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# TOWARDS A PREFERENCE-BASED MEASURE OF THE IMPACT ON WELL-BEING DUE TO VICTIMISATION AND THE FEAR OF CRIME

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## ABSTRACT

If the resources devoted to dealing with crime are to be used in ways that bring about the most benefits, it will be important to know something about how much better or worse one crime is compared to another. Ideally, one would like to describe the effects of all crimes – and possibly even the fear of crime as well – in terms of their effect on key elements of a person's life, such as her mental health and the degree to which she feels vulnerable. A 'crime state' descriptive system could then be used to categorise the effects of crime in much the same way as 'health state' descriptive systems are used to categorise the effects of ill health. By asking members of the general public to rank different crime states, it would be possible to generate a set of relative values for the effects of all crimes and this can provide an important input in policy making. If the crime states also contain a monetary dimension, the results could be used to generate monetary values that can be used in cost-benefit analysis, which is applied in other areas of government policy.

**Keywords:** costs of crime – valuing losses in well-being – preference elicitation – quality adjusted life years

## INTRODUCTION

Although most will agree that a typical case of rape will have a larger impact on the victim's well-being than a typical case of burglary, it is not established by how much it is worse to be the victim of one crime as opposed to being the victim of the other crime. This implies that, if it were possible to avoid one case of rape

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or one case of burglary, but not both, then most will agree that the choice should be to prevent the former than the latter, but there is no consensus on whether the prevention of rape over burglary should continue when the trade off is preventing one case of rape versus five burglaries, ten burglaries, or more.

Of course, one may argue that in the real world, crime policies are not discussed in terms of 'avoiding one case of rape or one case of burglary, but not both'. However, when, for example, a police force makes decisions on how to deploy its officers on the ground within a fixed resource limit and manpower, the different alternatives will each have its own expected impact on the current distribution of crime incidence. The judgement between avoiding one case of rape and five, or ten, cases of burglary is a highly abstract presentation of what the choice between different deployment patterns essentially entails. Information on the relative value of a typical case for different offences is a crucial input towards efficient and transparent policy decision making. It supplements a purely financial calculus, and is better than anecdotes because it allows victims themselves, or the general public, to express what the impact of different crimes has been on them in a systematic, comparable and unbiased manner.

There has been considerable research on the effects of victimisation on direct victims of crime. However, these studies have largely been descriptive, and non-comparable across different crimes (Shapland and Hall, this issue). The purpose of this paper is to present a study design to develop a measure that would allow the quantification of the losses in well-being to individuals that result from various crimes, including people feeling insecure about crime. This is not to deny that there may be losses that are not explicitly attributable to specific individuals; to the extent that they are real, they also need measuring, but are beyond the remit of this paper. Moreover, this individualist measure, once achieved, is intended to be used in the evaluation of a range of policy interventions and would, crucially, take account of the preferences of the general public. The paper builds on the economics literature, in particular health economics and transport economics, where there are established methodologies to evaluate the impact on well-being of non-market goods such as health and road safety. The contention is that, whereas there are numerous ways in which crime impacts on individual well-being which differ from the ways in which ill-health impacts on individual well-being, the basic mechanism is the same: something happens and as a result, the well-being of individuals is affected; and public policy should aim for (at least) efficient and transparent resource use.

In what follows, we set out a methodology for valuing losses from crime victimisation and the fear of crime. Both are important in determining losses in well-being. The fear of crime – just like crime itself – has a very real effect on people's well-being, and on their behaviour and consumption, so it is important to find ways of valuing it alongside losses in well-being to direct victims from criminal victimisation.

There are four main questions that need to be considered in developing such a measure: 1) what are the losses in well-being from crime and the fear of crime?; 2) how are the losses to be described?; 3) how are they are to be valued?; and 4) who is to value them? The following four sections deal with each of these questions in turn. The next section gives an illustrative, yet rather rough, example of what a valuation study might look like, whilst the final section provides a few concluding remarks.

## WHAT IS TO BE VALUED?

It is possible either to value the impact of different crime categories (rape, burglary etc.) or to value the outcomes associated with those crimes (physical health, mental health, etc.) We model the process from crime to well-being as follows. First, there is the *stimulus* that is the crime. From the perspective of a given individual, it may take the form of actual victimisation, or the witnessing of an offence, or hearing/reading stories about crime through the media. Second, there will be some kind of *outcome* caused by the stimulus. It may take the form of physical injury, or mental health problems, or loss in the sense of control and security, and it may last for days, months, or years. Third, each outcome will have an *impact on* the individual's *well-being*. All three stages are clearly related but there is no clear deterministic link between them.

