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Measuring the Costs of Crime

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Introduction

In *What the Numbers Say* Derrick Niederman and David Boyum endorse asking three questions about any number you are presented with (Niederman and Boyum, 2003):

1. To what question is this number (supposed to be) the answer?
2. Is it the correct answer to that question?
3. Is that the question to which I need the answer?

If the number does not answer the question we need to have answered, then it is more likely to muddle a decision rather than clarify it. Alas typical estimates of the cost of crime are often interpreted as answering a variety of important questions that they do not in fact answer. This article explains why, beginning with a vignette to illustrate the question that we would like the cost estimates to inform.

The Purpose of Cost of Crime Estimates

Thoughtful policy choice requires identifying benefits and costs (advantages and disadvantages). The standard prescription for rational policymaking involves trying to quantify the magnitude of the various pluses and minuses of alternative courses of action, and to do so with some common metric (such as dollars), when possible.

Such estimates help establish the importance of a problem, either compared to other problems or to the cost of possible remedies. Frequently, the principal benefit of a policy or program is a reduction in the extent and impact of the targeted problem. Thus, estimates of the problem's current cost can play a crucial role in deciding how to address that problem, including evaluating the merits of alternative

approaches. A ten million dollar solution to a one million dollar problem is not very attractive.

So answering the questions “What is the cost of crime?”¹ and “What portion of the cost of crime is attributable to illicit drug use?” is useful only insofar as the answers elucidate the extent of the crime problem and the relative merits of alternative approaches to crime control. Indeed, the ultimate questions we really want answered are “How much effort should be spent to control drug abuse and crime?” and “How should we deploy that effort?”

On the individual level, the logic of thoughtful decision making is straightforward. Imagine that a homeowner seeking to save money on her energy bill gets a knock on the door from an insulation company’s sales representative. The salesman tells her that re-insulating the house can reduce the gas usage of the furnace by 20 percent. Assuming the salesman is telling the truth, is that a good enough reason to buy the insulation?

The homeowner needs data: the current size of her gas bill, the portion attributable to her furnace and not her clothes dryer or stove, and the cost of re-insulation. That data informs the decision to re-insulate

The homeowner might find that the energy savings are significant, but the re-insulation is too expensive to make it worthwhile. Of course not all of the benefits and costs are strictly financial: how much time will managing the insulation project take, and how does the homeowner value losing the chance to spend that time on

¹ For our purposes here, we are defining crime to mean hurting people and taking their stuff: essentially the basic set of violent and property crimes that are tracked by the FBI’s Uniform Crime Reports.

work, leisure or recreation? How much would she pay for the improvement over and above the financial savings: is she consistently cold and uncomfortable in her drafty house in winter? Are there others in the house who will also gain? After weighing the benefits and costs, she might even decide on different options — perhaps to buy a new, more efficient furnace instead, or a small electric heater for the room she uses most often. For evaluating each of these alternative strategies for reducing her energy bills or increasing her comfort, having a reasonable sense of the total bill, how much she should attribute to the furnace, and the potential gains in comparison to other investments are key to making an informed decision.

When moving to a larger context, the benefit-and-cost approach becomes more complicated. Imagine that during the weekday, our homeowner serves as mayor of a city plagued by flagrant drug dealing. Drug-related murders fill the headlines, people are afraid to walk the street at night, businesses cannot attract enough customers from other neighborhoods to stay open, racial tensions are beginning to boil over, and she fears that the resources and tactics demanded by the police department will only make things worse. She's looking for ways to make an impact.

An advisor begins to pitch an anti-cocaine program that promises a 20 percent reduction in cocaine consumption. Our mayor knows that she will have to translate that promise into a monetary value in order to judge its merit, in the same way she dealt with her energy bill. If she used the same calculation as before, she'd proceed by ascertaining the total costs of crime, the proportion attributable to cocaine use as opposed to other drugs or non-drug causes, and then estimate 20

percent of that figure as the crime-reduction benefit of the proposed program. (To that sum she would have to add an estimate of the non-crime benefits of reducing cocaine use: protecting health and preventing addiction.) But her task as mayor is much more difficult than her task as homeowner, because she does not have the same level of information. The gas company sends her a monthly bill, but her constituency does not bill her for the monthly costs of crime.

