across the different types of drug-selling organization are shown in columns 7-11. Gender differences are smallest in solo drug sales, followed by pairs and triads—both overall and by drug type ($p < .05$).¹⁵ For incidents with co-offenders, gender gaps for crack are smaller than gaps for other drug types (however, note that these differences are only statistically significant at the level of $p < .05$ after combining categories with two and three offenders).

In sum, an important take-away from Table 3 is that few drug selling incidents involve the arrest of female co-offenders (6.5 percent). Particularly scarce are cases involving three

¹⁴ Note that 86.5 percent of cases involve solo-offenses in the study population excluding mixed-gender groups ($N=52,189$). In the study population that does not exclude mixed-gender groups, solo-offenses comprise approximately 80 percent of cases ($N=56,267$).

¹⁵ Note that these differences are statistically significant at a level of $p < .05$ with the exception of the difference between the pairs and triads in crack-sales.

female offenders (0.4 percent). Because of their infrequency, I hereafter collapse pairs and triads into one co-offending category.

Table 3. Gender Differences in Drug Sales by Organization Type (Overall and by Drug Type) (N=52,189)

Organization Type	N	Profile %					Gender Gap (% F)					Profile %	
	Total	Total	M	C	CC	H	T	M	C	CC	H	M	F
Solo	45,156	86.5	84.6	88.8	90.6	85.4	9.4	8.0	9.5	11.0	15.2	85.9	93.5
Pairs	6,014	11.5	13.0	9.7	8.4	12.3	4.6	3.5	5.3	8.1	5.4	12.0	6.1
Triads	1,019	2.0	2.4	1.5	1.0	2.3	1.8	1.6	2.5	3.2	0.0	2.1	0.4
Total	52,189	100.0	100.0	100.0	100.0	100.0	8.7	7.3	9.0	10.7	13.7	100.0	100.0

Gendered Organization of Drug Sales

Next, I examine more closely how gender affects the organization of drug sales. Table 4 provides a full breakdown of drug sale organization (DSO) by gender and drug type. In what follows, I first describe findings for drugs overall (column 1) and then by drug type (columns 2-5). As shown in column 1, drug sale incidents involving solo-male offenders comprise the largest share of arrests overall (73 percent) followed by all-male co-offenders (12 percent), solo-female offenders (7.6 percent), mixed-gender offenders (7.2 percent), and all-female co-offenders (0.5 percent) ($p < .001$). These findings are consistent with Hypothesis 1.

Turning next to columns 2-5, I note that this pattern holds generally across the four drug types but with some variation. First, in incidents involving the sale of heroin (column 5), solo-males still comprise the highest share of arrests (64 percent) but this figure is smaller than that for drugs overall (73 percent) ($p < .001$), marijuana (72 percent) ($p < .001$), cocaine (76 percent) ($p < .001$), and crack (76 percent) ($p < .001$). Therefore, the distribution of arrests involving heroin is relatively more “spread out” across DSO type. Second, for incidents involving crack, solo-females comprise a larger share of arrests than do all-male co-offenders ($p < .001$).

In sum, findings from Table 4 establish the robust effects of gender on both drug sales and drug organization. In particular, three major findings should be noted. Focusing on female involvement relative to males, I find that 1) females are much less likely to be involved in drug sales regardless of drug type; 2) all-female co-offending groups are extremely rare; and 3) a high proportion of female drug selling involves males—not females—as co-offenders.

Together, the findings presented in Tables 2-4 provide support for Hypothesis 1 and 2. First, drug selling markets appear heavily segregated by gender, with male involvement much greater than female involvement (Hypothesis 1). Second, although males dominate drug selling, females tend to have higher levels of participation in sales of crack and heroin as compared to marijuana and cocaine (Hypothesis 2).

Table 4. Drug Type by Gender of the Drug Sale Organization (N=56,257)

DSO	Drug Type				
	All drugs	Marijuana	Cocaine	Crack	Heroin
Total	100.0	100.0	100.0	100.0	100.0
Solo-male	72.7	72.1	75.6	75.7	64.4
All-male	12.0	13.8	10.0	8.2	12.4
Solo-female	7.6	6.3	7.9	9.4	11.5
Mixed-gender	7.2	7.5	5.9	6.1	11.1
All-female	0.5	0.5	0.5	0.7	0.6

Gender Differences in Drug Sale Earnings by Drug Type

Here, I discuss gender differences in earnings (in groupings) from drug sales and how earnings vary by drug type. Table 5 provides a detailed description of the dependent variables (i.e. drug sale earnings) overall and by grouping while Tables 6a and 6b break this out by gender. Turning to Table 5, I note the following. First, the large majority of arrests for drug sales involve relatively small quantities of the drug (i.e., small monetary amounts). This pattern is observed for drugs overall and by type of drug. Most cases fall within the “smallest” or *lowest*

monetary drug sale range—i.e., sales with earnings under \$1,000 (roughly 80 percent), while the second highest proportion of cases fall within the \$1,000-\$4,999 range (about 10 percent).

Together, these two groupings account for over 90 percent of cases, respectfully.

Second, I note the extremely wide range on each of the drug earnings variables. Large means and standard deviations are likely due to this distribution. Third, median earnings vary considerably by type of drug. As shown in column 6, crack appears to be the least profitable drug, followed by marijuana. Unexpectedly, cocaine and heroin have similar median earnings, though both are larger than crack and marijuana.

Table 5. Descriptive Statistics of Drug Earnings Variables (Total)

Value (\$)	Total								
	N	%	Mean (\$)	S.D. (\$)	Q1 (\$)	Q2 (\$)	Q3 (\$)	Min (\$)	Max (\$)
Drugs overall	52,189	100.0	24,293	767,508	73	196	785	4	48,400,000
Under 1,000	40,609	77.8	230	226	73	162	327	4	992
1,000-4,999	7,574	14.5	2,010	1,003	1,280	1,594	2,560	1,003	4,992
5,000-49,999	2,910	5.6	13,726	10,501	5,488	10,423	17,433	5,004	49,925
50,000+	1,096	2.1	1,097,926	5,186,126	78,980	156,854	397,918	50,719	48,400,000
Marijuana	30,633	100.0	37,763	995,763	62	219	692	4	48,400,000
Under 1,000	24,112	78.7	213	225	31	139	323	4	992
1,000-4,999	3,448	11.3	2,067	1,005	1,307	1,634	2,615	1,003	4,992
5,000-49,999	2,148	7.0	13,785	10,608	5,281	10,460	17,624	5,004	49,925
50,000+	925	3.0	1,205,308	5,609,224	83,680	156,899	418,398	50,732	48,400,000
Cocaine	5,417	100.0	14,368	248,647	177	531	1,238	72	8,766,780
Under 1,000	3,686	68.0	316	245	177	177	531	72	948
1,000-4,999	1,319	24.3	1,905	1,008	1,185	1,580	2,239	1,027	4,976
5,000-49,999	312	5.8	14,937	10,472	6,950	10,070	20,140	5,055	49,259
50,000+	100	1.8	694,886	1,704,323	78,980	107,926	358,663	50,942	8,766,780
Crack-Cocaine	12,381	100.0	1,372	37,620	73	196	589	73	2,758,800
Under 1,000	10,601	85.6	225	222	73	196	196	73	982
1,000-4,999	1,609	13.0	1,720	736	1,195	1,379	1,963	1,012	4,966
5,000-49,999	153	1.2	12,236	10,482	5,518	7,821	13,610	5,058	48,923
50,000+	18	0.1	553,286	839,725	80,557	160,930	643,720	55,176	2,758,800
Heroin	3,758	100.0	4,318	27,574	162	531	2,125	162	739,655
Under 1,000	2,210	58.8	292	176	162	162	531	162	531
1,000-4,999	1,198	31.9	2,349	1,164	1,063	2,125	3,188	1,063	4,861
5,000-49,999	297	7.9	12,788	9,598	5,917	9,299	15,850	5,072	49,663
50,000+	53	1.4	169,228	159,599	76,079	105,665	191,888	50,719	739,655

