# Drug Control and Reductions in Drug-Attributable Crime

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## Introduction

"The Cost of Crime" (Caulkins and Kleiman, 2013) began by describing a mayor whose advisor advocated fighting crime by funding a program that would reduce cocaine consumption by 20 percent.[1] The premise of that discussion was that a rough, first-pass analysis of that recommendation would compare the cost of the program to the social cost of crime times the proportion of crime that is caused by cocaine times 20 percent (the anticipated reduction in cocaine consumption).

The previous two articles in this series sought to enrich interpretation of two key parameters in that calculation: (1) the proportion of crime that is drug-related and (2) the social cost of crime. This article takes the analysis an important step further by noting that the reduction in crime can depend crucially on how the 20 percent reduction in cocaine consumption is achieved. There is not a one-for-one link between quantity of a drug that is consumed and the amount of drug-related crime that can be causally traced back to that consumption. So even if an intervention achieved a 20 percent reduction in cocaine consumption, the corresponding reduction in cocaine-related crime could be larger or smaller. Indeed, it is not inconceivable that there could be perverse effects; an intervention that reduced cocaine use might even *increase*, not decrease, cocaine-related crime.

We divide the discussion into five sections. The first four are mostly pessimistic about supply control policies relative to demand reducing interventions.

[1] Note: We are — unrealistically — imagining that the mayor's advisor somehow knows how much it will cost to reduce cocaine consumption by 20 percent or, more generally, how cost-effective drug control interventions are in terms of amount of drug use averted per million taxpayer dollars invested. In reality, such estimates are exceedingly difficult to produce. However, there is a long line of research on that question — much of it coming from RAND's Drug Policy Research Center — and we want to focus here on the drug-crime and drug-control-crime linkages, not the drug control to drug use reduction linkage.

The fifth paints a more optimistic view of law enforcement's potential contribution, by suggesting that law enforcement could focus on violence-control not supply control — a crucial but underappreciated distinction.

The overall conclusion, though, is not about the merits of demand- vs. supply-control, but rather to make the point that not all interventions that reduce drug use by a given proportion will reduce drug-related crime by the same proportion. When an intervention reduces drug-use by X percent, the resulting reduction in drug-related crime can be larger or smaller than X percent depending on the way in which the drug use reduction was obtained.

**Direct Effects of Supply- and Demand-Control Interventions**

It is common to divide drug control interventions into three bins: supply-side, demand-side, and harm reduction. Supply- and demand-side interventions try to reduce drug use by altering the market clearing equilibrium price and quantity demanded by shifting the supply and demand curves, respectively.

Harm reduction, by contrast, refers to efforts to reduce the collateral damage of drug use — e.g., the spread of blood-borne diseases — without necessarily trying to reduce the quantity of drugs consumed.[2] We will return to the idea of harm-reduction below, but with a twist.

Elementary economics suggests that constraining supply reduces quantity consumed by driving up price, whereas reducing demand lowers both consumption

[2] The meaning of the term harm-reduction is contested. Other interpretations include recognizing the human rights of drug users. Here we use the term in the sense of Caulkins and Reuter (1997) and MacCoun (1998).

and price. Introductory economics courses hammer at that idea by drawing supply and demand curves and visually depicting the effects of shifting one or the other curve. If the outcome of interest were consumption, the analysis would then focus on the relative slopes of the supply and demand curves (or, equivalently, their "elasticities").

The central point of this article is that reducing drug consumption is not synonymous with reducing drug-related crime. So we want to pause and think about how to connect the supply and demand model to drug-related crime.

Recalling Goldstein's (1985) tripartite framework, only psychopharmacological crime is directly connected to consumption. Both economic-compulsive and systemic crime are more closely related to drug dollars; economic-compulsive crime is committed to get money to buy drugs, and systemic crime stems from conflicts with or among suppliers over the proceeds from those sales.

The dollar value of drug sales, which is what we mean by "drug dollars," equals quantity consumed times price per unit quantity. Interventions that reduce demand push down both factors — consumption and price — and so clearly drive down their product, namely the amount spent on drugs. By contrast, interventions that constrain supply may reduce consumption, but they do so by driving up price, so the effects on drug dollars are less favorable than are the effects on consumption. Indeed, if demand is relatively price inelastic, then consumption falls by less than price rises, so constraining supply can actually increase rather than reduce the dollar value of the market for an illicit drug.

