

NBER WORKING PAPER SERIES

RETHINKING AMERICA'S ILLEGAL DRUG POLICY

John J. Donohue III
Benjamin Ewing
David Peloquin

Working Paper 16776
<http://www.nber.org/papers/w16776>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
February 2011

The authors wish to thank Jonathan Caulkins, Phil Cook, Louis Kaplow, Rob MacCoun, Jeffrey Miron, Peter Reuter, and participants at two NBER conferences and the Harvard Law School Law and Economics workshop for valuable comments. We are also particularly grateful to Jeffrey Miron and Angela Dills for sharing their national time series data on drug prohibition enforcement and crime. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2011 by John J. Donohue III, Benjamin Ewing, and David Peloquin. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Rethinking America's Illegal Drug Policy
John J. Donohue III, Benjamin Ewing, and David Peloquin
NBER Working Paper No. 16776
February 2011
JEL No. K0

ABSTRACT

This paper provides a critical review of the empirical and theoretical literatures on illegal drug policy, including cross-country comparisons, in order to evaluate three drug policy regimes: criminalization, legalization and “depenalization.” Drawing on the experiences of various states, as well as countries such as Portugal and the Netherlands, the paper attempts to identify cost-minimizing policies for marijuana and cocaine by assessing the differing ways in which the various drug regimes would likely change the magnitude and composition of the social costs of each drug. The paper updates and evaluates Jeffrey Miron’s 1999 national time series analysis of drug prohibition spending and the homicide rate, which underscores the lack of a solid empirical base for assessing the theoretically anticipated crime drop that would come from drug legalization. Nonetheless, the authors conclude that given the number of arrests for marijuana possession, and the costs of incarceration and crime systemic to cocaine criminalization, the current regime is unlikely to be cost-minimizing for either marijuana or cocaine.

John J. Donohue III
Stanford Law School
Crown Quadrangle
559 Nathan Abbott Way
Stanford, CA 94305
and NBER
donohue@law.stanford.edu

David Peloquin
Yale Law School
127 Wall Street
New Haven, CT 06511
david.peloquin@yale.edu

Benjamin Ewing
Yale Law School
127 Wall Street
New Haven, CT 06511
benjamin.ewing@yale.edu

I. Introduction

The United States stands out among developed nations for both its extremely punitive illegal drug policy and the high percentages of its population that have consumed banned substances—particularly marijuana and cocaine. The war against the millions of Americans who use and sell these drugs has cost taxpayers billions of dollars each year and contributed substantially to America’s globally unmatched incarceration rate (Walmsley 2009).¹ Yet it has failed to displace America from among the world leaders in use rates for illegal drugs even if escalating punitiveness may have contributed to declines in U.S. drug consumption from its peaks in the late 1970s and 1980s.

To locate America’s illegal drug policy globally and along a spectrum of potential alternatives, it is helpful to consider three broad approaches governments may take toward drugs: (1) legalization—a system in which possession and sale are lawful but subject to regulation and taxation (U.S. policy for alcohol and tobacco);² (2) criminalization—a system of proscriptions on possession and sale backed by criminal punishment, potentially including incarceration (U.S. policy for marijuana, cocaine, and other illegal drugs); and (3) depenalization—a hybrid system, in which sale and possession are proscribed, but the prohibition on possession is backed only by such sanctions as fines or mandatory substance abuse treatment, not incarceration³ (U.S. policy toward alcohol during Prohibition).⁴ All three of these approaches have been implemented in the practices of various governments around the world, though to greater and lesser extents. Nearly all countries have criminalized a consistent set of proscribed substances including marijuana, cocaine, heroin, and methamphetamine; most have also legalized other drugs such as alcohol and tobacco; and some have adopted policies of depenalization for substances whose sale, and to some degree possession, remains prohibited.⁵

We begin our analysis in Section II by attempting to define America's illegal drug problem, first sketching consumption patterns, current policy, and the social costs of illegal drugs under America's basic regime of criminalization. Because America's illegal drug policies are an integral part of the context in which those costs arise—and many of those costs, such as those associated with incarceration, would not exist but for America's current policies—we consider current policies and social costs in tandem, distinguishing costs that stem from criminalization and costs that flow from psychopharmacological effects of drugs on their users. Following this overview, we focus in Section III on the particular cases of marijuana and cocaine. For both marijuana and cocaine, we analyze three potential regimes—criminalization, depenalization, and legalization. We also address the two most significant sources of social costs from cocaine: crime and incarceration.

Marijuana is the most widely used illegal drug in America (as elsewhere) and the one with the most vocal advocates for legalization. Cocaine has been an especially acute problem in America, with the prevalence of this drug and its derivative, crack, providing the impetus for the escalation of the War on Drugs in the 1980s and Plan Colombia in the 1990s. We restrict our discussion to these two drugs partly because one of our principal contentions is that analysis of illegal drug policy from a perspective of minimizing social costs requires great focus on the varying burdens of individual drugs given their different toxicological and inherent criminogenic effects, and their distinct patterns of consumption and distribution.

Under U.S. criminalization of marijuana, a large number of people are arrested and otherwise punished for possession of a substance that is routinely consumed in today's developed world and is—by various expert accounts and along many measures—less dangerous to users and society than cigarettes or alcohol. This policy not only consumes criminal justice

resources and crowds out other valuable social spending, it also creates hard-to-quantify costs in other forms: diminished respect for the law, loss of faith in government warnings about the serious dangers posed by more harmful drugs, and a morally arbitrary arrest lottery undermining the principle that like offenders be treated equally. On the other hand, cocaine is substantially more dangerous than marijuana and under criminalization it is much more socially costly in the aggregate, notwithstanding far lower rates of use. The costs of cocaine under criminalization overwhelmingly stem from crime, violence, and incarceration.

The differing nature of the costs of criminalization for marijuana and cocaine is important because it suggests that the effect of a regime change (e.g., from criminalization to depenalization or legalization) would be different for marijuana than for cocaine. Depenalization and legalization could both potentially reduce perhaps the foremost cost of marijuana criminalization: the extremely high number of arrests for possession, and the concomitant burdens they impose on the criminal justice system's resources and individual arrestees—many of whom are otherwise law-abiding.⁶ Legalization, to a much greater extent than depenalization, would reduce the costs of black-market violence and lengthy incarceration for sellers that weigh so heavily in the overall costs of cocaine.

On the other hand, economic theory suggests that reductions in sanctions through depenalization or legalization would lower costs both implicit (such as time spent and risk incurred to obtain the drug) and explicit (the per unit dollar price of the drug), and thereby increase demand and use. By more substantially reducing costs and government disapproval, and by potentially enabling advertising, legalization would be expected to lead to higher levels of consumption than under a regime of depenalization. The possible exception to this claim would be if legalization were accompanied by a sufficiently comprehensive taxation regime that would

restrain consumption by maintaining a high enough price to the consumer. The psychopharmacological effects of cocaine are markedly more harmful than those of marijuana, and the costs per additional user would be higher for cocaine than marijuana. Moreover, marijuana consumption is much higher than cocaine consumption so the offsetting effect of tax revenues on the social costs of cocaine would be much less significant than for marijuana.

In sum, legalizing cocaine would pose greater risks and offer greater potential rewards than legalizing marijuana: the decreases in certain categories of costs and increases in others would be much more substantial for cocaine than for marijuana.

Not surprisingly, much of the debate over illegal drug policy and potential reforms hinges on two contentious questions. First, by how much would the prevalence and intensity of a drug's use rise under a different regime?⁷ Second, would reductions in other social costs—particularly through lower rates of crime and criminal justice enforcement costs—outweigh the costs of increased consumption?

Our nation's experience with alcohol regulation is instructive. During Prohibition—a regime of decriminalization or extreme depenalization—alcohol consumption was suppressed (from higher rates under legalization) to a degree that noticeably lowered the cost of alcohol abuse. These gains, however, appear to have come at a high cost in terms of crime, which fell sharply after Prohibition ended. While criminal gangs no longer cause mayhem over alcohol distribution, alcohol abuse does lead to belligerence and crime as well as many other social costs ranging from impaired productivity and increased motor-vehicle deaths to higher levels of child abuse and neglect. The U.S. has vastly more alcoholics than drug addicts in part because we have allowed a free market coupled with extensive advertising to promote alcohol consumption, with taxation levels that are well below social costs.

Conjectures from some sources that similarly free markets for cocaine could increase today's relatively small number of cocaine addicts to levels beyond the current number of alcoholics are offered in support of the current war on drugs. Opponents counter by pointing to the enormous criminal violence—here and abroad—that this war has generated, as well as the 500,000 incarcerated Americans whose lost freedom and productivity are among the greatest casualties of the war on drugs. The stakes are high for illicit drug policy, yet unfortunately we must continually choose its contours (for maintaining the status quo is itself a choice) with a less than ideal evidentiary base.

Legalization would almost certainly reduce crime, but such a prospective gain must be weighed against the increase in the costs of substance abuse that would likely follow. The murder and violence of illegal drug dealing, and the hundreds of thousands of ruined lives of prison inmates must be assessed against increased motor vehicle deaths and potentially millions of lives impaired by addiction. These are not pretty or easy choices, and to a significant extent the consequences of various drug policy regimes will depend upon the specifics of design and implementation. Our effort here is directed toward clarifying the tradeoffs by exploring, in the contexts of marijuana and cocaine, the question of which regime—and what set of policies within that overarching framework—would minimize the total cost to society.⁸

II. Defining America's Illegal Drug Problem

a. Consumption Patterns

i. Consumption Across Users

As Figure 1 reveals, according to the WHO World Mental Health Surveys taken in the 2000s, 42 percent of American adults have tried cannabis, more than twice the take-up rate in

any of the 17 countries studied other than New Zealand, which trailed closely behind the United States (Degenhardt et al. 2008).⁹ Figure 2 illustrates that the percentage of Americans ever consuming cocaine is even more extreme: sixteen percent of American adults have tried cocaine, dwarfing the next highest rates of about four percent in Colombia, Mexico, Spain, and New Zealand and the under two percent rates in other European countries, the Middle East, Africa, and Asia (Degenhardt et al. 2008). As Figure 7 and Figure 8 reveal, annual use figures are naturally lower, but the U.S. also stands near the top in terms of rates of past-year use. Figure 3 and Figure 4 provide comparable data on lifetime use rates of tobacco and alcohol, the two most socially costly legal drugs. While U.S. consumption levels for these legal substances are not low, they stand out less in the global context than U.S. use rates of marijuana and cocaine.¹⁰ If our severe criminalization has been effective at reducing the prevalence of marijuana and cocaine, however, then use rates in the U.S. are actually markedly lower than they would be were we to follow other countries' examples and move away from our distinctly punitive approach. One's assessment of the effectiveness of our illegal drug policy is partly tied to one's assessment of that counterfactual world.¹¹

Insert Figure 1, 2, 3 and 4 about here

A recurring pattern in the distribution of consumption across users holds for a variety of recreational drugs: a small percentage of users account for a large percentage of consumption. This pattern is found for alcohol consumption in the United States (Cook 2007, 57), as well as for cocaine use. For example, one study found that the top 22 percent of users account for 70 percent of cocaine consumption (NRC 2001, 60; see also Rydell and Everingham 1994, finding that heavy cocaine users consume cocaine at a rate nearly eight times that of light users). The top heaviness of the distribution of cocaine use among consumers is believed to have increased from

the early 1980s when consumption was nearly evenly split between light users and heavy users (NRC 2001, 60). Reuter (1999b, 17-18) characterizes cocaine as a “career” rather than an “event,” because as they come to appreciate the harmful consequences of the drug, the casual users quit, leaving in place a core of more serious users. Marijuana consumption is concentrated among individuals in their late teens and their twenties. Most consumers use the drug relatively infrequently and for relatively short periods of time (MacCoun and Reuter 2001, 342). Taken as a whole, these drug use distribution patterns suggest that the most severe problems stemming from drug use are concentrated within a relatively small percentage of users.

The National Council on Alcoholism and Drug Dependence (NCADD 2002) relies on a 2001 study by the Schneider Institute for Health Policy at Brandeis University, *Substance Abuse: The Nation’s Number One Health Problem*, for the claim that about 18 million Americans have alcohol problems and 5 to 6 million Americans have (illegal) drug problems (SIHP 2001). A similar set of estimates—not of “alcoholics” and problem users but of abusive or “dependent” users—comes from the National Survey on Drug Use and Health (NSDUH) from 2007 (SAMHSA 2008). The study found that in 2007, approximately 22.3 million people aged 12 or older had, in the past year, abused or experienced dependence on alcohol, illegal drugs, or both: 15.5 million abused or depended upon alcohol, 3.2 million on alcohol and illegal drugs, and 3.7 million on illegal drugs but not alcohol (SAMHSA 2008, 71).¹²

The NSDUH methodology uses various questions to classify persons as “dependent” upon or “abusing” different substances based on the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV). As the report puts it:

Dependence is considered to be a more severe substance use problem than abuse because it involves the psychological and physiological effects of tolerance and

withdrawal. Although individuals may meet the criteria specified here for both dependence and abuse, persons meeting the criteria for both are classified as having dependence, but not abuse. Persons defined with abuse in this report do not meet the criteria for dependence (SAMHSA 2008, 71).

The plight of drug users who are deemed to be in the thrall of addiction, abuse, or dependence is central to understanding illegal drug policy. Those who advocate maintaining severe criminalization frequently raise the specter of ballooning addiction to make depenalization or legalization seem intolerably reckless.¹³ They argue, consistent with the dominant understanding of addiction today as a disease, that once addiction sets in, individuals find themselves caught in a pattern of self-destructive behavior that is nearly impossible to escape. Severe sanctions for use, on this account, offer a strong incentive to avoid initiating the addiction cycle and to get out of it once it begins.

Yet there are fundamental tensions within the viewpoint just described. First, if punitive treatment of users reduces the number of people trying illegal drugs (and perhaps in turn the number who become perpetual users), it may conflict with the aim of providing problem users with the therapeutic treatment they need to wean themselves from drugs. It is not simply that governments with punitive dispositions divert resources that could be used on treatment programs. Punitive criminalization may create fears of punishment and demonization that directly discourage users from seeking treatment. *The Economist* recently noted that in Portugal, which decriminalized possession of illegal drugs in 2001, “[t]he number of addicts registered in drug-substitution programmes has risen from 6,000 in 1999 to over 24,000 in 2008, reflecting a big rise in treatment (but not in drug use)” (Treating Not Punishing 2009).¹⁴ The United States

has tried a different approach, using criminalization as a vehicle to promote treatment by sometimes offering it as an alternative to, or a means of reducing, criminal penalties.¹⁵

Second, the generally accepted view—outside of some Chicago school theoretical musings of the late 1960s and early 1970s—has long been that swift and certain sanctions are more salient, and effective at deterring than more distant and uncertain punishments of greater severity. Kleiman (2009) has stressed the intractable tradeoff between swiftness and severity in punishment. As he puts it:

One problem with the brute-force, high-severity approach is that severity is incompatible with swiftness and certainty. Severity means using a large share of punishment resources on a (relatively) few offenders, and (as the American experience with capital punishment since its reintroduction illustrates) the more severe a sentence is the more reluctantly it will be imposed and the more “due process”—and therefore the more time—it will require. (Kleiman 2009, 3)

The greater deterrence value of more immediate and likely sanctions seems especially important given the apparent risk and time preferences of drug users—individuals whose behavior suggests a present-moment orientation and a heavy discounting of future burdens. An experiment with offenders on probation in Honolulu, for example, which tested the effect of a program oriented around imminent but short incarceration for violators, found that program participants were 55 percent less likely to be arrested for a new crime and 72 percent less likely to test positive for drug use (Hawken and Kleiman 2009, 64).

Third, to the extent that addiction means a lack of voluntariness on the part of the addict, sanctioning addicts with the full brunt of criminal law is in tension with the core American criminal law requirements of *mens rea* and *actus reus*. If drug addiction is characterized by

involuntariness, then addicted users appear neither culpable to a degree meriting criminal sanctions¹⁶ nor likely to be deterred by such punishment. On the other hand, if drug addiction is a disorder of choice, as some have recently and compellingly argued on the basis of strong evidence that most addicts recover,¹⁷ then an internalities-based justification of criminalization is weakened: addiction begins to look less like an irreversible step into self-destruction and more like a habit that individuals will struggle over, but quite likely eventually overcome. The greater the degree of choice involved, the less catastrophic is initiation into use and even addiction, and the less justifiable are the costly sanctions designed in large part to keep individuals from ever experimenting with illegal drugs.

The significance of addicts in aggregate marijuana and cocaine consumption is important to bear in mind when considering the effect of changes in price—and policy shifts that would affect a drug’s price, such as changes to criminal sanctions, depenalization, or legalization—on the prevalence and intensity of use. Initially, one might assume that non-addicts and prospective dabblers would be more responsive to changes in price than addicts, whose compulsive behavior is often equated with an inability to quit, rising costs notwithstanding. According to this line of thinking, marginal increases in price—through, say, more severe criminal penalties—would affect casual users much more than heavy users, thus decreasing aggregate harms of use only by changing the behavior of marginal users, without substantially diminishing the core of problem users. A lower price resulting from more lenient policies would induce some new users whose intensity of use would be harder to predict—though a reasonable assumption might be that the new group would contain no greater percentage of addicts than the initial population of users.¹⁸

However, it is also possible—and consistent with the economic model of rational addiction put forth by Becker and Murphy (1988)¹⁹—that addicts will be responsive to price

changes over longer time spans. While neither we nor Becker and Murphy believe that all addictive behavior can be explained adequately as the rational pursuit of welfare maximization,²⁰ their model highlights an important theoretical consideration in attempting to assess the impacts of actual and hypothetical policy changes (and concomitant drug prices) on use: time horizon. One reason among many for caution in extrapolating from the results of short-lived policy experiences is that a policy affecting the use rate of a drug through the price mechanism may have a substantially greater impact if retained over a long period of time. Provocatively, the model put forth by Becker and Murphy suggests that in the long run, consumption of addictive goods may be even more responsive to price changes than consumption of nonaddictive goods.²¹ In the long run at least, price changes may indeed expand or contract the core of problem users.

Another factor to take into account when considering consumption across users is the age at which users are most likely to become addicted to illicit substances. In surveys of individuals in the United States, psychiatric researchers have found that drug abuse disorders, excluding alcohol, have a lifetime prevalence of 8.5 percent, and that age 19 is the median age-of-onset for such disorders (Kessler et al. 2005, 595). More importantly, these same surveys indicate that drug abuse disorders have a narrow age-of-onset range, with an interquartile range of 17-23 years (Kessler et al.). This suggests that efforts aimed at curtailing drug use among young people can play a key role in preventing drug addiction. Individuals who do not develop a disorder by their late twenties are much less likely ever to develop such a disorder.²² Therefore, finding ways to limit access to drugs among children and teens should be central to any regime—and any depenalization or legalization proposal.

ii. Consumption Across History

Simply identifying the trends in illegal drug use over time is a difficult task, given the obvious obstacles to securing accurate information about illegal behavior over extended periods of time. A number of surveys of illegal drug use include the percentages of individuals reporting to have used in the past month, past year, and ever. These are often broken down by drug and user characteristics—most notably age group. While the percentage of a population using a drug during a given time period is a valuable measure, all such statistics are limited in that they do not capture other important variables such as quantities and potencies used by individuals, much less the severity of harms associated with the instances of use.²³

Even if one accepts the accuracy of the data, one must also use caution in analyzing historical data regarding drug use trends. There is a natural—but potentially misguided—tendency to equate periods of low prevalence with successful policy and to attribute spikes in the percentage of users with policy failings. Even if prevalence of use were the sole criterion by which to measure the success of drug policy, it would remain extremely difficult to attribute causation to specific policies given the myriad other social factors that influence use.

With those provisos in mind, it is worth taking a cursory look at historical trends in the use of marijuana and cocaine in the United States. In Figure 5 we report data from the Monitoring the Future surveys²⁴ on the percentage of high school seniors reporting use of marijuana, cocaine, any illegal drug, and any illegal drug other than marijuana, within the past 30 days. While these are relatively narrow measures, we present them not just for the intrinsic significance of use prevalence among late adolescents, but also because they are broadly consistent with overall prevalence and have the important advantage of consistent tracking over a long period of time.

Insert Figure 5 about here

As Figure 5 suggests, the percentage of high school seniors who recently used marijuana reached a peak during the late 1970s, declined until the early 1990s, rose during the mid-to-late part of that decade and has since leveled and begun to decline in the 2000s. The percentage of high school seniors who recently used cocaine rose through the late 1970s, stayed high in the early 1980s, rose again in the middle of the decade, then declined by its end, falling until the early 1990s, after which time it rose fairly modestly by historical standards, then leveled. The tight correlation between the percentage using marijuana and the percentage using any illegal drug is broadly consistent with drug use trends—not just in the United States, but globally as well. This correlation is quite common across populations because the percentage of individuals around the world using marijuana dwarfs the percentage using all other illegal drugs.

Figure 5 might be taken to suggest that the “Just Say No” campaign of the Reagan years led to a major decline in consumption that was reversed during the more permissive Clinton years, although one must consider whether the Reagan campaign influenced reporting behavior as well as drug use. In addition, scholars have offered two reasons to doubt that policy changes in the U.S. can explain the declines in cocaine and marijuana use from the mid-eighties through the early nineties, the subsequent rise in use during the 1990s or the leveling off in the new century. First, drug use has in a number of instances followed the trajectories of epidemics—wherein use has increased continuously until reaching a plateau, then diminishing, likely due in part to greater awareness of the harmful consequences of use. Second, as Room et al. (2008, 15) note, regarding cannabis:

Interestingly, there seems to be a common pattern over time across countries. For most western nations between 1991 and 1998 there was an increase of about half in the proportion of 18 year olds reporting that they had tried cannabis. Since

1998 in the same countries there has been a substantial decline in that figure, though in 2006 it still remains well above the 1991 level...The common patterns across countries with very different policy approaches reinforce the general impression that penalties for personal use have very little impact on the prevalence of cannabis use in a society.

b. Current Policy

i. America's Punitive Approach

No responsible analysis of the harmful consequences of drug use can ignore the possibility that many of the harms of drug use are either caused or augmented by the legal prohibition against these drugs and its enforcement. Drug prohibition is inevitably a source of government intrusion into citizens' lives. Many (but not all) overdoses occur due to the unknown purity and potency of illegally purchased drugs. The sharing of contaminated syringes is largely a consequence of the artificial scarcity created by their illegality. And much of the criminality and violence associated with drug use (but by no means all) is due to the high price of illegal drugs and the conditions of their sale in illegal markets.

-National Research Council, *Informing America's Policy on Illegal Drugs* (2001, 63).

Figure 6 illustrates that across the array of five broad areas in which the federal government spends resources to control drug use, the dominant growth in spending since the initiation of the war on drugs has come in the area of domestic criminal enforcement. The federal government's categorical classification of drug prohibition spending changed after 2001.

However, in the past decade, federal drug policy has continued to shift its emphasis toward the supply side (ONDCP 2009, 15). As we will later show more directly, disaggregating the costs associated with America's illegal drug problem under the current drug-control policy approach underscores that many of the social costs of illegal drugs arise not from drug use per se but rather from drug control.²⁵ In this section, we examine the punitive side of America's current drug policies, focusing on the costs of incarceration.

Insert Figure 6 about here

Current U.S. drug control policy is largely punitive in nature. In 2007, law enforcement agencies nationwide made over 1.8 million arrests for drug abuse violations, more arrests than for any other category of offense (BJS 2009, 1). Of these arrests, approximately four-fifths were for possession, with 42.1 percent resulting from marijuana possession and 21.5 percent from heroin or cocaine possession (BJS 2009). The Office of National Drug Control Policy (ONDCP) has found that the largest cost increases in the war on drugs from 1992 to 2002 came as a result of increased incarceration rates for drug offenses and drug-related offenses and from the law enforcement and judicial proceedings needed to put offenders in prison (ONDCP 2004, vi).

Now imprisoning a greater percentage of its population than any other country (Walmsley 2009), the U.S. has less than five percent of the world's population but nearly 25 percent of its prisoners (A Nation of Jailbirds 2009). The punitive focus of U.S. drug policy is a major component of our country's record-sized prison populations. The American incarceration rate has increased greatly since President Ronald Reagan's emphasis on the war on drugs in the early 1980s. The number incarcerated in prison or jail on drug charges is estimated have risen from about 40,000 in 1980 to about 500,000 today—more than the total number incarcerated for all offenses thirty years ago (Mauer 2009, 1). As of 2004, drug offenders constituted an

estimated 55 percent of the federal prison population and 21 percent of the state prison population (Mumola and Karberg 2007).²⁶

Though most arrests involving drug offenses are for possession, most individuals serving prison sentences for drug offenses are behind bars for trafficking offenses, not just possession. In 1999, the most recent year for which the Bureau of Justice Statistics did a comprehensive report on federal drug offenders, simple possession was the most serious offense for only 2.1 percent of drug offense suspects referred to U.S. Attorneys for prosecution, whereas for 97.5 percent, drug trafficking was the most serious offense (BJS 2001, 2).²⁷ In terms of drugs involved for defendants actually convicted of federal drug offenses, 30.6 percent involved marijuana, 22.4 percent involved crack cocaine, 21.5 percent involved cocaine powder, 12.5 percent involved methamphetamine, 7.8 percent involved opiates, 0.5 percent involved hallucinogens, and 4.8 percent other substances (BJS 2001, 9).

Unsurprisingly, the percentage of incarcerated drug offenders serving time for possession appears to be significantly greater in state as opposed to federal prisons. Analyzing data from the 2004 Survey of Inmates in State and Federal Correctional Facilities, Mumola and Karberg (2007, 4) report that in 2004, 5.3 percent of drug offenders in federal prisons and 27.9 percent of drug offenders in state prisons were incarcerated for possession. The authors found that of drug offenders held in state prisons, 61.8 percent reported that cocaine or crack was involved in their offenses, and the analogous figures were 18.6 percent for stimulants, 12.7 percent for marijuana or hashish, 12.2 percent for heroin and other opiates, 2.2 percent for depressants, and 1.7 percent for hallucinogens.²⁸ One must interpret these data with caution. First, just 20.7 percent of drug offenders in state prisons reported having no prior criminal history (Mumola and Karberg 2007, 4). Second, given the pervasiveness of plea bargaining and the evidentiary ease of prosecuting

possession relative to other offenses, the percentage of convicts incarcerated in state prisons whose most severe offense truly is possession remains somewhat illusive.

