205 in-person

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Personalized Values for Health: Introducing OPUF

Online elicitation of Personal Utility Functions

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ISPOR Workshop, Vienna, 8th November 2022

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Personalized Values for Health: Introducing OPUF

Introduction

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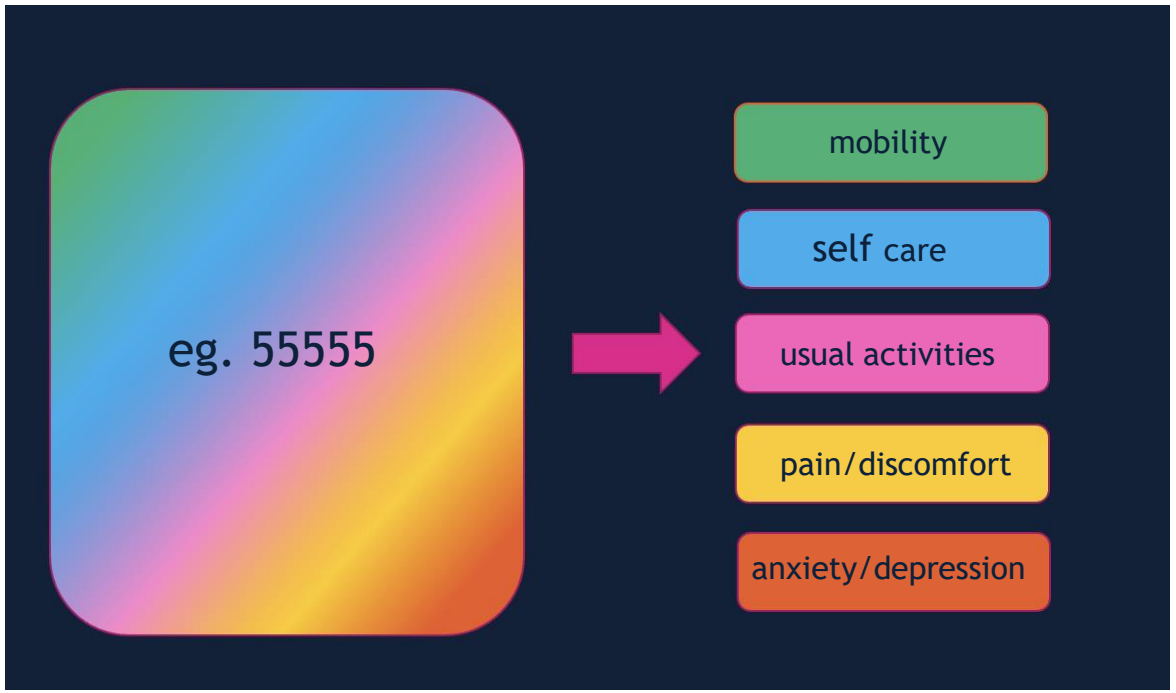
Preferences Are Personal

- QALYs are estimated by applying preference weights to patients' self reported HRQoL data
- Preferences weights are based on the average preferences of the general public
- These average preferences (value sets) for HRQoL instruments tell us little about the variation in preferences of sub-groups of people, or between individuals
- There is growing recognition that patients' preferences matter
- We need methods that are capable of providing preference information required for estimating QALYs, but also allow us to better understand and reflect the preferences of (individual) patients
- Existing methods are not well equipped to do that

