

Methods for Valuing Health in Economic Evaluation

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Elicitation methods

- Health care demands exceed resource supply
- Therefore, rationing is inevitable
- Many ways by which we can ration health care
- One is economic evaluation
- Many methods of economic evaluation
- Perhaps the most ‘respected’ is CUA
- Outcomes combine length and quality of life
- E.g. QALYs, DALYs, HYE

- We'll refer to QALYs
- We want to 'value' quality of life (or health)
- So that we can compare all health states
- E.g. if full health = 1; death = 0; blind = 0.6
- Then 5 years in full health = 5 QALYs
- And 5 years being blind = 3 QALYs (zero disc.)

Deriving the values?

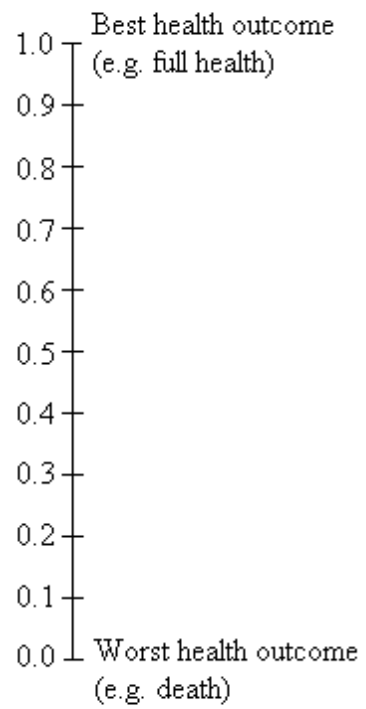
- There are several value elicitation methods
- They are all conceptually different
- They are all subject to biases
- The 3 most common instruments are:
- The rating scale; time trade-off; standard gamble
- We'll also briefly consider:
- Magnitude estimation; person trade-off

Strength of preference

- We want the values to be ‘cardinal’
- Cardinality = relative strength of preference
- E.g. if full health = 1 and death = 0
- And if deaf is 90% as good as full health
- And blind is 60% as good as full health
- And paralysed is 50% as good as blind
- Values of deaf, blind and paralysed = 0.9, 0.6, 0.3
- Difference between deaf and blind =
- Difference between blind and paralysed

The rating scale

- Developed by psychologists
- Advantages: quick, easy, cheap
- ‘Best’ health state placed at top; ‘worst’ at bottom
- Respondents given descriptions of health states
- And then place each health state on the scale
- Placements should reflect strength of preference



Rating scale: biases

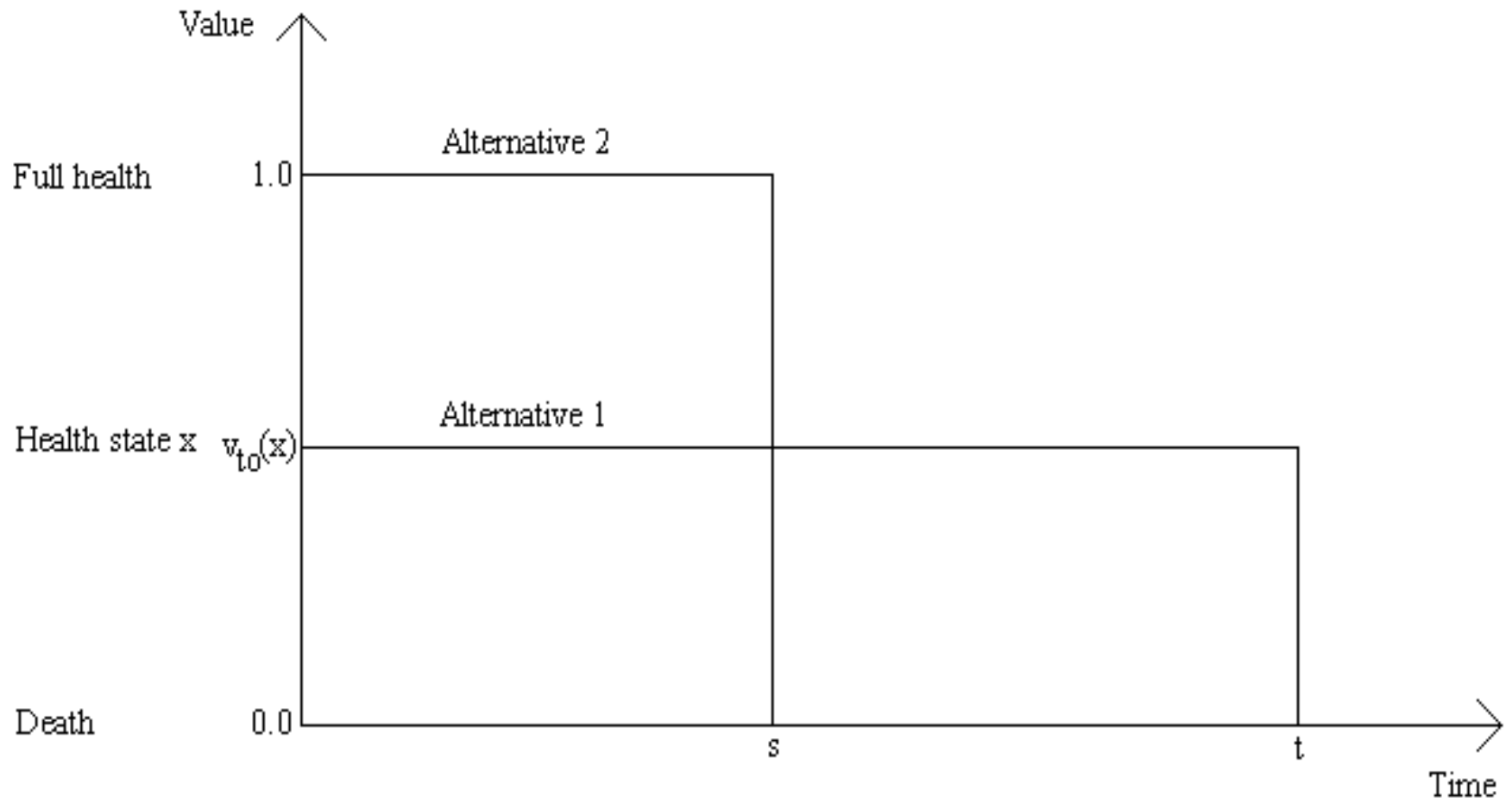
- Context bias:
 - Comparator health states have an influence
- End aversion bias:
 - People ‘bunch’ their answers

