Centre for Health Economics Seminar Series

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Reinterpreting Economic Evaluation in the Context of an NHS: The Case for a Fairness Focused Framework

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Economics

- Aim
  - Maximise wellbeing as defined by social values and preferences
- Theory (one role)
  - Logically connect policy – claimed goals

Criterion CEA/CUA

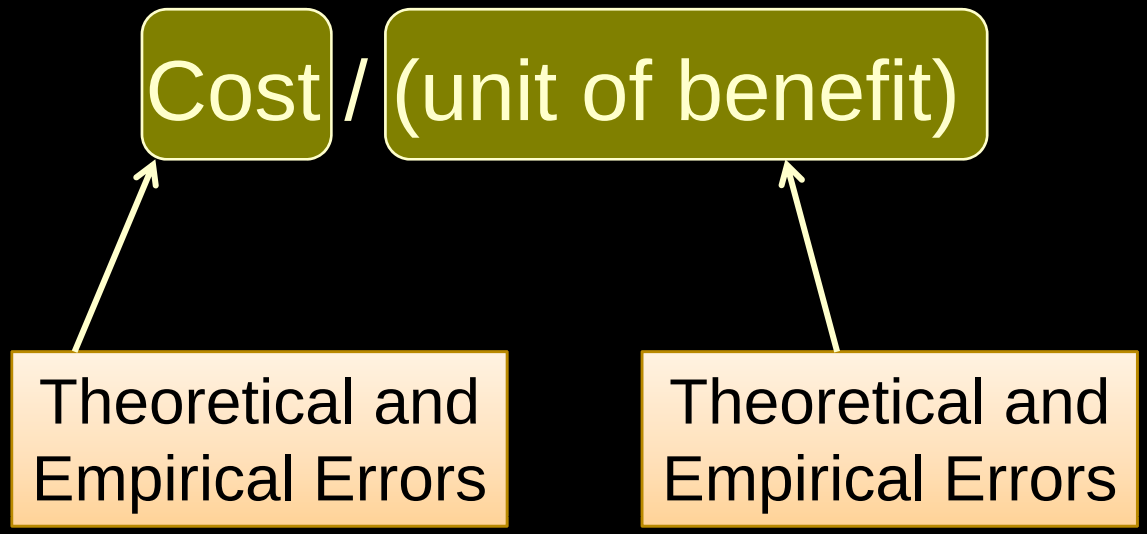
Minimise Cost/(Unit of Benefit)

Theme 1

Cost / (unit of benefit)

Theoretical and Empirical Errors

Theme 2


Cost / (unit of benefit)
Theoretical and Empirical Errors
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Contents

1. The orthodox framework
2. Why orthodoxy fails
3. Fairness in an NHS
4. Epistemology
5. Empirical Ethics
6. Would people minimise costs/life year
7. Conclusions

Argument

Section 1	There must be a causal link between recommended policy and claimed objectives: satisfying population objectives
	Economic evaluation is justified by orthodox welfare theory and its assumptions. These are highly problematical
Section 2	All programs redistribute benefits. To overcome the problem this creates, orthodox theory appeals to the concepts of Pareto Efficiency and Potential Compensation. Both concepts are flawed in an NHS
Section 3	Existence of an NHS in every country demonstrates a universality of fairness objectives. However the implications of this are forgotten

Argument cont'd

Section 4 How do we justify our policies? Orthodox assumptions are wrong. *A priori* ethics fails. Empirical Ethics is fallible

Section 5 Some empirical results are illustrated.

Section 6 Empirical results indicate that people wish to share benefits NOT (just) minimise costs

Section 7 The role of the economist should be to inform not dictate and (mislead) the social debate

Section 8 New results

1. The Orthodox Framework

Gold standard decision rule

Maximise Net present value (NPV)

NPV = Benefits (direct, Indirect) - Costs (Direct, Indirect)

1. The Orthodox Framework

Gold standard decision rule

Max. Net present value (NPV)

NPV = Benefits (direct, Indirect) - Costs (Direct, Indirect)

Invest if

NPV $\geq$ 1

Benefits (B) . Costs (C) $\geq$ 1

Benefits $\geq$ Costs

B/C $\geq$ 1

Problem: Monetising Value Life

Cost Effective Analysis (CEA)

Rule : Min Cost / LY

Cost Utility Analysis
Min Cost / QALY

Rationale for Orthodoxy Methods is Welfare Theory

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- Key assumptions/concepts
  - Axioms of choice theory

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      Pareto Efficiency → social welfare ↑

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    - Welfarism: social welfare = f(U, ... Un: ONLY)
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      Pareto Efficiency → social welfare ↑
    - Fairness ← distribution of initial wealth utility

      Fairness separated from analysis of efficiency

2. Why Orthodoxy Fails
Two additional problems with health care

1. **Information** (an aside)
   - Insufficient information – no coherent preferences
   - Abdication of consumer sovereignty

Two key problems (cont'd)

2. Fairness

Orthodoxy: Uncritically efficiency focused

All programs redistribute

Orthodox practice ... Ignores

theory ... 'Pareto efficiency

... Potential compensation

Is Pareto Self Evident?