The price of keeping hundreds of thousands of drug offenders behind bars is high and rising. Locking up approximately half-a-million drug offenders has a direct budgetary cost in the billions each year—approximately \$6.6 billion for state drug prisoners and perhaps that sum over again for federal prisoners and convicts serving time in jail.²⁹ In addition to the costs of incarceration borne by government and prisoners, a large toll falls on the families of those incarcerated, partly in terms of lost incomes, many of which were lawful ones (Donohue 2009). Fifty-nine percent of male state and federal inmates in prison for drug possession or trafficking have minor children, whereas in the general prison population, only fifty-one percent have children, indicating an additional cost stemming from high incarceration rates in the form of children with absent fathers (BJS 2008, 4).

There is also a startling racial disparity in imprisonment for drug charges. In state prisons, African-Americans account for 38.6 percent of prisoners overall and 45.1 percent of prisoners convicted of drug offenses (Sabol, Couture and Harrison 2007, 24), though they represent just 13 percent of the U.S. population (US Census Bureau 2008).³⁰ There is also evidence that a substantial portion of racial profiling problems result from the targeting of drug sellers through criminal enforcement efforts, which could be greatly reduced under a less punitive drug policy.

ii. America in a Global Perspective

With the aim of devising rational drug policies based on practical experience rather than predominantly ideological concerns, countries throughout Europe are experimenting with drug

policy in a variety of ways. In general, European countries have less punitive—and more harm-reduction oriented—approaches to drug policy than the United States. The Action Plan adopted by the German government in 2003 to deal with Germany’s drug problem is representative of this approach, claiming: “The ‘Action Plan on Drugs and Addiction’ advocates a realistic drug policy. It responds more to the concrete reality of life than to any ideological principles. Every addict must have access to appropriate therapy options” (Caspers-Merk 2003, 7). The plan encompasses both legal and illegal substances, recognizing that far more Germans suffer substance abuse problems related to tobacco and alcohol than illegal drugs (11-12).

Portugal has become the poster child of European drug reform following its July 1, 2001 decriminalization of formerly illicit substances.³¹ Rather than handle drug possession and use as a criminal matter, the police in Portugal give a civil citation to those caught using or possessing a quantity of drugs less than the average amount sufficient for ten-day use by one person. As Greenwald (2009, 3) notes, these civil citations instruct recipients to appear before a “dissuasion commission” within seventy-two hours. The dissuasion commission, which is designed to avoid all appearances of a criminal tribunal, is made up of a lawyer and two members of the medical profession, and it may order those caught with drugs to pay a fine or undergo a course of treatment. Greenwald reports, however, that fines are a last resort designed to be suspended except for addicts and repeat offenders, who can have their fines suspended as well, if they agree to treatment (3).³²

Even European countries that have not followed the extreme depenalization approach of Portugal have experimented with less punitive and more treatment-oriented drug policies. In Switzerland, for example, cannabis use remains a criminal offense (Room et al. 2008, 117). However, Switzerland experimented with a regime of open sales of small quantities of illicit

drugs, such as heroin, in Zurich's Platzspitz (the so-called "Needle Park") (MacCoun and Reuter 2005, 264). This experiment lasted only five years, from 1987-1992, because the park became unsightly and was viewed as an embarrassment by the city. Instead of resorting to strict punitive measures for drug use, Switzerland then instituted a heroin maintenance program that allowed heroin addicts to receive daily heroin shots supervised by a nurse in a clinical setting. Switzerland has since expanded this program due to evidence that crime rates and unemployment rates among participants drop during participation (266-67). Similar programs have been instituted with encouraging results in Vancouver, Canada, and the Netherlands (Reuter 2009).

But the trend toward decriminalization of drugs is not universal: the United Kingdom has gone in the other direction in recent years, at least with respect to marijuana, by increasing the maximum penalties for marijuana use. Gordon Brown's government decided to reclassify cannabis from a Class C drug to a more serious Class B drug, resulting in a maximum penalty of fourteen years of imprisonment for marijuana supplying, dealing, producing, and trafficking, and five years for possession (Room et al. 2008, 92-93). However, while the potential for such penalties exists, the British Home Office describes the "likely" enforcement steps: for a first possession offense police will issue a warning, for a second they will issue a Penalty Notice for Disorder (a civil citation resulting in an 80 Pound fee), and for a third, they will arrest the individual (Home Office 2009). Thus, even in one of Europe's strictest drug regimes, arrests and criminal punishment are reserved for repeat offenders.

While many European countries have more liberal policies toward drug possession, they generally continue to have strict penalties for drug trafficking—though these are appreciably less severe than their counterpart American punishments. As the European Monitoring Centre for Drugs and Drug Addiction puts it, "[o]ver the past ten years, most European countries have

moved towards an approach that distinguishes between the drug trafficker, who is viewed as a criminal, and the drug user, who is seen more as a sick person who is in need of treatment” (EMCDDA 2008, 22). For example, in spite of their relatively liberal policies toward drug users, the maximum drug trafficking penalty in the Netherlands is, nominally at least, 16 years (DEA 2005, 255). Even in Portugal, drug trafficking remains a criminal offense because it involves possession in excess of the average dose needed for ten days of personal use (Greenwald 2009, 3). Relative to America, Europe has focused more on helping rather than punishing problem users, while still attempting to disrupt large-scale drug networks.

Europe is not the only region of the world to have largely eliminated or reduced the penalties associated with possessing and using certain drugs. Latin America has also trended toward decriminalization in recent years. The Argentine Supreme Court decriminalized possession of small amounts of marijuana in August of 2009 (Brice 2009). The court based its ruling on the grounds that it is unconstitutional to punish adults for private use of marijuana if that use does not harm anyone else (Moffett 2009).³³ In declaring unconstitutional a law that provided for sentences of up to two years for drug possession, the court also opened the door for possible decriminalization of other substances, because the specific law overturned was not limited to marijuana. Lower courts might expand the ruling to other drugs. Following the court ruling, the chief of the Argentine cabinet praised the decision for challenging an American-style war on drugs by ending “the repressive policy that the Nixon administration invented” (Brice 2009).

A few days prior to the Argentine court ruling, Mexico enacted decriminalization legislation specifying that individuals in possession of small amounts of marijuana, cocaine, heroin, and methamphetamine will not be criminally prosecuted (Luhnow and de Cordoba 2009;

Wilkinson 2009). The new Mexican regime is similar to the Portuguese decriminalization in that those caught by police possessing a small amount of drugs will be encouraged to seek treatment (Luhnow and de Cordoba). After being caught three times with drugs, the user will be required to attend treatment. Unlike the prior presidential administration, which sharply criticized earlier attempts by Mexico to decriminalize drugs, President Obama’s drug czar, Gil Kerlikowske, said that the Administration would evaluate the new Mexican law using a “wait and see” approach (Luhnow and de Cordoba).

In recent years both Brazil and Ecuador have also signaled that they may follow the path of Argentina and Mexico toward decriminalization (Moffett 2009). Taken together, these developments reflect the dissatisfaction many Latin American governments have with America’s punitive war on drugs: a war that was started in large part to combat drug production and trafficking emanating from Latin America. While it is too soon to tell what effects the Argentine and Mexican reforms will have on use rates in those countries, we will show in subsequent sections that the European experience casts doubt on prohibitionist fears that drug use will inevitably jump sharply.

c. Defining the Costs

i. Aggregating the Costs

The social costs of recreational drug use in America have been staggering and unabated. According to the ONDCP’s most recent estimate, the economic cost of illegal drug use in the United States in 2002—including lost productivity, health effects, and crime-related costs such as policing expenditures and incarceration—was \$180.9 billion, having grown at an average rate of 5.3 percent annually since 1992 (ONDCP 2004, vi).³⁴ The costs of two legal drugs—alcohol

and tobacco—are of a similar order of magnitude. The most recent comprehensive estimate of Harwood (2000) puts the annual economic cost of alcohol use at \$184.6 billion in 1998.³⁵ Rice (1999) estimates the annual economic cost of smoking in 1995 was \$138 billion. Placing these figures in constant 2008 dollars provides a set of crude estimates of current annual social costs of alcohol (\$244 billion), tobacco smoking (\$195 billion), and illegal drugs (\$217 billion).³⁶

Commentators have rightly pointed out that such cost figures give a misleading impression of precision, ignore the benefits of drug use,³⁷ and provide scant direction for actual drug policy.³⁸ We offer these cost estimates for a crude sense of the scale of the problems under the current regime and as a reference point from which to examine the various types of costs associated with drug use—their relative magnitudes, who causes them, and who bears their burdens. It is also worth noting, however, that while such aggregate figures aspire to capture the domestic costs of illegal drugs, the costs imposed on foreign countries by the combination of America’s exceptionally large demand for illegal drugs coupled with its severe attempts at prohibition are also high and growing. Organized criminals from the Taliban in Afghanistan to drug cartels in Colombia and Mexico are enriched by America’s drug consumption and prohibition policy, with many highly unpleasant consequences. The current American administration has shown some signs of appreciating the magnitude of the role played by American drug demand in fostering crime in foreign countries. Following the recent wave of increasingly deadly gang violence near the Mexican-American border, Secretary of State Hillary Clinton surprised the media by candidly admitting that American drug consumers support crime in Mexico fueled by drug profits (Landler 2009).³⁹ Consideration of these foreign costs (and their domestic repercussions) might bring total social costs of illegal drugs to equal or exceed those of alcohol.

ii. Disaggregating the Costs

The social costs of drug use come in many different forms. Adapting a list from a 1996 article by MacCoun et al. (1996), the National Research Council (NRC 2001, 54) lists sixteen different categories of drug-related harms:

physical/mental illnesses; diseases transmitted to others; accident victimization; health care costs (drug treatment); health care costs (drug-related illnesses, injuries); reduced performance in school; reduced performance at workplace; poor parenting, child abuse; psychopharmacological crime and violence; economically motivated crime and violence; fear and disorder caused by users and dealers; criminal justice costs; corruption of legal authorities; strain on source country-relations; infringements on liberty and privacy; and violation of the law as an intrinsic harm.

It is striking, though, how large a portion of the social costs of drug use today arises from a single source with a broad reach: drug-related crime. Viewed as an isolated statistic, the ONDCP's estimate of the social costs of drug abuse provides little insight into the nature of America's drug problem. When disaggregated into its component parts, however, it is more revealing. Consider the following related estimates from that report, ONDCP (2004), each for the then most recent available year, 2002:

- Of the \$180.8 billion in illegal drug costs, \$108 billion (nearly 60 percent) were crime-related (IV-7, V-2).

- Over two-thirds of those crime-related costs were in the form of lost productivity for those incarcerated on drug-related charges and costs related to the administration of the criminal justice system (IV-8).
- Incarceration of offenders—475,000 for drug law violations, and 190,000 for drug-related property or violent crimes—resulted in productivity losses of \$39 billion and direct outlays of \$17 billion at the federal, state and local levels (III-18, IV-8).
- Health costs constituted a mere 8.7 percent of the total costs of drug abuse (vii).

The ONDCP report goes on to state:

[T]he large majority of these [crime] costs [of illegal drugs] are for drug specific offenses—sales, manufacturing, possession—and the smaller fraction are for drug-related crimes undertaken to finance expensive drug habits. Over 11 percent of arrests in the US are for drug offenses. In addition, appreciable fractions of income generating crimes are attributed to drug abuse: on the order of a quarter of burglaries, personal larcenies and robberies (xii).

While steps toward legalization of currently illegal drugs would likely increase consumption, estimates vary about the extent of this change and how its concomitant costs would compare with gains from decreased law enforcement costs, productivity and other gains from reducing the levels of incarceration, and potentially substantial decreases in the crime and violence stemming from decreased profitability and scope of black markets.⁴⁰ Though our best guess is that moving towards legalization would substantially reduce crime, it is possible that a

regime shift to depenalization or legalization would increase toxicologically-induced crime and thereby offset expected decreases in black market crimes.⁴¹

Citing evidence that a high percentage of arrestees test positive for alcohol and various illegal drugs, advocates of continued criminalization frequently imply, contrary to the implications of the ONDCP cost study, that toxicologically induced crimes are more common or costly than those whose origins are systemic to drug prohibition. Data do show a correlation between crime and illicit drug use that is, upon first consideration, quite distressing: the 2008 Annual Report of the Arrestee Drug Abuse Monitoring Program (ADAM II) found that in 2008, among ten major metropolitan areas across the country, the percentage of arrestees testing positive for the presence of some illicit substance ranged from 49 percent in Washington, D.C. to 87 percent in Chicago (ONDCP 2009, 15). However, as we will reiterate in the sections that follow, extrapolating from the ADAM II results to a belief that drug criminalization decreases crime or violence (rather than substantially increases both) conflicts with a number of theoretical considerations as well as considerable empirical evidence concerning the relatively greater importance of systemic (compared to toxicologically motivated) offenses.

Three theoretical points should be highlighted. First, as previously noted, the approximately 1.8 million annual arrests for drug abuse violations are more than for any other category of offense (BJS 2009). It is neither surprising, nor indicative of a causal relationship between drug use and crime (other than the tautological one produced by criminalization itself) that individuals in this subcategory of arrestees frequently test positive for illegal drugs. Second, any causal extrapolation from the correlation between drug use and crime runs up against the intractable problem of omitted variables bias: it is quite likely that factors which predispose individuals to frequent use of drugs also push them toward both crime and greater likelihood of

apprehension by authorities. This is especially true for marijuana: detectable traces may remain in one's system for extended periods of time, so one may test positive upon arrest even if the last instance of use occurred days or even weeks before the arrest, and before or after the commission of the offense (Pacula and Kilmer 2003). Third, the important question is not whether crime systemic to prohibition substantially outweighs toxicologically-induced crime—although, the best evidence supports this hypothesis. Rather, the appropriate inquiry should be into how the marginal decreases in systemic crime would compare to the marginal increases in toxicologically-driven crime given a regime change. Even if lesser penalties, depenalization or legalization would increase use, the new class of users—individuals formerly deterred by criminalization—would constitute a class much less predisposed to commit other crimes than the group of people already using under criminalization.

Return to the ONDCP's aggregate cost study and three of its key insights: (1) roughly forty percent of the current costs of illegal drugs in the United States are crime costs borne by offenders via incarceration and the government via administration of the criminal justice system; (2) these costs dominate the victim-borne costs of drug-related crime and health-related costs of abuse; and (3) the greatest driver of these costs is crime systemic to criminalization, rather than crime motivated by toxicology. Together, these propositions suggest that a substantial portion of America's current drug problem is its drug control policy. Since government policies create some of the costliest of all the burdens associated with illegal drugs, a substantial reduction in the social costs of illegal drugs would seem to require a reduction in the costs imposed by the current criminalization regime, not just a restraint of the costs of abuse.

III. Reforming America's Illegal Drug Policy⁴²

a. Broad Themes

While many advocates of legalization and continued criminalization of illegal drugs see sufficient similarities across drug classes to paint with broad strokes, we perceive the nature and extent of the harms associated with each drug to call for careful, individualized analysis.⁴³ That is not to say that recreational drugs do not share certain similarities or that society's experience with legal drugs cannot provide insight into the likely impact of legalizing a currently proscribed drug. The gaping disjunction between the law and policy toward cigarettes and alcohol on the one hand, and toward marijuana, cocaine and other currently illegal drugs on the other, appears less the result of thoughtful distinction than of inertia and a self-perpetuating myth that drugs accorded legal status are qualitatively similar to each other and different from drugs that are criminalized.⁴⁴ But if a unified approach across certain drugs might be desirable for a variety of reasons, only by meticulously examining each drug's unique psychopharmacological effects and social attributes can we begin to group together the different drugs that should be treated similarly.⁴⁵

In this section, we consider potential changes to America's policy toward marijuana and cocaine. To oversimplify somewhat, marijuana is the most widely used illegal drug, one of the least dangerous for users across various dimensions, and the frequent subject of debate over policy reform. Likewise, any decrease in social costs stemming from a change to marijuana policy is likely to be far smaller than would result from a comparable policy change concerning a "harder" drug such as cocaine. On the other hand, because the social costs under America's current drug regime are highest for cocaine,⁴⁶ changes to policy toward cocaine (as opposed to other narcotics) would change the social cost mitigation calculus in a way that would countenance potential risks and rewards of the greatest magnitude.

b. Marijuana

i. Psychopharmacology and Culture

[T]here is a glaring discontinuity between the lived experience of Americans and the drug policies of their governments. Nearly a hundred million of us—forty percent of the adult population, including pillars of the nation’s political, financial, academic, and media élites—have smoked (and, therefore, possessed) marijuana at some point, thereby committing an offense that, with a bit of bad luck, could have resulted in humiliation, the loss of benefits such as college loans and scholarships, or worse. More than forty thousand people are in jail for marijuana offenses, and some seven hundred thousand are arrested annually merely for possession.

-Hendrik Hertzberg, Higher Standards, *The New Yorker*, February 25, 2008.

Marijuana is a pivotal substance in the debate over illegal drug policy for many reasons. The World Drug Report 2008 found that cannabis “continues to dominate the world’s illicit drug market in terms of pervasiveness of cultivation, volume of production and number of consumers . . . [and its consumer market] dwarfs those for other drugs” (UNODC 2008, 14). In its “Facts and Figures” webpage on Marijuana, the ONDCP highlights three statistics from the 2008 National Survey on Drug Use and Health (NSDUH) (SAMHSA 2009): among Americans aged 12 or older, 102 million (over 40 percent) had tried marijuana in their lifetimes, 25.8 million (over 10 percent) had used in the past year and 15.2 million (over 6 percent) in the past month (ONDCP 2010). As noted in Figure 1, the United States is a clear outlier with respect to the

percentage of its population that has tried marijuana (though this is in part a reflection of the unusually high use rates in the late 1970s and 1980s). Although methodological issues and data availability make cross-country comparison for annual illegal drug use more difficult than for lifetime use, Figure 7 gives at least a crude sense of the United States in global context by showing the past year cannabis use estimates for the United States and the rest of North America, Australia, New Zealand, and selected countries from western and central Europe.⁴⁷ The data suggest that America is also among the world leaders in the percentage of its population using marijuana more regularly.

Insert Figure 7 about here

Far more individuals are arrested for possession of marijuana in the United States than for any other illegal drug. Of the more than 1.8 million arrests for drug violations in 2007, 42.1 percent—more than 750,000—were for marijuana possession, and when sales and possession arrests are aggregated, 47.4 percent or nearly half of all drug arrests are marijuana-related (FBI Uniform Crime Reporting Program 2007).⁴⁸ Marijuana arrests have risen significantly in recent decades; one recent study found that from 1992 to 2002 marijuana arrests increased by 113 percent while overall arrests decreased by 3 percent (King and Mauer 2006).

Room et al. (2008, 22) summarize the basic sensory effects of cannabis on its users: Cannabis produces euphoria and relaxation, alters perception, distorts time, and intensifies ordinary sensory experience, such as, eating, watching films, appreciating nature, and listening to music. Users' short-term memory and attention, motor skills, reaction time and skilled activities are impaired while they are intoxicated...Cannabis users are typically seeking one or more of these effects

when they use. But use can also result in unsought and adverse effects. The most common unpleasant effects of acute cannabis use are anxiety and panic reactions . . . [these] are a common reason for discontinuing use.

Current evidence suggests that while the harmful health effects of marijuana are not trivial (Browning 2009), they are less troublesome than those of other illegal drugs such as cocaine, heroin, or methamphetamine. MacCoun and Reuter (2001, 356, 360) conclude that “[t]he harms of cannabis are clearly no greater than those of alcohol, at the individual level” and “dependence occurs frequently, almost as frequently as for alcohol amongst those who start using the drug. . . . [but with seemingly] modest adverse consequences.” A recent survey of clinicians and researchers found that the experts perceived cannabis to be less addictive than most other drugs—including caffeine, amphetamine, alcohol, cocaine, methamphetamine, oxycodone, crack, nicotine, and heroin (Gore and Earleywine 2007, 176-85). Similarly, Kershaw and Cathcart (2009) report on a study by the Institute of Medicine which found that of those who tried tobacco, 32 percent went on to become dependent compared to just 9 percent for marijuana (see Figure 9).⁴⁹ Marijuana is also far less lethal than nicotine, alcohol, and other prevalent illegal drugs (Gable 2006, 155); fatal overdoses are unheard of, if not virtually impossible. Long-term smoking of marijuana could generate adverse health consequences from breathing smoke, though increased potency reduces the number of inhalations required to achieve the desired effect.

Marijuana use has intruded into mainstream America to a greater degree than any other illegal drug.⁵⁰ Moreover, Room et al. (2008) observe that because marijuana’s global prevalence so exceeds that of other illegal recreational drugs, the bureaucracies of drug control within individual countries and at the global level depend upon the criminalization of marijuana to

broaden the scope of their mission. They note the World Drug Report 2008 estimates that 65 percent of global seizures and 67 percent of “doses” seized were for cannabis and argue, using global use figures, that without cannabis illegal drug use would not be a global population-level issue (89, 92). Finally, the therapeutic potential of marijuana has given rise to a debate over whether doctors should be allowed to prescribe the drug for medicinal purposes.

Perhaps for all these reasons, marijuana has proven an attractive target for advocates of legalization, though many prominent opponents endorse a continued hard-line stand. Growing numbers of commentators in the popular press have advocated the legalization of marijuana (Klein 2009), and assessed the revenue boost legalization might provide states facing cash-strapped budgets (Yamamura 2009). The debate has been further stimulated in recent months as states have begun reacting to Attorney General Eric Holder’s announcement that the DEA will no longer raid state-approved medical marijuana distributors (Woo 2009).

Willingness to consider—if not outright endorse—legalization of marijuana has also grown among academics. Over 500 economists,⁵¹ including three Nobel Laureates,⁵² signed an open letter to the President, Congress, Governors, and State Legislatures expressing skepticism about current marijuana policy and calling for open debate over a shift from prohibition to taxation and regulation. The letter highlights Harvard economist Jeffrey Miron’s 2005 report *The Budgetary Implications of Marijuana Prohibition*, which estimates that legalization would save the federal and state governments a combined \$7.7 billion in prohibition enforcement expenditures and yield approximately \$2.4 billion in tax revenues if taxed like an ordinary good or as much as \$6.2 billion if taxed similarly to alcohol or tobacco (Miron 2005, 2-3).⁵³ In the wake of the recent economic downturn, old and new reformers have latched on to the “lost revenues” argument for legalization.

This section first considers the case for reforming marijuana policy, specifically weighing the costs of depenalization and legalization against those of the current system of prohibition.

ii. Criminalization

A defense of marijuana prohibition based on cost-minimization analysis might proceed as follows. First, a completely unregulated market for marijuana would lead to undesirably high levels of consumption—either because of negative externalities (social costs of marijuana use that accrue to those not a party to marijuana use and exchange) or internalities (private costs that accrue to users themselves but that users nevertheless fail adequately to account for in their consumption decisions). Second, regulation and taxation will not adequately correct for these market failures. Third, severe criminal sanctions for users and sellers are cost-justified deterrence mechanisms for reducing use. A more sophisticated version of this third argument would make explicit an important hypothesis frequently left implicit but nevertheless underlying much thought about drug policy: criminalization may not only raise the price for the user (thereby reducing its attractiveness for an individual with given preferences) but also, through the norm-generating or socializing effect of the law, actually alter individuals' preferences such that for any given price, use and distribution hold less appeal.⁵⁴

Though some libertarians argue that the value of individual autonomy dictates allowing marijuana use (irrespective of externalities) and simply sanctioning user behavior when it directly infringes upon the liberty of others, a cost-minimization approach demands consideration of the magnitude of social costs of use before accepting the notion that autonomy can trump all such social costs not generated directly from physical force or fraud. Few dispute that marijuana creates at least some externalities and also internalities—certainly at least in the

case of minors not yet capable of adequately processing the risks but also perhaps for the 1 in 11 who becomes dependent on the drug merely from trying it. The great contention is over which policies can most efficiently mitigate the total costs associated with marijuana use—in other words, which policies will yield the lowest total social costs, combining the costs of use and control.

The crux of the argument in favor of retaining the prohibitions on use, possession, and sale of marijuana is that eliminating any of these sanctions would increase marijuana use by reducing the cost and decreasing the risk. Full legalization might also stimulate demand by enabling advertisement and brand development. Increased use—either in terms of intensity and frequency or number of users—would in turn increase the costs of use borne by users themselves and society. There are also two related, subsidiary arguments, worth addressing. First, it is often contended that marijuana is a “gateway drug” that renders its users more likely to begin using other, more dangerous drugs, and, therefore, an increase in marijuana users as a result of depenalization or legalization would in turn increase the number of users of other illegal drugs.⁵⁵ Second, it is sometimes argued that marijuana use induces crime.

Before turning in subsequent sections to the evidence regarding expected increases in marijuana use under depenalization and legalization, it is helpful to consider briefly the insightful analysis of the gateway issues offered by MacCoun and Reuter. Though they believe that “there is little evidence that expanding marijuana use does increase the use of other, more harmful drugs,” MacCoun and Reuter present a taxonomy of seven possible meanings of the gateway concept: the first step; the spurious correlation; the early warning; the trap; the tantalizer; the toe in the water; and the foot in the door (MacCoun and Reuter 2001, 245-51).

The basic problems for an econometrician attempting to identify whether—and if so which—gateway hypotheses reflect actual experience are omitted variables bias and endogeneity. At the level of the individual, it is difficult to pinpoint a gateway mechanism because it is quite likely that underlying characteristics that predispose individuals to use marijuana also increase the likelihood of using other drugs. At the population level, it is difficult to assess the effect of marijuana use on the use of other drugs for an additional reason: causality likely runs in both directions.

However, even without precisely estimating the impact of marijuana use on the likelihood of trying other drugs, one may place a rough upper bound on the extent of such an effect by noting how commonly individuals use marijuana without going on to other, more harmful drugs. In their recent cannabis report, Room et al. (2008, 65) write: “Few [marijuana users] go on to use more dangerous illicit drugs; the 1995 US National Household Survey on Drug Abuse found that only 23 percent of 26-34 year olds who had used marijuana at some time had also used cocaine during their lives.” Similarly, the 2007 NSDUH found that those who used marijuana exclusively constituted 53.3 percent of illegal drug users and 73.2 percent of marijuana users (SAMSHA 2008, 16).

As MacCoun and Reuter remind us, it is also important to understand the mechanism of any gateway effect, assuming one exists at all. If the “gateway” is a matter of individuals becoming comfortable with illegal behavior and black market consumption, then legalization could undermine this gateway effect, even as it increased consumption directly via lower prices to users.