Turning next to *gender* differences in drug sale earnings both overall and by drug type (see Tables 6a and 6b), I note the following. First, I find female earnings for drugs overall to be slightly smaller than male earnings (e.g., 94 percent of cases for females were under \$5,000 vs. 92 percent of cases for males ($p<.001$)). Second, as seen in column 6, the median value for females is lower for marijuana (\$231 for males vs. \$173 for females) and cocaine (\$531 for males vs. \$354 for females). Additional gender differences in median earnings can be observed within “drug groupings” (e.g., for crack, sales under \$1,000, the median income for males is \$196 vs. \$73 for females).

Table 6a. Descriptive Statistics of Drug Earnings Variables for Male Offending Arrest Incidents (N=47,641)

Value (\$)	Male								
	N	%	Mean (\$)	S.D. (\$)	Q1 (\$)	Q2 (\$)	Q3 (\$)	Min (\$)	Max (\$)
Drugs overall	47,641	100.0	22,383.1	702,825	73	196	819	4	48,400,000
Under 1,000	36,867	77.4	232	227	73	162	327	4	992
1,000-4,999	7,022	14.7	2,013	1,005	1,280	1,594	2,560	1,003	4,992
5,000-49,999	2,744	5.8	13,703	10,497	5,488	10,424	17,327	5,004	49,925
50,000+	1,008	2.1	998,100	4,732,283	78,980	149,834	376,558	50,732	48,400,000
Marijuana	28,411	100.0	33,850	903,193	62	231	703	4	48,400,000
Under 1,000	22,307	78.5	214	225	31	139	327	4	992
1,000-4,999	3,230	11.4	2,071	1,009	1,307	1,634	2,617	1,003	4,992
5,000-49,999	2,027	7.1	13,716	10,577	5,281	10,460	17,087	5,004	49,925
50,000+	847	3.0	1,089,052	5,122,956	80,737	156,899	392,248	50,732	48,400,000
Cocaine	4,932	100.0	15,455	260,307	177	531	1,238	72	8,766,780
Under 1,000	3,306	67.0	322	249	177	177	531	72	948
1,000-4,999	1,234	25.0	1,914	1,012	1,238	1,580	2,239	1,027	4,976
5,000-49,999	297	6.0	15,003	10,486	6,950	10,188	20,140	5,055	49,259
50,000+	95	1.9	719,378	1,744,387	78,980	110,019	394,900	54,338	8,766,780
Crack-Cocaine	11,053	100.0	1,250	30,696	73	196	589	73	2,758,800
Under 1,000	9,406	85.1	228	223	73	196	196	73	982
1,000-4,999	1,483	13.4	1,722	742	1,195	1,379	1,963	1,012	4,966
5,000-49,999	147	1.3	12,454	10,633	5,518	7,821	13,794	5,058	48,923
50,000+	17	0.2	428,960	673,492	80,557	101,156	560,956	55,176	2,758,800
Heroin	3,245	100.0	4,501	26,587	162	531	2,125	162	714,507
Under 1,000	1,848	56.9	294	177	162	162	531	162	531
1,000-4,999	1,075	33.1	2,351	1,163	1,063	2,125	3,188	1,063	4,861
5,000-49,999	273	8.4	12,863	9,703	5,917	9,299	16,061	5,072	49,663
50,000+	49	1.5	163,764	141,885	80,305	105,665	191,888	52,199	714,507

Table 6b. Descriptive Statistics of Drug Earnings Variables for Female Arrest Incidents (N=4,548)

Value (\$)	Female								
	N	%	Mean (\$)	S.D. (\$)	Q1 (\$)	Q2 (\$)	Q3 (\$)	Min (\$)	Max (\$)
Drugs overall	4,548	100.0	44,299.6	1,259,045	73	196	531	4	48,400,000
Under 1,000	3,742	82.3	214	213	73	162	323	4	982
1,000-4,999	552	12.1	1,974	976	1,268	1,594	2,509	1,003	4,782
5,000-49,999	166	3.6	14,101	10,588	5,529	10,083	20,920	5,062	47,070
50,000+	88	1.9	2,241,393	8,824,370	94,537	258,884	774,073	50,719	48,400,000
Marijuana	2,222	100.0	87,797	1,799,410	31	173	646	4	48,400,000
Under 1,000	1,805	81.2	197	218	15	127	323	4	981
1,000-4,999	218	9.8	2,005	947	1,307	1,634	2,615	1,003	4,903
5,000-49,999	121	5.4	14,947	11,105	5,361	10,460	20,920	5,062	47,070
50,000+	78	3.5	2,467,736	9,351,306	104,600	264,766	815,876	52,300	48,400,000
Cocaine	485	100.0	3,309	36,892	177	354	708	72	789,800
Under 1,000	380	78.4	266	207	72	177	354	72	948
1,000-4,999	85	17.5	1,785	950	1,185	1,415	2,132	1,027	4,739
5,000-49,999	15	3.1	13,632	10,458	6,002	9,004	24,326	5,529	39,806
50,000+	5	1.0	78,980	314,601	78,980	94,934	133,002	50,942	789,800
Crack-Cocaine	1,328	100.0	2,383	73,174	73	196	393	73	2,666,840
Under 1,000	1,195	90.0	203	213	73	73	196	73	982
1,000-4,999	126	9.5	1,697	659	1,287	1,379	1,963	1,012	4,598
5,000-49,999	6	0.5	6,912	1,795	5,518	6,345	8,184	5,334	9,748
50,000+	1	0.1						2,666,840	2,666,840
Heroin	513	100.0	3,158	33,153	162	531	1,063	162	739,655
Under 1,000	362	70.6	281	173	162	162	531	162	531
1,000-4,999	123	24.0	2,335	1,186	1,063	2,125	3,188	1,063	4,861
5,000-49,999	24	4.7	11,929	8,439	5,404	8,453	14,793	5,283	34,024
50,000+	4	0.8	236,161	336,081	57,059	77,135	415,263	50,719	739,655

Note: variables were *not* truncated at 99th percentile

Table 7 provides a more condensed view of gender differences in drug sale earnings both overall and by drug type. Generally, I find added evidence for the above conclusion—female earnings overall are somewhat smaller than that for males (see columns 3-4). This can also be observed when examining gender gaps in columns 5-9. Here, I find that differences tend to be smaller in the lowest than in the higher earnings categories. When examining gender differences

for drugs overall (column 5), the gender gap is smallest in sales with earnings under \$1,000. This indicates that females comprise a larger share of cases with earnings under \$1,000.¹⁶

