Chapter 1
BACKGROUND AND METHODOLOGY

A. INTRODUCTION

Federal sentencing policy for cocaine offenses has come under criticism during the past few years. Public comment received by the Sentencing Commission, statements made by public officials, by criminal justice practitioners, researchers, and interest groups, and extensive litigation challenging the constitutionality of the sentencing laws have all raised questions about whether the current approach to sentencing for cocaine offenses is fair and whether it is effective. Critics have focused especially on the differences in penalty levels between two forms of cocaine – powder and crack.

The current sentencing structure for cocaine offenses is primarily the result of the Anti-Drug Abuse Act of 1986. It established mandatory minimum penalties for persons convicted of trafficking in a variety of controlled substances. The 1986 Act pegged the mandatory minimums to specific quantities of drugs distributed. The quantities triggering the Act's mandatory minimum penalties differed for various drugs and in some cases for different forms of the same drug. Cocaine base, commonly referred to as crack cocaine, was treated differently than cocaine hydrochloride, commonly referred to as powder cocaine. The Act established what has come to be known as a 100-to-1 quantity ratio between the two forms of cocaine. It takes one hundred times as much powder cocaine to trigger the same mandatory penalties as for a given amount of crack. For example, a person convicted of selling 500 grams of powder cocaine is subject to the same five-year minimum sentence as a person selling 5 grams of crack cocaine.

In 1987, the Sentencing Commission used the same 100-to-1 quantity ratio in setting drug penalties under the sentencing guidelines. The mandatory minimum statutes list only two quantities for each form of the drug. In the case of crack, these are five and five hundred grams, which correspond to five- and ten-year mandatory minimum sentences for first offenders. The sentencing guidelines go further and set sentences for the full range of possible drug quantities using the same 100-to-1 quantity ratio.

Congress also distinguished crack cocaine from both powder cocaine and other controlled substances in the Anti-Drug Abuse Act of 1988 by creating a mandatory minimum penalty for simple

possession of crack cocaine. This is the only federal mandatory minimum for a first offense of simple possession of a controlled substance. Under this law, possession of more than five grams of crack cocaine is punishable by a minimum of five years in prison. Simple possession of any quantity of any other substance – including powder cocaine – by first-time offenders is a misdemeanor offense punishable by no more than one year in prison.

B. AUTHORITY

The Sentencing Reform Act of 1984 created the United States Sentencing Commission as an independent agency in the judicial branch of government.[1] The Act directed the Commission to establish sentencing policies and practices for the federal criminal justice system through a detailed framework of sentencing guidelines.[2] In addition, the Act required the Commission to monitor and report periodically on the operation of the sentencing guidelines and gave the Commission ongoing sentencing and crime policy research responsibilities.[3] The Act recognizes "the importance of sentencing and corrections research in . . . improving the ability of the Federal criminal justice system to meet the goals of sentencing."[4]

This report is submitted pursuant to both the Commission's ongoing statutory authority and responsibility to advise Congress on sentencing policy (described in 28 U.S.C. §§ 994-95) and a specific statutory directive contained in section 280006 of Public Law 103-322, the Violent Crime Control and Law Enforcement Act of 1994. This latter provides that "the United States Sentencing Commission shall submit a report to Congress on issues relating to sentences applicable to offenses involving the possession or distribution of all forms of cocaine. The report shall address the different penalty levels which apply to different forms of cocaine and include any recommendations the Commission may have for retention or modification of these differences in penalties."

C. THE ISSUES

In broad outline, critics of current cocaine sentencing policies argue that the 100-to-1 quantity ratio is unfair and ineffective. They claim it has led to harsher punishment of small-quantity retail crack cocaine dealers than is imposed on more sophisticated powder cocaine dealers who are higher

[1] The Commission's duties and authorities are set out in chapter 58 of title 28, United States Code.

[2] *See generally* 28 U.S.C. § 994.

[3] *See* 28 U.S.C. § 995(a)(8), (9), (12)(A), (13)-(16), (20), (21).

[4] S. Rep. No. 225, 98th Cong., 1st Sess. 162 (1983).

up in the same drug distribution chain and who are involved in larger quantities of cocaine. They argue that, like other mandatory minimums, the crack penalties are unevenly applied depending on what charges are brought against defendants and whether they are prosecuted in state or federal court. This leads to disparate punishment for defendants guilty of similar conduct.

Critics contend that the lengthier sentences for crack have not been more effective than the shorter sentences for powder in deterring use or in reducing trafficking. They say that many of the harms associated with crack use – such as crime, violence, and the breakdown of inner city neighborhoods – are not products of the drug alone but result from the total social and economic environment in which the drug is typically used. Lengthy terms of imprisonment have not effectively addressed these harms, but have had a destructive effect on the lives of crack offenders. Finally, critics point to the impact of the lengthier sentences for crack on minority defendants, which has contributed to a growing gap between the average sentence imposed on Whites and on minorities in the federal courts.

Those who support a differential in crack and powder cocaine penalties argue that it is appropriate to punish crack cocaine offenders more harshly than powder cocaine offenders because crack is a more dangerous drug. They believe that the introduction of crack increased the accessibility of cocaine, increased the number of open-air drug markets in many cities, and increased the violence associated with the drug trade. Crack cocaine, they contend, is more addictive and produces more health and social problems than powder cocaine.

Tough punishment, supporters of a penalty differential claim, is needed to send a clear signal that trafficking in crack will not be tolerated. They argue that the threat of punishment discourages use and distribution, and that lengthy terms of imprisonment improve public safety by keeping known offenders off the streets. In addition, law enforcement officials say that the current penalties assist them in infiltrating larger drug organizations by inducing defendants facing stiff sentences to cooperate following arrest.

Supporters of the current penalties point out that crack has been particularly destructive of minority communities and they believe that strict law enforcement stands to benefit these communities. The penalties themselves are racially neutral and unbiased, they argue, and the fact that a higher proportion of minority defendants are convicted of crack than of powder cocaine offenses simply reflects that a higher proportion of minorities commit crack offenses.

D. METHODOLOGY

To weigh these competing arguments and evaluate the current cocaine penalty structure, the Commission identified the concerns of Congress with cocaine use and its goals for cocaine sentencing policy. We reviewed the legislative history of the relevant penalty provisions and the purposes that

Congress has established for sentencing. We then turned to the findings, from the research literature and from the Commission's own empirical study and its hearings on cocaine sentencing, to learn what is known about the two forms of the drug and the effects of the current sentencing policy.

Chapters 2 through 7 report the findings of this examination and lay the groundwork for the report's conclusions. Chapter 2 examines the forms and methods of cocaine use, and the effect of cocaine on the body and mind when used in its various forms. Chapter 3 looks at the trends in cocaine use, the prevalence of crack cocaine and powder cocaine use today, how these forms of the drug affect individual lifestyles and the community-at-large, and the available treatment strategies for cocaine users.

Chapter 4 examines the business side of cocaine, focusing on trafficking and distribution patterns, marketing techniques, and profitability, as well as how the markets for powder and crack cocaine differ from one another. Chapter 5 reviews the research literature on the relationship between cocaine and crime. Chapter 6 explores the national law enforcement response to cocaine, including the history of enforcement efforts, the current federal enforcement policies, current state sentencing laws for cocaine offenses, and questions related to race and cocaine sentencing policy. The Commission presents its own empirical research in Chapter 7, namely a comprehensive statistical analysis of drug cases and defendants sentenced in the federal courts.

In Chapter 8, the Commission synthesizes and analyzes the issues raised in the earlier chapters and presents its recommendations. We begin by asking, "Is crack more harmful than powder cocaine?" We focus particularly on what we know today about those harms that were of most concern to Congress when it enacted the differential penalty structure. Comparing the harmfulness of the two forms of the drug proved complicated because many of the problems associated with crack are not clearly caused by the drug alone, but appear to result from a combination of the drug with other factors in the social and economic context in which it is typically used.

Measuring the seriousness of a crime and assigning just punishment is especially difficult for drug crimes. The harmfulness of a drug and the amount involved are two considerations. In addition, many other factors – including a defendant's culpability for the harm caused by drug use, his or her role in the crime, whether violence was used, and other aggravating and mitigating circumstances surrounding the offense – should be considered. We found that the sentencing guidelines take many of these factors into account, and could be amended to reflect better the greater seriousness of certain cocaine offenses. The current mandatory minimum penalty statutes do not take account of many of these factors.

In summary conclusion, the Commission found that the current differences in penalty levels for crack and powder cocaine should be reexamined. We believe that the sentencing guidelines, freed from the constraints of the current mandatory minimums, would be better able to address the

increased harm of crack cocaine and avoid the unfairness of the current statutory system. Our recommendations for what changes are needed are found in Chapter 8.

The report contains three appendices. Appendix A summarizes the Commission's November 9, 1993, public hearing on crack cocaine. Appendix B summarizes comment received by the Commission on the differing penalty schemes for crack and powder cocaine as a result of both the Commission's requests for comment published in the Federal Register in December 1992 and December 1993, and directed requests made by the Commission to various organizations. Appendix C outlines the unsuccessful constitutional and other legal challenges to the statutory and sentencing guideline distinctions made between powder cocaine and crack cocaine, including a list of cases in which these issues were raised.

E. A NOTE ON TERMINOLOGY AND DRAWING CONCLUSIONS

The following definitions explain selected terms commonly referred to in this report.

Powder cocaine refers to cocaine hydrochloride.

Cocaine base refers to cocaine in a base form. Cocaine base includes coca paste, other intermediate forms of cocaine, freebase cocaine, and crack cocaine.

Crack cocaine refers to a specific smokable base form of cocaine derived from powder cocaine through a process that chemically separates hydrochloric acid from the cocaine alkaloid.

100-to-1 quantity ratio refers to the comparative amounts of powder cocaine and crack cocaine needed to trigger the five- and ten-year mandatory minimum penalties mandated by 21 U.S.C. § 841(b)(1).

Finally, when undertaking this study, the Commission was frustrated by limitations in the current research. We wish we knew more than we do before setting policy in this area. Throughout the report, limitations in the available data are noted and we call for additional research where it is especially needed. The conclusions drawn are made cautiously with these qualifications in mind.

At the same time, we recognize that there are also limitations in drawing conclusions based only on isolated instances, anecdotes, news media reports, or even based on "common sense," which can be distorted by stereotypes or by the conventional wisdom of the day. We believe that the research presented here provides new information and a more sound basis for setting policy than was available to Congress when it acted and to the Commission when it promulgated the original guidelines. Accordingly, it is fitting to reexamine this important area in light of a fuller understanding of the problem of cocaine in America.

Chapter 2

COCAINE, ITS FORMS, METHODS OF USE, AND PHARMACOLOGY

A. INTRODUCTION

Cocaine is a naturally occurring substance derived from the leaves of erythroxylon plants indigenous to South America. Pharmacologically, cocaine has two prominent actions: 1) it is a potent anesthetic; and 2) it is a powerful stimulant. Cocaine has been used in South America for more than 3,000 years and in the United States since the 19th century in a variety of forms: coca leaves, coca paste, powder cocaine, and cocaine base (*e.g.*, freebase and crack cocaine). The final form of cocaine dictates how the drug can be administered and, as a consequence, the intensity and duration of its physiological and psychotropic effects. For example, to be effective powder cocaine can be injected, insufflated (snorted), or ingested, while crack cocaine can only be smoked. Therefore, while powder cocaine users can administer the drug in a variety of ways, crack cocaine users are limited to smoking the drug.

This chapter provides a basic overview of cocaine: what it is, where it comes from, how it is used, its effects on the body, and its addictive potential. Section B of this chapter provides background on the origins of cocaine, its use, and abuse. Section C examines the different forms of cocaine – leaf, paste, powder, and base – the ways cocaine is administered, and the differing methods by which cocaine is absorbed and distributed within the body. Section D discusses the physiological and psychotropic effects of cocaine use, outlining both the impact of various routes of administration (ingestion, injection, insufflation, inhalation) on the intensity and duration of these effects and the side effects and toxicity associated with cocaine abuse. This section also discusses the physiological and psychological aspects of cocaine dependence.

B. ORIGINS OF COCAINE USE AND ABUSE

Coca leaves have been used by South American Indians for more than 3,000 years. The use of coca leaves was associated historically with the religious ceremonies of the Incas and reserved specifically for nobility. Today, the leaves are chewed regularly in Peru and Bolivia for their

therapeutic value.[5] Chewing coca leaves provides a long-lasting, low-grade euphoria that reduces appetite, increases physical stamina, and counters symptoms associated with "mountain sickness" and oxygen deprivation.[6]

Cocaine was first extracted from coca leaves around 1860 and used as an anesthetic that proved to be a boon for ophthalmology.[7] In addition to anesthetizing the eye and preventing muscle reflex, cocaine constricts the arterioles which, in turn, reduces the amount of bleeding in an otherwise blood-rich area. Cocaine also widens the air sacs in the lungs, constricts the capillaries in the nasal passages, and makes breathing significantly easier.[8] During the 19th century, cocaine was promoted as a remedy for such respiratory ailments as asthma, whooping cough, and tuberculosis. Additionally, it was publicized, most notably by Sigmund Freud, as an aphrodisiac and an antidote for morphine addiction and alcoholism.[9]

By 1890, cocaine had become the primary ingredient in many elixirs and other "restoratives" that claimed to provide relief from depression and a multitude of ailments. It was an ingredient in cigars, cigarettes, chewing gum, and several "tonics," most notably *Coca-Cola* (today's *Coca-Cola* does not contain cocaine).[10] Cocaine use during the 19th century, however, was far from benign. In 1891, for example, 200 cases of death from cocaine intoxication were reported.[11] According to one estimate, the U.S. population in 1906 – numbering only half of today's population – consumed as much cocaine as did the U.S. population in 1976.[12]

During the beginning of the 20th century, the general perception was that cocaine use increased the risk of crime. By 1914, 46 states, in an effort to control crime, had enacted legislation

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[5] J. Murray, "An Overview of Cocaine Use and Abuse," 59 Psychological Reports 243-264 (1986); D.F. Allen and J.F. Jekel, Crack: The Broken Promise (1991).

[6] C. Van Dyke, P.I. Jatlow, P.G. Barash, and R. Byck, "Oral Cocaine: Plasma Concentrations and Central Effects," 200 Science 211-213 (1978).

[7] *Id.*; M. Ellenhorn and D. Barceloux, Medical Toxicology: Diagnosis and Treatment of Human Poisoning (1988).

[8] P. Jatlow, "Drugs of Abuse Profile: Cocaine," 33 Clinical Chemistry 66-71 (1987).

[9] Murray, *supra* note 1.

[10] *Id.*; Jatlow, *supra* note 4; Van Dyke *et al.*, *supra* note 2; G. Das, "Cocaine Use in North America," 33 Journal of Clinical Pharmacology 296-310 (1993).

[11] Allen and Jekel, *supra* note 1.

[12] *Id.*

regulating the use and distribution of cocaine.[13] That same year Congress passed the Harrison Narcotics Act, banning non-medical use of the drug and requiring strict accounting of medical dispensing to patients.[14]

Cocaine became scarce following passage of the Harrison Act. As its availability diminished, the popularity of amphetamines – legal drugs with similar physiological and psychotropic effects – increased. By the 1950s, cocaine was no longer considered a law enforcement problem.[15] During the 1960s, however, cocaine reemerged as a drug of abuse.[16] In 1970, Congress classified cocaine as a Schedule II controlled substance. While Schedule II controlled substances have legitimate medicinal uses – cocaine is used as a local anesthetic – they are recognized as having a high potential for abuse and dependency.[17]

C. FORMS OF COCAINE AND METHODS OF USE

Cocaine derives from plants indigenous to the Andes Mountains of South America. Of the 17 species of erythroxylon plants that produce cocaine, only two (erythroxylon coca and erythroxylon novogranatense) yield sufficient levels of the cocaine alkaloid to justify mass cultivation for processing into cocaine. These two species, cultivated primarily in Peru, Bolivia, and Colombia, supply the world's cocaine.[18]

1. Forms of Cocaine

Coca leaves can be processed into a variety of usable forms using an array of different and oftentimes toxic chemicals. Because all forms are derivatives of the coca plant, the active ingredient – the cocaine alkaloid – is common to all. Figure 1 illustrates the processing and routes of

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[13] D. Musto, The American Disease: Origins of Narcotic Control (1973).

[14] *Id.*

[15] Murray, *supra* note 1; R. Siegel, "New Patterns of Cocaine Use: Changing Doses and Routes," 61 National Institute on Drug Abuse Research Monograph Series 204-222 (1985).

[16] *Id.*

[17] 21 U.S.C. § 812.

[18] Murray, *supra* note 1; U.S. Department of Justice, Drug Enforcement Administration, Drugs of Abuse (1989).

administration of the five basic forms of the drug: coca leaves, coca paste, powder cocaine, freebase cocaine, and crack cocaine.[19]

a. Coca Leaves

Due to differing environmental factors, the cocaine content of the coca leaf ranges between 0.1 percent and 0.8 percent. Coca plants grown at higher altitudes contain a higher percentage of the cocaine alkaloid than those grown at lower altitudes and are consequently more potent.[20] Coca leaves typically are chewed but can be rolled into cigarettes or cigars and smoked or infused in liquid and consumed like tea.[21]

b. Coca Paste

Coca paste is a chunky, off-white to light-brown, putty-like substance that exists primarily as an intermediate product in the processing of coca leaves into powder cocaine. Coca paste is derived from coca leaves by mixing the leaves with an alkaline material (*e.g.*, sodium bicarbonate), an organic solvent (*e.g.*, kerosene), and water. The mixture is agitated and the cocaine alkaloid and the organic solvent naturally separate from the water and the leaves. The water and the leaves are removed from the mixture and discarded. Using an acid, the cocaine alkaloid and the kerosene are separated and the kerosene is drawn off the mixture. Additional sodium bicarbonate is added and a solid substance separates from the solution. This solid substance, the coca paste, is removed and allowed to dry. [22]

Chemically, coca paste is a base form of cocaine (similar to freebase cocaine and crack cocaine) and typically contains residual toxins from the conversion process. Because coca paste is a base, it is hydrophobic – not readily absorbed into water – and, thus, cannot be injected, insufflated, or ingested. While most coca paste is converted into powder cocaine, the paste itself is smoked in South American countries that produce cocaine.[23] During the early 1980s, several cities in the United

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[19] The distinction between base and non-base forms of cocaine is important in determining the route of administration. Because, in comparison to base forms of cocaine (*e.g.*, crack cocaine), non-base forms (*i.e.*, powder cocaine) vaporize at significantly higher temperatures that tend to decompose the cocaine molecule; non-base forms of cocaine generally are not smoked.

[20] Murray, *supra* note 1; U.S. Drug Enforcement Administration, *supra* note 14.

[21] *Id.*

[22] U.S. Department of Justice, Drug Enforcement Administration, Cocaine: Cultivation and Cocaine Processing: An Overview (1991).

[23] R. Jones, "The Pharmacology of Cocaine Smoking in Humans," 99 National Institute on Drug Abuse Research Monograph Series 30-41 (1990).

States also experienced sporadic episodes of coca paste smoking.[24] However, coca paste is typically not imported into the United States.[25]

c. Powder Cocaine

Powder cocaine is a white, powdery substance produced by reacting coca paste with hydrochloric acid. It is the most commonly used form of cocaine. As illustrated in Figure 1, cocaine powder is derived by dissolving the coca paste in hydrochloric acid and water. To this mixture a potassium salt (potassium permanganate) is added. The potassium salt causes undesired substances to separate from the mixture. These substances are then discarded. Ammonia is added to the remaining solution, and a solid substance – the powder cocaine – separates from the solution. The powder cocaine is removed and allowed to dry.[26] Prior to distribution, powder cocaine typically is "cut," or diluted, by adding a variety of one or more adulterants: sugars, local anesthetics (*e.g.*, benzocaine), other drugs, or other inert substances.[27] Consequently, the purity level of powder cocaine may vary considerably.

While the active ingredient in powder cocaine – the cocaine alkaloid – does not differ from the active ingredient in coca paste or other forms of cocaine, the salt substrate causes the drug to be hydrophilic – readily dissolved, or absorbed, into water – and, thus, easily injected, insufflated, or ingested. However, unlike base forms of cocaine (such as freebase and crack cocaine), powder cocaine cannot be inhaled (smoked).[28] The cocaine alkaloid molecule, when in the powder cocaine form, begins to decompose at a temperature close to which the drug vaporizes (198 °C, 388 °F).[29]

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[24] U.S. Department of Justice, Drug Enforcement Administration, Crack Cocaine: An Overview. (1989).

[25] *Id.*

[26] U.S. Department of Justice, Drug Enforcement Administration, *supra* note 18.

[27] U.S. Department of Justice, Drug Enforcement Administration, Illegal Drug Price and Purity Report (1992).

[28] M. Perez-Reyes, S. Di Guiseppi, G. Ondrusek, A.R. Jeffcoat, and C.E. Cook, "Free-base Cocaine Smoking," 32 Clinical Pharmacology and Therapeutics 459-465 (1982); P. Wilkinson, C. Van Dyck, P.I. Jatlow, P. Barash, R. Byck, "Intranasal and Oral Cocaine Kinetics," 27 Clinical Pharmacology and Therapeutics 386-394 (1980).