Likewise, although she might not know off-hand how to prorate the gas bill between furnace, clothes dryer, and stove, the underlying principle is clear enough. If the furnace consumes two-thirds of the gas, it is responsible for two-thirds of the bill. She might not have appliance-specific meters, but they are easy to imagine conceptually. The first article in this series (Caulkins and Kleiman, 2013) argued that the state of the art in drug attribution factors (DAFs) is miles away from being able to meter and count a flux of crime-producing “molecules.” So prorating the amount of crime that is attributable to cocaine use is harder in theory as well as in practice than prorating the amount of gas consumption that is attributable to the furnace.

This article is about social scientists’ attempts to provide mayors and other policy makers with the equivalent of the gas company bill. Or, more accurately, it is about the critical limitations of many of these bills for crime, specifically those commonly produced by cost of illness (COI) studies. To stretch the metaphor, this paper is akin to a consumer advocacy organization’s efforts to help consumers decipher their utility bills, and a guide for those trying to make the bills more informative.

Estimating the Cost of Crime: Cost of Illness Approaches

The COI tradition has a long and respectable pedigree in the public health sphere, where experts have used it to measure the damages and value of potential solutions to many health issues. Part of this tradition is the use of attribution factors to examine problems in a multi-causal world. Take the case of cancer incidence related to smoking. Roughly 80 percent of lung cancer cases are caused by smoking. It follows logically that a 20 percent reduction in smoking will reduce incidence of lung cancer by roughly 16 percent. Therefore, a government-funded policy or program that reduces smoking by 20 percent can claim a 16 percent reduction in lung cancer among its benefits — which would be balanced against the policy or program’s costs when judging whether it was a “good investment” from the public’s perspective. Our previous article laid out a more full consideration of attribution factors (Caulkins and Kleiman, 2013).

COI methodology has generally recognized three categories of costs: direct costs, indirect costs, and intangible costs (Rice, 1966). The direct costs are the actual expenditures on treating a disease, predominantly medical expenditures but also including purchases such as alternate childcare while parents are being treated. The indirect costs count the loss of productive labor due to a person’s illness, treatment, or death, including lost earnings of friends or family who miss time from work while providing care for the individual. The final category is intangible costs, which includes the costs of pain, suffering, fear, and potential early death that a patient and their family and friends may experience because of a disease. That is

roughly the willingness-to-pay of someone to avoid that year of illness or early death, often conceptualized in terms of the value of a statistical life (e.g. Viscusi, 1993).

COI studies therefore theoretically consider a wide range of both costs and benefits, including both actual public and private expenditures and various non-financial gains and losses. The costs of lung cancer, for instance, would include health care expenditures (publicly funded, privately insured, or self-paid); direct financial losses to all the patients and their families (e.g., lost wages); the willingness-to-pay of the patients and their family and friends to avoid the suffering created by cancer and its treatment; the total value of the life-days lost; and the related costs, personal and social, generated by attempts to prevent cancer.

This is, to say the least, an ambitious agenda. The scope vastly exceeds that of a classic laboratory experiment or even a standard medical intervention study.

At its best, this process yields a reasonable and comprehensive estimate of the harms generated by the problem being studied. However in practice, many studies omit some categories of cost, particularly ones that are difficult to quantify. Some of this is understandable: How would one estimate the willingness-to-pay of a 10-year-old child to avoid having his mother die of lung cancer? But this produces a number that combines some but not all of the components of total cost, making the meaning of any given study opaque. The result is a number resembling the sum of apples and oranges minus cherries while ignoring avocados altogether: the number is not obviously the measure of anything in particular. Since different studies consider different subsets of costs, comparing the results of an evaluation of

Program A with the results of an evaluation of Program B might or might not help you decide which of the two programs is worth doing if you must choose between them.

Cost avoidance studies

In practice, some studies despair of even trying to estimate the societal cost, and instead pursue a simpler alternative: the “actual expenditures” or “cost-avoidance” approach. This approach only considers the financial costs and benefits of a problem. Ironically, these costs are sometimes described in literature as “economic costs,” which is not at all equivalent to “cost” in the comprehensive sense used by economists. Using money to count everything (the economic approach) is not the same as counting only money (the financial approach).

