

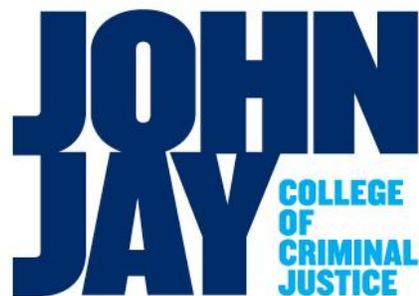
DEPARTMENT OF ECONOMICS

Working Paper

“More drugs, less crime”¹: Why crime dropped in New York City and the US, 1981-2007

Geert Dhondt

Working Paper 2012-02



“More drugs, less crime”¹: Why crime dropped in New York City and the US, 1981-2007

Travis Wendel², Ric Curtis², Jay Hamilton³, Geert Dhondt², Robert Riggs².

1.0 Introduction

During the 1981- 2007 period, the United States experienced a dramatic decline in crime. The trend is particularly pronounced in New York City: burglary peaked in 1982, then dropped and remained stable from 1985 to 1989, dropping again beginning in 1989 (Corman and Mocan 2000); assault peaked in 1989, while homicide and robbery peaked in 1990; (Corman and Mocan 2000).

A virtual industry has arisen attempting to explain the dramatic drops in crime in New York City (Karmen 2000, Bowling 1999, Joanes 1999, Kelling and Bratton 1998) and nationally (Zimring 2007, Blumstein and Wallman 2006, Rosenfeld 2004, Conklin 2003, Blumstein and Wallman 2000, Symposium 1998). One factor has been conspicuously unexplored: the effects of drug markets and drug prices on crime levels.

The connection between illegal drugs on the one hand and crime and violence on the other is well-established in the public imagination and debated in the academic literature. Property crime is often attributed to persons supporting the costs of daily drug use: about 17% of state and Federal prisoners in 2004 committed their offense to get money for drugs (Bureau of Justice Statistics (BJS) 2006). Property (30%) and drug offenders (26%) were more likely to commit their crimes to support drug use than those charged with violent offenses (10%) (BJS 2006). Much violence has been explained as a consequence/result of drug market activity. Most subsequent researchers have employed Goldstein’s typology of drug-related violence as “systemic” violence among drug distributors or related to the drug trade, “psychopharmacological” violence caused directly by drug use, and “economic-compulsive” violence committed to finance the costs of drug use (Goldstein 1985, Goldstein et al. 1989, 1992).

The crack era’s surge in violence has often been cited as the prototypical example of systemic violence; Dorn et al.’s (1992) argument that the “crowding out” of gentle hippies by hard-case “villains” they observed in UK ecstasy markets during the late

¹ What the paper actually argues is that *cheaper* drugs (rather than more drugs) led to lower crime, but we were unable to resist the allusion to Lott 1998; while we imagine the argument here may prove as unpopular as did Lott’s, we hope it will withstand critical scrutiny somewhat better.

² Department of Anthropology, John Jay College Of Criminal Justice.

³ Department of Economics, John Jay College Of Criminal Justice.

1980s is a typical developmental cycle in drug markets provides another take on this type of crime. Some have sought to explain some aspects of the US crime drop with drug market-related ideas: the “little brother” argument (Curtis 1998) that, in the 1990s and after, inner city youth avoided hard drug, use having seen the devastation wrought by crack use upon older family members, or the maturing of crack markets resulting in a lessening of systemic violence by crack distributors.

Remarkably, however, the very testable hypothesis that a drop in the price of illegal drugs is a primary reason for a drop in crime in the United States has never been seriously examined. This paper argues that the simplest explanation for the drop in crime deserves serious consideration, that is, that crime is lower today because drugs are cheaper than they used to be in times of higher crime. The paper reviews the evidence in New York City to make this argument, but the drug price drops cited took place nationally as well. In addition to a review of the ethnographic record and applicable literature, as a basic check of the relationships between the prices of heroin, cocaine and crack and crime rates, we examine the relationships of these prices to three crimes (larceny, assault and homicide).

The statistical hypothesis testing method we have employed is “Granger causality” (Granger 1969). Granger causality testing is an accepted econometric technique for analysis of time-series data which moves beyond demonstration of correlation to providing evidence of causal relationships. The estimates demonstrate that, over the 1985-2007 period:

- the price of heroin, the price of cocaine, and the price of crack cocaine all “Granger-cause” the larceny rate;
- the price of heroin, and the price of cocaine, but not the price of crack, “Granger-cause” the assault rate; and
- the price of powder cocaine, but not those of heroin or crack, “Granger-causes” the homicide rate.

In this case, Granger causality indicates that knowing the changes in heroin, cocaine and crack prices over the past year can help predict the change in the larceny rate for the upcoming year, but knowing the change in the larceny rate over the past year will not help predict the change in the prices of these drugs over the coming year. The demonstration of Granger causality with regard to the relationships among drug prices and crime rates does not, of course, exclude the possibility of other factors influencing both drug prices and crime rates.

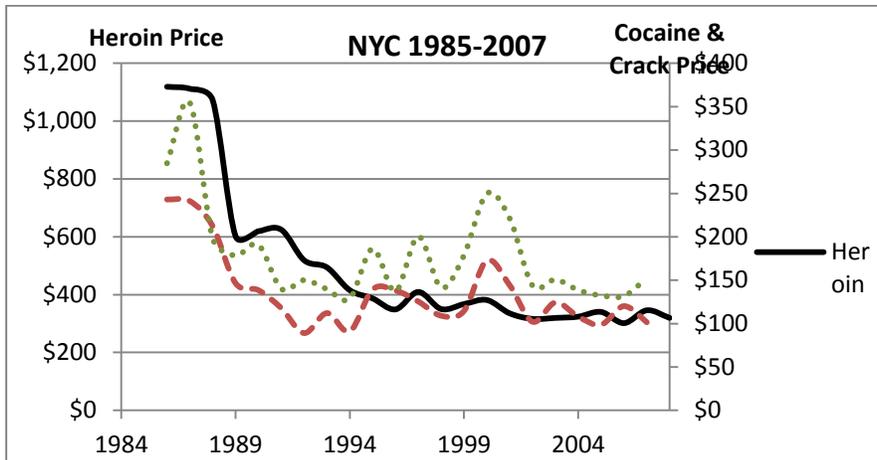
2.0 Why crime declined: Declining heroin and cocaine prices

Over the period over the 1981-2007 period of the crime decline, the prices of the illegal drugs most often connected with crime and violence in the United States – heroin, cocaine, and crack– have dropped significantly (cannabis has become significantly more expensive over the same period). This change in prices over a multi-decade period is not surprising⁴: price trends over time are not uniform: some items are more expensive now, in inflation-adjusted dollars, than they were thirty years ago (chocolate, crude oil, cigarettes, health insurance, movie tickets, e.g.), and other goods and services are less expensive (air travel, computer processing power, long distance phone calls, e.g.).

But the drop in Heroin, cocaine and crack prices has been dramatic and sustained over this period (see Figure 1). Cocaine was \$400-460 per pure gram in the early 1980s, dropping to \$170-230 by 2000; heroin similarly dropped from \$3000-3600 per pure gram in the early 1980s to \$1800-2100 by 2000 (Abt Associates 2001), continuing to decline to “all-time lows” in 2007 (Fries 2008); each drug saw a spike in prices in 1989-90. Cocaine prices showed more variation in price over time and among market levels than heroin. Crack prices complicate matters somewhat. Beginning in the early 1980s, cocaine was marketed prepared in smokable form in many neighborhoods in New York City. This marketing innovation took advantage of the increased bioavailability of smoked cocaine over sniffed cocaine to make low dollar-amount (\$5 and \$10 “rocks”, e.g.) purchases viable ways to get high. Like the powder cocaine from which it is made, crack prices declined over the period in question.

Figure 1: Heroin, cocaine and crack retail prices in New York City: 1985-2007 (in constant 2007 dollars)

⁴ Or perhaps it is surprising, given that a main objective of the war on drugs that has been pursued with ever-increasing vigor during that period has been to decrease use by limiting supplies and thus, it was hoped, driving prices up.



