HEALTH ECONOMICS
Health Econ. **18**: 147–159 (2009)
Published online 16 May 2008 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/hec.1355

EQUALITY OF WHAT IN HEALTH? DISTINGUISHING BETWEEN OUTCOME EGALITARIANISM AND GAIN EGALITARIANISM

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SUMMARY

When deciding how to weigh benefits to different groups, standard economic models assume that people focus on the final distribution of utility, health or whatever. Thus, an egalitarian is assumed to be an egalitarian in the outcome space. But what about egalitarianism in the gains space, such that people focus instead on how equally benefits are distributed? This paper reports on a study in which members of the public were asked to rank a number of health programmes that differed in the distribution of benefits and final outcomes in ways that enabled us to distinguish between different types of egalitarianism. The results suggest that outcome egalitarianism dominates, particularly for differences in health by social class, but a sizeable minority of respondents appear to be gain egalitarians, especially when the health differences are by sex. These results have important implications for how we think about outcome-based social welfare functions in economics. Copyright © 2008 John Wiley & Sons, Ltd.

Received 9 February 2007; Revised 12 February 2008; Accepted 13 February 2008

KEY WORDS: distribution; egalitarianism; gain; outcome; health

INTRODUCTION

Economists have developed methods of economic evaluation (e.g. cost–benefit analysis, cost–effectiveness analysis and, in health, cost–utility analysis), which help determine an efficient use of resources. The basic tenet of economic evaluation is that we should seek to maximise benefits, however they are conceived (see, for example, Drummond *et al.*, 2005). The maximisation of benefits requires that we consider only what can be done with resources, given where we are now. Equity considerations, on the other hand, require that we consider how welfare is distributed and, in general, require that we consider the distribution of welfare once benefits have been distributed (see, for example, Atkinson and Stiglitz, 1980). The issue is what makes a distribution equitable. For instance, let us imagine a very poor commune where some members are close to starving. People may think that it is a matter of fairness that everybody should achieve the same subsistence-level nutrition even if this means unequal or even inefficient rations across members of the commune. In this case, and in standard formulations in welfare economics, equity considerations operate in the (final) outcomes space. In standard formulations, then, efficiency operates in the gains space and equity operates in the outcomes space.

Consider Figure 1, a two-dimensional space with the welfare, or health, of two parties (two individuals or two homogeneous population groups) represented along the two axes. Efficiency is

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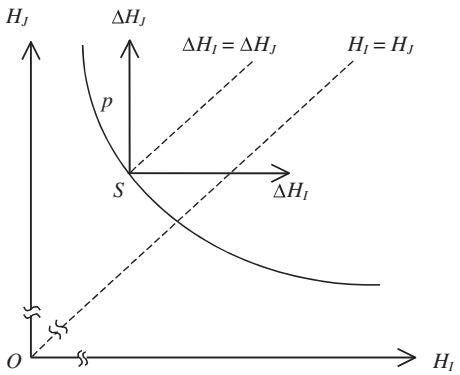

Figure 1. The outcomes space and the gains space

usually judged by how much *more* the intervention will produce and, therefore, given a specific starting point (S), by how far to the north east the end point will lie with respect to this point S. The Pareto improvement criterion is an example. However, equity is judged by how the two parties fare in terms of their eventual levels of welfare. When both parties are regarded as being equal in all relevant respects, equity will be judged with reference to how close the end point is to the 45° diagonal through the origin, O. There may be situations where an unequal distribution would be regarded as appropriate, in which case the 45° diagonal can be tilted to represent the equitable distributions. In either case, the frame of reference for efficiency is the 'gains space' with the origin at the initial point S, whereas the frame of reference for equity is the 'outcomes space' with the origin at point O, where both parties have zero welfare.

In health economics, the axes of Figure 1 can represent lifetime total health. The initial point is then taken to represent the amounts of health experienced by each individual or group at the time when a decision is made about how to allocate future health gains. The distinction between the outcomes space and the gains space is then equivalent to the distinction between lifetime health and prospective health (see, for example, Dolan and Olsen, 2001). As it is impossible to take away from somebody the health experience they have already had, all efficiency judgements take place in terms of prospective health; that is, the gains space. Given that the origin for the gains space is fixed within the outcomes space, any prospective end point determined in the gains space will correspond to a unique point in the outcomes space but economic evaluations have no primary interest in the outcomes space *per se*. Equity, on the other hand, represents a concern over the final distribution of health in the outcomes space, across the past and the future e.g. by looking at the distribution of expected age of death, or expected lifetime health across different populations.