Table 7. Gender Differences in Drug Sale Earnings (overall and by drug type)
(N=52,189)

Groupings (\$)	N		Profile %		Gender Gap (% F)				
	Total	Total	M	F	Total	M	C	CC	H
Under 1,000	40,609	77.8	77.4	82.3	9.2	7.5	10.3	11.3	16.4
1,000-4,999	7,574	14.5	14.7	12.1	7.3	6.3	6.4	7.8	10.3
5,000-49,999	2,910	5.6	5.8	3.6	5.7	5.6	4.8	3.9	8.1
50,000+	1,096	2.1	2.1	1.9	8.0	8.4	5.0	5.6	7.5
Total	52,189	100	100	100	8.7	7.3	9.0	10.7	13.7

Looking now across the different drug types (columns 6-9), the pattern generally holds (with the exception of marijuana). However, when testing for significance between the lowest earnings category (i.e., under \$1,000) and higher earnings categories (i.e., \$1,000-\$4,999; \$5,000-\$49,000; \$50,000+) (within-drug comparisons), differences between the “under \$1,000” and “\$50,000+” categories failed to reach statistical significance at the level of $p < .05$ for all four drugs. This is likely due to low female participation in sales with earnings \$50,000 and over.

Gender Differences in Drug Sale Earnings by Organization Type and Type of Drug

Tables 7 and 8, respectively, provide breakdowns of differences in drug sale earnings by organization type and by type of drug (Table 8) and gender differences in drug sale earnings by organization type and type of drug (Table 9). Key results from Table 8 are as follows. First, co-offending sales yield greater earnings than do solo sales for drugs overall ($p < .001$). This finding can be observed when comparing the profile percentages of solo versus co-offending arrests in columns 4 and 10. I also find this pattern to hold across drug type (columns 5-8 and columns 11-

¹⁶ Note, however, that the overall difference (i.e., total) between categories “Under \$1,000” (9.2 percent) and “\$50,000+” (8 percent) is not statistically significant at $p < .05$.

14). For example, take the sale of cocaine. The earnings distribution in co-offending incidents is more concentrated toward higher values than it is for solo incidents ($p < .001$). A similar pattern is observed for marijuana, cocaine, and heroin ($p < .001$).

Table 9 displays gender gaps in drug sale earnings by organization type and by type of drug. I note the following. First, gender gaps are smaller in solo offending drug sales than in co-offending drug sales (for both drugs overall and by drug type) ($p < .001$) (see row 5). Second, for solo-offending incidents, the size of the gender gaps (generally) do not increase (significantly) as illegal earnings increase although differences between the “under \$1,000” category and the “\$1,000-49,999” category are significant at $p < .01$ for drugs overall, cocaine, crack, and heroin). Third, for co-offending incidents gender gaps (generally) appear to increase as illegal earnings increase. However, these increases are small and are mostly non-significant at a level of $p < .05$.

I next turn to yet another central focus of this thesis, the gendered organization of drug sale earnings. The following results are displayed in Table 10. First, both overall and for all drug types, sales under \$1,000 are by far the most prevalent—followed by the “\$1,000-\$4,999” category and then the “\$5,000-\$49,999” and “\$50,000 and above” categories. These differences are significant at a level of $p < .001$ for the “total” DSO, solo-male, solo-female, and all-male groups. However, differences in earnings fail to reach statistical significance for mixed-gender and all-female groups (see columns 3, 8, 13, and 18).

Table 8. Differences in Drug Sale Earnings by Organization Type and Type of Drug (N=52,189)

Groupings (\$)	Total		Solo (%)						Co-Offending (%)					
	N	%	T (N)	T	M	C	C-C	H	T (N)	T	M	C	C-C	H
Under 1,000	40,609	77.8	35,720	79.1	80.0	70.1	86.1	61.4	4,889	69.5	71.9	52.1	81.0	43.8
1,000-4,999	7,574	14.5	6,387	14.1	10.9	23.8	12.7	31.1	1,187	16.9	13.2	29.0	16.4	36.5
5,000-49,999	2,910	5.6	2,247	5.0	6.5	4.7	1.1	6.6	663	9.4	9.9	14.0	2.5	15.5
50,000+	1,096	2.1	802	1.8	2.7	1.5	0.1	0.9	294	4.2	5.1	4.9	0.2	4.2
Total	52,189	100.0	45,156	100.0	100.0	100.0	100.0	100.0	7,033	100.0	100.0	100.0	100.0	100.0

Table 9. Gender Gap in Drug Sale Earnings by Organization Type and Type of Drug (N=52,189)

Groupings (\$)	Gender Gap (% F)										
	Total	Solo					Co-Offending				
	N	T	M	C	C-C	H	T	M	C	C-C	H
Under 1,000	40,609	9.9	8.2	10.7	11.6	17.7	4.6	3.4	6.3	7.8	5.8
1,000-4,999	7,574	7.9	7.2	6.6	7.8	11.5	4.0	2.4	5.1	7.9	4.0
5,000-49,999	2,910	6.6	6.4	6.2	4.8	9.9	2.6	2.8	1.2	0.0	3.5
50,000+	1,096	10	10.2	7.1	6.3	13.3	2.7	3.3	0.0	0.0	0.0
Total	52,189	9.4	8	9.5	11	15.2	4.2	3.2	4.9	7.6	4.6

Table 10. Drug Sale Earnings by Gender and Drug Sale Organization (N=56,267)

DSO	Total		Under 1,000					1,000-4,999					5,000-49,999					50,000+				
	N	%	T	M	C	C-C	H	T	M	C	C-C	H	T	M	C	C-C	H	T	M	C	C-C	H
Total	56,267	100.0	77.1	45.9	6.9	20.0	4.4	14.8	6.8	2.5	3.1	2.4	5.9	4.3	0.6	0.3	0.6	2.2	1.8	0.2	0.0	0.1
Solo-male	40,903	100.0	78.7	46.5	7.4	20.9	4.0	14.4	6.4	2.6	3.2	2.2	5.1	3.9	0.5	0.3	0.5	1.8	1.5	0.2	0.0	0.1
All-male	6,738	100.0	69.2	48.5	4.4	12.9	3.4	16.9	9.0	2.5	2.6	2.8	9.6	6.7	1.2	0.4	1.2	4.2	3.4	0.4	0.0	0.3
Solo-female	4,253	100.0	82.7	39.7	8.5	26.4	8.2	11.9	4.8	1.8	2.6	2.7	3.5	2.5	0.3	0.1	0.5	1.9	1.6	0.1	0.0	0.1
Mixed-gender	4,078	100.0	68.2	41.5	5.1	15.7	5.9	19.0	9.3	2.0	3.6	4.1	9.4	6.9	0.8	0.3	1.4	3.3	2.8	0.3	0.0	0.1
All-female	295	100.0	75.6	39.0	6.8	25.1	4.7	15.9	5.1	3.1	5.1	2.7	5.8	4.4	0.3	0.0	1.0	2.7	2.7	0.0	0.0	0.0

Note: rows add across to 100 percent

Second, solo-males earn more than solo-females across all earnings categories except “\$50,000 and above” (but for the \$50,000+ earnings category, these differences are significant at a level of $p < .001$). Third, all-male groups earn more than all-female groups across all earnings categories (note that differences are statistically significant at $p < .05$ for the “under \$1,000” and “\$5,000-\$49,000” categories). Fourth, whereas I expect all-male groups to earn more than mixed-gender groups, I find differences in proportion sizes across earnings categories to only be significant under the “\$1,000-\$4,999” and “\$50,000” categories.