By valuing crime outcomes rather than crime stimuli, we avoid some of the problems that would result from valuing crime. As Semmens (this issue) notes, 'the concept of crime, and specific offences within that broad concept, are all open to a number of understandings by different people. For example, the term "burglary" conjures up different images for different people – for some burglary represents only vandalism and theft; for others burglary might mean physical attack, rape or even death' (p. 225). When valuing crime, different respondents may still interpret the outcomes of crime differently but one source of heterogeneity (from crime stimulus to outcome) is removed.

In addition, the outcomes can be described in ways that pick up the effect of actual direct victimisation and the effect of fear of anticipated victimisation, rather than trying to attribute particular fears to particular crimes, which may prove impossible. Finally, the exclusion of causes in the description enables the same instrument to capture the indirect effect of crime on those who are close to the crime but are not direct victims: i.e. the impact on the well-being of witnesses, of those close to the victim, and of those close to the offender. While the individualist nature of the measure means that the impacts of crime that are not attributable to any specific individual will not be captured, the two factors here mean that externalities of crime that go beyond the direct victims can also be captured.

It would be a great advance if decision makers in criminal justice could be provided with information to allow them to think about the impact of crime on well-being in similar ways. Questions about whether to try and prevent a rape or

a burglary, say, could then be made in relation to the attributes of those crimes rather than in relation to the labels of the crimes. Similarly, it might allow those providing support services to look at their targeting of services in relation to the extent of impact of the offences. Measuring outcomes from different types of crimes using the same attributes would not only enable comparisons to be directly made between different crimes but would also avoid potential emotional or oversensitive (possibly media-driven) reactions to and preconceptions about particular crimes.

The challenge in the design of a valuation study is to engage respondents to consider the outcomes without having the nature of the crime stimuli specified. People may not be willing to accept injuries or phobias resulting from crime without being provided with some context and nature of the crime stimulus. One way round this might be to present various possible types of crime stimuli for the overall exercise, but not to associate any of them with a specific outcome to be evaluated, and to emphasise that the differences in these factors manifest themselves in different outcomes.

## HOW ARE THE LOSSES TO BE DESCRIBED?

There are two main ways in which the outcomes from crime and the fear of crime can be described. One is using a structured descriptive system in which the range of possible outcomes is expressed in terms of levels of relevant attributes, or dimensions. Any given outcome is then expressed by combining one level from each of these dimensions to form an overall outcome state. The other way of describing outcomes is in terms of vignettes or scenarios, whereby each outcome is described in terms of its salient features, the substance of which may differ across outcomes, thus giving a short multi-dimensional picture of a 'typical' instance of that outcome.

The advantage of a structured descriptive system lies in its systematic nature and its potential to be complete. Once all the relevant attributes of the outcomes are identified, the complete spectrum of possible outcomes can be described. From values given to a subset of the entire set of outcomes, regression analysis can be used to estimate values for those outcomes that were not directly valued. The main advantage of using vignettes (short descriptions of the effects of hypothetical incidents) is that the description of the outcomes does not require any explicit structure, which means that different vignettes can focus on different attributes and more richly describe the outcomes. The major disadvantage of this approach lies in its incomplete nature. A valuation study that elicits preferences for ten or so vignettes can make no reference to outcomes beyond this set.

The two approaches usually treat duration – the time spent by the person in a given outcome state – very differently. The structured approach will specify a single duration for all outcomes. If we assume that the effect on well-being of each outcome is a linear function of how long that outcome lasts (so that two

years in some pain is twice as bad as one year in some pain), then the values elicited using one duration can be applied to situations with longer and shorter durations. This makes the values from the structured approach generalisable but it does require a linearity assumption that does not always hold (Tsuchiya and Dolan, 2005). A vignette usually includes a reference to duration of the various components. Since the durations are part of the outcome, the linearity independence assumption is no longer required – but, again, it is not possible to estimate values for outcomes not included in the set of vignettes and so directly valued in the study.

Whichever approach is adopted, the relevant dimensions need to be identified. Ideally, a series of preparatory studies will be carried out to identify a manageable number of dimensions. These will start off from a more qualitative study of victims and non-victims to generate themes or items, moving on to more quantitative studies to form groups of items that can then be used as dimensions. Another important preparatory study will be to examine the wording and expressions used by lay people to refer to the selected dimensions. The psychometric properties of the measure need explicit consideration and the development stages must include cognitive testing.

