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Murder by numbers: monetary costs imposed by a sample of homicide offenders

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Prior research on the monetary costs of criminal careers has neglected to focus on homicide offenders and tended to minimize the public costs associated with crime. Drawing on expanded monetization estimates produced by Cohen and Piquero, this study assessed the monetary costs for five crimes (murder, rape, armed robbery, aggravated assault, and burglary) imposed by a sample of ($n = 654$) convicted and incarcerated murderers. The average cost per murder exceeded $17.25 million and the average murderer in the current sample posed costs approaching $24 million. The most violent and prolific offenders *singly* produced costs greater than $150–160 million in terms of victim costs, criminal justice costs, lost offender productivity, and public willingness-to-pay costs.

Keywords: costs of crime; monetization estimates; murder; homicide; criminal career

Introduction

By virtue of its lethality, there is no doubt that murder is the *ne plus ultra* of crimes. A variety of research projects from numerous disciplines have shown that the consequences and costs of murder can be devastating not only for the victims and their families, but also for neighborhoods and communities in which the murders occurred (Armour, 2002; Cohen, Miller, & Rossman, 1994; DeLisi, Hochstetler, Scherer, Purhmann, & Berg, 2008; Logan et al., 2008; Loomis, Wolf, Runyan, Marshall, & Butts, 2001; Pridemore, 2003; Zimring & Hawkins, 1997). Moreover, due to a disproportionately high murder rate compared to its peer Westernized nations (Zimring & Hawkins, 1997), the United States pays a particular toll for murder. According to Alvarez and Bachman (2003):

The high rates of murder that our society endures annually affect us all. Even those of us who have never been personally touched by lethal violence are

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aware of the widespread presence of this violence in our communities. The ever-present fear that we or someone we love may be killed is but another form of psychic violence that we must all endure (p. 204).

In addition to this psychic toll, murder is also financially costly. For instance, Miller, Fisher, and Cohen (2001) analyzed state-level data from Pennsylvania to produce estimates of specific forms of violence committed by and against juveniles. Considering medical care costs, lost future earnings, public program costs, property damage and losses, and quality of life losses, the average murder of a juvenile was nearly $4.2 million in urban areas and more than $4.3 million in rural areas. The average cost of the murder of an adult in urban Pennsylvania was nearly $3.5 million and less than $3 million in rural areas.

The costs of murder have also been investigated somewhat tangentially by criminal career researchers who study offending seriousness, violence specialization, and the mix of violent and other forms of crime that typify offending careers (e.g., Blumstein & Cohen, 1987; DeLisi, 2001, 2005; Lynam, Piquero, & Moffitt, 2004; Piquero, 2000; Piquero, Farrington, & Blumstein, 2003, 2007; Soothill, Francis, & Liu, 2008). From this perspective, murder can be viewed as costly because it is an offense that is part and parcel of the larger domain of offending among the most habitual criminals. For instance, Blumstein, Cohen, and Hsieh (1982) found that offenders that commit murder have among the lengthiest criminal careers. Vaughn, DeLisi, Beaver, and Howard (2009) found that homicide offenders also engage in other forms of offending, such as property, drug, and public-order offending. This is concordant with research indicating that offenders tend not to specialize in violence (Piquero, 2000). The take-away message from criminal careers research is that irrespective of the costs of murder, an additional burden is that some offenders who commit murder also frequently commit additional crimes. Despite a generalized understanding of the gravity of murder and its numerous consequences for society, surprisingly little prior research has focused on the costs imposed by criminal offenders who commit murder. This study seeks to fill this void by estimating the monetary costs posed by convicted murderers.

The monetary costs of criminal careers

In a seminal study, Cohen (1998) quantified the various costs that a young career criminal would prospectively inflict over their delinquent career including the annual victim and criminal justice-related costs per Index crime. Overall, Cohen reported that,

the total external costs of a life of crime are estimated to range from approximately $1.5 to $1.8 million. Of that amount, about 25 percent are

tangible victim costs, 50 percent lost quality of life, 20 percent criminal justice costs, and 5 percent offense productivity losses (1998, p. 17).

