



Preferences and Health Measurement (A Philosopher's View)

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Why Measure Health?

Health policy needs a measure of health **improvements** to allocate resources efficiently

Why Measure Health by Preferences?

“the QALY does not have to be based on individual subjective preferences, nor indeed on preferences at all. It could, for example, be simply interpreted as an empirically descriptive and pragmatic indicator of health.” Cookson and Culyer 2010, p. 159



Four assumptions

1. Measure the **value** of health states, not the **quantity** of health they contain.
2. The value of health is its contribution to well-being **[problematic]**.
3. Preferences indicate well-being **[problematic]**.
4. “Public” values that govern policy are an aggregation of “private” values **[problematic]**



Outline

1. Overview of health measurement schemes
2. Preference surveys are faulty
3. Whose preferences should be elicited?
4. What can we learn from preference surveys?
5. Variation in private values and averaging
6. Learning about private values without eliciting preferences
7. Avoiding averaging private values
8. Mitigating the problems with preference surveys
9. Conclusions



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1. Overview of health measurement

- Health as the time integral of instantaneous health states
- Health states are distinguished symptomatically, not by cause, effect, or prospects
- Values of token health states depend on the environment and individual values



Tokens and Types

- A token health state is the health state of an individual at a time [my knee pain at 3:00]
- The value of a token of a health state type depends on environment and individual goals
- Types or kinds of health states have no unique value
- The values of health state types are averages (but still private or personal values)



Health Measurement Systems (1)

- Health state **classification** and valuation
- **Classification:** Example: EQ5D
 - 5 dimensions: mobility, self-care, usual activities, pain/discomfort, anxiety/depression
 - 3 levels: no problem, moderate problem, severe problem
 - 243 health states + unconscious and dead



Health Measurement Systems (2)

Health state classification and valuation

- Measure the HRQoL of health states (“assign ‘quality weights’”)
- Assume: In population P : $V(H_1) > V(H_2)$ if and only if members of P prefer H_1 to H_2 .
- Stipulate: $V(\text{death}) = 0$; $V(\text{full health}) = 1$
- “QALYs” “quality adjusted life-years (the time integral of the values of health states of individuals)”



Eliciting Preferences

Time trade offs: Indifference between 10 years in H and x years in full health implies $V(H) = x/10$.

- **Hypothetical** preferences of survey respondents
 - Respondents do not actually face a tradeoff between length and quality of life.
 - Survey respondents only predict what their preferences would be or how they would choose



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(A) Time in full health	Preference	B Time in State 22121*
10 years	A	10 years
9 years, 6 months		10 years
9 years		10 years
8 years, 6 months		10 years
8 years		10 years
7 years, 6 months		10 years
7 years		10 years
6 years, 6 months		10 years
6 years		10 years
5 years, 5 months		10 years
5 years		10 years
4 years, 6 months		10 years
4 years		10 years
3 years, 6 months		10 years
3 years		10 years
2 years, 6 months		10 years
2 years		10 years
1 year, 6 months		10 years
1 year		10 years
0 years, 6 months		10 years
0 years	B	10 years

*22121 =

Moderate Problems

- Mobility,
- Self-care,
- Pain;

No problems

- Usual Activities
- Anxiety/ depression



When Do Time Tradeoff Surveys Indicate Health States Values?

Four Conditions:

1. Respondents understand and answer honestly.
2. Their beliefs about what they would prefer if they faced the time tradeoff choice are true.
3. Preferences among time tradeoffs coincide with preferences among health states.
4. An agent's preferences are reliable indicators of the value of health to the agent.



Why Rely on Preferences?

Two Interpretations:

1. Preferences as judgments of value – as answers to the health economist's question concerning the public or social value of health states
2. Preferences as measures of own well-being or quality of life, of private or personal value of health states.

Preference surveys aim to elicit the second.

1. Does the satisfaction of preferences constitute well-being or quality of life?
2. Preferences may **indicate** well-being or quality of life if certain conditions are met



Why Rely on Preferences? (2)

Preference satisfaction indicates personal or private value when:

- Agents have complete knowledge of relevant facts,
- Agents are rational,
- Agents are self-interested, and
- Agents have good evaluative judgment



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Problems

- The questions are hard and unfamiliar
 - People lack information, have false beliefs
- The questions are not well-defined
- There are no point values
- No incentive or opportunity for reflection



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3. Whose preferences?

(For what purposes?)

- Those who experience diminished health states assign them higher values.
- Preferences vs. feelings
- Whose values should determine quality weights?
- (Do disabilities diminish well-being?)



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4. What Can Preference Surveys Teach Us?

