

Willingness-to-Pay Method [WTP]

The WTP method can value *both* the *indirect* and *intangible* benefits. The WTP method *determines* how much people are willing to pay to gain a health benefit or to reduce the chance of an adverse health outcome. The WTP method measures patient **preferences**.

To elicit WTP values, respondents are presented with a hypothetical market describing the benefits of a particular health care intervention (e.g., program, pharmaceutical, medical device). Respondents are then asked to **value the outcomes** of the health care intervention in a dollar amount. Measuring WTP should include two general elements, a hypothetical scenario and a bidding vehicle ⁽¹⁾.

Basic components of WTP:

1- Hypothetical Scenario

The hypothetical scenario should include a description of the health care program or intervention (e.g., medication therapy, management program, or health education program). The intent of the scenario is to provide the respondent with an **accurate description** of the good or service that he or she is being asked to value. In addition, the scenario should detail the **amount of time** the person should expect to spend, as well as the **extent of benefit** (e.g., percent improvement in the condition) of the intervention ⁽¹⁾. An example of a hypothetical scenario for the asthma clinic might read:

Asthma Clinic Scenario

Patients with asthma have improved their condition by learning more about their disease and by taking their medications as directed. Pharmacists will help asthmatic patients to understand their condition and the medications used for treatment. In addition, they can:

- 1-Help patients learn how to use a peak flow meter and inhalers.**
- 2-Help patients recognize and handle situations when asthma attacks occur.**
- 3-Help patients learn how to monitor their asthma by keeping a record on file and following up on a regular basis to assess their progress.**

An initial visit with the pharmacist would include an educational program on managing the disease state. This type of service would last approximately **1 hour**. Assume that the program would result in a 50% improvement in the patient's asthma⁽¹⁾.

2- Bidding Vehicles:

After the program or intervention has been adequately described, respondents are then asked to "**bid**," or place a **monetary value on the benefits** of the program or intervention. Bids can be obtained through a variety of formats including ⁽²⁾:

A- Open-Ended Questions: Open-ended questions simply ask respondents how much they would be willing to pay for the outcomes of program or intervention. This question would **immediately** follow the hypothetical scenario. Here is an example:

What is the **maximum** amount that you would be willing to pay for the 1-hour consultation with a pharmacist? -----.

The respondent would then write in their maximum WTP amount ⁽¹⁾.

This method is used the least because it results in WTP values that **vary widely**. Many people do not know how to value health care programs because they do not normally pay the full amount out of pocket ⁽¹⁾.

B— Closed-Ended Questions: Closed-ended questions are also called "take-it-or-leave-it" questions. Respondents are asked whether or not they will pay a **pre-specified** amount of money for the outcomes of program or intervention. Here is an example:

**Would you be willing to pay \$60 for a 1-hour consultation with a pharmacist? ---
----Yes -----No**

This method more closely resembles the marketplace. When consumers shop for products, they must decide based on the price of the product whether to "take-it-or-leave-it." One drawback to this method is that only one question is asked, so only one WTP value can be elicited from a respondent. Thus, a very large sample would be required to determine the overall WTP value ⁽²⁾.

C- Bidding Game: The bidding game resembles an auction in that several bids are offered to reach a person's **maximum** WTP. Before soliciting a second response, the bids are adjusted based on the first response. This iteration could continue a number of times, but it is suggested that three times is optimal. Here is an example:

Would you be willing to pay \$60 for a 1-hour consultation with a pharmacist?
 _____ Yes If yes, ask: "Would you be willing to pay \$80?"
 _____ No If no, ask: "Would you be willing to pay \$40?"

This method is useful to try to arrive at a person's maximum WTP value. It is time consuming and the WTP values can be biased depending on how high (or low) the first bid is. This is called "**starting point bias.**"⁽²⁾.

D- Payment Card: The payment card method provides the respondent with a list of possible WTP amounts (i.e., payment card) to choose from. Here is an example:

What is the maximum amount that you would be willing to pay for a 1-hour consultation with a pharmacist? Please circle your choice.

\$150	\$90	\$30
\$130	\$70	\$10
\$110	\$50	\$0

This method is **very easy** to use and it provides respondents with a range of values to choose from. The advantages of the method can also result in disadvantages. Providing respondents with a range of values can bias their WTP values. The range provided can "suggest" the value of the intervention and can influence what respondents say. Also, "**range bias**" can influence the WTP amount. For example, if the range of values was from \$0 to \$75 versus \$0 to \$150, the respondents' WTP amount can vary depending on which range was provided ⁽²⁾.