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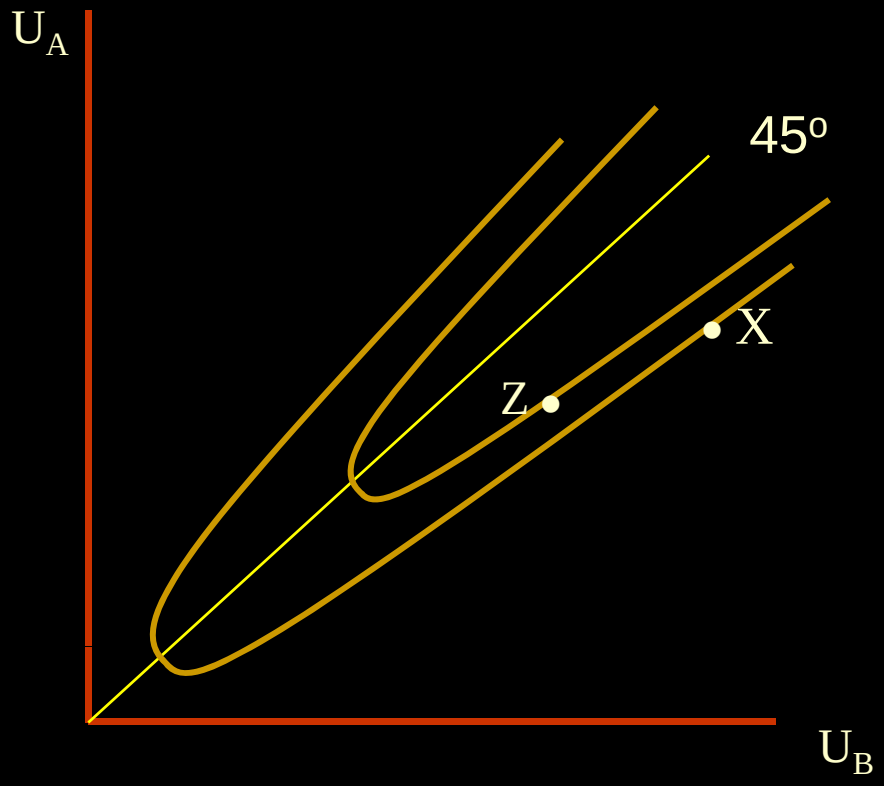
- Comparisons are not necessary if some better, none worse off

Is Pareto Self Evident



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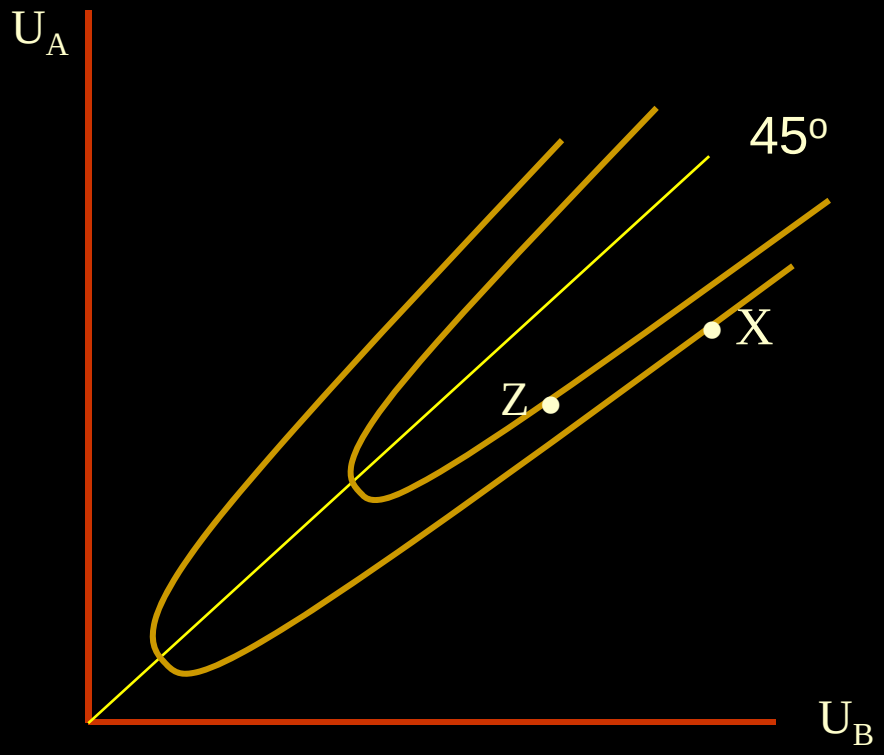

Motives

-Envy
-Jesus (St Matthew)
-Egalitarianism

- Liberalism (x is coercive)
- Duty (z imposes a burden)
  eg no coal exports
  sacrifice for children

Evidence

[n = 455]

- Society is better off if wealthy receive a higher income and the poor are no worse off

agree	23.3%
disagree	62.8%

Potential Compensation Principle

(Kaldor Hicks)

'Situation, X, is better if there is the potential to compensate loser' ie potential for Pareto Efficiency

Example: X is better: You will die. But that's OK because we could have prevented this (but didn't!)

