



Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

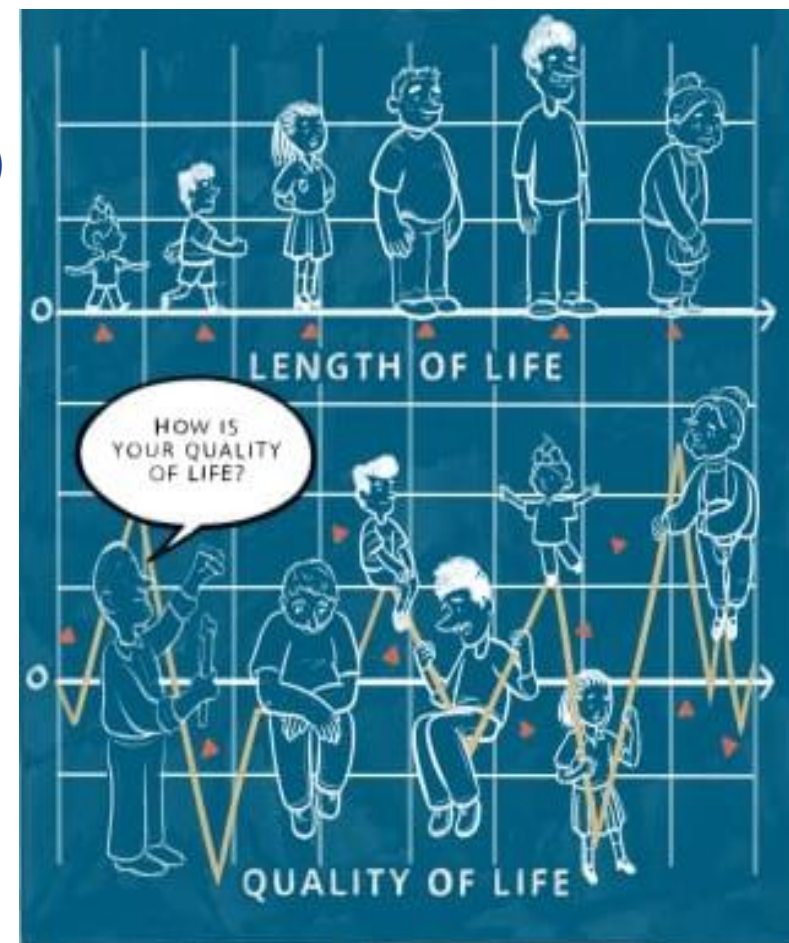
AN EQ-5D-5L VALUE SET FOR BELGIUM: HOW TO VALUE HEALTH-RELATED QUALITY OF LIFE?

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1. Why?

- Evaluation health interventions / treatments / new medical technology?
 - Length of life
 - Quality of life
 - Trade-off \Rightarrow cost-effectiveness analysis, quality-adjusted life years (QALYs)
- Measuring HRQoL \Rightarrow multidimensional
- Belgian guidelines for health economic evaluations
- Health interview survey
- No EQ-5D-5L value set available for Belgium
 - EQ-5D-3L for Flanders in 2003
 - Neighbouring countries: France, Germany, Netherlands, England



2. Objective of the study

- To develop an **EQ-5D-5L** value set, based on the preferences of a random sample of the *Belgian general public*
- The **EQ-5D-5L** instrument
 - Short questionnaire with standardized description of health
 - 5D: 5 dimensions of health
 - 5L: 5 levels per dimension



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- The **EQ-5D-5L** instrument

- Short questionnaire with standardized description of health
- 5D: 5 dimensions of health
- 5L: 5 levels per dimension
⇒ increased accuracy compared to 3L version (3 125 vs 243 states)
- For example health states **24315**

2 - I have **slight** problems in **walking about**

4 - I have **severe** problems **washing or dressing myself**

3 - I have **moderate** problems **doing my usual activities**

1 - I have **no** **pain or discomfort**

5 - I am **extremely** **anxious or depressed**

Under each heading, please tick the ONE box that best describes your health TODAY.

MOBILITY

- 2 →
- ☐ I have no problems in walking about
 - ☐ I have slight problems in walking about
 - ☐ I have moderate problems in walking about
 - ☐ I have severe problems in walking about
 - ☐ I am unable to walk about

SELF-CARE

- 4 →
- ☐ I have no problems washing or dressing myself
 - ☐ I have slight problems washing or dressing myself
 - ☐ I have moderate problems washing or dressing myself
 - ☐ I have severe problems washing or dressing myself
 - ☐ I am unable to wash or dress myself

USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

- 3 →
- ☐ I have no problems doing my usual activities
 - ☐ I have slight problems doing my usual activities
 - ☐ I have moderate problems doing my usual activities
 - ☐ I have severe problems doing my usual activities
 - ☐ I am unable to do my usual activities

PAIN / DISCOMFORT

- 1 →
- ☐ I have no pain or discomfort
 - ☐ I have slight pain or discomfort
 - ☐ I have moderate pain or discomfort
 - ☐ I have severe pain or discomfort
 - ☐ I have extreme pain or discomfort

ANXIETY / DEPRESSION

- 5 →
- ☐ I am not anxious or depressed
 - ☐ I am slightly anxious or depressed
 - ☐ I am moderately anxious or depressed
 - ☐ I am severely anxious or depressed
 - ☐ I am extremely anxious or depressed

