

Part I: Introduction to Economic Evaluation

The First of a Five-Part Series

National Center for Chronic Disease Prevention and Health Promotion
Division for Heart Disease and Stroke Prevention



Slide 1

Welcome to this five-part web presentation series on Economic Evaluation Methods.

Economic Evaluation

A powerful tool that can help users make the most of resources, decide between promising program options, and demonstrate the benefits of your program



Slide 2

Here are some questions to think about:

- How do you really know you're making the most of your limited resources?
- How do you decide between two promising program options when you can only afford one?
- How do you demonstrate to decision-makers that the benefits of your program are worth the costs?

The answer is economic evaluation—a powerful tool that can help with all these situations.

This series is designed to introduce you to a number of important concepts that will help you understand economic evaluation and how to incorporate these methods into your programs.

The four types of analysis that we will discuss in this series are:

- One: economic impact analysis,
- Two: programmatic cost analysis,
- Three: benefit-cost analysis, and
- Four: cost-effectiveness analysis.

We will also discuss cost-utility analysis, a special type of cost-effectiveness analysis.

In Part One, we'll define these terms and explain how economic evaluation can help you. The modules that follow will walk you through the process you would use to develop and conduct each of these types of analyses.

Why Care About Economics Within the Context of Public Health?

- ❑ We want to maximize outcomes and minimize costs.**
- ❑ Limited resources = hard decisions.**
- ❑ Return on investment (ROI) shows how much value we get from our spending decisions.**

Slide 3

As public health practitioners, we care about improving the health of the entire population, so we try to maximize health outcomes. But why should we care about economic issues in public health?

Public health managers and economists would both agree that maximizing health outcomes is an important goal. However, public health interventions, programs, and policies all have costs. And from an economist's perspective, keeping these costs low is also important.

If we lived in a society with unlimited resources, then we might not care so much about minimizing costs. But our reality is that financial resources for public health are scarce, and the situation is only getting worse, so we want to demonstrate the value provided in exchange for the resources we use. Another way to put this is to say that we care about societal returns on our investment in public health.

Slide 4

To identify problems we hope to address, we use surveillance to determine the burden of a disease. Surveillance takes into account incidence, prevalence, and mortality rate. In gauging the economic burden, surveillance provides information on the medical costs and losses in productivity associated with a disease.

We also look at the causes of a disease to determine risk and protective factors. Information about these factors helps refine our surveillance systems and identify high-risk populations and other groups who might benefit from public health interventions.

Program and policy development are also important. Programmatic cost analysis is part of this process.

Evaluation of an intervention, program, or strategy's effectiveness looks at how well an intervention reaches its intended goal of improving health outcomes. In contrast, economic evaluation helps us understand the *cost factors* related to an intervention.

Economic evaluation can be conducted prospectively or retrospectively. For example, a prospective evaluation might help determine whether a program or strategy is effective enough to be recommended for broader implementation.

Economic Impact Analysis

- ❑ **Estimates total costs of a disease or condition:**
 - Medical and non-medical costs
 - Productivity losses
- ❑ **Generally reported as cost:**
 - Annual total cost
 - Average patient lifetime cost
- ❑ **Shows potential benefits of prevention**

Slide 5

The first type of economic evaluation—economic impact analysis—deals with identifying problems in the public health model. Economic impact analyses—sometimes called “cost of illness estimates,” “impact analyses,” or “economic burden estimates”—estimate the total costs of a disease or illness.

Economic impact analyses typically include the cost of medical care required to treat or manage an illness. Often, these analyses also include estimates of lost productivity associated with the disease. Economic impact analyses are usually reported as annual total costs for a group, or cohort, of people with the disease, regardless of when the disease first occurred. This is a prevalence-based approach.

As an alternative, the analyses can be reported as total lifetime costs for a cohort of people who acquire the disease within a specific time period. This is an incidence-based approach.

Both of these approaches can be used to show the potential benefits of efforts to prevent the disease. Module 2 will provide more information on this topic.

Cost Analysis

- ❑ First step of a full economic evaluation
- ❑ Estimates total program costs and determines who incurs those costs
- ❑ Includes both financial and economic costs
 - *Financial* costs show up on a budget sheet.
 - *Economic* costs include in-kind services.
- ❑ Offers foundation for budget justification, decision-making, and forecasting

Slide 6

Another type of economic evaluation is programmatic cost analysis. This is typically the first step in an economic evaluation comparing program costs to outcomes.

Programmatic cost analyses include all the resources required to implement an intervention, such as personnel, space and utilities, travel, materials, and supplies. These costs are important for determining who incurs the costs—the program itself, participants in the intervention, or external community groups.