Kaldor Hicks - Wrong

Could have been better = *are* better !
(logic = St Augustine)

BUT

(i) Potential ≠ actual

(ii) Serious health problems
- Effective compensation likely

(iii) Death: no compensation

(iv) Compensation loser = taxpayer
ie tax sick/poor; reimburse taxpayer

Conclusion

- Causal link: assumptions – conclusion broken
- Each policy: re-distributes net benefits
  issue of fairness

3. Fairness in an NHS

Minimal Conclusion

- NHS every wealthy country (inc USA – Medicare, Medicaid) implies compulsion, paternalism overturning complete sovereignty of consumer

- **Hypothesis**: This reflects population values (not a bribe: like 'a free beer scheme' – Snr Australian Economist)

Consequences of Fairness

Hypothesis of support

Q: *'The entire population should receive some assistance for health care even when the majority of taxpayers are opposed to this'* (n = 455)

agree	80.6
disagree	5.6

Support for (health related) compensation (n = 455)

Q: (in health context) It is OK to restrict people's behaviour against their will

agree	53.8
disagree	25.6

Challenge to the Efficiency Focus

Case for a fairness focused framework (*JHE* 2006)

Four theoretical issues where fairness overturns conventional wisdom/analysis

- Treatment indirect benefits

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Case for a fairness focused framework (*JHE* 2006)

Four theoretical issues where fairness overturns conventional wisdom/analysis

- Treatment indirect benefits
- Moral hazard
- Future un-related medical costs
- Fundamental Rule: M Cost = M Benefit

Should MC = M Benefit

- Orthodoxy (preferences revealed by $)
  - Benefit Rich = WTP > Benefit Poor = WTP
- Real Rule
  - M Cost = M 'Generosity
    ← values *wrt* fairness
  - Generosity = possible fn of
    QoL, LY, Severity, Age, R of R
    = Soc WTP

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Purpose of an NHS is to override rule

4. Epistemology: How do we answer ethical questions?

1. Platonic Orthodoxy (PO)
   - Assume Welfarism etc
   - (near cousin) Assume Healthism
2. *A priori* Ethical Analysis
   - As defined by discipline of Ethics
3. Empirical Ethics

Option 2 Ethics per se

Improbability of resolution

if theory A ≡ theory B wrt implications

A, B are the same theory

if theory A ≠ theory wrt all implication

each theory conflicts with another

well reasoned theory

Consequence: rhetorical squabbling

Option 2: Ethics Per Se

Logical Impossibility of Resolution

'Superiority' (view A) implies evaluative criteria (A)

'Acceptability' criterion (A) implies a standard ie criterion B
B requires C requires D…

Proposition: Role of ethics is to critique – seek inconsistency – challenge … NOT to establish truth

Evidence: Cumulative history of ethics… We cannot keep waiting

Option 3: Empirical Ethics (EE)

NB: EE = proposed formalisation of existing practice

1 Iterative elicitation of values
Hypothesis generation, clarification

2 Quantification of social (value) preferences)
Deliberation

3 Ethics critique, ie testing

4 Resubmit for reconsideration, reformulation

5 Tentative acceptance

5. Empirical Ethics: Some Results
(n = 455)

Population view of fairness:

- Which ethical principles?
- Is welfarism supported?
- What dominates ethical thinking?

Population view of fairness: which ethical principles

1. Australians are not hedonic utilitarians

Q: 'Action producing happiness is always right'

agree	22.8%
disagree	57.4%

Q: 'Maximising happiness is more important' than any other principle

agree	14.3%
disagree	65.9%

2. Australians (Norwegians) not preference utilitarians in context of health sector

Survey	Australians	334
	Norwegians	227

Option 1: Maximise lives saved: Screening Program

Option 2: Variable reason: Helicopter Rescue

Australia, Norway Results

Reason for alternative program	% Maximising lives (rejecting alternative program)	
	Australia	Norway
Public preference (welfarism)	68.7*	72.24*
Rule of Rescue	53.8	49.0
Equity	62.7	48.9
n	334	227

•Test of (social) preference utilitarianism

Conclude 'Healthism' $\geq$ R of R, Equity
> Welfarism

Which Principle (cont'd)

3. There is strong commitment to 'duty', 'role in community', solidarity/communitarianism)

NB: ignored in economic theory

Q1 'Must fulfil duties even if it makes me less happy'

agree	91.5
disagree	3.9

There is strong commitment to 'duty', role in community (solidarity/communitarianism)

Q2 'Having duties is a natural part of being a member of society'

agree	95.0
disagree	00.0

There is strong commitment to 'duty', role in community (solidarity/communitarianism)

Q3 'Duties connects people ... They make a community'

agree	92.2
disagree	0.8

There is strong commitment to 'duty', role in community (solidarity/communitarianism)

Q4 'I fulfil my duties because it is my job'

agree	77.8
disagree	16.7

Which Principle (cont'd)

Rejoinder: 'But people fulfil duty because they selfishly benefit'

Q5 'People help others only because they gain something personally'

agree	18.2
disagree	60.7

Conclusion wrt Principles

- Support for an NHS due to belief in
  - Fairness/duty/community
- Object of scheme
  - Health, not utility
- Rules for allocation
  - Should reflect this

Evidence from the Empirical Ethics Literature

Topic	Argument/evidence
Economic cost	• 'Discrimination' against those with high cost illness rejected. Empirical results Australia, Norway, Spain, USA
Transfer payments	• Relevant to how much informed taxpayers will pay (Richardson & McKie 2007)
Age	• Importance of benefit varies by age UK, Australia, USA, Spain, Norway
Severity	• Importance of given health gain varies with severity of start point (Australia, Spain, USA, Norway)
Potential	• Importance of health gain varies with capacity to gain (Oregon)
Rule of Rescue	• Context matters (McKie & Richardson 2003)
Cause/Context of disease	• Discriminate against smokers disagree 38.8; agree 44.6

6. Problem with Cost

Would people minimise Cost/QALY ?