However, equity does not have to be conceptualised in terms of outcomes, as the equality of welfare, but it could instead be thought of in terms of gains or 'gain egalitarianism'. Unless the starting point S happens to lie on the 45° from the origin O, equity in the outcomes space and equity in the gains space will not coincide. Equal outcomes will require unequal gains, and equal gains will result in unequal outcomes. Therefore, if there are to be such circumstances where gain egalitarianism is applied, equity in outcomes space needs to be seen as less relevant: i.e. not all unequal outcomes would be automatically regarded as inequitable. Imagine a much more affluent commune, where no member was starving. This time, equity might require equal rations for everybody even if this implied unequal outcomes across members, which would be in line with gain egalitarianism. This thought experiment suggests that the same people may be outcome egalitarian or gain egalitarian, depending on the context. Specifically, as in this example, it is a reasonable conjecture that the more 'basic' the distribuendum and/or the situation, the more support outcome the egalitarianism will receive.

DOI: 10.1002/hec

There is now some evidence that suggests members of the public think that whereas inequality in life expectancy at birth across the socio-economic classes is inequitable, a similar inequality across the sexes is not inequitable (Dolan and Olsen, 2002). And if so, it may be reasonable to use the outcomes space to assess the equity of health policies that affect different socio-economic groups, but to use the gains space to assess the equity of health policies that affect the two sex groups. As is discussed in Tsuchiya and Williams (2004), this may be because in the context of social class, those who are disadvantaged in terms of health are also those who are disadvantaged in terms of socio-economic opportunities, whereas in the context of the sexes, those who are disadvantaged in terms of health are not those who are disadvantaged in terms of socio-economic opportunities; and for this reason, people may think that the inequality in health across the sexes is less inequitable than the same inequality across the socio-economic groups.

One way to deal with the dual objectives of efficiency and equity is to introduce inequality aversion into an outcome-based objective function, as is done with any standard concave social welfare function (SWF). Here, efficiency and equity are collapsed into one objective function, with specific trade-offs between them implied. This in effect puts the gains space into the background, and offers a complete ordering of all possible outcomes with reference to the origin O, so that any move from any point that crosses a social welfare contour away from the origin O is an improvement. As a result, the gains-based Pareto improvement criterion is also compromised: given diminishing marginal rates of substitution, a move from starting point S to any point in the area marked p in Figure 1 (i.e. to the north west from S *and* to the east of the social welfare contour through point S) will be regarded by the SWF as an improvement although one party will be strictly worse off than at the initial point S so that the Pareto improvement criterion will not be satisfied. This reflects a tension between a social welfare judgement placed explicitly within the gains space, and a social welfare judgement placed primarily within the outcomes space.

On the other hand, a gain-based assumption in the literature of SWF is the principle of monotonic increase, or the monotonicity principle, which states that social welfare will not decrease when the welfare of at least one party is improved. In other words, starting from point S, any move due north (or due east) is associated with a superior social welfare contour. However, if the location of S is considered to be sufficiently far away from the 45° diagonal through the origin O to the north west (i.e. if the distribution under S is considered to be sufficiently unequal), then as the only party to be made better off would be the already much better off party, some may find it counter-intuitive that a move due north be regarded as an improvement. Indeed, there is some evidence to suggest that a significant proportion of the general public may have preferences that violate the monotonicity principle. For instance, Dolan *et al*. (2002) have found that up to 20% of those interviewed had such preferences. Such perceptions support a backward bending social welfare contour (Abásolo and Tsuchiya, 2004), which allows for the possibility that a move due north from certain points is associated with an inferior contour, because it implies moving away from 45° diagonal through the origin O. Therefore, this is another example of a conflict between a social welfare judgement placed within the gains space, and a social welfare judgement placed within the outcomes space.