Summary: Gender Differences in Drug Selling, its Organization Type, and Illegal Earnings

In light of prior research, I hypothesized that 1) the organization of drug selling markets would heavily segregated by gender; 2) although males would dominate the largest share of arrests for each drug type, there would be higher levels of female participation in incidents involving cocaine versus marijuana and powder cocaine; 3) single-male offenders would earn more than single-female offenders; and 4) all-male co-offending groups (i.e. pairs and triads) would earn more than all-female and mixed-gender co-offending groups. Results presented in Tables 1-10 provide evidence to support Hypotheses 1-3 and mixed evidence in support of Hypothesis 4.

I note the following key points. First, I find a large gender gap in drug selling arrest incidents (see Tables 2 through 4)—which suggests that females do not participate in drug selling nearly as much as males. Second, although female participation remains low (overall and across drug type), I find there to be more female participation in crack and heroin sales (again, see Tables 2 through 4).

Third, I find that males earn slightly more than females for drugs overall (see Tables 6a-6b, and 7). More specifically, I find solo-males to earn more than solo-females across all

earnings categories except the highest category (i.e., \$50,000 and above) (see Table 10). Fourth, where I find all-male co-offenders to earn more than all-female co-offenders across all drug types, I do not find this to be the case for mixed-gender groups (see Table 10, rows 3 and 5)—as most differences appear to be statistically non-significant. Therefore, additional multivariate analyses are needed to further explore gender differences in drug sale earnings for drugs overall and by drug type, net of certain demographic and structural controls.

Multivariate Analyses

I now turn to an examination of results from multivariate analyses. In this final stage, I regress illegal earnings onto solo drug sale organization, net of controls. At issue is whether the mainly bivariate findings described above persist net of important controls. The results, as based on five OLS regressions, are presented in Tables 11 through 15. Findings speak to Hypotheses 3 and 4. Recall that the third hypothesis predicts that solo-males will earn more than solo-females for all drug types while the fourth hypothesis predicts that all-male co-offenders will earn more than all-female and mixed-gender co-offenders. All-male offenders serve as the reference group for drug sale organization (DSO) (i.e., solo-male, solo-female, all-male, all-female, and mixed-sex). Also note that *black* is the reference category for *race* while *South Atlantic* is the reference category for *Census Division*. Control variables are added to each OLS regression in a stepwise process.

As shown in Table 11, I first regress the overall drug earnings variable (logged) on the set of binary drug sale organization variables. I then regress the marijuana, cocaine, crack, and heroin earnings variables (logged) onto drug sale organization. Note that estimates are interpreted in terms of mean percentage change due to the logarithmic transformation of the dependent variables. Net of key demographic and structural controls, I find the following:

Aggregate Drug Earnings (see Table 11)

- Solo-female offenders earn 30 percent less than solo-males in overall drug sales ($p < .001$), controlling for all other variables.
- All-female co-offending groups earn approximately 37 percent less than all-male co-offenders ($p < .001$), controlling for all other variables. The difference in earnings between all-male and mixed-gender groups is statistically non-significant.¹⁷¹⁸

Table 11. OLS Regression Estimating the Effect of DSO on Aggregate Drug Earnings (logged) (N=56,267)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-female	-0.18***	-0.24	-0.11	-0.35***	-0.41	-0.29	-0.30***	-0.37	-0.24
All-male	0.45***	0.40	0.50	0.52***	0.47	0.58	0.48***	0.43	0.54
All-female	0.19	-0.04	0.42	0.12	-0.11	0.35	0.12	-0.11	0.34
Mixed-gender	0.49***	0.42	0.55	0.48***	0.41	0.54	0.49***	0.42	0.55
White				0.40***	0.37	0.44	0.27***	0.23	0.30
Other				0.96***	0.78	1.15	0.71***	0.53	0.89
Mixed-race				-0.17**	-0.27	-0.07	-0.24***	-0.33	-0.14
Age				0.03***	0.03	0.03	0.03***	0.03	0.03
Location Type							0.19***	0.16	0.22
New England							0.22***	0.16	0.28
East North Central							0.16***	0.11	0.20
West North Central							1.05***	0.98	1.12
East South Central							-0.28***	-0.33	-0.23
West South Central							0.15**	0.06	0.23
Mountain							0.59***	0.50	0.68
Pacific							-0.14**	-0.24	-0.04
Constant	5.56***	5.54	5.58	4.51***	4.46	4.56	4.31***	4.25	4.37

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; Coefficients are logarithmic form

¹⁷ See Table 16 in the Appendix for OLS Regression with “all-male” as reference category (page 66).

¹⁸I also note the following: 1) whites and those in the “other” race category earn more than blacks ($p < .001$), while mixed-race drug sales are not as profitable ($p < .001$); 2) for every one unit increase in age, earnings increase by 3 percent ($p < .001$); and 3) outdoor drug sales yield 20 percent more earnings than do indoor drug sales ($p < .001$).

Marijuana Earnings (see Table 12)

- Solo-female offenders earn approximately 32 percent less than solo-male offenders in marijuana drug sales ($p < .001$), controlling for all other variables.
- All-female co-offenders earn approximately 50 percent less than all-male co-offenders ($p < .001$), controlling for all other variables. The difference in earnings between all-male and mixed-gender groups is statistically non-significant.¹⁹²⁰

Table 12. OLS Regression Estimating the Effect of DSO on Marijuana Earnings (logged) (N=33,102)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-female	-0.16**	-0.26	-0.06	-0.36***	-0.46	-0.25	-0.32***	-0.42	-0.22
All-male	0.45***	0.37	0.52	0.58***	0.51	0.65	0.54***	0.47	0.62
All-female	0.13	-0.24	0.51	0.10	-0.27	0.46	0.04	-0.32	0.39
Mixed-gender	0.55***	0.45	0.65	0.50***	0.41	0.60	0.53***	0.43	0.62
White	5.39			0.38***	0.33	0.43	0.28***	0.22	0.33
Other				1.09***	0.86	1.33	0.83***	0.60	1.06
Mixed-race				-0.09	-0.24	0.06	-0.16*	-0.30	-0.01
Age				0.05***	0.05	0.05	0.05***	0.05	0.05
Location Type							0.28***	0.23	0.33
New England							-0.10*	-0.20	-0.01
East North Central							0.05	-0.02	0.11
West North Central							1.09***	1.00	1.18
East South Central							-0.40***	-0.47	-0.33
West South Central							0.14*	0.01	0.27
Mountain							0.57***	0.44	0.69
Pacific							-0.89***	-1.05	-0.74
Constant	5.39***	5.36	5.42	3.85***	3.77	3.93	3.68***	3.59	3.77

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; Coefficients are logarithmic form

¹⁹ See Table 17 in the Appendix for OLS Regression with “all-male” as reference category (page 66).

²⁰ I also find the following: 1) whites and those in the “other” race category earn more than blacks ($p < .001$), while mixed-race co-offending groups yield 16 percent less than blacks ($p < .05$); 3) for every one unit increase in age, there is a 5 percent increase in earnings ($p < .001$); and 4) outdoor drug sales yield 28 percent more earnings than do indoor drug sales ($p < .001$).

