UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF FLORIDA
TALLAHASSEE DIVISION

NICOLE FRIED, in her official capacity as the Commissioner of Agriculture, **VERA COOPER, NICOLE HANSELL and NEILL FRANKLIN,**

Plaintiffs,

CASE NO:

v.

MERRICK GARLAND, in his official capacity as Attorney General of the United States; **MARVIN RICHARDSON**, in his official capacity as Acting Director of the Bureau of Alcohol, Tobacco, Firearms, and Explosives; and **THE UNITED STATES OF AMERICA,**

Defendants.
_____/

COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF

COMES NOW, Plaintiffs, Nicole Fried ("Commissioner Fried"), in her official capacity as the agency head of the Florida Department of Agriculture and Consumer Services Commissioner ("FDACS"), Vera Cooper ("Cooper"), Nicole Hansell ("Hansell"), and Neill Franklin ("Franklin") (collectively, "Plaintiffs"), and file this Complaint for Declaratory and Injunctive Relief against Defendants Merrick Garland, in his official capacity as Attorney General of the United States ("Attorney General Garland"), Marvin Richardson, in his official capacity as Acting Director of

the Bureau of Alcohol, Tobacco, Firearms, and Explosives ("Director Richardson"), and the United States of America ("United States") (collectively, "Defendants"), and alleges as follows:

Introduction

1. As Supreme Court Justice Clarence Thomas recently noted, the United States' current policies regarding marijuana amount to:

> "a half-in, half-out regime that simultaneously tolerates and forbids local use of marijuana. This contradictory and unstable state of affairs strains basic principles of federalism and conceals traps for the unwary."
>
> *Standing Akimbo, LLC v. U.S.*, 141 S. Ct. 2236, 2236-2237 (2021) (Thomas, C., respecting the denial of certiorari).

2. The United States' "current approach to marijuana bears little resemblance to the watertight nationwide prohibition" which it previously enforced. *Id.* at 2238. Justice Thomas deemed this current approach to be "more episodic than coherent." *Id.*

3. In her official capacity, Commissioner Fried understands how essential it is for government entities to ensure that their regulations are rational, consistent, and coherent. FDACS regulates numerous areas of significant importance to Floridians. FDACS' jurisdiction includes essential matters such as food safety, agricultural water policy, consumer protection matters, and more.

4. Further, Commissioner Fried regulates and oversees, in her official capacity, Florida laws and programs relating to medical marijuana and firearms. In each of these areas, Commissioner Fried and FDACS work to ensure that Florida law is given full effect and that the rights of Floridians are preserved.

5. However, the Defendants' irrational, inconsistent, and incoherent federal marijuana policy undermines Florida's medical marijuana and firearms laws and prevents Commissioner Fried from ensuring that Floridians receive the state rights relating to them. As will be detailed below, Sections 922(d)(3) and 922(g)(3) of the Federal Criminal Code (collectively, the "Challenged Sections") forbid Floridians from possessing or purchasing a firearm on the sole basis that they are state-law-abiding medical marijuana patients. The Bureau of Alcohol, Tobacco, Firearms, and Explosives ("ATF") has expressly promulgated this interpretation of the Challenged Sections through 27 C.F.R. § 478.11 and ATF Form 4473 (collectively, the "Challenged Regulations).

6. Qualifying patients such as Cooper and Hansell may legally participate in Florida's medical marijuana program in accordance with the Florida Constitution and state statute. However, solely due to this state-legal use of medical marijuana, the Defendants, the Challenged Sections, and Challenged Regulations deem them too dangerous to exercise their Second Amendment rights. This deprivation of

Cooper and Hansell's Constitutional rights does not survive any level of appropriate legal scrutiny.

7. For much of the same reason, the Challenge Sections and Challenged Regulations prevent the implementation of Florida's medical marijuana program in violation of the Consolidated Appropriations Act, 2022, § 531 (attached as Exhibit A). This proviso is often referred to as the "Rohrabacher-Farr Amendment." As will be discussed below, Congress has expressly forbid Attorney General Garland and Director Richardson from expending any funds for that purpose or with that effect.[1] This embodies the contradictory nature of the United States' marijuana policy and the "traps for the unwary" that Justice Thomas warned of.

8. Qualifying patients such as Franklin, who refuse to participate in Florida's medical marijuana program on the sole basis that they are unwilling to concede their Second Amendment rights, embody this violation. By punishing Floridians for actions that fully comply with Florida's medical marijuana laws, the Defendants are violating the Rohrabacher-Farr Amendment. *See United States v, McIntosh*, 833 F. 3d 1163 (9th Cir. 2016).

9. The Plaintiffs do not challenge the United States' right to enact reasonable gun regulations (such as others throughout section 922) that protect the public. *See U.S. v. Chovan*, 735 F. 3d 1127 (9th Cir. 2013) (upholding the restriction

[1]

against those convicted of domestic violence offenses possessing firearms). In fact, the Plaintiffs are all strong advocates for reasonable gun regulations that keep firearms out of the hands of those who cannot safely possess them.

10. However, the Challenged Sections and Challenged Regulations are unconstitutional as applied to Florida medical marijuana patients. Those provisions, as applied to state-law-abiding medical marijuana patients, such as Cooper and Hansell, and those reasonably seeking to participate in the state medical marijuana program, such as Franklin, offer no protection to the public. They also place an inappropriate and severe burden on the constitutional rights of those affected.

11. The Plaintiffs are aware that *Wilson v. Lynch* and its progeny have previously upheld one of the Challenged Sections[2] and the Challenged Regulations in response to challenges that may appear similar to this one at first blush. 835 F. 3d 1083 (9th Cir. 2016).

12. As will be discussed below, *Wilson* was based on a thin and stale factual record which was found to suggest a "significant link between drug use, including marijuana use, and violence." *Id.* at 1093. The Plaintiffs will show that *Wilson* is distinguishable based on differences present on the face of this Complaint and on

[2] *Wilson* held that the plaintiff in that case did not have standing to challenge Section 922(g)(3) and thus dismissed the portions of the complaint dealing with it on that basis. The Plaintiffs, however, for the reasons stated below, have standing to challenge that provision.

pertinent evidence to be offered. Alternatively, the Plaintiffs will show through evidence that the stated factual basis for *Wilson* and its progeny, at least as it relates to state-law-abiding medical marijuana patients, is obsolete and without scientific support.

13. *Wilson* correctly held that the Challenged Sections and Challenged Regulations "directly burden" a medical marijuana patient's "core Second Amendment right to possess a firearm." *Id.* at 1092. Therefore, the relevant question in this matter is whether the physical and/or psychological effects of medical marijuana on a state-law-abiding patient render them sufficiently dangerous or violent for the application of the Challenged Sections and the Challenged Regulations to survive heightened scrutiny. As has and will be alleged and as will be shown through evidence, they do not. Therefore, those provisions are unconstitutional as applied to such patients.

14. Further, the Plaintiffs allege that the Challenged Sections and the Challenged Regulations violate the Rohrabacher-Farr Amendment. Much like in *McIntosh*, the Challenged Sections and Challenged Regulations impermissibly punish Florida medical marijuana patients who have fully complied with state law. Such punishment of individuals prevents the implementation of a state medical marijuana program. This issue was not raised or considered in *Wilson*.

15. Therefore, in order to stop these ongoing violations of the Second Amendment and/or the Rohrabacher-Farr Amendment, the Plaintiffs seek a judgment from this Court (a) declaring that the Challenged Sections and the Challenged Regulations violate the Second Amendment as applied to state-law-abiding medical marijuana patients and those reasonably intending to participate in the state medical marijuana program, and (b) enjoining the Defendants from enforcing the Challenged Sections and the Challenged Regulations as applied to state medical marijuana patients, and/or, in the alternative, (c) declaring that the Challenged Sections and the Challenged Regulations prevent the implementation of Florida's medical marijuana program in violation of the Rohrabacher-Farr Amendment, and (d) enjoining the Defendants from expending any federal funds to defend or enforce the Challenged Sections and the Challenged Regulations on that basis.

Jurisdiction and Venue

16. The subject matter of this case is within the original and exclusive jurisdiction of the federal courts of the United States. Specifically, the Plaintiffs seek relief pursuant to 28 U.S.C. §§ 1983, 2201, 2202, and 2412. Therefore, this case presents a federal question pursuant to 28 U.S.C. § 1331 and this Court has jurisdiction.

17. FDACS, which Commissioner Fried leads in her official capacity, is headquartered in Tallahassee. Further, Cooper is a resident of Milton, Florida, which is within the Northern District. Hansell is a resident of Miami, Florida. Franklin is a resident of Fort Myers, Florida. The actions described in paragraph 24 below, which give rise to Cooper's challenge, also occurred within this judicial district. Therefore, venue is proper in this district pursuant to 28. U.S.C. § 1391(e).

Parties

18. Commissioner Fried is a natural person and a citizen of the United States and of the State of Florida. As stated previously, FDACS, which Commissioner Fried leads in her official capacity, is an agency of the State of Florida. FDACS is the state agency responsible for, amongst other matters, the issuance of licenses permitting eligible Floridians to engage in the concealed carry of weapons and firearms. *See* § 790.06(1), Fla. Stat.

19. Nothing in Florida law precludes a medical marijuana patient from obtaining a concealed weapon or firearm license. *See* § 790.06(2), Fla. Stat. Further, nothing in Florida law prevents a medical marijuana patient from purchasing or possessing a firearm.

20. Further, FDACS regulates multiple aspects of Florida's medical marijuana program.[3] An applicant for a Medical Marijuana Treatment Center ("MMTC") license must possess, amongst other things, a "valid certificate of registration issued by [FDACS]." *See* § 381.986(8)(b)2, Fla. Stat. An MMTC also must follow the horticultural and agricultural practices spelled out in Chapter 581, which is under FDACS' authority.[4] *See* § 381.986(8)(e)6.c and d; § 581.035, Fla. Stat. Further, an MMTC must apply to FDACS for an Edibles Food Establishment Permit in order to sell medical marijuana in edible form. *See* § 381.986(8)(e)8; 500.12, Fla. State; Rule 5K-11.002, Florida Administrative Code. Beyond that, all consumer complaint relating to Florida's medical marijuana industry are directed to FDACS.[5]

21. In her official capacity, Fried works diligently in these areas to ensure that the laws under her jurisdiction are given full effect. This includes ensuring that safe and eligible Floridians are able to obtain a concealed weapon or firearm license

[3] As a general matter, Commissioner Fried, in her official capacity, has "supervision of matters pertaining to agriculture except as otherwise provided by law." Fla. Const., Art. IV, § (4)(d)

[4] Florida MMTC's are required by state law to be vertically integrated, meaning they must all grow their own medical marijuana, as well as processing and selling it.

[5] *See* https://www.fdacs.gov/Cannabis-Hemp/Medical-Marijuana/For-Consumers/Report-Your-Concerns-About-Medical-Marijuana

and that qualified Florida patients may avail themselves of a safe and regulated medical marijuana program.

22. Cooper is a Florida resident and a qualified, state-law-abiding medical marijuana patient. She takes and has taken medical marijuana in strict compliance with the state's medical marijuana laws.

23. Cooper is a widow whose late husband owned firearms for their family's personal protection while they resided together. Currently, Cooper runs her family's small business. Cooper wishes to purchase a firearm for her personal protection both inside and outside of her home.

24. Cooper attempted to exercise her Second Amendment rights by purchasing a firearm on March 15, 2022. She went to a gun store in Milton, Florida, but the store denied her purchase based upon ATF Form 4473 ("Form") (see Exhibit B, attached), which is one of the Challenged Regulations. Specifically, Cooper answered "yes" in response to Question 11(e) on the Form, which states, "Are you an unlawful user of, or addicted to, marijuana…or any other controlled substance?" The Form goes on to state that such marijuana use "remains unlawful under Federal law regardless of whether it has been legalized or decriminalized for medicinal or recreational purposes in the state where" the perspective purchaser resides. *Id.*[6]

[6] Although some states have decriminalized marijuana for all users and not just those deemed medically qualified, Florida has not. Therefore, this challenge relates only

25. Hansell is Florida resident and a qualified, state-law-abiding medical marijuana patient. She is also a veteran of the United States Army who served honorably in Afghanistan and elsewhere. During her time in service, she suffered physical injuries resulting from jumping out of helicopters, as well as Post Traumatic Stress Disorder. Hansell uses medical marijuana to successfully treat these issues.

26. Hansell wishes to possess a firearm for personal protection in her home and elsewhere.

27. Hansell attempted to exercise her Second Amendment rights by purchasing a firearm on March 15, 2022. She went to a gun store in Miami, Florida, but the store denied that purchase based upon her response to Question 11(e) on the Form that she is an "unlawful user" of medical marijuana.

28. Franklin is a Florida resident, a retired law enforcement officer, and the owner of a firearm. He also meets the criteria of a "qualified retired law enforcement officer," pursuant to 18. U.S.C. § 926C, which grants him federal permission to carry a concealed firearm.

29. Franklin consulted with a qualifying physician permitted to prescribed medical marijuana pursuant to Florida law, on March 16, 2022. The qualifying physician determined that Franklin qualifies to receive medical marijuana pursuant

---

to the Challenged Sections and Challenged Regulations' application to medical marijuana patients.

to Florida law based on a qualifying medical condition. However, Franklin will not participate in Florida's medical marijuana program on the sole basis that he does not want to lose his Second Amendment right to possess or purchase a firearm.

30. Attorney General Garland heads the Department. In his official capacity, he is responsible for executing and administering the laws of the United States, including the Challenged Sections. The Rohrabacher-Farr Amendment serves as a restriction on funds appropriated to Attorney General Garland and the Department.

31. ATF is housed within the jurisdiction of Attorney General Garland and the Department. ATF's jurisdiction, according to its website, is focused on "protect[ing] our communities from violent criminals, criminal organizations, the illegal use and trafficking of firearms, the illegal use and storage of explosives, acts of arson and bombings, acts of terrorism, and the illegal diversion of alcohol and tobacco products."

32. Director Richardson, in his official capacity, is responsible for executing and administering the ATF's efforts. This includes the enforcement and promulgation of the Challenged Regulations. Further, as ATF falls within the Department, the Rohrabacher-Farr Amendment restricts funds appropriated to Director Richardson and ABT.

33. The United States is a proper Defendant in this action pursuant to 5 U.S.C. § 702.

Statement of Facts

The Challenged Sections and the Challenged Regulations

34. Section 922(d)(3) of the Federal Criminal Code makes it unlawful to "sell or otherwise dispose of any firearm or ammunition to any person" who is an "unlawful user of or addicted to any controlled substance (as defined in section 102 of the Controlled Substances Act (21 U.S.C. 802))."[7]

35. ATF has adopted regulations which specifically define "controlled substance" as including marijuana. 27 C.F.R. § 478.11. Those regulations also define "unlawful user of or addicted to any controlled substance" as:

> A person who uses a controlled substance and has lost the power of self-control with reference to the use of controlled substance; and any person who is a current user of a controlled substance in a manner other than as prescribed by a licensed physician. Such use is not limited to the use of drugs on a particular day, or within a matter of days or weeks before, but rather that the unlawful use has occurred recently enough to indicate that the individual is actively engaged in such conduct. A person may be an unlawful current user of a controlled substance even though the substance is not being used at the precise

[7] Pursuant to section 922(d), indictment for or conviction of a federal crime does not always lead to the loss of a person's Second Amendment Rights. Specifically, only those facing or convicted of a crime "punishable by imprisonment for a term exceeding one year" face such repercussions. *See* Section 922(d)(1). Accordingly, the federal illegality of marijuana is not, in and of itself, a basis for the loss of a person's gun rights. There are other federal crimes of at least sometimes similar magnitude (i.e., those punishable by less than a year imprisonment) which do not carry this consequence.

> time the person seeks to acquire a firearm or receives or possesses a firearm. An inference of current use may be drawn from evidence of a recent use or possession of a controlled substance or a pattern of use or possession that reasonably covers the present time, e.g., a conviction for use or possession of a controlled substance within the past year; multiple arrests for such offenses within the past 5 years if the most recent arrest occurred within the past year; or persons found through a drug test to use a controlled substance unlawfully, provided that the test was administered within the past year. For a current or former member of the Armed Forces, an inference of current use may be drawn from recent disciplinary or other administrative action based on confirmed drug use, e.g., court-martial conviction, nonjudicial punishment, or an administrative discharge based on drug use or drug rehabilitation failure.[8]
>
> (emphasis added)

36. Section 922(g)(3) of the Federal Criminal Code prohibits any such "unlawful user" from possessing or receiving "any firearm or ammunition which has been shipped or transported in interstate or foreign commerce."

37. Stemming from these prohibitions, ATF has promulgated the Form. As previously stated, anyone seeking to legally purchase a firearm must complete this form and any self-identifying "unlawful user" of medical marijuana must be denied.

[8] Although this provision refers to controlled substances that are "prescribed by a licensed physician," Florida physicians do not actually "prescribe" medical marijuana. Instead, they determine whether the person consulting with them meets the state definition of a qualified patient and, if so, the physician may recommend the use of medical marijuana for their qualifying medical condition.

38. As the Form and 27 C.F.R. § 478.11 make clear, the Defendants promulgated interpretation of "unlawful user" includes state-law-abiding medical marijuana patients.

Florida's medical marijuana program

39. In November 2016, the citizens of Florida adopted what is now Article X, Section 29 of the Florida Constitution. That section of the state constitution provides that the "medical use of marijuana by a qualifying patient or caregiver in compliance with this section is not subject to criminal or civil liability or sanctions under Florida law." Art. X, § 29(a)(1).

40. A Florida "qualifying patient" is defined as "a person who has been diagnosed to have a debilitating medical condition, who has a physician certification and a valid qualifying patient identification card..." Art. X, § 29(a)(10), *see also* Section 381.986(1)(l), Florida Statutes (equivalent definition for "qualified patient").

41. Pursuant to Florida's Office of Medical Marijuana Use's April 1, 2022, weekly update (attached as Exhibit C), there were 702,081 qualified patients in Florida as of that date. Cooper and Hansell are two of those qualified patients.

During the period from March 25 through March 31, 2022, Florida licensees dispensed 270,724,530 milligrams of medical marijuana throughout in the state. *Id.*[9]

Statistics and studies regarding medical marijuana and violent crime

42. In 2013, the Office of National Drug Control Policy, which is located within the Executive Office of the President of the United States, commissioned a study from the RAND Drug Policy Research Center regarding drug-related crime. That study was published in October 2013, approximately three years before the *Wilson* decision was issued. A copy of that study is attached as Exhibit D.

43. That study concluded that there was "little support for a contemporaneous, causal relationship between" the use of marijuana "and either violent or property crime." *See Exhibit D, pgs. IV, 9.* The study goes on to conclude that, among other determinations, "marijuana use does not induce violent crime." *Id,*

[9] As will be discussed below, this growth in Florida's medical marijuana program without an accompanying increase in violent crime discounts the argument that the use of medical marijuana, in and of itself, makes state-law-abiding patients more violent. This number of patients does not, however, contradict the Plaintiffs' arguments relating to the Rohrabacher-Farr Amendment. As will be discussed further, punishment of individuals is sufficient to show a violation of that provision. Further, as the First Circuit has noted, "no matter the risks, there would likely be some participants in [a state's] medical marijuana market. After all, there have always been participants in the market for unlawful drugs who are undeterred by even life sentences." *U.S. v. Bilodeau*, 24 F. 4th 705, 714 (1st Cir. 2022). Accordingly, the legally pertinent question is not whether the Defendants' actions have prevented anyone from participating in the program, but rather whether they would "skew a potential participant's incentives against entering the market" and "deter the degree of participation in [the state's] market that [it] seeks to achieve." *Id.*

p. 109. As this study notes, other research papers have made similar findings. *Id., pgs. 105-106.*

44. The United States and the Department did not cite or acknowledge this study in *Wilson* or its progeny. In fact, in *Wilson,* the United States and the Department did not submit any studies or other evidence in the record relating to an alleged link between marijuana use and violence. 835 F. 3d at 1093. Instead, they simply relied upon prior cases that cited such studies. *Id.; see U.S. v. Carter,* 750 F.3d 462 (4th Cir. 2014); *U.S. v. Yancey,* 621 F.3d 681, 686 (7th Cir. 2010)[10]. The *Wilson* Court noted that it would have been "helpful for the Government to provide the studies in this case" and that the Court had "no occasion to evaluate the reliability of the studies and surveys." 835 F. 3d at 1093. However, the plaintiff in that case did not challenge the methodology or results of those previously cited studies.[11] *Id.*

45. The RAND study also reaches the common-sense conclusion that "the hard drug trade and the firearms that protect it, rather than drug use *per se*, are responsible for most of the systemic crime related to drugs." *See Ex. D, pg. 109.* The illegal drug market is highly associated with violent crimes such as robberies,

[10] Both of those cases dealt with the constitutionality of preventing illegal marijuana users (pursuant to both state and federal law) from possessing firearms.

[11] The Plaintiffs challenge the methodology and reliability of those studies. At a minimum, they allege that the conclusions reached in those studies are outdated or, in the alternative, are inapplicable to state medical marijuana patients.

causing many engaged within it to have to arm themselves or otherwise engage in dangerous activity. *See United States v. Thompson*, 842 F. 3d 1002, 1009 (7th Cir. 2016) (noting that "guns are known tools of the drug trade…").

46. However, Florida medical marijuana patients do not face these risks. They may safely purchase medical marijuana from a store much like any legal medication without facing or engaging in the dangerous actions that at least some illegal marijuana users must. There is nothing in *Wilson* or its progeny to suggest that the Defendants and/or their predecessors have ever acknowledged this significant distinction in defending the Challenged Sections and/or the Challenged Regulations. Instead, the Defendants have improperly conflated the illegal drug trade's ancillary violence and dangers with safe, state-legal, and federally-protected medical marijuana programs.

47. Since Florida implemented its medical marijuana program, relevant violent crime statistics have borne out the RAND study's conclusion that there is no apparent causal link between marijuana use *per se* and violent crime. From 2016 (when Florida patients began receiving medical marijuana) to 2019, Florida's violent crime rate compared to that of the United States as follows:

	United States[12]	Florida[13]
2016:	5.3 percent increase from the previous year	1.9 percent decrease from the previous year
2017:	.8 percent decrease	3.4 percent decrease
2018:	4.3 percent decrease	4.2 percent decrease
2019:	3.1 percent decrease	1 percent decrease[14]

48. Therefore, in at least three of those four years, Florida experienced a larger or statistically equivalent drop in violent crime rates compared to the nation as a whole. Similarly, researchers have found that Colorado and Washington did not experience any long-term increase in their violent crime rates after legalizing medical marijuana. *See* Ruibin Lu, Dale Willits, Mary K. Stohr, David Makin, John Snyder, Nicholas Lovrich, Mikala Meize, Duane Stanton, Guangzhen Wu & Craig Hemmens (2019) *The Cannabis Effect on Crime: Time-Series Analysis of Crime in Colorado and Washington State*, Justice Quarterly.

---

[12] *See* 2019 Preliminary Semi-Annual Uniform Crime Report, January-June 2019, United States Department of Justice, Federal Bureau of Investigations, Criminal Justice Information Services Division; Table 3: Percentage Change for Consecutive Years (attached as Exhibit E). This appears to be the most recent such report from the Department.

[13] *See* Crime in Florida Abstract Report, January-December 2019, Florida Department of Law Enforcement (attached as Exhibit F)

[14] As the titles of these reports show, the 2019 data for the United States runs only through June 2019, while the data for Florida runs through December 2019. Therefore, these numbers do not present an apples-to-apples comparison. They do show, however, that, even if it turns out that Florida's drop in violent crime in 2019 lagged behind the nation at large, the state still experienced a statistical reduction in such crime during that year.

49. If the Defendants were correct that medical marijuana use led to increased violent behavior, then it would be reasonable to expect that pertinent violent crime statistics would bear that out. However, as these facts and evidence to be elicited at trial will show, they do not.

50. The RAND study, the lack of ancillary and associated violence in the medical marijuana market, and the fact that increased violence has not occurred as medical marijuana has become more prevalent all strongly differentiate this challenge from *Wilson*. In fact, the factual basis for *Wilson* was completely based upon *Carter* and *Yancey*, which dealt with the state-and-federally-illegal drug trade, not patients in full compliance with a state medical marijuana program. The Plaintiffs intend to present what was not offered in *Wilson*: a full opportunity for the Court to examine the current factual and scientific basis for the Defendants' deprivation of this constitutional right.

The Rohrabacher-Farr Amendment

51. The Rohrabacher-Farr Amendment precludes Attorney General Garland, Director Richardson, and/or their predecessors, in their official capacities, from using any Department funds "to prevent [Florida and other states with medical marijuana programs] from implementing state laws that authorize the use, distribution, possession or cultivation of medical marijuana." *See Ex. A.* This language has been part of every federal budget since 2014.

52. This provision applies to more than just federal enforcement actions against a state itself. Rather, *McIntosh* held that this amendment "prohibits [the Department] from spending funds from relevant appropriations acts for the prosecution of **individuals** who engaged in conduct permitted by" state medical marijuana laws "and who fully complied with such laws." 833 F. 3d. at 1176-1177. (emphasis added); *see also Bilodeau*, 24 F. 4th at 713 ("We agree with this reading of the rider and conclude, as the Ninth Circuit did, that the [Department] may not spend funds to bring prosecutions if doing so prevents a state from giving practical effect to its medical marijuana laws.")

53. Further, *McIntosh* made clear that Rohrabacher-Farr precludes prosecution of individuals "**at a minimum**." *Id.* at 1177. (emphasis added).

54. Attorney General Garland, Director Richardson, and/or their predecessors, in their official capacities, are expending and have expended federal funds to promulgate and enforce the Challenged Sections and the Challenged Regulations.

55. The Challenged Sections and Challenged Regulations punish Florida state-law-abiding medical marijuana patients by depriving them of their Second Amendment rights. They also serve to preclude potential qualified potential patients such as Franklin from participating in the state medical marijuana program because the use of such state-permitted medication would cost them their Second

Amendment rights. In those ways, these provisions prevent the implementation of Florida's medical marijuana program in much the same way as the attempted prosecution in *McIntosh.*

Basis for Plaintiffs' Claims

56. Pursuant to Article III of the United State Constitution, to have standing, a plaintiff must demonstrate: (i) an injury in fact that is both concrete and particularized as well as actual or imminent; (ii) an injury that is traceable to the conduct complained of; and (iii) an injury that is redressable by a decision of the court. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560–61, 112 S.Ct. 2130, 119 L.Ed.2d 351 (1992); *State ex rel. Sullivan v. Lujan*, 969 F.2d 877, 880 (10th Cir.1992).

57. States and agencies such as FDACS are considered to be a special class of federal litigants. *Wyoming ex. rel. Crank v. U.S.*, 539 F. 3d 1236, 1241-1242 (10th Cir. 2008) *citing Massachusetts v. E.P.A.*, 127 S. Ct. 1438, 1454 (2007); *Lacewell v. Office of Comptroller of Currency*, 999 F. 3d 130, 145 (2nd Cir. 2021). Injury in fact has been found for state entities when federal regulations or actions interfere with the "ability to enforce its legal code." *Id.* The last two Article III standing prongs are met when the federal action directly causes this injury and declaratory and/or injunctive relief would prevent that going forward. *Id.*

58. Commissioner Fried is in need of a declaration of her rights, in her official capacity, regarding the Challenged Sections and Challenged Regulations. Those laws and regulations interfere with FDACS' ability to give effect to laws within its jurisdiction. They render state-law-abiding patients ineligible to purchase or possess a firearm even though Florida law has no such prohibition. In that way, those laws also serve to punish qualified patients solely for their participation in Florida's medical marijuana program. This contradicts Florida law and vitiates at least some of the legal rights and protections the state and FDACS intend to provide for its citizens.

59. Commissioner Fried, in her official capacity, is of the reasonable belief that the Challenged Sections and Challenged Regulations are unconstitutional as applied to state-law-abiding medical marijuana patients and those reasonably seeking to participate in the state medical marijuana program. It is also her reasonable understanding and belief that the Defendants oppose this position.

60. Commissioner Fried is also of the reasonable belief that the Challenged Sections and Challenged Regulations violate the Rohrabacher-Farr Amendment on the basis that they prevent the implementation of Florida's medical marijuana program by punishing state-law-abiding patients and precluding those reasonably wishing to participate in the state medical marijuana program from doing so. This interferences prevents Commissioner Fried from giving full effect to the medical

marijuana laws under her jurisdiction. It is Commissioner Fried's reasonable understanding and belief, though, that the Defendants oppose this position.

61. Much like Commissioner Fried, Cooper, and Hansell are of the reasonable belief that the Challenged Sections and the Challenged Regulations are unconstitutional as applied to them and other state-law-abiding medical marijuana patients. Cooper and Hansell are also of the reasonable belief that those provisions punish them for their participation in the state medical marijuana program by effectively vitiating their Second Amendment rights. This punishment amounts to an impermissible interference with Florida's medical marijuana program. It is also their reasonable understanding and belief, however, that the Defendants oppose those positions.

62. Much like Commissioner Fried, Cooper, and Hansell, Franklin is of the reasonable belief that the Challenged Sections and the Challenged Regulations are unconstitutional as applied to those reasonably intending to become medical marijuana patients. They force him, without any logical or sufficient reason, to choose between participating in this state-legal and federally-protected program and maintaining his Second Amendment rights. He is also of the reasonable belief that those provisions prevent Florida from implementing its medical marijuana program by precluding persons such as himself (i.e., those who value the exercise of their

Second Amendment rights) from participating in that program. It is Franklin's reasonable understanding and belief that the Defendants oppose those positions.

Claims for Relief

Count I – Declaratory Relief Related to Second Amendment Violation, 42 U.S.C. § 1983

63. The Plaintiffs reallege and incorporate by reference paragraphs 1 through 62 as if fully set forth herein.

64. The Challenged Sections and the Challenged Regulations, as applied, violate and impose an impermissible burden upon the Second Amendment rights of state-law-abiding Florida medical marijuana patients such as Cooper and Hansell. They also place an improper burden on Florida residents such as Franklin who are qualified for and who reasonably and imminently seek to participate in the state medical marijuana program.

65. As a direct and proximate cause of the application of the Challenged Sections and the Challenged Regulations to medical marijuana patients and those reasonably and imminently intending to inquire about becoming medical marijuana patients, Cooper, Hansell, and Franklin have suffered and continue to suffer irreparable harm stemming from the inability to exercise, or the real and imminent threat of loss of, their Second Amendment rights.

66. Further, the Challenge Sections and Challenged Regulations serve to punish those who participate in Florida's medical marijuana program in a manner

contrary to Florida law. This precludes Commissioner Fried, in her official capacity, from giving full effect to its laws.

67. The Eleventh Circuit has articulated a two-step analysis for evaluating Second Amendment claims. *See GeorgiaCarry.org, Inc. v. U.S. Army Corp. of Engineers*, 788 F. 3d 1318, 1322 (11th Cir. 2015). First, courts must "ask if the restricted activity is protected by the Second Amendment…," and then, "if necessary," the court should "apply the appropriate level of scrutiny." *Id.* As *Wilson* correctly determined, the Challenged Sections "directly burden" a medical marijuana patient's "core Second Amendment right to possess a firearm." 835 F. 3d. at 1092. The same is true for the Challenged Regulations.

68. Although there appears to be some disagreement regarding the precise level or type of scrutiny that should be applied to an alleged Second Amendment violation[15], it is clear that the rational basis standard would not be legally

[15] *Heller I* itself does not specify which level of scrutiny should be applied, holding only that the gun regulation at issue would not survive "any of the standards of scrutiny that we have applied to enumerated constitutional rights." 554 U.S. at 628. Multiple federal circuits appear to interpret *Heller I* as deeming intermediate scrutiny to be appropriate for Second Amendment cases. *See Wilson*, 835 F. 3d at 1093; *Heller v. District of Columbia*, 670 F. 3d 1244, 1256-1258 (D.C. Cir. 2011) ("*Heller II*"); *U.S. v. Marzzarella*, 614 F. 3d 85, 97 (3d Cir. 2010). Supreme Court Justice Brett Kavanaugh and other federal judges, however, contend that *Heller I* leaves "little doubt that courts are to assess gun bans and regulations based on text, history, and tradition, not by a balancing test such as strict or intermediate scrutiny." *See e.g. Heller II*, 670 F. 3d at 1271 (Kavanaugh, B., dissenting).

appropriate. *District of Columbia v. Heller*, 554 U.S. 570, 628 n. 27, 128 S. Ct. 570, 171 L. Ed. 2d 637 (2008) ("*Heller I*"). Therefore, at least some level of heightened scrutiny must be applied to such an alleged violation.

69. In order to survive any level of heightened scrutiny, a law or regulation must, at a minimum, relate to a "significant, substantial, or important" government objective and there must be a "reasonable fit" between that regulation and that objective. *Wilson*, 835 F. 3d at 1093.

70. The Plaintiffs agree that the Defendants have a significant, substantial, and important objective in trying to keep firearms out of the hands of those who are too dangerous or violent to use them safely. They do not challenge similar sections within Section 922 and/or other regulations with this effect. Further, they do not contest, at least for purposes of this proceeding, the constitutionality of the Challenged Sections and Challenged Regulations as applied to marijuana users who are not in compliance with a state medical marijuana program and who must at least potentially avail themselves of the ancillary violence and dangers present in the illegal drug market.

71. However, as applied to those who are in full compliance with a state medical marijuana program, the Challenged Sections and Challenged Regulations do not reasonably further the United States' goal in this area. The Defendants cannot reasonably show that such patients are inherently more dangerous due solely to their

state-law-abiding use of medical marijuana, especially in light of the government-procured RAND study and the violent crime statistics cited above. Further, those regulations apply to such patients at the same level and in the same manner as illegal users of marijuana without accounting for the inherent violence associated with the illicit drug trade that is not present for medical marijuana patients. This cannot survive any level of heightened scrutiny.

72. What Justice Thomas has deemed the Defendants' "half-in, half-out" position on marijuana makes their position even more untenable. Even if the Plaintiffs could take issue with the Defendants' previous bright-line stance on the dangerous effects of marijuana, at least their position was consistent and clear. Today, it is anything but consistent or clear. The Defendants must now justify the continued categorization of state-law-abiding medical marijuana patients as dangerous and violent despite, amongst other actions and statements, Congress' express statement through the Rohrabacher-Farr Amendment that state medical marijuana programs must be legally protected. The Defendants cannot square these positions. The Defendants have continuously undermined and weakened their own reasoning and position in this area since *Wilson* was decided.

73. The Plaintiffs contend that there exists an actual controversy regarding whether the Challenged Sections and Challenged Regulations are unconstitutional

as applied to Florida medical marijuana patients and those reasonably intending to become Florida medical marijuana patients.

74. The Plaintiffs possess no other adequate remedy at law through which to resolve these disputes and request a declaratory judgment.

75. The Plaintiffs have incurred and will incur attorney's fees as a proximate result of having to initiate and prosecute this action.

Count II – Injunctive Relief relating to violation of the Second Amendment 42 U.S.C. § 1983

76. The Plaintiffs reallege and incorporate by reference paragraphs 1 through 75 as if fully set forth herein.

77. The Plaintiffs, as pled, have experienced, are experiencing, and will continue to experience irreparable harm for as long as the Challenged Sections and Challenged Regulations continue to have their current as applied effect on state medical marijuana patients and those reasonably seeking to consult with a doctor about becoming a state medical marijuana patient. Further, Commissioner Fried, in her official capacity, will continue to experience irreparable harm for as long as Florida's medical marijuana and firearm laws are federally undermined.

78. The Plaintiffs have no plain, adequate, or complete remedy to redress the wrongs addressed herein other than this action. An award of monetary damages is not adequate to remedy potential loss of and/or infringement upon Cooper, Hansell, or Franklin's Second Amendment rights. Monetary damages would also not

remedy the undermining of state law affecting Commissioner Fried, in her official capacity.

79. Accordingly, the Plaintiffs seek an injunction preventing the Defendants from enforcing the Challenged Sections and Challenged Regulations as applied to Floridians who are in compliance with state medical marijuana laws.

80. Such an injunction will serve the public interest by ensuring that the core constitutional rights of state-law-abiding Floridians are protected and that Commissioner Fried, in her official capacity, can give full effect to state medical marijuana and firearm laws.

81. The Plaintiffs have incurred and will incur attorney's fees as a proximate result of having to initiate and prosecute this action.

Count III – Declaratory Relief Related to the Rohrabacher-Farr Amendment, 42 U.S.C. § 1983

82. The Plaintiffs reallege and incorporate by reference paragraphs 1 through 81 as if fully set forth herein.

83. Much like in *McIntosh*, the Defendants and/or their predecessors' expenditure of funds to promulgate and/or enforce the Challenged Sections and Challenged Regulations serves to punish Florida medical marijuana patients even though they are in full compliance with state law. The Plaintiffs contend that, as in *McIntosh*, this constitutes a violation of the Rohrabacher-Farr Amendment because it prevents the implementation of Florida's medical marijuana program.

84. The Plaintiffs contend that there exists an actual controversy regarding whether the Challenged Sections and Challenged Regulations prevent the implementation of Florida's medical marijuana program in this manner.

85. The Plaintiffs possess no other adequate remedy at law through which to resolve these disputes and request a declaratory judgment.

86. The Plaintiffs have incurred and will incur attorney's fees as a proximate result of having to initiate and prosecute this action.

Count IV – Injunctive Relief relating to violation of the Rohrabacher-Farr Amendment, 42 U.S.C. § 1983

87. The Plaintiffs reallege and incorporate by reference paragraphs 1 through 86 as if fully set forth herein.

88. The Plaintiffs, as pled, have experienced, are experiencing, and will continue to experience irreparable harm for as long as the Defendants expend funds to promulgate and/or enforce the Challenged Sections and Challenged Regulations in a manner that serves to punish state-law-abiding Florida medical marijuana patients. In doing so, the Defendants prevent the implementation of Florida's medical marijuana program in violation of the Rohrabacher-Farr Amendment.

89. The Plaintiffs have no plain, adequate, or complete remedy to redress the wrongs addressed herein other than this action. An award of monetary damages is not adequate to remedy the potential inability for Florida to implement its medical marijuana programs, the Defendants' illegal use of funds to prevent such

implementation, or the continued deprivation of state-law-abiding medical marijuana patients' Second Amendment rights.

90. Accordingly, the Plaintiffs seek an injunction preventing the Defendants from expending any funds to enforce or apply the Challenged Sections and Challenged Regulations to Floridians who are in compliance with state medical marijuana laws.

91. Such an injunction will serve the public interest by ensuring that the state's medical marijuana program is implemented and protecting state-law-abiding patients from loss of their constitutional rights.

92. The Plaintiffs have incurred and will incur attorney's fees as a proximate result of having to initiate and prosecute this action.

Prayer for Relief

WHEREFORE, the Plaintiffs respectfully request that the Court enter judgment in their favor as follows:

A) Declare that the Challenged Sections and the Challenged Regulations are unconstitutional as applied to Cooper, Hansell, and other state-law-abiding medical marijuana patients,

B) Declare that the Challenged Sections and the Challenged Regulations are unconstitutional as applied to Franklin and others reasonably and imminently

seeking to participate in a state medical marijuana program in full compliance with state law,

C) Permanently enjoin the Defendants from applying or enforcing the Challenged Sections and/or the Challenged Regulations to state-law-abiding medical marijuana patients, and/or, in the alternative,

D) Declare that the Challenged Sections and the Challenged Regulations, contrary to the Rohrabacher-Farr Amendment, prevent Florida from implementing its medical marijuana program, and

E) Permanently enjoin the Defendants from expending any funds to enforce or apply the Challenged Sections and the Challenged Regulations against state-law-abiding medical marijuana patients, and

F) Award the Plaintiffs their reasonable attorney's fees and costs pursuant to 28 U.S.C. § 2412, and

G) Grant any such other and further relief as the Court deems just and proper.

Respectfully submitted this 20th day of April, 2022.

/s/ William D. Hall
William D. Hall
Florida Bar No. 67936
Daniel R. Russell
Florida Bar No. 63445
Jordane Wong
Florida Bar No. 1030907

DEAN, MEAD & DUNBAR
106 E. College Ave., Suite 1200
Tallahassee, Florida 32301
Tel: (850) 999-4100
Fax: (850) 577-0095
whall@deanmead.com
drussell@deanmead.com
jwong@deanmead.com
kthompson@deanmead.com
Attorneys for Plaintiffs

/s/Adam J. Komisar
ADAM J. KOMISAR
Fla. Bar No: 86047
KOMISAR SPICOLA, P.A.
Adam@KomisarSpicola.com
P.O. Box 664
Tallahassee, Florida 32302
Telephone No.: (850) 328-4447
Fax No.: (850) 320-6592
www.KomisarSpicola.com
Co-Counsel for Plaintiff Nicole Hansell

CAMINEZ & YEARY, P.A.

/s/ Ryan A. Yeary
Ryan A. Yeary
Florida Bar No.: 71261
Kareem Todman
Florida Bar No. 109295
1307 South Jefferson Street
Monticello, Florida 32344
(850) 997-8181 - Phone
(850) 997-5189 – Facsimile
ryeary@caminezlaw.com
ktodman@caminezlaw.com
service@caminezlaw.com
Co-Counsel for Plaintiff Neill Franklin

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on the 20th day of April, 2022, the foregoing has been electronically filed and served by certified mail upon the United States Courthouse, 111 N. Adams Street, Tallahassee, FL 32301, the United States Department of Justice, 950 Pennsylvania Avenue, NW, Washington, DC 20530, and the Bureau of Alcohol, Tobacco, Firearms and Explosives, 99 New York Avenue, NE, Washington, DC 20226.

/s/ William D. Hall
William D. Hall

EXHIBIT A

H. R. 2471

One Hundred Seventeenth Congress of the United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the third day of January, two thousand and twenty-two

An Act

Making consolidated appropriations for the fiscal year ending September 30, 2022, and for providing emergency assistance for the situation in Ukraine, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Consolidated Appropriations Act, 2022".

SEC. 2. TABLE OF CONTENTS.

such activities are specifically authorized by a law enacted after the date of enactment of this Act.

(b) None of the funds made available by this Act may be used to effectuate the hosting of official Chinese visitors at facilities belonging to or utilized by NASA.

(c) The limitations described in subsections (a) and (b) shall not apply to activities which NASA, OSTP, or NSC, after consultation with the Federal Bureau of Investigation, have certified—

(1) pose no risk of resulting in the transfer of technology, data, or other information with national security or economic security implications to China or a Chinese-owned company; and

(2) will not involve knowing interactions with officials who have been determined by the United States to have direct involvement with violations of human rights.

(d) Any certification made under subsection (c) shall be submitted to the Committees on Appropriations of the House of Representatives and the Senate, and the Federal Bureau of Investigation, no later than 30 days prior to the activity in question and shall include a description of the purpose of the activity, its agenda, its major participants, and its location and timing.

SEC. 527. (a) None of the funds made available in this Act may be used to maintain or establish a computer network unless such network blocks the viewing, downloading, and exchanging of pornography.

(b) Nothing in subsection (a) shall limit the use of funds necessary for any Federal, State, Tribal, or local law enforcement agency or any other entity carrying out criminal investigations, prosecution, adjudication, or other law enforcement- or victim assistance-related activity.

SEC. 528. The Departments of Commerce and Justice, the National Aeronautics and Space Administration, the National Science Foundation, the Commission on Civil Rights, the Equal Employment Opportunity Commission, the International Trade Commission, the Legal Services Corporation, the Marine Mammal Commission, the Offices of Science and Technology Policy and the United States Trade Representative, the National Space Council, and the State Justice Institute shall submit spending plans, signed by the respective department or agency head, to the Committees on Appropriations of the House of Representatives and the Senate not later than 45 days after the date of enactment of this Act.

SEC. 529. Notwithstanding any other provision of this Act, none of the funds appropriated or otherwise made available by this Act may be used to pay award or incentive fees for contractor performance that has been judged to be below satisfactory performance or for performance that does not meet the basic requirements of a contract.

SEC. 530. None of the funds made available by this Act may be used in contravention of section 7606 ("Legitimacy of Industrial Hemp Research") of the Agricultural Act of 2014 (Public Law 113–79) by the Department of Justice or the Drug Enforcement Administration.

SEC. 531. None of the funds made available under this Act to the Department of Justice may be used, with respect to any of the States of Alabama, Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois,

Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming, or with respect to the District of Columbia, the Commonwealth of the Northern Mariana Islands, the United States Virgin Islands, Guam, or Puerto Rico, to prevent any of them from implementing their own laws that authorize the use, distribution, possession, or cultivation of medical marijuana.

SEC. 532. The Department of Commerce, the National Aeronautics and Space Administration, and the National Science Foundation shall provide a quarterly report to the Committees on Appropriations of the House of Representatives and the Senate on any official travel to China by any employee of such Department or agency, including the purpose of such travel.

SEC. 533. Of the amounts made available by this Act, not less than 10 percent of each total amount provided, respectively, for Public Works grants authorized by the Public Works and Economic Development Act of 1965 and grants authorized by section 27 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3722) shall be allocated for assistance in persistent poverty counties: *Provided*, That for purposes of this section, the term "persistent poverty counties" means any county that has had 20 percent or more of its population living in poverty over the past 30 years, as measured by the 1993 Small Area Income and Poverty Estimates, the 2000 decennial census, and the most recent Small Area Income and Poverty Estimates, or any Territory or possession of the United States.

SEC. 534. (a) Not later than 180 days after the date of enactment of this Act, the Director of the Federal Bureau of Investigation shall work with the Administrator of the General Services Administration to transmit to the Committees on Appropriations of the House of Representatives and the Senate, the Committee on Transportation and Infrastructure of the House of Representatives, and the Committee on Environment and Public Works of the Senate, a report on the construction of a new headquarters for the Federal Bureau of Investigation in the National Capital Region.

(b) The report transmitted under subsection (a) shall be consistent with the requirements of section 3307(b) of title 40, United States Code, and include a summary of the material provisions of the construction and full consolidation of the Federal Bureau of Investigation in a new headquarters facility, including all the costs associated with site acquisition, design, management, and inspection, and a description of all buildings and infrastructure needed to complete the project.

SEC. 535. (a) Notwithstanding any other provision of law or treaty, none of the funds appropriated or otherwise made available under this Act or any other Act may be expended or obligated by a department, agency, or instrumentality of the United States to pay administrative expenses or to compensate an officer or employee of the United States in connection with requiring an export license for the export to Canada of components, parts, accessories or attachments for firearms listed in Category I, section 121.1 of title 22, Code of Federal Regulations (International Trafficking in Arms Regulations (ITAR), part 121, as it existed on

EXHIBIT B

OMB No. 1140-0020

U.S. Department of Justice
Bureau of Alcohol, Tobacco, Firearms and Explosives

Firearms Transaction Record

WARNING: The information you provide will be used to determine whether you are prohibited by Federal or State law from receiving a firearm. Certain violations of the Gun Control Act, 18 U.S.C. 921 et. seq., are punishable by up to 10 years imprisonment and/or up to a $250,000 fine. Any person who exports a firearm without a proper authorization from either the Department of Commerce or the Department of State, as applicable, is subject to a fine of not more than $1,000,000 and up to 20 years imprisonment.

Read the Notices, Instructions, and Definitions on this form. Prepare in original only at the licensed premises (including business temporarily conducted from a qualifying gun show or event in the same State in which the premises is located) unless the transaction qualifies under 18 U.S.C. 922(c). **All entries must be handwritten in ink unless completed under ATF Rul. 2016-2.** PLEASE PRINT.

Transferor's/Seller's Transaction Serial Number (if any)

Section A - Must Be Completed By Transferor/Seller Before Transferee/Buyer Completes Section B

1. Manufacturer and Importer (if any) (If the manufacturer and importer are different, include both.)	2. Model (if designated)	3. Serial Number	4. Type	5. Caliber or Gauge
1.				
2.				
3.				

6. Total Number of Firearms to be Transferred (Please spell total number e.g., one, two, etc. Do not use numerals.)

7. Check if any part of this transaction is a pawn redemption. ☐
Record Line Number(s) From Question 1:

8. Check if this transaction is to facilitate a private party transfer. ☐

Section B - Must Be Completed Personally By Transferee/Buyer

9. Transferee's/Buyer's Full Name (If legal name contains an initial only, record the initial followed by "IO" in quotes. If no middle initial or name, record "NMN".)

Last Name (including suffix, e.g., Jr, Sr, II, III)	First Name	Middle Name

10. Current State of Residence and Address (U.S. postal abbreviations are acceptable. Cannot be a post office box.)

Number and Street Address	City	State	ZIP Code	County/Parish/Borough

11. Place of Birth			12. Height	13. Weight	14. Sex	15. Birth Date		
U.S. City **and** State	**-OR-**	Foreign Country	Ft. ____ In. ____	(lbs.)	☐ Male ☐ Female ☐ Non-Binary	Month	Day	Year

16. Social Security Number (optional, but will help prevent misidentification)

17. Unique Personal Identification Number (UPIN) or Appeals Management Database Identification (AMD ID) (if applicable)

18.a. Ethnicity
☐ Hispanic or Latino
☐ Not Hispanic or Latino

18.b. Race (Select one or more race in 18.b. Both 18.a. and 18.b. must be answered.)
☐ American Indian or Alaska Native
☐ Asian
☐ Black or African American
☐ Native Hawaiian or Other Pacific Islander
☐ White

19. Country of Citizenship: (Check/List more than one, if applicable. Nationals of the United States may check U.S.A.)
☐ United States of America (U.S.A) ☐ Other Country/Countries (Specify):

20. If you are an alien, record your U.S.-issued alien or admission number (AR#, USCIS#, or I94#):

21. Answer the following questions by checking or marking either the "yes" or "no" box to the right of the questions:	Yes	No
a. Are you the actual transferee/buyer of the firearm(s) listed on this form and any continuation sheet(s) (ATF Form 5300.9A)? **Warning: You are not the actual transferee/buyer if you are acquiring the firearm(s) on behalf of another person. If you are not the actual transferee/buyer, the licensee cannot transfer the firearm(s) to you.** Exception: If you are only picking up a repaired firearm(s) for another person, you are not required to answer 21.a. and may proceed to question 21.b.	☐	☐
b. Are you under indictment or information in any court for a **felony,** or any other crime for which the judge could imprison you for more than one year, or are you a current member of the military who has been charged with violation(s) of the Uniform Code of Military Justice and whose charge(s) have been referred to a general court-martial?	☐	☐
c. Have you ever been convicted in any court, including a military court, of a **felony,** or any other crime for which the judge could have imprisoned you for more than one year, even if you received a shorter sentence including probation?	☐	☐
d. Are you a fugitive from justice?	☐	☐
e. Are you an unlawful user of, or addicted to, marijuana or any depressant, stimulant, narcotic drug, or any other controlled substance? **Warning:** The use or possession of marijuana remains unlawful under Federal law regardless of whether it has been legalized or decriminalized for medicinal or recreational purposes in the state where you reside.	☐	☐

	Yes	No
f. Have you ever been adjudicated as a mental defective **OR** have you ever been committed to a mental institution?	☐	☐
g. Have you ever been discharged from the Armed Forces under dishonorable conditions?	☐	☐
h. Are you subject to a court order, including a Military Protection Order issued by a military judge or magistrate, restraining you from harassing, stalking, or threatening your child or an intimate partner or child of such partner?	☐	☐
i. Have you ever been convicted in any court of a misdemeanor crime of domestic violence, or are you or have you ever been a member of the military and been convicted of a crime that included, as an element, the use of force against a person as identified in the instructions?	☐	☐
j. Have you ever renounced your United States citizenship?	☐	☐
k. Are you an alien **illegally** or **unlawfully** in the United States?	☐	☐
21.l.1. Are you an alien who has been admitted to the United States under a nonimmigrant visa?	☐	☐
21.l.2. If you are such an alien do you fall within any of the exceptions stated in the instructions? (U.S. citizens/nationals leave 21.l.2. blank)	☐	☐

I certify that my answers in Section B are true, correct, and complete. I have read and understand the Notices, Instructions, and Definitions on ATF Form 4473. I understand that answering "yes" to question 21.a. if I am not the actual transferee/buyer is a crime punishable as a felony under Federal law, and may also violate State and/or local law. I understand that a person who answers "yes" to any of the questions 21.b. through 21.k. is prohibited from receiving or possessing a firearm. I understand that a person who answers "yes" to question 21.l.1. is prohibited from receiving or possessing a firearm, unless the person answers "yes" to question 21.l.2. and provides the documentation required in 26.d. I also understand that making any false oral or written statement, or exhibiting any false or misrepresented identification with respect to this transaction, is a crime punishable as a felony under Federal law, and may also violate State and/or local law. I further understand that the repetitive purchase of firearms for the purpose of resale for livelihood and profit without a Federal firearms license is a violation of Federal law.

22. Transferee's/Buyer's Signature	23. Certification Date Month	Day	Year

Section C - Must Be Completed By Transferor/Seller Prior To The Transfer Of The Firearm(s)

24. Category of firearm(s) to be transferred (check or mark all that apply):

☐ Handgun ☐ Long Gun (rifle or shotgun) ☐ Other Firearm (frame, receiver, etc.)

25. If sale or transfer is at a qualifying gun show or event:

Name of Function: _____

City, State: _____

26.a. Identification (e.g., Virginia driver's license (VA DL) or other valid government-issued photo identification including military ID.)

Issuing Authority and Type of Identification	Number on Identification	Expiration Date of Identification (if any) Month	Day	Year

26.b. Supplemental Government Issued Documentation (if identification document does not show current residence address or full legal name)

26.c. Official Military Orders Establishing Permanent Change of Station (PCS):

PCS Base/City and State:	PCS Effective Date:	PCS Order Number (if any):

26.d. Exception to the Nonimmigrant Alien Prohibition: If the transferee/buyer answered "yes" to 21.1.2. record the type of documentation showing the exception to the prohibition and attach a copy to this ATF Form 4473:

27.a. Date the transferee's/buyer's identifying information in Section B was transmitted to NICS or the appropriate State agency:

Month | Day | Year

27.b. The NICS or State transaction number (if provided) was:

27.c. The response initially provided by NICS or the appropriate State agency was:

☐ Proceed ☐ Delayed [The firearm(s) may be transferred on _____ if State law permits (optional)]

☐ Denied

☐ Cancelled

27.d. Prior to transfer the following response(s) was/were later provided by NICS or the appropriate State agency:

☐ Proceed _____ (date) ☐ Overturned

☐ Denied _____ (date)

☐ Cancelled _____ (date)

☐ No response was provided within 3 business days.

27.e. After the firearm was transferred, the following response was provided by NICS or the appropriate State agency (if applicable) on:

_____ (date). ☐ Proceed ☐ Denied ☐ Cancelled

27.f. Name and Brady identification number of the NICS examiner. (optional)

_____ (name) _____ (number)

27.g. Name of FFL Employee Completing NICS check. (optional)

28. ☐ No NICS check is required because a background check was completed during the NFA approval process on the individual who will receive the NFA firearm(s), as reflected on the approved NFA application.

STAPLE IF PAGES BECOME SEPARATED

29. ☐ No NICS check is required because the transferee/buyer has a valid permit from the State where the transfer is to take place, which qualifies as an exemption to NICS.

Issuing State and Permit Type	Date of Issuance (if any)	Expiration Date (if any)	Permit Number (if any)

Section D - Must Be Completed Personally By Transferee/Buyer

If the transfer of the firearm(s) takes place on a different day from the date that the transferee/buyer signed Section B, the transferee/buyer must complete Section D immediately prior to the transfer of the firearm(s).

I certify that all of my responses in Section B of this form are still true, correct, and complete.

30. Transferee's/Buyer's Signature	31. Recertification Date Month	Day	Year

Section E - Must Be Completed By Transferor/Seller

32. For Use by Licensee	33. Trade/corporate name and address of transferor/seller and Federal Firearm License Number (must contain at least first three and last five digits X-XX-XXXXX; hand stamp may be used)

The Individual Transferring The Firearm(s) Must Complete Questions 34-36.
For Denied/Cancelled Transactions, The Individual Who Completed Section C Must Complete Questions 34-35.

I certify that: (1) I have read and understand the Notices, Instructions, and Definitions on this ATF Form 4473; (2) the information recorded in Sections A, C and E is true, correct, and complete; and (3) this entire transaction record has been completed at the licensed business premises ("licensed premises" includes business temporarily conducted from a qualifying gun show or event in the same State in which the licensed premises is located) unless this transaction has met the requirements of 18 U.S.C. 922(c). Unless this transaction has been denied or cancelled by NICS or State agency, I further certify on the basis of — (1) the transferee's/buyer's responses in Section B (and Section D, if applicable); (2) the verification of the identification recorded in question 26 (and the re-verification at the time of transfer, if Section D was completed); and (3) State or local law applicable to the firearms business — it is my belief that it is not unlawful for me to sell, deliver, transport, or otherwise dispose of the firearm(s) listed on this form to the person identified in Section B.

34. Transferor's/Seller's Name (please print)	35. Transferor's/Seller's Signature	36. Date Transferred Month	Day	Year

REMINDER - By the Close of Business Complete ATF Form 3310.4 for Multiple Sales of Handguns Within 5 Consecutive Business Days

NOTICES, INSTRUCTIONS, AND DEFINITIONS

Purpose of the Form: The information and certification on this form are designed so that a person licensed under 18 U.S.C. 923 may determine if he/she may lawfully sell or deliver a firearm to the person identified in Section B, and to alert the transferee/buyer of certain restrictions on the receipt and possession of firearms. The transferor/seller of a firearm must determine the lawfulness of the transaction and maintain proper records of the transaction. Consequently, the transferor/seller must be familiar with the provisions of 18 U.S.C. 921-931 and the regulations in 27 CFR Parts 478 and 479. In determining the lawfulness of the sale or delivery of a rifle or shotgun to a resident of another State, the transferor/seller is presumed to know the applicable State laws and published ordinances in both the transferor's/seller's State and the transferee's/buyer's State. (See State Laws and Published Ordinances -Firearms (ATF Electronic Publication 5300.5) on https://www.atf.gov/.)

Generally, ATF Form 4473 must be completed at the licensed business premises when a firearm is transferred over-the-counter. Federal law, 18 U.S.C. 922(c), allows a licensed importer, manufacturer, or dealer to sell a firearm to a nonlicensee who does not appear in person at the licensee's business premises only if the transferee/buyer meets certain requirements. These requirements are set forth in section 922(c), 27 CFR 478.96(b), and ATF Procedure 2013-2 (or subsequent update).

After the transferor/seller has completed the firearms transaction, he/she must make the completed, original ATF Form 4473 (which includes the Notices, General Instructions, and Definitions), and any supporting documents, part of his/her permanent records. Such Forms 4473 must be retained for at least 20 years and after that period may be submitted to ATF. Filing may be chronological (by date of disposition), alphabetical (by name of purchaser), or numerical (by transaction serial number), as long as all of the transferor's/seller's completed Forms 4473 are filed in the same manner.

FORMS 4473 FOR DENIED/CANCELLED TRANSFERS MUST BE RETAINED: If the transfer of a firearm is denied/cancelled by NICS, or if for any other reason the transfer is not completed after a NICS check is initiated, the licensee must retain the ATF Form 4473 in his/her records for at least 5 years. Forms 4473 with respect to which a sale, delivery, or transfer did not take place shall be separately retained in alphabetical (by name of transferee) or chronological (by date of transferee's certification) order.

If the transferor/seller or the transferee/buyer discovers that an ATF Form 4473 is incomplete or improperly completed after the firearm has been transferred, and the transferor/seller or the transferee/buyer wishes to correct the omission(s) or error(s), photocopy the inaccurate form and make any necessary additions or revisions to the photocopy. The transferor/seller should only make changes to Sections A, C, and E. The transferee/buyer should only make changes to Sections B and D. Whoever made the changes should initial and date the changes. The corrected photocopy should be attached to the original Form 4473 and retained as part of the transferor's/seller's permanent records.

Section A

Questions 1-6. Firearm(s) Description: These blocks must be completed with the firearm(s) information. All firearms manufactured after 1968 by Federal firearms licensees should be marked with a serial number. Should you acquire a firearm that is legally not marked with a serial number (i.e. pre-1968); you may answer question 3 with "NSN" (No Serial Number), "N/A" or "None."

If more than three firearms are involved in a transaction, please provide the information required by Section A, Questions 1-5, on ATF Form 5300.9A, Firearms Transaction Record Continuation Sheet. The completed Form 5300.9A must be attached to this ATF Form 4473.

STAPLE IF PAGES BECOME SEPARATED

Types of firearms include, but are not limited to: pistol, revolver, rifle, shotgun, receiver, frame, and firearms that are neither handguns nor long guns (rifles or shotguns), such as firearms having a pistol grip that expel a shotgun shell (pistol grip firearm) or NFA firearms (machinegun, silencer, short-barreled shotgun, short-barreled rifle, destructive device, or "any other weapon").

Additional firearms purchases by the same transferee/buyer may not be added to the form after the transferor/seller has signed and dated it. A transferee/buyer who wishes to acquire additional firearms after the transferor/seller has signed and dated the form must complete a new ATF Form 4473 and undergo a new NICS check.

Question 8. Private Party Transfer: Check this box if the licensee is facilitating the sale or transfer of a firearm between private unlicensed individuals in accordance with ATF Procedure 2017-1. This will assist the licensee by documenting which transaction records correspond with private party transfers, and why there may be no corresponding A&D entries when the transfer did not proceed because it was denied, delayed, or cancelled.

Section B

The transferee/buyer must personally complete Section B of this form and certify (sign and date) that the answers are true, correct, and complete. However, if the transferee/buyer is unable to read and/or write, the answers (other than the signature) may be completed by another person, excluding the transferor/seller. Two persons (other than the transferor/seller) must then sign as witnesses to the transferee's/buyer's answers and signature/certification in question 22.

When the transferee/buyer of a firearm is a corporation, company, association, partnership, or other such business entity, an officer authorized to act on behalf of the business must complete Section B of the form with his/her personal information, sign Section B, and attach a written statement, executed under penalties of perjury, stating: (A) the firearm is being acquired for the use of and will be the property of that business entity; and (B) the name and address of that business entity.

Question 9. Transferee's/Buyers Full Name: If the transferee's/buyer's name is illegible, the transferor/seller must print the transferee's/buyer's name above the name written by the transferee/buyer.

Question 10. Current Residence Address: A rural route (RR) may be accepted provided the transferee/buyer lives in a State or locality where it is considered a legal residence address.

If the transferee/buyer is a member of the Armed Forces on active duty, his/her State of residence is the State in which his/her permanent duty station is located. If the service member is acquiring a firearm in a State where his/her permanent duty station is located, but resides in a different State, the transferee/buyer must list both his/her permanent duty station address and residence address. If the transferee/buyer has two States of residence, the transferee/buyer should list his/her current residence address (e.g., if the transferee/buyer is purchasing a firearm while staying at his/her weekend home in State X, list the address in State X).

Question 14. Sex: Individuals with neither male nor female on their identification document(s) should check Non-Binary.

Question 17. Unique Personal Identification Number (UPIN) or Appeals Management Database Identification (AMD ID): For transferees/buyers approved to have information maintained about them in the FBI NICS Voluntary Appeal File, NICS will provide them with a UPIN, which the transferee/buyer should record in question 17. The AMD ID is a number that will be provided to an appellant on certain types of overturned appeals and should also be recorded in question 17. The transferor/seller should provide the UPIN/AMD ID when conducting background checks through the NICS or the State POC.

Questions 18.a. and 18.b. Ethnicity and Race: Federal regulations (27 CFR 478.124(c)(1)) require licensees to obtain the race of the transferee/buyer. This information helps the FBI and/or State POC make or rule out potential matches during the background check process and can assist with criminal investigations.

Ethnicity refers to a person's heritage. Persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race, are considered Hispanic or Latino.

Race - one or more of the following responses must be selected: (1) American Indian or Alaska Native - A person having origins in any of the original peoples of North and South America (including Central America), and who maintains a tribal affiliation or community attachment; (2) Asian - A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam; (3) Black or African American - A person having origins in any of the Black racial groups of Africa; (4) Native Hawaiian or Other Pacific Islander - A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands; and/or (5) White - A person having origins in any of the original peoples of Europe, the Middle East, or North Africa. Select the closest representation for any other race or ethnicity that does not fall within those indicated.

Question 20. U.S.-issued Alien Number or Admission Number: U.S.-issued alien and admission numbers may be found on the following U.S. Department of Homeland Security documents: Legal Resident Card or Employment Authorization Card (AR# or USCIS#); Arrival/Departure Record, Form I94, or Form 797A (I94#). Additional information can be obtained from www.cbp.gov. If you are a U.S. citizen or U.S. national, the response to this question should be left blank.

Question 21.a. Actual Transferee/Buyer: For purposes of this form, a person is the actual transferee/buyer if he/she is purchasing the firearm for him/herself or otherwise acquiring the firearm for him/herself. (e.g., redeeming the firearm from pawn, retrieving it from consignment, firearm raffle winner). A person is also the actual transferee/buyer if he/she is legitimately purchasing the firearm as a bona fide gift for a third party. A gift is not bona fide if another person offered or gave the person completing this form money, service(s), or item(s) of value to acquire the firearm for him/her, or if the other person is prohibited by law from receiving or possessing the firearm.

EXAMPLES: Mr. Smith asks Mr. Jones to purchase a firearm for Mr. Smith (who may or may not be prohibited). Mr. Smith gives Mr. Jones the money for the firearm. Mr. Jones is NOT THE ACTUAL TRANSFEREE/BUYER of the firearm and must answer "no" to question 21.a. The licensee may not transfer the firearm to Mr. Jones. However, if Mr. Brown buys the firearm with his own money to give to Mr. Black as a gift (with no service or tangible thing of value provided by Mr. Black), Mr. Brown is the actual transferee/buyer of the firearm and should answer "yes" to question 21.a. However, the transferor/seller may not transfer a firearm to any person he/she knows or has reasonable cause to believe is prohibited under 18 U.S.C. 922(g), (h), (n), or (x).

Questions 21.b. - 21.l. Prohibited Persons: Generally, 18 U.S.C. 922(g) prohibits the shipment, transportation, receipt, or possession in or affecting interstate commerce of a firearm by one who: has been convicted of a felony in any Federal, including a general court-martial, State or local court, or any other crime, punishable by imprisonment for a term exceeding one year; is a fugitive from justice; is an unlawful user of, or addicted to, marijuana or any depressant, stimulant, or narcotic drug, or any other controlled substance; has been adjudicated as a mental defective or has been committed to a mental institution; has been discharged from the Armed Forces under dishonorable conditions; is subject to certain restraining orders; convicted of a misdemeanor crime of domestic violence under Federal, including a general court-martial, State or Tribal law; has renounced his/her U.S. citizenship; is an alien illegally in the United States or an alien admitted to the United States under a nonimmigrant visa. Furthermore, section 922(n) prohibits the shipment, transportation, or receipt in or affecting interstate commerce of a firearm by one who is under indictment or information for a felony in any Federal, including a general court-martial, State or local court, or any other crime, punishable by imprisonment for a term exceeding one year. An information is a formal accusation of a crime verified by a prosecutor.