Although financial-cost estimates are useful for budgetary purposes, sometimes the most pertinent dimensions of a problem are not registered on the accountant’s ledger. Omitting the avocados is fine when making goulash, but not when making guacamole. In this regard, crime is more like guacamole: if you omit the non-financial costs of pain, suffering, and death, and the additional costs created by the fear of those non-financial risks, you are missing most of the problem.

America’s crime problem might be better viewed as a violence problem (Zimring and Hawkins, 1999), and homicide is the most serious expression of criminal violence. We rightly consider death a tremendously important and costly outcome, but it typically doesn’t result in a large financial bill that must be paid; deaths are costly because of the life that is lost, not because someone has to write a

check to the undertaker. Health care, on the other hand, is financially expensive. Accordingly, cost-avoidance analyses can wind up viewing expensive cures to fatal diseases as a net negative.

A variant of the cost-avoidance approach estimates only the financial costs to public budgets. Unlike a private business that can “afford” any program that brings in revenues in excess of its costs, a public agency is limited by its budget. A program with great public benefits that exceeds the budget may be desirable, but it is infeasible because it is unaffordable. However, it makes no sense to call a program “unaffordable” if it program saves more money in the agency budget than it costs from that budget. For example, if a corrections department can prevent \$10 in the costs of re-incarceration by spending \$1 on a program that prevents recidivism, the case for doing that program is overwhelming. The same ought to be true, in the decision-making of the legislature and the governor, if the \$1 were spent by the parole department rather than the corrections department. Thus the public-budget version of cost-avoidance accounting can have great decision-making value. But it its not the same as a full benefit-cost analysis.

A proper *societal* benefit-cost analysis would weigh publicly- and privately-borne costs equally. It would also weigh equally the actual payments made to avoid something undesirable and a corresponding willingness-to-pay to avoid an undesirable outcome that was not successfully avoided. If Rob spends \$2,000 installing a burglar alarm, that is a cost of crime. If his brother Ron is burglarized, and would have been willing to pay \$2,000 to avoid that fate, then Ron’s cost of

crime is also valued at \$2,000, and the societal cost would treat the brothers' costs as equivalent in value. Cost-avoided methodologies do not pass this test.

In other words, a proper societal benefit-cost analysis should be indifferent to who endures a particular cost-burden or receives a particular benefit and to whether goods are privately or publicly provided. But it also cannot simply ignore the willingness-to-pay of someone to avoid pain, suffering, etc. Too often studies that purport to deliver truly comprehensive COI estimates, including all direct, indirect, and intangible costs, in practice shade toward cost-avoidance approaches.²

Intangibles Matter: The (Mis)Measurement of Victims' Suffering³

The COI approach to quantifying the costs of crime has long been controversial. Consider the following example taken from Caulkins et al. (2013).

Suppose a dependent heroin user robs you by sticking a gun in your ribs and forcing you to turn over your wallet, which contains \$40 in cash. After you do so, the robber swats you in the face with the butt of the gun, an injury for which you need stitches. Once safely away, the robber pockets the \$40 and throws your wallet in a garbage bin.

What societal cost would a COI study [of drug abuse] assign to this event?

That depends on what the robber buys with the \$40. If the robber buys a new pair of shoes, the entire event is ruled not drug-related. The robbery is only attributed to drug dependence if the proceeds are spent on illegal drugs.

Even if the crime is deemed drug-related, the \$40 never enters into a COI study's estimate of social cost. It is irrelevant whether the robber stole \$40, \$0.40, or \$400, as long as a portion was spent on drugs. COI studies view theft as a friction-less transfer of goods from one individual to another. Since both the criminal and the victim are members of society, that transfer is a wash; it does not reduce society's aggregate wealth.

² For example, one CDC guide to conducting Cost of Illness studies notes of intangible costs that "the majority of economic evaluations include only their quantitative discussion" and directly lays out the most common methodology as one of "Resource Use," i.e. cost-avoided where "COI = Number of episodes x (Direct cost per episode + Indirect cost per episode)" obviously removing intangible or willingness-to-pay measures immediately after discussing them. See <http://www.cdc.gov/owcd/eet/Cost/fixed/3.html>.

