OECD’S META-ANALYSIS OF VSL ESTIMATES AND LATER USE OF ITS FINDINGS

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Introduction


The book was the result of a multi-year project that included a meta-analysis of all available VSL estimates based on stated preferences surveys.

This introduction will briefly describe the meta-analysis and highlight some later uses OECD has made of the results of the analysis.
OECD’s meta-analysis of VSL estimates

- Covered all available mean VSL estimates from SP surveys made using environmental, health and traffic risk contexts.
- Excluded “willingness-to-accept” (WTA) estimates.

Countries can draw on this analysis to do “value transfers”:
- Estimating a VSL value to use in their policy assessments based on VSL values already estimated in other countries, taking due account of relevant differences between the countries concerned.

A domestic SP study would be better – but also more costly.
Estimates and surveys, by country

**Estimates**
- 77 for Country A
- 70 for Country B
- 75 for Country C
- 46 for Country D
- 53 for Country E
- 51 for Country F
- 123 for Country G
- 236 for Country H
- 125 for Country I

**Surveys**
- 8 for Country J
- 4 for Country K
- 4 for Country L
- 6 for Country M
- 6 for Country N
- 6 for Country O
- 6 for Country P

Legend:
- Blue: Canada
- Pink: France
- Green: Italy
- Orange: United States
- Purple: Sweden
- Teal: United Kingdom
- Other OECD
- China
- Other non-OECD
Screening of the VSL estimates

In order to base the final analysis on ‘good quality’ VSL estimates – well suited as a basis for policy assessments, we excluded estimates that

- Provided no information on the size of the risk change valued (231).
- Came from surveys where the full sample was <200 persons, or was based on a sub-sample (e.g., age group) of <100 persons (118).
- Came from samples clearly not representative of the general population (e.g., only health personnel, or only students) (102).
- The original authors (also) recommended that we should exclude (55).

We also did separate regressions on estimates stemming from surveys that used a similar questionnaire, developed by Maureen Cropper, Alan Krupnick, Anna Alberini et al.
Impacts of the screening

Number of mean VSL estimates

2005 USD, PPP adjusted

Unscreened
Screened
Recommended

250,000
500,000
750,000
1,000,000
2,000,000
3,000,000
4,000,000
5,000,000
6,000,000
7,000,000
8,000,000
9,000,000
10,000,000
15,000,000
20,000,000
200,000,000
More
Regressions on the recommended sample

<table>
<thead>
<tr>
<th></th>
<th>Model I</th>
<th>Model II</th>
<th>Model III</th>
<th>Model IV</th>
<th>Model V</th>
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<td>(2.290)</td>
<td>(2.255)</td>
<td>(2.271)</td>
<td>(2.360)</td>
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<td>R-squared</td>
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<td>0.814</td>
<td>0.827</td>
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<td>Root mean square error</td>
<td>0.905</td>
<td>0.803</td>
<td>0.739</td>
<td>0.714</td>
<td>0.677</td>
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Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
## Base VSL values

### Million 2005-USD, PPP-adjusted

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<tr>
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<th>Recommended sample</th>
<th>OECD countries (screened)</th>
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<tr>
<td>Mean VSL</td>
<td>2.8</td>
<td>4.0</td>
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<tr>
<td>(standard error)</td>
<td>(0.17)</td>
<td>(0.23)</td>
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<tr>
<td>Weighted mean VSL*</td>
<td>3.1</td>
<td>4.0</td>
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<tr>
<td>(standard error)</td>
<td>(0.26)</td>
<td>(2.9)</td>
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<td>Median</td>
<td>1.7</td>
<td>3.0</td>
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<td>Observations</td>
<td>350</td>
<td>261</td>
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*Weighted by the inverse of the number of observations from each SP survey.
In 2014, we used the formula stemming from the meta-analysis to prepare the book: *The Cost of Air Pollution: Health Impacts of Road Transport*. It combined country-specific VSL estimates with country-specific estimates of mortality caused by outdoor air pollution from the 2010 Global Burden of Disease survey. Outdoor air pollution cost OECD countries alone almost USD 1.6 trillion in 2010; China USD 1.3 trillion and India USD 0.5 trillion.
OECD use of the meta-analysis

- In 2015: Indoor and outdoor air pollution in co-operation with WHO Europe Regional Office (using 2010 data)

- In 2016: Indoor and outdoor air pollution costs in Africa (using 2013 data)

- In 2017: Outdoor air pollution in OECD + BRIICS countries (using 2015 data).
2015 VSL estimates

Income elasticity set to 0.8 in OECD countries, 1.0 in the BRIICS countries