

Annushiah Vasan Thakumar^{1*}, Vu Quynh Mai², Rachel Lee Yin Tan¹, Zhihao Yang³, Fredrick Purba⁴, Asrul Akmal Shafie⁵, Hsiang-Wen Lin⁶, Hoang Van Minh², Juan Ramos Goñi⁷, Nan Luo¹

¹Saw Swee Hock School of Public Health, National University of Singapore, Singapore, Singapore

²Center for Population Health Sciences, Hanoi University of Public Health, Hanoi, Vietnam

³Department of Health Services Management, Guizhou Medical University, Guiyang, China

⁴Faculty of Psychology, Universitas Padjadjaran, Jatinangor, Indonesia

⁵Discipline of Social and Administrative Pharmacy, Universiti Sains Malaysia, Penang, Malaysia

⁶School of Pharmacy and Graduate Institute, College of Pharmacy, China Medical University, Taichung, Taiwan

⁷Maths in Health B.V., Rotterdam, Netherlands

*avt@nus.edu.sg

INTRODUCTION

- The EQ-5D-Y-3L is the child version of the EQ-5D, that is aimed towards self-reported health in children and youths aged 8 to 15.
- It measures health on five dimensions (mobility, looking after myself, doing usual activities, having pain or discomfort, and feeling worried, sad or unhappy) with three severity levels each.
- The increasing development of EQ-5D-Y-3L value sets is set to inform youth-related healthcare decisions worldwide.
- The EQ-5D-Y-3L value set is estimated using preference of the general public, representing a societal perspective.
- However, it is not entirely clear how the general public's preferences for EQ-5D-Y-3L health states vary across countries.
- Recently, an EQ-5D-Y-3L valuation study involving four Asian jurisdictions, namely, Singapore, Malaysia, Taiwan, and Vietnam, was completed.
- Thus, the study aimed to compare composite time trade-off-based (cTTO) EQ-5D-Y-3L value sets across the four Asian jurisdictions.

METHODS

- In each jurisdiction, around 200 general public members were quota sampled to ensure national-representativeness and only cTTO data was used in this study.
- The international EQ-5D-Y-3L valuation protocol was used, but with minor changes involving the cTTO design.
- Singapore and Vietnam employed a larger 55-state design, with each respondent randomized to one of four blocks each containing 15 cTTO questions; while Malaysia and Taiwan used a smaller 28-state design, with each respondent answering one of three blocks each containing 10 questions.
- Competent interviewers administered the tasks with the quality of interviews monitored closely and consistently
- During data analysis, respondents were excluded if they valued all health states with the same values (except those valued all health states as 1 (non-traders)) or if their values increased with health state severity.
- The cTTO data was modelled using a 6-parameter censored random effects cross-attribute level effects (CALE) model and the model performance was evaluated in terms of the out-of-sample predictive accuracy.
- The value sets for the four jurisdictions were cross compared in terms of value characteristics.

RESULTS

- The censored random effects CALE model fitted all four datasets relatively well, exhibited good model performance, displayed coefficient monotonicity, and so was used for the cross-comparison analysis.
- The out-of-sample predictive accuracy for the models ranged between 0.009 and 0.051 on the mean square error, and between 0.826 and 0.976 on Pearson's R.

- Vietnam and Taiwan had the highest (-0.295) and lowest (-0.614) model-predicted '33333' value, with the least (5.76%) and most (19.75%) negative values, respectively (Table 1).
- The values and percentages for Malaysia and Singapore were -0.334 (7.41%) and -0.435 (11.11%), respectively (Table 1).
- None of the countries exhibited the same importance on the five dimensions (Table 1).
- The level 2 weights from highest to lowest were Singapore (0.329), Taiwan (0.297), Malaysia (0.273), and Vietnam (0.240), respectively (Figure 1).
- As such, the distribution of values between the four jurisdictions also differed (Figure 2).

Table 1 Characteristics of respondents, observed and modelled cTTO values of the four jurisdictions

