

# Preference Assessment 1 Measuring Utilities Directly

April 12, 2019

---

---

---

---

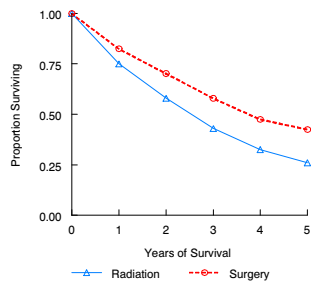
---

---

---

---

## Cancer of the Larynx, Stage T3



---

---

---

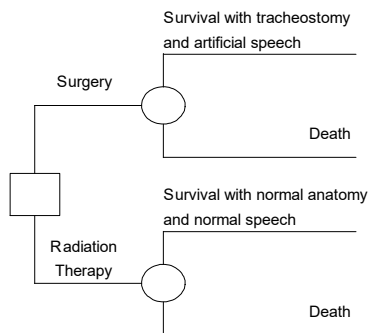
---

---

---

---

---



---

---

---

---

---

---

---

---

## Health Utilities

- Fundamental values that describe an individual's preferences for health outcomes
- Direct measurements (this presentation)
- Indirect measurements (next presentation)

---

---

---

---

---

---

---

---

## RANKING AND SCALING OUTCOMES

<u>Rank</u>	<u>Value</u>	<u>Outcome</u>
—	—	25-year survival with normal anatomy and normal speech
—	—	25-year survival with tracheostomy and artificial speech
—	—	10-year survival with normal anatomy and normal speech
—	—	10-year survival with tracheostomy and artificial speech
—	—	Death

---

---

---

---

---

---

---

---

## RANKING AND SCALING OUTCOMES

<u>Rank</u>	<u>Value</u>	<u>Outcome</u>
1	100	25-year survival with normal anatomy and normal speech
2	65	25-year survival with tracheostomy and artificial speech
3	58	10-year survival with normal anatomy and normal speech
4	50	10-year survival with tracheostomy and artificial speech
5	0	Death

---

---

---

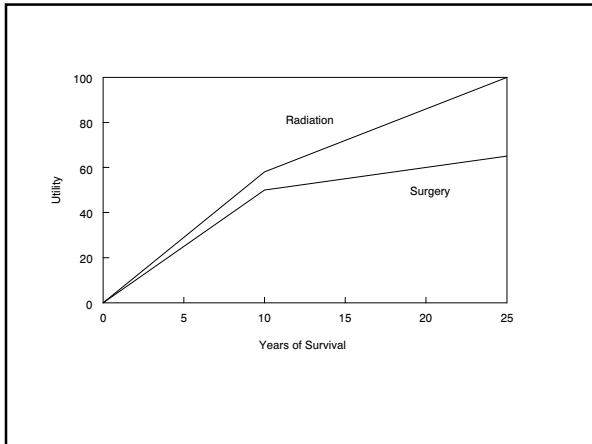
---

---

---

---

---




---



---



---



---



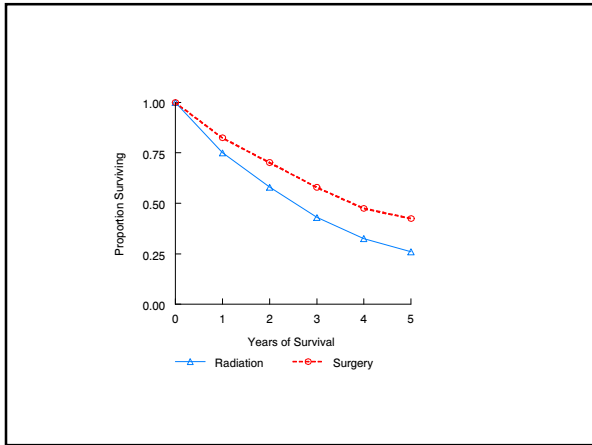
---



---



---




---



---



---



---



---



---



---

**SUMMARY OF RANK-AND-SCALE METHOD**

1. The analyst identifies the outcomes
2. The subject ranks the outcomes
3. The analyst defines the scale range and units
4. The analyst anchors each end of the scale with an outcome
5. The subject assigns scale values to the intermediate outcomes
6. The analyst checks to make sure the ranks and values are compatible

---



---



---



---



---



---



---

Note how anxious (on average) you felt over the past 24 hours with a mark (|) on the line below.