Source: Tables C-1, C-3 & C-5 of "The Price and Purity of Illicit Drugs" (Fries et al. 2008).

Figure 1 tracks the declines in the retail prices of heroin, cocaine and crack cocaine over the period 1985 to 2007. The analysis was originally intended to cover the period from 1981 to 2007 to make full use of the retail level price data compiled from STRIDE by Fries et al. 2008. However, the UCR data tool for cities only goes back to 1985; for the sake of consistency, it was not matched with published crime rates for New York from 1981-1984 from other sources. Further work should check the crime rate data for consistency to make use of these first few years' worth of price data. The price of a retail amount of heroin is considerably higher than the price of a retail amount of cocaine or crack, thus heroin price is shown on the left axis of the chart and cocaine and crack prices on the right axis. This has the effect of under representing the dramatic drop in heroin prices. All prices are shown in constant 2007 dollars. The price of heroin is the estimated annual price for 0.4 grams of pure heroin at the retail level (Fries et al. 2008, Table C-5). The price of cocaine is the estimated annual price for 0.75 grams of pure powder cocaine at the retail level (Fries et al. 2008, Table C-1). The price of crack cocaine is the estimated annual price for 0.3 grams of pure crack cocaine at the retail level (Fries et al. 2008, Table C-3).

3.0 Did declining heroin prices lead to declining crime levels?

Using the Granger causality test for analysis of time series data to examine the relationship between heroin prices, and larceny, assault and homicide, we find that the price of heroin predicts the rate of larceny and assault, but not that of homicide. Below, we provide Figures 2-4 representing the respective relationships of heroin prices and larceny, assault, and homicide, and Tables 1-3 showing the results of vector auto-regression for each pair.

3.1 Heroin prices and larceny

Figure 2: Retail heroin price and larceny rate trends in New York City: 1985-2007⁵

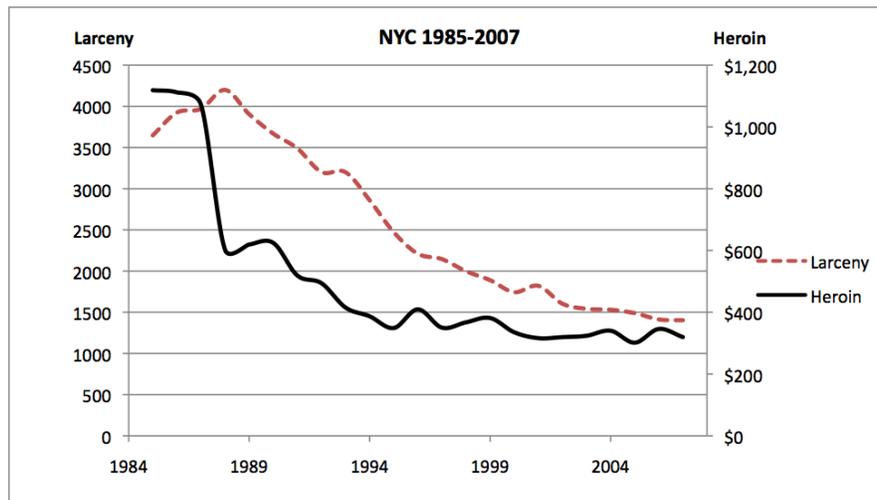


Table 1: Vector auto regression results for the price of heroin and larceny in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Larceny	Heroin Price
Constant	-62.1950 (0.242)	103.0645 (0.040)
Lagged Heroin Price	0.7050 (0.000)	0.5754 (0.002)
Lagged Larceny	0.411	0.2724

⁵ The price of heroin is the estimated annual price for 0.4 grams of expected pure heroin at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-5 of “The Price and Purity of Illicit Drugs” (Fries et al. p. c6). Larceny rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

	(0.052)	(0.174)
Granger	(0.000)	(0.377)
Causality Wald		

In this simple vector auto regression model, knowing the past price of heroin predicts future heroin prices and helps predict future larceny rates. While larceny cannot pass the 95% level of confidence for predicting future larceny rates, the Dickey-Fuller test for unit root were negative. The test for Granger causality indicates past heroin prices help predict future larceny rates, but not the other way around: knowing the larceny rate does not help to predict future heroin prices. Second order lags are not reported and are uniformly insignificant through the results.

3.2 Heroin prices and assault

Figure 3: Retail heroin price and assault rate trends in New York City: 1985-2007⁶

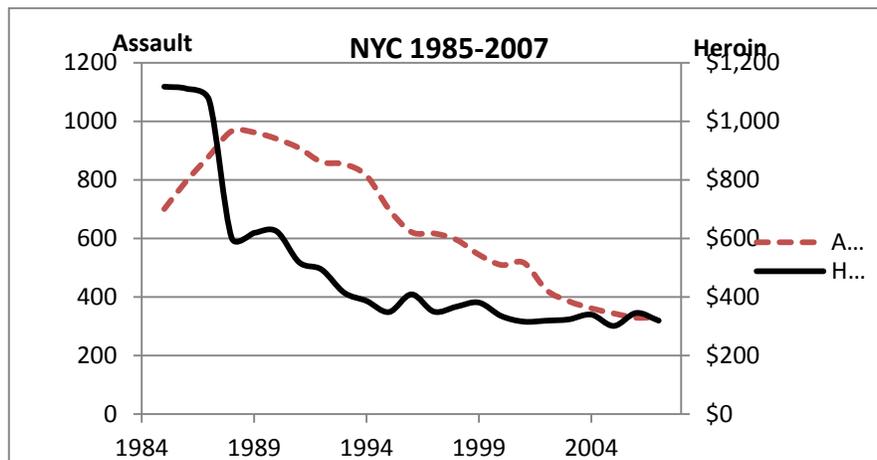


Table 2: Vector auto regression results for the price of heroin and assault in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Assault	Heroin Price
Constant	-47.5433 (0.028)	103.9433 (0.136)

⁶ The price of heroin is the estimated annual price for 0.4 grams of expected pure heroin at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-5 of “The Price and Purity of Illicit Drugs” (Fries et al. p. c6). Assault rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

Lagged Heroin Price	0.1553 (0.008)	0.498 (0.009)
Lagged Assault	0.7913 (0.000)	0.0492 (0.943)
Granger Causality Wald	(0.000)	(0.993)

For the model of the relationship in the trends of heroin price and assault, the results are even more pronounced. In this case, knowing the prior assault rate helps predict future assault rates and the Granger causality test still indicates a one-way time ordering of the trends with heroin price explaining future assault rates.

3.3 Heroin prices and homicide

Figure 4: Retail heroin price and homicide rate trends in New York City: 1985-2007⁷

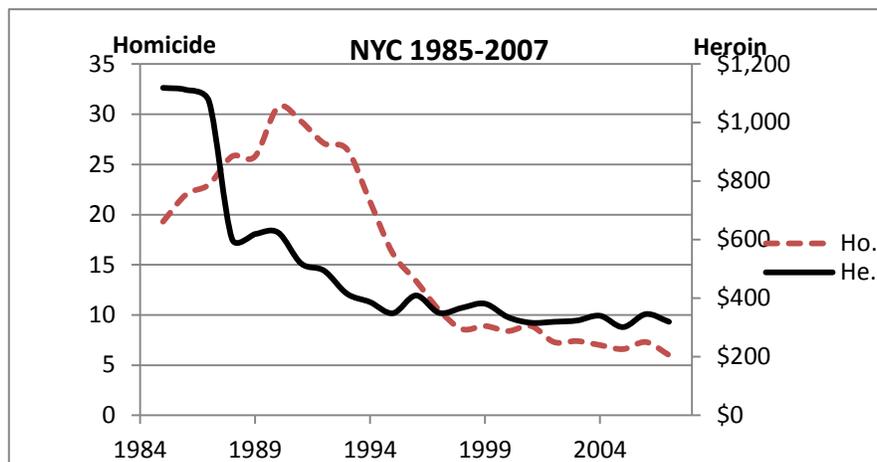


Table 3: Vector auto regression results for the price of heroin and homicide in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Homicide	Heroin Price
Constant	-1.4612 (0.186)	110.4613 (0.020)

⁷ The price of heroin is the estimated annual price for 0.4 grams of expected pure heroin at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-5 of “The Price and Purity of Illicit Drugs” (Fries et al. p. c6). Homicide rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011. Please note: Per request of the New York City Police Dept, the murder and nonnegligent homicides that occurred as a result of the events of September 11, 2001, are not included.

