

Drivers of Social Value Exceed Length and Quality of Life: Evidence from Switzerland

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Introduction & Background

Empirical Evidence on Social Value Drivers:

A Rapidly Growing Literature

Attributes of the Health Condition

- individual valuation of health conditions
- severity of the condition
- unmet medical need
- urgency of an intervention
- capacity to benefit from an intervention

Attributes of the Persons Afflicted

- non-discrimination (and claims-based approaches)
- age (and fair innings)
- other patient attributes
- fairness objectives; aversion against *all-or-nothing* decisions

Limitations of the Literature:

- many studies limited in size and / or scope
- many studies likely to be impaired by framing effects
- sometimes of questionable methodology
- zero sum assumption in many studies
- ex ante* severity of health state probably best documented attribute (“contextual variable”) – but distinct difficulties to quantify effects
- role of prevalence (“rarity”) controversial
- Cost attribute** (payment vehicle in most studies)
 - typically reflecting an individual (selfish) health state valuation (/WTP) perspective,
 - whereas citizens’ “social WTP” for coverage of health care programs under a collectively financed health scheme might be more relevant

Governance

ESPM (European Social Preference Measurement)

Project Group: Scientific Steering Committee

- Silvio Garattini (Mario Negri Institute, Milan / Italy)
- Sören Holm (U of Manchester / England)
- Peter Kolominsky (U of Erlangen / Germany)
- Deborah Marshall (U of Calgary / Canada)
- Erik Nord (U of Oslo / Norway)
- Ulf Persson (IHE, Lund / Sweden)
- Maarten Postma (U of Groningen / The Netherlands)
- Jeffrey Richardson (Monash U, Melbourne / Victoria)
- Michael Schlander (DKFZ & U of Heidelberg / Germany)
- Steven Simoons (U of Leuven / Belgium)
- Oriol de Sola-Morales (IISPV, Barcelona / Spain)
- Harry Telser (Polynomics / Switzerland)
- Keith Tolley (Tolley HE, Buxton / England)
- Mondher Toumi (U Aix-Marseille / France)

Objectives & Implementation / Methods

Primary Study Objective:

To investigate the valuation of selected attributes (with special attention to the role of “rarity”) of health care interventions from a citizen’s perspective

Study Implementation:

1. Survey Design

Initial Preference Formation Phase

Discrete Choice Experiment (DCE):

D-efficient fractional factorial design, with three blocks of 10 choice situations, each consisting of two alternatives, i.e., *standard* vs. *new* treatment

Supplementary Questions (e.g., socioeconomic)

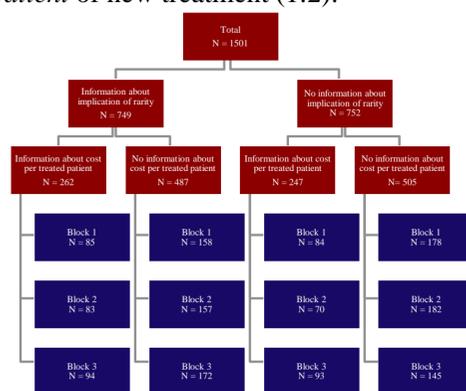
2. Survey Execution

- Qualitative Pretest: 10 “think-aloud” interviews
- Quantitative Pretest: 201 Swiss participants
- Main Survey: 1,501 respondents; online panel, representative sample of the Swiss population

Subsamples (to control for framing effects):

Respondents were randomized into 2 x 2 groups, differing

- by one additional item to reflect on the implications of prevalence (*rarity*; 1:1), and
- by information on implied extra cost *per patient* of new treatment (1:2):



Attributes & Levels:

