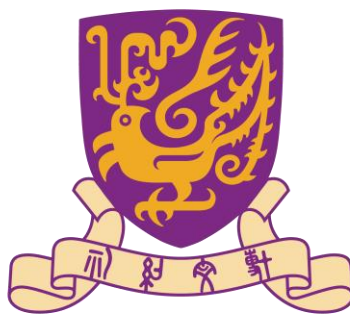# A Preliminary Comparison between Analytical Hierarchy Process and Discrete Choice Experiment in Health State Preferences in Hong Kong SAR, China

Clement CW NG, Annie WL CHEUNG, Eliza LY WONG*

EuroQol-5D (EQ-5D) is a popular instrument to illustrate users' health-related quality of life (HRQoL). The current valuation protocol, EQ-VT, consists of Discrete Choice Experiment (DCE) and Time Trade-off (TTO) tasks. However, some respondents often found the DCE tasks unrealistic and difficult to compare with the hypothetical health states.

As an alternative to the conventional 'decomposition' approach, *an innovative 'additional' approach Analytical Hierarchy Process (AHP)* may allow the respondents to compute both individual and group preferences by rating the EQ-5D dimensions and levels directly.
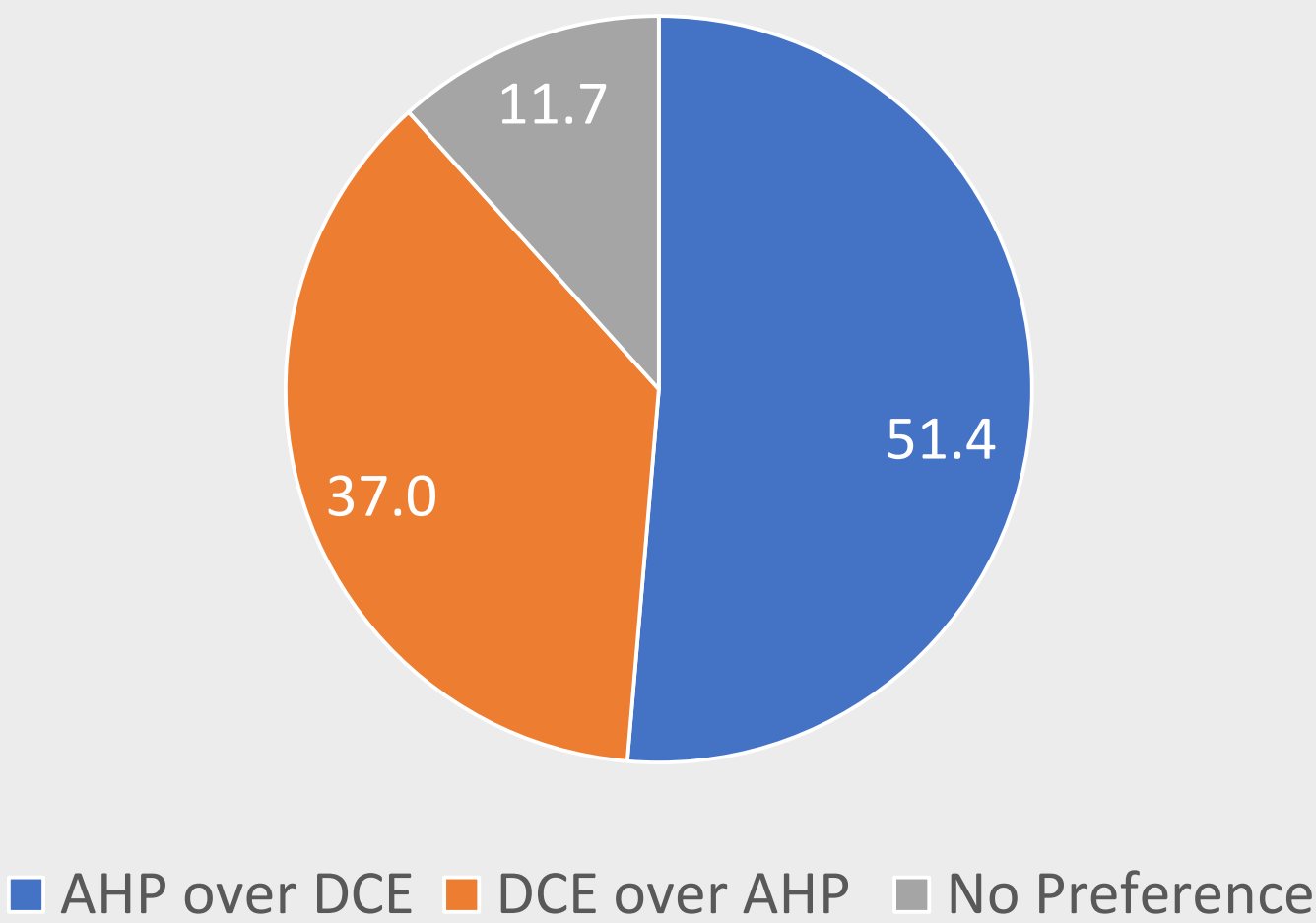
Method