³ This section draws directly and heavily on Caulkins et al. (2013).

On the other hand, the wallet is a loss because the robber didn't keep it. It would be included under "property damage of victims of crime." The losses tend to be larger when physical goods, rather than cash is stolen. You may not consider parting with your TV for anything less than \$500, but a robber will sell it for much less on the black market. Collins and Lapsley (5) assess this drop in value as a loss to the community, and assume 40% of the value of stolen property is lost. ...

COI studies would count the cost of the stitches under "Crime Victim Health Care Costs" ..., but the pain of getting hit in the face and any ensuing psychological damage would be dismissed as "intangible."

If the victim were on the way to work, and getting stitches took four hours, this lost work time would count under "Productivity Losses of Victims of Crime." If the victim were on the way home from work, and getting stitches made the victim miss an evening out with friends, then COI studies would assign no social cost to that lost time.

Suppose the robbery was so traumatic that the victim couldn't sleep well for weeks. That only counts as a cost if the victim sought professional help, in which case the doctor's charges and the cost of any sleeping pills would count. It does not count any subsequent measures the victim took to avoid further victimization such as staying home, carrying mace, or moving to a safer neighborhood.

These generally-used COI conventions strike many as capricious and divorced from common sense. However, it is important to remember that COI methods were invented to address conventional medical conditions: the costs of crime are simply not what they are designed to measure. The foolishness comes from people slavishly following conventions of ignoring intangible costs when carrying the COI tool over into other domains, such as crime, in which their use represents a gross, and unhelpful, simplification.

Other scholars have pursued ways of estimating the total societal costs of criminal victimization including victims' intangible pain and suffering. For example, Cohen et al. (2004) used the contingent valuation method and surveyed a representative sample of U.S. residents on how much the households would pay for 10 percent reductions in specific crimes in their neighborhood to estimate victim's willingness to pay to avoid victimization. The results illustrate the critical function of intangible costs: the

willingness-to-pay to avoid a single burglary came out to \$31,000, compared to direct costs of just \$1,300.

A related point pertains to domestic violence and child abuse. Estimates of the societal costs of crime sometimes focus on street crime, giving relatively short shift to other categories of crime, such as white collar crime and domestic violence. The latter may be a significant omission when the crime-cost estimates are incorporated into an analysis of drug-control interventions. The Substance Abuse and Mental Health Services Administration (SAMHSA) estimates that more than 8.3 million children live with a parent who abused or depended on alcohol or an illicit drug (SAMHSA, 2009). Alcohol abuse and dependency are important risk factors for child abuse.[FN] and Miller et al. (1996) estimated the average social cost per instance of child abuse is \$60,000⁴ — high relative to most street crimes besides homicide and rape. (And even that figure ignores the secondary victimization that occurs when children abused at home – or exposed to toxic level of alcohol *in utero* – grow up to be serious offenders. So any estimate of the benefits of a program to reduce alcohol abuse that neglected its impact on child abuse would be seriously deficient.

However, contingent valuation methods such as Cohen's face serious difficulties. Often the challenge with contingent valuation surveys is one of interpretation: what question are people really answering? An apartment with 10 percent less burglary risk probably has some other attractive features that may be conflated in the mind of the person interviewed. And when people answer they would pay X, Y, and Z percent more for 10 percent less burglary, robbery, and auto

⁴This figure is not adjusted for inflation. Adjusted for inflation, the figure would be \$88,782 in 2013.

theft respectively, does this mean that you can sum X, Y, and Z percent to get a final percentage of how much more they would pay for apartment with all three lower risks? It's hard to say, but it's easy to see how the answer could be "No."

This problem of interpretation is highlighted by the fact that variations in the correlational structure of information and complexity of a survey can substantially alter individuals stated willingness-to-pay (DeShazo and Fermob, 2002). While contingent valuations provide an important improvement in measuring the intangible costs of crime, they are not the end of the story.