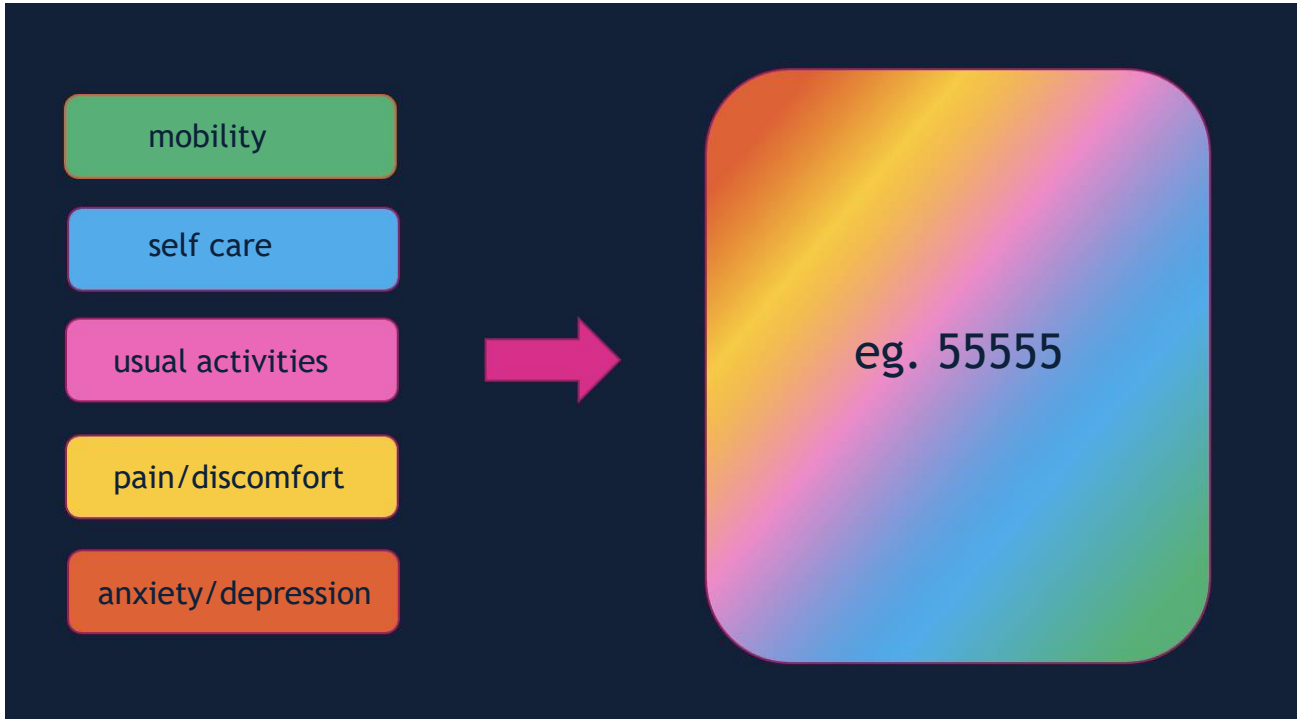
Limitations of Existing Methods



- Standard methods for valuing HRQoL (TTO, SG, DCE, BWS) are **decompositional**
- Respondents are asked to evaluate a series of **states,** described in terms of combinations of attributes/levels
- Responses are then decomposed to establish how important, on average, the attributes/levels are
- **Inefficient:** large samples required in order to estimate a social value set
- Generating value sets for small subgroups often not feasible
- Not possible to produce personalised utility functions

Compositional Methods Have Advantages

- Seek preferences for the attributes/levels
- That preference information can be used to ‘compose’ preferences for any given state defined by those attributes/levels
- Much more efficient
- Can be produced with smaller samples
- Values can be aggregated across individuals, without the need for complicated statistical models
- Allows the estimation of value sets at the individual-level
- Can handle more attributes/levels than conventional (decompositional) methods



Personal Utility Functions

- We developed an alternative approach – Personal Utility Functions - that uses these more efficient, **compositional** elicitation methods
- Draws on methods from multi-criteria decision analysis (MCDA) e.g., 'swing weighting'
- Value sets can be produced with much smaller samples

The European Journal of Health Economics (2019) 20:257–270
https://doi.org/10.1007/s10198-018-0993-z

ORIGINAL PAPER

A new method for valuing health: directly eliciting personal utility functions

Nancy J. Devlin[1,2] · Koonal K. Shah[1,2] · Brendan J. Mulhern[3] · Krystallia Pantiri[4] · Ben van Hout[2,5]

Received: 15 January 2018 / Accepted: 9 July 2018 / Published online: 20 July 2018

Abstract

Background Standard methods for eliciting the preference data upon which 'value sets' are based generally have in common an aim to 'uncover' people's preferences by asking them to evaluate a subset of health states, then using their responses to infer their preferences over all dimensions and levels. An alternative approach is to ask people directly about the relative importance to them of the dimensions, levels and interactions between them. This paper describes a new stated preference approach for directly eliciting personal utility functions (PUFs), and reports a pilot study to test its feasibility for valuing the EQ-5D.

The methods can produce:

- Powerful insights into sub-group preferences
- Value sets at the individual level

Online Personal Utility Function (OPUF)

- Now developed as an online resource – **OPUF**
- Qualitative interviews & pre-pilots conducted to get feedback on the different tasks
  After each round, OPUF refined and re-evaluated

OPUF can be used to value any measure of HRQOL:

- adult HRQoL: EQ-5D-5L) – Schneider et al (2022)
- child HRQoL: EQ-5D-Y-3L (Office of Health Economics) & CHU9D (Australia)
- EQ-HWB-S (proposed study, UK & Germany)
- Existing or new generic & condition specific measures

Novel applications: Its simplicity means individual patient preferences can be obtained, alongside self-reported health, to support shared decision making in clinical settings

About This Workshop…

Ben van Hout, University of Sheffield: **OPUF and preference heterogeneity**

Paul Schneider, University of Sheffield: **LIVE DEMO using OPUF to elicit and report back workshop participants' preferences**

Marieke Heisen, Open Health: **What applications can OPUF be used for?**

Q & A: **Audience questions and comments are welcome**

Personalized Values for Health: Introducing OPUF

OPUF and Preference Heterogeneity

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Some History

At the university of Sheffield

- Multi criteria analysis
- Swing weighting
- Y=X'ß

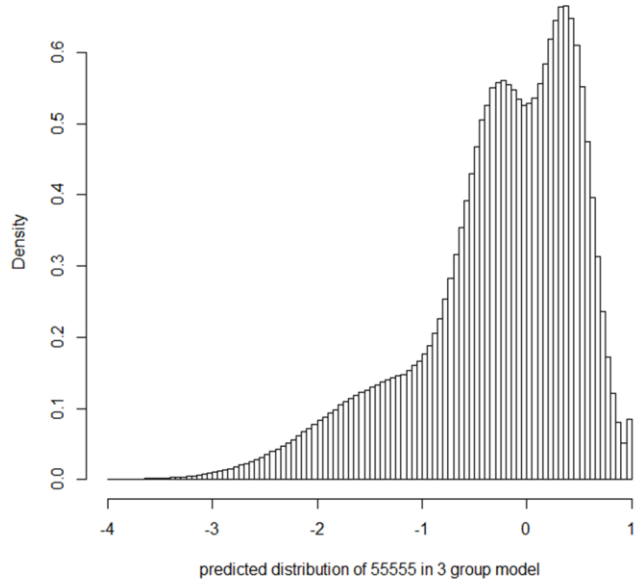
At a random EuroQol meeting

- In a random corridor
- Y=X'ß
- Swing weighting?