2. Objective of the study

- To develop an **EQ-5D-5L value set**, based on the preferences of a random sample of the Belgian general public
- **Value set**
 - Comparison of health states? For example 24315 versus 24351? Has anxiety/depression a higher impact on quality of life than pain/discomfort?
 - Translation from health state to HRQoL value (utility) in value set
 - One value for each health state
 - Values allow for a comparison between all potential health states

Profile	Utility value	Profile	Utility value	Profile	Utility value	Profile	Utility value	Profile	Utility value	Profile	Utility value	Profile	Utility value
24314	0.408	24341	0.374	24413	0.545	24435	0.095	24512	0.559	24534	0.15	25111	0.765
24315	0.315	24342	0.313	24414	0.312	24441	0.278	24513	0.506	24535	0.056	25112	0.704
24321	0.687	24343	0.261	24415	0.219	24442	0.217	24514	0.274	24541	0.24	25113	0.652
24322	0.626	24344	0.028	24421	0.591	24443	0.165	24515	0.181	24542	0.179	25114	0.42
24323	0.573	24345	-0.065	24422	0.53	24444	-0.068	24521	0.553	24543	0.126	25115	0.327
24324	0.341	24351	0.271	24423	0.478	24445	-0.161	24522	0.492	24544	-0.106	25121	0.698
24325	0.248	24352	0.21	24424	0.245	24451	0.176	24523	0.439	24545	-0.199	25122	0.637
24331	0.629	24353	0.158	24425	0.152	24452	0.115	24524	0.207	24551	0.137	25123	0.585
24332	0.568	24354	-0.074	24431	0.533	24453	0.062	24525	0.114	24552	0.076	25124	0.353
24333	0.516	24355	-0.167	24432	0.472	24454	-0.17	24531	0.495	24553	0.024	25125	0.26
24334	0.284	24411	0.658	24433	0.42	24455	-0.263	24532	0.434	24554	-0.208	25131	0.641
24335	0.191	24412	0.597	24434	0.188	24511	0.62	24533	0.382	24555	-0.301	25132	0.58

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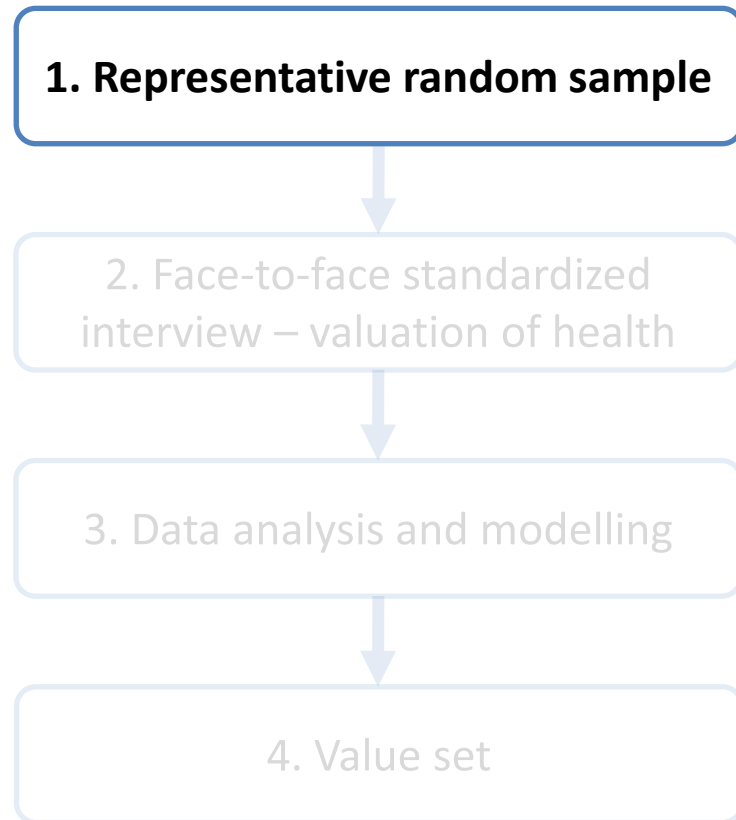
- *To develop an **EQ-5D-5L value set**, based on the preferences of a random sample of the Belgian general public*
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 - Translation from health state to HRQoL value (utility) in value set
 - One value for each health state
 - Values allow for a comparison between all potential health states
 - Used for calculation of QALYs in cost-effectiveness analysis

2. Objective of the study

- *To develop an EQ-5D-5L value set, based on the preferences of a random sample of the Belgian general public*
- *Preferences of a random sample of the Belgian general public*
 - Societal preferences for decision that impact society and public resources
 - One value set = always the same HRQoL value for a health state
 - Consistency and comparability
 - Essential for allocation of scarce resources