Beyond Victimization

The burden of crime is traditionally measured by the total number of incidents: homicides, burglaries, robberies, etc. Even when multiplied by the more modern, more comprehensive cost per crime figures (e.g., Miller et al., 1996), these victimization costs — the actual losses to victims and their families of completed crime — are the most obvious but not necessarily the most important costs of crime. There are at least five other categories of cost: direct crime-avoidance costs (expenditure and foregone benefit incurred by potential victims to reduce their exposure), second-order avoidance costs (imposed by those avoiding crime on others, such as the reduced job opportunities created when businesses move), residual fear, social hostility, and costs of law enforcement (direct and indirect). In other words, the total cost of crime is not well estimated by victimization losses.

A thought-experiment illustrates the point: a city might eliminate burglary, robbery, assault, homicide and rape completely if only everybody stayed at home

and triple- locked their doors. In this extreme scenario, the threat of crime clearly generates enormous costs in terms of interference with the normal activity of citizens. No one is working, going to school, or socializing. In other words, the city has not solved the problem of crime, even though the incidence of crime has been reduced to zero.

Of course, in actual experience avoidance costs usually manifest in more subtle ways. When crime rises to an unacceptable rate, businesses are unable to draw customers, parents keep their children home, and citizens flee for greener pastures (if they can afford the move). The resulting spatial mismatch between places of residence and legitimate employment contributes to urban poverty, joblessness, and a much wider range of social ills (Kain, 1992). In fact, this happened to many cities following the rapid increase in crime rates in the 1960s, when the vast and long-lasting increase in crime rates led many to abandon urban centers for the relatively greater safety of the suburbs (Cullen and Levitt, 1999); that exodus had large unanticipated environmental and societal costs.

The continual process of location selection — where we are willing to live, work, and play — and the attendant costs of moving (direct avoidance), subsequent travel time, blighted neighborhoods with no jobs (second-order avoidance), residual fear, and persistent social hostility represent major and ongoing costs of crime even if there is no direct victimization.

To focus on victimization alone therefore understates the true costs and may lead to inaccurate weightings among different crime categories. Violent crimes, and especially homicide and sexual assault, generate the bulk of direct victimization

losses. In so doing, these crimes generate the residual fear that is so central to the costs of crime. That residual fear, and the way such fear shapes our behavior, may be the largest of the costs of crime. Insofar as order-maintenance or community-oriented policing strategies can reduce the conditions that trigger those fears, the resulting improvement in perceived safety is a social benefit over and above any actual reductions in serious crime (Wilson and Kelling, 1982; Weisburd and Eck, 2004).

COI studies assume linear effects of the public health intervention: when you reduce lung cancer incidence by 10 percent, lung cancer costs go down basically by 10 percent too. For the cost of crime, this assumption of linearity may be seriously inaccurate. Fear levels might, for example shift sharply (much more than linearly) as the perceived crime level crosses some fairly low threshold, and then rise less than linearly above that level.

Thus victimization costs are to crime costs as the tip is to the iceberg. These estimates keep invisible a whole mass of residual fear, avoidance behaviors, and social hostility. To return to Niederman and Boyum's question "Is this the correct answer to the question?" we can now answer that our understanding, although improved by willingness-to-pay measures, needs further refinement to deal with the challenge of interpretation and the dominance of avoidance costs and residual fear as drivers of the cost of crime. .

Generating a Coherent Baseline

Cost-of-Illness-style studies estimate the total cost of a condition by contrasting the status quo with a hypothetical situation in which the condition is not present. For example, they estimate the total cost of lung cancer by contrasting the world we live in with a hypothetical world without lung cancer. In that hypothetical world people live longer and spend more or less on this or that form of healthcare, but otherwise carry on about their lives in more or less the same way. That image of “same but for the condition itself and treatment of it” seems entirely reasonable when applying the cost-of-illness approach to evaluating medical and public health interventions to treat or prevent disease.

But what is the counterfactual for crime? A world without any crime at all, in which no one needs to plan against the risk of victimization and there is little need for locks, keys, passwords, or worrying about your children’s safety as they wander around a city? That would not merely need to be on a different planet; it would apply to a different species. Calvin, Hobbes, and Darwin all teach us that zero crime is not a possible condition for human beings, because aggressive tendencies are built into human nature. And even if we could imagine the world of a crime-free species and measure its benefits compared to the actual world, we would have no good reason to think that getting rid of 10 percent of current crime would get us 10 percent of the value of this crimeless world, rather than 5 percent or 30 percent.