Some More History

The key aim of the project is to produce an EQ-5D-5L value set for England, whilst addressing the following questions:

- What is the best method to generate an EQ-5D-5L value set which reflects the stated preferences of the general public?
- Should average preferences be based on means or medians?
- How can conceptually different types of preference data – TTO and DCE – be combined in modelling health state values?
- How are extreme negative opinions about health states best handled?
- How do people differ in their stated preferences for quality of life and life and death?



Heterogeneity between subjects, Paul's PhD

Heart transplantation, only one donor heart available

Person 1

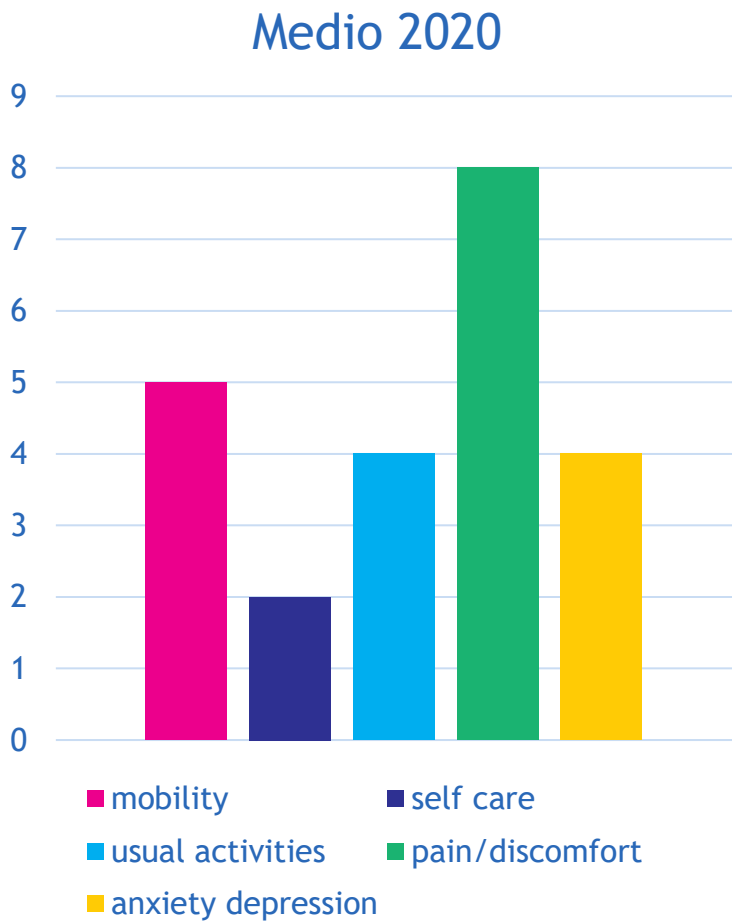
- Values 55555 at -0.2
- Potential gain in QALY's when going from 55555 to 11111 = 1.2

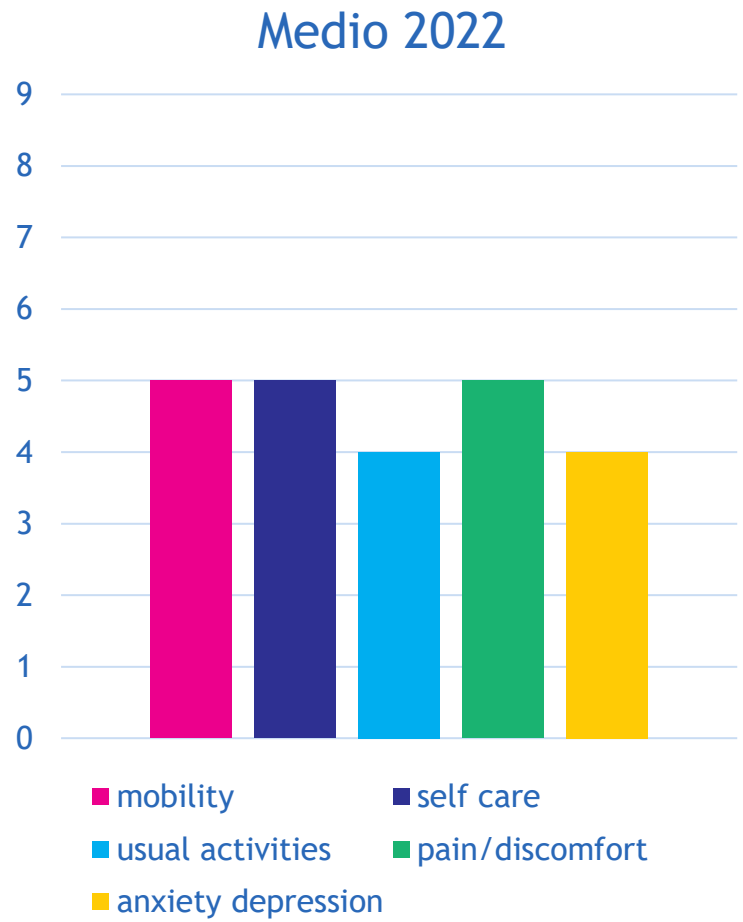
Person 2

- Values 55555 at 0.0
- Potential gain in QALY's when going from 55555 to 11111 = 1