The most-cited evidence in support of the hypothesis that marijuana users are driven to crime while under the influence is undoubtedly the ADAM II data indicating that in 8 of 10

major metropolitan areas studied in 2008, over 40 percent of arrestees tested positive for marijuana at the time of arrest (ONDCP 2009, 17). The weight of auxiliary evidence suggests, however, that this correlation primarily reflects factors other than a causal relationship of crime induction through intoxication.

First, the psychopharmacological effects of marijuana are relatively modest compared to the effects of alcohol, cocaine, and other illegal drugs, and do not suggest, *a priori*, that intoxicated users are driven to violent, antisocial activity with great frequency.⁵⁶ Second, it is clear from the sheer size of marijuana's user base that most users do not resort to non-possessory crime at all—while intoxicated or otherwise. Third, some empirical evidence suggests that the enforcement of marijuana criminalization may not work even as a “broken windows” policing strategy,⁵⁷ much less as a direct measure preventing supposedly toxicologically induced crime. A recent analysis of marijuana in public view (MPV) arrests across 75 police precincts in New York City from 1989 to 2000 concluded that “there is no good evidence that this “reefer madness” policing strategy contributed to the decline in the sorts of serious crimes that are of greatest public concern in New York City” (Harcourt and Ludwig 2007, 166).⁵⁸ On the contrary: while an initial panel data analysis offered some support for the idea that these misdemeanor marijuana arrests contributed to reductions in violent crime, when the authors restructured their regression model to control for mean reversion, the coefficient on MPV arrests became statistically significant in the opposite direction—suggesting that “an increase in MPV arrests over the period translates into an *increase* in serious crime—not, as the broken windows theory would predict, a decrease in serious crime” (171).

In considering the merits of criminalization, it is also important to remember that even within a system of criminalization, there is much leeway regarding the severity and nature of

prohibition enforcement. Moreover, there is significant historical and cross-country evidence to help understand how consumption and costs might change under a less punitive criminal regime. While it is always difficult to isolate the impact of a drug policy, and one must always be wary in generalizing from the experience of other countries to today's America, there is evidence, albeit somewhat conflicting, suggesting that depenalization and even decriminalization of marijuana may not lead to significant increases in use.

iii. Depenalization

It is often said that in the 1970s, eleven states “decriminalized” marijuana (NRC 2001). These states significantly reduced penalties for simple possession of marijuana, in some cases implementing a narrow form of the *regime* we call depenalization.⁵⁹ Evidence on the impact of these marijuana reform laws initially found little or only a weak effect (NRC 2001, 192-93).⁶⁰ On the other hand, a recent study finds that because other states have also reduced penalties for marijuana possession, “[so called] decriminalized states are not uniquely identifiable based on statutory law as has been presumed by researchers over the past twenty years” (Pacula et al. 2003, 26). The same study also finds, however, that the demand for marijuana among young people is sensitive to variation in penalties. A still more recent study traces the research—which began with studies finding little to no effect but now has become more mixed—and offers two possible explanations for the conflicting findings: (1) the effect of legal variation is different across age groups; and (2) the historical time period may matter (MacCoun et al. 2009, 350). Moreover, the authors find that a reason for minimal effects of depenalization may be that many individuals are unaware of the changes in their state's marijuana law.⁶¹

Another reason why use rates might not respond to decreased penalties is the extremely low likelihood of being arrested for illegal drug possession: reviewing the data, Boyum and Reuter estimate that in 1999, the “risk of being arrested for marijuana possession, conditional on using marijuana in the previous year, was about 3 percent; for cocaine the figure was 6 percent” (Boyum and Reuter 2005, 56). To the extent that individuals predisposed to illegal drug use also exhibit lower risk aversion and higher discounting of future welfare than the rest of society, they are especially unlikely to find psychologically salient—or change their behavior as a result of—risks characterized by low probabilities and high costs, such as possible arrest for possession.

Probably the most famous example of marijuana reform comes from the Netherlands. There, the 1976 “Opium Act” ushered in the *de facto* decriminalization (or extreme depenalization)⁶² of possession of small amounts of cannabis for personal consumption (5 grams or fewer) and a system of tolerated sale in “coffee shops” that in some sense resembles a form of highly but peculiarly regulated legalization. Under the latter system, registered coffee shop owners that adhere to certain guidelines may, without being targeted for prosecution, possess up to 500 grams of cannabis and sell it in quantities of 5 grams or fewer (Abraham 1999, 1). The Dutch experience with this controlled form of drug use provides insight into what could happen if the United States were to move down a path toward depenalization, decriminalization, or even legalization of marijuana. MacCoun and Reuter (2005, 264) report that since the 1976 reform, the number of “coffee shops” has increased steadily so that there now may be between 1200 and 1500 such venues in Amsterdam; on the other hand, van der Gouwe, Ehrlich, and van Laar (2009) report a decrease in the number of officially tolerated coffee shops from 1999 to 2007. Marijuana use in the Netherlands increased during the 1980s and early 1990s as the “coffee shops” became more widespread. However, there is no evidence for the existence of the so-

called “gateway effect” discussed earlier. Notably, there was no increase in use rates of heroin, which is traditionally the most widely used hard drug in the Netherlands, or of cocaine, in spite of the corresponding crack crisis in the United States (MacCoun and Reuter 2005, 264). Indeed, the European School Survey Project on Alcohol and Other Drugs (ESSPAOD 2003) conducted a quarter-century after *de facto* decriminalization and emergence of the coffee shop system in the Netherlands found that only 28 percent of Dutch school children surveyed reported smoking cannabis compared with 38 percent in France, whose politicians have been harshly critical of the Dutch approach.⁶³ Also, as we note in Figure 1 below, data from the World Health Organization World Mental Health Surveys indicate that when measured in terms of lifetime cannabis use, the United States has a much higher rate of those over age 18 who have ever used cannabis (42 percent) compared with the Netherlands (20 percent) (Degenhardt et al. 2008, 1057).

One of the goals of the Dutch scheme involves separating cannabis sales from sales of other illicit drugs in the hopes that cannabis users will not come into contact with sellers of drugs like heroin, thus stopping marijuana users from moving to more serious drugs. Manja Abraham (1999) reported that for users over age 18, 48 percent of cannabis purchases took place in coffee shops, whereas relatives and friends supplied 39 percent of cannabis used (3-4). While this demonstrates that a large informal cannabis market exists, only 3.7 percent of users reported obtaining cannabis from a stranger and 5 percent from a home dealer, someone who advertises cannabis sales and delivers them to the home, legally or illegally, depending upon the amount delivered. Among experienced users of cannabis (those who report using the drug more than 25 times in their lives), 54 percent reported purchasing cannabis most often in a coffee shop compared with 32 percent for less-experienced users (Abraham 1999, 4). This suggests that while a large percentage of sales occur outside of the state-sanctioned coffee shops, the heaviest

users obtain their cannabis through regulated channels or from people they know, rather than participating in a clandestine market of dealers. The lack of transactions with dealers who are otherwise unrelated to the individual is important because it is such transactions that bring an individual into contact with the black market and its associated crime and violence.

Evidence from Portugal and Australia also suggests that depenalization need not lead to substantial increases in marijuana use or its associated problems. In the period since decriminalization, drug use in Portugal has not spiked, nor has the country been besieged by drug tourists (Cato Institute 2009). In fact, Portugal continues to have among the lowest rates of cannabis and cocaine use in the European Union, and its rates remain far below their counterparts in the United States (Greenwald 2009, 23-24). Room et al. (2008, 130-33) have pulled together a handful of studies comparing changes in use rates in Australian jurisdictions covered by schemes involving civil penalties for small cannabis offenses with changes in use rates for the rest of Australia still subject to the country's standard criminal penalties for marijuana possession. On the whole, these analyses offer little if any evidence to suggest that use rates increased more in civil penalty jurisdictions than elsewhere.

In the United States, medical marijuana laws have begun to create a subsystem that, under our taxonomy, would be considered a form of decriminalization verging on a highly regulated form of legalization. Medical marijuana laws have introduced a mechanism that allows patients to grow and use marijuana for medical purposes without facing the prospect of state prosecution, while still allowing the states and the federal government to continue prohibiting the large-scale cultivation, distribution, and ordinary possession of marijuana. Fifteen U.S. states have provisions allowing for some type of medical marijuana; however, these subsystems of decriminalization differ from state to state. For example, in Colorado, a constitutional

amendment providing for medical marijuana included the requirement that patients using medical marijuana possess a registry identification card issued by the state, and it provided for the establishment of a confidential state registry for this purpose.⁶⁴ In California, probably the best-known example of a medical marijuana regime in the United States, the Compassionate Use Act of 1996 simply declares as one of its purposes: “to ensure that patients and their primary caregivers who obtain and use marijuana for medical purposes upon the recommendation of a physician are not subject to criminal prosecution or sanction.”⁶⁵ This act did not create a mandatory registry program for patients using medical marijuana. Rather, in 2004, California introduced a voluntary Medical Marijuana ID card, administered by the county governments.⁶⁶

While California’s medical marijuana dispensaries have been the focus of several news stories since the Obama Administration announced that agencies in charge of enforcing federal drug laws would no longer raid such dispensaries (Johnson 2009), the legal status of dispensaries remains questionable, and it would be misleading simply to say that California legalized the “sale” of medical marijuana (Wohlsen and Risling 2009; Martin and del Barco 2009). The Compassionate Use Act did not provide for sales through such dispensaries, and the expanded codification of medical marijuana in California occurring in 2003 provided only for multiparty growing of marijuana in collectives and cooperatives.⁶⁷ California’s Attorney General has indicated that for dispensaries to operate legally in California, they must operate as a non-profit, only sell to members of the collective, verify members’ status as qualified patients or primary caregivers, only acquire marijuana from qualified members, and only cultivate and transport amounts required to meet the needs of the collective’s members (State of California 2008).

The California courts have also placed limits on the ability of individuals cultivating and selling marijuana to avoid prosecution for possession and sale of the drug by claiming to be the

“primary caregiver” of multiple patients. The California Supreme Court has held that a patient’s primary caregiver must establish such status “based on evidence independent of the administration of medical marijuana,” and that growth and supply of medical marijuana alone are insufficient to establish oneself as a primary caregiver.⁶⁸ The California Supreme Court has also held that employers can fire medical marijuana patients who test positive for marijuana as a result of a urinalysis, because the drug remains illegal at the federal level, and nothing prevents employers from terminating employees who use illegal substances.⁶⁹ Thus, while medical marijuana states like California have decriminalized marijuana possession and use for medical marijuana patients, users still face repercussions such as loss of employment and certain limitations on purchases of marijuana that would presumably be reduced or eliminated in a legalization regime.

iv. Legalization

From a cost-minimization perspective, the primary expected benefits of legalization over depenalization would be even more substantial reductions in government expenditures on drug control, new tax revenues to offset remaining government spending, the potential for increased government control over product standards and labeling information, and substantial reductions in drug-related crime costs. Government regulation of labeling and product standards could help mitigate the problems of increased potency and user uncertainty regarding whether the drug taken has been laced with, or partly replaced by, other harmful ingredients the consumer did not intend to use—such as PCP. As noted earlier, Miron (2005, 2-3) estimates that the tax revenues from legalized marijuana would indeed be substantial—somewhere between \$2.4 and \$6.2 billion.⁷⁰ By undermining the black market, marijuana legalization could also be expected to

reduce systemic or economically motivated marijuana-related crime (as opposed to any toxicologically motivated marijuana crime), and the costs of law enforcement efforts targeted at marijuana. Miron (2005, 2) also estimates that legalization would save the federal and state governments a combined \$7.7 billion in prohibition enforcement expenditures. While the assumptions required for such estimates make them imprecise, it is not implausible that for marijuana alone, the combination of tax revenues and diminished enforcement expenditures could boost government coffers by over \$10 billion.

However, given the extremely large number of arrests for marijuana possession—far more than for sale—depenalization could achieve many of the same gains in reduced enforcement costs. Moreover, marijuana often has a much shorter distribution chain than cocaine; cultivation by individuals is common and many users receive marijuana from friends for free.⁷¹ These social factors may help explain why violence appears to be significantly less common and severe in black markets for marijuana than in such markets for cocaine.⁷² Hence, one of legalization's advantages over depenalization—its ability to undermine black markets—may be less important for marijuana than for cocaine. Legalization could also be expected to increase use more substantially than depenalization, although social costs of additional marijuana use could be mitigated if marijuana proved a partial substitute—rather than complement—for such drugs as cigarettes and alcohol.

We next consider additional considerations relevant to legalization: advertising, international legal obligations, and informational benefits.

Advertising. Legalization of marijuana in the United States might unleash the power of American advertising to entice consumers to use newly legalized substances while obscuring their dangers. There is some chance that an outright interdiction on advertisements of legalized

drugs would be found to violate First Amendment speech protections. Twenty-five years ago, the Supreme Court held in *Posadas de Puerto Rico Associates v. Tourism Company*⁷³ that if the government can ban a product or an activity like gambling, it can also proscribe advertising of that product or activity. This might suggest that because marijuana and other drugs are currently prohibited, advertising of such products could be banned. More recent decisions, however, have suggested that the government is not necessarily empowered to ban truthful advertising, even of products it could otherwise proscribe.⁷⁴

Steven Duke and Albert Gross (2006, 214-16) have called the *Posadas* decision an “aberration” and suggested that a complete ban on drug advertising could chill debate about the true dangers of drug use. Instead, these authors argue that a better way to limit advertising would be to withhold trademark protection from companies selling legalized drugs so that they would have no brand names to advertise, unlike today’s alcohol and cigarette companies. In addition, Duke and Gross recommend placing warnings on print ads at least as large as the largest type in the ads and prohibiting radio and television advertising, which the Court has held to be immune from First Amendment protections because the airwaves are owned by the public.⁷⁵

Evidence on the value of warning labels comes from Canada where colorful pictures of the damage to the body associated with smoking are placed on cigarette packages and required to cover at least 30 percent of the package material. The Canadian warnings have been found to be far more effective at inhibiting smoking than the bland American “Surgeon General’s Warning” (Givel 2007). One of the most touted anti-drug advertising campaigns in the United States has been Montana’s attempt to counter its methamphetamine problem through television ads and billboards depicting the physical deformities and violent behavior caused by meth use.

According to one analysis, two years after the introduction of the “Not Even Once” advertising campaign, meth use in Montana had dropped by one-half (Beale 2008). Following legalization, rigorous requirements on packaging of newly legalized drugs and explicit counter advertisements could help reduce a sudden surge in demand.

Placing such explicit warnings on newly legalized drug products would raise questions about how to deal with alcohol and tobacco advertising following the legalization of currently illicit substances. If one were to enact strict regulations requiring graphic depictions of the harms of newly legalized drugs like marijuana, it would seem inconsistent to allow cigarette manufacturers to continue packaging cigarettes with the current Surgeon General’s Warning, given that in terms of both lethality and addictiveness, marijuana may well be a less dangerous substance than nicotine (Gable 2006, 153). A comprehensive marketing policy on all dangerous substances might be difficult to accomplish, however, for political reasons.

An ongoing case filed in federal district court in Kentucky by several tobacco manufacturers and retailers could determine the extent to which the government may require large or graphic warning labels in print advertisements or product packaging.⁷⁶ In this case, the plaintiffs are seeking an injunction against sections of the Family Smoking Prevention and Tobacco Control Act⁷⁷ requiring graphic warning labels on cigarette packaging similar to those found in Canada, curtailing the use of color advertising in magazines with over 15 percent readership or two million readers under age 18, and prohibiting the advertisement of tobacco products within 1,000 feet of school playgrounds. In January 2010, the U.S. District Court for the Western District of Kentucky granted the plaintiff tobacco companies’ motion for summary judgment regarding the Family Smoking Prevention and Tobacco Control Act’s provision requiring that all tobacco advertising appear in black text on a white background in magazines

with over 15 percent readership or two million readers under the age of 18.⁷⁸ The court found that the ban violated the First Amendment because it was not narrowly tailored to serve the asserted state interest of protecting minors from tobacco advertising. The court seemed to place heavy emphasis on the fact that barring all color advertising would ban some of the logos and product symbols used by tobacco companies; product symbols whose meanings could not easily be translated into black and white text.⁷⁹ However, the court was more tolerant of the new warning requirements that mandate that cigarette packaging contain graphic warnings similar to those used in Canada, finding that these restrictions were narrowly tailored, and thus not in violation of the First Amendment.⁸⁰ This case will likely be appealed, and if it reaches the U.S. Supreme Court, which many experts believe it will, its holding could shape the government's ability to restrict the advertisement of legalized drugs for decades to come.

International Law. Another complication for legalization is international law. While many researchers attempt to make international comparisons in studying drugs, one area of drug control policy that receives scant attention is the United Nations Single Convention on Narcotic Drugs of 1961 which binds all UN member nations to maintain prohibition of drugs, including cannabis specifically (Levine and Reinarman 2006, 61). While the Single Convention on Narcotic Drugs requires that countries maintain prohibition of manufacture, sales, and import, it does not require a punitive regime of the type currently found in the United States. Article 36 of the Single Convention, "Penal Provision," specifically allows for treatment programs to either enhance or serve as a substitute for punishment.⁸¹ *The Economist* reports that countries like the Netherlands are able to allow for some innovation in controlling marijuana use through the convention's commentary, which states that its goal is "improvement of the efficacy of national criminal justice systems in the field of drug trafficking" (A Toker's Guide 2009). Thus reforms

working within the framework of the existing treaty are possible, though full-scale legalization would require either a country's withdrawal from the treaty or revision thereof.

Perhaps partly due to the Single Convention on Narcotic Drugs, even countries with more liberal narcotics policies than the United States lack full-fledged drug legalization and at most allow for depenalization of marijuana and/or widespread needle exchange programs. As discussed above, in the Netherlands, a country long known for its tolerance of marijuana smoking, the importation and commercial production of cannabis remains illegal (Levine and Reinerman 2006, 64). When considering its own drug reform, Portugal declined to adopt outright legalization likely in part because of its treaty obligations under the 1961 Single Convention (Cato Institute 2009).

Information Under Legalization. America's war on drugs is deeply entrenched, and powerful institutional forces make change difficult. In important ways the case for marijuana reform rests not only on the potential for the institution of an evidence-based, cost-minimizing approach to marijuana policy in its own right, but also on the possibility that marijuana reform might catalyze the use of such an approach in shaping drug policy in general. The National Research Council's *Informing America's Policy on Illegal Drugs: What We Don't Know Keeps Hurting Us* argued that our current form of criminalization severely limits the tools social science needs to study the effects of drugs and drug policies, and it therefore poses a serious obstacle for the possibility of making policy based on sound evidence. Criminalization obscures our knowledge of consumption patterns, prices, and potencies, and hence of the responsiveness of prices to policy changes.⁸² Perhaps most significantly, because America has no recent experience with the legalization of major currently illegal drugs, there has been too little variation in the data to tease out the causal effects of prohibition or the likely consequences of its

repeal.⁸³ Policy changes resulting in interstate variation in the treatment of marijuana would generate clearer information for analysts and policymakers.

c. Cocaine

Cocaine has made America's drug problem uniquely severe and has been at the heart of such national policies as President Reagan's push for an increasingly punitive war on drugs in the 1980s and Plan Colombia in the 1990s. As already noted, the United States is an outlier in cocaine use in terms of the percentage of Americans having ever tried the substance, which is approximately four times that of the next highest use country included in a 2008 World Health Organization survey of international drug use, as seen in Figure 2. Data from the 2009 World Drug Report, which compiles recent annual use figures from several dozen countries, indicate that in terms of current use rates the U.S. is no longer such an outlier. Nonetheless, Figure 8 below shows America's past-year prevalence rate is still among the highest in the world.

Insert Figure 8 about here

In order to better recognize the unique attributes of cocaine, we begin by offering a review of the psychopharmacology of the drug and then move into analyses of the problems with mandatory minimum sentencing and differences between the U.S. approach and that of other countries.

i. Psychopharmacology and Systemic Crime

Much of America's strict prohibition on cocaine is premised on the belief that cocaine is far more damaging psycho-pharmacologically than other licit or illicit drugs. Regular cocaine use does lead to unquestionable medical and psychological problems. Cocaine is a stimulant,

meaning that it causes the body to “speed up” the operation of ordinary functions. At low doses, physical effects of cocaine are similar to those of high doses of caffeine, including “nervousness, jitteriness, sleeplessness and agitation,” whereas high doses of cocaine can result in “suspicion, hypervigilance, and paranoia,” and extremely high doses can result in “a toxic psychosis, with symptoms similar to the delirium of high fever” (Morgan and Zimmer 1997, 137). As evidenced by the death of “body packers” who swallow balloons filled with cocaine in order to transport the substance into the United States, cocaine can be deadly if consumed in large doses (137-38).

Though by nearly all accounts cocaine is more harmful to its users than marijuana, the belief that cocaine is not at all comparable to alcohol or nicotine is undermined by studies on lethality and addictiveness of common drugs. Using a “safety ratio” measure calculated by taking the “lethal dose” of a drug (the quantity which causes death in 50 percent of animals) and dividing it by the “effective dose” (the quantity necessary to produce the desired effect in 50 percent of animal populations), cocaine has a higher ratio (15) than ethanol (10), indicating that it carries less risk of accidental fatal overdose than alcohol (Gable 2006, 153).

As for the likelihood that one will become addicted to cocaine, sometimes called the “capture ratio,” a 1999 study by The Institute of Medicine found that only 17 percent of those who try cocaine go on to become dependent on the substance, whereas the same figure is 32 percent for tobacco users as shown in Figure 9 below (Kershaw and Cathcart 2009). This finding comports with the latest Monitoring the Future study finding that while 7.2 percent of high school seniors report having used cocaine at least once in their lifetime, only 1.9 percent report having used cocaine in the past 30 days (NIDA 2009, 192, 199). This suggests that a large portion of those who try cocaine do not become regular users. A comparison with tobacco proves illustrative, because while 44.7 percent of high school students report having used

tobacco at least once during their lifetimes, 20.4 percent report having used the substance in the past 30 days, suggesting that, at least given current law, tobacco has a higher addiction rate than cocaine (192, 199). This evidence tends to undermine the view that anyone trying cocaine will all but certainly become an addict.

Insert Figure 9 about here

U.S. drug policy has also reflected exaggeration of differences between the psychopharmacological effects of cocaine and crack. The primary difference between cocaine and crack use stems from the differing routes of administration, with powder cocaine being snorted through the nose, while crack cocaine is generally smoked. Smoking crack leads to a quicker high than snorting powder cocaine because the large surface area of the lungs and the proximity of pulmonary to cerebral circulation allow for rapid absorption of the drug and a direct route to the brain (Belenko 1993, 34-35). This rapid absorption results in a high within 5-10 seconds and a subsequent crash once the high wears off (35). Physically, crack smoking, like smoking of other drugs, can lead to a variety of lung problems.⁸⁴ Behaviorally, crack smoking is associated with many of the same problems observed in users of powder cocaine, including depression, loss of interest, nervousness, fatigue, sleeplessness, loss of appetite, and thoughts of suicide, though with higher prevalence than for powder cocaine users (38). However, these behavioral problems are gathered from surveys of crack users, and thus come from a self-selected population that may be predisposed to such disorders even without drug use (38).

While differences do exist between cocaine and crack, many of the policy changes, such as the much harsher federal sentencing guidelines for crack as opposed to powder cocaine, now appear to have been enacted partly because of an exaggeration of the differences between the effects of cocaine and crack. Consider, for example, the “crack baby” scare of the 1980s, during

which the media highlighted the problem of numerous babies supposedly born addicted to crack. This scare appears to have been sensationalized. Recent research calls into question the supposed link between mothers using crack and children suffering from physical ailments different from those experienced by children whose mothers are not crack users (Morgan and Zimmer 1997, 152-54). Apparently, many of the problems associated with “crack babies” can be traced to the strong correlation between using crack and the failure of mothers to take other steps associated with prenatal health rather than physiological effects of crack use on the infants.

Psychopharmacological effects have been mischaracterized in other ways as well, beginning with the nature of the relationship between crack use and crime. Many people believe that crack causes crime because of its physical effects on the user. However, while crack was associated with a large increase in violence in American cities during the late 1980s, the psychopharmacological impact of the drug was largely not to blame. In a study of New York City murders committed during a six month period of 1988—the height of the crack epidemic—researchers attempted to attribute the cause of homicides to three different drug-related factors: (a) psychopharmacological effects of drug use, (b) economic compulsion in which drug addicts kill while committing thefts to fund drug purchases, and (c) systemic effects of participating in the drug market, such as when a dealer kills one of his own agents (Goldstein et al. 1997, 117). These researchers determined that only 7.5 and 1.9 percent of the murders could be attributed solely to either the psychopharmacological effects of drug use or economic compulsion, respectively, (another 4.1 percent fell into multiple categories) whereas 39.1 percent were part of the systemic involvement in the illegal drug markets.⁸⁵ This study found that 52.6 percent of homicides in New York City during this peak period of the crack problem were in some way drug related. Nonetheless, the psychopharmacological effects of drugs do not appear to be the

primary culprit in the correlation between homicide and crack use. This is underscored by the substantial crime and homicide drops in the 1990s, which, as Figure 7 reveals, occurred even as the percentage of 12th graders reporting cocaine use in the past month rose through the decade, following a substantial decline in the late 1980s.

In other words, it appears more the clandestine nature of the market in which cocaine is traded rather than the drug itself that leads to violent crime. When two drug dealers or a drug dealer and customer have a dispute regarding a sale or drug turf, they cannot use the legal system to settle the dispute. Rather, they must work problems out on their own, often through violent means.

In a 1999 article, Miron contributed an analysis supportive of the systemic violence view based on national time series data through 1995. The data showed a positive correlation between an index of prohibition expenditures and the homicide rate that was statistically significant across several specifications and persisted even with controls for demographic variables, the unemployment rate, *per capita* income, the execution rate and the incarceration rate (Miron 1999). The intuitive causal theory offered by Miron and others is that the more severe the prohibition on illegal drugs, the more attractive is violence relative to other mechanisms of dispute resolution and the greater is the diversion of law enforcement resources from other crimes. Notably, the relationship Miron identified in the data extended beyond the end of Prohibition in 1933—which, as we noted earlier, ushered in a major decrease in homicide (and crime, even in the midst of the Great Depression). Examining Figure 10, our simple plot of Miron’s prohibition enforcement index against the homicide rate, one sees that his national time series correlation appears strong up to the early 1990s (when Miron’s original data set ended), after which time the story breaks down.