A member of the Armed Forces must answer "yes" to 21.b. if charged with an offense that is referred to a general court-martial. A current or former member of the Armed Forces must answer "yes" to 21.c. if convicted under a general court-martial.

Discharged "under dishonorable conditions" means separation from the Armed Forces resulting from a dishonorable discharge or dismissal adjudged by a general court-martial. That term does not include any other discharge or separation.

EXCEPTION**:** A person is not prohibited from receiving or possessing a firearm if that person: (1) has been convicted of any Federal or State offense pertaining to antitrust violations, unfair trade practices, restraints of trade, or other similar offenses relating to the regulation of business practices; (2) has been convicted of a State misdemeanor punishable by imprisonment of two years or less; or (3) following conviction of a felony or other crime for which the judge could have imprisoned the person for more than one year, or a misdemeanor crime of domestic violence, has received a pardon, an expungement or set aside of the conviction, or has lost and regained civil

rights (the right to vote, sit on a jury, and hold public office) in the jurisdiction in which the conviction occurred, **AND** the law of the convicting jurisdiction does not prohibit the person from receiving or possessing firearms. Person subject to any of these exceptions, or who received relief from disabilities under 18 U.S.C. 925(c), should answer "no" to the applicable question**.**

Question 21.d. Fugitive from Justice: Any person who has fled from any State to avoid prosecution for a felony or a misdemeanor; or any person who leaves the State to avoid giving testimony in any criminal proceeding. The term also includes any person who knows that misdemeanor or felony charges are pending against such person and who leaves the State of prosecution.

Question 21.f. Adjudicated as a Mental Defective: A determination by a court, board, commission, or other lawful authority that a person, as a result of marked subnormal intelligence, or mental illness, incompetency, condition, or disease: (1) is a danger to himself or to others; or (2) lacks the mental capacity to contract or manage his own affairs. This term shall include: (1) a finding of insanity by a court in a criminal case; and (2) those persons found incompetent to stand trial or found not guilty by reason of lack of mental responsibility.

Committed to a Mental Institution: A formal commitment of a person to a mental institution by a court, board, commission, or other lawful authority. The term includes a commitment to a mental institution involuntarily. The term includes commitment for mental defectiveness or mental illness. It also includes commitments for other reasons, such as for drug use. The term does not include a person in a mental institution for observation or a voluntary admission to a mental institution.

EXCEPTION**:** Under the NICS Improvement Amendments Act of 2007, a person who has been adjudicated as a mental defective or committed to a mental institution in a State proceeding is not prohibited by the adjudication or commitment if the person has been granted relief by the adjudicating/committing State pursuant to a qualifying mental health relief from disabilities program. Also, a person who has been adjudicated as a mental defective or committed to a mental institution by a department or agency of Federal Government is not prohibited by the adjudication or commitment if either: (a) the person's adjudication or commitment was set aside or expunged by the adjudicating/committing agency; (b) the person has been fully released or discharged from all mandatory treatment, supervision, or monitoring by the agency; (c) the person was found by the agency to no longer suffer from the mental health condition that served as the basis of the initial adjudication/commitment; (d) the adjudication or commitment, respectively, is based solely on a medical finding of disability, without an opportunity for a hearing by a court, board, commission, or other lawful authority, and the person has not been adjudicated as a mental defective consistent with section 922(g)(4) of title 18, United States Code; or (e) the person was granted relief from the adjudicating/committing agency pursuant to a qualified mental health relief from disabilities program. This exception to an adjudication or commitment by a Federal department or agency does not apply to any person who was adjudicated to be not guilty by reason of insanity, or based on lack of mental responsibility, or found incompetent to stand trial, in any criminal case or under the Uniform Code of Military Justice. Persons who fall within one of the above exceptions should answer "no" to question 21.f.

Question 21.h. Qualifying Restraining Orders: Under 18 U.S.C. 922, firearms may not be sold to or received by persons subject to a court order that: (A) was issued after a hearing which the person received actual notice of and had an opportunity to participate in; (B) restrains such person from harassing, stalking, or threatening an intimate partner or child of such intimate partner or person, or engaging in other conduct that would place an intimate partner in reasonable fear of bodily injury to the partner or child; and (C)(i) includes a finding that such person represents a credible threat to the physical safety of such intimate partner or child; or (ii) by its terms explicitly prohibits the use, attempted use, or threatened use of physical force against such intimate partner or child that would reasonably be expected to cause bodily injury. An "intimate partner" of a person is: the spouse or former spouse of the person, the parent of a child of the person, or an individual who cohabitates or has cohabitated with the person.

Question 21.i. Misdemeanor Crime of Domestic Violence: A Federal, including a general court-martial, State, local, or tribal offense that is a misdemeanor under Federal, State, or tribal law and has, as an element, the use or attempted use of physical force, or the threatened use of a deadly weapon, committed by a current or former spouse, parent, or guardian of the victim, by a person with whom the victim shares a child in common, by a person who is cohabitating with, or has cohabited with the victim as a spouse, parent, or guardian, or by a person similarly situated to a spouse, parent, or guardian of the victim. The term includes all misdemeanors that have as an element the use or attempted use of physical force or the threatened use of a deadly weapon (e.g., assault and battery), if the offense is committed by one of the defined parties. (See Exception to 21.b. - 21.l.) A person who has been convicted of a misdemeanor crime of domestic violence also is not prohibited unless: (1) the person was represented by a lawyer or gave up the right to a lawyer; or (2) if the person was entitled to a jury, was tried by a jury, or gave up the right to a jury trial. Persons subject to this exception should answer "no" to 21.i.

A current or former member of the military who has been convicted of a violation of the Uniform Code of Military Justice that included, as an element, the use of force against a person as identified in the instructions under question 21.i. must answer "yes" to this question. This may include a qualifying offense that was referred to a special or general court-martial.

Question 21.l. Immigration Status: An alien admitted to the United States under a nonimmigrant visa includes, among others, persons visiting the United States temporarily for business or pleasure, persons studying in the United States who maintain a residence abroad, and certain temporary foreign workers. These aliens must answer "yes" to this question and provide the additional documentation as required under question 26.d.to establish they are excepted from the nonimmigrant alien prohibition. Permanent resident aliens and aliens legally admitted to the United States pursuant to either the Visa Waiver Program or to regulations otherwise exempting them from visa requirements may answer "no" to this question, leave 21.l.2 blank and are not required to submit the additional documentation under question 26.d.

Question 22. Transferee/Buyer Certification: Under 18 U.S.C. 922(a)(1), it is unlawful for a person to engage in the business of dealing in firearms without a license. A person is engaged in the business of dealing in firearms if he/she devotes time, attention, and labor to dealing in firearms as a regular course of trade or business with the principal objective of livelihood and profit through the repetitive purchase and resale of firearms. A license is not required of a person who only makes occasional sales, exchanges, or purchases of firearms for the enhancement of a personal collection or for a hobby, or who sells all or part of his/her personal collection of firearms.

Section C

Question 24. Category of Firearm(s): "Other" refers to frames, receivers, and other firearms that are neither handguns nor long guns (rifles or shotguns), such as firearms having a pistol grip that expel a shotgun shell, or National Firearms Act (NFA) firearms, including silencers.

If a frame or receiver can only be made into a long gun (rifle or shotgun), it is still a frame or receiver, not a handgun or long gun. All frames and receivers are "firearms" by definition, and subject to the same GCA limitations. See Section 921(a)(3)(B). Section 922(b)(1) makes it unlawful for a licensee to sell any firearm other than a shotgun or rifle to any person under the age of 21. Since a frame or receiver for a firearm, to include one that can only be made into a long gun, is a "firearm other than a shotgun or rifle," it cannot be transferred to anyone under the age of 21, nor can these firearms be transferred to anyone who is not a resident of the State where the transfer is to take place. Also, note that multiple sales forms are not required for frames or receivers of any firearms, or pistol grip shotguns, since they are not "pistols or revolvers" under Section 923(g)(3)(A).

Question 25. Qualifying Gun Show or Event: As defined in 27 CFR 478.100, a gun show or event is a function sponsored by any national, State, or local organization, devoted to the collection, competitive use, or other sporting use of firearms, or an organization or association that sponsors functions devoted to the collection, competitive use, or other sporting use of firearms in the community.

Question 26.a. Identification: Before a licensee may sell or deliver a firearm to a nonlicensee, the licensee must establish the identity, place of residence, and age of the transferee/buyer. The transferee/buyer must provide a valid government-issued photo identification document to the transferor/seller that contains the transferee's/buyer's name, residence address, and date of birth. A driver's license or an identification card issued by a State is acceptable. Social Security cards are not acceptable because no address, date of birth, or photograph is shown on the cards.

Identification documents such as a driver's license or identification card issued with binary, non-binary, or no sex designation may be used as an identification document. A combination of government-issued documents may be provided. See instructions for question 26.b. Supplemental Documentation.

If the transferee/buyer is a member of the Armed Forces on active duty acquiring a firearm in the State where his/her permanent duty station is located, but he/she has a driver's license from another State, the transferor/seller must list the transferee's/buyer's military identification card in response to question 26.a., in addition to PCS orders as indicated in 26.c.

Question 26.b. Supplemental Documentation: Licensees may accept a combination of valid government-issued documents to satisfy the identification document requirements of the law. The required valid government-issued photo identification document bearing the name, photograph, and date of birth of transferee/buyer may be supplemented by another valid, government-issued document showing the transferee's/buyer's residence address. This supplemental documentation must be recorded in question 26.b., with the issuing authority and type of identification presented. For example, if the transferee/buyer has two States of residence and is trying to buy a handgun in State X, he may provide a driver's license (showing his name, date of birth, and photograph) issued by State Y and another government-issued document (such as a tax document) from State X showing his residence address. A valid electronic document from a government website may be used as supplemental documentation provided it contains the transferee's/buyer's name and current residence address.

Question 26.c. Official Military Orders Establishing Permanent Change of Station (PCS): Licensees may accept electronic PCS orders to establish residency.

Question 26.d. Exceptions to the Nonimmigrant Alien Prohibition: An alien admitted to the United States under a nonimmigrant visa is not prohibited from purchasing, receiving, or possessing a firearm if the alien: (1) is in possession of a hunting license or permit lawfully issued by the Federal Government, a State or local government, or an Indian tribe federally recognized by the Bureau of Indian Affairs, which is valid and unexpired; (2) was admitted to the United States for lawful hunting or sporting purposes; (3) has received a waiver from the prohibition from the Attorney General of the United States; (4) is an official representative of a foreign government who is accredited to the United States Government or the Government's mission to an international organization having its headquarters in the United States; (5) is an official representative of a foreign government who is en route to or from another country to which that alien is accredited; (6) is an official of a foreign government or a distinguished foreign visitor who has been so designated by the Department of State; or (7) is a foreign law enforcement officer of a friendly foreign government entering the United States on official law enforcement business.

Question 27. NICS Background Checks: 18 U.S.C. 922(t) requires that prior to transferring any firearm to an unlicensed person, a licensed importer, manufacturer, or dealer must first contact the National Instant Criminal Background Check System (NICS). NICS will advise the licensee whether the system finds any information that the purchaser is prohibited by law from possessing or receiving a firearm. For purposes of this form, contacts to NICS include State agencies designated as points-of-contact (or POCs) to conduct NICS checks for the Federal Government.

The licensee should NOT contact NICS and must stop the transaction if there is reasonable cause to believe that the transferee/buyer is prohibited from receiving or possessing a firearm, including if: the transferee/buyer answered "no" to question 21.a.; the transferee/buyer answered "yes" to any question in 21.b. - 21.k.; the transferee/buyer answered "yes" to question 21.l.1., and answered "no" to question 21.l.2.; or the transferee/buyer cannot provide the documentation required by questions 26.a, b, c, or d. **Warning:** Any person who transfers a firearm to any person he/she knows or has reasonable cause to believe is prohibited from receiving or possessing a firearm violates the law, 18 U.S.C. 922(d), even if the transferor/seller has complied with the Federal background check requirements.

NICS Responses: If NICS provides a "proceed" response, the transaction may proceed. If NICS provides a "denied" or "cancelled" (and does not immediately provide a new transaction number) response, the transferor/seller is prohibited from transferring the firearm to the transferee/buyer. If NICS provides a "delayed" response, the transferor/seller is prohibited from transferring the firearm unless 3 business days have elapsed and, before the transfer, NICS or the State has not advised the transferor/seller that the transferee's/buyer's receipt or possession of the firearm would be in violation of law. (See 27 CFR 478.102(a) for an example of how to calculate 3 business days.) If NICS provides a "delayed" response, NICS also will provide a Missing Disposition Information (MDI) date that calculates the 3 business days and reflects when the firearm(s) can be transferred under Federal law. States may not provide an MDI date. Some States may not provide a transaction number for denials. However, if a firearm is transferred within the three business day period, a transaction number is required. State law may impose a waiting period or other requirements on transferring firearms.

At the time that NICS is contacted, the licensee must record in question 27.a. - 27.c.: the date of contact, the NICS (or State) transaction number, and the initial response provided by NICS or the State. The licensee may record the date the firearms may be transferred to the transferee/buyer (also known as the Missing Disposition Information (MDI) date) in 27.c. that NICS provides for delayed transactions (States may not provide this date). If the licensee receives any subsequent response(s) before transferring the firearm, the licensee must record in question 27.d. any response later provided by NICS or the State, or that no response was provided within 3 business days. If the licensee receives a response from NICS or the State after the firearm has been transferred, he/she must record this information in question 27.e. If the transaction was denied and later overturned, in addition to checking the "Proceed" in 27.d. and entering the date, the licensee must also check "Overturned" and, if provided, attach the overturn certificate issued by NICS or the State POC to this ATF Form 4473. If more than 30 days have elapsed and a new NICS check is required, record the new transaction number, date of contact and the response provided by NICS or the State on this Form 4473 in questions 27.a.-27.c. Note: States acting as points of contact for NICS checks may use terms other than "proceed," "delayed," "cancelled," or "denied." In such cases, the licensee should check the box that corresponds to the State's response.

Questions 28 and 29. NICS Exceptions: A NICS check is not required if the transfer qualifies for any of the exceptions in 27 CFR 478.102(d). Generally these include: (a) transfers of National Firearms Act firearms to an individual who has undergone a background check during the NFA approval process; (b) transfers where the transferee/buyer has presented the licensee with a permit or license that allows the transferee/buyer to possess, acquire, or carry a firearm, and the permit has been recognized by ATF as a valid alternative to the NICS check requirement; or (c) transfers certified by ATF as exempt because compliance with the NICS check requirements is impracticable. If the transfer qualifies for one of these exceptions, the licensee must obtain the documentation required by 27 CFR 478.131. A firearm must not be transferred to any transferee/buyer who fails to provide such documentation.

A NICS check must be conducted if an NFA firearm has been approved for transfer to a trust, or to a legal entity such as a corporation, and no background check was conducted as part of the NFA approval process on the individual who will receive the firearm. Individuals who have undergone a background check during the NFA application process are listed on the approved NFA transfer form.

Section D

Questions 30 and 31. Transfer on a Different Day and Recertification: If the transfer takes place on a different day from the date that the transferee/buyer signed Section B, the licensee must again check the photo identification of the transferee/buyer at the time of transfer.

Section E

Question 32. For Use by Licensee: This item is for the licensee's use in recording any information he/she finds necessary to conduct business or any additional information received from NICS that is not recorded in Questions 27.a. - 27.e.

Privacy Act Information

Solicitation of this information is authorized under 18 U.S.C. 923(g) and 922(b)(5). Disclosure of this information by the transferee/buyer is mandatory for the transfer of a firearm. Disclosure of the individual's Social Security number is voluntary. The number may be used to verify the transferee's/buyer's identity.

For information about the routine uses of this form see System of Records Notice Justice/ATF-008, Regulatory Enforcement Records System (68 FR 163558, January 24, 2003).

Paperwork Reduction Act Notice

The information required on this form is in accordance with the Paperwork Reduction Act of 1995. The purpose of the information is to determine the eligibility of the transferee to receive and possess firearms under Federal law. The information is subject to inspection by ATF officers and is required by 18 U.S.C. 922 and 923.

The estimated average burden associated with this collection is 30 minutes per respondent or recordkeeper, depending on individual circumstances. Comments about the accuracy of this burden estimate and suggestions for reducing it should be directed to Reports Management Officer, IT Coordination Staff, Bureau of Alcohol, Tobacco, Firearms and Explosives, Washington, DC 20226.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. Confidentiality is not assured.

EXHIBIT C

OMMU Office of MEDICAL MARIJUANA Use

Florida's Official Source for Responsible Use.

Florida HEALTH

April 1, 2022

We are pleased to provide this weekly update on the Department of Health, Office of Medical Marijuana Use's (OMMU) diligent work implementing the many requirements in Amendment 2 and those set by the Florida Legislature in section 381.986, F.S. The Florida Department of Health (Department) continues to focus on the health and safety of Florida's families and is dedicated to ensuring patients have safe access to low-THC cannabis and medical marijuana.

Patients

Qualified Patients (Active ID Card): 702,081 Processing Time for Complete Application*: 5 business days Processing Time for ID Card Printing: 5 business days **Applications are not deemed to be complete until all required information is received and payment has successfully cleared.*	▪ Check your application status: https://mmuregistry.flhealth.gov ▪ Questions about your application: Phone: 1-800-808-9580 ▪ Consumer comments, and concerns: Email: MedicalMarijuanaUse@flhealth.gov

Physicians

Qualified Physicians: 2,625 *A physician must have an active, unrestricted license as a physician under Chapter 458, F.S., or osteopathic physician under Chapter 459, F.S., and complete a 2-hour course and exam before being qualified to order medical marijuana and low-THC cannabis for qualified patients.* Learn more here: https://knowthefactsmmj.com/physicians	▪ Find a qualified physician: https://knowthefactsmmj.com/physicians/list ▪ Verify your qualified physician: http://www.flhealthsource.gov ▪ Health care complaint portal: https://www.flhealthcomplaint.gov

Weekly Highlights

The following dispensing locations were approved by the Department for the week of March 28 – April 1, 2022:

- AltMed Florida (MüV) – Marco Island
- Sanctuary – Tampa

Medical Marijuana Treatment Centers

The department is charged with the licensing and regulation of medical marijuana treatment centers (MMTCs). MMTCs are vertically integrated businesses, and are the only businesses authorized to cultivate, process and dispense low-THC cannabis and medical marijuana.

MMTC Authorization

After initial licensure, each MMTC must receive authorization at three stages prior to dispensing low-THC cannabis or medical marijuana: (1) cultivation authorization, (2) processing authorization and (3) dispensing authorization.

Low-THC Cannabis & Medical Marijuana Dispensations

MMTCs dispense low-THC cannabis and medical marijuana to qualified patients and caregivers as recommended by their qualified ordering physician at approved dispensing locations and via delivery. Medical marijuana is dispensed in milligrams of active ingredient tetrahydrocannabinol (THC), and low-THC cannabis is dispensed in milligrams of active ingredient cannabidiol (CBD).

For MMTC contact information and dispensing location addresses, visit https://KnowTheFactsMMJ.com/MMTC.

MMTC Dispensations for March 25 – 31, 2022:

MMTC Name	Dispensing Locations	Medical Marijuana (mgs THC)	Low-THC Cannabis (mgs CBD)	Marijuana in a Form for Smoking (oz)
Trulieve	113	117,359,838	1,686,581	38,129.913
Liberty Health Sciences	45	29,697,363	74,290	4,022.855
Curaleaf	45	43,287,300	326,436	13,058.871
AltMed Florida (MüV)	44	28,312,992	360,929	5,964.294
Surterra Wellness	43	21,880,407	1,146,987	4,329.816
Fluent	27	10,693,513	112,200	2,618.207
VidaCann	25	4,698,477	116,154	995.128
GrowHealthy	18	4,049,385	20,503	2,554.063
Sunnyside*	16	3,124,802	1,854	2,208.690
Cannabist	14	3,978,785	27,057	1,279.798
GTI (Rise Dispensaries)	7	1,557,315	18,629	1,752.353
MedMen	7	1,489,313	10,930	720.051
Sanctuary Medicinals, LLC	7	554,720	7,672	529.583
Green Dragon	3	0	0	94.304
HT Medical Cannabis	1	34,320	0	159.117
Insa – Cannabis for Real Life	0	0	0	0
Revolution Florida	0	0	0	0
Jungle Boys	0	0	0	0
The Flowery	0	6,000	0	66.608
Gold Leaf Florida	0	0	0	0
Cookies Florida, Inc.	0	0	0	8.077
Planet 13 Florida, Inc.	*N/A*	*N/A*	*N/A*	*N/A*
Total	**415**	**270,724,530**	**3,910,222**	**78,491.728**

General Background Information

Medical Marijuana ID Card Application Process: Once a patient has been diagnosed by a qualified physician and entered into the Medical Marijuana Use Registry, they can immediately begin the identification card application process. The department encourages applicants to complete the process online for fastest service. Patients receive an email from the OMMU once their email address is added to the registry by their qualified physician, which directs them to the application. Once an application is approved, patients instantly receive an approval email which can be used to fill an order at an approved MMTC while the physical card is printed and mailed. Learn more here: https://KnowTheFactsMMJ.com/Patients/Cards.

Medical Marijuana Use Registry: All orders for medical marijuana are recorded and dispensed via the Medical Marijuana Use Registry. The Medical Marijuana Use Registry is accessible online, with real time information to ordering physicians, law enforcement and medical marijuana treatment center staff. Patients and caregivers may also access the Medical Marijuana Use Registry to submit a Medical Marijuana Use Registry Identification Card application, check the status of their application and review orders and dispensations. Learn more here: https://KnowTheFactsMMJ.com/Registry.

For more information visit www.KnowTheFactsMMJ.com.

EXHIBIT D

Improving the Measurement of Drug-Related Crime

2013

Improving the Measurement of Drug-Related Crime

Office of National Drug Control Policy
Executive Office of the President
Washington, DC

October 2013

Acknowledgements

This publication was sponsored by the Office of National Drug Control Policy (ONDCP), Executive Office of the President, under contract number HHSP23320095649WC_ HHSP23337017T to the RAND Corporation. The authors of this report are Rosalie Liccardo Pacula, Russell Lundberg, Jonathan P. Caulkins, Beau Kilmer, Sarah Greathouse, Terry Fain, and Paul Steinberg from the RAND Drug Policy Research Center. M. Fe Caces served as the ONDCP Task Order Officer.

This work was significantly improved by input from an expert panel, which consisted of Allen Beck, Al Blumstein, Henry Brownstein, Rick Harwood, Paul Heaton, Mark Kleiman, Ted Miller, Nancy Rodriquez, Gam Rose, William Sabol, and Eric Sevigny; we also had input from ONDCP staff, including Fe Caces, Michael Cala, and Terry Zobeck.

Disclaimer

The information and opinions expressed herein are the views of the authors and do not necessarily represent the views of the Office of National Drug Control Policy or any other agency of the Federal Government.

Notice

Electronic Access to Publication

This document can be accessed electronically through the following World Wide Web address:
http://www.whitehouse.gov/ondcp

Originating Office

Executive Office of the President
Office of National Drug Control Policy
Washington, DC 20503

October 2013

Executive Summary

S.1. Introduction

Policymakers need good information on the impact of drug use and drug markets on crime, since crime is a major source of the external burden caused by the demand for illegal substances. Thus, information on how drug demand causes crime—directly and indirectly—is vital for evaluating strategies that could be used to manage the problem and/or reduce the harm caused by these illegal markets. Such information is also needed to set priorities for how best to target limited resources to tackle the problem. While partaking in any illegal market is, by definition, a crime, not all illegal substances generate the same burden on society in terms of non-drug crime.

In recent years, an expanding line of research has attempted to specify causal links between particular drugs and crime so as to better inform policymaking and the general understanding of the problem. Based on this scientific work, efforts in the United States, Europe, Australia, and Canada have tried to attribute some share of the total crime observed in society to the use of drugs and the presence of illegal drug markets. While these attribution studies have advanced the field, they remain unable to generate a credible range of estimates of the overall amount of crime that is causally attributable to drug use and supply.

In July 2011, the Office of National Drug Control Policy (ONDCP) awarded RAND's Drug Policy Research Center a contract to help move the science forward by developing a methodology that could be used to estimate the total amount of drug-related crimes in the United States and by pilot testing the proposed methodology using a select number of data sources to develop estimates at the national level. We began with a thorough literature review focused on studies identifying causal links between specific drugs and particular types of crimes. Then, in consultation with a group of external experts, we assessed the current strategies used to translate that knowledge into measures of drug relatedness. Several important insights were gleaned from these first two steps, leading our team to conclude that an entirely new approach was needed for describing drug-related crime. Prior attempts to improve the methodology for determining drug-attributable crime were constructive but narrow; they were incrementally improving the measurement of one particular dimension of the drugs-crime relationship while neglecting other equally important dimensions. Thus, we propose in this report an entirely new method for tracking and measuring the magnitude of drug-related crime and provide a prototype of a new strategy for measuring the problem, which we call "The Drugs-Crime Dashboard."

S.2. Insights from the Existing Literature

The scientific literature's earliest observation about the drugs-crime relationship is also the most obvious. People involved with drugs in one way or another account for a very large proportion of criminal activity, as reflected, for example, in urinalysis results and survey responses of arrestees. However, not all those crimes should be thought of as "caused" by drugs. Sometimes, both the drug-related activity and the criminal activity can be caused by an independent third factor (such as a proclivity toward deviant behavior more generally).

Teasing out what causes what amid reciprocal relationships is extremely hard to do well, but all too easy to do badly. Social scientists, particularly econometricians and statisticians, have made enormous strides over the last 10–20 years, both in developing statistical methods that can identify causal relationships and showing how flawed the conclusions drawn from older, less sophisticated analyses can be. Hence, although there have been any number of well written, comprehensive reviews of the drugs-crime literature in the past, we began our analysis with a review of the most recent (published in 2000 or later) and methodologically rigorous contributions to the literature.

Upon reviewing these methodologically strong studies on a drug-by-drug basis, four main insights about specific drugs-crime connections emerged:

- There is strong evidence that cocaine (including crack) was, at least in the 1980s, associated with homicide and systemic (i.e., market-related) violent crime.
- Heroin use (but not heroin markets) appears to be most strongly causally related to property crimes.
- While methamphetamines are commonly associated with aggressive behaviors and criminality, the evidence of a causal relationship in aggregate data is limited and inconclusive.
- Even though marijuana is commonly used by individuals arrested for crimes, there is little support for a contemporaneous, causal relationship between its use and either violent or property crime. There is evidence supporting a possible intertemporal relationship, but it is not clear to what extent this is unique to marijuana.

When viewed together, these insights point to our first, fairly predictable conclusion: Not all illicit drugs cause the same amount or types of crime, if any at all. Differences in the drug of choice and the environment in which the drug is taken (e.g., with alcohol or without) will be important for determining whether involvement with illegal drugs will translate into non-drug criminal activity.

Other important conclusions also emerged from our literature review. In particular, it became evident that drug use influences crime not just through proximal (or contemporaneous) mechanisms. Early and/or persistent drug involvement can also have long-lasting impacts on an individual's need or willingness to engage in crime. Similarly, for a community, the current presence of drug users and even drug markets can have long-term impacts by driving certain businesses or investment away from the community, thereby fostering an environment that

perpetuates low economic opportunity (and hence high rewards for crime). These temporally lagged and indirect mechanisms through which drugs can influence future crime rates are entirely missed in the current formulation of drug-attribution fractions (DAFs), but must be considered when thinking of ways to capture the overall influence of drugs on crime.

A third conclusion is that the science tends to focus on just a few types of drugs (cocaine, heroin, and marijuana) and only certain types of markets (mostly retail ones). These are areas where the crime/arrest/use data are relatively better, variations observed across jurisdictions can be exploited, and sources for statistical identification exist. However, gaping holes remain in our understanding of the linkages to other drugs (e.g., methamphetamines, prescription pharmaceuticals) and other crimes, including those generated at higher levels of the drug market (e.g., importation, wholesale trafficking within the United States). Also lacking are high-quality systematic studies evaluating the role of drugs in white-collar crime and/or government corruption. Oddly, the drugs-crime literature has also generally given little acknowledgement to the role substance abuse plays in child abuse and domestic violence. These gaps are an impediment to researchers and to the policy discourse because they limit attention to a fairly narrow slice of the problem. It is impossible to fully appreciate the importance of drugs as a social problem or to assess the potential value or effectiveness of specific policy responses without a full understanding of the additional aspects of the problem. However, for scientific evaluation of these issues to reach the same level it has for retail markets, additional data sources and better metrics of these types of crimes need to be developed.

S.3. Drug-Attribution Fractions Are an Inadequate Construct for Capturing All Drug-Involved Crime

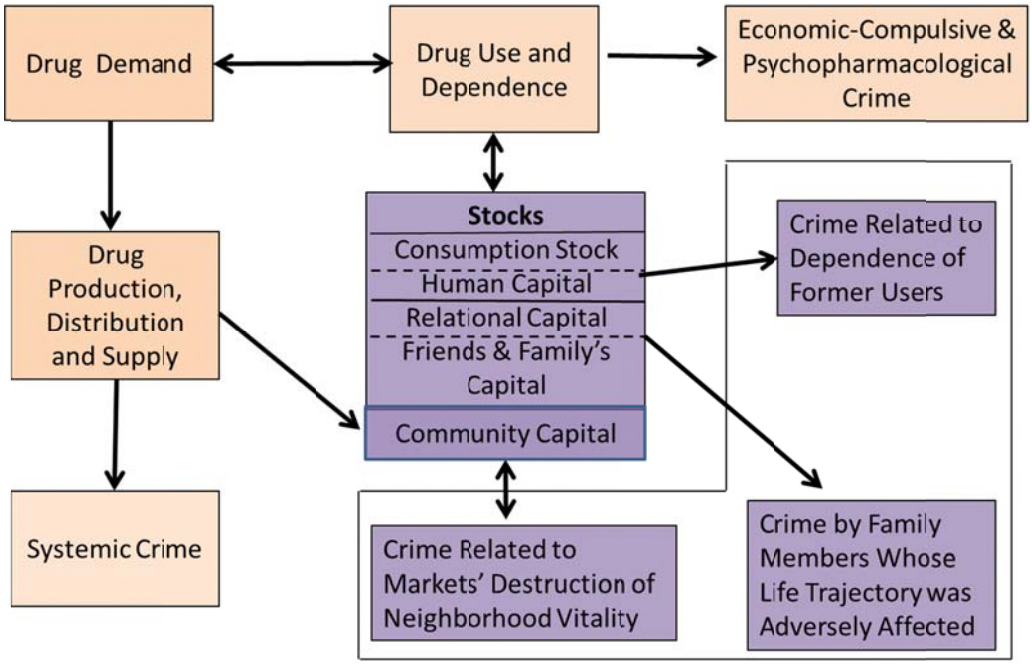
Initial efforts to determine what proportion of crimes could be causally attributed to drug involvement focused on heroin-dependent individuals and property crime. While modest improvements and expansions of this notion have occurred, such as including other drugs and counting a small proportion of crimes committed under the influence of drugs as having been caused by that intoxication, none of the improvements address fundamental flaws raised by critics, nor do they consider whether the initial conceptualization of this approach makes sense.

A key insight from our examination of the DAF literature and discussions with a group of experts in the field is the need for a fundamental rethinking of what can and cannot be measured by the traditional approach. A single measure cannot accurately reflect the variety of individual and community, contemporaneous, and intertemporal mechanisms through which drug use and distribution can influence crime. But the real problem is neither the existence of the DAFs nor how they have been historically measured, but the non-existence of complementary measures that are needed to paint a more accurate and comprehensive picture of how much crime is drug-related. While DAFs do serve a role and provide some insight, it is important to recognize explicitly what aspects of drug-related crime they overlook.

We therefore embarked on an effort to generate a new conceptualization that better summarized what the field has learned regarding the various mechanisms through which drugs might influence crime. Our approach intended to complement the traditional framework offered by Goldstein (1985) by providing insights that might help policymakers and community leaders to think more concretely about those mechanisms, the possible metrics that can be used to capture those mechanisms, and the additional mechanisms that remain less understood or unmeasured.

Figure S.1 illustrates our new conceptualization of the various mechanisms through which drugs are associated with crime. The pale pink boxes along the top row and left-hand column of the figure capture mechanisms previously considered in prior formulations of DAFs, although not necessarily comprehensively. Traditional DAFs, relying on self-reported information regarding use at the time of the offense and being in need of money to purchase drugs at the time of the offense, measure to some extent the contemporaneous relationship between drug use/dependence and economic-compulsive and psychopharmacological crime. Added to these estimates are those crimes that are 100 percent attributed to drugs, such as the sale and possession of illicit substances, which capture certain crimes related to drug markets. While this information drawn from drug offenses is useful, it clearly misses those crimes related to other important elements of drug markets, including the laundering of money, payment of bribes, and protection of drug market territories. These latter elements applied to retail markets are what are frequently thought of as systemic crimes in Goldstein's tripartite framework (1985). A few updates to the traditional DAFs attempted to measure one aspect of systemic crime (drug-related homicides) but the vast majority of systemic crime, particularly nonfatal crime, is generally ignored.

Figure S.1
Mechanisms Through Which Drug Use and Drug Distribution Influence Crime



A particularly relevant aspect of our proposed conceptualization is its explicit consideration of the indirect mechanisms through which sustained drug use can impact an individual's willingness to engage in crime. The purple box in the middle of Figure S.1 represents different types of processes or relationships (which we broadly describe as "stocks") that are influenced by sustained use of an illicit drug. Each separate area in this box is intended to embody the long-term, accumulated effects of prior consumption on that specific area. First, there is the "consumption stock," which reflects an abstraction of all the physiological and psychological changes that occur within an individual who has used drugs over an extended period of time, induced by long-term exposure to artificially introduced neurotransmitters (i.e., drugs). [1] That abstraction is useful because the neuroscientific understanding of addiction is still evolving, but it encompasses, for example, persistent changes in the demand for drugs (e.g., addicts' cravings that continue even six months after quitting) and also persistent changes in the mind, such as changing preferences or abilities, that affect non–drug seeking behavior. In other words, we refer here to the changes that persist post intoxication.

The other areas in the middle box represent other processes and relationships impacted by persistent drug use or the presence of or involvement in drug markets. Human capital refers to the accumulation of education, knowledge, and experience that make a person more productive

[1] Gary Becker and other economists have empirically assessed the impact of these consumption "stocks" on current and future decisions to use drugs and demonstrated that there are indeed long- and short-term consequences of them.

at a given task. Relational capital refers to the changes in relationships that occur because of long-term use of a drug. An example would include the strains placed on pre-drug relationships (with friends, family members, coworkers) as the drug user disassociates him/herself from non-using peers or persistently lies and makes up excuses to hide the habit. Thus, this captures the depletion of the user's social capital due to his/her behavior while previously intoxicated. Friends and family capital refers to the additional economic and social impact on those closest to and/or living with a dependent user. These can include relatively small impacts, such as the economic burden placed on someone trying to support a dependent user through recovery, as well as very large impacts, such as the long-term social and developmental impact on a child living with or taken away from a drug-dependent parent. Finally, there is community capital, which embodies the economic prosperity and future hope for opportunity of a community. Sustained turf battles over drug markets and/or high levels of drug use among youth and young adults within a community reduce the economic potential of neighborhoods by driving away business and business investments, which only further reduces the opportunity for economic prosperity and the relative attractiveness of non-criminal activities.

The conceptualization presented in Figure S.1 is innovative in the emphasis it places on both the direct (pale pink) and indirect (purple) mechanisms through which drug use and/or drug markets can cause crime. Both types of mechanisms have been well supported in the scientific literature. Indirect mechanisms take time to play out before they are fully realized, but they are no less real in terms of their effects. For example, a long period of dependent drug use can create gaps in a user's—or even an ex-user's—resume, which will influence his or her chances of obtaining gainful employment and, hence, the relative benefits of pursuing crime instead of legal employment. Similarly, early drug use can influence an individual's performance in school and ability/willingness to stay in school, which will impact that individual's job opportunities when he/she gets older. These sorts of drug-related deductions from human capital formation (often studied in epidemiological analyses) can generate indirect pathways through which prior drug use or drug dependence influences one's proclivity to engage in crime today.

A second innovative aspect of this conceptualization is that it more clearly separates drug-related crime caused by individual behavior from drug-related crime caused by the sum of many individuals living within the same community (or a community's susceptibility to drug-related crime). The fact that neighborhoods can be economically and socially devastated by outdoor drug markets (particularly violent ones) or a high density of drug users is something that was previously ignored in other constructs. Nonetheless, the ability of a teenager to find a legal source of income depends critically on the availability of such jobs in the local community.

A particularly relevant aspect of a community's environment is the implementation and enforcement of specific drug policies within it. For example, there is a hypothesis that generous social welfare benefits can reduce drug-related crime by allowing dependent users to substitute income support payments for criminal income. To the best of our knowledge, the empirical validity of that particular hypothesis remains unresolved, but it is a good illustration of the idea

that policy in general—not just drug policy—can mediate the amount of crime created by a given amount of drug use. A more concrete example is that drug policy can affect drug prices, and the amount of crime created per person-year of dependence may be different in countries with higher or lower drug prices.

The three remaining purple boxes, which are grouped together in Figure S.1, represent examples of the types of crimes that would be considered drug-involved if indirect pathways (that reflect cumulative impacts over numerous years of use) were incorporated into an understanding of drug-related crime. For example, the crime committed today by a former dependent user (clean and sober for years) because s/he is unable to get gainful employment due to a criminal record associated with his/her previous drug use could be reasonably attributed to drugs. Similarly, the crime committed by a youth who grew up in foster care due to drug abusing parents could plausibly be attributed to his parents' drug use. The extent to which such crimes can or should be attributed to drugs remains to be measured in future work, but it is relevant to highlight as yet another area of omitted costs.

These represent only a few of the variety of examples that might be offered to illustrate the extent to which drugs are involved in crime today. The main point is that, to fully understanding the drugs-crime relationship, we must adopt a broader conceptualization than used previously and pay explicit attention to both the direct and indirect pathways through which drug use can lead to crime. As these pathways reflect individual and community-wide factors that interact in very important ways, it is unlikely that a single metric will be sufficient for universally representing the influence of drug use on crime.

S.4. A New Tool for Policymakers: The Drugs-Crime Dashboard

Beyond recognizing the complexity of the drugs-crime relationship and the limits of current research, the conceptual framework presented in Figure S.1 brings to the forefront the need to think of a broader set of indicators that can help policymakers understand not just the immediate links between drug use and crime but also their longer-term association. While the use of multiple indicators is perhaps a new idea in the current application, the reliance on a set of indicators as opposed to any one indicator is quite common in business. While businesses are often thought of—at least in the abstract—as having just one objective (to maximize profits), when communicating to investors or market analysts, they typically report on a "dashboard" of "key performance indicators" to implement what is commonly referred to as "a balanced scorecard" of the company's performance. It is that idea that we propose for adoption here.

What sorts of metrics should be included in a Drugs-Crime Dashboard? The scientific literature provides hints of potential indicators of interest, such as the proportion of people arrested for drug offenses related to specific drugs as compared to the proportion of non-drug crimes involving use of those same drugs. Additionally, one could look at the Substance Abuse and Mental Health Services Administration's (SAMHSA's) Treatment Episode Data to assess

the number of people referred to treatment from the criminal justice system who are clinically dependent on a drug. This would give us an idea of the proportion of people arrested within a state for an eligible offense that meet clinical standards for dependence (and thus the role of dependence in their crimes).

DAFs remain a useful piece of information to include in a Drugs-Crime Dashboard, particularly if they are improved methodologically. We recommend three specific improvements based on discussions with our expert panel members and our own analysis of these data included in this report: (1) focus on associations reported by first-year (new) inmates rather than all inmates; (2) consider the role of polysubstance use and, in particular, alcohol use; and (3) include crimes committed by dependent users rather than just those who report committing the crime to finance a drug purchase.

There are a variety of additional data sets available in the United States today from which relevant information can be derived on some (though clearly not all) of the various mechanisms identified in Figure S.1. Examples are discussed in detail in this report, but include Uniform Crime Reports, or the National Incidence Based Reporting System (providing data on general drug offenses and the role of particular classes of drugs in those offenses); the Fatality Analysis Reporting System (capturing the number of drugged drivers); and the National Emergency Admissions Database (capturing, to some extent, serious victimization where the victims have drugs in their system and were either assaulted, raped, or in an accident).

One data source that is perhaps the most novel for thinking about drug-involved crime among arrestees is Record of Arrest and Prosecution (RAP) sheet data. RAP sheet data have strengths and limitations that are in some ways complementary to inmate surveys. RAP sheet analysis exploits administrative data (so there are no costs from primary data collection) that are available at local levels and provide information on current offenders who get caught, not a stock of inmates. Thus, the population being studied using RAP sheet data is much more representative of the population of offenders than that of inmates, who have been caught, charged, prosecuted, and sentenced to prison or jail. However, there is no interview component to the RAP sheet data, so answers to questions such as “Did you commit this crime to obtain money to buy drugs?” are simply unavailable. Nonetheless, as shown in this report, valuable information on the extent to which drug offenses play a role in current crime or affect repeat offenders can be gleaned from them.

S.5. A Prototype Drugs-Crime Dashboard

After considering a range of information available from a variety of sources, we provide a prototype of a national and state Drugs-Crime Dashboard in this report. This prototype is shown in Figure S.2. We emphasize the preliminary nature of this dashboard in that an important step before making the methodology final as a policy tool would be to solicit input from

policymakers and researchers about the content and amount of data to include (possibly making such a dashboard many pages long).

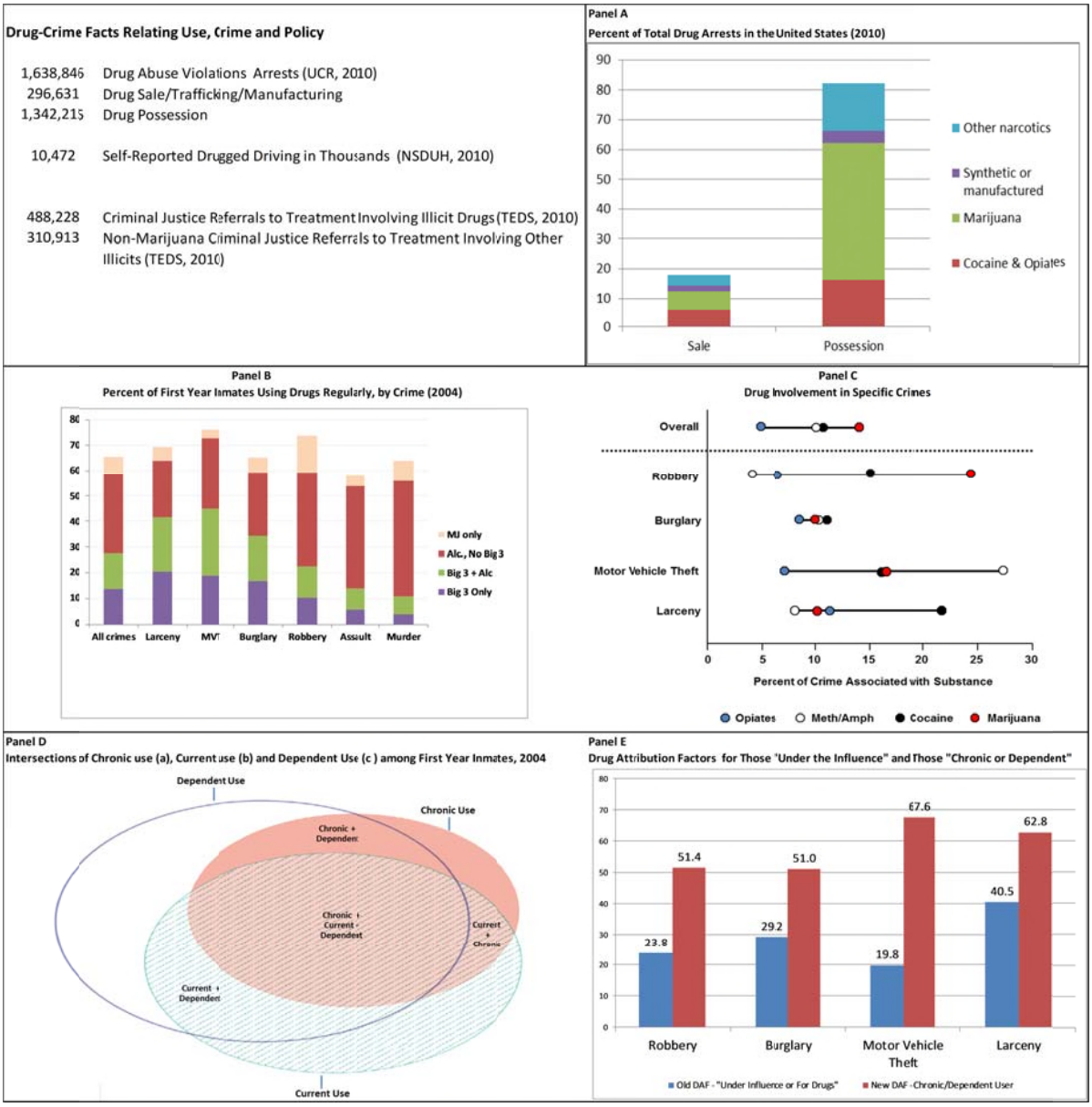
The benefit of using multiple statistics, rather than just one, to get a better understanding of the drugs-crime relationship is immediately apparent when looking at Figure S.2. For example, in looking at the data presented in the top left-hand corner about drug offending and Panels A and B, there is a bit of a disconnect between the drugs identified in sale and possession cases and those involved in non-drug offending. Cocaine and opiates, which represent only one-third of sales offenses and a quarter of possessions offenses, are two of the "Big 3" drugs being shown in Panel B that are involved in over half of all larceny, motor vehicle theft, and burglary offenses committed by inmates using drugs. Methamphetamines/amphetamines are the third "Big 3" drug, but it represents a very small proportion of sales and possession offenses (as it is included in the synthetic or manufactured drug category). Marijuana is by far the most common drug identified in drug possession and sales offenses (Panel A) but plays a much more minor role in terms of being the only drug consumed by inmates committing any of the property or violent crimes shown in Panel B. The implication is that, while marijuana is indeed one of the most frequently used drugs, even among those caught offending and incarcerated, it is not the drug driving the more serious offending when compared to the other substances.

Interestingly, the data presented in Panel C of Figure S.2, if shown alone, could be construed to suggest that marijuana in fact does play a much larger role in serious offending, as marijuana (indicated by the red dot) is the drug most frequently involved in all crimes and, in particular, robbery. By looking at the information in Panels B and C together, however, it becomes much clearer that marijuana gets used with other substances. While marijuana is reported to be involved in 25 percent of all robberies (Panel C), marijuana alone is involved in less than 15 percent of robberies (Panel B). Similarly, 10 percent of inmates who are in jail for larceny and burglary report being under the influence of marijuana (Panel C), but only half of those inmates consume only marijuana. Polysubstance use is a problem even among the more expensive drugs, as shown in Figure B by the fact that half of all the offending attributed to cocaine, heroin and/or meth (the "Big 3") also involves alcohol; in the case of murder, this proportion is even higher. It would be a very difficult task to try to tease out the relative importance of cocaine (or marijuana) in a given crime that involved the consumption of additional substances; hence, a key insight from graphics in the panels is that one has to be careful when attributing crime reported by inmates to any one particular substance.

Panels D and E provide important information regarding the role of dependent use versus use at the time of the crime. Panel D shows that, while there is some overlap with inmates who report using a drug at the time of the offense ("current use"), a significant proportion of crime committed by those meeting clinical definitions of dependence is missed by using solely a measure of self-reported use at the time of the offense. Indeed, as is shown in Panel E, if we instead define crimes involving drugs as those crimes committed by someone who was either using a drug on a near-daily basis or has met clinical criteria for dependence rather than those

committed by someone who simply self-reported use at the time of the offense, the proportion of property crimes involving drugs would be substantially higher, exceeding 50 percent of offenses for robbery, burglary, motor vehicle theft, and larceny in 2004.

Figure S.2
Prototype of a National Drugs-Crime Dashboard



The policy implications are easier to see using this multifaceted measure of drug-involved crime than they are using the single measure of a DAF. Drugs play a much larger role in criminal offending than previously thought, as crimes committed by those dependent or chronically using drugs had gone previously unrecognized if they were not committed while under the influence. These data show the clear need to emphasize treatment for the criminally involved, as doing so should dramatically reduce the amount of crime caused by drugs. However, this treatment needs to address polysubstance use and, in particular, alcohol use, as few offenders are using just one substance when offending. Targeting an offender's cocaine addiction without simultaneously addressing his/her alcohol use will do little to reduce the burden this offender places on society. Far more policy insights can be gleaned when these sorts of measures are examined over time.

As stated previously, the content of our proposed National Drugs-Crime Dashboard should be viewed as preliminary for several reasons. First, the data we recommend including at this point are largely descriptive, as opposed to only including measures that science has determined represent true causal relationships. This is, to some extent, a function of the state of the science, but also serves to demonstrate how a variety of different imperfect pieces of information can come together to provide a deeper understanding. Second, dashboards are decision support systems, so they interact with and should be customized to the interests of a particular decisionmaker, or at least the decision context. The dashboard that works best for a police chief may be different than the dashboard that works best for the head of a federal agency. We illustrate the principle with a generic national dashboard indicator but do not imagine that its particular design would be ideal for everyone who might eventually be interested in using such a dashboard. Third, the drug problem is not static. Drugs of abuse change considerably over time, and it is hard to predict which drug will be of greatest concern at any given point in the future. For the dashboard to stay relevant, it must be flexible and adaptable to the changing drug environment and to the measures available to monitor it. Thus, not unlike when Barton (1976) and Cruze et al. (1981) introduced the concept of DAFs as a preliminary idea on which future work could build, we too offer the Drugs-Crime Dashboard as a preliminary construct, on which we encourage future development.

Contents

Tables

Figures

1. Introduction

Policymakers need good information on the impact of drug use and drug markets on crime because crime is a major source of the societal burden caused by the ongoing demand for illegal substances. Thus, information on how drug demand causes crime—both directly and indirectly—is a vital input for policymakers to use in evaluating strategies to manage the problem and/or reduce its associated costs. Policymakers also need such information to set priorities for how best to target limited resources. For example, while taking part in any illegal market is, by definition, a crime, not all illegal substances generate the same burden on society in terms of non-drug crime. This may be the result of the nature of the substance itself, the way the substance is produced and/or brought to market, the environment in which the substance is sold and/or consumed, the population that tends to use the substance, or the policy and societal context more generally. Thus, understanding what drives the relationship between drugs and crime is vital for understanding the most appropriate policy response.

In recent years, an expanding line of research has attempted to specify causal links between drugs and crime. Based on this scientific work, efforts in the United States, Europe, Australia, and Canada have tried to attribute some share of the total crime observed in society to the use of drugs and the presence of illegal drug markets. While these so-called "attribution studies" have advanced the field, they remain unable to generate a credible range of estimates of the overall amount of crime that is causally attributable to drug use and supply. The approach and methods behind these studies have received considerable criticism by scholars in the field (see Reuter, 1999; Cohen, 1999; or Kleiman, 1999). It is really difficult to estimate the total amount of crime in a given year that can be reasonably attributed to drug use or drug markets for at least three reasons, only two of which receive serious attention: (1) data limitations preclude reliable measurement of the main variables of interest (drug use and involvement and crime); (2) it is difficult to infer causality in the absence of true experiments; and (3) there are conceptual challenges to doing so.

While numerous articles have been written criticizing prior methods, none have offered an alternative way forward—until now. In this report, we take steps that we believe will move the science forward. We start by offering a new conceptualization of the drugs-crime relationship that pays attention to the immediate and longer-term factors that link drug use to crime. This alternative conceptualization was constructed from insights gleaned from two important first steps. First, we conducted an updated literature review of recent studies, attempting to empirically assess the causal association between specific drugs and particular types of crimes and the hypothesized mechanisms through which they work. We present our key findings from that review in Chapter Two and offer the full review to the interested reader in Appendix A. Then, we re-examined the earlier development of drug attribution factors and attempted to trace

the logic of their construction back to the principal findings from our literature review (presented in Chapter Three).

Issues and conclusions drawn from these two steps were vetted and informed by a discussion with a group of subject-matter experts in a meeting held in Washington D.C. on November 15, 2011. It was clear to us that prior attempts to improve drug-attributable crime methodology were constructive, but narrow; they incrementally improved measurement of one particular dimension of the drugs-crime relationship while neglecting other, equally important dimensions. Recognizing the complexity of the issue and the limits of current research and data brings to the forefront the need to think of a broader set of indicators that can help policymakers to understand the immediate and longer-term effects of drug use. While it was not our original goal to develop an entirely new approach, it was the logical direction to take once we seriously considered the limitations of previous constructs.

In Chapter Four, we present our alternative conceptualization of the drugs-crime problem, emphasizing the limitations of drug-attribution fractions (DAFs) to completely represent all the relative dimensions of the relationship. The fact that these DAFs are an incomplete representation of the complex drugs-crime relationship does not mean that they are useless. Indeed, we argue that a modified version of these DAFs can be quite useful for describing the role drugs play in economic-compulsive and psychopharmacological crime but that they are even more useful when considered in conjunction with complementary pieces of information on other mechanisms missed by these measures. By simultaneously considering many measures of imperfect information, one can get a more reliable understanding of which drugs are influencing crime and how. It is the use and presentation of these multiple indicators that we refer to as a "Drugs-Crime Dashboard."

What sorts of metrics should be included in a Drugs-Crime Dashboard? Some scientific literature hints at potential indicators that could serve as a useful starting point, which we investigate in Chapters Five and Six. In Chapter Five, we discuss ways of refining previous methods of constructing DAFs from inmate surveys to make them more useful for describing the total amount of crime that might be considered drug-involved. Detailed analyses of the 2004 Survey of State and Federal Correctional Facilities (SISFCF) supporting the main conclusions presented in Chapter Five are provided in Appendix B. In Chapter Six, we discuss additional data that might be brought in to develop measures of missing dimensions of the drugs-crime relationship, including arrest information contained in administrative data available from all local and state jurisdictions as part of the Record of Arrest and Prosecutions (RAP) sheets. Detailed analyses supporting the suggestions we make in Chapter Six of how to make use of these data are provided in Appendix C. Other data systems and possible metrics that can be derived from them are also discussed in Chapter Six.

Finally, in Chapter Seven, we introduce two prototypes for a Drugs-Crime Dashboard, one capturing measures at the national level and one at the state level. We highlight some relevant information that can be gleaned when comparing specific statistics side-by-side and discuss some

of the policy implications that might be drawn from these comparisons. The goal is not to suggest that we have definitively determined the best information to include in a Drugs-Crime Dashboard, but rather to demonstrate how combining different pieces of information can provide a better understanding than any one statistic on its own. Thus, the dashboards presented in this report should be understood as illustrative rather than definitive. Before a definitive dashboard is constructed, serious consideration must be given to the critical questions of interest to various decisionmakers making use of these tools and to alternative data that might better capture information to inform those questions. We conclude Chapter Seven with some recommendations of what we believe would be useful next steps for further developing the dashboard concept in a way that will make it even more useful for policy makers needing to answer questions regarding the role of drugs in crime.

2. What Do We Know About the Drugs-Crime Relationship?

2.1. Introduction

It has long been understood that substance use and abuse are correlated with criminal behavior. Not only is the possession and use of some substances a criminal act, but there is a substantial literature that identifies an association between drug use and a range of other crimes, from petty theft to homicide (e.g., Chaiken and Chaiken, 1982; Inciardi, 1986; Nurco et al., 1991; Parker and Auerhahn, 1998; Boles and Miotto, 2003; Hoaken and Stewart, 2003; MacCoun, Kilmer and Reuter 2003; Bennett, Holloway and Farrington, 2008; Bennett and Holloway, 2009).

While the persistence of this observed *correlation* is indeed interesting—and there are similar findings observed for Canada, Europe, and Australia (Collins and Lapsley, 2002; Pernanen et al., 2002; MacDonald et al., 2005; Rehm et al., 2007; Collins and Lapsley, 2008)—it does not mean that drug use *causes* crime. The scientific literature has tried to pin down the extent to which drug use causes crime, and analysts have tried to translate information from these studies into measures that capture the amount of crime attributed to drug-related activity. However, the current approach to developing estimates of the amount of crime attributed to drug-related activity (i.e., DAFs) is poorly framed in that it adopts a conceptualization of drug-related crime that is overly simplistic and inadequately conceived. The history of developing DAFs from the scientific findings on causal relationships is discussed in the next chapter. Here, we simply state that attribution fractions have as their basis presumed mechanisms through which drug use causes crime. The scientific literature provides a basis for understanding which of those mechanisms have been carefully studied and determined to be truly causal. Thus, we start our investigation by returning to the scientific literature and assessing what we have come to learn about causal mechanisms linking drug activity and crime.

More specifically, in this chapter, we summarize the key insights from our review of the scientific literature on the causal relationship between drug use and crime. We then discuss various additional dimensions of the drugs-crime relationship that have been hypothesized, but that the scientific literature has been silent about. The absence of a literature demonstrating causality by the strict criteria used here does not necessarily mean the absence of a true causal relationship, because often there is inadequate data through which to carefully evaluate the association. We include a discussion of these additional dimensions since future circumstances and/or data may make it possible to carefully evaluate these mechanisms as well.

As will be evident in our review, the extant literature we did consider offers many different mechanisms through which drug use can be associated with and/or cause crime, which shows the complexity of the drugs-crime relationship. For example, some studies focus on the

contemporaneous relationship between drug use and crime among individuals, others focus on this relationship in terms of environment, while still others examine the relationship using a more longitudinal approach. The studies and the approaches used address entirely different questions, while still describing relevant aspects of the drugs-crime relationship. Additional dimensions are raised in the discussion of connections not carefully considered in the scientific literature.

From this review emerges a crucial criticism of the current state of the art for developing DAFs—their inability to reflect anything but a contemporaneous relationship between current use and crime. Thus, an important conclusion from this work is that a single attribution fraction is inadequate for capturing the many dimensions of this complex relationship.

2.2. Summary of the RAND Review of the Drugs-Crime Literature

We began by conducting a comprehensive literature review on the relationship between drugs and crime. We focused on studies published from 2000 forward, because we were explicitly requested to update a review that CSR Incorporated had previously conducted for the Office of National Drug Control Policy (ONDCP) (CSR Incorporated, 2010). The previous literature review described the methods used in a number of national studies to estimate the attribution fractions for drug-related crime in the United States, the United Kingdom, Australia, and Canada; it also described the theoretical underpinnings of hypothesized drugs-crime relationships. However, that review did not contain a careful description of methodologies used to identify presumed causal relationships for drug-involved crimes, nor did it contain a synthesis of findings with respect to each drug's contribution to crime.[2]

Thus, in addition to incorporating more recent studies, our goal in updating the previous review was twofold: (1) identify high-quality studies evaluating causal associations between specific drugs of abuse and crime and (2) summarize the evidence supporting drug-specific causal connections to crime based on these high-quality studies. A complete copy of the review we conducted is provided as Appendix A. Below, we summarize the most relevant findings.

From our literature search across a broad spectrum of academic disciplines, we identified 338 studies published since the year 2000 that examined the association between a specific drug and crime. The research in these papers focused on relationships identified during the 1980s and 1990s. Cocaine and marijuana were the drugs most commonly examined in the recent literature, not opiates (see Table 2.1).[3] This stands in marked contrast to the literature written through the 1980s, in which opiates were the focus (Chaiken and Chaiken, 1990; Hammersley, et al., 1989). Importantly, the crime most frequently considered in these recent studies is driving under the influence (DUI), followed by violent crime more generally, and then, to a lesser extent, property

[2] Although specific articles included in the appendix to that review did speak to these issues, the review did not contain an interpretation and summary of the literature to which these articles contribute.

[3] The numbers in this table are higher than the total number of articles because several studies explicitly consider more than one drug (and would hence be entered into the table more than once).

crimes. This too stands in contrast to earlier studies on the drug-crime nexus, which tended to focus on property crime (through roughly the mid-1980s) and homicides and other violent crimes (from the late 1980s through the 1990s).

From the identified studies, we identified and more closely examined high-quality, causal studies of specific drug-crime relationships. We were aided in this task by the fact that several important methodological advances have occurred in the past decade to try to assess the causal associations between drugs and crime. For example, economists and other social scientists have applied instrumental variable (IV) techniques, examined exogenous supply shocks, used differences-in-differences approaches, and applied other statistical techniques (Corman and Mocan, 2000; Pacula et al., 2000; DeSimone, 2001; Becker, Grossman and Murphy, 2004; Degenhardt et al., 2005; Grossman, 2005; Markowitz, 2005; Dobkin and Nicosia, 2009). In addition, psychologists and epidemiologists have made use of unique longitudinal datasets to enable prospective analyses of specific birth cohorts (Fergusson and Horwood, 1997; Baker, 1998) and special populations of users, including those in treatment (McGlothlin et al., 1978; Inciardi, 1979; Ball et al., 1982; Chaiken and Chaiken, 1982; Shaffer et al., 1984; Nurco et al., 1985; Bennett and Wright, 1986; Jarvis and Parker, 1989; Parker et al., 1996; French et al., 2000; Seddon, 2000; Zarkin et al., 2000; Jofre-Bonet and Sindelar, 2002; Gossop et al., 2003; Seddon, 2006). The results of these studies have been varied and, in some cases, contradictory, demonstrating that sophisticated methodologies alone are not enough to clarify causal links between illicit drugs and crime. Other factors can also influence results, such as differences in the population examined (by gender, age, socioeconomic status (SES), country), methods of measuring crime (self-reports versus known crimes or arrests), and measures of prevalence of drug use (lifetime, annual, recent, or heavy/dependent use). Moreover, different approaches that generate marginal relationships between specific types of drug use and crime versus average population relationships can generate very different ideas of the relationship, as can results that emphasize the short-term association versus the long-run association.

Nonetheless, we identified studies from our literature search that applied one of the following methodologies to assess the causal link:[4] (1) longitudinal or prospective design that accounts for unobserved heterogeneity; (2) natural experiments (e.g., regression discontinuity); (3) instrumental variable (IV) and/or reduced-form techniques; (4) propensity score methods.

[4] These methodologies were chosen because they appropriately address a common problem of unobserved heterogeneity, which means the factors not explicitly incorporated into the empirical analysis (unobserved heterogeneity) that influence an individual's decision to use an illicit substance and engage in a crime. Because these factors are not identified in the model, they can bias results, usually positively away from zero; this means that people incorrectly assume the positive association is causal, when in fact it is not.

Table 2.1
Number of Drugs and Crimes Examined by Studies Reviewed Since 2000

Crime	Drug				Total Studies by Crime
	Amphetamine	Cocaine	Opiates	Marijuana	
Violent (general)	39	58	44	52	193
Homicide	7	24	10	8	49
Assault	10	14	8	10	42
Robbery	4	11	9	5	29
Sexual Assault	5	15	4	15	39
Property (general)	25	27	48	19	119
Burglary	1	6	2	0	9
Theft	3	12	9	3	27
DUI	44	49	40	88	221
ID Theft	2	0	0	0	2
Total	**140**	**216**	**174**	**200**	

However, out of the 338 papers we identified as examining specific drugs-crime relationships, only 35 met our minimum quality standards. As shown in Table 2.2, these methodologically strong papers most often studied cocaine-related crimes, followed by marijuana-related crimes.[5] Interestingly, violent crimes and, in particular, robbery, were the crimes most frequently considered, followed by theft and burglary. We also identified several studies on opiate-related crimes, the vast majority of which examined the effects of opiate use on acquisitive crimes. Many of the studies on marijuana also examined property crimes, although nearly half also considered violent crimes. Finally, only a few of the studies meeting our inclusion criteria examined amphetamine-related crimes.

Several insights emerged from reviewing these methodologically strong studies on a drug-by-drug basis. First, there is strong evidence that cocaine, at least in the 1980s, was associated with homicide and systemic (i.e., market-related) violent crime. Findings included an association of cocaine (and, in particular, crack) with increased homicides, particularly gun homicides related to retail drug markets. Whether this also indicates an increase in violence because of psychopharmacological effects is less clear. There is further evidence of a potential association with assaults, but the studies are not unanimous in this finding. The evidence of a causal relationship between both powder and crack cocaine and acquisitive crimes, such as burglary, robbery, and theft, is much clearer, with most identified papers establishing a link. Finally, some evidence of a causal relationship between cocaine and intimate-partner violence was identified, particularly for crack cocaine. *Thus, the literature for cocaine seems developed and consistent enough that plausible ranges for a quantitative estimate of the causal relationship between*

[5] Again, the numbers in this table are higher than the total number of articles identified because several of these studies measured more than one drug or crime.

cocaine and homicide, burglary, robbery, and theft could be constructed from it, although one might be interested in assessing whether the relationships are of the same magnitude in the 2000s as observed in 1980s and 1990s.

Table 2.2
Number of Drugs and Crimes Examined in Methodologically Strong Papers Since 2000

Crime	Drug				Total Studies by Crime
	Amphetamine	Cocaine	Opiates	Marijuana	
Violent	3	4	1	9	17
Homicide	0	6	0	0	6
Assault	0	5	0	1	6
Robbery	0	8	5	1	14
Sexual Assault	0	3	0	2	5
Property (general)	1	0	1	4	6
Burglary	0	5	2	0	7
Theft	0	5	4	1	10
DUI	0	0	0	3	3
ID Theft	2	0	0	0	2
Totals	**6**	**36**	**13**	**21**	

Second, confirming what has generally been understood for at least 30 years, heroin use appears to be most strongly causally related to property crimes. However, none of the recent studies examining the relationship between heroin and acquisitive crime controlled for the concurrent use of other drugs or alcohol.[6] Because the psychopharmacological effects of these other substances might reduce inhibitions to engage in property crime—these effects are relevant to consider, provided that it was not the heroin use itself that led to the concurrent use of other substances. Assuming the use of heroin is not the reason for concurrent use of other drugs, then not controlling for these variables, particularly alcohol, can lead to a biased estimate of the magnitude of the relationships identified in these studies attributable to heroin. Importantly, there is a lack of published studies examining a causal relationship between heroin and violent crime (e.g., murder, rape, assault). Only one study considered the effects of heroin on intimate-partner violence, and it could not identify an effect independent of alcohol use. *Thus, while the literature for heroin is persistent in identifying a causal link between heroin use and property crimes, it may be insufficient for generating a quantitative range of estimates for the causal relationship with other crimes.*

[6] It is debatable whether one should control for concurrent alcohol or drug use, because if someone who used to inject heroin for 10 years switches to alcohol because it is legal and/or cheaper, then it may be that it was the history of heroin use that is more strongly associated with a given crime (particularly property crime) rather than alcohol use itself. The fact that that many drug users switch or use multiple drugs makes it difficult to know how much it is the current use of a given drug versus a history of use of another drug. This is an area in need of more research.