Not at all Anxious Extremely Anxious

---



---

---

---

---

---

---

---

---

extremely hungry hungry semi hungry no particular feeling semi satisfied satisfied full

---



---

---

---

---

---

---

---

---

**Escala numérica**

0 1 2 3 4 5 6 7 8 9 10

Nada de dolor El peor dolor imaginable

**Escala analoga visual**

Nada de dolor El peor dolor

Instrucciones: Pídale al paciente que indique en la línea en dónde está el dolor en relación con los dos extremos. Esta calificación es sólo una aproximación, por ejemplo, una marca en el medio indicaría que el dolor es aproximadamente la mitad del peor dolor posible.

**Escala de rostros de dolor**

0 2 4 6 8 10

Muy contento sin dolor Siente sólo un poquito de dolor Siente un poco más de dolor Siente aún más dolor Siente mucho dolor El dolor es el peor que puede imaginarse (se le pide que recuerde para sentir este dolor un hombre)

FIGURE 2. Visual analogue pain scales (VAS).

---

---

---

---

---

---

---

---

### SUMMARY OF VISUAL ANALOGUE METHOD

1. The analyst specifies the outcome being measured
2. The analysts explains the visual scale
3. The analyst illustrates each end of the scale with an outcome
5. The subject identifies a point on the scale that corresponds to the outcome level of interest
6. The analyst converts the point into a numerical value

---

---

---

---

---

---

---

---

### Rank-and-Scale Method and Visual Analogue Scale Method

- Easy to use
  - Face-to-face
  - Telephone
  - Mail
  - Computer/Internet
- Do not satisfy the assumptions of the underlying theory

---

---

---

---

---

---

---

---

### Basic Reference Gamble or Standard Gamble

- Principal advantage is that it does satisfy the assumptions of the underlying theory
  - Incorporates the value of choosing
  - Incorporates the value of risk
- Principal disadvantage is that it is difficult for people to understand and use, especially people who are sick or are answering for loved ones who are sick