3. Method & result

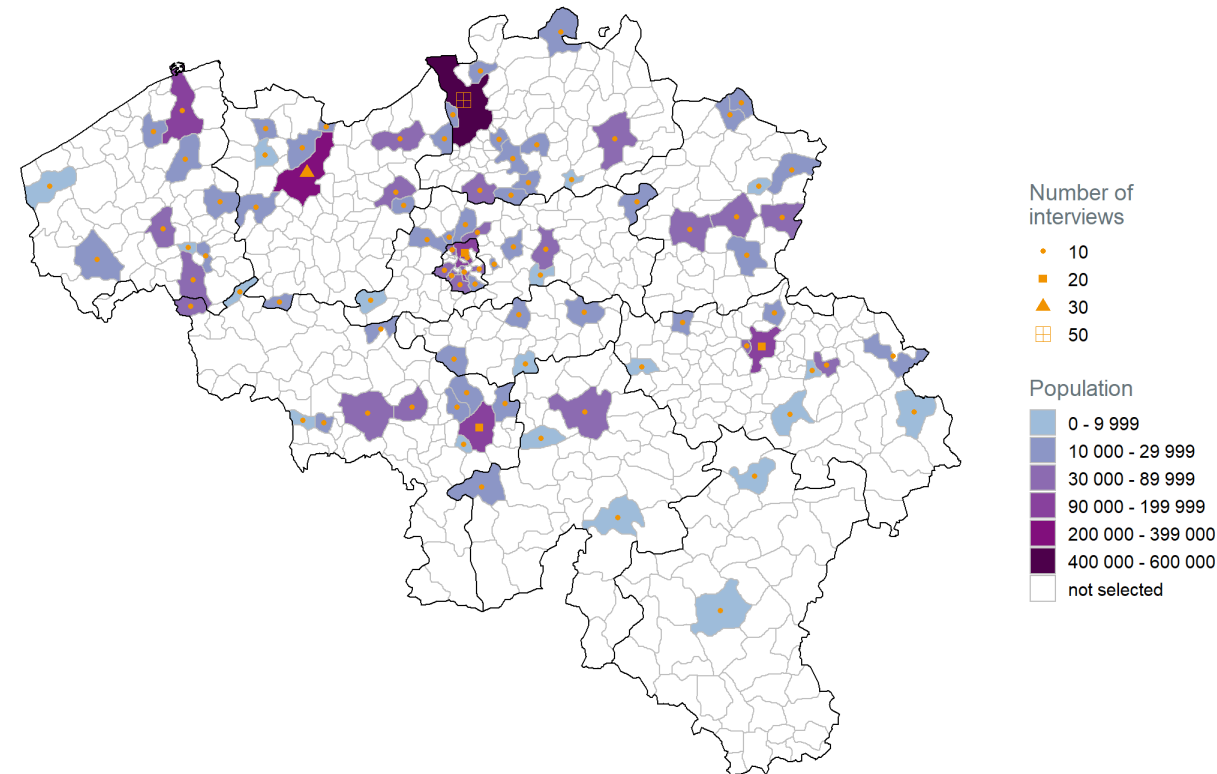
- Creation of an EQ-5D-5L value set following protocol developed by the EuroQol group (EQ-VT protocol 2.1)



3. Method & result

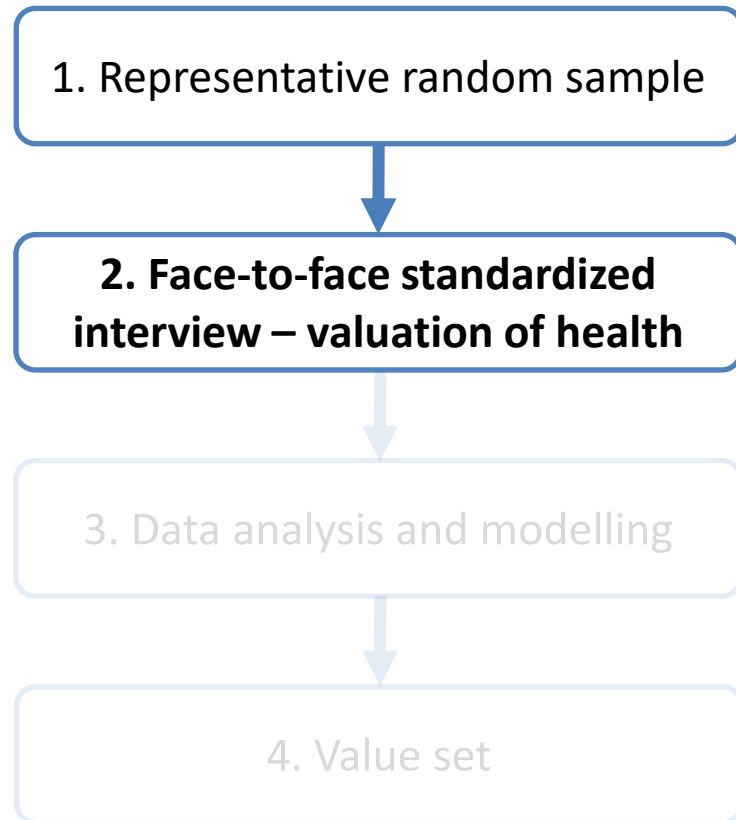
Step 1. Representative random sample

- Target
 - 1 000 (successful) interviews in adult population
 - Representativeness considered important in Belgian setting
- Multistage, stratified, cluster sampling with unequal probability design
 - In each province: random selection of municipalities
 - Municipality can be drawn multiple times
each draw = block of 10 interviews
 - Further subdivided by age category and sex
 - Random selection of potential respondents from the National Register
10 candidates for each targeted interview