Lagged Heroin Price	0.0058 (0.186)	0.4933 (0.009)
Lagged Homicide	1.1280 (0.000)	2.476 (0.784)
Granger Causality Wald	(0.056)	(0.963)

Although tantalizingly close to the 95% confidence level, the Granger causality test does not indicate that the price of heroin predicts future homicide rates.

4.0 Did declining cocaine and crack prices lead to declining crime levels?

The results for cocaine and crack largely mirror the results for heroin, with an important exception. Cocaine and crack prices both Granger-cause larceny rates. Powder cocaine but not crack cocaine Granger-causes assault rates. Similarly, powder cocaine but not crack Granger-causes homicide in these simple models.

4.1 Cocaine and crack prices and larceny

In this section, we again use the Granger causality test for analysis of time series data to examine the relationship between powder cocaine and crack prices, and larceny, assault and homicide, we find that the price of cocaine predicts the rate of larceny, assault, and homicide, while the price of crack predicts only the rate of larceny. Below, we provide Figures 5-10 representing the respective relationships of powder cocaine and crack prices and larceny, assault, and homicide, and Tables 4-9 showing the results of vector auto-regression for each pair.

Figure 5: Retail cocaine price and larceny rate trends in New York City: 1985-2007⁸

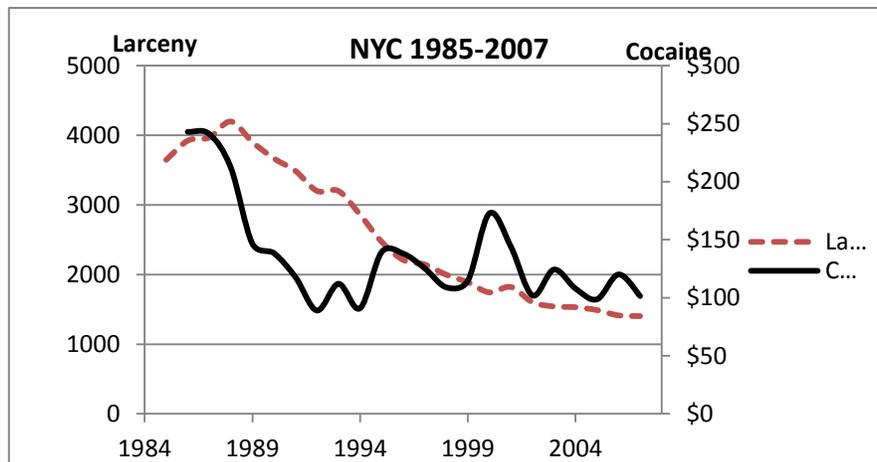


Table 4: Vector auto regression results for the price of cocaine and larceny in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Larceny	Cocaine Price
Constant	-273.3387 (0.017)	23.3828 (0.284)

⁸ The price of cocaine is the estimated annual price for 0.75 grams of expected pure powder cocaine at the retail level (range from 0.1-2.0 g) in constant 2007 dollars. Source: Table C-1 of "The Price and Purity of Illicit Drugs" (Fries et al. p. c2). Larceny rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

Lagged Cocaine Price	2.4231 (0.026)	0.5381 (0.009)
Lagged Larceny	0.6984 (0.002)	-0.0749 (0.077)
<hr/>		
Granger Causality Wald	(0.005)	(0.203)

Figure 6: Retail crack price and larceny rate trends in New York City: 1985-2007⁹

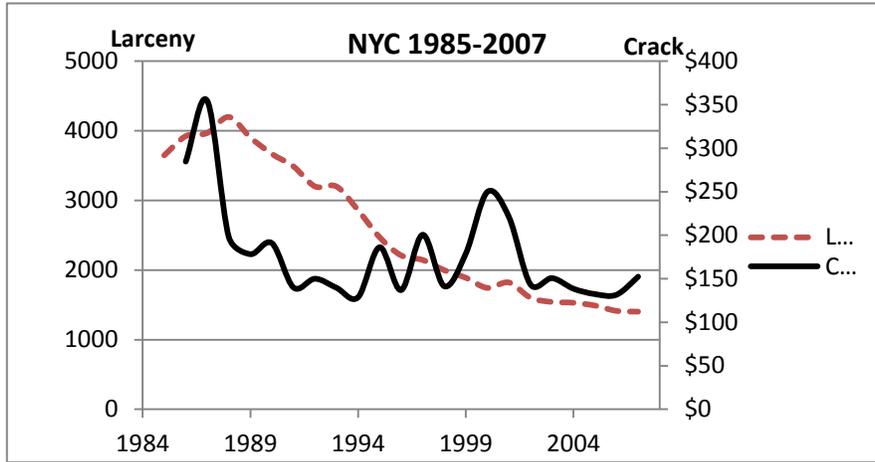


Table 5: Vector auto regression results for the price of crack and larceny in New York City: 1985-2007

(P-values in parentheses, significant values in bold).

Variable	Larceny	Crack Price
Constant	-245.0846 (0.048)	95.0545 (0.004)
Lagged Crack Price	1.8559 (0.001)	0.2276 (0.122)
Lagged Larceny	0.8612 (0.000)	-0.0907 (0.137)
<hr/>		
Granger Causality Wald	(0.002)	(0.329)

⁹ The price of crack cocaine is the estimated annual price for 0.3 grams of expected pure crack cocaine at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-3 of "The Price and Purity of Illicit Drugs" (Fries et al. p. c4). Larceny rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

Both powder cocaine and crack prices Granger-cause larceny rates.

4.2 Cocaine and crack prices and assault

Figure 7: Retail cocaine price and assault rate trends in New York City: 1985-2007¹⁰

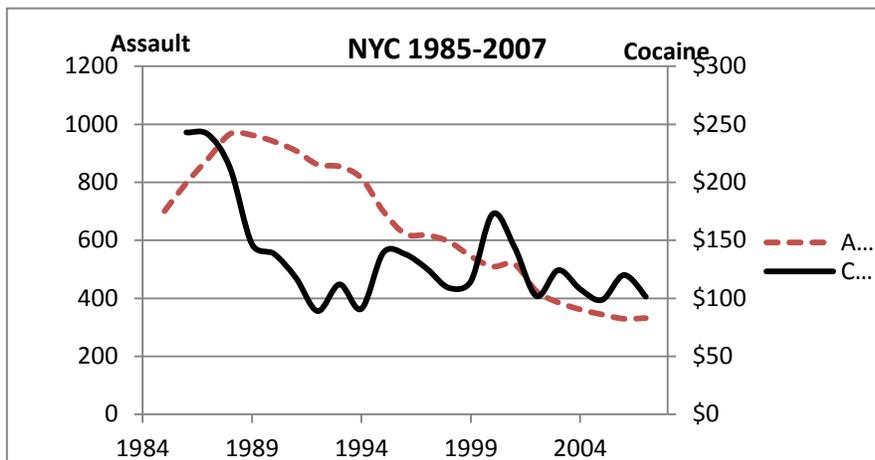


Table 6: Vector auto regression results for the price of cocaine and assault in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Assault	Cocaine Price
Constant	-78.5700 (0.050)	19.2328 (0.508)
Lagged Cocaine Price	0.5893 (0.043)	0.5105 (0.015)
Lagged Assault	1.1194 (0.000)	-0.2230 (0.162)
Granger Causality Wald	(0.023)	(0.364)

Figure 8: Retail crack price and assault rate trends in New York City: 1985-2007¹¹