Programmatic cost analyses include financial costs that appear in a budget, as well as economic costs of in-kind services. Module 3 will provide more information on this topic.

Economic Evaluation Methods

- ❑ **What is economic evaluation?**
 - A way to identify, measure, evaluate, and compare the costs and results of programs and policies.
- ❑ **There are three main methods:**
 - **Benefit-cost analysis (BCA)**
 - **Cost-effectiveness analysis (CEA)**
 - **Cost-utility analysis (CUA)**

Slide 7

A comparison of costs and benefits is the next step in economic evaluation. In this step, we assess the both the costs of an intervention and the benefits it provides. The two main types of this assessment are benefit-cost analysis and cost-effectiveness analysis.

In benefit-cost analysis, which will be discussed in module 4, program costs and benefits are converted into dollars. In cost-effectiveness analysis, to be discussed in module 5, program costs are in dollars but benefits are left in some natural unit, such as life years saved. A special type of cost-effectiveness analysis—called cost-utility analysis—includes only health outcomes.

How Economic Evaluations Inform Policy

Tier of Decision-Making



- ❑ **President/Congress**
 - Determine federal budget
 - BCA converts results to dollars
- ❑ **HHS**
 - Allocate funds to health programs
 - CUA compares outcomes of different programs
- ❑ **Local Programs**
 - Select best intervention for given outcome
 - CEA quantifies outcomes of similar programs

Slide 8

The particular type of economic evaluation to use depends on who is deciding which intervention to use. For example, at the federal level, the president has to make decisions about balancing spending between defense and health. Because the outcomes are different, a benefit-cost analysis that converts outcomes into dollars is the most appropriate economic evaluation method for decisions at that level.

In contrast, the CDC director makes decisions about interventions that affect different health programs—for example, hypertension screening versus diabetes prevention. The outcomes are different—hypertension versus obesity—but both are health related, so a cost-utility analysis, which includes only benefits that affect different aspects of health, is the most appropriate economic evaluation method.

In another example, the director of a heart disease prevention program might need to decide between programs that affect the same health outcome—for example, two interventions to improve hypertension screening. In this case, the most appropriate economic evaluation method is a cost-effectiveness analysis, which keeps outcomes in their natural units, such as the number of cases of hypertension treated.

The remaining presentations in this series will provide more in-depth information on all of these types of economic evaluations and how they can be applied to the public health model for preventing disease.

Types of Economic Evaluation Methods Used for CVD Prevention, 1995–2005

Types of Evaluation	No.	%
Cost-consequence or cost-minimization	28	14
CEA (cost per clinical outcome)	53	27
CEA (cost per life-year)	73	37
CUA (cost per QALY)	38	20
BCA	3	2

Slide 9

This table shows the numbers and percentages of five types of economic evaluation in cardiovascular research between 1995 and 2005 from a total of 195 studies, as determined by Schwappach and colleagues.

Main Themes

- ❑ **Economic evaluation enhances decision-making and helps set health policy.**
- ❑ **Practitioners and evaluators need to be adept at conducting these analyses, because demand for them is growing.**

Slide 10

Economic evaluation is often used to inform decisions about health policy. Increasing demand for economic evaluation requires that practitioners and evaluators have a firm grasp of the principles involved.

Outline of Presentations

- ❑ **II. Economic Impact Analysis**
- ❑ **III. Programmatic Cost Analysis**
- ❑ **IV. Benefit-Cost Analysis**
- ❑ **V. Cost-Effectiveness Analysis**

Slide 11

This concludes the first presentation, Introduction to Economic Evaluation. The remaining presentations will highlight each of the four types of economic evaluation: economic impact, programmatic cost, benefit-cost, and cost-effectiveness.

Resources

- Haddix A, Teutsch SM, Corso PS. *Prevention Effectiveness: An Introduction to Decision Analysis and Economic Evaluation*. 2nd ed. Oxford, England: Oxford University Press; 2003.

Slide 12

More information and additional resources on economic evaluation are available from the textbook *Prevention Effectiveness: A Guide to Decision Analysis and Economic Evaluation*.

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Rashon Lane, Applied Research and Evaluation Branch, and
Angela Soyemi, Communications Team

In collaboration with presentation author:

Phaedra S. Corso, PhD, MPA, Department of Health Policy and Management, University of Georgia College of Public Health

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Anatavia M. Benson, **Charlotte U. Duggan**, and **Thomas G. Race**

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Evaluation and Program Effectiveness Team . Division for Heart Disease and Stroke Prevention



For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov

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