Cocaine Earnings (see Table 13)

- Solo-female offenders earn approximately 52 percent less than solo-male offenders in powder cocaine sales ($p < .001$), controlling for all other variables.
- All-female and mixed-gender co-offending groups earn 60 percent ($p < .05$) and 26 percent ($p < .05$) less than all-male groups, respectively and controlling for all other variables.²¹²²

Table 13. OLS Regression Estimating the Effect of DSO on Cocaine Earnings (logged) (N=5,757)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-female	-0.41***	-0.56	-0.26	-0.55***	-0.69	-0.40	-0.52***	-0.66	-0.37
All-male	0.78***	0.65	0.92	0.83***	0.69	0.97	0.79***	0.65	0.92
All-female	0.09	-0.47	0.64	0.18	-0.37	0.73	0.19	-0.35	0.74
Mixed-gender	0.43***	0.26	0.60	0.56***	0.38	0.74	0.53***	0.35	0.71
White				0.47***	0.39	0.55	0.35***	0.26	0.43
Other				0.90***	0.42	1.39	0.72**	0.24	1.19
Mixed-race				-0.48***	-0.73	-0.23	-0.50***	-0.74	-0.25
Age				0.01**	0.00	0.01	0.01**	0.00	0.01
Location Type							0.09*	0.01	0.17
New England							0.28***	0.16	0.40
East North Central							0.35***	0.22	0.47
West North Central							0.94***	0.72	1.17
East South Central							0.01	-0.11	0.13
West South Central							0.29**	0.11	0.47
Mountain							0.68***	0.49	0.87
Pacific							0.28	-0.03	0.59
Constant	6.22***	6.17	6.26	5.82***	5.68	5.97	5.63***	5.48	5.79

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; Coefficients are logarithmic form

²¹ See Table 18 in the Appendix for OLS Regression with “all-male” as reference category (page 67).

²² I also note that: 1) whites and those in the “other race” category earn more than blacks ($p < .001$); and 2) outdoor drug sales yield 9 percent more earnings than do indoor drug sales ($p < .01$).

Crack-Cocaine Earnings (see Table 14)

- Solo-female offenders earn 20 percent less than solo-male offenders in crack-cocaine sales ($p<.001$), controlling for all other variables.
- Mixed-gender co-offending groups earn 13 percent ($p<.05$) *more* than all-male groups, controlling for all other variables.²³²⁴

Table 14. OLS Regression Estimating the Effect of DSO on Crack-Cocaine Earnings (logged) (N=13,180)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-female	-0.24***	-0.31	-0.17	-0.22***	-0.29	-0.15	-0.20***	-0.27	-0.13
All-male	0.19***	0.12	0.26	0.24***	0.16	0.31	0.21***	0.13	0.28
All-female	0.23	-0.02	0.47	0.29*	0.04	0.53	0.26*	0.02	0.50
Mixed-gender	0.26***	0.18	0.35	0.36***	0.27	0.46	0.34***	0.24	0.43
White				0.02	-0.04	0.08	-0.09**	-0.15	-0.03
Other				0.01	-0.43	0.45	-0.14	-0.58	0.29
Mixed-race				-0.21	-0.33	-0.09	-0.26***	-0.38	-0.14
Age				-0.01	-0.01	-0.01	-0.01***	-0.01	-0.01
Location Type							0.00	-0.04	0.04
New England							0.44***	0.37	0.51
East North Central							0.40***	0.34	0.46
West North Central							0.82***	0.67	0.98
East South Central							0.10***	0.04	0.15
West South Central							0.09	-0.01	0.20
Mountain							0.36***	0.23	0.49
Pacific							0.20*	0.03	0.37
Constant	5.40***	5.38	5.42	5.66***	5.60	5.73	5.50***	5.42	5.57

Notes: * $p<.05$, ** $p<.01$, *** $p<.001$; Coefficients are logarithmic form

²³ See Table 19 in the Appendix for OLS Regression with “all-male” as reference category (page 67).

²⁴ I also note that whites earn approximately 9 percent less than blacks ($p<.01$) while mixed-race co-offending groups earn 26 percent less than blacks ($p<.001$).

Heroin Earnings (see Table 15)

- Solo-female offenders earn 25 percent less than solo-male offenders in heroin sales ($p < .001$), controlling for all other variables.
- Mixed-gender co-offending groups earn 33 percent ($p < .001$) *less* than all-male groups, controlling for all other variables.²⁵²⁶

Table 15. OLS Regression Estimating the Effect of DSO on Heroin Earnings (logged) (N=4,228)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-female	-0.33***	-0.47	-0.19	-0.31***	-0.5	-0.2	-0.25***	-0.39	-0.11
All-male	0.71***	0.57	0.85	0.78***	0.63	0.92	0.70***	0.56	0.84
All-female	0.26	-0.31	0.84	0.30	-0.3	0.88	0.28	-0.28	0.84
Mixed-gender	0.30***	0.16	0.44	0.39***	0.23	0.54	0.37***	0.22	0.52
White				-0.05	-0.1	0.05	-0.40***	-0.51	-0.30
Other				0.14	-0.4	0.67	-0.38	-0.90	0.14
Mixed-race				-0.37**	-0.6	-0.1	-0.54***	-0.77	-0.30
Age				0.00	-0	0.01	0.00	0.00	0.01
Location Type							-0.02	-0.10	0.07
New England							0.85***	0.71	0.98
East North Central							0.44***	0.32	0.56
West North Central							0.95**	0.25	1.65
East South Central							0.20*	0.01	0.39
West South Central							0.87***	0.57	1.18
Mountain							1.42***	1.20	1.64
Pacific							0.91***	0.75	1.06
Constant	6.50***	6.45	6.56	6.41***	6.25	6.57	6.17***	5.99	6.35

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; Coefficients are logarithmic form

Do solo-male offenders earn more than solo-female offenders?

Results displayed in Tables 11 through 15 indicate that solo-male offenders earn more than solo-female offenders both overall and by drug type, net of controls. Specifically, effect sizes were largest in cocaine and marijuana sales and smallest in crack and heroin sales. These findings directly support Hypothesis 3.

²⁵ See Table 20 in the Appendix for OLS Regression with “all-male” as reference category (page 68).

²⁶ I also find the following: 1) whites earn 40 percent less than blacks ($p < .001$) while mixed-race groups earn 54 percent less than blacks ($p < .001$)

Do all-male co-offending groups earn more than all-female and mixed-gender groups?

Results shown in Tables 11 through 15 provide partial support for Hypothesis 4. Speaking to the question of whether all-male co-offenders earn more than all-female co-offenders, I find this to be the case for drugs overall, marijuana, and cocaine (see Tables 11-13). The differences in earnings between all-male and all-female co-offending groups were not significant for crack and heroin (see Tables 14-15).