In the current absence of such studies, the following five dimensions would seem to cover many of the consequences of crime: Physical health (including pain and disability); mental health (including fear, anger, depression and possibly post-traumatic stress disorder/PTSD); autonomy (including the sense of being in control of one's own life, and the sense of self worth), relational effects (including changes in trust in others and in criminal justice agencies, relationships with others, social integration); vulnerability (including the increased perceived risk of future victimisation).

These may not be the exact terms used since some, like autonomy, may be best understood in simpler terms such as 'control over one's life'. It is important that all attributes are clearly understood by respondents, otherwise responses risk picking up clarity as well as relative importance. It is also important for the structured descriptive system approach that the dimensions are regarded as independent of one another, because it uses regression analysis to break down the overall values for these outcomes into the weights attached to each dimension separately.

## HOW ARE THE LOSSES TO BE VALUED?

At present, there are two main ways in which losses in well-being can be valued: in monetary and in non-monetary terms, involving trade-offs in health. In this section, we set out each of these approaches in turn.

## Monetary Valuations

An ideal stated preference study would give information about the current baseline risks of experiencing particular outcomes and encourage respondents to consider their willingness to pay (WTP) to achieve reductions in the risks of those outcomes (Loomes, this issue). This raises challenging problems for stated preference work since it is well known that many respondents are insufficiently sensitive to information about small changes in small risks (see Jones-Lee *et al.* (1995) for examples in the context of road safety), and it may well prove impossible to find any satisfactory way of communicating the risk information.

As an alternative, 'certainty' scenarios might be used and valued using willingness to accept (WTA) rather than the more traditionally used WTP. The principle underlying WTA is that if an individual contemplates some adverse event, the loss of welfare could be offset by the welfare generated by some increase in wealth. Clearly, this does not necessarily apply to more severe levels of harm, such as death, where no amount of money may adequately compensate for the loss (and where respondents may be offended that such a comparison is sought at all). However, for many crime outcomes, it may be possible to argue that there are finite sums that would offset the experience (or at least, to explore how far that may be the case).

It may be possible to link such questions to ideas of prevention or compensation, rather than directly asking about the effect of the offence. Although in theory WTP could be used for 'certainties' and WTA for 'risk' it is more natural to consider paying for prevention (before the event), when the concept of absolute certainty would seem unrealistic. Similarly compensation payments make more sense after an event has occurred than presenting people with the idea that increased wealth goes with increases in levels of risk.

Another approach is, rather than eliciting valuations directly, to use a contingent ranking exercise, which offers an indirect way of eliciting monetary values. The contingent ranking approach asks respondents to compare alternatives, each involving various differences along the kind of dimensions outlined above. The general idea is that the relative weights assigned to different levels along the different dimensions can be inferred from the sets of rankings. If various sums of money can also be included, it should in principle be possible to infer the rate of trade-off between money and any level along any dimension. Similarly, the discrete choice experiment (DCE) approach asks individuals to make a series of choices between different pairs of outcomes, which can include financial payments or benefits. This approach has been used to attribute a financial value to social care outcomes (Burge *et al.*, 2006). This class of choice-based techniques is believed to mimic the kinds of choices people might be expected to make in real life.

In the event that we are not confident that respondents are sufficiently sensitive to risk, the relativities obtained from contingent rankings may allow us to 'chain' the values for more serious outcomes (which we cannot plausibly

obtain from WTP questions about preventing the *certainty* of those outcomes) to values for less serious outcomes which may be amenable to WTP (and WTA) questions using certainties rather than risks. However, the statistical procedures for inferring the various trade-offs often make somewhat restrictive assumptions about the underlying structure of people's preferences, and a large number of choices might be required to obtain the minimum amount of information to enable the estimation procedure to be implemented.

## Non-monetary Valuations

The aim of non-monetary valuations is to elicit the values of the outcome descriptions relative to one another. A subsequent task is then to 'peg' these to some monetary value(s). The valuations are relative to two anchor points. In the health state valuation literature, death and full health are typically used as the anchor points, and given the value of zero and one, respectively. A natural upper anchor in the context of crime valuation would be having no problems across all dimensions, with no mention of crime. However, it is not clear whether the lower anchor should be death caused by crime, or death with no cause specified. The latter will match better with the upper anchor and, as we point out above, we want to focus as far as possible on the outcome rather than the 'stimulus'. However, if death by crime is perceived as worse than death by, say illness, or by accident, then this should be taken into account.