Insert Figure 10 about here

With more recent data provided to us by Miron and Angela Dills, his coauthor on a more recent paper again using national time series data to analyze the effect of a variety of variables on various measures of crime (Dills, Miron, and Summers 2008),⁸⁶ we revisited Miron's original hypothesis and regression specifications. We extended one of Miron's original regressions and several slight variations on that specification to nearly an additional decade of time and two subsets of the available data—1933-2004 and 1966-2004.⁸⁷ The regression from 1933 onward tested the sensitivity of the drug prohibition spending coefficient to the exclusion of early 20th century data, the accuracy of which is questionable and upon which at least one econometrician has attempted to improve (Eckberg 1995).⁸⁸ The regression from 1966 onward tested whether the positive correlation between prohibition enforcement spending and the homicide rate held up for the last third of the 20th century onward—the time period over which substantial anti-drug spending emerged and the war on drugs became entrenched.⁸⁹

Finally, we conducted one additional set of regressions (which we do not report here) as a modest check on how well Miron's prohibition enforcement index proxies for overall spending on drug criminalization. Miron's index tracks the population- and inflation-adjusted expenditures by the one or two federal laws or agencies at any given time devoted exclusively to drug and/or alcohol prohibition, which have at many times been a relatively small component of total anti-drug spending.⁹⁰ While the current state of available data makes it infeasible to incorporate state-level enforcement spending (which has been estimated to exceed federal spending and the absence of which is a shortcoming of Miron's approach),⁹¹ we were able to test Miron's prohibition enforcement index as a proxy for overall domestic law enforcement spending by running simple, uncontrolled regressions for 1986 through 2001 using total federal domestic law

enforcement (population- and inflation-adjusted analogously to Miron's index), after which time the ONDCP's computation methodology radically changed (ONDCP 2002, 10-11; ONDCP 1998, 16). While the short time span is a concern, the general consistency of the results using the two different measures suggests that Miron's index offers a reasonable approximation of changes to at least federal domestic enforcement spending.

The first two columns of Table 1 show Miron's original specifications through 1995 and the resulting positive coefficient on his drug prohibition spending index, which was significant at the 1 percent level. Our effort at reproducing Miron's original demographics-controlled regression also reveals a positive coefficient, albeit smaller and significant only at the 5 percent level.

Insert Table 1 about here

When one extends the data beyond 1995, however, the relationship that Miron had established for the previous 95 years appears to break down. In our regressions on the homicide rate through 2004, starting in 1900 (with and without Eckberg's adjusted pre-1933 homicide rate), 1933 and 1966, the coefficient on the prohibition spending index is generally smaller and only for 1966 onward does Miron's full specification yield a coefficient on the prohibition spending index that is significant at the 5 percent level. Moreover, the R-squared values for the regressions from 1990 to 2004 are much lower than those for Miron's original regressions from 1900 to 1995.

The regression results do not fatally undermine the hypothesis that drug criminalization increases the homicide rate. They do, however, cast further doubt on the strength of empirical support (which was already only speculative and provisional) for Miron's intuitively plausible theory. Figure 10 reveals why the added data from the 1990s onward weakens the estimated

relationship between prohibition enforcement expenditures and homicide: federal *per capita* drug prohibition spending has continued to rise despite a steady fall in the homicide rate.

A number of more general problems potentially plague the basic regression specifications: the enormous difficulty of drawing causal inferences from national time series data; the possibility that causality runs in both directions; and the omission of state enforcement expenditures and other possible explanatory factors. However, bearing in mind these various provisos, Miron's analysis is consistent with, and provides a notable (though tentative and limited) supplement to, more targeted analyses—such as the aforementioned study of New York murders—supporting the theory that criminalization does more harm by the systemic crime and violence it creates than good in any toxicologically-induced crime it may prevent.

ii. Costs of Incarceration

The criminalization of cocaine has greatly contributed to our country's vast prison population. Related problems with our current approach to cocaine are mandatory minimum sentences and the differential treatment of crack and powder cocaine. As discussed earlier, there is a large racial disparity between African-Americans and Caucasians in terms of the percentage imprisoned for drug-related offenses. Much of this racial disparity is the result of mandatory sentences for possession and trafficking of crack which have been far more severe than those in place for powder cocaine. In the early 1990s, over 90 percent of defendants in crack cases were African-American compared with only 25 percent of defendants in powder cocaine cases (Caulkins et al. 1997, 20).⁹² Mandatory sentencing laws for drugs generally prescribe a sentence based on the quantity of the drug in question. Until just recently, under federal sentencing guidelines a defendant needed to possess an amount of powder cocaine one hundred times

greater than the amount of crack cocaine in order to receive an equivalent sentence.⁹³ Thus a defendant convicted of possessing 50 grams of crack cocaine with intent to distribute faced a mandatory minimum sentence of ten years whereas a defendant would need to possess 5 kilograms of powder cocaine to expect the same sentence.

Though President Obama recently signed the Fair Sentencing Act, which is set to reduce the sentencing disparity ratio from 100 to 1 to 18 to 1 (CNN Wire Staff 2010), a significant differential will remain, and some states also have adopted more stringent sentences for crack cocaine than powder cocaine (Boyum and Reuter 2005, 52). Differences in state law treatment of the two drugs have the potential to be more important because more prisoners are convicted of crack offenses at the state rather than federal level each year.

In addition to the racial disparities created by mandatory sentencing laws, scholars have also noted additional concerns regarding their implementation. First among these is the fact that drug amounts are determined by mixture weight rather than pure weight. This introduces sentencing distortion because drugs sold in the illicit market vary greatly in their purity. For example, the sale of coca leaf, which contains only 2 percent cocaine, is treated the same as the sale of pure powder cocaine in terms of weight, even though 100 grams of coca leaf has the same amount of cocaine as 2 grams of pure cocaine (Caulkins et al. 1997, 23). The focus on weight also prevents a distinction between large-scale dealers, the “kingpins” of the business, and small time dealers. A “kingpin” may operate in such a way that he carries very little of a drug substance on him at any given time and thus when caught in possession with an intent to sell, receives a lighter sentence than one of his subordinates, who carries larger quantities of the substance in order to make frequent sales. Without the mandatory minimum sentences, judges would have more discretion to differentiate between the “kingpin” and the small-time dealer.

Mandatory sentences shift power from judges to prosecutors because prosecutors have discretion concerning whether to charge an individual with a crime carrying a given minimum sentence, whereas once the defendant is convicted, under a mandatory sentencing scheme the judge lacks the discretion to reduce a sentence (Caulkins et al. 1997, 24). Deciding whether it is preferable to grant more power to judges or prosecutors is a judgment call which depends on whether one believes such power should be vested in the executive or judicial branch; however, the shift in power is a clear impact of mandatory minimum sentencing laws.

Given the substantial costs of mandatory minimums, are they necessary or cost-justified deterrence mechanisms? Credible evidence suggests they are not. A 1997 empirical evaluation of the cost-effectiveness of mandatory drug sentences found mandatory minimums are less effective at reducing cocaine use than both conventional enforcement and treatment programs (Caulkins et al. 1997). The authors, part of the RAND Drug Policy Research Center, attempted to measure the effects on cocaine consumption of spending an additional \$1 million on conventional enforcement, mandatory minimum sentences, or treatment. Looking at the 184,548 drug dealers convicted in state and federal courts during 1990, the authors estimated that were the federal mandatory minimum drug sentences⁹⁴ applied to all of these dealers, the cost to the public for the additional prison time would be \$22.5 billion. According to the model tested in this study, longer sentences influence cocaine consumption by raising the price of cocaine as dealers increase prices in order to offset the increased probability of a longer prison sentence. Using an estimate that a drug dealer must be compensated an additional \$37,500 per additional year of incarceration and a cost to the public of \$25,000 per year of incarceration, they estimated that each \$1 spent on longer sentences will translate into a \$1.50 increase in total costs to consumers of cocaine. Thus they found that an additional \$1 million spent on longer sentences

would increase cocaine prices by 0.004 percent.⁹⁵ Over a 15 year time horizon given a dealer discount rate of 12 percent and an elasticity of demand for cocaine of 1, they determined that each additional \$1 million spent on longer sentences reduces cocaine consumption by 12.6 kilograms nationwide (Caulkins et al. 1997, 103). Given estimated total annual consumption of 291,000 kilograms, this represents a change far less than one-hundredth of one percent. If one assumes the relationship to be linear over this range, every increase in incarceration costs of \$1 billion per year might be expected to reduce cocaine consumption by about 4.3 percent.

When evaluating treatment programs, the RAND authors relied on Rydell's and Everingham's (1994) study of cocaine treatment reporting that 13 percent of cocaine addicts abstain from hardcore cocaine use in the long-run following treatment and that 79 percent abstain during the 0.3 year length of the average treatment program. Given the \$1,740 average cost of a treatment program, an extra \$1 million could treat 575 heavy cocaine users, resulting in a 16 kilogram reduction in the first year. Over a 15 year time horizon, given that 13 percent of heavy users quit heavy use following treatment, these authors estimated that each \$1 million spent on treatment would reduce cocaine consumption by 103.6 kilograms, compared with 12.6 kilograms for longer sentences, making treatment appear much more effective (Caulkins et al. 1997, 105). While the linearity assumption might be more strained over this range, the comparison to the incarceration-increase numbers is revealing: an annual increase of \$1 billion in spending on treatment might be expected to reduce cocaine consumption by 35.6 per cent.

These findings are in line with Rydell's and Everingham's (1994) examination of the effectiveness of treatment (both outpatient and residential programs) compared with three other drug enforcement policies: source country control (eradicating coca leaves in the country where they are grown), interdiction (seizures at the U.S. border to prevent cocaine from entering the

country) and domestic enforcement (cocaine seizures, asset seizures, and arrests of drug dealers by federal, state, and local law enforcement agencies). The authors found that the cost of crime and productivity loss from cocaine use decreases by \$7.46 for every \$1 spent on treatment whereas the same figure for source country control is \$0.15 per dollar, \$0.32 for interdiction, and \$0.52 for domestic enforcement. Rydell's & Everingham's initial study was criticized for underestimating the decrease in cocaine use stemming from increases in cocaine prices due to source-country control, interdiction, and domestic enforcement. Repeating their study of policy effectiveness in 2000 assuming a more elastic demand for cocaine, Caulkins, Chiesa, and Everingham (2000) determined that treatment has a four-to-one advantage over domestic enforcement in reducing the costs of crime and productivity losses.

Overall, this evidence on treatment versus severe punishment for those found possessing or dealing cocaine today suggests that mandatory treatment for drug offenders is a more cost-effective solution. As with marijuana policy, there appear to be many potential improvements for cocaine policy, even within the regime of criminalization.

IV. Conclusion

In the United States—indeed, throughout the world—many individuals are drawn to substances that may harm them greatly. Public policy varies enormously with respect to these substances, partly based on the degree of addiction, the nature of harms, and historical experience. Though sugar, saturated fat, and high fructose corn syrup impose enormous health costs, regulation to discourage consumption of them is virtually non-existent; in fact, corn subsidies in particular have been criticized for perversely incentivizing poor diets. In contrast, tobacco and alcohol are subject to considerable regulation while remaining legal, and a host of

drugs ranging from heroin and cocaine to methamphetamine, ecstasy, LSD, and marijuana are banned by state and federal law.

Tobacco imposes high costs on a large proportion of users because the addiction is powerful and the health cost of decades of use will likely be great. Nonetheless, consumption rates tend to be high because the health costs are temporally distant, and governments tend not to prohibit consumption because current productivity and parenting ability are not discernibly impaired. Interestingly, perhaps the greatest domestic success in reducing consumption of harmful substances came for this lawful product, engineered largely through tax hikes via the settlement of tort litigation against the tobacco companies.

Other harmful recreational substances vary in terms of addictiveness and the ability of large numbers of users to enjoy them sporadically and without substantial health cost or productivity impairment for work and parenting. But for sizeable percentages—perhaps 10 percent for marijuana users, 15 percent for alcohol and cocaine users, and almost 25 percent for heroin users (see Figure 9)—the personal and social costs are dramatic and substantial. It is largely to reduce these costs to this minority of users that governments have banned, and tried to keep as many people as possible away from marijuana, cocaine, methamphetamine, and heroin (and sought to control various legal pharmaceuticals that similarly seem to be used without substantial cost by most while imposing great burdens for some not inconsiderable fraction of users).

Estimates placing the economic costs of illegal drug abuse at levels roughly comparable to those costs for alcohol and tobacco underscore that there are no easy choices when it comes to drug policy. Aggressive efforts to limit consumption through a tough penal approach tend to restrain the costs from drug use while unleashing the high costs of enforcement and incarceration

in a context of increased violence centered around the criminal gangs that run the drug trade. Conversely, legalization of alcohol and tobacco drastically reduces enforcement costs with respect to these substances while keeping the costs of consumption high. A cost-minimizing approach to drug policy might move us away from a punitive approach to control of the currently illegal drugs, while entailing aggressive measures to prevent underage consumption and constrain demand.

On the other hand, while thorough consideration of policy toward legal drugs is beyond the scope of the present inquiry, comparisons of their toxicological effects and social costs with those attributable to such illegal drugs as marijuana and cocaine suggest that more vigorous pursuit of demand-restraint policies for alcohol and tobacco may result in a reduction of the social costs of those drugs. At some point, insights from social science and medical testing may be refined enough, and widely enough disseminated, to enable potential users to secure better advance notice regarding their particular susceptibility to the serious consequences of drug and alcohol abuse. At present, many individuals find out the hard way, at great cost to themselves and society. Despite the problem of moral hazard, greater treatment seems to offer a more cost effective method for dealing with these abusers than criminal penalties.

Our analysis has also underscored that optimal drug policy is likely to differ from one drug to another, since, for example, the impact of government policies—current and hypothetical—may be substantially different for an extremely prevalent drug with relatively mild toxicological effects, such as marijuana, than for a far less common, but more addictive and dangerous drug, such as cocaine. Given the differences in prevalence, user base composition, toxicological effects and distribution networks between marijuana and cocaine, depenalization or

legalization would impact the magnitude and distribution of social costs in meaningfully different ways for these two drugs.

Yet if reform's risks and likely impacts upon the distribution of social costs differ from drug to drug, our analysis nevertheless concludes that for both cocaine and marijuana, there is considerable potential for reducing the overall social costs. Our review of theory and empiricism suggests that carefully tailored versions of depenalization or legalization might provide these cost-reductions, and additional analytic scrutiny could further clarify their likely impacts.

In light of the admitted uncertainty in empirical predictions of use rates under hypothetical new regimes, and considering the many important values that a cost-minimization approach fails to entertain, we are not surprised that many observers fear or dismiss alternatives to criminalization.⁹⁶ Distributional issues, although under-theorized in the illegal drug policy context, arguably underlie much concern about reform. While we follow standard economic analysis and treat a dollar in costs equally across contexts, politicians and voters are attentive to who bears the costs of alternative policies. Particularly troublesome to opponents of legalization—and to a lesser extent depenalization—may be that such reform would redistribute many costs away from current drug users, sellers, and the government⁹⁷ and on to a new set of victims: the new drug users and victims of accidents, a group whose ranks could include one's neighbors, relatives, or even one's own children. Upper middle class voters with influence over policy may believe that marijuana prohibition protects their children by placing costs on lower class drug sellers and other countries (such as Mexico). The supporters of prohibition will point to the lower rates of marijuana use by high school seniors today than in the late 1970s as evidence for the success of the prohibitionist approach. But, as Figure 11 illustrates, substantial historical drops in tobacco and alcohol consumption by high school seniors show that

consumption declines by the young can be engineered even for legal substances. Moreover, events from Kabul to Mexico City show that policies of drug prohibition enrich violent forces internationally in ways that can impose large indirect costs on the United States.

Insert Figure 11 about here

While we refrain from analyzing distributional consequences in depth, we are keenly aware of the concern they engender. Our relative optimism about the potential of depenalization or legalization to reduce the costs of certain illegal drugs does not come from a sense that such drugs are not socially harmful. We believe any serious analysis of reform must be especially sensitive to policies for tailoring depenalization or legalization to mitigate costs from increases in use.⁹⁸ Counter-advertising, treatment, age-restrictions, and policies against driving while under the influence—to list just a few such ideas—would together not just alter at the margin but integrally affect a new regime for any currently illegal drug.

In thinking about various options for reforming policy toward marijuana or cocaine, it is helpful to bear in mind that a choice among criminalization, depenalization, and legalization could be made with the aim of minimizing social costs, rather than simply curtailing use—the socially costly goal toward which our current policy of criminalization seems oriented. Maintaining a focus on the social harms of a drug, not just less subtle measures of the prevalence of use, helps to clarify the effects of policies that rely predominantly on tough criminal penalties.

However, even those who would design drug policy principally to minimize use prevalence should not discount the potential of a carefully tailored version of depenalization or legalization to serve that goal. Consider Becker's suggestion that if the goal of reduced consumption (particularly for the young) is largely derived via maintaining high prices, this goal could be achieved at lower social cost by legalizing and taxing up to the level of current price

(Becker, Murphy, and Grossman 2006).⁹⁹ While the merits of this argument will depend upon the specifics of the legalization policy and the drugs to which it is applied, some general theoretical considerations are worth stressing.

The socializing impact of legalization and possible attendant product advertising could increase individuals' preference for a socially harmful substance, increasing demand for the drug at any given price even if an excise tax were designed to simultaneously keep the price from falling too greatly.¹⁰⁰ Moreover, the greater the excise tax, the less effective legalization would be at shrinking the black market as illegal dealers would find a higher legal price easier to undercut. There is yet another basic tension in Becker's view: while it assumes consumers are responsive predominantly to price rather than the moral command of illegality (and hence its loss under legalization is a minimal cost), it also presumes that consumers will largely turn away from the lower priced illegal drugs that skirt the excise tax.¹⁰¹

Yet although legalization with significant taxation would not eliminate the black market for a drug entirely, it would be expected to shrink substantially the size of the illegal market, with the attendant cost reductions from less crime. The remaining black market would also have diminished risk and profit margins, thus providing less economic incentive for participants to engage in costly crime and violence to maintain their stakes. Moreover, the additional tax revenues could be used to fund greater enforcement to protect the under-aged (as well as to target the tax evaders), while providing greater vehicles for treatment for those who succumb to the burdens of addiction and abuse. Finally, it is not insignificant that legalization is the only regime that does not contemplate untold numbers of illegal transactions by otherwise law-abiding individuals, and an attendant diminished respect for, and faith in, the rule of law.¹⁰²

Similarly, a well-crafted form of depenalization is not necessarily antithetical to the goal of discouraging drug use. Like legalization, depenalization could also significantly reduce the enforcement costs and productivity losses from the arrest and legal processing of hundreds of thousands of marijuana possession cases—and some of the costs from analogous proceedings, plus incarceration, in the context of cocaine. Although one might worry that depenalization would expand consumption without contracting the black market, and that full decriminalization of possession would appear hypocritical when combined with the retention of criminal penalties for sale, it is not clear that these concerns would be borne out in practice. Particularly if sanctions were reduced for sale as well as possession, depenalization could, like legalization, reduce the risk and reward for illegal market participants, thus diminishing the likelihood of violence used to protect their market positions. Depenalization of possession alone could not only reduce enforcement costs but also—as the insights of Kleiman (2009) help show—increase the potential swiftness, certainty, and deterrence value per sanction unit, for situations where punishments were applied. It might also help usher in a policy shift toward harm reduction—a new orientation toward helping, rather than punishing, the victims of drug abuse. Rather than being an example of hypocritical or morally ambiguous policy, depenalization could be framed as a new understanding of which activities are sufficiently harm-producing to merit criminalization (i.e., sale) and which aren't (i.e., possession). Indeed, the experience of a number of European countries suggests that depenalization could reduce the costs of enforcement, redirect efforts toward helping problem users, and perhaps even reduce the violence of illegal markets, without these gains being outweighed by increased costs from use.¹⁰³

Although our inquiry into illegal drug policy has been a self-conscious search for a cost-minimizing regime, our evaluation of various policy options can also provide a basis for analysis

by those who would prefer simply to minimize use cost-effectively or who would conduct a full welfare analysis including the benefits of use for the many casual or moderate users who do not fall victim to costly abuse or dependence.

Endnotes

¹ The United States's incarceration rate of 7.56 per 1,000 people is five to ten times the rate in most western and northern European countries.

² Under our taxonomy, the libertarian ideal espoused by such scholars as Milton Friedman is a subset of legalization in which taxation and regulation would be kept to a minimum.

³ The terms “depenalization” and “decriminalization” have been used in confusing, misleading, and sometimes contradictory ways. The National Research Council (2001, 192) notes: “The term ‘decriminalization’ has sometimes been misunderstood to refer to ‘legalization’ (i.e., making drugs available for nonmedical uses, as in the case of alcohol). However, as used by experts in criminal law and popularized by the National Commission on Marijuana and Drug Abuse [NCMDA] in 1972, ‘decriminalization,’ refers to the repeal of criminal sanctions against possession for personal use, even though the drugs remain contraband and commercial access remains prohibited. The erroneous association between decriminalization and legalization has led some commentators to abandon the term in favor of ‘depenalization’ to refer to these more lenient marijuana laws.” Our taxonomy closely tracks the usage adopted by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA 2005, 12). The EMCDDA uses decriminalization and depenalization in the following ways: “[D]ecriminalisation’ comprises removal of a conduct or activity from the sphere of criminal law. Prohibition remains the rule, but sanctions for use (and its preparatory acts) no longer fall within the framework of the criminal law (elimination of the notion of a criminal offence). This may be reflected either by the imposition of sanctions of a different kind (administrative sanctions without the establishment of a police record – even if certain administrative measures are included in the police record in some countries, such as France), or the abolition of all sanctions. . . . [D]epenalisation’ means relaxation of the penal sanction provided for by law. In the case of drugs, and cannabis in particular, depenalisation generally signifies the elimination of custodial penalties. Prohibition remains the rule, but imprisonment is no longer provided for, even if other penal sanctions may be retained (fines, establishment of a police record, or other penal sanctions).” We use the term “depenalization” to describe a *regime* in which possession is punished with sanctions other than incarceration, reserving “decriminalization” to refer to regimes in which penalties for possession are not just reduced but are entirely removed or diverted from the realm of criminal law.

In addition to the erroneous association between “decriminalization” as used by the NCMDA in the drug context and ordinary understandings of legalization, there are two other important reasons for preferring the term depenalization to decriminalization, when describing the general policy of responding to possession with fines and/or treatment rather than incarceration. First, some Western European countries, for example, make much greater use of fines than the United States for a variety of criminal offenses. While fines may strike Americans as non-criminal sanctions, they are routinely used as criminal sanctions in some other countries. (For example, Greene (1988) cites a study from the early 1980s finding that in West Germany the fine was used as the sole penalty for three-quarters of property crime offenders and two thirds of those convicted of assault.) Hence, even if such a country relies primarily—or even exclusively—on fines and treatment to punish possession, one cannot thereby conclude that possession has necessarily been taken out of the system of criminal law. Second, as Suk (2008) notes with the example of employment discrimination law in France, some of those same countries use criminal law as the primary means of addressing behavior that in the U.S. is handled primarily through tort law. A more expansive domain for criminal law is structurally related to a heavier use of lesser sanctions, such as fines, in the criminal context, and it may also mean that criminal sanctions do not automatically trigger the degree of stigmatization that they imply in the United States. To the extent that criminal sanctions in general carry less of a stigma in some of the countries with less severe punishments for drug offenses, those countries’ variations on depenalization appear closer to decriminalization from the perspective of the American system and its use of incarceration as the basic sanction of criminal law.

One further clarification is in order: in theory, proscription with sanctions other than incarceration could be applied to sale, in addition to possession. However, because the application of depenalization to both possession and sale would essentially yield a system resembling a highly (though peculiarly) regulated legalization, we do not treat the depenalization of possession and sale together as a basic regime. Rather, we implicitly relegate such a regime to a subset of legalization and use the term “depenalization” to refer to depenalization of possession. This means that any depenalization of possession is likely to be incomplete, because states and countries generally set quantity caps defining the limits of non-criminal possession as a way to distinguish ordinary users from sellers.

⁴ Contrary to popular perception, Kleiman (2006) notes that depenalization was actually America’s policy toward alcohol during prohibition. Alcohol prohibition did not target simple possession but rather manufacture, sale, and transportation, and in that sense it was a policy of extreme depenalization. Cook (2007, 19) notes that even when sanctions were imposed for manufacture, sale, or transportation, in practice these sanctions tended to consist of only a small fine.

⁵ While there is a growing literature examining the experiences of countries and states that have shifted from criminalization to depenalization—whether that depenalization is effected *de jure*, as in Portugal’s decriminalization, or *de facto*, as in the case of some other European countries—there is a dearth of evidence on shifts from criminalization to legalization.

⁶ Depenalization would reduce these costs less than legalization because criminal justice resources would still be used to impose penalties on sellers and even users. The more extreme the depenalization, the greater would be the expected reduction in these costs.

⁷ The answer to this question largely depends upon the specifics of the new regime. For example, depenalization could involve a host of different approaches to enforcement, treatment, and civil penalties, while legalization could entail a wide range of policies regarding taxation, product quality regulation, advertising, and possession by minors.

⁸ A complete normative evaluation of drug policy, even one from a largely consequentialist perspective, must necessarily contend with a host of values not amenable to quantification: welfare, liberty, and justice, to name an important few. Despite such limitations, however, a cost-minimization perspective has a clarity and relative simplicity that makes it a useful guide for any normative discussion of illegal drug policy reform.

⁹ There are several reasons for treating these statistics with some caution. First, there are many possible metrics for capturing the extent of drug use, and across countries the percentage of people who have tried a drug once may be only loosely correlated with the percentage who have used the drug often or recently. Second, Room et al. (2008, 60) report: “Since [the] methodology in this study was more uniform than in any previous comparison of cannabis use across countries, it would be [sic] appear to be the most authoritative source for such statements. However, there are large discrepancies between the findings reported in Degenhardt *et al.* and other well known surveys Consequently, we have not made use of the WMHS data until these discrepancies, which may represent important methodological differences, are accounted for.”

¹⁰ For alcohol, Degenhardt et al. (2008) indicate that in terms of cumulative use—i.e., the percentage of the population that has ever used a given drug—the United States (at 91.6 percent) is within a few points of several West European nations, including Belgium, France, Germany, the Netherlands, and the Ukraine, rather than the clear outlier it is in terms of marijuana and cocaine. Using this same measure for tobacco, the United States has the highest cumulative incidence of use, 73.6 percent, of any nation studied. However, the U.S. has had dramatic success in decreasing tobacco consumption since 1985: according to World Health Organization data on regular basis smoking, the United States is far from a leader, with 20-29 percent of U.S. men reporting smoking regularly. The analogous percentage is now higher in most European countries, as well as in China and Russia—where over 60 percent of men report smoking on a regular basis.