While methamphetamines are commonly associated with aggressive behaviors and criminality, the evidence of a causal relationship in the papers we identified as methodologically strong was limited and inconclusive. One of the better papers to date found no evidence of a causal relationship between methamphetamines use and crime, while another paper found a causal relationship with property crime but not violent crime. There is some limited evidence of a link with intimate-partner violence. Finally, there is currently no strong empirical evidence in support of a causal relationship between methamphetamines and identity theft. *Thus, the literature for methamphetamines alone is insufficient for developing quantitative estimates of a causal relationship to crime.*

In the case of marijuana, there is little support for a contemporaneous, causal relationship between use and violent or property crime. Three papers with strong methodology looked for such a link, but found little evidence. One unpublished paper found an association between marijuana prices and property arrests at the county level, but no association with reported property crimes. However, there is clear evidence of marijuana-involved drugged driving. Further, there are a couple of studies showing evidence that marijuana may be linked to intimate-partner violence, but the research cannot rule out a spurious correlation related to lifestyle factors or underlying stressors. The greatest evidence causally relating marijuana to crime comes from longitudinal studies looking at criminal career trajectories. Yet this sort of longitudinal association exists for other illicit drug use as well, so trying to identify a true causal mechanism for the association is complex and unclear. While there may be a direct link, it is more likely attributable to other mechanisms, such as decreased family bonds or peer-group effects. There could also be reduced employment opportunities resulting from a marijuana-related arrest or dependence, but we are not aware of any research that has directly considered all of these mechanisms. As a result, this delinquency trajectory may be a result of drug use, drug enforcement, or spurious correlation. Identifying the mechanism for this effect is important because the policy implications depend on the specific mechanism involved. *Thus, the literature focused on marijuana use is insufficient and generally not supportive of the development of quantitative causal effects on crime, except for drugged driving.*

But we note that, in the case of marijuana markets in particular, the literature does not examine associations with systemic crime in the United States, which is a major omission. Indeed, the systemic crime associated today with various drug markets—including cocaine, heroin, meth, or even prescription drugs—must be reconsidered because drug markets have changed significantly in the past 20 years. Lessons learned from specific markets in the 1980s are no longer directly applicable, given the significant impact of technology (cell phones, smart phones, etc.) and of new types of drugs available in these markets.

Finally, while we were keenly interested in considering the causal relationship between drug use and upper-level ("white collar") crimes, our review confirmed what one might expect: Methodologically strong studies identifying a clear link between drug use and these crimes are rare or nonexistent. Indeed, our search for causal relationships between specific drugs and

embezzlement, money laundering, and corruption identified *no* articles meeting our methodological criteria that would allow us to assess causality.

2.3. Consideration of Drugs and "Other" Crimes

One of the great weaknesses of the traditional drugs-crime literature is that it focuses on street crimes caused by temporally proximal drug use or other drug-related activities. Often omitted from the discussion is the association between drug use and higher market-level crimes and/or the delayed or lagged effects of such use on criminal behavior (with the marijuana literature being the notable exception). The most likely reason is that data for some of these relationships are insufficient for developing quantitative estimates. Nevertheless, there may be real value in at least mentioning what we know about the connection between drugs and other crimes of interest, because some such crimes may represent significant burdens on society, even if they are not easily converted into social cost estimates because of measurement issues. Moreover, by bringing attention to these crimes, we hope to demonstrate some of the more complex ways in which drugs (either their use or their markets) can generate crime.

Corruption of Government Officials

Drug-related corruption is widespread in a number of other countries (e.g., Mexico, Colombia). Police corruption in the United States is not systemic, as it has sometimes been in the past (e.g., among New York City police before the Knapp Commission reforms), but it still exists among smaller groups within both uniformed police and drug enforcement detectives (e.g., the LAPD Rampart CRASH scandal) and also at the border.[7]

It seems implausible to sample from the universe of all corruption instances. Corrupted officials are unlikely to voluntarily self-report, but it would presumably be possible to review Internal Affairs cases at some police departments and report what proportion of cases involved drugs or drug trafficking.

Corrupt law enforcement can involve many different activities: demanding bribes to not arrest someone, pocketing a portion of seized money, selling seized drugs back to dealers or other consumers, etc. It is probably not constructive to speculate on what typologies would be most informative before reading a reasonable sample of files, but one broad distinction seems relevant: forms of corruption that aid or abet drug distribution versus forms of corruption that increase the chances of an arrest or conviction in drug crimes. The latter category would include perjury, planting evidence, using excessive force to elicit information, and acts of street justice. Carter (1990) draws a similar but slightly different distinction between corruption in pursuit of "illegitimate" versus "legitimate" goals.

[7] For a *New York Times* article on corruption at the border, see Archibold (2009).

Money Laundering

Drug sales are thought to generate roughly $60 billion per year in revenues in the United States (Rhodes et al., 2001). The great bulk of that revenue stays with the very large number of retail and low-level wholesale dealers, who have no need for money laundering services; they can simply spend their proceeds. But, as an exceedingly rough guide, suppose drugs were marked up by 50 percent at each distribution layer, that there were 1,000,000 full-time equivalent street sellers (mostly dependent users) distributing $60,000 in drugs per year to users, and that suppliers sell to ten customers. (More refined calculations could adjust the markup and branching factors, which tend to be lower at higher market levels, but the simple 10:1 and 1.5:1 rules of thumb create a five-layer distribution chain with approximately the right prices at each transaction size.)

If drugs are marked up by 50 percent at each distribution level, then the 1,000,000 street sellers each retain only $20,000 ($60,000-$40,000), and the 100,000 lowest-level wholesalers would net only $13,333 ($40,000-$26,667) per retailer they supply; thus, they would have a net income of only $130,000 per year—an amount they could simply spend. However, each of the 10,000 second-level wholesale dealers would net $900,000 per year over cost of goods sold; as such, these second-level wholesale dealers may have cause to employ money laundering services for at least a portion of their net revenues, and the 1,000 third-level wholesale dealers netting $6,000,000 per year each almost certainly would.

Calculations such as this suggest that drug dealers may need to launder roughly one-tenth to one-fifth of the retail sales revenue within the United States. That figure excludes dirty cash sent across the border to pay for drug imports, which may later be laundered outside U.S. borders. Laundering $5 billion–$10 billion per year would certainly involve quite a few people breaking the law. Drawing on experts in money laundering operations, it might be possible to estimate the number of people who would be involved and/or to obtain estimates of the amounts of money laundered that originated in other illegal activities to estimate the prevalence of drugs relative to other drivers of money laundering.

Child Abuse

Based on the National Survey on Drug Use and Health (NSDUH), SAMHSA estimates that 1.4 million children in America are living with a parent who abuses or is dependent on an illegal drug, and substance abuse/dependence is a prominent risk factor for a range of parenting problems, including child abuse.[8] Presumably, the true number is actually higher, since the household survey tends to miss some of the heaviest drug users and denial is a hallmark of addiction, a situation that likely leads to under-reporting the problems with drugs that underpin the estimates of abuse and dependence.

[8] Calculated using the ICPSR's on-line analysis tool for 2010 NSDUH.

It would be possible to refine or elaborate on the 2.1 million figure based on the household survey data and compare estimates from it to those reported in the National Child Abuse and Neglect Data Archive (NCANDA), which is an annually released data set collecting information from state child welfare agencies. The NCANDA has some significant limitations, including the fact that it does not contain drug-specific information, but it may be possible to build a crosswalk showing the relationship between key characteristics of abuse in NCANDA and those of individuals in the household survey. These crosswalked characteristics could then be associated with levels or rates of drug abuse. For example, a substantial number of those parents may be abusing only marijuana, and the questions triggering a survey-based diagnosis of abuse or dependence for marijuana tend to pertain to the difficulty of cutting down (withdrawal) and/or spending excessive time on the drug rather than to any adverse effects on work or family relations (such as child abuse).

However, the more pertinent question for this project is, "What proportion of child abuse cases involve illegal drugs?" That question is perhaps better answered by reviewing a sample of case files from child protective services agencies. And, indeed, there is such a literature. A very cursory review found articles mentioning proportions of cases in which one or both parents had substance abuse problems on the order of "43 percent," "more than half," and "67 percent" (Murphy et al., 1991; Famularo et al., 1992; Donohue et al., 2006). A more thorough review of that literature may clarify how that substance abuse breaks down between alcohol and illegal drugs and may provide some insight into what proportion of child abuse cases relating to illegal drugs might reasonably be viewed as having been caused by illegal drugs. Indeed, there are some articles that attempt to deal with the correlation versus causation question, concluding, for example, that there is a more than two-fold increase in the risk of child abuse when parents report a history of substance abuse problems (Walsh et al., 2003).

Witness Intimidation

Intimidating witnesses is itself a crime. As far as we know, there are no good statistics about its prevalence, but anecdotal evidence suggests that at least some instances involve drug dealers.

"Shared Infrastructure" Crimes

The drugs-crime literature has traditionally focused on crimes that were proximally related to drugs (i.e., for which the causal mechanism, if any, was direct and contemporaneous). But drugs can also indirectly cause crime through many mechanisms. For example, if someone's drug dependence leads that individual to drop out of school and remain unemployed for such a long time as to render them permanently unemployable, then even if the individual ceases all drug use, a subsequent trajectory of acquisitive crime might appropriately be blamed on the individual's former drug dependence, which has made the individual unable to access the legitimate labor market. Likewise, if a child is neglected or abused because of a parent's drug abuse and that neglect or abuse affects the child's subsequent behavior as an adult—including a

lack of attachment to school, work, and other conventional institutions—then resulting crimes might appropriately be blamed on drug abuse. Bruce Benson and his colleagues even argue that many street crimes committed by people not involved with drugs can be blamed on drug-law violators diverting law enforcement resources from other policing activities (Benson and Rasmussen, 1991; Benson et al., 1992).

Carefully considering all the plausible indirect crimes caused by drug use is an exercise far beyond the scope of this project. However, we do want to point out one particularly relevant category of indirectly caused crimes, which we refer to as "shared infrastructure" crimes. In such crimes, a connection, reputation, or capability originally developed to distribute drugs is applied to other criminal activity (i.e., it is dual-use).

Today, the most conspicuous example would be the diversified criminal activities of Mexican Drug Trafficking Organizations (DTOs). The term DTO is actually something of a misnomer because these are diversified organizations. Some scholars and commentators (e.g., Edgardo Buscaglia, Sylvia Longmire) argue that as much as half of DTO revenues come from activities other than drug distribution, including extortion, kidnapping, and illegal transport of other goods. Although we cannot sanction that particular figure because it seems extraordinarily difficult to estimate with any certainty, DTOs appear to be clearly engaged in a range of criminal activities. Indeed, rather than thinking of them specifically as *drug* trafficking organizations, they might better be thought of as organizations with an exceptional ability to threaten and carry out violence and that find a variety of ways to turn that capability into revenue. DTOs, then, provide a classic example of a shared infrastructure first developed for drug trafficking but subsequently used for additional crimes that would not show up in traditional counts of drug-attributable crimes.

There are also presumably domestic analogs. Blumstein and Cork (1996) argue that guns acquired with drug-sale revenue and for the purpose of protecting drug distribution activities get used in a wide variety of disputes, many that are not drug-related, sometimes with lethal results. For example, a traditional love triangle that might otherwise have led to a fistfight could instead result in a fatal shooting. In effect, the drug distribution elevates an assault to a homicide. More generally, there is a complicated relationship between drugs and street gangs in the United States. Scholars have long recognized that gangs do not exist solely to sell drugs, but serve sociological functions as well. Thus, it would be wrong to presume that every illegal act by every street gang is a drug-related crime. Nonetheless, it would be naïve to assume the opposite; it may well be that the sale of drugs generates revenues and weapons that enhance the power of street gangs and, as a result, facilitate some of their non-drug crimes.

2.4. Summary and Conclusions from the Literature

While an extensive literature exists describing and examining the relationship between drug use, drug markets, and crime, the vast majority of this work focuses on issues and areas that are

already in the spotlight. The findings from the research literature, particularly the U.S. literature, focus on relationships between drug use and crime at the retail level of the drug market. Perhaps not too surprisingly, the majority of studies focus on associations caused by cocaine, marijuana, and heroin, because these are three drugs for which the national data systems are somewhat comprehensive and the psychopharmacological properties are well understood. Additionally, all three are important to the drug market: Cocaine and heroin are very expensive (and hence highly profitable to sell), while marijuana is the most commonly used illicit drug. Gaping holes remain in our understanding of the relationship between other drugs (e.g., methamphetamines) and specific crimes, as well as the role of drug use in higher–market-level crime. Also missing from the scientific literature are high-quality systematic studies evaluating the role of drugs in particular types of white-collar crime and/or government corruption, particularly in the United States. A growing body of work has begun examining these issues in Colombia, Mexico, and other developing countries affected by the drug trade, but reliable data even in these countries are somewhat limited. This is an impediment to researchers and the discourse, because it is impossible to know the importance of drugs and the potential effectiveness of specific policy responses without a solid understanding of the mechanisms underlying the relationship those policies target.

Keeping in mind the limitations of the time period reviewed, the methodologies considered, the four drugs examined (cocaine, heroin, methamphetamines, and marijuana), the specific crimes examined, and susceptibility to publication bias, the results of this review are consistent with much of the conventional wisdom on the drugs-crime link. First, most systemic crime is caused by the hard drug trade and the firearms that protect it, rather than drug use per se. Several methodologically strong papers identified in our review supported a causal relationship, including Grogger and Willis (2000), Braga (2003), Messner et al. (2007), and Cerda et al. (2010), but as with all systemic crime, it is impossible to separate the drugs-crime from the context of the system in which it exists.

Second, economic-compulsive crime is a concern, especially among long-term heavy users of hard drugs. It has long been known that such users sometimes commit acquisitive crimes to support their expensive habits, and the methodologically strong papers identified in our review support that association. The evidence for this is the strongest for cocaine and heroin, and it could be true for methamphetamines. There are a large number of recent papers with strong methodologies that support this, including econometric methods using instrumental variables in various forms (see DeSimone, 2001; Markowitz, 2005), natural experiments (see Degenhardt et al., 2005a; 2005b; 2005c), longitudinal designs that control for unobserved heterogeneity (see Uggen and Thompson, 2003) and papers using matching methods (see Mocan and Tekin, 2005).

Third, there is not much evidence supporting a causal link with psychopharmacological crime in the absence of alcohol. The strongest potential evidence of a link is for cocaine, including index crimes such as robbery (DeSimone, 2001; Degenhardt et al., 2005c) and intimate-partner violence (Fals-Stewart et al., 2003; Stuart et al., 2008; El-Bassel et al., 2005).

But even for cocaine the evidence is inconclusive and contextual: Jaffe et al. (2009), for example, using another strong methodology, finds no evidence of an effect with regard to intimate partner violence (IPV) in a different population of interest, and while DeSimone (2001) finds evidence of a link with homicide, rape, and robbery, there is no evidence of an effect for assault. Evidence is limited and mixed for psychopharmacological crime because of methamphetamines abuse, where Dobkin and Nicosia (2009) find no effect using a strong methodology, and there is no evidence of an effect with regard to heroin, according to Fals-Stewart et al. (2003). The evidence of a link for marijuana is limited and suggests effects that are not proximal, suggesting mediating factors of development rather than any psychopharmacological violent crime from marijuana (see Pacula and Kilmer, 2003 and Mulvey et al., 2006).

Finally, there is some evidence that adolescent marijuana use is correlated with adult criminality, but this is likely mediated through other factors (e.g., decreased family bonds and deviant peers). Green et al. (2010) finds disruption of education as a mediating factor in one cohort, while Ford (2005) finds familial disruption, rather than educational disruption, to be a mediating factor in a very different cohort. The exact mechanisms are unclear and likely complex and context-dependent.

While identification of causal relationships between specific drugs and specific crimes continue to improve, there are still significant limitations with regard to context and polysubstance use. These causal links and the relevant contexts and conditions need to be better explored even to understand the order of magnitude of effects of drug-induced crime.

3. Drug-Attribution Fractions Developed for Crime

3.1. Introduction

It is difficult to estimate the total amount of crime in a given year that can be attributed to drug use or drug markets. Various researchers in the United States and abroad have wrestled with trying to do just that over the past 30 years (e.g., Pernanen et al., 2002; ONDCP, 2004; Brochu et al., 2002; MacDonald et al., 2005; Collins and Lapsley, 2008; Rehm et al., 2007; NDIC, 2011), but they have confronted three main challenges: (1) data limitations precluding reliable measurement of the main variables of interest (drug use/involvement and crime); (2) difficulty inferring causality in the absence of true experiments; and (3) conceptual challenges.

The first two challenges are so daunting that the third is often overlooked. Yet conceptual challenges are fundamental to the exercise, rendering the pursuit of methodological silver bullets quixotic. Better data or improved statistical techniques, even if they could fill the remaining holes that clearly exist in the literature, only make the last challenge more disconcerting, as the additional research inevitably demonstrates the multitude of direct and indirect mechanisms through which drug use and drug markets influence crime. On the positive side, acknowledging these conceptual issues points to practical steps that can improve understanding of the drugs-crime nexus.

In this chapter, we briefly review the roots of the concept of attribution and how it has been applied to the drugs-crime relationship. We then discuss conceptual problems with attempting to measure this complex problem with a single DAF in light of the assumptions underpinning the attributable risk concept, their violation in the context of drugs and crime, and the resulting anomalies. *The main conclusion is that one should not strive only to improve the methodology for estimating a single DAF, but instead think of how to measure additional elements of the drugs-crime relationship ignored by the current construction of DAFs.*

3.2. The Concept of Attributable Risk

It is important to begin with a basic understanding of the concept of attributable risk and, in particular, population-attributable risk factors. The concept of attributable risk comes from the health field, particularly epidemiology. A population risk factor is based on the notion of comparing two populations—one exposed to a risk factor and one not—and then assessing the *excess amount* of a health problem observed in the first population that is the result of its exposure to that particular risk factor.

For example, we can determine the amount of lung cancer attributable to cigarette smoking or the amount of HIV/AIDS attributable to injection drug use. For each of these examples, there is a known medical pathway through which the risk factor (smoking, injection drug use) can lead

to the health problem/condition (lung cancer, HIV/AIDS). This known medical pathway does not mean that a given risk factor will influence every individual the exact same way (e.g., because of the influences in environmental interactions, genetics, and other risk factors). But holding other factors constant, the attribution risk indicates how much the disease incidence in a population would be reduced on average if the risk factor were removed from the population.

Of course, how much a risk factor leads to a particular health outcome varies significantly. Liver cirrhosis and lung cancer are very strongly associated with specific health behaviors (drinking and smoking, respectively), while heart attacks are less strongly associated with any particular health behavior. The population attribution risk factor provides a way of representing the variation in those risks in terms of the ultimate association with the health outcome of interest. In essence, a population attribution factor captures the following: Supposing risk factor A was non-existent (e.g., no smoking), how much of a reduction would there be in health outcome B? A larger attribution factor means that more of the disease is caused by that single risk factor, while a smaller attribution factor means that the risk factor is one of several that lead to the negative health outcome of interest. The question is an obvious hypothetical because, in many cases, the risk factor will not completely disappear. Nonetheless, it helps us identify which risk factors are the most important to focus on when the goal is to reduce the overall incidence of a particular public health problem, as even small reductions in the most important risk factors will produce positive benefits in population health.

Several aspects of measuring attribution that were hinted at above deserve closer attention. First, health attribution fractions are developed for risk factors in which there is a clear physiological mechanism linking that risk factor to a specific health outcome and in which that mechanism is universal across populations and places because the mechanisms are based on human physiology and bioscience. While there is some heterogeneity in how risk factors influence the progression of health problems across individuals, such as differences in the presence of protective factors that may mitigate effects, the mechanism through which the risk factor influences health is generally the same across populations or at least significant subpopulations.

A second issue to keep in mind is that attribution fractions, when properly measured, hold other factors (competing risks) constant. Epidemiologists typically follow cohorts of individuals over time, some exposed to specific risk factors and others who are not, and assess the differential likelihood of disease based on exposure and intensity of the risk factor, the individual's environment, general health, genetics, and other relevant factors. The ability to fully control for the influence of competing risk and protective factors is important for properly identifying the real causal attribution of the particular risk factor.

Finally, for many health problems, population-level health outcomes are obtained as the simple sum of individual health outcomes. For example, the number of people in a community with lung cancer, liver cirrhosis, or heart failure does not strongly influence the likelihood of anyone else getting the disease. Under these circumstances, identifying risk attribution is

relatively simple and linear. Thus, the marginal effect of eliminating a certain amount of a risk factor on the health outcome is the same as the average effect for the population. Contagious conditions are exceptions; for HIV/AIDS or the flu, social interactions do influence the spreading of the disease among the population. Thus, the population risk is no longer simply an additive function of the individual risk, but is instead a function of the level of disease in the population (growing multiplicatively or exponentially). For these conditions, the marginal effect of reducing a risk factor is no longer the same as the average effect in the population, and calculation of the impact of reducing a risk factor depends critically on what stage the disease has reached in the population (because of social contagion). A small decrease in a risk factor at an early stage can have a much more profound effect on total health outcomes than a small decrease in a risk factor when the health outcome is more widespread.

With this general understanding of attribution fractions as they have developed in the health field, we now provide a bit of background on how they have been applied to drugs and crime.

3.3. Brief History of DAFs

For five decades, researchers and policymakers have attempted to understand and demonstrate the relative economic burden various diseases impose on society in terms of health care resources and lost productivity (both in earnings and at home). The exercise began with work not in economics, but rather in health services, conducted by Dorothy Rice (1967), who was one of the first to attempt to document the direct costs of diagnosing, preventing, treating, and rehabilitating people with certain medical disorders, as well as the indirect costs in terms of these people's lost earnings, productivity, and household production. The approach, which became known as the Cost of Illness (COI) framework, was made more explicit through a series of conventions leading to published guidelines by Hodgson and Meiners (1982) that describe which costs to consider and how to account for them.

Scholars subsequently tried to produce parallel estimates for costs associated with alcohol and illicit drugs, but crime was added as an additional cost consideration. Although Cruze et al. (1981) is widely cited as the first to develop attribution fractions for crime, such attribution fractions actually began with Barton (1976), who argued that all the income-generating crimes committed by daily users of heroin could be causally attributed to drug use, assuming that the property crime they committed was to support their expensive heroin habits. Cruze et al. (1981) broadened this concept to include not only the income-generating crime committed by daily heroin users, but also 20 percent of the income-generating crime committed by other drug users (including non-daily heroin users and all users of other drugs). The 20 percent figure was ad hoc and justified in comparison to similar constructs identified for alcohol. These percentages were applied to the numbers of drug users identified in the 1974 Inmate Survey by crime to identify the percentage of each crime that could be attributed to drugs.

A subsequent study by Harwood et al. (1984) broadened the definition of drug-attributable crime, adding an assumption that 10 percent of all violent crimes could be causally attributed to illicit drugs. This 10 percent estimate was also somewhat arbitrary, since there was no rigorous empirical support that violent crime was caused by drug use or drug markets, despite abundant anecdotal evidence from the violent cocaine markets. These latest attribution fractions were adopted by Rice et al. (1991).

Harwood et al. (1998) later updated their estimates using data from more recent inmate surveys and also made an important modification to this methodology. They replaced the heroin-centered attribution fractions for acquisitive crime and the 10 percent assumption for all forms of violent crime with crime-specific fractions based on inmates self-reporting that they committed a crime for drugs or drug money. This limited their consideration of attribution mainly to the economic-compulsive theory of crime. An important exception was homicide, for which they used detailed homicide data collected by the U.S. Federal Bureau of Investigation (U.S. Department of Justice, 1994) to try to capture systemic crime. From their review of these documents, Harwood et al. (1998) determined that 15.8 percent of homicides could be attributed to drugs. These DAF assumptions were maintained in the last two updates sponsored by ONDCP (ONDCP 2001, 2004).

Researchers in Canada, the United Kingdom, and Australia have produced similar national estimates of the economic burden of illicit drugs (Pernanen et al., 2002; Brochu et al., 2002; MacDonald et al., 2005; Collins and Lapsley, 2008; Rehm et al., 2007). In each study, sections are dedicated to estimates of the amount of crime caused by drug use and/or drug markets (Makkai and MacGregor, 2003; Pérez-Gomez, 2004). These efforts largely rely on a similar methodology to that used in the United States. In all cases, estimates of drug-attributable crime are constructed from information self-reported by incarcerated offenders, arrestees in detention centers, and/or probationers/parolees to assess what fraction of their crimes were induced by drug intoxication and/or the need for money to support a drug habit. Thus, causality in these studies is determined primarily by the willingness of an offender to ascribe the crime to his or her drug use.

Table 3.1 shows the DAFs employed in various studies over the past three decades in the United States. Attribution fractions in these studies are done for all illicit drugs together; they are not drug-specific. Since these studies are all so similar in their approach, we describe in detail only the approach used by the National Drug Intelligence Center, NDIC (2011), which represents the latest attempt to update these DAFs.[9]

[9] For more details on differences related to how information from the arrestee or incarcerated populations gets developed into attribution fractions, we refer the reader to the useful review conducted by CSR (2010).

Table 3.1
Crime-Specific DAFs

	Cruze et al. (1981)	Harwood et al. (1984)	Rice et al. (1990)	Harwood et al. (1998)	ONDCP (2004)	NDIC (2011)*
Homicide	-	10.0%	10.0%	15.8%	15.8%	7.2%
Agg. Assault	-	10.0%	10.0%	5.1%	5.1%	5.1%
Sex. Assault	-	10.0%	10.0%	2.4%	2.4%	3.7%
Other Assault	-	-	-	5.1%	5.1%	7.6%
Robbery	26.8%	26.8%	26.8%	27.2%	27.2%	28.0%
Burglary	22.4%	22.4%	22.4%	30.0%	30.0%	33.6%
Larceny	18.6%	18.6%	18.6%	29.6%	29.6%	39.1%
MVT	18.6%	18.6%	18.6%	6.8%	6.8%	17.7%
Stolen Goods	18.6%	18.6%	18.6%	15.1%	15.1%	27.0%
Prostitution	12.8%	12.8%	12.8%	12.8%	12.8%	12.4%
Drug Law	100%	100%	100%	100%	100%	100%

* Not presented this way in the main NDIC text; based on NDIC's Table 1.8.

The approach used to determine attribution fractions in U.S. studies since Harwood et al. (1998) relies on self-reported information from three inmate surveys: (1) the Survey of Inmates in State Correctional Facilities (last conducted in 2004), (2) the Survey of Inmates in Federal Correctional Facilities (last conducted in 2004), and (3) the Survey of Inmates in Local Jails (last conducted in 2002). In each survey, inmates who indicated any prior drug use were asked similar questions related to drug-induced and drug-involved crime. The two specific questions asked were:

1. "Did you commit the [governing offense] in order to get money to buy drugs?"
2. "Were you under the influence of drugs when you committed the [governing offense]?"

In the most recent study, all crimes described as being committed to get money to buy drugs were counted as drug-induced ("instrumental") crime, and 10 percent of all other crime committed while under the influence was also labeled as drug-induced ("related") crime (NDIC, 2011). The determination of this 10 percent figure was completely arbitrary, as indicated by the following quote:

> There appear to be no research-based findings that might justify our selection of a probability here, and so we choose to err conservatively by assuming that the proportion of related offenses that are drug induced is 0.10. This is an area where additional research effort is warranted. (NDIC, 2011 p. 8)

Thus, NDIC estimates the population fraction for a specific crime category by summing all the offenders whose crimes were "instrumental" or "related," by these definitions, and dividing by the total number of criminals in the sample for that governing offense.

This approach has a number of limitations that have been discussed elsewhere in the literature (see Reuter 1999; Kleiman, 1999; Cohen, 1999). One major criticism is that these attribution fractions do not accurately account for the true causal associations between drug use and crime identified in the literature (and reviewed in the previous chapter). This is because of a multitude of problems. For example, current attribution fractions are based on self-reports of use, intoxication, or perceived involvement (from law enforcement) rather than on clear, objective measures of the role drugs (or alcohol) played. However, such measures do not readily exist, because even a drug test indicating that a drug was present in someone's system at the time of an offense does not mean that it was the drug use that was responsible for the crime. Second, it ignores crimes that are committed but not captured in administrative records of crime or arrests (e.g., victimization that goes unreported or crimes that go undetected). Third, the current construction misses a great deal of systemic violence not captured by the two questions asked. This last point is especially troubling, given that much drug-related violence, particularly during the 1980s, is systemic (Goldstein et al., 1989; Reuter, MacCoun and Murphy,1990; Spunt et al., 1990, 1995; Brownstein et al., 1992; Goldstein, Brownstein, and Ryan, 1992).

Another important assumption of the approach is that the proportion of offenses attributable to drugs matches the corresponding proportion revealed by offenders who are now incarcerated (Cohen, 1999). There are many steps in the process leading from the commission of a crime to incarceration, including arrest, prosecution, conviction, and sentencing. Only a subset of offenders move from one stage to the next, and that subset is not random. For example, there is reason to believe that drug use and/or involvement in drug markets may increase the likelihood of arrest and/or incarceration, all else being equal. Once an arrest occurs, however, a number of factors can influence the likelihood of a conviction, further distancing the sample of the convicted and imprisoned population from the general population of offenders. And, of course, sampling from all current inmates over-samples those with long sentences relative to those who are entering incarceration. There have been attempts to moderate this bias by using arrestee populations (e.g., Collins and Lapsley, 2008; MacDonald et al., 2005), but they do not completely remove the potential bias, since individuals who get caught may be systematically different from those who do not.

These criticisms, as well as others raised in the literature, tend to revolve around the improper or inadequate identification of causal connections between drugs and crime because of limited data and/or weak identification strategies. The applicability of the risk attribution construct itself has not received enough attention.

In the next subsection, we raise a series of issues that lead us to conclude that *singularly relying on risk attribution construct is perhaps the greatest flaw about the current approach of trying to understand the amount of crime that is caused by drug use and drug markets.*

3.4. Conceptual Issues with Applying Attribution Fractions to Drugs

Because the connection between drugs and crime is probabilistic, importing the risk attribution concept from epidemiology has an inherent appeal. However, little else about the drugs-crime connection matches the circumstances that typically hold in classic epidemiological applications.

Specifically, this section elaborates on four conceptual issues with applying attribution fractions to drugs:

1. The drugs-crime relationship is not linear.
2. Both direct and indirect causal pathways are important.
3. Indirect effects are mediated through "stocks."
4. The mechanisms linking drugs to crime are not universal.

The Drugs-Crime Relationship Is Not Linear

When estimating how many cases of lung cancer smoking causes, one does not have to worry much about interactions between different cancer patients. Cancer is not contagious and if someone has a cancer, his or her tumor's growth is not affected by how many other people also have cancer. So the population-level outcome is simply the sum of the outcomes for the individuals. Formally, we would say the principle of linear supposition holds.

The same cannot be said of crime. Crime is a social behavior in a way that cancer is not.

For various reasons, the amount of crime expressed by one person depends on the amount of crime expressed by others. Some of these reasons are interpersonal or local; for example, parents move delinquent teens to a "better" school because they respect the power of peer influence. Other reasons are purely rational and reflect macro considerations. Schelling (1978) famously showed that an individual's incentives for being corrupt depend on the prevalence of corruption in the surrounding population, and Kleiman (1993) showed how "enforcement swamping" can reduce offenders' risks when many others are already offending.

These interactions create nonlinearity in the relationship between drugs and crime. The relationship between drugs and crime may be monotonic; greater drug-related activity might always be associated with more crime. However, the relationship is not one of simple proportionality. Over certain ranges, crime might increase more than proportionally; over other ranges, crime might increase less than proportionally. We can visualize this as a function that plots the amounts of crime versus the quantity of drugs consumed (which is one possible composite indicator reflecting drug use and distribution), with a curve that is not just a straight line emanating from the origin.

Lack of proportionality means the average effect (total current drug-related crime divided by total current drug consumption) can differ from the marginal effect (the slope of the relationship at the current level of crime or, equivalently, the amount by which crime would go up or down if drug consumption increased or decreased by one unit).

Comparing the status quo to a drug-free world (the origin in the graph just described) measures the *average* effect. But there is no policy that could create a drug-free world. Actual policy choices would increase or decrease drug volumes by some incremental amount, say 10 percent or 20 percent. So for practical purposes, policymakers ought to be interested in *marginal* effects. Furthermore, all empirical measurements—as opposed to conjectures based on self-reported data—will necessarily be grounded in examining marginal changes. We can observe and collect data comparing today to times or places with greater or lesser amounts of drug use and distribution, but we cannot do so for otherwise similar times or places in which drugs are entirely absent.

Thus, the current DAFs are defined for an average effect over a range that is purely hypothetical and also immeasurable.[10]

A further complication is that one person's drug use can cause a non-user to commit crime. For example, many assaults have a tit-for-tat character. If intoxication leads to an assault, the victim may retaliate the next day—meaning the latter crime may be caused by drug use even if both parties are stone cold sober. Or, one person's intoxication may escalate an argument to physical violence, with the police ultimately charging both the drug user and the second person involved with assault, or the police may charge only the second person if the drug user has more injuries and thus appears to be the victim. A variant of the latter occurs when intoxication creates a criminal opportunity—as when defenseless drunks get mugged.

In a prohibition regime, the most important way in which drug use causes non-users to commit crime is when users' demand supports a violent black market.

That drug use can cause non-users to commit crimes undermines the premise that crimes attributable to drug use can be measured as the difference between the number of crimes committed by drug users and the number committed by non-users.

Conventional epidemiological applications do not face this problem; one woman's breast cancer does not cause another woman's breast cancer (outside of inheritable diseases). Contagious diseases (e.g., HIV/AIDS, sexually transmitted disease, and other contagious viruses) or inheritable diseases are exceptions, but a well-designed epidemiological study could model the transmission of the disease based on known transmission factors (e.g., injection drug use or unprotected sex in the case of HIV, or homes with a virus versus those without a virus). It is not possible to make comparable adjustments in the case of drugs and crime because the transmission mechanisms are multiple, diffuse, obscure, and indirect. Moreover, statistically controlling for those indirect pathways generates a significant downward bias in estimates of the impact of drugs on crime, as is discussed more fully in the next subsection.

[10] Cohen (1999) made this point in his critique of the literature attempting to measure the cost of drug or alcohol use.

Direct and Indirect Causal Pathways Are Both Important

Attribution fractions are not estimated mechanically by comparing everyone exposed to a condition to everyone else. One first controls for other variables. Smokers in the United States are in much worse health than non-smokers. Much of that difference can be blamed on smoking, but it is also true that smoking is increasingly concentrated in the poorer and less-educated segments of American society (Escobedo and Peddicord, 1996; Flint and Novotny, 1997; Jarvis et al., 1999; Gilman et al., 2003), and poverty and low educational status independently predict poor health outcomes (Pritchett and Summers, 1993; DeWalt et al., 2004). So researchers use statistical adjustments to compare the health of smokers and non-smokers after controlling for third variables, such as poverty and educational attainment.

That makes good sense—as long as smoking does not cause poverty or lead someone to drop out of school. If an important mechanism by which smoking caused poor health was mediated through variables that are statistically controlled for (e.g., dropping out of school), then the resulting attribution factor could greatly understate the amount of ill health caused by smoking.

Unfortunately for DAFs, the indirect effects of drugs on crime are not minor; they are numerous and collectively constitute an important part of the common-sense understanding of ways that drugs cause crime. A simple example would be if long-term drug dependence renders someone unemployable and—absent legitimate income—the individual turns to crime to purchase necessities like food and shelter. The DAF would not consider such crimes to be drug-related. The current incarnation of DAF would miss these crimes because it asks only about crimes committed to obtain money to buy drugs. But the problem is not just in the tactical implementation; it is fundamental to the notion of attribution fractions.

Were someone to compare offense rates for drug users and non-users, they would certainly control for income, because rich people commit fewer income-generating street crimes than do poor people. But controlling for income would erase a crucial mechanism by which drugs cause crime.

There is a parallel between these estimates and estimates of discrimination. Minorities are under-represented on many universities' faculties. The universities might point to statistics showing they are just as likely to hire a qualified minority candidate as a similarly qualified non-minority and say the cause is not racial discrimination, but an absence of qualified minorities in the applicant pool. However, there might be relatively few qualified minority candidates precisely because of discrimination earlier in the process. For example, minorities are concentrated in districts with weak secondary schools. Therefore, looking at hiring decisions while controlling for qualifications at the time of hiring might miss important aspects of discrimination in the overall system.

Likewise, comparing current users to otherwise similar non-users can miss important aspects of the drugs-crime link. The problem becomes obvious when comparing DAFs to health-oriented attribution fractions. Suppose someone smoked cigarettes for 20 years, developed lung cancer,

then quit smoking last year, but is now dying of cancer. Any health study would attribute that cancer—or, more precisely, something like 0.75 of that cancer—to smoking, even though the person has already quit.

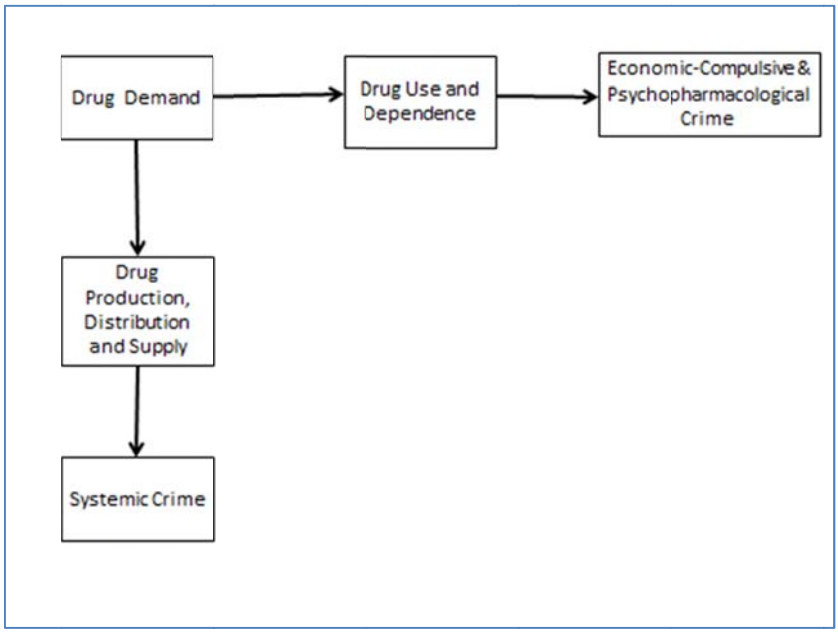
In contrast, suppose someone used heroin for 20 years, developed a criminal history, giant holes in that person's resume, and disabilities that block employment in the legal sector. The person quit using heroin last year, but still cannot get a job and so burglarizes a house to get money for food. Current inmate-survey-based methods would not count even a portion of that burglary as being drug-attributable, because the offender is not a current user, even though that same thinking would never absolve tobacco from responsibility for an ex-smoker's lung cancer.

Alternatively, imagine a woman who was molested as a child by an alcoholic father, who was expelled from high school before graduating for marijuana use, who suffered permanent brain damage from a heroin overdose, who was crippled when beaten for non-payment by a ruthless dealer, who lives by a flagrant street market that has driven off all legitimate businesses, and whose resume has a ten-year gap corresponding to imprisonment for drug offenses. She steals so she can afford medicine to treat the HIV she acquired by injecting with a dirty needle. That crime is in no way drug-related, according to DAF, unless she happened to be high at the time it was committed.

Indirect Effects Are Mediated Through "Stocks"

One way to think about this is that drug use and distribution not only cause crime proximally, but also affect "stocks" of various forms of "capital," which may affect crime indirectly over time. Let us begin by describing what we mean by proximal effects, which are those borne out around the time of the consumption. We will then describe what we mean be "stocks" and indirect effects. Figure 3.1 shows the proximal (or contemporaneous) ways in which drug use and drug markets can generate crime. NDIC's (2011) DAFs mainly considered the instances in which drug use causes economic-compulsive and psychopharmacological crimes by drug users (shown in the top row of Figure 3.1). It also captured 100 percent of drug offense arrests for manufacturing/trafficking/sales and possession (drug production, distribution, and supply) and, to a very modest degree, following the convention of Harwood et al. (1984, 1998), a narrow aspect of systemic crimes. While numerous aspects of both drug market and systemic crime remain unrepresented (e.g., money laundering and nonfatal systemic crime), the concept of these types of crimes is at least recognized.

Figure 3.1
A Simplified Model of the Proximal Effects of Drug Use on Crime

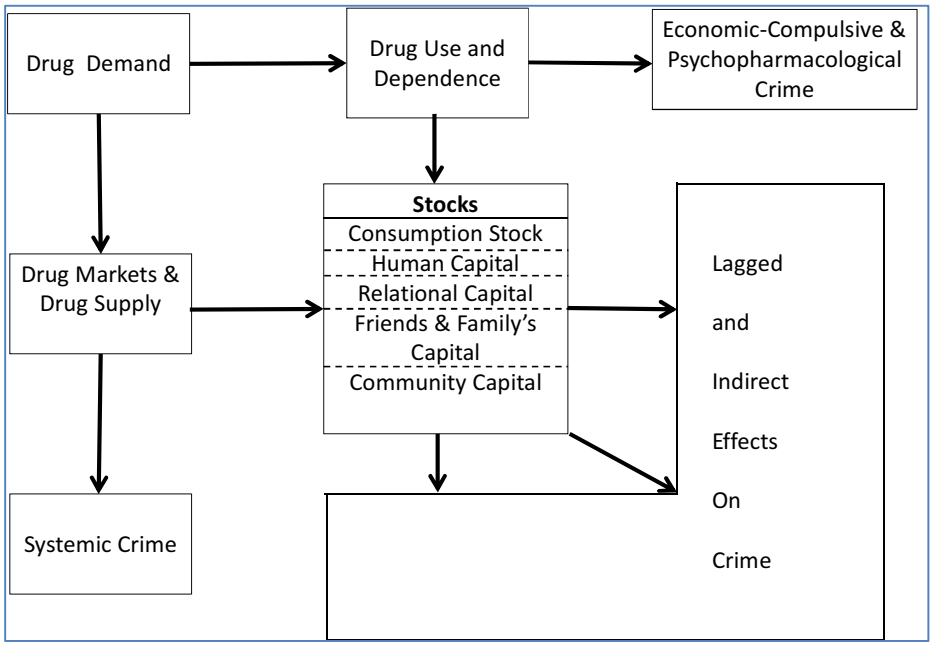


Economists customarily think of demand and supply as interacting in parallel to produce consumption, whereas Figure 3.1 depicts drug demand as the root cause of both use and supply/markets. This is admittedly a simplification. When it comes to drugs and crime, almost everything has some causal pathway connecting it to everything else, so all the arrows could be double-headed to some degree. But it is not unreasonable, for the purpose of simplification, to present the model as being driven by demand. For example, if some demand control intervention—whether treatment, prevention, or coerced abstinence—managed to cut the demand for drugs by 50 percent, over time, the volume of drugs produced and distributed would also fall by roughly 50 percent, and drug-related crime associated with markets and use would also decline.

Figure 3.2 adds to the previous figure a center box identifying a number of individual- and community-level processes or relationships that are influenced by the prolonged use of drugs or the presence of drug markets. The previous section gave an instance of heroin use eroding someone's human capital (their employability). This is just one of several relevant examples represented in the center box. Each separate area of this box is intended to embody the long-term accumulated effects of prior consumption on that specific area, which we broadly refer to as a "stock." First, there is the "consumption stock," which reflects an abstraction of all the physiological and psychological changes that occur within an individual that has used drugs over an extended period of time, induced by long-term exposure to artificially introduced neurotransmitters (i.e., drugs). Brain-imaging research funded by the National Institute of Drug Abuse (NIDA) shows that we can literally see the permanent, or at least long-lasting, effects of

drug use on the human brain. The neural pathways are not affected solely at the time of drug use. Frequent and prolonged drug use can actually change some drug users' brains with unknown impacts. A tangible example is that stimulant-induced psychoses are not limited to periods of intoxication; they can persist after individuals stop using the stimulant in question. If such psychoses contribute to an assault, then drug use can cause psychopharmacological crimes even when the user is not intoxicated.

Figure 3.2
A Simplified Model of the Proximal and Indirect (Long Term) Effects of Drug Use on Crime



Human capital refers to the accumulation of education, knowledge, and experience that makes a person more productive at a given task at work or home. It represents accumulated learning starting in elementary and high school and continuing well into adulthood. To the extent that drug use reduces the attention that an individual gives to learning (either at school or on the job) or the individual's willingness to stay in school, it can have long-term negative effects on his/her opportunities in the workplace and hence the economic gains of legitimate employment vis-à-vis those from crime. Similarly, gaps in employment caused by drug use (either because of being in prison or because of losing a job due to a drug charge) can interfere with a person's ability to get legitimate employment for months or years after s/he stops using.

Relational capital refers to the changes in relationships that occur because of the long-term use of a drug. An example would include the strains placed on relationships with friends, family members, or co-workers who were close to an individual before s/he began to use drugs. Strains might occur because these people do not approve of the individual's drug use, thus leading the

individual to feel that s/he needs to regularly lie to them. Alternatively, these friends and family members may feel the burden of the drug user's flakiness, as drugs become an increasing focus for the individual at the expense of important activities with family, friends, or co-workers. As drug users begin to disassociate themselves from non-using peers and family members (usually to avoid judgment), they seek friendship and acceptance from people like them—people who are willing to break certain laws they view as unimportant or irrelevant. Such associations can, in turn, increase the individual's own willingness to engage in crime.

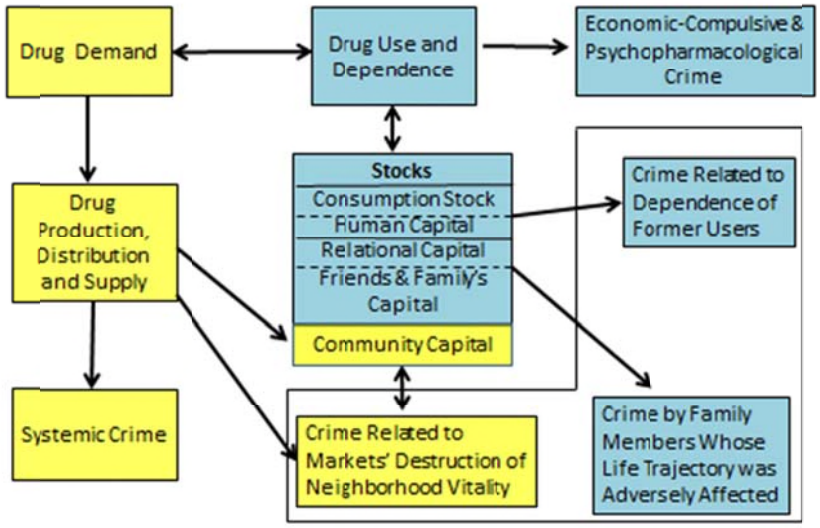
While relational capital is meant to capture the capital of the individual drug user with respect to his/her relationship with others, the fourth stock in the central box of Figure 3.2 refers to the direct impact a drug user has on friends and family members. A child living with a severely drug-dependent parent can have long-lasting scars caused by neglect, malnutrition, and/or a sense of abandonment. Indeed, when a parent is charged with a crime because of his/her drug use, the child can be put in foster care until the parent is released and/or proven to be clean. Children who are taken away from their parents and placed in foster care are at significantly higher risk of engaging in crime in the future than children who grow up in stable two-parent or even one-parent households. In their assessment of the role of drugs on crime, few evaluations attempt to include the crime committed by the children of drug-abusing parents. The mechanism, however, is indeed quite real.

Drug use can also adversely affect neighborhood and societal-level stocks and, in turn, promote crime. An example would be if high rates of drug use supported a flagrant, open-air drug market whose presence drove away legitimate businesses. If such markets, or even just dense populations of drug users, drive away businesses, then neighborhoods become susceptible to criminal activity intensified by empty storefronts and few local economic opportunities. The broken windows theory suggests that the sense of disorder created by flagrant markets can be directly criminogenic (Wilson and Kelling, 1982). Inasmuch as law enforcement depends on citizen cooperation, drug markets can undermine the effectiveness of crime control more generally (e.g., leaving witnesses too fearful to testify, exacerbating racial tensions, or undermining citizens' general confidence in the police).

This final point suggests that it may be helpful to differentiate in Figure 3.2 between those mechanisms through which drug use influences crimes on an individual basis and those through which drug use influences crimes at the community level. We attempt to do this in Figure 3.3, where individual mechanisms are identified in blue and community mechanisms are identified in yellow. The only other change from before is that specific examples of indirect crimes caused by the intertemporal (indirect) effects of drug use on these stocks are provided. Individual drug use and dependence feed into market drug demand, and market drug demand can influence individual use through impacts on availability and prices. Individual use influences one's own consumption stock and may influence human capital formation, as discussed above, as well as one's own relational capital with friends, family, and colleagues. Deterioration in these relational capital stocks can generate a need to commit crime (if family members or friends refuse to

provide economic assistance in terms of housing, food, and cash). Similarly, the removal of a child from his/her home because of parental substance use or abuse can lead to another generation of crime, caused by the emotional stress of observing a dependent parent and/or moving from home to home. These are all examples of negative impacts on individual stocks influencing an individual's decision to engage in crime in the current period.

Figure 3.3
The Direct and Indirect Influences of Drugs on Crime at the Individual (Blue) and Community (Yellow) Level



As noted above, however, there are also community capital stocks that are affected by drug markets and/or a critical mass of drug users. This can happen because of the visibility of outdoor drug markets, violence caused by turf wars among competing drug sellers, or just the general neighborhood deterioration that comes with drug distribution and drug use crime. These things occur not simply because of one individual using drugs, but typically because there is a critical mass of individuals using drugs, creating circumstances in which a drug market can come to exist and persist.

While the conceptualization presented in Figure 3.3 is useful for making concrete some of the direct and indirect ways drug use can cause crime, it still suffers from a very critical omission that remains a problem for DAFs as well: polysubstance use. DAFs make unstated assumptions about substitution and complementarity. DAFs ask us to imagine a world in which no illegal drugs are available or used, but everything else is the same. It is not reasonable to assume, however, that alcohol use would be identical in such a parallel universe. And, if the absence of

drugs would affect alcohol use, then alcohol-related crime would also be different.[11] Yet it is not possible to adjust for this either practically (we have no idea what the overall long-run cross price-elasticity of demand is) or politically (policymakers do not want a DAF that nets out this hypothetical interaction with alcohol).

This problem has no parallel in typical health-oriented attribution factor studies. Scientists estimating the smoking attribution factor for lung cancer do not worry that, in the absence of tobacco, people would smoke asbestos because they have some underlying demand for lung cancer.

Substitution and/or complementarity can also pose issues on the supply side. If drug sellers were not selling drugs, would they be robbers instead? Conversely, if the police were not so busy catching drug sellers, would they do a better job of deterring robbers? Who knows, but it strains credulity to imagine that all such indirect effects would conveniently cancel each other out.

The Mechanisms Linking Drugs to Crime Are Not Universal

Newton's second law (Force = mass x acceleration, or $F = ma$) says that if a force (F) is applied to an object with a certain mass (m), it will cause a certain acceleration (a) *anywhere* in the universe. It does not cause an acceleration of a in New Jersey and an acceleration of 2.3 times a in Arkansas, or an acceleration of a in a city that implements community policing and half that in a city that stresses traditional 911 response times.

There is no comparable universal law defining how much crime and violence are caused by a given amount of drug use (and associated drug selling). That inconstancy in no way denies that drug use and selling cause crime, but the cultural and policy context mediate the amount of crime created, as Watters et al. (1985) observed long ago.

For example, the volume of drugs being produced in and trafficked through Mexico is not so different in 2012 than it was in 2006, yet the number of drug-related homicides has grown roughly tenfold. So, two identical studies—each done extremely well—could produce DAFs that differ by a factor of ten, just because one was done six years before the other.

There can be cross-sectional and intertemporal variation. Homicides per unit of drug use are higher in countries with lots of guns—like Colombia and the United States—than they are in places with fewer guns, like Australia or Western Europe. Likewise, one explanation for the decline in lethal drug-related violence is that many flagrant street-corner retail markets have been replaced by arranged sales and/or sales made within a social network. So equal changes in use in

[11] It is not clear whether this parallel universe would have more or less alcohol and, hence, more or less alcohol-related crime. Suppose there would have been more alcohol use because, on net, illegal drugs have substituted to a degree for the use of alcohol. Then, the inmate-survey based approach will tend to overestimate the amount of crime that is causally attributable to drugs because it fails to recognize that the use of drugs is effectively causing a reduction in alcohol use and, hence, in alcohol-related crime. If, however, drugs and alcohol are not complements, similar logic leads to the opposite bias.

Australia and the United States, or in the United States today versus the United States in the 1980s, will not cause equal changes in crime.

This implies that DAFs are context-dependent, which has two important implications.

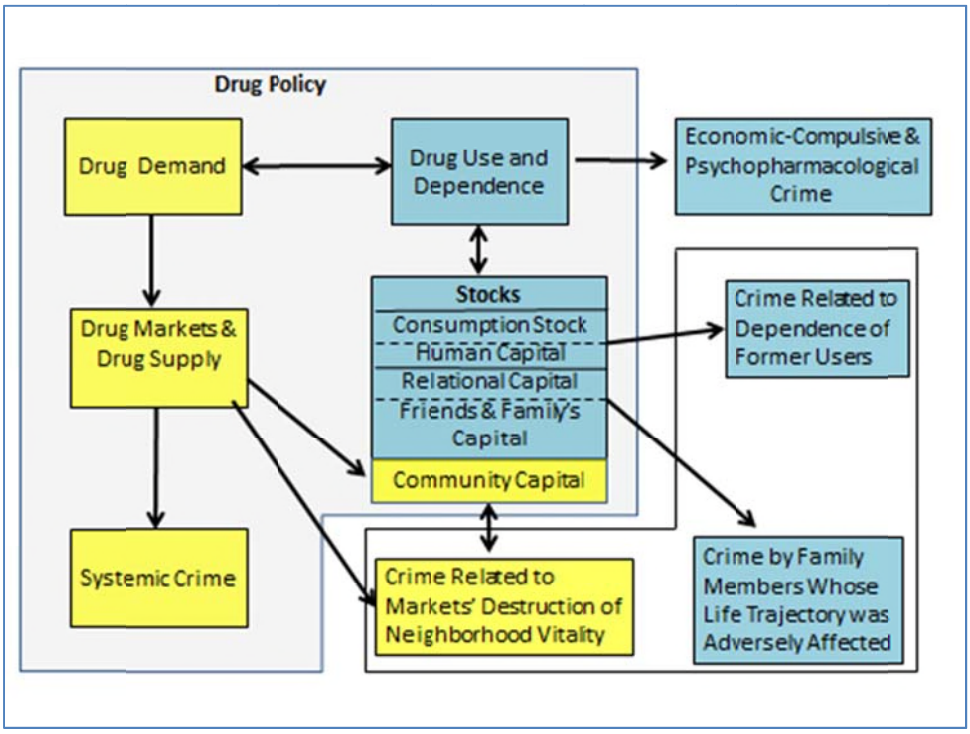
First, it enormously complicates measurement, because one cannot measure the proportion of a crime that is drug-related for one city, year, and/or substance and presume that the same factor applies to another city, year, or substance.

Second, it complicates interpretation. Suppose, as a thought experiment, Mexican DTOs were only in business to distribute drugs. That is, suppose they did not also kidnap, carjack, extort, etc. Then, common sense would say that when Mexican DTOs murder police or rivals, those homicides are drug-related. So the surge in violence over the last half-dozen years is, at least to an important degree, a surge in drug-related violence. As we said, the quantities of drugs used and transshipped have not changed much over those years. What largely changed was Mexican drug policy, specifically the abandonment of a long-standing laissez-faire policy toward trafficking. Critics of "the Drug War" seize on this to claim that the deaths are caused by drug policy, not drug use. That is an unproductive rhetorical game. Drug-related violence is the simultaneous product of the interaction of a variety of forces and dispositions, and efforts to intervene and change amounts of drug use will often also affect other components of that system of interaction.

Because drug policies can influence the amount of crime caused by drug use and drug distribution as much as they can affect the volume of drugs distributed and used, it is very difficult, statistically, to properly measure the drug attribution that is solely the result of drug use and distribution, independent of the drug policy context. Thus, unlike health interventions that target a health outcome by targeting risk factors (higher cigarette taxes to reduce smoking; exercise to reduce obesity), many drug policy interventions aimed at reducing drug use also have a direct effect on crime. This important contextual effect of drug policies on use and crime is reflected in Figure 3.4.

Moreover, what makes the effect of drug policies even more complicated (and less universal) is that there is no reason to imagine that the change in crime associated with a given change in drug distribution and use would be the same across all types of interventions that produce that same change. A prevention program that reduces illicit drug use by 10 percent will not have the same effect on crime as a supply-side intervention that raises the price enough to reduce illicit drug use by the same amount. The prevention policy will decrease drug use and spending by the same proportion, while the supply-side strategy creates higher prices, so spending—and spending related crime—falls by less than drug use. This means the impact on crime of a 10 percent reduction in use is not universal; it depends markedly on which policy interventions are used to produce that reduction. This is a very important and frequently ignored conceptual issue when thinking about the utility of DAFs.

Figure 3.4
A Simplified Model of the Relationship Between Policy, Drug Use, Drug Markets, and Crime



Indeed, any DAF that is estimated by empirical methods that can truly establish causality because they exploit historical variation in something that affects drug use and controls for other factors is really creating an estimate specific to that source of exogenous variation. And while the inmate–survey-based DAF is estimating something that is independent of the complexities of any real intervention and is more consistent with how most people think of DAFs, it depends entirely on the offenders' own attributions and/or ad hoc assumptions, such as the assumption that 10 percent of crimes committed under the influence should be viewed as having been caused by the drug use.

This picture highlights that policy itself is an important part of the overall societal context that affects the DAF. This interconnectedness is not unique to drugs-crime attribution fractions. The number of smoking-attributable deaths from lung cancer is influenced by the extent of health insurance coverage and the sophistication of medical treatment available, which are both aspects of health policy. Likewise, alcohol-attributable premature deaths associated with drunk driving can be cut by reducing drinking or by raising the safety standards of cars.

However, how much crime is jointly determined both by participants (users and distributors) and policy is hard to dismiss in the case of illegal drugs. Caulkins et al. (1999) used some heroic assumptions to guess that five-sixths of cocaine-related crime was economic-compulsive or systemic and, hence, driven more by cocaine dollars than by cocaine intoxication. Yet spending

is very much a function of price, which we, in turn, believe is affected directly by supply control policies and programs.

So the DAFs are really all conditional on drug policy being what it is today, and that is problematic when trying to use DAFs to estimate how a policy change would affect drug-related crime. Even with a perfect estimate of how much crime is drug-attributable today and the guarantee that a given policy change would cut drug consumption by 10 percent, it would not be valid to assume that program would reduce drug-attributable crime by 10 percent, because changing the policy changes the conditions for which the DAF applies.

To conclude, there is not just one DAF for drug-related crime.

3.5. Conclusions

More than thirty years ago, a team of researchers developed a sensible first approximation of the amount of crime that can be causally attributed to drug use. Fast-forward to today and we have witnessed a series of incremental improvements but no fundamental rethinking of how one might construct a measure (or measures) of the amount of crime that is drug-involved. Among policymakers, there is demand for a (large and apparently precise) number quantifying how many crimes can be blamed on drugs. But scientists and stakeholders have not expressed sufficient interest in critiquing that number's foundations or providing an alternative expression, leading to stability in the methodology for constructing DAFs that has spread internationally and created a false illusion of reliability.

It is crucial to recognize that the real problem is not the existence of the DAFs or how they have been historically measured as much as it is the non-existence of complementary measures that could, along with the DAFs, paint a more comprehensive picture of how much crime is drug-related. Thus, the DAFs do serve a role and provide insight, but it is important to recognize explicitly what aspects of the problems they can help us to understand and what aspects of the problem they completely miss.

Throughout this chapter, we highlighted considerations that undermine the ability for a single DAF, as adopted from the health field, to adequately summarize the full relationship between drugs and crime. Thus, science should push forward with a new approach, one that could supplement what is known from currently constructed DAFs and fill in some important blanks.

In the next chapter, we propose one such approach that relies not on a single number to describe the overall impact of drugs on crime, but on a set of complementary indicators that together tell a story of how the current stock and flow of drug users and suppliers influence crime in a given area at a given point of time. A refined (or incrementally improved) measure of the currently constructed DAFs remains a central piece of that approach. This is because such a measure has been used and appreciated by policymakers for decades. But understanding what the refined DAF actually captures and misses is vitally important to convey, so the remaining

chapters will lay out our vision for refining this measure and show its utility for understanding a relevant piece of the relationship between drugs and crime.

4. A Path Forward for Policymakers

4.1. Introduction

The previous chapter identified conceptual challenges associated with constructing a single number based on DAFs to describe the entire drugs-crime relationship. Even if DAFs could be estimated for each single drug and type of crime and then aggregated, that sum would still not be sufficient, because the relationship between drugs and crime is not linear; there is no universal mechanism through which use and/or distribution always affects crime by a certain amount. It instead highly depends on time, place, and setting. The fact that these DAF metrics are an incomplete representation of the complex drugs-crime relationship does not mean that they are useless for understanding aspects of drug-related crime. Indeed, we believe it is quite the opposite. They, or improved versions of them, can provide a useful understanding of a piece of the relationship, but we then need to understand how this piece fits in with the whole picture.

In the following pages, we sketch out a conceptual framework, or roadmap, for thinking about the various types of marginal and average DAFs estimated in the literature and what part of the total drug-attributable crime these measures might represent. The goal is to allow readers to better understand what information is actually contained in the literature and, perhaps more importantly, which information is not. Thus, the framework explicitly considers some of the concerns raised by critics of previous work that used DAFs to better understand the cost of drug use and drug distribution (e.g., Reuter, 1999; Cohen, 1999).

After describing this framework, we show where previous estimates might fit (if refined) into it. We then discuss the utility of tracking certain aspects of marginal or average DAFs, noting how they can change over time due to many factors (e.g., change in the types of drugs used, aging cohorts, policy, etc.). We explicitly consider the question, "What is it that we need to know from a policy perspective?" and whether imperfect information on aspects of the relationship, reported consistently over time, can provide useful knowledge about how drug use and drug markets are influencing crime. It is in addressing this final question that we introduce a possible approach going forward: a Drugs-Crime Dashboard.

4.2. A Framework for Thinking About Measuring the Drugs-Crime Relationship

Goldstein's tripartite model (1985) describes three types of crimes—psychopharmacological, economic-compulsive, and systemic—to which drugs contribute directly. Others, building on this work, have identified additional mechanisms through which drug use might influence crime—including victimization, corruption, and white-collar crime—although none of those mechanisms have been captured in the usual DAFs. And, of course, there are crimes that are

entirely the result of how/where the drug gets used, such as DUIs or having a drug near school grounds (Pernanen et al., 2002; MacCoun, Kilmer, and Reuter, 2003; Kilmer and Hoorens, 2010). As mentioned in the conclusion to Chapter Two, inadequate or non-existent data make it difficult to empirically assess causal mechanisms, even for some of the contemporaneous relationships suggested by Goldstein and other researchers who have extended his work. We also know from Chapter Three that, even with these extensions, the Goldstein framing still stresses *temporally proximate* effects and so misses important lagged mechanisms through which drug use can influence crime, including environmental factors, social contagion, and long-term dependence.

In a sense, Goldstein's tripartite categorization is most useful when confronting a crime known to be drug-related and when the goal is to understand what it was about the drug involvement that led to the crime. For example, was it intoxication, the user's need for money, or the dealer's activities that led to the offense? Goldstein's categories are not meant to provide an algorithm for determining the total amount of crime caused by drug use in the sense that the crime events would not have transpired had the drug never existed.

So our goal is not to displace, let alone dispute, the valuable perspectives offered by Goldstein and others. Rather, our objective is to develop a complementary model that supports more comprehensive thinking about the mechanisms through which drug use influences crime, the possible metrics that can be used to capture those mechanisms, and the mechanisms that remain less understood or unmeasured.

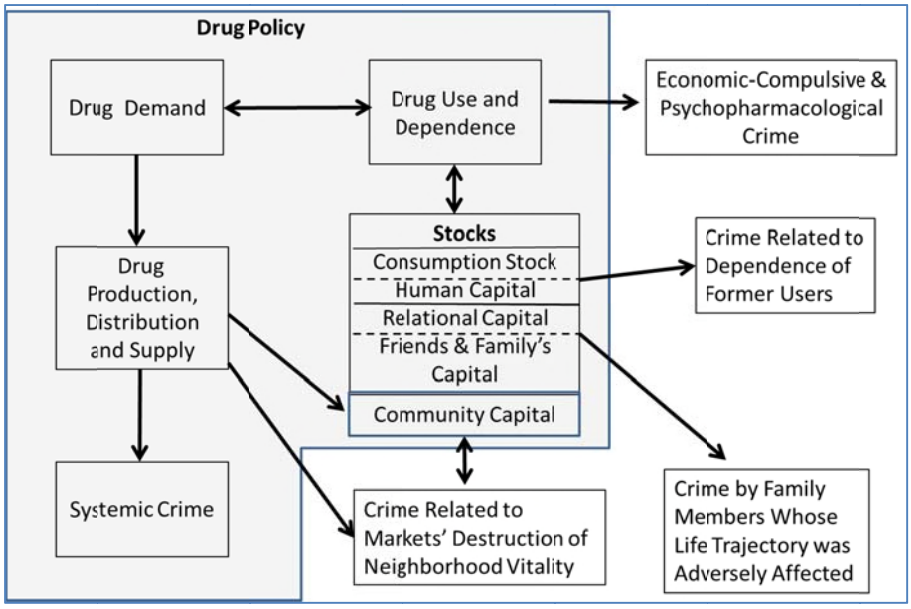
With this goal in mind, we return to an alternative version of the previous chapter's conceptualization of the relationship between drugs and crime, depicted below in Figure 4.1. There are several things to note in this conceptualization. First, like the conceptualization in Figure 3.2, it emphasizes that direct and indirect (through various past stocks) causal pathways are both important. Extended drug use clearly influences an individual's consumption capital stock (meaning the development of chronic use patterns and/or dependence), and this effect on the consumption capital stock can influence the need to engage in crime (to support one's habit) or willingness to engage in crime (e.g., a reduction in the stigma associated with crime because of a change in peer groups, or perhaps neurochemical changes caused by repeated exposure to drugs). Drug use and distribution can also influence other stocks, including an individual's human capital stock or, in simpler terms relevant here, employability. This too can happen through a multitude of avenues. Drug use and/or selling can produce a criminal record that impairs the ability to get certain types of jobs. Alternatively, drug use or selling could cause someone to drop out of school or fail to uphold job responsibilities, thereby limiting his/her employment options and the amount of income s/he can earn. These sorts of drug-related reductions to human capital formation can generate indirect pathways through which prior drug activity influences the need to engage in crime today.

Social or relational capital is another important stock that can be degraded, particularly by ongoing drug use. Drug abuse can lead some users to abuse their friends and families—

sometimes through physical abuse and sometimes by abusing their trust. We can examine this phenomenon through a scientific lens, but all too many people have witnessed it personally. Money is borrowed but never repaid. Promises are made and broken. Things are said that would have been better left unsaid. An extended period of dependence can leave a user with family whose patience has been pushed beyond the breaking point and with few friends not too deeply involved in drugs themselves to offer useful support.