Rating scale: conceptual comment

- Health states are placed on a line
- But there is no notion of ‘choice’
- This is a problem for economics
- In health care, people are required to choose
 - between treatments; or treatment and no treatment
- May cause them to think about the trade-offs
 - the **opportunity costs**
- Important: ‘choice’ may influence ‘value’

The time trade-off (TTO)

- Respondent given two options:
 - Option 1: time t in health state x with t given
 - Option 2: time s in full health
- What s causes indifference between the 2 options?
 - Can be done through an ‘iterative’ process
- TTO value: $tv(x) = sv(\text{full health})$
- Therefore, $v(x) = s/t$



Hypothetical example

- Two options:
 - Option 1: blind for 20 years
 - Option 2: full health for s years
- Billy is asked for his ‘indifference’ time s
- Assume he states $s = 15$ years
- TTO value for blind:
 - $20v(\text{blind}) = 15v(\text{full health})$
 - Therefore, $v(\text{blind}) = 15/20 = 0.75$

TTO: bias

- Values are calculated from two lengths of life
- This assumes that people do not discount life years
- But people do discount life years
 - Positive and negative discount rates have been observed
- +ve discount rates downwardly bias TTO values

How so?

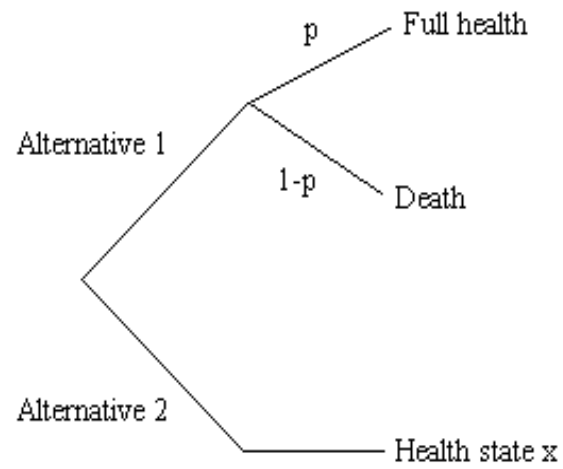
- Two options:
 - Option 1: blind for 20 years
 - Option 2: full health for s years
- Assume Billy states $s = 15$ years
- Therefore, $v(\text{blind}) = 15/20 = 0.75$
- Two further options:
 - Option 1: blind for 10 years
 - Option 2: full health for s years
- To be consistent, Billy should state $s = 7.5$ years
- But if he has a +ve discount rate:
 - $v(10 \text{ years}) > 1/2v(20 \text{ years})$
- So, he will state an $s > 7.5$ years, and $v(\text{blind}) > 0.75$

TTO: conceptual comment

- People choose between ‘certain’ outcomes
- But many health care decisions involve ‘risk’
 - Pills have side effects
 - Operations are dangerous
- May be important: ‘risk’ may influence ‘value’

The standard gamble (SG)

- Two options:
 - Option 1: a chance (p) of full health but a risk of death
 - Option 2: an intermediate health state x for certain
- What chance of full health for indifference?
 - Can be done through an iterative process
- The SG value:
 - $v(x) = pv(\text{full health}) + (1-p)v(\text{death})$
 - Therefore $v(x) = p$



SG: bias

- Consider the valuation of minor health states
- People may be unwilling to accept any chance of death
- Thus, the SG may sometimes be insufficiently sensitive

SG: conceptual comment

- The SG internalises risk
- And is implied from the dominant theory of risk
 - Expected utility theory
- Thus, for many, the SG is the ‘gold standard’
 - Although others believe risk should not be considered
- SG values $>$ TTO values $>$ rating scale values
- SG usefulness depends upon the EU axioms

Magnitude estimation: brief comment

- Also known as ‘the ratio scale’
- Respondents consider pairs of health states
- And then give a ‘ratio of undesirability’
- E.g. X is 2 times (3, 4, 5...times) worse than Y
- States related to each other on undesirability scale
- Like the rating scale, involves no trade-offs

Person trade-off (PTO): brief comment

- Two options:
 - Option 1: 100 people in full health have life extended by 1 year
 - Option 2: y people in health state x have life extended by 1 year
- What y causes indifference between the 2 options?
- The PTO value:
 - $yv(x) = 100v(\text{full health})$
 - Therefore, $v(x) = 100/y$
- A choice-based method
- Internalises consideration ‘across’ people

Conclusion

- There are many ways to elicit health state values
- All have biases; all are conceptually different
- Be aware of these biases and differences
- What are the appropriate conceptual assumptions?
- Then think about how the biases might be lessened