¹¹ If indeed severe sanctions are necessary to keep America’s use rates from rising even higher above those of other countries, it is tempting to conclude that Americans must have a greater disposition toward

recreational drug use. However, in attempting cross-country comparisons of sanctions and use rates, it is important not to lose sight of the broader set of incentives that individuals face. For example, to the extent that potential drug sellers choose among a set of possible legal and illegal behaviors, the attractiveness of alternative options—including the quality of social welfare networks, the available legal employment, and the severity of punishment for other criminal careers—will markedly affect the extent to which each unit of punishment deters. The U.S. may need more severe sanctions against drug offenders than Western European countries to produce comparable degrees of deterrence not only or simply because Americans have a greater cultural propensity to drug use (although this is possible) but also because alternatives to selling and using are worse in the United States. Lesser social safety nets and harsher penalties for alternative crimes such as property offenses may mean that greater punishment is necessary in the U.S. than in some Western European countries in order to make drug selling less attractive than substitute behaviors. On the other hand, lower levels of structural unemployment in the U.S. could militate in the opposite direction, further complicating the analysis. Thorough analysis of the complex sets of alternatives that individuals face which impact the deterrent effect of legal sanctions may be less critical in the drug possession context because drug use and income-producing crimes are unlikely to be strong substitute behaviors. Still, it is worth remembering that individual users may choose among broad sets of recreational substances, both legal and illegal, that differ somewhat across countries.

¹² The National Survey on Drug Use and Health (NSDUH) is sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA), which is a part of the Department of Health and Human Services (HHS). The survey itself is carried out by the Research Triangle Institute of North Carolina (RTI). RTI selects a random sample of households and draws 70,000 individuals ages twelve and over to participate annually. A professional RTI interviewer visits the household to conduct the survey. The actual interview is administered via laptop computer with the respondent entering most answers directly into the computer such that the interviewer does not know the respondent's answers to the questions. Respondents receive \$30 in cash following the interview. For further information, see National Survey on Drug Use and Health, <https://nsduhweb.rti.org/>.

¹³ For example, Joseph Califano Jr., president of the National Center on Addiction and Substance Abuse at Columbia University (CASA) and former Secretary of Health, Education and Welfare, uses addiction estimates in just this way, writing: "Today, we have 50 million nicotine addicts, 18 million alcoholics and alcohol abusers, and 6 million drug addicts. It is logical to conclude that, if drugs are easier to obtain, less expensive, and socially acceptable, more individuals will use them. With legalization, experts believe the number of cocaine addicts alone could jump beyond the number of alcoholics" (Trebach and Califano 2010).

¹⁴ Speaking on Portugal's experience with decriminalization of illegal drugs, Manuel Cardoso, deputy director of the Institute for Drugs and Drugs Addiction in Portugal, has said: "Before decriminalization, addicts were afraid to seek treatment because they feared they would be denounced to the police and arrested. . . . Now they know they will be treated and not stigmatized as criminals" (Treating Not Punishing 2009).

¹⁵ One way for someone caught in possession of marijuana to reduce one's expected sentence is to enter treatment. Many marijuana treatment admissions are criminal justice referrals (Room et al. 2008, 86). In that sense, the rise in arrests for possession of marijuana in the past two decades has been a factor contributing to an increase in the number of marijuana users seeking treatment—although it may be difficult to accurately estimate the number of individuals who did not seek treatment under the current criminalization regime, but who would have sought treatment had marijuana been depenalized or legalized.

¹⁶ In a famous concurrence in *Powell v. Texas*, Justice White put it this way: "If it cannot be a crime to have an irresistible compulsion to use narcotics . . . I do not see how it can constitutionally be a crime to yield to such a compulsion." *Powell v. Texas*, 392 U.S. 514, 548 (1968) (White, J., concurring).

¹⁷ Reviewing the "four largest, most methodologically rigorous studies of psychiatric disorders and their correlates," Heyman (2009, 69-88) finds that high remission rates are characteristic of addiction. Heyman

also finds the widespread belief that addiction is a chronic disorder to be unsupported by the best available data (73-74).

¹⁸ This intuitively plausible prediction is backed by evidence demonstrating that addiction is much more or less likely to spread depending upon social context. Heyman (2009, 31-43) reviews the influences of cohort and social context on addiction rates and finds that both are significant, despite the biological basis of addiction. Contrary to received wisdom, Heyman argues convincingly that “[a]ddiction is not an equal-opportunity disorder; indeed there is no psychiatric disorder that is more closely tied to circumstance” (39).

¹⁹ Grossman, Chaloupka, and Anderson (1998) find that the Becker-Murphy model—in which demand for addictive goods is sensitive to past, current and future price—is consistent with some empirical studies of the demand for cigarettes, alcohol and cocaine, which find negative effects of price on demand, positive effects of past and future consumption on demand, and greater price elasticities of demand over longer time horizons. Other economic models of addiction exist, however, that have treated addicts as myopic or holding inconsistent short and long term preferences.

²⁰ Becker and Murphy (1988, 695) put it this way: “We do not claim that all idiosyncratic behavior associated with particular kinds of addictions are consistent with rationality.”

²¹ Becker and Murphy write: “Permanent changes in prices of addictive goods may have a modest short-run effect on the consumption of addictive goods. This could be the source of a general perception that addicts do not respond much to changes in price. However, we show that the long-run demand for addictive goods tends to be more elastic than the demand for nonaddictive goods” (1988, 694-95).

²² The assumption underlying this statement is that the probability of *commencing* abuse drops sharply after adolescence, while those who begin abuse are put on a less favorable subsequent life path. As a result, one would observe that most abusers start early and have worse life outcomes. Of course, this pattern could also appear if there were simply two types of individuals—those prone to abusing drugs (that is, those with high probabilities of commencing abuse and having poor life outcomes) and those not so prone—and individuals in the first group tended to begin abuse in their teen years. Thus, heterogeneity with stable probabilities could generate the observed pattern in a way that would indicate that delaying initiation of abuse would not reduce the number of abusers over the life span. Of course, it might still be desirable to delay addiction to prevent it from stymieing education or growth.

²³ In reporting data on drug use over time, it is important to keep in mind the variety of ways in which use can be measured. Prevalence of use is the most common use measure, measuring the percentage who have tried a substance, rather than the quantities or potencies used or distribution of use among users. Prevalence is only a proxy for an ideal measure of use severity that would somehow incorporate and weight prevalence, intensity, potency, and other factors contributing to social harms generated by a population’s drug problem. Among prevalence statistics the most commonly reported are lifetime, last year, and last month. Each of these time horizons carries with it advantages and disadvantages. Lifetime use figures pick up all those who have ever tried a substance, even if just one time, thus giving a sense of how common it has been for a member of a given population to try a substance. By looking across an individual’s lifetime, however, such measures necessarily obscure the severity of prevalence at narrower moments in time (e.g., “now” or “in recent years”). If many people try a drug once or just several times, but drug use problems stem from perpetual users, the measure can be a poor proxy for the severity of the current problem of drug use within a population. Looking at use during the last year or last month illuminates the severity of the drug problem within a population at a narrower moment in time, and places more emphasis on relatively frequent users than lifetime use measures. However, these shorter time horizons fail to capture the likelihood that an individual in a given population will try or come to abuse the drug in the long-run.

²⁴ Monitoring the Future (MTF), sponsored by the Institute for Social Research at the University of Michigan, has been a mainstay of data collection regarding drug use in the United States since 1975. MTF consists of an annual survey of 16,000 seniors from public and private high schools across the contiguous United States. Random sampling procedures are used to select 133 schools for research, with

a maximum of 350 students surveyed within each school. Ten days prior to administration of the survey, students are given a flyer that explains the purpose of the study and provides notice to parents of the study, giving each parent an opportunity to refuse their child's participation. Institute for Social Research staff administer the questionnaire in classrooms during normal class periods following procedures outlined in a project instruction manual. All student responses remain confidential. For more information, visit <http://www.monitoringthefuture.org/purpose.html>.

²⁵ This important insight has long been recognized—at least by many advocates of some form of drug legalization. Kleiman and Saiger (1990, 539) note: “A central accomplishment of the consequentialist proponents of legalization has been to stress the vital distinction between the costs of drug abuse and the costs of drug control.”

²⁶ The war on drugs increased the number of drug offenders in federal prisons by 26 percent from 2000 to 2006, bringing the number to over 93,000 and accounting for over 53 percent of the increase in the federal prison population during this same time period (Sabol, Couture and Harrison 2007, 9). Sabol, West and Cooper (2009, 37-38) report that the numbers of drug offenders in state and federal prison were 265,800 (in 2006) and 95,079 (in 2008), respectively (those in jail are not counted in these numbers).

²⁷ Marijuana possession accounted for 59.8 percent of the cases evaluated for prosecution by U.S. Attorneys for simple possession, whereas powder cocaine and crack cocaine accounted for 11 and 10.3 percent, respectively (BJS 2001, 3). For drug trafficking offenses, marijuana was involved in 30.7 percent of evaluated cases, with powder cocaine and crack cocaine being involved in 28.2 and 15.5 percent of cases, respectively.

²⁸ Because offenders may have been involved with multiple substances, the figures do not add up to 100 percent.

²⁹ The American Corrections Association estimates that the average cost of incarcerating state prison inmates is \$67.55 per day, or around \$25,000 per prisoner per year (ACA 2006). Combining this estimate with one from Sabol, West and Cooper (2009, 21) that 265,800 state prisoners are currently serving sentences for drug offenses yields an annual cost of state drug incarceration of \$6.6 billion. If the total population of convicts incarcerated in jail and state and federal prison is approximately half-a-million, it is reasonable to think that the total costs of incapacitating drug offenders each year may be in the neighborhood of \$13 billion.

³⁰ Prevalence of use of illegal drugs is modestly higher among African-Americans than Caucasians (SAMHSA 2008, 25). The 2007 NSDUH reported past month illicit drug use rates of 9.5 percent among “blacks or African-Americans” and 8.2 percent among whites. While these data are useful at dispelling popular notions that drug use is vastly disproportionate among African-Americans, a comparison between the percentage of past-month drug users by race and the percentage of drug-abuse offense prisoners by race does not in and of itself demonstrate disparate enforcement of drug laws against African-Americans. Because most people imprisoned for drug-related offenses are imprisoned for drug trafficking and dealing rather than simple possession, and because the indicator of illegal drug use prevalence does not identify either the type of drug or severity of use, the highly aggregated demographic comparison of illicit drug users with individuals incarcerated on drug offenses must be interpreted cautiously.

³¹ We believe that Portugal's self-described policy of “decriminalization” is appropriately characterized (whereas some other laws—such as American states' reforms in the 1970s—have been misleadingly called decriminalization) because Portugal has by law explicitly designated short-supply possession as an “administrative offence” subject only to civil fines (Greenwald 2009; Treating Not Punishing 2009).

³² It appears that even treatment imposed as a condition for suspension of a fine may not be enforced rigorously (Greenwald 2009, 3). On the other hand, the Deterrence Commissions are theoretically empowered to levy other non-criminal sanctions such as the revocation of certain privileges.

³³ The Argentine Court's reasoning is similar to that of an earlier Alaska Supreme Court decision. In *Ravin v. State* the Alaska Supreme Court held that Article I, Section 22 of the Alaska Constitution (“The right of the people to privacy is recognized and shall not be infringed.”) protected people's right to possess marijuana in their own homes for personal use. *Ravin v. State*, 537 P.2d 494, 511 (Alaska 1975).

More recently the Alaska Court of Appeals interpreted *Ravin* as applying only to possession of small amounts of marijuana and upheld an Alaska statute prohibiting possession of eight ounces of marijuana. *Walker v. State*, 991 P.2d 799, 802-03 (Alaska App. 1999).

³⁴ This study uses the cost-of-illness (COI) methodology. The COI methodology evaluates both the direct costs from drug abuse, such as medical expenditures on treatment of drug users, and indirect costs, such as work missed due to drug induced illness. This method can be contrasted with the willingness-to-pay methodology, which computes the public's willingness to pay for the avoidance of a small amount of additional harm.

³⁵ "As used in this report and throughout most of the literature on economic costs, the term 'alcohol abuse' refers to any cost-generating aspect of alcohol consumption. This differs from the clinical definition of the term, which involves specific diagnostic criteria" (Harwood 2000, 1). An early aggregate cost study, Rice et al. (1991), estimated economic costs for 1988 of \$58.3 billion for drug abuse and \$85.8 billion for alcohol abuse. A subsequent study, Rice (1999), estimated that in 1995 there were \$114.2 billion in costs from drug abuse and \$175.9 billion in costs from alcohol abuse.

³⁶ These figures, rounded to the nearest billion, were computed using the CPI-based inflation adjustment calculator of the Bureau of Labor Statistics, available at <http://data.bls.gov/cgi-bin/cpicalc.pl>.

³⁷ Of course, whether and to what extent drugs benefit their users is not just an empirical question but also a normative one. For a brief and lucid discussion of various perspectives on the role of drug use benefits in policy assessment, see MacCoun and Reuter (2001, 70). The authors note that whereas some economists such as Becker and Murphy argue that the principle of revealed preference evinces benefits for drug users, others such as Kleiman are skeptical of such an argument given that certain drugs "instigate neurological and psychological processes that motivate compulsive use."

³⁸ In noting the limitations of its scope and reliability, the ONDCP's 2004 cost study, ONDCP (2004, vi) points to four brief critiques of the value of such estimates: Reuter (1999a), Kleiman (1999), Kopp (1999), and Cohen (1999). For an argument that such economic costs of drug use studies do not help illuminate the relative merits of prohibition or alternative policies, see Miron (2003).

³⁹ Since Secretary Clinton's remarks in March 2009, the news media have reported a flurry of stories concerning the violence in the Mexican drug trade. One particularly gruesome tale published in the *New York Times* in October 2009 reported the arrest of Santiago Meza Lopez who had admitted to disposing of the remains of 300 bodies for a drug cartel by dissolving them in lye. The lye corroded the remains to the point where DNA could not be recovered to identify the bodies. Due to such tactics, many people involved in the Mexican drug trade disappear each year (Lacey 2009). While Mexican drug smugglers are often depicted as cocaine dealers, marijuana remains the largest source of revenue for Mexican drug cartels. Even though Mexican growers are starting to face stiff competition from "mom and pop" U.S. producers of pot, the White House Office of National Drug Control reports that in 2006 over 60 percent of Mexican cartels' revenue (\$8.6 billion out of \$13.8 billion) came from U.S. marijuana sales (Fainaru and Booth 2009). Mexican traffickers have also established marijuana crops in remote American forests where they have shot at U.S. law enforcement agents, polluted rivers with pesticides and fertilizers, and started large fires. Most recently, the Associated Press has reported on the \$25 billion each year in profits from drug trafficking in the United States that Mexican cartels send to Mexico from the United States (AP 2009). In spite of attempts by the U.S. Treasury to stop this flow of funds, the AP reports that \$99.75 of every \$100 sent by the cartels makes it to Mexico.

⁴⁰ Caulkins and Kleiman (2007, 591) summarize the quandary in the cocaine context: "Unless the taxes and regulations involved in a post-prohibition control regime for cocaine were so high and so tight as to leave the current illicit market largely in place, the result would almost certainly be a very large increase in the number of heavy cocaine users Against that must be set the enormous reduction in violence and incarceration that would result from abolishing the illicit market in cocaine. (The net impact on property crime is unclear; users, presumably, would steal less, but some dealers, deprived of their customers by legal competition, might switch to theft as a source of illicit income. On the other hand,

legalization would free substantial police, prosecution, and prison resources for use against predatory crime.)”

⁴¹ Another concern that is difficult to assess is the extent to which current drug dealers would substitute toward other criminal enterprises were a liberalization of illegal drug policy to contract the black market and its profitability.

⁴² In this section we consider drug policy primarily from the standpoint of cost-minimization analysis. A final assessment on desirable social policy would consider other important concerns such as individual liberty, distributional justice, and which side of the controversy (those who would maintain the status quo or those who would enact reform) bears the burden of uncertainty. However, due to limited space and our interest in clarifying the social science, we do not give such concerns full treatment, but instead simply note some evidence that might be relevant to the application of these non-efficiency based criteria. For a discussion seeking to reframe the marijuana policy debate in terms of “just deserts” for offenders, see Husak (2007, 189). A comprehensive treatment—and indeed a true cost-benefit analysis—of various schemes would also require serious consideration of the benefits of drugs to their users. To the extent that reforms such as depenalization or legalization would increase the benefits to users through increased consumption, for example, our decision to ignore benefits biases our analysis in favor of the status quo and makes any favorable assessments of such reforms all the more cautiously derived.

⁴³ A persistent critique of arguments for “legalization” has been that they paint overly rosy pictures of the consequences of legalization by omitting the specifics—such as the forms of regulation, distribution mechanisms, level of taxation, treatment of marketing, and special policies toward young people—that if considered in detail would surely reveal the shortcomings of legalization.

⁴⁴ At the extreme, this posture often entails language implicitly denying that legal drugs such as alcohol and nicotine are drugs at all. The Drug Enforcement Administration (DEA) exploits this distinction in opposing legalization. “The Legalization Lobby claims drugs are no more dangerous than alcohol,” the DEA writes in its summary of the top ten “facts” on legalization (DEA 2003, 3). This statement implicitly perpetuates the myths that (1) alcohol is not a drug; and (2) the substances properly called drugs are illegal.

⁴⁵ John Kaplan’s *The Hardest Drug: Heroin and Public Policy* (1983) provides a classic example of the approach of focusing on the costs and benefits of a single drug, while drawing comparisons with other drugs. Written on the eve of the American crack “epidemic,” Kaplan considered the costs of heroin use, formerly considered to be the country’s most problematic drug, and explored the costs and benefits of possible systems of legalization and heroin maintenance. Kaplan’s careful weighing of costs and benefits for a particular drug provides an example of a strong methodological framework for those conducting research in this area.

⁴⁶ Caulkins and Kleiman (2007, 564) estimate that “cocaine (including crack) accounts for roughly two-thirds of the social costs associated with illicit drugs in the United States.”

⁴⁷ “Data from non-western countries are much sparser, but suggest more variation and lower rates” (Room et al. 2008, 61). There are several reasons why lifetime use data are more amenable to cross-country comparison. First, lifetime use figures are likely to fluctuate less over short periods of time because (a) people who have used during their lifetimes will not drop out of the pool of those who have ever used until they die, and (b) those who begin using between sampling periods will make up a smaller percentage of those who have ever used than those who have used during the past year because at any time far more people will have ever used than used in the past year. The most recent use figures for different countries are often for slightly different years. The smaller the expected changes in use from year to year, the lesser the extent to which different sampling years render statistics from two different countries incomparable. Second, lifetime use figures using a uniform methodology are available from at least one recent study, the WHO World Mental Health Surveys, whereas the most comprehensive cross-country data for past year use of which we are aware come from the World Drug Report 2009, and are pulled together from disparate studies done within individual nations and with somewhat differing methodologies.

⁴⁸ Far fewer—indeed just a small fraction—are actually imprisoned for marijuana possession. Caulkins and Kleiman (2007, 581) write: “There are more than 1 million arrests per year in the United States for drug possession . . . but few of them result in prison time, or even jail time following a conviction. That is especially true of cannabis possession, even in states where it is not formally ‘decriminalized.’ Possession of quantities suitable for personal consumption by itself is usually punished, if at all, with probation, fines, community service, or shorter jail terms, not prison sentences.”

⁴⁹ That relatively few marijuana users persist in their habit beyond their youth raises two important questions, however. First, to what extent is this consumption pattern the result of the existing punitive policy? Second, to what extent does uncertainty about the first question undermine our confidence in the long-term consequences of marijuana use?

⁵⁰ For example, “in 2004 the three leading Democratic hopefuls—John Kerry, Howard Dean, and John Edwards—all acknowledged without quibbling that they’d smoked pot” (Hertzberg 2008).

⁵¹ A list of the names is available at <http://www.prohibitioncosts.org/endorsers.html>.

⁵² Milton Friedman, George Akerlof, and Vernon Smith.

⁵³ More recently Miron has expanded upon that report, analyzing the budgetary implications of the prohibition of all other illegal drugs—including cocaine and heroin specifically (Miron 2008).

⁵⁴ Preferences for drugs are likely to be in significant part endogenous—i.e., not independent of, but rather, partly determined by, policy and market structure. However, while most assume that criminalization reduces the aggregate demand for drugs, the policy regime undoubtedly affects individuals in differing ways. For some, the resulting social stigma makes drug use or dealing far less attractive at any given price whereas, for others, a contrary lure of heresy and rebellion makes such activities more desirable at each price.

⁵⁵ A related issue is whether marijuana is an economic substitute for, or complement to, alcohol and cigarettes. Williams et al. (2004), for example, find some evidence that marijuana and alcohol are complements, and therefore increases in the price of alcohol decrease marijuana use. DiNardo and Lemieux (2001), on the other hand, find evidence that increases in the minimum drinking age were associated with slight increases in marijuana use, suggesting a substitution effect. We are skeptical that such studies can resolve the issue of whether marijuana and alcohol or marijuana and cigarettes are substitutes or complements—much less how the overall price decreases in marijuana from depenalization or legalization would affect alcohol or cigarette use—because it is unlikely that marijuana and alcohol or marijuana and cigarettes have stable relationships in individuals’ preference relations across social contexts and historical time periods. Even if such a stable relation were uncovered given marijuana criminalization, this would not ensure that the relationship would persist after marijuana reform—especially legalization.

⁵⁶ Reviewing the literature, two analysts write: “The psychopharmacological model hypothesizes that drug users engage in violent and/or non-violent crime because of the acute psychoactive effects of the substance. . . . There is very little support for this model in the case of marijuana, except for adolescents. Laboratory studies generally show that marijuana, unlike alcohol, temporarily inhibits aggression and violence . . . raising doubt that any association identified in the data is causal in nature. Still, there is some evidence showing a correlation between chronic marijuana use and increased risk of violent behavior” (Pacula and Kilmer 2003, 4). The results of the authors’ *own* models, using Arrestee Drug Abuse Monitoring (ADAM) and Uniform Crime Reports (UCR) data, suggest a *possible* causal mechanism between marijuana use and *arrests* for property and income-producing crime, but are too conflicting to affirm or refute the existence of a causal relationship between marijuana use and violent crime arrests. Even if one were to take a leap from their relatively mixed evidence and conclude that a causal relationship between marijuana use and non-violent crime arrests exists, however, the nature of that relationship remains elusive: perhaps most problematic is the possibility that a positive association between marijuana use and arrest likelihood may be a reflection of marijuana users’ greater likelihood of arrest conditional on committing a crime—rather than greater likelihood of committing crimes. At best the authors’ analysis offers weak and indirect support for the thesis that marijuana induces non-violent

crime at all, much less toxicologically.

⁵⁷ So-called “broken windows” policing is a strategy wherein law enforcement cracks down on minor offenses as a means of preventing antisocial behavior from escalating into more serious crimes. The strategy was advanced in James Q. Wilson’s and George Kelling’s article *Broken Windows: The Police and Neighborhood Safety* (Wilson and Kelling 1982).

⁵⁸ Not only did the authors find evidence against the “broken windows” theory of policing, they also observed that African-Americans and Hispanics were much more likely to be arrested for MPV and to fare poorly in the criminal justice system thereafter.

⁵⁹ Room, et al. (2008, 105), explain: “Predominantly, these state laws downgraded the legal status of marijuana possession offences, defining possession of small amounts as a misdemeanor, i.e. reducing the severity of penalties following violations while retaining them formally as criminally sanctioned offenses under this offense rubric. Thus, while these reforms have widely been labeled as ‘decriminalization,’ it has been suggested that this may have been a misnomer in strict terms. . . .” In one respect, there is a common denominator among the state reform laws that makes them somewhat like, though not strictly examples of, our particular conception of a “depenalization” regime: as Pacula et al. (2004, 9) note “[t]he only common denominator across these eleven statutes was the lack of imposition of minimum jail/prison terms.” The failure to specify minimum terms of incarceration is not the same as the removal of any incapacitating sanctions, however. If decriminalization strictly refers to a regime of sanctions outside the criminal system, some of the states’ reform laws approach this ideal more closely than others: some downgraded possession of a small quantity of marijuana to a misdemeanor while others downgraded the offense to a violation (Pacula et al. 2004).

⁶⁰ The 2001 NRC report noted that “most cross-state comparisons in the United States . . . have found no significant differences in the prevalence of marijuana use in decriminalized and nondecriminalized states Even in the few studies that find an effect on prevalence it is a weak one” (NRC 2001, 192-93).

⁶¹ MacCoun et al. (2009, 366-67) write: “Our study finds significant associations between the maximum penalty specified in state marijuana laws and a citizen’s perceived maximum penalties. But the associations are very small in magnitude. Citizens in decriminalization states are only about 29 percent more likely to believe the maximum penalty for possessing an ounce of marijuana is a fine or probation (relative odds ratio = 1.29). About a third of citizens in each type of state believe the maximum penalty is a jail sentence. People are not oblivious to their marijuana laws, but the average citizen’s awareness is pretty tenuous. This fact, combined with prior evidence for only weak effects of perceived sanction severity on offending . . . goes a long way toward clarifying why decriminalization effects are fairly weak and inconsistent.”

⁶² As van der Gouwe, Ehrlich, and van Laar (2009) explain, possession remains illegal and subject to incarceration and fines, but those found in possession of fewer than five grams of cannabis will not be subject to prosecution. Because the Netherlands’ policy systematically removes these low-level possession cases from the criminal system, despite retaining nominal prohibition, it may appropriately be termed *de facto* decriminalization or extreme depenalization.

⁶³ The survey methodology used by the European School Survey Project was modeled after that used by the Monitoring the Future study performed in the United States.

⁶⁴ COLO. CONST. art. XVIII, § 14, which states that “it shall be an exception from the state’s criminal laws for any patient or primary care-giver in lawful possession of a registry identification card to engage or assist in the medical use of marijuana.”

⁶⁵ CAL. HEALTH & SAFETY CODE § 11362.5 (West 2009).

⁶⁶ CAL. HEALTH & SAFETY CODE § 11362.71 (West 2009).

⁶⁷ CAL. HEALTH & SAFETY CODE § 11362.775 (West 2009), which provides that people with valid medical marijuana identification cards who “associate within the state of California collectively or cooperatively to cultivate marijuana for medical purposes, shall not solely on the basis of that fact be subject to state criminal sanctions. . . .”

⁶⁸ *People v. Mentch*, 195 P.3d 1061, 1068 (Cal. 2008).