Another attractive element of the conceptualization in Figure 4.1 is that it highlights the non-universal character of the relationship between drug use and crime. While there is a direct association between drug use and distribution and crime, the policy environment and the capital stocks clearly mediate these relationships (through the additional policy context shown in the grey shaded box). Thus, the point that any direct relationship between drug use and distribution and crime must explicitly account for the role of the policy environment and capital stocks to be accurate—and that those variables can change from population to population and place to place—highlights that there cannot be one universal estimate of the role of drugs on crime.

Figure 4.1
The Mechanisms Through Which Drug Use and Drug Distribution Might Influence Crime

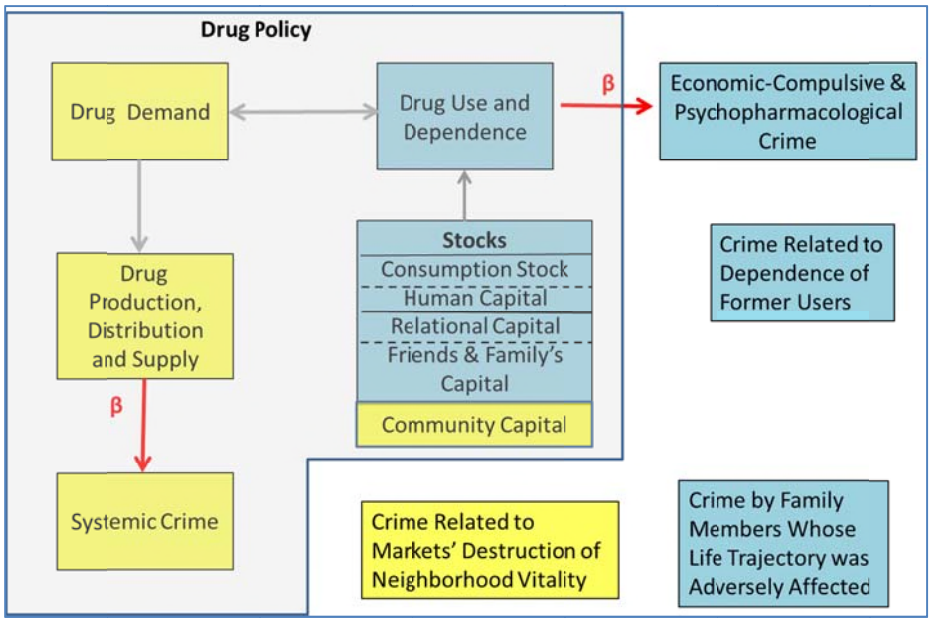


4.3. Where Previous Estimates Fit into This Framework

Numerous scientific studies evaluated in our literature review (see Appendix A) attempted to estimate specific pathways identified in our conceptual framework. Economic studies that focus on identifying the marginal effect of current drug use on current crime attempt to identify the relationships represented by the red arrows and "βs" in Figure 4.2. Embedded in a given data set employed for identification is a specific policy setting (state or city), a specific time period, and a

population with varying levels of capital stocks (all indicated as grey arrows). In essence, what most econometric studies do is try to hold these policy and past stock variables constant through policy controls as well as fixed time and individual effects, so that the marginal effect obtained from them provides a direct estimate of "β."[12] A study by DeSimone (2001), described in more detail in our literature review, provides a good example. DeSimone used cocaine price as an instrument for cocaine use in 29 U.S. cities, controlling for other characteristics and using year- and state-level fixed effects. He found that an increase in cocaine use was associated with an increase in six of the seven index crimes.

Figure 4.2
Contribution of Econometric Studies Examining Contemporaneous Relationships



Importantly, however, a different study using a population with different capital stocks (e.g., youth versus adults) or different policy environments (e.g., stringent versus lax drug enforcement) could legitimately estimate a very different marginal effect of drug use on crime. For example, while Stuart et al. (2008) found that the use of stimulants (typically cocaine) on a given day was associated with intimate partner violence (IPV) later that day in a sample of individuals arrested for IPV, Jaffe et al. (2009) found no association between crack cocaine use and IPV among participants recruited through an HIV program. While both studies were looking to identify the link between the same drug and the same crime, the effect was different in different populations, and perhaps the difference in the capital stocks explains the difference in

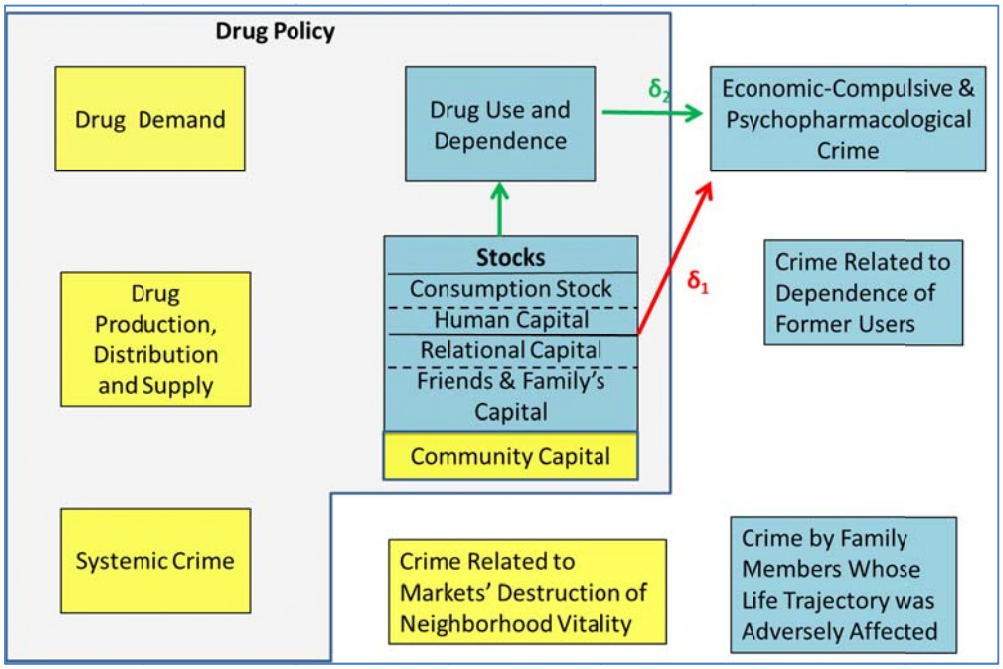
[12] Index crimes include murders and assaults, larceny, and other property crime, so systemic crimes are included as well.

results. Thus, it is not surprising that the estimated marginal effects (or βs) vary quite a bit from study to study.

Epidemiologists and criminologists examining criminal careers have focused more explicitly on the role of early drug use on capital stocks and how that influences the concurrent relationship between drug use and crime. A good example described in Appendix A is a study by Ford (2005). Ford used three waves of data from the 1979 National Longitudinal Survey of Youth in a structural equation model that examined the impact of early drug use and early delinquency on later drug use and later delinquency. The model indicated that early marijuana use and other illicit drug use were associated with later delinquency. Additionally, the model indicated that the mediating pathway by which drugs had this effect was through disrupting family bonds. A second example by Green et al. (2010) finds a different mediating pathway using propensity score matching. In matched groups of African Americans in Chicago entering first grade in 1966, heavy marijuana use in adolescents was associated with crime, with education as a potential mediating pathway.

Some longitudinal studies evaluate how early dependence or chronic use of a drug influences subsequent criminal behavior (indicated in Figure 4.3 by the red arrows, and estimated coefficients "δ_1") or how drug use today, influenced by early involvement in crime and/or drug use, is associated with crime today (indicated by the green arrow and "δ_2" in Figure 4.3). Because of their explicit consideration of the impact of levels of capital stocks on current drug-use decisions, the effect of concurrent drug use on crime estimated from them is significantly reduced when compared to estimates of "β" obtained from econometric studies (specified above).

Figure 4.3
Contribution of Epidemiological and Criminology Studies Examining the Contemporaneous and Longitudinal Relationships



Empirical methods, including propensity score methods, instrumental variables (IV) techniques, and regression discontinuity approaches, attempt to overcome the fact that people cannot be randomly assigned to different conditions, but to some degree these studies are always bounded by time and place (and the policies in effect and being enforced at that time and place). Thus, the estimates generated from these studies, rather than reflecting a precise, universal relationship, are always reflecting the social, physical, and temporal environments in which the population studied is being evaluated.

Moreover, because of the nonlinearity in the relationship between drugs and crime, the studies are also reflecting a shifting relationship over time, shifting partly because of changes in the overall prevalence of specific drugs of abuse over time (e.g., the heroin epidemic in the 1960s, cocaine epidemic in the 1980s, and methamphetamines epidemic in the late 1990s and early 2000s). Given the late stage of the cocaine epidemic we are in today, the popularity of cocaine as a drug of choice among youth and young adults—who are the main demographic engaging in various forms of crime—is low. Hence, the same decline in consumption today (say a 5 percent decline in use) would not have the same impact on crime as a 5 percent decline in use at the height of the epidemic. These are the sorts of social and environmental factors that reinforce the non-universal nature of the relationship just described.

In light of these issues, it is not surprising that a range of estimates emerge from each of the literatures attempting to identify the relationship between drugs and crime. Moreover, because of the particular lens used to approach the analysis (the controls included and methods employed),

various estimates emerge. But the figures above show that it is not accurate to try to obtain an average effect by taking the simple average of these disparate estimates obtained in the literature. They are, in fact, measuring quite distinct things, and averaging over them ignores the very different dimensions of the problem they try to enlighten.

Similarly, the framework in Figure 4.1 shows how currently constructed DAFs, which rely on responses to just two questions from all offenders arrested and/or incarcerated in a given time period, cannot accurately reflect the total amount of crime truly attributable to drug use or drug markets. In fact, previously estimated DAFs miss critical mechanisms through which drug use might influence crime.

4.4. Dashboards—A Way Forward

For some policymakers, the only application of the single, overarching DAF is to make the point that the amount of drug-related crime is large. But there is in fact much more we know and can say about the drugs-crime connection besides "it's big." For example, the evidence of a causal relationship is well established for cocaine and various crime types but not for marijuana (apart from DUI). So, an alternate way to answer the question of "How much crime is drug-related?" is not with a single number, but with a small set of complementary indicators. This approach is so common that its familiar metaphor (a "dashboard") has become something of a common element in business management. Although businesses are known for pursuing a singular objective (maximizing profits), most businesses do not manage this by following a single metric. Instead, they report to stock analysts a variety of key indicators of performance, including sales, inventory, and costs.

The conceptual framework presented in Figure 4.1, along with recognizing the complexity of the drugs-crime relationship and the limits of current research, brings to the forefront the need to think of a broader set of indicators for describing drug-related crime. Doing so may be more useful for policymakers in that they can better understand the immediate and longer-term effects on the current stock of drug-using offenders.

How does one go about developing a Drugs-Crime Dashboard? Some of the scientific literature conducted thus far hints at potential indicators that could serve as a useful starting point. But to properly construct a list, the objectives must be clear. What specific mechanisms are important to track? Do indicators currently exist for tracking those mechanisms? Should only indicators representing causal relationships be included, or would it also be useful to include measures reflecting correlation that could be better understood with additional science? These are just a few of the types of decisions that need to be considered.

Table 4.1 provides examples of other indicators we could think of from the literature and our own understanding of these mechanisms. But this is truly just a start, with the desired intent of raising interesting ideas rather than settling on specific measures for inclusion. In Chapters Five and Six, we delve deeper into the important details underlying a few potentially valuable metrics

for inclusion, thereby providing a better understanding of the amount of attention that should be given to each and every indicator that gets vetted for inclusion. Developing a useful dashboard of metrics is not as simple as identifying what metrics are available and can be used. It requires an understanding of a specific goal and determining which of the metrics—when combined—provide the best understanding of how that goal is being reached.

For the sake of illustration, however, we return to the preliminary list of indicators shown in Table 4.1. In thinking about metrics of the various ways drug use might lead to crime, it makes sense to include a measure of the amount of crime committed while under the influence of a drug or committed for need of money to buy drugs (versions of the DAFs that have been conducted previously). These are easy ways to capture some of the relationship between crime and current use (and, to some extent, the past use of those still using and dependent), although not all of this self-reported involvement should be presumed truly causal.

However, an important limitation of the metrics constructed from the inmate survey questions is that they are not collected annually. Long breaks in time can occur between surveys. Thus, information from them can become dated, and knowledge of changing dynamics may be lost, particularly if these are the only source of information on proximal drug-related crime. Thus, similar measures will also be valuable, perhaps from arrestees who are part of the Arrestee Drug Abuse Monitoring Program (ADAM) or some other program in which more frequent data collection occurs and data can represent local, state, and/or national geographic areas.

Table 4.1
Potential Indicators Capturing Dimensions of the Drugs-Crime Relationship for a Fixed Period of Time

Specific Pathway	Possible Indicators
Current Drug Use → Current Crime	• Crime committed under the influence • Committing crime because of the need for money for drugs • Drugged driving • Victims under the influence
Policy → Current Use → Current Crime	• Drug possession arrests • Drug sales arrests
Current Use → Consumption or Human Capital Stock → Future Crime	• Crimes committed by former drug dependents • Proportion of arrestees/inmates ever in drug treatment • Crimes committed by former drug offenders
Policy → Community Stock → Current Crime and Drug Use	• Lab seizures (policy) • Lab explosions (environment) • Proportion of weapons seized from drug offenders • Proportion of assets seized from drug offenders • Vacancy rate/property values in active drug market neighborhoods

Table 4.1 also provides examples of other indicators that might help capture additional avenues through which drug use can impact crime. For example, drug sales and drug possession arrests are crimes because they are defined as such. While we would not expect large changes in

this policy, changes such as the decriminalization of possession could lead to differential rates of both drug possession arrests and drugged driving arrests. (If use goes up because of the reduced criminality of drug use, drugged driving could go up while drug possession arrests go down.) Similarly, lab seizures are a function of policy, but it is a policy that can also influence the environment in which drugs are being traded, at least in the short run. Other measures, such as lab explosions, the proportion of weapons seized from drug offenders, and vacancy rates/property values in neighborhoods with active drug markets, can help measure the effect drug use might have on the local environment over time and then how this might translate into future crime down the road (e.g., deteriorated neighborhoods often become targets for gangs or other criminal activity).

4.5. Summary and Conclusions

This chapter describes a framework for measuring the drugs-crime relationship that moves beyond the flawed, single DAF. This should be useful to policymakers who seek a better understanding of these relationships and, ultimately, want to implement policies to minimize the social costs associated with drug use.

This framework does not make the previous research on the drugs-crime nexus obsolete. Rather, the chapter describes how these previous studies, described in Chapters Two and Three, fit into this framework. This not only helps identify gaps in the existing literature but also helps explain why studies about drugs and crimes can come to different conclusions. Indeed, a lot can depend on the levels of the various capital stocks for the individuals and areas being studied.

The chapter concludes with the idea of creating a "dashboard" to help policymakers better understand the drugs-crime nexus. While this is a familiar concept to those in business management, we are unaware of attempts to apply it in this context. However, a dashboard is only as good as its inputs. Therefore, in the next two chapters, we examine a variety of potential inputs that might be tracked within this framework.

5. Improving DAFs Constructed from Inmate Survey Data

5.1. Introduction

The fact that previously constructed DAF metrics are an incomplete representation of the complex drugs-crime relationship does not mean that they are useless for understanding aspects of drug-related crime. Indeed, the data sets from which they are commonly drawn provide valuable information about the role specific drugs have played in an offender's decision to engage in crime. Thus, we believe that, by making a few simple modifications to these data and the construction of additional indicators from them, useful information about the role current drug use plays in concurrent crime (committed either under the influence or because of the need for money to buy drugs) may be obtained from them. Combining these metrics with other metrics that capture additional mechanisms through which drug use influences crime will provide a much more comprehensive snapshot of the role of drugs in crime today.

In this chapter, we recommend improved methods for constructing DAFs from the inmate survey data that help us narrow in on particular aspects of the drugs-crime relationship. The recommendations stem from a presumed objective to improve our understanding of how much the contemporaneous use of a drug causes crime proximal to the time of its use—an objective that is narrower than what researchers have considered in the past. However, as articulated in the previous two chapters, we believe that such a narrow interpretation of findings from these metrics is warranted because they do not provide useful information about all the different ways drug use can influence crime, as indicated by our framework presented in Chapter Three. The current questions in the inmate surveys only obtain self-reported information from prisoners about drug use *during a crime* and as a *motivation for engaging in the crime* leading to their incarceration. Such questions, by design, are not useful for understanding the longer-term implications of drug use on crime or the role the presence of drug markets plays on crime. However, that does not mean these questions are not useful for understanding the role of contemporaneous drug use (or even contemporaneous chronic use) on crime.

In this chapter, we identify some important points, not the least of which are that a large number of dependent/chronic users engage in crime (above those who simply report use at the time of the offense) and that alcohol is an important contributing substance. Indeed, the large occurrence of alcohol use in combination with an illicit substance and the established science supporting alcohol's independent effect on violent crimes (Carpenter, 2007; Markowitz, 2005) leaves us uncomfortable trying to ascertain how much violent crime can really be attributed to illicit drug use specifically. However, as cocaine, heroin, and methamphetamines are significantly more expensive than alcohol, it seems far more plausible that it is their use that drives crime committed to obtain money for drugs (i.e., property crime).

What does this mean in terms of changes to the previously developed DAFs? Table 5.1 summarizes how our alternative construction of these DAFs for property crimes (discussed below) compares to DAF measures constructed in previous studies (ONDCP, 2004; NDIC, 2011). The table shows that if drug-relatedness were developed from a notion of dependent use rather than simple use at the time of the offense, previous estimates of DAFs would significantly understate the association between drug use and crime. This is because measures of dependent use explicitly capture the impact through past consumption stock on behavior. Higher DAFs would translate to even more drug-attributable crime and higher social costs.

Table 5.1
Possible Attribution Fractions for Acquisitive Crimes from First-Year Inmates Compared to Attribution Fractions from Prior Studies

Crime	ONDCP (2004)	NDIC (2011)	RAND estimate (A) for drugs	RAND estimate (B) for drugs and/or a dependent/chronic user
Robbery	27.2	28.0	23.8	51.4
Burglary	30.0	33.7	29.2	51.0
MVT	6.8	17.7	19.8	67.6
Larceny	29.6	38.8	40.5	62.8

We now describe the proposed modifications and our justification for proposing them.

5.2. Focus on New Prison Entrants

Previous studies that have developed DAFs from the inmate surveys constructed them using information on *all* the prisoners included in the sample. But because most of the inmates sampled in prison have been there for a while, their reports of drug involvement are not representative of offenders who were recently incarcerated. An alternative approach that directly deals with all these problems is to focus instead on constructing DAFs using just the cohort of new prisoners entering prison in the past year. In doing so, one reduces a variety of biases caused by compositional factors that are not reflective of the behaviors of recent offenders.

To see how important the proximity (in time) of drug use to offending is, we examined the 2004 Survey of Inmates in State and Federal Correctional Facilities (SISFCF).[13] These are the same data NDIC (2011) used to construct the most recent DAFs. We compared new prison entrants, defined as those admitted within the last 12 months, to those in prison for longer periods of time. We discovered that about one-quarter of those interviewed in the 2004 wave of the SISFCF were admitted in the past year, nearly 38 percent were admitted within the past 1–5 years, and another 36 percent were there at least 5 years. This distribution of inmates by length

[13] The most recent data available for the SISFCF during this project were from 2004. A full description of all analyses conducted with these data is provided in Appendix B. Similar analyses compared the results of the state portion of the SISFCF with the federal portion of the SISFCF and the Survey of Inmates in Local Jails (SILJ) with comparable results after adjusting for the type of crime and age.

of time since admission tells us that any summary statistics generated using the full sample will be heavily influenced by the characteristics of inmates who have been in prison for more than a year. That can lead to a distortion in statistics drawn from these data.

For example, analyses reported in Appendix B of this document show that older cohorts of inmates are more likely to be male (10 percent of the first-year cohort are female, while only 4 percent of the cohort in prison for five years or longer are female). Perhaps more important, if we look at the specific crimes inmates are in prison for, we see important differences in the representation of particular crimes based on cohort. The more serious crimes that lead to longer sentences will be overrepresented the most when sampling on all inmates rather than on recent admissions.

Table 5.2, which shows the primary offense inmates are being imprisoned for, shows that the largest share of inmates in the sample committed to prison for murder/manslaughter, forcible rape, or robbery (the shaded rows) have been in prison already five or more years. The fact that the first-year cohort of inmates represents such a small share of these crime groups means that analyses of the role of drugs on these crimes will largely reflect behavior and associations in the past—not those in the present.

Table 5.2
Percent of Inmates Held for Each Primary Offense by Time Served at Interview

Crime	Overall (percent)	0-1 year	1-2 years	2-5 years	Over 5 years
Murder/ manslaughter	13.2	3.1	5.3	9.4	25.6
Forcible rape	3.5	1.3	1.4	3.5	6.0
Aggravated assault	7.6	7.8	8.9	9.2	5.9
Robbery	12.5	6.7	11.2	14.2	15.8
Burglary	8.1	8.0	7.9	8.7	7.8
Arson	0.5	0.4	0.9	0.7	0.4
MVT	1.2	1.5	2.1	1.3	0.6
Larceny	3.8	5.6	5.5	3.1	2.4
Other crimes	49.6	65.7	56.8	45.0	35.5
Total	100.0	100.1	100.0	100.1	100.0

Note: Totals may not add to 100 percent because of rounding.

While the differences in age and other demographics are interesting, there are also important differences in the illicit drug of choice. As shown in Table 5.3, the first-year inmates were more likely than full population to report use of heroin and other opiates, methamphetamines/ amphetamines, and ecstasy both regularly and chronically. First-year inmates are also more likely to report any drug use, although they are less likely to report use of alcohol and marijuana. Chronic use of methamphetamines in the first-year cohort is as common as chronic use of cocaine in this cohort, which is entirely different from that of the full sample, which heavily reflects those who had been incarcerated for a longer time (for which the chronic use of cocaine

dominates the chronic use of methamphetamines). Given that drugs of choice differ across cohorts and that the scientific literature suggests that there are differences in the role specific drugs play in crime, associations identified from the pooled inmate survey would not paint an accurate picture of the current situation.

Table 5.3
Regular or Chronic Drug Use Among Inmates:
A Comparison of the First-Year Cohort to the All Inmates

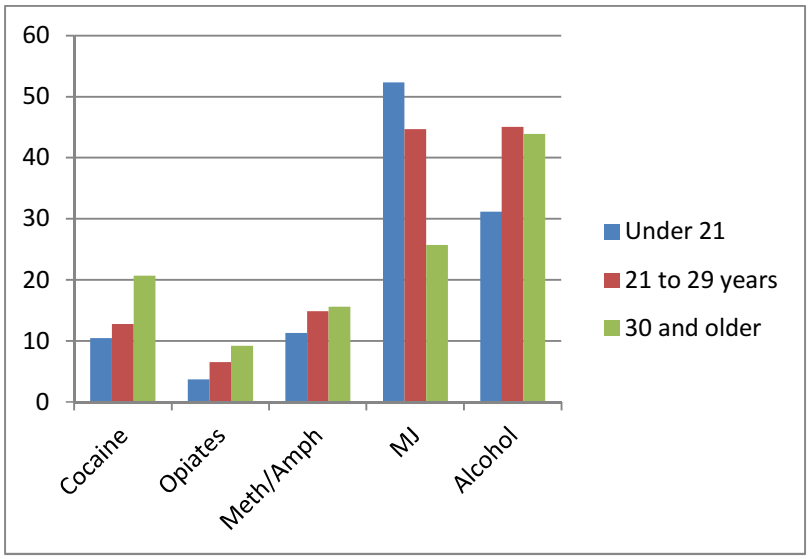
	Regular Use (weekly or more)		Chronic Use (almost daily use or use 20 times a month or more)	
Drug Used	**Overall**	**0–1 year**	**Overall**	**0–1 year**
Cocaine	18.2	17.0	13.1	12.2
Heroin/other opiates	7.0	7.8	5.9	6.9
Meth/amph	10.7	15.0	8.4	12.1
Marijuana	36.2	34.8	29.7	27.9
Methaqualone	0.8	3.3	2.9	0.2
Barbiturates	2.1	2.1	1.3	1.3
Tranquilizers	3.3	3.2	2.0	1.8
PCPs	1.6	1.0	1.1	0.7
Ecstasy	2.0	2.5	0.9	1.1
LSD	1.2	0.6	0.50	0.2
Other drugs	0.4	0.3	0.4	0.2
Inhalants	0.7	0.5	0.4	0.3
Any drug	51.5	53.6	43.6	45.0
Alcohol	45.9	44.1	24.9	21.8
Any drug or alcohol	68.0	69.4	53.3	53.6

The entry cohort is clearly important, but a related dimension is the age distribution of the inmates reflected by the entry cohort (vis-à-vis the older cohorts who aged in prison). As shown in Figure 5.1, the drug of choice significantly correlates with the age of the offender, even in the first-year cohort, with older offenders being more likely to report cocaine, opiates, methamphetamines, and alcohol use and younger inmates (under 21) being more likely to report marijuana use.

Given the differences in drugs of choice depending on age and the age profiles for specific crimes, it is perhaps not surprising to see that that there are important differences in reported use of specific drugs and crime by specific crime category. For example, in the case of murder/manslaughter (Table 5.4), the first-year cohort (shown in Panel B) is more likely to report the use of only alcohol and no illicit drug (37.3 percent) than is the full sample of all inmates (25.7 percent, shown in Panel A). In general, the first-year cohort is less likely to report use of an illicit drug, but those who do are more likely to do so without reporting regular use of alcohol than the full inmate population. Given alcohol's own independent relationship with crime, these subtle differences in the use of drugs and alcohol can have important implications

for proportions of inmates believed to engage in crime (in this case, murder/manslaughter) because of their drug use.

Figure 5.1
Drug of Choice by Age Among First-Year Inmates



In light of the demographic differences, the differences in utilization of specific drugs, and differences in the representation of particular types of crimes, we believe that more accurate information of the role of contemporaneous drug use in crime in a given year is best reflected by information reported by those most recently admitted to prison (i.e., in the past 12 months) rather than the full sample.[14] Thus, all remaining analyses in this chapter will focus on first year inmates unless otherwise specified.

Table 5.4
Percentage of Inmates Convicted of Murder/Manslaughter Who Used Drugs or Alcohol Regularly

Drugs–chronic use	Alcohol–regular use	
Panel A: All Prison Inmates		
	Yes	**No**
Yes–expensive drugs	8.8	4.8
Yes–MJ, no–expensive drugs	14.1	7.1
Yes–MJ, no–any illicit drugs	12.1	6.6
No illicit drugs	25.7	39.0
Panel B: First-Year Cohort Only		
Yes–expensive drugs	6.9	4.0
Yes–MJ, no–expensive drugs	7.5	8.3
Yes–MJ, no–any illicit drugs	6.6	7.3
No illicit drugs	37.3	35.8

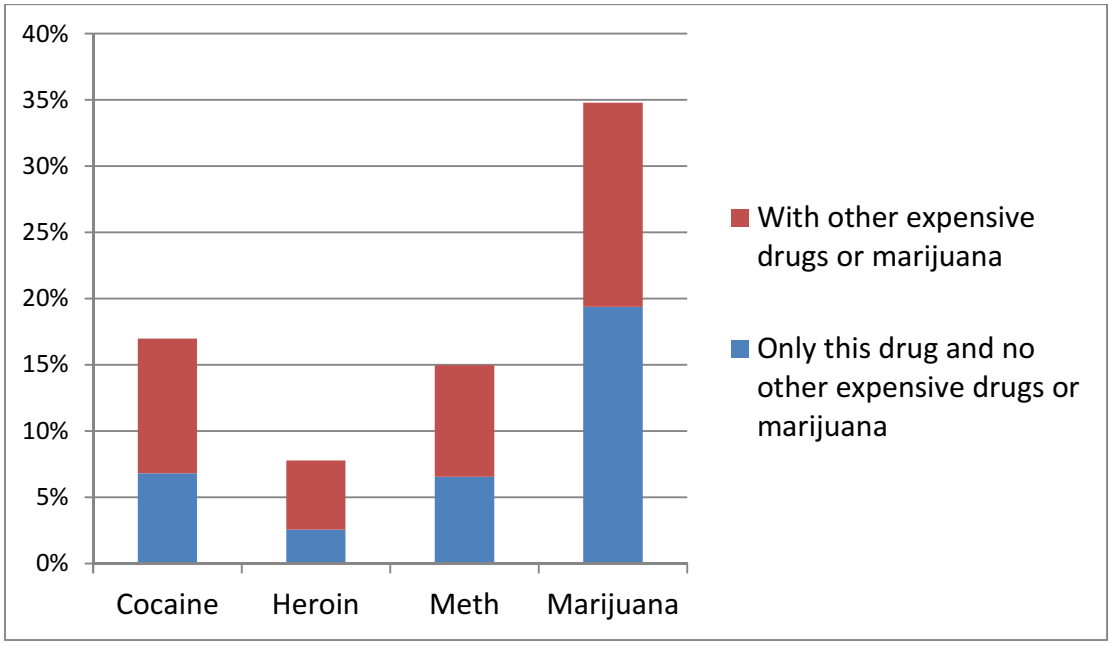
[14]This insight was provided to us during our expert panel meeting held in November 2011, and in particular by comments made by Allen Beck.

5.3. Considering Polysubstance Use

One might think, after reviewing the scientific literature, that the best way to move forward with the inmate survey would be to document the distinct roles different drugs have in association with specific crimes. However, as is evident in Table 5.4, even just for murder/manslaughter, it is clear that there is a huge amount of polydrug use among those who admit being under the influence at the time of the crime. Indeed, as shown in Figure 5.2, more than half of inmates who had used cocaine, heroin, methamphetamines, or other drugs used more than one drug regularly. In light of this polydrug use, it does not seem that a drug-specific approach to looking at drug-related crime will be very fruitful, because it will be impossible to know what percentage of a specific crime to attribute to each drug.

Using the scientific literature as our guide, we decided it was important to group drugs in particular categories. Alcohol was kept separate because of its own independent association with specific forms of crime. Marijuana, too, was separated from the other expensive drugs because of the lack of a finding in the scientific literature of a causal relationship to crime. Cocaine, heroin/other opiates, and methamphetamines/amphetamines were grouped together because they were expensive drugs (and, hence, plausibly associated with income-producing crime) and because they have been studied in the literature. Use of any other illicit drug was grouped in the remaining category. This last group represented a very small percentage of the inmate population because most inmates who used another illicit drug did so in addition to one of the other five drugs mentioned.

Figure 5.2
Polydrug Use by First-Year Inmates Using Cocaine, Heroin, Meth, or Marijuana



The term "expensive" merits elaboration. The issue is not price per gram (LSD is expensive in that regard) or price per dose. Rather, the issue is whether most of the demand for that drug comes from people who are spending much of their disposable income on that drug. For example, Roddy's (2011) sample of heroin users were spending, on average, three-quarters of their disposable income buying heroin. That is the type of circumstance in which economic-compulsive crime would be expected. Cocaine (including crack), heroin, and meth are the three major expensive drugs in the United States, according to this notion of expensive. By contrast, even daily marijuana use is not so expensive, and marijuana users are also, on average, less impoverished. In essence, this grouping broadens the old view, in which heroin was the only drug worth distinguishing as a primary driver of economic-compulsive crime; that old view does seem dated inasmuch as total estimated spending on cocaine/crack and methamphetamine is now many times the estimated spending on heroin (ONDCP, 2011).

Indeed, it is interesting to see the relative importance of specific combinations of substances (expensive drugs alone, expensive drugs with alcohol) and their association with crime in the 2004 first-year cohort inmates (Figure 5.3). Inmates reporting use of expensive drugs in the 30 days prior to the crime are more likely to be involved in income-producing crimes (larceny, motor vehicle theft [MVT], and burglary) than violent crimes. Alcohol alone (without an expensive drug) is more likely to be the substance used by inmates who engage in robbery, assault, and murder.

Nevertheless, the overall takeaway is that about 60 percent of first-year inmates used alcohol and/or one of the three expensive illegal drugs at the time of their offense. The proportion is a little higher for larceny and MVT and a little lower for violent crimes, but it is always a majority and never as much as three-quarters. Marijuana-only users represent a very small proportion of inmates, less than 10 percent for every crime except robbery.

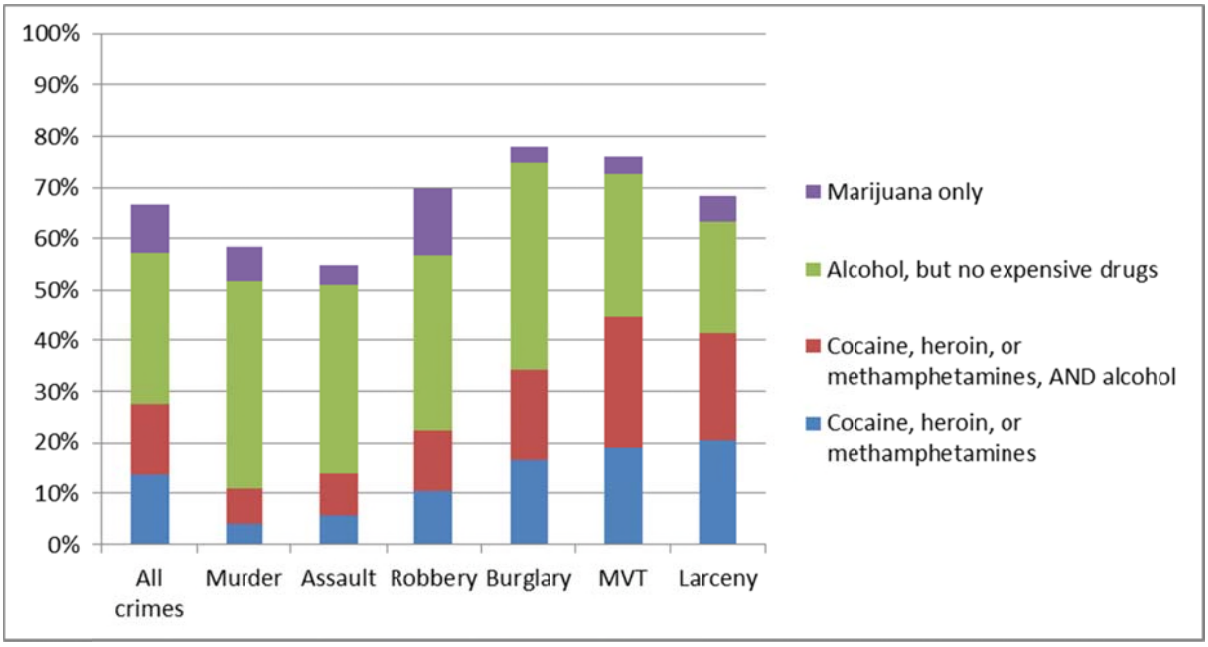
Alcohol clearly plays an important role, regardless of whether the person reports using an expensive drug (cocaine, heroin, meth) or a relatively inexpensive drug (marijuana, others). The only crime for which being under the sole influence of a drug is nearly as common as the use of only alcohol is methamphetamine in the case of MVT. But previous constructions of DAFs ignored the role of alcohol in any of these crimes, which could cause a misinterpretation regarding the role of marijuana in crime, given that it is used so infrequently without alcohol. While trying to attribute specific crimes, particularly violent crime, to drug use rather than alcohol is not a simple task, ignoring alcohol's role might completely misrepresent the relevance of particular illicit drugs. Nonetheless, for numerous income-generating crimes, the three expensive drugs, when considered alone or with alcohol, play a fairly large role.

5.4. Considering Drug Dependence Rather than Just Current Drug Use

In Chapter Four, we observed that someone who is dependent but not intoxicated may still commit a crime that is caused by their (past) drug use as embodied in their (current) dependent

state. Prior constructions of DAFs from inmate surveys have ignored this important pathway. Understanding how much self-identified dependent users engage in crime can help us better understand how much certain types of crimes can be influenced by fluctuations in rates of dependence in the U.S. population.

Figure 5.3
Use of Expensive Drugs, Alcohol, and Marijuana by Crime Among First-Year Cohort Inmates



Using information available in the SISFCF 2004, we can identify inmates as either (a) chronic users or (b) dependent users. Both are defined based on self-reported information to specific questions within the survey. Chronic users, as described earlier in Table 5.3, are individuals who report using a drug 20 or more times in the past 30 days. A chronic user may or may not be dependent. Dependent users are typically defined as meeting DSM-IV diagnostic criteria.[15] Only a clinician can make an actual individual diagnosis, but SAMHSA developed a method for estimating the rate of dependence in a surveyed population based on responses to a series of questions that correspond to DSM-IV criteria. They did so for the household population, but we adopt an approach that is similar in spirit for the inmate survey.

[15] DSM-IV criteria for dependence is defined as a cluster of three or more of the following cognitive, behavioral, and psychological symptoms occurring in a 12 month period: tolerance; withdrawal, or substance use to avoid withdrawal; taking the substance in larger amounts or over a longer period than was originally intended; unsuccessful efforts to decrease or discontinue use; spending a great deal of time obtaining, or recovering from, the substance; giving up important social, occupational, or recreational activities; and continuing to use the substance despite recognizing the role of the substance in contributing to psychological or physical problems (American Psychiatric Association, 2000).

In particular, we define dependent users as those having three or more of the DSM-IV criteria included in the survey questions. The degree of overlap between these two categories can be seen in Table 5.5. The third row of the last column shows that over three-quarters (78.2 percent) of first-year inmates who meet our definition of dependent use also qualify as chronic users, whereas the last row of the third column of the table shows that slightly fewer of the chronic users (67.5 percent) are also dependent users.

It is perhaps not too surprising that there is considerable overlap between those who use a drug chronically and those who are dependent. What is more surprising is how much these different definitions of problem drug users diverge. As we see by looking across the first row, nearly 74 percent of those on drugs at the time of the offense were dependent users (and a much higher proportion were chronic users). However, as can be seen by the first column of the third row, less than two-thirds of those dependent on drugs report being on drugs at the time of the offense and only one-third report needing money for drugs. What this tells us is that the standard criteria used to identify people who committed a crime because of drugs is missing a lot of crime committed by people who are clinically dependent on a drug.

Table 5.5
Overlap Between Different Conceptions of Problem Drug User Populations
Among First-Year inmates

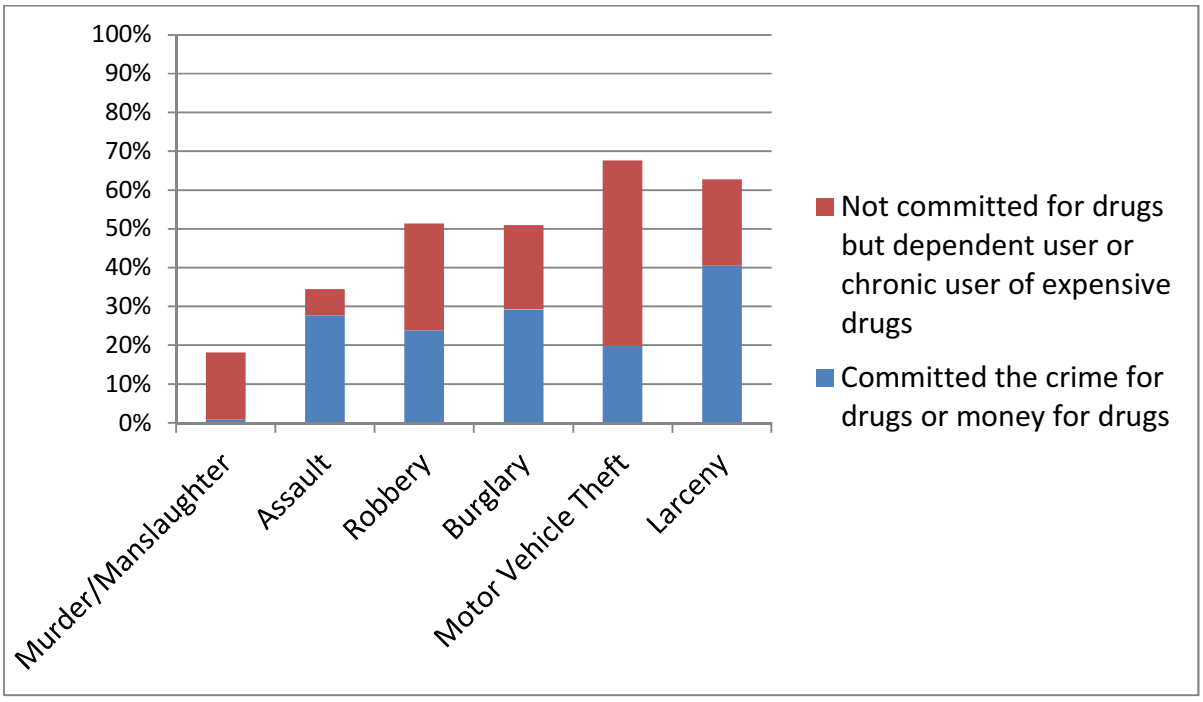
Types of state inmates reporting drug use	Alternative Ways to Define Drug Problems (Conditional probability that inmates fit alternative definition conditional on row in column A)			
	On drugs at the time	Committed crime for drugs	Dependent on drugs	Chronic user of expensive drugs
On drugs at the time (n=100,896)	–	41.0% (n=41,356)	73.8% (n=74,477)	89.4% (n=90,158)
Committed the crime for drugs (n=54,613)	75.7% (n=41,356)	–	78.9% (n=43,098)	83.6% (n=45,674)
Dependent on drugs (n=118,029)	63.1% (n=74,477)	36.5% (n=43,098)	–	78.2% (n=92,292)
Chronic user of drugs (n=136,659)	66.0% (n=90,158)	33.4% (n=45,674)	67.5% (n=92,292)	–

Note: Survey weighted totals are indicated by “n” and given in parentheses.

In Figure 5.4, we examine how much these different conceptualizations of problem drug use affect our understanding of drug crime. Focusing on inmates who reported committing their crime for drugs or to obtain money for drugs overlooks a large portion of inmates who could be considered problem drug users, using different conceptualizations of problem drug use. For purely income-generating crimes such as burglary and theft, there are almost as many problem drug users who did not report committing the crime for drugs as there are who did report it. For more violent crimes such as murder/manslaughter and assault, the number of crimes that could be associated with drug users who are overlooked is far greater. This is not to suggest that any one of these alternative conceptions of problem drug use, either alone or taken together, are

better than inmate reports of drug-relatedness in attributing a crime to drugs. Rather, this analysis highlights that drug crimes have multiple aspects and that multiple conceptions should be used to understand them. Moreover, it is possible that the current questions included in inmate surveys miss a relevant motivation for dependent/chronic users to engage in crime.

Figure 5.4
Alternative Specifications of Problem Drug Use Among First-Year Inmates



5.5. Summary and Conclusions

A careful examination of the 2004 SISFCF data reveals that there are important modifications that could and should be considered when trying to use these data to assess the amount of crime committed by prison inmates that can be attributed to drug use. This chapter highlights three important factors we believe should be accounted for explicitly in efforts going forward.

First, *only* the first-year cohort of inmates should be used, because this cohort alone is likely to be more representative of the current relationship between drugs of abuse and crime. Cohorts of inmates who have been incarcerated for longer than a year reflect problems and associations of the past, and combining these cohorts with the first-year ones simply confuses the picture of what we can learn from inmates today.

Second, the potential role of alcohol instead of drugs needs to be carefully considered. It is clear from the evidence that alcohol plays a significant role and could perhaps be the driving force behind most of the violent crimes committed by inmates under the influence of an illegal

substance. Alcohol plays a much smaller role in property crimes. Given this, it seems appropriate to give more credence to drug involvement in property crimes than in violent crimes.

Third, indicators of dependent use (which is highly correlated with chronic use) are more valuable measures of the potential role of drugs in crime than is use at the time of the offense, since there is clear evidence from the inmate survey that dependent users are not necessarily high at the time of an offense. The evidence also suggests that it is important to consider what the other motivations are, besides intoxication and/or the need for drug money, for dependent/chronic users to engage in crime. It is very possible that dependent users are in denial of their habit, claiming the need to steal for food or clothing because they used what money they had on drugs.

Of course, there are several problems that remain with this approach. First, these trends reflect the use rates of people arrested, convicted, and committed to prison—not the use rates of all criminal offenders. Thus, to extrapolate findings from inmates to the criminally involved population would require a rather heroic assumption that drug-relatedness in a crime does not influence the likelihood that someone who commits an offense will get convicted and end up in prison. Assessing how patterns observed in these data compare to findings from arrestees (obtained through RAP sheet data, as discussed in the next chapter) may be one useful way to try to assess the relative bias introduced by using inmate data alone.

A second major problem is that this approach does not directly assess how much associations in these self-reports actually reflect true causal relationships. Instead, it merely documents the association. Prior work generally made unsubstantiated, ad hoc assumptions about what percent of these observed associations could be truly causally presumed. Chapters Three and Four describe why, even if we had studies documenting marginal effects for specific places and times, they might not be appropriate to apply to population averages that might be inferred from the inmate survey. So, instead of claiming any sort of causal relationship, we simply report the level of drug involvement by crime and type of user and the tracking of this over time.

While the limitations pose concerns, their significance becomes reduced when these metrics are combined with other measures of drug-related crime, since information contained within them can be cross-validated from other sources, or other data metrics could be shown to help identify potential biases caused by the limitations of these data. Thus, another significant advantage of the dashboard concept is that, depending on the metrics selected for inclusion, it encourages the policymaker to consider more than a single indicator when evaluating drug-relatedness and allows the analyst to help correct distortions caused by using imperfect data.

6. Expanding Indicators to Capture Other Dimensions of Drug-Related Crime

6.1. Introduction

Once we move away from trying to construct a single DAF for individual crime categories and look beyond self-reported information from inmates (whether in jail or prison), there are a variety of rich data sources that can be used to provide insights into the various dimensions of the drugs-crime relationship. While some of these data sources are well known (e.g., the Arrestee Drug Abuse Monitoring (ADAM) Program or the Treatment Episode Data System [TEDS]), others receive less attention in this literature (e.g., Emergency Department data, RAP sheet data).

In this chapter, we review administrative and survey data sources that provide information on various dimensions of the drugs-crime relationship. These data systems each have strengths and weaknesses that may make them more or less ideal for the purposes proposed. In some cases, the only weakness is their limited coverage, suggesting that they might be useful to include in dashboards measuring relationships at one jurisdiction level (e.g., city) but not another (e.g., country), or that they might be good candidates for expanding data collection to more jurisdictions.

6.2. Administrative Arrest Data Systems Capturing Dimensions of the Effects of Drug Use on Offending

Administrative criminal justice data systems are often dismissed when trying to characterize the amount of crime related to drug use because none of the systems include objective measures of whether an offender was under the influence or in need of a drug at the time of the offense (hence the justification for interviewing inmates). Moreover, such systems only reflect those offenders who get caught (a group that may not be representative of all offenders). While these limitations are real, administrative data can still provide valuable information about at least two types of drug-related crime: (a) drug crime that is deemed a crime because of policy, namely drug possession, drug sale, drug manufacturing/trafficking, and, to some extent, drugged driving; and (b) crime that stems from an early career of drug offending. While the former has been discussed in the literature (ONDCP 2004, NDIC, 2011), the latter has been largely neglected.

The Uniform Crime Reports (UCR), which are the most widely used source of information on crime and arrests in the United States, are collected and maintained by the Federal Bureau of Investigation (FBI) and records information on crime and arrests known to the police in approximately 17,000 jurisdictions in the United States. The systematic information collected from so many jurisdictions throughout the United States is what makes this data set so valuable

to researchers and policymakers and why it has received the most attention and use. The UCR contain information directly relevant for measuring the first type of drug-related arrest previously mentioned—arrests made for "crimes by definition."

However, the UCR data have several limitations that make them less useful even for this purpose. For example, specific details on the type of drug are not reported. Heroin, cocaine, and their derivatives are all grouped into a single category, synthetic or manufactured drugs represent another category, and "other dangerous nonnarcotic drugs" are grouped into a third. The only drug that can be cleanly identified in these data alone is marijuana. Furthermore, DUI arrests are not broken out into those involving alcohol versus those involving another intoxicant. Finally, a hierarchy rule applies to the data, meaning that only the most serious charge is reported in the data. If an offender commits multiple crimes at one time (e.g., stabbing someone while drunk and in possession of a gram of cocaine), only the most serious offense (assault) will be captured in the UCR data. Thus, at best, the UCR data underestimate the total number of status crimes that occur, only counting those for which the drug offense is the most serious crime.[16]

The UCR Supplemental Homicide Reports (SHR) are considerably better than the main UCR data because they do, in fact, maintain and collect incident-level data about homicide offenses. Thus, it contains significantly more useful data, but only for understanding drug-involved murders. In addition to containing simple demographic information on the victim and the time and place of the incident, there is a code identifying the circumstances of the crime that includes two vague references to drug involvement: (a) drug crime and (b) brawl because of the influence of narcotics (separate from alcohol). Thus, it is possible to somewhat identify the level of drug involvement in concurrent homicides. Because no information is available about the offender's history, the files do not provide any information of the long-term effects of drug use on offending.

The National Incident Based Reporting System (NIBRS) is the next iteration of crime reporting, designed to eventually replace the UCR summary statistics. The data in this system also originate from police departments, but the NIBRS reporting system requires more detailed reporting of crimes leading to an arrest, including the identification of multiple offenses, offenders, victims, and characteristics of the offense. Thus, the data can provide a more accurate understanding of the number of crimes that involved drugs (in terms of possession or sale) rather than just those for which drug involvement was the most serious offense. Furthermore, greater detail is collected about the drug and type of drug offense. Types of drug offenses that are broken out include manufacturing, dealing, and possession (each separate). Specific types of substances involved or seized are also reported. NIBRS also contains a field about whether the offender was

[16] Status crimes refer to those crimes involving drugs that are a crime because of being defined as such (e.g., drug possession or drug sale). If the policy changed to make drug possession legal, then this would no longer be a crime. But if the policy changed to make drug possession legal, drugged driving would still be illegal. Thus, drugged driving is an example of a non-status drug-involved crime.

under the influence of drugs and/or alcohol at the time of the offense. However, it only reflects the opinion of the officer filling out the report.[17]

The NIBRS system has two principal drawbacks for the purposes of developing dashboard metrics. First, it is severely limited in the number of jurisdictions represented. As of late 2011, only 25 percent of the U.S. population was covered by NIBRS and data from only 10 states had all jurisdictions reporting to it. Because the coverage is thin, and the program's expansion has been slow, the utility of these data for monitoring drug crime metrics at the national level is limited. However, it may be quite useful for those jurisdictions that are already part of the system. Second, like the UCR system, the NIBRS data system does not include historical information about the offender, only the current incident. Thus, the data cannot be used to shed any light on the role of previous drug offenses starting a career of crime.

But such details are available if one goes directly to the RAP sheet data. All policing jurisdictions in the United States collect RAP sheet data and it is becoming increasingly more common to find these data available in electronic format from the state. RAP sheet data have the individual (as opposed to a crime incident) as the unit of observation. Therefore, they contain detailed information not only about the current arrest, adjudication, and sentencing of an individual charged with a specific offense, but also about his/her prior record (arrests, sentences, and time served).

To better understand how much RAP sheet data might be useful for understanding the direct influence of drug use on current engagement in crime and the role past drug offending might play in subsequent offending, we examined data from a single state, New York. New York was chosen because: (a) it is a state known to contain major drug markets, (b) there is a lot of public information, reporting, and research on crime in the state, and in New York City in particular, so various results could be easily validated using external sources, and (c) it is not yet a NIBRS state and, thus, provided us with a good understanding of the level of detail that might be available in a state that has not yet been encouraged to modify specific data fields.[18]

RAND received a random sample of arrests from 2004 and 2011 from the New York State Division of Criminal Justice Services for our assessment. Specific details about the crimes included and the samples sent are given in Appendix C. Information available in their electronic system included multiple charge details, counts, and the UCR code for the charges. The New York data set also contained the category of the charge (felony, misdemeanor, etc.), type of

[17] Michigan, for example, reports that 4.2 percent of its offenders are suspected of using drugs and 3.2 percent are suspected of using alcohol, considerably lower than self-reported estimates from either SISCF or ADAM.

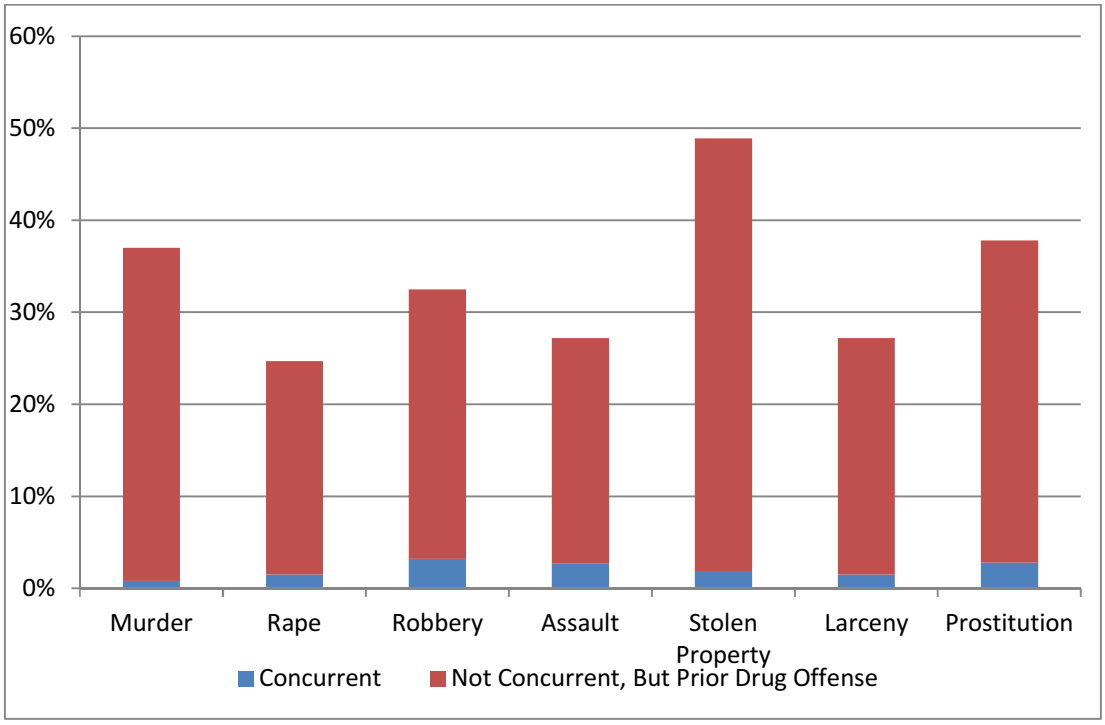
[18] According to information from the Justice Research and Statistics Association (JRSA), New York State is in the testing phase with NIBRS and has two of its 269 agencies collecting additional data elements to test the feasibility of implementing the system statewide (http://www.jrsa.org/ibrrc/state-profiles/new_york.shtml. The Bureau of Justice Statistics reports that $900,000 was granted to the NY State Division of Criminal Justice Services in 2001 to develop a repository so that it can accept data from agencies contributing to the system and convert the New York Penal Code to UCR and NIBRS offense classifications. It is important to note that none of New York State's five largest agencies are participating in the test.

charge (weapons charge, child victim charge, hate crime), sex offender registry code, and an identifier that allows us to link the individual arrested to prior arrests in the system. Information from the full history file includes gender, date of birth, race, and Hispanic ethnicity. From information on the date of birth and first arrest recorded in the file, it is possible to construct a measure of an individual's age at the time of his/her first arrest in New York.

We provide in Appendix C a description of various analyses using the New York RAP sheet data. Here, we simply point to some key insights learned from these analyses. First, while it is possible to obtain reasonably good data on status crimes in general from RAP sheet data, and on some non-status crimes like drugged driving, it is not necessarily true that drug-specific crime analyses will be possible. Jurisdictions in New York did not consistently use the available New York Public Health Codes or UCR codes to identify what illicit substance was involved in a particular recorded arrest. Thus, it was not possible to use these data to get a good sense of which illicit substance appeared to be driving particular types of drug-defined crimes. Although marijuana was frequently identified in the arrests, no other drugs were consistently reported across jurisdictions. Therefore, we must presume that it would not be possible to generate drug-specific associations from these data for the state.

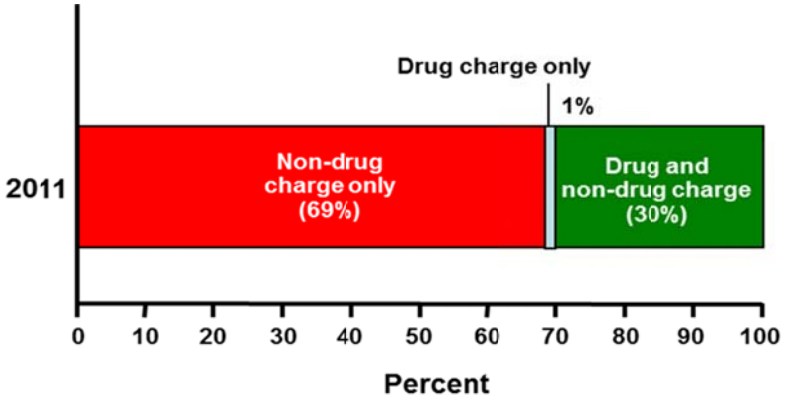
A second and perhaps more interesting result is that concurrent drug charges are not common for people being arrested for murder, rape, robbery, assault, larceny, stolen property offenses, and prostitution in New York (Figure 6.1). For none of these arrest charges do we see concurrent drug charges reaching even 5 percent, although there is some amount of variation across primary charges. Even so, it is quite common for people committing these crimes to have a prior drug offense. Indeed, in the case of people arrested for stolen property in 2011 in New York, over 45 percent had a prior drug offense in their record, suggesting that concurrent drug charges alone might significantly understate the role of drugs in overall offending.

Figure 6.1
Concurrent and Prior Drug Charges Among New York Arrestees in 2011



A third insight pertains to identification of a data source through which to consider the role of drug offending in starting criminal careers. Although prior drug offending is clearly common, it is not possible to know from Figure 6.1 whether drug offending was the first arrest that got people started down a road of crime or if it was a subsequent arrest. To consider this we must focus on offense charges for the first arrest, as is done in Figure 6.2. First arrests are grouped into one of three categories: (a) only drug offense (which includes possession and sales only); (b) drug offense plus other offense; and (c) non-drug offense. As can be seen in Figure 6.2, very few of those arrested in 2011 for one of our selected crimes (less than half a percent) were arrested only for drugs when they were first arrested. However, at least 30 percent had a drug charge as one of their charges in their first arrest, making it tricky to understand whether drug offenses are important or not. It is possible that these first arrest statistics might also reflect a policing priority of New York State because New York decriminalized marijuana possession (the most common drug involved in drug offending) back in the 1970s. Nonetheless, the data confirm our earlier suggestion that statistics focused exclusively on the impacts of proximal use on crime miss an important intertemporal avenue through which drug use might generate crime.

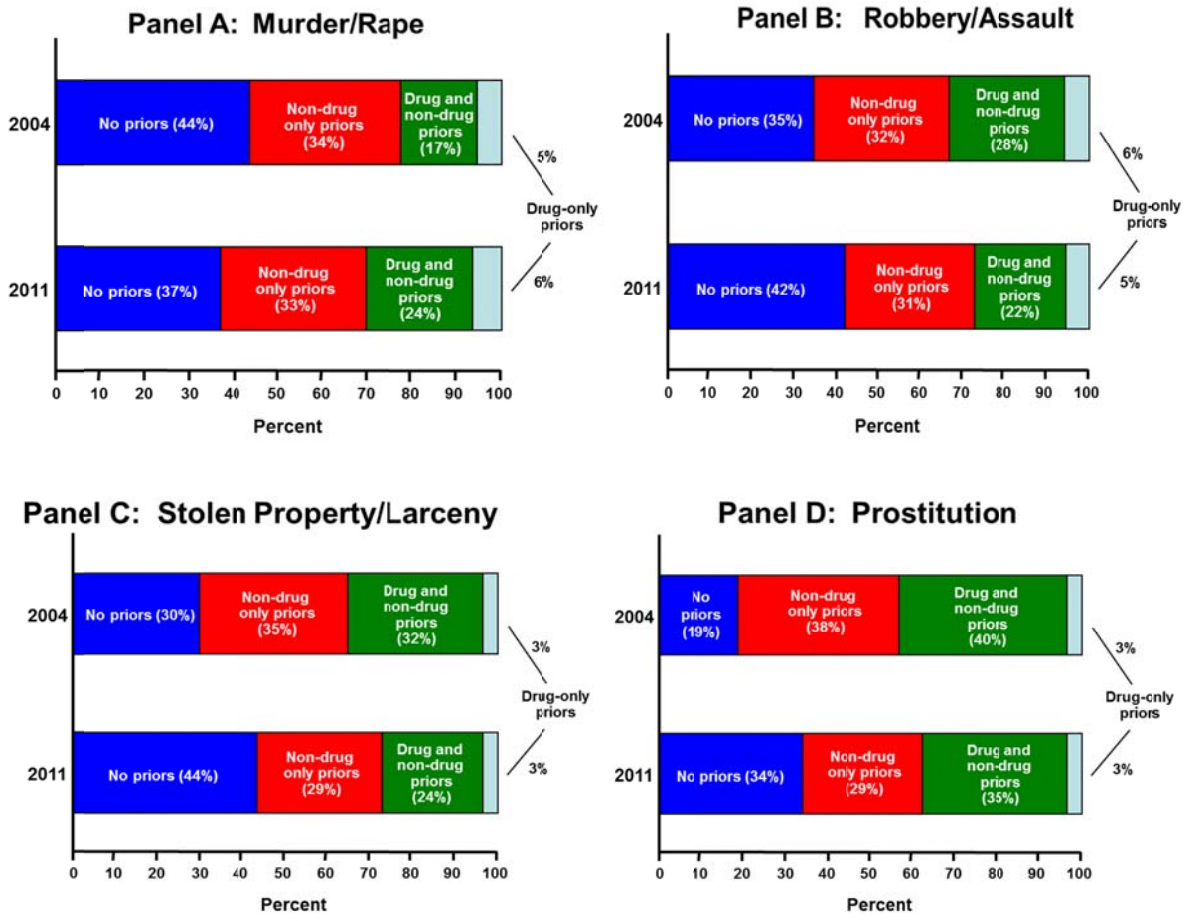
Figure 6.2
First Arrest Charge Among New York Arrestees in 2011



A final insight gleaned from our analysis of the New York State data is that RAP sheet data are useful for examining trends in drug-related crime over time. In Appendix C, we look at temporal variation in drug involvement by crime in greater detail, but in Figure 6.3 we show, in Panels A through D—murder/rape, robbery/assault, stolen property/larceny, and prostitution, respectively—how prior charges vary by type of crime between 2004 and 2011.

Here it becomes clear that prior drug-involvement can have differing influences on different types of crimes. For example, in terms of the composition of current arrestees for murder or rape, about two-fifths of all 2004 and 2011 arrestees (shown in dark blue) have no prior criminal record. A very small percentage has only a prior drug arrest (shown in light blue), while between 17 and 24 percent have a prior drug and non-drug offense (shown in green). What is interesting to see is that, between 2004 and 2011, the proportion of people arrested for murder/rape with no priors shrunk, while the proportion with a drug prior and/or drug plus non-drug prior grew. While this suggests that prior drug involvement is becoming more common among those arrested for murder/rape even though concurrent drug use is not, there are other explanations for these findings. For example, it could have been that there was a rise in concurrent drug use but, for some reason, the additional drug charge was not added to the RAP sheet data. It is unknown how often police ignore drug use when making a major arrest. It is possible officers may want to throw every possible charge at an individual. Then again, it may be too cumbersome to document the evidence necessary to include a drug charge along with a major crime charge and, as a result, the drug charge is not included.

Figure 6.3
Changes in Prior Drug Involvement by Crime Category



The trend is somewhat different for robbery/assault. While murder/rape shows a decreasing trend in the number of people arrested with no prior arrests between 2004 and 2011, arrestees for robbery/assault were more likely to have no prior criminal offenses in 2011 than in 2004. And, in the case of robbery/assault, it is the proportion of arrestees with a drug plus non-drug prior offense that is shrinking the most, suggesting that prior drug offenses may be less important for this category of crime.

We conclude from this analysis that RAP sheet data could be a useful tool for tracking specific dimensions of the drugs-crime relationship contemporaneously and over time. In addition to providing relatively good measures of drug-defined crimes (because no hierarchy rule applies), the case history data is particularly valuable for understanding the role that drug charges have played in other offending. Specifically, it can help us better understand how much drugs play a role in starting criminal careers. It is interesting to see that drug crimes were not the entryway into criminal careers for the vast majority of arrestees in New York State in either 2004 or 2011. However, while not common among all arrestees, early drug charges may still have

important impacts on future crime that will be better understood through monitoring and analysis. Another advantage of these data is that they can be analyzed annually, so it is possible to look at how various associations identified in these data trend over time.

6.3. Alternative Administrative Data Capturing Drug Offending

At least two other non-arrest administrative datasets capture objective information on the role of illicit drug use in proximal crime. The first is the Substance Abuse and Mental Health Services Administration's (SAMHSA's) TEDS, which provides consistent data at the local, state, and national level on the number of criminal-justice-referred treatment admissions for illicit drugs. This information, when coupled with information from either the UCR or RAP sheets, may yield useful insights into the amount of crime in which the criminal justice system (a judge or other court representative) deemed drug use played a significant role. What is nice about TEDS is that it captures people at a very early stage in the adjudication process, even before a formal arrest in some states. Booking facilities in some areas can adjudicate specific types of offenders straight to treatment. Moreover, the TEDS data capture drug-involved offenders who are apprehended for a variety of different offenses, not just drug sales and possession charges. Thus, when viewed with other information about arrests for specific offenses, it can provide useful information about the primary substances involved in overall offending.

The TEDS system maintains admission details on up to three substances of abuse, ranked in terms of their primary importance (first, second, and third). Polysubstance users can be identified, as can those who used illicit drugs with alcohol. Thus, the information provides a good sense of how important particular drugs are to offending by tracking the distribution of drugs mentioned in the primary drug code among those referred from the criminal justice system. It is also possible to understand how many of these criminal justice referrals are using one drug versus multiple drugs. Annual reports produced by SAMHSA using the TEDS data include information on primary drugs among criminal justice referrals and information on referrals involving only alcohol versus alcohol and another substance.

A second useful administrative data set, at least for tracking drugged driving, is the National Highway Traffic Safety Administration's (NHTSA) Fatality Analysis Reporting System (FARS). The FARS provides the most accurate data on drugged driving fatalities known to law enforcement. This data system is a census of all fatal accidents that occur in the United States and are known to police. Data records maintained for each accident event contain information on all parties involved in the crash and details of the environment in which the crash occurred. At least one person involved in the event must die for the event to be captured in FARS. The death does not need to be a driver or passenger in the car—it may be a pedestrian or someone on a bike. As part of the accident record, the police record the presence of alcohol and/or drugs and the method through which drug information was obtained (e.g., blood, urine, or another test). If a drug test was required but denied by the individual, this information is also recorded. Specific

drugs identified in the report include narcotics, depressants, stimulants, hallucinogens, cannabinoids, phencyclidines, anabolic steroids, and inhalants. Police may also report their suspicion of intoxication of non-fatal participants in the accident record. Data from this system can be used to track the number of drug-involved fatalities in a given year, either nationally or at the state level, thus providing a direct measure of how often drugs are involved in accidents and people engage in drugged driving that results in fatalities.