---

---

---

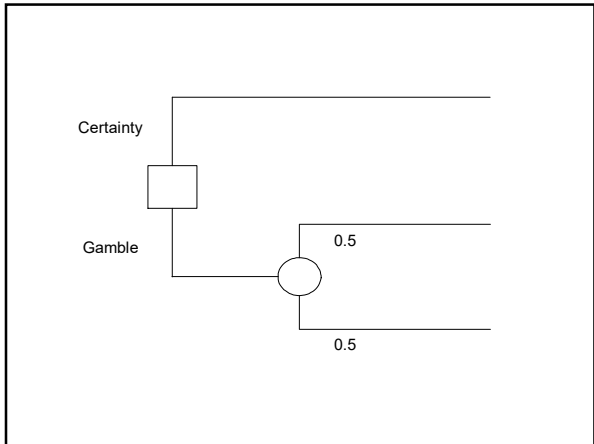
---

---

---

---

---




---



---



---



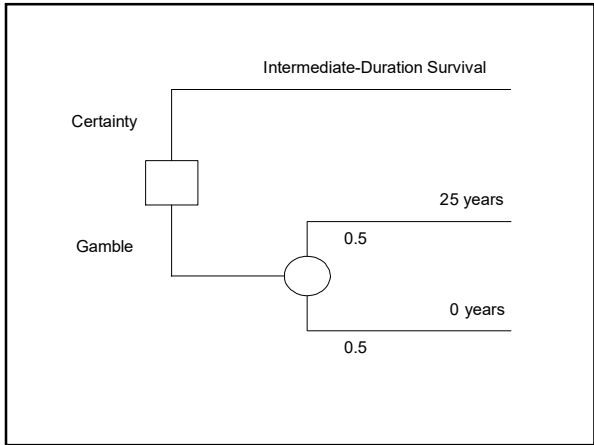
---



---



---




---



---



---



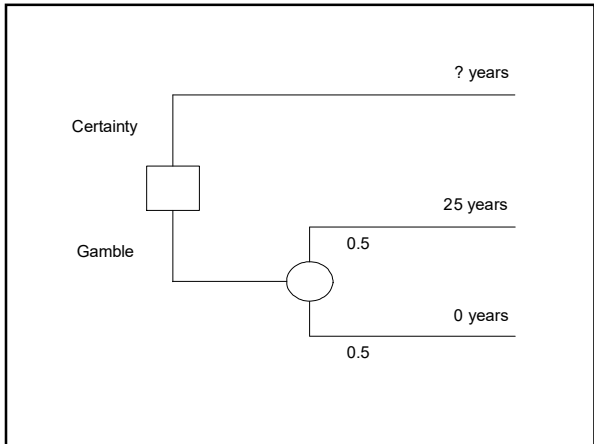
---



---



---




---



---



---



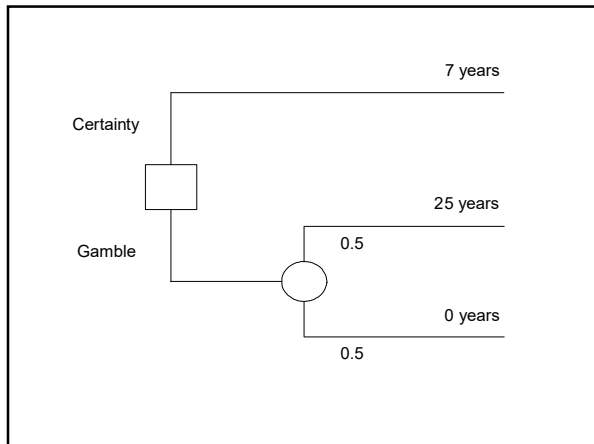
---



---



---




---



---



---



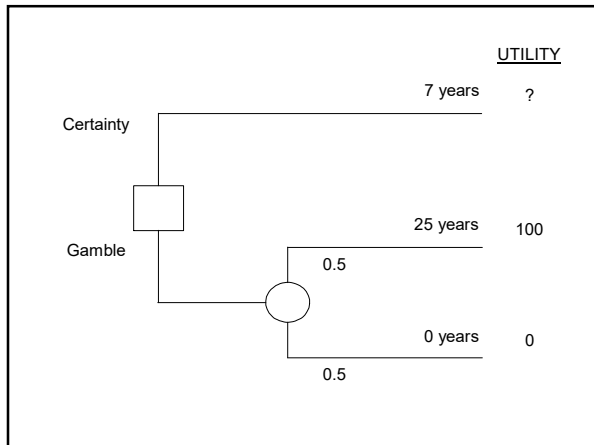
---



---



---




---



---



---



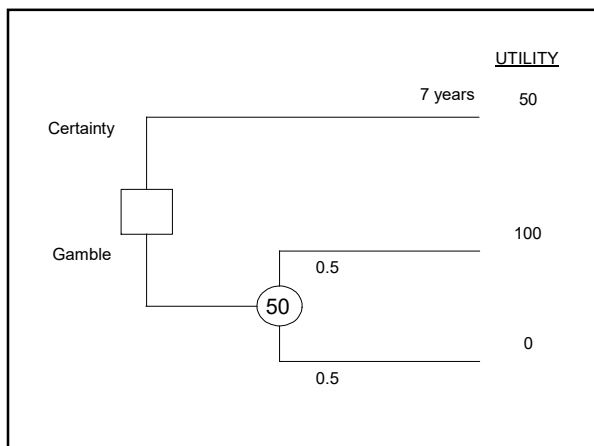
---



---



---




---



---



---



---



---



---

**SUMMARY OF THE STANDARD GAMBLE METHOD**

---

1. The analyst explains that the choice is between a certain outcome and a gamble
2. The analyst defines the best outcome, and makes it part of the gamble
3. The analyst defines the worst outcome, and makes it part of the gamble
4. The analyst specifies the probabilities of the gamble
5. The subject identifies a certain outcome that is equivalent to the gamble

---

---

---

---

---

---

---

---

**SUMMARY OF A COMMON VARIANT OF THE STANDARD GAMBLE METHOD**

---

1. The analyst explains that the choice is between a certain outcome and a gamble
2. The analyst defines the best outcome, and makes it part of the gamble
3. The analyst defines the worst outcome, and makes it part of the gamble
4. The analyst specifies a certain outcome
5. The subject identifies the probabilities that make the gamble equivalent to the certain outcome

