Charles F. Levinthal • Lori Brusman Lovins

Drugs, Society, & Criminal Justice

FIFTH EDITION

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Drugs, Society, and Criminal Justice

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PREFACE

In this fifth edition of Drugs, Society, and Criminal Justice, I am pleased to welcome a coauthor, Dr. Lori Brusman Lovins of the Department of Criminal Justice at the University of Houston—Downtown. My collaboration with Dr. Brusman Lovins has had a transformative impact on the pedagogy, focus, and state-of-the-art coverage in this edition. Continuing in the spirit and execution that have been hallmarks of previous editions, the fifth edition provides students in the criminal justice field of study with a thorough and comprehensive introduction to the major facts and issues concerning criminal justice and drug-taking behavior. Its core mission remains to provide an understanding of (1) the multiple challenges that drug abuse brings to our society, (2) the drug-control policies we have enacted to meet those challenges, (3) the range of international and domestic law enforcement efforts that provide the implementation of our present-day drug-control strategy, and (4) the systems of criminal justice that have been established to deal with the prosecution and adjudication of drug-law offenders.

What's New in the Fifth Edition?

- **Through the contribution of Dr. Brusman Lovins**, there is now a dedicated section of the book (Part Two) that examines the full spectrum of topics in criminal justice that bear upon drug abuse in our society—ranging from drug–crime relationships to drug-law penalties and enforcement to adjudication and correctional procedures for drug-law offenders.
- **An overall reorganization of chapters** in *Drugs, Society, and Criminal Justice*, Fifth Edition, provides a greater focus on the connection between drug-taking behavior and the criminal justice system. In the new edition, Part One (Chapters 1–3) serves as the foundation for issues of criminal justice through an understanding of drug problems in America and in the rest of the world as well as an understanding of the history of drug-control policy in America. Part Two (Chapters 4–7) is devoted to addressing major issues with regard to drugs, crime, and criminal justice. Part Three (Chapters 8–13) deals with fundamental and theoretical issues of drug-taking behavior in general and with respect to specific drugs of abuse. Part Four (Chapters 14–16) focuses on substance-abuse prevention and treatment, tobacco regulation, and drug testing.
- **Updated coverage of drugs and drug abuse in this edition** has been guided by the recognition of the devastating social and personal impact of an ongoing drug abuse crisis in America today. Chapter 9 (Opioids) focuses on the specific concerns related to opioid abuse and opioid overdose deaths, while other chapters focus on other major drugs of abuse such as cocaine and methamphetamine (Chapter 10) and hallucinogens and depressants (Chapter 12). Drug-taking behavior relating to other drugs with significant abuse potential—namely alcohol and nicotine in tobacco products—will be examined as well. Despite the fact that they are historically legal commodities and their recreational use by adults do not bear directly on the criminal justice system, there are significant ramifications for the public safety and public health of our nation. Alcohol misuse and abuse and tobacco use will be covered in Chapters 13 and 15, respectively. Finally, the social, political, and health-related issues surrounding the use of marijuana in America today will be given a special treatment in Chapter 11, with particular attention given to concerns that are being hotly debated and are continually in flux.
- **New and expanded coverage in Chapter 2 of this edition** deals with the significant issues of drug-related crime and law enforcement that relates to an increasingly sophisticated system of global illicit drug trafficking. Up-to-date coverage includes the unending challenges brought by the influx of illicit drugs across the U.S.–Mexico border, the destabilizing impact of narcoterrorist organizations in Afghanistan and Colombia, and transnational narcoterrorist organizations operating across international borders. Global illicit drug trafficking remains a constantly "moving target," and in this edition the latest law enforcement issues and developments are addressed.
- **An expanded number of *Drug Enforcement . . . in Focus* features in this edition** emphasize the important role that domestic and international law enforcement agencies play in the implementation of drug-control policies. New examples include: *Efforts to Move Marijuana from a Schedule I to a Schedule II Controlled Substance* (Chapter 3), *Diversion Programs for Low-level, First-time Offenders* (Chapter 7), and *A New Technology in Drug Testing* (Chapter 16). Addressing a broader perspective on drug use and abuse in America, an expanded number of **Drugs . . . in Focus features** provide insights on selective topics. New examples include: *Opioid Crisis Intervention Courts: A Response to the Opioid Epidemic* (Chapter 9), *Cannabis Skin Care Products without the High* (Chapter 11), and *Does Uber Save Lives?* (Chapter 13).
- **A new series of updated *Numbers Talk* features**, positioned near the beginning of each chapter, provide the opportunity for often surprising "numerical" insights into aspects of current patterns of drug-taking behavior. They serve to draw the reader into the chapter and help to set the stage for classroom discussion.

- Several pedagogical features from the previous edition have been updated in the fifth edition. **Portrait features**, one in each chapter, enable us to put a "human face" on the discussion of drugs, society, and criminal justice, reminding us that we are dealing with issues that affect real people in all walks of life, now and in the past. **Quick Concept Checks**, embedded in the chapters, provide opportunities to test oneself on basic concepts in the text. **Review Questions** and the **Critical Thinking: What Would You Do?** features at the end of each chapter provide the means for summarizing one's knowledge about facts in the chapter and re-examining the information in the text through an application to a real-world situation. **Running Glossaries** and **Pronunciation Guides** are helpful to see the definition of terms in the immediate context of the material and to have difficult-to-pronounce terms spelled out phonetically. On a personal and professional level, **Help Line features** provide important facts that can be used to recognize specific signs of drug misuse or abuse, effective ways to respond in drug-related emergency situations, and guidance concerning circumstances that may present some degree of personal harm.

Instructor Supplements

Instructor's *Manual with Test Bank*. Includes content outlines for classroom discussion, teaching suggestions, and answers to selected end-of-chapter questions from the text. This also contains a Word document version of the test bank.

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To access supplementary materials online, instructors need to request an instructor access code. Go to **www.pearsonhighered.com/irc**, where you can register for an instructor access code. Within 48 hours after registering, you will receive a confirming e-mail, including an instructor access code. Once you have received your code, go to the site and log on for full instructions on downloading the materials you wish to use.

Alternate Versions

***E-Books*.** This text is also available in multiple eBook formats. These are an exciting new choice for students looking to save money. As an alternative to purchasing the printed textbook students can purchase an electronic version of the same content. With an eTextbook, students can search the text, make notes online, print out reading assignments that incorporate lecture notes, and bookmark important passages for later review. For more information, visit your favorite online eBook reseller or visit **www.mypearsonstore.com**.

Acknowledgments

Dr. Brusman Lovins and I acknowledge with great appreciation the professionalism of the editorial and production team at Pearson Education: Editor Gary Bauer and Content Producer Rinki Kaur. It has been a pleasure to work with them all. We would also like to thank the reviewers for their valuable inputs in this edition: Albert Kopak, Western Carolina University; Beth Wiersma, University of Nebraska - Kearney; John Hazy, Youngstown State University; Kilby Raptopoulos, University of Arkansas - Little Rock; Sue Mahan, University of Central Florida.

From Dr. Brusman Lovins: "I would like to thank my academic mentor, Dr. Edward Latessa, at the University of Cincinnati. Dr. Latessa not only connected me to this project, but exposed me to a much wider world of corrections. He has been a continuous source of support and guidance. I want to express my appreciation to Dr. Levinthal (Chuck), who warmly welcomed me to join him in writing this edition and showed much patience, respect, and helpful guidance as we worked together. Finally, unending thanks are extended to my husband, Brian, and our three boys, Sam, Henry, and Walter, who endured a few sacrifices during this book writing journey but did not waiver on their love and encouragement."

From Dr. Levinthal: "My family has been a continuing source of strength, patience, and encouragement. I will always be particularly grateful to my wife, Beth, and our wonderful sons, David and Brian, for their love, understanding, and support."

An Invitation to Readers

Your reactions to *Drugs, Society, and Criminal Justice*, Fifth Edition will always be welcome. Please send any comments or questions to the following e-mail address: charles.f.levinthal@hofstra.edu. Thank you.

PART ONE

The Challenge of Drugs in Our Society

chapter 1

Understanding the Drug Problem in America

After you have completed this chapter, you should have an understanding of the following:

- The impact of drug-taking behavior on society and society on drug-taking behavior
- Definitions and distinctions regarding drugs and drug use
- The problem of drug toxicity
- Drug-related hospital emergencies and drug-related deaths
- Prevalence rates for drug use in the United States
- Illicit drug accessibility through Internet Web sites known as the "Dark Web"

For Juvenile Court Judge Marilyn Moores, of Marion County, Indiana, the social impact of the opioid crisis in America can be seen on a daily basis—in the sad faces of children literally being left behind. In her community, the demands on child welfare services have reached a breaking point.

> *We're seeing many younger children than we had seen before... lots and lots of opioid-addicted babies following their releases from NICUs (neonatal intensive care units) where they went through withdrawal from the opioid addiction they suffered in utero. We see kids—little itty-bitty kids—that are found in car seats in the backs of cars where parents have overdosed in the front seat. And because of the age of the children, we can't safely leave them with addicted parents ... We have kids who are sleeping in the Department of Child Services office because there are no homes for them that can be quickly found.*[1]

There is no question that we live in a world where drugs are all around us. We have become accustomed to hearing about all the drug-related arrests and thousands of drug-law offenders being incarcerated in

prisons and jails, the unending interception and confiscation of illicit drugs at our borders, and most importantly, the devastating effects of drug abuse among our families and friends in our neighborhoods and communities.

We have dealt with these issues for quite a while, but in recent years we have faced a new reality that is unique in its impact on our society and on our personal lives—the present-day epidemic of opioid abuse in America. Approximately 72,000 lives were lost in 2017 from a drug overdose, about 14 percent more than had been lost in 2016 and twice as many as had been lost in 2007.

Approximately 49,000 of the total drug overdose deaths in 2017 involved an opioid drug (either heroin, prescription opioid or synthetic opioid). On average, 134 Americans died of an opioid overdose on a given day during that year. Since the beginning of the twenty-first century, opioid abuse has claimed close to 500,000 American lives. No age group, geographic region, racial or ethnic group, or socioeconomic category of Americans has escaped this national calamity.

Across the nation, public-safety first responders have been overwhelmed each day with multiple opioid overdose emergency calls; medical examiners (calling themselves "last responders") have found themselves contending with finding room in morgues that are beyond capacity. Social service agencies have had to keep up with the demands of children needing to be placed in foster care due to opioid abuse conditions at home. Drug-related car crashes have become so commonplace in some communities that rescue crews immediately administer the opioid antidote, naloxone (Narcan), to any unresponsive driver they find, on the presumption that an opioid overdose was the cause. The criminal justice system is strained with greatly increased numbers of opioid abusers among the population of drug-law offenders. Meanwhile, large quantities of heroin and synthetic opioids continue to be smuggled across our borders and from overseas, with only a small fraction being confiscated by federal officials (see Chapter 2).

It is clear that the opioid crisis poses a clear and present danger to the public health and public safety of our entire nation. But even though opioid abuse has dominated the headlines, it should be recognized that present-day drug abuse takes many forms. For example, more than 14,000 lives were lost in 2017 to cocaine abuse, and 10,000 lives were lost to methamphetamine (meth) abuse (see Chapter 10). As we have seen in the past (Chapter 3), specific forms of drug abuse fall out of and into favor over time. Contending with the problems of drug abuse in America has been as difficult as aiming at a moving target that can switch direction at a moment's notice. Meanwhile, through the years problems of chronic alcohol abuse have never gone away (see Chapter 13).[2]

We pay a heavy price, amounting to expenditures of hundreds of billions of dollars, for the treatment of drug abusers and individuals with drug-related diseases, as well as a criminal justice system that is expected to implement drug-control policies at federal, state, and local levels. Beyond these expenditures, however, we are aware all too well of the costs of drug abuse that cannot be calculated in monetary terms: the consequences of drug-related crime, the deterioration of communities where drug-related crimes occur, and, in a larger sense, the decline in our collective sense of social order, the diminishment of personal dignity and self-worth, and finally the devastation in personal relationships among our families and individuals around us.

An accused drug-law violator is led away by an agent of the Drug Enforcement Administration (DEA) on an otherwise quiet, residential street in Billings, Montana.

Numbers Talk. . .

134	In any given day in 2017, the average number of Americans who died from an overdose of opioids (heroin, prescription opioid or synthetic opioid).
72,000	Estimated number of drug overdose deaths in the United States in 2017.
40,000	Estimated number of motor vehicle fatalities in 2017.

Sources: National Institute on Drug Abuse (2018, August). Overdose death rates. Rockville, MD: National Institute on Drug Abuse. National Safety Council (2018). 2017 estimates show vehicle fatalities topped 40,000 for second straight year. Accessed from: https://nsc.org/road-safety/safety-topics/fatality-estimates.

The purpose of this book is to explore a wide range of issues associated with **psychoactive drugs**, that is, those specific drugs that influence the functioning of the brain and hence our behavior and experience. A particular focus will be on psychoactive drugs that are dealt with through the criminal justice system in the United States. The principal drugs of this type include opioids, cocaine and methamphetamine, hallucinogens and depressants, and marijuana. Since their impact on societal well-being is enormous, there will be also chapters on alcohol and tobacco.

Given the problems we face with respect to drug abuse, we can ask the following questions: What are we doing about it? Specifically, what is the role of the criminal justice system in the United States in dealing with drug abuse today? How effective have our public policies and the criminal justice system been in meeting the challenges of drugs in our society?

Understanding Drugs and Society

There are essentially two ways of looking at the relationship between drugs and society.

First, we can examine the impact of our society on drug-taking behavior. There are a series of sociological risk factors, comprising elements of our present-day culture that increase the likelihood of certain undesirable forms of drug-taking behavior. Drug use is, at least in part, a consequence of how we feel about ourselves in relation to our family, to our friends and acquaintances, to our life experiences, and to the community in which we live. Risk factors also can be biological and psychological in nature. As we will see in Chapter 8, all three risk factors (biological, psychological, and sociological) are often acting in combination. It is for that reason that we consider a **biopsychosocial model** as a way of understanding the range of motivating circumstances for drug-taking behavior (Figure 1.1).

Second, we can consider the relationship in reverse. We can examine the impact of certain forms of drug-taking behavior on society, specifically the consequences of drug-related crime and other forms of antisocial behavior. As a nation, we have established over the years drug-control policies at federal, state, and local levels (Chapter 3) as a response to the negative impact of drug-taking behaviors. The implementation of federal drug-control policies has been the responsibility of specific agencies within the U.S. Department of Justice, such as the Drug Enforcement Administration (see Chapter 2), with its focus on the control of international and domestic drug trafficking and the enforcement of federal drug laws. Federal courts and correctional facilities for federal drug-law offenders are administered under the U.S Attorney's Office

psychoactive drugs: Drugs that affect feelings, thoughts, perceptions, and behavior.

biopsychosocial model: The idea that drug-taking behavior can best be accounted for through the consideration of a combination of biological, psychological, and sociological risk factors in an individual's life.

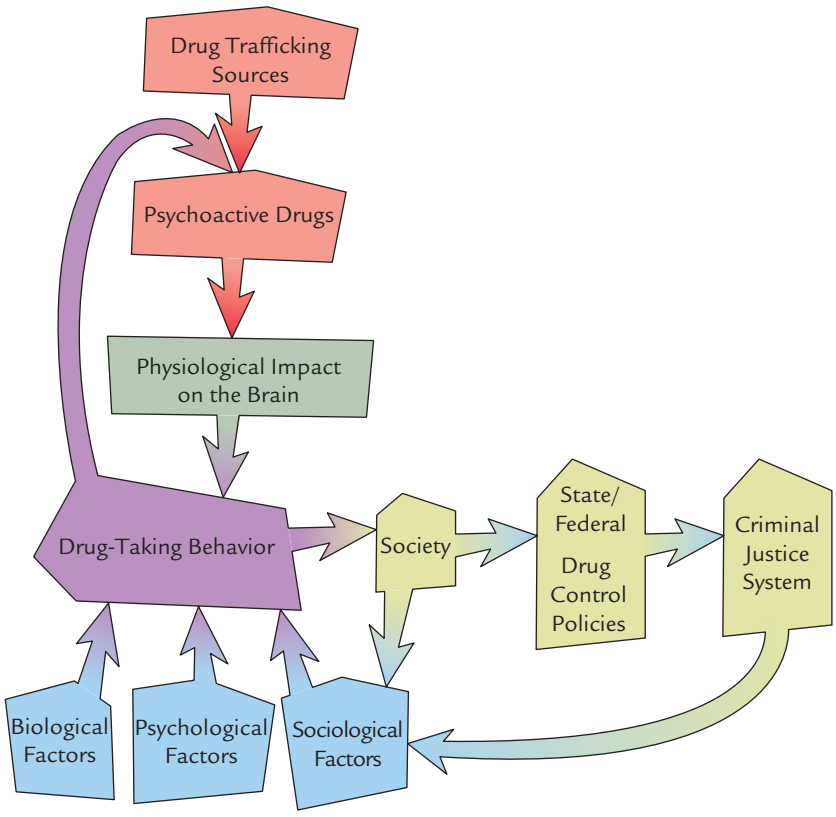


FIGURE 1.1

Understanding the interplay of drug-taking behavior and society through the biopsychosocial model. Note: The criminal justice system is an implementation of drug control policies established at state and federal levels. Components of the criminal justice system include law enforcement agencies, criminal courts, and correctional systems.

and the Bureau of Prisons (Chapter 7). State courts and correctional facilities are administered under equivalent agencies within each individual U.S. state.

Figure 1.1 shows that it is possible that the implementation of drug-control policies designed to reduce drug abuse may themselves be sociological risk factors, in that they tend to increase the likelihood of further drug-taking behavior (see Chapter 4). In other words, it is possible that, in some instances, the criminal justice system itself sets up a behavioral "feedback loop" that can increase rather than reduce the incidence of drug-taking behavior.

Definitions and Distinctions

Whichever way we look at the relationship between drugs and society, the fact remains that drugs and society have a profound impact on our daily lives—all the more reason to be clear on the meaning of the terms we use. The next sections cover the principal definitions and distinctions that will form the basis for understanding drugs and society. We begin with a basic definition that helps us to distinguish between drugs and nondrugs.

What Is a Drug?

It seems as if it should be relatively easy to define what we mean by the word **drug**. Minimally, there should be a set of criteria that can be used to distinguish a "drug" from a "nondrug." Unfortunately, it is more challenging than we would expect it to be.

The standard approach is to characterize a drug as *a chemical substance that, when taken into the body, alters the structure or functioning of the body in some way*. In doing so, we are accounting for examples such as medications used for the treatment of physical and mental disorders, as well as alcohol, nicotine, and the typical street drugs. Unfortunately, this broad definition also could refer to ordinary food and water. Because it does not make much sense for nutrients to be considered drugs, we need to refine our definition, adding the phrase, *excluding those nutrients considered to be related to normal functioning.*[3]

Even with this qualification, however, we may still be on slippery ground. It is true that we can now effectively eliminate the cheese in your next pizza from consideration as a drug, but what about some exotic ingredient in the sauce? Sugar is safely excluded, even though it has significant energizing and therefore behavioral effects on us, but what about the cayenne pepper that burns your tongue? Where do we draw the line between a drug and a nondrug in this case?

There are two major lessons that we learn from the seemingly simple task of arriving at a definition. First, there is probably no perfect definition that would distinguish a "drug" from a "nondrug" without leaving a number of cases that fall within some kind of gray area. The best we can do is to set up a definition, as we have, that handles most of the substances we are likely to encounter.

The second lesson is more subtle. We often draw a distinction between drugs and nondrugs not in terms of physical characteristics but rather in terms of whether the substance in question *was intended to be used primarily as a way of inducing a bodily or psychological* change. By this reasoning, if the pizza maker intended to put that spice in the pizza to make it taste better, the spice would not be considered a drug; it would simply be another ingredient in the recipe. If the pizza maker intended the spice to intoxicate you, raise your blood pressure, or quicken your heart rate, then it could possibly be considered a drug (see Drugs ... in Focus on page 5 for a guide to drug names). In other words, a designation of a chemical substance as a drug cannot be made without considering *how it might be used*.

Ultimately, the problem is that we are trying to reach a consensus on a definition that fits our intuitive sense of what constitutes a drug. We may find it difficult to define pornography, for example, but (as has been said in the halls of the U.S. Supreme Court) we know it when we see it. So it may be with drugs. Whether we realize it or not, when we discuss the topic of drugs, we are operating within a context of social and cultural values, a group of shared attitudes about what kind of behavior (that is, what kind of drug-taking behavior) is acceptable and what kind is not. These values and attitudes have manifested themselves over the years in social legislation and a criminal justice system that is designed for the purpose of regulating the use of specific drugs and specific forms of drug-taking behavior (see Chapter 3).