This is silly

Heterogeneity in time. Some personal experience





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OPUF Live Demo

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https://bitowaqr.github.io

@waq0r

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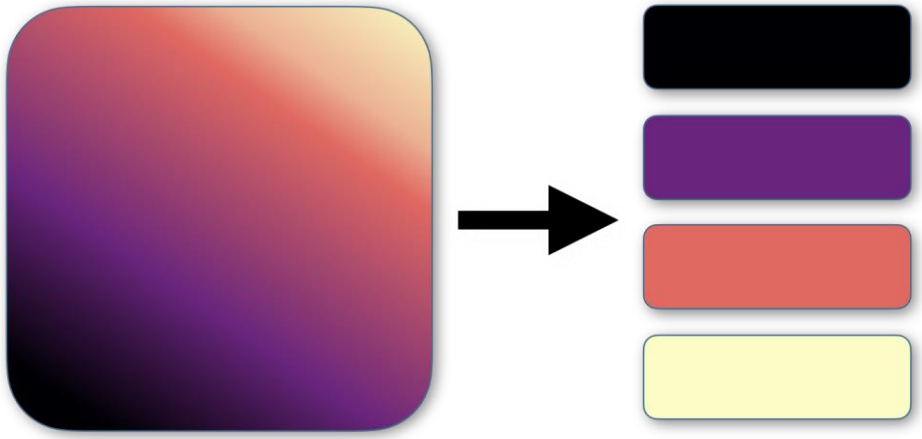
The Two Paradigms in Preference Elicitation

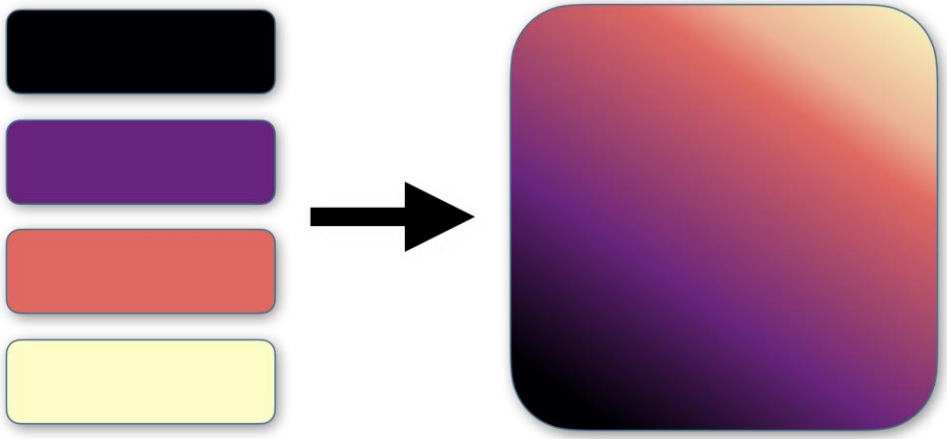
Decompositional

(DCE, BWS, TTO, SG, ...)

