

# A 'league table' of willingness-to-pay values in health: Premier league or conference league?

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106.3 Bridge FM

# RADIO WITH MORE BALLS

TUNE IN FOR ALL THE LATEST ON THE  
BRIDGE FM BRIDGEND FOOTBALL LEAGUE



**SATURDAY**

**2:15PM JUNIOR RESULTS**

**5:40PM SENIOR RESULTS**

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Economics

**WITH** Some **BALLS**

TUNE IN FOR ALL THE LATEST ON THE  
BRIDGE FM BRIDGEND FOOTBALL LEAGUE



**SATURDAY**

2:15PM JUNIOR RESULTS

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# Background – history and application

- Move from CEA to CUA to aid priority setting
- What is a league table?

# An example of a League Table

Table 1 Comparative Australian Cost-Utility/Cost-Effectiveness Results

Program	Adjusted cost per life year or per QALY at 1995-96 prices
Health promotion programs	
Sydney quit smoking campaign	\$19 per life year
Non-drug blood pressure reduction clinic	\$5,969 per life year
Care/cure programs	
Neonatal intensive care, babies 1000-1500g	\$1,433-3,582 per life year
Kidney transplant	\$5,455 per life year
Neonatal intensive care, babies <801g	\$4,298-5,492 per life year
Breast cancer screening	\$7,879-13,132 per life year
Cervical cancer screening	\$36,749 per life year
Hospital dialysis	\$57,053 per QALY
AIDS treatment with zidovudine	\$155,201 per life year

Source: Cervical cancer screening in Australia: Options for change [13]

Prices adjusted using the GDP deflator (ABS Economic Indicators) [22]

Source: Cost Effectiveness Analysis and the Consistency of Decision Making: Evidence from Pharmaceutical Reimbursement in Australia 1991-96 by George et al. Centre for Health program Evaluation working paper 89, page 11.

# Background – history and application

- Move from CEA to CUA to aid priority setting
- What is a league table?
- Oregon
  - “set priorities for health care on a systematic basis”
- NICE, PBAC & other similar organisations around the world
- Social value of a QALY

# QALYs do not advance us over WTP

WTP:

- is cognitively demanding because people are not used to valuing health in this way

# QALYs do not advance us over WTP

## WTP:

- is cognitively demanding because people are not used to valuing health in this way

## QALYS:

- Are cognitively demanding because individuals are not used to valuing health in terms of probability and time.

# QALYs do not advance us over WTP

WTP:

- values are hypothetical, respondents have little incentive to answer accurately

# QALYs do not advance us over WTP

## WTP:

- values are hypothetical, respondent have little incentive to answer accurately

## QALYs:

- we know little about how people answer SG or TTO and their incentives to do this may also be weak

# QALYs do not advance us over WTP

WTP:

- gives different values depending on the Elicitation method used

# QALYs do not advance us over WTP

## WTP:

- gives different values depending on the Elicitation method used

## QALYS:

- you get different utility values depending which instrument you use

# QALYs do not advance us over WTP

WTP:

- reflects ability to pay

# QALYs do not advance us over WTP

WTP:

- reflects ability to pay

QALYs:

- reflect life expectancy which is related to affluence

# QALYs do not advance us over WTP

WTP:

- values only reflect the context/setting in which they were elicited

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WTP:

- values only reflect the context/setting in which they were elicited

QALYs:

- Ditto

# QALYs do not advance us over WTP

WTP:

- purports to measure benefits wider than health but in practice values often don't incorporate these wider benefits

# QALYs do not advance us over WTP

## WTP:

- purports to measure benefits wider than health but in practice values often don't incorporate these wider benefits

## QALYs:

- Don't even have the potential to!

# Caution: league tables

- Studies need to be of good quality and use homogenous methodology.
- Studies may be from a variety of settings or contexts making it hard to translate the economic data between settings.
- Application issues in the face of simplifying assumptions such as program divisibility and returns to scale.
- The cost-effectiveness threshold would not be independent of health program size.

# Background – previous reviews

- Diener et al, 1998 “Health care contingent valuation studies: a review and classification of the literature”
- Bala et al., 1999, “Willingness to pay as a measure of health benefits”
- Klose, 1999, “The contingent valuation method in health care”
- Olsen and Smith, 2001 “Theory versus practice: a review of ‘willingness-to-pay’ in health and health care”
- Smith, 2003 “Construction of the contingent valuation market in healthcare: a critical assessment”

# Objective

## Primary Objective:

- Can a 'ratio' type of league table be created using WTP as the measure of benefit?

## Secondary Objectives:

- How should we construct the 'league table'?
- What is the relative magnitude of values across interventions?
- How comparable are the values?
- What is the purpose behind valuing and how are the values used?