Cohen's study introduced the basic monetization procedures and cost estimates (e.g., victim-, quality of life, criminal justice system, and worker lost productivity-costs), but did not specifically emphasize the costs of murder. However, Cohen (1998) estimated that the average annual cost of murder incurred by the criminal justice system in 1997 was $163,000.

Using data from an enriched sample of ($n = 500$) adult habitual criminals with at least 30 career arrests, DeLisi and Gatling (2003) largely replicated Cohen's research by estimating the assorted victimization costs of career criminals expressed in 2002 US dollars. They found that the average career offender imposed more than $831,000 in victim costs, nearly $275,000 in criminal justice system costs, and more than $29,000 in lost productivity. The mean cost imposed per offender was more than $1.14 million. The most recidivistic offenders created more than $10 million in costs. Unfortunately, despite the extreme nature of the offenders in DeLisi and Gatling's sample, just 58 offenders had committed murder. Their estimate of the cost of murder was nearly $426,000 in victim costs. Based on data from the Pittsburgh Youth Study (PYS), Welsh et al. (2008) examined the costs of delinquent careers among 503 boys. They found that the 10% most serious and chronic delinquents imposed approximately $800,000–$900,000 in victim costs during adolescence. In a separate study with the PYS data, Farrington, Loeber, Stallings, and Homish (2008) found that 33 boys had murder convictions and these boys demonstrated an array of risk factors for serious delinquency. Unfortunately, they did not produce cost estimates imposed by the homicide offenders within the PYS.

Recently, Cohen and Piquero (2009) significantly advanced our understanding of the monetary costs of criminal careers using expanded offense and cost estimates and a much larger ($n = 27,186$) sample of offenders, the 1958 Philadelphia birth cohort (Tracy & Kempf-Leonard, 1996; Tracy, Wolfgang, & Figlio, 1990). They produced several important findings. First, the present (in 2007 US dollars) value of saving a high-risk youth (saving refers to the preventive value indicating how much money and victimization would be precluded if the offending career was forestalled) was estimated between $2.6 million to $5.3 million at age 18. Second, the costs were higher at ages 10 ($3.2 to $5.5 million) and 14 ($3.2 million to $5.8 million) which indicates the importance of detecting the early onset of criminal careers. Third, when discounted to birth, Cohen and Piquero (2009) reported that the present value of saving a high-risk youth ranged from $2.6 million to $4.4 million. Fourth, the monetization procedures were bolstered to include public willingness-to-pay (WTP) estimates which capture public concern about crime (and willingness to assist in crime prevention) and significantly increase the costs associated with career offenders.

Current focus

To date, research on the monetary costs of criminal careers has grown to include increasingly larger study groups and expanded measures of crime costs. Because even large-scale criminal career datasets have few homicide offenders (see DeLisi, 2001, pp. 240–242), relatively little is known about the assorted costs of murderers. Understanding the costs of murder (and homicide offenders generally) is critical given the salience of lethal violence to the general population. An array of studies of crime seriousness (Cohen, 1988a, 1988b, 2005; Doerner & Lab, 2005; O'Connell & Whelan, 1996; Rossi, Waite, Bose, & Berk, 1974; Sellin & Wolfgang, 1964) consistently shows that murder is viewed as the most serious form of antisocial behavior in terms of its legal seriousness, societal impact, individual impact, severity of offenders who perpetrate it, and others. This study attempts to fill this void using a large ($n = 654$) sample of convicted homicide offenders.

