

**Title: Valuing Change in Mortality: The Value of Statistical Life or the Value of Life Years Lost?**

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**Abstract**

The literature on the valuation of changes in mortality has been dominated by the concept of the 'Value of a Statistical Life' (VSL), which reports the WTP/WTA for a change in the probability of death for an individual, divided by that change in probability. In the last few years, however, this concept has come under some criticism, especially in the context of valuing the impacts of air pollution, where two types of mortality effect are identified: acute and chronic. For acute effects, medical experts have suggested that the increased number of deaths following an episode of higher air pollution are deaths of individuals with very short life expectancies (in weeks or months at the most), in which case the VSL measure may not be appropriate. For chronic impacts there is a considerably latency period for much of the impact, which is not adequately captured in the VSL measure.

As part of the ExternE project financed by the research directorate of the European Union, these issues have been studied in greater depth recently. This paper reports on the results of that work. The structure of the paper is as follows.

1. Introduction. Discussion of what VSL tries to measure, what its weaknesses are. Issues of latency of effect. Why people have turned to valuing life years lost, or life expectancy changes. Problems with efforts made so far in this direction.
2. The epidemiological literature on air pollution and mortality. This literature is reviewed, including the calculation of impact indicators that can be informative for environmental policy decisions. Arguments are summarized that show why number of deaths is not meaningful for air pollution, whereas loss of life expectancy (LLE) is an appropriate impact indicator. The results are presented for the LLE from exposure to PM10, as implied by the long-term mortality studies of adults and infants.
3. How to estimate the value of changes in life expectancy. The Krupnick methodology and the results obtained to date. The methodology proposed by Looms/Jones Lee? Problems with these approaches. Other methodologies.
4. Future directions in work on valuing changes in mortality.