Instrumental Drug Use versus Recreational Drug Use

What could be the intent or motivation of the drug user with respect to this kind of behavior? Based upon the intent of the individual, drug use can be categorized as either instrumental or recreational.[4]

By **instrumental use**, we mean that a person is taking a drug with a specific socially approved goal in mind. The user may want to stay awake longer, fall asleep more quickly, or recover from an illness or its aftereffects. If you are a medical professional on call over a long period of time, taking a drug with the goal of staying alert is considered acceptable by most people as long as the drug does not interfere with one's duties. Recovery from an illness and achieving some reduction in pain are goals that are unquestioned. In these cases, drug-taking behavior occurs *as a means toward an end that has been defined by our society as legitimate*.

drug: A chemical substance that, when taken into the body, alters the structure or functioning of the body in some way, excluding those nutrients considered to be related to normal functioning.

instrumental use: Referring to the motivation of a drug user who takes a drug for a specific purpose other than getting "high."

The instrumental use of drugs can involve prescription and nonprescription (over-the-counter, abbreviated OTC) drugs that are obtained and taken for a particular medical purpose. Examples include an antidepressant prescribed for depression, a remedy for a cold, an anticonvulsant drug to control epileptic seizures, or insulin to maintain the health of a person with diabetes.

In contrast, **recreational use** means that a person is taking the drug not as a means toward a socially approved goal but for the purposes of acquiring the effects of the drug itself. The motivation, generally speaking, is to experience a pleasurable feeling or achieve a positive state of mind. *Whatever happens as a consequence of recreational drug-taking behavior is viewed not as a means to an end but as an end onto itself.* Smoking tobacco is a form of recreational drug-taking behavior as is involvement with street drugs, in that the goal in both cases is to alter one's mood or state of consciousness.

This seems simple enough, but there will be instances in which the distinction is less than clear. Drinking an alcoholic beverage, for example, is considered as recreational drug-taking behavior under most circumstances, but when moderate amounts are recommended by a physician for a specified therapeutic or preventative purpose (see Chapter 13), alcohol drinking might be considered instrumental in nature. You can see that whether drug use is judged to be recreational

recreational use: Referring to the motivation of a drug user who takes a drug only to get "high" or achieve some pleasurable effect.

Drugs . . . in Focus

Understanding Drug Names

The names we give to a particular drug can range from a tongue-twisting generic or pharmaceutical term to a catchy commercial word used for marketing purposes to often-colorful street slang. It is important to keep straight the different circumstances in which a drug name is used. We will focus on four major categories: brand names, generic names, natural-product names, and street names.

Brand names

Once a pharmaceutical manufacturer receives governmental approval for marketing a newly developed drug, it is given exclusive rights, referred to as a *drug patent*, to a specific brand name identifying the drug that is being sold. The brand name is a registered trademark that cannot be used by any other manufacturer for the life of the patent. As examples, while under patent, the drug Januvia, developed for the treatment of Type 2 diabetes mellitus, was marketed under that brand name by AstraZeneca Pharmaceuticals, and the cholesterol-lowering drug Crestor was marketed under that brand name by Merck & Co., Inc. A drug patent is granted for a fixed period of 20 years, beginning from the first year of an arduous multi-stage FDA approval process.

Generic names

Every pharmaceutical drug has a generic name as well. Doctors and other designated health-care professionals will often write prescriptions for a particular drug using its generic name (if the patent has expired) rather than its brand name since it is considerably less expensive. Once a drug patent has expired, a drug formerly available under its brand name becomes available under its generic name, sometimes alongside its brand name equivalent. For example, the nonprescription analgesic drug Tylenol is marketed by McNeil Consumer Healthcare in North America and its "sibling" Panadol is marketed by GlaxoKlineSmith in the United Kingdom and other countries outside North America under their original brand names. Since the patents have long since expired, they are also marketed as generic drugs under their generic names acetaminophen and paracetamol (para-acetylaminophenol), respectively. Illicit drugs are referred to by federal and state authorities by their generic names, unless they are botanical products (see later). Examples are cocaine hydrochloride, heroin, dextroamphetamine, methamphetamine, lysergic acid diethylamide (LSD), and phencyclidine.

Natural-product names

In some cases, drug names refer to (1) plants from which the drugs originate (for example, marijuana, opium, coca, and amanita mushrooms), (2) chemical entities isolated directly from plants (for example, morphine and codeine from opium poppies, cocaine hydrochloride from the coca plant, THC from marijuana, psilocybin from psilocybe mushrooms, and mescaline from peyote cactus), or (3) chemical entities derived directly or indirectly from plants through a specific chemical process (for example, alcohol created as a result of the fermentation of grains, free-base cocaine and crack cocaine created from a chemical modification of cocaine hydrochloride).

Street names

Street names refer to slang terms generated by a subculture of drug users for a particular illicit drug or combination of illicit drugs. Any listing of street names is bound to be incomplete, as the slang names are always changing. Nonetheless, some street names have been around for a long time. Examples are "speed" for methamphetamine, "smack" for white heroin, "black tar" for Mexican heroin, "speedball" for a combination of heroin and cocaine, "grass," "weed," or "pot" for marijuana, and "coke" for cocaine. More extensive listings of street names for major drugs can be found on pages 182, 202, and 210.

or instrumental is determined in no small part by the circumstances under which the behavior takes place. As we will see, social attitudes toward forms of drug-taking behavior have had a significant impact on the establishment of drug-control policies and drug-control laws.

Illicit (Illegal) versus Licit (Legal) Drugs

Psychoactive drugs that traditionally receive the greatest amount of attention are the ones officially defined in the United States as **illicit (illegal) drugs**. By definition, criminal penalties are imposed on their possession, manufacture, or sale, according to federal and state-level statutes. The best-known examples of illicit drugs are heroin, cocaine, and (except in some U.S. states) marijuana, as well as "club drugs" such as methamphetamine (meth), Ecstasy, LSD, PCP, ketamine, and GHB. Other equally important psychoactive substances, however, are **licit (legal) drugs**, such as alcohol, nicotine in tobacco products, caffeine, and certain prescription medicines used to treat a wide range of mental disorders. In the cases of alcohol and nicotine in tobacco products, legal access carries a minimum-age requirement. In the case of prescription medicines, legal access is limited to approval by specific health-care professionals. In the case of caffeine, there are no restrictions at all to its legal access.

The designation of a particular drug as being either illicit (illegal) or licit (legal) depends upon the society within which legality is defined. In short, the legal status of a particular form of drug-taking behavior is established on the basis of historical, cultural, and sometimes religious decisions rather than on the physical properties of the drug itself. Tobacco, for example, has deeply rooted associations in American history, dating to precolonial days. Although tobacco use is objectionable to many individuals and harmful to the health of the smoker and others, tobacco remains a legal commodity, though presently under federal regulations.

Except for a period between 1920 and 1933, known as the Prohibition Era, alcohol has been a drug that holds legal status in the United States within the bounds of the law, despite the fact that alcohol consumption can be harmful to individuals who become inebriated, potentially harmful to others who may be impacted by the drinker's drunken behavior, and harmful to one's health when consumed on a chronic basis. Elsewhere in the world, the legality of a drug or class of drugs is determined on the basis of the religious attitudes of a particular society. A prominent example is the illegality of alcohol use in nations whose laws incorporate the teachings of the Islamic religion.

In the United States, the legal or illegal status of marijuana is complicated by two important factors. The first factor is the specific region within the United States having the jurisdiction authority over marijuana use. On a federal level, marijuana use is officially designated as an illegal act (see Chapter 3), while in several U.S. states it is not. The issues surrounding the present-day jurisdictional conflict between the federal government and U.S. states with respect to marijuana use will be examined in Chapter 11.

The second factor considers whether marijuana has been used for either instrumental or recreational purposes. The instrumental use of marijuana for the treatment of specific medical conditions is legal in certain U.S. states, while in some U.S. states recreational use of marijuana is legal as well (see Chapter 11). In some U.S. states, the recreational use of marijuana remains an illegal form of drug-taking behavior but has been "decriminalized" under the law, in that penalties for infractions involve a monetary fine rather than criminal prosecution.

Misuse, Abuse, and Dependence

Distinctions need to be made between three terms that reflect the *long-time* consequences of drug-taking behavior. These consequences fall into three categories: drug misuse, drug abuse, and drug dependence.

Drug misuse typically applies to cases in which a drug is used with an instrumental goal in mind but in an inappropriate manner. For example, drug doses may be increased beyond the level recommended for its use in the mistaken idea that if a little is good, more is even better. Or doses may be decreased from the level recommended for its use with the intention of saving money by making the drug supply last longer. Prescription drugs may be continued longer than they were intended to be used or combined with some other drug. In the case of alcoholic misuse, the social or celebratory occasions of alcohol drinking may develop into a state of intoxication that can lead to inappropriate behaviors that are harmful to the drinker or to others.

Drug misuse of prescription or nonprescription drugs can be dangerous and potentially lethal, particularly when alcohol is combined with medications that depress the nervous system. Drugs that have this particular feature include antihistamines, antianxiety medications, and sleeping medications. Even if alcohol is not involved, however, drug combinations still represent serious health risks, particularly for the elderly, who often take a large number of separate medications. This population is especially vulnerable to the hazards of drug misuse.

In contrast, **drug abuse** is typically applied to cases in which a licit or illicit drug is used in ways that produce some form of physical, mental, or social impairment. The primary motivation for individuals involved in drug abuse is recreational. Drugs with abuse potential include not only the common street drugs but also legally available psychoactive substances, such as caffeine and nicotine (stimulants), alcohol, sedatives, and inhaled solvents (depressants), and a number

illicit drugs: Drugs whose manufacture, sale, or possession is illegal.

licit drugs: Drugs whose manufacture, sale, or possession is legal.

drug misuse: Drug-taking behavior in which a drug is used inappropriately.

of prescription or OTC medications designated for medical purposes but used by some individuals exclusively on a recreational basis. In Chapter 9, we will examine significant concerns about the abuse of prescription pain medications, such as Vicodin, Percocet, and OxyContin.

The term **drug dependence** is typically applied to conditions that extend beyond the consequences of drug abuse. There are more intense experiences on the part of the individual, such as feelings of intense craving for the drug and preoccupation in obtaining it as well as tendencies to increase the amount of the drug (referred to as drug tolerance) and display withdrawal symptoms when the drug use has stopped.

While it is important in many instances to make distinctions among misuse, abuse, and dependence as problematic aspects of drug-taking behavior, there are occasions when no value judgment is made or implied as to the motivation of the individual involved or the consequences that may result. In those occasions, we will simply refer to drug-taking behavior as *drug use*.

Drugs versus Substances

Because the general public often fails to recognize alcohol and nicotine as drugs (see Chapters 13 and 15), despite the significant problems associated with their use, health-care professionals have felt the need to substitute the word "substance" instead of "drug" in terminology when referring to drug-related diagnosis and treatment. Consequently, problems of drug-taking behavior are referred to as consequences of substance misuse, substance abuse, or substance dependence, respectively.

In guidelines for the diagnosis and treatment of problems related to substance use, the American Psychiatric Association and associated health professional organizations draw upon specific behavioral criteria. The degree of impaired control that an individual has over his or her substance use is assessed by occasions in which a substance is taken in large amounts or over a longer period of time than the individual originally intended or by evidence of persistent desire to cut down or regulate a pattern of substance use. In the most current guidelines adopted in 2013, referred to as the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*, behavioral criteria that had formerly been used to designate conditions of substance abuse and substance dependence as separate entities in earlier versions of the guidelines are now combined (with some modification) into a single condition, referred to as *substance use disorder*. Under the general diagnosis of substance use disorder, problems associated with drug use are now considered along a continuum, ranging from relatively mild to severe (see a more complete discussion of the DSM-5 on pages 145–146).

drug abuse: Drug-taking behavior resulting in some form of physical, mental, or social impairment.

drug dependence: Drug-taking behavior that involves not only some form of physical, mental, or social impairment in an individual's life but also more intense experiences such as feelings of drug craving, drug tolerance, and/or withdrawal when drug use has stopped.

On the Matter of "Addiction"

It is common in everyday conversations about excessive forms of drug-taking behavior that we use the term "addiction" or the phrase "drug addict." In broad terms, use of this term or phrase refers to an individual's dependence on a particular form of drug use and the presence of serious personal and social problems that are directly associated with that dependency. For the general public, the connotation of the word "addiction" is that an individual has abused a particular drug to such an extent that he or she no longer has the capability of stopping, that there is now some significant impairment in self-control. In that sense, addiction is a disorder of a normal process necessary for our survival. Every day, we find behavioral ways to satisfy bodily needs for food and water, for example, but the behavior typically ends once those needs have been satisfied. Addiction can be viewed as a useful shorthand way of saying that an important feedback loop of behavior has been disrupted.

Nonetheless, as convenient as it is to refer to the condition of drug dependence as an addiction, we need to be careful in doing so. We want to avoid perpetuating certain long-held negative social beliefs and prejudices toward people who suffer from this condition. Labeling an individual with a drug addiction as "a drug addict" can have a stigmatizing effect that impedes efforts on his or her part to seek out substance dependence treatment. While it is acknowledged that addiction is a serious *recurring* condition and that successfully treated individuals need to view themselves as being "in recovery" rather than "recovered," it is not helpful to adopt an implied expectation of inevitability (as implied in the expression "Once an addict, always an addict"). Unfortunately, only one out of ten individuals in the United States in need of treatment for a problem with illicit drug or alcohol use actually receives treatment in a specialty facility (see Chapter 14). Clearly, any progress toward reducing the social consequences of drug-related problems through treatment will depend on individuals avoiding a sense of shame, or a sense of denial that these problems exist in the first place.

While the behavioral aspects of drug misuse, drug abuse, or drug dependence are important to identify, it is equally important to emphasize the increasing opportunities for physical harm to occur. There will always be potential risks to one's physical well-being. As we all know, significant consequences can be life-threatening or life-ending. The next section will examine a major area of concern with respect to drug-taking behavior—the problem of drug toxicity.

The Problem of Drug Toxicity

When we say that a drug is toxic, we are referring to the fact that it is, to some degree, dangerous or in some way interfering with a person's normal functioning. Technically, any substance, no matter how benign, has the potential for

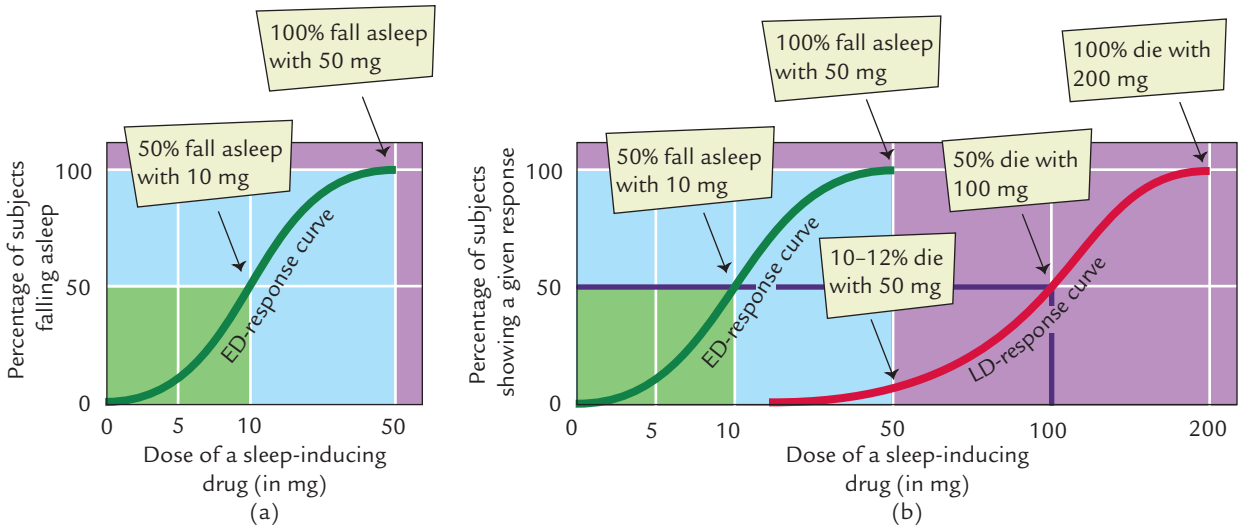


FIGURE 1.2

(a) An effective dose (ED)-response curve, and (b) an ED-response curve (left) alongside a lethal dose (LD)-response curve (right).

toxicity if the **dose**—the amount of the substance taken—is high enough. The question of a drug's safety, or its relative safety, when compared to other drugs, centers on the possibility that it can be toxic *at relatively low doses*. We certainly do not want people to harm themselves accidentally when taking the drug in the course of their daily lives. When there is a possibility that the *short-term* effects of a particular drug might trigger a toxic response, then the drug is identified as having some level of **acute toxicity**.

To understand the concept of toxicity in more detail, we need to examine an S-shaped graph called the **dose-response curve** (Figure 1.2a). Let us assume we have the results of data collected from laboratory tests of a hypothetical sleep-inducing drug. Increases in the dose level of the drug will produce the desired sleep-inducing effect in an increasingly large percentage of a test population of mice. As illustrated in Figure 1.2a, a dose of 10 mg will cause 50 percent of the population to fall asleep. With a dose of 50 mg, 100 percent will have done so. Some variability always exists in an individual reaction to any drug; some mice may be internally resistant to the drug's effect, while others may be quite susceptible. We cannot predict *which specific animal* might fall asleep with 10 mg of the drug, only that the probability of a given animal doing so is 50 percent.

We define the **effective dose (ED)** of a drug having a specific effect on a test population in terms of probabilities, from 0 to 100 percent. For example, the ED50 of a drug refers to the effective dose for 50 percent of the population; ED99 refers to the effective dose for 99 percent of the population. In this example, the ED numbers refer to the drug's effect of *producing sleep* on a specific proportion of the population being exposed to the drug. The same drug may be producing other effects (muscular relaxation, for instance) at lower doses; these drug effects would have their own separate dose-response curves. Remember that we are looking at the properties of a specific drug *effect* here, not at the overall properties of the drug itself.

Now we can look at Figure 1.2b, where the effective dose-response curve is represented next to another S-shaped dose-response curve, also gathered from laboratory testing, only in this case the "response" is death. It makes sense that the second curve is shifted to the right because the **lethal dose (LD)** would generally require a higher dosage of a drug than the dosage necessary to produce a nonlethal effect.

Emphasis should be placed on the word "generally," because the lethal dose-response curve may overlap with the effective dose-response curve (as it does in this example). In the example shown, although a 100-mg dose needs to be taken to kill 50 percent of the test population, a dose of as little as 50 mg (or less) is lethal for at least a few of them. The LD50

toxicity (tox-IS-ih-tee): The physical or psychological harm that a drug might present to the user.

dose: The quantity of drug that is taken into the body, typically measured in terms of milligrams (mg) or micrograms (µg).

acute toxicity: The physical or psychological harm a drug might present to the user immediately or soon after the drug is ingested into the body.

dose-response curve: An S-shaped graph showing the increasing probability of a certain drug effect as the dose level rises.

effective dose (ED): The minimal dose of a particular drug necessary to produce the intended drug effect in a given percentage of the population.

lethal dose (LD): The minimal dose of a particular drug capable of producing death in a given percentage of the population.

of a drug refers to the lethal dose for 50 percent of the population; LD1 refers to a relatively lower dose that is lethal for only 1 percent of the population.

In order to arrive at an idea of a drug's overall toxicity, we need to combine the effective and lethal doses of a drug in a ratio. The ratio of LD50/ED50 is called the **therapeutic index**. For example, if the LD50 for a drug is 450 mg, and the ED50 is 50 mg, then the therapeutic index is 9. In other words, you would have to take nine times the dose that would be effective for half of the population in order to incur a 50 percent chance of death in that population.

It can be argued that a 50 percent probability of dying represents an unacceptably high risk even for a drug that has

therapeutic index: A measure of a drug's relative safety for use, computed as the ratio of the lethal dose for 50 percent of the population to the effective dose for 50 percent of the population.

Drugs . . . in Focus

Acute Toxicity in the News: Drug-Related Deaths

The following is a listing of prominent celebrities in the entertainment world who have died since 1970 either as a direct consequence or as an indirect consequence of drug misuse or abuse.