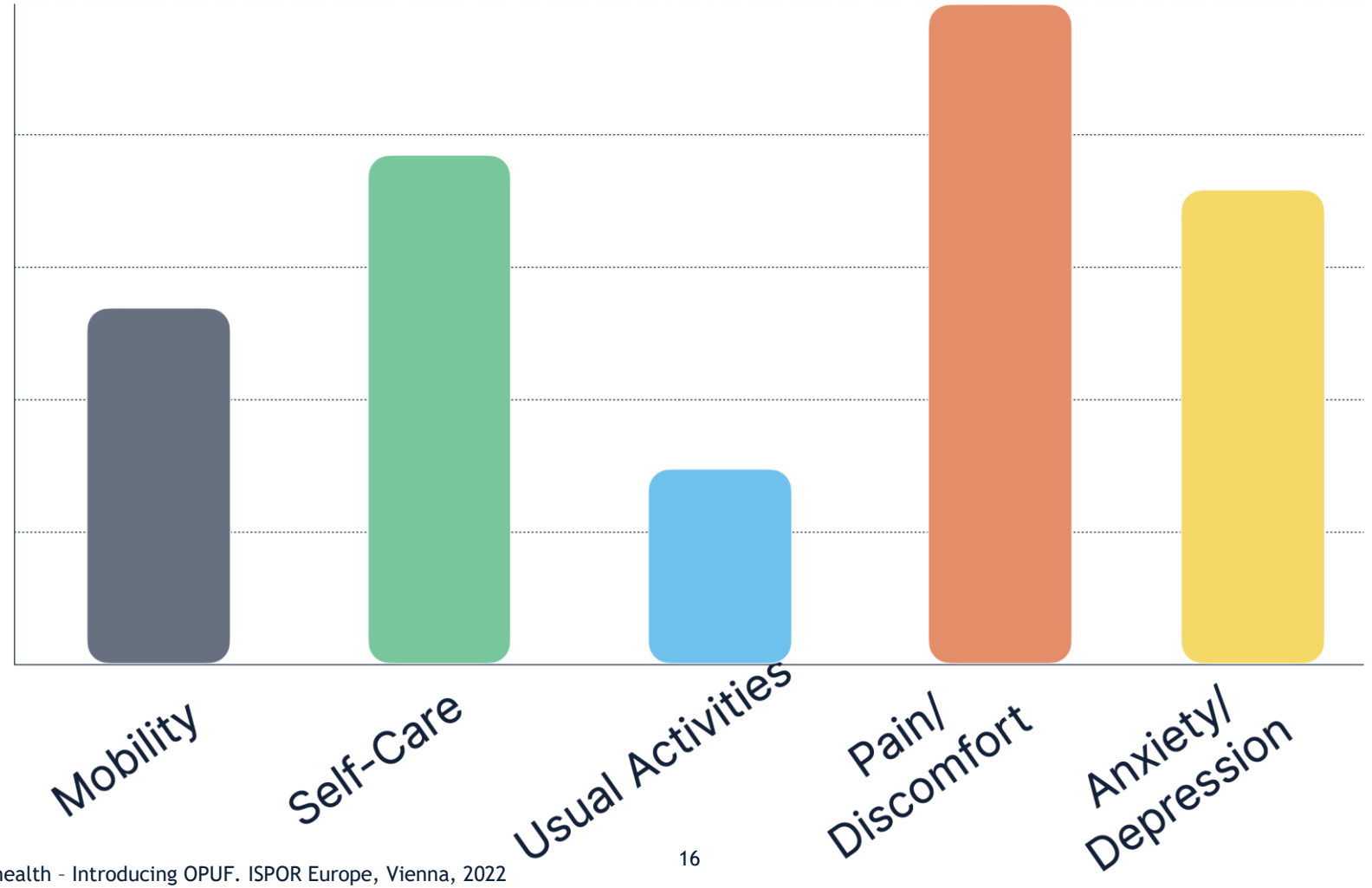


Compositional

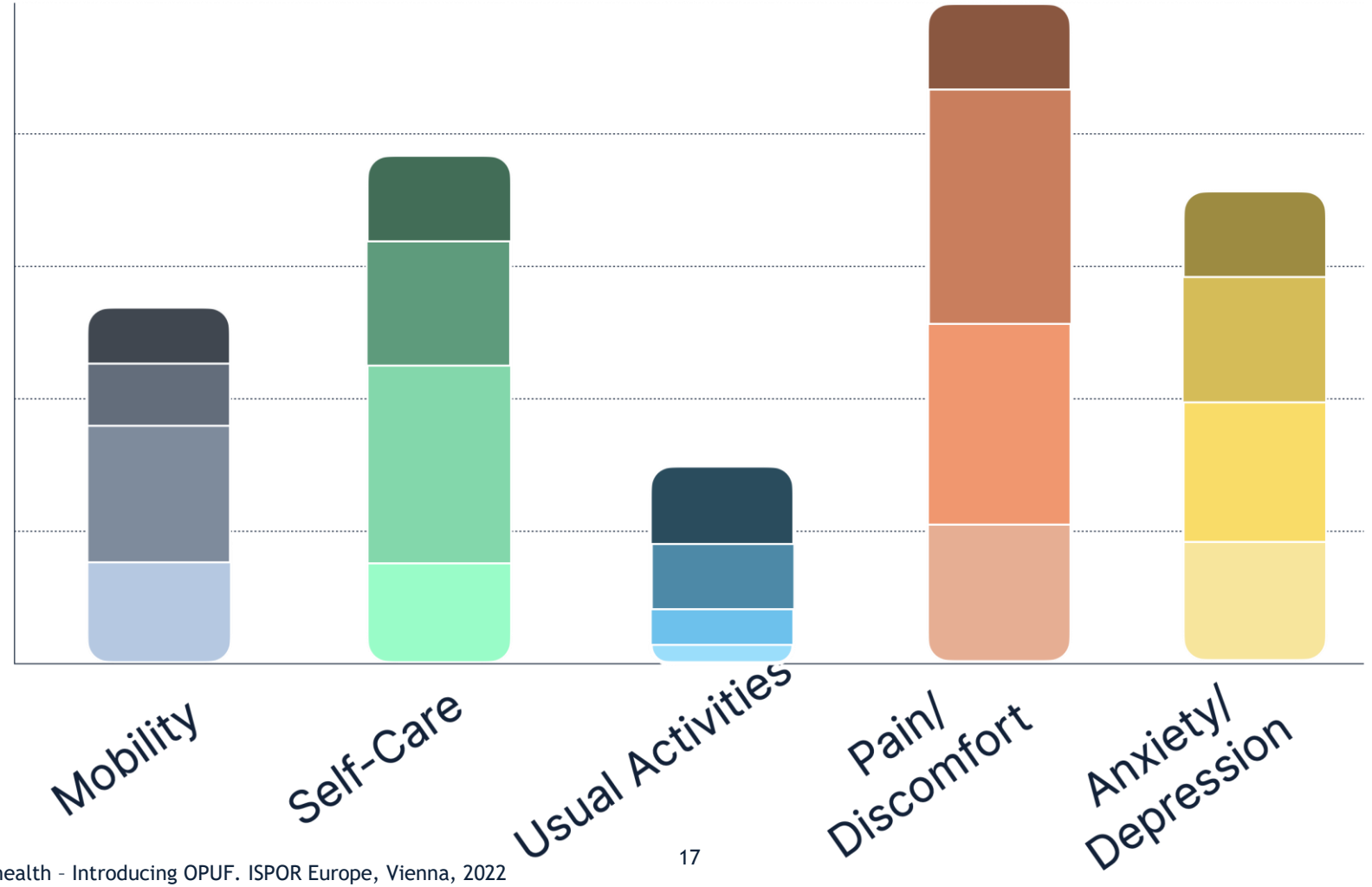
(MCDA, OPUF)