⁶⁹ Ross v. RagingWire Telecommunications, 174 P.3d 200, 204 (Cal. 2008).

⁷⁰ Taxing socially harmful substances will enhance social welfare to the extent that it corrects for externalities (and internalities). The tax revenues themselves are mere transfers from drug users and drug sellers to the government, although to the extent that the drug cartels are outside the United States, there may be some transfer of wealth away from countries such as Mexico to the United States. See generally, Kaplow (2004).

⁷¹ “Caulkins and Pacula (2006) analyzed the National Survey on Drug Use and Health and found that most users reported that they acquired their marijuana from a friend (89%) and for free (58%)” (Room et al. 2008, 74).

⁷² Room, et al. (2008, 74-75) put it this way: “Violence is not commonly found in cannabis markets. This is mostly an inference from the absence of reports rather than any positive information that disputes between market participants are resolved amicably and that competition for territory is lacking. . . . The fact that the market is so imbedded in social networks may be an important factor in explaining the lack of violence.” Much of the violence over marijuana distribution in the U.S. is taking place in Mexico, which is plagued by a shocking level of drug-cartel related violence.

⁷³ Posadas de Puerto Rico Associates v. Tourism Company, 478 U.S. 328 (1986).

⁷⁴ See, e.g., 44 Liquormart, Inc. v. Rhode Island, 517 U.S. 484 (1996) (invalidating Rhode Island ban on advertising liquor prices).

⁷⁵ See Capital Broadcasting Company v. Mitchell, 333 F. Supp. 582 (D.C. 1971), *aff’d sub nom.* Capital Broad. Company v. Kleindienst, 405 U.S. 1000 (1972).

⁷⁶ Complaint, Commonwealth Brands, Inc. v. United States, No. 00-117 (W.D. Ky. Aug. 31, 2009).

⁷⁷ Pub. L. No. 111-31, 123 Stat. 1776 (2009).

⁷⁸ Commonwealth Brands, Inc. v. United States, 678 F. Supp. 2d 512, 525-26 (W.D. Ky. 2010).

⁷⁹ *Id.*

⁸⁰ *Id.* at 531-32.

⁸¹ Single Convention on Narcotic Drugs, art. 36, Mar. 25, 1961.

⁸² See, for example, critiques of STRIDE price data (NRC 2001, 108-17).

⁸³ That many authors focus on America’s experience with alcohol prohibition and its repeal— notwithstanding the fact that both took place over 75 years ago, when social and economic conditions were quite different than today—is evidence of the dearth of American experience with transitions from some form of prohibition to legalization.

⁸⁴ Belenko (1993, 40) reports that studies of crack smokers indicate “injury to the bronchial pathways,” “lung irritation and inflammation, resulting in shortness of breath,” “decreased ability to exchange air,” pulmonary edema, and “pulmonary hemorrhaging possibly caused by the vasoconstricting action of cocaine.”

⁸⁵ 4.1 percent of the murders were categorized as “multidimensional,” meaning that they are drug-related but that they fit into more than one of these categories. Of the murders involving drugs, 22 percent involved cocaine and 54 percent involved crack.

⁸⁶ Dills, Miron, and Summers (2008) find that for certain regressions on the homicide rate, an index of drug prohibition spending enters as a statistically significant independent variable. We follow Miron’s original paper in using *Vital Statistics* rather than Uniform Crime Rates, for data on the homicide rate (Miron, 1999, 90).

⁸⁷ We used the Hildreth-Lu correction for serial correlation in all our regressions.

⁸⁸ We also tested the entire available time span using Eckberg’s adjusted pre-1933 homicide rate for the same purpose of identifying to what extent Miron’s initial finding depended upon the early 20th century and its questionable data.

⁸⁹ Given the limitations of national time series data we deliberately chose not to replicate Miron’s more heavily controlled specifications—from either his original 1999 paper or his more recent broader study of economic analysis of crime, due to concern about drawing strong conclusions from national time series data and the misleading sense of definitiveness such specifications might suggest. This should in no way

diminish the insights into model sensitivity that we reveal here. Indeed to the extent that results differ with certain alternative specifications in Miron's own partial follow up paper, this only reaffirms the central importance of model specification. Moreover, given our skepticism about the possibility of comprehensively modeling the determinants of homicide using the relatively thin device that is national time series data, the problem of specification cannot simply be solved here by identifying some *a priori* ideal set of controls and focusing on regressions including them.

⁹⁰ For a description of Miron's drug prohibition enforcement spending index and a variation thereof using projected rather than actual expenditures, which he also tested, see Miron (1999, 92-93). The drug spending index for which Miron and Dills sent us data was equal to annual spending in hundreds of 1992 dollars per capita.

⁹¹ For a brief concise discussion of state versus federal spending on drug control, see Boyum and Reuter (2005, 44). The authors note that state spending data are far sparser than federal spending data but the state data that do exist suggest state spending likely exceeds federal spending and is also probably more enforcement oriented than federal spending.

⁹² The most recent figures from the U.S. Sentencing Commission indicate that in Fiscal Year 2008, 79.8 percent of those sentenced for offenses related to crack cocaine were Black, 10.4 percent were White, 8.8 percent were Hispanic, and 1 percent were "other." For powder cocaine, the relevant figures are 30.2 percent Black, 16.6 percent White, 52.3 percent Hispanic, and 1.0 percent "other." These data include those sentenced for drug trafficking, drug offenses occurring near a protected location, continuing criminal enterprise, use of a communication facility to facilitate a drug offense, renting or managing a drug establishment, and simple possession (U.S. Sentencing Commission 2008a). As would be expected given the higher mandatory minimum sentences for crack cocaine as compared with powder cocaine, statistics from this same source indicate that defendants convicted on charges involving crack cocaine have median sentences of 97 months, compared with a median of 70 months for those convicted of offenses involving powder cocaine (U.S. Sentencing Commission 2008b).

⁹³ Controlled Substances Act, 21 U.S.C. § 841 (2006).

⁹⁴ The authors focus on federal mandatory minimum sentences because even though most of those imprisoned for possessing and distributing cocaine are in state prisons, they wish to capture the overall impact of mandatory sentencing laws rather than analyzing state-to-state differences in such laws.

⁹⁵ The exact method by which Caulkins, et al. derive the 0.004 percent increase in cocaine prices is as follows. They begin with an estimate from Mark Kleiman that a cocaine dealer needs to be compensated between \$25,000 and \$50,000 to incur a risk of spending one year in prison, choosing \$37,500 because it is in the middle of Kleiman's range. They then divide this \$37,500 by \$25,000 (the cost of incarcerating a prisoner for one year) to determine that every \$1 spent by the government on incarceration imposes a cost of \$1.50 on dealers, thus meaning that for every \$1 million spent on incarceration, cocaine costs increase by \$1.5 million. Caulkins, et al. then use a cocaine price of \$129.20 per gram and a sales quantity of 291,200 kg per year to calculate that \$37.6 billion is spent on cocaine in the United States each year. Finally, they divide the \$1.5 million increase in the cost of cocaine by \$37.6 billion to find a 0.004 percent increase in the price of cocaine for every \$1 million spent on incarceration.

⁹⁶ We also note that many vocal pundits have vested interests in maintaining the status quo criminalization—a reality that helps explain both much opposition to reform among commentators and the political intractability of illegal drug policy reform. An entire federal bureaucracy, the Drug Enforcement Administration (DEA) has been created to enforce the current prohibition regime, the prison guard unions benefit enormously from the large number of prisoners kept behind bars on drug-related charges, and a multi-million dollar industry has emerged to supply the pre-employment drug screening needs of large employers of low-wage workers such as Wal-Mart and Target. The drug-testing industry may be the group most opposed to changes involving the reduction of penalties for marijuana use. In the typical urinalysis used in pre-employment drug screens, the detection window for marijuana is longer than that for drugs considered more serious, such as cocaine (Boyum and Reuter 2005, 82). Thus while private employers may continue to require drug screens prior to employment, anything that would make

marijuana use more acceptable and thus less of a basis for screening out employment candidates could significantly damage the drug testing industry.

⁹⁷ While it is easy to appreciate in theory that costs borne by the government are channeled back to society at large through higher taxes and/or forgone spending, such costs are spread diffusely and the individual taxpayer cannot easily measure changes in her burden, if she can perceive them at all.

⁹⁸ In at least one important way, increases in use of a legalized drug would be inherently much less harmful than increases in use when a drug is proscribed: they would not contribute to the black market and its associated violence and crime. Would domestic violence and date rape increase? These are concerns, but in periods of declining crime, domestic violence also tends to fall, so the problem might be mitigated.

⁹⁹ Becker, Murphy, and Grossman (2006, 38) argue that where demand or supply for a good is inelastic, “a monetary tax could cause a greater reduction in output and increase in price than optimal enforcement against the same good would if it were illegal, even though some producers may go underground to avoid a monetary tax.”

¹⁰⁰ Depenalization might be less likely to present this particular problem, although it is worth pondering whether a regime of legalization coupled with counter-advertising might be able to avoid the appearance of governmental toleration of drugs and convey an official stance of discouraging use.

¹⁰¹ Greater product information and lesser risk of contamination would provide significant reasons for consumers to prefer the legal markets, but could also, undesirably, stimulate new demand—not just divert existing demand from illegal markets to legal ones.

¹⁰² One possible exception to this otherwise straightforward observation is the case of drugs—such as marijuana—that can be produced domestically with relative ease. Full decriminalization of marijuana possession could substantially erode the number of illegal marijuana sales by diverting consumers toward home cultivation for personal use.

¹⁰³ Of course, for reasons already mentioned, such comparisons need to be handled with care.

References

- “A Nation of Jailbirds.” 2009. *Economist*, April 4, 40.
- “A Toker’s Guide.” 2009. *Economist*, March 7, 34.
- Abraham, Manja D. 1999. “Places of Drug Purchase in the Netherlands.” Paper presented at the 10th Annual Conference on Drug Use and Drug Policy, Vienna, Austria.
<http://proxy.baremetal.com/csdp.org/research/places.pdf>.
- American Correctional Association (ACA). 2006. *2006 Directory of Adult and Juvenile Correctional Departments, Institutions, Agencies, and Probation and Parole Authorities*, 67th edition. Alexandria, VA: American Correctional Association.
- Associated Press (AP). 2009. “U.S. Drug Cartel Crackdown Misses the Money.” *MSNBC*, December 17. <http://www.msnbc.msn.com/id/34466436/>.
- Becker, Gary S., and Kevin M. Murphy. 1988. “A Theory of Rational Addiction.” *Journal of Political Economy* 96(4): 675–700.
- Becker, Gary S., Kevin M. Murphy, and Michael Grossman. 2006. “The Market for Illegal Goods: The Case of Drugs.” *Journal of Political Economy* 114(1): 38–60.
- Belenko, Steven R. 1993. *Crack and the Evolution of Anti Drug Policy*. Westport, CT: Greenwood Press.
- Beale, Jonathan. 2008. “Montana Meth Ads Winning Drug Battle.” *BBC News*, August 22. <http://fvgroup.com/news/BBC%208.22.08.pdf>.
- Bureau of Justice Statistics (BJS). 2009. *Drugs and Crime Facts*. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs.
- _____. 2008. *Special Report: Parents in Prison and their Minor Children*. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs.
- _____. 2001. *Federal Drug Offenders, 1999 with Trends 1984-99*. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs.
- Boyum, David, and Peter Reuter. 2005. *An Analytic Assessment of U.S. Drug Policy*. Washington, D.C.: AEI Press.
- Brice, Arthur. 2009. “Argentina Ruling Would Allow Personal Use of Pot.” *CNN*, August 25. <http://www.cnn.com/2009/WORLD/americas/08/25/argentina.drug.decriminalization/index.html>.
- Browning, Dominique. 2009. “Reefer Madness.” *New York Times*, August 27. <http://www.nytimes.com/2009/08/30/books/review/Browning-t.html>.

Caspers-Merk, Marion. 2003. *Action Plan on Drugs and Addiction*. Bonn, Germany: German Federal Ministry of Health.
http://www.emcdda.europa.eu/attachements.cfm/att_35452_EN_Germany%20Action%20plan%202003-%20Englisch.pdf.

Cato Institute. 2009. "Drug Decriminalization in Portugal." Policy Forum featuring Glenn Greenwald and Peter Reuter, April 3. <http://www.cato.org/event.php?eventid=5887>.

Caulkins, Jonathan P., and Mark A.R. Kleiman. 2007. "Drug Policy." In *Understanding America: The Anatomy of an Exceptional Nation*, edited by Peter H. Schuck and James Q. Wilson, 563–96. New York: Public Affairs.

Caulkins, Jonathan P., and Rosalie Liccardo Pacula. 2006. "Marijuana Markets: Inferences from Reports by the Household Population." *Journal of Drug Issues* 36(1): 173–200.

Caulkins, Jonathan P., James Chiesa, and Susan S. Everingham. 2000. *Response to the National Research Council's Controlling Cocaine Study*. Santa Monica, CA: RAND Corporation.

Caulkins, Jonathan P., C. Peter Rydell, William L. Schwabe, and James Chiesa. 1997. *Mandatory Minimum Drug Sentences: Throwing Away the Key or the Taxpayer's Money?* Santa Monica, CA: RAND Corporation.

Cohen, Mark A. 1999. "Alcohol Drugs and Crime: Is 'Crime' Really One-Third of the Problem?" *Addiction* 94(5): 644–47.

CNN Wire Staff. 2010. "Obama Signs Bill Reducing Cocaine Sentencing Gap." *CNN*, August 3. http://articles.cnn.com/2010-08-03/politics/fair.sentencing_1_powder-cocaine-cocaine-sentencing-gap-sentencing-disparity?_s=PM:POLITICS.

Cook, Philip J. 2007. *Paying the Tab: The Economics of Alcohol Policy*. Princeton, NJ: Princeton University Press.

Drug Enforcement Administration (DEA). 2005. "Drug Intelligence Brief: The Changing Face of European Drug Policy." In *Drug War Deadlock: The Policy Battle Continues*, edited by Laura E. Higgins, 247–57. Stanford, CA: Hoover Institution Press.

_____. 2003. *Speaking Out Against Drug Legalization*. Washington, D.C.: U.S. Department of Justice. http://www.justice.gov/dea/demand/speakout/speaking_out-may03.pdf.

Degenhardt, Louisa, Wai-Tat Chiu, Nancy Sampson, Ronald C. Kessler, James C. Anthony, Matthias Angermeyer, Ronny Bruffaerts, Giovanni de Girolamo, Oye Gureje, Yueqin Huang, Aimee Karam, Stanislav Kostyuchenko, Jean Pierre Lepine, Maria Elena Medina Mora, Yehuda Neumark, J. Hans Ormel, Alejandra Pinto-Meza, José Posada-Villa, Dan J. Stein, Tadashi Takeshima, and J. Elisabeth Wells. 2008. "Toward a Global View of Alcohol, Tobacco,

- Cannabis, and Cocaine Use: Findings from the WHO World Mental Health Surveys.” *PLoS Medicine* 5(7): e141. doi:10.1371/journal.pmed.0050141.
- Dills, Angela K., Jeffrey A. Miron, and Garrett Summers. 2008. “What Do Economists Know About Crime?” NBER Working Paper 13759. Cambridge, MA: National Bureau of Economic Research.
- DiNardo, John, and Thomas Lemieux. 2001. “Alcohol, Marijuana, and American Youth: The Unintended Consequences of Government Regulation.” *Journal of Health Economics* 20(6): 991–1010.
- Donohue III, John J. 2009. “Assessing the Relative Benefits of Incarceration: The Overall Change over the Previous Decades and the Benefits on the Margin.” In *Do Prisons Make Us Safer? The Benefits and Costs of the Prison Boom*, edited by Steven Raphael and Michael Stoll, 269–341. New York: Russell Sage Foundation.
- Duke, Steven B., and Albert C. Gross. 2006. “Issues in Legalization.” In *Drugs and Society: U.S. Public Policy*, edited by Jefferson M. Fish, 201–22. Lanham, MD: Rowman & Littlefield Publishers.
- Eckberg, Douglas L. 1995. “Estimates of Early Twentieth Century U.S. Homicide Rates: An Econometric Forecasting Approach.” *Demography* 32(1): 1–16.
- European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). 2008. *Annual Report: The State of the Drug Problem in Europe*. Luxembourg: Office for Official Publications of the European Communities.
- _____. 2005. *Illicit Drug Use in the EU: Legislative Approaches*. Lisbon: European Monitoring Centre for Drugs and Drug Addiction.
- European School Survey Project on Alcohol and Other Drugs (ESSPAOD). 2003. *The ESPAD Report 2003: Alcohol and Other Drug Use Among Students in 35 European Countries*. Stockholm: Modintryckoffset.
http://www.espad.org/documents/Espad/ESPAD_reports/The_2003_ESPAD_report.pdf.
- Fainaru, Steve, and William Booth. 2009. “Cartels Face an Economic Battle.” *Washington Post*, October 7.
<http://www.washingtonpost.com/wp-dyn/content/article/2009/10/06/AR2009100603847.html>.
- FBI Uniform Crime Reporting Program. 2007. *Persons Arrested – Crime in the United States, 2007*. Washington, D.C.: Federal Bureau of Investigation.
- Gable, Robert S. 2006. “Acute Toxicity of Drugs Versus Regulatory Status.” In *Drugs and Society: U.S. Public Policy*, edited by Jefferson M. Fish, 149–62. Lanham, MD: Rowman & Littlefield Publishers.

- Givel, Michael. 2007. "A Comparison of the Impact of U.S. and Canadian Cigarette Pack Warning Label Requirements on Tobacco Industry Profitability and the Public Health." *Health Policy* 83(2-3): 343–52.
- Goldstein, Paul J., Henry H. Brownstein, Patrick J. Ryan, and Patricia A. Bellucci. 1997. "Crack and Homicide in New York City: A Case Study in the Epidemiology of Violence." In *Crack in America: Demon Drugs and Social Justice*, edited by Craig Reinerman and Harry G. Levine, 113–30. Berkeley, CA: University of California Press.
- Gore, Robert, and Mitch Earleywine. 2007. "Marijuana's Perceived Addictiveness: A Survey of Clinicians and Researchers." In *Pot Politics: Marijuana and the Costs of Prohibition*, edited by Mitch Earleywine, 176–88. New York: Oxford University Press.
- Greene, Judith A. 1988. "Structuring Criminal Fines: Making an 'Intermediate Penalty' More Useful and Equitable." *Justice System Journal* 13(1): 37–50.
- Greenwald, Glenn. 2009. *Drug Decriminalization in Portugal: Lessons for Creating Fair and Successful Drug Policies*. Washington, D.C.: Cato Institute.
http://www.cato.org/pub_display.php?pub_id=10080.
- Grossman, Michael, Frank J. Chaloupka, and Richard Anderson. 1998. "A Survey of Economic Models of Addictive Behavior." *Journal of Drug Issues* 28(3): 631–43.
- Harcourt, Bernard E., and Jens Ludwig. 2007. "Reefer Madness: Broken Windows Policing and Misdemeanor Marijuana Arrests in New York City, 1989-2000." *Criminology and Public Policy* 6(1): 165–82.
- Harwood, Hendrick. 2000. *Updating Estimates of the Economic Costs of Alcohol Abuse in the United States: Estimates, Update Methods, and Data*. Washington, D.C.: National Institute on Alcohol Abuse and Alcoholism. <http://pubs.niaaa.nih.gov/publications/economic-2000/alcoholcost.pdf>.
- Hawken, Angela, and Mark Kleiman. 2009. *Managing Drug Involved Probationers with Swift and Certain Sanctions: Evaluating Hawaii's HOPE*. Award No. 2007-IJ-CX-0033. Washington, D.C.: National Institute of Justice, Office of Justice Programs, U.S. Department of Justice.
- Hertzberg, Hendrick. 2008. "Higher Standards." *New Yorker*, February 25.
- Heyman, Gene M. 2009. *Addiction: A Disorder of Choice*. Cambridge, MA: Harvard University Press.
- Home Office. 2009. *Cannabis Reclassification*. London. Accessed December 20.
<http://drugs.homeoffice.gov.uk/drugs-laws/cannabis-reclassifications/>.

- Husak, Douglas. 2007. "Do Marijuana Offenders Deserve Punishment?" In *Pot Politics: Marijuana and the Costs of Prohibition*, edited by Mitch Earleywine, 189–207. New York: Oxford University Press.
- Johnson, Carrie. 2009. "U.S. Eases Stance on Medical Marijuana." *Washington Post*, October 20. <http://www.washingtonpost.com/wpdyn/content/article/2009/10/19/AR2009101903638.html>.
- Kaplan, John. 1983. *The Hardest Drug: Heroin and Public Policy*. Chicago: The University of Chicago Press.
- Kaplow, Louis. 2004. "On the (Ir)Relevance of Distribution and Labor Supply Distortion to Government Policy." *Journal of Economic Perspectives* 18(4): 159–75.
- Kershaw, Sarah, and Rebecca Cathcart. 2009. "Marijuana is Gateway Drug for Two Debates." *New York Times*, July 19. <http://www.nytimes.com/2009/07/19/fashion/19pot.html>.
- Kessler, Ronald C., Patricia Berglund, Olga Demler, Robert Jin, Kathleen R. Merikangas, and Ellen E. Walters. 2005. "Lifetime Prevalence and Age-of-Onset Distributions of *DSM-IV* Disorders in the National Comorbidity Survey Replication." *Archives of General Psychiatry* 62(6): 593–602.
- King, Ryan S., and Marc Mauer. 2006. "The War on Marijuana: The Transformation of the War on Drugs in the 1990s." *Harm Reduction* 3:6. doi:10.1186/1477-7517-3-6.
- Kleiman, Mark A.R. 2009. *When Brute Force Fails: How to Have Less Crime and Less Punishment*. Princeton, NJ: Princeton University Press.
- _____. 2006. "Prohibition: A Rum Do." *Druglink* 22(4): 14–5.
- _____. 1999. "'Economic Cost' Measurements, Damage Minimization and Drug Abuse Control Policy." *Addiction* 94(5): 638–41.
- Kleiman, Mark A.R., and Aaron J. Saiger. 1990. "Drug Legalization: The Importance of Asking the Right Question." *Hofstra Law Review* 18(3): 527–65.
- Klein, Joe. 2009. "Why Legalizing Marijuana Makes Sense." *Time*, April 2.
- Kopp, Pierre. 1999. "Economic Costs Calculations and Drug Policy Evaluation." *Addiction* 94(5): 641–44.
- Lacey, Marc. 2009. "In Mexican Drug War, Investigators Are Fearful." *New York Times*, October 16. <http://www.nytimes.com/2009/10/17/world/americas/17juarez.html>.
- Landler, Marc. 2009. "Clinton Says U.S. Feeds Mexico Drug Trade." *New York Times*, March 25. <http://www.nytimes.com/2009/03/26/world/americas/26mexico.html>.

Levine, Harry G., and Craig Reinerman. 2006. "Alcohol Prohibition and Drug Prohibition." In *Drugs and Society: U.S. Public Policy*, edited by Jefferson M. Fish, 43–76. Lanham, MD: Rowman & Littlefield Publishers.

Luhnow, David, and José de Cordoba. 2009. "Mexico Eases Ban on Drug Possession." *The Wall Street Journal*, August 22, A1.

MacCoun, Robert J., and Peter Reuter. 2005. "Does Europe Do it Better?" In *Drug War Deadlock: The Policy Battle Continues*, edited by Laura E. Huggins, 262–69. Stanford, CA: Stanford University Press.

_____. 2001. *Drug War Heresies: Learning from Other Vices, Times, and Places*. Cambridge, England: Cambridge University Press.

MacCoun, Robert J., Rosalie Liccardo Pacula, Jamie Chriqui, Katherine Harris, and Peter Reuter. 2009. "Do Citizens Know Whether Their State Has Decriminalized Marijuana? Assessing the Perceptual Component of Deterrence Theory." *Review of Law and Economics* 5(1): 347–71.

MacCoun, Robert, Peter Reuter, and Thomas Schelling. 1996. "Assessing Alternative Drug Control Regimes." *Journal of Policy Analysis and Management* 15(3): 330–52.

Martin, Michel, and Mandalit del Barco. 2009. "In California, Medical Marijuana Dispensaries Outnumber Starbucks." *National Public Radio*, October 15.
<http://www.npr.org/templates/story/story.php?storyId=113822156>.

Mauer, Marc. 2009. *The Changing Racial Dynamics of the War on Drugs*. Washington, D.C.: The Sentencing Project.

Miron, Jeffrey. 2008. *The Budgetary Implications of Drug Prohibition*. Silver Spring, MD: Criminal Justice Policy Foundation. <http://big.assets.huffingtonpost.com/miron-economic-report.pdf>.

_____. 2005. *The Budgetary Implications of Marijuana Prohibition*. Washington, D.C.: Marijuana Policy Project. http://www.heartland.org/custom/semod_policybot/pdf/17483.pdf.

_____. 2003. *A Critique of Estimates of the Economic Cost of Drug Abuse*. New York: Drug Policy Alliance.

_____. 1999. "Violence and the U.S. Prohibition of Drugs and Alcohol." *American Law and Economics Review* 1(1): 78–114.

Moffett, Matt. 2009. "Argentina Eases Rules on Marijuana." *Wall Street Journal*, August 26, A11.

Morgan, John P., and Lynn Zimmer. 1997. "The Social Pharmacology of Smokeable Cocaine: It's Not All It's Cracked up To Be." In *Crack in America: Demon Drugs and Social Justice*, edited by Craig Reinerman and Harry G. Levine, 131–70. Berkeley, CA: University of California Press.

Mumola, Christopher J., and Jennifer C. Karberg. 2007. *Drug Use and Dependence, State and Federal Prisoners, 2004*. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs.

National Council on Alcoholism and Drug Dependence (NCADD). 2002. "Alcoholism and Drug Dependence Are America's Number One Health Problem." Accessed December 20, 2009. <http://www.ncadd.org/facts/numberoneprob.html>.

National Institute on Drug Abuse (NIDA). 2009. *Monitoring the Future, National Survey Results on Drug Use: 1975-2008, Secondary Students*. Bethesda, MD: National Institute on Drug Abuse. http://www.monitoringthefuture.org/pubs/monographs/vol1_2008.pdf.

National Research Council (NRC). 2001. *Informing America's Policy on Illegal Drugs: What We Don't Know Keeps Hurting Us*. Washington, D.C.: National Academy Press.

Office of National Drug Control Policy (ONDCP). 2010. *Marijuana: Facts & Figures*. Washington, D.C.: Executive Office of the President.