Of course, what constitutes equity in the context of health economics and health policy is not straightforward. Many health economists and policy analysts have devoted considerable attention to equity as equality of access and/or equal utilisation for equal need, as opposed to equity as the equality of health outcomes for all; for example, McGuire *et al*. (1988) and Mooney (1992) are classics. In addition, there is a growing academic interest in equity as a matter of procedural justice, relating to the way in which decisions are made, as distinct from distributional justice, which relates to the consequences of those decisions (see, for example, Daniels and Sabin, 1997; Wailoo and Anand, 2005; Tsuchiya *et al*., 2005). However, in this paper, and in line with one of the definitions of equity discussed in Culyer and Wagstaff (1993), we focus on equality in terms of health outcomes. We recognise the importance of equality of access in academic and policy debates, but our focus on equality of health is

DOI: 10.1002/hec

consistent with a long tradition in health economics (see, for example, Culyer and Wagstaff, 1993; Williams, 1997) and with much of the debate in current health policy in the UK (Secretary of State for Health, 1999).

This paper uses examples from inequalities in health to explore two issues related to the tension between gain-based social judgements and outcome-based social judgements. One relates to gain egalitarianism. Our conjecture is that when an existing inequality is perceived to be less inequitable, more people will support gain egalitarianism. The second issue is the violation of monotonicity. Our conjecture here is that when an existing inequality is perceived to be more inequitable, more people will violate the monotonicity principle. In order to explore these conjectures, we assume, in line with previous findings, that inequalities in health across social classes are perceived to be more inequitable than the same degree of inequalities in health across the sexes. We also assume that inequalities in life expectancy are more inequitable than inequalities in prevalence of illness. The following three sections present the methods of a questionnaire-based survey administered in small group settings, the results concerning the two issues above and a discussion, respectively.

METHODS

Questionnaire

Respondents were asked five questions on priority setting in health policy. This paper reports on the results of the third and fourth questions, which are referred to as Questions 1 and 2 hereafter. (For details of the other questions, see Dolan and Tsuchiya, 2005.) The two questions discussed in the current paper involved trade-offs between health maximisation and a more equal distribution of health. Both questions used a benefit trade-off (BTO) method in which the size of the health benefit is used as the currency to express the trade-off between efficiency and equality. Question 1 used life expectancy at birth as the measure of health and Question 2 used the prevalence of long-term limiting illness (see Appendix A for the format of Question 1 – Question 2 followed a similar format).

Question 1 presented respondents with information on life expectancy at birth, at the starting point, which was 73 for the disadvantaged group, *I*, and 78 for the advantaged group, *J*. Both groups are of equal size. Respondents were asked to imagine six scenarios that could increase average life expectancy by varying amounts for the two groups. The six scenarios were presented in random in order to avoid any anchoring effects, or '*status quo*' bias (Samuelson and Zeckhauser, 1988), and respondents were first asked to choose their most preferred scenario. Having done this, they chose their second preferred scenario, third preferred and so on – effectively, ranking all six scenarios in order of preference, with no ties allowed.

The six scenarios, labelled *a* to *f*, are shown below, and the starting point (*S*) and the resulting distributions of health from each scenario are illustrated in Figure 2(a).

	Group *I* (years)	Group *J* (years)
a	+2	+2
b	+3	+1
c	+4	+0
d	+3.5	+0
e	+3	+0
f	+2	+0

Question 2 presented respondents with prevalence rates of limiting long-term illness, which for the disadvantaged group was 40%, and for the advantaged group was 12%. Again, respondents were asked to imagine six scenarios that could reduce rates of illness by differing amounts for both groups, and to rank the scenarios in order of preference from the first to the sixth. The six scenarios are shown below