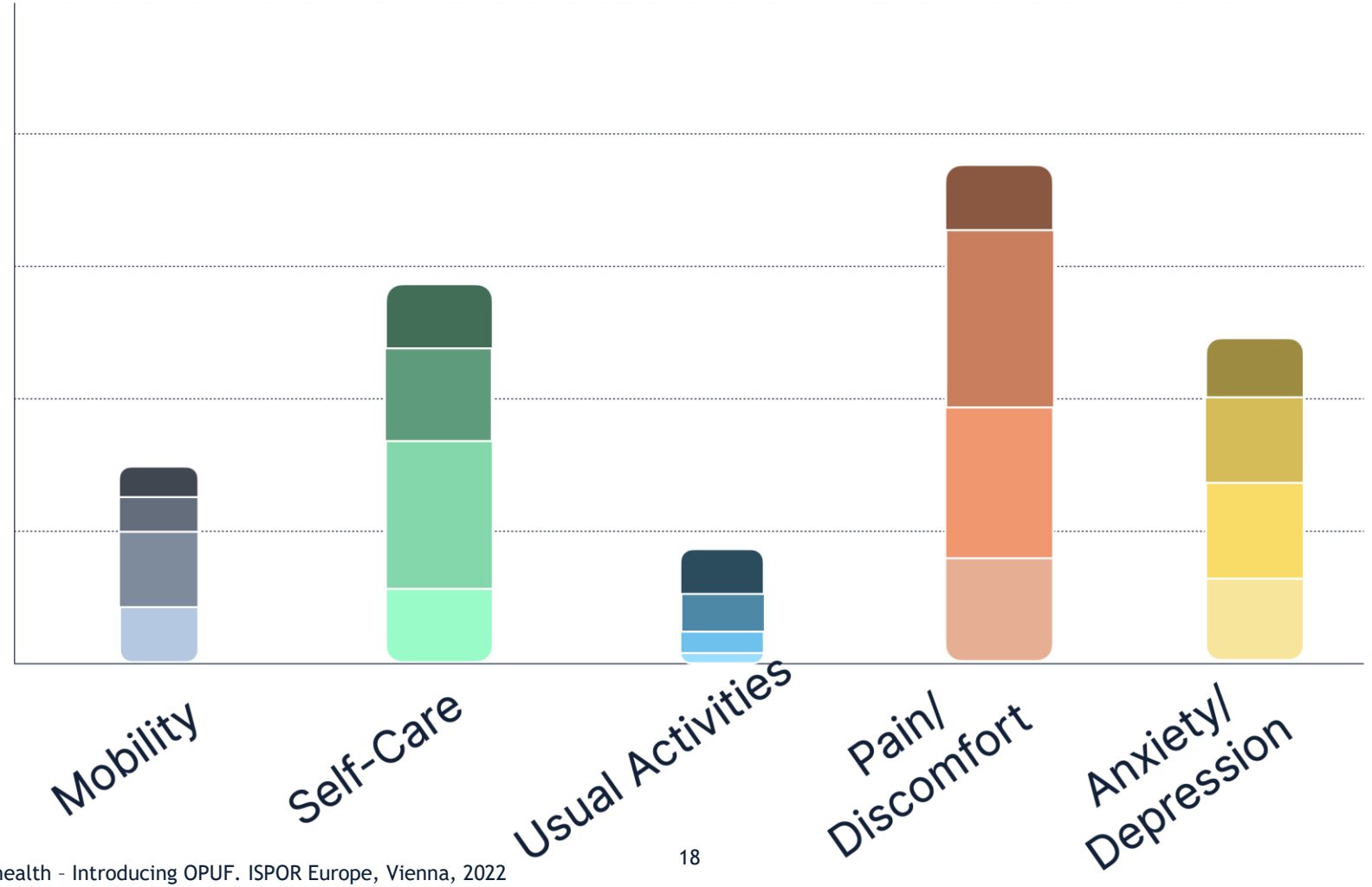
1 Criteria Weighting



2 Level Rating



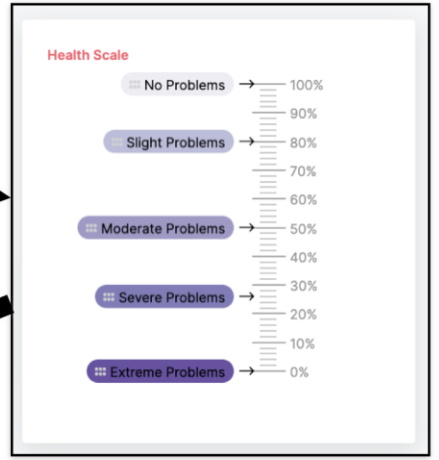
3 Anchoring


Mobility
Self-Care
Usual Activities
Pain/
Discomfort
Anxiety/
Depression

Constructing Preference Functions