_____. 2009. *Office of National Drug Control Policy: FY2010 Budget Strategy*. Washington, D.C.: Office of National Drug Control Policy. <http://www.whitehousedrugpolicy.gov/publications/policy/10budget/index.html>.

_____. 2009. *ADAM II: 2008 Annual Report*. Washington, D.C.: Executive Office of the President. <http://www.whitehousedrugpolicy.gov/publications/pdf/adam2008.pdf>.

_____. 2004. *The Economic Costs of Drug Abuse in the United States, 1992-2002*. Publication 207303. Washington, D.C.: Executive Office of the President. www.ncjrs.gov/ondcppubs/publications/pdf/economic_costs.pdf.

_____. 2002. *National Drug Control Strategy: FY2003 Budget Summary*. Washington, D.C.: Office of National Drug Control Policy. <http://www.whitehousedrugpolicy.gov/publications/pdf/budget2002.pdf>.

_____. 1998. *The National Drug Control Strategy 1998: Budget Summary*. Washington, D.C.: Office of National Drug Control Policy. <http://www.ncjrs.gov/ondcppubs/publications/pdf/budget98.pdf>.

Pacula, Rosalie Liccardo, and Beau Kilmer. 2003. "Marijuana and Crime: Is there a Connection Beyond Prohibition?" NBER Working Paper 10046. Cambridge, MA: National Bureau of Economic Research.

Pacula, Rosalie Liccardo, Jamie F. Chriqui and Joanna King. 2003. "Marijuana Decriminalization: What Does it Mean in the United States?" NBER Working Paper 9690. Cambridge, MA: National Bureau of Economic Research.

Reuter, Peter. 2009. *Can Heroin Maintenance Help Baltimore? What Baltimore Can Learn From the Experience of Other Countries*. Baltimore, MD: The Abell Foundation.

_____. 1999a. "Are Calculations of the Economic Costs of Drug Abuse Either Possible or Useful?" *Addiction* 94(5): 635–38.

_____. 1999b. "Drug Use Measures: What Are They Really Telling Us?" *National Institute of Justice Journal* 239: 12–19.

Rice, Dorothy P. 1999. "Economic Costs of Substance Abuse." *Proceedings of the Association of American Physicians* 111(2): 119–25.

Rice, Dorothy P., Sander Kelman, and Leonard S. Miller. 1991. "Estimates of Economic Costs of Alcohol and Drug Abuse and Mental Illness, 1985 and 1988." *Public Health Reports* 106(3): 280–92.

Room, Robin, Benedikt Fischer, Wayne Hall, Simon Lenton, and Peter Reuter. 2008. *Cannabis Policy: Moving Beyond Stalemate*. Oxford, England: The Beckley Foundation.
http://www.beckleyfoundation.org/pdf/BF_Cannabis_Commission_Report.pdf.

Rydell, C. Peter, and Susan Everingham. 1994. *Controlling Cocaine: Supply Versus Demand Programs*. Santa Monica, CA: RAND Corporation.

Sabol, William J., Heather C. West, and Matthew Cooper. 2009. *Bureau of Justice Statistics Bulletin: Prisoners in 2008*. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs.

Sabol, William J., Heather Couture, and Paige M. Harrison. 2007. *Bureau of Justice Statistics Bulletin: Prisoners in 2006*. Washington, D.C.: U.S. Department of Justice, Office of Justice Programs.

Substance Abuse and Mental Health Services Administration (SAMHSA). 2009. *Results from the 2008 National Survey on Drug Use and Health: National Findings*. Washington, D.C.: Department of Health and Human Services.
<http://www.oas.samhsa.gov/nsduh/2k8nsduh/2k8Results.pdf>.

_____. 2008. *Results from the 2007 National Survey on Drug Use and Health: National Findings*. Washington, D.C.: Department of Health and Human Services.
<http://www.oas.samhsa.gov/nsduh/2k7nsduh/2k7Results.pdf>.

Schneider Institute for Health Policy, Brandeis University (SIHP). 2001. *Substance Abuse: The Nations Number One Health Problem*. Princeton, NJ: The Robert Wood Johnson Foundation.

State of California. 2008. *Department of Justice Guidelines for the Security and Non Diversion of Marijuana Grown for Medical Use*. Sacramento, CA: Department of Justice, State of California. http://ag.ca.gov/cms_attachments/press/pdfs/n1601_medicalmarijuanaguidelines.pdf.

Suk, Julie C. 2008. "Procedural Path Dependence: Discrimination and the Civil-Criminal Divide." *Washington University Law Review* 85(6): 1315–71.

"Treating, Not Punishing." 2009. *The Economist*, August 29, 43.

Trebach, Arnold S., and Joseph A. Califano, Jr. 2010. "Close to Home Online, Viewpoints. Should Illegal Drugs Be Decriminalized?" In *Close to Home: Moyers on Addiction*. Accessed August 30. <http://www.pbs.org/wnet/closetohome/viewpoints/html/decrim.html>.

United Nations Office on Drugs and Crime (UNODC). 2009. *World Drug Report 2009*. Vienna, Austria: United Nations Office on Drugs and Crime. http://www.unodc.org/documents/wdr/WDR_2009/WDR2009_eng_web.pdf.

_____. 2008. *World Drug Report 2008*. Vienna, Austria: United Nations Office on Drugs and Crime. http://www.unodc.org/documents/wdr/WDR_2008/WDR_2008_eng_web.pdf.

U.S. Census Bureau. 2008. *2007 Population Estimates*. Washington, D.C.: U.S. Census Bureau. Accessed March 4, 2010. <http://www.census.gov/popest/national/asrh/NC-EST2007-srh.html>.

U.S. Sentencing Commission. 2008a. Table 34: Race of Drug Offenders for Each Drug Type. Washington, D.C.: U.S. Sentencing Commission. Accessed March 4, 2010. <http://www.ussc.gov/ANNRPT/2008/Table34.pdf>.

U.S. Sentencing Commission. 2008b. Figure J: Average Length of Imprisonment for Each Drug Type. Accessed March 4, 2010. <http://www.ussc.gov/ANNRPT/2008/figj.pdf>.

van der Gouwe, D., E. Ehrlich, and M.W. van Laar. 2009. *Drug Policies in the Netherlands*. Utrecht: Trimbos Institute. http://www.minvws.nl/includes/dl/openbestand.asp?File=/images/fo-drug-policies-_tcm20-180356.pdf.

Walmsley, Roy. 2009. *World Prison Population List, 8th edition*. London: King's College London, International Centre for Prison Studies. http://www.kcl.ac.uk/depsta/law/research/icps/downloads/wppl-8th_41.pdf.

Wilkinson, Tracy. 2009. "Mexico Moves Quietly to Decriminalize Minor Drug Use." *Los Angeles Times*, June 21. <http://articles.latimes.com/2009/jun/21/world/fg-mexico-decriminalize21>.

Williams, J., Rosalie Liccardo Pacula, Frank J. Chaloupka, and Henry Wechsler. 2004. "Alcohol and Marijuana Use Among College Students: Economic Complements or Substitutes?" *Health Economics* 13(9): 825–43.

Wilson, James Q., and George Kelling. 1982. "Broken Windows: The Police and Neighborhood Safety." *Atlantic Monthly* 249(3): 29–37.

Wohlsen, Marcus, and Greg Risling. 2009. "Medical Marijuana Shops Abound in California." *Associated Press*, November 5. <http://abcnews.go.com/US/wireStory?id=9009353>.

Woo, Stu. 2009. "Oakland Council Backs a Tax on Marijuana." *Wall Street Journal*, April 30, A4. <http://online.wsj.com/article/SB124105239168771233.html>.

Yamamura, Kevin. 2009. "Governor Asks: What if Pot's Legal and Taxed?" *Sacramento Bee*, May 6, 1A.

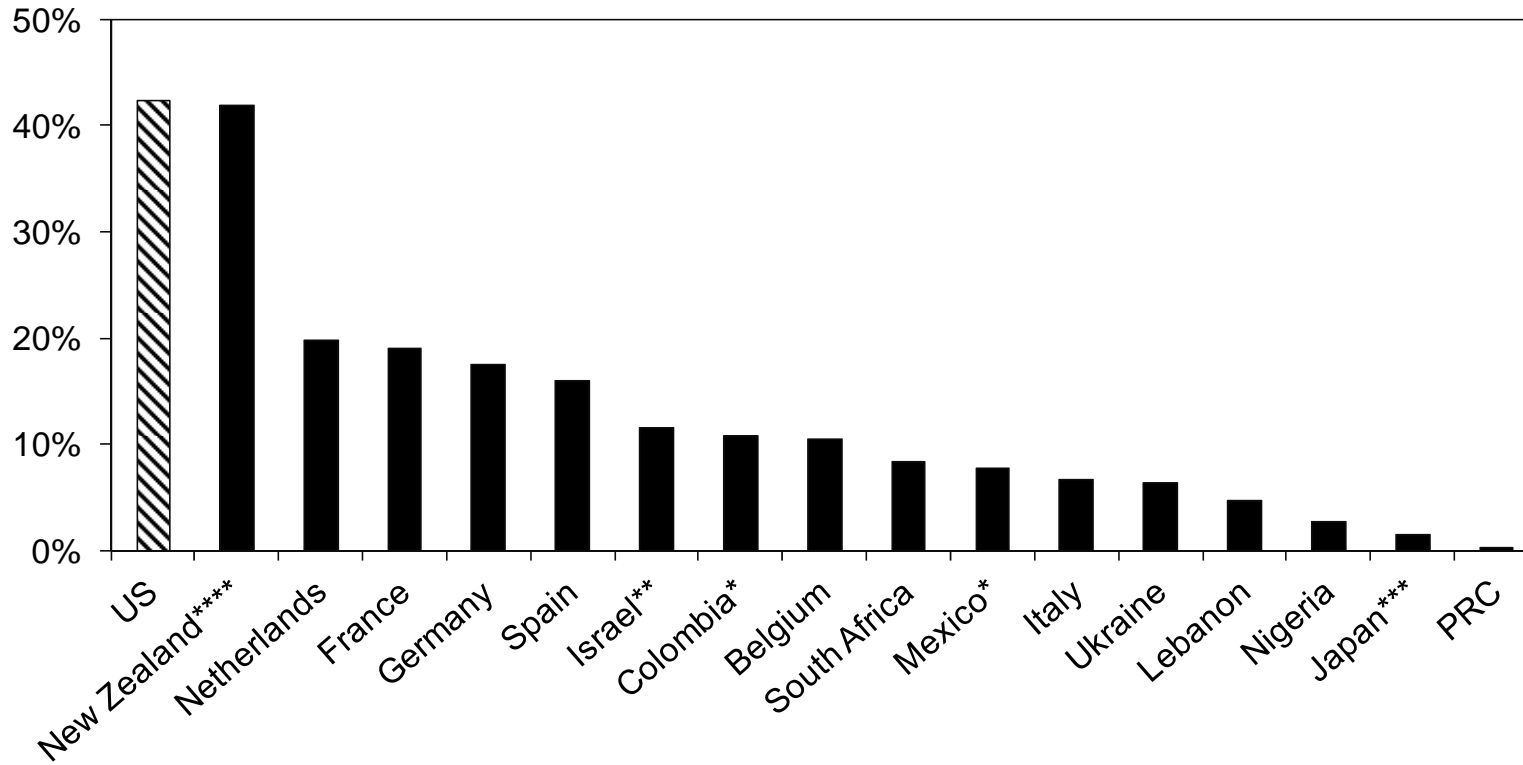
Table 1: Regressions of the Homicide Rate on Prohibition Enforcement

	Miron (1999)		Donohue, Ewing & Peloquin								
	1900-1995 (Original Results)		1900-1995	1900-2004			1900-2004 (Adj. Pre-1933)	1933-2004	1966-2004		
Miron Index	<u>139.2</u> (NW t-stat: 3.44)	<u>90.1</u> (NW t-stat: 3.08)	<u>71.40</u> (32.98)	38.99 (31.26)	<u>58.99</u> (27.06)	60.42 (32.13)	42.43 (29.48)	37.64 (38.83)	27.44 (51.96)	<u>88.88</u> (35.44)	<u>94.39</u> (43.27)
Linear Trend	*	*	<u>0.43</u> (0.08)			-0.01 (0.13)	0.08 (0.10)	0.15 (0.20)			-0.13 (0.46)
% Aged 5-14		*	49.14 (33.29)		53.28 (40.32)	51.76 (40.72)	<u>74.25</u> (35.86)	-6.01 (44.16)		<u>-345.34</u> (109.29)	<u>-367.77</u> (137.83)
% Aged 15-24		*	25.15 (18.50)		41.84 (28.90)	41.42 (30.07)	<u>49.13</u> (22.81)	8.74 (32.24)		<u>-201.40</u> (60.92)	<u>-206.03</u> (64.89)
% Aged 25-34		*	<u>81.50</u> (32.73)		70.12 (41.11)	69.10 (41.65)	<u>90.60</u> (35.46)	39.64 (37.16)		<u>-302.64</u> (92.35)	<u>-304.45</u> (94.46)
% Aged 35-44		*	-5.59 (33.27)		-31.29 (50.13)	-33.15 (50.80)	-4.35 (39.16)	-102.19 (56.43)		<u>-405.10</u> (85.74)	<u>-394.10</u> (92.09)
% Aged 45-54		*	-5.11 (36.13)		-8.80 (43.16)	-8.79 (48.94)	-16.26 (42.56)	-53.85 (64.38)		<u>-280.60</u> (70.93)	-247.32 (133.60)
% Aged 55-64		*	27.90 (45.94)		-81.38 (68.44)	-85.88 (71.66)	-27.45 (54.65)	<u>-212.03</u> (102.87)		<u>-558.29</u> (115.97)	<u>-537.64</u> (132.90)
% Aged 65+		*	<u>-352.92</u> (75.82)		53.44 (37.55)	54.03 (116.18)	0.51 (94.03)	-90.55 (199.72)		-138.92 (234.89)	-93.46 (290.42)
Intercept	*	*	-13.84 (21.80)	18.88 (26.45)	-12.50 (27.60)	-10.97 (28.81)	-27.99 (24.07)	37.34 (40.79)	-10.12 (58.46)	<u>292.01</u> (69.18)	<u>295.51</u> (72.00)
ρ	N/A	N/A	<u>0.67</u> (0.08)	<u>1.00</u> (0.00)	<u>0.94</u> (0.01)	<u>0.94</u> (0.01)	<u>0.78</u> (0.05)	<u>0.75</u> (0.07)	<u>1.00</u> (0.01)	<u>0.52</u> (0.07)	<u>0.53</u> (0.06)
R ²	.53	.94	.72	.02	.20	.20	.45	.60	.01	.81	.80
Adj. R ²	*	*	.70	.01	.13	.12	.40	.54	-.02	.75	.74

Table 1 notes:

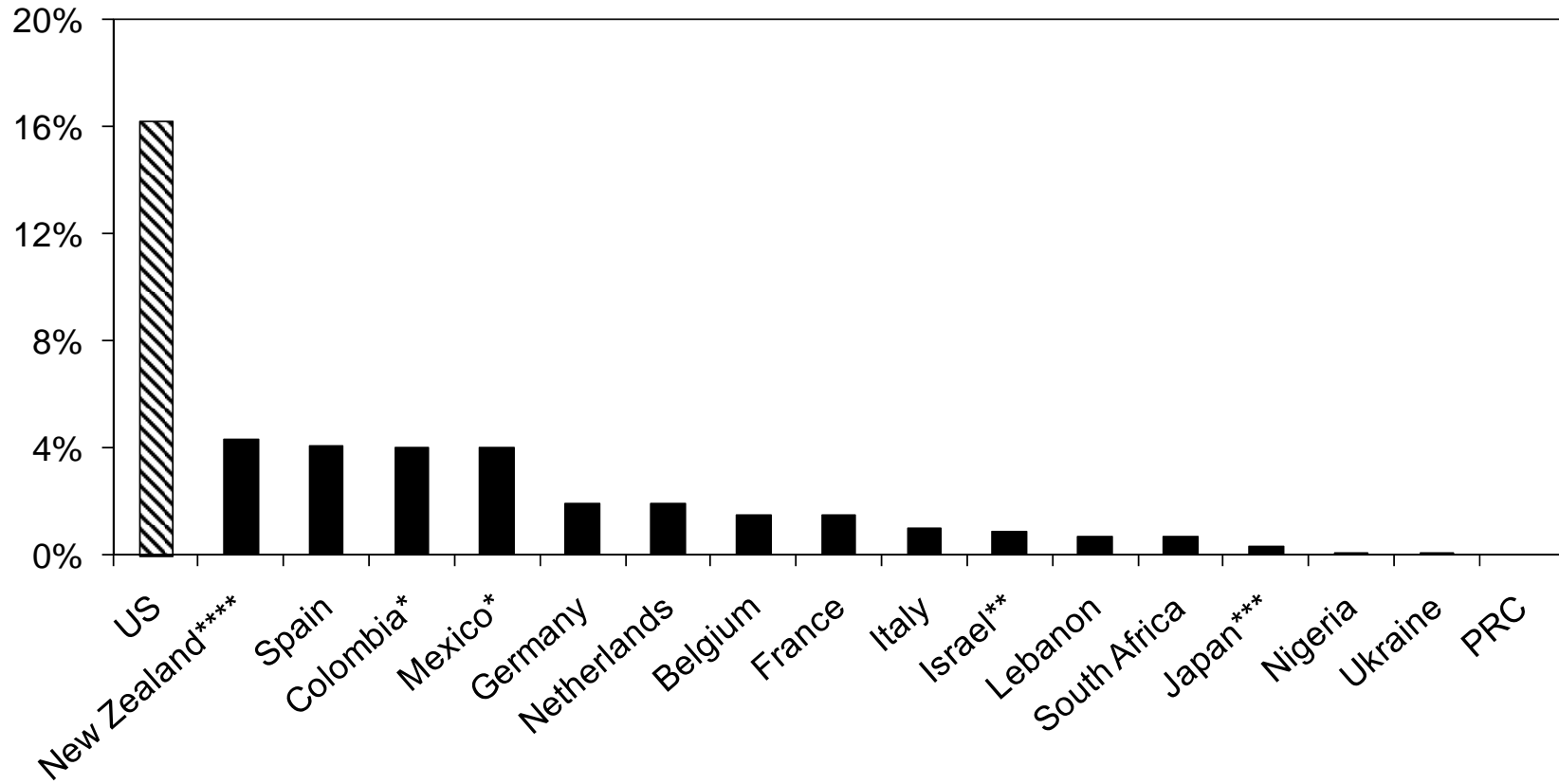
In his original paper Miron reported Newey and West t-statistics and incorporated a trend term; however, he did not specify in his article a chosen maximum lag order of autocorrelation for the Newey-West approach and did not further elaborate on the construction of his trend term. We regressed the homicide rate on Miron's chosen variables using the Hildreth-Lu correction for serial correlation. We report standard errors in parentheses. Asterisks indicate that the coefficient was not reported. Coefficients in bold are statistically significant at the 5 percent level; coefficients in bold and underlined are statistically significant at the 1 percent level.

Figure 1: Percentage Reporting Use of Cannabis in Lifetime, Population Aged 18+, 2001-2005



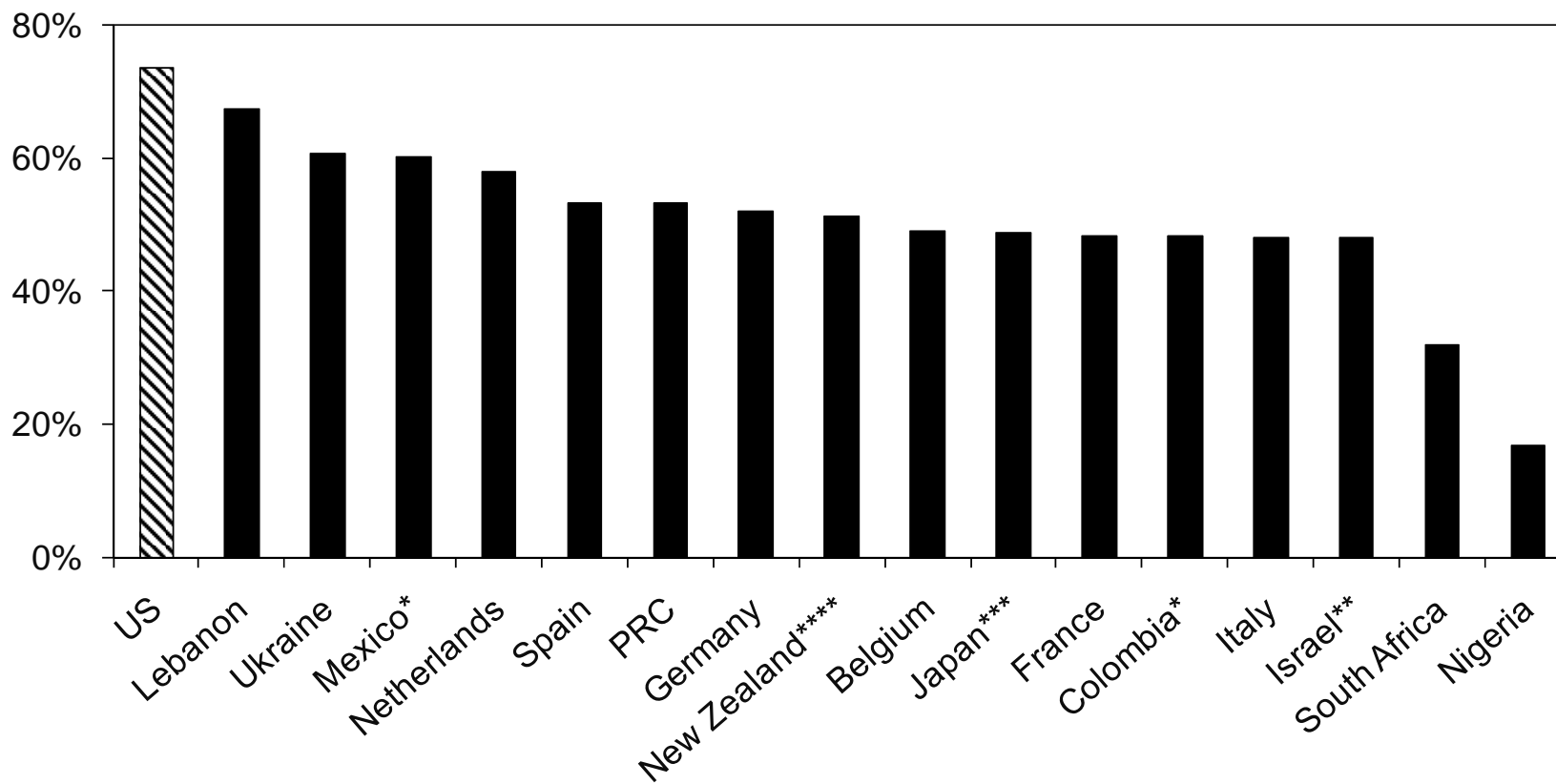
Source: Degenhardt et al. (2008, 1057). * Aged 18-65, **21+, ***20+, ****16+

Figure 2: Percentage Reporting Use of Cocaine in Lifetime, Population Aged 18+, 2001-2005



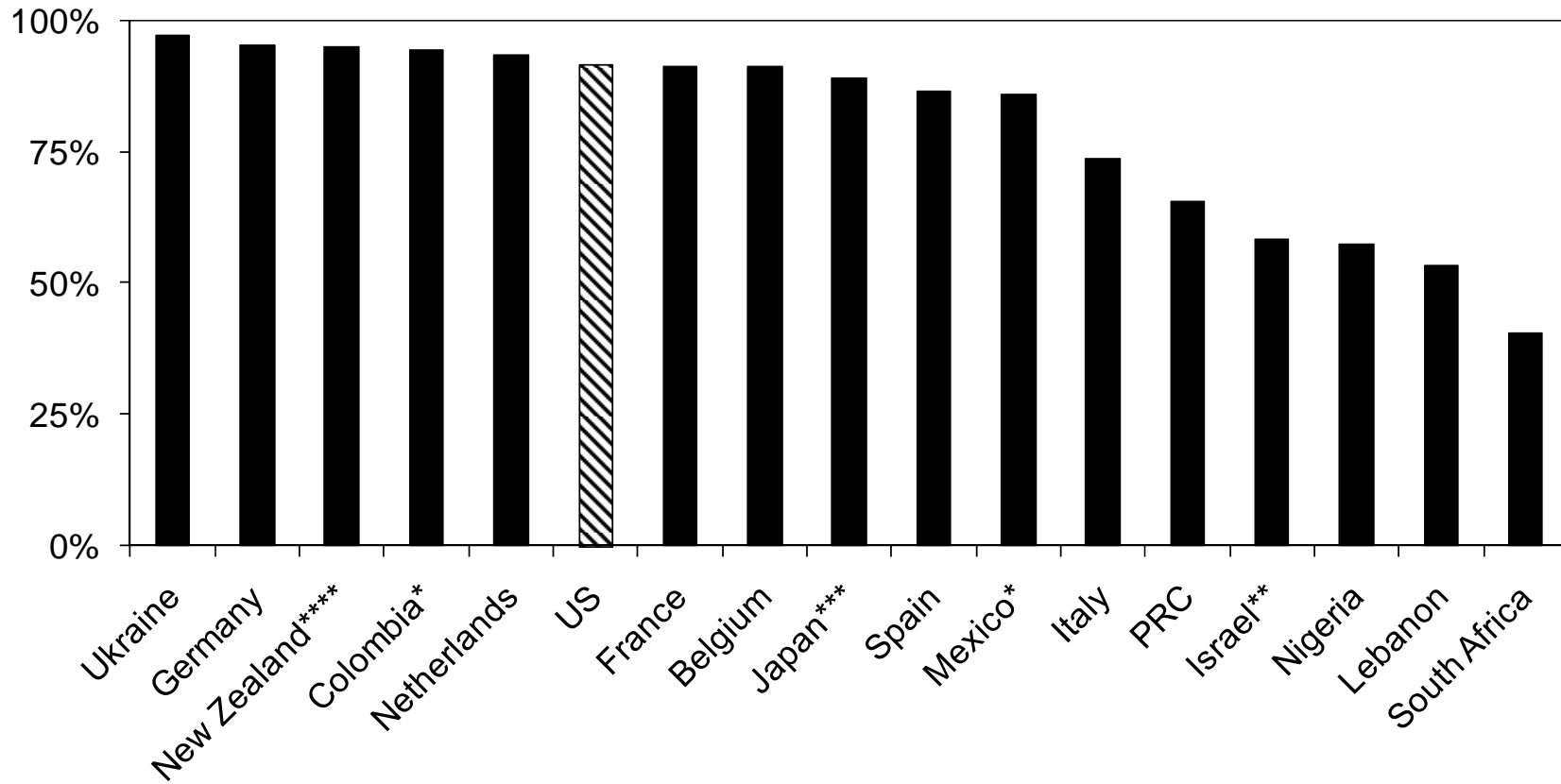
Source: Degenhardt et al. (2008, 1057). * Aged 18-65, **21+, ***20+, ****16+

