

Quantifying Benefits of Recovering a Stolen Vehicle and Apprehending the Perpetrator

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Background

Over the past two decades motor vehicle theft has trended down in the United States. In 2015 there were 707,758 reported motor vehicle thefts, well below the peak of 1,661,738 in 1991 (FBI, 2016).² Perceptions of law enforcement and of victimization risk, however, seem sticky. The decrease in vehicle thefts has not been associated with improvements in public confidence in police, nor reductions in concerns for personally being a victim of a motor vehicle theft. The benefits of declines in rates of vehicle theft and increases in stolen vehicle recovery would depend on how clearly those gains are communicated to the public, and the extent to which future thefts are deterred.

Calculating the benefits of vehicle recovery

How the cost and benefit of a vehicle recovery is calculated depends on the perspective assumed in the benefit-cost analysis. The choice of perspective is consequential, with the potential to not only meaningfully change the magnitude of the ratio, but even the sign. A “taxpayer perspective,” for example, is quite restrictive in that it includes only the actual dollar values that fall on a public budget³. In the case of vehicle theft a taxpayer perspective would consider the effects on policing costs and court, convictions, and corrections costs, but would exclude off-budget costs such as community perspectives of their law enforcement agencies or of their perceptions of their safety, or costs shouldered by victims. This perspective even excludes the private out-of-pocket costs that vehicle owners incur in replacing their vehicles or in protecting themselves from future victimizations (e.g., the costs of security enhancements and private insurance). By contrast, a “social planner perspective” is much broader. This perspective includes costs to the public as well as to state and local governments. For example, in calculating the costs attributable to a crime the social planner perspective includes case processing costs counted in the taxpayer perspective as well as property loss or damage, and quality of life impacts incurred by victims. Calculations from this perspective would quantify off-public-budget factors, such as inconvenience costs, changes in private insurance premiums and other pecuniary outlays, and the quality-of-life impact of changes in perspectives of law enforcement.

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² In more-recent years burglaries and other property crimes have continued to decrease significantly, but the downward trend in vehicle thefts has reversed; the most recent Uniform Crime Reporting data show a slight uptick in the number of thefts in 2015 and 2016, but still well below theft rates in the 1990s.

³ It might be made more restrictive still by focusing on budget implications for a specific government entity such as a city or county or state.

The social planner perspective often includes monetizing both tangible costs (where an actual expense or loss is incurred) and intangible costs (for example, the value of psychological and emotional costs). Intangible costs are harder to quantify than tangible costs but over the past decade several methods have been developed to monetize intangible costs for inclusion in benefits-cost analyses, for example, *willingness-to-pay* valuations (Stickle, 2015).

Assuming a social planner perspective is adopted, the following factors might be considered for inclusion in a CBA calculation.

A. Precautionary costs

Precautionary costs include two broad classes of costs. The first class includes expenditures on reducing the expected costs associated with being the victim of a vehicle theft, such as vehicle theft insurance premiums. The second class includes expenditures associated with reducing the risk of becoming the victim of a car theft. These are vehicle protection costs (e.g., anti-theft devices such as LoJack and GPS trackers and the costs of secure parking).

B. Victim costs

There are several costs that fall to the victim of a car theft

- The financial losses (insurance deductibles and other) that are not otherwise covered by insurance
- Lost wages
- Inconvenience costs, including the opportunity costs of time expended in documenting and reporting the theft (filing complaints, replacement search costs) and the inconvenience of the period during which the victim is without a vehicle
- Psychological distress due to victimization

C. Criminal justice costs

The criminal justice costs include the costs associated with policing, legal and adjudication costs, and costs of corrections (community supervision and incarceration costs).

D. Quality of life

A potential benefit of recovery of stolen vehicles is the benefit of improving the community's perceptions of their law enforcement agencies and gaining an improved sense of security

Increasing the vehicle theft clearance rate

The clearance rate for vehicle theft (i.e., recovering a stolen vehicle and catching the perpetrator) is 13.1%, which is similar to the clearance rate for burglaries (UCR, 2016).