3. Method & result

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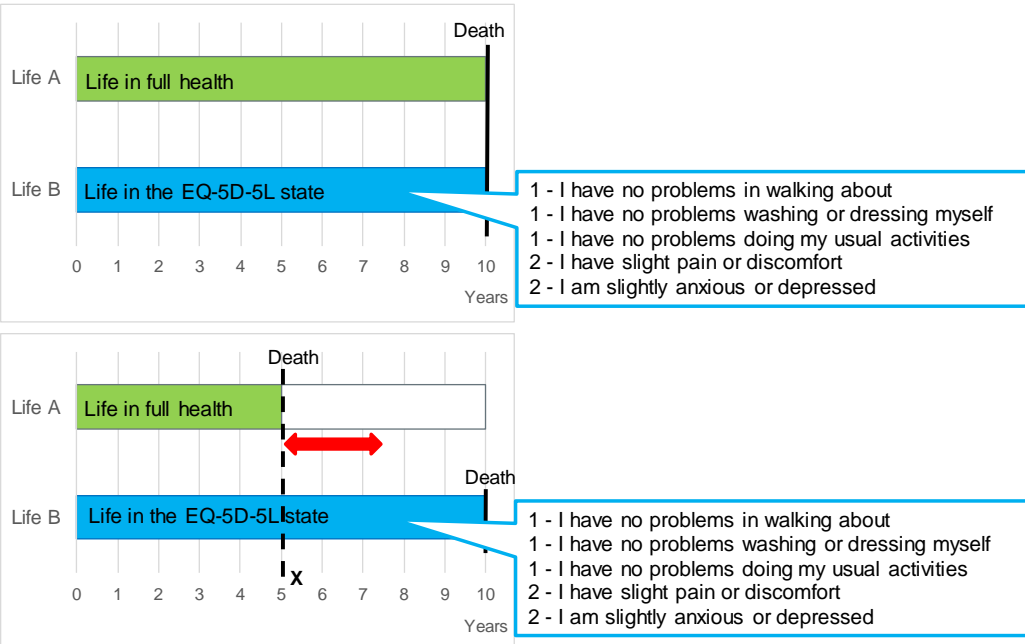


3. Method & result

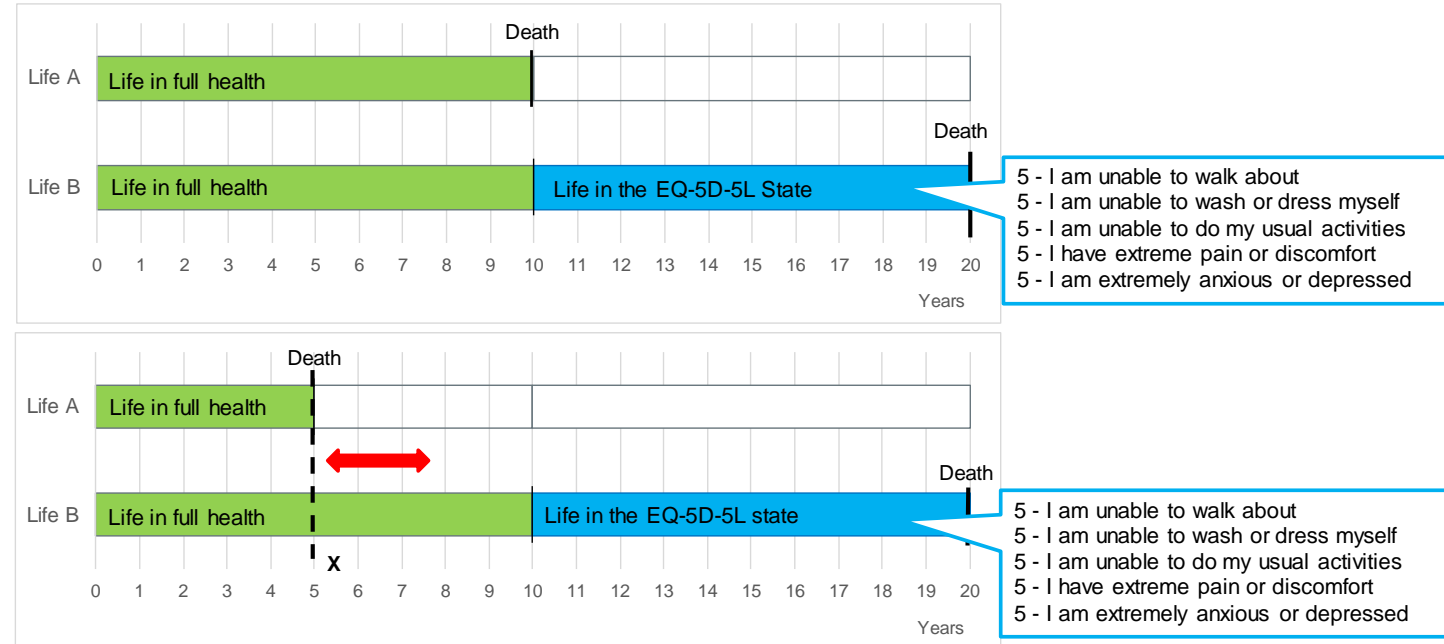
Step 2. Face-to-face standardized interview – valuation of health

- Follow EQ-VT protocol 2.1
 - Each respondent: valuation of hypothetical health states by cTTO (10/11 states)

Traditional TTO



Lead-time TTO



3. Method & result

Step 2. Face-to-face standardized interview – valuation of health

- Follow EQ-VT protocol 2.1
 - Each respondent: valuation of hypothetical health states by cTTO (10/11 states) and DCE (7 choice pairs)

Which is better, state A or state B?