Direct valuations for crime outcomes could be elicited using the standard gamble (SG) method or the time trade-off (TTO) method (Drummond *et al.*, 1997). The basic SG asks the respondent to choose between the certainty of an intermediate health state and an alternative treatment with two probabilistic outcomes, one of which is better than the certain outcome and one of which is worse. The probabilities are changed until the respondent is indifferent between the two scenarios. The basic TTO asks the respondent to choose between two alternatives. One is to live for a defined period of time in poor health and then die and the second is to live for a shorter period of time in full health and then die. The length of time in full health is changed until the respondent is indifferent between the two scenarios.

There are then ways to express the duration of a given outcome. One alternative is to make the duration of the outcome the same as that of the entire scenario (e.g. 'you will experience outcome $i$ for $t$ years, and then die'). Since many crime outcomes will last for much shorter durations than the life expectancy of a typical respondent, this may be difficult for respondents to take at face value and engage with. Therefore, the second alternative is to make the duration of the outcome shorter than the overall duration of the scenario (e.g. 'you will experience outcome $i$ for $t$ years (or $m$ months), and then survive to your naturally expected age of death in full health'). However there are two issues associated with this. First, let us suppose the duration of the outcome is set to be very short relative to the time horizon, such as when an outcome will last

for one month during the next ten years. If a respondent to a TTO question is willing to trade-off more than one month at the end of the ten years, then (in the absence of discounting) the outcome in question will have a negative value, implying that it is worse than death. Likewise, if a respondent to a SG question is willing to take more than a 0.008 risk of death, then the outcome will also be valued as if it were worse than dead. Secondly, the valuations will not be anchored at zero for death, and there needs to be an additional exercise to provide this link.

A further issue arises when respondents are faced with outcomes that involve relatively mild losses, which they acknowledge are worse than full health but which they are also unwilling to trade-off for any survival or take any risk of death. One way to address this issue is to value these mild states using a more severe outcome that is preferred to death as the bottom anchor in the TTO and SG elicitations (rather than using death, as in the basic formats described above). If this intermediate outcome is then valued against full health and death, the results of this elicitation can be used to chain the results obtained for all the other outcomes to the standard 0 to 1 (death to full health) scale. This chaining method results in values for mild outcomes that are less than the value for full health. The problem with chaining is that it may introduce an additional source of noise and error. An alternative, which is to set an intermediate *additional* anchor (rather than replacing the bottom anchor), may be preferable in the case of crime but again will need to be investigated in terms of whether it means the same to all respondents.

As with monetary valuations, it is possible to elicit non-monetary valuations indirectly by asking respondents to rank a number of different outcomes, or by asking them to make a series of choices between different pairs of outcomes. The latter DCE (discrete choice experiment) approach is increasingly being used in health valuation (Ryan and Gerard, 2003). A new approach where individuals choose the best and worst attribute from a series of scenarios is also being developed (Flynn *et al.*, 2007). The data from these exercises are analysed in ways that allow cardinal values at the group level to be generated from ordinal data at the individual level (McCabe *et al.*, 2006).

## WHO IS TO VALUE THE LOSSES?

As noted in the introduction, we are committed to developing a measure that takes account of the preferences of the general public. But this still leaves open the question of the weight that should be given to different sub-group preferences within the population. In particular, should all preferences be weighted equally or are some preferences – for example those of actual victims or those most fearful – more equal than others? The analogous question in the context of health care (i.e. should the preferences of patients be given more weight than the preferences of the public?) is the focus of much attention, since it

is generally found that values provided by those imagining a particular health state are lower than the values of those in that state.

However, given the focus on outcomes, with no mention of the specifics of the crime stimuli, the distinction between 'victims' and 'non-victims' becomes very blurred. Even in supposedly 'crime free' populations, a substantial number of people have experienced the effects of crime indirectly (through the media, knowing others that have been victimised or being a victim of a minor crime themselves etc.), and they may well have direct experience of fear of possible victimisation. As a starting point, we propose to elicit valuations obtained from a representative sample of the public, which will provide some population average valuation. However, for specific applications (e.g. where the instrument is used to evaluate a crime prevention programme aimed at a particular population sub-group), it may be more appropriate to use values obtained from this sub-group.

With sufficient sample sizes, it will be possible to explore the effects on valuation of different experiences of crime. Victims of violent crime and those whose only experience of crime is reading about them in the news may well have different judgements about how different crime outcomes impact on individual well-being. It will also be possible to explore the effect of the community to which individuals belong. It may be that the kind of community one lives in has an effect on the relative assessment of how good or bad a given crime outcome is. One possibility is that people from communities with very poor social capital and cohesion may perceive the impact of having mental health problems or feeling very vulnerable differently from people from communities with rich social capital and cohesion.

## AN EXAMPLE

We have been discussing a range of different possible methods. It may be clearer to understand the choices which could be made methodologically if we were to give one possible example of a study which could be undertaken to value the effects of crime and the fear of crime.