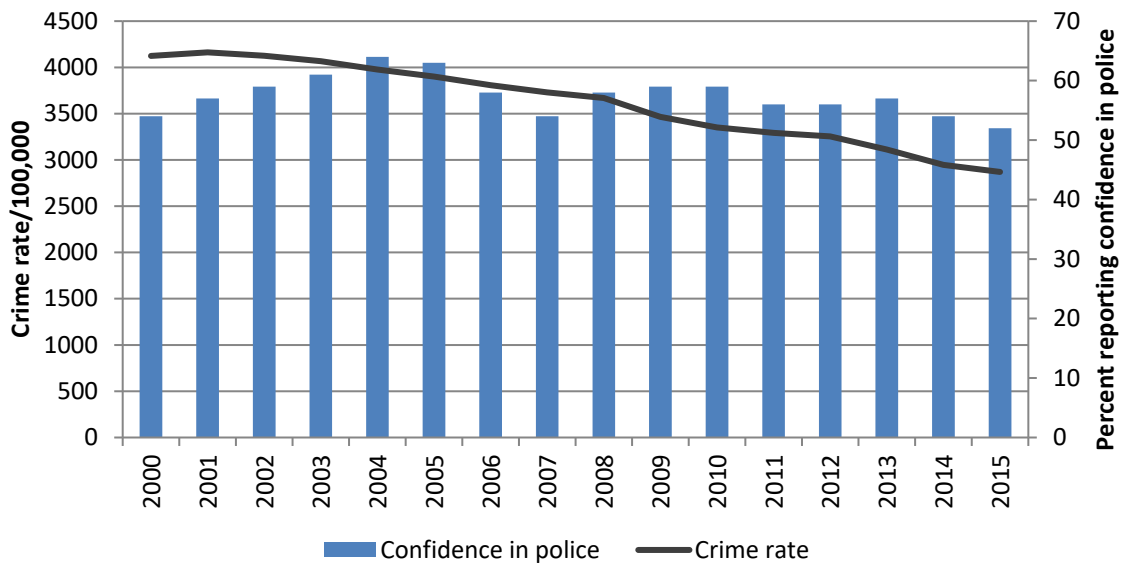
Quantifying the benefit of increasing the clearance rate would depend on the direct value of the vehicles recovered but also depends on several other factors, including how the clearance rate is associated with: the public’s perceptions of the police; the public’s concern over vehicle theft incidence (and the costs they incur to avoid victimization), and deterrence of future crime.

With respect to public perceptions there are two factors to consider: (1) How does the vehicle theft clearance rate affect the public perception of the performance of their police agencies and perceptions of their risk of victimization? and (2) If these perceptions are changed, how do you assign a value to these changes?

A negative correlation could be expected between crime rates and confidence in police (that is, falling crime levels are likely to be associated with improvements in confidence of the police), but this does not appear to have been the case.

Figure 1 shows historical crime trend data and public opinion data collected on confidence in the police. Historical crime data are from the FBI Uniform Crime Reporting program (UCR) and police confidence data are from Gallup. These data indicate that the crime drop has not been associated with an increase in confidence in the police. (Increased media focus on police shootings may have influenced the Gallup survey.)

Figure 1. Crime Rate (per 100,000) in the USA and Confidence in Police



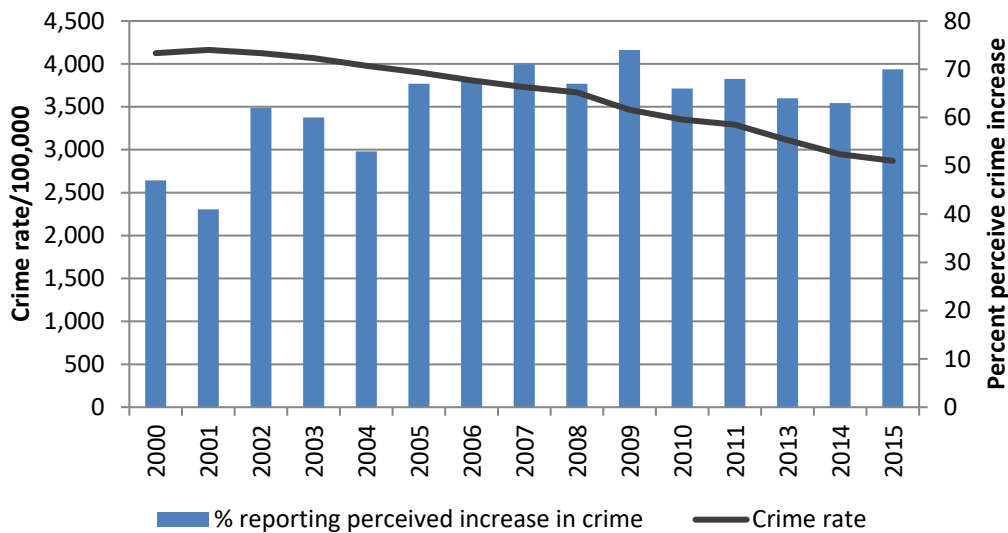
Data sources: The overall crime rate per 100,000 people is from the FBI UCR Annual Reports. Historical data on persons reporting frequently worrying confidence in police is from Gallup 2016 and reflect the percentage of respondents who reported “A great deal” or “Quite a lot” to the question: “Please tell me how much confidence you, yourself, have in the police?” The two series are *positively* correlated over the period ($r = 0.5$).