So the relevant comparison is not to a no-crime world in which people have adapted to the reality of no threat, but rather to a world with somewhat less crime and therefore (perhaps) somewhat less fear and precaution. How much less, and what form reduced precaution would take, is an open question; if crime rates fell

by 50 percent we would not respond by locking only the front door while leaving the back door open.

The absence of a coherent counterfactual and the large confounding effects of avoidance behavior make the conceptual target of a total-cost-of-crime estimate unclear, and muddy the significance of precise measurements of the total costs of crime suggesting over \$1 trillion per year (Anderson, 1999) or any other amount. If the costs of crime were \$1 trillion, and the budgetary costs of the criminal justice system something less than a quarter of that amount, it would be reasonable to think that the potential gains from crime reduction are greater than the potential gains from shrinking criminal-justice costs, but even that rough calculation ignores the non-monetary costs of arrest and incarceration. So what we should be trying to estimate is not the total cost of crime but the value of modest size reductions. What would a world with 10 percent less crime look like? But to be even more precise, given the confounding effects of avoidance behavior, we need some measure of the criminal riskiness of the environment,. Then we would want to measure the value of a 10 percent reduction in criminal riskiness of the environment.

It is sometimes useful to think of the number of crimes as being a function of three distinct inputs:

Criminal riskiness,
Crime-control efforts by the criminal justice system, and
Avoidance efforts by the households, firms, non-profits, and
government agencies.

The main driver of criminal riskiness is the number of active and potential offenders and their individual propensities to offend given various levels of

temptation and fear of punishment and social disapproval, and features of the built environment and social arrangements that offer or deny temptation.

For any given level of criminal riskiness, we hope that investing more in police, courts, and corrections will reduce the number of crimes that are actually committed, via deterrence, incapacitation and perhaps rehabilitation and norm reinforcement. (In practice, some crime-control efforts may turn to be criminogenic, on balance, at the current margin; see Useem and Piehl on mass incarceration.) Likewise, for any given level of criminal riskiness, potential victims take steps privately to avoid being victimized, such as buying locks, staying home at night, or moving to lower-crime neighborhoods.

Criminal riskiness is akin to what Philip Cook has called “the demand for criminal opportunity,” (Cook, 1986) with the rate of completed crime determined by the intersection between that demand curve and the supply of criminal opportunity offered by potential victims. We elaborate on Cook’s demand-and-supply dichotomy by dividing victim “supply side factors” into those that are or are not counted versus those held constant by the COI approach.

To measure riskiness, we need to hold precaution constant: how many hours, on average, could a person walk down this street at this time of day before being mugged? If a car is parked on that street, how many days will it sit, on average, before being stolen? These are conceptually meaningful and potentially operationalizable questions, although the cost of answering them in any systematic way might be daunting. Then we would need to ask how total social cost (victimization losses, direct and secondary avoidance costs, residual fear, social

hostility, and costs of enforcement) varied with that imagined measure of victimization risk.

Let us return to COI's roots and write out the analogous framework. By analogy, deaths and other adverse effects of cancer might be thought of as depending on

- Risks of cancer
- Efforts to counter cancer through medical treatment
- Efforts to counter cancer through personal behavioral change.⁵

If cancer disappeared entirely, healthcare expenditures would change, and COI studies recognize those changes, at least in theory. (In practice, some count the reductions in the cost of treating cancer but not the increases in the cost of treating whatever other conditions develop in the additional years of life the person enjoys because cancer did not kill him or her prematurely.)

There are also changes in the third category. Perhaps fewer smart kids would be inspired to go into the medical profession, opting instead to be artists or entrepreneurs. If cancer disappeared, people might spend more time sunbathing and eat fewer anti-oxidants. In theory they might even stay in school longer if elimination of cancer increased life expectancies and hence the time horizon over which investments in human capital could be amortized.