---

---

---

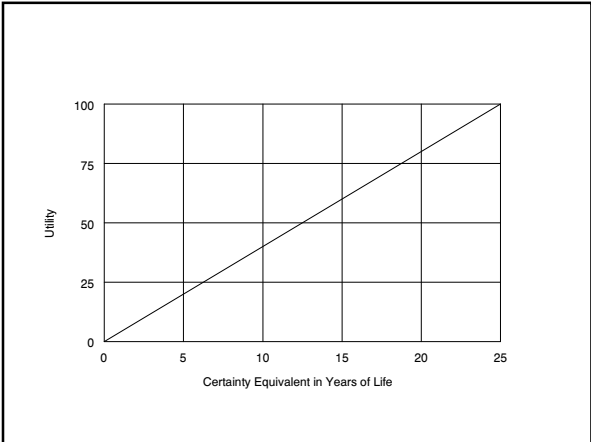
---

---

---

---

---




---

---

---

---

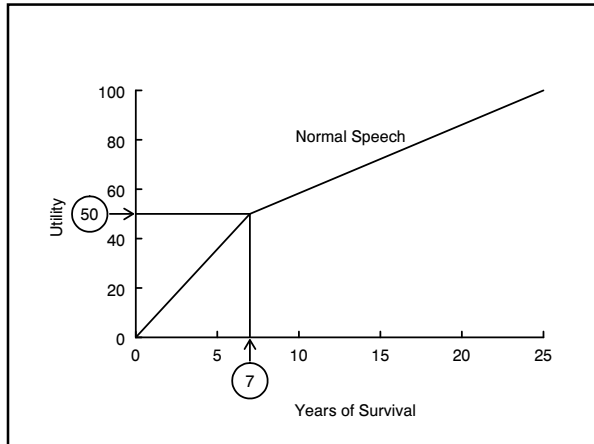
---

---

---

---






---



---



---



---



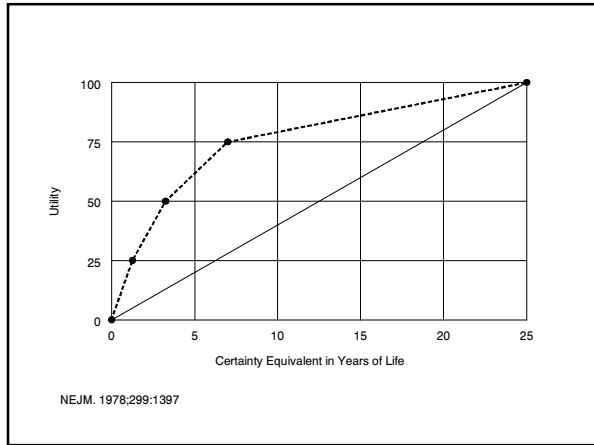
---



---



---



NEJM. 1978;299:1397

---



---



---



---



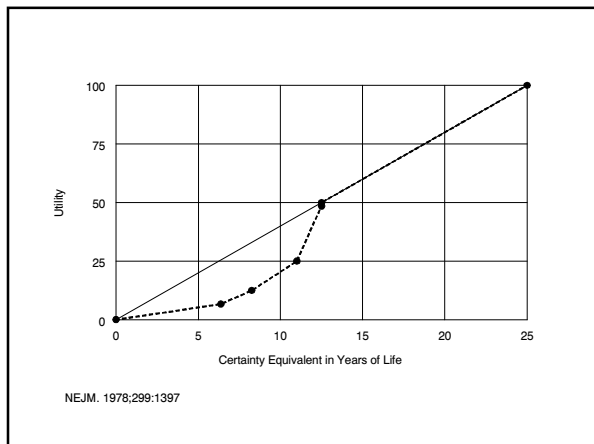
---



---



---



NEJM. 1978;299:1397

---



---



---



---



---



---



---

## Time-Tradeoff Method

- Satisfies the theoretical assumption for choice
- Does not satisfy the theoretical assumption for risk
- Easier for people to do than the standard gamble method and harder for them to do than the rank-and-scale or visual analogue methods

---

---

---

---

---

---

---

---

## THE TIME-TRADEOFF METHOD

Assume your life expectancy is 25 years. If you had a tracheostomy with artificial speech, would you be willing to accept a somewhat shorter survival in exchange for normal anatomy with normal speech? If so, how many years out of 25 years would you give up for normal anatomy with normal speech? For example, would you give up 5 years and choose 20 years with normal speech rather than 25 years with artificial speech? If not, what number of years with normal speech would be equal to 25 years with artificial speech?