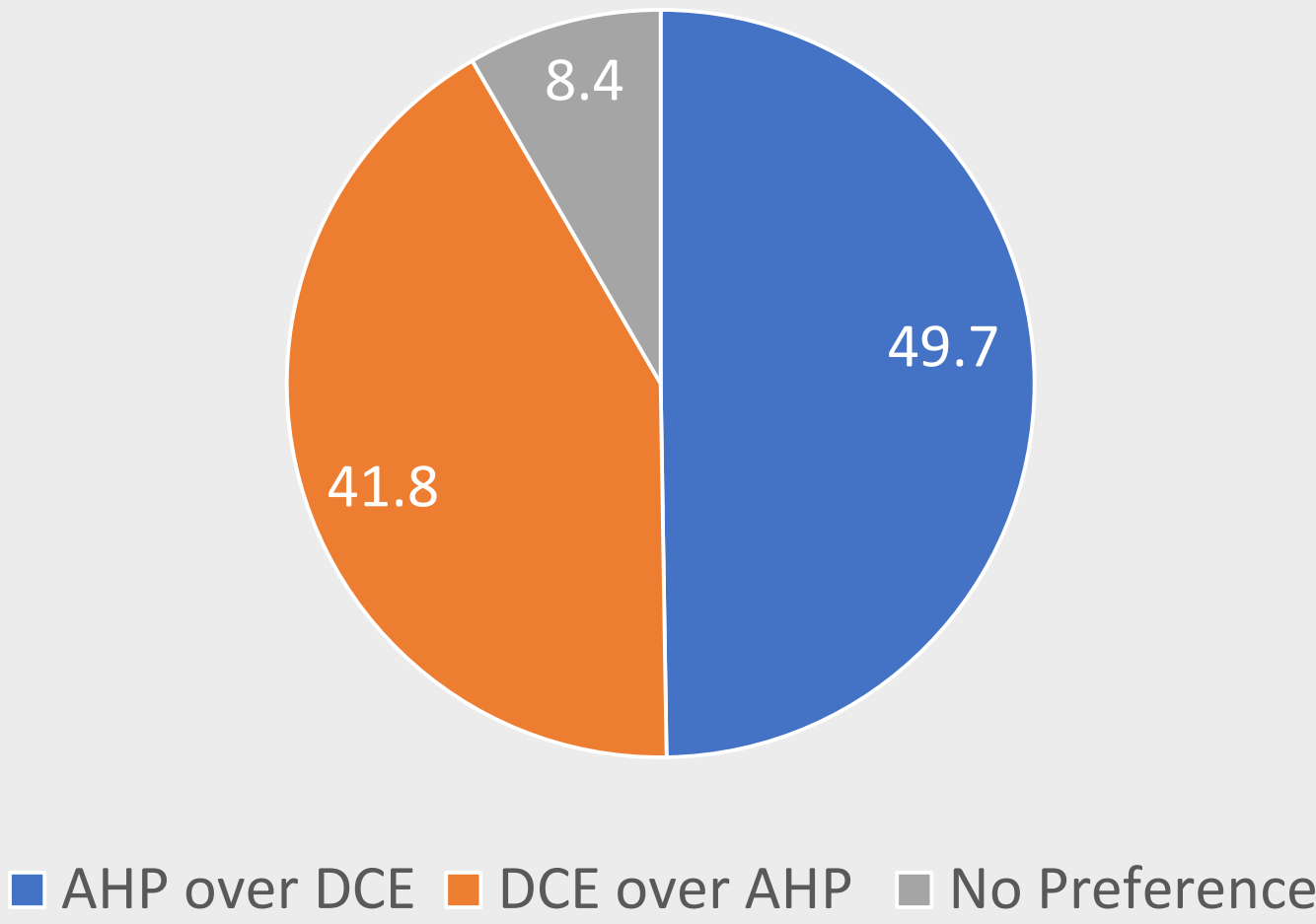| Design	Online/ Face-to-face Cross-sectional Survey
Time	July 2022- March 2023
Sample Size	*n*=368 (73.0% of the Study Target n=504)
Sampling	Quota Sampling based on Sex and Age Group Mix of Hong Kong Community Aged 18 or Above With Chinese or Cantonese Literacy

Objective

The project targeted to conduct a head-on comparison between DCE and AHP in EQ-5D-5L health state preference elicitation in Hong Kong SAR, China.

Results & Findings

Ease of Understanding the Trade-off Tasks — AHP over DCE 51.4, DCE over AHP 37.0, No Preference 11.7

Preference on HRQoL Elicitation Methods — AHP over DCE 49.7, DCE over AHP 41.8, No Preference 8.4

Dimensions Ranking	Direct Ranking		AHP	
	Total Rank Votes	Rank	Weighting	Rank
Mobility	931	2	0.226	2
Self- care	856	1	0.285	1
Usual Activities	1015	3	0.187	3
Pain/ Discomfort	1236	4	0.175	4
Anxiety/ Depression	1482	5	0.126	5

Table 1. Summary of EQ-5D-5L Dimensions Ranking by Direct Ranking and AHP

- Rankings Aligned
- AHP reflecting participants' HRQoL preference with pairwise comparison

Utility Range	AHP		DCE	
	Dimension Range	Rank	Dimension Range	Rank
Mobility	2.71	1	2.722	1
Self- care	2.56	2	1.281	5
Usual Activities	2.54	3	1.320	4
Pain/ Discomfort	2.29	4	1.698	3
Anxiety/ Depression	2.12	5	1.964	2

Table 2. Summary of EQ-5D-5L Utility Ranges by AHP and DCE

- Inconsistency Found in Comparisons on Dimension Level

Comparison by EQ-5D-5L Levels	Pearson Correlation Coefficient	Spearman Rank Coefficient
	0.816	0.880

Table 3. Summary of Correlation Testing between AHP and DCE-derived EQ-5D-5L Levels

- **Strong Agreement with Monotonic Relationship**

Conclusions

- The sample found AHP easier to understand and generally preferred AHP over DCE in health state preference elicitation.
- AHP had demonstrated its ability to report comparable findings to both patient-reported ranking and DCE-derived outcome.

Please feel free to contact and connect with
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if you have any questions on the project.