The majority of crime that is drug-related in the Goldstein sense of the term is either economic-compulsive or systemic. That can make supply-control interventions singularly inefficient ways of reducing drug-related crime. Indeed, it is entirely possible that the artificially-high drug prices resulting from supply-side enforcement could exacerbate or at least sustain rather than mitigate the amount of drug-related crime. This insight, while fundamental, is not new. It is discussed in detail by Kleiman (1992), Caulkins et al. (1997), Boyum and Reuter (2005), and Babor et al. (2010), among others.

**Indirect Effects Mediated through Human Capital Stocks**

In "How much crime is drug-related?" Caulkins and Kleiman (2013) argued for augmenting Goldstein's three types of proximate drug-relatedness with indirect effects mediated through four types of stocks: those of the individual user, the user's friends and family, the neighboring community, and society overall.

Demand-reduction interventions will generally be preferable to supply-reduction interventions with respect to at least the first two of these indirect effects. Many supply-control interventions damage the human capital of those they touch, whereas demand control interventions are more likely to enhance or expand human capital by reducing drug use, dependence, and addiction.

These are gross generalizations, and it is easy to think of exceptions. Some supply-control programs operate overseas or target only higher levels of the trade. They have no direct human capital effects on drug users in the U.S. Likewise, if K-12

students spend too much time in school-based drug prevention programs, that could distract from the school's primary mission of teaching academics.

However, the bread and butter of supply control is arresting, prosecuting, and incarcerating domestic dealers and their functionaries (holders, look-outs, couriers, etc.). The majority of the arrests and the plurality of the resulting inmates come from lower echelons of the drug distribution system, and many of those arrested for distribution or possession with intent to distribute are themselves drug users. For heroin in particular, user-dealers ("jugglers") play a prominent role in retail distribution, which is the level most vulnerable to police observation and arrest. It is also the most populous level, since at each level of the distribution network, one supplier sells to multiple dealers at the next lower level.

While there are many benefits to society of arresting and punishing those involved in drug distribution, the net effects are mostly negative for those who are arrested and punished — and often for their families. Of the millions who are arrested, presumably some are scared straight or deterred from further criminal involvement, but the modal outcome is probably less favorable. Criminal convictions can be a significant barrier to obtaining subsequent legitimate employment (Bushway, 2011), and imprisonment creates a variety of hidden and indirect costs (Raphael and Stoll, 2009), perhaps even exacerbating the spread of HIV/AIDS (Johnson and Raphael, 2009).

By contrast, demand-side interventions usually provide beneficial services to the participants, and their collateral or spill-over effects may be large. Modern, comprehensive drug prevention programs do more than educate about drugs' risks

or teach specific resistance skills. Many seek to promote health awareness, social skills, and good decision making generally — as is suggested by the names of some model programs mentioned on the Office of Juvenile Justice and Delinquency Prevention (OJJDP) web site, such as "Life Skills" (Botvin and Cantor, 2000) and Family Effectiveness Training (Szapocznik and Williams, 2000).

Program benefits accruing from reductions in use of illegal drugs may be a modest share of the overall social benefit of the programs (Caulkins et al., 2002). Indeed, OJJDP describes Project SMART — which was designed and originally evaluated with respect to effects on use of illegal drugs, among other outcomes (Hansen et al., 1988; St. Pierre et al., 1992) — as teaching "a broad spectrum of social and personal competence skills to help youths identify and resist peer and other social pressures to smoke, drink, and engage in sexual activity." [3] Note that *illegal* drugs are not even mentioned in that brief summary.

To be clear, this is not a challenge to the idea that drug prevention programs reduce drug use and thereby reduce drug-related crime. Rather, we are pointing out that assessing the social benefits of programs funded and described as drug prevention programs from the perspective of their ability to reduce drug-related crime is under-appreciating the full range of their effects. By contrast, a narrow focus on crime-prevention effects may *over*-estimate the value of supply-control interventions because the collateral consequences tend to be less favorable.

