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Re-estimating an EQ-5D-5L value set for China

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Background

- EQ-5D is the most widely used instrument for measuring health-related quality of life (HRQoL) and generating QALYs in economic evaluations.
- The first EQ-5D-5L value set for China (2012) was based on an urban-only sample and raised concerns about sampling bias, quality control, and interviewer effects.
- Since then, EQ-VT protocols have improved, and new evidence suggests the need for a more representative value set.
- A robust, nationally representative EQ-5D-5L value set is critical to support health technology assessment (HTA) and reimbursement decisions in China.

Study Aim

- To derive a new, nationally representative EQ-5D-5L value set for China by collecting cTTO and DCE data using the EQ-VT v2.0 protocol with rigorous quality control, and to compare the results with the previously published 2018 value set.

Methods

- **Sample**: 1,206 respondents recruited from 12 provinces, with quotas for sex, age, education, and rural/urban residence.
- **Design**: Composite TTO (cTTO): 10 health states per respondent Discrete Choice Experiment (DCE): 12 pairs per respondent.
- **Protocol**: EQ-VT v2.0 with standardized quality control procedures.
- **Analysis**: Evaluated 48 model specifications, including the traditional additive model specifications and cross-attribute level effects (CALE) model, which include 20 parameters and 8 parameters respectively.
- **Model selection**: Selected final model based on logical consistency, prediction accuracy (RMSE, MAE), and parsimony.

Table 1. Best performed 20-parameter model and 8-parameter models

		8-parameter model		20-parameter model	
		Estimate	Std. Error	Estimate	Std. Error
	Intercept	0.064	0.010		
	L2	0.110	0.007		
	L3	0.346	0.007		
	L4	0.704	0.007		
	MO	0.299	0.007		
	SC	0.241	0.006		
	UA	0.279	0.006		
	PD	0.447	0.008		
CALE	AD	0.289	0.008		
	Intercept	0.064		0.066	0.010
	MO2	0.033		0.028	0.005
	MO3	0.104		0.094	0.005
	MO4	0.211		0.203	0.006
	MO5	0.299		0.295	0.007
	SC2	0.026		0.037	0.005
	SC3	0.084		0.097	0.005
	SC4	0.170		0.173	0.006
	SC5	0.241		0.249	0.007
	UA2	0.031		0.023	0.005
	UA3	0.096		0.087	0.005
	UA4	0.196		0.191	0.006
	UA5	0.279		0.276	0.007
	PD2	0.049		0.051	0.005
	PD3	0.155		0.160	0.006
	PD4	0.315		0.327	0.008
	PD5	0.447		0.442	0.009
	AD2	0.032		0.029	0.005
	AD3	0.100		0.099	0.006
	AD4	0.203		0.193	0.007
Additive	AD5	0.289		0.292	0.008

- Both models are hybrid models including both DCE and cTTO data in the modelling.
- We computed the corresponding coefficients of the CALE (Cross-Attribute Level Effects) model following the traditional 20-parameter additive model specification.

Results

- Data quality was high, with strong compliance to the EQ-VT v2.0 protocol and minimal interviewer effects. About 23% of cTTO values were negative, suggesting respondents could clearly distinguish very poor health states.
- Across 48 model specifications tested, the hybrid Cross-Attribute Level Effects (CALE) model demonstrated the best overall performance, with logical consistency and superior prediction accuracy (RMSE = 0.043, MAE = 0.034). A hybrid main-effects model also performed well but with slightly lower accuracy.
- The CALE model ranked pain/discomfort and anxiety/depression as the most important dimensions, followed by mobility, usual activities, and self-care. This ordering contrasts with the earlier 2012 value set, where mobility had a larger impact.
- The estimated value for the worst health state (55555) was −0.661, compared to −0.391 in the 2012 set, indicating that the new tariff provides a wider value range and greater sensitivity to severe health states.
- These differences are likely attributable to the inclusion of rural respondents, rigorous quality control reducing interviewer bias, pandemic-related shifts in health perceptions, and broader socioeconomic changes in China.
- Table 1 presents the coefficient estimates for the two best-performing models, while Figure 1 compares all health state values of this value set and the 2012 value set.

Figure 1. Comparison of the 3125 health state values

Conclusions

- A new EQ-5D-5L value set for China was successfully derived.
- The tariff reflects current Chinese health preferences more accurately than the 2012 version.
- It provides a stronger foundation for HTA and QALY estimation in China.
- This updated value set will support evidence-based reimbursement and policy decisions.

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