Name	Year of Death	Age	Reasons Given for Death
Janis Joplin, singer	1970	27	Overdose of heroin and alcohol
Jimi Hendrix, singer and guitarist	1970	27	Overdose of sleeping pills
Elvis Presley, singer and actor	1977	42	Cardiac arrhythmia suspected to be due to an interaction of antihistamine, codeine, and Demerol (a painkiller), as well as Valium and several other tranquilizers
John Belushi, comedian and actor	1982	33	Overdose of heroin combined with cocaine
River Phoenix, actor	1993	23	Cardiac-respiratory arrest from accidental combination of heroin and cocaine
Jonathan Melvoin, keyboardist for the Smashing Pumpkins rock band	1996	34	Overdose of heroin
Chris Farley, comedian and actor	1998	33	Overdose of heroin and cocaine
Bobby Hatfield, singer, the Righteous Brothers	2003	63	Heart failure following overdose of cocaine
Mitch Hedberg, comedian	2005	37	Heart failure due to "multiple-drug toxicity," including heroin and cocaine
Heath Ledger, actor	2008	28	Acute intoxication from combined use of six prescription medicines for pain, anxiety, insomnia, and nasal congestion
Michael Jackson, songwriter and entertainer	2009	50	Cardiac arrest due to an intramuscular administration of propofol (brand name: Diprivan), possibly interacting with a number of antianxiety medications
Greg Giraldo, comedian	2010	44	Overdose of prescription medication and alcohol
Amy Winehouse, singer	2011	27	Accidental alcohol poisoning, resulting from a lethal blood–alcohol concentration of 0.42 percent
Whitney Houston, singer and actress	2012	48	Accidental drowning, with chronic cocaine use and heart disease as contributing factors
Cory Monteith, television actor "Glee"	2013	31	Overdose of heroin and alcohol
Philip Seymour Hoffman, actor	2014	46	Overdose of heroin
Prince, songwriter, singer, actor and director	2016	57	Overdose of fentanyl
Tom Petty, songwriter and singer	2017	66	Overdose from a combination of fentanyl, fentanyl analogs, oxycodone, and other drugs

Note: Celebrities whose drug-related deaths have been attributed to the toxicity of nicotine, tars, or carbon monoxide in tobacco products are not included in this listing.

Source: Various media reports.

genuine benefits. To be more conservative in the direction of safety, the ratio of LD1/ED99 is often calculated. Here we are calculating the ratio between the dose that produces death in 1 percent of the population and the dose that would be effective in 99 percent. Naturally, this second ratio, called the **margin of safety**, should be as high as possible for a drug to be considered relatively safe to use. As before, the higher the ratio, the greater the difference between effectiveness and lethality. In other words, the wider the margin of safety, the safer (less toxic) the drug in question. Clearly, the margin of safety for the hypothetical drug examined in Figure 1.2 would present serious toxicity issues. Bear in mind, however, that any index of drug toxicity assumes that the drug is being consumed by itself, without any other substances being consumed at the same time. If something else is administered along with the drug in question (whether it is another drug or some food product), then the margin of safety can potentially change. The important issue of drug interactions, particularly drug interactions with alcohol, will be taken up in Chapter 8.

The U.S. Food and Drug Administration (FDA) requires that therapeutic index and the margin of safety are calculated by recognized pharmaceutical companies during the development of new drugs. Obviously, the goal is for these ratios to be as large as possible, considering that an individual might unintentionally take a higher-than-recommended dose of the drug. We do not want the consumer to be in danger if this happens. But what about the toxicity estimates in the consumption of illicit drugs? The unfortunate reality of street drugs is that the buyer has no way of knowing what he or she has bought until the drug has been used, and then it is frequently too late. It is an extreme case of *caveat emptor* ("Let the buyer beware").

Few if any illicit drug sellers make any pretense for being ethical businesspeople; their only objectives are to make money and avoid prosecution by the law. Frequently, the drugs they sell are diluted with either inert or highly dangerous ingredients. Adulterated heroin, for example, may contain a high proportion of milk sugar as inactive filler and a dash of quinine to simulate the bitter taste of real heroin, when the actual amount of heroin that is being sold is far less than the "standard" street dosage. At the other extreme, the content of heroin may be unexpectedly high and lead to a lethal overdose, or the adulterated product may contain animal tranquilizers, arsenic, strychnine, insecticides, or other highly toxic substances. Cocaine, LSD, marijuana, and all the other illicit drugs that are available to the drug abuser, as well as look-alike drugs that are unauthorized copies of popular prescription medications, present hidden and unpredictable risks of toxicity. Even if drugs are procured from a friend or from someone you know, these risks remain. Neither of you is likely to know the exact ingredients. The potential for acute toxicity is always present.[5]

Given the uncertainty that exists about the contents of many abused drugs, what measure or index can we use to evaluate the effects of acute toxicity on individuals in our society? A natural tendency is to look first to the news headlines; think of all the well-known public figures who have died as a direct consequence of drug misuse or abuse (Drugs … in Focus).

It is possible that such examples have been misleading. In the past, it could have been argued that celebrities were not representatives of the drug-using population in general and that the drugs prevalent among celebrities, because of their expense, were not representative of the drugs most frequently encountered by the rest of society. However, in light of the current nationwide drug epidemic, recent reports of drug-related deaths among celebrities appear to be more of a mirror of present-day society than an anomaly. To gain more definitive understanding about drug toxicity in the general population, we must turn to emergency departments of hospitals where drug-related cases are treated as well as medical examiners where drug-related deaths are recorded.

Drug-Related Hospital Emergencies

The extent of hospital emergencies associated with a major drug of abuse, as reflected in the number of **drug-related emergency-department (ED) visits**, varies considerably from drug to drug and from year to year. ED-visit statistics for a given year can only be a "snapshot" of problems in drug-taking behavior at that point in time. The dominance relationship among specific drugs of abuse with respect to hospital emergencies will be in constant flux. Beginning in the 1980s, for example, cocaine and crack cocaine abuse was the dominant drug-related problem, particularly among urban communities of major cities (Chapter 10). In the late 1990s and early 2000s, the focus was on methamphetamine abuse, particularly as experienced in nonurban regions of the United States (Chapter 10).

Obviously, heroin and other opioids have become the primary focus of concern in recent years. Figure 1.3 shows the number of ED visits in 2015 involving an overdose of heroin and other opioids, cocaine, or methamphetamine. Heroin and other opioids accounted for about 84 percent of these ED visits, with cocaine and methamphetamine accounting for about 6 percent and 10 percent, respectively. While heroin accounted for a majority of all opioid-drug ED visits that year, about one-third involved opioid drugs other than heroin, primarily opioid medications such as oxycodone and hydrocodone.

In the past, tracking the extent of a particular medical condition requiring an ED visit on a national level was an arduous, labor-intensive task, since information had to be

margin of safety: The ratio of a lethal dose for 1 percent of the population to the effective dose for 99 percent of the population.

drug-related emergency-department (ED) visit: An occasion on which a person visited an ED for a purpose that was related to recent drug use.

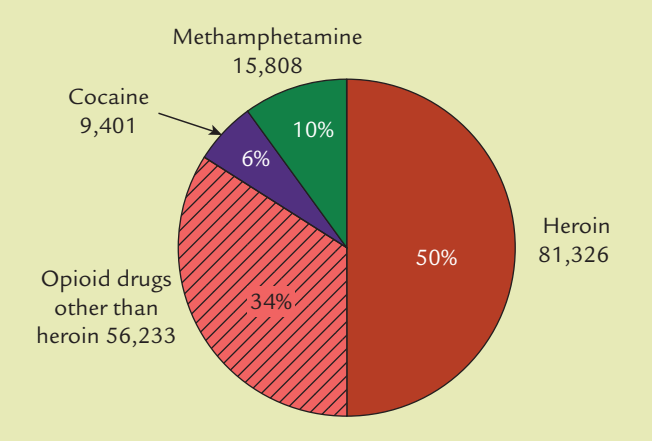


FIGURE 1.3

Estimated numbers in the United States of drug-poisoning-related emergency department (ED) visits in 2015, involving heroin, opioids other than heroin, cocaine, or methamphetamine.

Source: Centers for Disease Control and Prevention. (2018, August 31). *Annual Surveillance Report of Drug-Related Risks and Outcomes — United States, 2018.* Atlanta, GA: Centers for Disease Control and Prevention, Table 3B. Accessed from: https://www.cdc.gov/drugoverdose/pdf/pubs/2018 cdc-drug-surveillance-report.pdf.

extracted from billing data. As a result, there would be a considerable time delay before it was possible to determine the extent of any large-scale public health emergency such as the current opioid abuse epidemic. The 2015 data described above comes from this former record-keeping process. Fortunately, patient data can now be collected electronically in near real-time and viewed within 24–48 hours of an ED visit. As a result, there is an opportunity to track opioid overdose emergencies or any condition requiring an ED visit in a timely fashion. Using electronic data records, the Centers for Disease Control and Prevention reported in 2018 that opioid overdose ED visits had increased 30 percent from the third quarter (July–September) of 2016 to the third quarter of 2017. Of the four regions of the United States in the analysis, the Midwest showed the greatest increase (60%) over this period of time. Information regarding opioid overdose deaths will be reviewed in the next section.[6]

It should be pointed out that among hospital emergency records in any given year, the overwhelming proportion of **drug-related ED visits** continues to be associated with *excessive alcohol consumption*, either as a direct consequence of alcohol consumption or automobile accident injuries that have resulted from alcohol consumption. The number of ED visits in such cases far outstrip the number of ED visits resulting from any form of illicit drug-taking behavior. The range of toxicity issues related to alcohol use and misuse will be reviewed in Chapter 13.

Drug-Related Deaths

According to the Centers for Disease Control and Prevention, drug overdose is presently the leading cause of accidental death in the United States and the leading cause of death among Americans under the age of 50, with about two-thirds of overdose deaths reported in 2017 being due to either a prescription opioid or illicit opioid drug (see Chapter 9). Figure 1.4 shows the changing pattern in drug overdose cases from 1999 to 2017. While the number of cocaine overdose cases exceeded the number of overdose cases involving opioids in 1999, opioids have subsequently become dominant. The dramatic rise in heroin overdose deaths began around 2010 and deaths due to synthetic opioids around 2013.

Clearly, the most significant factor in the escalating numbers of opioid overdose deaths has been the sharp increase in the abuse of the synthetic opioid, fentanyl, as well as fentanyl analogs (chemical variations of fentanyl) that have been combined with heroin sold to opioid abusers. One extremely potent fentanyl analog, called *carfentanil*, has been estimated to be as much as 5,000 times more potent than heroin itself. Carfentanil is used as a tranquilizer for elephants and other large animals, but it has never been intended to be consumed by humans.[7]

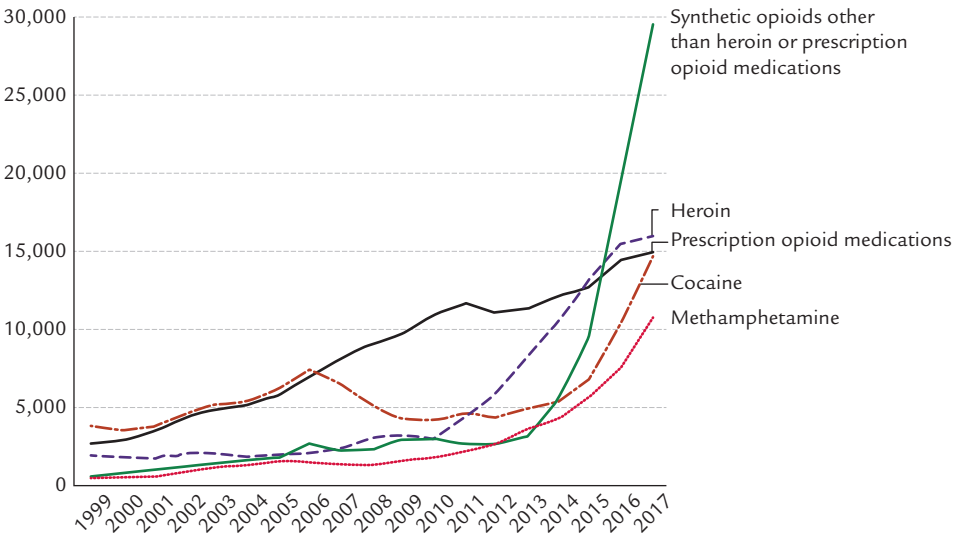


FIGURE 1.4

Drugs involved in U.S. overdose deaths, 1999–2017.

Source: National Institute on Drug Abuse (revised September 2017). Overdose death rates. Accessed (March 12, 2018) https://www.drugabuse.gove/relate-topics/trends-statistical/overdose-death-rates.

PORTRAIT

From Oxy to Heroin: The Life and Death of Erik

Erik lived in a suburban Long Island, New York community, and heroin killed him in 2008 at the age of 19. His mother, Linda D., never imagined what she was up against. "You worry," she has said, "about them smoking pot. You worry about them driving recklessly. You worry about them not using their seat belt. You worry about that phone call in the middle of the night. You don't worry about heroin. Because it didn't exist in my mindset."

In the last few years, the reality of heroin in the suburbs and small towns of America, previously considered to be immune from its deadly reach, has hit home with a sudden and unexpected vengeance. As a director of a local drug-counseling center has expressed it, "They're starting younger, they're starting with more substances, they have better access, everything is cheaper, and they have more money." You would call a perfect storm. Heroin arrests have doubled; rehabilitation-facility admissions of those 21 and under for prescription pain reliever dependence have tripled or quadrupled in many cases.

In the case of Erik, it began after an emergency appendectomy with a prescription for Vicodin. Erik gradually entered into a shadowy world of drug-taking behavior. Finding new supplies of Vicodin, then shifting to OxyContin, was easy. "It sounded grimy and sleazy," a teenager would say in reference to her own dependence on prescription pain relievers, "but at the time it was just what I did. Everyone knows someone who can get them for you."

At some point in early 2008, according to Linda, "The oxys dried up." Erik turned from pills to heroin. "It started at a party," she has said, "Someone said to him, 'Oh, try this.'" By May, Linda and her husband realized Erik was using heroin. In the weeks that followed, they tried to convince him to get help. The family's insurance covered Erik's first trip to a rehabilitation facility in update New York, but when Erik left after three days, they told the family that he had used up their insurance company's "once in a lifetime" rehabilitation coverage. They tried to convince public hospitals to admit Erik, but he was denied. In the meantime, Erik's parents were finding injection needles around the house and discarded rubber tubing. They desperately tried to cobble together funds to pay for rehabilitation, but they didn't succeed in time. Erik died in July.

If Erik had rejected his parents' efforts to get him help, they would have faced considerable legal obstacles. In New York State, no one, even a minor, is required to get treatment for substance abuse. Parents can petition a county probation department to have a drug-abusing child designated as a Person in Need of Supervision (PINS), but a court order has to be issued by a judge for a PINS child to be admitted for treatment. Even then, the child may leave at any time regardless of medical advice to stay.

Sources: Alter, S. (2009, November 12). Push for heroin help. *Newsday*, p. A5. Archibold, R. C. (2009, May 31). In heartland death, traces of heroin's spread. *The New York Times*, pp. 1, 24. Lefkowitz, M. (2009, June 14). Heartbreak of addiction hits home. *Newsday*, pp. A4–A6. Muhuri, P. K.; Gfroerer, J. C.; and Davies, C. (2013, August). Associations of nonmedical pain reliever use and initiation of heroin use in the United States. *CBHSQ Data Review*. Rockville, MD: Substance Abuse and Mental Health Services Administration. Deutsch, K. (2013). Thriving online marketplace. *Newsday*, p. A3.

Detailed information regarding recent developments in opioid abuse is discussed in Chapter 9.

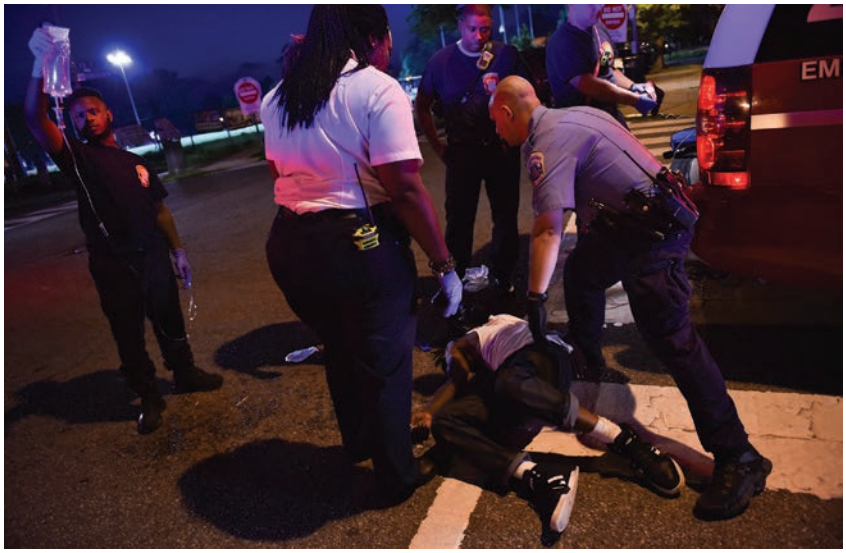
Understanding Chronic Drug Toxicity: How Many Drug Users?

The statistics regarding hospital emergencies and overdose deaths are staggering and disturbing, but we are speaking only of the occasions resulting from *acute* drug toxicity. In order to evaluate the impact of **chronic toxicity** as well, it is important to examine the numbers of individuals who are drug users over an extended period of time.

We would not be so concerned about acute or chronic toxicity levels of psychoactive drugs if we lived in a society in which very few or any individuals were engaged in that form of behavior. If a drug were so toxic (in other words, extremely poisonous), no one except individuals attempting suicide or exposed to that drug by accident would take it. Drug toxicity in that case would affect relatively few people. Unfortunately, surveys of prevalence rates with regard to major psychoactive drugs indicate substantial numbers of drug users and therefore substantial potential for the incidence of drug toxicity.

Prevalence rates will be examined here in two ways. First, the degree of recent exposure to specific drugs will be assessed by the prevalence rate of drug use during the past year. Second, the degree of current drug use will be assessed by the prevalence rate of drug use during the past month. In general, prevalence rates can be thought of as a "multiplier" that allows us to gain a rough estimate of the impact of drug toxicity on our society as a whole. How many people have been or are presently engaging in drug-taking behavior?

chronic toxicity: The physical or psychological harm a drug might cause in the course of drug use over an extended period of use.



Dealing with drug-related emergencies is a continual challenge for emergency medical service (EMS) crews.

Credit: Radius Images/Alamy Stock Photo

Prevalence Rates of Drug Use in the United States

Naturally, there are problems in obtaining a full picture of drug-taking behavior in America today. Since we cannot conduct large-scale random drug testing, the only alternative is simply to ask people about their drug-taking behavior through self-reports. We encourage honesty and arrange the data-collection procedure so as to convince the respondents that their answers are strictly confidential, but the fact remains that any questionnaire is inherently imperfect because there is no way to verify the truthfulness of what people say about themselves. Nevertheless, questionnaires are all we have, and the statistics on drug use are based on such survey measures. Comprehensive reports of the prevalence rates of many forms of drug use among Americans across the life span, referred to as the National Survey on Drug Use and Health (NSDUH), are issued on an annual basis by the U.S. Department of Health and Human Services. Reports on prevalence rates specifically among secondary school students, as early as eighth-graders, college students, and young adults, are issued on an annual basis through the Monitoring the Future (MTF) program at the University of Michigan.

We begin with NSDUH statistics related to current levels of illicit drug use in the U.S. population at large, and more detailed statistics for specific age groups within that population. Current drug use is defined as any drug use within the previous month. Five major drugs will be highlighted: heroin, cocaine, methamphetamine, hallucinogens, and marijuana. It should be noted that marijuana is included among illicit drugs surveyed in the NSDUH data, owing to the official stance of the U.S. federal government with respect to marijuana.

Illicit Drug Use among Individuals Aged 12 and Older

Figure 1.5 shows that between 28 and 29 million Americans, 12 years or older were current illicit drug users in 2016. This number accounts for about one in ten individuals in this population.[8]

Figure 1.6 shows the prevalence of current illicit drug users in age groups 12–17, 18–25, and 26 years or older in 2016. It is clear that the greatest number of current drug users were between 18 and 25 years of age.[9]

Specific prevalence rates in 2016 with regard to five major drugs among Americans, 12 years or older, as well as among individuals in three age groups are shown in Table 1.1. It is apparent that marijuana users account for about 84 percent of the total number of illicit drug users in the United States (as defined by the U.S. federal government). Among Americans aged 12 or older, cocaine use in 2016 outnumbered heroin use by about four to one. Since the number of heroin overdose deaths in 2016 was greater

Quick Concept Check 1.1

Understanding Margins of Safety

Check your understanding of the concept, margin of safety, by answering the following questions.