It might not be surprising that falling crime levels have not been associated with increasing confidence in law enforcement, given that public perceptions of the risk of crime deviate substantially from the actual risk of victimization. Historical analysis of Gallup polls

overlaid on UCR crime data show that the public perception of crime risk is poorly correlated with actual event-based risk. Figure 2 shows crime rates and the perceptions of crime; even though crime in the United States was falling over the period shown, there was an increase in the percentage of Americans who reported that crime was on the rise. This might indicate a failure in communicating gains in crime control, or it might indicate threshold effects (that is, it might take a dramatic improvement in crime control to positively influence perceptions).

Recent polls conducted by Gallup show that 43% of Americans report being worried about having their car stolen and 18% report being frequently worried (Gallup 2016).

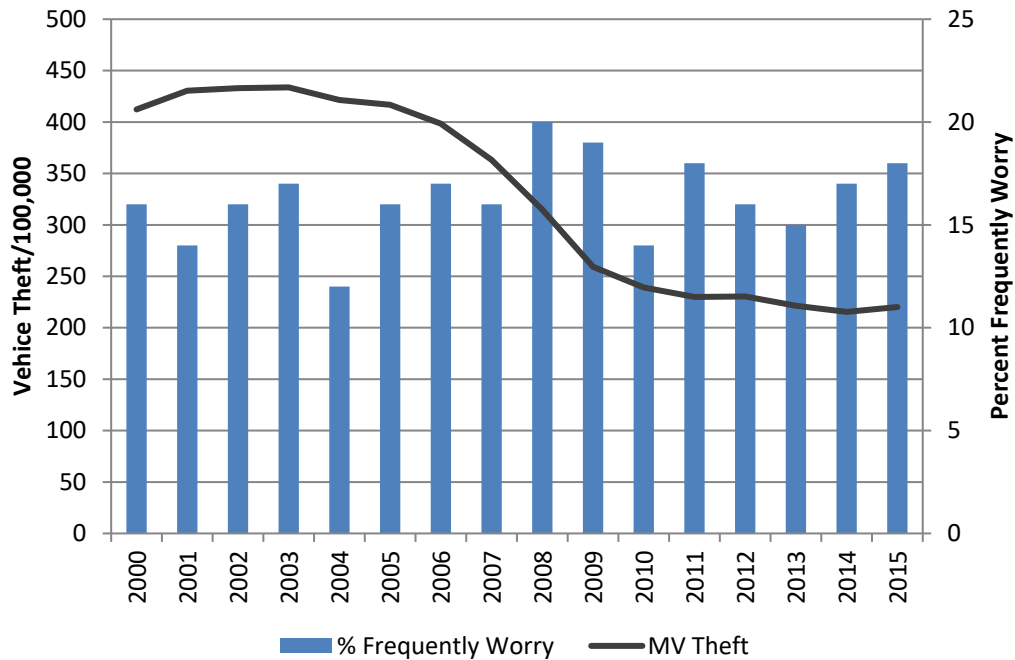
Figure 2. Crime Rate (per 100,000) in the USA and Perceptions of Crime



Data sources: Crime rate per 100,000 people is from the FBI UCR 2016. Data on perceptions of crime are from Gallup 2016 and reflect the percentage of respondents who reported “more” to the question: “Is there more crime in the U.S. than there was a year ago, or less?” The two series are negatively correlated over the period ($r = -0.57$).

Figure 3 shows vehicle theft rates (per 100,000 people) in the United States and the percentage of Americans who report frequent worry about being the victim of a vehicle theft. That vehicle theft is at historic lows seems not to have translated into peace of mind for American car owners.

Figure 3 Vehicle Theft (per 100,000) and Percentage of Americans Who Frequently Worry about Having a Car Stolen or Broken Into



Data sources: Vehicle Theft Rate per 100,000 people is from the FBI UCR Annual Reports. Historical data on persons reporting frequently worrying about having a car stolen or broken into are from Gallup 2016 and reflect the percentage of respondents who reported “frequently” to the question: “How often do you, yourself, worry about having your car stolen or broken into?” The two series are negatively correlated over the period ($r = -0.32$).

Detering future crime

Increasing the vehicle theft clearance rate might deter future crime in two ways:

1. By apprehending, convicting, and incarcerating vehicle thieves so that they are not available to commit future thefts and deterring their future involvement in vehicle theft (specific deterrence). This is offset to the extent that there is replacement (someone else steps into the shoes of an incarcerated vehicle thief) and to the extent that incarceration itself is criminogenic.
2. By deterring others from committing vehicle theft because the crime no longer seems like a good bet (general deterrence). This also may be offset by the possibility of replacement of incapacitated thieves by a new cohort.