Assume your life expectancy is 10 years. If you had a tracheostomy with artificial speech, would you be willing to accept a somewhat shorter survival in exchange for normal anatomy with normal speech? If so, what number of years with normal speech would equal 10 years with artificial speech?

---

---

---

---

---

---

---

---

## EQUIVALENT YEARS OF LIFE

<u>Tracheostomy with Artificial Speech</u>	<u>Normal Anatomy with Normal Speech</u>
25	12.5
10	7

---

---

---

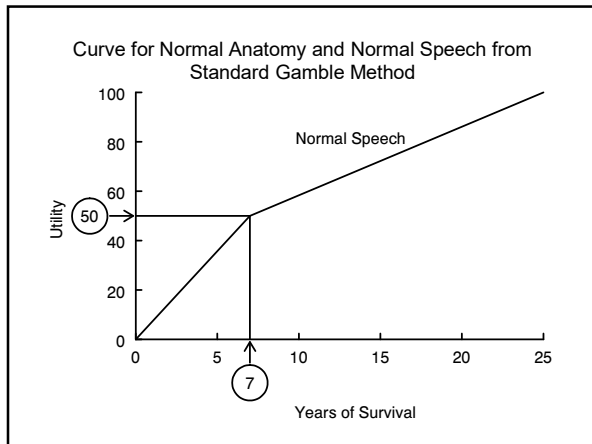
---

---

---

---

---




---

---

---

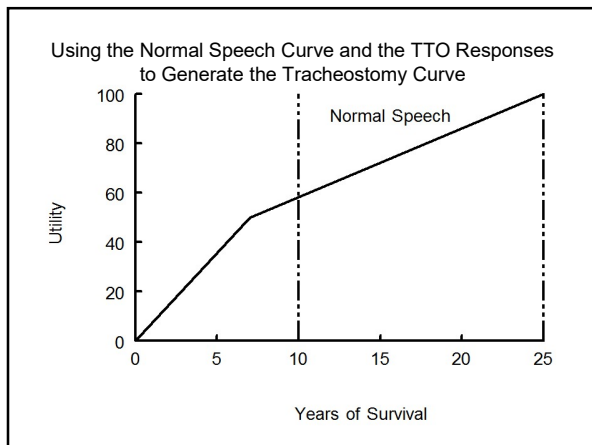
---

---

---

---

---




---

---

---

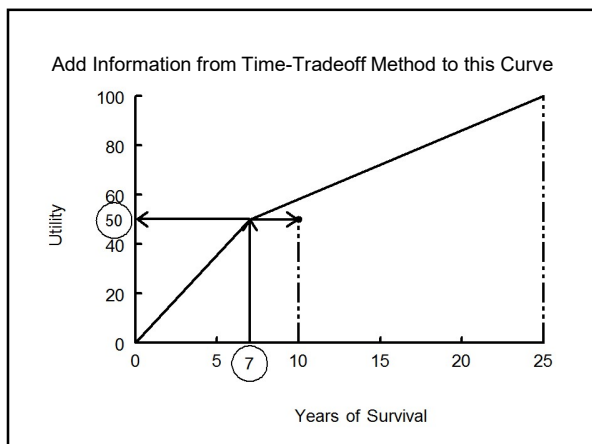
---

---

---

---

---




---

---

---

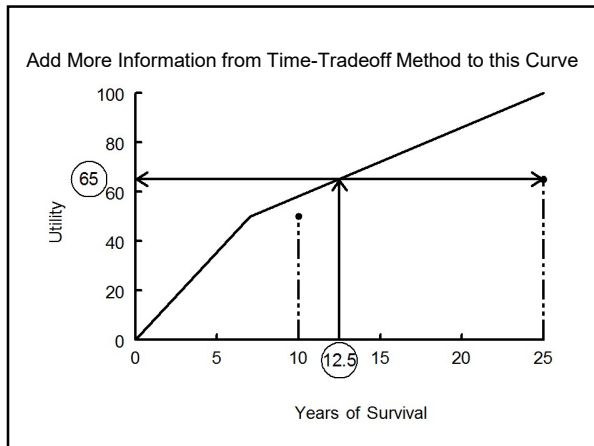
---

---

---

---

---




---

---

---

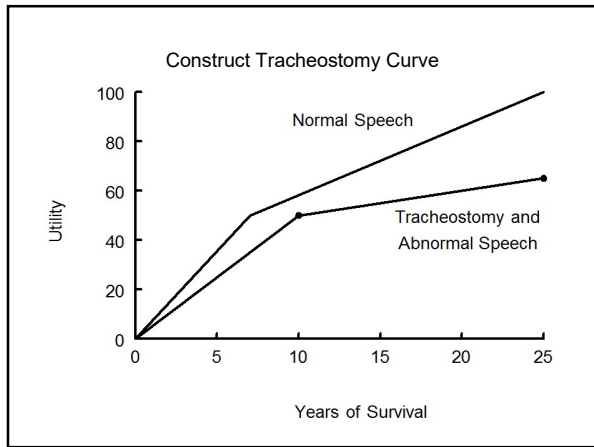
---

---

---

---

---




---

---

---

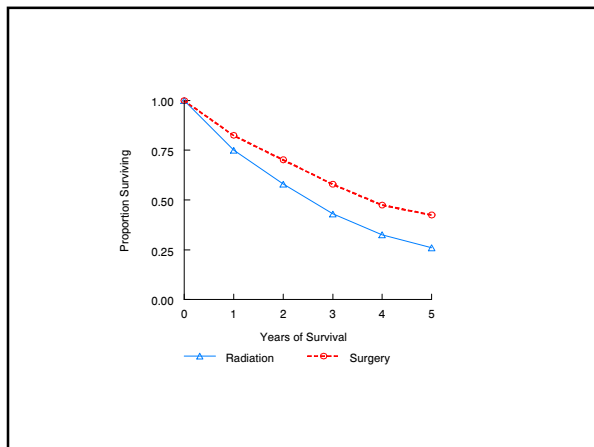
---

---

---

---

---




---

---

---

---

---

---

---

---

## SUMMARY OF THE TIME-TRADEOFF METHOD

1. The analyst defines the outcomes
2. The analyst specifies the number of years in the worse health state
3. For the specified number of years in the worse health state, the subject identifies the equivalent number of years in the better health state

---

---

---

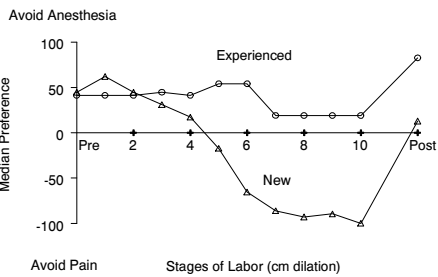
---

---

---

---

---



---

---

---

---

---

---

---

---

## Asian Viral Disease

Imagine that the U.S. is preparing for an epidemic of an unusual viral disease from Asia, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the consequences of the programs are as follows.

---

---

---

---

---

---

---

---