The following seven drugs have been studied in large populations of laboratory animals and the LD1 and ED99 dosages for each drug have been established.

	LD1	ED99
DRUG A	100 mg	50 mg
DRUG B	40 mg	2 mg
DRUG C	500 mg	10 mg
DRUG D	35 mg	5 mg
DRUG E	140 mg	20 mg
DRUG F	150 mg	1 mg
DRUG G	150 mg	10 mg

Rank order Drugs A through G in terms of their margins of safety, from the greatest margin of safety (safest) to the smallest margin of safety (least safe). Determine which drugs might be "tied" in their margins of safety.

Answer: The correct rank order is Drug F (safest), Drug C, Drug B, Drug G, Drugs D and E (tied), and Drug A (least safe).

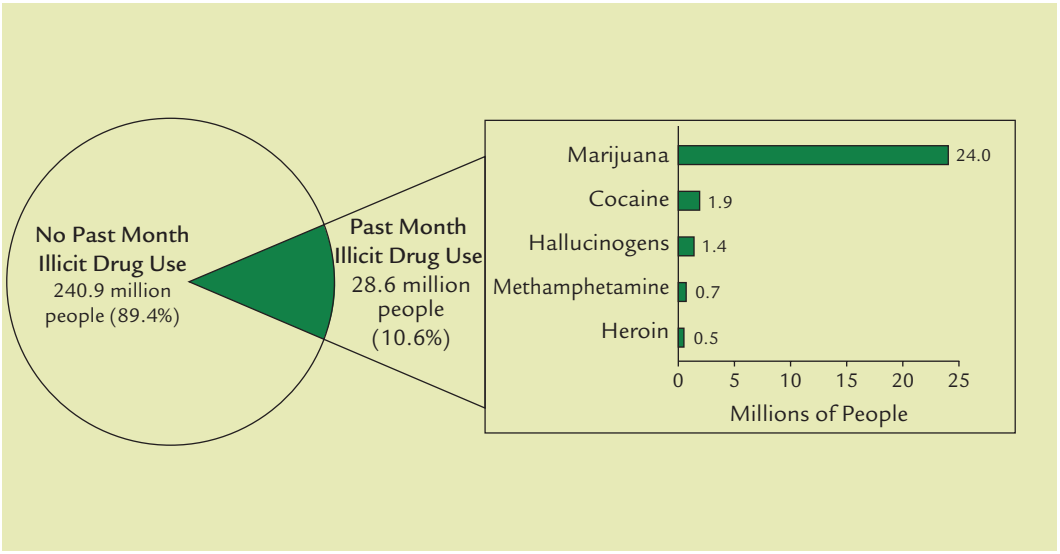


FIGURE 1.5

Numbers of current illicit drug users among individuals aged 12 or older in 2016.

Source: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration (2017, September). *Key Substance Use and Mental Health Disorders in the United States. Results from the 2016 National Survey on Drug Use and Health.* Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Figure 15.

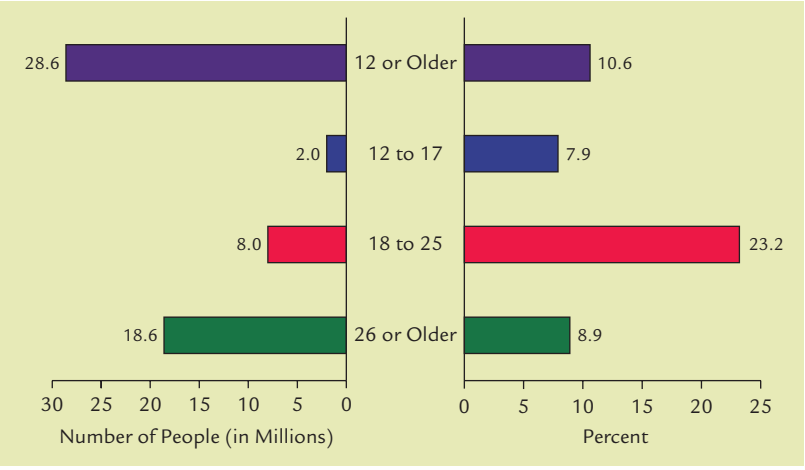


FIGURE 1.6

Percentages of current illicit drug users among individuals aged 12 or older and age group in 2016.

Source: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration (2017, September). *Key Substance Use and Mental Health Disorders in the United States. Results from the 2016 National Survey on Drug Use and Health.* Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, Figure 16.

than cocaine overdose deaths in 2016, a relative judgment of heroin toxicity relative to cocaine toxicity can be made. Since heroin overdose deaths in 2016 outnumbered cocaine overdose deaths among far fewer individuals, we can conclude that heroin use carries a substantially higher level of drug toxicity than does cocaine use. In other words, in relative terms, heroin is by far the more dangerous drug.[10]

Illicit Drug Use in Special Populations

Since 1975, the Monitoring the Future (MTF) project at the University of Michigan has provided detailed information about drug use among subpopulations in the United States that include three levels of secondary school students (eighth, tenth, and twelfth graders) and college students. The advantage of surveying secondary school students from year to year is that we are able to examine trends in adolescent drug-taking behavior over time and compare the prevalence rates for one drug relative to another over the years. We can assume that the degree of overreporting and underreporting stays relatively constant over the years and does not affect interpretation of the general trends. Additionally, it is possible to predict future changes in prevalence rates among high school seniors based upon present changes in prevalence rates among eighth and tenth graders, since these students will progress to higher grades in succeeding years (based on the "cohort effect" in survey research).

TABLE 1.1

Current illicit drug users and prevalence rates in 2016 among Americans, 12–17, 18–25, and 26 or older.

DRUG	AGE			
	12 or older	12-17	18-25	26 or older
Heroin	475,000	3,000	88,000	383,000
	0.2%	<0.1%	0.3%	0.2%
Cocaine (including crack cocaine)	1,900,000	28,000	532,000	1,300,000
	0.7%	0.1%	1.6%	0.6%
Hallucinogens (including LSD)	1,400,000	114,000	668,000	608,000
	0.5%	0.5%	1.9%	0.3%
Methamphetamine	667,000	9,000	65,000	594,000
	0.2%	<0.1%	0.2%	0.3%
Marijuana	24,000,000	1,600,000	7,200,000	15,200,000
	8.9%	6.5%	20.8%	7.2%

Source: Center for Behavioral Health Statistics and Quality (2017, September). *National Survey on Drug Use and Health. Illicit drug use in the past month.* Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.

To examine various degrees of drug use, MTF questions are phrased in four basic ways:

1. Whether an individual has ever used a certain drug in his or her *lifetime*. The percentage of those saying "yes" is referred to as the lifetime prevalence rate.
2. Whether an individual has used a certain drug *over the past year*. The percentage of those saying "yes" is referred to as the annual prevalence rate.
3. Whether an individual has used a certain drug *within the past 30 days*. The percentage of those saying "yes" is referred to as the past-month prevalence rate and is equivalent to the designation of "current drug use" in the NSDUH surveys.
4. Whether an individual has used a certain drug *on a daily basis during the previous 30 days*. The percentage of those saying "yes" is referred to as the daily prevalence rate.

These questions distinguish three important degrees of involvement with a given drug. The first question focuses on the extent of experimentation, referring to individuals who may have taken a drug only once or twice in their lives but have stayed away from it ever since. The second and third questions focus on the extent of current but moderate drug use. The fourth question focuses on the extent of heavy drug use.

Illicit Drug Use among Secondary School Students

A graph of year-to-year changes in annual prevalence rates for illicit drugs among U.S. high school seniors since the inception of the Monitoring the Future program in 1975 (Figure 1.7) resembles something of a roller-coaster ride. In 1975, the statistics were looking quite scary. By the end of the 1970s, prevalence rates for illicit drug use had reached historically high levels. In 1979, about one-half of high school seniors reported smoking marijuana or using an illicit drug of some kind in the past year. At that time and continuing into the mid-1980s, 12 percent (one in eight seniors) reported using cocaine or crack cocaine in the past year. Fortunately, annual prevalence rates for illicit drug use among high school seniors showed a steep decline through the 1980s, ending at a historically low level (27%) around 1992. In other words, illicit drug use had dropped by about 50 percent. But at that point, a dramatic reversal occurred. Prevalence rates took a sharp upward turn during the decade of the 1990s. The bottom line is that, in terms of illicit drug use in this demographic group, the situation in 2017 remains somewhere between the worst of times (in 1979) and the best of times (in 1992).

There is optimism that prevalence rates among seniors might decline from present levels in the near future. The reason is that the annual prevalence rate for illicit drug use among eighth graders in 2017 declined from the previous two years (from 15 percent to 12–13 percent). Since it is likely (though not certain) that the present drug-taking inclinations of eighth graders will continue over their succeeding high school years, we might be seeing a decline in illicit drug use among seniors reporting in 2021.[11]

Illicit Drug Use among College Students

According to the MTF survey, college students reported in 2017 a higher annual prevalence rate (42%) in the use of illicit drugs in general, relative to high school seniors. As is the case with other surveys, illicit drug use was clearly dominated by marijuana smoking. Table 1.2 shows the lifetime, annual, and 30-day prevalence rates among college students with respect to five major types of drugs: the use of heroin, cocaine, hallucinogens, methamphetamine, and marijuana.[12]

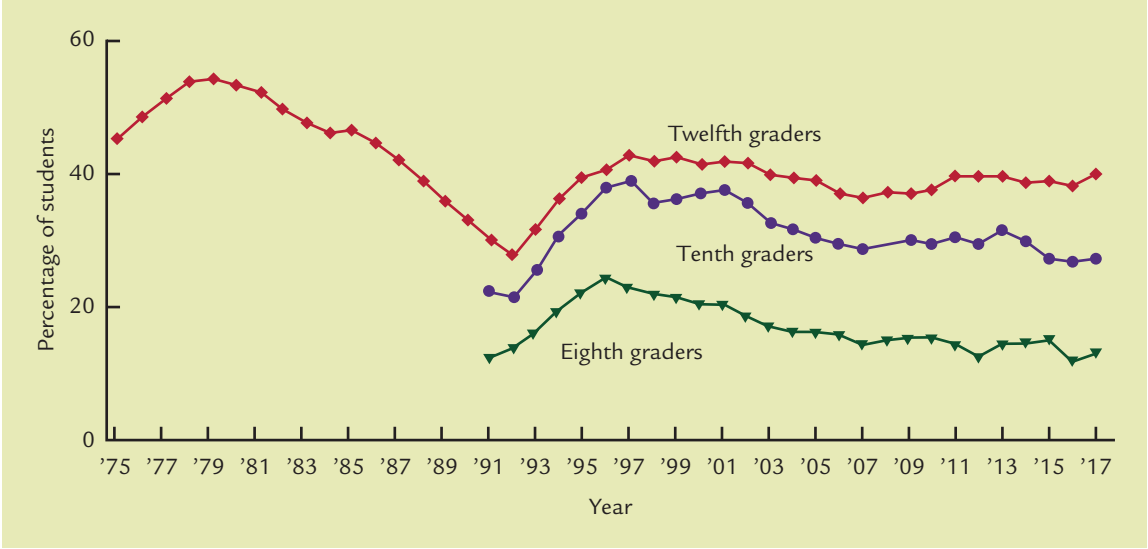


FIGURE 1.7

Trends in annual prevalence of illicit drug use among eighth, tenth, and twelfth graders.

Note: Updated statistical information from the University of Michigan survey is available at the end of December of each year through the Web site: http://www.monitoringthefuture.org.

Source: Based on data from Miech, R. A.; Johnston, L. D.; O'Malley, P. M.; Bachman, J. G.; Schulenberg, J. E.; and Patrick, M. E. (2018). *Monitoring the future: National survey results on drug use. 1975-2017, Vol. I: Secondary school students.* Ann Arbor, MI: Institute for Social Research, The University of Michigan, Table 4-1b.

TABLE 1.2

Prevalence rates (in percentages) for six illicit drugs among college students, aged 19–22, in 2017.

	EVER IN LIFETIME	IN PAST 12 MONTHS	IN PAST 30 DAYS
Heroin	0.1	<0.1	<0.1
Cocaine	6.5	5.0	1.3
Hallucinogens	7.2	4.0	1.2
Methamphetamine	0.6	0.4	<0.1
Marijuana	50.5	38.3	21.2

Note: For more current information, consult the Web site for the Monitoring the Future study: http://www.monitoringthefuture.org.

Sources: Based on data from Schulenberg, J. E.; Johnston, L. D.; O'Malley, P. M.; Bachman, J. G.; Miech, R. A.; and Patrick, M. E. (2018). *Monitoring the future: National survey results on drug use, 1975–2017, Vol. II: College students and adults aged 19–55.* Ann Arbor, MI: Institute for Social Research, The University of Michigan, Tables 2-1, 2-2, and 2-3.

Quick Concept Check 1.2

Understanding Prevalence Rates of Drug Use in the United States

Check your understanding of prevalence rates of drug use in the United States by marking the following statements as true or false.

1. The MTF survey conducted by the University of Michigan represents drug use information from all 17- to 18-year-old individuals in the United States.
2. The trend in illicit drug use from the early 1980s to the present has been a steady decline.
3. Prevalence rate for marijuana use among college students is less than the prevalence rate among high school seniors.
4. From the cohort data in the MTF survey, it is possible to predict that the prevalence rate for illicit drug use among high school seniors in 2021 will be substantially higher than the prevalence rate reported in 2017.
5. Lifetime prevalence rates are indications of the most extreme involvement with illicit drugs.

Answers: 1. false 2. false 3. false 4. false 5. false

The Problem of Drug Accessibility through the Internet

One of the current drug-related problems in America today, and one of the major challenges for law enforcement agencies, is the easy accessibility to illicit drugs through Internet Web sites, where drug transactions can be made with considerably greater anonymity and ease than had ever been possible. According to law enforcement officials, Internet transactions on these sites are accessed through special browsers with purchases made with virtual, difficult-to-trace currencies such as bitcoins, and delivered through the ordinary mail. The shadowy world of Internet trade is referred to as the "Dark Web."

In 2013, authorities took down the most notorious online marketplace for drugs, known as the Silk Road (see Drug Enforcement … in Focus), but recently a great number of other Web sites have taken its place. One of the leading markets of this kind reportedly comprises as many as 23,000 listings for opioids and more than 4,000 for fentanyl alone, along with a wide range of pills, powders, and nasal sprays. The distribution of the powerful opioid, fentanyl, has been particularly suited for Dark Web transactions since a quantity of fentanyl sufficient to get nearly 50,000 people high can fit into a standard first-class envelope.

Presently, tens of thousands of consumers are estimated to have access to these sites. While arrests are continually

Drug Enforcement . . . in Focus

Dealing with High-Tech Drug Dealing: Policing the "Dark Web"

In October 2013, the FBI in conjunction with the Drug Enforcement Administration succeeded in shutting down an online Internet marketplace called Silk Road. From February 2011 to October 2013, Silk Road was available as a Web site for Internet customers to buy a range of illicit drugs (among other items such as weapons) in an anonymous and untraceable transaction. Silk Road users could access the Web site using encrypted software that hid their personal computer IP addresses. As a result, they could not be identified. Money transactions were accomplished via Bitcoins, a digital form of currency that could be purchased online with real money. Buyers were instructed to have shipments delivered to post office boxes or locations other than their home. When deliveries were completed, Bitcoins were transferred from buyer to seller through a secure escrow account on the site. At the time it was shut down, Silk Road was estimated to have 900,000 active users and annual sales worth $30 million. The FBI had identified Silk Road as the most sophisticated and extensive criminal marketplace on the Internet.

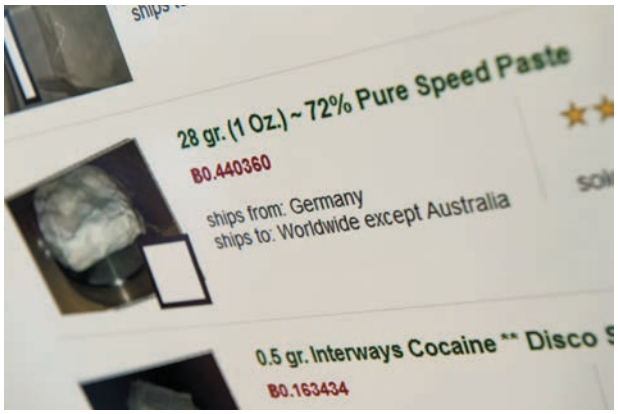
From a criminal justice perspective, here was an example of the difficulty in keeping up with present-day technologies that, while originally developed for legitimate applications, could be exploited for carrying out illegal transactions. Department of Justice and Postal Service authorities struggled to track down the server location of Silk Road and prosecution proceeded slowly, until the owner, 29-year-old Ross William Ulbricht, made a simple mistake. According to court records, the U.S. Customs and Border Protection agency had intercepted at the Canadian border a package of allegedly forged identification documents containing Ulbricht's photograph. More than 100 undercover purchases through Silk Road had been made by authorities, as they built a criminal case.

After the original Silk Road was closed down, however, Web sites similar to Silk Road, collectively referred to as the Dark Web, took its place. Marketplace sites such as Agora, White Rabbit Anonymous, Silk Road 2.0, Outlaw Market, and Evolution made use of increasingly sophisticated encryption technology to allude law enforcement agencies in their effort to identify the customers involved. In 2014, the number of illegal drug listings on 10 of the largest online drug markets had risen to more than 40,000, twice the number in the previous year.

In late 2014, an international raid jointly conducted by cybercrime units of Europol and federal law enforcement agencies in the United States succeeded in closing down Silk Road 2.0 and as many as 400 other Web sites, as well as arresting the man behind the operations of Silk Road 2.0 and some associated individuals in Europe.

Sources: Deutsch, K. (2013, October 3). Drug mart shut. *Newsday,* p. A3. Deutsch, K. (2013, September 23). High-tech drug dealers: Sources say Feds are probing. *Newsday,* p. A3. Segal, L. (2013, November 6). How the silk road was reborn. *CNN Money*. Accessed from: http://money.cnn.com/2013/11/06/technology. Wakefield, J. (2014, November 7). Huge raid to shut down 400-plus dark net sites. *BBC News Technology*. Accessed from: http://www.bbc.com/news/technology-29950946.

being made, the technological tools that have made the Dark Web possible in the first place are so widely available that it is unlikely that Internet accessibility of illicit drugs will be completely curtailed anytime soon. Often, sites are taken down for only a matter of days before they reappear under a new name or format. As a former federal prosecutor has put it, "It's only going to increase, and increase the types of communities and markets that might not have had as easy access before."[13]



A screen shot of the now-defunct Web site "Silk Road 2.0," showing various items available for sale.

Source: U.S. Department of Justice, Washington, D.C.

Summary

Understanding Drugs and Society

- Psychoactive drugs are those drugs that affect our feelings, perceptions, and behavior.
- An understanding of drugs and society requires an examination of the impact of our society on drug-taking behaviors as well as an examination of the impact of drug-taking behaviors on society. In the first case, it is important to consider the biological, psychological, and social risk factors that increase the likelihood of drug-taking behavior. In the second case, it is important to consider the consequences of drug-related crime and other forms of antisocial behavior. Agencies within the Department of Justice focus on reducing the negative impact of drug-taking behavior.

Definitions and Distinctions

- Drug use is considered either instrumental or recreational, depending on the intent of the user. Designation of drugs as illicit (illegal) or licit (legal) is dependent upon the society in which drug use occurs.
- Drug misuse refers to cases in which a prescription or nonprescription drug is used inappropriately. Drug abuse refers to cases in which a licit (legal) or illicit (illegal) drug is used in ways that produce some form of impairment. Drug dependence refers to cases in which the individual has intense experiences in connection with drug use, such as feelings of drug craving, drug tolerance, and/or feelings of withdrawal when drug use has stopped.

The Problem of Drug Toxicity

- A drug's harmful effects are referred to as its toxicity. Acute toxicity refers to the physical or psychological harm a drug might present to the user immediately or soon after the drug is ingested, as measured by a drug's therapeutic index or margin of safety. The therapeutic index is computed as the ratio of the lethal dose for 50 percent of the population to the effective dose for 50 percent of the population. The margin of safety is computed as the ratio of a lethal dose for 1 percent of the population to the effective dose for 99 percent of the population.
- Chronic toxicity refers to harmful effects when drug use extends over a period of time. Assessments of the chronic toxicity of a particular drug include statistics on drug-related health consequences as well as socioeconomic costs. The impact of chronic toxicity for a particular drug on society needs to be evaluated in terms of the prevalence rate of use.