Figure 3: Percentage Reporting Use of Tobacco in Lifetime, Population Aged 18+, 2001-2005



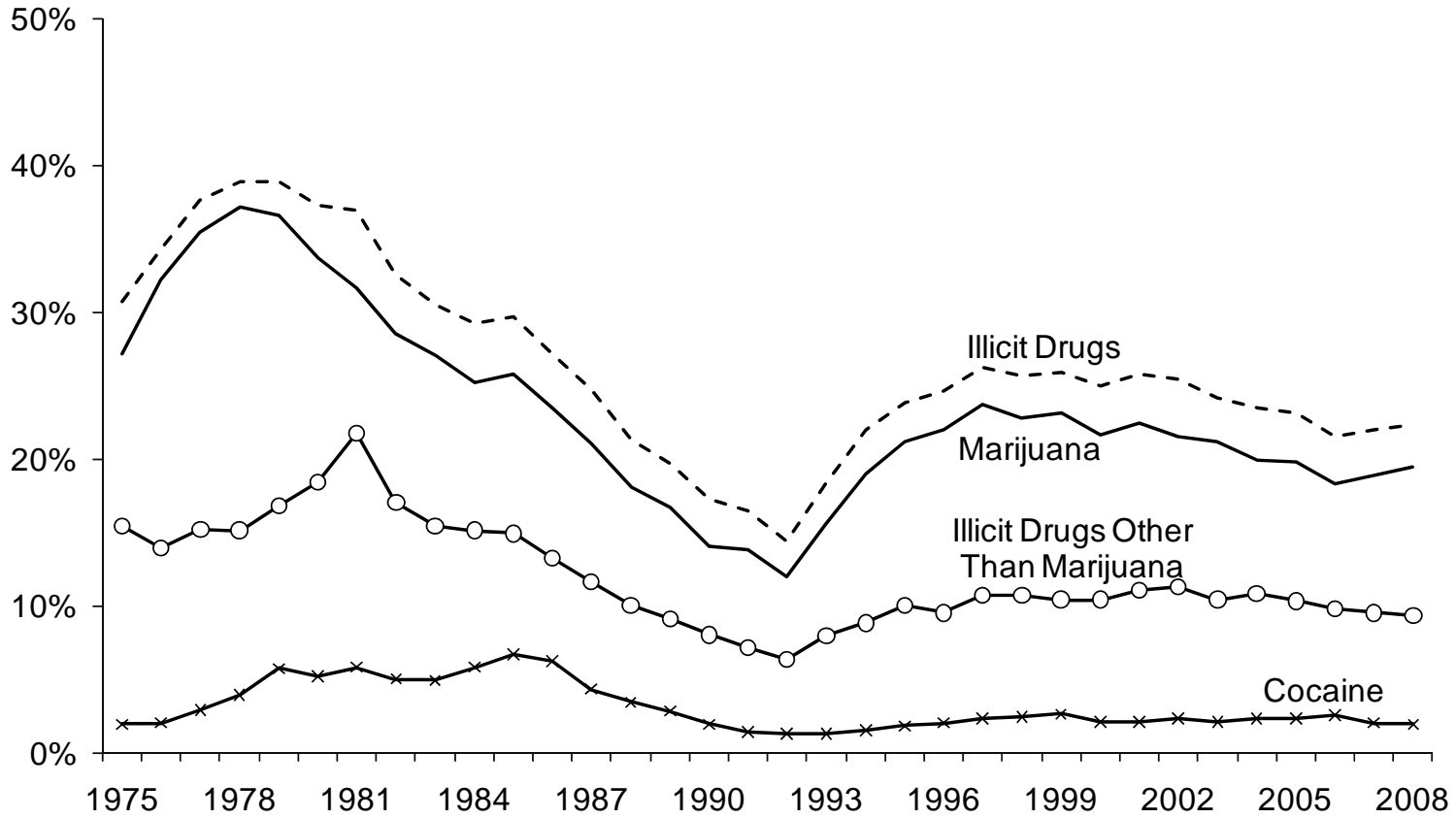
Source: Degenhardt et al. (2008, 1057). * Aged 18-65, **21+, ***20+, ****16+

Figure 4: Percentage Reporting Use of Alcohol in Lifetime, Population Aged 18+, 2001-2005



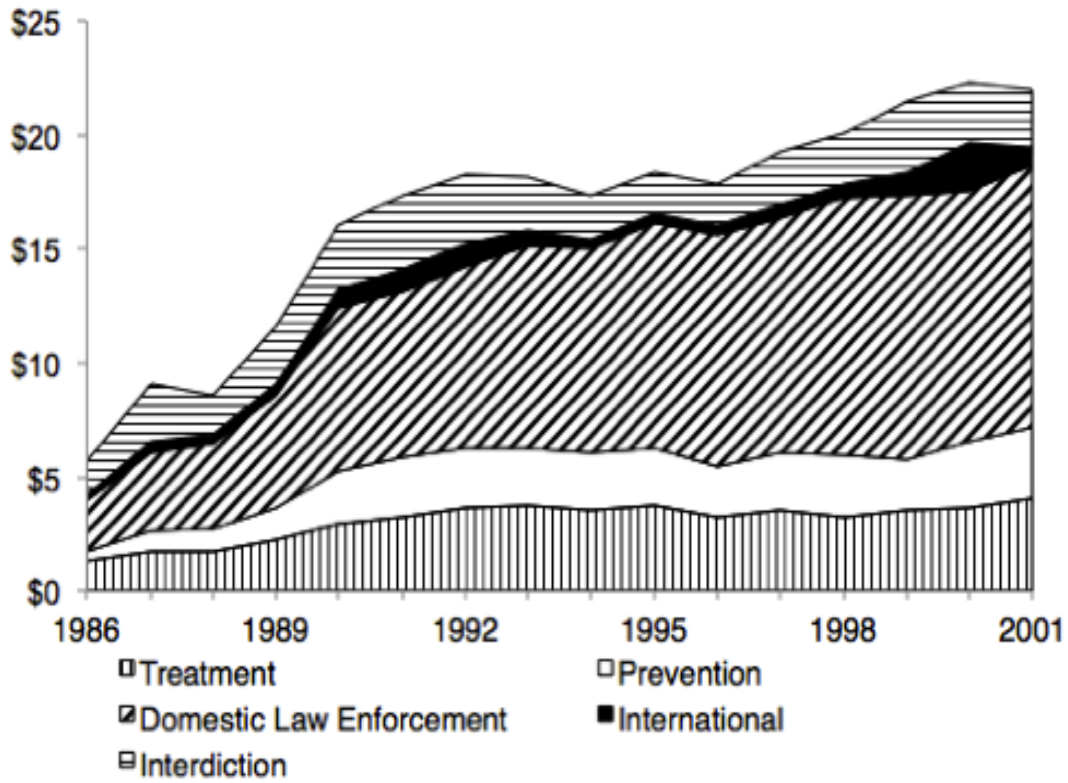
Source: Degenhardt et al. (2008, 1057). * Aged 18-65, **21+, ***20+, ****16+

Figure 5: Percentage of 12th Graders Reporting Use of Illicit Drugs in Past 30 Days



Source: NIDA (2009, 198-99).

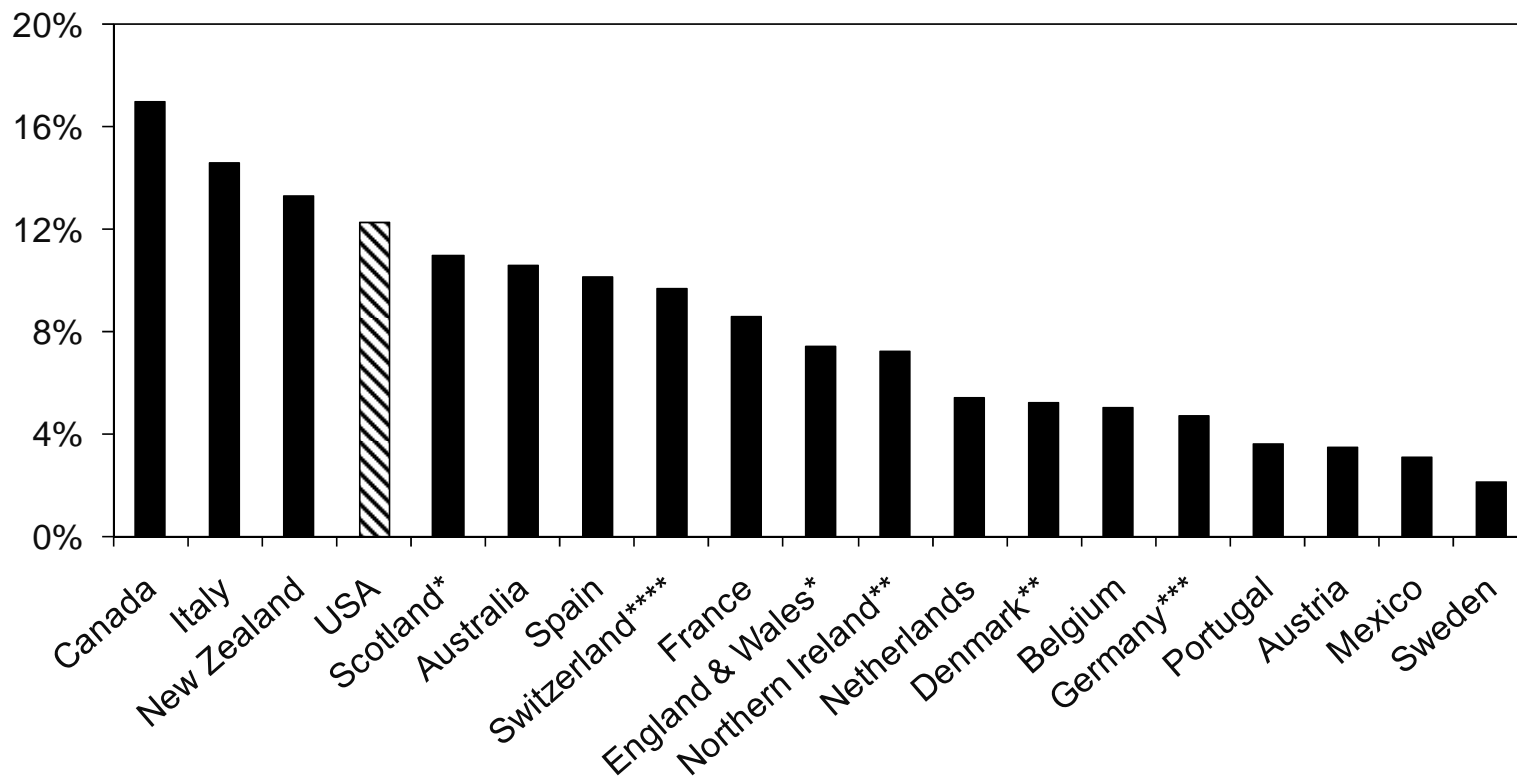
Figure 6: Federal Drug Control Spending, 1986-2001 (Billions of 2008 Dollars)



Source: Nominal figures from ONDCP (2002, 10-11) and ONDCP (1998, 16).

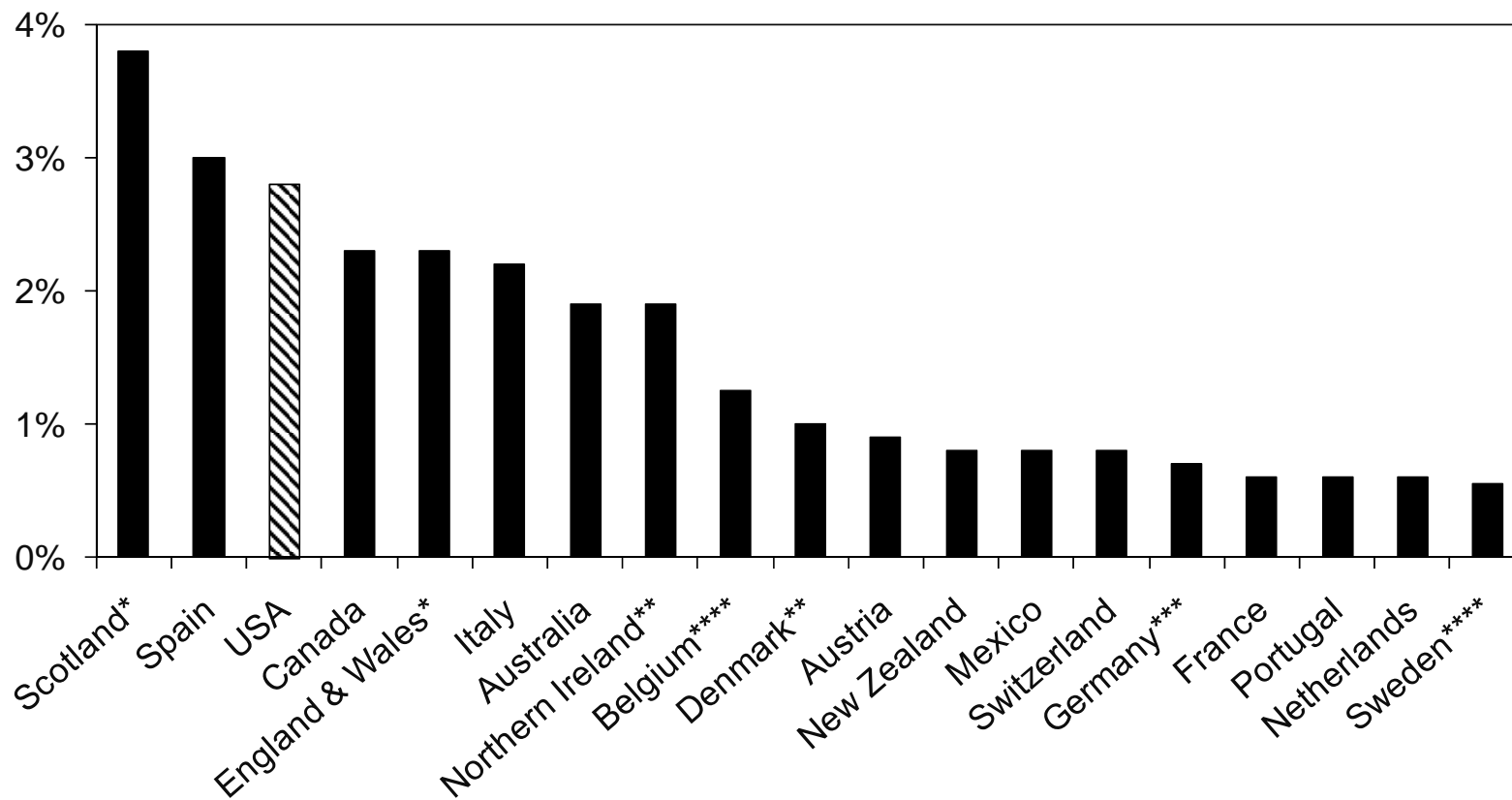
A slight variation on this graph appears in Boyum and Reuter (2005, 38).

Figure 7: Annual Prevalence of Cannabis Use, Population Aged 15-64 (2004-2008)



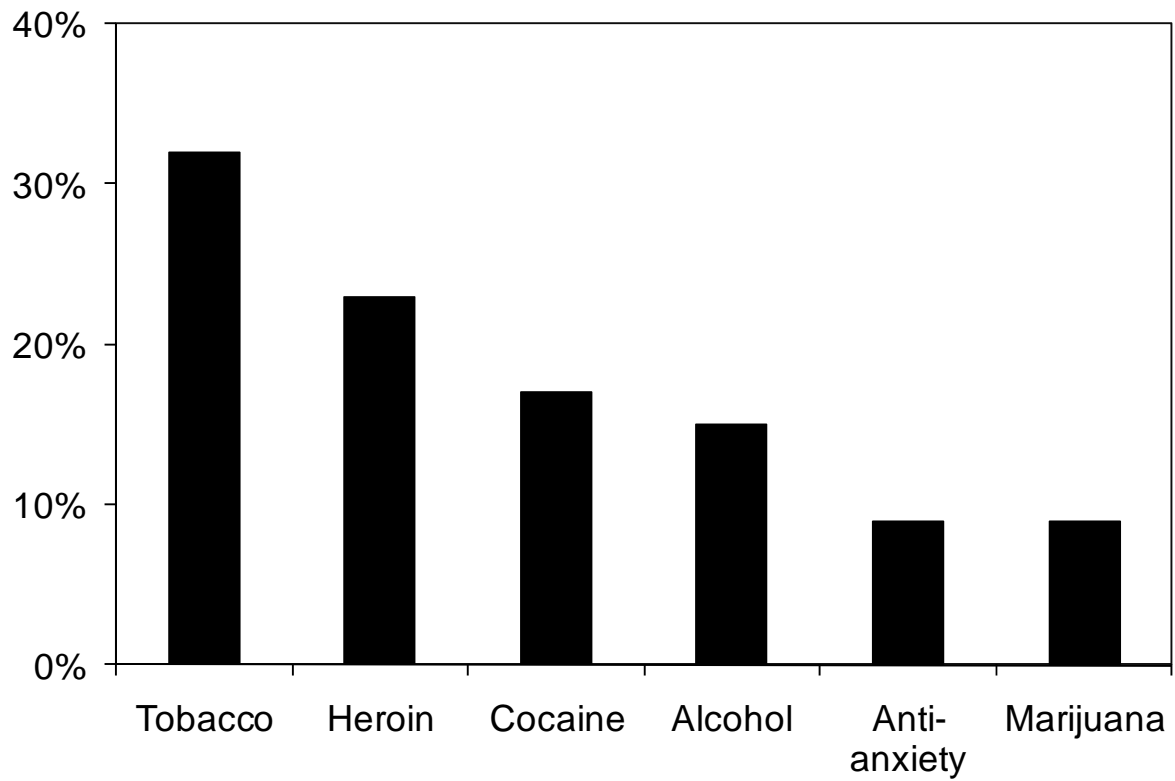
Source: UNODC (2009, 245-49). *Aged 16-59, **16-64, ***18-64; **** Percentage is the midpoint of a range

Figure 8: Annual Prevalence of Cocaine Use, Population Aged 15-64 (2004-2008)



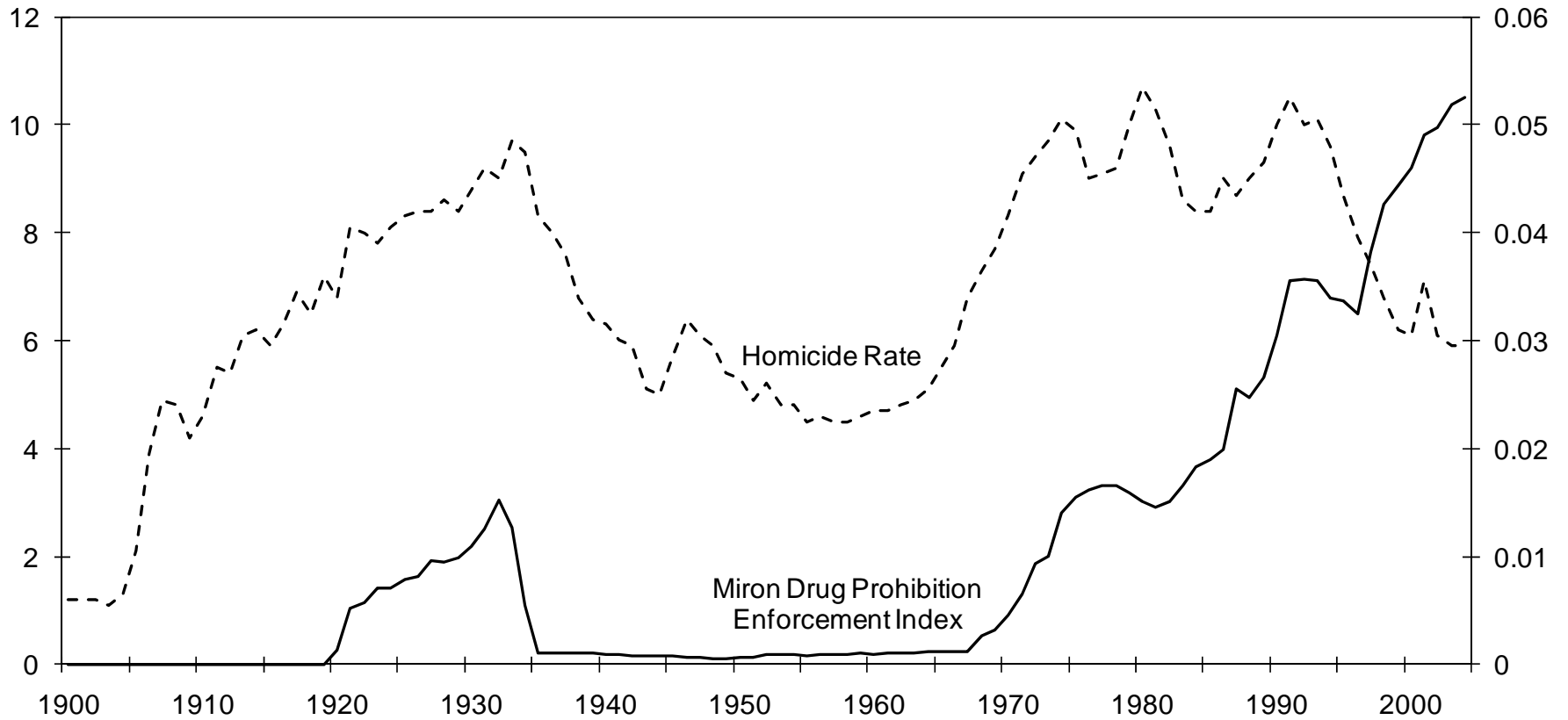
Source: UNODC (2009, 240-44). * Aged 16-59, **16-64, ***18-64; **** Percentage is the midpoint of a range

Figure 9: Of Those Who Tried, Percentage Later Dependent, 1999



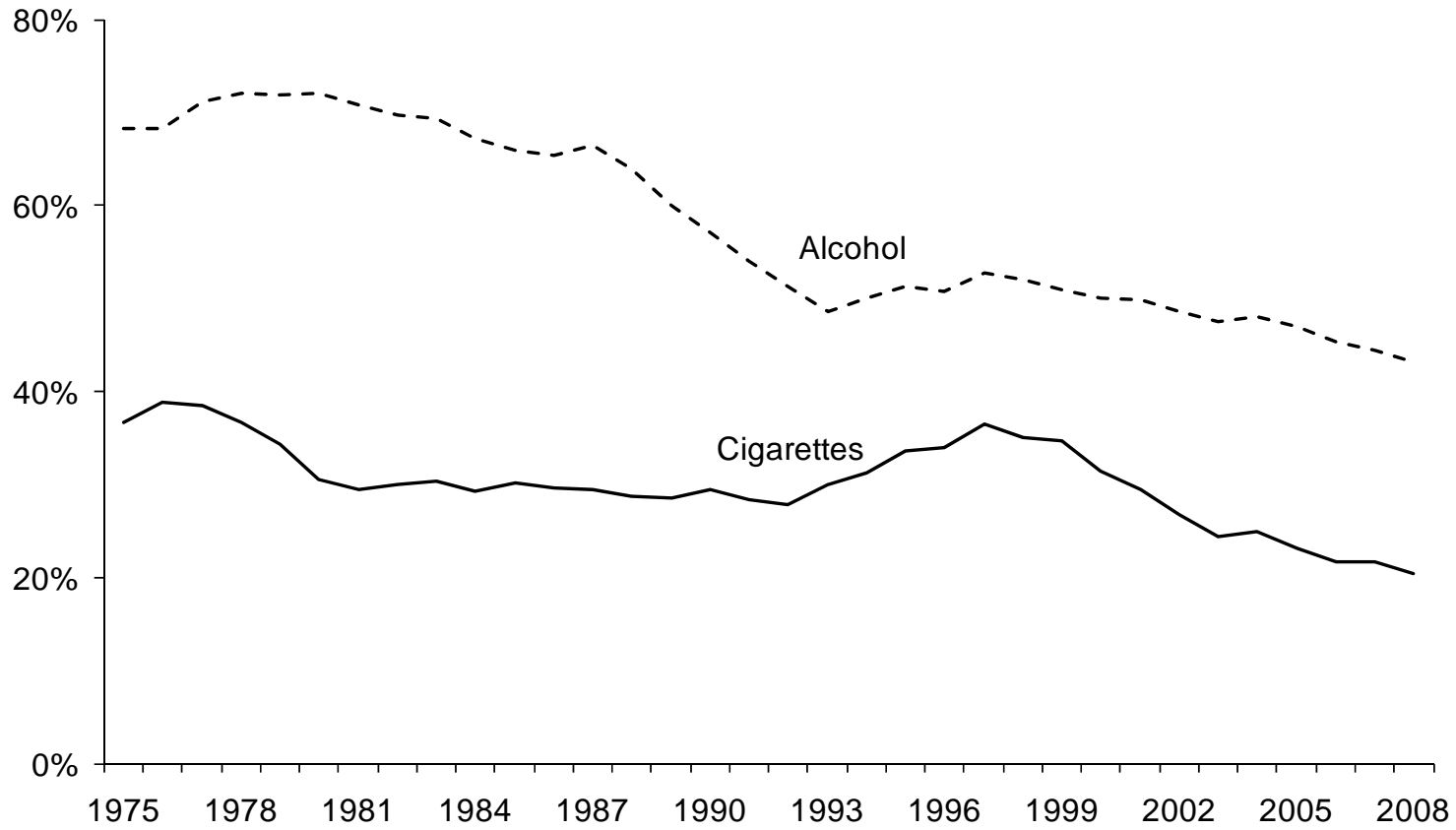
Source: Kershaw and Cathcart (2009).

Figure 10: Homicide Rate (Per 100,000 Persons) v. Drug Prohibition Enforcement Index (Hundreds of 1992 Dollars Per Capita)



Source: Data supplied by Angela Dills and Jeffrey Miron (homicide rate from U.S. Vital Statistics; prohibition enforcement expenditures based on Miron (1999) with data from the Budget of the United States Government (various years))

Figure 11: Percentage of 12th Graders Reporting Use of Licit Drugs in Past 30 Days



Source: NIDA (2009, 198-99).