Technically, cocaine is not smoked. The concept of smoking implies that the substance is burned and the smoke from the burning substance is inhaled. "Smoked" cocaine, however, is actually vaporized, much like water is vaporized when it boils, and the cocaine-laden vapor is inhaled into the lungs. For the purposes of this discussion, the terms "vaporized" and "smoked" will be used interchangeably to mean inhalation into the lungs.

[29] S. Budavari, M. O'Neil, A. Smith, and P. Heckelman (Eds.) The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals (1989); D.R. Wesson and P. Washburn, "Current Patterns of Drug Abuse that Involve Smoking," 99 National Institute on Drug Abuse Research Monograph Series 5-11 (1990).

Once the cocaine alkaloid decomposes, it is inactive pharmacologically and no longer produces any physiological or psychotropic effects.[30]

d. Cocaine Base

Cocaine base is produced from powder cocaine. In this form, the cocaine alkaloid has been "freed" from the salt substrate and is once again in a base form similar to that of coca paste. Cocaine base vaporizes at a significantly lower temperature (98°C, 208°F) than powder cocaine (198°C, 388°F). This lower vaporization point results in less of the drug being decomposed when heated.[31] However, as a base, the drug is not water-soluble. Therefore, if injected, nasally insufflated, or ingested, it will not be absorbed readily into the body. Powder cocaine can be converted into two forms of cocaine base, freebase cocaine or crack cocaine.

i. Freebase Cocaine

Freebase cocaine is derived from powder cocaine that has been dissolved in water and a strong alkaloid solution, typically ammonia. Ether or another organic solvent is added, and a solid substance separates from the solution. This solid substance is the cocaine base.[32] Prior to adoption of the federal drug paraphernalia laws in 1986, kits containing the necessary materials and ingredients (except for the cocaine) to "freebase" could be purchased in drug paraphernalia shops.[33]

The use of freebase cocaine was documented first in the mid-1970s. Because freebase cocaine is significantly purer than coca paste or powder cocaine, many users believed that it was a healthier form of the drug. Even though an estimated ten to 20 percent of the cocaine-abusing population was using freebase cocaine during the 1970s, many resisted the freebasing process because of its complexity and potential danger. Ether, a highly volatile and flammable solvent, will ignite or explode if the freebase cocaine is smoked before the ether has evaporated entirely. This danger received extensive media coverage in 1980 when comedian Richard Pryor suffered third-degree burns over his torso and face while freebasing cocaine.[34]

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[30] C. Cook and A. Jeffcoat, "Pyrolytic Degradation of Heroin, Phencyclidine and Cocaine: Identification of Products and Some Observations on their Metabolism," 99 National Institute on Drug Abuse Research Monograph Series 97-120 (1990).

[31] Budavari, *et al.*, *supra* note 25; Wesson and Washburn, *supra* note 25.

[32] U.S. Department of Justice, Drug Enforcement Administration, *supra* note 18.

[33] *Id.*; 21 U.S.C. § 863.

[34] T. Morganthau, "Crack and Crime," Newsweek, June 16, 1986, at 16-22.

ii. Crack Cocaine

Crack cocaine, another form of cocaine base, also is derived from powder cocaine. Unlike the processing of freebase cocaine, converting powder cocaine into crack cocaine does not involve any flammable solvents. The powder cocaine is simply dissolved in a solution of sodium bicarbonate and water. The solution is boiled and a solid substance separates from the boiling mixture. This solid substance, crack cocaine, is removed and allowed to dry.[35] The crack cocaine is broken or cut into "rocks," each typically weighing from one-tenth to one-half a gram. One gram of pure powder cocaine will convert to approximately 0.89 grams of crack cocaine. The Drug Enforcement Administration estimates that crack rocks are between 75 and 90 percent pure cocaine.[36]

2. Administration of Cocaine

While cocaine in any form – paste, powder, freebase, or crack – produces the same type of physiological and psychotropic effects, the onset, intensity, and duration of its effects are related directly to the method of use. The form of cocaine generally defines the routes by which it can be administered. Powder cocaine can be injected, insufflated, or ingested; cocaine base, however, can only be smoked.[37] This section describes the principles underlying drug absorption by and distribution within the body. It compares the four primary routes of cocaine administration – ingestion, nasal insufflation (snorting), injection, and inhalation (smoking) – and the impact of each route on drug absorption and distribution.

a. Absorption and Distribution Within the Body

The route of administration directly affects the rate at which the drug will be absorbed into the bloodstream and transported to the central nervous system and brain where it produces physiological and psychotropic effects. Absorption of a drug into the blood stream is regulated by two primary factors: the amount of blood flowing to the site of ultimate consumption (*e.g.*, the stomach or small intestine); and the surface area over which the drug is absorbed. Following nasal insufflation

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[35] U.S. Department of Justice, Drug Enforcement Administration, *supra* note 18.

[36] U.S. Department of Justice, Drug Enforcement Administration, *supra* note 23. *See also*, Budavari, *et al.*, *supra*, note 25 at 2451. Although crack cocaine theoretically should be as pure as freebase cocaine, in practice it is less pure because crack cocaine processors tend to be less careful when making crack cocaine. In addition, crack cocaine processors often cut the end product with adulterants to increase the weight and bulk of the crack rocks (*See also*, Chapter 4).

[37] R. Foltin and M. Fischman, "Smoked and Intravenous Cocaine in Humans: Acute Tolerance, Cardiovascular and Subjective Effects," 257 Journal of Pharmacology and Experimental Therapeutics 247-261 (1991); R. Jones, "The Pharmacology of Cocaine," 50 National Institute on Drug Abuse Research Monograph Series 34-53 (1984); J. Javaid, M. Fischman, C. Schuster, H. Dekirmejian, and J. Davis, "Cocaine Plasma Concentrations: Relation to Physiological and Subjective Effects in Humans," 202 Science 227-229 (1978).

(snorting), for example, the surface area is limited to the nasal mucosa in the nasal cavity. In contrast, following cocaine inhalation (smoking), the drug is absorbed by the air sacs of the lungs which have a surface area the size of a football field.

The impact of a drug is additionally governed by the proportion of the drug distributed to various parts of the body. Of ultimate importance is the proportion of the drug reaching the central nervous system, particularly the brain – the primary site of action for drugs of abuse. For example, when a drug is injected intravenously, 100 percent of the drug is distributed to the body. Other routes of administration result in smaller proportions of the administered dose being available for distribution to the central nervous system. This phenomenon is attributable both to the smaller fraction of the drug being absorbed into the bloodstream and to natural safeguards in the body (*e.g.*, metabolism) that cleanse the blood of toxic substances. Figure 2 depicts the pathway of a drug from administration to the central nervous system and brain.

b. Onset of Physiological and Psychotropic Effects

The faster a drug reaches the bloodstream, the faster it is distributed throughout the body and the faster the user feels the desired physiological and psychotropic effects.[38] The level of effect and the length of time until maximum effect differ according to the method of administration.[39] Figures 3 and 4 summarize these differences. Figure 3 depicts, by method of consumption, the average change in physiological and psychotropic responses after cocaine is administered. Figure 4 depicts the average time interval required to reach maximum physiological and psychotropic response after cocaine is administered. The figures show that, upon administration of the drug, the average level of effect and the time until onset of the physiological and psychotropic responses differ significantly based on route of administration. The figures indicate that the psychological effect of the drug – the perceived intoxication – is very strongly associated with the route of administration. Intoxication begins soon after drug use and is perceived as more intense when use is through injection or smoking.

The psychotropic feelings, described as "stimulated" or "high," are correlated to the rate of increased concentration of cocaine in the blood, particularly blood flowing to the brain. The faster

[38] *Id.*; Wesson and Washburn, *supra* note 25.

[39] Foltin and Fischman, *supra* note 33.

cocaine reaches the brain, the greater the intensity of the psychotropic effects.[40] However, these intense psychotropic responses also dissipate more quickly. Consequently, routes of cocaine administration with the more immediate and intense psychotropic responses (specifically, injection of powder cocaine or smoking cocaine vapors) maintain the intensity for shorter periods of time than slower routes of administration.[41]

c. Routes of Administration

i. Ingestion

Users who ingest cocaine typically chew the coca leaves in their mouths much like chewing tobacco. Coca leaves typically are mixed with an alkaline substance (such as lime) and chewed into a wad that is retained in the mouth between gum and cheek and sucked of its juices. The juices are absorbed slowly by the mucous membrane of the inner cheek and by the gastro-intestinal tract when swallowed. Alternatively, coca leaves can be infused in liquid and consumed like tea.[42] Ingesting coca leaves generally is an inefficient means of administering cocaine. Because cocaine is hydrolyzed (rendered inactive) in the acidic stomach, it is not readily absorbed. Only when mixed with a highly alkaline substance (such as lime) can it be absorbed into the bloodstream through the stomach.[43] Absorption of orally administered cocaine is limited by two additional factors. First, the drug is partly metabolized in the liver. Second, capillaries in the mouth and esophagus constrict after contact with the drug, reducing the surface area over which the drug can be absorbed.[44]

Orally administered cocaine takes approximately 30 minutes to enter the bloodstream. Typically, only 30 percent of an oral dose is absorbed, although absorption has been shown to reach 60 percent in controlled settings.[45] Given the slow rate of absorption, maximum physiological and

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[40] N. Benowitz, "Clinical Pharmacology of Inhaled Drugs of Abuse: Implications in Understanding Nicotine Dependence," 99 National Institute on Drug Abuse Research Monograph Series 12 (1990); M. Benuck, A. Lajtha, and M. Reith, "Pharmacokinetics of Systemically Administered Cocaine and Locomotor Stimulation in Mice," 257 Journal of Pharmacology and Experimental Therapeutics 307 (1991); J. Boni, W. Barr, and B. Martin, "Cocaine Inhalation in the Rat: Pharmacokinetics and Cardiovascular Response," 257 Journal of Pharmacology and Experimental Therapeutics 307 (1991); Van Dyke, *et al., supra* note 2.

[41] J. Ambre, S. Belknap, J. Nelson, T. Rho, S. Shin, and A. Atkinson, "Acute Tolerance to Cocaine in Humans," 44 Clinical Pharmacology and Therapeutics 1 (1988).

[42] Murray, *supra* note 1.

[43] Wilkinson *et al., supra* note 24; Van Dyke *et al., supra* note 2.

[44] *Id.*

[45] *Id.*; Jones, *supra* note 33.

psychotropic effects are attained approximately 60 minutes after cocaine is administered by ingestion. While the onset of these effects is slow, the effects are sustained for approximately 60 minutes after their peak is attained.[46]

ii. Nasal Insufflation (Snorting)

Users who insufflate cocaine "snort" the drug into their nasal passages. The powder cocaine typically is apportioned into "lines," each representing between ten and 35 mg. of cocaine. The powder is drawn into each nostril through a thin straw and absorbed into the bloodstream through the capillaries of the mucous membranes of the nasal cavity.[47] Like ingestion, nasal insufflation is not the most efficient route of cocaine administration. Cocaine constricts the capillaries in the nasal membranes, thus reducing the surface area and making absorption slow and incomplete. Absorption following snorting cocaine is dose-dependent, with larger doses more completely absorbed than smaller doses.[48] One study found that only 28 percent of a 64 mg. intranasal dose of cocaine was absorbed compared to almost 69 percent of a 96 mg. dose.[49]

Cocaine snorted through the nasal passages appears in the blood three to five minutes after administration, significantly faster than the 30 minutes required for it to reach the bloodstream through ingestion.[50] However, both ingestion and insufflation result in approximately the same proportion of the drug being absorbed: 30 to 60 percent.[51] Compared to ingestion, the faster absorption of insufflated cocaine results in quicker attainment of maximum drug effects. Snorting cocaine produces maximum physiological effects within 40 minutes and maximum psychotropic effects within 20 minutes.[52] Similar to ingestion of cocaine, physiological and psychotropic effects

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[46] *Id.*

[47] J. Javaid, M. Musa, M. Fischman, C. Schuster, and J. Davis, "Kinetics of Cocaine in Humans after Intravenous and Intranasal Administration," 4 Biopharmacuetics and Drug Disposition 9-18 (1983); A. Jeffcoat, M. Perez-Reyes, J. Hill, B. Sadler, and C. Cook, "Cocaine Disposition in Humans after Intravenous Injection, Nasal Insufflation, or Smoking," 17 Drug Metabolism and Disposition 153-159 (1989).

[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] G. Barnett, R. Hawks and R. Resnick, "Cocaine Pharmacokinetics in Humans," 3 Journal of Ethnopharmacology 353 (1981); Jones, *supra* note 19; Wilkinson *et al., supra* note 24; Van Dyke *et al., supra* note 2.

[52] Jones, *supra* note 19.

from nasally insufflated cocaine are sustained for approximately 60 minutes after the peak effects are attained.[53]

iii. Injection

Cocaine injectors dissolve powder cocaine in water and inject the mixture into a vein, typically in the arm, using a hypodermic syringe. While injection is an effective method of delivering a drug dose, it is potentially problematic. Because the drug is injected directly into the bloodstream, natural safeguards (*e.g.*, metabolism) are bypassed. Given the unknown purity of street doses, intravenous drug users are less able to monitor and correct dosages, and therefore are subject to unexpected drug reactions or overdoses.[54] Further, safe intravenous administration requires sterile conditions – conditions typically not associated with illicit drug use. Consequently, illicit drug users who inject drugs are generally at a greater risk of health problems than illicit drug users who use drugs in other fashions.[55] (*See* Chapter Three, Cocaine Use and Public Health Issues, for a detailed discussion of the health problems associated with intravenous drug use.)

Intravenously administered cocaine is absorbed completely into the bloodstream, requiring only one minute to reach the brain.[56] The time interval to attainment of maximum physiological and psychotropic effects is much shorter than the interval following either ingestion or intranasal administration. Maximum physiological effects occur in ten minutes; maximum psychotropic effects in four minutes. These effects are sustained for approximately 30 minutes.[57]

iv. Inhalation (Smoking)

Cocaine base (including coca paste, freebase cocaine, and crack cocaine) typically is smoked in pipes constructed of glass bowls fitted with one or more fine mesh screens that support the drug. The user heats the side of the bowl (usually with a lighter), and the heat causes the cocaine base to vaporize. The user inhales the cocaine-laden fumes through the pipe. Alternatively, crack cocaine can be sprinkled in cigarettes and smoked.[58]

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[53] Van Dyke, *et al.*, *supra* note 2.

[54] R. Julien, A Primer of Drug Action (1988).

[55] *Id.*

[56] Benowitz, *supra* note 36.

[57] Jones, *supra* note 19.

[58] U.S. Department of Justice, Drug Enforcement Administration, *supra* note 20.

Smoking cocaine combines the efficiency of intravenous administration with the relative ease of consumption of ingestion and insufflation.[59] Facilitated by the large surface area of the lungs' air sacs, cocaine administered by inhalation is absorbed almost immediately into the bloodstream, taking only 19 seconds to reach the brain.[60] However, only 30 to 60 percent of the available dose is absorbed due to incomplete inhalation of the cocaine-laden fumes and variations in the heating temperature.[61] Cocaine smokers achieve maximum physiological effects approximately two minutes after inhalation.[62] Maximum psychotropic effects are attained approximately one minute after inhalation.[63] Similar to intravenous administration, the physiological and psychotropic effects of inhaled cocaine are sustained for approximately 30 minutes after the peak effects are attained.[64]

D. EFFECTS OF COCAINE

Cocaine is the most potent central nervous system stimulant of natural origin.[65] While different forms of cocaine do not result in different types of physiological or psychotropic effects, the route of administration does impact, as discussed above, the immediacy, intensity, and duration of cocaine's effects. The sections below discuss cocaine's physiological and psychotropic effects.

1. Physiological Effects of Cocaine

Cocaine, like other central nervous system stimulants such as amphetamine, caffeine, and nicotine, produces alertness and heightens energy.[66] Cocaine acts on the central nervous system by

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[59] Wesson and Washburn, *supra* note 25; R. Foltin and M. Fischman, "Self-Administration of Cocaine in Humans: Choices Between Smoking and Intravenous Cocaine," 261 Journal of Pharmacology and Experimental Therapeutics 841-849 (1992).

[60] Benowitz, *supra* note 36.

[61] Boni *et al., supra* note 36; Foltin and Fischman, *supra* note 33; Jeffcoat *et al., supra* note 43; D. Paly, P. Jatlow, C. Van Dyke, F. Jeri, and R. Byck, "Plasma Cocaine Concentrations during Coca Paste Smoking," 30 Life Sciences 731-738 (1982).

[62] *Id.*

[63] Benowitz, *supra* note 36.

[64] Boni *et al., supra* note 36; Foltin and Fischman, *supra* note 33; Jeffcoat, *et al., supra* note 43; Paly *et al., supra* note 57; Perez-Reyes, *et al., supra* note 24.

[65] U.S. Department of Justice, Drug Enforcement Administration, *supra* note 14.

[66] F. Gawin and E. Ellinwood, "Cocaine and Other Stimulants: Actions, Abuse and Treatment," 318 New England Journal of Medicine 1173 (1988).

inhibiting the re-uptake of the neurotransmitter norepinephrine. The augmentation of norepinephrine results in increased motor activity, with slight tremors and convulsions in the user's extremities.[67] In the cardiovascular system, the augmentation of norepinephrine results in increased heart rate, elevated blood pressure, and other symptoms similar to hypertension.[68] The rate of increase in these physiological responses varies by route of cocaine administration, with the most efficient absorption routes (inhalation and injection) producing the most rapid increases.[69]

Cocaine's vasoconstrictive properties reduce the size of the blood vessels, causing the air sacs in the lungs to dilate and the capillaries in the nasal passages to constrict.[70] Because cocaine permits less body heat to be lost, cocaine users generally experience an increase in body temperature. In cases involving cocaine overdoses, body temperatures as high as 114 °F have been reported.[71]

2. Psychotropic Effects of Cocaine

Cocaine also inhibits the re-uptake of dopamine, a neurotransmitter that controls the pleasure centers in the central nervous system, causing a sense of euphoria, decreased anxiety and social inhibitions, and heightened sexuality.[72]

Increased dosages of cocaine and use of the most rapid drug administration routes produce euphoric experiences that create vivid, long-term psychological memories that form the basis for subsequent craving of the drug.[73] Psychoses and hallucinations have been reported with increased doses of cocaine, including foraging and "skin picking" (a slang term for a condition in which addicts mistakenly believe that bugs are crawling on their skin). In addition to producing euphoria and psychoses, cocaine use causes the user to crave other drugs, including alcohol. Polydrug use is particularly significant because concurrent use of cocaine and other drugs is associated with increased

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[67] Jatlow, *supra* note 4; Julien, *supra* note 50; Jones, *supra* note 33; U. Raczkowski, Y. Herandez, H. Erzouki, and T. Abrahams, "Cocaine Acts in the Central Nervous System to Inhibit Sympathetic Neural Activity," 258 Journal of Pharmacology and Experimental Therapeutics 511 (1991).

[68] *Id.*

[69] *Id.*

[70] *Id.*

[71] *Id.*

[72] R.A. Wise, "Neural Mechanisms of the Reinforcing Action of Cocaine," 50 National Institute on Drug Abuse Research Monograph Series 15-33 (1984).

[73] Gawin and Ellinwood, *supra* note 62.

toxicity.[74] (*See* Chapter Three, Cocaine Use and Public Health Issues, for a discussion of the toxicity associated with cocaine and polydrug use.)

3. Drug Dependence

Drug dependence can be both physiological and psychological. Psychoactive substance dependence has been described as

> a cluster of cognitive, behavioral, and physiologic symptoms that indicate that the person has impaired control of psychoactive substance use and continued use of the substance despite adverse consequences . . . [including but] not limited to the physiologic symptoms of withdrawal and tolerance. . . [Withdrawal symptoms] vary greatly across classes of substances. Marked and generally easily measured physiologic signs of withdrawal are common with alcohol, opiates, sedatives, hypnotics, and anxiolytics. Such signs are less obvious with amphetamines, cocaine, nicotine, and cannabis, but intense subjective symptoms can occur upon withdrawal from heavy use of these substances.[75]

The nature and severity of dependence has been shown to be primarily influenced by the individual's drug tolerance and the immediacy and duration of the drug's effect.

a. Physiological Dependence

Unlike some drugs, cocaine is not physiologically addicting.[76] Examples of drugs that cause physiological dependence include:

- opiates (*e.g.*, heroin, morphine, codeine, and methadone),
- barbiturates (*e.g.*, phenobarbital, secobarbital),

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[74] *Id.*

[75] American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders: DSM-III-R (1987).

[76] K. Blum, Handbook of Abusable Drugs (1984); L. Keltner and D. Folks Psychotropic Drugs. (1993). Physiological dependence occurs when prolonged use of the drug causes systemic changes in the central nervous system (*e.g.*, lower pulse rate, decreased body temperature, or depressed respiration). When drug use is withdrawn, the body responds with an effect that is opposite the drug's action in an effort to maintain the new equilibrium established through use of the drug. For example, if the drug causes the body temperature to decrease by three degrees, the person's body temperature will increase by three degrees when the drug is withdrawn. Physical changes resulting from cessation of prolonged drug use (such as significant increases in body temperature) cause the user discomfort, including physical events such as nausea, convulsions, or seizures or psychological effects such as hallucinations or paranoia. Withdrawal symptoms can be stopped or mitigated by re-administering the drug. Over time, the homeostatic response to the dependence restores equilibrium in the body's varied systems.