Drug-related Hospital Emergencies and Drug-related Deaths

- Acute toxicity associated with a major drug of abuse is reflected in the number of drug-related emergency-department (ED) visits and drug-related deaths. The statistics vary considerably from drug to drug and from year to year, making the nature of drug toxicity something of a "moving target." From 2015 statistics, heroin and other opioids have become the dominant source of drug toxicity, accounting for more than eight out of ten (84%) hospital emergencies.
- Lethal cases of drug overdose represent the leading cause of accidental death in the United States today and the leading cause of death among Americans under 50. The recent rise in drug overdose deaths in the United States has been dominated by opioid overdose deaths, specifically through the increased availability of illicit synthetic opioids such as fentanyl and fentanyl analogs.

Prevalence Rates of Drug Use in the United States

- Information concerning illicit drug use among the general population is reported in the annual National Survey of Drug Use and Health by the Department of Health and Human Services. Information concerning illicit drug use among subpopulations such as secondary school students and college students is gained through annual reports by the Monitoring the Future (MTF) program at the University of Michigan.
- Between 28 and 29 million Americans, 12 years or older, were current illicit drug users in 2016, as indicated by reports of drug use within the past month. Marijuana users (defined by the U.S. federal government as an illicit drug) accounted for about 84 percent of the total number of illicit drug users in the United States. Among Americans, 12 years or older, cocaine use in 2016 outnumbered heroin use by more than four to one.
- From 2000 to 2017, prevalence rates of illicit drug use among secondary school students have been fairly stable at a level of about 38–40 percent. College students reported in 2017 a higher annual prevalence rate (42 percent) in the use of illicit drugs in general, relative to high school seniors. As is the case with other surveys, illicit drug use in 2017 was clearly dominated by marijuana smoking.

The Problem of Drug Accessibility through the Internet

- One of the current drug-related problems in America today, and one of the major challenges for law enforcement agencies, is the easy accessibility to illicit drugs through Internet Web sites. Drug Web sites are accessed through special browsers, transactions are made with virtual, difficult-to-trace currencies such as bitcoins, and illicit drugs are delivered through the ordinary mail. The shadowy world of Internet trade is referred to as the "Dark Web."
- A prominent example has been the online Internet marketplace Web site, Silk Road, offering Internet customs a range of illicit drugs (among other items such as weapons) for purchase through anonymous and untraceable transactions. Silk Road was closed down by cybercrime units of Europol and federal law enforcement agencies in the United States in 2014.

Key Terms

acute toxicity, p. 8
biopsychosocial model, p. 3
chronic toxicity, p. 12
dose, p. 8
dose-response curve, p. 8
drug, p. 4
drug abuse, p. 6
drug dependence, p. 7
drug misuse, p. 6
drug-related ED visit, p. 10
effective dose (ED), p. 8
illicit drugs, p. 6
instrumental use, p. 4
lethal dose (LD), p. 8
licit drugs, p. 6
margin of safety, p. 10
psychoactive drugs, p. 3
recreational use, p. 5
therapeutic index, p. 9
toxicity, p. 8

Review Questions

1. Distinguish between brand names, generic names, and street names given of present-day drugs.
2. Distinguish between (a) instrumental and recreational drug use, (b) illicit (illegal) and licit (legal) drugs, (c) misuse, abuse, and dependence, and (d) drug use and substance use
3. Define the following: ED, LD, ED99, LD1, ED50, and LD50. Explain how these terms are used in the computation of a therapeutic index and a margin of safety for purposes of evaluating a particular drug's level of toxicity.
4. Summarize the 2015 estimates of hospital emergencies with respect to heroin, cocaine, hallucinogens, methamphetamine, and marijuana.
5. Summarize the current estimates of drug overdose deaths. In what way could you say that heroin is by far more dangerous than cocaine?
6. Summarize the general trends in the pattern of illicit drug use among high school seniors in the United States from 1975 to 2017.
7. Summarize the general relationship between drug use among college students, relative to that of high school seniors.
8. Why has it been particularly difficult for law enforcement to close down the Dark Web?

Critical Thinking: What Would You Do?

Suppose that you were a state legislator considering new regulatory laws with respect to psychoactive drugs. What would be your argument in favor of making a distinction between "hard drugs," such as heroin, cocaine, and methamphetamine, and "soft drugs," such as marijuana and hallucinogens? On what basis would you make such a distinction? What would be the counterarguments to this proposal? What considerations would be made with respect to federal regulations currently in place?

Endnotes

1. Adapted from Scott, S. (2017, December 17). The foster care system is flooded with children of the opioid epidemic. Interview with Juvenile Court Judge Marilyn Moores, Marion County, Indiana. *NPR Now*, WNYC Radio. Quotation of Judge Moores.in https://www.npr.org/2017/12/23/573021632/the-foster-care-system-is-flooded-with-children-of-the-opioid-epidemic.
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9. Center for Behavioral Health Statistics and Quality, Figure 16.
10. Center for Behavioral Health Statistics and Quality, Illicit drug use in the past month
11. Miech, R. A.; Johnston, L. D.; O'Malley, P. M.; Bachman, J. G.; Schulenberg, J. E.; and Patrick, M. E. (2018). *Monitoring the future: National survey results on drug use 1975–2017, Vol. I: Secondary school students*. Ann Arbor, MI: Institute for Social Research, The University of Michigan, p. 108.
12. Schulenberg, J. E., Johnston, L. D.; O'Malley, P. M.; Bachman, J. G., Miech, R. A.; and Patrick, M. E. (2018). *Monitoring the Future: National survey results on drug use, 1975–2017, Vol. II: College students and adults ages 19–55*. Ann Arbor, MI: Institute for Social Research, The University of Michigan, Tables 2-1, 2-2, and 2-3.
13. Popper, Nathaniel (2017, June 11). Drug trade rises in dark corners of the Internet. *The New York Times*, pp. 1, 19. Popper, Nathaniel (2017, July 7). Online bazaar for drugs goes dark, startling users. *The New York Times*, p. B4.

chapter 2

Understanding the Drug Problem in Global Perspective

After you have completed this chapter, you should have an understanding of the following:

- The nature of the global illicit drug trade
- The global problem of illicit drug toxicity
- The global illicit drug trade and criminal justice
- Trafficking of opioids and cocaine
- Trafficking of marijuana
- Trafficking of methamphetamine and other illicit drugs
- Drug trafficking as a moving target
- Illicit drug trafficking and social violence in Mexico
- International and transnational narco-terrorism

The darting eyes of the driver, his tight grip on the steering wheel as he began to cross the U.S.–Mexico border: sufficient telltale signs for the Customs and Border Protection officer on duty at the busy DeConcini Port of Entry in Nogales, Arizona, to be suspicious of someone with something to hide. Sure enough, the car carried a Mexican citizen with a border-crossing card, his wife, and two small children—and a load of illicit drugs. Four pounds of methamphetamine were found in the passenger's backrest and seven pounds of heroin between the engine and the dashboard. It was a relatively small seizure operation but repeated often during the day. In 2016, more than 300 pounds of heroin had been seized at the Nogales border point alone.

It has gotten so bad, according to the agents who spoke to me, smuggling operations so brazen that shipments would sometimes have visible markings identifying their cartel of origin. Earlier that morning, the letters "LEY" were spotted in black lettering on some heroin bricks that had been intercepted at the border the previous day. "Probably Sinaloa guys sending it through Chino Leya," said an agent in charge. He later explained that Chino

Leya was one of the drug distribution organizations in the Sinaloa Cartel, which controls the routes that run through Arizona, with destinations in Cleveland, New York, and New Jersey. Evidently, the drug traffickers didn't want their shipment to get lost in transit.

It was a typical day in the life of the Customs and Border Protection agents, small victories on a day-to-day basis, despite the acknowledgment that all their efforts accounted for only a very small percentage of drugs that would make it through the border without detection.[1]

Illicit drugs are a global problem and a global business. They are a global problem in that illicit drugs impact upon hundreds of millions of individuals in nations around the world, just as they impact upon Americans. In fact, some countries face problems that are more far-reaching, as we will see. It is clear that problems of acute and chronic toxicity arising from illicit drug abuse are the same no matter where in the world illicit drugs are found. Hospital emergencies, drug-related deaths, and conditions of substance abuse in general are facts of life everywhere. Illicit drugs are also a global business, in that illicit drugs are the products of an international commercial enterprise, referred to as the **global illicit drug trade**. Every day, this shadowy business manages to deliver sufficient supplies of illicit drugs to customers in practically every region of the world. Its operations rest upon an enormous and ever-changing drug-trafficking network that is sustained on brutality, opportunism, greed, and, in some countries, a continuing pattern of political corruption.

Estimates of the total worth of the global illicit drug trade range from $28 billion to $280 billion or upwards of $400 billion. Of that total, a minimum of $64 billion is estimated to be generated through U.S. drug sales alone.[2] Understandably, it is difficult to come up with exact figures, but it is safe to say that the global illicit drug trade has always been and will continue to be a financial success.

global illicit drug trade: An international business encompassing the cultivation, manufacture, distribution, and sale of illicit drugs in practically all regions of the world.

Given its success, however, outlets are needed for spending all that money. Drug trafficking is inherently a cash-intensive business, and hundreds of thousands to millions of dollars of cash proceeds must be somehow moved from point A to point B, placed into a formal banking system, or disguised as legitimate business earnings. In other words, illicit drug proceeds must be "laundered" in order to be realized as profits by drug-trafficking organizations, hence the term "money laundering." Historically, the term is derived from an early practice of American gangsters who owned chains of laundromats as a way of channeling their illegal profits through a legal business. Today, with such huge amounts of money involved, money laundering tactics need to be much more sophisticated. A number of methods are currently employed, including bulk cash smuggling, trade transactions in which proceeds are used to purchase consumer goods that are later resold individually for cash, and manipulations of formal banking procedures. International law enforcement authorities are continually challenged to circumvent these tactics (see Chapter 4).

Ultimately, financial success for the global illicit drug trade rests upon a steady demand for their products. In this respect, participants in the global illicit drug trade are no different from leaders of legitimate businesses. So long as demand stays high, suppliers will have the upper hand. Where are the customers for this enormous business enterprise? How many people worldwide are currently illicit drug users? How does the United States compare to other nations in this respect? And, most importantly, what is the extent of health-related problems in the world that result from the toxicity of illicit drugs?

Two international surveys provide information about prevalence rates of illicit drug use and associated health-related consequences of drug-taking behavior on a global basis. The first survey is the World Drug Report (WDP), compiled and published annually by the United Nations Office on Drugs and Crime (UNODC), an agency that coordinates

Numbers Talk. . .

60,000	The number of killings and disappearances of Mexico citizens over a six-year period as result of drug-related violence. Some estimates have been higher, up to 70,000 killings.
98	Percentage of drug-related murders and disappearances in Mexico that are never followed up or possible perpetrators hunted down. In some regions of Mexico, the percentage is 100 percent.
300,000	The estimated death toll in Colombia during the 10-year period (1948–1958) referred to as *La Violencia*.

Sources: AnimalPolitico (2013, July 17). Retrieved from http://www.animalpolitico.com/2013/07/98-de-los-homicidios-de-2012-en-la-impunidad/#axzz2ZJH5vQG5. (accessed in translation, September 1, 2013). Miroff, N. (2012, December 2). A new General in Mexico's drug war. *Newsday,* pp. A32–A33. Richani, N. (2002). *Systems of violence: The political economy of war and peace in Colombia.* Albany, NY: State University of New York Press, pp. 23–28. Second statistic, information courtesy of InsightCrime.org.

information from 98 countries on a variety of illicit drug-related issues.[3] The second survey is the European School Survey Project on Alcohol and Other Drugs (ESPAD), a survey of prevalence rates for illicit drug, alcohol, and tobacco use among adolescents 15–16 years old in 36 European nations. Since nearly all European nations prohibit the sale of alcohol and tobacco to minors in a similar way to that of the United States (see Chapters 13 and 15), prevalence rates in the ESPAD survey can be considered to reflect the prevalence of underage drinking and underage smoking as violations of regulations regarding alcohol and tobacco use, respectively.[4] ESPAD statistics can be compared to the 10th-grade student data in the Monitoring the Future study (Chapter 1). Together, the two surveys allow us a glimpse into the global picture of drug-taking behavior.

The Global Problem of Illicit Drug Toxicity

According to the UNODC, an estimated quarter of a billion people, approximately 5 percent of the global population aged 15–64, used drugs at least once in 2015. While the extent of drug toxicity experienced by so many people in the world can be difficult to fathom, a statistic has been devised that captures it in a single number. The **disability-adjusted life years (DALYs) statistic** refers to the years of "healthy life" lost as a result of premature death and disability caused by drug use, essentially an indicator of drug toxicity. In 2015, an estimated 28 million years of "healthy life" were lost worldwide due to drug use.[5]

The DALYs statistic provides a look at overall drug toxicity levels on a worldwide basis, but prevalence rates and drug toxicity vary considerably among nations and across drug types. One nation might have a high prevalence rate for Drug X and a low prevalence rate for Drug Y, while another nation might have a low prevalence rate for Drug X and a high prevalence rate for Drug Y. The consequences of drug toxicity for different drugs may vary from nation to nation as well. Fortunately, the World Drug Report breaks down the prevalence rates and toxicity levels for individual illicit drugs among individual nations.

Worldwide, approximately 190,100 drug-related deaths were reported in 2015. Table 2.1 shows the disproportionate share of the United States in this total, accounting for more than one in four cases (27 percent) in the world, despite representing only 5 percent of the world's population. Other nations such as the Russian Federation, the United Kingdom, and Canada experienced large numbers of drug-related deaths as well. In terms of the impact of drug-related cases themselves, you can look to the rate per million individuals who were affected in each country. Some countries reported fewer cases in 2015, but their impact nonetheless was significant. In Iceland, for example, 45 drug-related deaths were reported, but, due to a relatively small population, the impact on individuals in Iceland was nearly as great as the impact in the United States. Overall, opioids accounted for almost 12 million of the 28 million DALYs reported worldwide in 2015.[6]

TABLE 2.1

Drug-related deaths in 10 countries in 2015.

COUNTRY	NUMBER OF INCIDENCES	RATE PER MILLION IN POPULATION
Australia	1,808	116.2
Canada	2,394	104.5
El Salvador	568	160.1
Iceland	45	221.2
Kenya	1,387	56.1
Russian Federation	8,189	81.1
Sweden	765	124.5
United Kingdom	2,949	66.7
United States	**52,404**	**245.8**
Venezuela	197	55.3

Note: Marijuana is listed as an illicit drug due to its status in most countries as well as the federal government of the United States.

Source: United Nations Office on Drugs and Crime (2017). *World Drug Report 2017.* Vienna: United Nations Office on Drugs and Crime. Statistical tables.

The annual prevalence rates of four illicit drugs (heroin, cocaine, methamphetamine, and marijuana) in eight countries in 2015 are shown in Table 2.2. The prevalence rate for heroin in the United States (0.59 percent) was somewhat higher than the worldwide prevalence rate, though lower than that of the Russian Federation (1.44 percent), Jamaica (0.70 percent), and Nigeria (0.70 percent). Prevalence rates for cocaine in the United States and the United Kingdom were about seven times higher than rates reported worldwide. The United States reported about four times the worldwide prevalence rate in the use of methamphetamine and marijuana.

Clearly, marijuana is far and away the most frequently used drug among the four drugs listed in Table 2.2, with a worldwide prevalence rate of approximately 4 percent. Worldwide, there were approximately 183 million marijuana users, compared to 18 million heroin users, 37 million methamphetamine users, and 17 million cocaine users in 2015.[7]

European Prevalence Rates for Illicit Drugs, Alcohol, and Tobacco

While the World Drug Report provides information about worldwide illicit drug use in a population ranging from 15 to 64 years old, the focus of the ESPAD survey is on drug use among adolescents. The ESPAD statistics regarding lifetime prevalence rates for a wide range of drugs are

Disability-adjusted life years (DALYs) statistic: An index of the number of years of "healthy life" that would be lost as a result of premature death and disability caused by drug use.

TABLE 2.2

Annual prevalence rates (percentages) for drug use with respect to four illicit drugs in 2015.

COUNTRY	HEROIN	COCAINE	METHAMPHETAMINE	MARIJUANA
Bermuda	0.15	1.30	0.10	10.90
France	0.52	1.10	0.30	11.10
Israel	0.53	1.07	1.01	8.88
Jamaica	0.70	0.98	0.81	7.21
Nigeria	0.70	0.70	1.40	14.30
Russian Federation	1.44	0.23	0.39	3.49
United Kingdom	0.73	2.20	0.10	6.50
United States	**0.59**	**2.30**	**2.90**	**16.50**
Worldwide	**0.37**	**0.35**	**0.77**	**3.8**

Source: United Nations Office on Drugs and Crime (2017). *World Drug Report 2017.* Vienna: United Nations Office on Drugs and Crime. Statistical tables.

based on a sample of approximately 100,000 European students aged 15–16 years old, closely matched in methodology to the 10th-grade sample of American students as reported in the Monitoring the Future survey (Chapter 1). The average lifetime prevalence rates for illicit drugs, heroin, cocaine, methamphetamine, marijuana, alcoholic beverages, and tobacco (cigarettes) are shown in Table 2.3, alongside comparable data for American 10th graders.

The bottom line is that American adolescents are less likely than their European counterparts to use cigarettes and alcohol, but more likely to use illicit drugs. The United States ranks lowest in the proportion of students using tobacco or alcohol, compared to students in 36 European countries. With respect to other forms of drug use, however, the United States ranks near the top of the list. Among European nations, levels of marijuana use in the Czech Republic (37 percent) and France (32 percent) are comparable to that of the United States.[8]

The Global Problem of New Psychoactive Substances (NPS)

A major concern among drug-control authorities around the world is the emergence of several hundred new drug formulations. While these formulations are related chemically to known illicit drugs, in many cases their behavioral effects are significantly greater. These new psychoactive substances are created in clandestine laboratories, principally in China, by making minor alterations in the molecular structure of known psychoactive compounds. The proliferation of these new drugs (sometimes referred to as "designer drugs") has greatly complicated drug-control efforts.

Of particular concern are NPS that are analogs of extremely potent opioid, fentanyl (see later in the chapter); others are identified by simply letters and a number. Examples of NPS of this type are AH-7921, U-47000, AH-21, and MT-45

TABLE 2.3

Lifetime prevalence rates for four illicit drugs (heroin, cocaine, methamphetamine, and marijuana), alcohol, and tobacco among users 15–16 years old in the United States, Europe, and two European countries.

DRUG/DRUG ACTIVITY	UNITED STATES (%)	EUROPE (%)	CZECH REPUBLIC (%)	FRANCE (%)
Illicit drugs	35	18	37	32
Heroin	1	1	1	2
Cocaine	3	2	1	4
Methamphetamine	1	2	1	1
Marijuana	31	16	37	32
Any alcoholic beverage	47	80	96	50
Tobacco (cigarettes)	20	46	66	63

Note: More recent statistics for users 15–16 years old in the United States are available (see Figure 1.7), but 2015 prevalence rates are entered here for comparable analyses to European counterparts.

Source: Based on data from The European Monitoring Centre for Drugs and Drug Addiction (2017). *The 2015 ESPAD report: Substance use among students in 36 European countries.* Stockholm: The European Monitoring Centre for Drugs and Drug Addiction, Tables 5, 6, 7a, and 7b.

Quick Concept Check 2.1

Understanding Prevalence Rates in America and Worldwide

Check your understanding of the annual prevalence rates in the U.S. adult population relative to the average worldwide by circling "Higher" or "Lower," as appropriate.

1. Heroin	Higher	Lower
2. Cocaine	Higher	Lower
3. Methamphetamine	Higher	Lower
4. Marijuana	Higher	Lower

Check your understanding of the lifetime prevalence rates among 10th graders in the U.S. population relative to the average among European youths of comparable age by circling "Higher" or "Lower," as appropriate.

5. Illicit drugs in general	Higher	Lower
6. Marijuana	Higher	Lower
7. Any alcoholic beverages	Higher	Lower
8. Tobacco (cigarettes)	Higher	Lower

Answers: 1. Higher 2. Higher 3. Higher 4. Higher 5. Higher 6. Higher 7. Lower 8. Lower

(see Chapter 9). It is as if a well-understood set of viruses that have been tracked over the years were now mutating into new forms. Between 2009 and 2016, 106 countries and territories reported to the UNODC that as many as 739 different NPS compounds had been introduced as new illicit drugs.

