Using DCEs to value multi-attribute health states for economic evaluation

Rosalie Viney, Richard Norman, Madeleine King, Paula Cronin, Deborah Street, John Brazier, Julie Ratcliffe

This project is funded by a NHMRC Project Grant

CHERE
CENTRE FOR HEALTH ECONOMICS RESEARCH AND EVALUATION
UNIVERSITY OF TECHNOLOGY SYDNEY

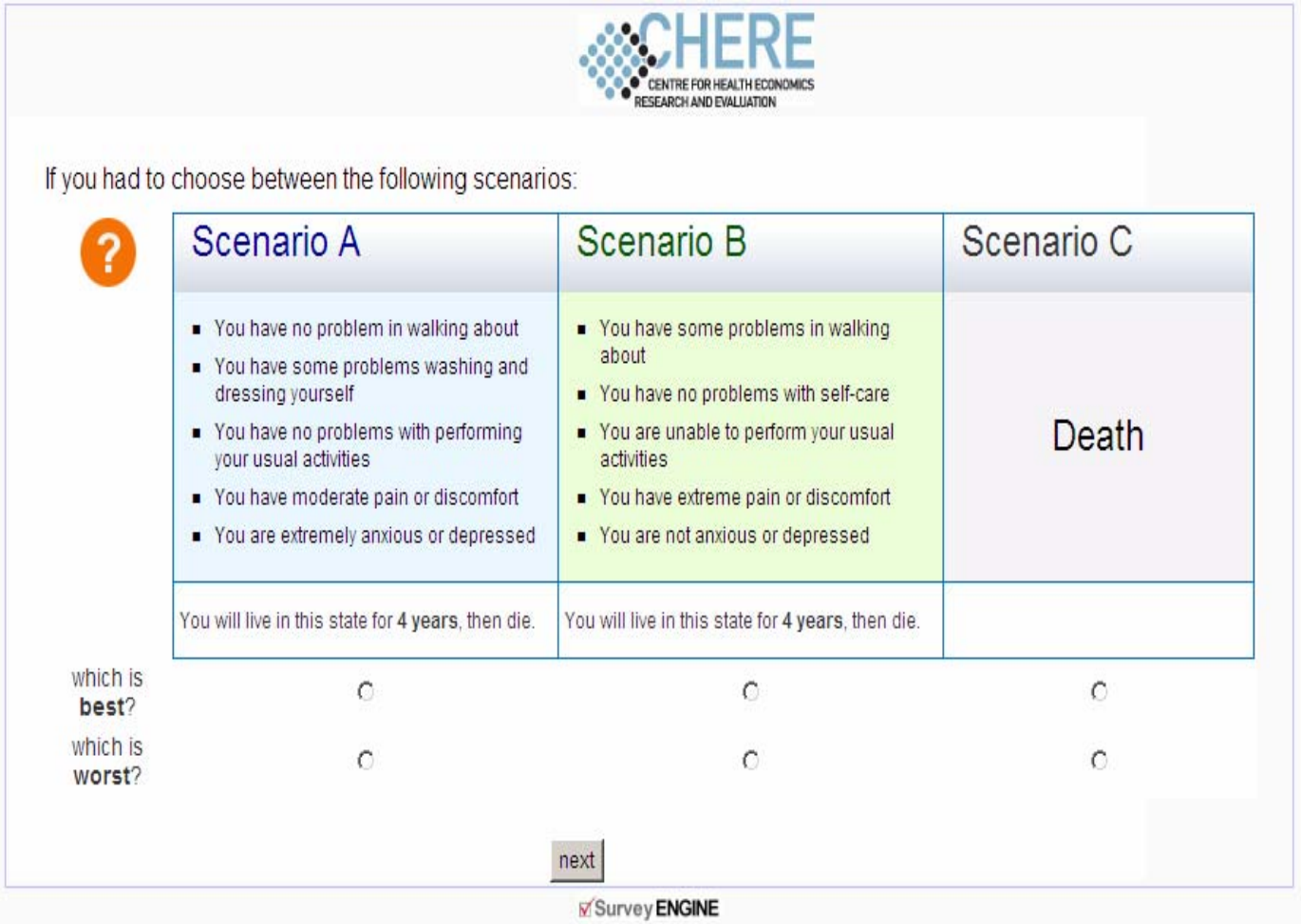
Project aims:

- To compare methods of valuing health outcomes
  - Time trade-off and Standard Gamble (conventional approaches)
  - Discrete choice experiments (new approach)
- To develop Australian utility weights for existing MAU instruments (EQ-5D and SF-6D)

Why use a DCE approach?

