Resource Pack:

Introduction to Benefit-Cost Analysis


Overview

This resource pack, curated by the Center for Health Decision Science, introduces the theory and practice of benefit-cost analysis. It is targeted towards advanced students as well as practitioners and those interested in teaching benefit-cost analysis.

Benefit-cost analysis (also referred to as cost-benefit analysis) is a well-established and widely-used form of economic evaluation. It is designed to inform policy and other decisions by providing evidence on the consequences of alternative interventions. In benefit-cost analysis, all impacts are measured in monetary units, including both health and non-health outcomes. By using money as a common metric, it allows the simultaneous, integrated consideration of multiple consequences and provides information on the intensity as well as the direction of individual preferences. Money is not important per se; rather it is used as a convenient measure of the trade-offs individuals and societies are willing to make. The summary measure is usually net benefits (benefits minus costs), although the ratio (benefits divided by costs) may also be reported as long as impacts are categorized consistently. In addition, analysts should also estimate how the benefits and costs are distributed across individuals in different income and other groups. The results can be combined with information on non-quantifiable effects, on legal, technical, budgetary, and political constraints, on ethical concerns, and on other factors, to provide the evidence-base for decision-making. In addition to the resources in this pack, those interested in the use of these methods in low- and middle-income countries may wish to review the CHDS BCA in Low- and Middle-Income Countries resource pack.
Selected Resources – At a Glance


EPA Guidelines for Preparing Economic Analyses

HHS Guidelines for Regulatory Impact Analysis

Norwegian Cost-Benefit-Analysis Guidance

UK Green Book Appraisal Guidance

OECD Cost-Benefit Analysis and the Environment

Benefit-Cost Analysis in Global Health

Behavioral Economics and the Cities

Attention to Distribution in U.S. Regulatory Analysis

Behavioral Economics and the Conduct of Benefit-Cost Analysis
Teaching Benefit-Cost Analysis
https://www.e-elgar.com/shop/teaching-benefit-cost-analysis

Society for Benefit-Cost Analysis

Journal of Benefit-Cost Analysis
https://www.cambridge.org/core/journals/journal-of-benefit-cost-analysis

Economic Evaluation Primer
http://dx.doi.org/10.2139/ssrn.4742082
Annotated Bibliography

CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/3280
This leading text is a practical introduction to cost-benefit analysis through problem solving. It advocates the application of a consistent framework for conducting and interpreting these analyses. The book is written in an easily accessible style and includes spreadsheet exercises, case studies, and exhibits to illustrate application of the approach.

Chapters include:

1. Introduction to Cost-Benefit Analysis
2. Conceptual Foundations of Cost-Benefit Analysis
3. Microeconomic Foundations of Cost-Benefit Analysis
4. Valuing Impacts from Observed Behavior: Direct Estimation of Demand Schedules
5. Valuing Impacts in Output Markets
6. Valuing Impacts in Input Markets
7. Valuing Impacts in Secondary Markets
8. Predicting and Monetizing Impacts
9. Discounting Future Impacts and Handling Inflation
10. The Social Discount Rate
12. Risk, Option Price, and Option Value
13. Existence Value
15. Valuing Impacts from Observed Behavior: Indirect Market Methods
16. Contingent Valuation: Using Surveys to Elicit Information about Costs and Benefits
17. Shadow Prices from Secondary Sources
18. Cost-Effectiveness Analysis and Cost-Utility Analysis
19. Distributionally Weighted CBA
20. How Accurate is CBA?
EPA Guidelines for Preparing Economic Analyses
CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/2405
The US Environmental Protection Agency (EPA) Guidelines for Preparing Economic Analyses provide a framework for assessing the impacts of environmental regulations and policies that has been extensively peer-reviewed and is widely-applied both within and outside of the agency. The Guidelines discuss: (1) statutory and executive order requirements for conducting economic analyses; (2) identifying the need for policy action; (3) regulatory and non-regulatory approaches to pollution control; (4) baseline definition; (5) discounting future benefits and costs; (6) analyzing benefits; (7) analyzing costs; (8) estimating economic impacts on business, government, and other entities; (9) environmental justice, children, and other distributional considerations; and (10) presenting the analysis and results. It also includes appendices that cover economic theory, mortality risk valuation; and accounting for unemployed labor in more detail, as well as a reference list and index.

HHS Guidelines for Regulatory Impact Analysis
CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/3283
The U.S. Department of Health and Human Services (HHS) Guidelines for Regulatory Impact Analysis describe how to assess the benefits, costs, and other impacts of its significant regulations as required by several executive orders and statutes. The guidelines discuss best practices for each analytic component, including: (1) framing the analysis, (2) assessing benefits, (3) assessing costs, (4) accounting for timing, (5) addressing uncertainty and nonquantifiable effects, (6) conducting distributional and other supplementary analyses, (7) communicating the approach and results, and (8) conducting retrospective analyses. Appendices include a checklist and provide supplementary technical information as well as a reference list, index, and glossary.

For supplementary information, see:

• Guidelines for Regulatory Impact Analysis: A Primer
• Estimating Medical Costs for Regulatory Benefit-Cost Analysis: Conceptual Framework and Best Practices
• Appendix D: Updating Value per Statistical Life (VSL) Estimates for Inflation and Changes in Real Income

Norwegian Cost-Benefit-Analysis Guidance
CHDS repository link: http://repository.chds.hsph.harvard.edu/repository/3338
This document provides detailed guidance for conducting cost-benefit analysis of government programs in Norway. It includes an overview of the main features of such analysis. It then describes several analytic
components: distributional effects; real prices; social discount rates; lifespan, analysis period, and residual value; wider impacts of transportation projects; disasters and irreversible effects; carbon pricing; longevity and health valuation; and financial and administrative implications.