Attribute	Standard Treatment	New Treatment
Age of Patients	mainly children, on average 10 years old mainly adults, on average 40 years old mainly elderly, on average 70 years old	
Prevalence	1 in 20, i.e. about 400,000 people in Switzerland 1 in 200, i.e. about 40,000 people in Switzerland 1 in 2,000, i.e. about 4,000 people in Switzerland [lower rates correspond to definition of orphan / ultra-orphan diseases]	1 in 50,000, i.e. about 160 people in Switzerland
Health State	slightly impaired moderately impaired moderately impaired severely impaired severely impaired severely impaired very severely impaired very severely impaired very severely impaired very severely impaired	slightly impaired slightly impaired moderately impaired slightly impaired moderately impaired severely impaired slightly impaired moderately impaired severely impaired very severely impaired
Life Expectancy	45 (10), 60 (40), 75 (70) 45 (10), 60 (40), 75 (70) 45 (10), 60 (40), 75 (70) [depending on age of patients]	52 (10), 64 (40), 76 (70) 66 (10), 72 (40), 78 (70) 80 (10), 80 (40), 80 (70)
Cost	no extra cost	12 CHF per year (= 1 CHF per month) 60 CHF per year (= 5 CHF per month) 120 CHF per year (= 10 CHF per month) 360 CHF per year (= 30 CHF per month) 600 CHF per year (= 50 CHF per month) [defined from a citizen's perspective, i.e., extra premium to mandatory health insurance (OKP)]

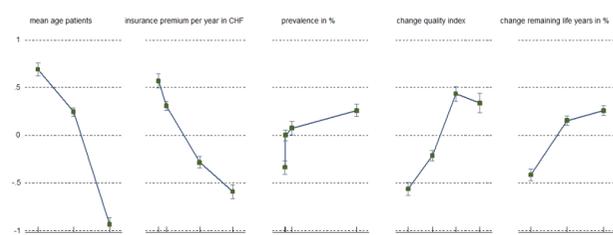
Primary Results & Key Observations

Model Selection:

We estimated a separate model for each attribute investigating how well a linear model specification approximates the flexible function of the dummy model:

Flexible Functional Form (with dummy variables):

The figure below illustrates the point estimates with 95% confidence intervals for each attribute level.



We used the pure linear model as well as the flexible dummy variable model as benchmark to compare quality of fit measures including the AIC, BIC, and log-likelihood criteria.

The variables *mean age of patients* and *prevalence [%]* required a nonlinear variable specification. Upon testing several specifications, we identified the Main Model for primary analyses. According to the Main Model, the marginal utility for an additional year of life is decreasing with the total number of years.

Interaction Effects:

The interactions indicate a positive relationship between *remaining life years* and *quality of life*.

A negative relationship between the *change of remaining life years* and *mean age of patients* suggests that – from the perspective of citizens – the utility of one additional life year is higher for young patients compared to older patients. Finally, the positive relationship between *mean age of patients* and *quality of life* indicates that for older people quality of life may be more important than for younger people.

Inclusion of interaction effects did not improve model fit based on BIC. Therefore, we did not include interactions in the Main Model.

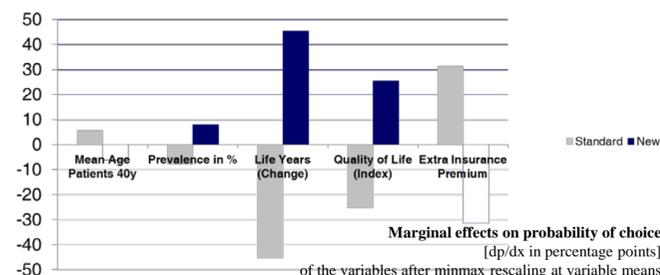
The Prevalence Attribute and Framing Effects:

The level of information on the implications of prevalence (“rarity”) influenced the social value (or valuation) of the attribute.

Both groups showed a decreasing valuation of an intervention with decreasing prevalence of the disorder. This effect was larger than the decrease of prevalence, and **by implication the accepted cost per patient increased with rarity**. Thus we decided to enhance the Main Survey by a subgroup with additional information on implied cost per patient – which had a relatively small impact on valuation.

Importance of Attributes:

The marginal effect of each variable depends on the overall utility level and is not constant. The variables with the highest impact on choice probability were *change in remaining life years*, the *quality of life index*, and *insurance premium* per year. The negative marginal effect for *older people* was three times larger compared to middle-aged people. The impact of *prevalence* was comparable to the age effect.



Conclusions

Our discrete choice experiment (DCE), using a payment vehicle from the citizen’s perspective, shows that a **representative sample of the Swiss population places value on a broader range of attributes of health care interventions than length and quality of life**.

Further analyses are underway to assess the implied social (public) willingness-to-pay, impact on accepted cost per patient, and relation of findings to the conventional logic of cost effectiveness.