DOI: 10.1002/hec

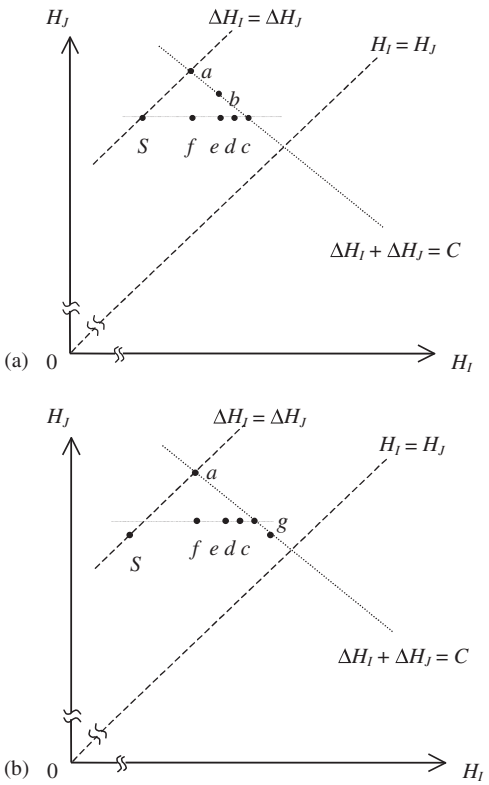

Figure 2. (a) The starting point and the six scenario outcomes in Q1. The move from the starting point S to a corresponds to the equal gain line $\Delta H_I = \Delta H_J$. Points a, b and c lie on the constant total gain line $\Delta H_I + \Delta H_J = C$. Points c, d, e, f and S lie on a horizontal line with H_J held constant. (b) The starting point and the six scenario outcomes in Q2. The move from the starting point S to a corresponds to the equal gain line $\Delta H_I = \Delta H_J$. Points a, c and g lie on the constant total gain line $\Delta H_I + \Delta H_J = C$. Points c, d, e and f lie on a horizontal line with H_J held constant

and were designed to identify different types of preferences similar to those identified in Question 1, and are illustrated in Figure 2(b), where the axes are arranged so that reducing illness be represented in moves towards the right or above.

	Group *I* (%)	Group *J* (%)
a	−7	−7
g	−14	−0
c	−12	−2
d	−11	−2
e	−10	−2
f	−7	−2

In order to test whether people's aversion to inequality differs according to the groups across which the inequalities exist, half the respondents received a variant where the health differences were by the highest and lowest social classes, and the half received another variant where the same differences existed between women and men. In Question 1, men are the disadvantaged group, and in Question 2 it is women, reflecting the shorter life expectancy of men and the higher level of morbidity amongst women.

DOI: 10.1002/hec

Analysis

The results are summarised by the distribution of ranks and the average ranks given to each scenario by question and by questionnaire variant. Given the study design, individual-level results will be summarised in three ways:

1 The ordering for scenarios *a*, *b*, *c* and *g*, along the $\Delta H_I + \Delta H_J = C$ line. If a respondent is averse to inequalities in consequences, then $c[4,0] \succ b[3,1] \succ a[2,2]$ for Q1 and $g[-14,0] \succ c[-12,-2] \succ a[-7,-7]$ for Q2 should hold. In what follows, we will refer to this ordering as the 'concave ordering'. On the other hand, if a respondent is gain egalitarian, then their rank ordering will be determined by how close the points are to the line $\Delta H_I = \Delta H_J$, so that the reverse preference ordering $a \succ b \succ c$ for Q1 and $a \succ c \succ g$ for Q2 should hold. This will be referred to as the 'reverse concave ordering'.
2 The ordering for scenarios *c*, *d*, *e* and *f*, along the straight horizontal line. If a respondent's preference is either increasing in total health or decreasing in outcome inequality, then $c[4,0] \succ d[3.5,0] \succ e[3,0] \succ f[2,0]$ for Q1 and $c[-12,-2] \succ d[-11,-2] \succ e[-10,-2] \succ f[-7,-2]$ for Q2 should hold. We refer to this ordering as the 'dominant ordering'. On the other hand, if a respondent is purely gain egalitarian, then the reverse ordering $f \succ e \succ d \succ c$ should hold. This will be referred to as the 'reverse dominant ordering'.
3 Where the dominant ordering holds, the location of *a* and *b* in this sequence. This will give an indication of the point at which the implied indifference curve through *a* intersects with the straight horizontal line from *c* to *f*, as in Figure 3, which, assuming symmetry, depicts two mutually exclusive cases where the indifference curve through point *a* falls between points *e* and *f* (i.e. ranking $c \succ d \succ e \succ a \succ f$) and between points *d* and *e* (i.e. ranking $c \succ d \succ a \succ e \succ f$). As the figure indicates, the former contour implies stronger inequality aversion. Note that, while the same can be done to identify the indifference curve through point *b*, given the location of point *g*, the indifference curve through this point is not expected to intersect with the straight horizontal line from *c* to *f*. The ordering between *c* and *g* overlaps with concavity.