- anxiolytics (*e.g.*, diazepam, meprobromate),
- nicotine (*e.g.*, tobacco products),
- caffeine (*e.g.*, coffee and tea), and
- alcohol.[77]

For drugs that cause physiological dependence, the nature of withdrawal symptoms varies with the type of drug. For example, opiate withdrawal is characterized by restlessness, sweating, extreme anxiety, fever, chills, and extreme diarrhea; alcohol withdrawal is characterized by hyperexcitability, hallucinations, psychomotor agitation, confusion, and delirium tremens – a syndrome characterized by a variety of discomforts.[78]

While cocaine is not physiologically addicting, users may experience anxiety and depression when cocaine is not available for use. These sensations, while possibly affecting physical systems in the body, have not been demonstrated to be related to bodily function; rather, these sensations have been classified as psychological manifestations resulting from psychological dependence.[79]

b. Psychological Dependence

Psychological dependence is a compulsion for repeated use of a drug for its euphoric effects despite any adverse effects that may occur.[80] Cocaine exhibits powerful reinforcing properties that cause users compulsively to misuse the drug resulting in psychological addiction.[81] The psychological craving for cocaine is the most important contributor to its abuse potential.[82]

Cocaine users discover that higher doses intensify the euphoria. Therefore, unless the user has imposed a limit on the quantity of drug used during a fixed period, or an external limit on supply exists, some users will gradually increase the frequency of use and quantity of the dose. The pursuit of euphoria becomes so great that users may often ignore all signs of physical and psychological risk, either to the individual or to others. With continued use, elation and self-confidence associated with the euphoria diminish, and depression and irritability set in. Often, in an attempt to ward off

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[77] *Id.*

[78] Julien, *supra* note 50.

[79] F.H. Gawin, "Cocaine Abuse and Addiction," 29 Journal of Family Practice 193-197 (1989).

[80] Julien, *supra* note 50; American Psychiatric Association, *supra* note 71.

[81] Murray, *supra* note 1; J. Spotts and F. Shortz, "Drug-Induced Ego States: I. Cocaine Phenomenology and Implications," 19 International Journal of the Addictions 119 (1984).

[82] Gawin, *supra* note 75.

depression and/or the "crash" from the high, cocaine users further intensify their pattern of use, resulting in cocaine binges lasting for several hours or even days.[83]

The psychological components of dependence are the same across all categories of psychoactive drugs.[84] For example, persons dependent on psychoactive drugs may exhibit a compulsion to use a drug over a longer period than originally intended. The criteria described in Table 1 were established by the American Psychiatric Association to diagnose drug dependency and the severity of the dependence. These criteria paint a picture of an individual whose drug-using behavior is out of control: the individual uses larger amounts of the drug while enjoying the drug experience less. Because the user is unable to reduce or discontinue use and behavior associated with procuring, preparing, or being intoxicated, drug use consumes increasing amounts of the individual's life. Once the individual seeks treatment for dependence, the distinction between physiological and psychological dependence becomes irrelevant: physiological dependence becomes merely one factor in the diagnosis of psychoactive substance dependence.[85]

c. Mechanisms of Dependence

The level and severity of cocaine dependence is affected by two factors: route of administration and drug tolerance.

i. Route of Administration

As stated earlier, cocaine, regardless of how it is administered (injection, inhalation, nasal insufflation, or ingestion), produces the same type of psychotropic effects but with different levels of immediacy, intensity, and duration. Because of its relationship with immediacy, intensity, and duration, the route of administration plays an important role in determining the likelihood that use will lead to dependence and abuse.[86] First, the intensity of the psychotropic effects is greater for those methods of administration that deliver the drug most rapidly to the brain. Consequently, routes of administration that result in the most rapid increases in blood concentration will provide the maximum levels of psychotropic effects.[87]

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[83] Gawin and Ellinwood, *supra* note 62.

[84] American Psychiatric Association, *supra* note 71.

[85] *Id.*

[86] Foltin and Fischman, *supra* note 33; Foltin and Fischman, *supra* note 55; Perez-Reyes, *et al.*, *supra* note 24.

[87] Foltin and Fischman, *supra* note 33; Gawin and Ellinwood, *supra* note 62; Javaid. *et al.*, *supra* note 33; Jeffcoat, *et al.*, *supra* note 43; Wesson and Washburn, *supra* note 25.

Second, the duration of the effect is inversely related to its intensity: methods of administration that bring about the most intense effects also will have the shortest durations.[88] Consequently, routes of cocaine administration that result in more rapid increases in the blood's drug concentration – such as injection and inhalation – are more likely to lead to drug dependence. For the injection and inhalation administration methods, cocaine's effects are quick in onset, short-acting, and carry a greater likelihood that the user will administer the drug more frequently (*e.g.*, daily or more often). Inhalation also carries a greater likelihood that users will administer the drug in binges. For the insufflation or ingestion administration methods, the cocaine effects are slow in onset, longer acting, and less likely to involve administering the drug frequently (*e.g.*, daily or more often) or in binging episodes.

ii. Drug Tolerance

Drug tolerance is the process by which the effectiveness of a drug diminishes over time such that increasing doses are necessary to achieve effects comparable to prior doses. Acute tolerance is defined as a change in responsiveness to a drug's effects in the short-term, even within the course of a single dose.[89] Cocaine's physiological and psychotropic effects dissipate quickly, but the drug continues to be present in the bloodstream after the effects are no longer being experienced. Therefore, acute tolerance to the physiological and psychotropic effects of cocaine develops rapidly.[90] When tolerance occurs, users need increasing amounts of the drug to achieve comparable levels of physical and psychological euphoria. Consistent with the development of drug tolerance, experienced users are often able to administer doses that would otherwise be fatal to a first-time user.[91]

E. SUMMARY

Table 2 summarizes the discussion in this chapter, comparing the various characteristics of powder cocaine and cocaine base.

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[88] Ambre, *et al.*, *supra* note 37.

[89] *Id.*

[90] M. Chow, J. Ambre, T. Atkinson, D. Banshen, and M. Fischman, "Kinetics of Cocaine Distribution, Elimination, and Chronotropic Effects," 38 Clinical Pharmacology and Therapeutics 318-324 (1985).

[91] M. Fischman, "The Behavioral Pharmacology of Cocaine in Humans," 50 National Institute on Drug Abuse Research Monograph Series 71-91 (1984).

Chapter 3

COCAINE USE AND PUBLIC HEALTH ISSUES

A. INTRODUCTION

Although the vast majority of Americans do not use illegal drugs, their use by a small minority affects the public health of the United States in many ways. This chapter focuses on cocaine use and its public health impact on the national community. The chapter analyzes both the impact of cocaine generally, and, where possible, the different impacts of powder and crack cocaine specifically. Section B examines current use data, including demographic information indicating use trends by such factors as gender, age, and race, through the findings of four separate national data collection efforts monitoring cocaine use. Section C examines various health effects of cocaine use, including the link between cocaine use and sexually transmitted and other diseases and the effects of cocaine use during and following pregnancy. Section D surveys other social problems affected by cocaine use, including the impact of cocaine use on social institutions and the workplace, and the connection between cocaine and domestic violence. Finally, Section E examines the availability of treatment for cocaine users.

B. TRENDS IN COCAINE USE IN THE UNITED STATES

The federal government funds several major data collection efforts to measure the prevalence of drug use across the nation. Each of these efforts taps a different data source for information on a specific population subgroup. No single dataset is currently available to provide precise national estimates of either casual or heavy drug use or precise demographic breakdown of users. When these separate data sources are examined collectively, however, a broad view of cocaine use in the United States emerges.

It is important to note that the data presented here relate to cocaine *users* and not cocaine *traffickers*. There is little statistical data on the overall numbers or demographic breakdown of cocaine traffickers. The information that is available on cocaine traffickers is discussed in Chapters 4 and 7.

Drug use statistics from four data sources are presented here:

- The National Household Survey on Drug Abuse (NHSDA);
- The Drug Use Forecasting Program (DUF);
- The Drug Abuse Warning Network (DAWN): Hospital Data; and
- The Drug Abuse Warning Network (DAWN): Medical Examiner Data.

Table 3 describes the characteristics of these data sources including the limitations on their application to drug use analyses.

1. Drug Use Among the Household Population

The National Institute on Drug Abuse (NIDA) has annually conducted the National Household Survey on Drug Abuse (NHSDA). This self-report survey produces estimates of drug use among household members aged 12 years and older in the contiguous United States. One of the NHSDA's limitations is its omission of the homeless, prisoners, and those in residential drug treatment.

a. General Prevalences

Data from the 1991 NHSDA indicate that while most people reported they have never used cocaine, 11.5 percent of the population reported using it at least once during their lifetime, 3.0 percent reported using it at least once in the past year, and 0.9 percent reported using it in the past month.[92] National trend data from the NHSDA indicate that recent cocaine use (*i.e.*, use at least once during the previous year) peaked at 6.0 percent between 1985 and 1988 and has declined since.[93] In 1988, 4.1 percent of the population were using cocaine at least once during the survey year, compared to 3.0 percent in 1992. Similarly, monthly use of cocaine has declined since 1988. In that year, the NHSDA estimated that 1.5 percent of the population were using cocaine at least once in the past month, compared to 0.6 percent in 1992.

For four years since 1988, the NHSDA has asked about the use of crack separately from general cocaine use. Trends in the use by the general population of the two forms of cocaine are shown in Figure 5. While use of all cocaine has declined, the use of crack has remained relatively stable. The data indicate that 0.5 percent of the population were using crack at least once a year during 1988, compared with 0.4 percent in 1992. From 1988 through 1992, NHSDA reports no change in the monthly use of crack (0.2%).

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[92] National Institute on Drug Abuse, National Household Survey on Drug Abuse: Main Findings 1991 58 (Table 4.4) (May 1993) (hereinafter "NHSDA:1991").

[93] *Id*. at 60 (Table 4.6).

According to the NHSDA report, crack cocaine use was most common among young and middle-aged adults, males, especially those who were Blacks, residents of metropolitan areas, those with less than a high school education, and the unemployed.[94]

Although the NHSDA data indicate that the number of casual users of all forms of cocaine has declined substantially, from 7.3 million in 1988 to 5.5 million in 1990, the same data indicate that the number of hard-core users has remained fairly constant. The NHSDA study estimated more than 2.1 million "heavy" cocaine users for 1991, a number that has changed little since 1988, and reported approximately 620,000 Americans (0.3%) using cocaine on a weekly basis.[95] These findings suggest that little progress has been made in combating cocaine abuse within the hard-core user population.[96]

According to the NHSDA data, among those who used cocaine at least once in the past year, insufflation ("snorting") is the most common route of administration. A total of 76.0 percent of such cocaine users snort cocaine, while 27.9 percent smoke cocaine. About equal percentages (10.8% and 10.5%, respectively) either ingest or intravenously inject cocaine.[97] Figure 6 details the NHSDA data on prevalence of the various routes of administration of cocaine.

b. Age and Trends in Cocaine Use

The rates of those who reported using cocaine in any form during each of the survey years are consistently and significantly highest for individuals aged 18 to 25 years, peaking in 1979. Since 1985, the data indicate a steady decline in use across all age groups.[98] Figure 7 demonstrates rates of use in the survey years by age group.

The NHSDA reports that crack cocaine is most popular among young adults ages 18-25. However, of those who used cocaine in the past year, a higher proportion of 12- to 17-year-olds used crack (26.7%) compared to 18- to 25-year olds (13.0%), 26- to 34-year-olds (15.7%), or 35 years and older (21.4%).[99]

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[94] *Id.*

[95] In fact, this number has remained fairly constant since 1985. *Id.* at 40, 60.

[96] *See e.g.*, D. Hunt and W. Rhodes, Office of National Drug Control Policy, Characteristics of Heavy Cocaine Users Including Polydrug Use, Criminal Activity, and Health Risks (Dec. 1992).

[97] NHSDA: 1991, *supra* note 1, at 61 (Table 4.7). Data on routes of administration reflect that some number of respondents reported using more than a single route of administration during the survey year.

[98] *Id*. at 27 (Table 2.7).

[99] *Id*. at 56, 63 (figures derived from Tables 4.2 and 4.9).

In addition to the NHSDA, NIDA conducts an annual survey of drug use among high schoolers. That survey also has shown a decline in both powder and crack cocaine use since 1986 (the first year the survey included questions on crack cocaine use). In 1986, 12.7 percent of twelfth graders reported using cocaine (of any kind) at least once in the reporting year. In 1994, 3.6 percent reported using cocaine in the reporting year. Similarly, in 1986, 4.1 percent of twelfth graders reported using crack cocaine at least once in the reporting year versus 1.9 percent in 1994. It is worth noting that in the last year (between 1993 and 1994) there was a slight increase in both crack and powder cocaine use among young people (a 0.4% increase for crack and a 0.3% increase for powder)[100]

The high schooler survey also provides trend data on the occasional use of cocaine and crack by young adults. Among young adults NHSDA data indicate a decline in the use of both of these drugs. From 1987 through 1993, there was a 71 percent (13.6% to 3.9%) decrease in the proportion of young adults reporting the use of cocaine within the past year. Also declining substantially were the proportion of young adults reporting cocaine use within the past 30 days, which decreased by 77% (4.8% to 1.1%) between 1987 and 1993. During this period, the data show a 58 percent drop in the proportion of young adults that used crack at least once in the past year. From 1987 to 1990, the proportion of young adults reporting crack use within the past month decreased 60 percent (1.0% to 0.4%). However, from 1990 through 1993, the percentage of young adults reporting crack use within the past month remained constant.

c. Race and Trends in Cocaine Use

Public opinion tends to associate the country's drug crisis, specifically its perceived "crack problem," with Black, innercity neighborhoods.[101] The NHSDA found that cocaine in any form was used by 2.8 percent of Whites, 3.9 percent of Blacks, and 3.8 percent of Hispanics in the survey population during the 1991 reporting year.[102] Because Blacks and Hispanics comprise significantly smaller percentages of the total population, the majority of those reporting cocaine use were White. The survey found that of those reporting cocaine use at least once in the reporting year, 75 percent were White, 15 percent Black, and 10 percent Hispanic. And of those reporting crack use at least once in the reporting year, 52 percent were White, 38 percent were Black, and 10 percent were Hispanic. (Thus, within racial categories, 0.3% of Whites, 1.5% of Blacks, and 0.6% of Hispanics reported crack cocaine use at least once in the reporting year.)

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[100] National Institute on Drug Abuse, Monitoring the Future Study, (Table 3) (Dec. 1994).

[101] M. Fullilove, "Perceptions and Misperceptions of Race and Drug Use," 269 Journal of the American Medical Association 1034 (Feb. 24, 1993).

[102] NHSDA: 1991, *supra* 1, at 56.

The survey found that of those reporting any form of cocaine use at least once in their lifetime, 82 percent were White, 10 percent Black, and 8 percent Hispanic (within racial categories, 11.8% of Whites, 11.2% of Blacks, and 11.1% of Hispanics reported some form of cocaine use in their lifetime). Of those reporting crack cocaine use at least once in their lifetime, 65 percent were White, 26 percent Black, and 9 percent Hispanic (within racial categories, 0.3% of Whites, 1.5% of Blacks, and 0.6% of Hispanics).[103] Because so few report crack use in the past month, NIDA does not publish a racial breakdown of those figures.[104] Percentages of use by race have shifted somewhat over time, but percentages of all races using cocaine have steadily declined since 1985.[105]

A significant limitation on the observations that may be made from data on race and cocaine use trends is that race is highly correlated with place of residence, and neighborhood-level social and environmental conditions are significant factors driving drug abuse. Also, as will be discussed in Chapter 4, the ability to distribute crack cocaine in single-dose amounts makes crack cocaine more marketable in lower-income neighborhoods than powder cocaine, sold only in larger, more expensive quantities.

A recent study reanalyzed NHSDA data using neighborhood and social condition explanatory factors. The analysis found that crack cocaine smoking did not depend strongly on the race of the individual, but instead on social conditions. The study noted that if factors such as drug availability and social conditions are held constant, the odds of crack cocaine use within a population do not differ significantly by race/ethnicity.[106] Consistent with this, a study in the Miami, Florida metropolitan area, which recruited a street-based sample of 350 cocaine users, found few differences in level of crack use among participants aged 13-29 years based on the race of the individual. With the exception of one sub-group (Hispanics aged 20-29 years), more than 90 percent of participants reported that crack was the primary form of cocaine used, regardless of race. The authors also report that among older cocaine users (aged 30-49 years), Whites are more likely to report crack as the primary form of cocaine used and Blacks are least likely to use crack as their primary form of cocaine ingestion.[107]

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[103] *See*, *e.g.*, S. Belenko, Crack and the Evolution of Anti-Drug Policy (1993).

[104] *Id.* at 49-50. Of Blacks using cocaine, more than twice as many reported using powder cocaine than using crack cocaine.

[105] NHSDA:1991, *supra* note 1.

[106] M. Lillie-Blanton, J. Anthony, and C. Schuster, "Probing the Meaning of Racial/Ethnic Group Comparisons in Crack Cocaine Smoking," 269 Journal of the American Medical Association 993, 996 (Feb. 24, 1993).

[107] Lockwood, D., Pottieger, A., Inciardi, J. Crack Use, Crime by Crack Users, and Ethnicity. For publication in: Darnell F. Hawkins (ed) Ethnicity, Race and Crime, Suny Press, 1994. *See also* United States Sentencing Commission, Hearing on Crack Cocaine 73-75 (statement of Dr. Jerome H. Skolnick, Professor of Law at the University of California at Berkeley) for further support of this funding.

d. Other Demographic Trends in Cocaine Use

Metropolitan Areas. The NHSDA data indicate that the highest rates of cocaine use were reported in large metropolitan areas. Of those surveyed from large metropolitan populations, 3.4 percent reported using cocaine in the past year, compared with 3.0 percent of those from smaller metropolitan populations and 2.3 percent of those from non-metropolitan populations. [108]

Gender. The 1992 NHSDA indicates that 3.2 percent of males reported using cocaine at least once in the past year, compared to 1.7 percent of women. [109] In 1991, the rate of males using cocaine in the past year (4.1%) was more than twice that for females (2.0%). [110] Since 1985, the rates of use for men have been roughly twice as high as the rates for women, although rates of use for both genders have consistently declined.

Employment. Of the people reporting cocaine use during the 1991 reporting year, 71.4 percent were employed. [111] However, the *rate* of use is higher for the unemployed. NIDA's 1991 survey indicates that 11.8 percent of unemployed persons used cocaine in the past year, compared to 3.2 percent of the employed. [112]

2. Drug Use Among the Arrestee Population

The Drug Use Forecasting (DUF) program collects data on drug use by arrestees but does not distinguish between crack and powder cocaine. [113] As will be discussed in Chapter 6, various factors including the national drug enforcement strategy, local law enforcement training, priorities, and resources, and individual prosecutorial discretion affect police charging decisions. All of these factors affect the demographics of arrestees generally, and, thus, of arrestee populations sampled for DUF analysis.

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[108] NHSDA: 1991, *supra* note 1, at 56 (Table 4.2).

[109] National Institute on Drug Abuse, National Household Survey on Drug Abuse: Population Estimates 1992 115 (Table 21-A) (Oct. 1993) (hereinafter "1992 Population Estimates").

[110] *Id.*

[111] NHSDA:1991, *supra* note 1 at 56 (Table 4.2) (this reflects an estimated 0.9 million adult employed cocaine users).

[112] *Id.*

[113] U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, Drug Use Forecasting 1993 Annual Report (Nov. 1994). These data result from analysis of voluntary and anonymous urine samples collected at booking centers across the country.

The DUF 1993 Annual Report indicates that cocaine use among arrestees remains at high levels and continues to be the most prevalent drug used by arrestees in 1993. The percent of male arrestees testing positive for the use of cocaine range from a low of 19 percent in Omaha, Nebraska, (where 54% tested positive for any drug) to a high of 66 percent in Manhattan, New York (where 78% tested positive for any drug). The percent of female arrestees testing positive for cocaine ranged from a low of 19 percent in Indianapolis, Indiana (where 51 percent of female arrestees tested positive for any drug), to a high of 70 percent in Manhattan, New York (where 83% of female arrestees tested positive for any drug). Consistent with DUF findings since 1987, cocaine remains the most pervasive drug among both male and female arrestees.

3. Hospital Emergency Room Episodes

The Drug Abuse Warning Network (DAWN) gathers data on drug-related emergency room visits and medical examiner cases as reported from selected hospitals and medical examiners in specified metropolitan areas. DAWN data for 1992 indicate an upward trend in drug-related (any drug type) hospital emergency room visits since 1990, with an estimated 433,493 such visits in 1992.[114] Data demonstrate a similar trend in cocaine-related episodes, with the total increasing from one percent of all emergency room visits in 1978 to 27.6 percent in 1992. Cocaine ranked second only to alcohol in drug mentions.

The 119,843 cocaine-related episodes reported in 1992 represented an 18-percent increase from 1991. Cocaine-related emergency care was divided fairly equally among detoxification (25.7%), unexpected reaction (24.0%), and chronic effects of habitual use (19.5%).[115] The number of visits related either to unexpected reactions from cocaine or to its chronic effects increased by more than 50 percent since 1990. Cocaine-related emergencies were also sometimes associated with overdosing (13.6%).[116] In addition, between 1991 and 1992, cocaine mentions increased for almost every demographic subgroup.[117] In 1992, 57.7 percent of episodes involved Blacks, 26.6 percent involved Whites, and 9.9 percent involved Hispanics.[118]

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[114] National Institute on Drug Abuse, Series 1, Number 12-A, Annual Emergency Room Data 1992 85 (Table 4.03) (Mar. 1994) (hereinafter "1992 Emergency Room Data"). Note that alcohol in combination with any other drug remains the largest component of emergency room drug episodes.

