The Journal of Mental Health Policy and Economics
J. Mental Health Policy Econ. **2**, 55–58 (1999)

Willingness to Pay as a Measure of the Benefits of Mental Health Care

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Abstract

Background: Decision-makers would benefit from being able to plan and evaluate mental health care interventions or programmes on the basis of costs and consequences that are measured in the same unit of measurement (money being the most convenient). Monetized quantification of the consequences of alternative interventions could be subsequently incorporated into cost–benefit allocation decisions.
Aim: This paper provides an overview of the policy and research context within which willingness-to-pay survey techniques are located, together with a review of the main approaches used to date. We also highlight key issues in the application of these techniques and indicate areas of mental health research and policy that could benefit from their introduction.
Method: Willingness-to-pay survey techniques are reviewed, and issues concerning their validity and application in the context of cost–benefit analyses of mental health policies are discussed.
Discussion: Different survey methods are available for generating willingness-to-pay data, the most common being the contingent valuation approach. An assessment of the validity of data generated by these alternative techniques is vital in order to ensure that they are consistent with the notion of economic preferences and values.
Implications: The generation of valid and meaningful data on the monetized value of mental health outcomes would provide decision-makers with an improved evidence-based framework for resource allocation.

Received 15 October 1998; accepted 2 April 1999.

'Monetized Benefits': a Challenge for Mental Health Economics and Policy

The tension that exists between the health and social consequences of mental disorders on the one hand, and the scarcity of resources relative to need on the other, implies that difficult choices will always have to be made regarding which mental health and social care policies are worth pursuing. Techniques of economic appraisal offer a framework within which to inform policy decisions of this type. Economic evaluation of mental health care interventions has typically been through the conduct of cost–effectiveness analysis (CEA), or less commonly cost–utility analysis (CUA), both of which evaluate not only the costs but also the outcomes of an intervention, expressed in terms of reduced symptoms, improved functioning, quality-adjusted life years etc. Both forms of evaluation represent useful tools for identifying the most productive methods of spending defined budgets (technical efficiency), but they do not permit *normative* conclusions to be drawn regarding whether any identified improvements in user outcomes are actually worth pursuing. This is a significant limitation.

By contrast, another mode of economic evaluation, cost–benefit analysis (CBA), seeks to ensure that specific policy proposals lead to improvements in allocative efficiency—that is, towards a situation where public resources are allocated to maximum social advantage. In practical terms this involves investing only in programmes or policies whose benefits exceed input costs. In this context it is ideal for costs and consequences to be measured in the same unit of measurement (money being the most convenient numeraire), since this facilitates direct comparison of costs versus benefits. Despite its use in other areas of public policy, cost–benefit analysis (CBA) has not been widely applied in the health and social care sectors, largely because of the difficulties associated with placing monetary values on the so-called 'intangible benefits' of health and social care provision, such as the alleviation of medication side-effects or the reduction of stress among users or carers. However, the development of new economic methods for valuing health outcomes holds out the prospect of a move towards decision-making on the basis of monetized costs *and* benefits of alternative mental health care interventions.

Economic Approaches to the Valuation of Health Care

The Value of Health and Social Care

From an economic perspective, health care is valuable to the extent that it increases social welfare, net of all costs incurred. Monetary equivalent reductions or gains in individual well-being should be measured according to the variation in a person's income that would leave him/herself indifferent between their pre- and post-change in welfare circumstances, equivalent to the maximum amount an individual would be willing to pay for an improvement in well-being or the minimum compensation s/he would require

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Source of funding: none declared.

CCC 1091–4358/99/020055–04$17.50

in return for experiencing some welfare loss. For traded commodities, the money valuation of welfare gains or losses is generally observable via prices paid in day-to-day transactions for goods and services. However, for non-traded goods, including health care, the trade-offs that appropriately reflect the money value that people attach to specified improvements in welfare are usually non-observable in market transactions. Economists have therefore devised other means of measuring the monetary equivalent of welfare gains and losses attached to non-marketed goods (**Figure 1**). Two main approaches can be identified.

The Revealed Preference Method

This approach makes use of observable income–well-being trade-offs in one market situation to make inferences about similar trade-offs in other contexts. An example of this approach is the modelling of market wage data across occupations that vary in their degree of risk of fatal injury. Predicted marginal rates of substitution between wages and risk are used to estimate the value of a statistical life (VOSL) for use in the appraisal of public policies targeted at saving lives.[1,2] The extent to which the wage–risk method is applicable to mental health policy evaluation, however, is questionable. There is empirical evidence that the context within which fatality risks occur affects peoples' subjective valuations for changes in the levels of risk involved.[3] If suicidal deaths are perceived more negatively than accidental deaths, interventions aimed at reducing suicide risk stand to be undervalued by comparison to improved work or road safety. The use of other available market price information in generating revealed preference data is also likely to be limited with respect to mental health policy evaluation, for example because observed prices may not be an adequate representation of values for mental health care financed from public taxation or health-insurance schemes.