Parallel observations pertain to many drug treatment interventions. Of course some, such as low-threshold, high-tolerance methadone maintenance, can be

[3] OJJDP. "Prevention: SMART Leaders." Retrieved April 5, 2013 from http://www.ojjdp.gov/mpg/SMART%20Leaders-MPGProgramDetail-610.aspx.

quite focused on their drug and medical aspects, but "ancillary services" are an important — sometimes even dominant — dimension of many treatment strategies. Best practice in treatment is generally construed as complementing activities focused on the drug use itself (medication, cognitive therapy, etc.) with a range of ancillary services (vocational services, legal services, educational services, treatment for other mental health problems, even childcare and transportation services), either directly or through case management and referral to other service providers. And, just as with prevention, benefit-cost analyses credit drug treatment with a range of important outcomes beyond crime reduction, including improvements in health, employment, and social relations.

Indeed, at some level, the premise of many demand-control interventions is to reduce drug use by investing in the human capital of their target audience (whether youth or those who are already abusing drugs), whereas supply-control seeks to deter drug-related activity by destroying the human capital of those who persist and are caught. Hence, if drug use causes crime not just directly, in the Goldstein sense, but also indirectly via destruction of human capital, it seems entirely plausible that the indirect effects on crime are more favorable for demand-control than for supply-control interventions.

**Indirect Effects Mediated Through Use of Other Substances**

Drug Attribution Factors (DAFs) make unstated assumptions about substitution and complementarity. DAFs ask us to imagine a world in which none of the illegal drugs had ever been available or used, and nothing else is different. But it

is not reasonable to assume that alcohol use would be identical in that parallel universe. And if the absence of drugs would affect alcohol use, then alcohol-related crime would also be different.[4]

Yet it is not possible to adjust for this either practically — we have limited evidence concerning the short-run cross-price elasticities of demand, and no idea what the overall long-run interaction is — or politically. Policy makers do not want a DAF that nets out this hypothetical interaction with alcohol.

The same conundrum applies to less than complete elimination of drug use. If an intervention drove down cocaine use by 20 percent, how might that affect alcohol use, heroin use, etc.?

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

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

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

There is somewhat more to say concerning substitution and complementarity on the demand side. Jofre-Bonet and Petry (2008) review literature that attempts to identify pairs of drugs that are complements or substitutes. By and large, the literature is not decisive because estimating cross-elasticities is more difficult than is estimating own-price elasticity.

Deductively, one would guess that similar drugs with similar effects are more likely to be substitutes. Two brands of beer or two brands of wine view each other as competitors, which implies their producers believe they are substitutes; manufacturers of complementary products are strategic partners, not rivals. Moreover, substitution seems to hold for alcoholic drinks generally: beer and wine substitute for one another, and for distilled spirits.

One might guess this applies to other central-nervous-system depressants as well: the opiates and the barbiturates, for example, with the slight caveat that different drugs in the same class can "potentiate" one another — strengthen one another's effects when interacting in the central nervous system, as alcohol tends to do with the opiates. One might likewise guess that there is substitution among stimulants; different amphetamines compete with one another, and probably with cocaine.

But stimulants and depressants are perhaps more likely to be complements. Café royale and rum-and-cola illustrate the idea for alcohol and caffeine (a depressant and stimulant, respectively); mixing heroin and cocaine in a "speedball" or combining stimulants and depressants ("uppers and downers," in drug-user

slang) would be other examples. Mixing alcohol and cocaine carries particular risk by producing cocaethylene in the bloodstream, which causes aggressive behaviors.

The response to price changes can be different in the short- vs. long-run. A classic illustration is consumers' response to gasoline price increases triggered by the two oil shocks of the 1970s. In the short-run the stock of automobiles and the distribution of commuting distances were both fixed. However, over time, people could buy more efficient cars and relocate closer to work. As a result, the long-run elasticity was almost ten times greater in absolute value than the short-run elasticity (Pindyck, 1979).

In a similar — though less extreme — manner, Becker et al. (1994) estimated that the long-run elasticity of demand for cigarettes is roughly double the short-run elasticity. Likewise, Saffer and Chaloupka (1999) and Dave (2008) found roughly two-to-one ratios for cocaine and heroin, respectively. Van Ours (1995) and Liu et al. (1999) also found such differences for opium (smaller ratio in the case of Van Ours, larger for Liu et al.).