6.4. Survey Data Capturing the Effects of Drug Use on Offending

In addition to the administrative data sources listed above, self-reported information on the use of a drug and participation in crime can be elicited from a variety of surveys. Two surveys that are particularly relevant for tracking this sort of information consistently over time are the Arrestee Drug Abuse Monitoring Program (ADAM) and the National Survey on Drug Use or Health (NSDUH).

The ADAM dataset currently surveys the drug use of men who are arrested in a given quarter in 10 cities throughout the United States. The ADAM survey has evolved from a series of surveys conducted over the years. It began with the Drug Use Forecasting (DUF) program, which collected information from male arrestees in 23 cities from 1987 to 1997. The program was expanded to 35 cities as ADAM/DUF from 1998 to 2003, with a redesign in 2000. The ADAM program was then suspended from 2004 to 2006, and contracted to just 10 sites when it resumed for 2007–2009.

The ADAM program solicits voluntary, self-reported information about drug use from arrestees. Eighty-six percent of participants also voluntarily provide a urine sample. ADAM currently records three offense codes for a large number of crimes, including index crimes, drug crimes (sales, possession, under the influence of substance, and other drug offense), and other offenses; inpatient/outpatient drug treatment history; questions related to abuse or dependence; and additional questions about specific drugs. Questions related to these most common drugs include ever used substances; age of first use; use in the past 12 months; number of days used in each of the months of the past 12 months; number of days used in the past week; number of days used in the past 3 days; and method of consumption. Thus, information from this system can be used to construct and compare measures of self-reported drug use with objective data (urinalysis) to assess how much the arrestee was under the influence at the time of the offense. The main drawback of these data at this time is their limited geographic coverage. Should the program be expanded again in the future, it could be very useful for providing some important comparisons with RAP sheet data, helping us understand how much RAP sheet data can be used to fill in some gaps in drug involvement.

An alternative source of national and state representative samples of self-reported drug-involved crime is the NSDUH. Since 1991, NSDUH (formerly the National Household Survey on Drug Abuse) has been conducted annually with a randomly selected, nationwide sample of

approximately 70,000 individuals aged 12 and older. The survey interviews a new sample every year, thus generating a repeated cross-section of the U.S. population in each year. Starting in 2002, state-representative samples have been drawn, enabling state-specific estimation of substance use prevalence rates for the majority of the states. In-person interviews are conducted in the respondents' homes, and respondents self-report the use of alcohol, marijuana/hashish, cocaine, crack, heroin, and methamphetamines. Respondents also self-report the use of other types of amphetamines, hallucinogens, inhalants, prescription drugs (general use and specific types), and sedatives. Information is available on the annual, 30-day, and lifetime prevalence of each drug, as well as frequency of use in the past year. Importantly, this survey also identifies individuals meeting DSM-IV criteria for abuse and dependence for specific drugs, allowing researchers to differentiate casual recreational users from more dependent users. Finally, information is also reported on the age of first use, facilitating the construction of measures of new users for each drug.

Information on crime is obtained through a series of questions inquiring about specific types of crimes committed in the past 12 months. Participants self-report whether they have driven under the influence of alcohol or under the influence of illegal drugs; they also self-report whether they have been arrested for driving under the influence of alcohol or drugs, motor vehicle theft, larceny/theft, burglary, aggravated assault, other assault, robbery, or homicide. Finally, participants are asked questions about whether they have been arrested for forcible rape; arson; drunkenness; the possession, manufacture, or sale of drugs; prostitution or other sexual offenses; fraud; possessing stolen goods; or vandalism.

Unlike the ADAM data, the NDSUH has no objective information about drug use and/or crime involvement, since the information is only obtained through self-reports. Thus, prevalence estimates from these data are likely to suffer from reporting biases. Moreover, with the exception of drugged driving, none of the questions ask whether the crime was committed in a manner involving drugs (either under the influence or in need of money to by drugs). Thus, with the exception of drugged driving, it is unclear to what extent drugs are actively involved in the decision to commit a crime. Furthermore, the underrepresentation of hard-core drug users in this population is likely to further bias any estimates of drug-involved crime toward zero. For all these reasons, these data are unlikely to provide direct evidence of drug-involved crime in most areas, with the notable exception of drugged driving.

There are a variety of other national and state survey data that resemble the NSDUH in that they obtain information on drug use over specific periods of time as well as involvement in crime. These data sets include the National Longitudinal Survey of Youth (NLSY), the National Longitudinal Study of Adolescent Health (Add Health), the Youth Risk Behavior Surveillance System (YRBS), the Behavioral Risk Factor Surveillance System (BRFSS), and the National Epidemiological Survey of Alcohol and Related Conditions (NESARC). However, each of these suffer from the same problem as the NSDUH in terms of the ability to directly identify how much drugs (and/or alcohol) are involved in the self-reported crime that is reported (with the

exception of drugged driving). Thus, while these surveys are useful for identifying associations and may provide reduced-form evidence of causal associations in statistical models, there is no specific indicator that can be tracked from them consistently over time (besides involvement in drugged driving) to identify how much drugs are involved in crime.

6.5. Data Sources for Understanding Drug-Related Victimization

The most useful survey for understanding victimization is the National Crime Victimization Survey (NCVS), which is a large, nationally representative annual survey on victimization in the United States. While the survey allows researchers and analysts to understand the extent to which specific types of crimes are not brought to the attention of the police (e.g., underreported victimization in cases such as domestic violence), it has a variety of limitations in terms of examining the drugs-crime link. One major limitation is that drug involvement is reported based on the victim's perception of the offender being under the influence at the time of the offense, which may or may not be accurate of true impairment. A second limitation is a lack of geographic identifiers; identifiers are not generally available for public NCVS data. There is one version of the dataset that presents some geographic identifiers for about 40 large Metropolitan Statistical Areas (MSA) for the period from 1979 to 2004, but information on MSAs is not consistently reported after that. A third limitation is a lack of data for cases in which the victim is no longer able to report, particularly the elimination of cases resulting in death.

While the NCVS is the main data source for documenting rates of victimization for the country, it does not contain reliable data on how often the victim is under the influence of an illicit drug at the time of an offense. The inmate surveys do, in fact, ask offenders whether they perceived their victims to be under the influence of alcohol or a drug at the time of the offence. However, this information is just as likely to be unreliable as the victim's perception of the offender's use of a substance reported in the NCVS. The NIBRS records information from the police officer on their opinion of drug (or alcohol) involvement in a given incident. These data suffer from similar biases, although police officers are probably far better trained to identify people influenced by drugs than are offenders.

In light of the weaknesses of these survey data, an option is to obtain information from administrative data that capture, for a subset of victims, the involvement of drug-impairment, namely emergency department data. As part of the Healthcare Cost and Utilization Project (HCUP), the Agency for Healthcare Research and Quality (AHRQ) sponsors both a national (NED) and statewide emergency admissions data base (SEDD) that each provide comprehensive data on all emergency room visits in the sample.[19] Currently, 27 states provide samples to the

[19] The Centers for Disease Control, National Center for Health Statistics has its own data collection effort—the National Hospital Ambulatory Medical Care Survey (NHAMCS), which is designed to collect data on utilization of emergency department and outpatient services from a national sample of visits to the emergency departments and outpatient departments of noninstitutional general and short-stay hospitals. However, the data do not allow for lower levels of analyses at the state or local level.

SEDD data set and, from these, a nationally representative sample is constructed. The data includes medical record and discharge information for all emergency department visits. From these data, it is possible to use International Classification of Diseases-9 (ICD-9) codes to identify patients who are admitted for an assault, rape, domestic violence, or vehicular accident and who also have evidence of marijuana, heroin/opiates, cocaine and/or amphetamines in their systems. While these data cannot provide a complete representation of all types of victimization caused by drugs, they provide consistent data on a variety of measures that are collected systematically across states and over time. Moreover, they provide a good indication of the most severe victimization, even if it is not reported to the police.

6.6. Other Potential Data Sources to Keep an Eye on for the Future

All the administrative and survey data sources mentioned thus far emphasize crimes that involve the drug user and, to some extent, individual victims. The conceptual framework presented in Chapter Four includes other areas of crime that are still not well represented by the data systems we have discussed. Additional indicators for tracking other important elements of the problem, including drug market violence, neighborhood crime, and impacts on families, are also important to develop. However, data systems for these areas are not as widely available. There are a few potential sources of information, with unknown coverage, but they provide a glimpse into possible avenues for developing indicators in the future depending on how these data systems evolve. We now discuss just a few examples of such data systems, with the hope that future scientists explore the viability of these data sets and others more carefully.

The National Study on Child and Adolescent Well-Being (NSCAW) was a longitudinal study intended to answer a range of questions about the outcomes of children who entered the child welfare system. It included a nationally representative sample of 5,501 children, ages 0–18, who were investigated by Child Protective Services between October 1999 and December 2000 from 92 primary sampling units in 36 states (Barth, Gibbons, and Guo, 2006). Data were gathered from children, caregivers (parents or foster parents), teachers, and caseworkers over a 36-month period and included a clinical assessment of substance abuse and dependence of the caregivers in the sample. Unfortunately, the study has not been replicated on subsequent samples to the best of our knowledge; thus, the data obtained from this sample are now a bit dated. However, should additional data be collected in future years using this model, it would be possible to track for a nationally representative sample of children in contact with the child welfare system who are impacted by their parents' substance use and possibly their subsequent engagement in crime. This is precisely the type of information we need to understand some of the long-term effects of drug dependence and abuse on crime.

Similarly, there are a variety of data systems maintained by the Drug Enforcement Agency that track information on enforcement activities targeting the supply of drugs, including lab seizures, pharmacy raids, and the like. To the extent that information on such enforcement is

systematically collected for all activities, this information can provide a sense of the number of suppliers that have been detected and directly engaged by law enforcement. This provides information not only on drug status offenses but also neighborhoods and areas affected by aggressive suppliers.

Finally, policymakers interested in tracking the effects of drug markets in their own local areas might be interested in tracking vacancy rates and rental rates in neighborhoods impacted by drug markets. To the extent that these two indicators provide a sense of the dissolution of communities because of drug-related crime, they can be used to track when areas get turned around or start to slip into disarray. Tracking such indicators on an aggregate level (state or national) is likely to provide less direct information because of the amount of aggregation that has to occur. Nonetheless, they might be useful indicators for local leaders.

6.7. Summary and Conclusions

A variety of different data sources exist that provide glimpses of the extent to which drugs are involved in crime. In this chapter, we discussed several administrative and survey-based data systems that capture aspects of the data we believe are necessary to present a fuller picture of drug-related crime. Numerous sources of data provide additional insight into the most proximal links between drugs and crime, with perhaps the most useful being the ADAM, TEDS, FARS, NIBRS, and hospital ED data. However, not all these data have broad coverage. In particular, the ADAM data are now only collected in 10 sites and are not nationally representative. This is perhaps the greatest loss in terms of tracking proximal drug-related crime because of the missed ability to map self-reported drug involvement to objective measures of drug use for a variety of charges. NIBRS is only operational in fewer than half of the states. FARS only captures drugged driving that results in a fatality. ED data only capture victims that require immediate and significant healthcare services. TEDS only partially reflects the willingness of judges and states to divert criminal offenders to treatment in lieu of (or in addition to) incarceration and is also affected by the amount of money available for treatment. Thus, none of these more promising data systems for capturing proximal crime provide good information on all drug-relatedness.

The story is even worse when we look at the data sources available for longitudinally tracking the role of drugs in crime. The most promising data, RAP sheet data, are not uniformly available electronically across all states at this time. However, in those areas where they are, very detailed criminal histories can be analyzed to better understand how much prior drug charges influence the type of crime committed or the subsequent involvement in crime of offenders. Our own analysis of these data suggests that, for the main index crimes we examined, drug offending was not the first crime that got offenders a record in New York. However, repeat offenders are more likely to have drug charges, and, more importantly, these charges are often not the main charges involved. Thus, data systems like the UCR, which use a hierarchy rule for reporting crimes, can grossly understate the amount of crimes that involve drug charges as well.

However, despite their individual weaknesses, our review of these data systems suggests that certain combinations of data indicators may be quite informative in that they provide a more complete picture of the role drugs play in crime. For example, to the extent that RAP sheet data provide information on previous drug charges and when those charges occurred (i.e., what year), one could look at criminal justice referrals from TEDS in those states for those years to see what proportion of those being referred to treatment from the criminal justice system had prior treatment episodes (and, hence, a history of dependence). Thus one could identify how many of those users who are receiving multiple episodes of treatment (and who are presumably more dependent) are reengaging in crime. This would help fill in our understanding of the effect of prior drug involvement on current offending, even if the current charges do not reflect a drug charge.

Similarly, while the FARS data only provide information on fatalities involving drugged drivers, the NSDUH provides interesting information on self-reported drugged driving in general. Together, these statistics can provide a better idea of the prevalence of drugged driving and its impact on society.

Therefore, not all hope is lost. Until better data systems emerge, useful information can still be gleaned from some of the existing data sources we have. We provide an example of how to do this in the following chapter. We also, however, want to highlight here that there are several areas where more work can and should be done to get a better idea of the importance of drugs for crime. In particular, very little information is available on systemic crime beyond that in the UCR homicide reports and the RAP sheet data. We are also unaware of any current effort to collect systematic data on the impact on children of substance-abusing parents who have encounters with law enforcement and on how much these children subsequently engage in crime themselves. It seems particularly valuable to continue to research this important, indirect mechanism through which drugs can impact crime both at present and in the future.

7. The Drugs-Crime Dashboard Prototype

7.1. Introduction

Perhaps the most important contribution of this work is its identification of the conceptual limitations of trying to rely on singular DAFs to describe the amount of crime caused by drug use and drug markets. Fundamentally, even if we had better data and could do a better job of teasing out the amount of crime committed while under the influence that was really the result of drug use, doing so would *still* not fully describe the role drug use has in crime. There is no such thing as a population-average attribution factor in the case of drugs and crime because the effect of drug use is neither proportional nor universal.

Yet policymakers need information on the impact of drugs on crime and need it presented in a systematic way over time across jurisdictions and the nation as a whole. Such information is vital for evaluating strategies for managing the drug problem and identifying how a proposed solution might influence different aspects of the drugs-crime relationship. We introduced the concept of the Drugs-Crime Dashboard in Chapter Four and discussed the core advantage of monitoring or evaluating policy across a variety of relevant drugs-crime dimensions. After describing how to improve measurement of the effect of concurrent drug use on crime using the state and federal inmate surveys in Chapter Five and discussing several other relevant data sources with useful indicators in Chapter Six, we are now in a position to introduce a prototype of the Drugs-Crime Dashboard.

7.2. Why Call This a Prototype Dashboard?

We emphasize that the dashboard we are about to present is simply a prototype for several reasons. First and foremost, dashboards are decision support systems, so they interact with, and should be customized to, the interests of a particular policymaker or at least a decision's context. The dashboard that works best for a police chief may be different from the dashboard that works best for the head of a federal agency. A policymaker could mix and match a set of indicators that suits a particular situation or need.

We illustrate this principle with a generic national dashboard indicator but do not imagine that its particular design would be ideal for everyone who might eventually be interested in using such a dashboard. Moreover, our intent was to keep the visual illustration to a single page, when the actual amount of relevant data may take up several times this space. Thus, we would like to encourage the reader to focus on the concept of what is being presented rather than the specific details at this point in time. Alternative decisions about what constructs to capture and further refinement of specific metrics, the data sources used to measure them, and/or how they are presented are possible at a later stage and could be determined through an interactive process

involving policymakers and researchers (e.g., through a Delphi process). Our goal now is to demonstrate how one would think about constructing a dashboard and what it *might* include.

Second, we include many indicators in the prototype dashboard that provide a descriptive understanding of drug-related crime rather than only metrics representing a true causal link to crime. This is for at least two reasons. First, the work necessary to identify causal associations for some of these measures has yet to be done. Second, some of these associative indicators, when combined with other associative indicators, can still generate good insight into the nature of how drug use influences crime.

The third reason we emphasize the evolutionary nature of the dashboard concept is simply because the drug problem is not a static problem. Drugs of abuse change considerably over time, and it is hard to predict which drug will pose a problem in the future. For the dashboard to stay relevant, it must stay flexible and adaptable to the changing drug environment and to the data metrics available to monitor it. Thus, not unlike when Barton (1976) and Cruze et al. (1981) introduced the concept of DAFs as a preliminary idea on which future work could be built, we too offer the Drugs-Crime Dashboard as a preliminary construct on which we encourage future development.

7.3. What Should Be Included in the Drugs-Crime Dashboard?

There is no shortage of interesting statistics from which one could develop a series of indicators about the drugs-crime problem and the extent to which drugs are related to crime. Indeed, two of the three appendices attached to this report provide a myriad of supplemental analyses generating interesting statistics worthy of consideration. Thus, the hardest part of developing a prototype is deciding where to start and which statistics seem the most relevant. We made our decision based on the following criteria:

- A dashboard is only effective at communicating information if the statistics are not overwhelming. It is necessary, at least at this stage, to keep the number of statistics represented in the dashboard limited. Additional data included in comprehensive tables might be useful to support these statistics and provide supporting documentation of specific measures, but we emphasized statistics in the dashboard that could stand on their own.
- The statistics captured must reflect the most relevant constructs for policymakers to understand both the contemporaneous relationship between drugs and crime and the relationship over time, given the data currently available.
- The statistics must be able to differentiate crime that is the result of drug use from crime generated by current drug policy.
- The specific measure must be something that can be systematically reproduced consistently over time and measured in a way in which the presumption of causality, even if not explicitly evaluated, is reasonably inferred.

Of course, it is also valuable to consider what issues are of greatest interest to policymakers today. For example, the Obama administration is very concerned about rising rates of drugged

driving and has made it part of its strategic plan to reduce drugged driving over the next few years. Because drugged driving is an excellent indicator of a drug-induced crime (it is not possible to be arrested/convicted for driving under the influence if drugs were not consumed), it is reasonable to add it to the short list of variables to include.

With these criteria in mind—and given the availability and quality of existing data, our knowledge of the drugs-crime literature, and years of conducting drug policy analysis—we settled on a series of indicators that reflect information of drug-induced crime associated with consumption today, persistent consumption in the past, exposure to the criminal justice system in the past because of a prior drug arrest, and drug-induced crime defined by policy.

7.4. The National Drugs-Crime Dashboard Revealed

Figure 7.1 provides a look at our proposed National Drugs-Crime Dashboard. The purpose of the metrics included in this dashboard is to provide a snapshot of drug-related crime at a national level. As such, we restrict ourselves to metrics from data sets that are representative of populations at a national level (e.g., UCR, inmate surveys, TEDS). Each metric allows us to consider specific aspects of the drugs-crime relationship, although all the measures here reflect only proximal relationships given the national data available.

The upper left corner presents some very general information about associations between drug use and crime, first focusing on indicators that represent how much drug-defined crime occurs (sales and possession) and then on indicators that demonstrate the general level of use (drugged driving and referrals to treatment from the criminal justice system). We begin by showing that, in 2010, there were 1.6 million total drug abuse violation arrests in the United States (obtained from on-line data reported in *Crime in the United States*),[20] with approximately 80 percent of those reflecting arrests for possession of a drug and 20 percent reflecting arrests for sale of a drug. We give a bit of depth to this statistic in Panel A, showing its breakdown by type of drug (according to UCR statistics). Here you see that marijuana accounts for nearly half of all drug possession arrests and is the second most common cause of sales arrests. Cocaine and opiates (which are combined in the UCR) have the largest share of sales arrests but only represent about one-third of all sales arrests.

Other general statistics reported in the top left corner of the dashboard provide additional information about both drug use and how much our current drug policies, or the enforcement of these policies, influence user crime. For example, we include information on the number of people arrested for drugged driving and the number of people arrested and referred to treatment

[20] United States Department of Justice, Federal Bureau of Investigation. (September 2011). *Crime in the United States*, 2010. Retrieved (August 2012), from (http://www.fbi.gov/about-us/cjis/ucr/crime-in-the-u.s/2010/crime-in-the-u.s.-2010).

from the criminal justice system for use of an illicit drug.[21] While providing a sense of how many users get in trouble with the law, these data also reflect how much law enforcement imposes the law (because arrests for a given crime can go up simply because of increased enforcement, even if use does not change). When decoupled from crime caused by being under the influence of a drug or in need of money to buy a drug, these statistics give a much clearer sense of crime defined as such because of the prohibition on drugs versus crime committed because drug use makes a user commit a crime s/he would not have otherwise. Thus these numbers, when tracked over time, can provide insight to policymakers regarding how well current prohibition is generally being enforced against users and sellers of drugs. Declines in these numbers may indicate a reduction in the number of users (which could be validated with data from NSDUH, ADAM, and other sources) or a reduction in enforcement against users.

Panel B of the national dashboard provides information in the form of a stacked bar chart showing the proportion of first-year inmates who self-report using drugs around the time of the crime, by the type of crime and by the substance they report using. This chart allows us to ask: Which substance(s) are prison inmates who use drugs most likely to have used prior to their last offense: alcohol, one of the "Big 3" expensive drugs, or marijuana? Reading the bar chart from left to right, it shows that 65 percent of all crimes committed by first-year inmates in the 2004 SISFCF involved either alcohol or drugs, with the vast majority of the crimes involving alcohol. Only 13 percent of crimes committed by inmates using drugs involved cocaine, opiates, or amphetamines/methamphetamines without alcohol (labeled "Big 3 Only"). Approximately the same amount of crimes involved these "Big 3" drugs but also included alcohol. There was a small share of crime (about 7 percent) that excluded one of the "Big 3" drugs and alcohol but simply involved marijuana, possibly with another less common substance.

The next six bars in Panel B show how specific drugs differ in their involvement in particular crimes. Alcohol is by far the most common substance involved in murder (the last bar) committed by this first-year cohort of inmates, as indicated by the red and green stacked portions of the bar. Alcohol also played a pretty important role in assault and robbery. However, for larceny, motor vehicle theft, and burglary, the "Big 3" drugs played a more substantial role, being involved in at least half of all the crimes committed by first-year inmates. However, we never see these drugs influencing a dominant share of the crime by this cohort without alcohol. Alcohol is also involved in at least half of the cases involving the "Big 3" drugs for every crime, with the possible exception of burglary. Interestingly, we see that marijuana alone (without alcohol or an expensive drug) plays a relatively important role in robbery for this cohort as well.

The utility of drawing on multiple statistics rather than just one to get a better understanding of the drugs-crime relationship becomes immediately evident when looking at Panel A and B

[21] The referrals to treatment data come from SAMHSA's Treatment Episode Data Set (TEDS) Annual Report and are calculated as the total number of criminal justice referrals minus those that are referred only for alcohol, as referenced in Chapter Five. In the case of those not involving marijuana, the number where marijuana was the reason for the referral was also subtracted.

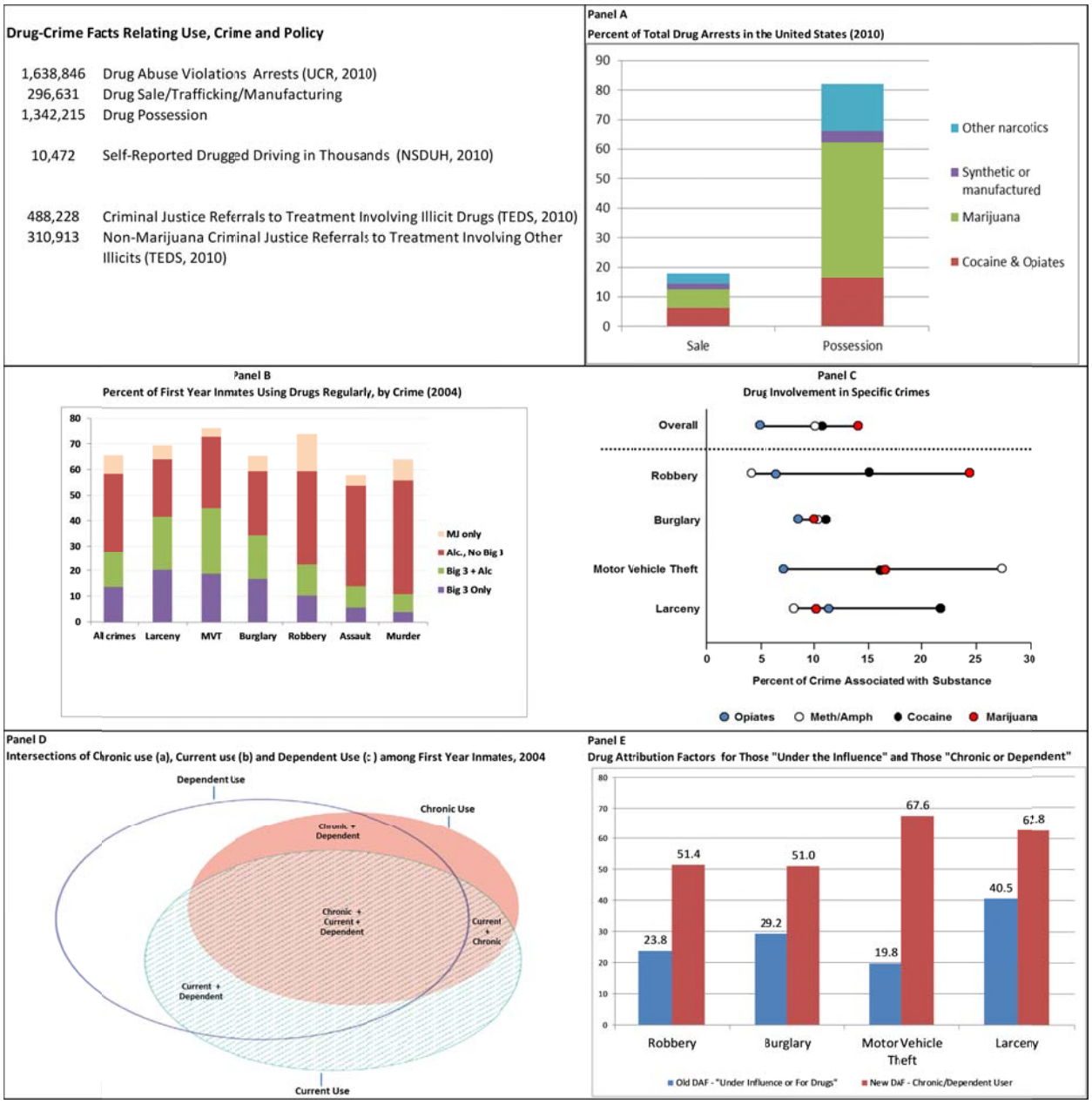
together. While cocaine and opiates represent one-third of sales offenses and a quarter of possession offenses, they are two of the "Big 3" drugs shown in Panel B that are involved in over half of all larceny, motor vehicle theft, and burglary offenses committed by inmates under the influence of a drug. Marijuana is by far the most common drug identified in drug possession and sales offenses (Panel A), but it plays a much more minor role in terms of being the only drug consumed by inmates committing property and violent crimes. It is difficult to place marijuana in the same standing of the more expensive drugs when seeing that it alone is involved in relatively few of the crimes.

Panel C of Figure 7.1 looks more closely at the involvement of particular illicit drugs in particular crimes using a dot plot. The previous statistics grouped each of the expensive drugs together, so this figure breaks it down for overall crime and the four crimes in which drugs are most frequently involved. Each colored dot tells you what percentage of crime in a certain category involved use of a particular drug. The plot allows us to answer the following question: How important are particular illicit drugs in terms of their involvement in specific crimes? Of course, it does not give you a sense of whether the drug was used alone or in combination with another substance. One can get an understanding of polysubstance use versus single drug involvement by comparing findings in this figure with those in Panel B.

Looking at overall crime in Panel C, (the top dot chart) it can be seen that heroin/opiates (the blue dot) were only used by 5 percent of offenders around the time of committing a general crime, meth/amphetamines (the white dots) and cocaine (the black dots) were used by just over 10 percent of offenders, and marijuana (the red dot) was used by over 15 percent of offenders around the time of committing a crime. Intriguingly, marijuana is shown to be involved in nearly 25 percent of robberies, while the two stimulants, cocaine and meth/amphetamine, are involved in only 15 percent and less than 5 percent of robberies, respectively. Again, if one were looking at this figure alone, one might be tempted to infer from it that marijuana may, in fact, cause crime (despite the scientific literature not finding a contemporaneous relationship). However, when this figure is presented alongside Panel B, it is easier to see that, while marijuana is indeed used by offenders, the use of marijuana alone—without alcohol or another illicit substance—happens far less often. Marijuana alone is involved in fewer than 10 percent of all crimes and fewer than 15 percent of robberies. While it is not trivial, marijuana does not play nearly the role of the other more expensive drugs, as is clearly demonstrated by looking across these two figures.

The information that can be gleaned from Panel C is that methamphetamines/amphetamines use is common among those incarcerated for motor vehicle theft and less so for those involved in robbery and larceny. Cocaine, on the other hand, is frequently used by offenders caught for larceny, burglary, and robbery. Across those acquisitive crimes captured in the dot plot, opiates are most frequently involved in larceny and burglary and less so for robbery and motor vehicle theft. Thus, there does appear to be some sort of crime-specific pattern for drugs such as opiates and meth/amphetamine and more of a general crime involvement for cocaine and marijuana.

Figure 7.1
National Drugs-Crime Dashboard Prototype



Panel D of Figure 7.1 shows the very high degree of overlap in the three self-reported indicators of use among the first-year cohort of inmates, which could be relevant for understanding the importance of crime indicated by traditional DAFs and crime suggested by a DAF based on chronic and/or dependent use: current use (indicated by blue shading), chronic use (indicated by pink shading), and dependent use (no shading). However, it also shows that there is less overlap between dependent use and current use than there is between chronic use and current use (which overlap quite a bit). Further, it shows that chronic use does not perfectly overlap with dependent use; thus the two are not perfectly interchangeable. As our purpose is to try to understand to what extent crime by dependent users not under the influence of a drug at the time of a crime could be important, this graph gives a policymaker a quick sense of whether definitions may be important.

The final graph of the national dashboard (Panel E) presents DAFs created from the 2004 SISFCF for selected income-generating crimes for which the research supports a plausible causal link. The blue bars demonstrate DAFs constructed using the same approach taken by NDIC (2011) but using only the first-year cohort. The red bars show DAFs that include chronic and dependent users who were caught, even if they did not report being under the influence at the time of the offense or in need of money for drugs. These are the same data reported in Table 5.1. Although causality cannot be inferred from any of the information in this graph, the graph shows that chronic and/or dependent users are engaged in nearly twice as much robbery, burglary, and motor vehicle theft as individuals who report being under the influence and/or in need of money to by drugs at the time of the offense. In the case of larceny, the inclusion of crime committed by chronic/dependent users raises the involvement in larceny by more than 50 percent. Thus, crime among dependent users is an important piece of the picture that was not being fully captured in previous formulations of DAFs. When dependent use is considered, estimates of drug-involved crime increase by over 50 percent for every crime category.

Although each of the data points and figures are interesting in their own right, together they tell a more valuable story from which policy implications are more easily drawn than from simple DAFs. First, it is clear that drugs play a much larger role in criminal offending than previously thought, because crime committed by those dependent or chronically using drugs had gone previously unrecognized when those offenders did not report being under the influence of a drug or committing the crime for money to buy drugs. The policy conclusion is that a focus on drug treatment in the criminal justice system, not simply for those caught in possession of or selling drugs but also for those committing more serious offenses, could go a long way to reducing the level of crime overall. Effective treatment would immediately reduce the amount of crime committed because someone was in need of money to buy drugs (either self-reported or not). The longer-term effect of increased treatment on crime will increase over time as the stock of dependent users or ever-dependent users declines.

A second significant finding for policymakers is the importance of alcohol used in combination with drugs. It is clear from Panel B that polysubstance use is very common in this

population, hence any focus on treatment needs to be mindful of not just drug addiction but also the alcohol use. The role of alcohol in combination with these substances may be extremely important, as indicated by the finding that marijuana is involved in a high number of specific crimes (Panel C) but is usually consumed with alcohol (as suggested by Panel B and shown more clearly in Appendix B). Effective treatment needs to address both alcohol and drug use; addressing illicit drug use alone will lead to only very small benefits.

A third insight for policy makers is that focusing on drugs that are involved in sales and possession offenses alone is not a strong indication of the importance of a particular drug in terms of its inducement of crime among users. While marijuana is heavily represented in sales and possession offenses, as would be expected, given the much higher prevalence of its use among the general population, that does not mean it plays a major role in criminal offending. The scientific research does not support such a conclusion, nor does a more nuanced look at the role of particular substances in crime, including alcohol, as shown in Panel B.

7.5. A State Drugs-Crime Dashboard Revealed: The Example of New York

Figure 7.2 provides a look at how the dashboard might be applied to state-level data. Importantly, when the geographic focus changes from the nation to the state, additional information becomes available, particularly about arrestees. We present data for New York State and show, in the upper left-hand panel, general statistics on drug-defined crimes as reported in Crime in the United States, the NHTSA's FARs, and treatment referrals from the criminal justice system reported in TEDS. These statistics are generally comparable to those shown in the national dashboard. Presumably, should this approach move forward, it would be useful to track a subset of indicators consistently over time and across states that can be used to shed light on the overall findings shown in the national statistics. For example, by comparing the total number of drug offenses in New York State to the national number in Figure 7.1, that New York State drug violation arrests represent only 3.8 percent of national drug arrests. That seems somewhat small given the New York State represents 6.3% of the US population.

If we focus just on what can be learned from the state dashboard, the numbers in the top left-hand corner give us a sense of the size of the drug arrestee population in New York and the relative importance of the criminal justice system as a way of reforming drug offenders (in terms of diversion to treatment). Drug offenses represent nearly 20 percent of all arrests within the state, which may indicate intensive enforcement of drug policies or the relative ease of catching drug offenders within the state. Youth represent less than 10 percent of those drug offense arrests. It is difficult to say how important diversion to treatment is in New York State. Criminal justice referrals represent only 8.7 percent of all treatment admissions within the state, suggesting that the needs of people coming through the criminal justice system do not push out other individuals seeking treatment. Tracking these sorts of statistics over time will be far more useful for understanding the use of treatment by the criminal justice system in New York State.

In Panel A of Figure 7.2, we show the percentage of possession and sales offenses that can be attributed to a specific drug. As noted in Chapter Six, the RAP sheet data for New York do not do a very good job identifying the drug involved in possession or sales offenses beyond marijuana. While clearly a less than ideal indicator for this particular state, other states may do a better job of recording this sort of information in their RAP sheet data, so we kept it in as a relevant measure.

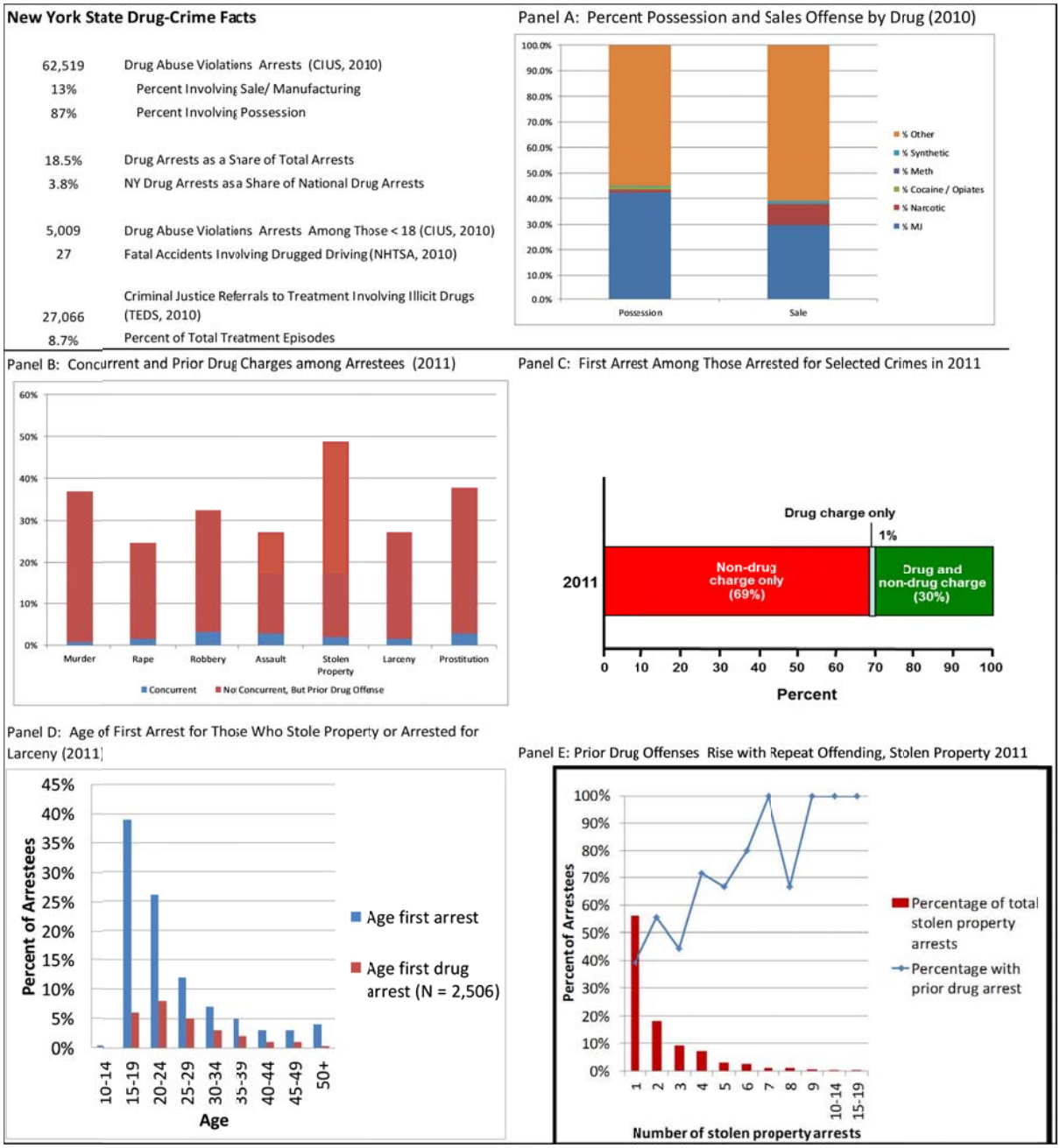
Panel B of Figure 7.2 presents the share of arrestees who were either arrested for drugs simultaneously to their current offense (a concurrent arrest) or who had previously been arrested for drugs (prior arrest). The focus is on those arrested for seven mutually exclusive charges: murder, rape, robbery, assault, stolen property, larceny, and prostitution. Not surprisingly, the rates for concurrent drug charges were low for all of these offenses, all hovering below 5 percent. Where we see stark differences across arrest types is in the share of arrestees who had previously been arrested for a drug offense in New York State.[22] Among those arrested for stolen property, nearly 45 percent had previously been arrested for a drug offense. The figures for prostitution and larceny were about 35 percent and 25 percent, respectively. The figure for murder was also close to 35 percent, suggesting that the figures for violent crimes may also be in the same ballpark.

Because it is important to understand how often a drug violation (sales or possession offense) starts a criminal career for some offenders, we show in Panel C the percentage of offenders arrested for the first time in 2011 who were arrested for either a drug offense only, a drug offense plus one of the other major offenses considered in our sample, or only a non-drug offense. It is interesting to see that the proportion of first-time arrestees experiencing a concurrent drug charge (31 percent in total) is substantially higher than that observed for the entire 2011 arrestee population (shown in Panel B). However, the vast majority of those arrested on a drug charge were arrested for something else as well; less than 1 percent of first-time arrestees in New York were arrested simply on a drug violation.

Policymakers can learn two things from the findings in Panel B and Panel C when they are examined together. First, the vast majority of individuals arrested in New York State in 2011 were repeat offenders. In order for 31 percent of first-time arrestees to have a drug charge while fewer than 5 percent of all arrestees have a drug charge, repeat offenders must swamp the sample. Those who are arrested on a drug charge (and we are not separating sales from possession here, but the vast majority of arrests are for possession, as indicated by the numbers in the top left-hand corner of Figure 7.2) are disproportionately involved in subsequent crime, as that is the only way that such high rates of prior drug offenses can emerge in Panel B if the sample of first-time offenders shown in Panel C is representative of a typical first arrest

[22] Since it is possible that these individuals may have been arrested for drugs in another state, we should consider these figures lower bounds.

Figure 7.2
New York State Drugs-Crime Dashboard



population. However, it would be wrong to conclude that it is just drug arrests that drive future crime, given so few first-time arrestees have only a drug charge (Panel C).

The data shown in Panel D provide additional support for the conclusion that drug violations alone do not drive future crime in New York State. Here we show the mean age of first arrest among offenders apprehended for larceny or stolen property in 2011. Among those arrested in 2011 for stolen property and larceny, a fair share had a prior arrest involving drug charges (also

seen in Panel B), but the vast majority of these arrestees were first arrested for a non-drug charge at an earlier age than for their first drug charge. Similar results can be found for each of the major crime categories included in Panel B (shown in Appendix C). For none of the crime categories in 2011 do we see the age of first drug arrest proceeding the age of first non-drug arrest for the majority of the offenders.

As is also true for many other offenses, Panel E. shows that the vast majority (81 percent) of those apprehended for stolen property in New York State in 2011 were experiencing their first charge for stolen property. Among those being charged with their first stolen property offense, 20 percent had a prior drug offense. However, when we look at repeat offenders, we see the number with a prior drug offense rise quickly, to nearly 70 percent of those experiencing their third stolen property charge. This proportion eventually reaches 100 percent for more frequent reoffenders. Thus, while few arrestees of major crimes in 2011 in New York State had a drug violation starting their criminal career, repeat offenders usually have drugs as part of their long-term arrest record.

Again, by examining multiple pieces of data simultaneously, we have a better understanding of the role drugs play in crime than if we were to rely on a single statistic. Although state-specific DAFs have never been constructed on a state-by-state basis, it is clear that how we understand the role of concurrent drug charges changes when focusing on one metric (Panel B) versus another (Panel C). If only concurrent charges were examined for the entire arrestee population (Panel B), then it can mistakenly be presumed that prior drug offending is what leads people to engage in more serious crime, as anywhere between 20 and 50 percent of arrestees charged with serious crimes in 2011 had a prior drug charge (depending on the crime). However, when looking at charges for first-time arrestees in 2011 (Panel C) it can be seen that very few people are arrested only for drug charges. The vast majority of first-time arrestees are charged with both a drug charge and a more serious charge.

That obviously has important implications for how policymakers interpret statistics reported in Uniform Crime Reports (UCR), which use a hierarchical rule for reporting. Only the most serious charge is included in reports of arrests to UCR. As drug charges are generally viewed as more minor than murder, rape, robbery, assault, stolen property, and larceny (one might quibble with prostitution), UCR statistics vastly understate the involvement of drug charges in other serious offenses. Whether drugs caused these crimes is entirely unclear and cannot be ascertained from these data. However, to the extent that a murder or assault occurred in concurrence with the sale of a drug, one might be able to gain some information about systemic crime.

7.6. Summary and Conclusions

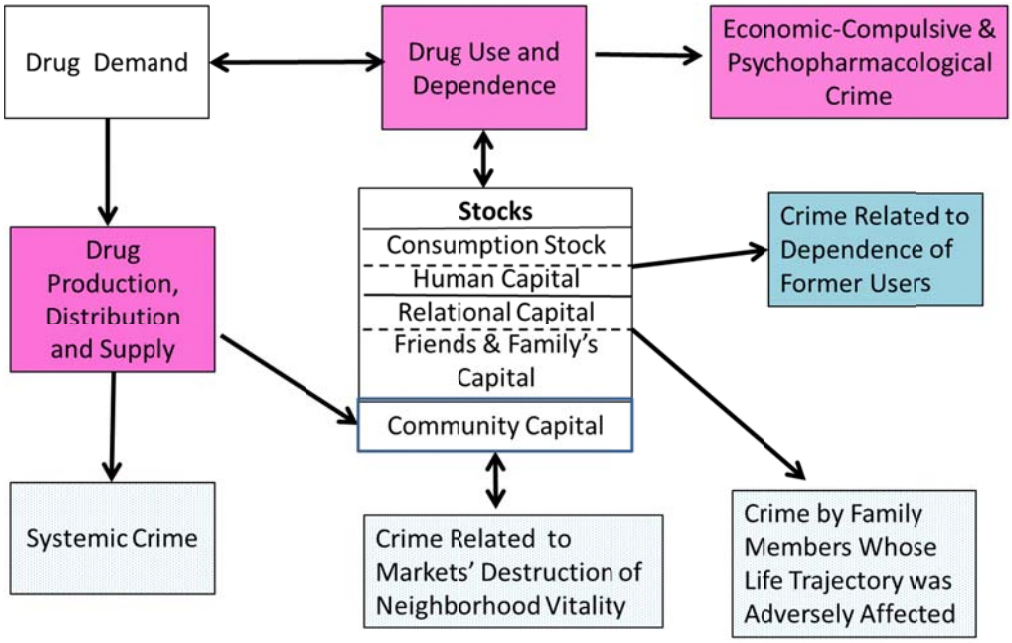
Dashboards are very useful decision support systems that can be customized to meet the specific interests of the policymakers using them. Their applicability to the current objective—to improve the understanding of drug-related crime—is readily apparent when one realizes that

there are multiple proximal and distal mechanisms through which drug use and drug markets influence crime. Proximally, drug use, possession, and sale are defined as crimes and the mere act of doing these generates costs from a criminal justice perspective. Also proximal are the criminal actions drug users take while under the influence or in need of money to buy drugs. More distal individual mechanisms are caused by sustained use of a drug (e.g., the formulation of dependence) and the interactive effects caused by this sustained drug use with the criminal justice system, education and employment outcomes, and social networks. Distal mechanisms might also operate through the sustained effects of drug markets on communities and neighborhoods, reducing the economic opportunities of those living in them. Expecting a single metric, such as a DAF, to reasonably represent all of these mechanisms is unrealistic. Instead, a more useful strategy is one that considers a multitude of measures that reflect different aspects of the problem.

In the prototype Drugs-Crime Dashboards offered in this chapter, we provide an introduction to a few metrics that might be useful for helping to explain some of the more proximal mechanisms through which drug use and drug policy influence crime. The data from New York State seem to suggest that few arrestees in 2011 were starting a criminal career simply because of a drug offense, shedding light on a possible indirect mechanism (the impact of a criminal record caused by a simple drug offense on future employment). This finding for New York State needs to be replicated in other states and examined in other time periods before it can be conclusively interpreted. But it might be a start.

Figure 7.3 illustrates that the current metrics evaluated in this report and proposed for the national or state dashboards capture only a few of the mechanisms identified in our conceptual framework presented earlier. The pink boxes record aspects of the drugs-crime relationship that our analyses and measures seem to cover fairly well, at least as far as existing data go. The blue box represents an area in which we offered some interesting new insights (looking at criteria for dependence among inmates and the role of a first drug charge in repeat offending), but more work in this area is clearly needed. A very fruitful avenue for exploring the extent to which administrative data in arrestee RAP sheets might be used as signals for current or previous dependent use would involve linking the ADAM data and RAP sheet data geographically to better understand the extent to which dependent users are being charged with concurrent drug charges. To make the dashboard even more useful to policymakers, however, serious thought needs to be given to the bottom row of lightly shaded boxes in Figure 7.3. Here we identify the areas of the drugs-crime relationship that we were unable to provide any useful information about. These represent areas that deserve some serious thought, and we leave it to future work to develop metrics for them.

Figure 7.3
Captured and Missing Data Elements of the National and State Dashboards



Our objective was not to construct the definitive structure of a dashboard and determine the definitive set of statistics to be included in it, but merely to introduce the concept and demonstrate its potential utility and versatility when used to understand the relationship between drugs and crime. The Drugs-Crime Dashboards can and should be expanded to consider a variety of metrics that we were unable to capture here.

The real power of a dashboard will come by tracking the various indicators contained in it regularly over time. Drugs of abuse change considerably over time, and by examining how crimes change as drugs of abuse change, one can gain good insight as to whether a particular drug that is strongly associated with a crime (e.g., meth/amphetamine use and motor vehicle theft) is really driving that crime or if it is just the drug of choice among a group of offenders who are willing to steal cars and use drugs. Thus we believe an important next step in the development and testing of this concept would be to implement a standard state dashboard for 10 states to report data over a ten-year period. Such an exercise would identify the extent to which given data change a great deal over time (so the relative value of a high-frequency or low-frequency update) and the extent to which specific drug associations identified in one state are consistently reported in other geographic locations. The consistency with which particular drugs are associated with particular crimes across places and over time can lend strong evidence of a real relationship and provide the data necessary to empirically test that relationship.

While we believe it would be useful to test the utility of the dashboard by constructing a systematic version for a set of states, we do not believe that every jurisdiction that decides to use this tool should include all the same elements all the time. For the dashboard to stay relevant, it

must be flexible and adaptable to the specific environment for which it is being used. Many locations are no longer part of the ADAM system, but those that are have an amazing data tool for understanding drug-crime associations in their area. Similarly, many states have electronic RAP sheet data that would enable quick assessment of those arrested from year to year, while a few states only have paper copies or partial electronic data from select counties. However, the dashboard is not just a function of data sets. Other factors may be important to track as part of a dashboard in one area (e.g., methamphetamines/amphetamines in California) that are not relevant in other areas (e.g., methamphetamines/amphetamines in New York). It is reasonable to presume that, if local agencies are interested in developing dashboards to better understand that their own situation, they should do so with the most relevant data they have available to them.

For monitoring the national problem, however, it would be helpful to have a set of metrics that can be systematically presented across jurisdictions consistently over time. That way, knowledge can be gained about how these measures change with changes in the consumption of different substances, changes in law enforcement practices or focus, changes in policy targeting offenders and/or high-risk populations, and changes in other factors that can affect how drug use influences crime.

We hope this work initiates serious deliberation on the main questions of interest to policymakers about the drugs-crime nexus at a variety of levels of government. With those main questions in hand, a serious evaluation of the best metrics available to describe the relationships embedded in those questions can then begin. In some cases, the metrics may not yet exist. However, this too provides insights for policymakers about where future priorities might lie in the support of data collection efforts.

American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders. Washington, DC.

Archibold, Randal C. (2009, December 17) "Hired by Customs, but Working for Mexican Cartels." *New York Times*. Retrieved from http://www.nytimes.com/2009/12/18/us/18corrupt.html.

Baker, J. (1998). *Juveniles in Crime—Part 1: Participation Rates and Risk Factors.* Sydney: New South Wales Government, Bureau of Crime Statistics and Research.

Ball, J., Rosen, L., Flueck, J., and D. Nurco. (1982). "Lifetime Criminality of Heroin Addicts in the United States." *Journal of Drug Issues*, Summer 1982: 225-239.

Barth, R. P., Gibbons, C., and S. Guo. (2006). "Substance Abuse Treatment and the Recurrence of Maltreatment Among Caregivers with Children Living at Home: A Propensity Score Analysis." *Journal of Substance Abuse Treatment, 30*(2): 93-104.

Barton, W. I. (1976). "Heroin use and criminality: Survey of Inmates of State Correctional Facilities, January, 1974." *Drug Use and Crime, PB-259 167*. Research Triangle Institute, National Technical Information Service, U.S. Department of Commerce, Springfield, VA.

Becker, G. S., M. Grossman and K. M. Murphy (2004). "The Economic Theory of Illegal Goods: The Case of Drugs." NBER.

Bennett, T., and K. Holloway. (2009). "The Causal Connection Between Drug Misuse and Crime." *British Journal of Criminology*, *49*: 513-531.

Bennett, T., Holloway, K., and D. Farrington. (2008). The Statistical Association Between Drug Misuse and Crime: A Meta-Analysis. *Aggression and Violent Behavior*, *13*: 107-118.

Bennett, T., and R. Wright (1986). "The Impact of Prescribing on the Crimes of Opioid Users." *British Journal of Addiction, 81*(2): 265-273.

Benson, B. L., Kim, I., Rasmussen, D.W., and T. W. Zuehlke. (1992). "Is Property Crime Caused by Drug Use or Drug Enforcement Policy," *Applied Economics*, *24*: 679-692

Benson, B. L. and D. W. Rasmussen. (1991). "The Relationship Between Illicit Drug Enforcement Policy and Property Crimes," *Contemporary Policy Issues*, *9*: 106-115.

Blumstein, A. and D. Cork. (1996). "Linking Gun Availability to Youth Gun Violence." *Law and Contemporary Problems*, *59*: 5-24.

Boles, S. M., and K. Miotto. (2003). "Substance Abuse and Violence: A Review of the Literature." *Aggression and Violent Behavior*, *8*: 155-174.

Braga, A. A. (2003). "Serious Youth Gun Offenders and the Epidemic of Youth Violence in Boston." *Journal of Quantitative Criminology, 19*(1): 33-54.

Brochu, S., da Agra, C., et al., eds. (2002). "Drugs and Crime Deviant Pathways." Hampshire, England: Ashgate Publishing.

Brownstein, Henry H., Hari R. Shiledar Baxi, Paul J. Goldstein, and Patrick J. Ryan. (1992). "The Relationship of Drugs, Drug Trafficking, and Drug Traffickers to Homicide." *Journal of Crime and Justice*, *15* (1): 25-44.

Carpenter, C. (2007). "Heavy Alcohol Use and Crime: Evidence from Underage Drunk Driving Laws." *Journal of Law and Economics*, *50*: 539-557.

Carter, D. L. (1990). "Drug-Related Corruption of Police Officers: A Contemporary Typology." *Journal of Criminal Justice, 18*(2): 85-98.

Caulkins, J. P., C. P. Rydell, S. S. Everingham, J. Chiesa, and S. Bushway. (1999). *An Ounce of Prevention, a Pound of Uncertainty: The Cost-Effectiveness of School-Based Drug Prevention Programs.* Santa Monica, CA: RAND.

Cerda, M., S. F. Messner, M. Tracy, D. Vlahov, E. Goldmann, K. J. Tardiff and S. Galea (2010). "Investigating the Effect of Social Changes on Age-Specific Gun-Related Homicide Rates in New York City During the 1990s." *American Journal of Public Health, 100*(6): 1107.

Chaiken, J., and M. Chaiken. (1982). *Varieties of Criminal Behavior,* R-2814-NIJ. Santa Monica, CA: RAND Corporation.

Chaiken, J. and M. Chaiken. (1990). "Drugs and Predatory Crime." In M. Tonry and J. Q. Wilson, eds., *Crime and Justice: A Review of Research*, Vol. 13. Chicago: University of Chicago Press.

Cohen, M. A. (1999). Alcohol, Drugs and Crime: Is Crime Really One-Third of the Problem?" *Addiction*, *94*: 644-647.

Collins, D. J., and H. M. Lapsley. (2002). *Counting the Cost: Estimates of the Social Costs of Drug Abuse in Australia in 1998–9.* New South Wales: Commonwealth of Australia.

Collins, D. J., and H. M. Lapsley. (2008). *The Costs of Tobacco, Alcohol, and Illicit Drug Abuse to Australian Society in 2004/2005.* New South Wales: Commonwealth of Australia.

Corman, H., and H. N. Mocan. (2000). "A Time-Series Analysis of Crime, Deterrence, and Drug Abuse in New York City." *The American Economic Review*, *90*: 584-604.

Cruze, A. M.; Harwood, H. J., Kristiansen, P. L, Collins, J. J., and D. C. Jones. (1981). *Economic Costs of Alcohol and Drug Abuse and Mental Illness-1977.* Research Triangle Park, NC: Research Triangle Institute.

CSR Incorporated. (2010). *Illicit Drug Use and Criminal Behavior: A Literature Review.* Prepared for the Office of National Drug Control Policy.

Degenhardt, L., E. Conroy, S. Gilmour and L. Collins (2005a). "The Effect of a Reduction in Heroin Supply in Australia Upon Drug Distribution and Acquisitive Crime." *British Journal of Criminology, 45*(1): 2-24.

Degenhardt, L., C. Day, P. Dietze, S. Pointer, E. Conroy, L. Collins and W. Hall (2005b). "Effects of a Sustained Heroin Shortage in Three Australian States." *Addiction, 100*(7): 908-920.

Degenhardt, L., C. Day, W. Hall, E. Conroy and S. Gilmour (2005c). "Was an Increase in Cocaine Use Among Injecting Drug Users in New South Wales, Australia, Accompanied by an Increase in Violent Crime?" *BMC Public Health, 5*: 1-10.

Dobkin, C., and N. Nicosia. (2009). "The War on Drugs: Methamphetamine, Public Health, and Crime." *American Economic Review*, *99*: 324-349.

Donohue D., Romero V., and H. H. Hill (2006). “Treatment of Co-occurring Child Maltreatment and Substance Abuse.” *Aggression and Violent Behavior*, *11*(6): 626-640.

El-Bassel, N., L. Gilbert, E. Wu, H. Go and J. Hill (2005). "Relationship Between Drug Abuse and Intimate Partner Violence: A Longitudinal Study Among Women Receiving Methadone." *American Journal of Public Health, 95*(3): 465.

Escobedo, L. G. and J. P. Peddicord (1996). "Smoking Prevalence in US Birth Cohorts: The Influence of Gender and Education." *American Journal of Public Health, 86*(2): 231-236.

Fals-Stewart, W., J. Golden and J. A. Schumacher (2003). "Intimate Partner Violence and Substance Use: A Longitudinal Day-to-Day Examination." *Addictive Behaviors, 28*(9): 1555-1574.

Famularo R., Kinscherff R., and T. Fenton (1992). **“**Parental Substance Abuse and the Nature of Child Maltreatment”. *Child Abuse and Neglect*, *16*(4), 475-483.

Fergusson, D. M., and L. J. Horwood. (1997). “Early Onset Cannabis Use and Psychosocial Adjustment in Young Adults.” *Addiction*, *92*: 279-296.

Flint, A. J. and T. E. Novotny (1997). "Poverty Status and Cigarette Smoking Prevalence and Cessation in the United States, 1983-1993: The Independent Risk of Being Poor." *Tobacco Control, 6*(1): 14.

Ford, J. A. (2005). "Substance Use, the Social Bond, and Delinquency." *Sociological Inquiry, 75*(1): 109-128.

French, M., K. McGeary, D. Chitwood, C. McCoy, J. Inciardi and D. McBride (2000). "Chronic Drug Use and Crime." *Substance Abuse, 21*(2): 95-109.

Gilman, S., D. Abrams and S. Buka (2003). "Socioeconomic Status Over the Life Course and Stages of Cigarette Use: Initiation, Regular Use, and Cessation." *Journal of Epidemiology and Community Health, 57*(10): 802-808.

Goldstein, P. J. (1985). “The Drugs/Violence Nexus: A Tripartite Conceptual Framework.” *Journal of Drug Issues*, *Fall*.

Goldstein, P. J., H. H. Brownstein, and P. J. Ryan. (1992). “Drug-Related Homicide in New York: 1984 and 1988.” *Crime and Delinquency*, *38*(4): 459-476.

Goldstein, P. J., H. H. Brownstein, P. J. Ryan, and P. A. Bellucci. (1989). “Crack and Homicide in New York City, 1988: A Conceptually Based Event Analysis.” *Contemporary Drug Problems*, *Winter*: 651-687.

Gossop, M., Marsden, J., Stewart, D., and T. Kidd. (2003). “The National Treatment Outcome Research Study (NTORS): 4–5 year Follow-Up Results.” *Addiction*, *98*: 291-303.

Green, K. M., E. E. Doherty, E. A. Stuart and M. E. Ensminger (2010). "Does Heavy Adolescent Marijuana Use Lead to Criminal Involvement in Adulthood? Evidence from a Multiwave Longitudinal Study of Urban African Americans." *Drug and Alcohol Dependence, 112*(1-2): 117-125.

Grogger, J., and M. Willis (2000). “The Emergence of Crack Cocaine and the Rise in Urban Crime Rates.” *Review of Economics and Statistics, 82*: 519-529.

Grossman, M. (2005). "Individual behaviors and substance use: The Role of Price." *Advances in Health Economics and Health Services Research, 16*: 15-39.

Hammersley, R., Forsyth, A., Morrison, V., & Davies, J.B. (1989). The Relationship Between Crime and Opioid Use. *Addiction, 9*: 1029-1043.

Harwood, H. J., D. Fountain, et al. (1998). *The Economic Costs of Alcohol and Drug Abuse in the United States*. Bethesda, MD: National Institute on Drug Abuse, National Institutes of Health.

Harwood, H. J., D. Napolitano, et al. (1984). *Economic Costs to Society of Alcohol and Drug Abuse and Mental Illness*. Research Triangle Park, NC: RTI.

Hoaken, P. N., and S. H. Stewart. (2003). "Drugs of Abuse and the Elicitation of Human Aggressive Behavior." *Addiction Behavior*, *28*: 1533-1554.

Hodgson T.A., and M. R. Meiners (1982). "Cost-of-illness Methodology: A Guide to Current Practices and Procedures." *Milbank Memorial Fund Quarterly: Health and Society*, *60*(3): 429-462.

Inciardi, J. A. (1986). *The War on Drugs: Heroin, Cocaine, Crime and Public Policy*. Palo Alto, CA: Mayfield.

Inciardi, J. (1979). "Heroin Use and Street Crime." *Crime and Delinquency, 25*(3): 335.

Jaffe, A., W. C. Pedersen, D. G. Fisher, G. L. Reynolds, S. L. Hershberger, S. Reise and P. Bentler (2009). "Drug Use, Personality and Partner Violence: A Model of Separate, Additive, Contributions in an Active Drug User Sample." *The Open Addiction Journal, 2*: 39.

Jarvis, G. and H. Parker (1989). "Young Heroin Users and Crime." *British Journal of Criminology, 29*(2): 175.

Jarvis, M. J., J. Wardle, M. Marmot and R. Wilkinson (1999). "Social Patterning of Individual Health Behaviours: The Case of Cigarette Smoking." *Social Determinants of Health, 2*.

Jofre-Bonet, M., and J. L. Sindelar. (2002). *Drug Treatment as a Crime Fighting Tool.* Cambridge, MA: National Bureau of Economic Research Cambridge.

Kilmer, B., and S. Hoorens. (2010). *Understanding Illicit Drug Markets, Supply-Reduction Efforts, and Drug-Related Crime in the European Union*. TR-755-EC. Cambridge, UK: RAND Europe.

Kleiman, M. A. R.(1993). "Enforcement Swamping: A Positive-Feedback Mechanism in Rates of Illicit Activity." *Mathematical and Computer Modeling, 17*: 65-75.

Kleiman M. A. R. (1999). "Economic Cost" Measurements, Damage Minimization and Drug Abuse Control Policy." *Addiction 94*: 638-641.

MacCoun, R., B. Kilmer, and P. Reuter. (2003). *Research on Drugs-Crime Linkages: The Next Generation. Toward a Drugs and Crime Research Agenda for the 21st Century*, 65-90.

MacDonald, Z., L. Tinsley, et al. (2005). *Measuring the Harm from Illegal Drugs Using the Drug Harm Index.* Home Office Online Report 24/05. London, UK: Research Development and Statistics Directorate, Home Office. Retrieved from http://rds.homeoffice.gov.uk/rds/pdfs05/rdsolr2405.pdf

Makkai, T., and K. Mc Gregor. (2003). “What Proportion of Crime is Associated with Illicit Drugs?” Australian Institute of Criminology.

Markowitz, S. (2005). “Alcohol, Drugs, and Violent Crime.” *International Review of Law and Economics, 25*: 20-44.

McGlothlin, W., M. Anglin and B. Wilson (1978). "Narcotic Addiction and Crime." *Criminology, 16*(3): 293-316.

Messner, S. F., S. Galea, K. J. Tardiff, M. Tracy, A. Bucciarelli, T. Piper, V. Frye and D. Vlahov (2007). "Policing, Drugs, and the Homicide Decline in New York City in the 1990s." *Criminology, 45*(2): 385-414.

Mocan, H. N. and E. Tekin. (2005). "Drugs and Juvenile Crime: Evidence from a Panel of Siblings and Twins."

Mulvey, E. P., C. Odgers, J. Skeem, W. Gardner, C. Schubert and C. Lidz (2006). "Substance Use and Community Violence: A Test of the Relation at the Daily Level." *Journal of Consulting and Clinical Psychology, 74*(4): 743.

Murphy J. M., M. Jellinek D. Quinn, G. Smith, F. G. Poitrast, and M. Goshko. (1991). “Substance Abuse and Serious Child Mistreatment: Prevalence, Risk, and Outcome in a Court Sample.” *Child Abuse and Neglect*, *15*(3): 197-211.

National Drug Intelligence Center (NDIC). (2011). *The Economic Impact of Illicit Drug Use on American Society.* Washington DC: United States Department of Justice.

Nurco, D., J. Ball, J. Shaffer, and T. Hanlon. (1985). “The Criminality of Narcotic Addicts.” *The Journal of Nervous and Mental Disease*, *173*: 94-102.

Nurco, D., T. Hanlon, and T. Kinlock (1991). “Recent Research on the Relationship Between Illicit Drug Use and Crime.” *Behavioral Sciences & the Law, 9*: 221-242.

Office of National Drug Control Policy. (2004). *The Economic Costs of Drug Abuse in the United States, 1992-2002.* Publication No. 207303. Washington, DC: Executive Office of the President.

Office of National Drug Control Policy (ONDCP). (2001). *The Economic Costs of Drug Abuse in the United States, 1992-1998.* Publication No. 190636. Washington, DC: Executive Office of the President.

Pacula, R. L., M. Grossman, F. J. Chaloupka Iv, P. M. O'Malley, L. Johnston and M. C. Farrelly (2000). "Marijuana and Youth," (pp. 193-191). In Jonathan Gruber (Ed.), *Risky Behavior Among Youths: An Economic Analysis*. Chicago, IL: University of Chicago Press.

Pacula, R. L. and B. Kilmer. (2003). "Marijuana and Crime: Is There a Connection Beyond Prohibition?" NBERWorking Paper No. 10046 [Cambridge MA].

Parker, H. J., P. Kirby, and G. Britain. (1996). *Methadone Maintenance and Crime Reduction on Merseyside.* London, UK: Home Office Police, Policy Directorate Police Research Group.

Parker, R. N., and K. Auerhahn. (1998). “Alcohol, Drugs, and Violence.” *Annual Review of Sociology*, *24*: 291-311.

Pérez Gómez, A. (2004). *Basic Protocol for Calculating Fractions Attributable to Crime.* Report for CICAD (Inter-American Drug Abuse Control Commission)/UMDNJ Project.

Pernanen, K., M. M. Cousineau, et al. (2002). *Proportions of Crimes Associated With Alcohol and Other Drugs in Canada.* Toronto, Ontario: Canadian Centre on Substance Abuse.