[115] *Id*. at 44 (Table 2.14).

[116] *Id*. at 44 (Table 2.14). Information on reason for emergency room visit was missing for 15.3 percent of cocaine drug abuse mentions.

[117] *Id*. at 41 (Table 2.11).

[118] *Id*.

While cocaine-related episodes have risen, increased use of other drugs has contributed to the overall increase in emergency room episodes. Since 1990, heroin-related episodes have risen considerably: in 1992, the 48,003 mentions represent a 34-percent increase compared to the previous year.[119] Between 1990 and 1992, the number of heroin-related emergency room episodes more than doubled in Boston, Baltimore, and New York City.[120] Marijuana- and hashish-related episodes are at their highest levels since 1988 and reflect a 48-percent increase between 1991 and 1992. PCP has received increased mentions as well.[121]

In addition to information on reasons for seeking emergency care, the DAWN Emergency Room Data examine motives for drug use by those who sought emergency room care. Of those reporting use due to drug dependence or for recreational purposes, 64.6 percent reported dependence on cocaine and 12.5 percent reported recreational use of cocaine.[122] Although alcohol (30.9%) remains the most frequently mentioned drug used in combination with other drugs, cocaine (25.7%) ranks a close second.[123]

DAWN does not distinguish between crack cocaine and powder cocaine; however, information on route of administration is a proxy for distinguishing between the two forms of cocaine. Injection or snorting involves only powder cocaine; smoking (inhalation) is most likely to involve crack cocaine, although it could involve "freebasing" powder cocaine (*see* Chapter 2 for a further discussion of routes of cocaine administration). For cases in which information on the route of administration was available, DAWN reported that 38.2 percent of emergency room admissions involved smoking; 17.5 percent involved injection; and 11.3 percent involved snorting.[124] In 30 percent of the cases, the route of administration was unavailable.[125] These data indicate that most cocaine-related hospital emergencies involve the two most rapid routes of cocaine administration – inhalation and injection – but that episodes involving smoking are two times higher than those

[119] *Id*. at 85 (Table 4.03).

[120] *Id*. at 88 (Table 4.05b).

[121] *Id*. at 85 (Table 4.03).

[122] *Id.* at 43 (Table 2.13). For drug-use motive, 13.8 percent of the information on cocaine mentions is missing.

[123] *Id*. at 49 (Table 2.19).

[124] *Id*. at 47 (Table 2.17).

[125] *Id*.

involving injection. Figure 8 illustrates DAWN data on cocaine-related emergencies by the primary reported route of cocaine administration.[126]

The emergency room data indicate significant increases in cocaine-related visits, and the DAWN report provides three possible hypotheses for the increases. First, the DAWN report posits that higher purity levels may account for the increase in emergency room visits. The Drug Enforcement Administration reports that the average purity of an ounce of powder cocaine increased from 58 percent in 1990 to 74 percent in 1992. During that time, the number of cocaine-related emergency room visits attributed to overdose increased by 47 percent.[127]

Second, changes in patterns of use, such as route of administration or dosage amount, may impact on the number of emergency room visits. For example, DAWN posits that the emergence of crack smoking in the mid-1980s may be responsible for the increase in cocaine mentions. DAWN data presented in Figure 8 illustrate that smoking was the most common administration route for cocaine-related hospital emergencies.

Finally, reports of an increase in the rate of polydrug use may account for the change. Past DAWN reports indicate that cocaine users, in general, are more likely to be polydrug users than are users of other drugs.[128] As mentioned in Chapter 2, polydrug use) the concurrent use of two or more drugs) significantly increases the risk of injury or death. For example, in 1992, 60.0 percent of cocaine-related emergency room admissions[129] and 73.2 percent of all cocaine-related deaths involved at least one other drug.[130]

Consistent with the increased toxicity of concurrently administered cocaine and alcohol,[131] medical emergencies are most likely when the drug used with cocaine is alcohol. Their concurrent

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[126] Figure 8 also arrays cocaine death data by route of administration.

[127] 1992 Emergency Room Data, *supra* note 23, at 45.

[128] *Id.* at 49 (Table 2.19).

[129] *Id*.

[130] National Institute on Drug Abuse, 1992 Medical Examiner Data 31 (Table 2.17) (1994) (hereinafter "1992 Medical Examiner Data").

[131] Concurrent use of cocaine and alcohol results in the body's manufacture of cocaethylene, a pharmacologically active metabolite that stimulates the cardiovascular system and produces the same feelings of euphoria as cocaine. The effects of cocaethylene are similar to – but more intense, longer-lasting, and more toxic – than those of cocaine alone. W. Hearn, S. Rose, J. Wagner, A. Ciareglio and D. Mash, "Cocaethylene is More Potent than Cocaine in Mediating Lethality," 39 Pharmacology and Biochemistry and Behavior 531-533 (1991).

use accounted for 40.8 percent of cocaine-related emergency room admissions.[132] Concurrent use of cocaine and heroin is the second most likely cause of cocaine-related emergency room admissions (12.7%).[133]

4. Medical Examiner Reports

DAWN gathers data on the number of deaths related to drug use. In 1991, 135 medical examiners in 21 metropolitan areas reported a total of 7,532 deaths that involved drug overdoses or in which drug abuse was a contributing factor.[134]

Consistent with the research discussed above, 74.5 percent of drug-related deaths involved polydrug use.[135] Among cocaine-related deaths, concurrent use with alcohol was the most deadly combination. The cocaine/alcohol combination was involved in 37.1 percent of cocaine-related deaths,[136] followed closely by opiates and heroin, involved in 29.5 percent of deaths.[137]

In total, 45.8 percent of the drug-related deaths involved cocaine (either alone or in combination with another drug).[138] The number of drug-related deaths involving cocaine increased 20 percent between 1990 and 1991.[139] As shown in Figure 8, the most frequent route of administration for cocaine-related deaths was injection (12.7%).[140] Cocaine-related deaths have been

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[132] 1992 Emergency Room Data, *supra* note 23, at 51 (Table 2.21).

[133] *Id*.

[134] 1992 Medical Examiner Data, *supra* note 39, at 11 (Table 2.01). These data do not include deaths involving AIDS, homicide-related drug abuse deaths, or cases for which the drug used was unknown.

[135] *Id*. at 13 (Table 2.03).

[136] 1992 Medical Examiner Data, *supra* note 39, at 33 (Table 2.19).

[137] *Id*.

[138] Cocaine was the most frequently mentioned substance (46.0% of total episodes) among all drug-related deaths. The next most frequently mentioned substances were alcohol in combination with other drugs (34.1%) and heroin/morphine (38.7%). *Id*. at 16 (Table 2.06a).

[139] *Id*. at iv.

[140] *Id*. at 30 (Table 2.16). Note that for 73.0 percent of the medical examiner reports on cocaine-mention deaths, data on the route of administration were missing.

associated most commonly with respiratory failure, acute increase in blood pressure, rupture of a weak cerebral blood vessel, and major convulsive seizures.[141]

For the medical examiner data, cocaine was the drug most frequently mentioned for all age groups, for both sexes, and for two of the three racial categories: Blacks and Hispanics. The data show 43.5 percent of all mentions involved Blacks, 39.1 percent involved Whites, and 15.9 percent involved Hispanics.[142] Cocaine ranked third in frequency for Whites, behind alcohol in combination with another drug and heroin/morphine.[143]

5. Combined Results for NHSDA, DUF, and DAWN

The data outlined above measure different aspects of the drug abuse problem and reflect patterns among different populations. A study conducted in 1992 for the Office of National Drug Control Policy combined results from NHSDA, DUF, and DAWN, along with several other reports, to estimate the number of heavy cocaine users in the United States.[144] This study does not distinguish between powder cocaine and crack cocaine.

The study estimated that the casual use of all forms of cocaine has decreased since 1988, while the number of hard-core users has remained fairly constant.[145] The study estimated more than 2.1 million heavy cocaine users in 1991, a number that has changed little since 1988. However, the number of casual users declined substantially from 7.3 million in 1988 to 5.5 million in 1990.[146]

A study utilizing much of this same data, conducted by the Rand Foundation and released in 1994, similarly found that fewer Americans are now using cocaine than in the 1980s.[147] The report concluded, though, that total consumption has remained roughly constant, because of consumption

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[141] *Id*.

[142] *Id*. at 26 (Table 2.12).

[143] *Id*. at 18-20. Route of administration and form of the drug were unavailable in most cases, making it impossible to determine how many of the deaths could be attributed to crack cocaine. Therefore, statistics for cocaine include all forms of the drug.

[144] Hunt and Rhodes, *supra* note 5.

[145] *Id.* at 6 (Table 1).

[146] *See*, *e.g.*, Hunt and Rhodes, *supra* note 5; NHSDA: 1991, *supra* note 1.

[147] S. Everingham and C. Rydell, Drug Policy Research Center, Modeling the Demand for Cocaine 27 (Figure 3.8) (RAND) (1994).

by heavy users.[148] The report calculated that heavy users accounted for more than two-thirds of the total demand for cocaine in 1992, up from less than one-half in 1980.[149]

C. COCAINE USE AND HEALTH EFFECTS

The use of illicit drugs, including all forms of cocaine, impacts the public health of the United States in many ways. This section examines various health effects of cocaine use, including the link between cocaine use and HIV infection, sexually transmitted diseases, and the effects of cocaine use during and following pregnancy.

1. Cocaine and Disease Transmission

Cocaine use raises serious public health concerns about disease transmission due to the patterns of cocaine use, the commonly associated phenomenon of user binges, and the rise of "shooting galleries" (for powder cocaine) and "crack houses" (for crack cocaine). These concerns center on four major areas: 1) HIV and AIDS transmission; 2) other sexually transmitted diseases (STDs); 3) prostitution; and 4) other diseases.

a. Cocaine and HIV/AIDS Transmission

i. Intravenous Cocaine Injection

More than 30 percent of individuals with Acquired Immunodeficiency Syndrome (AIDS) are abusers of intravenous (IV) drugs. Thousands of other IV drug abusers carry the Human Immunodeficiency Virus (HIV), the virus that causes AIDS.[150] Intravenous drug users who share needles, syringes, or other drug equipment (such as drug-injection cookers or cotton balls) can exchange small amounts of blood on these articles and transmit the virus.[151]

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[148] *Id.* at 15-18. Heavy users were defined in the study as those using cocaine at least once a week.

[149] *Id.*

[150] G. Pratsinak and R. Alexander (Eds.), Understanding Substance Abuse and Treatment 157 (1992).

[151] D. Longshore and M. Anglin, HIV Transmission and Risk Behavior among Drug Users in Los Angeles County 1991 Update (1991).

The spread of the AIDS virus is positively associated with IV drug injection.[152] In the prototypical "shooting gallery" environment, drug injection equipment is passed from one user to another, producing an increased risk for the transmission of the HIV virus.[153] In addition, IV cocaine use is believed to present a higher risk of HIV infection than do the use of heroin or other IV drugs because of the relatively short-lived euphoria of cocaine (*i.e.*, cocaine injectors are more likely to reinject frequently to sustain the drug high than are abusers who inject other illicit drugs such as heroin).[154] Consequently, cocaine injectors who frequent "shooting galleries" are at the greatest risk.

ii. Sexual Transmission

Drug use has been associated with an increased risk of HIV transmission through the high-risk sexual activity of users.[155] Compared to powder cocaine injectors, crack cocaine smokers exhibit more high-risk sexual behaviors, including multiple sexual partners, sex without condoms or other barriers, and sexual activity during or following drug use.[156] Whether crack cocaine is the cause of this association cannot be determined due to limitations in the available data. The relationship between crack cocaine smoking and high-risk sexual behavior holds across demographic and lifestyle groups.[157] Another factor increasing the risk of HIV infection among crack cocaine users concerns "sex for crack," where an individual exchanges sex for a dose of crack cocaine.[158] Although the practice of trading sex to support a drug habit is not unique to crack cocaine) between one-quarter and one-third of all drug users have traded sex either for drugs or for the money to buy drugs[159]) this practice is common in "crack houses" that sell the drug and provide a location for its use. Consequently, rates of HIV infection are nearly equal between crack cocaine smokers who are at

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[152] *Id*.

[153] M. Wallace, M. Galanter, H. Lifshutz, and K. Krasinski, "Women at High Risk of HIV Infection from Drug Use," 12 Journal of Addictive Diseases 83 (1993).

[154] "New Evidence Links Cocaine Use and HIV," 30 Journal of Psychosocial Nursing 45 (1992).

[155] Belenko, *supra* note 12, at 41 (1993).

[156] R. Booth, J. Watters, and D. Chitwood, "HIV Risk-Related Sex Behaviors among Injection Drug Users, Crack Smokers, and Injection Drug Users Who Smoke Crack," 83 American Journal of Public Health 1146-1147 (1993). *See also*, B. Edlin, M.D., *et al.*, "Intersecting Epidemics – Crack Cocaine Use and HIV Infection Among Inner-City Young Adults," The New England Journal of Medicine 1422 (Nov. 24, 1994).

[157] Longshore and Anglin, *supra* note 60, at 37.

[158] U.S. General Accounting Office, The Crack Cocaine Epidemic: Health Consequences and Treatment 20 (Jan. 1991).

[159] Longshore and Anglin, *supra* note 60, at 28.

greater risk due to high-risk sexual practices and powder cocaine injectors who are at greater risk because of the potential for infection from shared injection equipment.[160]

Drug-related increases in HIV/AIDS transmission are not solely limited to the drug users themselves. For example, an increasing percentage (34% in 1991, up from 29% in 1986) of new female AIDS cases links transmission to heterosexual contact with high-risk partners.[161]

b. Cocaine and Other Sexually Transmitted Diseases

The same high-risk sexual behaviors that increase the likelihood of HIV transmission among crack cocaine smokers also increase the risk of sexually transmitted diseases (STDs) such as gonorrhea, herpes, and syphilis. The nationwide increase in syphilis in the late 1980s paralleled the growth in crack cocaine use. In some areas, the increase was concentrated among powder cocaine and crack cocaine users as well as prostitutes. Cases of penicillin-resistant gonorrhea also rose, with the new cases occurring in greater numbers among young Blacks, prostitutes, persons in low-income neighborhoods, and drug abusers.[162]

Research indicates that crack cocaine users are significantly more likely to contract STDs than are intravenous powder cocaine users. For example, crack cocaine smokers were up to twice as likely as IV cocaine users to test positive for syphilis and gonorrhea.[163]

Public health professionals report that it is difficult to contain the spread of syphilis within the high-risk populations of either cocaine users or prostitutes.[164] The difficulty is the ineffectiveness of established public health procedures for identifying and notifying sexual partners. Within the sexually active populations of crack cocaine smokers, including prostitutes and those who exchange sex specifically for crack (or for the money to acquire it), individuals are often unable or unwilling to provide information on the identity of their sexual partners or the location of crack houses.[165]

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[160] Booth *et al.*, *supra* note 65, at 1147.

[161] T. Ellerbrock, S. Lieb, P. Harrington, T. Bush, S. Schoenfisch, M. Oxtoby, J. Howell, M. Rogers and J. Witte, "Heterosexually Transmitted Human Immunodeficiency Virus Infection Among Pregnant Women in a Rural Florida Community," 327 New England Journal of Medicine 1704 (Dec. 10, 1992).

[162] U.S. General Accounting Office, *supra* note 67, at 20-21.

[163] Booth *et al.*, *supra* note 65, at 1146.

[164] J. Hibbs and R. Gunn, "Public Health Intervention in a Cocaine-Related Syphilis Outbreak," 81 American Journal of Public Health 1259 (Oct. 1991).

[165] Centers for Disease Control, "Alternative Case-Finding Methods in a Crack-Related Syphilis Epidemic - Philadelphia," 40 Morbidity and Mortality Weekly Report 77 (Feb. 8, 1991).

Further, because members of these populations generally are not preventive health care consumers who receive regular medical attention, their infections are more likely to remain undiagnosed. Undiagnosed syphilis infections are spread easily. Public health officials are trying to develop alternative methods for case-finding to combat the crack-related spread of sexually transmitted disease.[166]

Finally, an increase in the non-HIV STD rates can trigger an increase in HIV infection rates. For example, genital sores produced by syphilis can provide open wounds that facilitate HIV transmission during sexual contact.[167]

c. Cocaine and Other Diseases

Disease spread among drug users is a continuing concern of public health practitioners. In addition to the spread of the HIV virus and sexually transmitted diseases, transmission of other major diseases has been associated with cocaine use. For example, viral hepatitis is a disease that can be transmitted in the same manner as HIV/AIDS.[168] Given the behavior profiles of IV cocaine abusers and crack smokers, users of either form of cocaine can be exposed.[169] Also, as compared to the general population, powder cocaine users are at greater risk of contracting pneumonia, and crack smokers are at greater risk of exhibiting bronchitis, chronic cough, and black sputum.[170]

2. Cocaine-Exposed Infants and Children

Another area of concern cited by policymakers is the danger of maternal drug use on children. "Cocaine-exposed infants" are newborns who have been exposed to cocaine prior to birth. "Crack babies," a term widely used in the media, is misleading because of the inability to determine whether the fetus's prenatal exposure was due to crack cocaine or some other form of cocaine. While many health practitioners associate cocaine-exposed infants with crack cocaine use, it must be noted that exposure to either powder cocaine or crack cocaine prior to birth produces the same types of symptoms and problems for the infant. Many health practitioners have noted a significant increase in cocaine-exposed infants since crack cocaine use became widespread. Researchers and scientists

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[166] Centers for Disease Control, "Selective Screening to Augment Syphilis Case-Finding - Dallas, 1991," 42 Morbidity and Mortality Weekly Report 424 (June 11, 1993).

[167] U.S. General Accounting Office, *supra* note 67, at 21.

[168] N. Benowitz, "Clinical Pharmacology and Toxicology of Cocaine," 72 Pharmacology and Toxicology 9 (1993).

[169] G. Comer, M. Mittal, S. Donelson, and T. Lee, "Cluster of Fulminant Hepatitis B in Crack Users," 86 American Journal of Gastroenterology 331 (1991).

[170] M. Ellenhorn and D. Barceloux, Medical Toxicology: Diagnosis and Treatment of Homeless Persons (1988).

do not distinguish between the two forms of cocaine, however, and results of perinatal cocaine exposure studies apply to all forms of cocaine.

In addition, when children of drug-addicted mothers develop poorly, it is difficult to pinpoint the precise root of the problem. Factors other than cocaine abuse that affect the physiological or behavioral development of a child are commonly seen among cocaine-abusing women, and their presence may confound the results of research on developmental effects.[171] These factors include poor nutrition, cigarette smoking, other drug use,[172] lack of prenatal and postnatal care, and dysfunctional parenting. Each of these factors can cause many of the effects discussed below and limit the conclusions that can be drawn about the effects of cocaine exposure on infant and child development.

a. Incidence of Perinatal Drug Exposure

Existing data cannot estimate accurately the total number of *in utero* drug-exposed newborns due to several factors.[173] First, most research to date has focused on urban hospitals and as such reflects only the general demographics of the country's urban areas. Therefore, results from these studies cannot be generalized to the population as a whole. Second, these studies rely on mothers' self-reporting (a scenario that presents obvious incentives to underreport drug use) or on urine screenings at hospital admission (which may detect very recent drug use but will fail to detect use earlier in pregnancy). Consequently, the prevalence of drug-exposed infants may be underestimated.[174]

Researchers using these limited data estimate that 7.5 to 17 percent of pregnant women use illicit drugs during their pregnancy, resulting in the births of 100,000 to 740,000 drug-exposed babies each year. A study of births in New York City reported that the proportion of birth certificates

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[171] J. Ellis, L. Byrd, W. Sexson and C. Patterson-Barnett, "In Utero Exposure to Cocaine: A Review," 86 Southern Medical Journal 725, 730 (July 1993). This document is an extensive review of available literature on the subject in which Ellis *et al*. summarize others' findings and draw some general conclusions based on the works they reviewed.

[172] National Institute on Drug Abuse, "Developmental Effects of Prenatal Drug Exposure May Be Overcome," NIDA Notes (Jan./Feb. 1992).

[173] National Institute on Drug Abuse, Maternal Drug Abuse and Drug Exposed Children: Understanding the Problem 12 (Sept. 1992). NIDA's National Pregnancy and Health Survey used a national probability sample covering approximately 5,000 hospital-delivering mothers in 106 hospitals. The hospitals screened the mothers for drug use upon admission and collected information on type of drug, frequency and duration of use, route of administration, doses consumed, infant status, and length of stay in the hospital.