Survey Methods

Where the revealed preference method cannot be used, survey techniques provide a means of generating estimates of maximum willingness to pay for policy or care outcomes. A wide range of strategies for measuring health state preferences and utilities have been developed, based on a synthesis of methods from psychology, economics, business and other disciplines.[4] Although most standard methods, such as category rating, paired comparison and standard gamble, have been applied to valuation studies of mental disorder,[5,6] there remains a paucity of studies upon which to establish the optimal method for measuring preferences for mental health states. There are three main techniques that have been specifically used to generate monetized estimates of these health state preferences.

Contingent valuation method (CV) Formerly used to value environmental goods,[7] CV has enjoyed an increased application to the area of health care evaluation. In a recent review Diener *et al.*[8] identified 48 CV studies in the health economics literature over the period 1984–1996 (only one was related to mental health—a CV survey of the benefits linked to the prescription of a new anti-depressant[9]). Respondents are presented with a description of some identified welfare improvement (or loss), such as a reduced risk of medication side-effects, and are then asked to state how much they would be willing to pay (or accept in compensation) for the specified change.

Conjoint analysis (CA) This method is built on the premise that many types of non-marketable good are multi-attribute in nature. CA survey respondents are presented with a series of pair-wise scenarios that share the same attributes but which vary according to the level of each attribute identified. The aim is to assess the extent to which respondents are prepared to trade off relevant attributes against one another. Summing willingness to pay for relevant changes in the levels of all attributes affected gives the total value of the intervention under evaluation. In order to generate willingness-to-pay estimates, it is necessary to include cost or price as an attribute at varying levels so that marginal trade-offs between income and other attributes

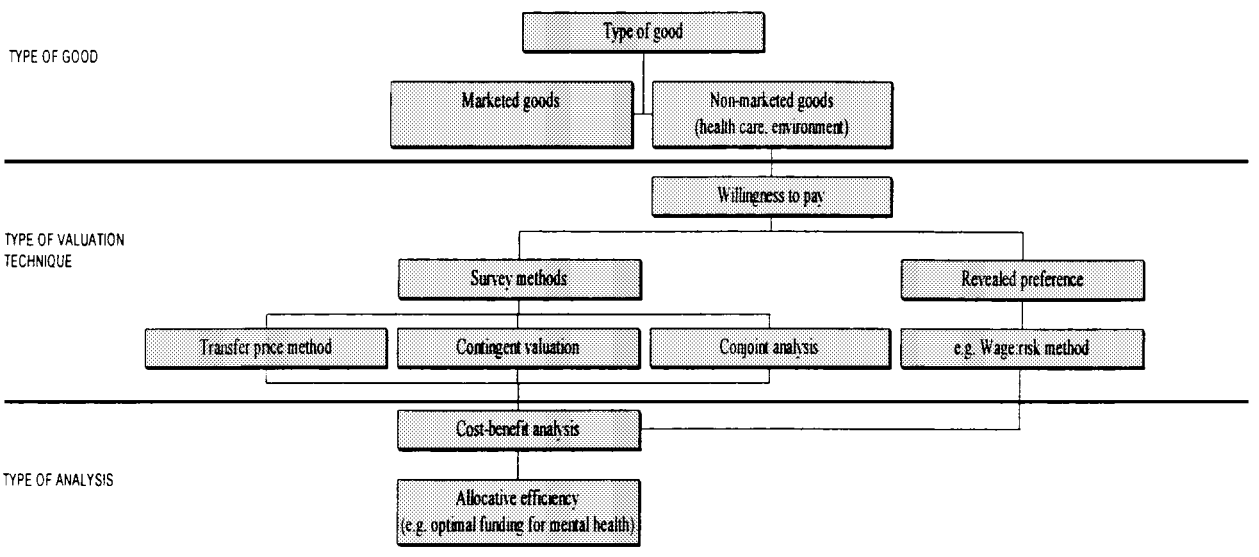

Figure 1. Economic approaches to valuation

can be determined. Marginal trade-offs can be elicited by asking each respondent to indicate their strength of preference for either scenario on a numbered scale (the contingent ranking method) or by asking people to state a preference for either scenario.[10,11]

Transfer-Price/Matching Question Techniques The transfer-price (or matching question) approach aims to identify directly the variation in price (and therefore income) that would leave respondents indifferent between two scenarios that share a specific attribute but which differ in terms of the level of that attribute. The difference in price between either attribute established at the point of indifference is implicitly the value a survey respondent attaches to the differential level of the attribute described. This method has been employed in the health area to assess public valuations for reducing the risk of contracting multiple sclerosis.[12] The transfer price approach offers a more direct means of focusing respondents' minds on income variations that leave them indifferent between two scenarios with different levels of utility, which reflects more accurately the theoretical measurement of welfare changes discussed earlier.