### What is to be Valued?

A decision was made to value the outcomes of crime and the fear of crime rather than to value the crimes themselves. Instructions might look something like the following: 'we will describe some states that you may find yourself in because of crime. When we say "because of crime", this can be caused by being a victim of a criminal offence, or by witnessing a criminal act first hand, or by simply hearing about a crime on television. Also, the crime can be violent and cause injuries, or non-violent and only involve loss to property. Such experiences will affect people in different ways. Here we are just describing possible effects of the experience.'

TABLE 1
An example of two scenarios to illustrate descriptors of crime effects states

| Domain | Scenario 1 | Scenario 2 |
|---|---|---|
| Physical health | Mild problems (e.g. mild intermittent pain) | No problems |
| Mental health | Moderate problems (e.g. recurring anxiety states) | No problems |
| Autonomy | Extreme problems (e.g. strong persistent feeling of worthlessness) | Mild problems (e.g. some feelings of loss of control) |
| Relational effects | Extreme problems (e.g. not at ease with anybody) | Mild problems (e.g. mistrust of strangers) |
| Vulnerability | Extreme problems (e.g. feel strongly something is bound to go wrong and nothing can be done about it) | Moderate problems (e.g. occasionally worry that everything could be lost) |

## How is it to be Described?

For generalisability, a structured descriptive system is preferred. It would be crucial to have a reasonable descriptive system, in terms of what the dimensions are, how they are worded, how many levels there are in each dimension, and how the levels are worded. Here as a baseline we think in terms of the five dimensions alluded to above, with each dimension having four levels (for example: no problems; mild problems; moderate problems; severe problems), thus generating $4^5 = 1{,}024$ possible outcomes. Table 1 illustrates how this might look, with scenario 1 possibly reflecting the outcome state following a rape and scenario 2 the type of state that might follow a small theft. A six-dimension system could also be explored, where one of the dimensions is monetary.

## How is it to be Valued?

Each respondent would be asked to rank around eight cards, each of which combines different levels of each of the five or six dimensions. A duration of five years would be used as a starting point. Where the descriptive system does not include money, the results would be anchored to full health and death. Where the system does include the monetary dimension, the results would be reported in terms of monetary value per one-level change in each dimension.

### Who is to Value it?

The scenarios would be given to a representative sample of the general public, who, amongst a range of other things, would be asked to provide information on their own crime experiences, their fears about crime, and their concerns about the safety of those close to them. To ensure comparability across studies, it would be helpful if data on background characteristics could be gathered in the same way as in the British Crime Study (Walker *et al.*, 2006).

## CONCLUDING REMARKS

There are many questions that need to be addressed when developing a preference-based measure. We have put forward tentative suggestions about how some of these might be dealt with so that a set of crime-outcome valuations can be generated. There are several additional variants that could explore a range of different effects and labels, including labelling the way in which the individual is affected (e.g. one variant will specify the individual has been a direct victim; another will specify that the individual was witness to an offence); labelling the kind of offence (e.g. one variant will specify that the crime stimulus was a violent crime; another will specify that the stimuli was property crime); or labelling non-crime causes such as traffic accidents or job loss.

Whatever the details, we certainly do not claim to have provided the best or the most definitive answers, and we welcome dialogue with others about how best to proceed.

It is also important to note that this or any other similar instrument is not sufficient alone to quantify the impact of specific crimes on the well-being of those affected. Two more elements are necessary. The first is to identify the relevant outcomes due to the crime in question, i.e. to establish the link between the crime stimuli and the outcomes. One obvious way to do this is to use the classification system in a questionnaire of those affected. Victims and their families, or witnesses of different crimes, would be asked to describe their current state using the classification system, and the results will be the distribution of different outcomes by the type of offence and the type of respondent.

The second element is the time component. A 'mild' crime may take the victim into one mild category of outcome for a relatively short period of time, and then that may simply come to an end. A 'severe' crime is more likely to see the victim initially categorised in a more severe kind of outcome, and then gradually move on to less severe categories with time. This time profile would ideally be established by repeated observations of victims through time, using the same classification questionnaire, although it is not impossible to explore the same issue using a cross sectional survey of a large number of victims, provided the time lapsed since the crime stimulus is also recorded.

It is only after identifying the relevant outcomes and measuring their durations that the total impact on well-being from a given type of crime can be calculated. In other words, the study discussed here does not address the issue of which criminal offences result in what outcomes, with what impact on well-being, and for how long. These are issues for specific application studies further down the road, where the eventual instrument can be put to use.

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