¹⁰ The price of cocaine is the estimated annual price for 0.75 grams of expected pure powder cocaine at the retail level (range from 0.1-2.0 g) in constant 2007 dollars. Source: Table C-1 of “The Price and Purity of Illicit Drugs” (Fries et al. p. c2). Assault rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

¹¹ The price of crack cocaine is the estimated annual price for 0.3 grams of expected pure crack cocaine at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-3 of “The Price and Purity of Illicit Drugs” (Fries et al. p. c4). Assault rates are per 100,000 population. Source: FBI Uniform

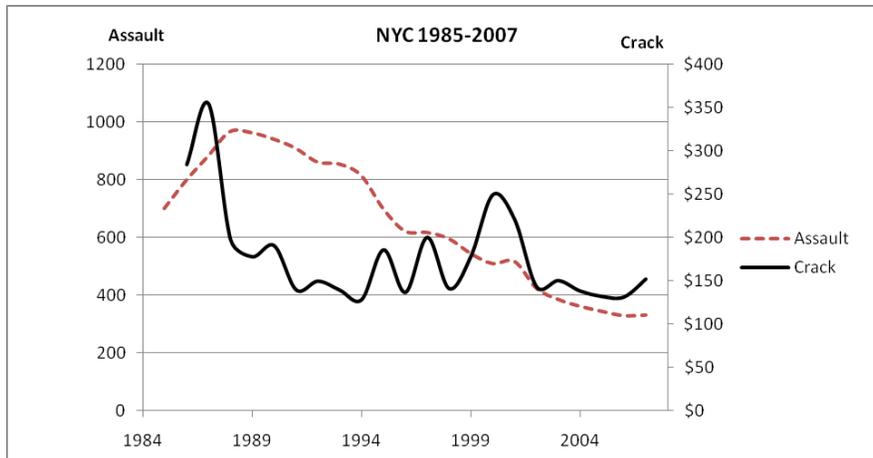


Table 7: Vector auto regression results for the price of crack and assault in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Assault	Crack Price
Constant	-41.2056 (0.354)	94.8802 (0.025)
Lagged Crack Price	0.3249 (0.050)	0.2411 (0.128)
Lagged Assault	1.2928 (0.000)	-0.1763 (0.392)
Granger Causality Wald	(0.147)	(0.683)

The price of crack cocaine is the estimated annual price for 0.3 grams of expected pure crack cocaine at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-3 of "The Price and Purity of Illicit Drugs" (Fries et al. p. c4).

Assault rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

The price of powder cocaine, but not that of crack, Granger-causes the assault rate.

4.3 Cocaine and crack prices and homicide

Figure 9: Retail cocaine price and homicide rate trends in New York City: 1985-2007¹²

Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011.

¹² The price of cocaine is the estimated annual price for 0.75 grams of expected pure powder cocaine at the retail level (range from 0.1-2.0 g) in constant 2007 dollars. Source: Table C-1 of "The Price and Purity

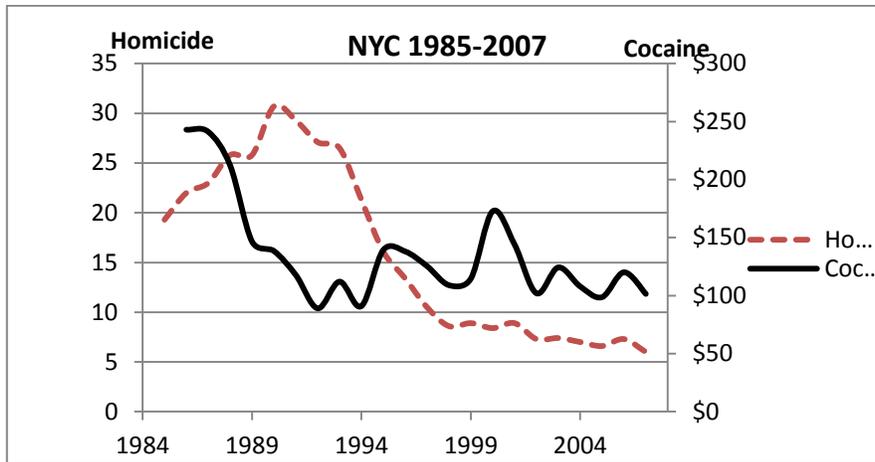


Table 8: Vector auto regression results for the price of cocaine and homicide in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Homicide	Cocaine Price
Constant	-1.9456 (0.224)	33.5423 (0.094)
Lagged Cocaine Price	-.0047 (0.774)	0.4753 (0.021)
Lagged Homicide	1.1503 (0.000)	-3.6181 (0.140)
Granger Causality Wald	(0.042)	(0.305)

Figure 10: Retail crack price and homicide rate trends in New York City: 1985-2007¹³

of Illicit Drugs” (Fries et al. p. c2). Homicide rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011. Please note: Per request of the New York City Police Dept, the murder and nonnegligent homicides that occurred as a result of the events of September 11, 2001, are not included.

¹³ The price of crack cocaine is the estimated annual price for 0.3 grams of expected pure crack cocaine at the retail level (range from 0.1-1.0 g) in constant 2007 dollars. Source: Table C-3 of “The Price and Purity of Illicit Drugs” (Fries et al. p. c4). Homicide rates are per 100,000 population. Source: FBI Uniform Crime Reports, prepared by the National Archive of Criminal Justice Data, www.ucrdatatool.gov, retrieved August 11, 2011. Please note: Per request of the New York City Police Dept, the murder and nonnegligent homicides that occurred as a result of the events of September 11, 2001, are not included.

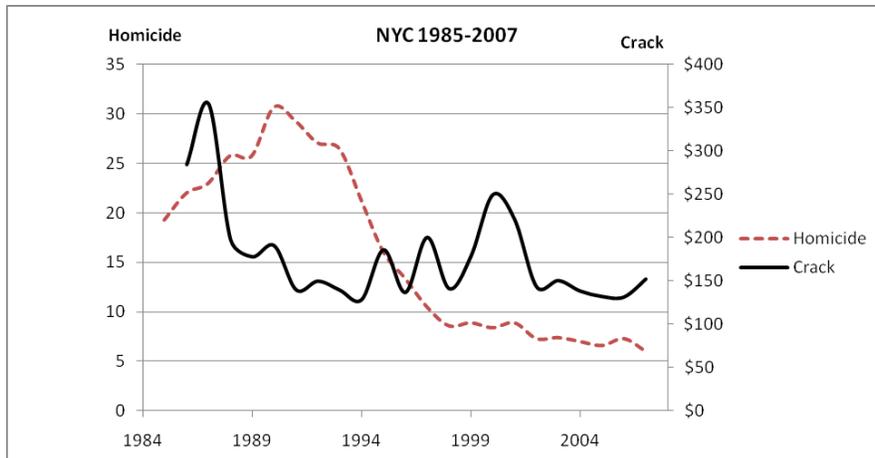


Table 9: Vector auto regression results for the price of crack and homicide in New York City: 1985-2007

(P-values in parentheses, significant values in **bold**).

Variable	Homicide	Crack Price
Constant	-3.0141 (0.120)	0.863 (0.572)
Lagged Crack Price	0.0128 (0.172)	0.2068 (0.172)
Lagged Homicide	1.2279 (0.000)	-2.1448 (0.525)
Granger Causality Wald	(0.158)	(0.721)

The price of powder cocaine Granger-causes the homicide rate: knowing the price of powder cocaine enables us to predict the homicide rate, but not vice versa. The price of crack does not demonstrate Granger causality with regard to homicide.

5.0 How declining drug prices led to lower crime: The ethnographic record

5.1 Heroin markets and crime

In the early 1990s, there was a period when the increasing purity of heroin being sold in New York City and elsewhere across the country sparked fears that a new epidemic of heroin use, and hence crime, was going to follow on the heels of the crack epidemic (Hamid et al. 1997). But despite more plentiful and powerful heroin, retail markets for the drug continued to wither in New York City throughout the 1990s, spurned by most young people who were far more interested in marijuana than heroin or other hard drugs. The once powerful organizations that sold “stamped” heroin and controlled entire swaths of neighborhoods (Wendel and Curtis 2001, Curtis and Wendel 2000) disappeared with changing consumer demand heroin and an altered urban landscape that made such businesses obsolete. Stamped heroin continued to be sold in New York (see, for example, <http://dequinceyjynxie.blogspot.com/>), but increasingly, it was done via delivery service (Curtis et al. 2002) and occupies far more of a niche market than was once the case.