# Methods

*Search period:* 1st January 1985 to 31st December 2004

## **Old fields:**

- Background
  - e.g. country of data collection, health care financing method stated, etc
- Methods of elicitation
  - e.g. elicitation format, payment vehicle, time period used, respondent type, etc
- Results
  - e.g. distributional issues, validity, reliability, statistics used, etc

# New fields collected

- Intervention/benefit being valued;
- Whether quality of life was assessed;
- How risk was presented;
- WTP values; (mean, median, CI etc);
- Price year and currency;
- Cost of the intervention (where available);
- Cost-benefit ratio (where available);
- Mean/median income of sample.

# Methods

*Computerised bibliographic database search:*

- Medline and EconLit

*Search terms:* (contingent valuation, willingness to pay, willingness to accept and cost-benefit).

Full details were downloaded and reviewed for appropriateness and relevance. All papers reviewed by two people.

# Methods – exclusion criteria

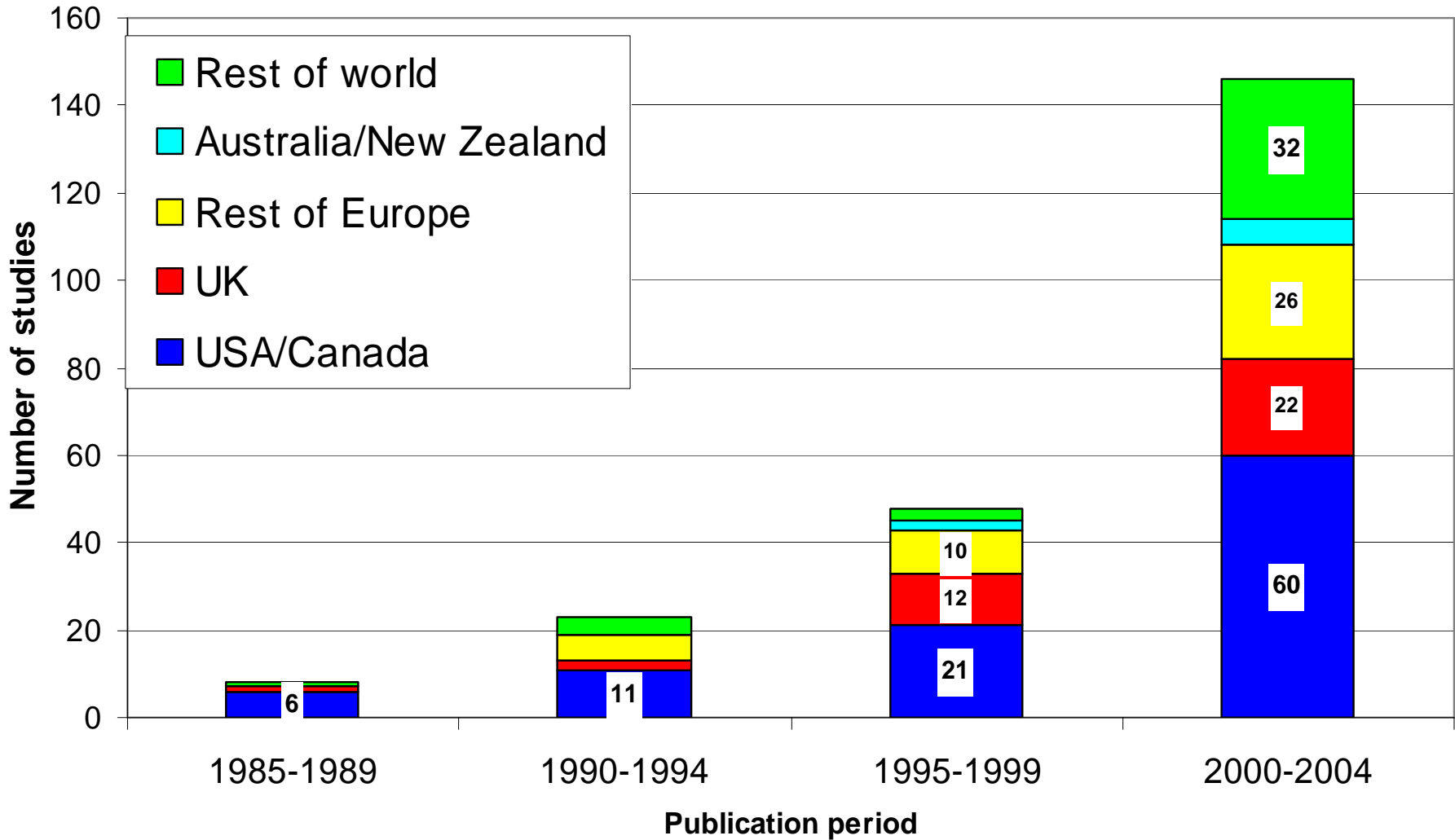
## Papers which

- did not report the results of a survey were excluded.
- duplicated, or reported less comprehensively, results based on the same data from previously published papers already included in the review database.
- reported WTP results for the overall size of the health care sector, or the value of reduced waiting time.
- used methods which do not directly ask for WTP were excluded (e.g. indirect WTP from a discrete-choice experiment).
- Were not published in the English language.