	Malaysia	Singapore	Taiwan	Vietnam
Background characteristics				
No of respondents	207	200	200	203
Mean age (SD)	40.41 (16.81)	46.81 (15.70)	46.20 (16.36)	43.62 (15.83)
Females (%)	50.24	48.00	51.50	51.23
Had illness in self (%)	37.68	4.80	52.50	47.78
Had illness in family (%)	56.04	50.50	63.50	47.78
Cared for others (%)	29.47	22.00	23.00	21.18
Self-reported problems (%)				
Mobility (MO)	8.70	5.00	1.00	13.30
Looking after myself (SC)	2.90	2.50	6.50	2.96
Doing usual activities (UA)	10.63	6.00	7.50	3.45
Having pain or discomfort (PD)	21.74	19.50	5.00	37.93
Feeling worried, sad or unhappy (AD)	27.05	26.00	21.00	29.56
Mean EQ-VAS (SD)	82.95 (13.35)	80.91 (14.41)	87.45 (9.48)	81.03(15.04)
Observed cTTO values				
Mean value (SD)	0.332 (0.584)	0.331 (0.626)	0.176 (0.692)	0.417 (0.549)
Mean 33333 value	-0.321	-0.346	-0.478	-0.32
Participants with WTD values (%)	66.67	58.00	75.00	68.97
End of scale (-1) values (%)	3.00	9.37	14.55	2.69
End of scale (1) values (%)	5.75	9.10	2.35	3.45
WTD values (%)	22.32	20.30	32.85	20.76
Modelled cTTO values				
Second highest value	0.939 (SC)	0.933 (UA)	0.938 (MO)	0.939 (AD)
Mean value (SD)	0.409 (0.266)	0.364 (0.283)	0.285 (0.317)	0.426 (0.262)
Mean 33333 value	-0.334	-0.435	-0.614	-0.295
WTD values (%)	18 (7.41)	27 (11.11)	48 (19.75)	14 (5.76)
Dimensional importance				
	PD-MO-AD-UA-SC	PD-AD-MO-SC-UA	AD-PD-UA-SC-MO	PD-MO-SC-UA-AD

Note: AD: Feeling worried, sad or unhappy; L2: level 2 parameter; MO: Mobility; PD: Having pain or discomfort; SC: Looking after myself; UA: Doing usual activities; WTD: worse than dead