Since the late 1960s, heroin had been an enormously expensive and profitable drug and the markets that were associated with heroin grew to be highly organized in NYC, especially after the Knapp Commission Report effectively ended the NYPD’s street-level narcotics enforcement efforts in 1972 (Knapp 1973). But the high price was consistently associated with crime and violence. In many cases, these large organizations were quite ruthless in their methods and techniques, but the enormous profits that they generated also trickled back into those communities, and many of the former employees of those organizations talk fondly about the regular “paychecks” that they received from these highly organized businesses.

The wholesale price of heroin remained somewhat steady until the mid-1990s, but the technical and social organization of retail distribution (Curtis and Wendel 2000) changed in ways that affected the rates and types of violence and crime associated with heroin markets, especially beginning in the late 1980s when crack entered the scene. After more than a decade of ignoring street-level drug markets in the wake of the Knapp Commission Report, the NYPD began a prolonged war of attrition on street-level drug markets with the formation of the Tactical Narcotics Teams (TNT) in 1987 (Sviridoff, et al. 1992). It was well into the 1990s before it was clear that this strategy paid any lasting dividends besides expanding the number of jobs for upstate prison guards. Indeed, critics in the press sometimes charged that the prodigious numbers of arrests produced by the TNT simply rotated the population of drug dealers between New York City neighborhoods and prisons and displaced drug markets to other neighborhoods that were not currently the targets of law enforcement interventions. Without arguing the

merits of these arguments, one generally unobserved but important outcome of the pressure that law enforcement applied to street-level drug selling organizations in the post-1987 period was the degree to which the greater turnover rate of employees engendered by the arrests affected the ability of the organization to make a profit. As trusted employees were carted off by the dozens to Rikers Island in police vans, the large heroin-selling organizations began to dip into the reserve army of labor (i.e., active heroin users) to replace them, but these new employees were far less trustworthy or reliable as effective street-level sellers. To keep workers in line, management used increasingly brutal methods (for example, one business owner pulled out the teeth of wayward employees (Curtis 2003, 55)), but the widening gulf between management and labor affected the bottom line and losses continued to mount. By 1993, the large heroin-selling organizations had begun to restructure, cutting their mounting losses from hand-to-hand street-level sales that had been their calling card and laying off all their former workers. In transforming their businesses into ones that relied upon a “franchise” model, these organizations were able to effectively solve their unruly labor force problem. By outsourcing their labor costs and using independent businessmen (and women) to sell their drugs, the businesses dramatically reduced their presence on the street and the amount of violence associated with those markets fell precipitously over a very short period of time.

Another development that promoted the restructuring of heroin businesses was that despite the fears that a new heroin epidemic would result from crack’s popularity, there was hardly a perceptible bump in new users of heroin in NYC, even when supplies and quality began to increase in the late 1980s and early 1990s. Indeed, by the early 1990s, the demographics of the heroin-using population in New York City were markedly slanted toward the older end of the spectrum and there were very few new users of the drug as was the case in some nearby suburbs (e.g., Suffolk County) where young white users had begun to flood local methadone programs. Saddled with an aging customer base that was increasingly infirm, the long-term sustainability of large heroin organizations was in jeopardy. To add insult to injury, the bottom dropped out of the price of heroin in 1997. That year, new wholesalers (again, Colombians via Dominicans and other Central Americans) began to offer discount heroin to retailers in NYC at less than half the price, \$75,000 per kilo rather than \$175,000, provided that they also take kilos of cocaine that were increasingly difficult to move. Corporate-style distributors has already been weakened by the influence of crack markets and a war of attrition with the NYPD, but the ability of a flock of new distributors to enter the market at substantially lower start-up costs meant the end of corporate-style businesses as the model for retail heroin operations in NYC.

While the falling price of heroin did not translate to nominal lower prices at the retail level (heroin continues to be available in NYC at the post-1973 standard market price of

\$10 per bag (approximately 0.2g) for heroin of highly variable purity), available heroin was far purer beginning in the 1990s; i.e., the real retail price of heroin fell considerably. Users did not have to purchase as much to sustain a habit, and were increasingly able to negotiate favorable deals for discount purchases (for example, \$75 for a “bundle” of 10 bags, normally priced at \$100) in what had become a buyer’s market -- one Queens wholesaler interviewed at the time commented “Used to be the custies [customers] fiending for the product, now it’s the dealers fiending for a custy.”

5.2 Cocaine/crack markets and crime

The beginning of the cocaine/freebase/crack sequence in the early 1980s in NYC was the outcome of a variety of factors, including the crisis in marijuana availability in 1981 (other cities had other “triggers” to the cocaine/crack epidemic of the 1980s, see Agar 2003). Efforts to eradicate marijuana, first in Mexico and later in Colombia, via spraying with paraquat, effectively crimped the supply chain and encouraged many Colombian growers to switch to coca, a plant that was much hardier in the face of spraying, and produced a more profitable product. The Reagan-era crackdowns on entry points mentioned above further encouraged the transition from the marijuana growing that had been traditional in Colombia (Partridge 1975) Initially using distribution routes that were already in place for marijuana, cocaine traffickers found relatively easy passage into the United States, and then shifting to new routes, but the prices for the drug were beyond what most marijuana consumers had been accustomed to paying (Adler 1993).

In the early 1980s, the soaring price of what little marijuana was available in NYC sent many dealers and users to cocaine markets (Hamid 1992), where prices were high (\$100-125/gm retail), but supply was plentiful as the glut of newly arrived Colombian cocaine was piling up. Cocaine had long enjoyed a reputation as a “rich man’s high” and the public’s fascination with “freebasing” during the early 1980s propelled many first-time users to seek out the experience. But the “freebase parlors” that had attracted so many new users to the drug could not accommodate such large numbers of people and many new styles of distribution and consumption emerged to satisfy demand. Crack, essentially pre-prepared but very dilute freebase, emerged as the solution, making cocaine in the 1980s in this newly marketed smokable form for the first time a viable “poor man’s high.” After a prolonged shortage of marijuana, new distributors and users of cocaine, freebase and soon after that, crack, flooded the market. The exponential growth of freebase and crack markets from 1983-1985 reached its peak by about 1986 (Agar (2003, 8) says that nationally, the crack era curve “took off” in 1985), but during this heady growth period there was relatively little competition that would spark the levels of violence that came later in the decade.

For a brief period, in 1982-3, the price of cocaine had remained somewhat steady, and with retail sales booming, everyone was making money, but the glut of cocaine entering

the market combined with new distribution routes (Colombians via Dominicans in NYC) quickly acted to depress the wholesale and retail prices of cocaine products. By 1985-6, the wholesale price of cocaine had dropped by about half, retail prices were not far behind, and competition for market share began in earnest.

By the mid-1980s, the market had become saturated with a wide variety of styles of cocaine/crack distributors, some of which were associated with high rates of crime and violence. Street-level markets, in general, were associated with high levels of violence, but markets that lacked a high degree of social organization – those dominated by freelance dealers – were notorious for unpredictable and predatory crimes against users, dealers and neighborhood residents alike; those markets that featured complex forms of social organization tended to more purposefully employ violence as a tool to affect the market (Sviridoff et al, 1992; Curtis 1996, 2003, Curtis and Wendel 2000).

The market responded to the steep drop in the price of cocaine (and consequently profits and profit margins) by altering the social and technical organization of distribution to reduce costs and maintain profits. Included among these were such cost-cutting measures as franchising, hiring part-timers, undercutting the competition (selling two for the price of one, for example), diluting the product, and so on. These cost-saving tactics and techniques had consequences that led to considerable violence (Curtis and Wendel 2007), but they were ultimately fruitless when street-level markets were unable to adapt to the altered urban landscape of the 1990s.