Conventional COI studies do not grapple with such indirect or knock-on effects mediated through endogenous changes in avoidance efforts. This is a critical assumption of independence between possible interventions and public behavior:

⁵ Again, the alternative distinction between items #2 and #3 would be between those paid for with a check vs. those paid for with behavioral change.

the public will basically maintain a constant level of avoidance behavior regardless of the interventions undertaken. That is reasonable when studying cancer, but imitating that analytical choice is harder to defend in analyzing crime.

The desire to avoid criminal victimization shapes the fabric of daily life, from how we organize where we live to the times of day we do things to the mechanics of dating to perceptions and attitudes toward people in demographic groups associated with high rates of offending. The desire to avoid cancer does not similarly shape the daily fabric of life. A case of cancer itself dominates the lives of the patients and their families, but the possibility of cancer *ex ante* is much less influential, at least apart from rather specific responses such as eschewing smoking and asbestos. Indeed, a bane of the public health community is precisely the public's stubborn refusal to convert to health-promoting diet and exercise regimens.

Strained Assumptions about Proportionality of Harm to Prevalence

Some COI studies carefully avoid making statements about what reduction in social cost would accompany less-than-complete eradication of a the problem under investigation. However, the implied epistemic modesty is more apparent than real, since COI studies' *raison d'être* is to contribute insight to the policy process. There is – alas – no policy option that could eradicate either cancer or killings. The practical policy options aspire only to reduce the incidence of some condition by some proportion.

In practice, the policy literature combines a COI study's estimate of the total cost with a projection for a less-than-total elimination of a condition to produce an

estimate of the value of the intervention behind that reduction. E.g., if the cost of social condition X were \$100B and an intervention would cut the condition's prevalence by 10 percent, the value of that intervention is estimated to be about \$20B. As we argue above, this implicit assumption is largely without foundation when it comes to crime control: a 10% reduction in criminal riskiness will not in general lead to a 10% reduction in completed crime (since it will tend to reduce precaution, increasing the "supply" of criminal opportunity as "demand" falls, according to the normal pattern of risk-compensation), and a 10% reduction in completed crime might occasion a reduction in total crime costs either greater or less than 10%, precisely because of the gains from reduced precaution. Similarly, reduced criminality might lead to reduced criminal justice expenditure, but the reduction in prison capacity during the crime wave of the 1960s and 1970s and continuation of the prison-building boom for a decade and a half after the beginning of the great crime collapse of the mid-1990s illustrate that expenditures and crime rates are not tightly bound.

So the costs of crime may not be proportional to the amount of crime.

Moreover, the derivative of total cost to riskiness might itself be a function of the level of reduction. Consider the case of litter; reducing the number of discarded beer cans in an extremely messy park by 50 percent might have very little benefit, while reducing that number by 95 percent might be several times as valuable. Given the importance of crime-avoidance costs in total crime costs, we would need much more knowledge than we have about the behavioral response of potential victims to changes in risk: there's no reason to think that reducing crime by 25 percent would

lead to a reduction of 25 percent in the number of locks or the number of families or businesses relocating away from victimization risk.

Conclusion

Although numbers tell a story, they tell it in small portions and with unequal emphasis. We have shown that, to make good criminal justice policy, analysis of victimization costs must be supplemented by counting primary and secondary avoidance costs and residual fear.

We have also shown that the riskiness of an environment is not the same as the frequency of acts of crime committed. A world with no completed victimizations may nevertheless suffer from enormous costs of crime if people live in a locked down police state pervaded by residual fear of crime, social hostility, and chronic avoidance behavior.

Cost estimates of crime must therefore examine the quantities and qualities of reduction at hand. What we actually want to measure are modest decreases in the criminal riskiness of the environment, and the benefits of those decreases in reduced precaution and (perhaps) reduced actual victimization.

This last point returns us to our original set of questions: “Is that the question to which I need the answer?” For the mayor considering a strategy to reduce cocaine consumption by 20 percent, this consideration of non-linearity may be just as important as understanding the overall cost of crime in her city. The implications of non-linearity between illicit drug use and resultant drug crime, and the effects this has on possible interventions to reduce drug use and drug-

attributable crime, are the focus of the third in this series of articles “Drug Control and Reductions in Drug-Attributable Crime” (Caulkins, 2013).

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