Pritchett, L. and L. H. Summers (1993). Wealthier is Healthier, World Bank Publications.

Rehm, J., W. Gnam, S. Popova, D. Baliunas, S. Brochu, B. Fischer, et al. (2007). "The Costs of Alcohol, Illegal Drugs, and Tobacco in Canada, 2002." *Journal of Studies on Alcohol*, *68*: 886-895.

Reuter, P., R. MacCoun, and P. Murphy (1990). "Money from Crime: A Study of the Economics of Drug Dealing in Washington, D.C." R-3894-RF. Santa Monica, CA: RAND.

Reuter, *P. (*1999). Are Calculations of the Economic Costs of Drug Abuse either Possible or Useful? *Addiction, 94*: *635-638.*

Rhodes, W., M. Layne, A. Bruen, P. Johnston, and L. Becchetti. (2001). *What American Users Spend on Illicit Drugs 1990-2000.* Washington DC: Office of National Drug Control Policy.

Rice, D. (1967). "Estimating the Cost of Illness." *American Journal of Public Health, Nations Health*, *57*: 424-440.

Rice D.; S. Kelman, and L. S. Miller. (1991). "Estimates of Economic Costs of Alcohol and Drug Abuse and Mental Illness, 1985 and 1988." *Public Health Reports*, *196*(3): 280-292.

Roddy , J., C.L. Steinmiller, and M. Greenwald. (2011, March 28). "Heroin Purchasing is Income and Price-Sensitive." *Psychology of Addictive Behavior*.

Schelling, T. (1978). *Micro-Motives and Macro Behavior*. New York: WW Norton and Company.

Seddon, T. (2000). "Explaining the Drug–Crime Link: Theoretical, Policy, and Research Issues." *Journal of Social Policy*, *29*: 95-107.

Seddon, T. (2006). "Drugs, Crime, and Social Exclusion: Social Context and Social Theory in British Drugs-Crime Research." *British Journal of Criminology*, *46*: 680-703.

Spunt, B. J., P. J. Goldstein, P. A. Bellucci, and T. Miller. (1990). "Drug Relationships in Violence Among Methadone Maintenance Treatment Clients." *Advances in Alcohol and Substance Abuse*, *9*: 81-99.

Spunt, B., H. Brownstein, P. Goldstein, M. Fendrich, and H. J. Liberty. (1995). "Drug Use by Homicide Offenders." *Journal of Psychoactive Drugs*, *27*(2): 125-134.

Stuart, G. L., J. R. Temple, K. W. Follansbee, M. M. Bucossi, J. C. Hellmuth and T. M. Moore (2008). "The Role Of Drug Use in a Conceptual Model of Intimate Partner Violence in Men and Women Arrested for Domestic Violence." *Psychology of Addictive Behaviors, 22*(1): 12.

US Department of Justice. (1994). *Sourcebook of Criminal Justice Statistics—1993*. Washington, DC, Bureau of Justice Statistics.

Walsh, C., H. L. MacMillan, and L. Jamieson. (2003). **"**The Relationship Between Parental Substance Abuse and Child Maltreatment: Findings from the Ontario Health Supplement." *Child Abuse and Neglect*, *27*: 1409-1425.

Watters, J. K., C. Reinarman, and J. Fagan (1985). “Causality, Context, and Contingency: Relationships Between Drug Abuse and Delinquency.” *Contemporary Drug Problems, 12*(3): 351-372.

Wilson and Kelling. (1982). "The Police and Neighborhood Safety: Broken Windows." *Atlantic Monthly, 127*: 29-38.

Zarkin, G. A., S. C. Cates, and M. V. Bala. (2000). “Estimating the Willingness to Pay for Drug Abuse Treatment: A Pilot Study.” *Journal of Substance Abuse Treatment*, *18*: 149-159.

APPENDIX A

Revisiting the Causal Link Between Illegal Drugs and Crime: Evidence from the Recent Literature, 2000-2011

A.1. Introduction

Substance use and abuse have long been linked to criminal behavior. Not only is the possession and use of certain substances illegal in itself, but a strong association linking illicit drug use and a range of other crimes has been identified in a rather substantial literature. When considering the harms of drug use, one of the most concerning is the crime that users impose on others. However, the extent to which drug use or the systems associated with this use actually cause crime is unclear. The people who use drugs may be predisposed to criminal activity due to a range of circumstances. To understand the impact of drugs, we need to identify the extent to which drug use causes (either directly or indirectly) crime.

The standard taxonomy used to describe the nature of drug-related crimes remains Goldstein's tripartite framework. It describes how drugs can be involved in three types of crime: (1) psychopharmacological crimes, in which the intoxicating effects of the drug (or withdrawal) on the user causes the user to engage in criminal behavior; (2) economic-compulsive (acquisitive) crimes, in which users commit income-generating crime to pay for drugs; and (3) systemic crimes related to the criminal activities surrounding the provision, distribution, and sales of an illegal product (Goldstein, 1985). Others have built on this framework to include the increased likelihood of a user becoming a victim of crime, corruption and white-collar crimes involving the production and distribution of drugs, and substance-defined crimes such as drug possession or driving under the influence (Pernanen et al., 2002; MacCoun et al., 2003; Kilmer and Hoorens, 2010). Scholars have concluded that, although research supports a positive association between some drug use and drug-induced crime (e.g., heroin and property crime), the vast majority of the crime generated by drugs is caused by illegal markets and policy of prohibition (Boyum et al., 2011; Caulkins and Kleiman, 2011).

Determining a causal relationship requires more than just information identifying that drugs were used or involved in a situation. Having marijuana present when driving a car or testing positive via a urine sample does not mean an individual was actually under the influence of the substance while driving. The associations between drug use and crime are even more complicated when they are tied to behaviors like aggression. A large number of unobserved common factors could generate a positive association between drug use and crime regardless of a true causal connection. One such factor is alcohol use; alcohol use is known to be associated with aggression and often co-occurs with drug use. Another set of factors is the personal characteristics that motivate individuals to become involved in both behaviors (Hirschi and Gottfredson, 1988; Fagan and Chin, 1990; White, 1990). Other factors that have been hypothesized to generate the association between crime and drugs include gang involvement (Fagan, 1990); peer effects (Gorman and White, 1995); general problem behavior during adolescence (Jessor and Jessor, 1977); and common environments or situational causes (Skogan, 1992; Fagan, 1993).

There have been many attempts to empirically test for real causal links in a manner that accounts or deals with the possible confounding of alternative explanations. In addition to econometric specifications attempting to identify causal relationships through advanced statistical analyses (Corman and Mocan, 2000; DeSimone, 2001; Degenhardt et al., 2005; Grossman, 2005; Markowitz, 2005; Dobkin and Nicosia, 2009), researchers have used longitudinal analyses following a birth cohort (Fergusson and Horwood, 1997; Baker, 1998), following a sample of users over a period of time (McGlothlin et al., 1978; Inciardi, 1979; Ball et al., 1982; Chaiken and Chaiken, 1982; Shaffer et al., 1984; Nurco et al., 1985; French et al., 2000), and following users in treatment (Bennett and Wright, 1986; Jarvis and Parker, 1989; Parker et al., 1996; Seddon, 2000; Zarkin et al., 2000; Jofre-Bonet and Sindelar, 2002; Gossop et al., 2003; Seddon, 2006). The results have been varied and, in some cases, generated contradictory results, demonstrating that sophisticated methodologies alone are not sufficient for clarifying causal links between illicit drugs and crime. Of course, other factors can also influence results, such as differences in the population examined (e.g., gender, age, socio-economic status, country), the measurement of crime (self-report versus known crimes or arrests), and the measurement of use (lifetime, annual, recent, or heavy/dependent use). Additionally, different substances may be related to different crimes, the effects of which can be difficult to disentangle because offenders often use several substances.

While numerous literature reviews on the relationship between drugs and crime have been conducted (McBride and McCoy, 1982; Nurco et al., 1991; Goldstein, 1997; Parker and Auerhahn, 1998; French et al., 2000; Seddon, 2000; Boles and Miotto, 2003; Hoaken and Stewart, 2003; MacCoun et al., 2003; Bennett and Holloway, 2009), no review that we are aware of has looked exclusively at studies using improved empirical methods and/or data designed to assist with causal inference. This paper attempts to fill that void by taking a careful look at the recent literature (published between 2000 and 2011) that applies these advanced methods and contributes to the existing literature in two important ways: (1) highlighting findings from more analytically rigorous studies emphasizing the identification of causal associations; and (2) examining the findings regarding the drugs-crime relationship based on drug of abuse. Each drug has unique psychopharmacological effects on users that may impact aggression, heighten a sense of paranoia, or alter other psychological factors that may predispose one towards violence. Ignoring the individual pharmacological effects of each substance and analyzing the relationship between drug use and crime by grouping all drugs together leads to ambiguity and imprecision. Findings from such studies will be heavily influenced by whatever the primary drug of choice is for the population being studied (cocaine, marijuana, etc.) and could therefore lead to very different conclusions. Similarly, it is important to consider the influence of alcohol used in combination with particular drugs to better understand the role of the drugs themselves.

In conducting our review, we focused extensively on methods employed, carefully considering methodologically relevant factors such as definitions of drug use (the type of drug and the frequency/recentness of use being considered), the granularity of the observations

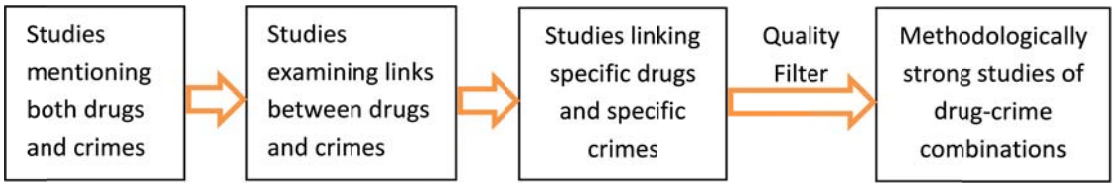
(annual data versus monthly data), and the population being considered. By emphasizing these sorts of differences across studies we were able to clarify some apparently inconsistent findings as well as generate broader conclusions regarding the stability of an association across populations with different ages, gender, and other factors.

This appendix is organized as follows. In the next section (Section Two) we describe our methods for identifying relevant studies and the exclusion criteria applied. In Section Three we then present findings from the studies that made it through our filter, emphasizing those findings that pertain to four main drugs (cocaine, heroin, methamphetamines, and marijuana) and the specific crimes they are associated with. In Section Four, we draw conclusions from our review of the literature regarding areas where the evidence supporting or refuting a relationship is greatest and areas where more work is needed.

A.2. Methods

As the literature on the drugs-crime link is wide-ranging, we drew from electronic databases in a number of fields, specifically medicine (PsychInfo, PubMed), economics (EconLit), social sciences (Academic Search Elite, Web of Science), and criminal justice (Criminal Justice Abstracts, National Criminal Justice Research Service). Additionally, we included grey literature in medicine (New York Academy of Medicine Grey Literature Report) and criminal justice (Rutgers Gray Literature Database). Finally, we identified articles from Cochrane Reviews and drug-specific resources (Project Cork, ISSDP, EMCDDA, UK database: Drug Scope). Articles were not limited to peer-reviewed journals. To focus on the most recent articles, we limited our consideration to articles that had been published from January of 2000 through August of 2011. Our consideration was not limited by the geographic location of the study, but was limited to those articles published in English.

Figure A.1
Analytic Framework for Filtering Articles



In each database, a combination of search terms was used to identify specific drugs in combination with specific crimes. Our consideration of drugs focused on those of greatest interest in the United States, notably cocaine, heroin, methamphetamines, and marijuana. Search terms used to describe these drugs included *cocaine, heroin, opiates, amphetamines, methamphetamines, marijuana*, and *cannabis*. Search terms for crime included *assault, battery, robber*, larceny, theft, homicide, murder, manslaughter, DUI, DWI,* and *driving*. Articles with

at least one drug term and one crime term in the title, abstract, or subject fields were included in the initial search results. This initial search identified 7,288 articles. An additional search using the terms *drug* and *crime* was used to decrease the number of articles that were mistakenly omitted. This search identified an additional 2,738 articles.

Most of these identified studies were irrelevant to our purposes. An initial screen removed papers that clearly did not examine a drugs-crime relationship. After this initial screen, consideration was narrowed to papers that referred to one or more drugs in specific terms rather than "drugs" or "substances" generally. While there have been methodologically rigorous studies conducted since 2000 that considered drug use broadly, the lack of distinction between drug types would have limited our ability to identify drug-specific relationships. This step also limited consideration to those papers that referred to one or more specific crimes, although "violent crime" and "property crime" were allowed as general categories. Applying these two screens reduced the number of relevant studies substantially to 338.

Finally, we applied a quality filter based on the methodological rigor of the study to identify only papers that provided the strongest evidence of a causal relationship. Among the strong methodological approaches we included in our review were the application of longitudinal or prospective designs that also accounted for unobserved heterogeneity; natural experiments, including those with regression discontinuity designs; instrumental variable and/or reduced form techniques; and matching methods, including propensity scoring.

Only 34 papers met our minimum quality standards (see Table A.1). Some of these papers considered multiple drugs, multiple crimes, or both, resulting in a total of 94 drugs-crime combinations. Cocaine and marijuana were the drugs for which the drugs-crime link was most commonly examined, followed by heroin and other DSM-IV–recognized opiates, then by amphetamines/methamphetamines. Similarly, robberies were the most commonly examined specific offense, followed by theft, which was the most commonly examined non-violent crime. Violent offenses or measures of aggression were also common, as were general property offenses.

Table A.1
Number of Drugs/Crimes Examined in Methodologically Strong Papers

Crime	Drug				Total Studies by Crime
	Amphetamine	Cocaine	Opiates	Marijuana	
Violent (not specific)	3	5	1	11	14
Homicide	3	5	0	0	8
Assault	3	3	0	1	6
Robbery	3	8	5	1	13
Sexual Assault	3	3	0	2	7
Property (not specific)	1	1	1	7	9
Burglary	3	6	4	0	9
Theft	3	3	1	0	6
DUI	0	0	0	3	3
ID Theft	1	0	0	0	1
Total studies by drug	**5**	**16**	**7**	**16**	

We considered all of the drugs-crime combinations that resulted from these studies, not just those that identified a statistically significant relationship. As the measures of drug use or their proxies varied substantially from paper to paper and were not presented in terms that could be converted into a single measure of use, we do not attempt any meta-analyses of pooled effect sizes. Instead, we consider each of the findings and attempt to integrate the disparate findings qualitatively.

A.3. Findings

Cocaine

The vast majority of the research on drug-related crime in the United States involves cocaine. Cocaine has been associated with violent crimes, both through its pharmacological effect of increased aggression and the systemic violence associated with drug sales and markets. Additionally, cocaine addiction is associated with acquisitive crime as a means to pay for it—in 2000, chronic cocaine users spent over $200 per week on average for their cocaine (Rhodes et al., 2000). However, the relationship between cocaine and crime depends on context and the kinds of individuals that partake. We find these statements to also be true among the methodologically rigorous papers identified in our review. They present some evidence suggesting a pharmacological effect involved particularly with intimate partner violence (IPV), while other evidence links homicides and gun violence to systemic drugs-crime. Evidence of a relationship between cocaine and acquisitive crimes is much clearer, although not clear enough to provide effect sizes.

Cocaine and Violent Crime (14 papers)

Four papers examine issues specific to pharmacological drugs-crime through IPV. There is little reason to believe that IPV is related to economic-compulsive or systemic mechanisms for drugs-crime, isolating pharmacological effects as a potential mechanism. Three of the four papers identified find evidence of increased IPV among cocaine users. Fals-Stewart et al. (2003) found a positive association between cocaine and IPV through respondent diaries. A two-stage hierarchical, generalized linear model was used, nesting Level 1 circumstances of a specific day (including substance use) within time-invariant Level 2 characteristics of the individuals and the relationship. Using these time-invariant controls at the relationship and respondent level, the odds of physical aggression and severe physical aggression were three times higher on days during which the respondent used cocaine, but not opiates or marijuana. These results are limited in that unobserved stressors may have contributed to both the respondent using those substances and committing violence on a given day, but they are also reinforced in that the aggression immediately followed the cocaine use, most often occurring within two hours of use.

A second paper by Stuart et al. (2008) applies a structural equation model to data solicited from people arrested for IPV. This study was limited in that it did not distinguish between cocaine and other stimulants, but it did find that stimulants were associated with IPV for both men and women. Still, the path coefficients were low (0.10), suggesting the correlation between stimulants and IPV is low. The results of the study further show that stimulant use by the victim is associated with IPV at levels almost as high as when used by the perpetrator. El-Bassel et al. (2005) also found an association between crack cocaine use and being the victim of IPV in a study that applied propensity scores to match cocaine users to non-users in a population of women on methadone. They found the odds of becoming a victim of IPV was 4.4 times as high for women using crack cocaine as for non-users, while the odds ratio for powder cocaine was not significant. As drug use is often common to both partners (Fals-Stewart et al., 2003), it is unclear whether this reflects a pharmacological effect or reflects the context in which the victims associate themselves.

Finally, Jaffe et al. (2009) found no evidence that cocaine specifically was involved with aggression in the context of IPV (Jaffe et al., 2009). Using a structural equation model that directly considered aggressive personality in a sample of participants recruited through HIV prevention/testing programs, the authors found that only methamphetamines use was associated with IPV, while alcohol and crack cocaine use were not. These papers provide mixed evidence of a pharmacological mechanism for cocaine-related drug crimes, smaller than that of alcohol but still substantial in several studies. However, we cannot overlook the importance of population demographics and the context of use, even when considering pharmacological effects.

Two additional papers examined the drugs-crime relationship in a way that provides evidence for a pharmacological mechanism. Using variations in cocaine price, DeSimone (2001) and Markowitz (2005) found some evidence that cocaine use causes violence. Prior research has established that drug users are sensitive to price (Grossman and Chaloupka, 1998; Saffer and

Chaloupka, 1999; Caulkins, 2001; Pacula et al., 2001; Williams, 2004) in that increases in price are associated with decreases in use. Approaches using price are the clearest conceptually for identifying crime associated with drug use itself, as drug price would only affect pharmacological offenses through drug use. However, these sorts of reduced-form models are less useful for understanding both economically-motivated and systemic crimes because price can have an independent effect on both these types of crimes (e.g., the higher cost of cocaine increases the need for more money to buy the drug and also creates greater profits for dealers competing for sales territory).

Both DeSimone and Markowitz used the DEA's System to Retrieve Information from Drug Evidence (STRIDE) dataset for drug prices. While some people have expressed concerns regarding the accuracy of the STRIDE price data (Horowitz, 2001), it can still provide useful information when appropriately applied (Arkes et al., 2008). DeSimone examined these drug prices using a two-stage least squares (2SLS) method, while Markowitz used a reduced-form equation. Both studies also included controls for other substances (heroin and alcohol in DeSimone and marijuana and alcohol in Markowitz) as well as controls for demographics and fixed effects to account for some unobserved variability. DeSimone applied the price data to UCR arrest rates, while Markowitz applied them to reports of victimization in the NCVS. Both the UCR and the NCVS have their limitations. The UCR provide administrative data on reports of arrests that may not match actual crime rates. Also, arrest rates can reflect law enforcement engagement. DeSimone attempted to control for this to some extent with a variable for general law enforcement intensity, but this may not have reflected relative intensity for enforcing one crime type over another. As a victimization survey, the NCVS also has limitations, including respondent biases and the lack of inclusion of both homicide victims and crimes against businesses rather than people. Also, the NCVS may not fully sample populations at high risk for drug-related violence.

Considering the results of these studies together provides some convergent validity to the relationship between cocaine and crime. DeSimone found that an increase in cocaine use, as captured through lower cocaine prices, was associated with an increase in arrests for six of the seven index crimes, including three of the four violent crimes. A 10 percent decrease in cocaine price was associated with an increase in arrests rates of 5.2 percent for homicide, 1.8 percent for rape, and 3.6 percent for robbery, but no conclusive evidence was found of an association between cocaine and aggravated assault. In her initial models, Markowitz also found cocaine use to be associated with victimizations for assault and robbery (homicide could not be examined in the NCVS), but not sexual assault. These effects dropped out when individual-level fixed effects to control for unobserved differences in the victims were included, but it is unclear whether these controls are appropriate; as crime is so rare and individuals report crime in only a small number of cases, individual-level fixed effects may completely subsume any true effect. While there is reason to believe that this evidence is strongest under a pharmacological mechanism for a drugs-crime relationship, systemic or economic-compulsive mechanisms may also be at work.

Cocaine-positive toxicology reports are another mechanism used as a proxy for cocaine use. Messner et al. (2007) and Cerda et al. (2010) both used the rate of test results for cocaine in toxicology reports of fatal accidents of all kinds as a proxy for cocaine use. Compared to using price data, this proxy is not suggestive of any one form of criminogenic effect (i.e., pharmacological over economic-compulsive); however, accident data may have its own limitations as to how well it matches use rates at a precinct level. Messner et al. (2007) applied this proxy to a pooled, cross-sectional time series of precinct-level administrative crime statistics for 74 New York City precincts, with demographic variables and random intercepts also used as controls, and found cocaine use to be associated with homicide rates. When disaggregating the types of homicides, they found this association existed only for gun-related homicides. Messner et al. (2007) did not find evidence that cocaine use contributed to robberies, but whether this reflects limitations in the reporting of robberies in administrative data rather than an actual lack of an effect is unclear. Cerda et al. (2010) looked closer at gun-related homicides using Bayesian hierarchical models. They did not have controls for other illicit substances but did include alcohol use with similar toxicology data. Cerda et al. (2010) found cocaine use was associated with gun-related homicides among the 15–24 year age group, even after controlling for alcohol, and among the 35 and older age group, but not among the 25–34 year age group, for which alcohol was a strong predictor instead.

Another study by Ousey and Lee (2004) also looked at cocaine-positive toxicology reports, but from a sample of arrestees in the ADAM dataset. They applied a hierarchical linear model to 14 years of city-level crime data from the UCR Supplemental Homicide Reports. While one of their measures of use (combined cocaine/heroin arrest rates) is not useful for our analysis by drug, their other measure from arrestee toxicology data found that an increase in cocaine positive tests among arrestees was associated with an increase in the number of homicides among the black population but not the white population.

Other papers may provide stronger evidence for cocaine-related systemic crimes. Grogger and Willis (2000) accounted for cocaine use through the arrival of crack cocaine to 27 U.S. metropolitan areas in the UCR (Grogger and Willis 2000). As a proxy for crack cocaine use, they used the date that crack cocaine arrived in the area. The intuition behind this approach assumes that the timing of the arrival of crack cocaine is driven by macro-level factors and is largely independent of the micro-level factors of city crime rates. The study found a clear association between the arrival of crack cocaine and aggravated assault rates (between 15 and 25 percent, depending on the model). Some models also found a statistically significant association between the arrival of crack cocaine and increased murder rates (up to 24 percent, when statistically significant).

Another paper by Braga (2003) provides context linking this increase in violence to increased gun use. Using a repeated cross-section of criminal-history data, the author identified individuals involved in increased violence during the emergence of crack cocaine in Boston. The increase in violence was strongly tied to a small group of serious youth gun offenders and not to a diffusion

of guns away from street drug gangs. Together, these papers provide some insight into the common understanding that the crack cocaine trade has caused increases in gun-related violent crime.

A majority of the research supports a positive association between cocaine and violent crime. Some of this evidence supports an increase in pharmacological violence, as noted through IPV and studies using price data as a proxy for use. There is also evidence to support systemic mechanisms for increases in violent crimes such as homicides. This systemic violent crime is largely associated with gun homicides related to protecting drug markets in the 1980s and 1990s; the extent to which gun homicides are a necessary or contemporary part of the cocaine market is unclear.

Cocaine and Acquisitive Crime (9 papers)

As discussed previously, DeSimone (2001) and Markowitz (2005) examined drug use using drug prices as a proxy. Using price as a proxy for economic-compulsive crimes, however, can be problematic, as the expense of a drug is determined by both price and quantity, which are inversely related. Quantity may increase when price falls (and vice versa), and whether total expense as the product of the two rises or falls is conceptually uncertain. Thus, estimates of economic-compulsive drug crime using price as a proxy for consumption will understate the effect of drugs on crime. For this reason, DeSimone's estimates of a 10 percent increase in cocaine price being associated with increases of 3.6 percent for robbery, 3.3 percent for burglary, 1.4 percent for larceny, and 5.8 percent for motor vehicle theft underestimate the true effect to an uncertain extent. At the same time, Markowitz's mixed evidence as to whether cocaine price has an effect on robbery rates is entirely inconclusive. For these income-generating crimes, estimates based on price should be viewed as conservative.

Looking at other studies linking cocaine to acquisitive crimes may help identify the true effect. Two of the other papers discussed earlier present opposite conclusions. Messner et al. (2007), who used cocaine-positive toxicology reports from fatal accidents, found no link between cocaine and robbery. Grogger and Willis (2000) found that the emergence of crack cocaine in cities was associated with a 7.6 percent increase in burglaries, a 7.3 percent increase in larceny, and a 14 percent increase in motor vehicle theft. Additionally, two other papers examined cocaine only in the context of income-generating crimes. Mocan and Tekin (2005) relied on data from two waves of the U.S. Longitudinal Study of Adolescent Health. The particular data they used examined a subset of sibling and twin adolescents in the mid-1990s. Self-reported data was collected on cocaine use and participation in burglaries, thefts, and robberies. Using a fixed-effects model, cocaine use was associated with an 11 percent increase in burglaries, thefts, and robberies. A second paper, by Uggen and Thompson (2003), also found a relationship in the National Supported Work Demonstration Project dataset, a longitudinal dataset covering a very different time period (1975–1978) and population (inmates, ex-addicts, and dropouts). This data examined criminal behavior in terms of the source of participant income, finding self-reported

cocaine or heroin use to be associated with an increase in illegal monthly earnings. The average amount of self-reported illegal earnings per month was nearly $1000 when adjusted to 2012 dollars.

Three additional papers, all by Degenhardt et al. (2005a, 2005b, 2005c), also provide context for cocaine-related crime. These papers all relate to the Australian Heroin Drought, a sudden contraction of the heroin supply in Australia that began in 2001 in a way that is believed to be exogenous to the country's domestic drug crime or demand for drugs. While the argument for exogeneity is strongest for heroin, there were secondary effects, as some users substituted increased amounts of cocaine. Additionally, some areas had established cocaine markets, which made the substitution to cocaine easier, resulting in differential rates of substitution. The studies found evidence of increases in robberies and burglary offenses, both in official Australia crime data and in interviews with drug users. Interviews suggested that, while to some extent this reflected a desire to buy heroin at the much higher prices that accompanied the supply shock, it also reflected the high prices of cocaine as a substitute. Additionally, the kind of crime committed depended on the area. Robberies increased more in areas where the substitution of cocaine was easier and more common as compared to areas where the substitution of cocaine was less feasible.

The evidence of a causal association between cocaine and acquisitive crime is clearer than that between cocaine and violent crime. Most of the identified papers provide evidence in support of a link between cocaine and economically-motivated crimes, including burglary, robbery, and theft.

Heroin

Before the crack cocaine epidemic, drug policy focused on the economically-driven crimes associated with chronic heroin use (Preble and Casey, 1969). While heroin can be associated with pharmacological violence (primarily as a side effect of withdrawal) and systemic crime (from drug markets), the highly addictive properties of heroin made crimes intended to finance a user's habit (such as burglary and theft) the greatest concern. Our literature review reflects this. Only one article examining the link between heroin and violent crime made it through our methodology filter, however. Several others consider the association of heroin and robbery, but we consider this in the context of financing the addiction, where we examine six papers on acquisitive crime.

Heroin and IPV (1 paper)

While there are several useful papers that find treatment (including opioid maintenance therapy) can decrease violent crime (Anglin and Speckart, 1988; Gossop et al., 2005; Havnes et al., 2012), most of these studies did not meet the conditions of our methodology filter. The one paper that did make it through our filter, by Fals-Stewart et al., examines the effect of cocaine, opiates, marijuana, and/or alcohol on IPV in a population of males entering a drug treatment

program (Fals-Stewart et al., 2003). As noted above, this paper found no association with physical aggression on days during which the respondent used opiates at the 5 percent significance level.

Heroin and Acquisitive Crime (6 papers)

Several of the papers identified examine data surrounding the Australian Heroin Drought, a significant decrease in heroin supply that occurred in Australia in early 2001. As this decrease in supply is believed to be exogenous to domestic law enforcement and demand for the drug, it makes a useful natural experiment. In this case, the drugs-crime relationship is established by an economic-compulsive mechanism. In the short term, as the supply of heroin fell, price rose drastically, leading to greater expenditures and an increase in acquisitive crime to generate sufficient income to meet those expenditures. In the longer term, demand for the drug fell, and there was less need for crime to pay for it.

Two of these papers are described in the earlier section on cocaine (Degenhardt et al. 2005a; Degenhardt et al. 2005c). They detail how the supply decrease was associated with increases in robbery and burglary in the short term, as expenditures spiked, but decreases in theft in the long term, as levels of heroin use fell. Both of these conditions are consistent with an economic-compulsive mechanism for the drugs-crime relationship. Another paper by Smithson et al. (2004) also presents evidence that rates of robbery and burglary fell as heroin demand fell over the long term. Using heroin purity data, this study also found that heroin purity fell after 2001, as supplies of existing inventory were stretched. Robbery and burglary rates also fell relative to these decreasing levels of purity.

Chilvers and Weatherburn (2003) also examined heroin use in Australia, but prior to the 2001 heroin drought. They used the annual rate of heroin overdose as a proxy for heroin use and applied this to data to annual robbery rates in New South Wales from 1966 to 2000. They found a significant positive relationship between overdoes and robbery and estimated that a 10 percent increase in heroin use resulted in a 6 percent increase in robberies.

The final two identified studies examining the links between heroin use and acquisitive crime are described in greater detail in the previous section on cocaine. The first, Mocan and Tekin (2005), used a variety of individual-level social and economic controls in a fixed-effects model. The study found that injection heroin use was associated with a 41 percent increase in the propensity to commit burglaries, robberies, and thefts in a longitudinal study of adolescents in the mid-1990s. Uggen and Thompson (2003) identified the amount of income that drug users generated through acquisitive crime. In a sample of ex-inmates, addicts, and dropouts running from 1975–1978, individuals who used cocaine or heroin self-reported their illegal monthly earnings to be nearly $1,000 (in 2012 dollars).

As expected, these studies identified a consistent relationship between heroin and property crimes. One of their major limitations, however, is their minimal consideration of the concurrent

use of other substances, particularly alcohol, making it problematic to presume that the full magnitude of the relationships identified can be attributed to heroin.

Methamphetamines

Research on the criminological effects of methamphetamines is much less developed than that of the other three drugs examined. The methamphetamines problem is smaller, more rural, and has less of a history as a significant concern. As a result, methamphetamines have received little attention.

Despite the paucity of research, there are several theories as to how methamphetamines (and amphetamines generally) may cause crime, particularly looking at the physiological effects of increased aggression or loss of impulse control associated with the drug. Five articles on methamphetamines made it through the quality filter of our literature review. The findings from these studies provide inconclusive evidence of any criminogenic effect of methamphetamines.

Methamphetamines and Violent or Property Crime (5 papers)

Two papers were identified that use government interventions of methamphetamines precursors as exogenous natural experiments. The first, by Dobkin and Nicosia (2009), examines how a 1995 U.S. government intervention that successfully disrupted methamphetamines precursors affected methamphetamines-related harms in California. Following the disruption, the price of methamphetamines tripled, while purity declined; the authors also identified drops in monthly counts of amphetamine-related hospital admissions, treatment admissions, use among arrestees, and felony methamphetamines arrests, but there was no evidence of a decrease in either property of violent crime in California administrative crime data. Rafert (2009) used a similar approach, but his results are quite different. In his study, Rafert used two interventions as instruments, one in 1995 and one in 1997. Two-staged least squares was used, with the interventions estimating methamphetamines treatment admissions in the first stage, and treatment admissions serving as a proxy for methamphetamines use in the second stage. The resulting dependent variables represent crime rates by county and month drawn from the UCR (NIBRS data are also used as a robustness check). Rafert found that a 10 percent increase in methamphetamines treatment admissions was associated with an increase of 6.3 percent in murders, 7.1 percent in robberies, 3.2 percent in burglaries, 3.8 percent in larcenies, and 6.0 percent in motor vehicle thefts. However, his study suffered from the omission of a key variable that was included in the Dobkin and Nicosia study: alcohol use. A third report by Nicosia et al. (2009) also examined UCR data, using methamphetamines hospital admissions directly, and found an association between methamphetamines and property crimes, but not violent crimes. Thus, these three papers, all using high-frequency data and alternative identification techniques, generate different results. This is perhaps because of differences in the inclusion/exclusion of alcohol or perhaps because two of the studies used national-level data (Nicosia et al., 2009; Rafert, 2009) while one used data for California only (Dobkin and Nicosia, 2009).

Two papers were identified that examined the link between methamphetamines and IPV. Because both of these papers are described in greater detail in the previous section on cocaine, only the relevant findings will be discussed here. Jaffe et al. (2009) found, after applying a constructed model of aggressive personality to a sample of participants from HIV prevention/testing programs, methamphetamines were the only substances still associated with IPV. Similarly, Stuart et al. (2008) applied a structural equation model to a sample of people arrested for IPV, and found stimulant use (including both cocaine and methamphetamines) to be associated with IPV, whether it was used by the perpetrator or his/her partner. However, this study was limited in that it did not distinguish between methamphetamines and other stimulants.

These studies provide the most compelling evidence of a causal relationship between methamphetamines and crime, but even they are inconclusive. The methodologically strongest of these papers found no evidence that methamphetamines are associated with crime, while others suggested links to property crime or to crime more generally. More research on methamphetamines-related crime needs to be done.

Methamphetamines and Identity Theft (1 paper)

While methamphetamines have been linked with identity theft in law enforcement, actual evidence of an association is limited. Only one paper examining the link between identity theft and methamphetamines was identified as meeting our methodological criteria. Nicosia et al. (2009) examined Federal Trade Commission (FTC) data on identity theft on a state level from 2000 to 2006 (Nicosia et al. 2009). Two proxies for methamphetamines use were used: emergency room admissions primarily related to methamphetamines and treatment admissions primarily related to methamphetamines. While a linear regression identified a link, the effects were not present in the more properly specified log-transformed model. While this paper's methodologies met our quality filter, there are concerns regarding the completeness of the FTC data on identity theft. The extent to which there is a causal relationship between methamphetamines and identity theft remains unclear.

Marijuana

There is a long established correlation between marijuana and crime (Dembo et al., 1987; Dawkins, 1997; Baker, 1998). People who commit criminal acts are more likely to use marijuana (Taylor and Bennett, 1999; Makkai et al., 2000), and people who use more marijuana commit more criminal acts than those who use less marijuana (McRostie and Marshall, 2001). But this correlation is not sufficient to support a causal association. Other factors, such as common delinquency factors or other substance use, could drive a spurious correlation. The papers identified in our review provide little evidence of marijuana-related violent crime, either through pharmacological or systemic mechanisms. Evidence in support of property crime is similarly limited. Still, evidence is provided in support of two relevant areas. The first relates adolescent

marijuana use to later criminality, likely mediated through other factors such as decreased family bonds and increased deviant peer networks. The second relates to marijuana-related DUI.

Marijuana and Violent and Property Crime (8 papers)

While marijuana is the most commonly used illicit substance, rigorous examinations of the link between marijuana and crime are rare. One approach is the use of instrument variable techniques. Pacula and Kilmer (2003) proxied marijuana use through changes in marijuana prices to examine the effect on crime as indicated by arrest rates from 1994 to 2000 for 35 counties in the UCR. They found some support for a causal link between marijuana use and property crime arrests, particularly in specifications that included measures of law enforcement intensity. However, the evidence did not support a link between marijuana and violent crime, particularly in models including self-reports of use within the three days prior to the crime and/or at the time of the arrest or models using crime rates rather than arrest rates. Markowitz (2005) found a similar lack of evidence regarding violent victimizations. This study (described in greater detail in the cocaine section) applied an instrument for marijuana use based on punishments for marijuana. The study used two specifications for robustness: an indicator for decriminalization laws and the amount of jail time or fine typically imposed for the possession of small amounts of marijuana. Markowitz found no association between marijuana use and rape/sexual assault or robbery and the limited evidence of an association with assault disappeared when fixed effects were included.

Mulvey et al. (2006) also found no evidence of a criminogenic effect for marijuana in a sample of individuals at high risk of repeated violence drawn from patients presenting at a psychiatric hospital (Mulvey et al., 2006). Using a structural equation model, they found that the likelihood of violence increased in days after using alcohol, but that no increase occurred on the day after using marijuana. This study shares a limitation with several other papers in that the time frame examined for effects does not match the time frame expected for intoxication, calling the results (or lack thereof) into question. Similarly, Arseneault et al. (2000) found no proximal relationship between marijuana and violence. Using a birth cohort in New Zealand, they were able to trace adult violence to substance abuse characteristics throughout their lives, distinguishing groups based on three mental conditions: schizophrenia, alcohol dependence, and marijuana dependence. As expected, violence by alcohol-dependent individuals was best explained by alcohol use before the offense, but violence by marijuana-dependent individuals was best described by juvenile delinquency.

Three papers examine whether marijuana use is associated with IPV. All three of these examine more than one substance and are discussed in more detail in the section on cocaine. The first paper, Fals-Stewart et al., examines the relationship between cocaine, opiates, marijuana, and/or alcohol and IPV in a population of males entering a drug treatment program. As noted above, this paper found that physical aggression among males entering the drug treatment program was not associated with days during which the respondent used marijuana. The second

paper, by El-Bassel et al., did find an association between marijuana and IPV six months later. Clearly this is not a pharmacological effect, but could be due to selection issues or a more long-term drug use trajectory. Stuart et al. (2008) also found an association between marijuana and IPV. It is unclear, however, whether stressors contributed to both the marijuana use and the increased aggression.

Swartout and White (2010) found mixed support for the association of marijuana and sexual aggression such as rape or attempted rape. The data used in the study comprises a set of male college students interviewed five times across their four years of college. Hierarchical linear modeling was used to more fully utilize the longitudinal nature of the data by incorporating both time-variant and time-invariant characteristics at different levels. This approach found that, while the frequency of marijuana use was a strong predictor of the severity of sexual aggression across the sample, the frequency used by a given individual was only marginally related ($p=0.072$) to their severity of sexual aggression across time periods.

The papers we identified provided little support for a link between marijuana and either violent or property crimes. Those cases in which some relationship was found between marijuana and violent crimes included contradictory or unclear results.

Adolescent Marijuana Use and Future Criminal Activity (6 papers)

A second line of research examined early marijuana use and subsequent criminal behavior over years or decades. Early marijuana use may contribute to the use of other substances, lower educational attainment, or other characteristics that lead to later criminal activity. On the other hand, early marijuana use could be a symptom of underlying problems that may also contribute to later criminal activity. Following subjects over time allows researchers to control for innate and unobserved characteristics in an attempt to isolate characteristics that may contribute to a criminal trajectory.

Arseneault et al. (2000) found evidence of an association between marijuana and a longer-term criminal trajectory, as described in the section on proximate marijuana crime. In their study of the violence committed by individuals with various mental disorders, they found that violence committed by marijuana-dependent individuals was best described by juvenile delinquency.

Observing longitudinal cohorts is one common approach to examining trends in marijuana-related life trajectories. Green et al. (2010) examines a cohort of African-American youth entering first grade in Chicago in 1966. The cohort was contacted again in adolescence, at age 32, and at age 42. Heavy adolescent marijuana users were propensity-score matched with non-heavy users, leaving the two groups similar on important personality traits, family situation, and elementary school adaption and achievement. Using the matched sample as a control, heavy adolescent marijuana use was associated with drug-related and property crime, but not violent crime. The heavy use of marijuana by age 16 raised the odds that an individual would be arrested for a property crime by age 32 by 50 percent (odds ratio 1.5). Fergusson et al. (2002) found a similar link between early marijuana use and later criminal activity using a different longitudinal

cohort that was more contemporaneous but also more distant. The study examined a birth cohort of urban children born in New Zealand in 1977. Using individual-level fixed effects, time-dynamic covariates, and reports of cannabis use at different ages, the authors found early marijuana use was associated with later crime. The association was dose dependent—14–15 year olds who used monthly or more committed crimes at a rate 1.4 times higher than non-users, while those who used weekly or more committed crimes at a rate 2.7 times higher. Weekly use by 17–18 and 20–21 year olds had smaller effects, 0.5 and 0.7 times higher rates of criminality than non-users, respectively. By contrast, Pederson and Skardhamar (2010) found limited evidence for increased criminality among early marijuana users in a longitudinal sample of Norwegian youth. Their study shows only a rise in drug arrests for early marijuana users, not non-drug arrests. However, concerns have been raised regarding the sufficiency of Pederson and Skardhamar's data and methodology (Farrington, 2010; Bretteville-Jenson and Rossow, 2011). Still, these three longitudinal studies do present some consistent evidence that early marijuana use is associated with later crime or delinquency, although the exact mechanisms are unclear.

Another approach identified involves applying a structural equation model to multiple waves of data. One study by Mason and Windle (2002) examined a panel dataset of four waves of high school students in the United States using a model that accounted for potential bi-directionalities in substance abuse and delinquency. Their model combined marijuana use with drinking and cigarette smoking to create a latent variable of substance use, a notable limitation of this paper for our purposes. Fitting the model did find that early substance use contributed to later delinquency, and that early delinquency contributed to later substance use. The association between early substance use and later delinquency was moderate ($\beta = 0.24$), but it does not decompose the role of marijuana from other substances. Similarly, Ford (2005) applied a structural equation model to three waves of the 1979 National Longitudinal Survey of Youth. Early marijuana use and other illicit drug use were significant predictors of later marijuana use, illicit drug use, and delinquency. Here the association between marijuana and later delinquency was significant but weak ($\beta = 0.07$). Early delinquency, on the other hand, was only found to be a significant predictor of later delinquency and other illicit drug use, not a significant predictor of later marijuana use. While both of these papers are limited for our purposes in that they do not distinguish between various types of crimes, they do provide additional evidence of a long-term criminal trajectory associated with marijuana.

The articles examined in our review do provide some evidence of a link between early/adolescent marijuana use and later/adult crime. However, the mechanism by which this occurs is unclear. Much of the resultant criminality depends on the context of place and time and includes effects mediated through other factors.

Marijuana and DUI (3 papers)

A substantial body of research has addressed the effect of marijuana on driving. Papers have examined the incidence of driving under the influence in several ways (self-reports and

substance tests of blood, saliva, and urine), for several populations (drivers generally or in specific contexts, drivers in accidents, drivers in fatal accidents), and for several drugs in several countries (the Unites States, but also commonly in European nations that collect more information in a standardized fashion). One important strain of research is that of case-control or culpability studies. While these case-control studies do not meet our criteria for strong methodologies and hence will not be discussed below, several good reviews have been done recently and provide some evidence of a causal relationship between marijuana use and motor vehicle accidents based on this literature when acute use near the time of the accident is used as a primary indicator (Asbridge et al., 2012; Li et al., 2012).

Another strain of research examines the extent to which marijuana use impairs driving ability. These studies rarely examine driving in realistic contexts, where adaptive behaviors may compensate for those impairments. One exception is a true experiment conducted by Ramaekers et al. (2000) in the Netherlands, where a small group of subjects were given low doses of THC and/or alcohol or a placebo then performed a road-tracking and car-following test in normal traffic. The study was limited in that subjects were given low doses of the intoxicants so as to generate performance deficits without putting the subjects at risk and subjects were aware of the fact that they were being observed (with an instructor present for safety reasons), which could have led to driving behaviors that were not entirely natural. Subjects on THC, either alone or with alcohol, performed worse with regards to their lateral position, following distance, reaction time, and performance than those on placebo. While this provides some evidence of marijuana impairment, we cannot extrapolate from the low doses of the study to higher doses over the legal limit; a review of the evidence suggests that the overall risk of accidents from alcohol use is higher than that from marijuana use (Ramaekers et al. 2004).

Two other papers examined driving impairment caused by marijuana through repeated cohort datasets. Fergusson et al.'s (2008) examination of a birth cohort in New Zealand found that, after controlling for a set of variables that contribute to risky driving behavior, the rate of collisions was borderline related to self-reported DUI-marijuana (p=.064), but not to self-reported DUI-alcohol (p=.764). The authors suggest that this could represent different perceptions of the risk of DUI due to marijuana. Additionally, the variables for intoxication are dichotomous and this paper did not consider the interaction of alcohol and marijuana. Accidents were also measured as dichotomous indicators, and, as they largely reflect minor collisions, the results may not scale up to more severe accidents.

Bingham and Shope (2004) find an interesting connection between marijuana use and DUI which develops from adolescence. Participants were recruited in the 10th grade and contacted again approximately eight years later as young adults. After controlling for family, social, and personal factors, both drugged driving as an adult and drunk driving as an adult were associated with adolescent marijuana use, alcohol misuse, and tolerance of deviance. However, current marijuana use was not associated with riskier driving behaviors. Given both the indirect link between marijuana use and drunk driving and the persistence of adolescent cause with adult

effects, this suggests that marijuana use as an adolescent places youth on a deviant trajectory, similar to the findings regarding adolescent use of marijuana and later criminal behavior.

In addition to the well-developed literature on the effects of marijuana on driving skills and the case-control/culpability studies, these three papers present evidence that marijuana has negative effects on actual driving. This is consistent with findings from a 2010 review of the marijuana and driving literature by Room and colleagues, which argues "better-controlled epidemiological studies have recently provided credible evidence that cannabis users who drive while intoxicated are at increased risk of motor-vehicle crashes."

A.4. Conclusion

It is important that this review be considered in the context of the well-established literature on drug crime. While this article provides perspective on more recent methodologically rigorous papers, it builds on decades of work on the effects of illicit substances. However, this review also underscores the need to better understand the causal associations for drug-related crimes. Issues related to illicit substances are complicated and contextual; the effects of drug use are dependent on the type or types of drug used, the population using it, the nature of the market, and the policies in place to address it.

The findings from this review should be considered in light of the limitations of our study. First, our review exclusively focused on four drugs—cocaine, heroin, methamphetamine, and marijuana—and excluded other potentially important drugs such as prescription drugs and hallucinogens. Second, we exclusively focused on certain types of crime, typically lower-level crimes associated with sales or use, of which the harms are most obvious, while avoiding higher-level crimes related to trafficking. To some extent, this study is a reflection on the research available, but the lack of research attention given to higher-level white-collar crime and trafficking should not be interpreted as a lack of evidence of an association there. A third and related limitation is that our review is susceptible to the problem of publication bias in that we could only identify published papers, and any bias in the types of papers that get published (i.e., those that find an effect) would also bias our conclusion.

Keeping in mind these limitations, the results of this review are consistent with much of the conventional wisdom on the drugs-crime link. First, the hard drug trade and the firearms that protect it, rather than drug use per se, are responsible for most of the systemic crime related to drugs. Second, long-term heavy users of hard drugs sometimes commit acquisitive crimes to feed their expensive habits. This is especially true for cocaine and heroin, and it could also be true for methamphetamine. Third, there is not much evidence supporting a causal link between drugs and psychopharmacological crime in the absence of alcohol. The strongest potential evidence of a link is for cocaine, but even there the evidence is inconclusive and contextual. Finally, marijuana use does not induce violent crime, and the links between marijuana use and property crime are

thin. Adolescent marijuana use is correlated with adult criminality, but this is likely mediated through other factors (e.g., decreased family bonds and deviant peers).

More rigorous studies identifying causal relationships between specific drugs and specific crimes are needed, taking context and polysubstance use into account. This is particularly true for methamphetamine, which is clearly an important concern in some regions of the country. Additionally, these causal links need to be explored to understand the order of magnitude of the effects; so often causal mechanisms rely on proxies or natural experiments, which limit the interpretability of the estimates. Only through this exploration will it be possible to construct reasonably good estimates of drug-induced crime.

References

American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders. Washington, DC.

Anglin, M. and G. Speckart (1988). "Narcotics Use and Crime: A Multisample, Multimethod Analysis." *Criminology, 26*(2): 197-233.

Arkes, J., R. L. Pacula, S. M. Paddock, J. Caulkins and P. Reuter. (2008). "Why the DEA Stride Data Are Still Useful for Understanding Drug Markets," National Bureau of Economic Research Cambridge, MA.

Arseneault, L., T. E. Moffitt, A. Caspi, P. J. Taylor and P. A. Silva (2000). "Mental Disorders and Violence in a Total Birth Cohort: Results from the Dunedin Study." *Archives of General Psychiatry, 57*(10): 979.

Asbridge, M., J. A. Hayden and J. L. Cartwright (2012). "Acute Cannabis Consumption and Motor Vehicle Collision Risk: Systematic Review of Observational Studies and Meta-Analysis." *BMJ: British Medical Journal, 344*.

Baker, J. (1998). Juveniles in Crime: Participation Rates and Risk Factors, NSW Bureau of Crime Statistics and Research.

Ball, J., L. Rosen, J. Flueck and D. Nurco (1982). "Lifetime Criminality of Heroin Addicts in the United States." *Journal of Drug Issues, Summer 1982*: 14.

Becker, G. S., M. Grossman and K. M. Murphy (2004). "The Economic Theory of Illegal Goods: The Case of Drugs." NBER.

Bennett, T. and K. Holloway (2009). "The Causal Connection Between Drug Misuse and Crime." *British Journal of Criminology, 49*(4): 513.

Bennett, T. and R. Wright (1986). "The Impact of Prescribing on the Crimes of Opioid Users." *British Journal of Addiction, 81*(2): 265-273.

Bingham, C. R. and J. T. Shope (2004). "Adolescent Problem Behavior and Problem Driving in Young Adulthood." *Journal of Adolescent Research, 19*(2): 205-223.

Boles, S. M. and K. Miotto (2003). "Substance Abuse and Violence: A Review of the Literature." *Aggression and Violent Behavior, 8*(2): 155-174.

Boyum, D. A., J. P. Caulkins and M. A. R. Kleiman (2011). "Drugs, Crime, and Public Policy." Crime and Public Policy. J. Q. Wilson and J. Petersilia, Oxford University Press: 368.

Braga, A. A. (2003). "Serious Youth Gun Offenders and the Epidemic of Youth Violence in Boston." *Journal of Quantitative Criminology, 19*(1): 33-54.

Bretteville-Jenson, A. L. and I. Rossow (2011). "Questionable Conclusions on Cannabis and Crime." *Addiction, 106*(2): 449-450.

Carter, D. L. (1990). "Drug-Related Corruption of Police Officers: A Contemporary Typology." *Journal of Criminal Justice, 18*(2): 85-98.

Caulkins, J. P. (2001). "Drug Prices and Emergency Department Mentions for Cocaine and Heroin." *American Journal of Public Health, 91*(9): 1446.

Caulkins, J. P. and M. A. R. Kleiman (2011). "Drugs and Crime." Handbook of Crimes and Punishment. M. Tonry, Oxford University Press.

Cerda, M., S. F. Messner, M. Tracy, D. Vlahov, E. Goldmann, K. J. Tardiff and S. Galea (2010). "Investigating the Effect of Social Changes on Age-Specific Gun-Related Homicide Rates in New York City During the 1990s." *American Journal of Public Health, 100*(6): 1107.

Chaiken, J. and M. Chaiken (1982). "Varieties of Criminal Behavior."

Chilvers, M. and D. Weatherburn (2003). The Impact of Heroin Dependence on Long-Term Robbery Trends, NSW Bureau of Crime Statistics and Research.

Corman, H. and H. N. Mocan (2000). "A Time-Series Analysis of Crime, Deterrence, and Drug Abuse in New York City." *The American Economic Review, 90*(3): 584-604.

Dawkins, M. P. (1997). "Drug Use and Violent Crime Among Adolescents." Adolescence *32*.

Degenhardt, L., E. Conroy, S. Gilmour and L. Collins (2005a). "The Effect of a Reduction in Heroin Supply in Australia Upon Drug Distribution and Acquisitive Crime." *British Journal of Criminology, 45*(1): 2-24.

Degenhardt, L., C. Day, P. Dietze, S. Pointer, E. Conroy, L. Collins and W. Hall (2005b). "Effects of a Sustained Heroin Shortage in Three Australian States." *Addiction, 100*(7): 908-920.

Degenhardt, L., C. Day, W. Hall, E. Conroy and S. Gilmour (2005c). "Was an Increase in Cocaine Use Among Injecting Drug Users in New South Wales, Australia, Accompanied by an Increase in Violent Crime?" *BMC Public Health, 5*: 1-10.

Dembo, R., M. Washburn, E. Wish, J. Schmeidler, A. Getreu, E. Berry, L. Williams and W. Blount (1987). "Further Examination of the Association Between Heavy Marijuana Use and Crime Among Youths Entering a Juvenile Detention Center." *Journal of Psychoactive Drugs, 19*(4): 361-373.

DeSimone, J. (2001). "The Effect of Cocaine Prices on Crime." *Economic Inquiry, 39*(4): 627-643.

DeWalt, D. A., N. D. Berkman, S. Sheridan, K. N. Lohr and M. P. Pignone (2004). "Literacy and Health Outcomes." *Journal of General Internal Medicine, 19*(12): 1228-1239.

Dobkin, C. and N. Nicosia (2009). "The War on Drugs: Methamphetamine, Public Health, and Crime." *The American Economic Review, 99*(1): 324.

El-Bassel, N., L. Gilbert, E. Wu, H. Go and J. Hill (2005). "Relationship Between Drug Abuse and Intimate Partner Violence: A Longitudinal Study Among Women Receiving Methadone." *American Journal of Public Health, 95*(3): 465.

Escobedo, L. G. and J. P. Peddicord (1996). "Smoking Prevalence in US Birth Cohorts: The Influence of Gender and Education." *American Journal of Public Health, 86*(2): 231-236.

Fagan, J. (1990). "Intoxication and Aggression." *Crime and Justice, 13*: 241-320.

Fagan, J. (1993). The Political Economy of Drug Dealing Among Urban Gangs. Drugs and community. R. Davis, A. Lurigio and D. P. Rosenbaum. Springfield, IL, Charles Thomas: 19–54.

Fagan, J. and K. Chin (1990). "Violence as regulation and social control in the distribution of crack." Drugs and violence: Causes, correlates, and consequences: 8–43.

Fals-Stewart, W., J. Golden and J. A. Schumacher (2003). "Intimate Partner Violence and Substance Use: A Longitudinal Day-to-Day Examination." *Addictive Behaviors, 28*(9): 1555-1574.

Farrington, D. P. (2010). "Commentary on Pedersen and Skardhamar (2010): Does Cannabis Use Predict Non-Drug Offending?" *Addiction, 105*(1): 119-120.

Fergusson, D. M. and L. Horwood (1997). "Early Onset Cannabis Use and Psychosocial Adjustment in Young Adults." *Addiction, 92*(3): 279-296.

Fergusson, D. M., L. J. Horwood and J. M. Boden (2008). "Is Driving Under the Influence of Cannabis Becoming a Greater Risk to Driver Safety than Drink Driving? Findings from a Longitudinal Study." *Accident Analysis and Prevention, 40*(4): 1345-1350.

Fergusson, D. M., L. J. Horwood and N. Swain-Campbell (2002). "Cannabis Use and Psychosocial Adjustment in Adolescence and Young Adulthood." *Addiction, 97*(9): 1123-1135.

Flint, A. J. and T. E. Novotny (1997). "Poverty Status and Cigarette Smoking Prevalence and Cessation in the United States, 1983-1993: The Independent Risk of Being Poor." *Tobacco Control, 6*(1): 14.

Ford, J. A. (2005). "Substance Use, the Social Bond, and Delinquency." *Sociological Inquiry, 75*(1): 109-128.

French, M., K. McGeary, D. Chitwood, C. McCoy, J. Inciardi and D. McBride (2000). "Chronic Drug Use and Crime." *Substance Abuse, 21*(2): 95-109.

Gilman, S., D. Abrams and S. Buka (2003). "Socioeconomic Status Over the Life Course and Stages of Cigarette Use: Initiation, Regular Use, and Cessation." *Journal of Epidemiology and Community Health, 57*(10): 802-808.

Goldstein, P. J. (1985). "Drugs and Violent Behavior." *Journal of Drug Issues, 15*: 493-506.

Goldstein, P. J. (1997). "The Relationship Between Drugs and Violence in the United States of America." United Nations Office on Drugs and Crime (UNODOC) World Drug Report.

Gorman, D. M. and H. R. White (1995). "You Can Choose Your Friends, But Do They Choose Your Crime? Implications of Differential Association Theories for Crime Prevention Policy." Crime and Public Policy: Putting Theory to Work: 131-155.

Gossop, M., J. Marsden, D. Stewart and T. Kidd (2003). "The National Treatment Outcome Research Study (NTORS): 4–5 Year Follow-Up Results." *Addiction, 98*(3): 291-303.

Gossop, M., K. Trakada, D. Stewart and J. Witton (2005). "Reductions in Criminal Convictions After Addiction Treatment: 5-Year Follow-Up." *Drug and Alcohol Dependence, 79*(3): 295-302.

Green, K. M., E. E. Doherty, E. A. Stuart and M. E. Ensminger (2010). "Does Heavy Adolescent Marijuana Use Lead to Criminal Involvement in Adulthood? Evidence from a Multiwave Longitudinal Study of Urban African Americans." *Drug and Alcohol Dependence, 112*(1-2): 117-125.

Grogger, J. and M. Willis (2000). "The Emergence of Crack Cocaine and the Rise in Urban Crime Rates." *Review of Economics and Statistics, 82*(4): 519-529.

Grossman, M. (2005). "Individual behaviors and substance use: The Role of Price." *Advances in Health Economics and Health Services Research, 16*: 15-39.

Grossman, M. and F. Chaloupka (1998). "The Demand for Cocaine by Young Adults: A Rational Addiction Approach." *Journal of Health Economics, 17*(4): 427-474.

Havnes, I., A. Bukten, M. Gossop, H. Waal, P. Stangeland and T. Clausen (2012). "Reductions in Convictions for Violent Crime During Opioid Maintenance Treatment: A Longitudinal National Cohort Study." *Drug and Alcohol Dependence, 124*(3): 307-310.

Hirschi, T. and M. Gottfredson (1988). "Towards a General Theory of Crime." Explaining Criminal Behaviour: Interdisciplinary Approaches: 8-26.

Hoaken, P. and S. Stewart (2003). "Drugs of Abuse and the Elicitation of Human Aggressive Behavior." *Addictive Behaviors, 28*(9): 1533-1554.

Horowitz, J. L. (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): 1254-1263.

Inciardi, J. (1979). "Heroin Use and Street Crime." *Crime and Delinquency, 25*(3): 335.

Jaffe, A., W. C. Pedersen, D. G. Fisher, G. L. Reynolds, S. L. Hershberger, S. Reise and P. Bentler (2009). "Drug Use, Personality and Partner Violence: A Model of Separate, Additive, Contributions in an Active Drug User Sample." *The Open Addiction Journal, 2*: 39.

Jarvis, G. and H. Parker (1989). "Young Heroin Users and Crime." *British Journal of Criminology, 29*(2): 175.

Jarvis, M. J., J. Wardle, M. Marmot and R. Wilkinson (1999). "Social Patterning of Individual Health Behaviours: The Case of Cigarette Smoking." *Social Determinants of Health, 2*.

Jessor, R. and S. L. Jessor (1977). Problem Behavior and Psychosocial Development: A Longitudinal Study of Youth, New York: Academic Press.

Jofre-Bonet, M. and J. L. Sindelar (2002). Drug Treatment as a Crime Fighting Tool, National Bureau of Economic Research, Cambridge, MA.

Kilmer, B. and S. Hoorens (2010). "Understanding Illicit Drug Markets, Supply-Reduction Efforts, and Drug-Related Crime in the European Union."

Li, M. C., J. E. Brady, C. J. DiMaggio, A. R. Lusardi, K. Y. Tzong and G. Li (2012). "Marijuana Use and Motor Vehicle Crashes." *Epidemiologic Reviews, 34*(1): 65-72.

MacCoun, R., B. Kilmer and P. Reuter (2003). "Research on Drugs-Crime Linkages: The Next Generation." Toward a Drugs and Crime Research Agenda for The 21st Century: 65-95.

Makkai, T., J. Fitzgerald, P. Doak and N. S. Wales (2000). Drug Use Among Police Detainees, NSW Bureau of Crime Statistics and Research.

Markowitz, S. (2005). "Alcohol, Drugs and Violent Crime." *International Review of Law and Economics, 25*(1): 20-44.

Mason, W. A. and M. Windle (2002). "Reciprocal Relations Between Adolescent Substance Use and Delinquency: A Longitudinal Latent Variable Analysis." *Journal of Abnormal Psychology, 111*(1): 63.

McBride, D. C. and C. B. McCoy (1982). "Crime and Drugs: The Issues and Literature." *Journal of Drug Issues*.

McGlothlin, W., M. Anglin and B. Wilson (1978). "Narcotic Addiction and Crime." *Criminology, 16*(3): 293-316.

McRostie, H. and J. Marshall (2001). "Drug-Related Property Crime in South Australia in 2000."

Messner, S. F., S. Galea, K. J. Tardiff, M. Tracy, A. Bucciarelli, T. Piper, V. Frye and D. Vlahov (2007). "Policing, Drugs, and the Homicide Decline in New York City in the 1990s." *Criminology, 45*(2): 385-414.

Mocan, H. N. and E. Tekin. (2005). "Drugs and Juvenile Crime: Evidence from a Panel of Siblings and Twins."

Mulvey, E. P., C. Odgers, J. Skeem, W. Gardner, C. Schubert and C. Lidz (2006). "Substance Use and Community Violence: A Test of the Relation at the Daily Level." *Journal of Consulting and Clinical Psychology, 74*(4): 743.

Newburn, T. and B. Webb (1999). Understanding and Preventing Police Corruption: Lessons from the Literature, Home Office, Policing and Reducing Crime Unit, Research, Development and Statstics Directorate.

Nicosia, N., R. L. Pacula, B. Kilmer, R. Lundberg and J. Chiesa (2009). The Economic Cost of Methamphetamine Use in the United States, 2005. Santa Monica, CA: RAND Corporation.

Nurco, D., J. Ball, J. Shaffer and T. Hanlon (1985). "The Criminality of Narcotic Addicts." *The Journal of Nervous and Mental Disease, 173*(2): 94.

Nurco, D., T. Hanlon and T. Kinlock (1991). "Recent Research on the Relationship Between Illicit Drug Use and Crime." *Behavioral Sciences and the Law, 9*(3): 221-242.

Ousey, G. C. and M. R. Lee (2004). "Investigating the Connections Between Race, Illicit Drug Markets, and Lethal Violence, 1984-1997." *Journal of Research in Crime and Delinquency, 41*(4): 352.

Pacula, R. L., M. Grossman, F. J. Chaloupka, P. M. O'Malley, L. D. Johnston, M. C. Farrelly and J. Gruber (2001). Risky Behavior Among Youths: An Economic Analysis. Chigago, IL: University of Chicago Press.

Pacula, R. L., M. Grossman, F. J. Chaloupka Iv, P. M. O'Malley, L. Johnston and M. C. Farrelly (2000). "Marijuana and Youth," (pp. 193-191). In Jonathan Gruber (Ed.), *Risky Behavior Among Youths: An Economic Analysis.* Chicago, IL: University of Chicago Press.

Pacula, R. L. and B. Kilmer. (2003). "Marijuana and Crime: Is There a Connection Beyond Prohibition?" NBERWorking Paper No. 10046 [Cambridge MA].

Parker, H. J., P. Kirby and G. Britain (1996). Methadone Maintenance and Crime Reduction on Merseyside, Home Office, Police Research Group.

Parker, R. N. and K. Auerhahn (1998). "Alcohol, Drugs, and Violence." *Annual Review of Sociology, 24*(1): 291-311.

Pedersen, W. and T. Skardhamar (2010). "Cannabis and Crime: Findings from a Longitudinal Study." *Addiction, 105*(1): 109-118.

Pernanen, K., M. Cousineau, S. Brochu and F. Sun (2002). Proportions of Crimes Associated with Alcohol and Other Drugs in Canada, Canadian Centre on Substance Abuse.

Preble, E. and J. J. Casey (1969). "Taking Care of Business—The Heroin User's Life on the Street." *Substance Use and Misuse, 4*(1): 1-24.

Pritchett, L. and L. H. Summers (1993). Wealthier is Healthier, World Bank Publications.

Rafert, J. G. (2009). Three Essays on Illicit Drug Use, Crime, and Child Welfare, University of California, Berkeley.

Ramaekers, J., H. Robbe and J. O'Hanlon (2000). "Marijuana, Alcohol and Actual Driving Performance." *Human Psychopharmacology: Clinical and Experimental, 15*(7): 551-558.

Ramaekers, J. G., G. Berghaus, M. van Laar and O. H. Drummer (2004). "Dose-Related Risk of Motor Vehicle Crashes After Cannabis Use." *Drug and Alcohol Dependence, 73*(2): 109-119.

Rhodes, W., M. Layne, P. Johnston, L. Hozik and M. Hadley (2000). What America's Users Spend on Illegal Drugs, Office of National Drug Control Policy. www. whitehousedrugpolicy. gov/publications/drugfact/american user s spend.

Room, R., B. Fischer and W. Hall (2010). Cannabis Policy: Moving Beyond Stalemate, Oxford University Press.

Saffer, H. and F. Chaloupka (1999). "The Demand for Illicit Drugs." *Economic Inquiry, 37*(3): 401-411.

Seddon, T. (2000). "Explaining the Drug–Crime Link: Theoretical, Policy and Research Issues." *Journal of Social Policy, 29*(01): 95-107.

Seddon, T. (2006). "Drugs, Crime and Social Exclusion—Social Context and Social Theory in British Drugs-Crime Research." *British Journal of Criminology, 46*(4): 680-703.

Shaffer, J., D. Nurco and T. Kinlock (1984). "A New Classification of Narcotic Addicts Based on Type and Extent of Criminal Activity." *Comprehensive Psychiatry, 25*(3): 315-328.

Skogan, W. G. (1992). Disorder and Decline: Crime and The Spiral of Decay in American Neighborhoods, University of California Press.

Smithson, M., M. McFadden, S. E. Mwesigye and T. Casey (2004). "The Impact of Illicit Drug Supply Reduction on Health and Social Outcomes: The Heroin Shortage in the Australian Capital Territory." *Addiction, 99*(3): 340-348.

Stuart, G. L., J. R. Temple, K. W. Follansbee, M. M. Bucossi, J. C. Hellmuth and T. M. Moore (2008). "The Role Of Drug Use in a Conceptual Model of Intimate Partner Violence in Men and Women Arrested for Domestic Violence." *Psychology of Addictive Behaviors, 22*(1): 12.

Swartout, K. M. and J. W. White (2010). "The Relationship Between Drug Use and Sexual Aggression in Men Across Time." *Journal of Interpersonal Violence, 25*(9): 1716.

Taylor, B. M. and T. Bennett (1999). Comparing Drug Use Rates of Detained Arrestees in the United States and England, Diane Pub Co.