# Results



Number of studies published each period by country



# Results

- Few go as far as estimating a cost benefit ratio
- Increasing number undertaken by clinicians not economists
- Increasingly done for reasons other than methodological development
- A far narrower range of interventions have been valued in this way than by QALYs

**Table 1: WTP studies of health in the UK published between 1988 - 2004**

WTP Range UK£2004 (AUS\$2004(PPP))	No	Interventions based on WTP per annum	No	Interventions based on WTP per intervention
£0-£50 (\$0 - \$111)	4	<ul style="list-style-type: none"> <li>•Child health services: 2. hospital for bedwetting;</li> <li>•Water fluoridation</li> <li>•Child health services: 3. school health service covering those with special needs</li> <li>•Antenatal carrier screening for cystic fibrosis</li> <li>•The introduction of a helicopter ambulance service (15 lives saved)</li> </ul>	7	<ul style="list-style-type: none"> <li>•Value of a negative cervical smear result</li> <li>•Fortification of flour with folic acid</li> <li>•Pap smear screening - 10% improvement in accuracy</li> <li>•Pap smear screening - improved accuracy with STD test</li> <li>•Hypothetical vaccine that offers protection against hypothetical infectious diseases (Deputit's A &amp; B syndromes)</li> <li>•Antenatal carrier screening for cystic fibrosis – 1) stepwise and 2) couple screening</li> <li>•Carrier screening for deafness genes</li> <li>•Colorectal cancer screening - Flexible sigmoidoscopy - open-ended 5% trimmed</li> </ul>
£50-£100 (\$111 - \$221)	2	<ul style="list-style-type: none"> <li>•Child health services: 1. overnight tonsillectomy;</li> <li>•100 extra heart operations per annum</li> <li>•Child health services: 2. local clinics for bedwetting;</li> <li>•150 extra cancer treatments per annum</li> <li>•Child health services: 3. school health service covering all pupils</li> <li>•Child health services: 1. day case tonsillectomy</li> </ul>	4	<ul style="list-style-type: none"> <li>•Cervical smear screen</li> <li>•Reduced post operative emesis (nausea &amp; vomiting) in children</li> <li>•BMD (bone mineral density) screening (osteoporosis)</li> <li>•Colorectal cancer screening - Faecal Occult Blood test (5% trimmed open-ended and (un)trimmed payment card)</li> <li>•Colorectal cancer screening - Flexible sigmoidoscopy ((un)trimmed open-ended and payment card)</li> </ul>
£100-£500 (\$221 - \$1107)	3	<ul style="list-style-type: none"> <li>•Laparoscopic (rather than conventional/open) cholecystectomy</li> <li>•Occupational Health Service</li> <li>•The introduction of a helicopter ambulance service (15 lives saved)</li> <li>•100 extra heart operations per annum</li> <li>•150 extra cancer treatments per annum</li> </ul>	3	<ul style="list-style-type: none"> <li>•Colorectal cancer screening - Faecal Occult Blood test (untrimmed open-ended and payment card)</li> <li>•Surgical abortion</li> <li>•Medical abortion</li> <li>•Midwife-managed delivery unit</li> </ul>
£500-£1000 (\$1107 - \$2213)	0		2	<ul style="list-style-type: none"> <li>•Colorectal cancer screening - Faecal Occult Blood test (Bidding game)</li> <li>•Colorectal cancer screening - Flexible sigmoidoscopy (Bidding game)</li> <li>•Consultant-led labour ward</li> </ul>
£1000-£5000 (\$2213 - \$11,066)	0		4	<ul style="list-style-type: none"> <li>•Hysterectomy for menorrhagia</li> <li>•Conservative treatment for menorrhagia</li> <li>•Antenatal care (overall and GP/midwife vs. obstetrician led care)</li> <li>•Orthodontic treatment - the public's value</li> <li>•Artificial insemination by donor</li> </ul>
>£5000 (>€)	0		4	<ul style="list-style-type: none"> <li>•A further attempt at in vitro fertilisation (IVF)</li> <li>•Orthodontic treatment - patients values pre and post surgery</li> <li>•IVF</li> <li>•Treatment to correct dentofacial deformity</li> </ul>