### Asian Viral Disease

If Program A is adopted, 200 people will be saved.

If Program B is adopted, there is a 1/3 probability that 600 people will be saved, and a 2/3 probability that no people will be saved.

---

---

---

---

---

---

---

---

### Asian Viral Disease

If Program A is adopted, 400 people will die.

If Program B is adopted, there is a 1/3 probability that no people will die, and a 2/3 probability that everyone will die.

---

---

---

---

---

---

---

---

Which of the two programs do you favor?

Description	Program A Certain	Program B Gamble
X "saved"	↑	↓
Y "die"	↓	↑

---

---

---

---

---

---

---

---

OPTIONS FOR SOLVING THE  
UTILITY-MEASUREMENT PROBLEM

1. Do not perform a decision analysis
2. Create a model whose outcomes can be compared on a natural scale
3. Identify and resolve inconsistencies while utilities are being measured
4. Use more than one method to measure utilities
5. Perform sensitivity analyses

---

---

---

---

---

---

---

Summary Issues: Scale

- Any scale will work
- 0 to 100 most common
- 0 to 1 second most common
- Scales with minus numbers (because all the outcomes are "bad") are prone to human error

---

---

---

---

---

---

---

Summary Issues:  
Whose Preferences to Measure?

- Patients understand the outcomes better
- Members of the general public pay for the decisions

---

---

---

---

---

---

---

## Other Summary Issues

- 4 direct measures for measuring utilities
- Any of these 4 methods can be used alone to measure utilities for the outcomes of a decision problem
- Any of these 4 methods can be used alone to calculate QALYs
- Few published studies use any of these 4 methods; most use indirect methods

---

---

---

---

---

---

---

---