Method

Participants

Homicide offenders are relatively rare in number and are scarcely found in conventional probability samples, and these conditions necessitate accessing correctional samples through official records (Hickey, 2003; Reidel, 1999). This study uses DeLisi and Scherer's (2006) data from a stratified convenience sample of 654 convicted and incarcerated homicide offenders selected in 2003 from eight states (Arkansas, Florida, Georgia, North Carolina, New Jersey, Ohio, Oklahoma, and Texas) spanning the Midwestern, Southern, and Atlantic coast areas of the United States. These states were selected because they provided biographical information (e.g., name, sex, race, and date of birth) on homicide offenders that could be used to purchase their publicly available criminal records. Criminal records contained arrest, judicial, and correctional information and were produced by a clearinghouse with access to criminal justice information in 45 states and Washington, DC. The records clearinghouse service updated its database monthly producing criminal records, which while not as exhaustive as National Crime Information Center rap-sheets, were valid measures of offenders' official criminal history (Geerken, 1994), particularly the records of homicide offenders (DeLisi & Scherer, 2006; Wright, Pratt, & DeLisi, 2008).

Monetization procedures and measures

This study replicated the monetization procedures originally developed by Cohen et al. (1998; Cohen et al., 1994; Miller, Cohen, & Wiersema, 1996)

who devised a formula for monetizing a criminal career to determine the lifetime external costs. The formula is

$$\Sigma_{ij}(1 - \beta)^{j-1}\lambda_{ij}[VC_i + CJ_i + CI \times T_i + W \times T_i] \qquad (1)$$

where, λ = mean number of offenses, VC = victim costs of crime, CJ = costs of criminal justice investigation, arrest, adjudication, CI = cost of incarceration in days, T = average time served, β = discount rate, W = opportunity cost of offender's time, i = crime 1 through crime I, j = year 1 through year J of crime.

This produced assorted cost estimates of specific criminal offenses. Victim costs included tangible costs, intangible costs, and risk of death (where applicable). Criminal justice costs were also produced and included the annualized costs of investigation, legal defense, incarceration, parole, and probation. Lost earnings equaled the average yearly income lost due to incarceration. These estimates were adjusted for inflation using the inflation calculator produced by the United States Bureau of Labor Statistics which uses the Consumer Price Index and is expressed in 2008 US dollars.

An intrinsic limitation of monetized cost estimates of crime is that they cannot fully capture the specific and general negative implications of criminal victimization. In his seminal article, Cohen (1998) described antisocial behavior as an:

> externality, which is an action taken by one person that negatively affects another person in society, where that person does not voluntarily accept this negative consequence through monetary payments of otherwise ... Although pain and suffering costs are not actual commodities or services exchanged in the marketplace, individual are willing to pay real dollars and expend real resources to avoid the pain, suffering, and lost quality of life associated with becoming a crime victim (pp. 6–7).

Similarly, DeLisi and Gatling (2003) suggested that 'the many qualitative consequences of these criminal victimizations are incalculable' (p. 291). To redress this, Cohen, Rust, Steen, and Tidd (2004) calculated willingness-to-pay (WTP) estimates which are the amount of money that citizens would be willing to pay to prevent crimes. Based on a nationally representative sample ($n = 1300$), Cohen et al. (2004) found that WTP estimates were between 1.5 and 10 times higher than previous estimates of the costs of crime because they encompassed collateral costs. These costs included prevention expenditures for personal security, avoidant behaviors to safeguard against victimization, third-party costs of insurance, and government welfare programs. To increase the accuracy of costs of crime estimates, Cohen and Piquero (2009) recently extended monetization

procedures to include WTP estimates and this study replicated their procedures.

Based on these procedures, estimates for victim costs, criminal justice system costs, offender productivity costs, and WTP costs were produced for five Index offenses: murder, rape, armed robbery, aggravated assault, and burglary (see Table 1). For murder, the victim, justice, and offender productivity costs were $5,163,556. The murder WTP estimate was $12,089,100 for a total cost of $17,252,656 per murder. For rape, total victimization costs were $151,423, WTP cost was $297,109, and the total cost was $448,532. For armed robbery, victimization costs were $48,869, WTP cost was $286,864, and the total cost was $335,733. For aggravated assault, victimization costs were $58,295, WTP cost was $87,084, and total cost was $145,379. For burglary, victimization costs were $5,430, WTP cost was $35,858, and total cost was $41,288.