One NPS category, based on variations in the molecular structure of a group of compounds found in marijuana plants called *cannabinoids* (see Chapter 11), illustrates the challenges faced by drug-control officials. Soon after the synthetic cannabinoid JWH-018 (known as Spice or K2) appeared on the scene in 2010 as a new recreational drug, several countries placed it on their own prohibited-drug lists. It was not long, however, before another compound with similar psychoactive properties, referred to as JWH-073, took its place. At that point, JWH-073 was added to the prohibited-drugs list, only to be followed by further variations. Making matters worse, regulatory agencies in some countries have been relatively slow in their response to the emergence of NPS, allowing a foothold to be established among drug users before they can be officially banned.[9]

The Global Illicit Drug Trade and Criminal Justice

It is clear that prevalence rates for illicit drugs around the world constitute a substantial "demand" for the global illicit drug trade that continues to provide a "supply." Obviously, the "suppliers" are highly motivated to get their product to the customer, and they do so with great success, despite the concerted efforts of international drug-control authorities to thwart their operations. How does the global illicit drug trade do it? Where are the drug-trafficking routes that deliver illicit drugs to drug users? What is the extent of "collateral damage" brought on by the global illicit drug trade?

It would be an ideal situation if international drug-control authorities were able to identify, at any precise moment, all of the illicit drug-trafficking routes in the world and all of the means by which drugs are distributed. But unfortunately, two principal factors are working against them in this respect.

The first factor is the extraordinary agility on the part of the global illicit drug trade in adapting to changing law enforcement circumstances. Typically, drug-trafficking operations are highly mobile; operations can often be moved within hours, making it relatively easy to shift illicit drug activity to another location. One country might be dominant with respect to drug trafficking one year, while a neighboring country might be dominant the next year. The reality is that drug-trafficking patterns are in a constant state of flux, with drug-control agencies playing "catch up" time after time. In effect, updated maps of drug-trafficking routes cannot ever be completely accurate because the "ink never dries" fast enough before routes change again.

The second factor is the limitation in the ways that are available to law enforcement for keeping track of drug-trafficking activities. The principal method is to examine, on an ongoing basis, confiscated shipments of illicit drugs in drug-seizure operations and raids on illicit drug laboratories and distribution sites. While yielding information about drug trafficking, this approach is far from perfect. Confiscated drugs are by no means a random sample of the drugs involved in a specific drug-trafficking system. Drug seizures and laboratory raids may correlate with the *extent* of drug trafficking in a particular region, but the *quantity* of confiscated drugs may be related more to the intensity of drug-control campaigns in that region or else the ease by which drugs are intercepted by drug-control authorities. In other words, we cannot know the extent to which the magnitude of a drug seizure is related to law enforcement agents being clever or drug traffickers being stupid!

While we recognize that illicit drug-trafficking patterns can change, it is nonetheless useful to draw upon the information we have at our disposal in order to gain an understanding of the global forces at work. The focus here will be on the best-known international trafficking routes, past and present, in five categories: heroin, cocaine, marijuana, methamphetamine, and finally three other illicit drugs (LSD, PCP, and ketamine). In the past, a particular drug has had its own unique trafficking pattern. In recent years, however, there has been a growing trend toward "multitasking" on the part of the global illicit drug trade, with distribution systems designed to deliver multiple categories of illicit drugs through the same pipeline. As we will see, this is particularly the case with respect to present-day drug trafficking in Mexico.

The Trafficking of Heroin and Other Opioids

Opioids are a diverse group of drugs, some of them (such as heroin) being derived from morphine, the active ingredient in raw opium (see Chapter 9), and others (such as fentanyl) having similar "opiate-like" properties but synthesized entirely in the laboratory. The abuse of heroin and fentanyl or in combination represents the dominant opioid problems today (Chapter 1). We will take up the trafficking patterns of heroin and fentanyl separately, since they have distinct origins, histories, and routes of distribution.

Heroin, Turkey, and the "French Connection"

From the 1930s to the 1960s, heroin trafficking into the United States centered on a close association of American and Corsican Mafia organizations with clandestine heroin-producing laboratories in Marseille, France. Although most of the raw opium itself was produced and transported from Southeast Asia, Turkish farmers grew opium poppies as well. The main markets for these local farmers were the pharmaceutical companies that manufactured morphine and other opium-based medications for legitimate purposes, but part of their crop would be left to the side and later diverted to morphine laboratories operated by criminal groups in the area. Morphine would then be shipped to Corsican-controlled heroin laboratories in Marseilles. From Marseilles, the heroin would be transported to New York, where American Mafia groups controlled its distribution in major U.S. cities. The pattern of heroin trafficking during this period of time became known as the "French Connection."

By the late 1960s and 1970s, a series of successful "French Connection" prosecution cases, conducted by a coordinated team of international law enforcement agencies, had led to the demise of this heroin-trafficking system. The supply of opium to Marseilles was cutoff when production in Turkey was curtailed, beginning with the 1968 opium crop. Major traffickers were either captured and imprisoned by French and American authorities or killed by fellow criminals within their own organizations. Heroin trafficking shifted from France and Turkey to more direct sources in Southeast Asia and Southwest Asia.[10]

Golden Triangle: A once-dominant opium-producing region of Southeast Asia comprised the nations of Thailand, Burma (Myanmar), and Laos.

China White: A street name for heroin from the Golden Triangle nations of Southeast Asia.

Golden Crescent: A major opium-producing region of Southwest Asia, comprising Pakistan, Afghanistan, Turkey, Iran, and former regions of the Soviet Union.

FIGURE 2.1

The nations of the Golden Triangle.

Source: Public Radio International, Minneapolis, MN.

The Golden Triangle in Southeast Asia

In the 1960s and 1970s, the dominant source of heroin for the U.S. market was the so-called **Golden Triangle** of Southeast Asia, an area comprising the countries of Thailand, Burma (Myanmar), and Laos (Figure 2.1). Heroin from the Golden Triangle was usually sold as a white or off-white powder, and, considering its place of origin, was called **China White** on the street. Southeast Asian heroin was smuggled into the United States primarily via containerized maritime cargo from such locations as Taiwan and Hong Kong and often was concealed among legitimate commodities. The cargo shipments traveled to major ports of entry along the West Coast of the United States and western Canada, where they were transported eastward to cities such as Chicago and Detroit. Since the 1980s, however, the role of the Golden Triangle region as a source of heroin in the United States has greatly diminished as heroin trafficking to American users has shifted to sources in the Western Hemisphere. Today, direct Southeast Asian heroin markets are primarily in Asia and Australia.[11]

The Golden Crescent in Southwest Asia

Currently, the single largest source of heroin for *worldwide* consumption is the so-called **Golden Crescent** of Southwest Asia, an area comprising the countries of Pakistan, Afghanistan, Iran, and regions of the former Soviet Union such as Tajikistan and Kyrgyzstan. Within the Golden Crescent, the dominant player is clearly Afghanistan and, in particular, the southwest Afghan provinces of Farah, Hilmand, and Kandahar, next to the border with Iran and Pakistan. In years when crop yields are high, Afghanistan alone has the capacity to supply approximately 90 percent of the world's heroin; in years of relatively low crop yields, the percentage dips to about 75 percent, with other regions in

FIGURE 2.2

The nations of the Golden Crescent.

Source: Global Times.

Myanmar and Laos (part of the Golden Triangle) making up the extra quantities needed for the global marketplace.

Special units of the Drug Enforcement Administration, called Foreign-Deployed Advisory Support Teams (FAST), have been trained by U.S. Special Forces in Afghanistan since 2005 to blunt the impact of the country's heroin trade by destroying opium processing laboratories and targeting heroin traffickers. Raids by U.S. and Afghan counternarcotics units, such as an October 2016 seizure of more than 20 tons of heroin (the "largest known seizure of heroin in Afghanistan, if not the world" according to officials), reduced the flow of heroin trafficking money to the Taliban for their use in meeting operational expenses. Nonetheless, even raids of this magnitude have not been sufficient to stem the tide of heroin trafficking in the region. Interestingly, the reason given by opium farmers themselves for growing opium poppies remains essentially economic; less than 1 percent of the Afghan farmers claim that their decisions are dictated by the encouragement of the Taliban or other anti-government groups. A typical Afghan farmer makes 10 times more money from growing opium poppies than another other crop.[12]

Nasrullan Khan, Kandahar's deputy counter-narcotics officer, inspects a cache of opium and heroin seized in a recent raid.

Credit: Steve Chao, Al Jazeera.

Relatively little of the heroin from Afghanistan or other countries in the Golden Crescent region (Figure 2.2), however, is destined for the U.S. market. Nonetheless, owing to its importance with respect to heroin trafficking for the rest of the world, it is important to examine the ways in which heroin trafficking from this region is accomplished.

In recent years, three major trafficking systems for Golden Crescent heroin have been identified by international drug-control agencies: (1) a northern route, (2) a Balkan route, and (3) a southern route through East, West, and Central Africa. The northern route extends through Tajikistan, Kyrgyzstan, Uzbekistan, and Turkmenistan to Kazakhstan (formerly part of the Soviet Union) and the Russian Federation itself. The Balkan route is the principal trafficking corridor for Afghan heroin to sizable markets in the Russian Federation and Western Europe, extending through Iran (via Pakistan), Turkey, Greece, and Bulgaria. Judging from data gained through heroin seizures, a relatively minor but growing southern trafficking route extends from the East African nations of Benin and Tasmania to Nigeria with destinations in Western Europe. In the case of the southern route, Golden Triangle nations have traditionally supplied the bulk of the raw opium for processing, but in recent years the demands from Western Europe have increased to such an extent that "the African connection" now brings significant quantities of heroin from Afghanistan as well (see Figure 2.3 on page 28).[13]

Heroin Trafficking in Mexico and Colombia

At the present time, despite its dominant role in the worldwide heroin trade, the heroin-trafficking operations in Golden Crescent nations have little or no impact on heroin consumption in the United States. Instead, the dominant players in heroin trafficking to markets in the United States in the twenty-first century are the Western Hemisphere nations of Mexico and Colombia.

For many years, Mexican heroin was crudely processed with many impurities, resulting in a much-disparaged powder version (called brown heroin) that was, at the time, considered inferior to the more refined China White heroin coming out of Southeast Asia. The Mexican variety is typically black or brown in color and has a sticky consistency, hence its name **Black Tar** or "Tootsie Roll" on the street. Despite its darker color, Mexican heroin processing methods have "improved" so as to achieve considerably higher levels of purity. At the same time, street prices have dropped dramatically, so that Mexican heroin is both relatively strong and relatively cheap.

Black Tar: A form of heroin, generally brownish in color, originating in Mexico.

Although Mexico cultivates only 2–7 percent of the world's opium, Mexico's opium production is significant because virtually all the Mexican opium is converted into heroin and destined for the United States. Most of the opium in Mexico is grown by small, independent farmers known as *campesinos* in rural areas of Sinaloa, Chihuahua, Durango, and Guerrero. Typically, individual traffickers or trafficking organizations pay a prearranged price for the opium crop, the equipment used in harvesting, and food for the farmer's family. A middleman or broker then collects the opium and transports it to a clandestine laboratory for processing into heroin. Mexican heroin is smuggled into the United States primarily overland across the U.S.–Mexico border via private and commercial vehicles. Smaller quantities of Mexican heroin often are carried across the border by illegal aliens or migrant workers who hide the drugs in backpacks, in the soles of their shoes, or on their bodies.[14]

By global standards, Colombia produces relatively little heroin (less than 5 percent of the world's total estimated production). However, most of the heroin produced in Colombia is destined for the United States. At one time, heroin was transported from Colombia directly to the United States by couriers traveling on commercial flights from one of the Colombian airports to international airports in Miami, Atlanta, or New York. Couriers (known as "drug mules") often swallowed small pellets of heroin that had been placed in condoms or balloons, or wrapped in latex from surgical gloves. They also concealed heroin in body cavities, taped it to their bodies, or concealed it in their clothing or shoes. Larger quantities of heroin into the United States were smuggled by transporting the drug in suitcases containing heroin sewn into the seams of clothing. Alternatively, Colombian heroin traffickers recruited Mexican couriers to transport South American heroin into the United States through rural areas of Mexico then across the Mexico–U.S. border via private or commercial vehicles crossing at border checkpoints. As already noted, Mexico has since developed its own heroin production and trafficking system for both Mexican and Colombian heroin.[15]

Heroin Trafficking Today

At the present time, the global heroin trafficking network is a complex system with the Golden Triangle nations, Golden Crescent nations, and Mexico being the dominant suppliers for various destinations around the world. Heroin trafficking, originating in the Golden Crescent region and destinations in Western, Central and Southeastern Europe, and the Russian Federation, follows a variety of routes, including a circuitous "Southern route" that extends through and around Africa. The Golden Triangle distributes heroin through more localized routes into Central Asia and Australia. Finally, heroin from sources in Mexico and Colombia enters Mexico, then is transported into the United States, primarily through its southwest border (Figure 2.3).[16]

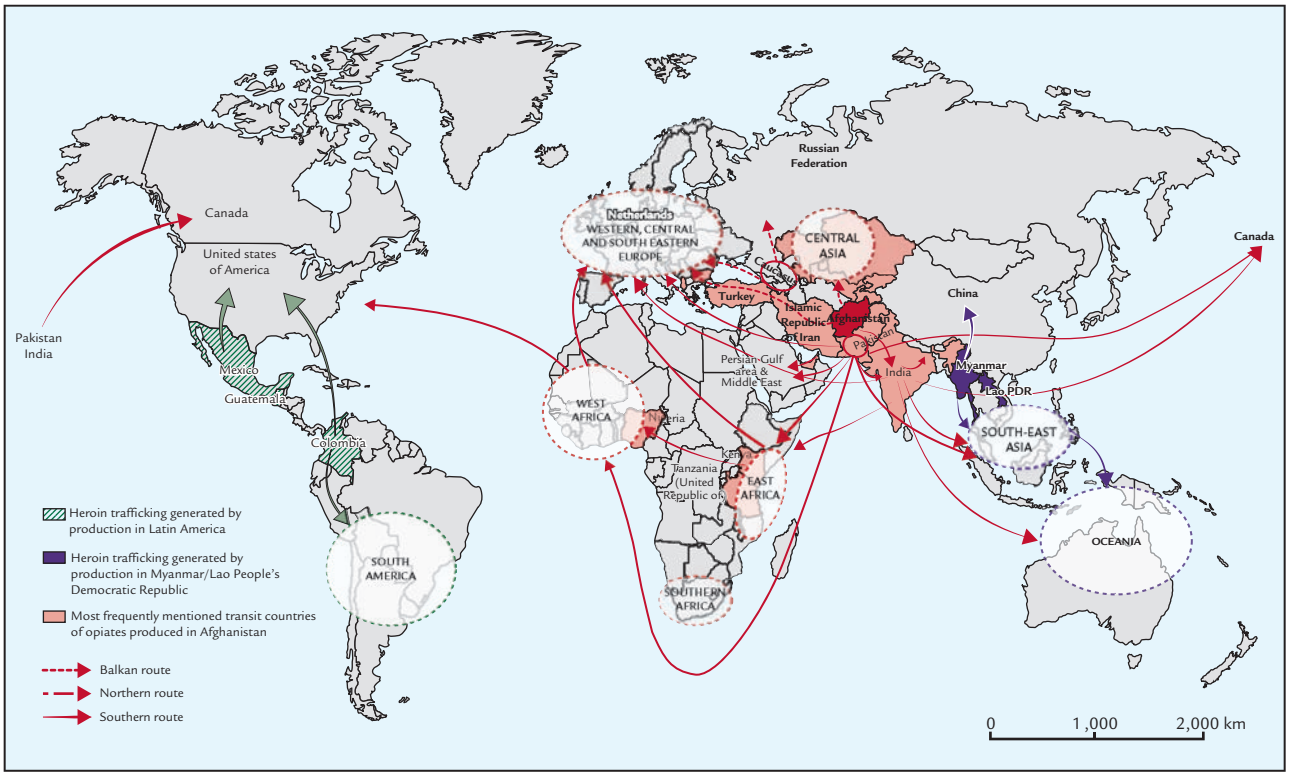


FIGURE 2.3

The complex heroin trafficking network, supplying the world.

Source: United Nations Office on Drugs and Crime (2017). *World Drug Report 2017.* Vienna: United Nations Office on Drugs and Crime. PowerPoint Slide 10.

The Trafficking of Fentanyl and Fentanyl Analogs

Fentanyl has been widely applied in clinical settings as a licit synthetic opioid drug, owing to its extremely strong analgesic and anesthetic properties (see Chapter 9). In its licit form, fentanyl has been diverted, on a small scale, by drug traffickers from the legitimate market to illicit use or sale. On a much larger scale, illicit fentanyl or precursors for manufacturing fentanyl is presently created in clandestine laboratories in China, then shipped directly to the United States via the U.S. Postal Service and other express mail services or shipped to Canada and Mexico for later transport across the northern and southwest borders. Wherever the final destination for fentanyl or fentanyl precursors, a variety of hotel rooms or private homes, known as "fentanyl mills," are typically employed for mixing fentanyl with heroin or pressing fentanyl into counterfeit pills that are intended to pass as legitimate prescription pain medications (Figure 2.4).

As noted earlier, illicit fentanyl is responsible for enormous increase in opioid-related overdose deaths in recent years. Adding to the dangers involved, a synthetic fentanyl analog called carfentanil, with a potency that is 100 times that of fentanyl and used on a legitimate basis only as a tranquilizing agent for elephants and other larger mammals, has recently entered the illicit drug market. According to reports of the Drug Enforcement Administration, mail-order shipments of carfentanil have been seized having markings that indicate Chinese points of origin. Destinations for these shipments have included Ohio and several other U.S. states on the East Coast from Rhode Island to Florida.

Until recently, adequate technology for the interdiction of opioids from overseas on a large scale has not been available. However, in 2018, the International Narcotics Trafficking Emergency Response by Detecting Incoming Contraband with Technology (INTERDICT) Act became law, authorizing the installation of thousands of newly developed portable drug-screening devices at major international

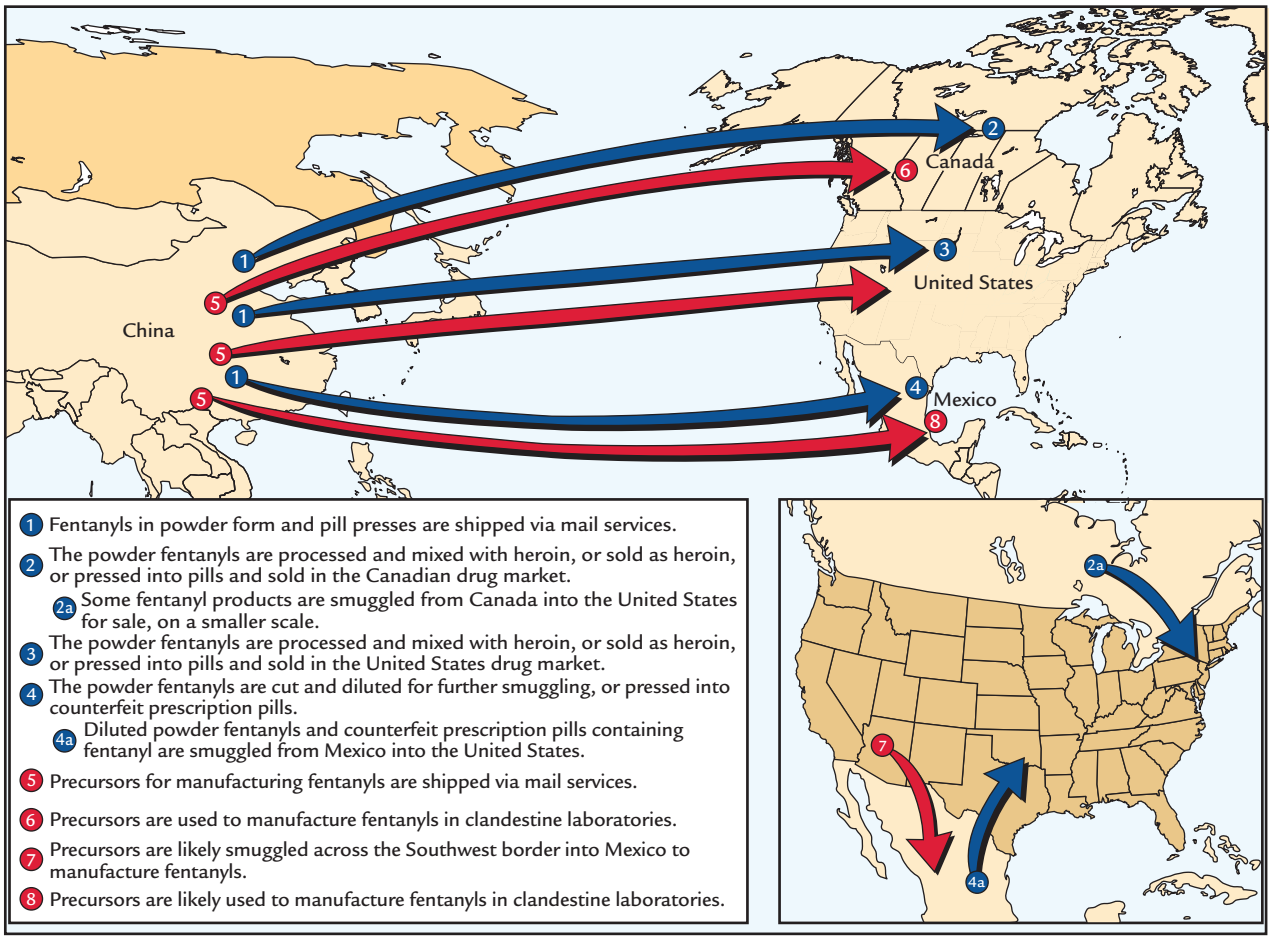


FIGURE 2.4

Trafficking routes for illicit fentanyl and fentanyl precursors.

