



Original Article

Scope insensitivity: The limits of intuitive valuation of human lives in public policy

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ABSTRACT

A critical question for government officials, managers of NGOs, and politicians is how to respond to situations in which large numbers of lives are at risk. Theories in judgment and decision making as well as economics suggest diminishing marginal utility with increasing quantities of goods. In the domain of lifesaving, this form of non-linearity implies decreasing concern for individual lives as the number of affected people increases. In this paper, we show how intuitive valuations based on prosocial emotions can lead to scope insensitivity and suboptimal responses to lives at risk. We present both normative and descriptive models of valuations of lives and discuss the underlying psychological processes as they relate to judgments and decisions made in public policy and by NGOs.

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1. Introduction

People in organizations often have to make decisions that affect the welfare of others. This includes allocations of resources (e.g., money, time, and services) by national and international organizations as well as by government agencies. In situations where the welfare of large segments of a population is threatened, both government and non-government organizations (e.g., charities; NGOs) are called upon to react. Recent examples of such large-scale threats include the ongoing humanitarian crises in Africa as well as armed conflicts (e.g., the civil war in Syria) and natural catastrophes (e.g., hurricanes and earthquakes). In response to such calamities, international humanitarian aid in 2011 consisted of both government-provided (\$12.5 billion) and private voluntary (\$4.6 billion) contributions (Global Humanitarian Assistance, 2013). In order to understand how managers, civil servants, politicians, and other administrators make decisions regarding the welfare of people whose lives are in danger, we need to better understand how people value the lives of others.

In this article we give examples of how human lives are valued and how this deviates from how they should be valued according

to egalitarian norms. We argue that valuations of lives are prone to well-documented biases when done intuitively. Following dual process models, we define intuitive information processing to be primarily automatic and affective in nature and deliberative information processing to be controlled and reason-based (Evans, 2008; Kahneman, 2003; Stanovich & West, 2000). We first present two examples of valuations that follow normative moral principles, then contrast them with descriptive valuation models resulting from intuitive processing. Finally, we present a short study to demonstrate how variations in elicitation methods can lead to different valuations of lives and close with a discussion on how these valuations could be improved.

Experimental research has shown that valuations of lives are often scope insensitive, which is the tendency to be relatively unresponsive to the number of people at risk in large-scale humanitarian catastrophes. Scope insensitivity can lead to suboptimal decision outcomes in public policy. This is the case in situations where the goal is to improve the welfare of as many people as possible, but the decisions (and underlying valuations) do not correspond to this goal (Baron & Szymanska, 2011). Before examining the reasons for scope insensitivity, we briefly reflect on some normative aspects of valuations of life.

1.1. Normative valuations of lives

How should human lives be valued? This is a complex question whose answer depends largely on the adopted philosophical

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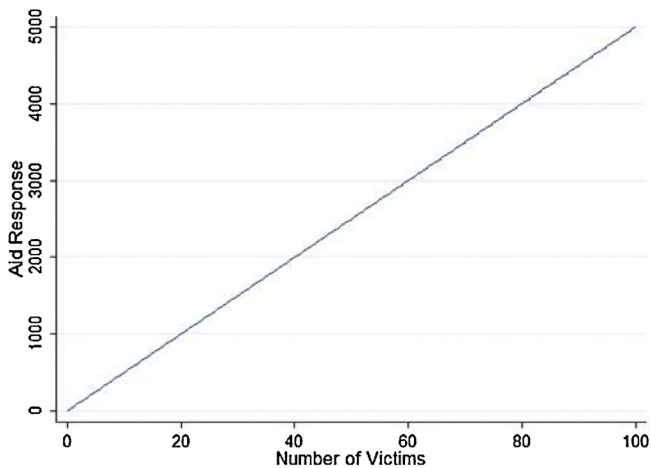


Fig. 1. Linear function.

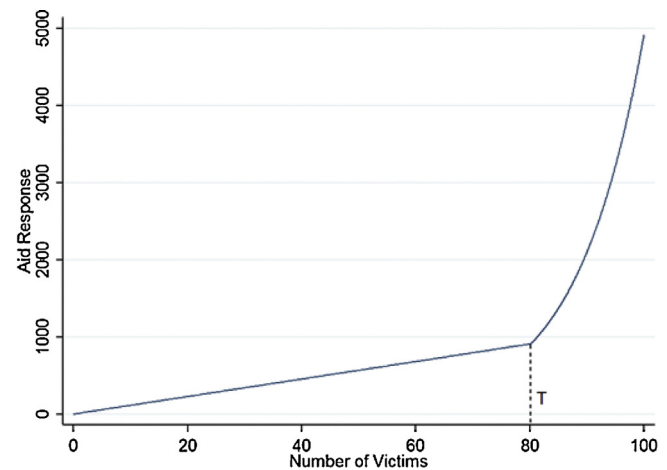


Fig. 2. Exponential function with threshold T.