State A

2 - I have slight problems in walking about
2 - I have slight problems washing or dressing myself
4 - I have severe problems doing my usual activities
1 - I have no pain or discomfort
3 - I am moderately anxious or depressed

State B

2 - I have slight problems in walking about
2 - I have slight problems washing or dressing myself
3 - I have moderate problems doing my usual activities
3 - I have moderate pain or discomfort
1 - I am not anxious or depressed

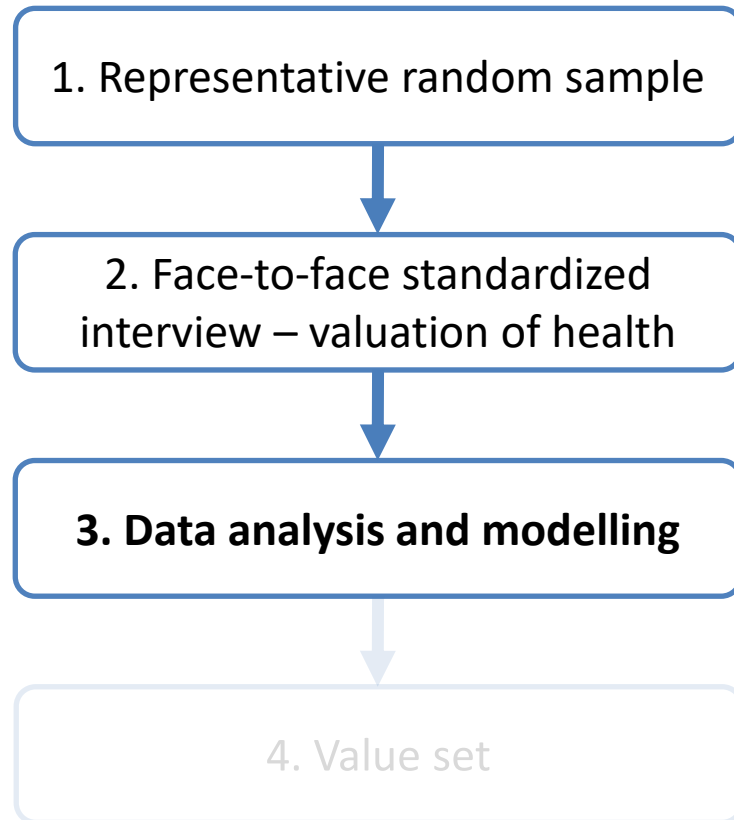
3. Method & result

Step 2. Face-to-face standardized interview – valuation of health

- Follow EQ-VT protocol 2.1
 - Each respondent: valuation of hypothetical health states by cTTO (10/11 states) and DCE (7 choice pairs)
 - Overall: 86 health states + unconscious state by cTTO and 196 choice pairs
 - Built-in quality control process: time spent + valuation
- Limited number of interviewers (learning effects) who received training
- Data collection: May 2018 to September 2020 => 916 interviews

3. Method & result

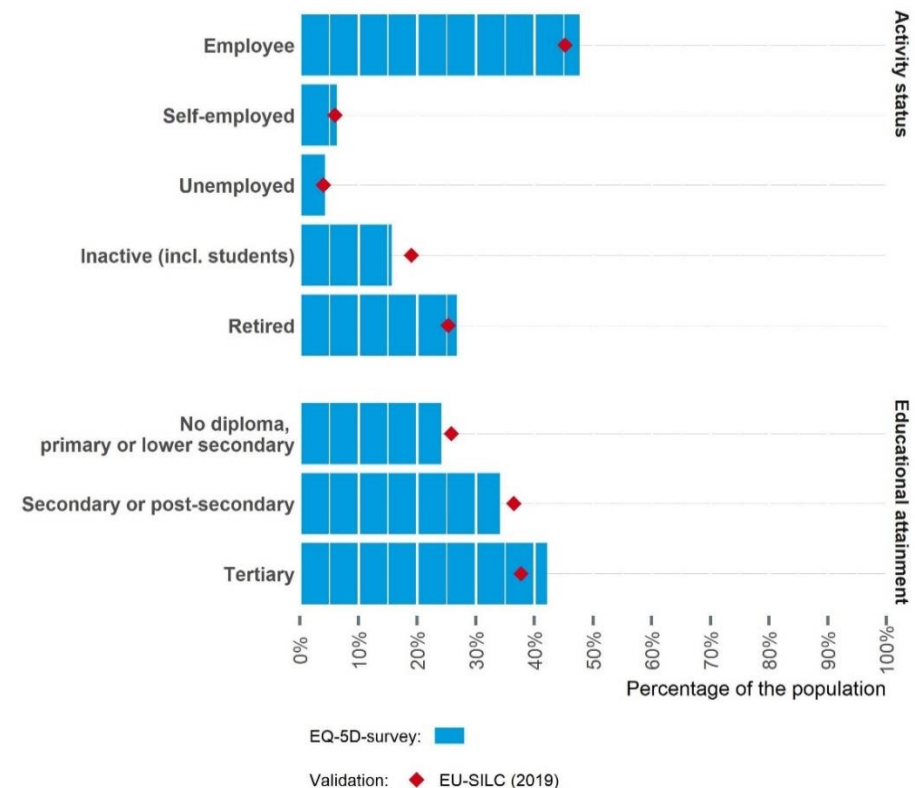
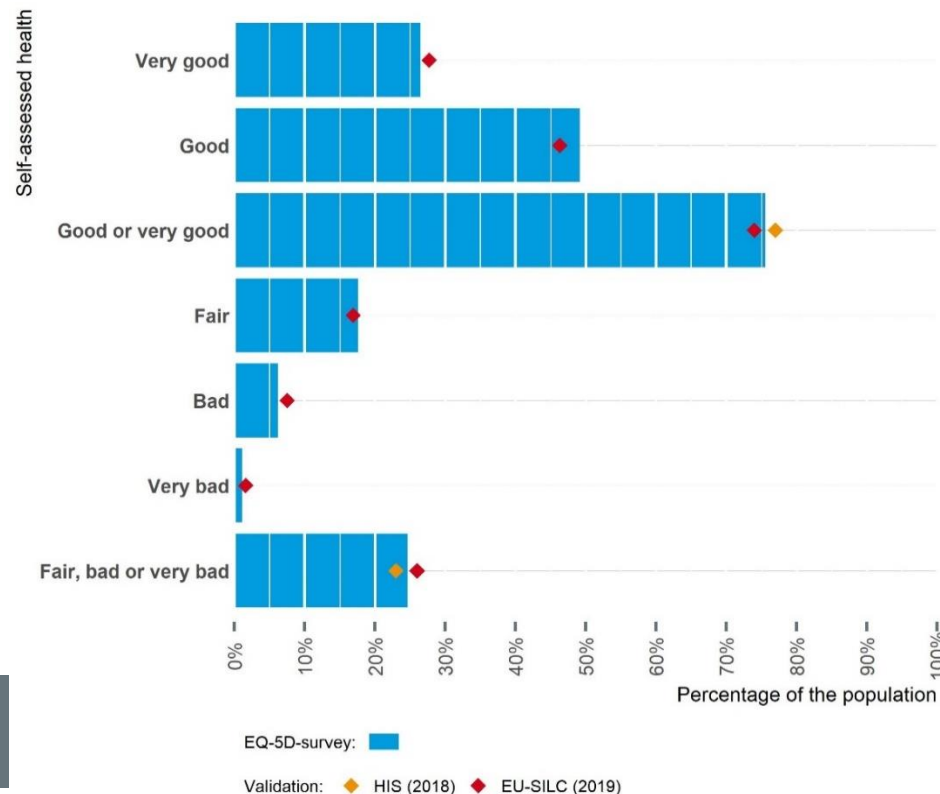
- Creation of an EQ-5D-5L value set following protocol developed by the EuroQol group (EQ-VT protocol 2.1)