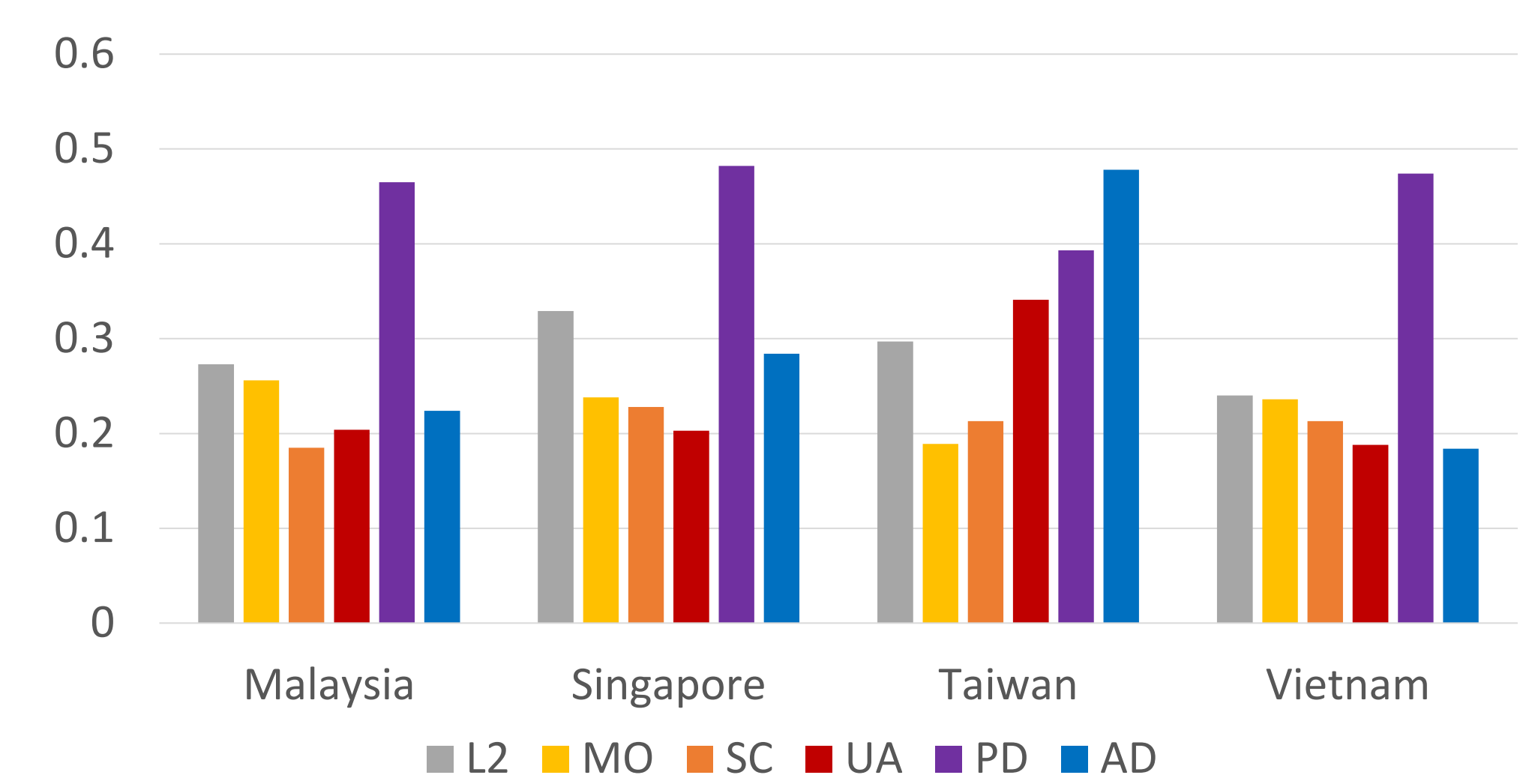


Figure 1 Modelled parameter values for the four jurisdictions

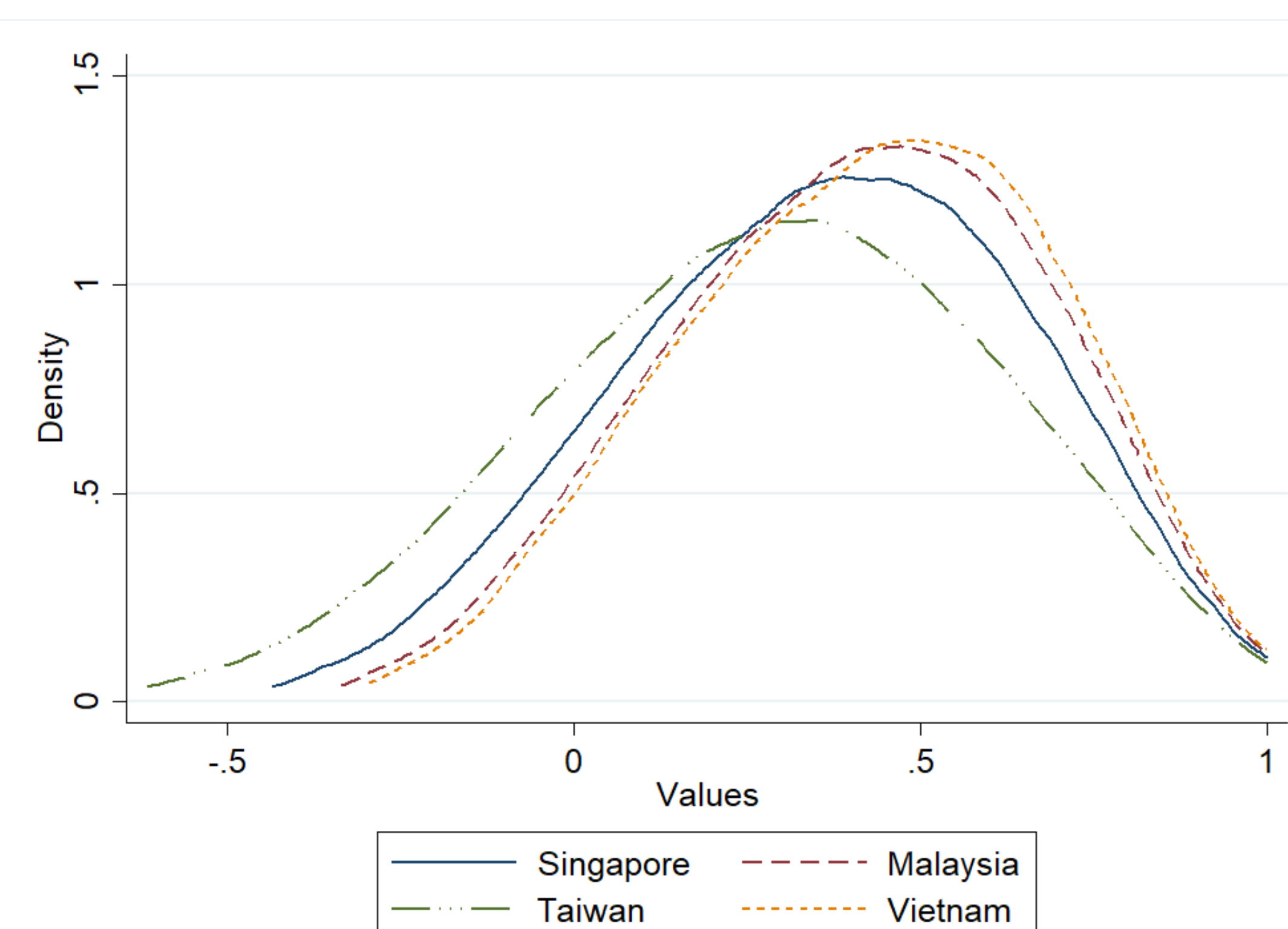


Figure 2 Kernel density distribution of 243 health state values

CONCLUSIONS

- In general, the preference to sacrifice life years to avoid children from living in poor health states differed across the studied jurisdictions.
- Although these are all valuation studies conducted in Asia using the same protocol, both the relative importance and the scale of the five EQ-5D-Y-3L health dimensions differed vastly.
- This observation resonated with previous Asian population studies involving preferences towards adult EQ-5D-5L health states, stressing the need for population-specific value sets.