What is less studied but nonetheless plausible is that not just the magnitude but also the nature of the price response might vary with the time scale. It would not be surprising if some pairs of drugs were substitutes in the short-run but complements in the long-run. Users may switch from one drug to another in response to availability. But eventually, these drugs may become complements provided the price of one drug declines. This may cause increased escalation of use and furthered dependence on both drugs, which could result in polydrug use.

The limited empirical evidence is not inconsistent with these speculations (Jofre-Bonet and Petry, 2008). However, understanding of these matters is in its infancy, so in all likelihood some of what we guess now might look naively wrong in retrospect. What seems safest to state is that the simplistic notion that all pairs of drugs are substitutes — as if there were a fixed number of intoxicated hours with which different drugs compete for market share — is unsound. And, conversely, the idea that there would be no substitution into other substances if use of one were curtailed seems equally naïve. Hence, one would expect that demand-side interventions that reduce cocaine use by 20 percent might plausibly reduce the use of some other substances, whereas supply-side interventions that have the same effect on cocaine use might have less salutary effects on consumption of other substances.

**Maladaptation of Those Who Are not Caught**

One might also speculate — with some limited supporting evidence — that supply control efforts may spur greater criminality not only on the part of drug dealers whose human capital is damaged by being convicted and punished, but also by inducing violent behavior among the drug dealers who are *not* caught and punished. Such a possibility is overlooked entirely by traditional DAFs which focus on criminality by users, not sellers.

Reuter (1983, 2009) stresses that systemic violence includes not only inter-organizational conflict (e.g., fights over "turf"), but also intra-organizational conflict, such as punishing people who are believed to have cooperated with the police.

Likewise, even seemingly wanton violence may in fact be instrumental if the resulting reputation for violence deters neighbors or other witnesses from testifying against the dealers in court. That is, increasing the enforcement threat to dealing organizations means increasing their incentive to evade detection; logically, this might manifest in the use of violence and threats thereof to potential snitches and the flagrant display of violence to make these threats credible (Kleiman and Heussler, 2012).

It has also been speculated that enforcement may stir up markets in ways that exacerbate violence as the remaining dealers try to reestablish a pecking order and market rights (Maher and Dixon, 2001). One explanation for the sharp rise in drug trafficking related violence in Mexico under the Calderon administration is that increased enforcement removed key leaders, and that triggered succession struggles and violence among competing factions (Beittel, 2012). Another plausible cascade of events beginning with drug enforcement and ending with violence would be an instance of a dealer being "punished" for having "lost" drugs that were seized by enforcement (Soudijn, Melvin and Reuter, in submission).

**The Upside of the Complexity of the Crime-Drug Relationship**

The previous discussion is mostly pessimistic. To caricature, it says that demand side drug control interventions might achieve reductions in crime roughly along the lines of what would be predicted by a naïve applications of DAFs, but interventions to reduce drug supply mostly will not.

However, the very complexity and nonlinearity of the drugs-crime linkages opens up a wealth of opportunities for drug-market interventions that can do even better than a naïve application of DAFs would suggest, meaning that the reductions in drug-related harm — including specifically drug-related crime — could exceed the reductions in drug use (Caulkins, 2002; Weatherburn et al., 2003; Caulkins and Reuter, 2009; Greenfield and Paoli, 2012).

The relationship between drugs and crime is frustratingly complex. In the case of cocaine, for instance, the rise in crime attributed to the spread of the drug lagged the use of the drug itself by decades. Initiation peaked around 1980 (Caulkins et al., 2004), but cocaine-related crime and disorder not until nearly a decade later.

The key insight, though, is that not everyone selling a given drug in a given city and year is equally noxious. Some selling occurs in flagrant public markets, with arm's length transactions between strangers. Such markets can destroy the surrounding community and associate profits with locations, creating both incentives for turf wars and obvious robbery targets. Other selling is embedded within social networks, is largely invisible to the surrounding community, and is rarely accompanied by shooting.