3. Method & result

Step 3. Data analysis and modelling

- Data analysis
 - Further exclusion, e.g. all states same value => 892 respondents
 - Post-stratification weights
 - Good representativeness of sample, also for health status, HRQoL, education and employment status



3. Method & result

Step 3. Data analysis and modelling

- Data analysis
 - Further exclusion, e.g. all states same value => 892 respondents
 - Post-stratification weights
 - Good representativeness of sample, also for health status, HRQoL, education and employment status
 - Face validity of that data e.g. lower cTTO values as severity increases
 - Findings:
 - Limited willingness to trade-off life years for mild health states
 - Respondents disagree more strongly on the valuation of health states that diverge more severely from full health
 - Important share of negative valued states

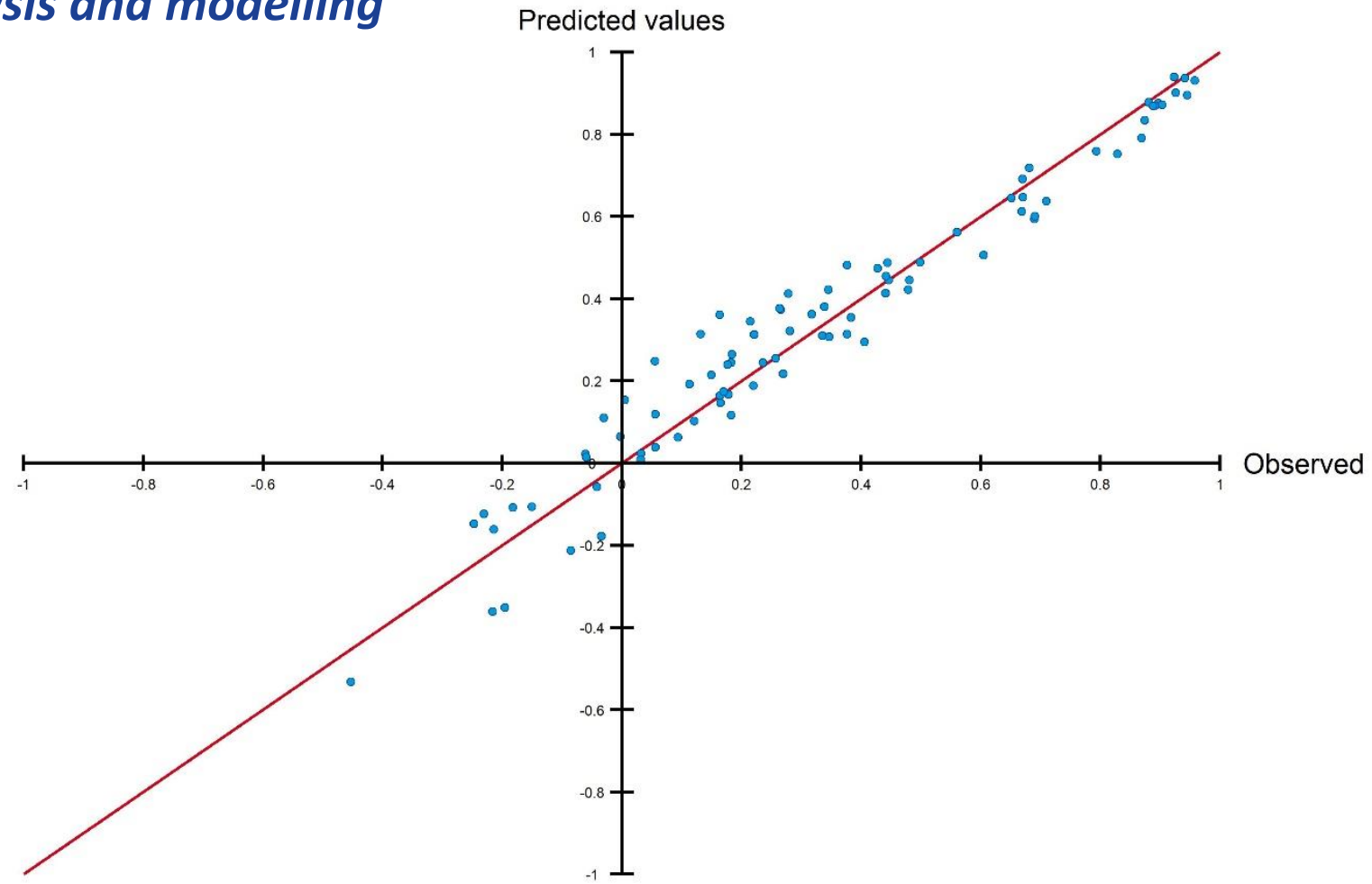
3. Method & result

Step 3. Data analysis and modelling

- Data modelling
 - Estimate disutility rather than utility
 - No model imposed by EuroQol
=> fit wide range of models based on literature and choose model using selection criteria
 - 4 selection criteria:
 1. Logical consistency: disutility increases as health states worsen
 2. Goodness of fit: model is able to predict observed values
 3. Predictive accuracy: model is able to predict unobserved data
 4. Theoretical considerations: desirability to correct for heteroscedasticity, censoring and to use hybrid model
- Preferred model: multiplicative hybrid model with intercept, random effects, correction for heteroscedasticity

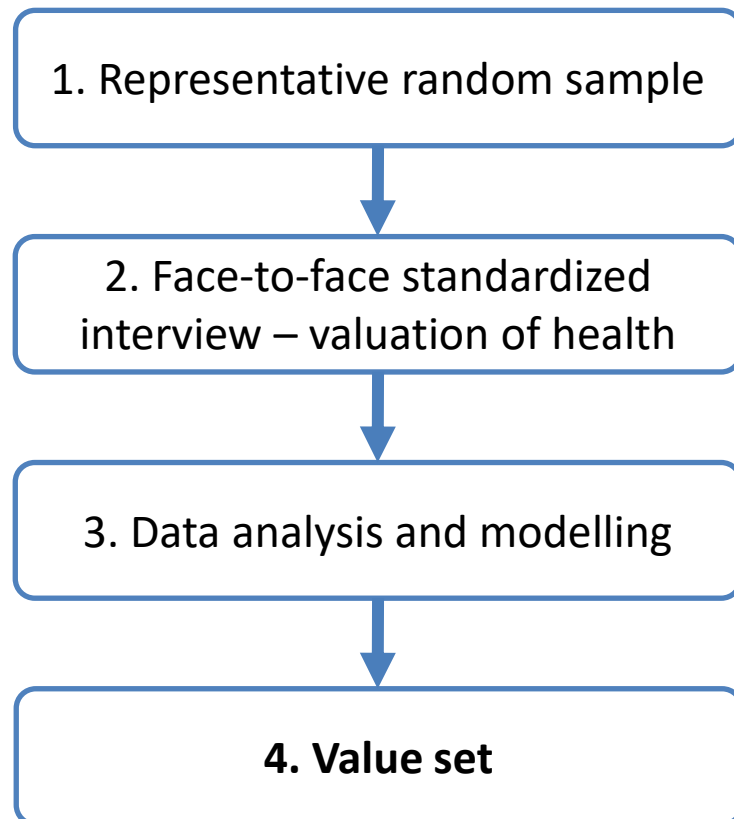
3. Method & result