In addition, the data are analysed using rank ordered logit regressions (in STATA 8), assuming a simple additive model between health maximisation and inequality reduction. The dependent variable is the rank given to a scenario, and the explanatory variables are the total gain in health across the two groups (GAIN) and the size of the difference in final health resulting from the scenario (INEQ). The

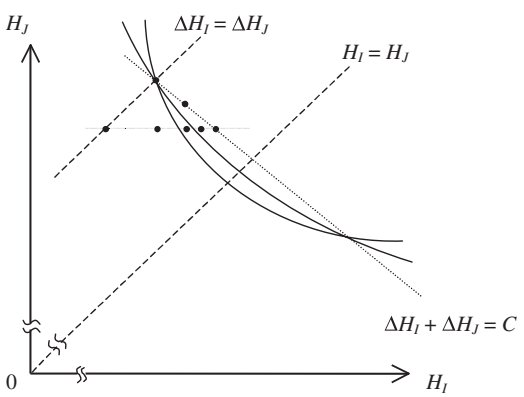

Figure 3. Two alternative indifference curves through *a*. Labels for the points are dropped (see Figure 1 above). The figure shows two symmetric contours through point *a* that intersect with the horizontal line *c–d–e–f* at different points

DOI: 10.1002/hec

performance of the model is assessed by looking at the product moment correlation between the predicted probabilities of a given scenario being ranked first and the average ranks of the scenario.

Logistics

Letters of invitation were sent out to 2000 people on the electoral register in two wards in Sheffield. Potential respondents were invited to participate in a group interview for which they would be paid £15. Brief discussion groups with groups of five to eight people were conducted before each participant was asked, on an individual basis, to complete the questionnaire. Respondents were prompted by the facilitator to check whether they understood the questions.

RESULTS

Respondents

In total, 257 people (13.2%) agreed to take part. To ensure that the sample was broadly representative of the wider population, 192 respondents were selected based on information on their age and sex obtained from their reply slips. In total, 128 (66.7%) participants attended a group interview. Five respondents had missing or unusable data, and were excluded from subsequent analysis.

Distribution of ranking

The overall rankings for the two questions are reported in Appendix B. Table I presents the results of the tests for concave ordering. About one-half of the respondents satisfy concavity on each question in relation to social class and about one-third do so in relation to differences between the sexes. The modal preference is to satisfy the concave ordering in both questions and both variants (a total of 28 respondents out of 123), while 11 respondents consistently support the reverse concave ordering.

These rankings suggest that more respondents are averse to inequalities in outcomes than to inequalities in gains as a concave ordering is consistent with outcome egalitarianism (and trading) but not with gain egalitarianism. However, there is considerable difference between the versions of the questionnaire, particularly in Question 1, where over one-third of the respondents in the sexes variant exhibit gain egalitarian preferences (compared with less than 1 in 10 in the social classes variant). There is less difference between the variants in Question 2, but gain egalitarianism is still more common in the sexes variant.

It is worth noting that some respondents may have been distribution neutral maximisers. As maximisers are indifferent between all choices on the $\Delta H_I + \Delta H_J = C$ line, in the absence of being able to give tied ranks, they would have to be chosen randomly. Our experience from earlier piloting, however, suggests that very few respondents would fall into this group. It is also worth noting that, in the choice between three programmes that generate the same overall benefit, many respondents rank the 'middle' option first (that is, prefer a programme that targets the worst off yet at the same time gives something to both groups).

Table II presents the results of the tests for dominant ordering. Across the two questions and the two variants, the dominant ordering is the modal preference out of the 24 possible combinations. For Q1, the second most frequent ordering is $c \succ e \succ d \succ f$ for the social class variant (13%) and $d \succ c \succ e \succ f$ for the sex variant (12%), which are both similar to the dominant ordering ($c \succ d \succ e \succ f$). Support for the reverse dominant ordering is around 2%. However, the second most frequent ordering for Q2 after the dominant ordering is the reverse dominant ordering across the two variants (13 and 17%). This suggests that a significant minority support gain egalitarianism. Around 32% of those in the social class variant and 26% of those in the sexes variant chose the dominant ordering consistently across the two

DOI: 10.1002/hec

Table I. The support for concave ordering in (a) Q1 on life expectancy (%) and (b) Q2 on long-term illness (%)

Preference	Social class	Sexes	Total
(a)			
Outcome-based aversion			
$c[4,0] \succ b[3,1] \succ a[2,2]$	**44**	33	**38**
Gain-based aversion			
$a[2,2] \succ b[3,1] \succ c[4,0]$	9	**35**	24
'*Middle*' *preferred*			
$b[3,1] \succ c[4,0]$, $b[3,1] \succ a[2,2]$	17	13	15
All others	30	18.	24
(b)			
Outcome-based aversion			
$g[14,0] \succ c[12,2] \succ a[7,7]$	**52**	**39**	**45**
Gain-based aversion			
$a[7,7] \succ c[12,2] \succ g[14,0]$	24	32	29
'*Middle*' *preferred*			
$c[12,2] \succ a[7,7]$, $c[12,2] \succ g[14,0]$	17	17	17
All others	7	12	10

Mode in bold. Sum to 100% along the columns.