[174] There is consequently no data reflecting the degree of exposure. The studies do not address at what levels of *in utero* exposure the exposed infant is likely to be affected. Note also that most studies of the effects of maternal cocaine use were conducted in the mid-1980s, prior to the surge in crack cocaine use.

indicating maternal illicit substance abuse tripled between 1981 and 1987. Depending on the research, estimates of the number of cocaine-exposed babies born annually range from 30,000 to 160,000.[175] One study estimates that nationally two to three percent of all newborns have been exposed to cocaine.[176]

Although the national estimate of cocaine-exposed infants is notable at two to three percent, cocaine is used less frequently during pregnancy than other drugs. For example, fetal alcohol syndrome is a serious drug-related problem among newborns.[177] In addition, studies show that 38 percent of all newborns have been exposed to tobacco, and up to 12 percent of newborns have been exposed to marijuana.[178]

b. Physiological Effects on the Fetus

Because the studies do not distinguish among cocaine-exposed infants, no medical evidence exists to indicate whether more infants are born to mothers who used crack cocaine during pregnancy versus those who used powder cocaine. Additionally, the research cannot determine whether a mother who uses crack cocaine during pregnancy is more likely to endanger her infant than a mother who uses similar amounts of powder cocaine. Further questions need to be explored in order to answer these questions. For example, the percentage of pregnant women who use crack cocaine as opposed to powder cocaine and whether pregnant crack users are likely to become frequent or binge users are two relationships that would appear to warrant further investigation.

Unlike infants exposed to narcotics or opiates prior to birth, cocaine-exposed infants are not born addicted to cocaine and typically do not experience withdrawal. However, cocaine use can produce detrimental effects on both the mother and the fetus. First, cocaine causes constriction of blood vessels that restricts the flow of oxygen and other vital nutrients to the fetus. The sudden constriction of blood vessels can also cause the placenta to tear away from the uterine wall, resulting in premature delivery. In addition, brain cells deprived of oxygen will atrophy and may die, leaving behind lesions on the surface of the brain, the effects of which are uncertain and may remain hidden for years. Heavy cocaine use during the later months of pregnancy can lead to a complete disruption of the fetal blood supply to an organ or a limb. Occasionally, cocaine-exposed children are born with obvious signs of abnormality such as organ deformities or shriveled arms or legs.

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[175] D. Gomby and P. Shiono, "Estimating the Number of Substance-Exposed Infants," The Future of Children 22 (Spring 1991). W. Chavkin, "Treatment Programs Shun Addicted Pregnant Women," 2(15) Alcoholism & Drug Abuse Week 6 (Apr. 18, 1990).

[176] *Id*. at 23.

[177] Among its various problems, fetal alcohol syndrome is a known cause of central nervous system abnormalities.

[178] Gomby and Shiono, *supra* note 84, at 21-22.

Cocaine use also is associated with *in utero* developmental problems, including increased incidence of spontaneous abortion, small head circumference, low birth weight, retarded growth, and urogenital abnormalities.[179] In addition, infants exposed to cocaine prior to birth are more likely to experience Sudden Infant Death Syndrome (SIDS), seizures, or neurobehavioral dysfunctions such as high irritability and arousal problems.[180]

c. Cocaine Exposure After Birth

In addition to uterine exposure, infants can be exposed to cocaine after birth in a variety of ways. Infants may be exposed indirectly through their mothers' breast milk or directly when nursing mothers apply cocaine to their nipples to reduce pain during breastfeeding. Infants may also be exposed, second-hand, to cocaine vapors via proximity to someone freebasing or smoking crack cocaine. Cocaine may also be deliberately administered to soothe colic or teething pain.[181] Children suffering from cocaine poisoning via direct or second-hand vapor exposure may experience drowsiness, nausea, hallucinations, and coma. Infants exposed through breast milk may be susceptible to seizures, heart attacks, strokes, and death.[182]

d. Behavioral Effects on Infants and Children

Behavioral problems are the most commonly cited effect observed in cocaine-exposed children. A clear association has been found between maternal drug use and developmental difficulties.[183] For example, cocaine-exposed babies usually perform poorly on responsiveness tests. They are easily overstimulated, which can result in excessive sleeping or bouts of crying that may last

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[179] *See, generally*, National Institute on Drug Abuse, *supra* note 82; Ellis *et al*., *supra* note 80, at 725; B. Zuckerman, "Effects of Maternal Marijuana and Cocaine Use on Fetal Growth," 320 New England Journal of Medicine 762 (Mar. 23, 1989).

[180] *See*, Ellis *et al*., *supra* note 80, at 728. A recent study by Bauchner *et al*., found that risk of SIDS in infants exposed to cocaine was less than reported previously. The study reported that the elevated risk of SIDS among these infants probably reflects the health behaviors and socio-demographic characteristics of their mothers that are independently associated with SIDS. H. Bauchner, B. Zuckerman, M. McClain, D. Frank, L. Fried and H. Kayne, "Risk of Sudden Infant Death Syndrome Among Infants with *In Utero* Exposure to Cocaine," 113 Journal of Pediatricts 831, 834 (Nov. 1988).

[181] United States Sentencing Commission, Hearing on Crack Cocaine 174 (Statement of Robert S. Hoffman) (Nov. 1993).

[182] *Id*.

[183] National Institute on Drug Abuse, *supra* note 82.

hours.[184] For older children, maternal drug-use effects include developmental disabilities or behavioral dysfunctions. Researchers believe these adverse effects may be the result of cocaine's effect on the neurotransmitters, the signals that help control a person's mood and responsiveness.

e. Mitigating Behavioral Effects Through Intervention

Post-natal studies on cocaine-exposed children confirm that the physiological and behavioral development of these children is not determined solely by their mothers' drug use. Important factors include the quality of health care, family lifestyle, and the genetic disposition of both the mother and the child.

To mitigate complications, early intervention for cocaine-exposed children is crucial. One study examined 400 children exposed to cocaine or other drugs before birth and followed their subsequent development. Pregnant women in the study received prenatal care and participated in treatment programs during their pregnancy. Both the infants and their mothers received intensive postnatal support.[185] Importantly, researchers found that cocaine exposure does not affect intellectual functioning.[186] Of the children born to these mothers, 95 percent were "mainstreamed" in school and required no special educational interventions.[187] However, behavioral abnormalities continued for a small percentage of these children.

f. Economic Costs of Cocaine-Exposed Infant Care

In addition to physiological and developmental risks for both mother and fetus, the cost of caring for cocaine-exposed infants imposes an added burden on the health-care and welfare systems of this country. Costs of prenatal substance abuse are incurred in both the short and long term. Short-term costs include: longer hospital stays for both mother and infant, special care provided by neonatal intensive care units, lost productivity from job and family-related activities, and boarding of babies until child welfare systems can place the child in foster care.[188] Long-term costs, which are

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[184] *Id.*

[185] I. Chasnoff, "Hope for a Lost Generation," School Safety 4 (Winter 1992).

[186] *Id.*

[187] *Id.*

[188] C. Phibbs, "The Economic Implications of Prenatal Substance Abuse," The Future of Children 114 (Spring 1991). "Boarder babies" refers to infants who stay in a hospital after they have been cleared for medical discharge. Typically, these infants no longer require medical attention but must undergo a social evaluation or placement in foster care, generally because their mothers are unable or unfit to care for them.

harder to quantify, can include: treatment for chronically ill or disabled children, treatment of AIDS-related illness, placements in foster care, and special education needs. [189]

A 1985-86 cost analysis study at Harlem Hospital in New York City estimated neonatal cost differentials for cocaine-exposed versus unexposed infants. This study found that neonatal hospital costs were $5,200 higher for cocaine-exposed infants than for unexposed infants. Neonatal medical (physician) costs were $2,610 higher, and lengths of hospital stay increased by four days for cocaine-exposed infants when compared to unexposed infants. [190]

Exposure to other illicit substances was associated with higher costs and longer stays as well. [191] Finally, the study suggests that drug treatment programs and prevention targeted at this population of users could substantially reduce the short-term costs of prenatal cocaine exposure.

g. Governmental Responses to Perinatal Drug Exposure

Many states have vacillated in their response to mothers giving birth to drug-exposed babies. Several states now have laws that allow child-abuse charges to be pressed against any woman with illegal drugs in her bloodstream who gives birth to a child, arguing that the presence of illegal drugs is *prima facia* evidence of child neglect. Other states have simply removed exposed babies from their mothers, making them wards of the state. However, some of these states have more recently turned to intensive treatment programs rather than removing the children from their mothers. These programs often adopt a carrot and stick approach, directing mothers whose newborns test positive for cocaine to enter a treatment program or give up the child. [192]

D. OTHER SOCIAL PROBLEMS AFFECTED BY COCAINE USE

[189] *Id*.

[190] C. Phibbs, D. Bateman and R. Schwartz, "The Neonatal Costs of Maternal Cocaine Use," 266 Journal of the American Medical Association 1521 (Sept. 18, 1991).

[191] *Id*.

[192] J. Willwerth, "Should We Take Away Their Kids? Often the Best Way to Save the Child is to Save the Mother As Well," 137 Time (May 13, 1991).

In addition to its impact on public health, cocaine use may affect other social problems. This section reviews available information relating to the effects of cocaine use on domestic violence and social institutions, including the workplace and the family.

1. Cocaine and Domestic Violence

Studies of domestic violence have long pointed to alcohol and drugs as contributing factors in violence within the family.[193] However, most research examines the impacts of generic "substance abuse" rather than specific effects of individual drugs on either spousal abuse [194] or child abuse.[195]

Research on domestic violence suggests that alcohol abuse by itself may represent a far greater risk for domestic violence than illicit drug use.[196] It is difficult to predict the potential outcome if illicit drugs are used in combination with alcohol. The psychopharmacological effects of an illicit drug may mitigate or enhance the effects of alcohol, and it is likely that the level and direction of the effects will vary by drug and by an individual's reaction to a drug. [197]

There is very little information concerning the relationship between cocaine and domestic violence or the relationship of crack versus powder cocaine and domestic violence. Researchers have consistently found, however, that domestic violence increases in families where there is alcohol or drug abuse.[198] Most researchers agree "[i]t is . . . clear that the great majority of battery incidents are alcohol and/or drug related."[199] The general consensus in the research community is that in domestic violence, alcohol abuse is more prevalent than drug abuse,[200] and the relationship between alcohol

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[193] *See, e.g.*, K. Leonard and T. Jacob, "Alcohol, Alcoholism, and Family Violence," Handbook of Family Violence (1988).

[194] B. Miller, T. Nochajski, K. Leonard, H. Blane, D. Gondoli and P. Bowers, "Spousal Violence and Alcohol/Drug Problems Among Parolees and Their Spouses," 1 Women and Criminal Justice 55, 56 (1990).

[195] J. Bays, "Substance Abuse and Child Abuse, Impact of Addiction on the Child," 37 (4) Pediatric Clinics of North America (1990).

[196] M. de la Rosa, "Introduction: Exploring the Substance Abuse-Violence Connection," in M. de La Rosa, B. Gropper, and E. Lambert (Eds.), Drugs and Violence: Causes, Correlates, and Consequences 5 (1990).

[197] *Id*. at 184-188.

[198] Bays, *supra* note 104, at 891.

[199] A. Roberts, "Psychosocial Characteristics of Batterers: A Study of 234 Men Charged with Domestic Violence Offenses," 2 Journal of Family Violence 81, 82 (1987).

[200] *Id*. at 82.

abuse and spousal abuse is the most significant.[201] Similarly, research shows an important association between alcohol consumption and violence against children.

2. Cocaine in the Workplace

Data from the 1991 NIDA National Household Survey indicate that 13.1 percent of full-time employees reported illicit drug use during the survey year. About half that rate, 6.3 percent, reported use of any illicit drug during the past month.[202] In an earlier NIDA study on drugs in the workplace, 8.2 percent of full-time employees reported current illegal drug use.[203] In comparison, 3.2 percent of the full-time employed reported use of cocaine in the past year and 1.0 percent reported use in the past month.[204] Of the full-time employed, 0.4 percent reported use of crack cocaine in the past year.[205] Data on monthly use of crack cocaine among the employed were not available. Studies have shown that employees who have used illegal drugs recently consume more medical benefits, file more workers' compensation claims, are absent more often, and are fired more frequently than other workers.[206]

Although the cost of drug abuse to American businesses is difficult to determine, one study estimates that drug-induced absenteeism, accidents, fatalities, damages to equipment, insurance claims, tardiness, theft, and decreases in worker productivity cost American businesses tens of billions of dollars annually.[207] In 1986, estimates for lost productivity alone resulting from drug and alcohol abuse ranged from $60 to $100 billion.[208] Alcohol accounted for $50.6 billion in reduced productivity

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[201] Most research shows that 60 to 70 percent of batterers are under the influence of alcohol. Correspondingly, only 13 to 20 percent of batterers are under the influence of some drug other than alcohol.

[202] NHSDA: 1991, *supra* note 1, at 35-36.

[203] National Institute On Drug Abuse, Research on Drugs and the Workplace, NIDA Capsules 1 (1990). This shows a reduction in the rate of use from 8.2 to 6.3 percent between 1989 and 1991. "Current use" is defined as use within the past month.

[204] NHSDA: 1991, *supra* note 1, at 56-57.

[205] *Id*. at 63.

[206] *Id*. at 2.

[207] S. Smarr, "The Dope on Drugs in the Workplace," 31 Bobbin 100, 100 (1989).

[208] T. Rosen, "Identification of Substance Abusers in the Workplace," 16 Public Personnel Management 197 (1987).

in 1980, compared with $25.7 billion for all other drugs combined. Estimates generally focus on the costs of alcohol compared to other drugs, rarely distinguishing between specific illegal drugs. [209]

3. Social Isolation and Cocaine Abuse

When cocaine use becomes uncontrolled, an individual's links to the social and economic world can disintegrate. Physical, psychological, and behavioral changes can begin soon after an individual begins to use cocaine. However, in general, clear-cut and identifiable changes in the consistent cocaine user may not be apparent for three to six months for crack cocaine users or two years or longer for powder cocaine users. [210]

As users become cocaine dependent, their family and social lives disintegrate. They concentrate their energies on finding the next dose; employed users may spend all earnings on cocaine; a parent may leave children unsupervised for extended periods. [211]

Unemployed cocaine abusers, like unemployed abusers of many drugs, frequently are asked to leave the family due to the friction caused by the cocaine dependence. In a study of voluntary inpatients in a hospital unit, 18.7 percent of the 245 study participants had been asked to leave their homes. More than half of those asked to leave (51.1%) became homeless (entering the homeless shelter system, living on the street, or moving among temporary situations in homes of friends or relatives). [212]

Research confirms that those who are homeless and abuse drugs are most likely to abuse alcohol, [213] but abuse of other drugs is common. For example, one Los Angeles study reported that just under one-third of homeless shelter residents abused drugs other than alcohol, [214] while another study in Los Angeles reported that half of the homeless individuals surveyed had used illegal drugs

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[209] *Id*. at 198.

[210] D. Allen and J. Jekel, Crack: The Broken Promise 34 (1991).

[211] *Id*. at 29.

[212] B. Wallace, "Crack Addiction: Treatment and Recovery Issues," Contemporary Drug Problems 74 (Spring 1990).

[213] P. Fisher, "Estimating Prevalence of Alcohol, Drug, and Mental Health Problems in the Contemporary Homeless Population: A Review of the Literature," 16 Contemporary Drug Problems 334 (1989).

[214] P. Koegel, A. Burnam, and R. Farr, "The Prevalence of Specific Psychiatric Disorders Among Homeless Individuals in the Inner City of Los Angeles," 45 Archives of General Psychiatry 1088 (1988).

within the past month.[215] Homeless shelters in New York City reported that the most frequently abused drug among shelter residents was cocaine, both powder and crack.[216]

E. AVAILABILITY OF TREATMENT FOR COCAINE ABUSERS

1. Treatment Strategy

Treatment for cocaine dependency is similar in many ways to treatment for dependency on other drugs, including alcohol. Generally, the strategy has two stages: detoxification and treatment. Detoxification, the precursor to treatment, focuses on getting the abuser to stop drug use and on monitoring the abuser's body until it is free of the drug. Because cocaine is not physically addictive, withdrawal – although unpleasant – is not physically hazardous or life-threatening for cocaine abusers. Detoxification may result in symptoms of irritability, depression, anxiety, sleep irregularities, lack of energy, and strong cravings.[217] The severity of withdrawal varies depending on the predominant route of drug administration, frequency of use, and dosage amount.

After detoxification, the recovering abuser's drug treatment focuses on avoiding a relapse into drug use. There are three traditional formats for drug treatment that are used alone or in combination to meet the needs of the patient. These are inpatient treatment, residence in a therapeutic community, and outpatient treatment.[218] Inpatient treatment is the most expensive of the drug treatment formats. In this format, the individual becomes a medical patient in a hospital or other medical facility, typically for one month. The patient usually is expected to participate in after-care following discharge.[219] Residence in a therapeutic community involves residing with other recovering abusers for a year or longer in a structured, hierarchical regimen designed to instill responsibility.[220] Outpatient treatment

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[215] L. Gelberg, L. Linn and B. Leake, "Mental Health, Alcohol and Drug Use, and Criminal History Among Homeless Adults," 145 American Journal of Psychiatry 194 (1988). Note that the sample included homeless individuals located in shelters, parks, parking lots, shopping malls, soup kitchens, beach areas, food distribution centers, and job service/social service assistance areas.

[216] W. Breakey and P. Fischer, "Homelessness: The Extent of the Problem," 46 Journal of Social Issues 40 (1990).

[217] Pratsinak and Alexander, *supra* note 59, at 90.

[218] R. Rawson, "Cut the Crack: The Policymaker's Guide to Cocaine Treatment," 51 Policy Review 11 (Winter 1990).

[219] *Id*.

[220] *Id*.

is the most commonly used drug treatment: the individual remains in his or her usual living environment and visits a treatment center for counseling and therapy.[221]

Regardless of format, all treatment programs encourage either individual and/or peer group counseling, behavioral therapy, and support networks. The 12-step program developed under Alcoholics Anonymous and adopted by Narcotics Anonymous and Cocaine Anonymous is often cited as an effective component for drug abuse treatment success.

2. New Concepts in Cocaine Treatment

An emerging area of cocaine drug treatment research involves the development of drugs that lessen the distress from and/or diminish the craving for cocaine. In particular, pharmaceutical companies are seeking to develop drugs to block cocaine euphoria, to address post-use dysphoria, to curb cocaine desire, or to control depletion of dopamine from nerve synapses. While several such current research projects may prove promising, to date there is no demonstrated effective pharmacologic treatment for cocaine abuse.[222]

Another experimental therapy for the treatment of crack cocaine addiction involves acupuncture. The treatment structure involves daily sessions of 45 minutes for ten to 14 days. Five needles are inserted into each ear to stimulate detoxification and relaxation. Preliminary results appear to indicate that acupuncture, coupled with additional types of therapy, can assist in the treatment process[223] and help control craving and withdrawal symptoms.[224]

3. Potential for Successful Treatment

These approaches to drug treatment are available regardless of drug type. There are no indications that the success of any given approach is particularly correlated to the drug of abuse. Rather, the success rate across drug types is related directly to the length of treatment. For example, those who complete the residence program in a therapeutic community have a greater than 75 percent chance of being drug free five to seven years later. The success rates are approximately 50 percent

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[221] A. Washton, "Outpatient Treatment Techniques," in A. Washton and M. Gold (Eds.), Cocaine: A Clinician's Handbook 117 (1987).

[222] Benowitz, *supra* note 77, at 10.

[223] U.S. General Accounting Office, *supra* note 67.

[224] B. Wallace, Crack Cocaine: A Practical Treatment Approach for the Chemically Dependent 165 (1991).

for those who stay in the program one year and approximately 25 percent for those who stay in the program less than one year.[225]

Because crack cocaine's popularity is a relatively recent phenomena, research has not yet produced conclusions concerning which, if any, of these treatment formats is most appropriate for crack cocaine abusers.[226] However, as is true for other drug and alcohol abusers, the diverse population of crack cocaine abusers makes it unlikely that one single "best" treatment modality will be identified.

As it is for all drug abuse treatment, "success" for cocaine treatment is difficult to define. Treatment practitioners traditionally consider two or three years of drug abstinence a success. However, even short periods of abstinence or continued cocaine use at reduced frequencies can indicate a positive treatment outcome. Success rates for cocaine drug treatment – measured as abstinence of one year or longer – vary from 25 to 50 percent. The higher rates are characteristic of abusers who are professional or skilled workers, with much lower success rates for unskilled workers and long-time users who also use other drugs.[227] One study found that outpatient treatment combined with drug testing, individual and group therapy, and relapse prevention achieved a 75-percent success rate for recovering crack cocaine abusers who finished the program.[228]

[225] *Id*. at 175.

[226] *Id.* at 80.

[227] Benowitz, *supra* note 77, at 9.

[228] Washton, *supra* note 130, at 171.

Chapter 4

THE DISTRIBUTION AND MARKETING OF COCAINE

A. INTRODUCTION

This chapter examines the markets for crack cocaine and powder cocaine in the United States. These markets are inescapably intertwined because virtually all cocaine enters the United States in the powder form. Only at the wholesale and retail levels in the distribution chain does some of the powder cocaine get transformed into crack cocaine. This fact ultimately has critical implications for cocaine sentencing policy.

Policymakers generally view the drug distribution chain using a vertical framework that involves importers, wholesale distributors, and retail-level dealers; that is, focusing on how drugs enter the country, move between and within states, and ultimately reach the user.[229] Theoretically, each level closer to retail sales involves less culpable individuals trafficking in lesser quantities of drugs. Viewing drug distribution through this vertical framework, however, does not preclude the existence of horizontally integrated drug distribution chains that involve separate and distinct organizations. From an enforcement perspective, for example, a single conspiracy at the retail level may be quite extensive, involving a major distributor, four or five mid-level dealers, and 30 street sellers. The distinctions between these vertical and horizontal frameworks for viewing drug distribution are important to keep in mind as one considers the material presented in this chapter.