Suppose (contrary to fact) that

1. the four conditions needed to make inferences from surveys were met,
2. that health states tokens had a unique value, and
3. that individual judgment of the private value of health states were **perfect** (no random error)



The Four Conditions (Reminder):

1. Respondents understand and answer honestly.
2. Their beliefs about what they would prefer if they faced the time tradeoff choice are true.
3. Preferences among time tradeoffs coincide with preferences among health states.
4. Preferences are reliable indicators of the value of health to the agent (which supposes that):
 1. Agents possess all relevant knowledge
 2. They are rational
 3. They are self-interested
 4. They are competent evaluators.



What Can Preference Surveys Teach Us?

Suppose that

1. the four conditions needed to make inferences from surveys were met,
 2. that health states tokens had a unique value, and
 3. that individual judgment of the private value of health states were **perfect**; **Then**
- Everyone would assign the same private value $V(H)$ to H
 - **Question:** Should $V^S(H)$ (the social or public value of H) = $V(H)$?
 - Depends on how $V^S(H)$ is to be used. (Is the objective to maximize the private value of health?)



Survey Responses Vary

- Easy case: the variation is all noise
- Typical case: “true” private values of health state tokens vary

Suppose that the private values of H were $V_1(H)$, $V_2(H)$, and $V_3(H)$ with frequencies f_1 , f_2 , and f_3 : **Some possibilities** for the public or social value, $V^S(H)$:

- $V^S(H) = f_1 V_1(H) + f_2 V_2(H) + f_3 V_3(H)$
- $V^{S*}(H) = (1/3) * [V_1(H) + V_2(H) + V_3(H)]$
- Median
- Mode



Other Sources of Variation

- Different health conditions receive the same health state classification
- Differences in evaluative standards



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Actual Variation

$V(22121) = .642$ with $SD = .421$; 95% confidence interval > 0.7

Can we justify averaging?

- Let $V_1(H) = 0.85$, $V_2(H) = 0.7$, and $V_3(H) = 0.2$;
 $f_1 = 0.4$, $f_2 = 0.4$, and $f_3 = 0.2$;
- $V^S(H) = 0.64$; $V^{S^*}(H) = 0.52$; median = 0.7
- **How** one averages matters!
- Are 3 digits meaningful?



Why Average?

- To find in the noisy data the shared value that individuals assign
- To determine a compromise between differing values
- To respect democratic sovereignty
- To make the values governing policy socially acceptable



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Analogy: Glamour

- Who is more glamorous: Brad Pitt or Woody Allen?
- Why poll people for an answer?
- How do respondents figure out how to answer?
 - Glamour depends on characteristics of people
 - Judgments of glamour depend on
 - Beliefs about what these characteristics are
 - Beliefs about Brad Pitt and Woody Allen
 - Judgments of glamour are fallible



Glamour: Could we bypass polling?

- We could identify the characteristics of the glamorous
- There would be little point to doing so because
 - Easier just to ask
 - There are many reliable judges with lots of practice
 - Not very important whether a judgment of glamour is correct.



Assessing Health States

- Health states are valuable because of their properties and consequences
- Health economists could identify the properties and consequences that constitute the private values of health states
 - Not necessarily more expensive than surveying..
 - Potentially more reliable, because survey respondents are often not reliable judges.
 - Very important whether the public values assigned to health states are correct.



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7. Avoiding Averaging?

Two possibilities:

- (A) Do without public values or
- (B) disconnect them from private values



A. Doing without Public Values

Individualistic ideal: each individual's private values should govern his/her access to health-related resources beyond a basic package.

- Partial implementation via markets
- Impossible, without unfairness



B. Autonomy for Public Values?

What is wanted of public health measures, including health care? Several answers:

- Health maximization: public value must be an aggregate of private value
- The most powerful army
- Opportunities and protection of rights



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8. Mitigating the Problems with Preference Surveys (1)

1. Use deliberative groups with the following traits
 1. To assign private values
 2. To assign public values
- “representative expertise in the relevant . . . evidence exists amongst the panellists
- there is a representative breadth of colloquial sources of evidence. . .
- the deliberating membership is heterogeneous. . .
- members are willing to share values openly
- stakeholder consultation has been inclusive. . . “
(Culyer 2009)



8. Mitigating the Problems with Preference Surveys (2)

2. Assign an interval of values to health states
 - Recognizes the coarseness of the classification and avoids unmodeled compromises
 - Encompasses moderate disagreements in value

But

- Limits discrimination by cost-effectiveness
- Complicated to operationalize



Mitigating the Problems with Preference Surveys (3)

3. Determine and assess the reasons why individuals assign the values that they do and employ a corrected version of the implicit algorithm(s) people are employing
4. Partly decentralize health care allocation decision-making



9. Conclusions

- How health measurement systems work
- Conditions that need to be satisfied to infer private values from preference surveys
- Problems with deriving public values by averaging private values
- Opening the black box of preferences
- Improving preference elicitation
- Superseding preference elicitation and aggregation