Table II. The support for dominant ordering in (a) Q1 on life expectancy (%) and (b) Q2 on long-term illness (%)

Preference	Social class	Sexes	Total
(a)			
Dominant			
$c[4,0] \succ d[3.5,0] \succ e[3,0] \succ f[2,0]$	**57**	**57**	**57**
Gain based			
$f[2,0] \succ e[3,0] \succ d[3.5,0] \succ c[4,0]$	2	3	2
All others	41	41	41
(b)			
Dominant			
$c[12,2] \succ d[11,2] \succ e[10,2] \succ f[7,2]$	**43**	**35**	**38**
Gain based			
$f[7,2] \succ e[10,2] \succ d[11,2] \succ c[12,2]$	13	17	15
All others	44	48	46

Mode in bold. Sum to 100% along the columns.

questions. There were no respondents who chose the reverse dominant ordering across the two questions.

Location of the indifference curve through points *a* and *b*

Tables III and IV summarise the distribution of respondents in terms of the ranking given to scenario *a* (and then *b*), relative to the horizontal straight line between *c* and *f*, provided that dominant ordering is satisfied. The results for Question 1 in Table III(a) indicate that there is moderate aversion to inequalities in life expectancy across the social classes but there is no aversion to inequalities across the sexes, where men are worse off than women. In fact, $a[2,2] \succ c[4,0]$ holds for the median respondent here, which supports gain egalitarianism. At the same time, $f[2,0] \succ a[2,2]$ holds for 16% of respondents in the social class variant and 25% in the sexes variant, implying backward bending social welfare contours i.e. contours that are strictly in favour of reducing the inequality between two groups even if both groups are worse off as result. Table III(b), looking at the indifference curve through point $b[3,1]$, indicates that the corresponding proportions are 8 and 28%, respectively. Overall, 16% in the social class variant and 18% in the sexes variant have ranked *a* above *b*, and thus have implied indifference curves through points *a* and *b* that intersect.

DOI: 10.1002/hec

Table III. Distribution (%) of the location of indifference curve through (a) *a* and (b) *b* in Question 1 on life expectancy – respondents with dominant ordering only

	Social class	Sexes	Total
(a)			
To the right of *c*[4,0]	32	**50**	43
Between *c*[4,0] and *d*[3.5,0]	16	8	**12**
Between *d*[3.5,0] and *e*[3,0]	**8**	6	7
Between *e*[3,0] and *f*[2,0]	28	11	18
To the left of *f*[2,0][a]	16	25	21
Total (*n*)	25	36	61
(b)			
To the right of *c*[4,0]	20	39	31
Between *c*[4,0] and *d*[3.5,0]	20	8	13
Between *d*[3.5,0] and *e*[3,0]	**52**	**25**	**36**
To the left of *e*[3,0][a]	8	28	19
Total (*n*)	25	36	61

Median in bold.
[a]This implies a backward bending iso-welfare contour.

Table IV. Distribution (%) of the location of indifference curve through (a) *a* and (b) *g* in Question 2 on long-term illness – respondents with dominant ordering only

	Social class	Sexes	Total
(a)			
To the right of *c*[12,2]	9	17	13
Between *c*[12,2] and *d*[11,2]	0	17	9
Between *d*[11,2] and *e*[10,2]	4	8	6
Between *e*[10,2] and *f*[7,2]	**61**	**29**	**45**
To the left of *f*[7,2][a]	26	29	28
Total (*n*)	23	24	47
(b)			
To the right of *c*[12,2]	**78**	**75**	**77**
To the left of *c*[12,2][b]	21	25	23
Total (*n*)	23	24	47

Median in bold.
[a]This implies a backward bending iso-welfare contour.
[b]This implies gain egalitarianism.

The results for Question 2 indicate that, in the context of inequality in long-term illness, people are equally averse to inequalities between the social classes and the sexes, where women are worse off than men. Taken together, the modal preference is to have the indifference curve through *a* located between *e*[−10,−2] and *f*[−7,−2]. On the other hand, the results in relation to point *g* suggest that 21% of the social class variant and 25% of the sexes variant have the ordering $c[-12,-2] \succ g[-14,-0]$ implying gain egalitarianism. However, none of these respondents also have $a[-7,-7] \succ c[-12,-2]$; i.e. they have intersecting indifference curves.