Section B describes the development of the current cocaine markets. Section C discusses the importation and regional distribution of cocaine. Section D looks at the wholesale and retail markets for powder cocaine and crack cocaine, examining their development and layers of distribution. Section E discusses the different forums of retail cocaine distribution. Section F describes the structure of organizations involved in the distribution of crack and powder cocaine, including the roles of individual freelance distributors, small groups, and urban gangs. Section G discusses the roles of youth and women in cocaine distribution, and Section H, the prices, profits, and revenues in the cocaine markets.

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[229] See sections B and C, *infra*.

B. THE DEVELOPMENT OF CURRENT COCAINE MARKETS

1. The Development of Drug Markets Generally

The existence of historical cycles, or "drug eras," for most drugs (including marijuana, and heroin, as well as both powder and crack cocaine) has been suggested by some researchers. Theoretically, during these drug eras, once a drug is first introduced, its use soon expands, later peaks, levels off, and eventually declines to an equilibrium level.[230]

A comparison of drug eras shows relatively consistent time periods (10-15 years) from introduction of a drug to peak use. Moreover, drug eras show a pattern of initiation and violent consolidation in the market for the new drug, typically followed by a relatively peaceful plateau period and eventual decline in use.[231]

2. The Evolution of the Crack Cocaine Market

The types of organizations dominating distribution of crack cocaine have evolved, at least in primary markets such as New York City and Los Angeles, from primarily freelance distributors (1984-1985) to gang and small-group distributors (1985-1986) and ultimately to small-group and freelance distributors (1987-present).[232]

In 1984-1985, the crack cocaine market was highly decentralized, involving primarily freelance distributors, characteristic of many early drug distribution markets. The demand for crack cocaine was not well-established and distribution systems were not well developed, leaving the market open to any person with access to cocaine and a desire to distribute.[233]

Over time, the crack cocaine market transformed from this decentralized system into a growing, non-competitive market, to a system in which relatively well-organized gangs used violence

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[230] *See* Hamid, *infra* note 4, *passim*; Bruce D. Johnson & Ali Manwar, Towards a Paradigm of Drugs Eras *passim* (paper presented at American Society of Criminology, San Francisco, California) (copy on file with the Commission) (Nov. 21, 1991); and Andrew Golub and Bruce D. Johnson, Drugs Eras: A Conceptual Model for the Dynamics of Change in the Population of a Particular Drug *passim* (paper presented at the Society for the Study of Social Problems Annual Meeting) (copy on file with the Commission) (Aug. 11, 1993).

[231] *See* Johnson & Manwar, *supra* note 2, at 7-8.

[232] T. Mieczkowski, "Crack Distribution in Detroit," 17 Contemporary Drug Problems 9, 16 (1990) (data derived from Detroit Drug Use Forecast questionnaires from 454 self-reported crack users and sellers); A. Hamid, "The Development Cycle of a Drug Epidemic: The Cocaine Smoking Epidemic of 1981-1991," 24 Journal of Psychoactive Drugs 340 (1992).

[233] *Id.*

to consolidate individual dealers and eliminate uncooperative distributors.[234] By 1986, gangs and small-group distributors dominated the market. Following the consolidation, no single gang or organization controlled distribution, leading one researcher to note that crack cocaine

> appears to be distributed largely by multiple units of small entrepreneurs rather than by any mega-organization that controls the crack trade [leading to the] speculation . . . that crack distribution lacks a set of highly centralized or formally organized distribution syndicates. It relies heavily on the "low end" dealer [and] users [who] . . . occupy a shadowy ground between dealing and consuming.[235]

Other research confirms a generally stable market among gang and small-group distributors during this time. For example, the market among entrepreneurial gangs in northern California became unstable only when these gangs sought to expand marketshare.[236] Even among cultural gangs in Los Angeles, violence subsided as the markets consolidated and the gangs became more entrepreneurial. According to one gang member,

> Now you might see a neighborhood that is Blood and Crip together. But that's because they got something going on with drugs. They got some kind of peace because of drugs.[237]

Other ethnographic researchers present similar findings with respect to this period.[238]

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[234] United States Sentencing Commission, Hearing on Crack Cocaine 64-68 (Nov. 1993) (statement of Paul J. Goldstein, Professor of Epidemiology, University of Illinois at Chicago Circle) (hereinafter "Commission Hearing"); J. Skolnick, T. Correl, E. Navarro, and R. Rabb, "The Social Structure of Street Dealing," 17 American Journal of Police 1, 20 (1990) (noting "if the market is stable there is little violence, . . . if the market is destabilized, whether by a rival gang or by law enforcement, then violence is likely to erupt").

[235] Mieczkowski, *supra* note 4, at 20-21.

[236] Skolnick *et. al*, *supra* note 6, at 17.

[237] *Id*.

[238] *See*, *e.g.*, Hamid, *supra* note 4.

Today, researchers and some law enforcement officials believe the market to be agai n dominated by a "cottage industry" of small-group and freelance distributors.[239] In New York City, for example, researchers report:

> Despite a systematic effort to locate vertically-organized crack distribution groups in which one or two persons control the activities and gain the returns from labor of 15 or more persons, no such groups have been located, and no distributors repor t knowing of such groups. Instead, freelance crack selling dominates most drug street scenes.[240]

C. INTERNATIONAL AND REGIONAL DISTRIBUTION OF COCAINE

Powder cocaine generally is imported into a limited number of "source cities."[241] The powder cocaine then is dispersed to regional and wholesale distrib utors for later retail sales. As stated above, crack cocaine rarely, if ever, is imported into the United State s. Instead, powder cocaine is imported, with some of it later converted into crack cocaine.

Powder cocaine is smuggled into the United States primarily from Colombia, Mexico, an d Caribbean nations through Arizona, southern California, southern Florida, and Texas.[242] Powder cocaine, typically in shipments exceeding 25 kilogram s and at times reaching thousands of kilograms, generally is channeled to one of four "source" cities (Houston, Los Angeles, Miami, and New York City) for distribution there and throughout the country.[243]

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[239] S. Belenko, Crack and the Evolution of Anti-Drug Policy 112 (1993) (citing J. Fagan and K. Chin, "Violence as Regulation and Social Control in the Distribution of Crack," in M. de la Rosa, B. Gropper, and E. Lambert (Eds.), Drugs and Violence: Causes, Correlates, and Consequences (1990), and B. Johnson, T. Williams, K. Dei and H. Sanabria, "Drug Abuse and the Inner City: Impacts of Hard Drug Use and Sales on Low Income Communities," in Q. Wilson and M. Tonry (Eds.), 13 Crime and Justice: An Annual Review of Research 9-67 (1990)); U.S. Department of Justice, Drug Enforcement Administration, DEA Drug Situation Report: Crack Cocaine 12, 17, v (Nov. 4, 1993) (draft) (hereinafter "DEA Report").

[240] Johnson *et al.*, *supra* note 11, at 360-61.

[241] U.S. Department of Justice, Drug Enforcement Administration, U.S. Drug Threat Assessment (1993) 14 (Sept. 1993) (hereinafter "DEA Threat Assessment").

[242] DEA Report, *supra* note 11, at iii, v.

[243] Commission Hearing, *supra* note 6, at 15-16 (statement of Kevin M. Donnelly); DEA Threat Assessment, *supra* note 13. Los Angeles, Miami, and New York City also serve as source cities for powder cocaine destined for conversion into crack cocaine. *See* DEA Report, *supra* note 11, at 1.

Colombian and Mexican suppliers are the primary importers of powder cocaine.[244] While Mexican smugglers supply cocaine in the southwest, the Colombian Medellín and Cali Cartels control importation into the source cities. According to the DEA, the cartels maintain "operational headquarters" in major U.S. cities (Chicago, Houston, Los Angeles, New York, Philadelphia, San Francisco) to control wholesale and regional distribution networks within those cities. The Cali Cartel's operational cells are directed by managers based in Colombia and operate independently of other cells. The Medellín Cartel's operations are less compartmentalized, involving drug trafficking groups that generally make joint decisions but permit some managers discretion in operations.[245]

A few large gangs in the source cities (the Crips and the Bloods in Los Angeles and Jamaican Posses, Dominican, and Haitian groups in Miami and New York City) purchase powder cocaine from cartel members for further intrastate and interstate distribution primarily as powder cocaine.[246] In addition, Cuban and Mexican groups are involved heavily in the distribution of powder cocaine that generally is not converted to crack cocaine.[247]

D. WHOLESALE AND RETAIL DISTRIBUTION OF COCAINE

1. Wholesale Distribution

Wholesale cocaine traffickers purchase cocaine from importers and regional distributors usually in kilogram or multikilogram allotments. Some wholesalers then transport the cocaine, almost always in powder form, elsewhere interstate or intrastate.[248] Other wholesalers package powder cocaine into retail quantities (ounces or grams) or convert powder cocaine into crack for retail sales. These distributors often manage crack or shooting houses or street-corner sales and may supervise as many as 20 sellers. The gangs involved in wholesale distribution generally are also involved in retail distribution of cocaine, as are other small-group and freelance distributors.[249] Conversion of powder cocaine to crack occurs at both wholesale and retail levels.

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[244] Belenko, *supra* note 11, at 113; DEA Report, *supra* note 11, at 2.

[245] DEA Threat Assessment, *supra* note 13, at 14, 20.

[246] Commission Hearing, *supra* note 6, at 13 (statement of Kevin M. Donnelly); DEA Report, *supra* note 11, at 1-2.

[247] *Id.* at 15; DEA Threat Assessment, *supra* note 13, at 14; Skolnick *et. al*, *supra* note 6, at 4, 30.

[248] DEA Report, *supra* note 11, at 2.

[249] *Id.* at 2.

The Drug Enforcement Administration notes that in recent years some wholesale distributors who initially handled crack cocaine now distribute powder cocaine to avoid "the harsh Federal sentencing guidelines that apply to higher-volume crack sales."[250]

2. Retail Distribution

Retail distributors sell cocaine to the consumer and may conduct hundreds or thousands of transactions annually.[251] For a variety of reasons including the enticement of profits, there is a large supply of retail dealers. Indeed, in many communities, retail dealers who are arrested or otherwise leave the market are "almost immediately replaced."[252] An FBI agent involved in an 11-month investigation of drug sales at the Kenmore Hotel in New York, for example, found a "seemingly unending well of crack dealers."[253] Dealers arrested "were replaced by other crack dealers, who easily absorbed the prior dealers' clientele."[254]

Researchers note several similarities among certain "street" retailers of crack cocaine and street retailers of powder cocaine. Researchers found that in New York City, for example, street retailers of both drugs are primarily poor, minority youth, generally under the age of 18, and were first attracted by large profits.[255] In many cases, these dealers distribute both drugs.[256]

But, researchers also note differences between retail crack and powder cocaine distribution. For example, crack is sold in smaller quantities than powder. Many in law enforcement believe that as a result, crack is more easily transported, distributed, and, if necessary, hidden or discarded upon

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[250] *Id.* at iv.

[251] Mieczkowski, *supra* note 4, at 17.

[252] DEA Report, *supra* note 11, at 2, 7.

[253] Affidavit of FBI Special Agent Kenneth R. Weiss In Support of Verified Complaint and Seizure Warrant, United States v. 143-147 East 23rd Street [which includes the Kenmore Hotel], at 3-4.

[254] *Id.*

[255] Belenko, *supra* note 11, at 109; DEA Report, *supra* note 11, at 17; T. Williams, The Cocaine Kids (1989).

[256] P. Reuter, R. MacCoun, P. Murphy, A. Abrahamse, and B. Simon, Money From Crime: A Study of the Economics of Drug Dealing in Washington, D.C. (RAND) 1990. Data derived from District of Columbia Pretrial Services Agency data on the 11,430 D.C. residents charged with drug selling during 1985-1987 and interviews with 186 probationers in the District of Columbia who acknowledged a recent history of drug dealing.

an encounter with law enforcement than powder cocaine.[257] According to a Miami narcotics detective, crack cocaine is "easy to get rid of in a pinch. Drop it on the ground and it's almost impossible to find; step on it and the damn thing is history. All of a sudden your evidence ceases to exist."[258] Some authorities relate that retailers of both powder and crack cocaine "drip" traffic; that is, they carry small quantities on their person for immediate distribution and leave additional quantities in drop spots to which they can return.[259] Firearms may be located near the stash for use against rival groups or others seeking to take the drugs.

The ease of disposal and the tactic of "dripping" increase the likelihood that, in the event of arrest, the retail dealer's criminal liability will be limited to the quantity on his/her person, a quantity that will likely be less than the total quantity the dealer intended to distribute. Of course, the retail-level dealer who distributes from a crack or shooting house is prevented by the nature of that forum from "dripping" and generally will be held liable for the entire quantity of drugs found in the house.[260]

3. Polydrug Distribution

Researchers and law enforcement officials indicate that cocaine distributors at all levels generally distribute more than one drug. For example, in New York City, distributors package crack cocaine and powder cocaine in the same apartments for later retail distribution. The DEA believes:

> Without exception, each of [the four wholesale trafficking groups - Jamaican Posses, Crips and Bloods, Dominican and Haitian groups] started out as poly-drug traffickers, concentrating primarily on marijuana and cocaine HCl, and continue to sell these drugs. [Similarly, retailers often sell other drugs in addition to crack.][261]

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[257] M. Klein, C. Maxson, and L. Cunningham, "'Crack,' Street Gangs, and Violence," 29(4) Criminology 623, 625 (1991).

[258] J. Inciardi, "Beyond Cocaine: Basuco, Crack, and Other Cocoa Products," Contemporary Drug Problems 470-71 (1987).

[259] For discussion regarding "dripping," *see e.g.*, Commission Hearing, *supra* note 6, at 44 (statement of Kevin M. Donnelly).

[260] *Id.* Regardless of the dealer's mode of operation, his sentence under the sentencing guidelines is determined using the aggregate quantity of drugs associated with the offense(s) of conviction and all related conduct. *See*, U.S. Sentencing Commission, Guidelines Manual (hereinafter "USSG") §1B1.3 (1994).

[261] DEA Report, *supra* note 11, at 4.

Considerable research suggests that drug dealers gravitate toward distribution of the substance that produces the highest net income (*see* Section H, "Prices, Profits, Revenues").[262]

E. FORUMS FOR RETAIL DISTRIBUTION

Powder and crack cocaine are distributed at the retail level by similar means. The DEA notes that cocaine sales take place in dwellings (urban and suburban) and on innercity street corners.[263] Researchers identify four general forums for retail distribution: through freelance individuals, open-air street sales, sales by runners or beepermen, and sales in crack or shooting houses. Although there is a reasonably clear idea of who sells cocaine in the street and in crack and shooting houses, there is less awareness of how cocaine is sold in the suburbs, in upper-class neighborhoods, and to business people.[264] Dealers who sell to the more affluent users are generally more difficult to target and thus more difficult to inventory.

1. Street-Corner or Open-Air Forum

Distribution of crack and powder cocaine on the street-corner or in open-air markets involves alley, sidewalk, or roadway sales, or sales in fenced-in areas such as public housing compounds. Sales typically consist of small retail quantities sold to walk-up or drive-up buyers. Generally no consultation takes place between the parties prior to the purchase. This method is the least sophisticated type of retail sale and is used frequently for distribution of both crack cocaine and powder cocaine.[265]

The DEA notes advantages to street-corner transactions, such as the availability of avenues of escape, the ability to change locations to avoid law enforcement detection, the ability to use decoy sellers to disrupt surveillance, and the low overhead associated with the street-corner market.[266] In

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[262] Reuter *et al.*, *supra* note 28, at 59.

[263] DEA Report, *supra* note 11 at 3; Skolnick *et. al*, *supra* note 6, at 28.

[264] *Id*.

[265] T. Mieczkowski, "The Operational Styles of Crack Houses in Detroit," in M. de la Rosa, B. Gropper, and E. Lambert (Eds.), Drugs and Violence: Causes, Correlates, and Consequences 61 (1990); Reuter *et al.*, *supra* note 28, at 17.

[266] DEA Report, *supra* note 11 at 3.

addition, where a street-corner market has been staked out by a group of cooperating freelancers or a gang, competition and associated violence may be limited.[267]

Where competition is not controlled (*i.e.*, where freelancers predominate or where gangs are attempting to consolidate competition), violence aimed at controlling rivals may threaten the security of the street corner.[268] The security of some street-corner transactions is maintained by lookouts or enforcers who carry firearms to protect the street retailer from undercover police, rivals, and customers. For instance, in the District of Columbia, police "very seldom[ly]" arrest multiple drug dealing conspirators working in open-air markets, because a lookout monitoring the transaction from another corner often signals the conspirators, thus allowing for widespread escape.[269]

In Detroit during the late 1980s, street transactions were the least popular method of distribution) only 4 percent of distributors reported using this method exclusively.[270] In other cities, such as New York City, Trenton, New Jersey, and Los Angeles, street-corner transactions predominate.[271] In the District of Columbia, open-air markets increased from between 10 and 20 in the early 1980s (distributing primarily phenmetrazine, dilaudid, heroin, and marijuana) to more than 80 that currently distribute crack cocaine.[272]

2. Beepermen, Touters, and Runners

A second distribution system involves a "beeperman" who exchanges drugs with the drug user after having been contacted by phone or beeper. In some cases, the beeperman personally identifies the buyer and exchanges the drugs; in others, an intermediary (a "touter") serves as a sales agent or broker who identifies buyers. A "runner" may deliver the drugs and retrieve the money for the beeperman or touter.[273]

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[267] Hamid, *supra* note 4, at 342-43.

[268] Hamid, *supra* note 4, at 341-43.

[269] Commission Hearing, *supra* note 6, at 46-47 (testimony of John J. Brennan, Sergeant, Narcotics and Special Investigations, Metropolitan Police Department, District of Columbia); Skolnick *et. al*, *supra* note 6, at 28 (citing Bowser (1988)).

[270] Mieczkowski, *supra* note 37, at 63.

[271] Hamid, *supra* note 4, at 341-43; Commission Hearing, *supra* note 6, at 18 (statement of Kevin M. Donnelly) (data for Trenton, New Jersey); Klein *et al.*, *supra* note 29, at 631.

[272] Commission Hearing, *supra* note 6, at 8 (testimony of John J. Brennan).

[273] Mieczkowski, *supra* note 4, at 24, 61-63 (data for Detroit); T. Williams, *supra* note 27 (data for New York City).

Beepermen may employ more than one trusted runner or touter, often using a merchandise consignment system in which the beeperman receives a fixed sum and the touter or runner keeps anything else he/she arranges with the buyer. In addition, the touter or runner may be permitted to retain a portion of the drugs exchanged. The runner assumes the risk of loss of the cocaine, whether to law enforcement, rival dealers, or customers. This assumption of risk, along with other conditions, may serve "as an entree for violent behavior" in this system of distribution.[274]

Beepermen may deliver drugs to a home or office, meet at a designated location, or have the consumer retrieve the drugs from a particular place. Public places such as fast-food restaurant parking lots are considered more secure delivery points than covert locations. This method may be most commonly used in powder cocaine transactions, at least among wealthy users, because it offers privacy and security from law enforcement.[275] In Detroit, 21 percent of dealers primarily relied on this method.[276]

3. Crack and Shooting Houses

Distribution through crack and shooting houses involves use of a fixed location from which drugs are sold to visiting consumers.[277] Crack and shooting houses may be established through converting dwellings by coercion or by bribing the occupants with drugs. Some research indicates that tenants who initially consent to the use of a portion of the residence by a gang for crack cocaine production or distribution later may be coerced into permitting the gang to dominate use of the entire property. Such tenants ultimately may be compelled by the gang to leave the property, lose the property to seizure, or suffer the consequences of a law enforcement raid or a deal gone awry.[278]

Research identifies various benefits of crack and shooting house distribution. Chief among these is a more secure environment, including armed employees and one or more lookouts who alert residents to approaching law enforcement officials.[279] Houses also facilitate sex-for-drugs arrangements that commonly substitute as a medium of exchange for cocaine, as well as other drugs.

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[274] Mieczkowski, *supra* note 37, at 61-63, 65-67.

[275] Reuter *et al.*, *supra* note 28, at 17.

[276] Mieczkowski, *supra* note 37, at 63.

[277] *Id.* at 62.

[278] *Id.* at 70, 79-80.

[279] D. Allen and J. Jekel, Crack: The Broken Promise 17-18 (1991).

Other frequently mentioned mediums of exchange at crack houses are stolen property,[280] firearms, and food stamps.[281] (*See* Chapter 5 for a further discussion of crime associated with cocaine.)

Although crack and shooting houses offer some advantages for distribution, they nevertheless are more likely to be subject to surveillance and raids by law enforcement officials; and successful raids often turn up large quantities of drugs.[282] Further, crack and shooting houses, particularly those with areas set aside for smoking or shooting cocaine, encourage customers to loiter, which may attract thieves (whether outsiders, customers, or the operators of the house) and others seeking confrontation. In short, the intimate and extended circumstances of the transfer of drugs may make customers and crack house operators more vulnerable to violence and other crime. Indeed, some patrons are "more scared about a user" or "a rip-off or stickup" than about a "bust" by law enforcement.[283]

Among gang and non-gang distributors, crack houses appear to be used at similar rates. In Los Angeles, both gang and non-gang groups use crack houses for distribution in less than six percent of all sales.[284] In Kansas City, Jamaican Posses reportedly run approximately 100 crack houses.[285] In Miami, approximately 700 crack houses are in operation.[286]

Two general types of crack and shooting houses exist: (1) "austere" or "fortified" houses and (2) "open" or "social" houses.

a. "Fortified" or "Austere" Crack and Shooting Houses

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[280] Mieczkowski, *supra* note 37, at 75, 82, 87.