Richardson and Nord

Would people minimise Cost/QALY

- Among patients who are equally ill, those who can be helped at LOW COST should have priority over those who can be helped at high cost, because this will allow more people to be helped when the money is limited *[Agree 19%]*
- It is UNFAIR TO DISCRIMINATE against those who happen to have a high cost illness. Priority should therefore not depend on the cost of treatment (except in cases where costs are extremely high) *[Agree 81%]*

Cost (cont'd)

STAGE 2 (Interview) Repeat emphasising budget

n = 119 constraint: words used, have some priority

prefer low cost . . . 30%

STAGE 3 Challenge but more health possible

. . . No change

STAGE 4 Numerical example

Low cost vs first come, first served → low cost

STAGE 5 Allocate a budget between low cost – high cost consequences shown

Health Maximising Choice . . . 6%

Problem with cost

- **Nord & Richardson (1995)**
  Who cares about cost: Does economic analysis reflect or ignore social values?'
- **Abellan-Perpinan & Pinto (1999)**
  Allocate a budget

	A	B	
Cost	100	200	↘ Maximise Health
Benefit	x	x	

- **Ubel (2000)**
  Allocate organs ↘ Maximise Health
  * % good prognosis
  * % poor prognosis

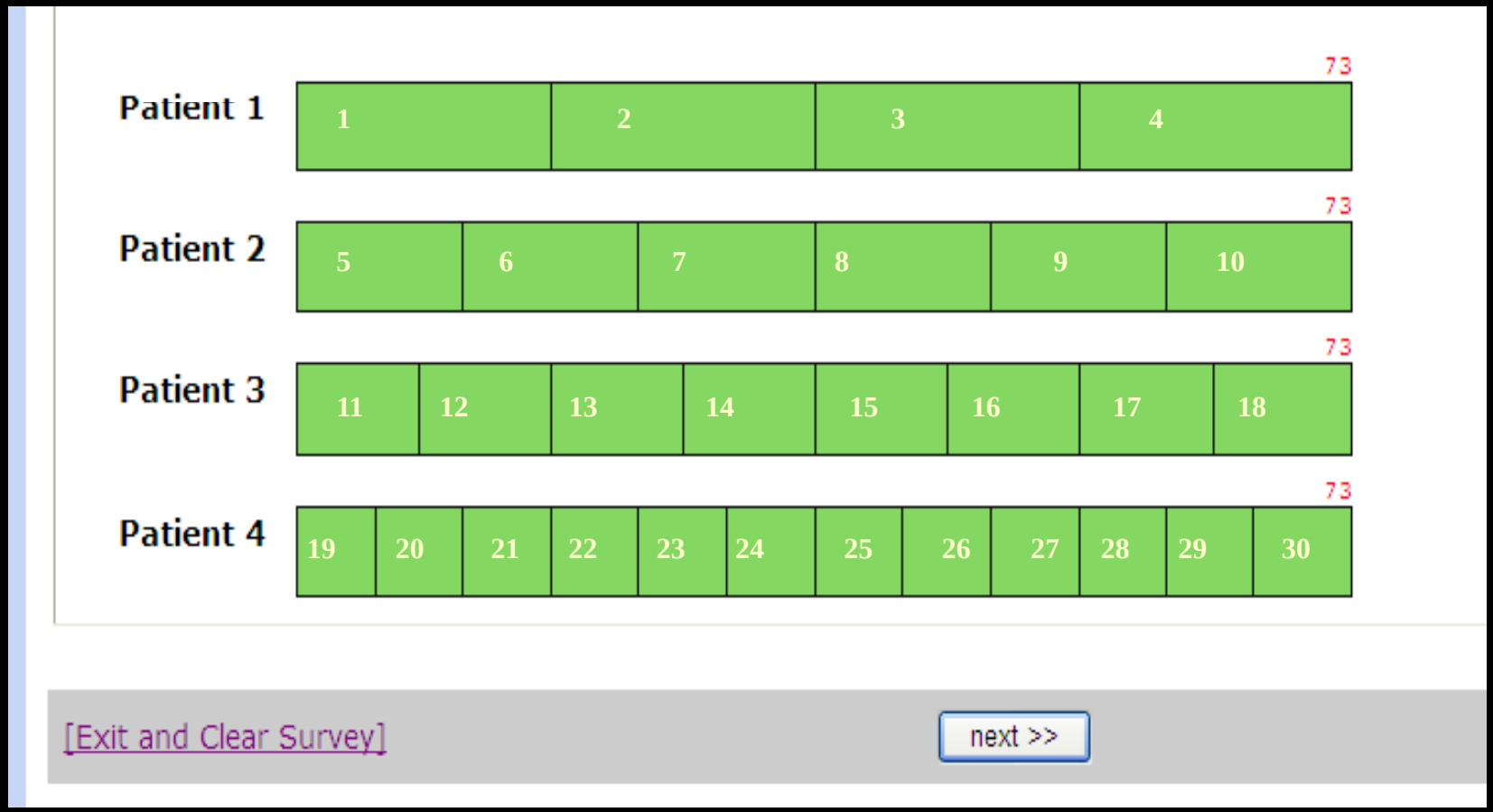
Cost/LY *vs* fairness between individuals a general test

Web based allocation exercise

The diagram below represents 4 patients and the age when they will die which is shown in red