These estimates were multiplied by the number of arrests for these crimes that occurred simultaneous to their instant homicide offense (e.g., the murder for which the offender in the sample was currently incarcerated). Univariate statistics for these crimes were murder ($M = 1.39$, $SD = .87$, Range $= 1$–9), rape ($M = .21$, $SD = .86$, Range $= 0$–13), armed robbery ($M = .76$, $SD = 1.68$, Range $= 0$–21), aggravated assault ($M = .34$, $SD = 1.00$, Range $= 0$–9), and burglary ($M = .34$, $SD = .82$, Range $= 0$–6).

Findings

As shown in Table 2, the assorted costs of murder are staggeringly high. The average victim costs exceed $6.5 million with more than $426,000 in justice system costs, and nearly $200,000 in lost productivity. The WTP estimate is $16.8 million for a total cost of $23.96 million per murder. The offenders in this sample averaged nearly 1.4 murder victims and the range was 1–9 victims. The total costs imposed by the offender with nine murder victims were greater than $155 million.

Table 1. Cost estimates per offense for five index offenses (2008 US dollars).

Offense	Victim costs	Justice costs	Offender productivity	Subtotal	WTP	Total
Murder	4,712,769	307,355	143,432	5,163,556	12,089,100	17,252,656
Rape	138,310	8503	4610	151,423	297,109	448,532
Armed robbery	29,711	15,060	4098	48,869	286,864	335,733
Aggravated assault	37,907	13,831	6557	58,295	87,084	145,379
Burglary	2049	2356	1025	5430	35,858	41,288

Table 2. Average victimization costs for murder, rape, and armed robbery (2008 US dollars).

Cost	Mean ($)	Standard deviation	Minimum	Maximum
		Murder		
Victim costs	6,535,904	4,112,001	4,712,769	42,400,000
Justice costs	426,255.30	268,174.40	307,355	2,766,195
Offender productivity	198,918.70	125,147.80	143,432	1,290,888
WTP	16,800,000	10,500,000	12,089,100	109,000,000
Total	23,961,078		17,252,656	155,457, 083
		Rape		
Victim costs	29,184.68	118,443.30	0	1,798,030
Justice costs	1794.21	7281.64	0	110,539
Offender productivity	972.75	3947.83	0	59,930
WTP	62,692.72	254,432.70	0	3,862,417
Total	94,644.36		0	5,830,916
		Armed robbery		
Victim costs	22,533.11	49,871.15	0	623,931
Justice costs	11,421.65	25,278.84	0	316,260
Offender productivity	3107.96	6878.66	0	86,058
WTP	217,560.50	481,513.20	0	6,024,144
Total	254,623.22		0	7,050,393

The assorted costs of rape and armed robbery were much lower than the costs of murder. Each rape imposed more than $29,000 in victim costs, nearly $2000 in justice system costs, nearly $1000 in offender productivity losses, and nearly $63,000 in WTP costs. The total average cost per rape was nearly $95,000. The costliest offender – who committed 13 rapes in concert with his homicide offenses – imposed total costs in excess of $5.8 million. The average costs of armed robbery were comparable to those for rape in terms of victim ($22,533), but higher for justice system costs (more than $11,000), offender productivity (more than $3000), and most dramatically, WTP estimates (nearly $218,000). The average total costs per armed robbery were nearly $255,000. The most active armed robber with 21 offenses imposed more than $7 million in victimization costs.

Table 3 contains cost estimates for aggravated assault. The average victim cost of an aggravated assault was nearly $13,000 with nearly $4700 in justice costs and more than $2200 in lost offender productivity. The average WTP estimate exceeded $29,000 for a total average victimization cost of nearly $49,000. The costliest offender imposed costs in excess of $1.3 million.