The market had stopped expanding by 1987-88, and evidence of the backlash against crack was in full-blown display by the summer of 1990 when the “Philly Blunt” T-shirt was the hottest item sold by sidewalk clothing vendors. Smoking marijuana in the wrapping from a Philly cigar, or wearing a representation of it on a t-shirt, became a symbol of minority youth rebellion against the excesses of crack, especially the indiscriminate violence that had become associated with it, and from that point on, very few youth expressed any interest in using crack. The “little brother” syndrome (Curtis 2003) is an idea that captures the contempt and fear felt and expressed by youth in the early 1990s toward crack users and dealers: seeing what crack had done to an earlier generation, these youth were determined to take a different path.

Crack markets began to adjust to a smaller consumer base and lower profits, and by 1993, the shakeout of the market became visible as street-level sales of the drug were increasingly confined to fewer neighborhoods and housing projects in historically problematic locales. Some small crews continued to operate in a discreet, public-private manner that was not easily observed by outsiders or law enforcement, but they served an eroding consumer base and a trickle of newcomers. The leader of one such crew sold crack in this fashion from a tree-lined block in Brooklyn when he was first interviewed in 1995 (Curtis and Hamid 1999). The police were aware of what was

happening on that block, but they could not catch him in the act with drugs. But they arrested him anyway and he served time in a shock program in upstate New York. By 2000, having been off the streets for a period of time and now on parole, he began reducing his involvement with the distribution and use of cocaine and crack. In the Spring of 2011, we contacted him again and found out that he had stopped using and selling drugs completely, had gotten married, moved to a suburb in Long Island and owned his own company. His crew had dissolved, and while most had not fared as well as he had, none of them were currently involved with selling drugs anymore. This account was like many that we heard told by former crack and heroin dealers who found that the reduced opportunity to make money in the drug market combined with the increased risk of arrest pushed many of them in other directions, usually out of drug sales entirely.

6.0 Why did drug prices decrease?

While it is outside the scope of the present paper to discuss *why* heroin and cocaine prices declined after 1981, briefly, geopolitical shifts led to changes in drug market production, with consequent effects on availability and price, as domestic demand remained flat or declined (Bagley 1988).

6.1 Supply-side factors affecting US drug prices

US policies aimed at “sealing the borders” to drug smuggling in the beginning of the 1980s (Williamson 1983, Executive Office of The President 1982) resulted in major shifts in global drug market production and consequent changes in rich/consumer nation availability. The South Florida Task Force, created in 1981, and its later national expansion as the National Narcotics Border Interdiction System, both headed by Vice President George H.W. Bush, focused heavily on marijuana smuggling (87% of NNBIS interdictions, General Accounting Office 1985). In response, Colombian traffickers essentially ceased production of bulky, hard-to-smuggle, lower-profit marijuana (the “Colombian gold” (Clarke 1981) that was a staple of high-end marijuana markets of the mid to late 1970s, e.g.; this shift was also the genesis of the domestic “designer marijuana “industry), and began large-scale production of cocaine and shortly afterwards heroin (Bagley 1988, Falco 1992, Freiling 2009, Drug Enforcement Administration 2003). Mexican heroin markets supplying “black tar” heroin to the US west coast also increased production at this time (Bagley 1988, Mills 1986). Other Reagan-era initiatives had the effect of increasing heroin production in Central Asia and increasing available Central American transshipment routes for South American drug production destined for US consumers (Mills 1986, Bagley 1988, McCoy 1991).

The result was a huge increase in global production of heroin and cocaine and a consequent eventual drop in retail prices in rich/consumer nations, principally at this time the US. European consumption of heroin was robust throughout the 1981-2007 period, but there was little European cocaine market until the mid-1990s; the other largest current consumer market for hard drugs among non-producer countries, Brazil, was not yet rich enough to account for any large share of global cocaine consumption until the early 1990s.

6.2 Demand-side factors affecting US drug prices

Demand dropped at the same time supply increased, with both factors driving down price. Crack became unpopular for a new generation of potential users and many current users stopped using because it impoverished them, even as the price plummeted. And heroin, because of the fear of HIV, was also experiencing reduced demand, although greatly increased heroin purity meant that one could sustain a habit

sniffing at a reasonable level of expenditure (for the first time since the 1930s, Courtwright et al. 1989) without HIV worries.

There is a lack of elasticity of demand for heroin or cocaine: the likely effect of decreased heroin prices may be marginally more consumption, but not much; cheaper heroin isn't going to draw very many new consumers in to the market and existing users have a pretty solid base level of consumption they can't drop below (withdrawal) or go much above (overdose/death), so at most one would expect a little more use among new and low-level users. Cocaine demand is probably more elastic in response to price; one would expect decreased prices to lead to increased consumption by existing users but probably not a lot of new users.

In each case, assuming we are correct that one could expect total expenditure to stay about the same or decrease, and assuming the correctness of the claim that crimes committed to finance drug use are a significant share of total crime, then less crime would be needed to cover that expenditure. Most likely in any existing market, most people are as high as they care to be most of the time; the question is the level of expenditure (i.e. crime) required to maintain that desired state. The only way increased consumption would drive higher crime is psychopharmacological violence ("I was so high I didn't know what I was doing"), which Goldstein et al. concluded is not a significant source of violence. With regard to property crime, it's hard to see how increased consumption *per se* would lead to increased crime for psychopharmacological reasons.

Many of those that continue to use heroin and other hard drugs constitute what might be termed the "worst generation" age cohort of hard drug users (Johnson et al. 2006). This cohort came of age during the Viet Nam era and many have consistently used drugs over the last 40 some years. But with the widespread availability of methadone (which was introduced in the mid-1960s) and the increased availability of other replacement drugs (e.g., suboxone, Xanax), many of these users have become disengaged from heroin markets and the types of violence and criminality that accompanied them. For example, one heroin seller and shooting gallery operator that we interviewed in the early 1990s in Brooklyn is currently (2011) a methadone patient who makes money selling pharmaceutical drugs to his cohort of acquaintances near John Jay College. Like many from his generation that continued to use drugs, the effects of age would likely have decreased his criminal involvement to support his habit over time, especially violent crime, but the availability of legal drugs that are easily acquired and sold has also hastened his withdrawal from street drug markets and other forms of criminality. The growth of the drug treatment industry and competition from pharmaceutical drugs has had the effect of reducing the size of heroin markets and, because they no longer hold a monopoly over the kinds of drugs that are sought by users, has reduced the amount of structural violence that had once been associated with street-level heroin markets.

Heroin users also have a variety of means to mitigate the effects of their addictions that were not available in previous decades and thus, their need to engage in criminal acts to buy daily supplies of heroin can be more easily attenuated. In addition to methadone and suboxone, which are widely available legally and on the black market, heroin users have access to a wide variety of pharmaceutical drugs (both diverted drugs available in illicit markets and prescribed substances) to help them manage their drug dependence. Harm reduction programs, another recent innovation, have also been very effective in engaging many of the most at-risk drug users and, through this engagement, steering them away from crime and violence.

Another effect of an aging hard-drug consumer cohort is the increasing percentage of users who qualify for government assistance (e.g. SSI and SSD) with each passing year. NYC's extraordinary response to the HIV epidemic has also taken pressure off drug markets, as so many of the "worst generation" are HIV+ and thus qualify for many city-provided services, including, crucially free/heavily subsidized housing. The early 1990s also saw a proliferation of syringe exchange programs sprout across New York City to combat the HIV/AIDS epidemic among drug injectors. Once run by grassroots activists to serve the more than 200,000 injectors in New York, many of these programs have evolved into mainstream multi-service organizations that cater to hard drug users of all types. Effective outreach to drug using communities by these organizations has brought many users into contact with health care providers, but what is notable about the populations that they serve is the degree to they are aging. The small number of young people that they are in contact with are vastly outnumbered by those that are long-term drug users.