1 Criteria Weighting

2 Level Rating



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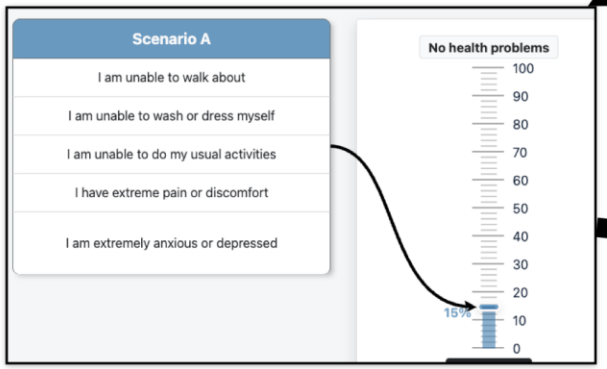
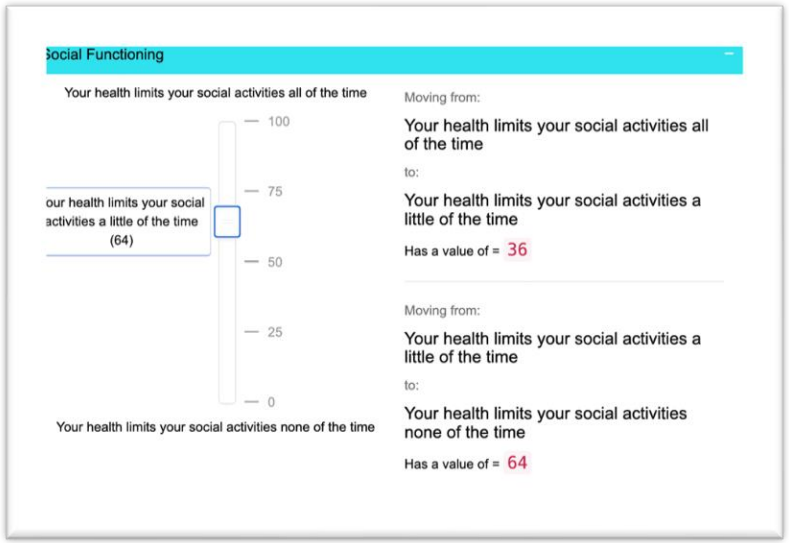
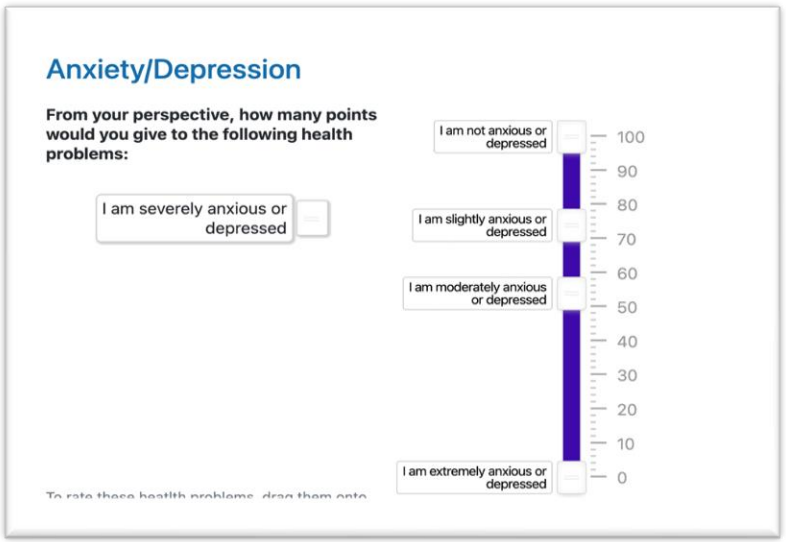