Table 3.   Average victimization costs for aggravated assault and burglary (2008 US dollars).

Cost	Mean ($)	Standard deviation	Minimum	Maximum
	Aggravated assault			
Victim costs	12,751.59	37,993.80	0	341,163
Justice costs	4652.63	13,862.67	0	124,479
Offender productivity	2205.72	6572.01	0	59,013
WTP	29,294.31	87,283.40	0	783,756
Total	48,904.25		0	1,308,411
	Burglary			
Victim costs	698.67	1687.60	0	12,294
Justice costs	803.35	1940.45	0	14,136
Offender productivity	349.50	844.21	0	6150
WTP	12,226.81	29,533.34	0	215,148
Total	14,078.33		0	247,728

The costs of burglary were modest compared to all other offenses. Victim, criminal justice system, and offender productivity costs were less than $2000 but the WTP estimate exceeded $12,000. The average total cost of burglary was just over $14,000 and the most criminally active burglar imposed costs approaching $248,000.

Discussion

Crime imposes an assortment of costs on the individual victim who bears the brunt of its damage to person, property, or both. Crime also carries costs for the offender in the event of lost freedom and productivity stemming from the legal consequences of punishment. And there is a larger societal cost of crime characterized by fear, avoidant behaviors, and expenditures for crime prevention. Building on the work by Cohen and his colleagues, Cohen and Piquero (2009) recently extended the study of the monetary costs of crime by included victim costs, criminal justice system costs, lost offender productivity costs, and public WTP costs to capture the victim-specific and societal toll that is imposed by crime. This study replicated their work for five crimes – murder, rape, armed robbery, aggravated assault, and burglary – adjusted to reflect 2008 US dollars. In addition, this study supported cost estimates provided by prior research. For instance, the current WTP estimates for murder ($12.09 million), rape ($297,109), armed robbery ($286,864), aggravated assault ($87,084), and burglary ($35,858) were comparable to those reported by Cohen et al. (2004), which were $9.7 million, $237,000, $232,000, $70,000, and $25,000, respectively.

Unlike prior research that either de-emphasized or utilized samples with a paucity of homicide offenders, these analyses provide empirical monetary weight to the staggering costs of homicide. When assorted costs and WTP estimates are added, the total cost per murder is $17,252,656 which dwarfs the commensurate total costs of rape ($448,532), armed robbery ($335,733), aggravated assault ($145,379), and burglary ($41,288). Put another way, the average cost of one murder is 38.5 times higher than the average cost of one rape, 51.4 times higher than the average cost of one armed robbery, 118.7 times higher than the average cost of one aggravated assault, and 417.9 times higher than the average cost of one burglary. These monetary estimates comport with the notion advanced by crime seriousness research which indicates that murder is viewed as the most serious and in many ways costliest crime (Cohen, 1988a, 1988b; Doerner & Lab, 2005; O'Connell & Whelan, 1996; Rossi et al., 1974; Sellin & Wolfgang, 1964).

That each murder costs more than $17.25 million still does not convey the true costs imposed by homicide offenders in the current sample. Since the mean homicide conviction was more than one, the average murderer in these analyses actually imposed costs approaching $24 million. For the offender who murdered nine victims, the total murder-specific costs were $155,457,083! Again, these costs should be considered relative to prior research. It has been shown that the average cost of a career criminal or high-risk delinquent ranges from $1 million to nearly $6 million (Cohen, 1998, 2005; Cohen & Piquero, 2009; DeLisi & Gatling, 2003). The male who was convicted of nine murders was also convicted of 13 rapes, 5 armed robberies, and 1 aggravated assault (the offender had the highest number of convictions for both murder and rape). In addition to the $155,457,083 in murder costs, this individual offender imposed costs for rape (13 × $448,532), armed robbery (5 × $335,733), and aggravated assault (1 × $145,379) for a total cost of $163,112,043. If we compared this cost to the highest estimate of the cost of saving a high-risk youth (approximately $6 million), then the most violent offender in the current sample imposed costs more than 27 times greater than the average costs of a chronic offender.