6.3 Other factors influencing the relationships among drug markets, drug prices, and crime

A multitude of other factors undoubtedly affected the relationships among drug markets, drug prices, and crime. Two we believe are worthy of discussion are: technological/market changes that have reduced the economic viability of many forms of property crime; and law enforcement initiatives and tactics that were effective at reconfiguring (but not eliminating) markets for heroin, cocaine and crack in NYC during this time period.

Technology has also played a role in reducing crime associated with drugs. During the crack epidemic of the 1980s, markets for stolen goods were flooded with VCRs, stereos and other relatively expensive household items. But the mass market availability of cheap Chinese goods that has replaced those once expensive items means most apartments contain little with any substantial resale value, and the use of ATM/debit cards mean few people on the street carry cash.

Law enforcement initiatives have also played a significant role in reconfiguring drug markets and reducing the size of those that commanded the attention of the community. In particular, Operation Impact, an overlay of uniformed officers assigned to high-crime areas for months at a time, had the effect of suppressing street-level drug use and sales and other street crimes in areas where they were deployed. In addition, undercover operations, often coordinated with the District Attorney and other law enforcement agencies (e.g., the New York City Housing Authority), were often effective in dismantling large-scale distribution organizations through such novel legal tactics as the “historical conspiracy” approach pioneered in 2002 in Brooklyn to address distributors that were entrenched in public housing projects in Coney Island and Cypress Hills (Curtis et al. 2003). Though the court ultimately ruled against this approach (of arresting the entire organization at once and charging them with RICO violations), it was effective in disrupting active markets in the housing projects in ways that arresting individuals or small groups of distributors had not been.

7.0 Conclusion: Mapping a research agenda to explore connections between heroin, cocaine, and crack prices and crime

Despite the fact that the enormous decreases in price from 1981-2007 for both heroin and cocaine are well-known in the literature, there has been little exploration of how those substantial decreases might have contributed to the equally-well-known decreases in both violent and property crime that occurred over the same time-period. Using a combination of econometric analysis and ethnographic data about New York City heroin and cocaine markets, supplemented by an analysis of the extensive literature, official reports, etc. discussing the parallel declines in drug prices and crime, this paper attempts to begin to remedy that omission, describes methods for analyzing the relationship between drug market prices and crime, and proposes additional analyses to continue that exploration.

The hypothesis for which we have provided some initial analysis is that a decrease in heroin, cocaine, and crack prices reduces crime. There are two reasons price might fall, decreased demand and increased supply; as we have argued above, both factors are likely at work with regard to drug prices during this period. More sophisticated models should include additional control variables such as economic conditions, explainable changes in police presence, incarceration rates (Levitt (2004)), as well as explore other structural features of the trends. Unfortunately all existing sources of information on consumption come from problematic proxies. Hospital emergency room admittances and surveys of drug use participation do not answer critical questions about the intensity of drug use and the true elasticity of demand for drug consumption. Although costly, new data collection techniques need to be designed to track the effects of prices changes on both consumption and criminal activities connected to that consumption.

References

- Abt Associates. 2001. *The Price of Illicit Drugs: 1981 Through the Second Quarter of 2000*. Washington, D.C.: Office of Programs, Budget, Research and Evaluations, Office of National Drug Control Policy. Available online at http://www.abtassociates.com/reports/price_illicit.pdf
- Andreas, P. and J. Wallman. 2009. Illicit markets and violence: What is the relationship? *Crime Law and Social Change* 52, 22-229.
- Arkes, J., Rosalie Liccardo Pacula, Susan M. Paddock, Jonathan P. Caulkins, Peter Reuter. 2008. *Why the DEA STRIDE Data are Still Useful for Understanding Drug Markets*. National Bureau of Economic Research Working Paper No. 14224.
- Bagley, B. 1988. US foreign policy and the war on drugs: Analysis of a policy failure. *Journal of Interamerican Studies and World Affairs* ["Special Issue: Assessing the Americas' War on Drugs"] 30(2/3), 189-212.
- Blumstein, A. and Wallman, J. (eds). 2000. *The Crime Drop in America* (Cambridge Studies in Criminology). Cambridge [UK]: Cambridge University Press.
- Blumstein, A. and Wallman, J. 2006. The crime drop and beyond. *Annual Review of Law and Social Science* 2:125-146
- Brownstein, H., Baxi, H., Goldstein, P., and Ryan, P. 1992. The relationship of drugs, drug trafficking, and drug traffickers to homicide. *Journal of Crime and Justice* 15, 25-44.
- Bureau of Justice Statistics. 2006. *Drug Use And Dependence, State And Federal Prisoners, 2004*. Washington, D.C.: Bureau of Justice Statistics, United States Department of Justice Available online at <http://bjs.ojp.usdoj.gov/content/pub/pdf/dudsf04.pdf>
- Caulkins, J., Johnson, B. Taylor, A., and Taylor, L. 1998. *What Dealers Tell Us About Their Costs Of Doing Business*. Available online at <http://repository.cmu.edu/cgi/viewcontent.cgi?article=1041&context=heinzworks>
- Caulkins, J., Reuter, P., and Taylor, L. 2006. Can supply restrictions lower price? Violence, drug dealing and positional advantage. *Contributions to Economic Analysis and Policy* 5(1).
- Conklin, J. 2003 Why crime rates fell. *Crime and Justice International* 19,72: 17-20
- Clarke, R.C. 1981. *Marijuana botany: The propagation and breeding of distinctive cannabis*. Berkeley: And/Or press.
- Courtwright, D., Joseph, H., and D Des Jarlais. 1989. *Addicts Who Survived: An Oral History of Narcotics Use in America, 1923-1965*. Knoxville: University of Tennessee Press.
- Curtis, R., and Sviridoff, M. 1999). The social organization of street-level drug markets and its impact on the displacement effect. In R. P. McNamara (ed.), *Crime*

- Displacement: The Other Side Of Prevention*. East Rockaway (NY): Cummings and Hathaway.
- Curtis, R., and Wendel, T. 2000. Toward the development of a typology of illegal drug markets. In M. Natarajan and M. Hough (eds.), *Illegal Drug Markets: From Research To Policy, Crime Prevention Studies, Vol. 11*. New York: Criminal Justice Press.
- Curtis, R., and Wendel, T. 2007. "You're always training the dog": Strategic interventions to reconfigure drug markets. *Journal of Drug Issues* 37(4): 867-891.
- Curtis, R., Friedman, S., Neaigus, A., Jose, B., Goldstein, M., and Idefonso, G. 1999). Street-level drug markets: Network structure and HIV risk. *Social Networks* 17, 229-249.
- Curtis R, A Hamid. 1999. Neighborhood Violence in New York City and Indigenous Attempts to Contain It: The Mediating Role of the Third Crown of the Latin Kings. In P. Marshall, M. Singer and M. Clatts (eds.), *Integrating Cultural, Observational, and Epidemiological Approaches in the Prevention of Drug Abuse and HIV/AIDS*. Washington, D.C.: National Institute on Drug Abuse.
- Curtis, R., Wendel, T., and Robbins-Stathas, L. 2003. *"Best Practices" For Harm Reduction/Syringe Exchange Programs In New York City: An Ethnographic Rapid Assessment Study*. Submitted to the New York City Department of Health and Mental Hygiene HIV Prevention Planning Unit.
- Curtis, R., Wendel, T., and Spunt, B. 2002. *We Deliver: The Gentrification Of Drug Markets On Manhattan's Lower East Side*. Report published by the National Institute of Justice, U.S. Department of Justice; available online at www.ncrjs.gov/rr/vol5_1/69.html.
- Curtis, R., Wendel, T., Karmen, A., Donaldson, G., Spunt, B. et al. 2003. *Rapid Assessment Of Shootings And Homicides In Two Brooklyn Police Precincts: 67 And 73*. Report submitted to the Kings County District Attorneys Office, the New York City Police Department, and the communities of Brownsville and East Flatbush.
- Dorn, N., K. Murji, and N. South. (1992). *Traffickers: Drug Markets And Law Enforcement*. London: Routledge.
- Drug Enforcement Administration. 2003. "Colombian Marijuana" sections in chapters "1975-1980" and "1980-1985", *Drug Enforcement Administration History: A Tradition of Excellence 1973-2003*. Washington, D.C.: Drug Enforcement Administration, United States Department of Justice; available online at <http://www.justice.gov/dea/pubs/history/>
- Eck, J. 1995. A general model of the geography of illicit retail marketplaces. In J. Eck and D. Weisbrud (eds.), *Crime and Place, Vol. 4*. Monsey: Criminal Justice Press.
- Executive Office of the President. 1982. *Federal Strategy for Prevention of Drug Abuse and Drug Trafficking, 1982*. Washington, D.C.: Executive Office of the President.