Step 3. Data analysis and modelling



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3. Method & result

Step 4. Value set

- Example state **24315**
 - Disutility *Intercept*, for all health states deviating from perfect health: 0.038
 - Disutility *Mobility*, level 2: $0.227 \times 0.139 = 0.032$
 - Disutility *Self-care*, level 4: $0.166 \times 0.788 = 0.130$
 - Disutility *Usual activities*, level 3: $0.181 \times 0.258 = 0.047$
 - Disutility *Pain/discomfort*, level 1: $0.482 \times 0 = 0$
 - Disutility *Anxiety/depression*, level 5: $0.439 \times 1 = 0.439$
 - Overall disutility: 0.685
 - **Utility: $1 - 0.685 = 0.315$**

	Coefficient value	Standard error	P value
<i>Intercept</i>	0.038	0.0148	0.005
β_{MO}	0.227	0.0102	<0.0001
β_{SC}	0.166	0.0108	<0.0001
β_{UA}	0.181	0.0098	<0.0001
β_{PD}	0.482	0.0138	<0.0001
β_{AD}	0.439	0.0132	<0.0001
L_2	0.139	0.0154	<0.0001
L_3	0.258	0.0158	<0.0001
L_4	0.788	0.0157	<0.0001

3. Method & result

Step 4. Value set

- General features:
 - Highest utility loss for dimensions pain/discomfort and anxiety/depression
 - Small utility loss for level 2, in particular for dimensions mobility, self-care and usual activities

	Coefficient value	Standard error	P value
<i>Intercept</i>	0.038	0.0148	0.005
β_{MO}	0.227	0.0102	<0.0001
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L_2	0.139	0.0154	<0.0001
L_3	0.258	0.0158	<0.0001
L_4	0.788	0.0157	<0.0001

3. Method & result

Step 4. Value set

- Value set with 3 125 EQ-5D-5L states + unconscious state can [be downloaded from website](#)



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An EQ-5D-5L value set for Belgium – How to value health-related quality of life?