Click on the box where you think Medicare should spend $10,000

Orthodox Economic Ranking



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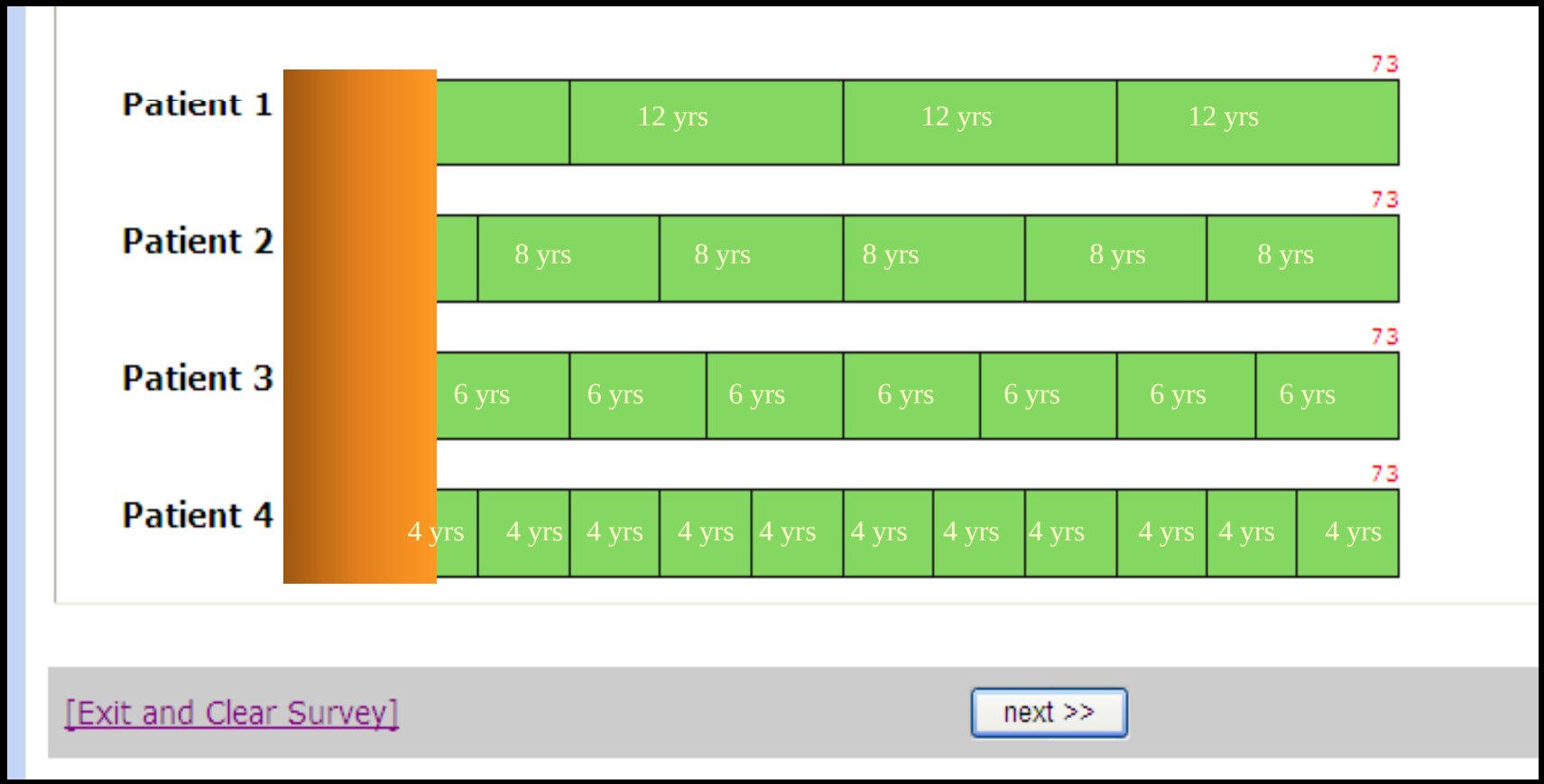

