

Valuing prevention of a death on the roads – a European perspective

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Why value prevention of effects of road collisions in terms of money?

- Reducing road collisions and their effects costs money
 - some from taxes that people have paid
 - some in higher prices paid for safety features in vehicles
- This money could be spent in other ways
- Valuing prevention in money helps in deciding how much to spend on safety measures
- Hardest to value is prevention of a death – but it has been UK policy to do this since 1967 (see Evans *Int Jl Sustble Transpn* 3(3) 160-177, 2009)



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Value of preventing a fatality (VPF)

- **No-one can put a value in money on saving someone's life, or on saving someone from lifelong disablement**
- **But we can estimate how much ordinary people would be willing to pay to achieve small reductions in risk to large numbers of road users so that some one of them, whose identity can never be known, escapes being killed**
- **This amount is called the willingness-to-pay (WTP) estimate of the Value of Preventing a Fatality (VPF)**



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The WTP estimate of VPF is assumed to cover ...

human costs that would be experienced by the victim and their associates, including the loss of future enjoyment of material consumption by the victim

but not the medical and administrative costs resulting from the fatality (which are small in comparison)

nor the human or material costs to others involved in the same collision

nor consequent traffic delay or disruption



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Requirement for an EU-wide VPF

- Each Member State of the EU uses its own valuation in its own decision-making
- But a common valuation is useful to inform debate and decision-making at the EU level
- The European Commission itself would find it hard to gain agreement to a value
- So it is useful for a cross-European non-governmental organisation to propose one



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European Transport Safety Council

Founded in 1993 as a non-governmental organisation dedicated to reducing death and injury in transport in Europe bringing together practitioners, researchers and parliamentarians from across Europe to provide independent advice at the European level on transport safety matters seeking to promote transport safety strongly but constructively with the European Parliament and European Commission

See www.etsc.eu



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Previous ETSC estimates of VPF

1997 ETSC Review *Transport accident costs and the value of safety* proposed a VPF in year 1995 Euro of **€1.117million** based on WTP estimates from Finland, Sweden and the UK

2003 ETSC Review *Cost effective EU transport safety measures* updated this estimate to **€1.265million** in year 2000 Euro

These estimates contributed to a widely quoted estimate that the value of (hypothetical) prevention of all road collisions in the EU would be about **€160billion per year**



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Need for a fresh estimate in 2011

- To value reduction in deaths on EU roads 2002-10 in pursuit of EU target set in 2001
- To update annual value of (hypothetical) prevention of all road collisions in the EU
- To look ahead to further reduction in road deaths in pursuit of EU target for 2020
- To take account of more recent WTP estimates in a wider range of countries



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ETSC Working Group April-May 2011

Richard Allsop	ETSC & UCL	Co-chair
Rune Elvik	TØI Norway	Co-chair
David Hounsell	DfT UK	
Gunnar Lindberg	VTI Sweden	
Steffan Niemann	bfu Switzerland	
Wim Wijnen	SWOV The Netherlands	



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Input 1: national WTP valuations at market prices

Austria	€2 670 593	in 2006
Belgium	€1 776 416	in 2002
Ireland	€2 261 306	in 2009
Norway	NOK 26 126 880	in 2009
Sweden	SEK 21 000 000	in 2006
Switzerland	*CHF 3 495 000	in 2007
The Netherlands	€2 362 694	in 2003
United Kingdom	GBP 1 585 510	in 2009

* On a different basis but within range of WTP valuations



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Input 2: HEATCO Deliverable 5

- HEATCO was an EU-funded project seeking harmonised approaches to transport costing and project assessment – with widely accepted findings
- Deliverable 5 in 2006 proposed harmonised guidelines including recommending:
 - WTP valuation of prevention of death and injury, presenting values at factor cost
 - ways of converting values in market prices in particular currencies and years to factor cost in a given currency and year



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From market prices to factor cost

- Divide value at market prices by $1 + T/100$ where T is the tax content of consumer expenditure as a percentage of the real content in the country concerned in the year when the WTP estimate was made
- For Sweden T was 30.6 in 2006 so the estimated value at factor cost in 2006 was $SEK\ 21000000/1.306 = SEK\ 16079632$