■ DOWNLOAD

Scientific report in English (110 p.) (5.62 MB)

Belgian EQ-5D-5L value set in digital format for statistical analysis (319 KB)

■ CONTACT

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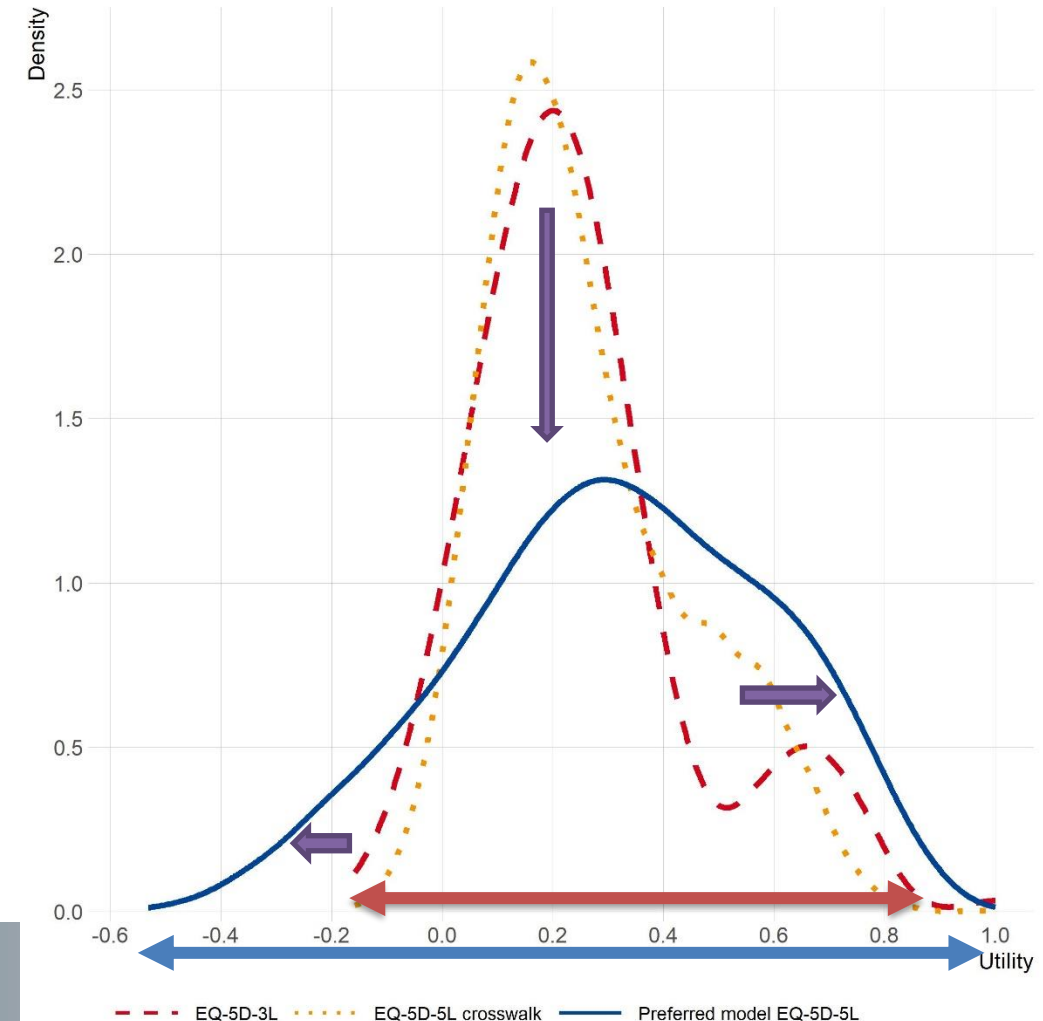
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4. Comparison 3L and 5L value set

- We recommend to use the 5L version
 - 5L version more precise with more health states
 - Valuation techniques and quality control have improved
 - Update from 2003 was needed
 - Based on Belgian population
- Comparison of value set shows:
 - Peak of utility values similar
 - 5L covers wider range of utility values
=> better discrimination between patients
range 3L: -0.158 to 0.817 // 5L: -0.532 to 0.939
 - 5L has higher valuation of mild health states
 - 5L has higher fraction of states worse than dead
3L: 6.6% // 5L: 15.0%



4. Recommendations

1. In accordance with the Belgian guidelines for health economic evaluations, we recommend the use of the EQ-5D-5L and new value set to quantify impact of health interventions on HRQoL
2. Recalculate population norms (or reference values) that allow to identify unmet health needs in the population and gain insight in HRQoL (differences) of the population
3. Use the EQ-5D-5L as generic patient-reported outcome measure (PROM) in clinical settings.