Issues of Survey Response Validity

An essential component of survey techniques is to subject responses to tests of validity, in particular whether observed willingness-to-pay estimates are in fact true measures of economic value. As an initial test of response validity, 'bid functions' can be estimated in order to examine the extent to which marginal valuations accord with prior theoretical expectations. For example, is there evidence of a positive income effect (one would expect willingness to pay to be partly determined by ability to pay)? Issues of convergent validity should also be explored, such as the extent to which willingness to pay is correlated with alternative scales measuring strength of preference,[13] since evidence of systematic differences would suggest that specific features of different survey designs and the way in which trade-offs are framed will introduce a degree of bias.[14]

An important validity issue concerning survey methods is the counter-theoretical finding that the minimum amount respondents are apparently willing to accept for a specified disbenefit has been shown to exceed the maximum willingness to pay for a commensurate benefit.[15] This 'willingness-to-pay–willingness-to-accept disparity' has been rationalized in terms of a *status quo* bias: individuals attach a greater value to, for example, a reduction in quality of life with respect to their current circumstances compared to a gain in quality of life of the same magnitude.

A further validity issue concerns the sensitivity of willingness-to-pay estimates to the scope of a particular good.[16,17] Insensitivity to scope is generally referred to as the embedding effect, which is characterized by willingness to pay for an inclusive category of good (such as community-based care for the mentally ill) being exceeded by the sum of valuations for each specific attribute that constitute the inclusive good. For example, respondents may rely on heuristic anchor points or 'rules of thumb' as a cognitive aid in formulating individual willingness to pay, which are invariant with respect to the scope of benefits presented.

Finally, surveys that ask respondents to value a series of related or unrelated goods are potentially open to bias arising from sequencing effects. Thus willingness to pay is driven by the placement of a good in the sequence of survey questions, with goods placed further along a sequence typically given lower valuations.[18] However, it has also been argued that sequencing may actually reflect legitimate economic behaviour as opposed to a systematic response bias.[19]

Applicability of Willingness-to-Pay Measures in Mental Health Care and Policy

Whilst willingness to pay methods are receiving increased interest, they have yet to gain a foothold in the analysis of mental health policy. There are a number of mental health economics priority research areas[20] to which the willingness-to-pay approach potentially could be applied.

(i) *New treatments*. The existing cost-effectiveness evidence base surrounding the newer anti-depressants and anti-psychotics remains ambiguous. There would be merit in attaching monetary values to the benefits associated with newer and older drugs, including differences in compliance and adverse side-effects, enabling straight comparison of these monetized benefits with the acquisition costs of these products. Research into the efficacy and cost-effectiveness of psychotherapeutic responses to mental disorder could likewise contain willingness-to-pay estimates of the benefits associated with the absence of drug side-effects, increased rates of compliance and enhanced satisfaction.

(ii) *New services*. Willingness-to-pay methods could be applied where new services are being planned. For example, willingness-to-pay estimates could be used to assess the extent of local support for a new community outreach mental health service or the establishment of supported community-based accommodation.

(iii) *Assessing suicide prevention*. Willingness-to-pay estimates could be used to estimate the (monetary) value of a statistical life associated with interventions that reduce the risk of suicide, both pharmacological products that are safer in overdose and prevention strategies such as early detection of high risk populations.

(iv) *Assessment of quality of life adjustment factors and disability weights*. Willingness to pay could be used as an alternative to utility measurement methods such as time trade-off for eliciting preferences associated with different states of health-related quality of life or disability. Comparison of such alternatives is important for assessing the validity

and reliability of these techniques, and by implication the credibility of exercises that are based in part on particular weighting methods.

The generation of such data through the careful application of willingness-to-pay methods, and its subsequent inclusion in cost–benefit considerations, can usefully contribute to mental health decision-making and resource allocation. In particular, the capacity of the approach to value the benefits of an intervention (including those previously considered 'intangible') in a unit of measurement comparable to the intervention's resource inputs represents an important development towards a more comprehensive assessment of the consequences of mental disorder and treatment responses to it.

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