Uggen, C. and M. Thompson (2003). "The Socioeconomic Determinants of Ill-Gotten Gains: Within-Person Changes in Drug Use and Illegal Earnings." *American Journal of Sociology, 109*(1): 146-185.

White, H. R. (1990). "The Drug Use-Delinquency Connection in Adolescence."

Williams, J. (2004). "The Effects of Price and Policy on Marijuana Use: What Can Be Learned from the Australian Experience?" *Health Economics, 13*(2): 123-137.

Wilson, J. Q. and G. Kelling (1982). "The Police and Neighborhood Safety: Broken Windows." *Atlantic Monthly, 127*: 29-38.

Zarkin, G. A., S. C. Cates and M. V. Bala (2000). "Estimating the Willingness to Pay for Drug Abuse Treatment: A Pilot Study." *Journal of Substance Abuse Treatment, 18*(2): 149-159.

APPENDIX B

Analyses of the Survey of Inmates in State and Federal Correctional Facilities (SISFCF) and the Survey of Inmates in Local Jails (SILJ) Data

B.1. Introduction

Inmate surveys have been used to identify drug attribution fractions (DAFs) related to the share of acquisitive crimes attributable to drug use since the earliest cost-of-drug crime studies (non-acquisitive crimes have been estimated using various other methods). Inmate surveys represent a criminal population that is more accessible for study than arrestees or criminals at large and is one of the few populations for which we obtain direct information on how much a given crime was motivated by the need for an illicit drug or being under the influence of it.

In Chapter Five of this report, we discussed improvements on the traditional approach of using inmate data to develop DAFs of the drugs-crime relationship. For interested readers, this appendix outlines in greater detail the dataset, analyses, and results related to the inmate survey data used in Chapter Five.

The analysis documented in this appendix uses the most recent releases of the two series of inmate surveys (one from prisons and one from jails) as of March 2012: the 2004 version of the Survey of Inmates in State and Federal Correctional Facilities (SISFCF) and the 2002 version of the Survey of Inmates in Local Jails (SILJ). Inmates are asked a battery of questions about their current offense and sentence, criminal history, socioeconomic characteristics, physical and mental health, and the prison programs they have accessed. Most relevant to our study are several questions on substance abuse across these categories, including questions on the inmate's general use, use in conjunction with the offense, and family history of use.

Our analysis of inmate survey data serves two purposes. First, we want to assess how previously constructed crime-specific DAFs would change with incremental improvements in how data are used to construct them. Second, we want to consider what other approaches for capturing drug-related crime are possible using these data. In particular, we are interested in understanding to what extent incorporating knowledge of whether a person was a chronic drug user generates a meaningful change in our understanding of drug-involved crime. We find that there are indeed some distinct and relevant differences in drug-involved crime when one adopts an alternative definition of "drug-involved" based on the chronic use of a drug.

This appendix begins with a general description of the data used for the analyses, then looks at some minor refinements to how those data are used (e.g., focusing on first-year cohorts of prisoners, looking at alcohol use) to see how such changes influence previously-constructed DAFs. Then, we more thoroughly analyze how various definitions of "drug-involvement" influence findings on drug-related crime.

B.2. Background on State, Federal, and Local Inmate Data

Inmate surveys represent different incarcerated populations: those who violate federal laws and those who violate state laws. Offenders charged with violations of federal laws are tried in federal courts and typically serve their sentences in federal prisons, while offenders charged with violating state laws are tried in state courts and serve their sentences in state facilities (either jails

or state prisons). Prisons, whether federal or state, are typically long-term facility where inmates are incarcerated for more than a year. Jails are typically short-term facilities; those being held in jail may include inmates with shorter sentences (misdemeanants sentenced to one year or less), individuals awaiting trial or sentencing, or those being held in custody as a witness or for their protection. For this analysis, we only consider those in jails who have been convicted of a crime and not those who are being held for other reasons. These three populations—jail, state prison, or federal prison—are represented by different surveys.

The 2004 SISFCF is the latest in a series of inmate surveys and comprises two surveys, one involving state inmates and another involving federal inmates. Previous editions of the state inmate survey were conducted in 1997, 1991, 1986, 1979, and 1974. The federal inmate surveys are a more recent development, with previous editions conducted in 1997 and 1991.

The 2002 SILJ is the latest in a series of surveys of inmates being held in local jails rather than prisons. Previous versions of the SILJ were conducted in 1996, 1989, and 1983, and a precursor survey—the Survey of Jail Inmates—was conducted in 1978 and 1972.

These surveys are collected by the Department of the Census on behalf of the Bureau of Justice Statistics, as well as the Bureau of Prisons (for the federal prison data). They are publicly available for research through the National Archive of Criminal Justice Data as part of the Inter-university Consortium for Political and Social Research.

Both the SISFCF and the SILJ use a stratified sample design, with stratifications of prisons by region, gender, and size and stratifications of inmates within prisons by whether the crime was a drug or non-drug crime. Table B.1 provides information on the sampling frame based on prison/jails in the United States. The Department of the Census developed weights based on these stratifications to allow estimates representative of both the national inmate population and subgroups by gender and region for drug and non-drug crimes. These weights are used throughout the analyses.

Table B.1
Counts of Inmates Within Prisons in State, Federal, and Local Jail Datasets

	State (2004)	Federal (2004)	Jail (2002)
Prisons/jails–total	1,549	148	3,475
Prisons/jails participating	287	39	417
Inmates–total	1,115,853	130,496	605,997
Inmates interviewed	14,499	3,686	6,982

These surveys rely on the ability of inmates to accurately remember and honestly report their experiences. Inmates were informed both verbally and in writing that responses would be confidential, and computer-assisted personal interviewing (CAPI) was used to reassure inmates that they could respond honestly without fear of repercussions. Interviews were voluntary, but

the response rates were high—90 percent of state inmates, 87 percent of federal inmates, and 90 percent of those in jail participated.

The inmate surveys took approximately an hour to complete because they contain a large number of detailed questions in a variety of areas. The SISFCF 2004 and SILJ 2002 questions cover the following areas:

- individual characteristics
- current offense
- pretrial and trial
- current sentence
- incident characteristics
- criminal history
- socioeconomic characteristics
- alcohol and drug use and treatment
- medical conditions, mental health, and disabilities
- prison programs and disabilities.

The questions most obviously relevant to DAFs are in the section on alcohol and drug use and treatment. A first variable is whether the offense was committed for drugs or for money to buy drugs. This question has been used to inform DAFs since the earliest efforts at estimating drug-related crimes. A second variable that is also usually included for assessing drug involvement is self-reported drug use at the time of the offense. Other questions that researchers could also find useful are those pertaining to lifetime use, recent use, and frequency of use of a variety of specific substances. Such data can allow researchers to estimate regular or chronic use of drugs and the kinds of drugs used. In addition, this section has a battery of questions reflecting the criteria for drug abuse and drug dependence as identified in the DSM-IV. Questions reflecting abuse and dependence were added in the 2004 SISFCF and are not available in the SISFCFs from 1997 or earlier.

Additional variables related to drug problems are available in other sections. Drug-defined crimes (e.g., drug possession, drug sales, DUI in which the substance of interest was drugs) are considered in the area addressing the current offense. Incident characteristics related to drug-defined crimes (e.g., kind of drug sold, purity of drug sold) are also available, but because *all* drug-defined crimes are attributed to drugs, such detail is not necessary for determining DAFs. Additional potentially relevant questions not generally examined include questions in the section on criminal history (e.g., a previous drug offense) and the section on socioeconomic variables (e.g., parents' history of drug use). Previous offenses are examined more directly using Record for Arrest and Prosecution (RAP) sheet data, while the links between parental use and later criminality are less proximate and clear and, thus, not examined here.

Distinguishing between the kinds of drugs used is important. As described in Appendix A, there are reasons to believe that different drugs may contribute to criminal activity in different ways—for example, there is much stronger evidence of a link between acquisitive crimes and

drugs that are both highly addictive and expensive (such as heroin) than there is for drugs that are less addictive or expensive (such as marijuana). Additionally, drug use is often concurrent with the use of alcohol, which is known to be related to some violent crimes. Consideration of specific drugs, either used alone or with other drugs or with or without alcohol, is an important contribution of this analysis.

Most of the variables relating to drug use include consideration of the kind of drug used. Variables of whether the offense was committed for drugs or money to obtain drugs do not distinguish between specific individual drugs, nor do questions related to dependence and abuse (aside from alcohol). The specific drugs inquired about in the surveys are:

- heroin/other opiates
- methamphetamines/amphetamines
- methalqualone
- barbiturates
- tranquilizers
- crack cocaine/cocaine other than crack
* PCP
* ecstasy
* LSD or other hallucinogens
* marijuana
* other
* inhalants.

Our analysis combines a few of these categories, in particular (a) heroin and other opiates are combined, (b) methamphetamine and other amphetamines are combined, and (c) crack and other forms of cocaine are combined. Additionally, while we examine questions about lifetime use, recent use, and frequency of use of inhalants, this category of drugs is not included when we construct use at the time of the offense.

The need to make distinctions between different crimes is commonly understood, and previous studies of drug-involved crime have identified different DAFs by offense. We follow the same process in our own analyses. The crimes committed by the inmates in these three types of institutions vary. Table B.2 presents counts of inmates in the SISFCF and SILJ serving sentences for a set of relevant crimes. As a matter of law, most of the drug-related crimes of interest are state crimes, which include most of the traditional kinds of violent, property, and drug crimes, while federal crimes of interest include drug trafficking, money laundering, organized crime, and gun crimes. This is reflected in the inmate data: Both the national population of inmates and the sample of inmates in the data are much smaller for federal prisons than for state prisons for the crimes of interest. Similarly, because the sentences of inmates in local jails are typically short-term, inmates in local jails are typically serving for lesser crimes. The number of inmates surveyed in the federal prison and local jail datasets are quite small, which limits the ability to develop reliable estimates from federal and local data. For these reasons, our analysis focuses on state inmate data, which can produce the most reliable estimates for the range of offenses we are interested in. Additional analyses are performed on people serving sentences in federal prisons and jails, but only to confirm estimates derived from the state inmate data.

Table B.2
Population of Inmates in State Prison, Federal Prison, and Local Jail

Crime	Sample Count			Survey-Adjusted Population		
	State	Federal	Jail-convict	State	Federal	Jail-convict
Overall	**14,494**	**3,686**	**3,558**	**1.2 million**	**129,299**	**326,340**
Murder/manslaughter	1,888	135	430	161,203	3,636	37,629
Forcible rape	468	9	17	43,321	253	2,219
Assault	1,111	61	364	95,957	1,722	35,438
Robbery	1,699	425	143	152,869	10,913	11,869
Burglary	1,091	23	198	98,839	596	19,611
Arson	88	8	14	6,529	215	942
MVT	165	6	78	14,849	154	7,126
Larceny	648	31	294	46,973	572	24,612

Distinguishing between different crimes is also important if one wants to try to draw inferences to the general offending population. The probability of arrest and the probability of sentencing to jail/prison differ by type of crime (and may depend on the criminal history of the offender). It is also possible that drug involvement influences the likelihood of arrest or being put in prison (e.g., those under the influence are more likely to get arrested). Thus, it is important to understand how much the distribution of crimes among those incarcerated in prison differs from the distribution of crimes among those arrested (and those reported to police), before any real inferences can be drawn from the inmate population on the role of drugs in crime. That being said, we only have information on drug involvement at the national level from the inmate population. Thus, we are left to simply describe what we see in this population, but we make it clear that several steps need to be taken to generalize the findings for this population to the entire offending population.

The most obvious way in which the inmate population is different from the offender population is in severity of offense; more severe offenses are associated with greater enforcement intensity and longer sentences when a person is caught. Even within the prisoner population, we see that those charged with a lesser offense have shorter sentence lengths than those charged with more serious offenses. Yet the composition of the inmates surveyed reflects more heavily those who have been sentenced to prison longer.

Because all prison sentences (as compared to jail offenses) typically last more than one year, the distribution of first-year inmates in a given survey year should be more reflective of the distribution of offenders convicted of a crime and sentenced to prison that year than the full inmate population, which includes individuals incarcerated for 10 years or more. Similarly, drugs might be associated with longer sentences for some crimes (e.g., a secondary charge of drug possession may add to the sentence of a controlling offense, such as assault) and shorter sentences for other others (e.g., an intentional murder may be considered more severe than a vehicular homicide resulting from DUI). Moreover, the drug of choice of the first-year cohorts

will be more reflective of the role of particular drugs in crime than will be the drug of choice of older inmates.

For these reasons, we believe that analyses of the association between drugs and crime using inmate data should focus on first-year inmates rather than the full sample. However, restricting our observations to those in jail for less than one year reduces sample size and, hence, can reduce precision for some analyses. Thus, to ascertain how this new construction of the data influences findings, we report findings for both the first-year cohort and the full sample of inmates for many of our analyses.

However, it is important to keep in mind that any analyses using inmate data to assess the role of drugs in crime will be biased because it is impossible to know how much drug use influences the likelihood of offending, the likelihood of getting caught, and the likelihood of being sentenced to jail. The process for adjusting the inmate population to better reflect the population of offenders is an exercise well beyond the scope of this project; for now, we simply recognize this important limitation and do what we can to improve analyses of drug-related crime using the inmate survey.

B.3. Findings with Respect to Drug Involvement in Crime

Update Using the Percentage Reporting Committing the Crime for Drugs or Drug Money

An initial task was to estimate DAFs using the traditional approach. Previous studies of cost-of-crime for ONDCP estimate DAFs for attributive crimes by examining the percentage of inmates who reported committing the crime for drugs or for money to buy drugs. Two approaches were presented: the traditional approach estimating the percentage of all inmates reporting that they committed the crime for drugs or money to buy drugs, and a slightly refined approach estimating the same percentage of only inmates in their first year of incarceration. Results from two previous studies are presented for comparison: the previous ONDCP estimates (which use 1997 SISFCF data) and the NDIC estimates (which use 2004 SISFCF data with a slightly different approach). These estimates are presented in Table B.3.

Our estimates of traditional DAFs are largely in line with other estimates from the ONDCP and NDIC, once uncertainty is taken into account. The percentage of inmates who reported committing robberies or burglaries for drugs is consistent with both the previous ONDCP report (using the 1997 version of the SISFCF) and the NDIC report (using the 2004 SISFCF and the 2002 SILJ).

Table B.3
Traditional Attribution Fractions for Acquisitive Crimes for State Inmates, 2004

Controlling Offense	ONDCP (2004)	NDIC (2011)	For Drugs–All Inmates	For Drugs–First-Year Inmates
Robbery	27.2%	28.0%	25.6%	23.8%
Burglary	30.0%	33.7%	31.7%	29.2%
MVT	6.8%	17.7%	14.9%	19.8%
Larceny	29.6%	38.8%	37.4%	40.5%

The percentage of inmates who reported committing motor vehicle theft (MVT) or larceny for drugs or drug money increases from the 1997 dataset to the 2004 dataset; whether this represents an actual increase or only an outlier in the data is unclear, because both our estimate and the NDIC estimate come from the same dataset. However, there are reasons to believe that the increase is real and related to the rise in methamphetamines use over this period. The survey data do not identify the kind of drug that the crime was committed to obtain, but in a comparison between the 1997 and the 2004 state inmate surveys, the percentages of offenders who committed MVT while under the influence of cocaine, opiates, or marijuana remained stable, while the percentage who were on methamphetamine increased from 8.4 to 27.7 percent. While the percentage of inmates who were on methamphetamines at the time of the crime increased for all crime types over this period, other increases were not nearly so drastic.

The refinement of considering only first-year inmates had an effect, but it was a small one. The differences in estimates for the entire inmate population and the population of first-year inmates are between 2 and 5 percentage points and within the 95 percent confidence intervals. For the crimes of robbery or burglary, the first-year estimates are smaller than the whole prison estimates. This may be easily explained because drug use is frequently considered an aggravating condition associated with longer sentences, leading to different attrition rates and the whole prison estimates overestimating the rates for committed offenses. For the crimes of MVT or larceny, we see the opposite effect, with first-year estimates larger than the whole prison estimates.

Use of Drugs at the Time of the Offense

When the first DAFs for drug crimes were created prior to the emergence of the crack epidemic in the 1980s, heroin-generated acquisitive crimes were the most important consideration and the DAFs reflected this. Information on use at the time of the crime was ignored, because economic-compulsive mechanisms for crime were the primary interest. This slowly changed over time, as interest in psychopharmacological crime emerged. However, even the most recent NDIC report did not consider the mixing of drugs when constructing its estimate of the role of drugs in crimes committed under the influence. Moreover, apportioning 10 percent of those crimes reported by inmates as done under the influence of a drug as drug-attributable crimes is a bit ad hoc and may not reflect the actual rate of crimes caused by drug use. Thus,

given the literature on causal effects of drug use, we decided to examine the use of drugs by drug grouping and with the consideration of alcohol to better understand the role of psychopharmacological mechanisms in drug-involved crime.

Data are available from the inmate surveys on self-reports of drug use at the time of the crime for alcohol and a range of drugs separately. To improve precision, we grouped drugs together by their theorized effects identified in the literature.[23] The use of stimulants is associated with some violent crimes, notably IPV. We grouped cocaine and methamphetamine/other amphetamines together as stimulants. Because alcohol use is also associated with violent crimes, we distinguish between the use of illicit stimulants and alcohol at the time of the crime. There is little evidence supporting violent crime as the result of marijuana or heroin use, but it is clear that heroin is positively associated with income-generating crime and it is plausible that marijuana use may lower a person's inhibitions to commit certain property crimes. Thus, we group these substances together as "other drugs" (which represent a very small category once stimulant use, heroin, and marijuana are taken out).

A simple cross-sectional analysis of the drugs used at the time of the crime by crime category and the groups just described (i.e., stimulants, other drugs, and alcohol) are presented in Table B.4 through Table B.10. Rape and arson are not presented, as the reported numbers are too low to generate estimates for those offenses. Figure B.1 shows the main findings from these tables with respect to the involvement of specific groups of drugs and/or alcohol side by side.

Table B.4
Percentage of First-Year Inmates Who Used Drugs or Alcohol at the Time of the Offense

	Alcohol Used at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	6.4%	12.8%
Other drugs, no stimulants	5.4%	8.7%
No illicit drugs	17.0%	49.8%

Table B.5
Percentage of First-Year Inmates Who Committed Murder or Manslaughter and Used Drugs or Alcohol at the Time of the Offense

	Alcohol Use at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	6.9%	5.5%
Other drugs, no stimulants	8.4%	1.6%
No illicit drugs	26.3%	51.1%

[23] We evaluated associations between each drug and crime category separately before aggregating categories up to make sure that we were not mistakenly classifying heroin or other illicits with dissimilar drugs. The groupings used here reflect systematic findings from analyses of each drug and each crime individually.

Table B.6
Percentage of First-Year Inmates Who Committed Assault and Used Drugs or Alcohol at the Time of the Offense

	Alcohol Used at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	4.0%	4.5%
Other drugs, no stimulants	7.1%	4.9%
No illicit drugs	30.2%	49.3%

Table B.7
Percentage of First-Year Inmates Who Committed Robbery and Used Drugs or Alcohol at the Time of the Offense

	Alcohol Use at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	9.7%	8.4%
Other drugs, no stimulants	11.5%	13.2%
No illicit drugs	14.6%	42.6%

Table B.8
Percentage of First-Year Inmates Who Committed Burglary and Used Drugs or Alcohol at the Time of the Offense

	Alcohol Used at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	8.3%	13.0%
Other drugs, no stimulants	4.4%	10.8%
No illicit drugs	13.3%	50.2%

Table B.9
Percentage of First Year Inmates who Committed Motor Vehicle Theft and Used Drugs or Alcohol at the Time of the Offense

	Alcohol Use at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	10.4%	32.1%
Other drugs, no stimulants	6.9%	2.6%
No illicit drugs	14.5%	33.4%

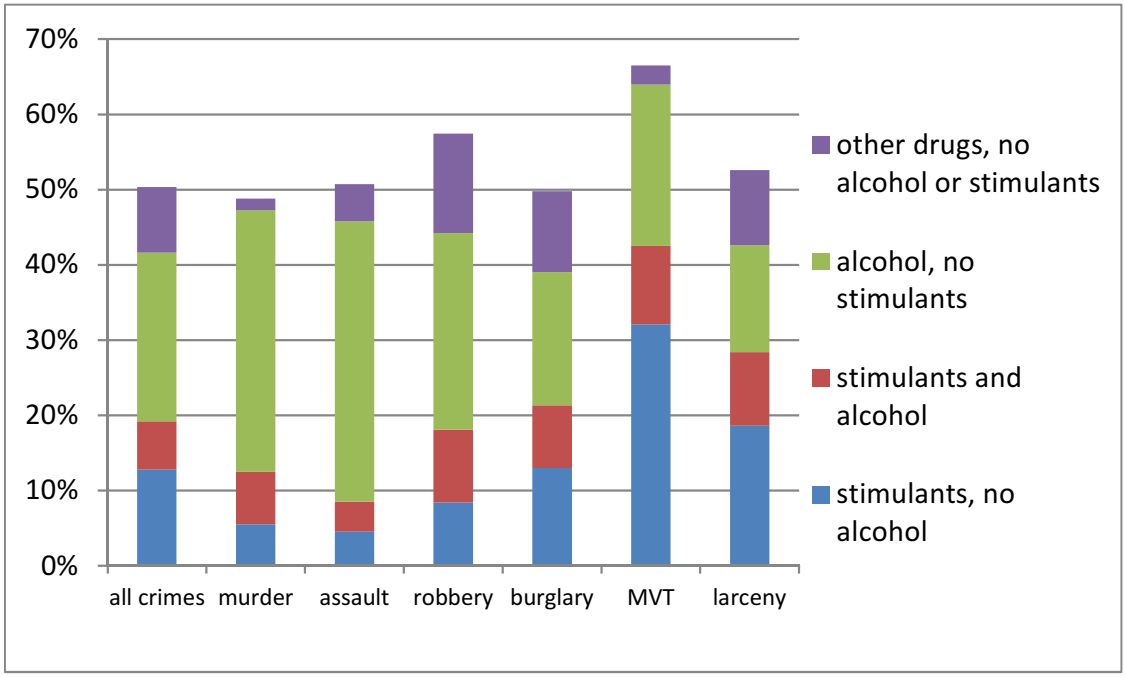
Table B.10
Percentage of First Year Inmates who Committed Larceny and Used Drugs or Alcohol at the Time of the Offense

	Alcohol Used at the Time	
Drug Used at the Time	**Yes**	**No**
Stimulants (cocaine and meth/amph)	9.8%	18.6%
Other drugs, no stimulants	3.8%	10.0%
No illicit drugs	10.4%	47.4%

As can be seen in the bottom right-hand corner of each of the tables, nearly half of all incidents of murder, assault, burglary, and larceny were committed by inmates who reported no use of alcohol or an illicit drug at the time of the offense. In the case of robbery and, in particular, MVT, the rates of intoxication were a bit higher than for the other crimes. Overall, alcohol and/or an illicit drug were consumed at the time of the offense for half of all inmates.

Table B.4 shows that stimulants were involved in 19.2 percent of all crimes committed by first-year inmates in 2004 (top row, adding across both outcomes for alcohol), but this figure represents approximately 38 percent of all crimes involving the use of alcohol and/or an illicit drug (19.2/50.2 = 38.24). Heroin, marijuana, and other illicit drugs were involved in 14.1 percent of all crimes committed by first-year inmates in 2004 but were involved in 31 percent of all crimes involving alcohol and/or an illicit substance (driven overwhelmingly by marijuana use). The involvement of stimulants, other illicit drugs, and alcohol varies considerably by type of crime, but not in the way we expected. This is seen even more clearly in Figure B.1.

Figure B.1
Drugs Used at the Time of the Crime by First-Year Inmates, by Substance and Crime



What can be seen clearly from Figure B.1 is that alcohol is the predominant substance used at the time of the offense for all of the more violent crimes (murder, assault, and robbery). While stimulants play a small role, alcohol is by far the main intoxicant; and only in the case of robbery do we see a sizeable influence of other illicit drugs. This is expected and fits with the established literature on the psychopharmacological mechanisms of alcohol-related violence. However, these analyses provide little support of the hypothesized link between stimulant use and violent crime,

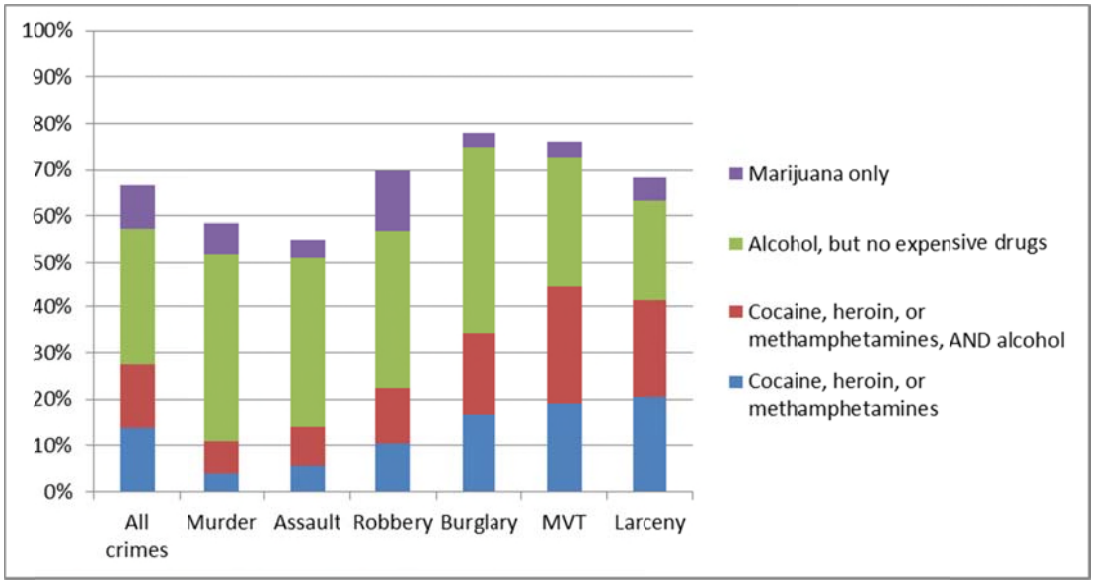
as stimulant use represents a smaller share of use at the time of the offense for violent crimes than for other crimes. The use of stimulants at the time of the crime is highest for MVT, particularly in relation to methamphetamine, but it is also involved in a higher percentage of larcenies.

Of course, there are other ways of grouping drugs that might be considered. Thus, we also tried combining cocaine, heroin, and other opiates with methamphetamine and other amphetamines in a single category of the most commonly used "expensive and highly addictive drugs," which are related to economic-compulsive acquisitive crimes and, for some of the stimulants, violent crime. Marijuana presents a different category of drug use; while marijuana is the most commonly used drug, there is little evidence of marijuana on its own being causally associated with violent or acquisitive crime. So, by separating it out, we can assess how much previous findings, in which it was grouped with heroin and other illicit drugs, might have misattributed to marijuana use crime that is truly related to the use of harder illicit drugs. Regular alcohol use is also included. Because alcohol is an important, but legal, psychoactive substance, we present it somewhat differently than the drug categories; both the percentage of inmates who use expensive drugs and the percentage who use marijuana only are examined with and without concurrent regular alcohol use.

The estimates from these alternative breakdowns are shown in Figure B.2. As expected, the percentage of inmates who use the expensive drugs, including cocaine, heroin/other opiates, and methamphetamine/other amphetamines, is greater among those who committed acquisitive crimes, particularly burglary, MVT, and larceny. This is indicative of an economic-compulsive mechanism of drugs-crime. A higher proportion of those inmates who committed violent crimes, such as murder/manslaughter and assault, used alcohol without other illicit drugs. This is consistent with what we observed previously. The use of marijuana alone is involved in only a small number of inmate drug crimes.

Regardless of how drugs are grouped or whether they are considered individually, it appears that the proportion of offenders who used drugs alone is relatively smaller than that of offenders who used only alcohol or alcohol in combination with an illicit drug. While it may be the case that drugs decrease inhibitions and impulse control, these findings do not necessarily suggest a strong psychopharmacological link to those who commit crimes and end up incarcerated in prisons.

Figure B.2
Inmate Use of Expensive Drugs, Alcohol, and Marijuana by Crime



Note: The proportion of inmates with drug and/or alcohol involved crime in this figure is slightly higher than those reported in B.1 because "use" is defined in terms of regular use rather than use at the time of the offense.

B.4. Findings with Respect to Other Conceptions of Problem Drug Use

Using inmates' reports of committing crime for drugs or money to buy drugs as a way of informing DAFs has been useful in the past, but it is limited in a couple of ways. First, inmate surveys rely on inmates accurately knowing and reporting the motivations for their actions. Motivations may not be so straightforward. An addict who commits a crime for money to pay the rent because he spent his rent money on drugs would not necessarily report this as a crime committed for drugs, even though drugs may be the ultimate cause. As the understanding of drug addiction has improved, with better diagnostics for dependence and abuse, there may be other ways of describing problem drug use that are more informative. Second, this way of informing the DAFs focuses exclusively on economic-compulsive crime and ignores other relevant mechanisms through which drug use might be related to crime, such as systemic crime.

We examine several alternative conceptions of problem drug use, including regular use versus chronic or dependent use at the time of the offenses, to assess how much more chronic or dependent users report engaging in crime to support their drug habit. These aspects are examined individually with consideration to multiple kinds of drugs, both on their own and together, to see to what extent the different conceptions of problem drug use overlap or diverge.

Regular or Chronic Use

One way of considering problem drug use is by examining the frequency of use. We identified two categories of frequent use: regular use, defined as weekly use or more; and chronic use, defined as almost daily use, or use 20 times per month or more.

Based on those criteria, the drug use rates among inmates were much higher than those among the general population (see Table B.11). Approximately half of all inmates used one or more substances regularly. Marijuana was the substance most commonly used, followed by cocaine, methamphetamines, and heroin, which were all used at rates higher than in the general population. The distribution of regular use of substances was very similar to that of chronic use of cocaine, heroin, methamphetamines, and marijuana, but not of alcohol. While 44 percent of inmates reported drinking weekly or more, only 22 percent reported drinking almost daily. The percentage of regular users who were chronic users was much smaller for alcohol than for illicit drugs.

Table B.11
Regular or Chronic Drug Use Among Inmates (Full Sample and First-Year Cohorts)

	Regular Use (weekly or more)		Chronic Use (almost daily/20 times per month or more)	
Substance	**Full Sample**	**First-Year Cohort**	**Full Sample**	**First-Year Cohort**
Cocaine	18.2%	17.0%	13.1%	12.2%
Heroin/other opiates	7.0%	7.8%	5.9%	6.9%
Meth/amphetamines	10.7%	15.0%	8.4%	12.1%
Marijuana	36.2%	34.8%	29.7%	27.9%
Methaqualone	0.6%	3.3%	2.9%	0.2%
Barbiturates	2.1%	2.1%	1.3%	1.3%
Tranquilizers	3.3%	3.2%	2.0%	1.8%
PCPs	1.6%	1.0%	1.1%	0.7%
Ecstasy	2.0%	2.5%	0.9%	1.1%
LSD	1.2%	0.6%	0.5%	0.2%
Other drugs	0.4%	0.3%	0.4%	0.2%
Inhalants	0.7%	0.5%	0.4%	0.3%
Any drug	51.5%	53.5%	43.6%	45.0%
Alcohol	45.9%	44.1%	24.9%	21.8%
Any drug or alcohol	68.0%	69.4%	53.3%	53.6%

First-year inmates look a bit different from the full inmate population in terms of choice of drug used. In particular, whether measured in terms of regular or chronic use, methamphetamines/amphetamines use in the first-year cohort is higher than the full sample at large, which is consistent with general trends during this period, which show a rise in methamphetamines use nationally. Usage rates of heroin and other opiates were also higher among first-year cohorts, again reflective of changing drug use patterns in the general population. Alcohol use, however, particularly chronic alcohol use, was lower in the first-year

cohort, resulting in no net change in the prevalence of drug or alcohol use overall. Given the difference in the composition of drugs consumed by the first-year inmate cohort (shown in Table B.11) and the general associations these substances have with violent and income-producing crime (shown in Figure B.2), the moderate decrease in robbery and increase in MVT between the full sample and the first year-cohort reported in Table B.3 may, in fact, simply reflect that the first-year cohort was more likely to use methamphetamines and opiates than cocaine and alcohol. To the extent that chronic use differs more than regular use between the two samples, it will be interesting to know how much chronic users report being under the influence of a drug or in need of money for drugs at the time of the offense. We discuss this below.

Drug users often use more than one drug, which can make consideration of the causal effects of drug use more complicated. Our analysis examined the use of multiple drugs by inmates in several ways. In Table B.12, we look at the percentage of inmates who use any drug, regardless of whether they use any other drug regularly. Table B.12 also examines the use of multiple drugs, both with and without alcohol. While alcohol is a legal drug, it is associated with psychopharmacological violence, which can confound analyses of drug crimes.

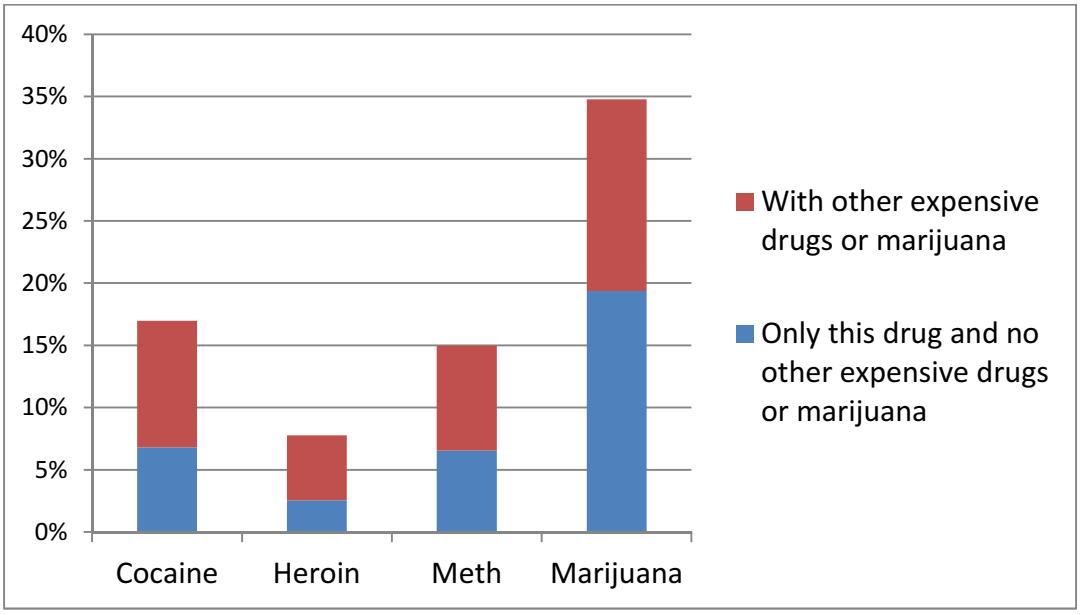
Table B.12
Regular Drug Use of First-Year Inmates, with and without the Use of Multiple Drugs

Substance	Any Regular Use	Regular Use, but No Use of Other Drugs	Regular Use, but No Use of Other Drugs or Alcohol
Alcohol	44.1%	16.2%	16.2%
Cocaine	17.0%	6.8%	2.9%
Heroin	7.8%	2.5%	1.5%
Meth	15.0%	6.5%	4.2%
Marijuana	34.8%	19.4%	8.5%
Any other drug	7.6%	0.6%	0.3%
Multiple drugs	17.7%		
Multiple drugs or alcohol	35.9%		
Total using anything	69.4%		

The data indicate that the majority of inmates who regularly use cocaine, heroin, or methamphetamines use more than one drug. Over half of all inmates who use marijuana, on the other hand, do not use any other illicit drugs (19.4 percent report marijuana as the only illicit drug they use). Even among marijuana users, however, the vast majority also use alcohol (as indicated by only 8.5 percent of marijuana users not using alcohol or another illicit drug).

Data specifically demonstrating the degree of polydrug use by drug is illustrated more clearly in Figure B.3. Just over half of all inmates who use illicit drugs use multiple drugs.

Figure B.3
Polydrug Use by Inmates Regularly Using Cocaine, Heroin, Meth, or Marijuana



We can also examine which substances are used together. Table B.13 identifies the kinds of specific drugs used together conditional on the first drug used. For example, the heroin column of the cocaine row shows that 16.8 percent of inmates who first report use of cocaine also used heroin, while the cocaine column of the heroin row shows that 43.9 percent of inmates who first used heroin also used cocaine.

Table B.13
Regular Use of Other Specific Drugs Conditional on Use of One Drug

	Percentage of Inmates Who Used a Specific Drug Conditional on the Use of the Drug in First Column					
Substance	**Cocaine**	**Heroin**	**Meth**	**Marijuana**	**Other drugs**	**Alcohol**
Cocaine	–	16.8%	13.6%	52.2%	16.8%	63.1%
Heroin	43.9%	–	18.2%	47.1%	29.3%	51.5%
Meth	23.3%	11.9%	–	56.9%	21.9%	51.8%
Marijuana	26.2%	9.1%	16.8%	–	17.3%	60.7%
Other drugs	40.3%	23.7%	37.8%	75.5%	–	68.3%
Alcohol	25.0%	7.8%	12.0%	47.8%	12.4%	–

We find in looking at this table that the regular use of multiple drugs is not a homogeneous concept, but varies by drug. As expected, alcohol is the most common conditionally used substance—between half and two-thirds of inmates who reported regular use of cocaine, heroin, methamphetamines, or marijuana also reported drinking regularly (the final column). Given the

links between alcohol and violent crime, it is important to consider the role of alcohol when attributing violent crime to illicit drug use. Marijuana is the most commonly used illicit drug, with approximately half of all inmates who drink or use cocaine, heroin, or methamphetamines also using marijuana.

Dependence

Another way to consider problem drug use is through the concept of dependence. Dependence is a clinical term denoting aspects of addiction that were added to the DSM-IV as a standard diagnosis in 1994. Because the clinical conditions for dependence were not recognized as a standard in the late 1970s and 1980s, when the initial cost-of-drug studies were performed, it could not be used to inform DAFs. Questions reflecting dependence and abuse criteria were added to the inmate surveys starting in 2002 for the SILJ and in 2004 for the SISFCF.

We defined dependence using the standard operating definition, that is, that the respondents indicated experiencing three or more of the seven symptoms that describe a dependency syndrome (difficulty at work/school, having problems cutting back, needing to use when you first wake up, etc.). Survey questions addressing dependence in the inmate surveys do not identify which drug a person is dependent on, only dependence on drugs as compared with dependence on alcohol.

The proportion of first-year inmates in state prisons in 2004 who met our criteria for dependence was nearly two-fifths (38.9 percent), while nearly one-fourth met criteria for alcohol dependence (last row of Table B.14). However, the rates of dependence varied quite considerably among those in prison for particular offenses, with MVT and larceny representing the group with the highest rates of drug dependence, and the more violent offenses (murder, rape) representing the lowest. For alcohol, the crime category with the most first-year inmates meeting DSM-IV criteria for dependence was assault (a violent crime). The lowest rate of alcohol dependence was found among those who committed for rape.

Importantly, the proportion of first-year inmates meeting DSM-IV criteria and sentenced to prison for committing robbery, burglary, MVT, and larceny are consistently higher than the proportion of crime in each of these categories attributed to drugs using the traditional method of relying on inmates' self-reports of being in need of drugs/money to buy drugs or being under the influence, shown in Table B.3.

Table B.14
Percentage of First-Year Inmates in State Prisons Who Were Drug-Dependent, by Crime

Crime	Percentage Drug-Dependent	Percentage Alcohol-Dependent
Murder/ manslaughter	16.1%	24.3%
Forcible rape	17.7%	10.5%
Assault	32.1%	34.9%
Robbery	43.9%	26.5%
Burglary	44.1%	22.7%
Arson	20.5%	20.4%
MVT	58.8%	28.3%
Larceny	57.5%	26.9%
All inmates	**38.9%**	**24.6%**

This finding is perhaps not too surprising with regard to acquisitive crimes, for which the newly constructed dependence measure can better capture the crime that dependent users are unwilling to attribute to their dependency and are possibly in denial of. It is somewhat more surprising, however, for the violent crime of robbery, for which the traditional DAF attributes 23.8 percent of all robberies to drugs among the first-year cohort, while the new dependent measure attributes 43.9 percent. This near doubling of attribution may or may not be real, because it is not clear how much these drug-dependent individuals are also dependent on alcohol. Nonetheless, it suggests that previous constructions of drug-related crime might grossly underestimate the amount of drug-involved crime occurring. Dependence should be considered as a dimension of problem drug use in future efforts to better understand the drugs-crime relationship.

Comparing Multiple Conceptions of Use

The previous analyses examined drug-related crimes under several different conceptions of problem drug use: crimes committed to get drugs or money to buy drugs, regular or chronic use of drugs, and dependence. While using data from inmate reports that the crime was committed for drugs is the traditional approach, the other conceptions may be useful to describe other aspects of drug-related crime. In this section, we compare the different conceptions of problem drug use to see how they converge or diverge and the resulting implications for understanding drug-related crime.

The overlap between the four concepts was calculated using the conditional probability that an inmate met the threshold for one concept given that he met the condition for another concept (Table B.15). For example, among the alternative ways to define drug problem categories, Column B in Table B.15 (labeled "committed for drugs") tells us that 41 percent of inmates who were on drugs at the time of the offense (Row 1) committed the crime for drugs, while Column C (labeled "dependent on drugs") shows that 76.9 percent of these offenders who reported being on drugs at the time of the offense met clinical criteria for dependence, and column D (labeled "chronic use of expensive drugs") shows that 89.4 percent of these same offenders met our

definition of a chronic user. In other words, over three-fourths of all offenders on drugs at the time of the offense were either dependent or chronic users.

Table B.15
Overlap Between Different Conceptions of Problem Drug User Populations

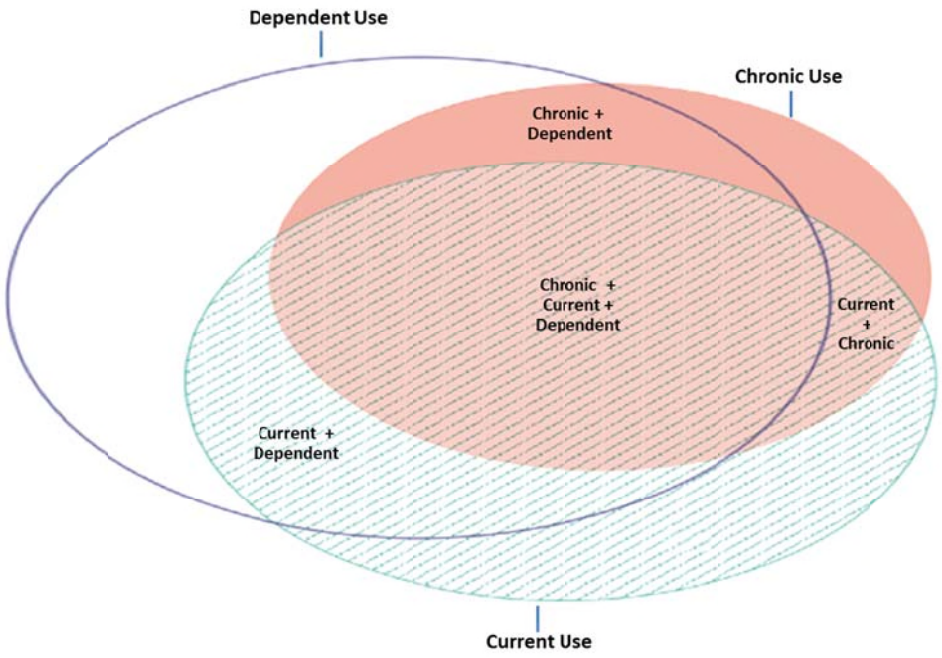
	Alternative Ways to Define Drug Problems (Conditional probability that inmates fit an alternative definition conditional on row in column A)			
Types of inmates reporting drug use	**A. On drugs at the time**	**B. Committed for drugs**	**C. Dependent on drugs**	**D. Chronic user of expensive drugs**
1. On drugs at the time	–	41.0% (n=41,356)	73.8% (n=74,477)	89.4% (n=90,158)
2. Committed the crime for drugs	75.7% (n=41,356)	–	78.9% (n=43,098)	83.6% (n=45,674)
3. Dependent on drugs	63.1% (n=74,477)	36.5% (n=43,098)	–	78.2% (n=92,292)
4. Chronic user of drugs	66.0% (n=90,158)	33.4% (n=45,674)	67.5% (n=92,292)	–

Importantly, however, we see there is not perfect symmetry across these categories. As shown in Row 3 (labeled "dependent on drugs"), only 63.1 percent of those meeting clinical definitions of dependence reported being on drugs at the time of the offense (Column A) and only 36.5 percent reported committing the crime to get drugs or money to buy drugs (Column B). In other words, although questions related to use at the time of the offense or to committing the crime for drugs appear to broadly capture behaviors of some of the dependent and chronic users, not all are captured. However, limiting a definition to one of these two criteria ignores a fair number of offenders who meet definitions of dependent or chronic use. If we believe drug dependence to be a driving force for acquisitive crimes, then using only inmate reports of having committed the crime for drugs or drug money would underreport drug-related crimes.

Indeed, even if we focus in on the more serious drug users, our various definitions do not perfectly overlap, in that only 66 percent of offenders meeting DSM-IV criteria for dependence use a drug on a near daily basis (i.e., are a chronic user, as shown in Row 3, Column D) and only 67.5 percent of chronic (near daily) users meet DSM-IV criteria for dependence. Thus, neither of these definitions perfectly identifies a group of offenders who are using at troubling rates.

This is shown more clearly in the Venn Diagram in Figure B.4.

Figure B.4
Relationship Between Regular, Chronic, and Dependent Use in the First-Year Inmate Cohort



These alternative concepts of problematic drug use can help inform a range of possible estimates for attribution fractions related to acquisitive crimes (Table B.16). The narrowest specification for drug-related crime is the conventional definition based on inmate reports that the crime was committed for drugs or money to buy drugs. These represent a direct estimate of the economic-compulsive mechanism of drug crimes. The broadest specification for drug-related crime includes all definitions: crimes committed for drugs, crimes committed by dependent users, and crimes committed by chronic users. Whether the narrowest or broadest specification is closer to the truth is unclear, but using the two alternative specifications can be informative as to the extent of drug crime. These estimates are also used to inform Figure B.4.

Table B.16
Alternative Specifications of Problem Drug Use Among First-Year Inmates

Crime	Committed for Drugs	Committed for Drugs or Dependent on Drugs	Committed for Drugs, or Dependent or Chronic Use of Cocaine, Heroin, or Meth
Robbery	23.76%	53.15%	55.42%
Burglary	29.15%	55.28%	56.97%
MVT	19.84%	65.03%	72.62%
Larceny	40.48%	65.22%	67.02%

B.5. Summary of Findings from State and Federal Inmate Data

Inmate data have been used to inform estimates of drug-related offenses since the earliest cost-of-crime studies in the 1970s and 1980s, but there are several ways in which estimates from inmate data can be improved.

First, the distribution of offenses among the inmate population are not equivalent to the distribution of offenses committed by offenders at large. While attempts to break down DAFs by crime take a small step toward adjusting this problem, a more significant improvement would be to focus on the use of data only from first-year inmates. As these inmates have all entered prison within the past year, their data are more likely to be representative of contemporary offenders, crimes, and drugs of choice.

Second, drugs are not homogeneous in their applicability to drug crime. This is true not only for illicit drugs but also for alcohol, which can play a significant role in violent crimes in particular. While Appendix A identified how some drugs are causally linked to certain crimes, the inmate data also reflect these distinctions. For example, the regular use of expensive drugs is disproportionally associated with acquisitive crimes, while the regular use of alcohol is disproportionately associated with violent crimes. A similar finding for inmates who used drugs at the time of the crime supports a strong economic-compulsive mechanism and a weak psycho-pharmacological mechanism. A strong psychopharmacological mechanism is identified instead for alcohol.

Third, multiple indicators of problem drug use can be valuable for describing drug involvement in crimes. One particular indicator is dependent use. Dependent use is not only more theoretically sound as an indicator than use at the time of the offense in that it is reflective of the medical literature on addiction, but it is also supported empirically by its high correlation with chronic use and covers a greater extent of problematic drug users. There is clear evidence that dependent users are not necessarily high at the time of an offense, but that they are still engaging in a crime. The evidence also suggests that it is important to consider in future work what the motivations are for dependent/chronic users to engage in crime other than intoxication and/or the need for money to buy drugs. It is very possible that dependent users are in denial of their habit, claiming instead the need to steal for food or clothing, but only becuase they used what money they had on drugs.

However, several limitations remain in the use of inmate surveys. The first limitation is in the use of inmate survey data to describe criminal behavior. While steps have been taken to make the inmate population data more representative of all contemporaneous offenders (i.e., creating different estimates for different offenses and using first-year inmate data), there are still reasons to believe that the two populations are different in meaningful ways. Substance use may affect the probability of being arrested, prosecuted, and/or convicted. As a result, the substance use of those criminals who are incarcerated may be substantially different from the substance use of those who are not.

A second limitation of inmate data is that it is more illustrative of the pharmacological or economic-compulsive mechanisms of crime than the systemic mechanisms of crime or changes to the life trajectory of long-term users and the children of users. Inmate survey data do include some variables on parental use, historical use, and gang involvement, but their use in estimating drug-related crime is challenging.

A final major limitation is that this approach only presents associations rather than directly assessing causal relationships. While these associations may correspond with the causal associations identified in Appendix A, the use of the scientific literature to generate numerical estimates is limited because of differences across research approaches and the populations studied. Nonetheless, the level of drug involvement may serve as a useful indicator, even if we cannot precisely determine at this time the extent to which the association is causal.

While these limitations present some concerns, they are less significant when the metrics from inmate data are combined with other measures of drug-related crime, as the information can be cross validated from other sources, and other data metrics can help identify potential biases caused by the limitations of these data. Thus, another significant advantage of the dashboard concept discussed in this report is that, depending on the metrics selected for inclusion, it encourages the policymaker to consider more than one indicator when evaluating drug-relatedness and allows the analyst to help correct distortions caused by using imperfect data.

APPENDIX C

Analyses of New York State Computerized Criminal History (CCH) Data for 2004 and 2011

C.1. Introduction

In Chapter Six of this report, we discussed several indicators that could be used to describe the drugs-crime relationship from Record for Arrest and Prosecution (RAP) sheet data. For interested readers, this Appendix outlines in greater detail the dataset, analyses, and results involving the RAP sheet data.

Our analysis sought to understand how much RAP sheet data, which contain standard administrative information on current charges and a historical criminal record, could be used to understand the role of drugs in crime. All jurisdictions collect basic information on arrests and record this information in RAP sheets. It is the aggregated information in these sheets that is reported to the state for the purposes of constructing Uniform Crime Reports (UCR), but the RAP sheet information is considerably more comprehensive in most states than what is reported in the UCR. By focusing on arrestees, the RAP sheet data is more representative of the population of offenders (thus removing biases in sampling associated with prosecution, conviction, and commitment to prison as well as duration of stay in prison). However, by using administrative data, the RAP sheet data lack self-reported information on drug-use involvement as well as any sort of objective measure of drug use during the offense.

Using the RAP sheet data, we explore here the extent to which information about current and prior criminal charges can be used to understand both the concurrent involvement of drug use in violent and property offenses (given there is no direct information on drug involvement aside from a drug offense) as well as the influence of previous drug offending on current offending. It is in our investigation of this second issue that we can gain some insights as to the relative importance of a criminal record, caused by a prior drug arrests, on subsequent offending and better understand the ways drug use can indirectly influence crime through lower human capital.

C.2. Background on Data Requested and Obtained from New York State

As is true for many states now, New York maintains a computerized criminal history data file that contains information on all arrests made within the state, the arraignment associated with those arrests, and their dispositions. The data sets vary across states (e.g., arrest charges and arraignment charges, along with their accompanying dates, vary to a small degree across states), but there is a lot of commonality with respect to the basic information captured within these data sets. For New York State, arrestee information includes a variety of other information, including charge detail, counts, and the UCR code for the charge.[24] The New York data set also contains the category of the charge (type of felony, misdemeanor, etc.), type of charge (weapons charge, child victim charge, hate crime), sex offender registry code, and an identifier that allows us to

[24] The Uniform Crime Reports program collects crime statics from law enforcement agencies nationwide to compile into an annual report published by the FBI.

link the individual arrested to prior arrests in their system. Information from the full history file includes gender, date of birth, race, and Hispanic ethnicity.

It should be noted that the file we analyzed only contained historical information for arrests made in New York State. If an individual was arrested in another state and moved to New York following the arrest, his or her out-of-state arrest would not be included in the file.

Depending on the question, we conducted some analyses at the arrest level and other analyses at the individual level. For analyses at the individual level, if an arrestee had more than one arrest within a year, we used the most recent (i.e., last) arrest. We did include individuals who were arrested in both the 2004 and 2011 cohorts, which resulted in 3,364 arrestees who were included in both sets of analyses. While we originally hoped to examine arrestee data associated with all major reported crimes resulting in an arrest that occurred between 2004 and 2011, the data scope was too large for the New York State Division of Criminal Justice Services to accommodate our request.

To be able to examine changes over time and include all charges (not just the top charge for each arrest), we had to dramatically reduce the amount of data we requested. We did so in two ways. First, we only requested data for two years (2004, 2011) so we could obtain a larger sample of arrests from each year and still identify longer-term trends. The year 2004 was chosen because it corresponded with the year for which the SISCF is available and we thought it might be useful to compare findings. The year 2011 was chosen because it represented the most recent year for which data were publicly available. Second, we requested a random sample of arrestees charged within either year with a drug charge or one of the following top charges:

- murder (09A, murder and non-negligent manslaughter, and 09B, negligent manslaughter)
- rape (11A, forcible rape)
- robbery (120, robbery)
- assault (13A, aggravated assault, and 13B, simple assault)
- larceny (23H, all other larceny)
- stolen property (280, stolen property offenses)
- drugged driving (90D, driving under the influence; does not include the charge of driving under the influence of alcohol)
- prostitution (40A, prostitution).

These were the crimes which had the greatest number of arrests in each year (as seen in Table C.1) and for which the literature suggests a possible relationship with illegal drugs (see Appendix A).

While we requested the total cohort of those arrested for drug violations (35A, drug/narcotic violations), we were only sent a sample of these violations. The 2004 sample of arrestees includes 14,044 individuals who had over 101,000 total arrests up through 2004 (over seven arrests per individual on average). The 2011 sample of arrestees includes 24,229 individuals, who had 146,029 total arrests up through 2011 (over six arrests per individual on average).

Once we received the data, we learned that all controlled substances, regardless of type, are governed by a single offense code, PL 220, which is non-specific in terms of which drug was involved. Thus, it is not possible, using the New York State code, to separate heroin from cocaine or methamphetamines. While there is also a public health offense code (3306) that lists specific drugs by schedule (I–V), category, and name, this is not included as part of the detailed offense code we received. However, we suspect this code was at least partially invoked because the arrest data include the UCR codes for various offenses and these codes do differentiate marijuana from narcotics and other drugs. Using PL 220 alone enables only a broad identification through specific subsections in the statutes, but heroin and cocaine are not uniquely identified in these subsections, and while methamphetamines and cocaine possession are (not sales, trafficking, or intent to sell, just possession), they are only used occasionally. Thus, this significantly limited our ability to use these data to examine drug-specific relationships. However, it is possible that other states differentiate by substance and that the resulting analyses could be broken down by specific drug.

Table C.1
Breakdown of the Number of Arrests for Various Codes in New York State by Year and the Size of Our Sample of These Arrests for a Given Year

IBR Code	Label in NY Code	2004	2011	Total in NY Data	2004 Sent to RAND	2011 Sent to RAND
09A	Murder and non-negligent manslaughter	**741**	**732**	**2198**		
09B	Negligent manslaughter	**26**	**12**	**60**		
	Combined = Murder	**767**	**744**	**2258**	**147**	**140**
11A	Forcible Rape	**780**	**706**	**2194**	**191**	**160**
11B	Forcible Sodomy	536	482	1480		
11C	Sexual Assault w/ object	52	38	126		
11D	Forcible Fondling	1078	1757	3929		
11E	Course of Repeated Sexual Contact	90	121	327		
120	Robbery	**5183**	**7834**	**18932**	**1410**	**2154**
13A	Aggravated Assault	**7636**	**15064**	**30910**		
13B	Simple Assault	**6063**	**22893**	**35944**		
	Combined Assault	**13699**	**37957**	**66854**	**2403**	**3816**
200	Arson	303	261	892		
220	Burglary/Breaking and Entering	5098	7821	18677		
23A	Pocket-Picking	4	20	31		
23G	Theft from a Motor Vehicle Parts or Accessories	76	93	257		
23H	All other larceny	**19445**	**56448**	**98611**	**7108**	**12460**
240	Motor Vehicle theft	1118	1423	3676		
26A	False Pretenses/Swindle/Confidence games	1177	1602	3786		
26B	Credit Card/ATM Fraud	13	12	39		
26C	Impersonation	1758	2620	6304		
26D	Welfare Fraud	248	338	864		
270	Embezzlement	30	85	152		
280	Stolen Property Offenses	**3145**	**4951**	**11036**	**467**	**3816**
290	Destruction/Damage/Vandalism of Property	5010	13670	24658		
36B	Drug Equipment Violations	827	838	2480		
40A	Prostitution	**1448**	**1693**	**4122**	**882**	**637**
40B	Assisting or Promoting Prostitution	437	293	1115		
Totals		**62322**	**141807**	**272800**		

C.3. Findings with Respect to Drug Involvement in Crime

We begin our analysis by simply looking at the distribution of major offenses observed in the data and how much drug charges occur currently or in terms of prior offenses. In Table C.2, we look at major offenses generating arrests in both 2004 and 2011. Larceny, drug violations, assault, and robbery are the four offenses most frequently observed in both years, with larceny arrests being the most common (representing about one-third of the total) and drug arrests being

the second most common in 2004 and 2011, suggesting a bit of consistency despite a generally higher total number of arrests in 2011 than in 2004.[25]

Because drug offenses are the second highest category of crimes in both years of our random sample, we thought it would be useful to understand the composition of drug offenses. Table C.3 shows the breakout of offense charges by drug arrest in both years. Note that, because an individual can be charged with both a possession and sales offense, the number of offenses sum to a total greater than that reflected in Table C.2. We found that over 90 percent of drug arrests in New York State involve a drug possession charge, while less than 15 percent involve a drug sale charge.[26] Drugged driving incidences are included in our general drug offense categories (to differentiate drunk driving from drugged driving).

Table C.2
Percentage of Arrests for Major Crimes Within Our Random Sample of 2004 and 2011 Arrestees

Crime	Number of 2004 Arrests	Number of 2011 Arrests
Murder	147 (.7%)	140 (.4%)
Rape	191 (.88%)	160 (.4%)
Robbery	1,410 (6.5%)	2,154 (5.8%)
Assault	2,403 (11.1%)	3,816 (10.3%)
Stolen Property	467 (2.2%)	751 (2%)
Larceny	7,108 (32.8%)	12,460 (33.6%)
Prostitution	882 (4.1%)	637 (1.8%)
Drug	3,092 (14.3%)	4,616 (12.4%)
DUI	432 (2%)	424 (1.1%)
Total	16,132	25,158

Table C.3
Drug Arrests Broken Out by Offense Category for Our Random Sample of 2004 and 2011 Arrestees

Drug Offense	2004 (Percentage of offenses)	2011 (Percentage of offenses)
Drug Possession	2,800 (90%)	4,250 (92%)
Drug Sale	445 (14%)	589 (13%)
Drugged Driving	64 (2%)	102 (2%)

Another way to consider the composition of drug offenses is by examining the specific drugs involved. Table C.4 provides insight into how well we are able to do this for drug offenses in the state of New York in 2004 (Panel A) and 2011 (Panel B). The UCR codes allow us to break out marijuana-specific violations, but otherwise we can only identify general narcotics. New York does have separate penal codes for cocaine possession, methamphetamines possession, and

[25] This increase in arrests for the sub-group of offenses being examined is consistent with the increase in total arrests during this time (New York State Division of Criminal Justice Services, 2012).

[26] In New York State, intent with possession to distribute is coded as New York Penal Code section 220.16, Criminal Possession of a Controlled Substance in the Third Degree.

synthetic sale and possession offenses,[27] but these are not used frequently (as indicated by the very low numbers given for these categories in the table).

Table C.4
Drug Arrests by Specific Drug in Our Random Sample of 2004 and 2011 Arrestees

Drug	Total Arrests	Possession Arrests	Sales Arrests
Panel A: 2004 Data			
Marijuana	740	684	89
Narcotic	101	42	59
Cocaine	?	42	?
Methamphetamines	1	0	1
Synthetic	7	2	5
Other/unknown	2,554	2,215	339
Panel B: 2011 Data			
Marijuana	2,040	1,945	194
Narcotic	102	50	52
Cocaine	?	50	?
Methamphetamines	1	2	0
Synthetic	17	10	7
Other	2,927	2,529	398

One potential reason for the lack of specific drug arrest information is that some jurisdictions in New York State provide detailed information by drug and others do not. In both the 2004 and 2011 data, the number of drugs identified as "other" exceeds the number of drugs for which a specific drug was identified. Because the specific drugs identified reflect the most commonly used drugs, it is implausible that the "other" category reflects drugs other than those identified (such as LSD or PCP). Two alternative possibilities are that the "other" code includes large numbers of references to crimes involving multiple drugs or large numbers of references to crimes in which a specific drug was involved but not recorded.

To explore these possibilities, we examined arrest categorizations for specific drugs and for "other" by county code (results not shown). We did, in fact, observe a clustering of coding for "other" in 4 of the 61 counties. However, these four counties also contained the highest number of drug-related arrests. And although a few specific codes are occasionally used in these counties, they are the exception rather than the norm. Thus, there appears to be a systematic bias toward not identifying specific drugs in particular counties.

Of the specific drugs identified in the New York data (and shown in Table C.4), the vast majority of the drug arrests in both years are for marijuana. The category of "narcotics," which, for historical reasons, includes both cocaine and heroin even though cocaine is not a narcotic, are relatively small vis-à-vis marijuana, and synthetic drugs are virtually non-existent. Of course, because the "other" category has even more observations than that of marijuana in both years

[27] The UCR handbook defines "synthetic" as "manufactured narcotics which can cause true drug addiction (demerol, methadones)."

and because it is difficult to know what exactly is included in this category, it is hard to say with any certainty what drugs seem to be most substantially associated with crime.[28] Because we cannot do a good job differentiating drugs with these data, we will move forward keeping all drugs pooled together for most of the remaining analyses.

Concurrent and Prior Drug Arrests

We first examined whether individuals arrested for a major crime in 2004 or 2011 were concurrently arrested for a drug crime (i.e., drug possession, drug sales, or drugged driving). If individuals were not concurrently arrested for a drug crime, we also considered whether they had a prior drug arrest to better understand how much prior involvement with drugs, as reflected in a criminal charge for drugs, may be associated with subsequent crime or a trajectory of crime. The results, presented in Table C.5, show that for the three most frequent non-drug arrests (larceny, assault, and robbery), concurrent drug arrest is fairly rare and falling in 2011 vis-à-vis 2004. However, prior drug arrests are common. In 2011 for example, generally 25–30 percent of larceny, assault, or robbery arrestees had a prior drug offense, and the rate is considerably higher (47 percent) for stolen property offenses. Across all crime categories, the rate of prior drug convictions is lower in 2011 than in 2004, when 30–35 percent of all current arrestees had prior drug arrests. Concurrent use of drugs was also a bit higher in 2004, particularly for assault and stolen property offenses.

Because marijuana is a drug that is uniquely identifiable in most of the data, we wanted to examine how much the trends identified for the full sample apply to marijuana-specific offenses (as compared to all other drug offenses). We show in Table C.6 that the results for marijuana-specific charges are generally consistent with those reported for the full sample. Across all major crime categories, most arrestees for major crimes were not dually arrested for a marijuana offense. The largest group with a concurrent marijuana arrest was that charged with assault in 2004 (2.5 percent). Also, the proportion of offenders with a prior marijuana arrest is a bit lower across all crime categories than that observed for all drug offenses, ranging from 10–20 percent in general rather than 30 percent. And indeed, in Table C.7, where we show the same results for all drugs except marijuana, we see that the proportion of arrestees across each crime category with a prior non-marijuana drug offense is indeed generally above 30 percent. This might not be terribly surprising, given that New York State decriminalized marijuana during the late 1970s and, thus, the enforcement of marijuana charges vis-à-vis those for other illicit drugs is likely to be reduced.

[28] This is also striking inasmuch as for the Northeast in 2004 overall, "other dangerous nonnarcotic drugs" is only about 7.5 percent of the total (http://www2.fbi.gov/ucr/cius_04/persons_arrested/index.html).

Table C.5
Concurrent and Prior Drug Arrests for Major Crime Categories

Major Crime	Concurrent Drug Arrest	No Concurrent Arrest–Prior Drug Arrest	No Concurrent Arrest–No Prior Drug Arrest	Sample of Arrests
2004				
Murder	4 (2.9%)	39 (27.9%)	97 (69.3%)	140
Rape	2 (1.2%)	29 (16.7%)	143 (82.2%)	174
Robbery	40 (3.4%)	417 (35.8%)	707 (60.7%)	1,164
Assault	98 (4.8%)	578 (28.6%)	1,347 (66.6%)	2,023
Stolen Property	18 (6.2%)	105 (36.3%)	166 (57.4%)	289
Larceny	73 (1.5%)	1,661 (33.9%)	3,162 (64.6%)	4,896
Prostitution	9 (1.9%)	198 (41.6%)	269 (56.5%)	476
2011				
Murder	1 (.8%)	47 (36.2%)	82 (63.1%)	130
Rape	2 (1.5%)	32 (23.2%)	104 (75.4%)	138
Robbery	48 (3.2%)	443 (29.3%)	1,023 (67.6%)	1,514
Assault	82 (2.7%)	742 (24.5%)	2,208 (72.8%)	3,032
Stolen Property	7 (1.9%)	173 (47.01%)	188 (51.1%)	368
Larceny	126 (1.5%)	2,231 (25.7%)	6,338 (72.9%)	8,695
Prostitution	10 (2.8%)	125 (35%)	222 (62.2%)	357

Table C.6
Concurrent and Prior Arrests for Marijuana and a Major Crime

Crime	Concurrent Marijuana Arrest	No Concurrent Arrest–Prior Marijuana Arrest	No Concurrent Arrest–No Prior Marijuana Arrest	Total Arrests
2004				
Murder	0 (0%)	21 (15.0%)	119 (85.0%)	140
Rape	2 (1.2%)	16 (9.2%)	156 (89.7%)	174
Robbery	11 (1.0%)	193 (16.6%)	960 (82.5%)	1,164
Assault	50 (2.5%)	282 (13.9%)	1,691 (83.6%)	2,023
Stolen Property	4 (1.4%)	48 (16.6%)	237 (82.0%)	289
Larceny	30 (0.6%)	628 (12.8%)	4,238 (86.6%)	4,896
Prostitution	0 (0%)	42 (8.8%)	434 (91.2%)	476
2011				
Murder	0 (0%)	25 (19.2%)	105 (80.8%)	130
Rape	2 (1.5%)	19 (13.8%)	117 (84.8%)	138
Robbery	20 (1.3%)	294 (19.4%)	1,200 (79.3%)	1,514
Assault	40 (1.3%)	422 (13.9%)	2,570 (84.8%)	3,032
Stolen Property	1 (0.3%)	84 (22.8%)	283 (76.9%)	368
Larceny	73 (0.9%)	1,018 (11.7%)	7,604 (87.5%)	8,695
Prostitution	3 (0%)	49 (13.7%)	305 (85.4%)	357

Across crimes and years, the bottom-line statistic in New York State is that about one-third of people arrested for a typical Part I offense have a prior or concurrent arrest for a drug offense, with the great bulk of that coming from prior, not concurrent offenses. The proportion is a little lower for rape and a little higher for prostitution, but in round terms, the bottom line is about one-third.