viewpoint. What is considered normative may depend on several different criteria and goals pursued. Here we focus on two examples of normative principles that can be justified with egalitarian moral values and the goal of group survival. According to egalitarian moral perspectives (and various forms of utilitarianism), all lives should be valued equally (Baron & Szymanska, 2011; Dickert, Västfjäll, Kleber, & Slovic, 2012; Sinnott-Armstrong, 2011). In addition to this moral principle, it is also possible to acknowledge that losses of lives may sometimes be so large as to threaten the survivability of a population. In such cases, the value of each additional endangered life increases disproportionately (Slovic, Fischhoff, & Lichtenstein, 1982).

If all lives are inherently of equal value, one would expect policy decisions to be faithful to this egalitarian moral principle whenever possible.¹ Such valuations are captured by a simple formula in which the level of response is given by $R = X \times N$, where R is the aid response (measured either in financial contributions, volunteer time, volunteer numbers, etc.), X is the response for one victim, and N is the number of victims. The resulting linear function is depicted in Fig. 1 and shows that each additional life at risk should increase resource allocation to the same extent. An underlying assumption of this valuation function is that the efficiency of lifesaving remains constant such that saving an additional life does not become cheaper if more lives are at risk. This assumption is reasonable in situations in which the impact of how much an additional dollar can do to save a life does not change (e.g., if the cost and effectiveness of an additional vaccine or a bowl of rice remains constant).

The second normative valuation function is illustrated in Fig. 2 and is linear until the number of lives at risk reaches a critical point T at which the sustainability of the group is threatened. After this point, the value of each additional life at risk increases exponentially, which can be modeled by a value function of $R = X \times N^b$, with $b = 1$ for all $N \leq T$ and $b > 1$ for $N > T$. As the number of lives at risk increases, progressively more aid is given to each one. Both functions can be considered normative because they represent valuations that are based on generally accepted moral principles (i.e., equality of lives and survival of the group). However, it should also be noted that other possible normative valuation functions exist. For example, if the goal is to save a specific number of lives in order to reach a critical threshold needed for the survival of a group,

valuations might increase sharply until such threshold is reached and then level off or drop.^{2,3}

1.2. Psychophysical numbing

Evidence exists that valuations of lives underlying aid responses do not always follow such normative models. As the number of lives at risk increases, people tend to exhibit valuations that become progressively less sensitive to changes in victim numbers. This diminished sensitivity to the value of life was documented by Fetherstonhaugh, Slovic, Johnson, and Friedrich (1997) by assessing individuals' willingness to aid groups of different sizes. In one study that compared the effect of the size of refugee camps, participants stated that it would be more beneficial to save 4500 lives when the size of the camp was smaller (11,000 refugees) compared to a larger camp (250,000 refugees). This suggests that respondents valued saving 4500 lives in the smaller camp more than saving the same amount when more lives were at risk. If each individual life that can be saved is valued to the same extent (as proposed by a linear valuation function), then the size of the refugee camp should not make a difference. However, the results by Fetherstonhaugh et al. (1997) suggest that participants were less sensitive to the number of lives when the proportion was low (2% saved) compared to high (41% saved).⁴

In accordance with similar insensitivity to changes in quantity in the domain of perception, Fetherstonhaugh et al. (1997) termed this type of valuation "psychophysical numbing". It can be captured by the mathematical formula of $R = X \times N^b$, with an exponential coefficient $0 < b < 1$. The diminishing sensitivity (with increasing quantity of a stimulus) gives rise to a distinct functional form which describes valuations of several domains, including visual and auditory perception, the value of money, as well as the value of human lives (see Fig. 3). Also known as diminishing marginal utility among economists (e.g., von Neumann & Morgenstern, 1944) and

² We would like to thank an anonymous reviewer for this suggestion.

³ An entirely different philosophical approach to normative valuations was suggested by Taurek (1977), who asserted that the utility of saving one life cannot be meaningfully added to saving another life. According to this perspective, saving lives is not a utility-maximizing problem. Instead, the way lives should be valued is to give each life at risk the same chance of survival, regardless of how many lives are in danger. When given the chance to either save one or 50 people, an "equal chance" entails flipping a coin to determine who is being saved.

⁴ Although not normative according to a linear valuation, an exponential normative model could in theory explain these findings if participants perceived the affected proportion of the smaller camp to be large enough to threaten the survivability of the entire camp.

¹ Naturally, constraints or competing objectives may prevent policy decisions to always follow such a principle.

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