There are limitations of this study that warrant consideration. Most importantly, despite the use of the broadest and most current monetization estimates (Cohen & Piquero, 2009) the current monetary costs are conservative and omit many additional crimes that the homicide offenders committed in conjunction with their murders. For instance, the crime of kidnapping was not included because it was not covered in the prior study by Cohen and Piquero (2009); however, Cohen (1988b) previously calculated a victim cost of kidnapping (in 1987 US dollars) of $110,469. In 2008 US dollars, the victim cost per kidnapping is $206,570 and the offenders in the current sample averaged ($M = 0.32$) arrest charges resulting in a mean kidnapping victim cost of $66,102.40. The most prolific kidnapper had 15 arrests which imposed a kidnapping victim cost of $3,098,550.

This study focused on just five crimes for which there were complete data to replicate cost estimates, but it documented that homicide offenders often have extensive criminal histories including an array of offenses (DeLisi & Scherer, 2006; Wright et al., 2008). In this regard, more research is needed that contains enough offense and criminal history information on diverse types of criminal offenders (e.g., those convicted of murder, rape, kidnapping, and other serious crimes) to capitalize on the multiple offense-specific cost estimates that now exist.

On the other hand, it should be noted that the current findings are based on an enriched sample of murderers many of whom also had extensive involvement in other serious forms of criminal behavior. In this way, although the costs of murder are always high, the costs imposed by the current sample are in some ways inflated by the overall extremity of this offending. Future research could attempt to replicate this study with diverse correctional or offender samples where only a fraction would likely have committed murder. Moreover, many murderers have little to no criminal history, thus it is likely that the monetary costs imposed by a more 'normative' sample of offenders would be significantly fewer than the current data. Indeed, Fox and Levin (1998) noted in their review of multiple homicide offenders, 'the absence of any prior criminal involvement is conspicuous' (p. 449). In addition, future research could examine if other serious, chronic offenders that do not commit murder, nevertheless, impose greater monetary costs than a murderer particularly one with no other criminal involvement. These are important empirical questions that can better situate the current findings within the criminal careers and monetary costs of crime literatures.

'Beyond the expenses of the legal system, victim losses, and crime-prevention agencies, the burden of crime encompasses the opportunity costs of victims', criminals', and prisoners' time; the fear of being victimized; and the cost of private deterrence' (Anderson, 1999, p. 611). This burden of crime has been estimated to exceed $1 trillion annually in the United States. Overall, the current research note provides rather alarming estimates that suggests that murder is extraordinarily costly. This meshes with prior studies which similarly found that murder produced devastating consequences for victims, the covictims of the homicide, and society at large (Alvarez & Bachman, 2003; Armour, 2002; Cohen et al., 1994; Logan et al., 2008; Loomis et al., 2001; Pridemore, 2003; Zimring & Hawkins, 1997). For the covictims of homicide – the family and friends of the person that was murdered – recovery is a difficult, lifelong process characterized by posttraumatic stress disorder, depression, financial vulnerability, disability, and other challenges (Armour, 2002). Again, in addition to the human toll, the issues associated with victim recovery denote additional costs.

Finally, Rosenfeld, Baumer, and Messner (2007) produced interesting research findings on the interrelationships between social trust, firearm

prevalence, and murder. They found that social trust influences firearm prevalence via its association with homicide rates. Where levels of social trust are low, homicide rates are higher. And where homicide rates are higher, so too is the proportion of the public which owns firearms. Their research provides a macro-perspective look at the negative implications that cascade from homicide offending. This study places a price tag on these negative effects, with each murder costing more than $17.25 million. In addition to the lives that are lost and shattered, murder also denotes extraordinary collateral fiscal costs.

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