The claim that shootings by drug dealers could be rare may be surprising, but it follows from simple arithmetic. Before the recent rapid decline in cocaine distribution, approximately one million people sold cocaine in the US in any given 12 month period (Caulkins, 2000; Caulkins and Reuter, 2009)). However, given the total number of homicides in the country, it is clear that throughout the late 1990s and 2000s, those one million dealers couldn't possibly have committed more than

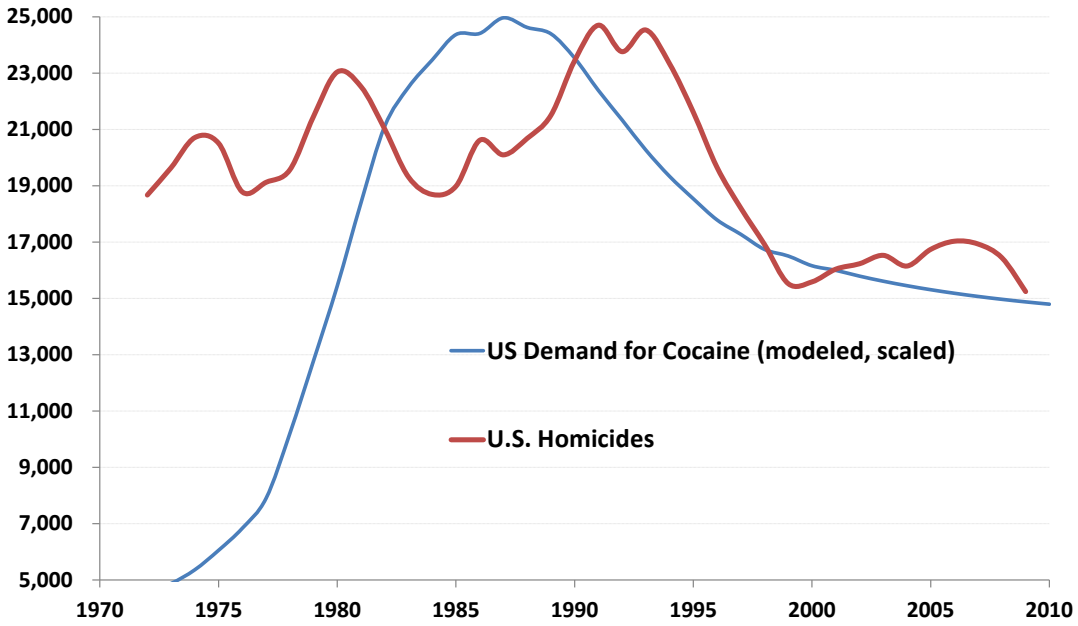
5,000 homicides per year, and probably were responsible for far fewer than that. If law enforcement could eliminate the small proportion of dealers who are at greatest risk of committing a homicide, that might greatly reduce drug-related violence even if it had a rather modest effect on drug use (Caulkins, 2002; Caulkins and Reuter, 2009).

Canty et al. (2000) describe this as a market regulation model of enforcement, which can be seen as an extension of problem-oriented policing (Goldstein, 1990), inasmuch as it recognizes there are important drug-related problems besides drug use or dealing per se.

Hence, *enforcement strategies that minimize drug-related crime and enforcement strategies that minimize the volume of drugs consumed may be entirely different. Focused crackdowns that force flagrant markets underground may be more useful in reducing violence than it is for reducing drug use*.