[281] Skolnick *et. al*, *supra* note 6, at 19-20.

[282] *Id.* at 34.

[283] Mieczkowski, *supra* note 37, at 72, 85-86; Skolnick *et. al*, *supra* note 6, at 34. Skolnick quotes a dealer who held little fear of actually being caught:

> The police just give themselves away. You just know them when they come, you know, undercover. It's just instinct from being a street person. They catch somebody, they catch little naive people with three or four rocks, and they be right out of jail right away.

[284] Klein *et al.*, *supra* note 29, at 631.

[285] D. Barton, "The Kansas City Experience: `Crack' Organized Crime Cooperative Task Force," 55 The Police Chief 30 (1988).

[286] J. Inciardi and A. Pottieger, "Kids, Crack, and Crime," 21 (2) The Journal of Drug Issues 260 (1991) (data derived from interviews with 699 Miami cocaine users) half on the street, half in residential treatment) interviewed from April 1988 to March 1990).

"Fortified" crack and shooting houses are characterized by limited buyer-seller interaction, bricked or boarded windows, rear or alley entryways, and slots through which the transaction occurs.[287] Structures used include inhabited or abandoned dwellings and buildings, clubs, or motel rooms.[288] Approximately half of the structures used for distribution in Los Angeles had some form of fortification, including burglar bars on windows or reinforced entrances to the building.[289]

"Fortified" houses involve a risk of predatory violence among the parties because their familiarity with each other is limited and conditions favor robbery.[290] As a consequence, firearms are regularly present. In Los Angeles, firearms were seized in 58 percent of raided crack houses.[291] In Trenton, New Jersey, where crack houses are not common, one house was fortified by boarding the windows with 2-by-6 boards and by fortifying the front door with metal doors. The house had no furniture but was stocked with a sawed-off shotgun, a .38-caliber handgun, 9-millimeter handguns, and a machine gun.[292]

b. "Open" or "Social" Crack and Shooting Houses

"Open" houses permit considerable interaction between buyers and sellers. The more interactive houses may include an area for smoking and/or shooting, and even rudimentary child care facilities. The arrangement typically leads to loitering among consumers as they socialize or smoke. As a result, additional goods and services, such as drug paraphernalia, liquor, other drugs, and stolen goods may be provided for a fee.[293]

Although the houses are "open" and "social," drug transactions generally are conducted among regulars or customers with whom the seller has some relationship. Pervasive loitering often requires bodyguards or enforcers to keep the peace. Enforcers might patrol the premises with shotguns or knives or stand at the door with a gun.[294]

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[287] Mieczkowski, *supra* note 37, at 71.

[288] Williams, *supra* note 27; DEA Report, *supra* note 11, at 7.

[289] Klein *et al.*, *supra* note 29, at 632.

[290] Mieczkowski, *supra* note 37, at 71.

[291] Klein *et al.*, *supra* note 29, at 642.

[292] Commission Hearing, *supra* note 6, at 19 (statement of Kevin M. Donnelly).

[293] Mieczkowski, *supra* note 37, at 71, 81-82; DEA Report, *supra* note 11, at 3.

[294] Mieczkowski, *supra* note 37, at 81, 84-85.

A variation on this "open" crack house is the "freak house," a relatively recent development in New York City. The "freak house" is typically a dwelling in which a male crack user permits several homeless, crack-user females to reside in the dwelling in exchange for providing sex to male customers. The men, who may or may not be users, generally purchase crack cocaine (or have it purchased) in street-corner markets and exchange the crack for sex ("freaking"). The male crack user receives sex and crack cocaine from the women in his employ, and crack or cash from the male visitors.[295]

For one researcher, the freak house is symptomatic of the decline of the crack cocaine era:

> The freakhouse is a culmination of social processes at work both in the crack-using population and in the low-income neighborhood at large. . . Especially when contrasted with the preceding period of curbside use and distribution, which provided formats for the rapid, widespread diffusion of crack use, freakhouses speak of its contraction. However, declining crack use in freakhouses portends even greater trouble than has already been attributed to it. The risk of heterosexual transmission of AIDS is compounded . . . In its decline, therefore, the cocaine-smoking epidemic intersects with disease and death.[296]

4. Prevalence of Drug Distribution Forums

The prevalence of one forum for cocaine distribution over another often is associated with climatic conditions (*e.g.*, cities in colder climates experience larger numbers of crack and shooting houses), the level of law enforcement activity (*e.g.*, an area subject to a number of raids on houses may see more street distribution), and exposure to violence.[297]

Distribution of crack in Detroit most frequently is accomplished through crack houses; 71 percent of dealers used this forum alone or in connection with other forums.[298] Other Detroit data indicate that 63.7 percent of respondents purchase or distribute through a crack house, while 11.8

[295] Hamid, *supra* note 4, at 344; Johnson *et al.*, *supra* note 11, at 361, 363.

[296] Hamid, *supra* note 4, at 344.

[297] DEA Report *supra* note 11, at 3.

[298] Mieczkowski, *supra* note 37, at 63, 64.

percent use touters or beepermen, and 10.4 percent purchase from street sellers. Sharing with a friend makes up the remaining 14.1 percent.[299]

Other studies show the important, if not necessarily dominant, role of crack houses in crack cocaine distribution in New York City.[300] One researcher notes frequent use of crack houses, primarily apartments or after-hours clubs, in Hispanic neighborhoods of New York.

However, some evidence indicates that crack houses in Harlem generally have disbanded "rapidly" when users became disaffected with the excessively entrepreneurial nature of this distribution forum, particularly the renting of paraphernalia, which elsewhere is often provided free, and the requirement that users leave as soon as smoking was completed.[301] Crack cocaine now is sold primarily from apartments of users or curbside.[302] In Los Angeles, only six percent of crack cocaine sales occurred in crack houses, although one-third of arrests occurred in such houses.[303]

F. ORGANIZATIONAL STRUCTURE OF COCAINE DISTRIBUTORS

Three types of organizational structures are used to distribute both powder cocaine and crack cocaine: freelance individuals, relatively small, non-gang groups, and relatively large, urban street gangs. Only urban street gangs are found at all levels – regional, wholesale, and retail – of distribution.[304]

1. Freelance Individuals

The "freelance" system of distribution, in which loosely organized individuals use *ad hoc* contacts to sell drugs, prevailed during the early stages of both the powder and crack cocaine markets when demand was not well-established.[305] With the development of new manufacturing techniques,

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[299] Mieczkowski, *supra* note 4, at 22-23.

[300] *See* Belenko, *supra* note 11, at 108.

[301] Hamid, *supra* note 4, at 340.

[302] A. Hamid, "The Political Economy of Crack-Related Violence," 17 Contemporary Drug Problems 59 (1990); Hamid, *supra* note 4, at 340-41.

[303] Klein *et al.*, *supra* note 29, at 631.

[304] DEA Report, *supra* note 11, at 4.

[305] Mieczkowski, *supra* note 4, at 16.

virtually anyone with access to baking soda and water could make crack cocaine from powder cocaine. Indeed, this breakthrough decentralized the manufacturing process for crack cocaine and permitted demand to be met by retail dealers or even consumers themselves.[306] However, as a practical matter, few retail dealers of crack cocaine manufacture the drugs they distribute. For example, in the District of Columbia, only 11-12 percent do so, compared with double that number, 23 percent, of PCP dealers.[307]

These free-lancing individuals continue to represent a significant portion of retail cocaine distributors, both powder and crack, even with well-established demand and a relatively mature drug distribution market. Freelance distributors also engage in wholesale distribution.[308] Many individual cocaine dealers are users who deal to maintain access to the drug or to secure money to purchase cocaine when they otherwise lack financial resources or legitimate employment opportunities.[309]

Considerable and nearly unquantifiable freelance distribution occurs in close circles of friends and family as cocaine is shared, borrowed, traded, begged, or otherwise sold.[310] But substantial street retailing by individual dealers also occurs. In the District of Columbia, for example, approximately 45 percent of distributors of cocaine, both powder and crack, work alone.[311] Some individual dealers may choose, after selling with a group, to go independent, believing they can earn higher profits on their own.[312]

A number of limitations hinder the ability of an individual dealer to market his/her drug as successfully as more organized groups, particularly street gangs. Not only is an individual seller more likely to use drugs, thus limiting entrepreneurial effectiveness and ability to evade detection by law enforcement, but the individual seller generally is prevented from entering areas controlled by a neighborhood group with a monopoly on trafficking. Individual dealers generally lack the protective structures of organized gangs that are useful particularly against competition and "ripoffs."

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[306] Commission Hearing, *supra* note 6, at 109 (statement of Charles R. Schuster, Senior Research Advisor, Addiction Research Center, National Institute on Drug Abuse); Allen and Jekel, *supra* note 51, at 16.

[307] Reuter *et al.*, *supra* note 28, at 60-61.

[308] DEA Report, *supra* note 11, at iv, 12.

[309] *Id.* at 2; Allen and Jekel, *supra* note 51, at 17; Mieczkowski, *supra* note 37, at 60, 75; Inciardi and Pottieger, *supra* note 58, at 257, 260.

[310] Mieczkowski, *supra* note 4, at 18.

[311] Reuter *et al.*, *supra* note 28, at 61-62.

[312] Skolnick *et. al*, *supra* note 6, at 1, 20.

Moreover, individual dealers are less protected from undercover operations and informants and lack shared marketing information regarding drug pricing and sources.[313]

Freelance distributors are not without some degree of organization, however, to protect their interests and to regulate the marketplace. As researchers in New York City note:

> [F]ree-lancers frequently enter into various short-lived forms of cooperation to protect one another, to assign "spots" [curbside selling locations], and even to raise funds for special events. Each, however, retains his own suppliers and manages his own returns.[314]

2. Small, Non-Gang Groups

Individuals, sometimes gang members acting apart from the auspices of the gang, informally will band together in small groups (typically three members) for the purposes of distributing cocaine.[315] These groups may have advantages over larger, gang-directed groups because their limited size presents a more difficult target for law enforcement, making group leaders less likely to be discovered.[316] In addition, the ease and relative cheapness of the ingredients used in manufacturing crack cocaine allow for distribution groups to begin operating with little initial working capital.

The phenomenon of gang members operating independently from the gang itself complicates the classification of distributors as non-gang or gang-related.[317] Indeed, some researchers suggest that the rise in gang-related activity and the onset of crack cocaine, though coincidental, are not correlated. Instead, they suggest that the groups distributing crack cocaine are entrepreneurial in nature and not traditional street gangs, even if they so designate themselves.[318]

3. Urban Street Gangs

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[313] *Id*. at 20-21 (noting particular dominance of urban street gangs in Los Angeles). This study involved interviews in 1988 of a sample of 39 California inmates and wards and 42 city and county police, state narcotics officers, and correctional officials.

[314] Johnson *et al.*, *supra* note 11, at 361.

[315] Belenko, *supra* note 11, at 107; Hamid, *supra* note 74, at 59.

[316] Reuter *et al.*, *supra* note 28, at 24.

[317] *See* Klein *et al.*, *supra* note 29.

[318] Belenko, *supra* note 11, at 108; Klein *et al.*, *supra* note 29; J. Moore, "Gangs, Drugs, and Violence," in M. de la Rosa, B. Gropper, and E. Lambert (Eds.), Drugs and Violence: Causes, Correlates, and Consequences 160-176 (1990).

Researchers and law enforcement officials consistently report that certain urban street gangs are involved significantly in both powder and crack cocaine distribution. Some of these gangs are relatively well organized, similar to traditional organized crime, enabling them to move relatively nimbly into and through drug distribution markets. Other gangs, like other unstable, transitory, criminal groups (particularly those involving youths), lack a significant degree of organization or discipline, although they play a significant distribution role in the drug markets.[319]

a. Primary Street Gangs

Four sets of gangs – Jamaican Posses, the Crips and the Bloods, Haitian gangs, and Dominican gangs – are large distributors of both powder and crack cocaine, although they were not organized initially to distribute drugs. These gangs are large, well financed, relatively well organized, well connected in their respective communities, and tend to use violence both to enforce gang discipline and to consolidate market share. Although these larger gangs initially distributed crack cocaine only in large urban areas such as Los Angeles, Miami, and New York City, they now are believed to have established operations nationwide in numerous small and mid-sized cities and towns.[320] These gangs do not represent the entire population of gangs believed to deal in illegal drugs but are the most widely known and illustrate how gangs often deal in illegal drugs.

The four primary sets of gangs employ similar but not identical methods of distributing both powder and crack cocaine. A brief discussion of the history and structure of each primary group's operations follows.

Jamaican Posses primarily comprise immigrants from Jamaica who have entered the United States since 1980. Many members initially belonged to posses established in Jamaica, but membership increasingly includes Hispanics and Blacks. Posse membership in the United States in 1988 was approximately 11,000 individuals in about 35 posses.[321]

Jamaican posses distributed crack cocaine initially in New York City and Miami where they had established trafficking organizations for powder cocaine, heroin, and marijuana.[322] By mid-1987, the posses also became the primary East Coast distributors of crack cocaine, setting up distribution

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[319] DEA Threat Assessment, *supra* note 13, at 34.

[320] DEA Report, *supra* note 11, at 1, 4.

[321] U.S. Department of the Treasury, Bureau of Alcohol, Tobacco and Firearms, 1 Caribbean Based Organized Crime 1 (June 1993).

[322] DEA Report, *supra* note 11, at 4-5; Hamid, *supra* note 74, at 34-35, 57.

rings in 12 cities.[323] Operations later spread westward to Dallas, Kansas City, Alabama, Kentucky, Mississippi, West Virginia, the Florida panhandle, and even south-central Los Angeles. [324]

Posses are fragmented and competitive, resulting in relatively undisciplined and unstructured organizations. Indeed, centralizing tendencies have been "strenuously disavowed," at least by those directing marijuana distribution in previous incarnations of the posses. This fragmentation and the experience of many posse members in political revolts in Jamaica in the early 1980s are believed to have led to considerable violence committed by and among posses. Nevertheless, some centralizing of crack cocaine operations has been apparent since the late 1980s. [325]

Typical roles within Jamaican Posses include boss (top of the chain of command), manager (oversees operations of retail sellers), courier (transports drugs or money between managers and sellers), seller (distributes drugs at retail level), lookout (protects sellers from law enforcement, competitors, customers), and steerer (directs customers to sellers). Lookouts or bodyguards commonly are employed to protect the drugs and financial interests. While generally only trusted workers are employed, enforcers are required to keep discipline because of disagreements and confrontations leading to violence that arises over profits, losses, and thefts. [326]

Posses, while historically associated with crack cocaine distribution at all levels, increasingly are removing themselves from the violence and exposure to law enforcement entailed in the day-to-day operation of crack houses and street selling, focusing instead on supplying sellers with larger quantities of cocaine.[327]

The Crips and the Bloods are rival gangs in Los Angeles whose membership comprises primarily Black youth. Although not formed initially to distribute drugs, the gangs nevertheless are believed to engage in considerable drug trafficking.[328] They had lucrative drug distribution

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[323] Belenko, *supra* note 11, at 105-106 (citing news sources).

[324] DEA Report, *supra* note 11, at 1; Barton, *supra* note 57, at 28-31.

[325] DEA Report *supra* note 11, at 5; Hamid, *supra* note 74, at 61.

[326] DEA Report, *supra* note 11, at 6-7.

[327] *Id.* at 5.

[328] Skolnick *et. a*l, *supra* note 6, at 10, 17 (Skolnick calls them "cultural" gangs established primarily around neighborhood identity. As the involvement of these gangs in crack cocaine distribution increases, law enforcement and others have grown skeptical of their "cultural" basis).

organizations (concentrating primarily on distributing powder cocaine, marijuana, and PCP) already in place at the time crack cocaine was introduced into the United States.[329]

The Crips and the Bloods primarily distribute cocaine in the West and the Midwest.[330] They began distributing in Los Angeles where gang leaders and membership were based.[331] The gangs since have expanded operations into as many as 40 cities across the United States, including Birmingham, Denver, Detroit, Las Vegas, Phoenix, and Seattle. This expansion eastward and northward resulted from pressures by law enforcement and competition, and occurred as the gangs sought to take advantage of higher retail prices in smaller retail markets.[332] Gangs originally established operations in cities and towns in which friends or family were located. Older members often "fronted" drugs to younger ones to facilitate the entry of new sellers into the retail distribution.[333]

Loosely organized into small units or "sets" of members, Crips and Bloods are present at all levels of distribution. Gang members serve as retailers dealing multiple grams or ounces on the street or in crack houses, a limited number of wholesale distributors (some of them former retail sellers), and regional traffickers, some with the ability to broker multi-million-dollar deals with Colombian importers.[334]

Haitian gangs have been identified among the primary distributors of powder and crack cocaine in Miami, New York City, and the District of Columbia.[335] Haitian gangs often recruit retail sellers from recent, often unemployed, Haitian immigrants. Gang involvement in crack cocaine distribution is facilitated by easy access to powder cocaine that increasingly is transported through Haiti by Colombian cartels.[336]

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[329] DEA Report *supra* note 11, at 9-10; Skolnick *et. al*, *supra* note 6, at 5, 8. *But see* the discussion *infra* for contrasting views within the literature regarding the degree of organization of street gangs.

[330] *See* DEA Threat Assessment, *supra* note 13, at 34.

[331] DEA Report, *supra* note 11, at 9.

[332] DEA Threat Assessment, *supra* note 13, at 34.

[333] Belenko, *supra* note 11, at 105-106 (citing news sources); DEA Report *supra* note 11, at 1, 9, 10.

[334] DEA Report, *supra* note 11, at 9-10; Skolnick *et. al*, *supra* note 6, at 6, 18.

[335] Belenko, *supra* note 11, at 106 (citing news sources); DEA Report, *supra* note 11, at 2, 9; *but see* Reuter *et al.*, *supra* note 28, at 24 (indicating gangs "seem to play a minor role" in the District of Columbia).

[336] DEA Report, *supra* note 11, at 9.

Dominican gangs are among the primary distributors of powder and crack cocaine in New York City and Massachusetts.[337] Bosses operating from the Dominican Republic often recruit Dominican immigrants located in the United States to staff retail distribution positions. The DEA identifies Dominican gangs as "always armed" and technologically sophisticated, using booby traps and walkie-talkies in their operations. The DEA also reports that the Dominican gangs are highly competitive and violent, resulting in less-structured, less-disciplined organizations.[338]

b. Secondary Street Gangs

Numerous local street gangs, including Black organizations in Detroit, West Indian groups in Brooklyn and Harlem, and Black and Hispanic organizations in Los Angeles and northern California, are involved in crack cocaine and powder cocaine distribution to a lesser extent than the primary gangs discussed above.[339]

In New York City, the prior involvement of Caribbean nationals with marijuana and cocaine led them into crack cocaine distribution when marijuana demand fell, marijuana supplies increasingly were interdicted, and, in contrast, powder cocaine became plentiful and in high demand. The relative ease of packaging crack cocaine and the increasing popularity of crack smoking, particularly among West Indian communities, also contributed to the gangs' involvement.[340]

c. "Entrepreneurial" or "Business-Model" Gangs

A second class of gangs, "entrepreneurial" or "business-model" gangs, can be distinguished from the primary and secondary "cultural" gangs discussed above. Cultural gangs are established primarily for social purposes, with drug distribution a subsidiary purpose of the gang. The shared ethnic, racial, and neighborhood characteristics of cultural gang members are of paramount importance.[341]

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[337] *Id.* at 2; Belenko, *supra* note 11, at 106 (citing news sources).

[338] DEA Report, *supra* note 11, at 8.

[339] DEA Report, *supra* note 11, at 5; Mieczkowski, *supra* note 37 (data for Detroit); Hamid, *supra* note 74 (data for Brooklyn and Harlem); Skolnick *et. al*, *supra* note 6 (data for Los Angeles and Northern California).

[340] Belenko, *supra* note 11, at 109.

[341] Skolnick *et. al*, *supra* note 6, at 8, 11, 13, 15.

Entrepreneurial gangs, on the other hand, are established to further the financial objectives of the organization and not the gangs' cultural or neighborhood objectives. As with cultural gangs, entrepreneurial gangs rely extensively on people who have grown up in the gangs' territory or neighborhood. They exhibit considerable differentiation of roles within the organization, including bosses, couriers, street retailers, lookouts, and steerers.[342] Drug supplies typically are "fronted" to sellers, and employees often receive benefits that include bonuses, food, lodging, and drugs.[343]

Entrepreneurial gangs have two models of organization. The first, the "vertical business" model, involves a multi-layered, hierarchical organization headed by a small number of people who control most aspects of employee distribution, including location of sales, prices, and profits. The "franchise business" model involves a dealer who distributes on consignment moderate quantities of drugs to several dealers, each of whom controls a separate organization. In either model, employees may frequently shift roles within the organization, and turnover may be high. Control of organization employees and competitors is established through the use of a variety of disciplinary methods and violence that can be "ruthless" and "pitilessly savage."[344]

G. ROLE OF YOUTH AND WOMEN IN CRACK COCAINE DISTRIBUTION

Research indicates that youth, even children, are prevalent in crack cocaine distribution organizations.[345] For example, retail dealers in New York City tend to be under 18 years of age. As one researcher notes, "[a]ges of distributors . . . continue to fall, and today many distributing groups are primarily groups of teenagers," a factor believed to lead to strains that "erupt in violence."[346]

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[342] *Id.* at 8, 11, 13, 15.