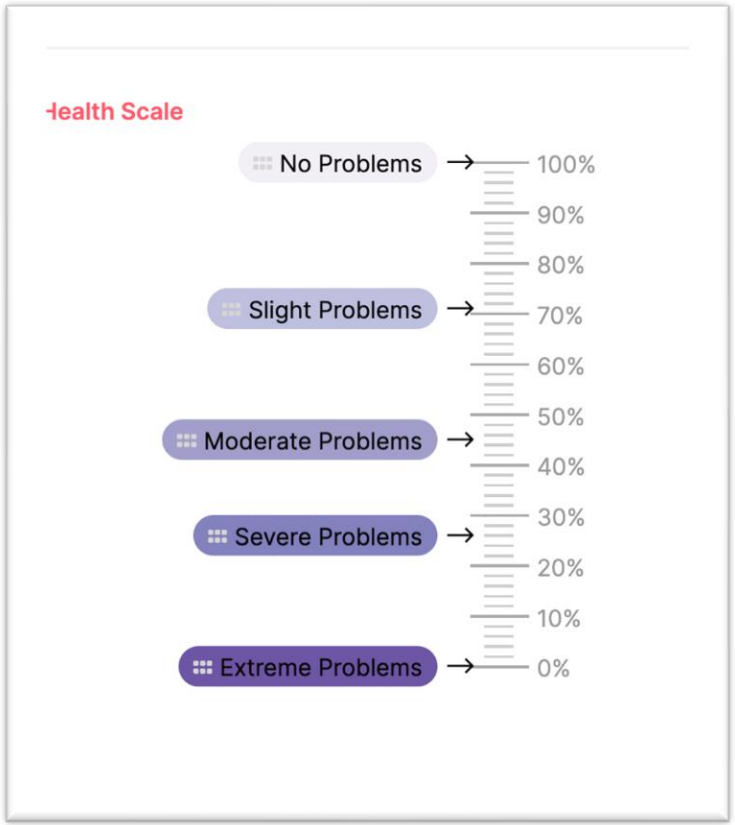
Preference model

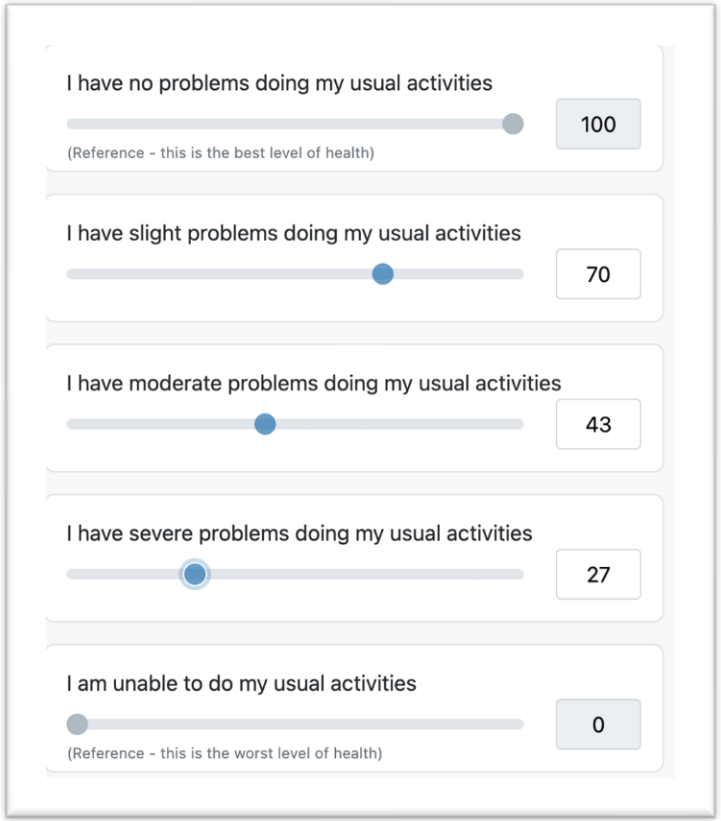
Mobility	
Lvl 2	0.055
Lvl 3	0.123
Lvl 4	0.213
Lvl 5	0.283
Self-Care	
Lvl 2	0.055
Lvl 3	0.124
Lvl 4	0.213
Lvl 5	0.282
Usual Activ	
Lvl 2	0.048
Lvl 3	0.108
Lvl 4	0.186
Lvl 5	0.248
Pain/Discom	
Lvl 2	0.060
Lvl 3	0.136
Lvl 4	0.234
Lvl 5	0.309
Anxiety/Dep	
Lvl 2	0.049
Lvl 3	0.111
Lvl 4	0.192
Lvl 5	0.254

Constructing Preference Functions









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https://valorem.health/ispor

Personalized Values for Health: Introducing OPUF

What Applications Can OPUF Be Used For?

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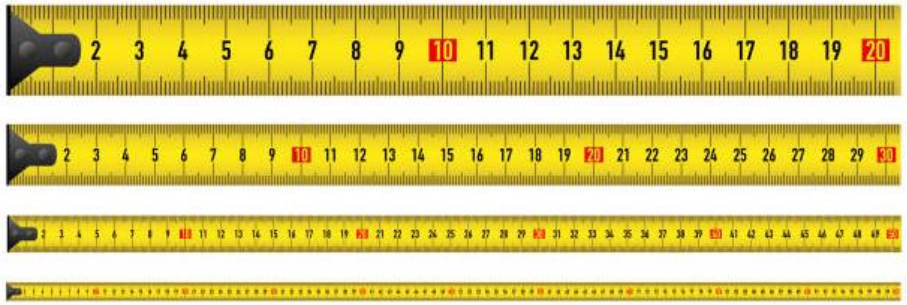
Valuating Patient-Reported Outcome Measures

- Many PROMs – generic or disease-specific – do not have a value function
  - OPUF can be used to make these PROMs ‘preference-accompanied’, i.e., having a value set
  - Need for a common measure stick across descriptive systems



- Though there are methods to derive the MCID, true meaningfulness might be lacking without a valuation
  - Frequently used methods are based on statistical considerations
  - Underpinning of these statistical methods under debate
  - A “3-point improvement” may bring more value in one dimension than in another
  - In which dimension a 3-point improvement brings most value may differ from person to person

Valuating Patient-Reported Outcome Measures

- OPUF is not a tool to build new measures, though the notion of ‘composing a value function’ would lead to more orthogonality and less item correlation while designing a measure
  - OPUF could be used to investigate inter-domain dependencies and item redundancy
  - As respondents ‘build’ their own value function, you can ask them to reflect on their own value function and comment on dependencies or redundancy
  - For instance, it can support selecting items from the PROMIS item bank

- OPUF is capable of handling a large number of dimensions
  - Dimensions do not have to be of the same type (e.g., continuous, categorical, ordinal) nor need to have the same number of levels

Take a Disease-Specific Measure

- Typical example of what we meet in our research
- 10 dimensions and a summary score –
  an arbitrary addition of points

Can we conclude a patient would not want to take this treatment, given no change from baseline?

Δ score	
	Physical health
	Feelings
	View of Self
-3	Sports and Leisure
	Work and School
	Dealing
	Treatment
+3	Future
	Family
	Sexuality
0	Total

After Haemo-QoL©

Take a Disease-Specific Measure

- Typical example of what we meet in our research
- 10 dimensions and a summary score – an arbitrary addition of points

Can we conclude a patient would not want to take this treatment, given no change from baseline?

Well, maybe the patient does want to take it?

Δ value	Δ score	
		Physical health
		Feelings
		View of Self
-0.1	-3	Sports and Leisure
		Work and School
		Dealing
		Treatment
+0.25	+3	Future
		Family
		Sexuality
+0.15	0	Total

After Haemo-QoL©

Novel Applications

- Turn to OPUF when...
  - Rare disease (small sample size)
  - Specific interest in heterogeneity
  - Specific interest in (individual) valuation over time
  - Informing shared decision making
  - Need to anchor to death and perfect health

- The dimensions do not per se have to constitute health states, they can also constitute treatment or intervention profiles

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Q & A




We welcome you to join us here:
Personalized Values for Health Discussion Group (252)
Nov 8, 5:45 - 6:30 PM, Discussion Lounge, Hall X1

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