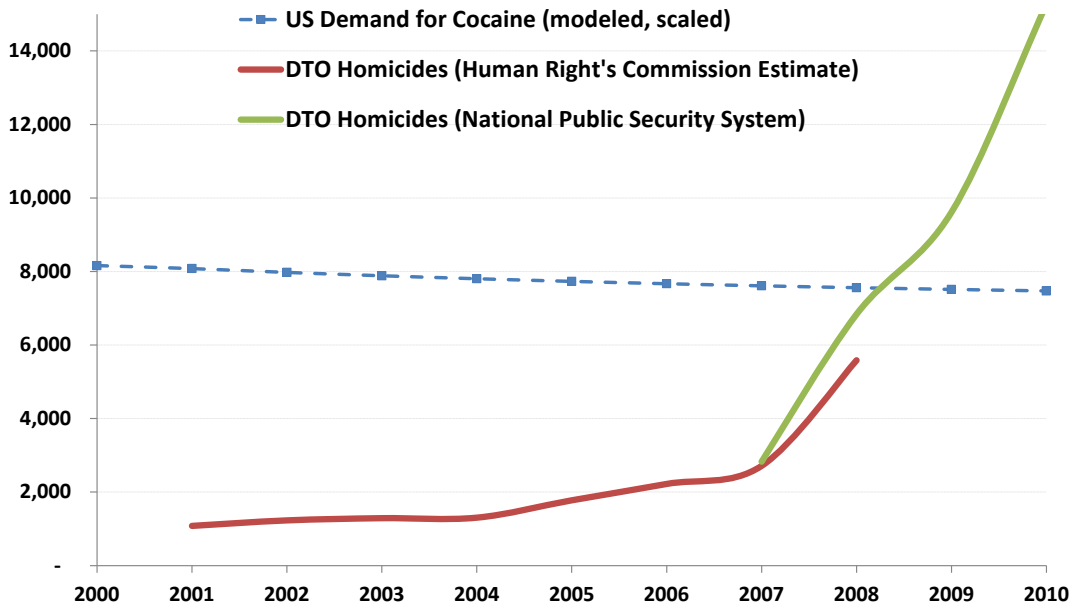
A couple of graphs give a sense of the extent to which drug use and violence at the aggregate level can move in ways that are not strongly parallel. Figure 3.1 juxtaposes a model of US cocaine demand (adapted from Caulkins et al., 2004) with the number of homicides. There are periods with parallel movements — notably the sharp declines in the 1990s. But there are also periods that are striking for their lack of correlation; cocaine demand soared in the 1970s — a time when murder rates were increasingly only modestly.

*Figure 3.1: Long View of US Cocaine Consumption and Homicides Shows Only Modest Correlation*




We cannot construct comparably long time series for Mexico, but Figure 3.2 juxtaposes the truly dramatic rise in DTO-related homicides in Mexico with the ebbing of US demand for cocaine. (Demand for cocaine within Mexico may have been increasing, but the conventional wisdom is that most drug trafficking related violence in Mexico can ultimately be blamed on US consumers, not on consumption within Mexico.)

*Figure 3.2: Drug Trafficking Related Homicides in Mexico Soared at a Time When US Cocaine Demand Was Ebbing*




## Conclusion

Much of this article contrasted the crime-reducing effects of demand- vs. supply-control interventions that achieve a comparable reduction in drug use. The purpose was not to promote demand- over supply-side interventions or vice versa, although we acknowledge that the law of unintended consequences may rear its head more often for supply-side interventions.

Rather, the central point is that when a program reduces drug use by a given amount, it may reduce the amount of crime attributable to that drug by a different amount. The crime reduction could be proportionally greater, lesser, or even nonexistent. Indeed, perverse results cannot be ruled out (e.g., from driving up the price of a drug whose long-run price elasticity of demand is in the relatively inelastic range).

So suppose we somehow knew:

1. How much an intervention cost;
2. How much that intervention would reduce drug use in aggregate and over time — a difficult question for which decades of research has still produced only a partial answer c.f., Babor et al., 2009 or Boyum et al. 2011;
3. What proportion of crime is attributable to drugs — which DAFs do not answer fully, as was discussed in "How much crime is drug related?" (Caulkins and Kleiman, 2013);
4. What is the social cost of crime — a somewhat ephemeral number, as noted in "The Cost of Crime" (Caulkins and Kleiman, 2013).

Even if we knew all that, we still could not meaningfully compare Item 1 to the product obtained by multiplying together Items 2 — 4 because the reduction in drug-related crime need bear no particular relationship to the reduction in drug consumption.

What one would need instead is a program- or intervention-specific estimate of how the program in question affected drug-related crime. That is, one would have to take the evaluation back to first principles; one could not use as a proxy the product of the DAF and the evaluated effect on drug use.

Of the three critiques in this series of articles, this is perhaps the most deadly with respect to DAFs utility for policy analysis because it is a statement about "reality" (meaning, the logic model connecting interventions to outcomes), not just a statement about measurement. Perfect DAF measures would be just as vulnerable to this issue as would be imperfect DAFs.

On the other hand, here we are critiquing only the application of DAFs to policy analysis of drug control interventions. A perfect DAF would still have validity in a descriptive sense of characterizing the present state of affairs.

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