Aggregate results

Table V reports the regression results. As the units of health gain in the two questions are not the same, it is inappropriate to compare the regression coefficients across the questions. Moreover, as both GAIN and INEQ are crude proxy measures for total gains and outcome inequalities, it is also inappropriate to compare the relative size of the regression coefficient for GAIN with the coefficient for INEQ within

DOI: 10.1002/hec

Table V. The additive model using rank ordered logit regression

	Q1: life expectancy		Q2: long-term illness	
	Social class	Sexes	Social class	Sexes
GAIN	**0.88**	**0.74**	**0.14**	**0.08**
INEQ	**−0.31**	**−0.20**	**−0.09**	**−0.03**
Correlation	−0.93	−0.90	−0.97	−0.84

Bold where $p<0.05$. GAIN: total gain in health across the two groups. INEQ: the size of the difference in final health resulting from the scenario. Correlation: Pearson product moment correlation between the predicted probability of a given scenario being first best and the average rank of the scenario. The closer this is to −1, the better is the performance of the regression.

one regression. However, it is meaningful to compare the relative size of the GAIN coefficients (or the INEQ coefficients) across the social class variant and the sex variant, within a given question. All regression coefficients are significant ($p<0.05$), and have the expected sign: the preferences are for increased total health and decreased outcome inequality. Both these preferences are stronger in the context of social class than in the case of sex, both in the life expectancy question and the long-term illness question. The final row indicates that the correlation between the predicted probability of a given scenario is to be ranked first and the average rank given to the scenario. As more preferred scenarios have higher probabilities and lower ranks, full agreement will have a correlation coefficient of −1. As can be seen, the four regressions perform well.

DISCUSSION

This study explores peoples' preferences in relation to the distribution of health benefits and final health. It uses a ranking exercise to explore the nature and extent of inequality aversion. As the study has no qualitative component, we cannot ascertain the real reasons why respondents made the choices they made. What we can discuss, however, is whether or not the observed choices are consistent with our conjectures, and with the assumptions of outcome-based SWFs. There are two conjectures: one is that when an existing inequality is perceived to be less inequitable, more people will support gain egalitarianism; and the second is that when an existing inequality is perceived to be more inequitable, more people will violate the monotonicity principle.

The results suggest that most respondents are inequality averse, but the kind of inequality aversion varies across question and variant. With differences in life expectancy by social class, respondents appear to focus heavily on the final distribution of health, in line with outcome egalitarianism. However, with differences in life expectancy by sex, as well as with differences in long-term illness by social class and by sex, about one-third of the respondents appear to be focusing on the size of the benefit to each party, in line with gain egalitarianism. The latter does not accord with standard SWFs based on the outcomes space. However, both are in line with our conjectures.

In addition, in the choice between three programmes that generate the same overall benefit, a sizeable minority of respondents prefer the programme that targets the worst off yet at the same time gives something to both groups. Such results might make some intuitive sense but, again, they do not accord with the notion of an outcome-based SWF. As one referee rightly pointed out, preferences for a programme in which everyone gains may stem from fear of a political backlash or estimation of likelihood of political support. In other words, it may be that people reason with implicit constraints that make their answers diverge from a standard SWF only in appearance. We suggest that future research, some of it qualitative in nature, should seek to test this possibility.

DOI: 10.1002/hec

The regression results show that both health maximisation and inequality aversion are stronger for inequalities across social classes than across the sexes, and this applies to both inequalities in life expectancy and in long-term illness. This is consistent with the finding that gain-based egalitarianism found more support in the gender variant than in the social class variant. Regarding inequality aversion in outcomes, there are many respondents, particularly to the social class questions, whose rankings would imply backward bending SWFs. In other words, the final distribution of health could mean less health for both groups, so long as the inequality narrows. Such responses generate pathological SWFs in standard economics terms and, as such, some may question whether respondents really appreciated the trade-offs their responses would suggest. However, these results are not without exception (Abásolo and Tsuchiya, 2004) and it seems entirely plausible that some people may be willing to make great sacrifices in efficiency in order to bring the life expectancies of the higher and lowest socio-economic groups closer together.