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From estimate year to common year

- **Multiply by ratio of consumer price index in the common year to index in the estimate year in the country concerned**
- **Multiply by ratio of real GDP/head in the common year to real GDP/head in the estimate year in the country concerned**
- **For Sweden the 2009/2006 ratios of the price index and GDP/head were 1.071 and 0.950 so the 2009 estimate was**
SEK 16079632x1.071x0.95 = SEK 16360222



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To common currency and purchasing power in common year

- **Divide by the number of units of currency in the estimating country which (in the common year) had the same purchasing power as €1 had on average across the whole EU**
- **For Sweden this was SEK 11.8628 in 2009 so the WTP estimate for Sweden in year 2009 was** $\text{€}16360222/11.8628 = \text{€}1379120$
- **Note: The Euro has different purchasing powers in different Eurozone countries**



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Estimates in millions of Euro in year 2009 at factor cost

Austria	2.081	These values are lower than those in general use in the countries concerned because the countries work with valuations at market prices
Belgium	1.771	
Ireland	1.500	
Norway	1.699	
Sweden	1.379	
Switzerland	1.620	
The Netherlands	1.983	
United Kingdom	1.534	

Average 1.696



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Outcome of ETSC 2011 review

Based on current practice in eight European countries that estimate VPF from WTP or by another method giving a similar value, the ETSC takes the VPF in 2009 at factor cost and 2009 prices to be about **€1 700 000** or about **HK\$17million**

This figure can be adjusted to prices in other years using the EU-wide price index

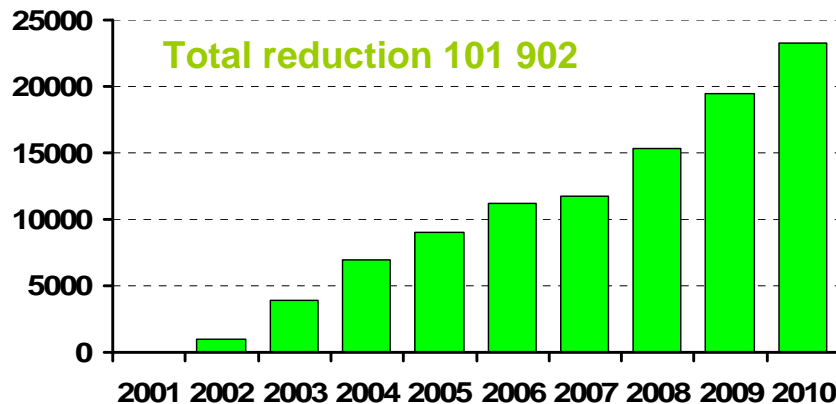
The value itself can be adjusted to other years using the EU-wide index of GDP/head



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Reduction in road deaths in current EU compared with 2001



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Value to society of the reduction in road deaths in the EU since 2001

Applying the ETSC estimate of VPF adjusted year by year for GDP/head to the reduction in road deaths in the current EU in 2002-2010 compared with 2001 gives a total value to society at factor cost and 2009 prices of about **€175billion** or about **HK\$1800billion**



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Other accompanying benefits

The policies and measures that have reduced numbers of deaths have also reduced the amount of injury, material damage and other collision costs

Numbers of injuries recorded as serious have fallen by similar percentages to numbers of deaths, but lesser injuries and material damage may well have fallen by smaller percentages

In European countries the total social value of (hypothetical) prevention of all collisions is estimated to be typically 4 to 5 times the value of prevention of all road deaths

The total benefit to society from road safety improvements since 2001 as a multiple of the value of prevention of the 100 000 deaths is thus hard to estimate – but the multiple is probably in the range 3 to 4, implying

€500 to 700 billion or **HK\$5000 to 7000 billion**



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Annual value of (hypothetical) prevention of all road collisions

There are currently about 31 000 road deaths each year in the EU

The ETSC estimate of VPF implies that the yearly social value of prevention of all these deaths would be around **€3billion**

European countries have estimated the total social value of prevention of all collisions to be at least 4 times the value of prevention of all road deaths

So the yearly social value of prevention of all road collisions in the EU would be at least **€10billion** or **HK\$2000 billion**



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Thank you for your attention



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