Which Value of a Statistical Life (VSL) to use in environmental policy assessments?
A global meta-analysis of Stated Preference Studies.

by
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Abstract

The outcome of assessments of environmental and climate, transport and health policies often depend heavily on the number used for the Value of a Statistical Life (VSL) in cost-benefit analysis.

However, VSL numbers vary greatly across countries, and even between sectors in the same country.

Therefore we conduct, to our knowledge, the first global meta-analysis (MA) of stated preference (SP) surveys of mortality risk valuation. The surveys ask adults their willingness to pay (WTP) for small reductions in mortality risks, deriving estimates of sample mean VSL for environmental, health and transport policies.
We explain the variation in VSL estimates by differences in characteristics of the SP methodologies applied, the population affected and characteristics of the mortality risks valued; including the magnitude of the risk change. The mean (median) VSL in our full dataset of VSL sample means was found to be around 7.4 million (2.4 million) USD-2005. The most important variables explaining the variation in VSL are GDP per capita and the magnitude of the risk change valued. According to theory, however, VSL should be independent of the risk change. We discuss and test a range of quality screening criteria in order to investigate the effect of limiting the MA to high quality studies. When limiting the MA to studies that find statistically significant differences in WTP using external or internal scope tests, without requiring strict proportionality, we find that mean VSL from studies that pass both tests tend to be less sensitive to the magnitude of the risk change. For establishing VSL numbers in individual countries we suggest benefit transfer in terms of a simple MA function with GDP per capita, or unit value transfer of a VSL estimate from a neighboring country with income adjustments. In both cases we apply an income elasticity of VSL derived from our screened models equal to 0.7-0.9 with a sensitivity analysis for 0.3-0.4, found for some subsets of the data that satisfy scope tests or use the same high-quality survey.

Finally, we provide guidance for adjusting the VSL estimate when applied to cost-benefit analyses of environmental policies affecting specific groups of individuals and/or specific types of mortality risks.