[343] Johnson *et al.*, *supra* note 11, at 56, 62.

[344] *Id*. at 62-65; Skolnick *et. al*, *supra* note 6.

[345] *See*, *e.g.*, Commission Hearing, *supra* note 6, at 10, 14 (statement of Jeff L. Tymony, Executive Director, Halfway House for Adults, Wichita, Kansas); J. Fagan and K. Chin, "Initiation into Crack and Cocaine: A Tale of Two Epidemics," 16 Contemporary Drug Problems 579-617 (1989); Inciardi & Pottieger, *supra* note 58, *passim*; Allen & Jekel, *supra* note 51, at 17; Mieczkowski, *supra* note 4, *passim*; T. Mieczkowski, Crack Dealing on the Street: An Exploration of the YBI Hypothesis and the Detroit Crack Trade (1990) (paper presented at Annual Conference of the American Society of Criminology, Baltimore, Maryland 1990); Skolnick *et. al*, *supra* note 6, at 22; J. Inciardi, "Trading Sex for Crack Among Juvenile Drug Users: A Research Note," 16 Contemporary Drug Problems 689, 689-90 (1989) (citing media reports) (data derived from 254 interviews of crime-involved youth in Miami from October 1986 through November 1987).

[346] Hamid, *supra* note 74, at 61.

New York City arrest data indicate that both powder cocaine and crack cocaine distributors are young, but those involved in distributing crack cocaine are younger. Of 339 powder cocaine distributors, 29 percent were 21 years of age or less, and 30 percent were 22-26 years of age. By comparison, of 618 crack cocaine distributors, the figures are 38 percent and 30 percent, respectively.[347] Ten percent of the youths who distribute crack cocaine sold only to friends or worked for dealers as lookouts or steerers; two-thirds (67%) were street retailers; and 23 percent not only sold the drug but also manufactured, smuggled, or wholesaled it.[348] Recent research suggests that the use of teenagers to sell crack cocaine may have plateaued, particularly as retail profits decrease and as social norms develop against "crack heads" and those who sell to them.[349]

The DEA identifies crack cocaine distributors as responsible in large part for the increase in juvenile involvement in drug trafficking.[350] In addition, considerable research suggests that crack cocaine dealers use juveniles in more visible roles, such as lookouts, steerers, and runners, in the belief that juveniles are more likely to escape detection and prosecution.[351] Young, unemployed or underemployed, illiterate, and otherwise impoverished persons are particularly susceptible to the allure of profits to be made from drug distribution.[352]

Other macro-economic factors associated with crack cocaine distribution, such as the nature of the economy, social structure, and the urban environment, have made it more likely that youth will distribute crack cocaine than powder cocaine (*see* Chapter 5, Section C titled "Cocaine in Context" for more detail).[353]

Similar reasons may be behind an increased use of women to distribute crack cocaine. The DEA suggests that women have greater roles in crack cocaine distribution relative to distribution of other drugs. Women are used to make straw purchases of firearms or to rent residences to use as

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[347] Fagan and Chin, *supra* note 117, at 589-91, 597. *But see also*, pp. 602, 605 for a discussion on limitations of these data.

[348] Inciardi & Pottieger, *supra* note 58, at 260.

[349] Johnson *et al.*, *supra*, note 11, at 363.

[350] DEA Report *supra* note 11, at 13; Inciardi & Pottieger, *supra* note 58, at 257-58 (same).

[351] Commission Hearing *supra* note 6, at 136-37 (statement of Robert Byck); DEA Report, *supra* note 11, at 13; Skolnick *et. al*, *supra* note 6, at 22.

[352] DEA Report *supra* note 11 at 2; Fagan and Chin, *supra* note 117, at 581.

[353] Fagan and Chin, *supra* note 117, at 589-91, 597. *But see also*, pp. 602, 605 for a discussion on limitations of these data.

crack and stash houses on behalf of a distributor so he or she can remain unknown (to the gun dealer or the landlord, as the case may be).[354] In Miami, 12 percent of youth dealers are women.[355]

H. PRICES, PROFITS, REVENUES

1. Marketing Strategies

As a glut of powder cocaine developed in the early to mid-1980s, prices for both powder cocaine and crack cocaine fell.[356] Consequently, retail crack cocaine distributors began using new marketing strategies to ensure an expanded market for crack cocaine. One strategy involved varying prices and quantities depending on the consumer's resources.[357] Some street gangs distributed free crack cocaine samples for first-time buyers or offered "double ups" (two doses for the price of one) to establish a market in smaller localities or new territory.[358]

Perhaps the most significant marketing strategy involved selling crack in single-dosage units in plastic vials or baggies weighing between 0.1 and 0.5 gram apiece and affordably priced at between $5 and $20.[359] In contrast, powder cocaine typically is retailed by the gram,[360] *i.e.* five to ten doses, for less affordable prices ($65-$100). The affordability of crack cocaine expanded the consumer base into socioeconomic groups with less available cash.

Recently, innovations in marketing strategies have been targeted not at inducing new users but at increasing dealer profits. For example, in New York City the same "nickel" ($5) vials that might have contained 0.1 gram of crack might now contain 0.05 gram. Some report that vials with "V"-shaped bottoms are used to give a false impression of the quantity of drug in the container.[361]

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[354] DEA Report, *supra* note 11, at 13.

[355] Inciardi & Pottieger, *supra* note 58, at 264.

[356] Belenko, *supra* note 11, at 5; Klein *et al.*, *supra* note 29, at 625; DEA Report, *supra* note 11, at 1.

[357] Allen & Jekel, *supra* note 51, at 17.

[358] Commission Hearing, *supra* note 6, at 42 (statement of Kevin M. Donnelly); DEA Report, *supra* note 11, at 10.

[359] Skolnick *et. al*, *supra* note 6, at 58-59; Belenko, *supra* note 11, at 4; DEA Report, *supra* note 11, at iii.

[360] Inciardi, *supra* note 30, at 470.

[361] Johnson *et al.*, *supra* note 11, at 362.

2. Prices

Prices for crack cocaine and powder cocaine dropped dramatically during the 1980s. Since 1990, however, prices generally have remained constant or increased.[362] Short-term price fluctuations since 1990 have resulted primarily from law enforcement seizures, changes in demand, increased profit-taking by wholesalers, and worsening economic conditions.

a. Crack Cocaine

As indicated previously, crack cocaine generally is sold for $5, $10, or $20 in single-dosage quantities ranging from 0.1 to 0.5 a gram,[363] although quantities in some areas have gradually decreased as dealers seek greater profits per sale.[364] The relatively low price for a dose of crack cocaine makes it more affordable to lower-income persons.[365] Five grams of crack cocaine, the quantity necessary to trigger the five-year mandatory minimum, represents between 10 and 50 doses and costs between $225 and $750 (based on DEA estimates of price per gram).

The DEA notes a typical range of street prices in 1992 of $10-$50 depending on the size of the rock or vial, with an average price of $10-$20.[366] The DEA also states 1992 crack cocaine prices were $45-$150 for one gram, $400-$2,800 for one ounce, and $14,000-$40,000 for one kilogram, when available in this quantity.[367] In some saturated urban markets, the DEA reports even lower 1992 prices (Detroit: $3 per vial; Philadelphia: $2.50 per vial; New York City: $2 per vial). Other rural or small-town markets may command prices closer to $75 a rock, a factor that induces urban distributors to expand their operations.[368]

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[362] Hamid, *supra* note 4, at 343-44.

[363] Inciardi, *supra* note 30, at 485; Allen & Jekel, *supra* note 51, at 17.

[364] Hamid, *supra* note 4, at 343.

[365] Mieczkowski, *supra* note 4, at 10.

[366] DEA Report, *supra* note 11, at iii, vi; U.S. Department of Justice, Drug Enforcement Administration, Illegal Drug Price/Purity Report: United States January 1990 - March 1993 3 (July 1993).

[367] DEA Report, *supra* note 11, at 13-14.

[368] *Id*. at 13.

Other data show prices consistent with the DEA's national data. In Los Angeles, the late 1980s price for a quarter-gram rock varied between $10-$25.[369] In Detroit, the $10 rock was "the unit of sale for most street-level distributors in the late 1980s."[370]

b. Powder Cocaine

In contrast with the single-dosage quantities of crack cocaine sold by street retailers, powder cocaine usually is sold in five- to ten-dosage units (about a gram), typically for $65-$100 a gram.[371] In Detroit, an "eight ball" (one-eighth of an ounce or approximately 2.5-3.5 grams) of powder cocaine sells for at least $125.[372] Five hundred grams of powder cocaine, the quantity necessary to trigger the five-year mandatory minimum, represents between 1000 and 5000 doses and costs between $32,500 and $50,000 (based on DEA estimates of price per gram).

DEA data indicate that powder cocaine prices in 1992 ranged from $11,000-$42,000 per kilogram, $350-$2,200 per ounce, and $15-$150 per gram. Prices tend to be lower in source cities such as Los Angeles and Miami.[373]

3. Profits and Revenue

Estimated profits from distribution of cocaine, whether powder cocaine or crack cocaine, are difficult to specify given the nature of the drug trade, regional variation in cost and sales price, and varying purity of the drug. Nevertheless, some generalizations are possible.

a. Regional and Wholesale Distribution

Individuals at the top of the drug distribution chain make considerably more money than others in the organization.[374] DEA data for 1992 indicate domestic wholesalers can purchase a kilogram of powder cocaine from Colombian sources for $950-$1,235. Powder cocaine from other

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[369] Klein *et al.*, *supra* note 29, at 625 n.1.

[370] Mieczkowski, *supra* note 4, at 10.

[371] Inciardi, *supra* note 30, at 485.

[372] Mieczkowski, *supra* note 4, at 10, 20.

[373] DEA Threat Assessment, *supra* note 13, at 2-3.

[374] Belenko, *supra* note 11, at 110; DEA Report, *supra* note 11, at 6, 17.

source countries such as Bolivia and Peru generally is more expensive, typically selling for $1,200-$2,500 and $2,500-$4,000 a kilogram, respectively. As noted above, a kilogram of powder cocaine can be sold wholesale, after dilution, for $11,000-$42,000, and can be marketed, after further dilution, in gram quantities for $17,000-$173,000. These figures, not considering distribution expenses, produce profits of $16,000-$171,000 per kilogram of powder cocaine.[375]

Estimates of expenses associated with distribution, other than the wholesale costs of powder cocaine noted above, are not reported frequently in the research literature. However, one estimate is that ten percent of the wholesale price and one percent of the street price represent the costs of distributing the drug.[376]

Law enforcement estimates suggest wholesale revenues are considerable. The DEA estimates that the Jamaican Posses gross $1 billion in drug proceeds annually.[377] Dallas police estimate that crack houses run by Jamaican Posses in that city gross $400,000 per day, or about $146 million annually.[378]

Jamaicans dealing crack cocaine in Kansas City operate an estimated 100 crack houses, each of which are required to turn $4,000-$10,000 a day in receipts on the sale of up to 1,000 "dimes" ($10 rocks).[379] These figures represent $360 million in annual crack house sales in Kansas City alone.

b. Retail Distribution

Retail dealers of all drug types experience significant potential for profit-making early in the historical cycle of the drug when demand is high relative to the number of distributors.[380] However, as the drug era progresses and more dealers flood the market, retail dealers generally earn only modest sums of money largely because large supplies and stiff competition tend to lower prices.

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[375] U.S. Department of Justice, Drug Enforcement Administration, Source to the Street: Mid-1993 Prices for: Cannabis, Cocaine, Heroin 6 (Sept. 1993) (hereinafter "DEA Source").

[376] Skolnick *et. al*, *supra* note 6, at 35. Skolnick *et al.* go on to note that successful interdiction of cocaine hydrochloride smuggling that increases wholesale costs by an additional ten percent increases retail costs by only one percent. *Id*.

[377] U.S. Department of the Treasury, Bureau of Alcohol, Tobacco and Firearms, VII Jamaican Organized Crime, 2 (June 1992).

[378] Phillip C. McGuire, "Jamaican Posses: A Call for Cooperation Among Law Enforcement Agencies," 55 The Police Chief 20, 20 (1988).

[379] Barton, *supra* note 57, at 30-31.

[380] Reuter *et al.*, *supra* note 28, at 25-26.

Additional reasons for the decline in profits include ripoffs, territorial changes, expenditures on or consumption of drugs for personal use, and loss of suppliers, dealers, and buyers through arrest. [381]

c. Actual Profits in Washington, D.C., and New York City

Considerable evidence indicates that crack cocaine users who distributed crack cocaine in the late 1980s earned substantially more than user/sellers of other drugs. [382] Studies from the District of Columbia and New York are illustrative.

District of Columbia. Reuter *et al.* (1990) examined the economics of drug dealing in the District of Columbia and found that profits from the sale of all drugs during 1985-1987 were $721 per month (median) for part-time sellers and $2,000 per month for daily sellers. These profits often were matched or exceeded by legitimate income (75% of dealers had regular jobs and a median income of $850 per month). This factor led the authors to conclude that the data showing legitimate and illicit income were "inconsistent with the hypothesis that individuals are driven to street dealing by sheer economic necessity." [383]

In comparison, crack cocaine dealers in the District of Columbia earned median monthly net incomes of $833. The gross income figures are higher than for powder cocaine, while net income figures are comparable to those for powder cocaine. The authors also note most of this income is derived by individuals working as freelancers or in small groups because gangs and other highly organized systems are not predominant in the District of Columbia. [384]

Crack cocaine was the major source of drug income for 34 percent of street retailers in the District of Columbia, while powder cocaine was the major source of income for 32 percent. More dealers, however, sold powder cocaine (54%, including 34% who sold only powder cocaine) than sold crack cocaine (45%, including 25% who sold only crack cocaine). [385]

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[381] Hamid, *supra* note 2, at 343; DEA Report, *supra* note 11, at 17.

[382] Belenko, *supra* note 11, at 65 (citing Johnson *et al.* (1993)), 110.

[383] Reuter *et al.*, *supra* note 28, at 62, 68.

[384] *Id.* at 23-24, 62, 68.

[385] *Id.* at 58, 59. Note: Forty-one percent of the street-level dealers in the District of Columbia sold crack cocaine daily, and 39 percent sold powder cocaine daily, compared with 37 percent for all drugs combined. Only 20 percent of cocaine distributors (both powder and crack) sold only one day a week or less. Median time spent selling in the District was four hours a day for cocaine distributors (both powder and crack) compared with three hours a day for all drugs combined. The median number of sales per day was 16 for crack cocaine and 15 for powder cocaine, compared with 13 for all drugs combined. The median number of customers per day was 15 for crack cocaine and 12 for powder cocaine compared with 12 for all drugs combined. *Id.* at 59 and 61.

New York City. Johnson *et al.* (1993) examined the 1988 monthly cash income from drug dealing by 1,003 drug users in certain New York City neighborhoods.[386] The data indicate that "nondrug users" who distribute crack cocaine generally sell fewer than four times a day but generally earn monthly cash income (from crack cocaine sales) that was considered "high" ($1,000-$6,000) or "very high" (more than $6,000). These findings suggest that "nondrug users" in fact are involved with distribution, perhaps wholesale distribution, that is not limited to user quantities. "Nondrug users" sold crack cocaine more frequently than any other drug; they generally sold powder cocaine only once a day, if ever, rarely sold marijuana, and never sold heroin. Three-quarters of "nondrug users" who sold powder cocaine had monthly cash income between $1,000 and $6,000. For crack cocaine distributors, regardless of history of drug use, 21 percent earned a monthly income of less than $1,000, 42 percent earned $1,000-$6,000, and 38 percent earned more than $6,000. A powder cocaine distributor earned monthly incomes evenly across all three categories.[387]

The data also indicate that "heavy crack users" are frequent sellers of crack cocaine (60% sell more than three times a day) and earn "high" or "very high" monthly incomes from crack cocaine distribution (42% of distributors earn more than $6,000 a month and 40% earn from $1,000-$6,000). These heavy crack cocaine users sold crack cocaine more frequently than any other drug, but also sold powder cocaine relatively frequently, with "heavy crack users" earning more than the average drug user.[388]

4. Compensation

A variety of methods are used to pay retail distributors. In Jamaican Posses, lookouts and steerers tend to "contract" with a gang for their services, while couriers, street sellers, and managers of sellers tend to be paid employees.[389] Kansas City law enforcement reports that Jamaican retail sellers flown in from Miami and New York City were paid $5 commissions for each quarter gram of crack cocaine they sold and $10 for each half gram.[390] In Detroit, compensation includes salaries,

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[386] Bruce D. Johnson *et al.*, "Crack Abusers and Noncrack Abusers: Profiles of Drug Use, Drug Sales, and Nondrug Criminality," 24 Journal of Drug Issues 117-141 (1994). This study summarizes interviews of 1,003 persons between August 1988 and July 1989 from New York City settings in which drug abusers could be conveniently recruited, *i.e.*, Northern Manhattan streets, arrestees, inmates, probationers/parolees, and treatment clients.

[387] *Id.* at 28, 30.

[388] *Id.* at 28, 30.

[389] DEA Report, *supra* note 11, at 6.

[390] Barton, *supra* note 57, at 30.

commissions, bonuses, and permission to operate side enterprises (*e.g.*, sale of drug paraphernalia). In addition, others, often users, are paid in drugs.[391]

In Los Angeles, retail dealers often are provided drugs on consignment and permitted to retain one-quarter of the value of the drugs consigned for their own profits. Typical consignments amounted to $700-$4,000 of drugs, although as little as $100 of crack cocaine may be consigned. Consignment generally is provided to relatives of the wholesaler or to those who have established a satisfactory history of past transactions. Crack users typically are not consigned drugs.[392] Recent research on New York City crack cocaine distribution suggests that the consignment system is used rarely in that city.[393]

According to one study in the District of Columbia, 39 percent of crack cocaine dealers and 33 percent of powder cocaine dealers retain a portion of the drugs they have for sale for their own consumption. One-third of these retain half or more of the drugs.[394] In Miami, youths who sell crack cocaine frequently are paid in crack for their efforts. Thirty-five percent of lookouts and steerers, 85 percent of retail dealers, and 91 percent of wholesale dealers "often" (six or more times in the previous year) are paid in crack.[395]

5. Drug Cutting to Increase Profits

Crack cocaine generally is not, contrary to popular belief, 100-percent pure.[396] Rather, the baking soda used in converting the powder cocaine remains as an adulterant in the crack cocaine after conversion, reducing the purity.[397] DEA laboratory analysis during the mid-1980's showed an average powder cocaine purity of more than 80 percent.[398] National Institute on Drug Abuse data show purity

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[391] Mieczkowski, *supra* note 37, at 73, 75, 80.

[392] Skolnick *et. al*, *supra* note 6, at 18-19.

[393] Johnson *et al.*, *supra* note 11, at 361.

[394] Reuter *et al.*, *supra* note 28, at 60-61.

[395] Inciardi & Pottieger, *supra* note 58, at 263.

[396] Inciardi, *supra* note 30, at 469; Belenko, *supra* note 11, at 4 (citing early official descriptions of the drug as nearly pure and recent evidence to the contrary); DEA Report, *supra* note 11, at vi; Skolnick *et. al*, *supra* note 6, at 26 (stating the "dry form of cocaine called `crack' or `rock' . . . is nearly pure").

[397] Inciardi, *supra* note 30, at 469.

[398] DEA Report, *supra* note 11, at 14.

of gram quantities of crack cocaine ranging from 50 percent in Seattle to as high as 96 percent in Miami, where ammonia is used instead of baking soda in the conversion process. [399]

In addition, crack cocaine may be "cut" further or diluted, as is powder cocaine, to increase distributor profits. Although cutting crack cocaine is more difficult than cutting powder cocaine, some dealers attempt it with benzocaine, hicaine, lidocaine, or procaine. Cocaine may be cut before or after conversion into crack cocaine; in either event, some portion of the cutting agents may survive the conversion process, reducing the purity of the crack cocaine. [400]

Cutting cocaine not only increases the distributor's profits but also may leave chemical substances in the cocaine that cause undesirable side effects for the smoker. Indeed, widespread cutting agents and chemicals of varying quality result in some users purchasing powder cocaine for their own conversion in order to avoid crack cocaine that is adulterated with substances such as toxic chemicals, soap, chalk, or plaster. [401]

DEA data show powder cocaine purity averaging 83 percent for kilogram quantities, 74 percent for ounces, and 64 percent for grams. [402] Purity of gram quantities ranges from a low of 15 percent in the District of Columbia to more than 90 percent in some midwestern and northeastern cities. [403]

[399] National Institute on Drug Abuse, Epidemiologic Trends in Drug Abuse: Proceedings of the Community Epidemiology Work Group 11-18 (June 1992) (hereinafter "NIDA Proceedings").

[400] DEA Report, *supra* note 11, at vi, 14; Mieczkowski, *supra* note 37, at 66, 67.

[401] DEA Report, *supra* note 11, at vi, 13.

[402] DEA Threat Assessment, *supra* note 13, at 4.

[403] NIDA Proceedings, *supra* note 171, at 11-18.