Author, publication year	Country of data source	Details of what was valued	Mean WTP UK£2004	Mean WTP AUS\$2004 (PPPs)	Mean WTP €2004
Johannesson,1994	USA	IVF - Public programme: 10% probability of success	£25.22	\$55.82	€35.74
Johannesson,1994	USA	IVF - Public programme: 25% probability of success	£29.94	\$66.26	€42.44
Johannesson,1994	USA	IVF - Public programme: 50% probability of success	£36.25	\$80.23	€51.38
Johannesson,1994	USA	IVF - Public programme: 100% probability of success	£50.16	\$111.02	€71.10
Johannesson,1994	USA	IVF - Ex-ante: 10% probability of success	£681.59	\$1,508.53	€966.14
Johannesson,1994	USA	IVF - ex-ante: 25% probability of success	£831.31	\$1,839.90	€1,178.36
Johannesson,1994	USA	IVF - ex-ante: 50% probability of success	£1,155.16	\$2,556.66	€1,637.41
Johannesson,1994	USA	IVF - ex-ante: 100% probability of success	£1,580.67	\$3,498.41	€2,240.56
Ryan, 1996	Australia	IVF	£2,151.14	\$4,761.00	€3,049.19
Ryan, 1998	USA	IVF - ex-post	£2,847.52	\$6,302.27	€4,036.29
Stavinoha, 2001	USA	Stage of treatment 1 (Clomiphene)	£4,646.70	\$10,284.30	€6,586.58
Ryan, 2004	UK	A further attempt at IVF (when reduced to £19533, the amount at which the probability of saying yes was 0.01)	£5,007.08	\$11,081.91	€7,097.41
Ryan, 2004	UK	A further attempt at IVF (when upper value the highest bid £20,000)	£5,012.22	\$11,093.28	€7,104.71
Ryan, 2004	UK	A further attempt at IVF Choice experiment	£5,022.52	\$11,116.08	€7,119.29
Ryan, 2004	UK	A further attempt at IVF (When upper value infinity)	£5,035.90	\$11,145.69	€7,138.26
Ryan, 1997	UK	IVF	£5,917.16	\$13,096.14	€8,387.43
Stavinoha, 2001	USA	IVF	£7,115.80	\$15,749.02	€10,086.47
Stavinoha, 2001	USA	Stage 2 menotropin followed by intrauterine insemination	£7,334.60	\$16,233.28	€10,396.62
Ryan, 1998	USA	IVF - ex-ante	£8,025.48	\$17,762.37	€11,375.92
Stavinoha, 2001	USA	Stage 3 menotropin followed by ART	£10,155.44	\$22,476.50	€14,395.09
Granberg, 1995	Sweden	IVF (Median WTP)	£12,729.71	\$28,174.00	€18,044.05
Johannesson,1994	USA	IVF - Ex-Post: 10% probability of success	£13,970.69	\$30,092.59	€19,803.12
Johannesson,1994	USA	IVF - Ex-Post: 25% probability of success	£22,105.68	\$49,639.57	€31,334.27
Johannesson,1994	USA	IVF - Ex-Post: 50% probability of success	£34,336.54	\$75,995.25	€48,671.21
Johannesson,1994	USA	IVF - Ex-Post: 100% probability of success	£50,348.07	\$111,432.72	€71,367.17

# Looking behind the numbers

- See handout for example using Australia studies

# Caution: league tables

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- The cost-effectiveness threshold would not be independent of health program size.

# Objective

## Primary Objective:

- Can a 'ratio' type of league table be created using WTP as the measure of benefit?

# Preliminary answers

## Primary Objective:

- Can a 'ratio' type of league table be created using WTP as the measure of benefit?

**Very difficult, given the majority of papers (92%) don't report costs.**

# Objective

## Secondary Objectives:

- How should we construct the 'league table'?

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- How should we construct the 'league table'?

Need to develop 'guidelines' for doing these studies to make them more comparable

# What constitutes a good contingent valuation study?

- Good response rate – how high is good enough?
- Association between WTP and SES
- Sensitivity of WTP to scale/scope of the good
- Predictive validity – real world evidence available?
- Reliability of elicitation methods

# Objective

## Secondary Objectives:

- What is the relative magnitude of values across interventions?

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The UK example showed some unexpected rankings of interventions but that's not to say they aren't reflecting genuine preferences

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Australian example showed wide variation in methods used, preference for different methods have changed over time

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Many more studies undertaken without a methodological component which suggests the values are there for being used for policy making but in reality it is unclear how they are being used

# Conclusions

- Highlighted the:
  - disparate range of methods used,
  - the resultant range of values and
  - that little is known about how to use the values derived.
- Caution is required in interpreting the tables too literally
- Questions are also raised about the transferability of results.
- More research is needed