Table C.7
Concurrent and Prior Arrests for All Drugs Other Than Marijuana and a Major Crime

Crime	Concurrent Arrest for Drug Other than MJ	No Concurrent Arrest–Prior Non-MJ Drug Arrest	No Concurrent Arrest–No Prior Non-MJ Drug Arrest	Total Arrests
2004				
Murder	2 (1.4%)	36 (25.7%)	102 (72.9%)	140
Rape	1 (.6%)	24 (13.8%)	149 (85.6%)	174
Robbery	30 (2.6%)	359 (30.8%)	775 (66.6%)	1,164
Assault	51 (2.5%)	482 (23.8%)	1,490 (73.7%)	2,023
Stolen Property	14 (4.8%)	93 (32.2%)	182 (63.0%)	289
Larceny	44 (.9%)	1,479 (30.2%)	3,373 (69%)	4,896
Prostitution	9 (1.9%)	185 (38.9%)	282 (59.2%)	476
2011				
Murder	0 (0%)	39 (30%)	92 (70%)	130
Rape	0 (0%)	29 (21%)	109 (79%)	138
Robbery	28 (1.9%)	297 (19.6%)	1,189 (78.5%)	1,514
Assault	45 (1.5%)	554 (18.2%)	2,433 (80.2%)	3,032
Stolen Property	6 (1.6%)	140 (38%)	222 (60.3%)	368
Larceny	54 (0.6%)	1,932 (22.2%)	6,709 (87.5%)	8,695
Prostitution	7 (2%)	108 (30.3%)	242 (67.8%)	357

Figures C.1–C.4 provide a similar look at the data, collapsing some of these charges together (because of general involvement of drugs and similarity of crimes). The main insight reported in the figures that cannot be seen from the previous tables is the proportion of current arrestees that only have prior drug charges. In other words, these figures allow us to look back at the criminal history of current offenders and assess the extent to which these offenders were engaged in drug crime versus other crimes.

For example, Figure C.1 looks at the composition of current arrestees for murder or rape and shows that about two-fifths of all 2004 and 2011 arrestees for murder/rape have no prior criminal record (shown in dark blue). A very small percentage has only a prior drug arrest (shown in light blue), while between 17 and 24 percent have prior drug and non-drug offenses (shown in green). It is interesting to see is that, between 2004 and 2011, the proportion of people arrested for murder/rape with no priors shrunk, while the proportion with a drug prior or drug and non drug prior grew. While this suggests that prior drug involvement is becoming more common among those arrested for murder/rape even though concurrent drug use is not, there are other explanations for these findings. For example, there could have been a rise in concurrent drug use, but for some reason additional drug charges were not added to the RAP sheet data. It is unknown how often police ignore drug use when making a major arrest. It is possible that officers may want to throw every possible charge at an individual. Then again, it may be too cumbersome to document the evidence necessary to include a drug charge along with a major crime charge; therefore, the drug charge may not be included.

Figure C.1
Percentage of Murder/Rape Arrestees with No Priors, Only Drug Priors, Only Non-Drug Priors, and Drug and Non-Drug Priors

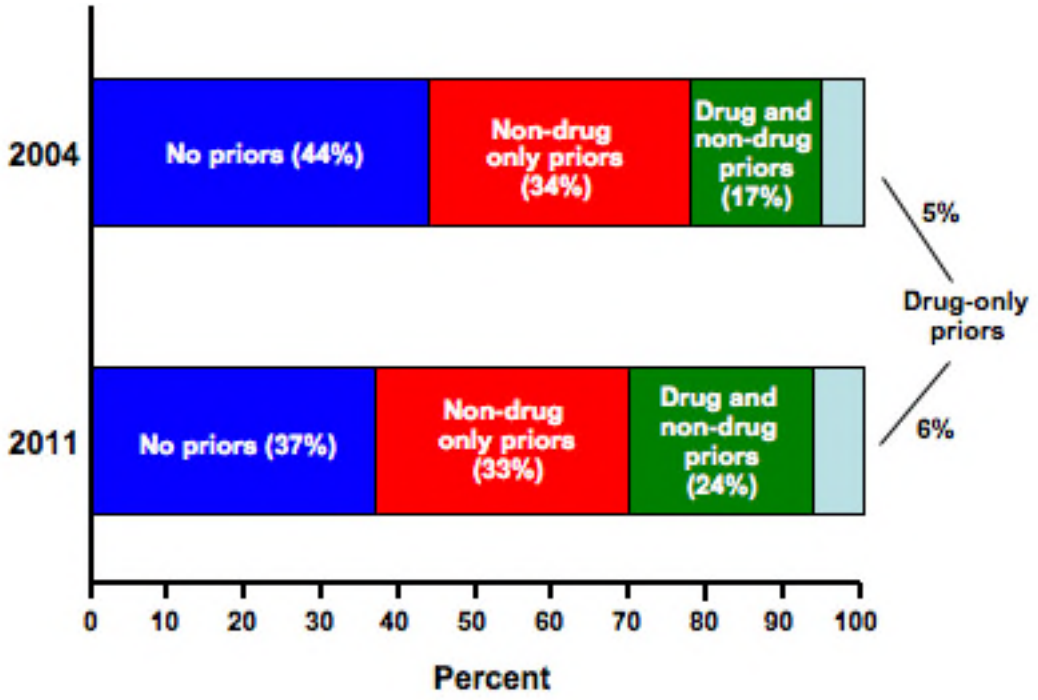
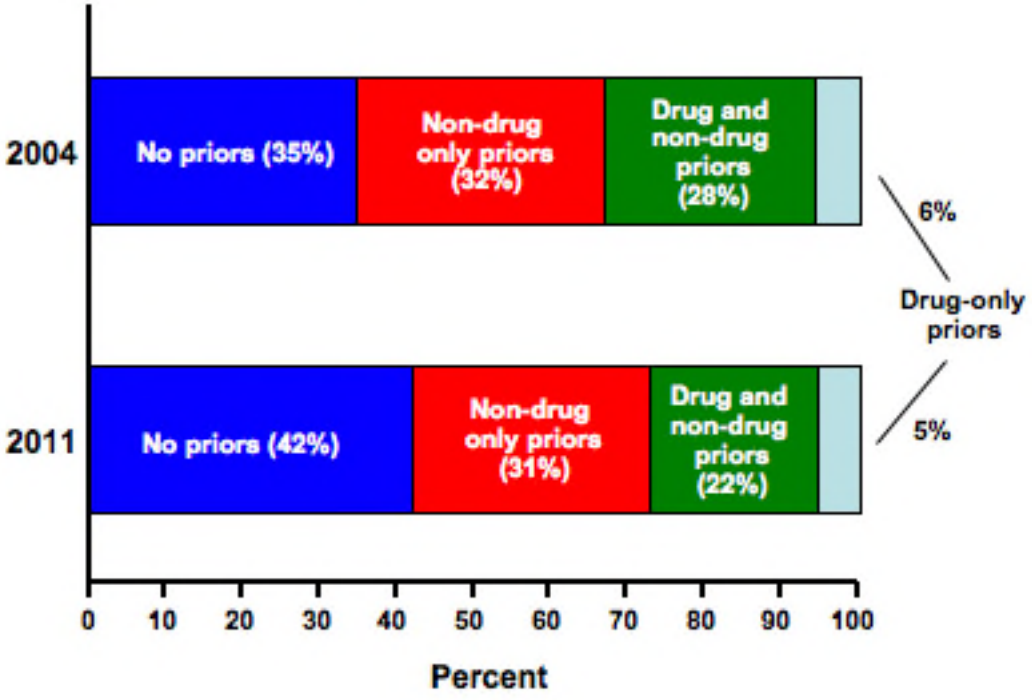


Figure C.2 shows a somewhat different trend for robbery/assault. While murder/rape shows a decreasing trend in the number of people arrested with no prior arrests between 2004 and 2011, Figure C.2 shows that arrestees for robbery/assault are more likely to have no prior criminal offenses in 2011 than in 2004. In the case of robbery/assault, it is the proportion of arrestees with a drug plus non-drug prior offense that is shrinking the most, suggesting that prior drug offenses may be less important for this category of crime. This is further supported by evidence in Table C.5 showing that, while the total number of arrestees in both the robbery and assault categories are higher in 2011 than 2004, it is the number of arrestees with no drug offense that grew the fastest between 2004 and 2011.

Figure C.2
Percentage of Robbery/Assault Arrestees with No Priors, Only Drug Priors, Only Non-Drug Priors, and Drug and Non-Drug Priors



Larceny is the most frequent category for arrest in both 2004 and 2011, and here we also see that the proportion of people arrested for larceny or stolen property (which are grouped together in Figure C.3) with no prior offense grew substantially between 2004 and 2011. Again, the group with a prior drug and non-drug offense is shrinking the most, although we also see a bit of a reduction in the number of people with non-drug prior offenses between 2004 and 2011. The proportion that has just a prior drug offense (no non-drug offenses) remained fairly stable between 2004 and 2011, but small.

Figure C.3
Percentage of Stolen Property/Larceny Arrestees with No Priors, Only Drug Priors, Only Non-Drug Priors, and Drug and Non-Drug Priors

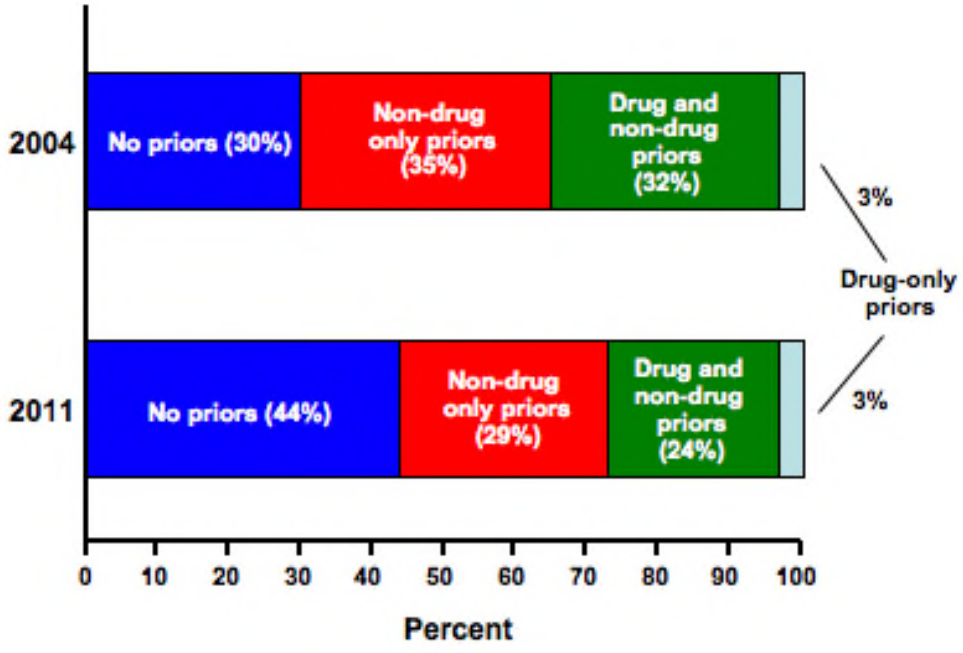
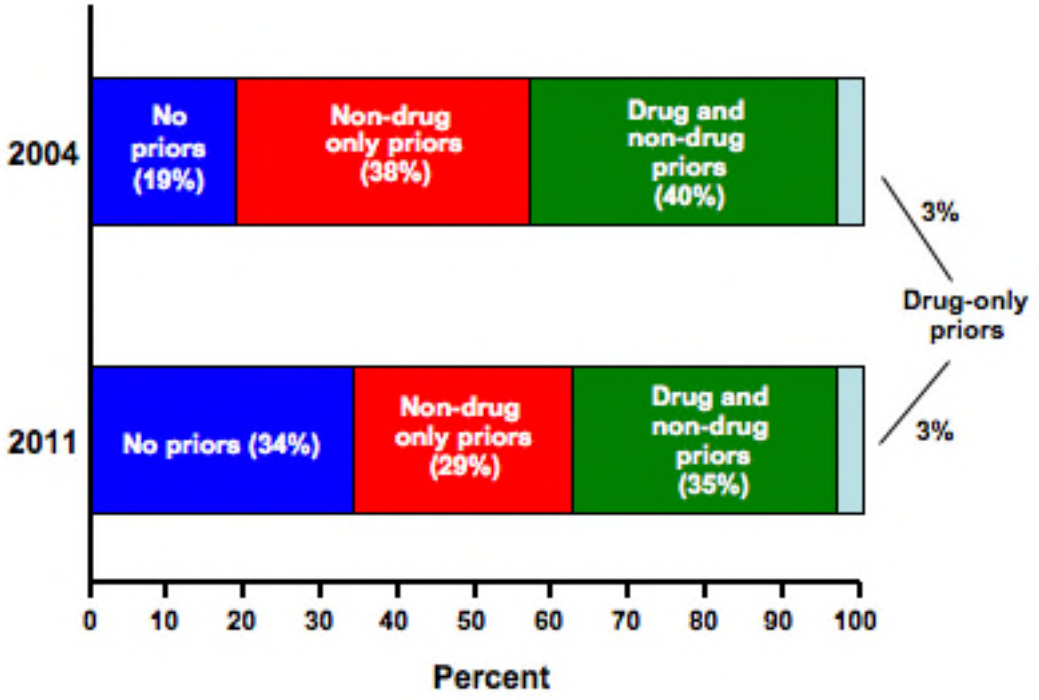


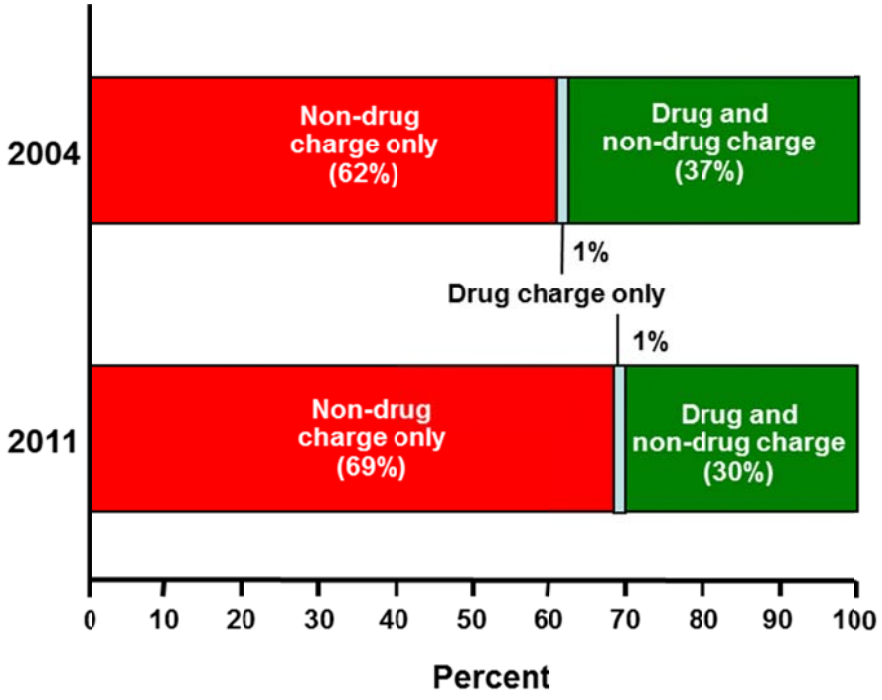
Figure C.4 shows the same general pattern in prior convictions for those arrested for prostitution in that the proportion of offenders with no prior arrests grew substantially between 2004 and 2011. In the case of prostitution, however, the proportion of those with only non-drug offenses shrunk the most over time. There was also a reduction in the proportion of arrestees with drug and non-drug priors (which is suggested by the findings in Table C.5 as well), but the proportion of offenders with drug-only priors remained fairly constant between 2004 and 2011.

Figure C.4
Percentage of Prostitution Arrestees with No Priors, Only Drug Priors, Only Non-Drug Priors, and Drug and Non-Drug Priors



All the tables and figures presented thus far give an indication that concurrent drug offenses were not common in New York State in 2004 or 2011. However, they are based on a sample of all arrestees in each of these years, and we have not yet considered whether the prevalence of concurrent or prior drug offenses among arrestees differs for first time offenders vis-à-vis repeat offenders. In Figure C.5, we examine the composition of current charges for first-time arrestees in New York State for 2004 and 2011. We group all offenses together because many of the offense groups have very small numbers. When we focus on just first-time offenders, the proportion of arrestees with a concurrent drug offense in 2004 is nearly two-fifths (38 percent) while the proportion in 2011 is closer to one-third (31 percent). The proportion of these arrests that is drug-only is extremely small in both years (only 1 percent). Thus, the majority of first-time arrestees in New York State are not arrested on drug charges, and nearly no one is arrested for drug charges only. Also, while concurrent drug charges are not rare for first-time arrestees, they still only occur for a relative minority of the total first-time arrestee population.

Figure C.5
Percentage of First-Time Arrestees with Only a Drug Charge, Non-Drug Charge, or Both



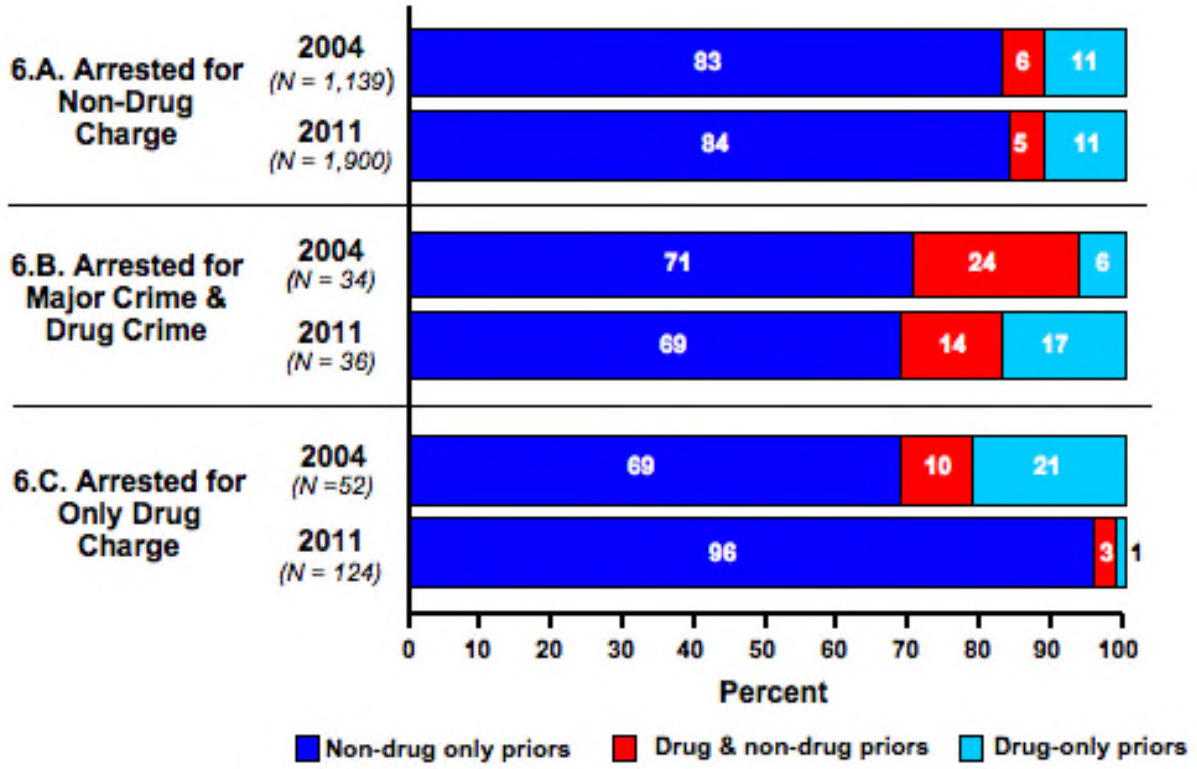
History of Offenders with Multiple Arrests

The previous analysis presented in Figure C.5 shows that the charges for first-time offenders apprehended by New York State police fundamentally differ from the general trend among the entire arrestee population. We also wanted to see how much the data for repeat offenders differed from that of the overall arrestee population to better understand what is driving the overall findings. To do this, we decided to look a bit more closely at previous charges for those arrested a second time in 2004 and 2011. Because the samples are small within any particular crime category, we again collapsed the data across all crime arrests and examined three groups: individuals arrested solely arrested for a non-drug crime, individuals concurrently arrested for a non-drug crime and a drug crime, and individuals arrested solely for a drug crime.

Figure C.6 shows the distribution of prior offenses for each of the three groups of second-time arrestees. Figure C.6.A shows the distribution of prior arrests for those arrested for a major crime with no concurrent drug crime, Figure C.6.B shows the distribution of prior arrests for those arrested for a major crime and a drug crime, and Figure C.6.C shows the distribution of prior arrests for those experiencing only a drug charge in their second arrest. A number of interesting observations emerge. First, about 10 percent of those arrested in 2004 and 2011 for a second time on a non-drug charge (C.6.A) had only a drug offense for their first arrest. This number is small, but not insignificant. And indeed, when individuals with a prior drug charge and other charges are included, nearly 15 percent of second-time arrestees for a major non-drug

crime are offenders who had drug charges previously. The percentage of offenders with a previous drug charge rises when looking at second-time arrestees in 2004 and 2011 who were arrested for both a drug charge and a major crime charge (Figure C.6.B). What is interesting about this second group is that the proportion of drug-only first-time charges is much higher in 2011 than in 2004, although the total number of arrestees with some form of prior drug charge is the same across the two years. When we look at those arrested in 2004 and 2011 for just a drug charge, we get an interesting break from the previously observed pattern. For 2004, we see that about one-third of the prior offenses included a drug offense (with a much larger share being prior drug offenses only). But in 2011, offenders arrested for drug offenses are much less likely to have a prior drug arrest charge. Only 5 percent of second-time arrestees had a drug charge as their first offense in 2011.

Figure C.6
Distribution of Prior Arrest Charges Among Second-Time Arrestees in 2004 and 2011

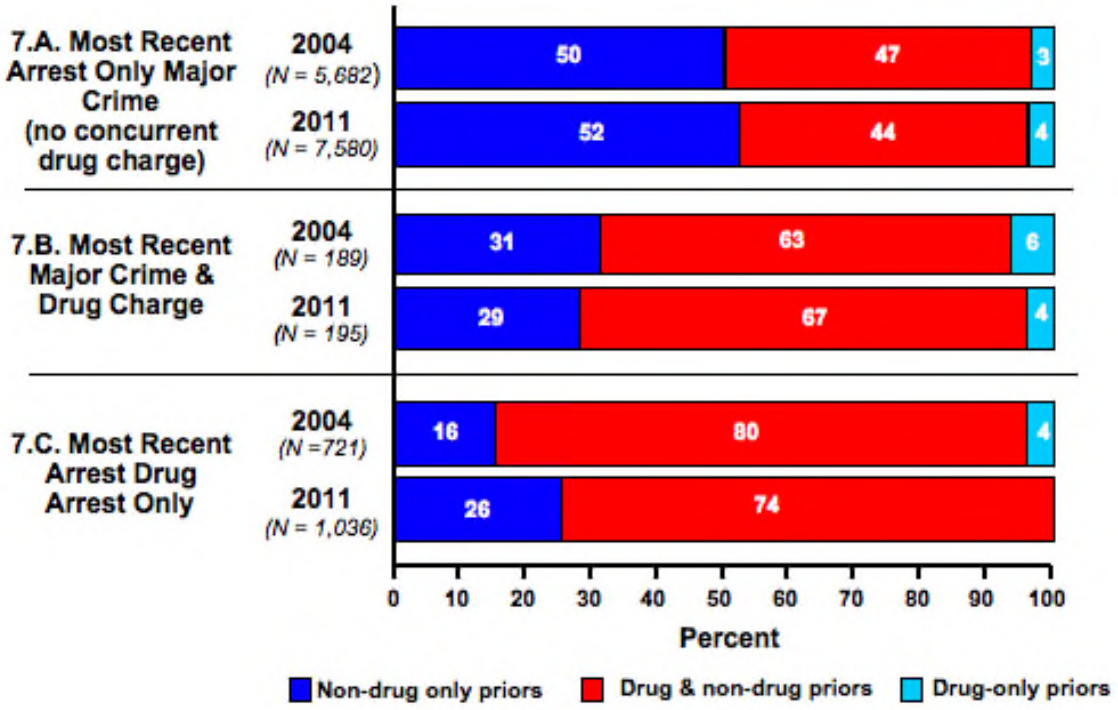


These data together suggest that, at least for New York State, few people experience repeat arrests for just drug offenses, and it was even less common to experience repeat arrests for just drug offenses in 2011 than it was in 2004 (perhaps because of the impact of the recession on state budgets). Moreover, it does not appear that prior drug offenses alone are a major cause of subsequent offending, at least among second-time arrestees.

This leads us to ask, does this hold for people experiencing their third, fourth, or fifth arrest in 2004 and 2011? Because not all crimes had multiple repeat offenders, we grouped our second-time offenders with all subsequent offenders and looked at the pattern for crimes for which people were arrested at least two times in 2004 and 2011 (Figure C.7). Interestingly, the pattern starts to shift, even from second-time arrestees arrested in each of these years. At one end of Figure C.7 are individuals arrested for the second or subsequent time whose current arrest does not include a drug charge and whose prior arrests are split between those involving drugs and those not involving drugs (Figure C.7.A). Prior drug charges, largely concurrent with other offenses, represent nearly half of all their previous charges. At the other end are individuals arrested for the second or subsequent time whose current arrest includes only a drug change (Figure C.7.C.). For these offenders, nearly all prior arrests involve a drug charge.

Two primary findings emerge. First, those who are arrested more than twice are more likely to have a drug charge included in their background. Second, while those who are arrested more than twice are more likely to have a drug charge in their background, almost all have non-drug arrests in their background as well. In fact, those individuals who are on their second or more arrest and whose current arrest is a drug crime are less likely to have only drug arrests in their history than those whose current arrest is not a drug crime. It is not clear whether this reflects a difference in underlying crimes or a difference in enforcement. At the very least, it suggests that few arrestees engage in a long-term pattern of drug use that results in arrest without also engaging in other non-drug crimes.

Figure C.7
Distribution of Prior Arrests Among Arrestees with Two or More Arrests in 2004 or 2011



Repeat Offenders Versus First-Time Offenders and the Proportion with Prior Drug Offenses

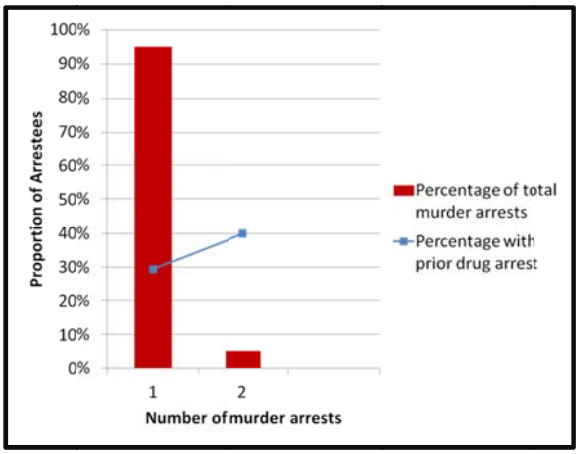
In addition to understanding the proportion of arrestees with prior drug offenses, it is important to understand to what extent we are capturing the same repeat arrestees versus new arrestees and whether prior involvement with drugs differs between these groups. In the next series of figures, we attempt to evaluate that question by looking at arrestees by number of prior charges for the same offense. Thus, someone who is being arrested for their first murder would have only one murder arrest, someone with one prior murder charge would now have two, and so on. We look to see what proportion of arrestees falling into each of these categories had prior drug arrests and whether that proportion rises as you look at repeat offenders versus first-time offenders. Unlike the previous analyses that grouped all major crimes together, we look at each major crime category separately so we can assess any differential patterns across crime category.

Looking at Figures C.8–C.14, it appears that the proportion of individuals with a drug arrest history increased as the number of prior arrests for the same crime category also increased for all major crime categories. Indeed, it is surprisingly stark how consistent the upward trend is across each of the crime categories.

However, the descriptive trends in terms of prior drug involvement over time are not entirely consistent. For most groups of arrestees (rape, robbery, larceny, and prostitution), the proportion of arrestees with prior drug arrests appear to have fallen between 2004 and 2011, while this proportion appears to have increased for the other groups (murder and stolen property). Prior drug arrests are significantly more common for individuals with multiple prior arrests than they are for first-time arrestees (typically representing about half of those with two or more arrests). In the case of first-time arrestees, around 20 percent have prior drug charges, with the two notable exceptions of those charged with larceny and prostitution, of whom less than 10 percent have a concurrent or prior drug arrest. This finding is particularly surprising given previous findings about the proportion of inmates who report being under the influence or in need of drugs at the time of the offense, but perhaps it identifies an important distinction between use at or around the time of the offense and actual charges brought against the offender.

Figure C.8
Percentage of Arrestees with Prior Drug Arrests by Number of Murder Offenses

2004



2011

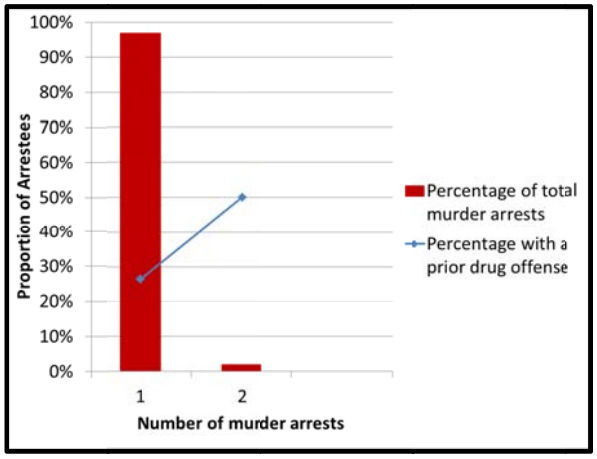
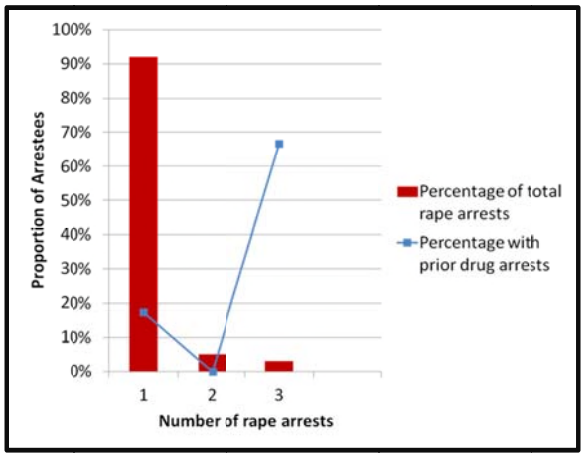


Figure C.9
Percentage of Arrestees with Prior Drug Arrests by Number of Rape Offenses

2004



2011

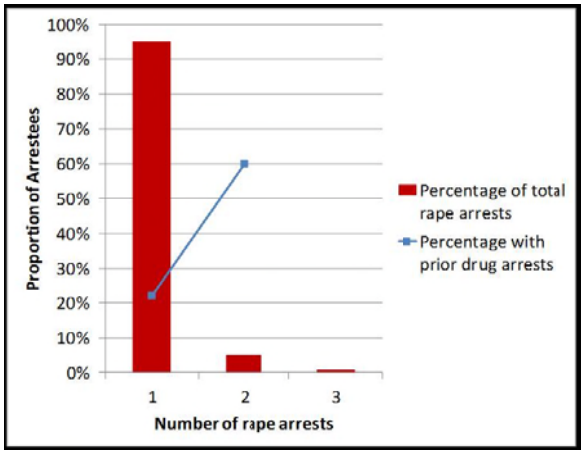


Figure C.10
Percentage of Arrestees with Prior Drug Arrests by Number of Robbery Offenses

2004 **2011**

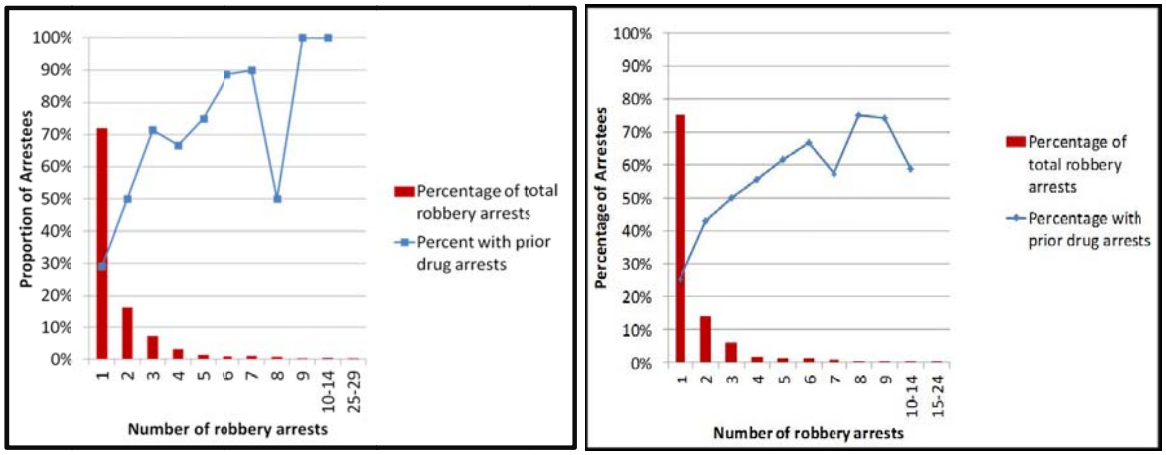


Figure C.11
Percentage of Arrestees with Prior Drug Arrests by Number of Assault Offenses

2004 **2011**

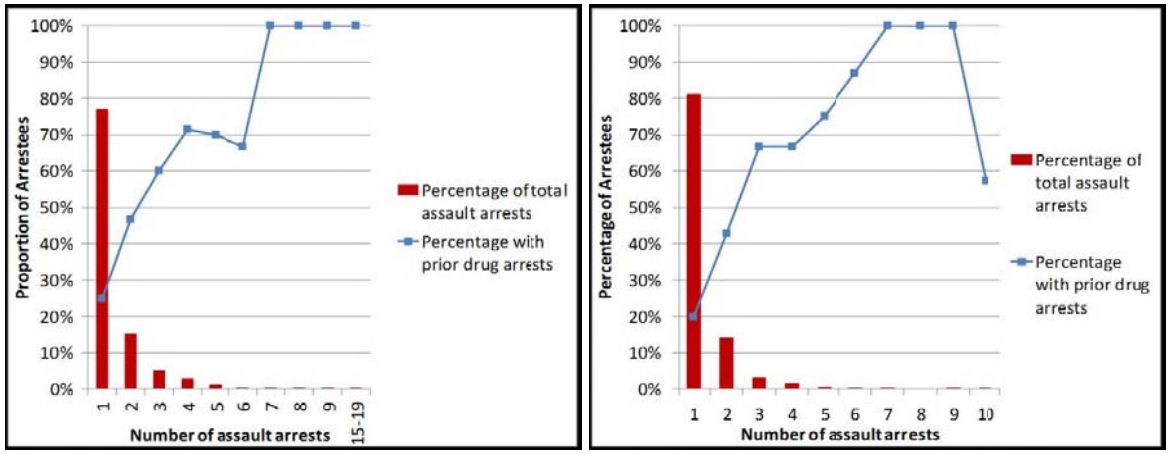


Figure C.12
Percentage of Arrestees with Prior Drug Arrests by Number of Stolen Property Offenses

2004 **2011**

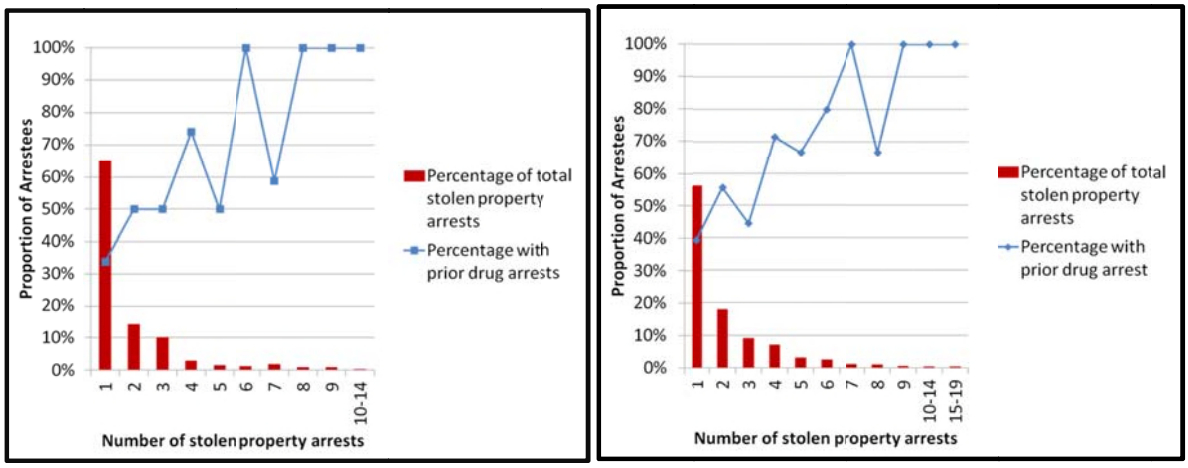


Figure C.13
Percentage of Arrestees with Prior Drug Arrests by Number of Larceny Offenses

2004 **2011**

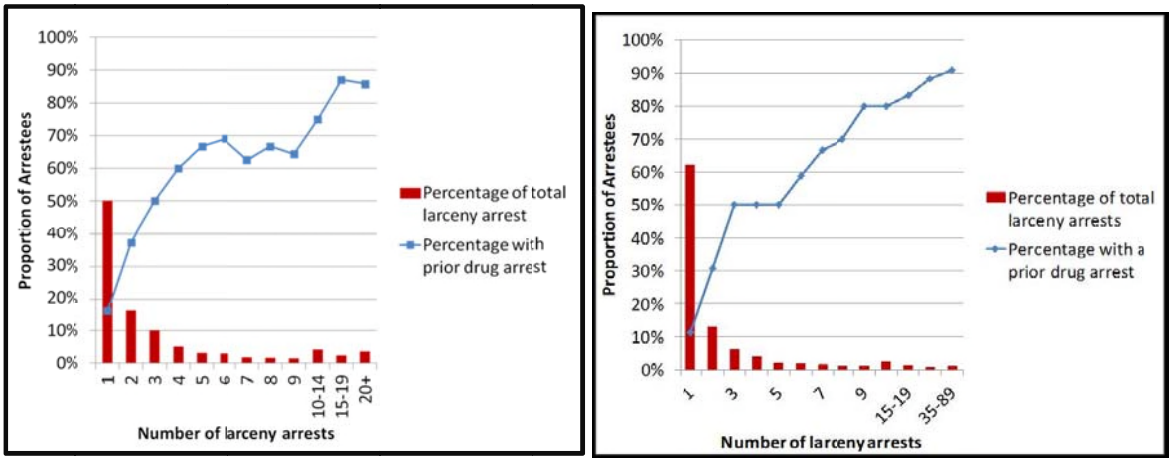
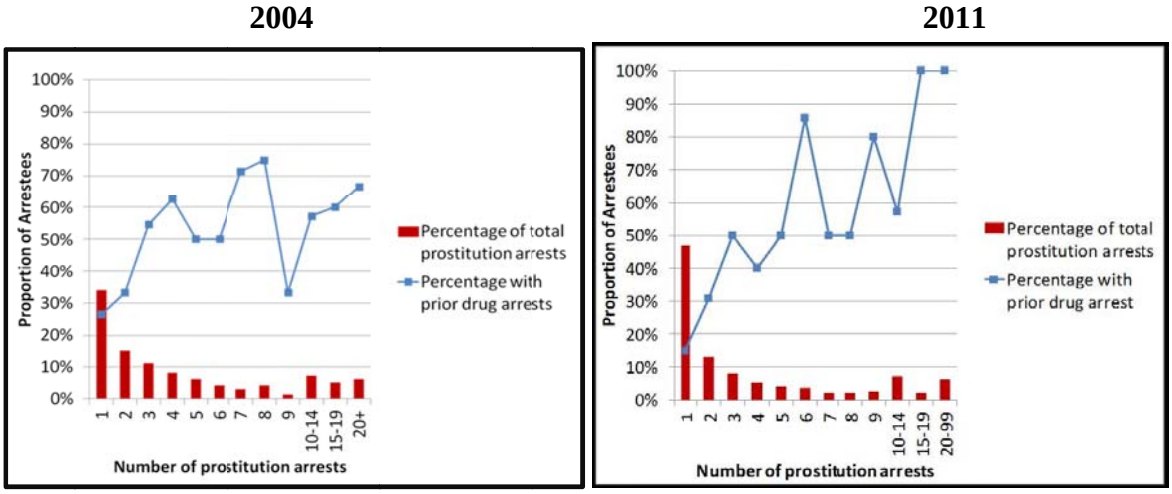


Figure C.14
Percentage of Arrestees with Prior Drug Arrests by Number of Prostitution Offenses



Age of First Offense and Age of First Drug Offense

The results suggest so far that drug offenses are not often the crime people start with, since very few of the first-time offenders in our sample, regardless of the crime, have drugs as a concurrent charge for their first arrest. What we cannot tell, however, is if those who are first arrested for drug offenses are younger than those first arrested for other offenses.

As described in Chapters Three and Four, if a drug arrest impacts an individual's ability to stay in school or get a job, then an early drug offense could lead to a criminal career. In the New York State data, it is possible to reconstruct a full history of each offender's record within the state of New York, including all previous arrests and dispositions. Thus, we can construct for every individual in the samples from 2004 and 2011 a look at what their first arrest was in New York and the age at which it occurred.

In Figures C.15–C.18, we attempt to look at the question of whether drug arrests start at an earlier age than other arrests by looking at the age of first arrest and first drug arrest for all individuals charged with a particular crime in 2004 or 2011. Because some crimes are less common, we group crimes together based on similarities in drug involvement and repeat offending. The specific crimes are the same as those presented in Figures C.8–C.14 and are grouped as follows: (1) murder and rape, (2) assault and robbery, (3) stolen property and larceny, and (4) prostitution. Age ranges were created based on obvious break points in the data and are as follows: 10–14; 15–19; 20–24; 25–29; 30–34; 35–39; 40–44; 45–49; and over 50.

For each crime group, we report the proportion of arrestees that were first arrested for any crime and the proportion of individuals who were first arrested for a drug crime within each age range. Although not all individuals arrested for each major crime category had been arrested for a drug crime, we calculated the percentage of individuals arrested for a drug crime at a particular age range out of the total number of arrestees, not just the percentage of those individuals

arrested for a drug crime. (Thus, the proportion of those arrested for a drug crime across all age ranges does not sum to 100 percent because of those with no prior drug arrest.) For informational purposes, we also provide the total number of individuals who had been arrested for a drug crime (Figure C.19).

Figure C.15
Age of First Arrests for Murder and Rape Arrestees

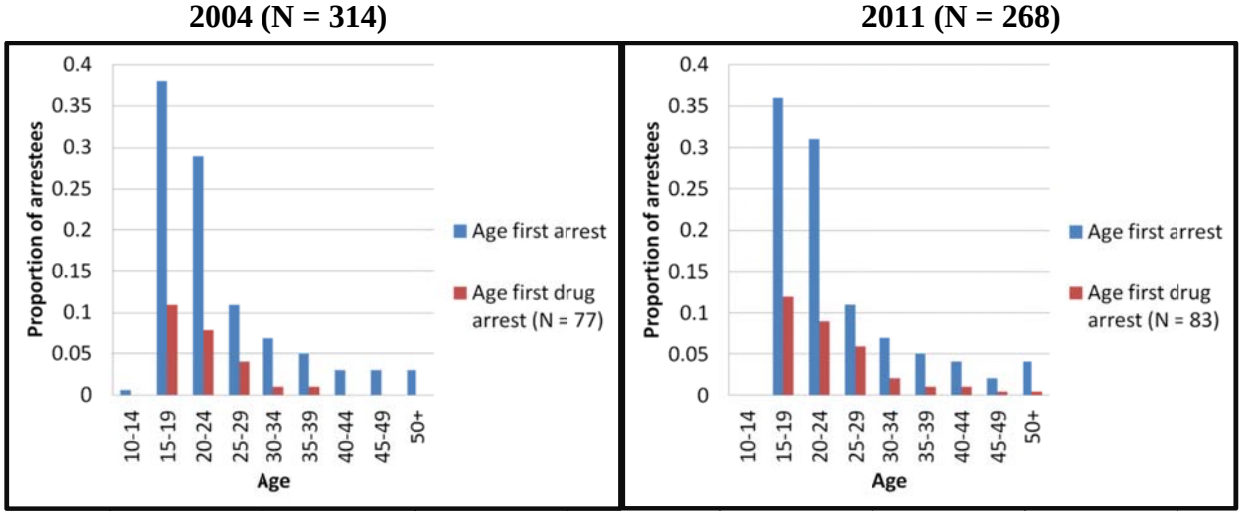


Figure C.16
Age of First Arrests for Assault and Robbery Arrestees

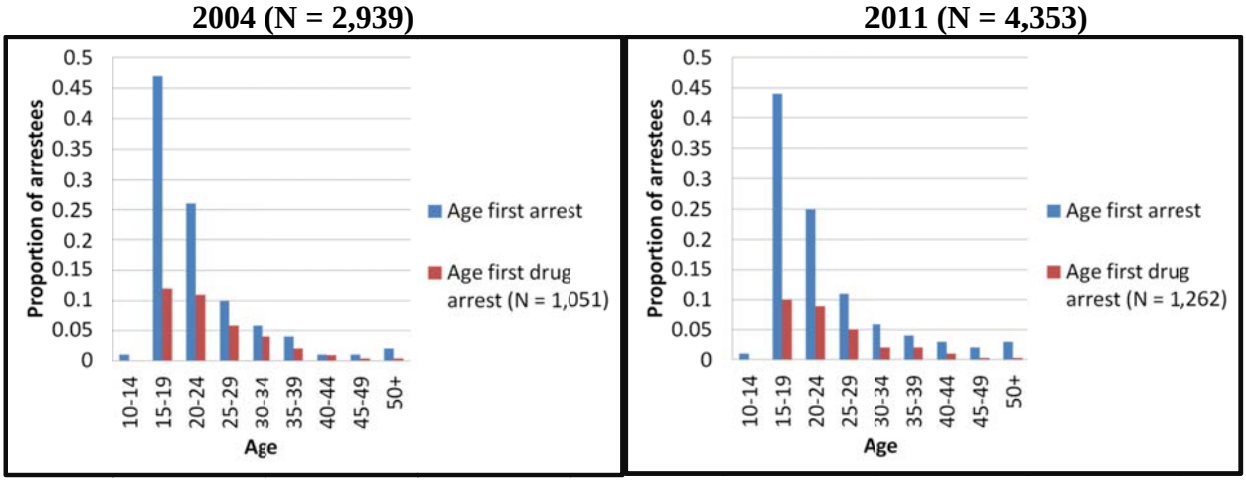


Figure C.17
Age of First Arrests for Stolen Property and Larceny Arrestees

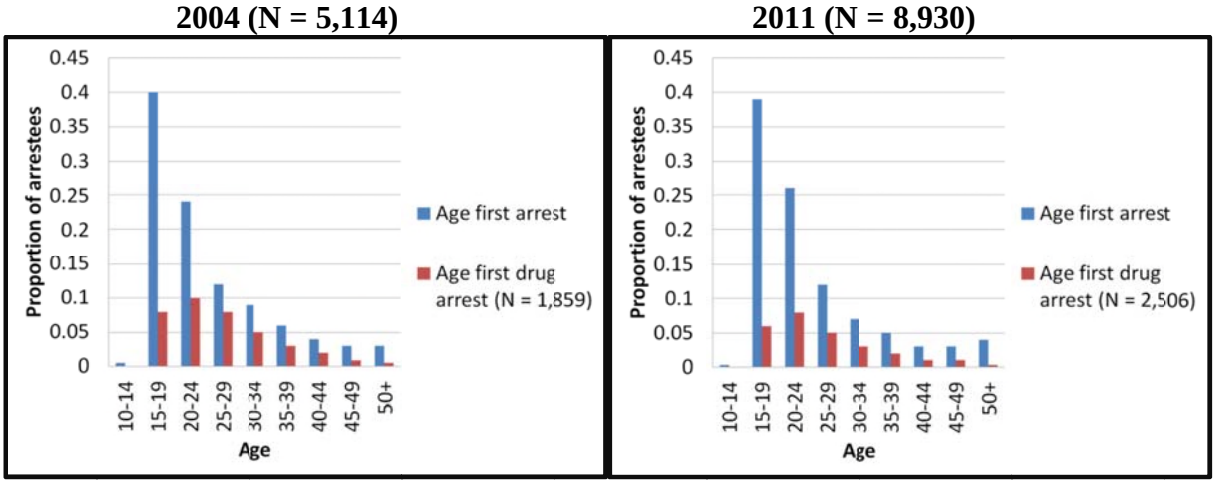
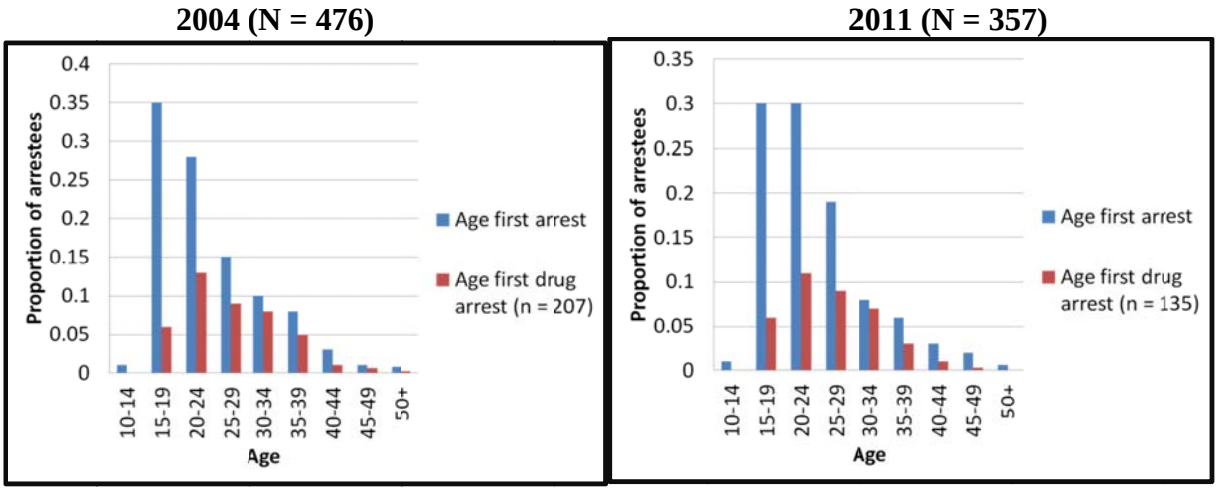


Figure C.18
Age of First Arrests for Prostitution Arrestees

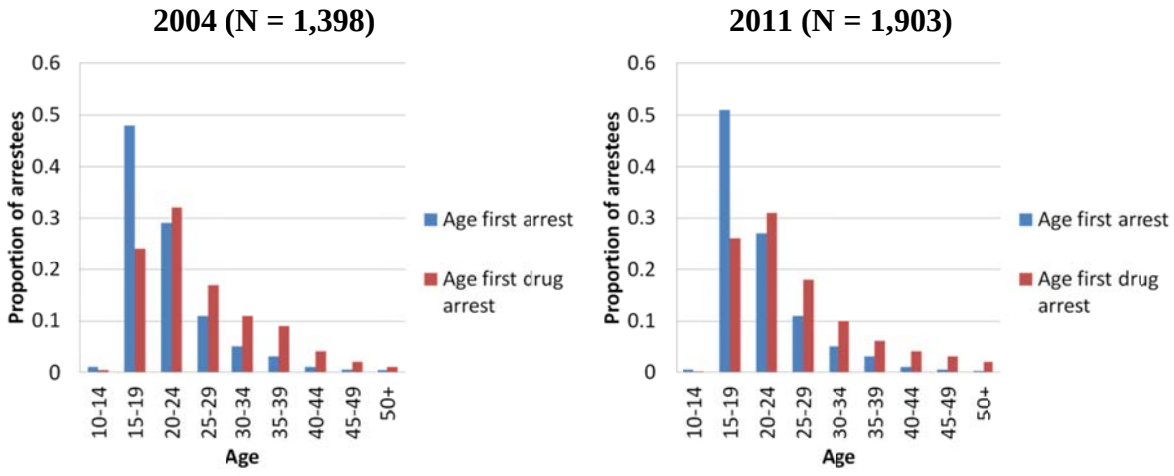


Looking first at the group based on non-drug main charges, there appears to be some interesting patterns. For all non-drug crimes, the modal age of first arrest is 15–19 years (prostitution in 2011 is the only exception to this rule). For offenders whose last charge was for stolen property, larceny, and prostitution, the modal age of first drug charge was actually later than the modal age of first arrest, occurring at the age of 20–24 rather than 15–19. This is an important distinction between these crimes and murder/rape and assault/robbery, for which the modal age of first drug arrest is also 15–19. But the proportion of individuals whose first offense was a drug offense—based only on age of first arrest—ranges from one-third to one-fifth of these arrestees. Thus, early drug offenses, while certainly common among arrestees charged in 2004 and 2011 with a serious crime, are not the majority of arrests at an early age for these types

of offenders. Of course, if we are missing the first arrest for the majority of arrestees in 2004 and 2011 because they were committed outside the state, then this may not be true.

Even when looking at the age of first offense for drug violators in 2004 and 2011 (Figure C.19), a sizeable proportion of those were first arrested between the ages of 15 and 19, but only half of those arrests were for drug offenses. Again, we see the modal age for first drug offense (20–24) is later than the modal age of first general offense (14–19).

Figure C.19
Age of First Arrests for Drug Arrestees



C.4. Summary of Findings from New York State Criminal History Data

Analyses of the New York State RAP sheet data provide several useful insights about the relationship between prior drug offenses and subsequent crime. First, for those arrested for larceny, assault, and robbery, prior drug arrests are fairly common; 20–33 percent of these arrestees were previously arrested for drugs (Table C.4). Concurrent drug charges, however, are typically quite rare. Inmate and ADAM studies suggest a far greater proportion of arrestees are under the influence of drugs at the time of arrest. That is not surprising inasmuch as "possessing" drugs within one's body (being under the influence) is not a criminal offense per se.

Second, it is very difficult in the New York data to identify drug-specific arrest information. Although drug-specific codes may be available in the New York State Computerized Criminal History Database, they are not commonly used. Hence, reliable drug-specific data over time cannot be obtained for New York State. It is possible that other states have better data or are more consistent in reporting drug-specific charges. We know, for example, that drug-specific information is fairly good in California RAP sheet data. But it does highlight the point that it may not be possible to look consistently across states at drug-specific trends in crime.

Third, the proportion of offenders who have only prior drug offenses (versus prior drug and non-drug offenses) is fairly small across all main crime categories (Figures C.1–C.5). Arrest for drug offenses alone does not appear to be the primary driver for criminal careers. There are a number of possible explanations for this. One possibility is that the administrative data are not sufficient to determine what is a clear cause-and-effect relationship—that while the initiation of drug use precedes the initiation of crime, the criminal justice system does not identify drug use until it is associated with criminal behaviors. Another possibility is that the relationship between drug use and crime is not a straightforward story of one-directional causality. It is certainly possible that an initial drug arrest can lead to subsequent non-drug crimes (through mechanisms such as putting drug offenders in contact with non-drug offenders or mediated by factors such as disrupted education and earning potential), but it is also possible that early crime can put offenders in contact with drug-using peers. Another possibility is that the story of causality in drug arrest is not necessarily sequential, with a well-established pattern of drug use prior to a pattern of crime. The use of drugs and commission of crime are complex actions with bidirectional causality and reinforcement.

Fourth, first-time arrestees in each crime category are less likely to have a prior drug charge than repeat arrestees regardless of current charge (Figures C.15–C.19). This could simply reflect the offender's interaction with the criminal justice system, because an arrestee with only one arrest in a given crime category may have had fewer interactions with the criminal justice system for all crime categories in general and, thus, fewer prior arrests for drug crimes and non-drug crimes. But as offenders are arrested for more offenses, the likelihood that they have only drug crimes or only non-drug crimes as prior offenses decreases (Figures C.6 and C.7). Criminals with a substantial history of arrests are more likely to have a combination of drug and non-drug crimes in their background.

Finally, whether early drug arrests truly come before other arrests is difficult to discern in the available data, but self-reported data on age of first offense recorded in the computerized criminal history data base for New York State does not suggest that drug charges are the main entry way into criminal careers. They are indeed a factor and an important factor, but they do not represent a majority of these cases.

EXHIBIT E

Table 3

January to June
Percent Change
for Consecutive Years 2015–2019

Data Declaration Download Excel

Years	Violent crime	Murder	Rape[1]	Robbery	Aggravated assault	Property crime	Burglary	Larceny-theft	Motor vehicle theft	Arson
2016/2015	+5.3	+5.2	+3.5	+3.2	+6.5	-0.6	-3.4	-0.8	+6.6	-1.1
2017/2016	-0.8	+1.5	-2.4	-2.2	-0.1	-2.9	-6.1	-3.0	+4.1	-3.5
2018/2017	-4.3	-6.7	+0.6	-12.5	-2.0	-7.2	-12.7	-6.3	-3.3	-9.4
2019/2018	-3.1	-3.9	-7.3	-7.4	-0.3	-5.6	-11.1	-4.2	-6.7	-12.5

- [1] The figures shown in the rape column include only those reported by law enforcement agencies that used the revised Uniform Crime Reporting (UCR) definition of rape. See the data declaration for further explanation.
- NOTE: In 2018, the UCR Program transitioned from its legacy data collection system to an updated, modern platform during the UCR Technical Refresh, or UCR-TR. This renovation of how UCR collects, verifies, and estimates data may result in differences in UCR data compared with previous years that may be due to technical reasons rather than actual crime occurrences. See the data declaration for further explanation.

Data Declaration

Provides the methodology used in constructing this table and other pertinent information about this table.

EXHIBIT F

CRIME IN FLORIDA ABSTRACT

State of Florida

January - December 2019

Florida Department of Law Enforcement

The statistics presented in this release are an indication of crime and criminal activities known to, and reported by, law enforcement agencies for 2019.
This report reflects data residing in the UCR database as of 3/12/2020.

Crime Volume and Rate

MEASURE	2018	2019	Percent Change
Total Index Crime	**567,176***	**541,048**	**-4.6**
Total Violent Crime	81,906*	81,092	-1.0
Total Property Crime	485,270	459,956	-5.2
Total Crime Rate	**2,721.4***	**2,551.1**	**-6.3**
Violent Crime Rate	393.0*	382.4	-2.7
Property Crime Rate	2,328.4	2,168.7	-6.9

Offense Totals

INDEX OFFENSES	2018	2019	Percent Change
Murder	**1,104***	**1,121**	**1.5**
Firearm	836*	853	2.0
Knife/Cutting Instr.	110	104	-5.5
Hands/Fists/Feet	68	62	-8.8
Other	90	102	13.3
Rape	**8,442**	**8,439**	**0.0**
Firearm	126	155	23.0
Knife/Cutting Instr.	121	99	-18.2
Hands/Fists/Feet	6,931	7,231	4.3
Other	1,264	954	-24.5
Robbery	**16,861**	**16,199**	**-3.9**
Firearm	6,683	6,195	-7.3
Knife/Cutting Instr.	1,168	1,097	-6.1
Hands/Fists/Feet	7,390	7,334	-0.8
Other	1,620	1,573	-2.9
Aggravated Assault	**55,499**	**55,333**	**-0.3**
Firearm	16,794	17,194	2.4
Knife/Cutting Instr.	10,391	10,216	-1.7
Hands/Fists/Feet	8,697	9,275	6.6
Other	19,617	18,648	-4.9
Burglary	**71,801**	**63,148**	**-12.1**
Forced Entry	36,487	31,758	-13.0
No Forced Entry	29,268	26,138	-10.7
Attempted Entry	6,046	5,252	-13.1
Larceny	**372,350**	**357,828**	**-3.9**
Pocket Picking	2,431	3,012	23.9
Purse Snatching	1,265	1,214	-4.0
Shoplifting	77,456	82,265	6.2
From Motor Vehicle	107,495	100,632	-6.4
Motor Vehicle Parts	30,603	28,339	-7.4
Bicycles	13,979	14,128	1.1
From Building	30,877	28,464	-7.8
From Coin Oper. Dev.	642	795	23.8
All Other	107,602	98,979	-8.0
Motor Vehicle Theft	**41,119**	**38,980**	**-5.2**
TOTAL INDEX OFFENSES	**567,176***	**541,048**	**-4.6**

Arrest Totals

ARREST TYPE	2018	2019	Percent Change
Violent Offense Arrests	**34,161**	**33,165**	**-2.9**
Adult	30,971	29,912	-3.4
Juvenile	3,190	3,253	2.0
Male	27,150	26,230	-3.4
Female	7,011	6,935	-1.1
Property Offense Arrests	**89,337**	**85,427**	**-4.4**
Adult	76,696	74,022	-3.5
Juvenile	12,641	11,405	-9.8
Male	61,296	58,781	-4.1
Female	28,041	26,646	-5.0
Part II Offense Arrests	**593,167**	**560,629**	**-5.5**
Adult	560,735	530,640	-5.4
Juvenile	32,432	29,989	-7.5
Male	444,353	418,705	-5.8
Female	148,814	141,924	-4.6
TOTAL ARRESTS	**716,665**	**679,221**	**-5.2**

Domestic Violence by Offense Type

PRIMARY OFFENSE	2018	2019	Percent Change
Murder	195	200	2.6
Manslaughter	19	21	10.5
Rape	1,783	1,891	6.1
Fondling	841	922	9.6
Aggravated Assault	16,003	15,946	-0.4
Aggravated Stalking	160	97	-39.4
Simple Assault	83,980	84,260	0.3
Threat/Intimidation	1,551	1,618	4.3
Simple Stalking	384	343	-10.7
TOTAL OFFENSES	**104,916**	**105,298**	**0.4**

Property Information Values

PROPERTY TYPE	STOLEN VALUE	RECOVERED VALUE
Currency, Note, Etc.	121,721,075	2,177,040
Jewelry, Precious Metals	146,766,826	6,569,771
Clothing & Furs	30,429,658	3,165,012
Motor Vehicles	610,618,733	357,868,619
Office Equipment	29,274,435	2,392,442
TVs, Radios, Stereos	22,349,060	1,289,060
Firearms	8,854,114	1,519,655
Household Goods	13,509,402	825,676
Consumable Goods	8,939,444	1,144,914
Livestock	365,190	71,321
Miscellaneous	295,979,509	40,480,771
TOTAL VALUES	**1,288,807,446**	**417,504,281**

SOURCE: Florida Department of Law Enforcement. Florida Uniform Crime Report, 2019 [Computer program]. Tallahassee, FL: FDLE, Florida Statistical Analysis Center.

*Figures include the Marjory Stoneman Douglas High School shooting incident on February 14, 2018 in which 17 persons were killed.

CRIME IN FLORIDA ABSTRACT

January - December 2019

Crime Trends

Year	Index Total Crimes	% Change	Violent Crime	% Change	Property Crime	% Change	Population	% Change	Crime Rate	% Change
2015	659,125	-1.6	90,204	2.6	568,921	-2.3	19,815,183	1.6	3,326.4	-3.2
2016	640,985	-2.8	88,470	-1.9	552,515	-2.9	20,148,654	1.7	3,181.3	-4.4
2017	612,320	-4.5	85,503	-3.4	526,817	-4.7	20,484,142	1.7	2,989.2	-6.0
2018	567,176*	-7.4	81,906*	-4.2	485,270	-7.9	20,841,507	1.7	2,721.4*	-9.0
2019	541,048	-4.6	81,092	-1.0	459,956	-5.2	21,208,589	1.8	2,551.1	-6.3

Domestic Violence
by Offense Type to Victim's Relationship to Offender

OFFENSES	RELATIONSHIP VICTIM TO OFFENDER								Arrests
	Total	Spouse	Parent	Child	Sibling	Other Family	Cohabitant	Other	
Murder	200	66	24	30	5	25	35	15	103
Manslaughter	21	2	3	7	3	2	4	0	16
Rape	1,891	188	86	410	240	453	216	298	601
Fondling	922	5	65	261	148	327	40	76	200
Aggravated Assault	15,946	2,769	1,676	1,428	1,368	1,243	4,355	3,107	11,368
Aggravated Stalking	97	29	5	2	1	4	22	34	65
Simple Assault	84,260	17,878	10,478	6,113	6,735	5,029	23,875	14,152	53,076
Threat/Intimidation	1,618	397	210	84	92	148	325	362	511
Simple Stalking	343	98	13	7	7	16	76	126	129
TOTAL OFFENSES	**105,298**	**21,432**	**12,560**	**8,342**	**8,599**	**7,247**	**28,948**	**18,170**	**66,069**

ARSON			
STRUCTURE	TOTAL INHABITED	TOTAL ABANDONED	ATTEMPTED
Single Occupied Residence	255	45	36
Other Residence	75	12	8
Storage	6	5	3
Industrial/Manufacturing	2	2	0
Commercial	79	16	13
Community/Public	56	11	9
All Other Structures	40	11	1
Motor Vehicles	178	70	20
Other Mobile	5	3	1
Other	150	62	6
TOTAL	**846**	**237**	**97**

VEHICLE RECOVERY	
	Number
Stolen Locally and Recovered Locally	38,471
Stolen Locally and Recovered by Other Jurisdictions	70,105
Stolen Other Jurisdictions and Recovered Locally	11,317
TOTAL	**119,893**

SOURCE: Florida Department of Law Enforcement. Florida Uniform Crime Report, 2019 [Computer program]. Tallahassee, FL: FDLE, Florida Statistical Analysis Center.

*Figures include the Marjory Stoneman Douglas High School shooting incident on February 14, 2018 in which 17 persons were killed.