Historically, criminologists have characterized deterrence in terms of celerity, certainty, and severity, but we now know that these features do not carry equal weight. In the criminal justice context, “celerity” refers to how *quickly* an infraction is responded to. Years of increasing punitive severity in the United States have yielded disappointing results and most researchers now reject crime-control arguments (deterrence and selective-incapacitation effects) for punitive measures such as mandatory minimums (Caulkins et al., 1997; Tonry, 2009). In contrast, recent findings in criminology support the idea—

consistent with behavioral economics—that speed and certainty of responses to infractions are more important than severity (Nagin, 2013).

The impact of increasing the clearance rate for vehicle theft might depend not only on increasing the probability of apprehension but also on the response time. To what extent would increasing the rate of recovery of stolen vehicles deter future thefts? There is relatively limited empirical evidence detailing the relationship between the probability of detection and deterrence. Several authors have noted that the relationship may be nonlinear, and that there might be important threshold effects. One study of serious youthful offenders found evidence of a “tipping point” effect, that perceived risk had to reach a certain threshold (estimated risk of apprehension of between .3 and .4) to deter behavior, and deterrence was substantially higher as perceived risk approached unity (Thomas et al., 2012).

What do we know about celerity in practice? Very little. While many researchers have focused on severity, celerity and certainty have been given short shrift by deterrence scholars (Loughran, Paternoster, & Weiss, 2012). Even Becker’s famous rational-actor model fails to address celerity, apart from the discounting of consequences (McAdams, 2011).

Of the studies that do touch on speed of response to proscribed behaviors, relatively few have studied these factors in practical rather than laboratory settings. Part of the challenge is the scarcity of available data. Attention is paid to what is measured and what is measured is based on available data. Severity is tracked with measures of sentence length and time served (available from administrative databases and routinely reported by state agencies). Certainty is tracked (albeit imperfectly) with clearance rates, and by comparing data from victimization reports (such as the National Crime Victimization Survey) with arrest data (such as from the FBI’s UCR) or from interviewing offenders and comparing self-reported crimes with self-reported arrests and convictions. These methods produce crude estimates of arrests or convictions per crime reported. National-, state-, and county-level celerity measures are limited to inconsistently kept measures such as “days to arrest,” “days pending a hearing,” and “days to close a warrant,” all of which are difficult to access in diffracted databases.

Operant-conditioning studies and behavioral economics experiments on the role of adverse consequences in changing behavior assign a much greater role to certainty, especially as the probability approaches unity, and to swiftness, especially as it tends toward immediacy. Under “hyperbolic” discounting (which overweights immediate-future results over deferred results), the difference between a response tomorrow and a response two weeks from now can be much more important than the difference between a response two weeks from now and a response two months from now, an effect that will not arise under a geometric discounting formula used in the prescriptive economic theory of choice over time (Ainslie, 1983; Wilson & Herrnstein, 1985). The importance of speedy responses is that it is uncomfortably disruptive and strengthens the association between the action and the response.

From psychologists we learn the importance of “temporal contiguity” (proximity of stimulus and response) in shaping perceptions of causality (the recognition that the misbehavior *causes* the response); when the response is delayed, the perception of causality is diminished, and the system therefore appears punitive, unfair, and arbitrary (Rhine, 1993; Steiner, Makarios, Travis, & Meade, 2012). The speed of a response has also been demonstrated to have a powerful effect on learning. In experimental studies with rats, for example, Camp and colleagues (1967) showed that even a two-second delay in administering punishment reduced its effectiveness in shaping behavior compared with instant punishment, and that the effectiveness of the punishment was muted even further if the punishment was administered with a 30-second delay. Similarly, studies on humans also show that learning occurs more quickly when consequences are contiguous with actions. A school-based study (Abramowitz & O’Leary, 1990) of first and second graders demonstrated the effect of a reprimand (delivered if the student was engaged in “off-task” behavior) delivered immediately compared with the same reprimand delivered with a two-minute delay. The immediate reprimands were effective in shaping behavior, whereas those delivered with a delay had no effect. In simulated-driving experiments with adults, it has been demonstrated that enforcement strategies that entail immediate responses to an offense are more effective at getting drivers to remain within speed limits than those where responses were delayed (Marciano et al., 2015). Threshold effects are likely substantial. Gershaw (1984) attributed the inefficacy of our criminal justice system to punishments that are delivered long after a crime is committed, considered in context of the total amount of punishment delivered. He noted that delays in punishment resulted in the perpetrator no longer perceiving the crime as the primary factor in the punishment; instead, he perceives the punishment as the consequence of “getting caught” not as causally related to the underlying crime. Thus, rather than desisting from crime, the perpetrator is more likely to focus on how he might be smarter about not getting caught.

In terms of specific and general deterrence, the potential benefits of recovering a stolen car and apprehending the perpetrator depends not only on how the increased probability of detection positively affects behavior (deters vehicle theft), but also how the increase in speed of detection shapes that behavior.

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