- Stated preference surveys required for valuation of health states
- In DCEs stated preferences inferred from series of choices between alternatives
  - Alternatives described in terms of attributes
  - Experimental design principles used to choose a sample of choice sets to allow for efficient estimation of parameters of interest
- In MAUIs health states described in terms of levels of various dimensions of health
  - DCE approach readily applicable to this context
- Use of DCE approach allows greater coverage of the response surface

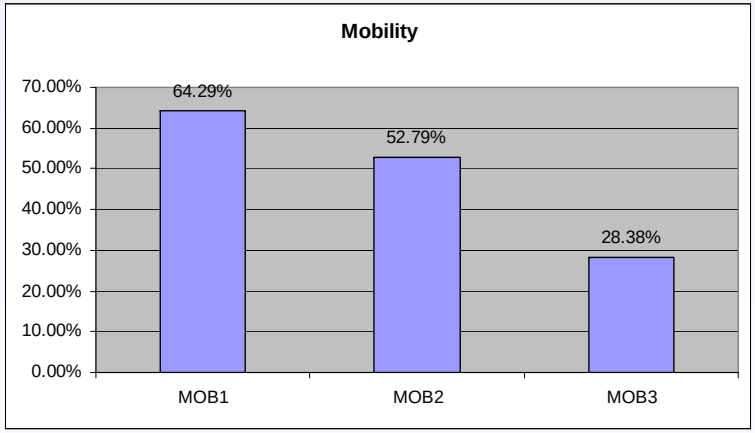
Example of a choice set

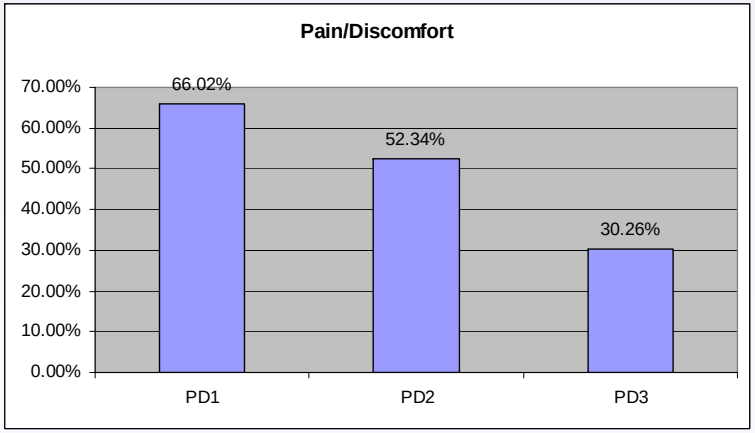


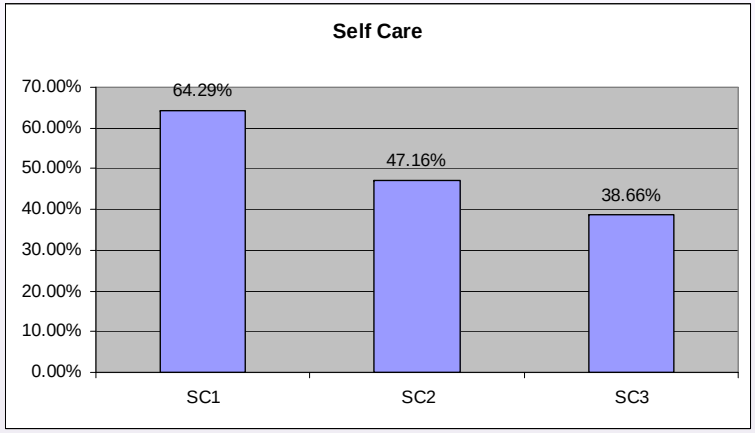
Experimental design

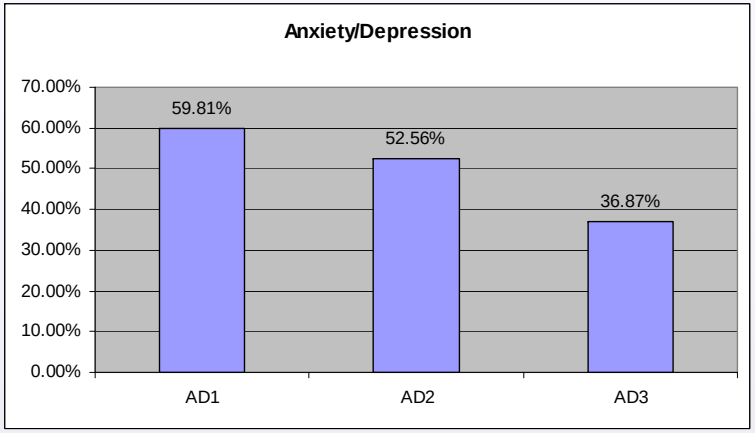
- 243 health states in the EQ-5D; 5 durations: 243*5
- ED methods developed by Street and Burgess
- Not all health states equally “plausible”
- Potential trade-off between statistical efficiency and respondent efficiency
- Explored this empirically by using three design approaches
  - Allow for any health states (All states)
  - Excluded highly implausible states (Plausible)
  - Included only the original UK valuation study health states (Dolan)

Marginal Frequencies

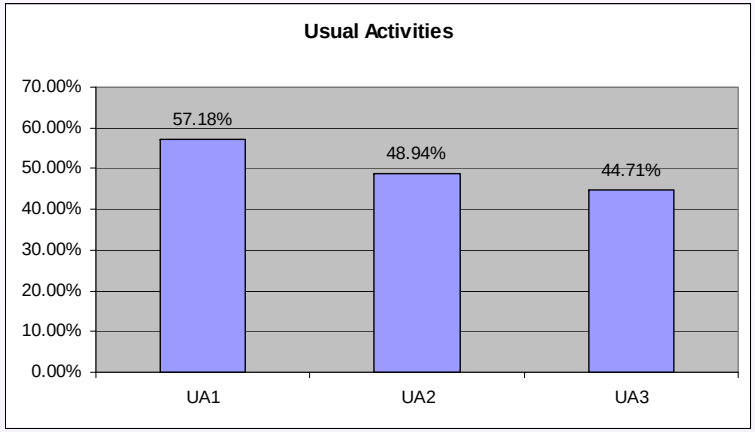


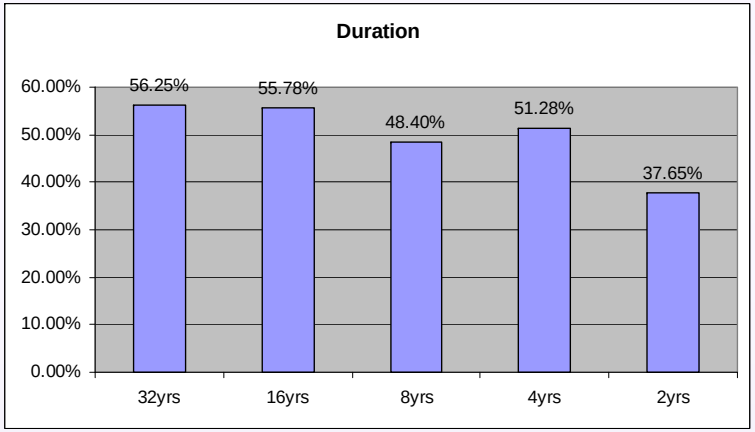






Marginal Frequencies