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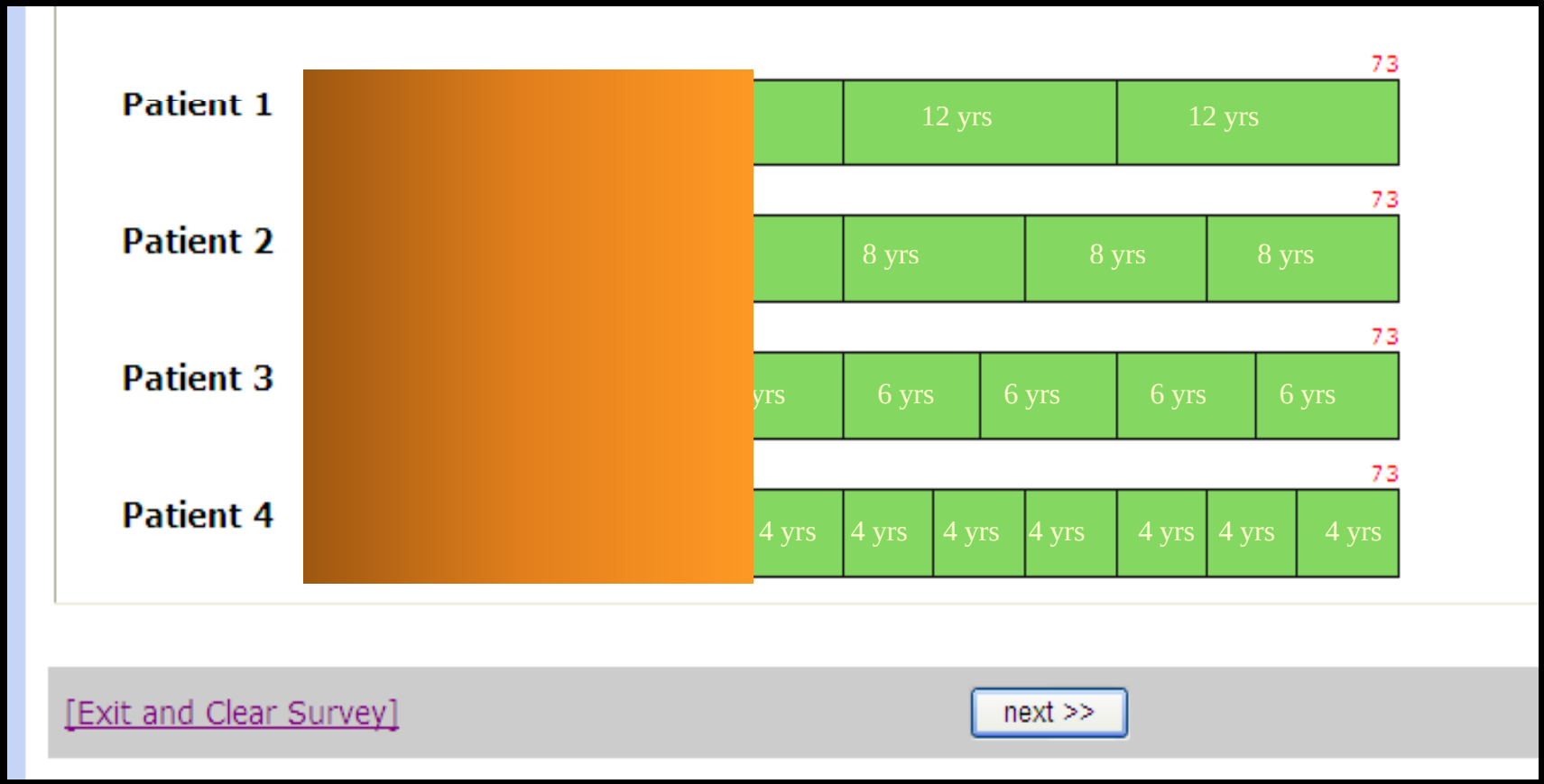

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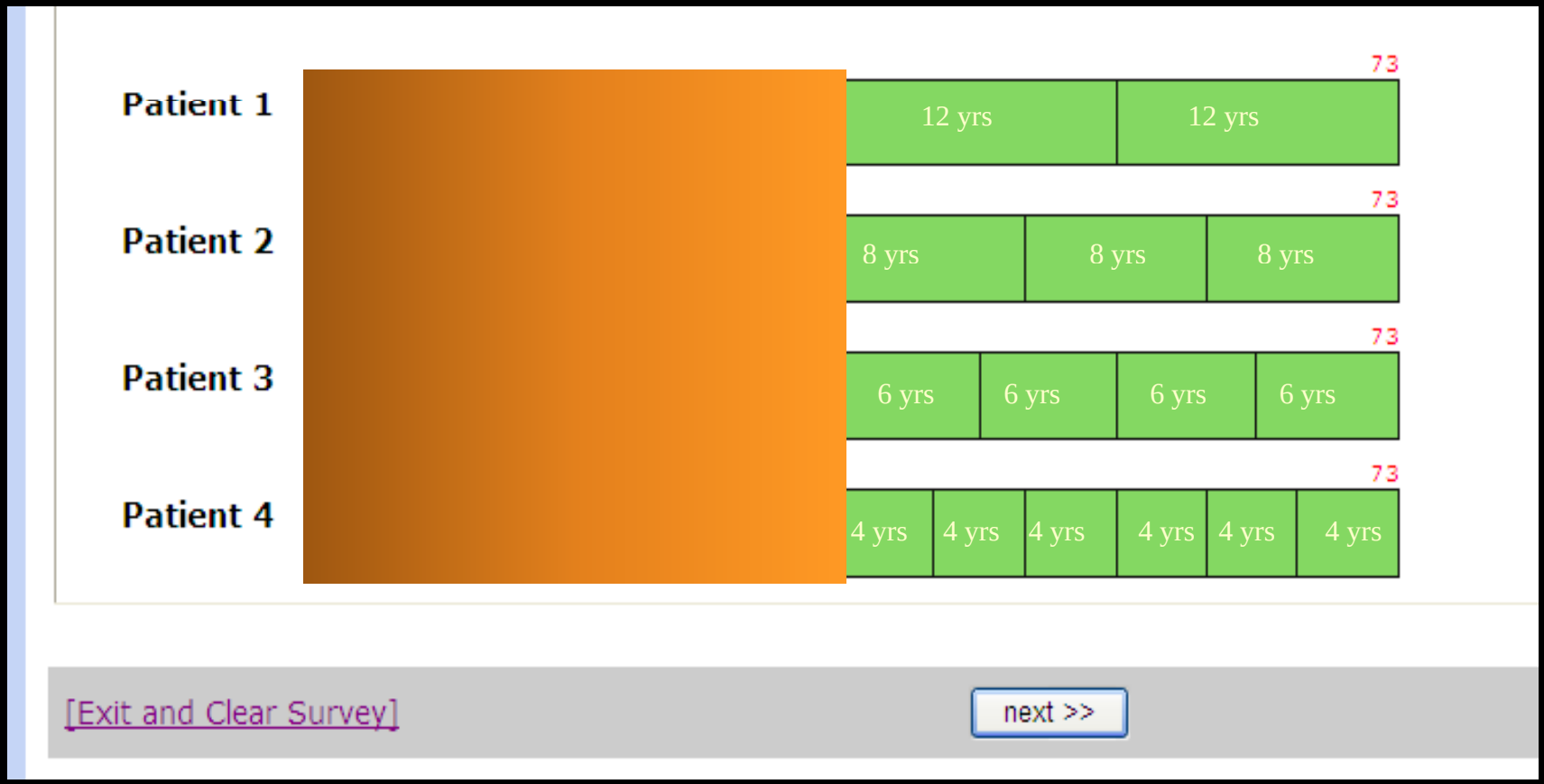

