

Valuing health and safety for UK public policy: the Social Value of a QALY project

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Background to the project

- Funded by Dept of Health's NCCRM.
- May 2004-Sept 2007.
- May give a basis to or refute statements made recently about what the value of a QALY should be.
- Feed into policy.

NICE (and other) dilemmas

- NICE makes recommendations to rest of NHS
- Requires judgements about value of gains in length and quality of life
- The mythical £30,000!!
- Is it in the right ballpark?
- Other government considerations:
 - NHS productivity
 - ‘Joined up’ government
- Even without money values, what weights might be attached to QALY gains in different situations?

Three related studies

Synthetic

- Estimating a WTP-based value of a QALY from existing contingent valuations for prevented fatalities and injuries

Survey-based

- Feasibility of eliciting money values (n=420)
 - If not feasible/robust, try to understand why
 - If feasible and robust, subsequent full study could give basis for CBA instead of CEA
- Deriving distributional weights (n=600)
 - Are some QALYs worth more than others?
 - How much more, and how justified?

Estimating WTP-based values from values for prevented fatalities/injuries

- Estimating a value of a QALY using the Department for Transport's value of a prevented fatality.
- “Back of the envelope” estimates based on existing WTP-based value of a prevented fatality (VPF)/injury.

What is the VPF?

- VPF is an aggregate WTP across a large group of people for a small reduction in the risk of death.
- Calculation of VPF: a group of 100,000 people benefit from a safety improvement which reduces the probability of premature death by 1 in 100,000 for each person. WTP is aggregated across 100,000 people to give the value of preventing one 'statistical' fatality.

The VPF: some points to note

- WTP reflects the rate people are willing to trade of wealth against risk “at the margin”.
- It is not the “value (or price) of life” that would be offered in compensation for the certainty of death.
- Current UK VPF is £1.3m.

Translating the VPF to a value of a QALY: the data

- ONS data on population age and gender split to calculate assumed age of a fatality for over 18s.
- GAD data used to estimate remaining life expectancy in absence of road fatality.
- EQ-5D utility values.
- 1.5% discount rate.
- VPF (minus net output).

Approach 1

- Approach 1 is the simplest, using only the VPF and remaining life expectancy to estimate a value.
- $V = \frac{VPF}{LE}$
- Gives an individual valuation.
- Assumes each year is equally valued.
- Can also be thought of as a group aggregate.

Approach 2

- Approach 2 takes into account that WTP is likely to depend on factors besides future life expectancy.
- Model incorporates a component that reflects basic value of living (α) along with remaining life expectancy (β).
- Can take different ‘functional forms’:
 - $M_i = \alpha + \beta E_i$

Approach 2: linear form

- Take VPF-versus-age relationship from 3 earlier UK studies = inverted U shape

$$\frac{M_i}{M} = 0.45$$

- So, say for an 80 yr old,

and, if life expectancy is 0, $\alpha = 0.45 \times \text{£}1.3\text{M} = \text{£}585,000$ (1)

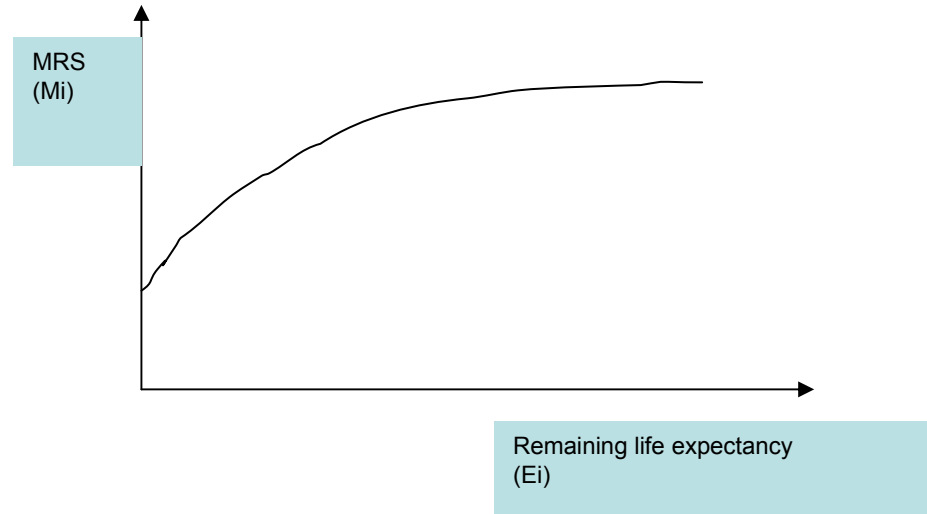
- For 40 yr old, $\frac{M_i}{M} = 1.36$

and, if life expectancy is 40, $\alpha + \beta E_i = 1.36 \times \text{£}1.3\text{M}$ (2)

- Subtract (1) from (2) and substitute back in would give
 $M_i = 585,000 + 29,575E_i$

More complex functional forms

2a. $M_i = \alpha + \beta E_i^{1/2}$ $\alpha, \beta > 0$



2b. $M_i = \frac{\alpha}{80 - E_i} + \beta E_i$

Require more complex differentiations and integrations

Results

Approach	Discounted value of a QALY
Approach 1	£65,142
Approach 2a	£37,530
Approach 2b	£46,144

Issues raised by synthetic work

- Are results in NICE 'ballpark'?
- Challenges for NICE decision-making
- Incorporating a 'value of living' component (raises issue of value of QALYs in different contexts - life saving vs life extending)

Further work

- Estimating a value using quality adjustments alone by using the Department for Transport's value of a serious injury.
- Further sensitivity analysis.
- Empirical study on population sample.

Two surveys

- Monetary value of a QALY, incorporating:
 - methods used as basis of VPF (linking a combination of standard gamble and contingent valuation questions);
 - DCE (Orderings over different bundles of [risks of] quality/quantity of life moves and money to infer value of a QALY)
- Weights for QALYs:
 - Matching questions (PTOs, varying people and levels of factors)
 - DCE (Infer from orderings over bundles; identify interactions)

Challenge: one size does not fit all

- Insurance perspective
- Element of pragmatism (“Is NICE in the right ballpark from the perspective of the community?”)
- Weights study too

Conclusion

- Set of weights for NICE to work with?
- Move to a fully-representative sample for WTP-based value?
- Different values for different contexts?
- It's difficult, but policy makers will keep asking the question