- Fagan, J. 1990. Intoxication and aggression. In M. Tonry and J. Q. Wilson (eds.), *Drugs And Crime: Crime And Justice, A Review Of Research, Vol. 13* (pp. 241-320). Chicago: University of Chicago Press.
- Fagan, J., and Chin, K. 1990. Violence as regulation and social control in the distribution of crack. In M. De La Rosa, E. Lambert and B. Gropper (eds.), *Drugs And Violence: Causes, Correlates, And Consequences* (pp. 8-43). Washington, D.C.: National Institute on Drug Abuse.
- Falco, M. 1992. Foreign drugs, foreign wars. *Daedalus* 121,3, (special issue: "Political Pharmacology: Thinking about Drugs"), 1-14.
- Federal Bureau of Investigation. (annual) *Uniform Crime Reports*. Washington, D.C.: Federal Bureau of Investigation, United States Department of Justice
- Freiling, T. 2009. *The candy machine: How cocaine took over the world*. London: Penguin Books.
- Fries, A. (Project Leader), Anthony, R., Cseko, A., Gaither, C. and Schulman E. 2008. *The price and purity of illicit drugs: 1981-2007*. Institute for Defense Analysis, IDA Paper P-4369.
- Friman, H. R. 2009. Drug markets and the selective use of violence. *Crime Law and Social Change* 52, 285-295.
- General Accounting Office. (1985). *Coordination of Federal drug interdiction efforts*. (Report to the Chairman, Subcommittee on Government Information, Justice and Agriculture, Committee on Government Operations, House of Representatives). Washington, D.C.: United States General Accounting Office.
- Goldstein, P. 1985. The drug/violence nexus: A tripartite conceptual framework. *Journal of Drug Issues* 14, 493-506.
- Goldstein, P., Brownstein, B. and Ryan, P. 1992. Drug-related homicide in New York: 1984 and 1988. *Crime and Delinquency* 38, 459-476.
- Goldstein, P., Brownstein, H., Ryan, P. and Bellucci, P. (1989). Crack and homicide in New York City, 1988: A conceptually based event analysis. *Contemporary Drug Problems* 16, 651- 687.
- Granger, C. 1969. Investigating causal relations by econometric models and cross-spectral methods. *Econometrica* 37(3), 424-438.
- Hamid, A., 1992. The developmental cycle of a drug epidemic: The cocaine smoking epidemic of 1981-1991. *Journal of Psychoactive Drugs* 24, 337-348.
- Hamid, A., Curtis, R., McCoy, K., McGuire, J., Conde, A., Bushell, W., Lindenmayer, R., Brimberg, K., Maia, S., Abdur-Rashid, S., and Settembrino, J. 1997. The heroin epidemic in New York City: Current status and prognoses. *Journal of Psychoactive Drugs* 29(4), 375-391.

- Horowitz, J. 2001. Should the DEA's STRIDE data be used for economic analyses of markets for illegal drugs? *Journal of the American Statistical Association* 96(456), 1254-1271.
- Joanes, A. 1999. Does the New York City Police Department deserve credit for the decline in New York City's homicide rates?: A cross-city comparison of policing strategies and homicide rates. *Columbia Journal of Law and Social Problems* 33(1), 265-313.
- Johnson, B.D., .2006. The rise and decline of hard drugs, drug markets, and violence in inner-city New York. In Blumstein, A. and Wallman, J. (eds). 2000. *The Crime Drop in America* (Cambridge Studies in Criminology). Cambridge [UK]: Cambridge University Press.
- Karmen, A. 2000. *New York Murder Mystery: The True Story Behind the Crime Crash of the 1990s*. New York: New York University Press.
- Kleiman, M. 1988. Crackdowns—the effects of intensive enforcement on retail heroin dealing. In M. Chaiken (ed.), *Street-level drug enforcement: Examining the issues. Issues and Practices* (pp. 3-34). Washington, DC: National Institute of Justice.
- Knapp, Whitman.1972 *The Knapp Commission Report on Police Corruption*. New York: George Braziller.
- Levitt, S. D. 2004. Understanding why crime fell in the 1990s:four factors that explain the decline and six that do not. *Journal of Economic Perspectives* 18(1), 163-190.
- Lott, J. 1998. *More Guns, Less Crime: Understanding Crime and Gun Control Laws (Studies in Law and Economics)*. Chicago: university of Chicago Press.
- Maher L., and Curtis, R. 1992. Women on the edge of crime: Crack cocaine and the changing contexts of street-level sex work in New York City. *Crime, Law and Social Change* 18, 221-258.
- McCoy, A. 1991. *The Politics of Heroin: CIA Complicity in the Global Drug Trade*. Lawrence Hill Books, Chicago.
- McCoy, K., McGuire, J., Curtis, R., and Spunt, B. 2005. White chicks on dope: Heroin and identity dynamics in New York in the 1990s. *Journal of Drug Issue*, 35, 815-836.
- Mills , J. 1986. *The Underground Empire: Where Crime and Governments Embrace*. New York: Doubleday Books.
- Moore, M. 1977. *Buy And Bust: The Effective Regulation Of An Illicit Heroin Market*. Lexington (Ma.): Lexington Books.
- National Drug Intelligence Center (annual). *National Drug Threat Assessment* Washington, D.C.: U.S. Department of Justice.
- Naylor, R.T. 2009. Violence and illegal economic activity: A deconstruction. *Crime Law*

- and Social Change* 52, 231-242.
- Partridge, W.L. 1975. *Cannabis and Culture*. Mouton De Gruyter.
- Reuter, P.H. 2004. *The Organization of Illegal Markets – An Economic Analysis*. Washington, D.C.: National Institute of Justice.
- Reuter, P.H., MacCoun R., Murphy, P., Abrahamse A., Simon, B. (1990). *Money From Crime: A Study of the Economics of Drug Dealing in Washington, D.C.* Washington, D.C.: Rand Corp.
- Rosenfeld, R. 2004. The case of the unsolved crime decline. *Scientific American* 290(2), 82-89.
- Shepard, Edward M. and Blackley, Paul R. 2005. Drug enforcement and crime: Recent evidence from New York State. *Social Science Quarterly* 86(2), 323-42.
- Sviridoff, M., Sadd, S., Curtis, R., and Grinc, R. 1992. *The neighborhood effects of New York City's tactical narcotics team on three Brooklyn precincts*. New York: Vera Institute of Justice.
- Thoumi, T. 2005. The numbers game: Let's all guess the size of the illegal drug industry! *Journal of Drug Issues* 35(1): 185-200.
- Travis, J. "Foreword", "Symposium: Why is Crime Decreasing?". *The Journal of Criminal Law and Criminology* 88(4).
- Wendel, T., and Curtis, R. 2000. The heraldry of heroin: Dope stamps and the dynamics of drug markets in New York City. *Journal of Drug Issues* 30(2), 225-260.
- Wendel, T., Rothchild, R., Curtis, R., Corcoran, K., Hanlin, T., Eng, B., and Zedeck, M. 2003. Heroin cut with morphine?: An ethnographic-forensic chemistry case study. *Addiction Research and Theory* 11(5), 349-366.
- Williamson, R. 198). International illicit drug traffic: The United States response. *Bulletin of Narcotics* 35(4), 33-45.
- Zimmer, L. 1987. *Operation Pressure Point: The disruption of street-level drug trade on New York's Lower East Side*. New York: New York University School of Law.
- Zimring, F. 2007. *The Great American Crime Decline (Studies in Crime and Public Policy)*. New York: Oxford University Press.