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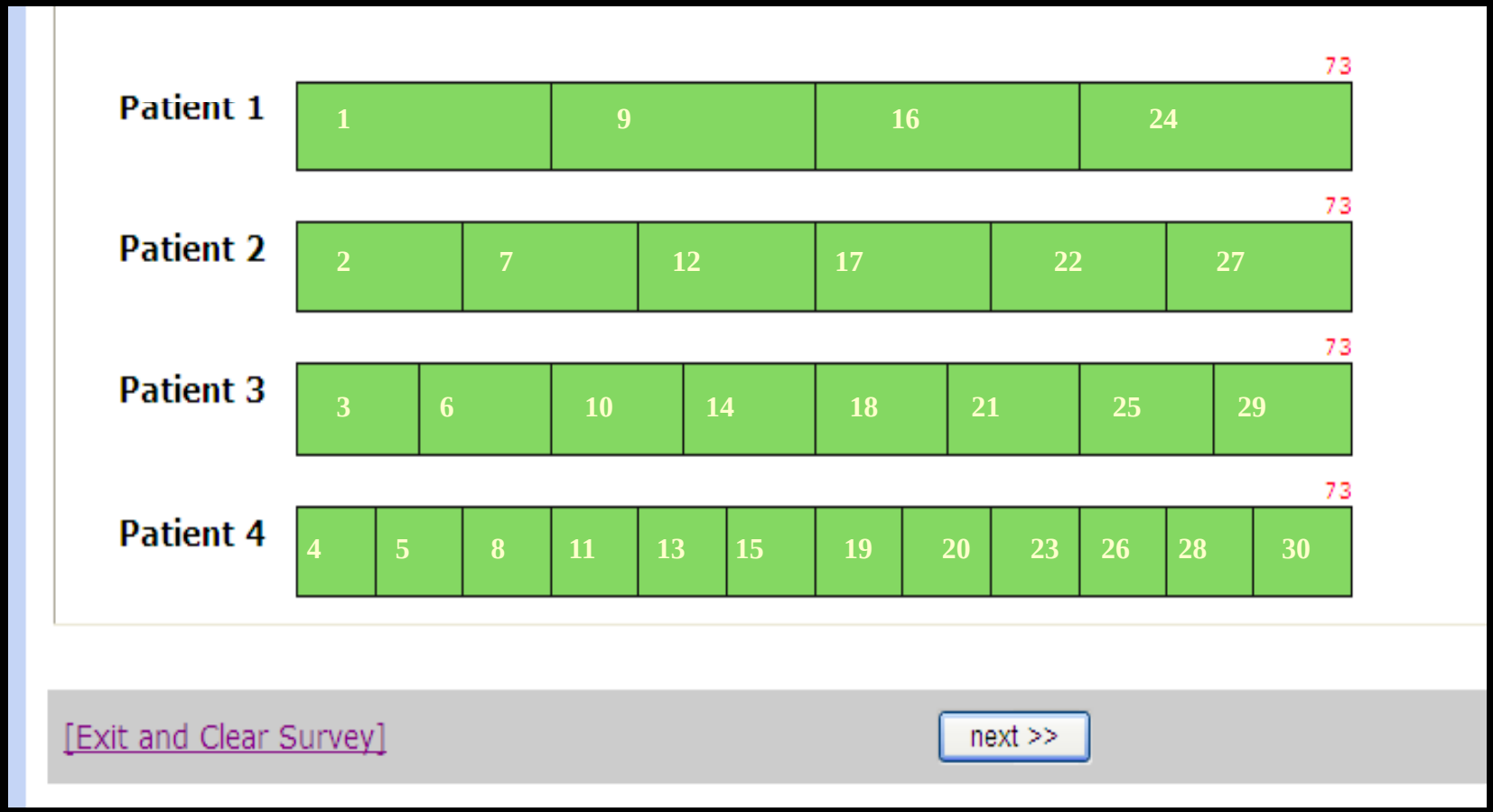
Extreme Egalitarianism



Indices: Spearman correlation and ad hoc index

		Spearman correlation		$\Sigma (O_1-O_2)^2$/max ind	
		Response Order vs Order			
	n	Efficiency	Egalitarian	Efficiency	Egalitarian
Graduate	7	0.6520	0.4448	0.090	0.1330
Total	27	0.68	0.41	0.0819	0.1409

Indices: Spearman correlation and ad hoc index

		Spearman correlation		$\Sigma (O_1-O_2)^2$/max ind	
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	n	Efficiency	Egalitarian	Efficiency	Egalitarian
Economist	9	0.6923	0.3634	0.080	0.1526
Graduate	7	0.6520	0.4448	0.090	0.1330
Other	12	0.6983	0.4298	0.078	0.1366
Total	27	0.68	0.41	0.0819	0.1409

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		Spearman correlation		$\Sigma (O_1-O_2)^2$/max ind	
		Response Order vs Order			
	n	Equal services	Compromise Eclectic	Equal service	Compromise Eclectic
Economist	9	0.6090	0.5109	0.1044	0.1281
Graduate	7	0.5438	0.5089	0.1219	0.1294
Other	12	0.5573	0.5334	0.1180	0.1229
Total	27	0.5706	0.5200	0.1146	0.1262