Speaking next to the question of whether all-male co-offending groups earn more than mixed-gender co-offending groups, I find this to be the case for cocaine and heroin sales only (see Tables 13 and 15). By contrast, I find mixed-gender co-offending groups to earn *more* than all-male groups for arrest incidents involving crack sales. This result contradicts Hypothesis 4. No statistically significant effect for mixed-gender co-offending groups exists in the sale of drugs overall and marijuana (see Tables 11 and 12). I therefore cannot reject the null hypothesis for Hypothesis 4.²⁷

Limitations of Analysis

Before proceeding to a discussion of the findings, I address some limitations of this analysis. First, it is important to point out that drug selling operations typically involve more than one or two offenders (e.g., in street-level distribution networks, several individuals with different roles may be involved in selling; and even freelance distributors purchase their drugs from wholesale or “larger-scale” distributors). In the current analysis, however, the large

²⁷ Although race is not a central focus of this thesis, some notable race effects emerge from OLS models. First, I find that whites earn more than blacks both overall ($p < .001$) and for marijuana ($p < .001$) and cocaine ($p < .01$). Blacks, however, earn more than whites in crack ($p < .01$) and heroin sales ($p < .001$). Second, I find that mixed-race co-offending groups are not as profitable as whites and blacks in drug sales overall and in marijuana and cocaine sales. Blacks, however, earn more than mixed-race groups in crack and heroin sales.

majority of arrest incidents involve two offenders or less. Therefore, it is possible that the NIBRS data are not capturing the entire picture of a drug selling operation.

Second, the very large majority of drug-sale arrest incidents involve the seizure of marijuana (approximately 59 percent). This could potentially mask the effects of the other drug earnings variables when combined to make the *aggregate drug earnings* variable.

Third, we know very little about the roles offenders play in co-offending groups. For example, in mixed-gender arrest incidents it is impossible to determine whether women adopt less central positions or whether women co-offenders share equally in the profits. Some research, for example, indicates that women co-offending with male offenders do not fare well in mixed-sex crime partnerships or networks (Steffensmeier and Terry 1983; Steffensmeier and Schwartz 1997). Instead, they are “short-changed” and do not receive an equal share of the “score.”

Third, the data provide no detail regarding the relationship between co-offenders. This is unfortunate, as it would be helpful to know whether co-offenders are connected by certain types of ties (e.g., kinship vs. friendship vs. “business”).

Fourth, this analysis does not provide much detail regarding the social organization of the drug sale apart from the number of offenders involved in the drug selling incident. For instance, we cannot determine whether social networks underlie drug sales or whether they adopt more of a business-like model.

Fifth, illegal earnings measures are not true measures of drug earnings. Instead, I use the estimated value of the drugs seized at the time of arrest. Some important differences may exist between seizure value and actual drug earnings. For example, the true price of earnings could vary by geographic location (e.g., region, state, city, and neighborhood). Also, earnings from

drug sales may be non-monetary (e.g., barter or trade for other tangible or intangible goods and services).

Despite these limitations, I believe the results from this analysis provide a good illustration of key aspects of effects of gender on drug selling crime – most notably: in level of involvement, organization, and earnings.

DISCUSSION

Over the past three decades, there has been a lively debate among gender and drug crime scholars regarding the social organization of illegal drug markets. In particular, scholars disagree on the extent of female participation in drug selling and the gender gap in drug sale earnings. On the one hand, there is the view that the gender gap in participation and earnings is relatively small. This perspective emerged shortly after the introduction of crack-cocaine in the mid-1980s and differs from the one traditionally held by crime scholars. By contrast, the alternative (i.e., traditional) view argues that the gendered organization of drug selling has changed very little (if at all) since the introduction of crack. Drawing from Steffensmeier's (1983) theory of sex-segregation in illegal enterprise, scholars who share this view assert that the gender gap in drug sale participation and earnings has been and continues to be large and that the drug economy is still heavily dominated by men.

However, despite considerable interest in the topic, major gaps exist in the empirical literature and the debate has yet to be resolved. The central aim of this thesis has been to go beyond prior research and establish a more complete picture of a) the gender gap in drug sales (overall and by drug type), b) the gender gap in illegal earnings from drug sales (overall and by drug type), and c) the gendered organization of drug sales (e.g., solo or co-offense, same-sex or mixed-sex) using a unique database (i.e., NIBRS) and a well-established theoretical framework.

In what follows, I discuss key findings from the current thesis in light of the *institutionalized sexism framework* and prior literature on women's involvement in the drug market.

First, findings from descriptive analyses reveal that drug selling is a highly gendered activity (see especially Tables 2 and 4). Men account for the large majority of drug-sales, comprising approximately 85 percent of all arrest incidents versus women's 8 percent (total) (while the remaining 7 percent of incidents involve mixed-gender groups). Particularly striking is the infrequency of all-female drug selling groups, as they make up only one-half of a percent of all arrest incidents. These results conflict with the view that female drug sellers have gained significant advances in the drug economy (e.g., Fagan 1994, Baskin et al. 1994) and align more closely with Steffensmeier's (1983) central thesis, which posits that sex-segregation is a dominant feature of the underworld and that males dominate virtually all forms of illegal enterprise.

Second, female participation appears to be higher in drug sales involving crack-cocaine and heroin rather than marijuana and cocaine (see Tables 2-4). This finding is understandable when considering the disorganized nature of street-level heroin and crack sales (and crack in particular). A sizable body of qualitative literature depicts these sales as less professional, chaotic/unstable, and heavily related to sex work (e.g., Inciardi 1993). It may be the case that women do not experience as much difficulty in accessing opportunities to sell these drugs on the streets. For instance, a likely scenario is that women operate as "freelance" or low-level distributors who traffic in small amounts to support their own drug habit or use and who also often combine sex work with their drug involvement.

Third, when women co-offend they are more likely to do so with men than other women (see Table 4, rows 5 and 6). By contrast, males are less likely to co-offend with the opposite sex

(see Table 4, rows 3 and 5). These findings are consistent with the institutionalized sexism framework as well as the larger body and co-offending literature. Notably, Steffensmeier (1983) argues that institutionalized sexism—which in large part results from males’ sex-typing of females, homosocial reproduction, and the task environment of crime—keeps women from gaining a foothold in more organized forms of illicit enterprise, and especially all-female forms of crime organization. Similarly, as Carrington (2015) notes, the majority of studies examining gender homophily in co-offending “...have concluded that males are the most common co-offenders not only of male offenders (i.e. homophily) but of females (i.e. heterophily)” (3).

Until this point, my findings align with the traditional view regarding women’s involvement in the drug economy and the gender gap in drug selling. In contrast to the assertions of Fagan (1994) and others (Baskin et al. 1993; Bourgois 1989; Dunlap and Johnson 1996; Mieczkowski 1994), my results suggest that women have not made significant progress in drug selling roles. Rather, the gender gap appears to be high—and especially so for the sale of marijuana and cocaine. Next, I discuss what is arguably the most unique contribution of my study—clarifying the gender gap in illegal drug sale earnings both overall and by drug type.

The fourth finding is derived from both bivariate and multivariate analyses. Solo-male drug sellers earn more than solo-female drug sellers both overall and by drug type, net of key demographic and structural controls. In particular, solo-females earn approximately 30 percent less than solo-males overall, 32 percent less for marijuana, 52 percent less for cocaine, 20 percent less for crack, and 25 percent less for heroin (see Tables 11-15). Therefore, even when women *are* involved in drug selling (in its most unsophisticated form), they earn considerably less than their male counterparts.