Source: Drug Enforcement Administration (2017). *2016 National Drug Threat Assessment Summary*. Washington, D.C.: Drug Enforcement Administration, U.S. Department of Justice, Figure 83.

airports and international mail delivery centers that will be sensitive enough to detect fentanyl, fentanyl analogs, and other synthetic opioids. The law also authorizes the support of hundreds of scientists to analyze the data collected from these devices and determine the origin of the shipments and their intended recipients.[17]

The Trafficking of Cocaine

Cocaine is derived from the leaves of the coca shrub, grown in the high-altitude rain forests and fields that run along the slopes of the Andes in South America (see Chapter 10), commonly referred to as the Andean Region. Due to the volatility of the global illicit drug market, the country with the "distinction" of being the number-one coca producer in the world varies from year to year. At one time, virtually all the world's coca was cultivated in Bolivia and Peru, but frequent crop eradication campaigns resulted in a decline in coca production in these countries. In recent years, Colombia has become dominant in coca cultivation and the manufacture of cocaine. Cocaine is routed west into Europe through Colombian drug-trafficking organizations, while cocaine destined for the United States is routed through Mexico for further distribution across the Southwest border or else by air or sea (see Drug Enforcement ... in Focus in Chapter 10).

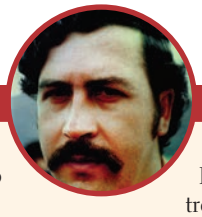
cartel: An organization centered on the manufacture, distribution, and/or sale of illicit drugs.

Medellin and Cali drug cartels: Two major Colombian drug cartels that controlled much of the illicit drug distribution in South America from the mid-1970s to the mid-1990s.

Until the early 1970s, Cuban organized crime groups controlled the importation of cocaine from Colombia into the United States, but, by the mid-1970s, control of the cocaine industry had shifted from Cubans to Colombians themselves. For the next two decades, its production and distribution would be under the control of well-organized Colombian-led criminal organizations (referred to as **cartels).** The most powerful organizations of this type were the **Medellin and Cali drug cartels** (named after cities in Colombia that were their home bases).

Prior to the advent of drug cartels in Colombia, cocaine smuggling had been on a small scale and quite primitive by today's standards. As the demand for cocaine in the United States exceeded supplies, however, more sophisticated trafficking methods were developed. The infamous Medellin Cartel led by Pablo Escobar (see Portrait) employed fleets of small airplanes loaded with cocaine in remote Colombian airfields. The huge profits gained from Medellin operations were invested in

PORTRAIT



Pablo Escobar: The Violent Life of the Former "King of Cocaine"

The criminal career of Pablo Escobar began in earnest at the age of 26 with his first drug bust. We can be certain that he had been in trouble before, but this was his first drug bust, an arrest for possession of 39 pounds of cocaine. What made this arrest unusual was that the arresting officer was later mysteriously murdered and as many as nine judges were so intimidated by death threats that they refused to hear the case. In the succeeding years, Escobar joined two other criminal entrepreneurs to form the Medellin Cartel, named after their home town. The cartel they created was to set the standard for its organizational discipline as well as the vicious brutality by which the cartel operated.

In a fleeting attempt to legitimize himself, Escobar at one point ran for political office. It may not be surprising that he won the election and became a member of the Colombian Congress. In effect, his intention was to gain immunity by being part of the government. His political career did not last very long, however, and soon Escobar returned to a more lucrative renegade status in Colombia.

In 1984, the Medellin Cartel controlled 80 percent of the Colombian drug trade in cocaine. Escobar's annual income exceeded $2.75 billion, placing him on the *Forbes* magazine listing of the wealthiest people in the world.

Violence and assassination were the tools of his trade. Police officers, judges, public officials, and journalists were his targets. Public bombings and drive-by shootings were commonplace. Three presidential candidates, the Colombian attorney general, more than 200 judges, 100 police officers, and dozens of journalists were murdered, their deaths attributed to Escobar and his cartel. A Colombian jetliner was bombed, resulting in 107 deaths. In 1990, Escobar offered a "bounty" of $4,000 (a huge amount by Colombian standards) for each police officer killed. In the following month, 42 police officers were murdered.

In 1991, the Colombian government offered immunity from prosecution and the use of extravagant facilities of a mountainside ranch if Escobar would turn himself in. He accepted this arrangement, though his criminal activities were merely directed from the ranch itself and the violence continued. When the government decided to move him from the ranch, Escobar was tipped off and escaped. What followed was the most famous manhunt in history, lasting for over a year. The Central Intelligence Agency (CIA) and the Drug Enforcement Administration (DEA) joined Colombian police in the chase. In 1993, a brief telephone call to his family was intercepted by authorities and telephone lines were severed, isolating Escobar (before the advent of cell phones) from communicating with the outside. A relatively small 17-men swat team surrounded his last stand. As he tried to escape from the rooftop, he was killed by a barrage of bullets. So ended the ignominious career of Pablo Escobar—the Colombian King of Cocaine.

Sources: Brooke, J. (1990, June 7). In the capital of cocaine, savagery is the habit. *The New York Times*, p. 4. Watson, R.; and Katel, P. (1993, December 13). Death on the spot: The end of a drug king. *Newsweek*, pp. 18–23.

increasingly sophisticated cocaine labs, better airplanes, and even a private island in the Bahamas where their planes could refuel. In the meantime, the Medellin Cartel became known as the prototype for the modern-day drug cartel with an organization that can be characterized as an onion-like layering of power and responsibility. Kingpins at the center directed operations, and groups of self-contained cells were managed by a small number of cartel managers. Each cell specialized in a different aspect of the drug business, such as production, distribution, smuggling, or money laundering. If police arrested members of one cell, a second or third cell would step up operations to fill the vacuum. Members of each of cells rarely were connected directly with any of the leaders of the cartel.

During his ascendency to power, Pablo Escobar and the other leaders of the Medellin Cartel set out to crush any opposition from law enforcement or the Colombian government by a campaign of terror and brutality. They were considered responsible for the murder of hundreds of government officials, police, prosecutors, judges, journalists, and innocent bystanders. Their flamboyant lifestyle, combined with their total disregard for human life, became their trademark.

In contrast, the Cali Cartel was more subdued in their operations, relying instead on political corruption over violence, conducting their business in a discreet and business-like manner, and reinvesting much of their profits from the illicit drug trade into legitimate businesses. The Cali Cartel relied heavily on political bribery for protection. At one point, the former president of Colombia, Ernesto Samper, and hundreds of Colombian congressmen and senators were accused of accepting campaign financing from the cartel. The Medellin Cartel relied on small airplanes and speedboats, whereas the Cali Cartel smuggled most of its shipments in large cargo ships, hiding the drugs in all types of legitimate cargo, from cement blocks to bars of chocolate. During the 1980s, the two cartels shared the cocaine-trafficking market into the United States, with the Medellin Cartel controlling the market in south Florida and the Cali Cartel controlling the market in cocaine in New York. The Cali Cartel later expanded into cocaine markets in Europe and Asia and through alliances with other organized crime groups such as the Japanese Yakuza.

By the mid-1990s, both cartels had met their downfall. Escobar himself was killed as he tried to escape in a final confrontation with Colombian police in 1993. The Cali Cartel outlasted the Medellin Cartel for a few years, but its leaders were eventually tracked down and arrested as well. The vacuum created by the demise of the Medellin and Cali Cartels led to a decentralization of cocaine trafficking in the region. Production and trafficking operations were taken over by smaller independent Bolivian, Peruvian, and Mexican organizations (called "cartelitos").

Present-day trafficking of Colombian cocaine is routed through Honduras, then on to Mexico, where the drugs are smuggled across the border into the United States in hidden

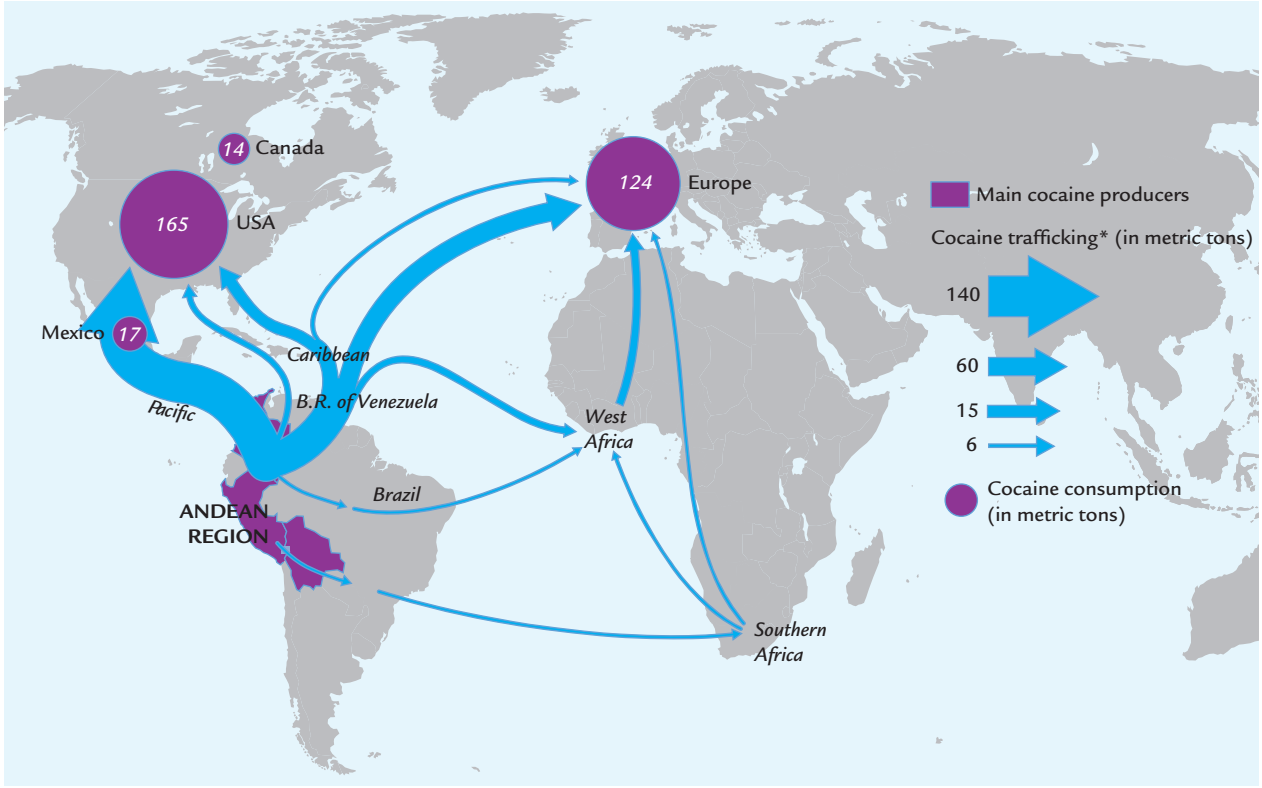


FIGURE 2.5

Patterns of cocaine trafficking from origins in the Andean Region of South America.

Source: United Nations Office on Drugs and Crime (2010). *World Drug Report 2010.* Vienna: United Nations Office of Drugs and Crime, Map 6, p.70.

compartments inside passenger vehicles or combined with legitimate cargo in commercial trucks. Other transborder routes have not been devised as well. In 2015, an underground drug tunnel was discovered that ran from Mexicali, Mexico, to the All-American Canal on the U.S. side of the border near Calexico, California. Thirty-one kilograms of cocaine were seized by U.S. federal agents. In October 2015, the Columbian government ended over 15 years of aerial eradication of coca because of concerns that the herbicide, glyphosate, used in killing coca plants, caused health problems among the community. The DEA assessment has been that, as a result of this action, coca production in Colombia has risen substantially and will continue to rise in the foreseeable future (Figure 2.5).[18]

The Trafficking of Marijuana

Mexico is currently the major foreign source for marijuana smuggled into the United States. Most of the marijuana trafficking, whether grown in Mexico or transported through Mexico from other locations such as Colombia, takes place at the U.S.–Mexico border.

A Mexican federal agent crawls through a hidden U.S.–Mexico border tunnel previously used to transport drugs from Mexico to the United States. See Drug Enforcement … in Focus for an update on DEA operations on the U.S.–Mexico border.

Credit: Sandy Huffaker/Getty Images News/Getty Images

Drug Enforcement . . . in Focus

Massive Drug Tunnels Underneath the Border

From 2008 to 2013, more than 75 cross-border drug-trafficking tunnels were detected and shut down (most of them in California and Arizona), reflecting a trend in getting illicit drugs into the United States from Mexico. An image comes to mind of tunnels barely wide enough for one man to crawl through (see the above-mentioned photo), and many of the tunnels have been indeed small. But some of them have been substantially bigger. In 2013, a massive and sophisticated tunnel was uncovered by the San Diego Tunnel Task Force, comprising agents with ICE, DEA, and Customs and Border Protection. Stretching the length of five football fields (about one-third of a mile) at a depth of about 35 feet, it was equipped with lighting, ventilation, and an electric rail system.

The tunnel connected a warehouse in Tijuana, Mexico, with a warehouse in the Otay Mesa industrial park south of downtown San Diego, just north of the Mexico border. It was estimated that it had taken years and tens of millions of dollars to build the tunnel, and it was just completed and ready for operation when federal agents descended (literally) and closed it down. More than eight tons of marijuana and several hundred pounds of cocaine were seized.

As it often happens in interdiction cases, careful surveillance and a few lucky breaks made the difference. Earlier in the week, a box truck was pulled over by police in a nearby town for traffic violations and three tons of marijuana was found concealed inside. Another five tons of marijuana was found in another box truck attempting to leave the Otay Mesa warehouse that turned out to be the "U.S. entrance" to the tunnel. The cocaine was also found in a van that authorities had earlier observed leaving the same warehouse site. While the tunnel uncovered in 2013 was immense, it was only the eighth large-scale drug tunnel that had been discovered in the San Diego area since 2006.

Despite the success of the operation, drug-control authorities expect that more tunnels will be built. Whether or not all of them will be detected is another matter. The tunnel uncovered in 2013 was the eighth large-scale drug tunnel discovered in the San Diego area since 2006.

Sources: Drug Enforcement Administration (2017). *2016 National Drug Threat Assessment Summary.* Washington, D.C.: Drug Enforcement Administration, U.S. Department of Justice. Feds shut down massive new cross-border drug tunnel south of San Diego. News Release, Drug Enforcement Administration, U.S. Department of Justice, Washington, D.C., October 31, 2013. Massive new cross-border drug tunnel shut down south of San Diego. News Release, Immigration and Customs Enforcement, U.S. Department of Homeland Security, Washington, D.C., October 31, 2013.

As a result of increased detection and monitoring of air traffic at the border, most of the marijuana that enters the United States from Mexico is smuggled by land. Drug-trafficking organizations operating from Mexico employ a wide variety of methods for smuggling marijuana when crossing the border, such as concealing the drug in false vehicle compartments located in doors, fuel tanks, seats, or tires. Marijuana often is hidden in tractor-trailer trucks among shipments of legitimate agriculture products, such as fruits and vegetables. Smaller quantities of marijuana can be smuggled across the border by horse, raft, and backpack. Once the marijuana is smuggled successfully across the border, traffickers consolidate the shipments at "safe houses" in southern U.S. cities. For large quantities of marijuana, transport through cross-border underground tunnels from Mexico to sites in California and Arizona has been a frequent option (see Drug Enforcement ... in Focus). From 1990 to 2016, 225 tunnels were seized by federal drug-control authorities.[19]

The Trafficking of Methamphetamine

During the early 1990s, methamphetamine reemerged as a popular recreational drug in the United States after an earlier period of popularity in the 1960s and 1970s. Methamphetamine has a similar chemical structure to that of amphetamine, but it has a more pronounced effect on the central nervous system (see Chapter 10). It is a white, odorless, and bitter-tasting crystalline powder and is commonly referred to as "speed," "meth," and "crank." The primary precursor chemicals for the manufacture of methamphetamine, ephedrine, and pseudoephedrine are obtained by purchasing inexpensive over-the-counter cough-and-cold medications. Throughout the 1970s and 1980s, the production and trafficking of methamphetamine were controlled by motorcycle gangs such as Hell's Angels and other groups. It has been estimated that between 1979 and 1981, money obtained from selling methamphetamine accounted for 91 percent of the Hell's Angels finances. Today, methamphetamine is still often referred to as "crank" because motorcyclists would hide the drug in the crankshafts of their motorcycles.

In the mid-1990s, drug-trafficking organizations based in Mexico and California began to take control of the production and distribution of methamphetamine, setting up large-scale "superlabs" that were capable of producing as much as 10 pounds of methamphetamine in a 24-hour period. The entry of these organizations into the methamphetamine trade resulted in a significant increase in the supply of high-purity, low-cost methamphetamine.

At the same time, supplies of methamphetamine appeared as produced by smaller independent "mom and pop" laboratories, obtaining the ingredients necessary for manufacture from retail and convenience stores. The rural regions of southern and midwestern U.S. states were particularly suited for small-time methamphetamine (meth) cookers with operations in trailers or mobile homes located in secluded heavily forested areas. Cooks would typically dispose of highly toxic wastes from the production process by dumping the material into a nearby lake, pond, or stream. The proliferation of laboratories was fueled by the expansion of Internet sites providing access to methamphetamine "recipes." At the time, these methamphetamine laboratories were described as "chemical time bombs" because of the frequent explosions and fires that were triggered by the highly flammable and toxic chemicals needed for methamphetamine production (see Chapter 10).

Since 2005, methamphetamine trafficking has shifted from the domestic meth labs to foreign sources. The federal Combat Methamphetamine Epidemic Act, passed in 2005, drastically reduced the availability of large quantities of pseudoephedrine, a necessary precursor chemical for meth production. As a result, domestic production of meth has decreased substantially, replaced by production in Mexican laboratories. In order to circumvent the scarcity of pseudoephedrine, Mexican traffickers have utilized an alternative precursor, Phenyl-2-Proponone (P2P). According to recent analyses by the Drug Enforcement Administration, 78 percent of meth samples seized by drug-control authorities show that P2P was the precursor used in the production process. Meth is then smuggled across the southwest border in liquid or powder form. Once across the border, clandestine laboratories in the United States convert meth into a crystalline form, referred to as *crystal meth* (see Chapter 10).[20]

The Trafficking of LSD, PCP, and Ketamine

Lysergic acid diethylamide (LSD) is a clear or white, odorless crystalline material that is soluble in water (see Chapter 12). The drug is usually dissolved in a solvent for application onto paper, commonly referred to as blotter paper or blotter acid. Blotter acid consists of sheets of paper soaked or sprayed with LSD and decorated with a variety of colorful designs and symbols. A sheet of paper LSD blotter may contain hundreds of small, perforated, and one-quarter-inch squares, with each square representing one individual dose. LSD may also be found in tablet form (microdots), in thin squares of gelatin ("window panes"), or in a dissolved liquid form that can be stored in an eyedrop container or glass vial. Eyedroppers allow users to disperse hundreds of doses of LSD at large parties or concerts by administering the drug on the tongue.