Admittedly, survey studies can only give a few examples, and we should be careful about making sweeping general claims. However, the empirical results reveal that people do care about the *status quo*, which is 'non-standard'. There is certainly the need for more research, across a range of decision contexts, into how and why so many people have such preferences. Evidence should also seek to consider the degree to which respondents are happy with their preferences when the consequences of those preferences for policy are spelled out to them. This is broadly in line with the reflective equilibrium ideas first put forward by Rawls (1971). Robust violations of particular axioms in the SWF may lead to some of those axioms (and possibly including monotonicity) being relaxed in certain contexts, in much the same way as certain axioms of expected utility theory (such as transitivity) have been relaxed in the light of compelling evidence that they do not provide a good descriptive model of human behaviour. Of course, expected utility still provides a good normative theory for decision-making and there are good grounds for retaining non-pathological SWFs in public policy settings. We do not seek to resolve these tensions here but hope that the results of studies like ours inform on-going debates of this kind.

ACKNOWLEDGEMENTS

We would like to thank Jan Abel Olsen, Bekki Shaw and Alan Williams for their help in designing the study, all the respondents who took part and the two anonymous referees. This study was funded by NHS Executive R&D Programme, Health Technology Assessment Grant on 'The validity of aggregation methods in cost–utility analysis'. The usual disclaimers apply.

CONFLICT OF INTEREST

None.

ETHICS

At the time of the study, no ethics approval was required for surveying members of the public on their views on hypothetical questions.

APPENDIX A

FORMAT FOR LIFE EXPECTANCY QUESTION

While actual life expectancy varies between individuals, on average, people in social class 1 live to be 78 and in social class 5 they live to be 73. Imagine that you are asked to choose between six programmes that will *increase* average life expectancy.

Social class 1	Social class 5
78 +0 years = 78 years	73 +2 years = 75 years

Social class 1	Social class 5
78 +0 years =78 years	73+3 years =76 years

Social class 1	Social class 5
78 +1 years =79 years	73+3 years =76 years

Social class 1	Social class 5
78 +2 years =80 years	73+2 years =75 years

Social class 1	Social class 5
78 +0 years =78 years	73+3.5 years = 76.5 years

Social class 1	Social class 5
78 +0 years =78 years	73+4 years =77 years

APPENDIX B

Ranks given to different scenarios in Q1 on life expectancy (%)

Scenario	Variant	1	2	3	4	5	6	Average rank
a[2,2]	Social class	**24**	19	6	11	20	20	3.46
	Sexes	**44**	10	7	3	7	29	3.07
b[3,1]	Social class	11	15	**43**	20	9	2	3.07
	Sexes	9	**39**	19	19	12	3	2.94
c[4,0]	Social class	**54**	20	11	0	9	6	2.07
	Sexes	**38**	13	26	10	9	4	2.52
d[3.5,0]	Social class	6	**32**	19	26	11	7	3.28
	Sexes	6	28	20	**32**	9	6	3.28
e[3,0]	Social class	2	15	17	**30**	**30**	7	3.93
	Sexes	1	4	20	26	**39**	9	4.23
f[2,0]	Social class	4	0	6	13	20	**57**	5.19
	Sexes	3	6	7	10	25	**49**	4.96

Mode in bold. Sum to 100% along the rows. Social class variant: $n = 54$. Sexes variant: $n = 67$.

DOI: 10.1002/hec

Ranks given to different scenarios in Q2 on long-term illness (%)

Scenario	Variant	1	2	3	4	5	6	Average rank
a[7,7]	Social class	19	7	7	4	35	29	4.13
	Sexes	**38**	4	7	6	16	29	3.45
g[14,0]	Social class	**50**	4	15	6	11	15	2.69
	Sexes	**38**	6	15	6	9	28	3.25
c[12,2]	Social class	11	**48**	11	6	19	6	2.89
	Sexes	9	**42**	9	13	22	6	3.14
d[11,2]	Social class	2	11	**50**	20	11	6	3.44
	Sexes	1	9	36	**40**	10	3	3.58
e[10,2]	Social class	4	19	11	**52**	11	4	3.59
	Sexes	3	20	**30**	28	15	4	3.43
f[7,2]	Social class	15	11	6	13	13	**43**	4.26
	Sexes	12	19	3	7	29	**30**	4.14

Mode in bold. Sum to 100% along the rows. Social class variant: $n = 54$. Sexes variant: $n = 67$.

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DOI: 10.1002/hec