The fifth key finding is slightly more complex. Although I find all-male groups to earn more than all-female groups (i.e., for drugs earnings overall, marijuana earnings, and cocaine earnings), all-male groups do not earn more than mixed-gender groups across all drug types. In fact, all-male groups only earn more than mixed-gender groups in sales involving cocaine and heroin.

Unexpectedly, I find that mixed-gender groups earn more (approximately 13 percent more) than all-male groups in sales involving crack. While this result is inconsistent with Hypothesis 4 (i.e., I predicted that all-male groups would earn more than all-female and mixed-gender groups across all drug types), it can be explained in the context of the institutionalized sexism framework and prior literature on women's involvement with crack-cocaine. I note the following. First, one of Steffensmeier's (1983) propositions is that less gender segregation will exist in task environments where women are considered useful in the commission of a crime and in crime activities that are less professional and stratified. Second, prior qualitative literature suggests that the population of female crack users is somewhat high (e.g., Fagan 1994; Baskin et al. 1993). Third, we also know from prior research (Griffin and Rodriguez 2011; Steffensmeier and Ulmer 2005) that female drug users prefer to buy their drugs (e.g., crack) from other females (i.e., in order to minimize their likelihood of being victimized). Therefore, crack distribution networks may purposefully incorporate women dealers into their selling operations to attract more female customers (i.e., drug users) and yield greater profits.

Although this finding would appear to suggest less gender discrimination in crack sales, this is unlikely to be the case. Considering results from prior literature (Steffensmeier and Terry 1986; Steffensmeier and Ulmer 2005), women tend not receive an equal or greater share of the earnings from illegal ventures (net of their roles). Rather, a scenario that is more likely is that

men pocket a higher percentage of the profits and provide women with a much smaller share of earnings.

The sixth (and broadest) finding is that my results provide support for the longstanding view regarding women in the illegal drug economy. That is, the gender gap in both drug sale participation and earnings is quite large (overall and by drug type), and there exists little to no evidence of significant female progress in the illegal drug trade. This result contradicts the conclusions of Fagan (1994) and others (Baskin et al. 1993; Bourgois 1989; Dunlap and Johnson 1996; Mieczkowski 1994), who argue that women have made significant advances in drug distribution networks following the mid-1980s. Rather, my findings align more closely with those who project that drug markets have remained heavily dominated by males and that females continue to play only a much small role in drug sales and distribution, especially at the higher and lucrative levels (Commonwealth of Pennsylvania 1990; Maher and Hudson 2007; Steffensmeier 1983; Steffensmeier and Ulmer 2005).

Finally, it is important to point out that the majority of arrest incidents (approximately 80 percent) involve a solo-offender. This is surprising considering the number of individuals it typically takes to manufacture/produce, process, package, transport, and sell illegal drugs/narcotics. A likely scenario is that the NIBRS data are capturing mostly low or retail-level drug sales (e.g., street-level or personal network based). At this level, drug selling may not require more than one or two individuals.

Limitations of Study

Before proceeding to conclusions and directions for future research, it is important to briefly reiterate/discuss the limitations of this thesis. I note the following. First, the NIBRS incident data are official statistics. Therefore, the data suffer from certain issues, namely a)

unreported and undetected crime events (i.e., the dark figure of crime); b) reporting bias; and c) police bias. To the latter point, police may not perceive women as likely suspects for drug dealing and therefore might not make as many arrests of female dealers. This would ultimately affect the number of female arrests (i.e., solo or co-offending) reflected in the NIBRS data.

Second, it is possible that the NIBRS arrest incident data are not capturing a complete picture of a drug sale (i.e., its organization). That is to say that not all of the parties involved may be present (or detected by police) at the time of arrest. The fact that 80 percent of cases included in the study population would seem to support this notion. These individuals would therefore be excluded from the arrest data and the present analyses. Thus, the definition of co-offending may be limited when using official arrest statistics, as police may only detect a small number of individuals involved in a drug selling scheme.

Third, the data provide little to no detail regarding a) the relationships between co-offenders; or b) the roles individuals play in co-offending groups. For example, it would be helpful to know whether men and women share romantic or kinship ties, or whether they are connected by “business-like” relations. It would also be helpful to know whether the women in these groups adopt less central roles, such as touts, look-outs, money holders, etc.

Fourth, I note that most of the drug arrest incidents involve the sale of marijuana (approximately 59 percent), and that this could potentially bias the effects of other drug earnings variables when combined to make the *aggregate drug earnings* measure. Finally, unlike the UCR, the data are not representative of the U.S. population as a whole and therefore cannot be generalized. Despite these limitations, however, I believe that the findings presented in this thesis provide a reasonable approximation of the gendered organization of drug sales in the U.S.

CONCLUSION

To conclude, the central aims of this thesis were threefold, to establish 1) the gender gap in *involvement* in drug sales (overall and by drug type); 2) the gender gap in *illegal earnings* from drug sales; and 3) the *social organization* of drug sales (i.e., solo or co-offense; same-sex or mixed sex) and how drug sale organization intersects with participation and amount of illegal earnings. I also wished to clarify the longstanding debate between gender and drug crime scholars regarding the extent of women's involvement in the illegal drug economy using a unique database (NIBRS) and a well-established theoretical framework.

Key findings from bivariate and multivariate analyses are as follows. First, a large gender gap in drug sale participation exists for drugs overall and across drug type (e.g., marijuana, cocaine, crack, and heroin). Second, the size of the gender gap varies somewhat by type of drug. Notably, gender differences are smaller for crack-cocaine and heroin and larger for marijuana and cocaine. Third, there is a large gender gap in illegal earnings from drug sales in both solo and co-offending incidents. Fourth, mixed-gender co-offending groups earn more than all-male groups in drug sales involving crack. Together, these findings offer support for Steffensmeier's (1983) institutionalized sexism framework, which emphasizes the role of gender stratification in illegal enterprise as shaping women's involvement in more organized and profitable forms of criminal activity. Findings also lend quantitative (and empirical) support to the view that drug markets remain heavily male dominated, and that women have not made significant progress in drug selling roles.

This thesis contributes to four important strands of criminological research, namely: a) gender and crime literature; b) the literature on gender and *drug crime*; c) the institutionalized sexism literature; and d) the growing body of research on illegal earnings. In addition to

establishing the gender gap in drug sale participation and illegal earnings from drug sales, this thesis offers a fresh, quantitative view into the social organization of illicit drug markets. It also lends empirical insight to the debate regarding women's involvement in the illegal drug economy. Moreover, it has helped establish NIBRS as an important dataset for a) scholars or policymakers who are interested in drug related issues; and b) scholars interested in exploring how institutionalized sexism varies across type of crime activity.

Future research should build on the current study to examine how the gender gap in drug selling and drug sale earnings varies by other drug types (e.g., amphetamines, prescription pills, etc.). Scholars should also draw on the findings presented in this thesis (as well as the institutionalized sexism framework) and investigate race and race by gender differences (e.g., white vs. black) in drug selling and drug sale earnings, and how these vary by drug type and type of organization. In sum, this study provides a solid foundation for future research and should seriously be considered by those interested in learning more about gender differences in the illegal drug economy.