Deriving a cost algorithm to replace cost

- Cost/LY = [gained LY/1,000] $^{-1}$
  = [size of 'Block'] $^{-1}$
- 'Budget' = [$10,000] [number of iterations]
- LY/person = services [clicks]*[LY/service]
- "Severity' = Life expectancy

Deriving the threshold

$$\ln \rho /(1-p) = a - b_1 P - b_2 LE + b_3 Y$$

if $\rho = ½$

$$0 = a - b_1 P - b_2 LE + b_3 Y$$

If Y, LE fixed

$$\text{cost/LY} = P = (1/b_1)(a + b_2 LE + b_3 Y)$$

= fixed threshold/person

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$LE = f[Q] = f[cost/LY]$ ie endogenous

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But

LE = f[Q] = f[cost/LY] ie endogenous

$$[Cost/LY]/person = 1/b_1 [a - b_2(f(cost/LY)] + b_3 Y$$ ... Equation 1

Logit results n = 1560 (36 people)

Probability Service Received

	b	z	p
Cost/LY	-76	-6.7	0.00
Life Expectancy	0.15	0.7	0.47
Income	1.7	11.2	0.00
Const			
	n=168		

Interpretation: a small change in price requires a large offsetting change in Y: consistent with fixed threshold

Logit results n = 1560 (36 people)

Probability Service Received

	b	z	p	b	z	p
Cost/LY	-76	-6.7	0.0	-1.76	-1.25	0.21
Life Expectancy	0.15	0.7	0.47 ns	-0.116	-9.19	0.00
Income	1.7	11.2	0.0	0.19	8.67	0.00
Const				-0.91	-3.6	0.00
	n=168			LR chi 2 (3) = 181		

Interpretation: a large increase in cost/LY offset by a small change in LE

Regression results n = 1,386

Dependent = Life Expectancy

	Linear		Log	
	b	t	b	t
Cost/LY	-99.4	-40.0	-0.73	35.6
Income	1.60	89.8	0.91	67.5
Constant	16.4	32.7	-0.68	-11.7
R^2	0.86		0.79	

Calibrating the threshold

Equation 1

a = -0.91; b_1 = -1.76(ns); b_2=-0.116; b_3=0.19

LE (linear) = 16.4 + 1.6 income - 99.4 (cost/LY)

Cost/LY = -1.59 + 6.55 cost/LY + 0.29 Inc

Logit, enlarged database

N = 46,608 (36 people)

PR	Coefficient	Z	P
P	9.66	55.7	0.000
Life Expectancy	0.008	9.13	0.000
Y	0.02	12.5	0.000
Constant	-2.7	-63.1	0.000

LR chi 2 (3) = 4031

Beginning of Conclusions

- Each different price = different person
- No threshold: trade-off

price ↑ → (a) disembodied efficiency ↓
: pressure to not fund
(b) fairness ↑
pressure to compromise

Efficiency *vs* Fairness

- Efficiency focus
  - Disembodied costs, benefits
  - Distribution an aside/neglected
  - Description of economics
- Fairness focus
  - Relationships between people
  - Efficiency an aside/neglected
  - Description of population

Efficiency *vs* Fairness

- Efficiency focus
  - Disembodied costs, benefits
- Fairness focus
  - Relationships between people

AND

Change cost → re distribution

AND

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Hence:

Efficiency (cost/benefit) and fairness (sharing)

Are inextricable and must be judged simultaneously

AND

Change cost → re distribution

Hence:

Efficiency (cost/benefit) and fairness (sharing)

Are inextricable and must be judged simultaneously

Hence:

Impact [cost ↑, fairness ↓] ≠ [Impact cost↑ alone]

(Getting closer to the end) Common problem

- Objectives — assumed, not observed

- Assumed benefits — utility
- Assumed costs — loss utility
- Observed costs — reflects fairness
- Observed benefits — reflects fairness

(Even closer)
Most destructive assumptions

Cannot compare individuals

Ethics is outside scope of economics

(Even closer)
Most destructive assumptions

Cannot compare individuals

Ethics is outside scope of economics

BUT

Comparison of people

= key to wellbeing

= basis of political economy

= most common human activity

What is the ideal method?
Impossibility of an Ideal Metric for Decisions and how we should select one
(Richardson 2007)

- Different metrics → different distributions
- Economic orthodoxy ↛ solution
- Ethics ↛ answer
- Empirical ethics ↛ guarantees
- Voting ↛ ideal solution (Arrow)
- Arrow (trivial) ↛ solution

Final Conclusion! (Promise)

1. Provide
   - Information on objectives
   - Options/objectives
2. Empirical Ethics: likely to be
   - Fairness focussed
3. Stop imposing values on society
   - Present pretentions = Hubris
4. Accept status of 'Dentist' (Keynes) not Philosopher King (Plato)

Postscript (non core promise)

- Eliminate the term ‘efficiency’
  - Maximising wrong objectives ≠ efficiency
    max QALY/cost ≠ efficiency if we wish to share
  - ‘Efficiency’ is a coercive term
- Eliminate the term ‘equity’
  - Excludes too many objectives eg solidarity/ community; unequal treatment of unequals
  - Equity (also) a coercive term

Neutral terminology

- Maximise objectives
  - Subject to constraints
  - Identify trade-offs
- Research tasks
  1. Assist (not dictate) finding objectives
  2. Technical analysis to maximise goals

FIN