Using CV to obtain QALYs

- Utility function defined over (chronic) health states and survival duration (eg, Pliskin et al (1980))

$$V = V(h, T)$$

- Welfare impact of change in health state for given survival is the change in survival time that give the initial utility level but with the new health state

$$V(h^1, T + CV) = V(h^0, T) = V^0$$

$$CV = \frac{1}{\mu}\left[\ln\left(1 + e^{V^0}\right) - \left[\ln\left(1 + e^{V^1}\right)\right]\right]$$

- Survival time is the metric for measuring the welfare impacts of the change in health state
- μ denotes the marginal utility of survival time

Valuation of health states: indicative results for 8 years duration

Health state	Additional years required to accept	Implied QALY weight
Mobility 2	3.41	0.70
Mobility 3	10.09	0.44
Self Care 2	3.74	0.68
Self Care 3	7.53	0.52
Usual Activities 2	0.34	0.96
Usual Activities 3	3.10	0.72
Pain / Discomfort 2	3.38	0.70
Pain / Discomfort 3	9.77	0.45
Anxiety / Depression 2	2.52	0.76
Anxiety / Depression 3	7.76	0.51

Conclusions

- Online completion of DCE a feasible method for health state valuation
- All states design preferred (some loss of respondent efficiency)
- Durations require further investigation
- QALY estimates feasible
  - further development needed to address multinomial choice, allowing anchoring to death and full health