LSD is commonly produced from lysergic acid, which, in turn, is chemically derived from the ergot fungus. Since ergot is not readily available in the United States and is regulated under the Chemical Diversion and Trafficking Act, most of the production of LSD is believed to come from sources located abroad, such as Europe and Mexico. Since the 1960s, nearly all the LSD that is produced in the United States has originated from a small number of laboratories operating in northern California.

Typically, LSD trafficking is accomplished in two ways. The primary method of transportation is by mail, using

overnight delivery services. LSD is frequently concealed in greeting cards, plastic film containers, or articles of clothing that are mailed to a post office box established by the recipient. The post office box is usually listed under a fictitious name or business, and no return address is typically provided on the package or envelope. Rock concerts also have been a traditional means of distributing LSD. Throughout the 1970s and 1980s, traffickers used concerts of the rock band The Grateful Dead as a network to distribute and sell both large and small quantities of LSD.

Phencyclidine (PCP), a synthetic drug first used in medical anesthesia but now classified as an illicit hallucinogen (see Chapter 12), is produced in clandestine laboratories either in Mexico or in the United States and distributed under a variety of street names, such as angel dust, rocket fuel, killer weed, embalming fluid, ozone, or Sherman (because the drug supposedly "hits you like a Sherman tank").

Ketamine is known by the street names Special K or simply K (not to be confused with the synthetic cannabinoid that is called K2 or Spice). Ketamine is a drug that is chemically similar to PCP but produces fewer symptoms of confusion, irrationality, and violence. Since it is currently available as a legitimate medication as an injectable, short-acting anesthetic for animals and humans, ketamine is frequently sold on the street after being stolen from either hospital or veterinary facilities, or else smuggled into the United States from Mexico. In clinical use, ketamine is found in liquid form for injection, but ketamine sellers prefer to market the drug in a powdered or crystallized form. In this way, ketamine powder can be snorted, smoked (sprinkled on tobacco or marijuana), or ingested by being dropped into a drink, with an effect similar to that of PCP.[21]

Drug Trafficking as a Moving Target

The emphasis in examining drug-trafficking patterns has been on nations that have historically participated in the global illicit drug trade. In recent years, however, drug-trafficking organizations have emerged involving nations that had not been part of the traditional illicit drug cultivation and trafficking business. In some cases, an expansion of global drug trafficking has been off-shoots of well-established trafficking organizations. Mexican drug traffickers, for example, have managed to establish strongholds in other Central American countries such as Guatemala and Honduras. Colombian traffickers now have major operations in nearby Venezuela; trafficking routes extend as far as West Africa. Dominican traffickers are particularly active on the East Coast of the United States in the distribution of cocaine and heroin, in cooperation with Mexican and Colombian organizations. Asian drug traffickers are active on the East Coast and West Coast of the United States in the distribution of marijuana and MDMA (Ecstasy), the latter of which is typically imported from China, Belgium, and the Netherlands to Canada or produced in Canada then smuggled into the United States (see Chapter 11).[22]

Drug Trafficking/Violence: The Mexican Connection

During the 1980s and early 1990s, the United States began to exert immense pressure on drug-trafficking organizations operating in the Caribbean and south Florida. As a response, traffickers in Colombia formed alliances with Mexican trafficking groups for the purpose of transporting cocaine across the southwest border of the United States. With the disruption of the Medellin and Cali drug cartels in Colombia, Mexican cartels groups such as the Amado Carrillo-Fuentes Organization (ACFO) and the Arellano-Felix Organization (AFO) began to consolidate their power and dominated drug trafficking along the Mexico–U.S. border and in many American cities. By the late 1990s and early 2000s, after the loss of their leaders who were either imprisoned or killed during capture, the power and influence of these particular organizations declined significantly, only to be replaced by other trafficking groups that are seemingly intent on outdoing each other in brutality and callous disregard for human life.

Today, it is difficult to fully appreciate the scope of Mexico's involvement in illicit drug trafficking and the impact of Mexican drug trafficking on American illicit drug users (Figure 2.6). Drug-control authorities have confirmed that Mexico is responsible for the major portion of illicit drugs smuggled into the United States. In addition, prescription opioid medications such as OxyContin (see Chapter 9) as well as other prescription drugs are manufactured in clandestine Mexican laboratories. At the same time, Mexico continues to be a major transit location for illicit drugs destined to the United States from South America. According to the U.S. Department of Justice, Mexican drug cartels have gained drug-trafficking operations in more than 1,000 U.S. cities and towns, smuggling multiton quantities of illicit drugs and unauthorized prescription drugs across the U.S.–Mexico border.

The statistics of drug-related violence in Mexico are staggering. There have been more than 164,000 civilian casualties in Mexico from 2007 to 2014 that have been related to drug-trafficking activities. This number can be compared to approximately 21,000 civilian casualties in Afghanistan and approximately 81,000 civilian casualties in Iraq during the same period. Many homicides in Mexico have been reported simply as "disappearances."

The horrific effects on daily life in the countryside are difficult for most Americans to grasp. The brutality associated with the continual battles for control over illicit drug trafficking among Mexican drug cartels is an ever-present reality. Over the years, thousands of Mexicans have suddenly never been seen by their families again, most likely never to be found. One cabinet member in the Mexican government has described his nation as a society in which killing someone can be viewed as normal or natural. It is not surprising that in a 2013 survey, more than 72 percent of the Mexican population reported feeling insecure in their own country, and more than half reported that insecurity was the main concern in their lives.[23]

FIGURE 2.6

Drug-trafficking routes in Mexico. Ephedra refers to a plant-based stimulant, once marketed as a dietary supplement but since banned in the United States in 2004.

Source: Google image. http://www.geo-mexico.com/wp-content/uploads/2011/01/Drug_routes_2010_800.jpg

The Continuing Drug Cartel War in Mexico

Over more than 20 years, criminal prosecutions of drug cartel leaders have been cited as indicators of major victories by law enforcement agencies in the long-standing war against drug trafficking in Mexico, but it is difficult to be optimistic that significant improvements will be made in that regard in the near future. All too often, power struggles among drug cartels and within each of them are ignited when a cartel leader is removed. The result is an increased level of violence rather than a period of calm as rival cartels sense a vacuum in the structure of the illicit drug trade and an opportunity to become the new dominant power. Individuals within each cartel will begin to outdo each other in brutality as they fight for the vacant top spot in the organization or dominance among rival cartels. The current roster of Mexican drug cartels, listed in Table 2.4, will be constantly changing, as will the dominance relationships among them. The shifting dominance relationships can be seen clearly through the history of the Sinaloa Cartel and its leader as given in the following section.

The Rise and Downfall of El Chapo

Few drug cartel leaders in recent years have been followed as extensively by the media as the notorious leader of the Sinaloa Cartel, Joaquin Guzmán, best known by his nickname, El Chapo. As it has been widely reported, the final capture of El Chapo and his extradition to the United States for prosecution in 2016 ended a yearlong manhunt and a frustrating series of twists and turns that created deep concerns among American drug-control authorities over the competence of Mexican authorities in handling drug trafficking in their country.

In 1989, the war over dominance in Mexican drug trafficking between the (now defunct) Arellano-Felix Cartel and the then-emerging Sinaloa Cartel had escalated into bloody confrontations as gunmen of each cartel battled to kill the leader of the other. In 1993, Cardinal and Archbishop of Guadalajara Juan Ocampo died in the cross-fire of one of these battles, leading to a massive public outcry and a nationwide manhunt for the perpetrators of the killing. Under a false passport, El Chapo fled to Guatemala where he had paid a Guatemalan military official $1.2 million as a bribe

TABLE 2.4

Major drug cartels in Mexico in 2017.

NAME	PRINCIPAL BASE OF OPERATIONS IN MEXICO	DRUG-TRAFFICKING PRODUCTS
Sinaloa Cartel	State of Sinaloa	Heroin, cocaine, marijuana, and meth
Jalisco New Generation Cartel	State of Jalisco	Primarily meth, also heroin, cocaine, and marijuana
Juarez Cartel	State of Chihuahua	Marijuana, cocaine, recently heroin and meth
Gulf Cartel	State of Tamaulipas	Marijuana, cocaine, less so heroin and meth
Los Zetas Cartel	Eastern, Central, and Southern Mexico	Marijuana, cocaine, recently heroin and meth
Beltran-Leyva Cartel	States of Guerrero, Morelos, Nayarit, and Sinaloa	Heroin, cocaine, marijuana, and meth

Source: Drug Enforcement Administration (2017, October). *2017 National Drug Threat Assessment Summary.* Washington, D.C.: Drug Enforcement Administration, U.S. Department of Justice.

to remain in hiding. His attempt failed, however, as the official soon passed information about his whereabouts to Mexican authorities, and in 1995 El Chapo was returned to Mexico, arrested, and sentenced to imprisonment in a federal Mexican prison.

For the next six years, El Chapo remained in prison, but his existence there was hardly a harsh one. During his imprisonment, El Chapo's lifestyle far exceeded that of an ordinary incarcerated inmate. He managed to retain daily control over expanding Sinaloa Cartel operations. Associates brought him suitcases of cash to bribe prison officials. Prison guards themselves became his personal servants; regular visits from his mistress were overlooked by prison authorities. Not surprisingly, the extent of collusion between El Chapo and prison staff, not to mention $2.5 million of his personal funds, would set the stage for a relatively easy prison escape in 2001.

From 2001 to 2014, under the ruthless leadership of El Chapo, the Sinaloa Cartel battled and eventually won over rival cartels for dominance in drug trafficking in Mexico. Meanwhile, the elusiveness of El Chapo from authorities, even in the face of national manhunts for his capture, soon made him a near-legendary figure in Mexican folklore. Stories abounded, for example, of his habit of strolling into local restaurants, his bodyguards confiscating the patrons' cellphones, eating a meal, and then leaving after paying for everyone's tab, all without detection by authorities. According to law enforcement intelligence reports, Sinaloa gunmen carried surface-to-air missiles to bring down government aircraft on the occasions in which it was necessary to protect El Chapo from being captured. During this period, El Chapo himself was ranked as the 10th richest man in Mexico with a net worth amounting to an excess of $1 billion.

In 2014, Mexican authorities finally succeeded in recapturing El Chapo, and now he was sentenced to a maximum-security prison, supposedly the most secure facility in all of Mexico. In July of 2015, however, it was evident that the facility was far from secure enough to prevent El Chapo from escaping once more. Surveillance cameras had been positioned in his prison cell, but coverage had somehow missed a small section in the shower area. Over a period of several months, El Chapo's associates had constructed a 30-foot-deep underground tunnel connecting the shower area to an outside construction site located a mile away from the prison. The tunnel was large enough to accommodate lighting and air ducts for ventilation. A motorcycle was found in the tunnel and officials presume that this may have been the means for El Chapo's escape. In the several months while this elaborate tunnel or its connection to the prison was being built, no reports of unusual construction noise had been made by prison officials.

At this point, El Chapo was at large once again, but not for long. In October 2015, he was captured while hiding in the Sierra Madre mountains, and now extradited to the United States under bilateral international drug-trafficking agreements. In January of 2017, El Chapo pleaded not guilty to a 17-count indictment in U.S. District Court in New York for money laundering and drug trafficking, as well as numerous kidnappings and murders that he had allegedly directed in Chicago, Miami, New York, and other U.S. cities while in Mexico. In November 2018, the trial of El Chapo finally began. His charges included trafficking $14 billion in illicit drugs and running a criminal enterprise that the government has called "the world's largest and most prolific drug trafficking operation."[24]

Drugs and Narcoterrorism

The term **narcoterrorism** has been used in a number of ways when referring to the intermingling of political activity with illicit drug trafficking. In the case of Afghanistan, narcoterrorism has been applied to the violence waged by Afghan insurgent groups such as the Taliban, using profits from heroin trafficking as a means for funding their political activities. In the case of Colombia, narcoterrorism has referred to the

narcoterrorism: A term referring to anti-government political groups in which their operations have combined political insurgency and illicit drug trafficking.

Quick Concept Check 2.2

Understanding International Drug Trafficking

Check your understanding of global drug trafficking by matching the organization name or term (on the left) with the appropriate identification (on the right). *Note*: Some of the answers may not at all be used.

1. The French Connection
2. The Golden Crescent
3. Black Tar
4. Medellin Cartel
5. Sinaloa Cartel
6. Hell's Angels
7. FARC
8. China White
9. Drug mules
10. The Golden Triangle

a. A present-day drug cartel in Mexico
b. Human couriers carrying drugs either in their bodies or on their person
c. A major anti-government organization in Colombia
d. A name for Mexican heroin
e. Southeast Asian nations, including Laos and Vietnam
f. Southwest Asian nations, including Afghanistan
g. The chemical name for PCP
h. A major drug cartel in Colombia, led by Pablo Escobar
i. A name for Asian heroin in the 1960s and 1970s
j. An early trafficking organization of methamphetamine
k. Animals used to transport illicit drugs across the Rio Grande River from Mexico to the United States
l. A trafficking route of heroin in Europe, discontinued in the late 1960s and 1970s.

Answers: 1. l 2. f 3. d 4. h 5. a 6. j 7. c 8. i 9. b 10. e

violence stemming from a long-standing political struggle between the Colombian government and powerful cocaine-traficking organizations within Colombia. As we will see, there exists an extensive network of "transnational" narcoterrorism as well, operating throughout the world with no regard to international borders.

Narcoterrorism in Afghanistan and Colombia

In Afghanistan, the blurriness between drug trafficking and political insurgency has been particularly significant, given the recent history of American military engagement in that country. Profits from Afghan heroin, for example, allegedly helped to finance Taliban terrorist activities within Afghanistan during the 1990s, although that Al Qaeda forces benefited directly from the heroin trade has been largely refuted. The U.S. 9/11 Commission Report on the September 11, 2001, attacks concluded in 2004 that the drug trade was a source of income for the Taliban, but it did not serve the same purpose for Al Qaeda. Specifically, there is no reliable evidence that Osama bin Laden was personally involved in drug trafficking or that he made his money through drug trafficking.[25]

Interestingly, in 2001, the Taliban announced a comprehensive ban on the cultivation of the opium poppy, purportedly for religious reasons. As a result, opium production plummeted from 3,676 metric tons the previous year to 74 metric tons by the end of 2001. U.S. officials believe that the ban was most likely an attempt by the Taliban to raise the price of opium, which had declined significantly following a particularly abundant crop season in 2000. After the fall of the Taliban in 2002, Afghan growers resumed opium cultivation, and production increased to 2,865 metric tons in 2003. Although the Afghanistan government has officially banned the cultivation of opium poppies, decades of war and political unrest have left the criminal justice system in disarray, and it has been difficult for the ban to be enforced. From the standpoint of U.S. strategic interests in Afghanistan, there has been a troublesome conflict between efforts to reduce the cultivation of opium in the rugged, mountainous areas of Afghanistan, on the one hand, and efforts to encourage regional Afghan warlords in these regions to divest themselves from a profitable opium-trade involvement in order to support the central government and oppose the Taliban, on the other.[26]

With respect to Colombia, U.S. foreign policy was originally focused strictly on supporting anti-drug programs in that country. During the Clinton presidency in the 1990s, economic aid to Colombia rose to a previously unprecedented level of $88 million, but this money was tightly restricted to police and counterdrug efforts and not intended to support Colombia's war against insurgent groups. The focus was to reduce the influence of major drug cartels that were dominant in Colombia at the time. In 2002, George W. Bush changed the U.S. strategy by granting the Colombian government the funding to combat terrorism as well as drug trafficking, two struggles that in the view of the Bush administration had become one. Under the Bush administration, Colombia was awarded $650 million, an eightfold increase, in U.S. aid, to begin a unified campaign against drug trafficking and the activities of groups designated as terrorist organizations.[27]

For more than a half-century, rebel insurgency in the form of leftist guerrilla organizations opposed to the established Colombian government has dominated the political landscape. It is estimated that from 1948 to 1958, more than 300,000 people were killed during a civil war within Colombia, a horrific period that has since been referred to as *La Violencia* (the Violence).[28] Combined with a history of unstable central governments and a long-standing culture of

violence, illicit drug trafficking in Colombia was bound to exacerbate an already volatile political situation. It was evitable that political insurgency would become intertwined with illicit drugs.

From its founding in 1960, the public agenda of the Revolutionary Armed Forces of Colombia (known as FARC by its initials in Spanish) was to represent the people of rural Colombia against repression under the central government, exploitation of natural resources by multinational corporations, and political influence by other nations, specifically the United States. In reality, it became the agent of widespread kidnappings, murders, and social intimidation. In recent years, several world governments, including the United States, European Union, and Canada, joined in officially classifying FARC as a terrorist organization.[29]

At its peak, FARC claimed approximately 18,000 members, though a substantial number of them were identified as minors forced to join and fight along with the adults. The organization became concentrated primarily in the southeast region of Colombia, in an area of more than 42,000 square kilometers (16,200 square miles), the approximate size of Kentucky.

In the late 1990s, several cocaine producers elsewhere in Colombia shifted their crops to FARC-controlled territory, and experimentation with coca plants resulted in a stronger coca leaf with a higher cocaine yield. FARC essentially created a coca-based economy within its sphere of influence. Due to a scarcity of paper currency in the area, farm workers were paid in coca paste (see Chapter 10). They sold their excess "wages" to cocaine traffickers, who in turn refined the coca paste into cocaine for shipping to the United States. Meanwhile, FARC collected taxes on the trade, charged the traffickers for protection from authorities, and collected a fee for the use of remote runways for planes to take the cocaine away. There was even an "export tax" on all cocaine shipped from FARC-controlled territory. At one time, FARC was considered to be the richest insurgent organization in history.[30]

Yet, despite the riches that FARC accumulated from cocaine trafficking, its political power began to wane. Major FARC leaders were arrested on charges of cocaine importation conspiracy and extradited to the United States. A ceasefire and talks of a negotiated peace settlement between FARC and the Colombian government began in 2011, but it was unclear whether a political agreement would ever be achieved. As a testament to the fact that terrorist activity was not at an end, 19 Colombian soldiers were killed in 2013 in a FARC ambush near the Venezuelan border. Nonetheless, a disarmament agreement between FARC and the Colombian government was finally achieved in 2016. The terms included relinquishing 8,000 guns and 1.2 million pieces of ammunition to the United Nations in return for amnesty for rank-and-file guerrilla fighters. Guerrilla commanders who were accused of war crimes, however, would be subject to prosecution in a military tribunal.

To conclude, Colombians have paid a very heavy price for decades of political conflict and illicit drug trafficking in their country. An independent commission reported in 2013 that, since 1958 (the year that *La Violencia* supposedly ended), there have been more than 250,000 conflict-related deaths, more than 27,000 forced disappearances, and between 5 and 8 million people forced from their homes. On the one hand, Colombia looks to a more stable political future. In 2018, Rodrigo London, former FARC rebel commander, announced his candidacy for president, under the newly formed political party Common Alternative Revolutionary Force (conveniently retaining the Spanish acronym, FARC). It remains unclear whether the Colombian people will be forgiven with their votes. On the other hand, the dismantlement of FARC as a military force will lead to a disengagement from control over coca-producing provinces where they have been dominant for decades. If this occurs, it is possible that there will be a new round of violence in these regions as local organizations wrestle among themselves to fill in the void.[31]

Transnational Narcoterrorism

A significant development in narcoterrorism has been the emergence and continuing influence of individuals and groups, operating across international borders, without specific allegiances to individual nations. They are financed by powerful private donors (called shadow facilitators), and their criminal operations include arms trafficking, money laundering (see Chapter 4), kidnap-for-ransom, extortion, and racketeering, as well as drug trafficking. According to the Counter-Narcoterrorism Operations Center of the DEA, an Algeria-based Muslim jihadist group called Al Qaeda in the Lands of the Islamic Maghreb (AQIM), designated by the U.S. Department of State as a foreign terrorist organization, has been active for several years in West African nations such as Kenya, Tanzania, Ghana, Guinea-Bissau, and Nigeria, with a primary focus on trafficking Colombian cocaine through West Africa to destinations in Europe. Some of the AQIM profits have financed the Hezbollah in the Middle East, who in turn has received support from the government of Iran. The DEA has identified Hezbollah as having a significant role in cocaine trafficking and drug-related money laundering between South America, West Africa, Europe, and the Middle East.

Besides concerns about illicit drug trafficking, there is the extremely worrisome prospect of terrorist organizations acquiring access to highly toxic substances, such as chemical weapons, for use as weapons of mass destruction (Drugs … in Focus).[32]