APPENDIX

Table 16. OLS Regression Estimating the Effect of DSO on Aggregate Drug Earnings (logged) (N=56,267)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-male	-0.45***	-0.50	-0.40	-0.52***	-0.58	-0.47	-0.48***	-0.54	-0.43
Solo-female	-0.63***	-0.70	-0.55	-0.88***	-0.95	-0.80	-0.79***	-0.87	-0.71
All-female	-0.26*	-0.50	-0.03	-0.41**	-0.64	-0.18	-0.37**	-0.60	-0.14
Mixed-gender	0.04	-0.04	0.12	-0.05	-0.13	0.03	0.00	-0.07	0.08
White				0.40***	0.37	0.44	0.27***	0.23	0.30
Other				0.96***	0.78	1.15	0.71***	0.53	0.89
Mixed-race				-0.17**	-0.27	-0.07	-0.24***	-0.33	-0.14
Age				0.03***	0.03	0.03	0.03***	0.03	0.03
Location Type							0.19***	0.16	0.22
New England							0.22***	0.16	0.28
East North Central							0.16***	0.11	0.20
West North Central							1.05***	0.98	1.12
East South Central							-0.28***	-0.33	-0.23
West South Central							0.15**	0.06	0.23
Mountain							0.59***	0.50	0.68
Pacific							-0.14*	-0.24	-0.04
Constant	6.01***	5.96	6.06	5.03***	4.96	5.10	4.79***	4.72	4.87

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; coefficients are logarithmic form; all-male is reference category

Table 17. OLS Regression Estimating the Effect of DSO on Marijuana Earnings (logged) (N=33,102)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-male	-0.45***	-0.52	-0.37	-0.58***	-0.65	-0.51	-0.54***	-0.62	-0.47
Solo-female	-0.61***	-0.73	-0.49	-0.94***	-1.06	-0.82	-0.86***	-0.98	-0.75
All-female	-0.31	-0.69	0.06	-0.48*	-0.85	-0.12	-0.51**	-0.87	-0.15
Mixed-gender	0.1	-0.01	0.22	-0.08	-0.19	0.03	-0.02	-0.13	0.09
White				0.38***	0.33	0.43	0.28***	0.22	0.33
Other				1.09***	0.86	1.33	0.83***	0.60	1.06
Mixed-race				-0.09	-0.24	0.06	-0.16*	-0.30	-0.01
Age				0.05***	0.05	0.05	0.05***	0.05	0.05
Location Type							0.28***	0.23	0.33
New England							-0.10*	-0.20	-0.01
East North Central							0.05	-0.02	0.11
West North Central							1.09***	1.00	1.18
East South Central							-0.40***	-0.47	-0.33
West South Central							0.14*	0.01	0.27
Mountain							0.57***	0.44	0.69
Pacific							-0.89***	-1.05	-0.74
Constant	5.84***	5.77	5.91	4.43***	4.33	4.53	4.22***	4.12	4.33

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; coefficients are logarithmic form; all-male is reference category

Table 18. OLS Regression Estimating the Effect of DSO on Cocaine Earnings (logged) (N=5,757)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-male	-0.78***	-0.92	-0.65	-0.83***	-0.97	-0.69	-0.79***	-0.92	-0.65
Solo-female	-1.19***	-1.38	-1.00	-1.38***	-1.57	-1.19	-1.30***	-1.49	-1.11
All-female	-0.69*	-1.26	-0.13	-0.65*	-1.21	-0.09	-0.59*	-1.15	-0.04
Mixed-gender	-0.35**	-0.56	-0.15	-0.27*	-0.48	-0.07	-0.26*	-0.47	-0.06
White				0.47***	0.39	0.55	0.35***	0.26	0.43
Other				0.90***	0.42	1.39	0.72**	0.24	1.19
Mixed-race				-0.48***	-0.73	-0.23	-0.50***	-0.74	-0.25
Age				0.01**	0.00	0.01	0.01**	0.00	0.01
Location Type							0.09*	0.01	0.17
New England							0.28***	0.16	0.40
East North Central							0.35***	0.22	0.47
West North Central							0.94***	0.72	1.17
East South Central							0.01	-0.11	0.13
West South Central							0.29**	0.11	0.47
Mountain							0.68***	0.49	0.87
Pacific							0.28	-0.03	0.59
Constant	7.00***	6.87	7.13	6.65***	6.46	6.84	6.42***	6.22	6.62

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; coefficients are logarithmic form; all-male is reference category

Table 19. OLS Regression Estimating the Effect of DSO on Crack-Cocaine Earnings (logged) (N=13,180)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-male	-0.19***	-0.26	-0.12	-0.24***	-0.31	-0.16	-0.21***	-0.28	-0.13
Solo-female	-0.43***	-0.53	-0.34	-0.46***	-0.56	-0.36	-0.41***	-0.50	-0.31
All-female	0.04	-0.22	0.29	0.05	-0.20	0.30	0.06	-0.19	0.31
Mixed-gender	0.07	-0.03	0.18	0.12*	0.01	0.23	0.13*	0.03	0.24
White				0.02	-0.04	0.08	-0.09**	-0.15	-0.03
Other				0.01	-0.43	0.45	-0.14	-0.58	0.29
Mixed-race				-0.21**	-0.33	-0.09	-0.26***	-0.38	-0.14
Age				-0.01***	-0.01	-0.01	-0.01	-0.01	-0.01
Location Type							0.00	-0.04	0.04
New England							0.44***	0.37	0.51
East North Central							0.40***	0.34	0.46
West North Central							0.82***	0.67	0.98
East South Central							0.10***	0.04	0.15
West South Central							0.09	-0.01	0.20
Mountain							0.36***	0.23	0.49
Pacific							0.20*	0.03	0.37
Constant	5.59***	5.52	5.66	5.90***	5.80	6.00	5.70***	5.60	5.81

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; Coefficients are logarithmic form

Table 20. OLS Regression Estimating the Effect of DSO on Heroin Earnings (logged) (N=4,228)

	Model 1			Model 2			Model 3		
	Coeff.	95% CI		Coeff.	95% CI		Coeff.	95% CI	
Solo-male	-0.71***	-0.85	-0.57	-0.78***	-0.92	-0.63	-0.70***	-0.84	-0.56
Solo-female	-1.04***	-1.22	-0.86	-1.09***	-1.27	-0.90	-0.95***	-1.13	-0.77
All-female	-0.44	-1.03	0.14	-0.47	-1.06	0.11	-0.42	-0.99	0.15
Mixed-gender	-0.41***	-0.59	-0.23	-0.39***	-0.57	-0.21	-0.33***	-0.51	-0.15
White				-0.05	-0.15	0.05	-0.40***	-0.51	-0.30
Other				0.14	-0.39	0.67	-0.38	-0.90	0.14
Mixed-race				-0.37**	-0.60	-0.13	-0.54***	-0.77	-0.30
Age				0.00	0.00	0.01	0.00	0.00	0.01
Location Type							-0.02	-0.10	0.07
New England							0.85***	0.71	0.98
East North Central							0.44***	0.32	0.56
West North Central							0.95**	0.25	1.65
East South Central							0.20*	0.01	0.39
West South Central							0.87***	0.57	1.18
Mountain							1.42***	1.20	1.64
Pacific							0.91***	0.75	1.06
Constant	7.21***	7.09	7.34	7.19***	6.98	7.40	6.87***	6.65	7.10

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$; Coefficients are logarithmic form.

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