
**Policy Challenges of the
Heterogeneity of the
Value of Statistical Life**

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Policy Challenges of the Heterogeneity of the Value of Statistical Life*

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Abstract

Economic research has developed estimates of the heterogeneity of the value of statistical life (VSL) on dimensions such as individual age, income, immigrant status, and the nature of the risk exposure. This paper examines the empirical evidence on the heterogeneity of VSL and explores the potential implications for the valuation of regulatory policies. Previously, the U.S. Environmental Protection Agency (EPA) unsuccessfully sought to adopt a simple age discount percentage for VSL based on survey evidence. However, labor market estimates of VSL indicate a pattern that tracks lifetime consumption trajectories, as the VSL rises with age and eventually tapers off but does not plummet with age. The VSL has an income elasticity of at least 0.5. The analysis of age variations in VSL is accompanied by a review of the value of statistical life year (VSLY) approach. The U.S. Department

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of Transportation recognizes the influence of a positive income elasticity of VSL, and EPA has proposed adopting a 50% cancer premium. Recent studies suggest that the risk of death from terrorist attacks are of particular concern and may merit a substantial premium in benefit assessments. Whether and how such heterogeneity in VSL should be incorporated in regulatory policy evaluations depends in part on the source of the heterogeneity. Some prominent sources of heterogeneity arise from segmented labor markets in which disadvantaged groups face different labor market opportunities. Blacks and Mexican immigrants face quite different labor market offer curves. As a result, influences that are problematic from the standpoint of setting different benefit levels for policy purposes are differences in VSL by race and immigrant status. The paper also examines the EPA's recent devaluation of life and the Posner-Sunstein proposal to use VSL estimates to set hedonic damages in tort liability cases. As with hedonic damages generally, adoption of their proposal would lead to excessive levels of compensatory damages and would greatly increase damage amounts.

Keywords: Value of statistical life, risk, regulation, hedonic damages.

JEL Codes: J17, I18, H40, K32

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1

Introduction

The value of a statistical life (VSL) is the individual's money-risk tradeoff for small risks of death. This measure is the most prevalent benefit assessment approach used by government agencies when valuing changes in risk. The academic literature includes dozens of labor market studies of VSL.¹ There also have been studies of VSL based on price-risk tradeoffs for the product market as well as VSL amounts implied by risk-taking decisions ranging from the choice of highway speed to the use of seat belts.

This paper focuses on the variation in VSL both across different studies in the academic literature as well as in different policy contexts. These differences often reflect quite legitimate heterogeneity in the valuation of risk. There are important differences in the VSL with respect to individual risk-taking behaviors as well as personal characteristics, including age, income, race, gender, and immigrant status. What are these differences and what are the policy implications for benefit

¹For reviews, see Viscusi (1993), Viscusi and Aldy (2003), and Viscusi (2010), among others. Robinson (2007), Graham (2008), and Viscusi (2009a) review related government agency practices. Kniesner and Leeth (2009) review the underlying theory and econometric foundations of this area of research.

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assessment? To assess such issues, I explore both the VSL estimates themselves and their implications for the structure of labor markets. The ramifications for labor market structure are not innocuous. To the extent that there are segmented labor markets in which people face different labor market opportunities, there will be differences across the population in their estimated VSL. How and whether information regarding the heterogeneity of VSL should be used depends on how the differences arise.

My review of the academic literature is coupled with an examination of the policy arena's use of the VSL methodology. Government agencies adopted the VSL approach to valuing risk regulations almost three decades ago. The use of VSL estimates to value mortality risks has continued through the recent controversies involving variations in VSL levels with age and income. Other aspects of risk heterogeneity that also are potentially prominent policy concerns and could affect the application of VSL estimates include the size of the risk being reduced and the context in which the risk arises. For example, is the risk a voluntary risk, and is it being incurred in a market context in which those exposed to the risk have endangered their lives by engaging in reckless behavior?

As government agencies continue to refine their benefit assessment procedure, the potential role of heterogeneity of VSL has moved to the forefront of these debates. The U.S. Department of Transportation (U.S. DOT, 2008) has adopted a positive income elasticity of VSL. The income elasticity of VSL has also arisen as a component in proposed congressional legislation that sought to incorporate a proportional income elasticity of VSL that will apply only to increases in income.² Age variations in the VSL amount used in regulatory impact analyses have been attempted and since abandoned in the United States,³ but outside the United States the practice of varying VSL by age has generated less of a controversy.⁴ More recently, the U.S.

²The 2008 proposed legislation was the "Restoring the Value of Every American in Environmental Decisions Act" (proposed in the 110th Congress, 2nd Session).

³See Viscusi (2009a) for a review of the history of this episode.

⁴The European Commission's (2001) member countries use a VSL that declines with age, and Canada has used a VSL involving a 25% discount for those over age 65. See Hara Associates (2000).

Environmental Protection Agency (U.S. EPA, 2010) proposed a cancer premium for VSL following a similar approach in the United Kingdom. Other types of differentiation by type of risk exposure, such as terrorism attacks, are also likely to gain policy prominence based on the findings in the economics literature.

The VSL approach continues to remain controversial among non-economists on normative grounds, as exemplified in the critique by Ackerman and Heinzerling (2004). However, the policy alternative to using VSL estimates has not been to use an infinite value of life but to undervalue lives. In particular, early policy assessments used the economic loss measures in tort damages contexts consisting of the present value of lost earnings and medical expenses. Tort damages alone will undervalue life compared to VSL estimates. There have also been recent suggestions that court awarded compensation for wrongful death should include both the VSL as well as the value of economic loss. One might think that such a measure, if appropriate for compensatory damage purposes, surely would be appropriate for regulatory analyses as well. Whether this expansion of the use of the VSL concept in combination with economic loss amounts is appropriate is explored later in this paper.

Assessments of VSL and heterogeneity in VSL levels are likely to be increasingly important for policy decisions. For three decades agencies have been required to show that all major new regulations pass a benefit-cost test. In 2011, President Obama's Executive Order 13563, Improving Regulation and Regulatory Review, reaffirmed the objectives of the previous Executive Order 12866 and broadened the regulatory review focus and the tests of economic merit to include existing regulations. As a consequence, the range of policies for which benefit-cost tests will be undertaken will continue to increase. That development will bolster the policy role of VSL, which is the standard governmental approach to monetizing mortality risks.

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