Advantages and Disadvantages of the Willingness-to-Pay Method

The main advantage of the WTP approach is that it is a method to place a dollar value on **intangible benefits**. However, there are several disadvantages to the WTP methodology. It is difficult for people to place a dollar value on a health benefit or an increase in health-related quality of life or satisfaction.

Because a "hypothetical" or artificial scenario is presented, it is possible that respondents might give a "hypothetical response" or that the respondent may not understand the value of the market (e.g., pharmaceutical care program" being presented) ⁽²⁾.

Presenting Results of Costs and Benefits

After all costs and benefits have been identified and quantified (measured), the results of the analysis must be presented in ways that help **decision makers** understand the value of the program or intervention.

CBA can be presented in the following three formats: **net benefit calculations, benefit-to-cost ratios, and internal rates of return (IRR).**

When evaluating interventions, it is important to consider the time horizon for the project. If retrospective data are collected for more than 1 year or if the project inputs or outcomes are estimated for more than 1 year into the future, it is important to adjust or discount these costs one point in time ⁽²⁾.

Net Benefit (or Net Cost) Calculations ⁽²⁾.

The net benefit (or net cost) calculation simply presents the difference between the total costs and benefits. Net benefit = total benefits — total costs; Net cost = total costs — total benefits. Interventions would be considered to be cost beneficial if:

$$\text{Net Benefit} > 0 \quad \text{or} \quad \text{Net Cost} < 0$$

Benefit-to-Cost (or Cost-to-Benefit) Ratio Calculations ⁽²⁾.

CBA results can also be calculated by summing up the total benefits and dividing by the total costs. The ratio may be expressed as a benefit-to-cost ratio or a cost to-benefit ratio. Depending on how the ratio is presented, interventions are cost beneficial if:

$$\text{Benefit-to-cost} > 1 \quad \text{or} \quad \text{Cost-to-benefit} < 1$$

Example Using Different Calculation Techniques⁽²⁾.

Suppose a decision maker had to choose between two options. Also assume that the projects are for 1 year, so discounting is not needed.

Option A: Cost = \$1000; Benefit = \$2000

Option B: Cost = \$5000; Benefit = \$7500

TABLE 7.4. COMPARISON OF TWO PROPOSALS USING NET AND RATIO CALCULATIONS

	<i>Proposal A</i>	<i>Proposal B</i>
Net benefit	$\$2000 - \$1000 = \$1000$	$\$7500 - \$5000 = \$2500$
Net cost	$\$1000 - \$2000 = -\$1000$	$\$5000 - \$7500 = -\$2500$
Benefit/cost ratio	$\$2000/\$1000 = 2.0$	$\$7500/\$5000 = 1.5$
Cost/benefit ratio	$\$1000/\$2000 = 0.5$	$\$5000/\$7500 = 0.7$

Table 7.4 shows the net and ratio calculations for both proposals. Although four calculations are shown in the table, the benefit-to-cost ratio (when compared with the cost-to-benefit ratio) and the net benefit calculation (when compared with the net cost calculation) **are used most often** because the higher the result, the more cost beneficial an option becomes (for cost/benefit ratio: the lower the result, the more cost beneficial the option becomes).

Using the criteria outlined above for cost-beneficial programs, it is apparent that both programs are cost beneficial using both the net and ratio methods of calculations. However, when comparing net calculations, proposal B is more cost beneficial than proposal A (net benefit = \$2500 versus \$1000), but proposal A is more cost beneficial than proposal B (benefit-to-cost ratio = 2.0 versus 1.5) when using ratio calculations.

In this example, in which both proposals are cost beneficial, the decision maker may consider other issues, such as the **amount of money available for investment**. Whereas A would require \$1000 input costs, proposal B would require \$5000.

Another consideration may involve **the return on investment**. Proposal A, with a 2:1 benefit-to-cost ratio, has a higher return than proposal B (i.e., 1.5:1 benefit-to-cost ratio).

اي ان الدولار الواحد المصروف على Proposal A يعود دولارين (كنتيجة وليس كنقد)

وان الدولار الواحد المصروف على Proposal B يعود دولار ونصف

A third consideration is **the actual net benefit amount**. Proposal B has a higher net benefit than proposal A (\$2500 versus \$1000) ⁽²⁾.