UK Green Book Appraisal Guidance
CHDS repository link: http://repository.chds.hsph.harvard.edu/repository/3337
The Green Book is guidance issued by HM Treasury in the United Kingdom on how to appraise government policies, programs, and projects. It also provides guidance on monitoring and evaluating impacts after implementation. The Green Book introduces the analytic approaches and the policy framework, describes the generation of policy options, discusses the valuation of costs and benefits, and describes the presentation of the results. It also includes technical appendices that discuss nonmarket valuation, distributional analysis, public-private partnerships, uncertainty, and discounting in more detail.

OECD Cost-Benefit Analysis and the Environment
CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/3300
This book explores recent developments in environmental cost-benefit analysis in detail. It begins with an overview of the main issues and of the foundations of environmental cost-benefit analysis. It then explores methods of environmental valuation, including revealed preferences, contingent valuation, discrete choice experiments, value transfers, and subjective well-being measurement. The following sections explore the core elements of the analysis, including discounting, uncertainty, quasi-option value, and distribution. It also considers a number of specific issues in more detail, including sustainability and human capital, ecosystems and biodiversity, the social cost of carbon, and health valuation. It concludes with a discussion of the use of benefit-cost analysis in practice.

Benefit-Cost Analysis in Global Health
CHDS repository link: http://repository.chds.hsph.harvard.edu/repository/3333
This paper provides a brief introduction to the use of benefit-cost analysis in global health. It discusses the general framework and analytic components, then considers the valuation of changes in health and longevity in more detail. It concludes with a case study example.

Benefit-Cost Analysis and the Cities
CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/2725
This paper provides a short introduction to the use of benefit-cost analysis to assess interventions undertaken at the city or municipal level. It introduces the concepts that underlie the conduct of benefit-cost analysis, describes the major analytic components, and discusses how to tailor the analysis to the
characteristics of the policy and the resources available. It concludes with a list of references for those interested in learning more.

**Attention to Distribution in U.S. Regulatory Analysis**


CHDS repository link: [http://repository.chds.hsph.harvard.edu/repository/3336](http://repository.chds.hsph.harvard.edu/repository/3336)

Before promulgating a major environmental, health, or safety regulation, U.S. government agencies are expected to analyze the distribution of its impacts as well as its total costs and benefits. This article reviews several analyses to explore whether this expectation is being met. The authors find that agencies provide little information on distributional impacts. To the extent that these impacts are assessed, agencies often focus on the distribution of health effects and do not address the distribution of the associated costs across individuals in different income or other groups. While the reason for this lack of attention is unclear, the authors argue that this practice is problematic. Further research is needed to better understand the distribution of both costs and benefits and to determine whether more routine provision of such information is desirable.

**Behavioral Economics and the Conduct of Benefit-Cost Analysis**


CHDS repository link: [http://repository.chds.hsph.harvard.edu/repository/3335](http://repository.chds.hsph.harvard.edu/repository/3335)

Benefit-cost analysis is rooted in neoclassical welfare economics, which in its most simplified form assumes that individuals act rationally and are primarily motivated by self-interest, making decisions that maximize their welfare. Behavioral economics explores the psychological aspects of decision-making and challenges some of these assumptions. This paper considers the implications of this behavioral research for predicting how individuals will respond to policy options and for valuing outcomes. The authors argue that benefit-cost analysis should focus on describing individual preferences that are reasonably well-informed and thoughtful.

**Teaching Benefit-Cost Analysis**


CHDS repository link: [http://repository.chds.hsph.harvard.edu/repository/3334](http://repository.chds.hsph.harvard.edu/repository/3334)

This book presents a series of a self-contained modules designed to be used in teaching benefit-cost analysis, authored by a group of leading practitioners. It is intended to appeal to both undergraduate and graduate students as well as professionals interested in expanding their understanding of these issues. Each module consists of a short, accessible discussion of the topic; many include a list of additional resources as well as class exercises. Specific topics include overarching concepts such as defining the baseline and understanding the difference between partial and general equilibrium analysis as well as concepts that students often find challenging, such a valuing statistical lives and evaluating policies that address addictive goods.

**Society for Benefit-Cost Analysis**

Organization. Society for Benefit-Cost Analysis. [https://benefitcostanalysis.org](https://benefitcostanalysis.org)

CHDS repository link: [https://repository.chds.hsph.harvard.edu/repository/2433](https://repository.chds.hsph.harvard.edu/repository/2433)

The Society for Benefit-Cost Analysis (SBCA), founded in 2007, works to improve the theory and practice of benefit-cost analysis and support evidence-based policy decisions. It addresses policy areas including public
health, transportation, criminal justice, education, energy, environmental quality, homeland security, and poverty. Members include scholars and practitioners from around the world, who work in government, academia, nonprofits and private industry. Its members represent numerous disciplines such as economics, law, engineering, public policy, decision science, and natural science.

The SBCA website provides access to BCA news and events, including the annual SBCA conference, as well as career listings and links to BCA databases. Pre-conference professional development workshops are offered each year, covering a range of topics such retrospective benefit-cost analysis, valuing health and longevity, and communicating the results. The Society also publishes the “On Balance” blog, which features short articles on wide-ranging topics. It supports the Journal of Benefit-Cost Analysis, published by Cambridge University Press, which includes substantial open-access content. Members have free access to the Journal as well as to other resources.

Journal of Benefit-Cost Analysis
CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/3282

The Journal of Benefit-Cost Analysis (JBCA) is the primary research journal in the field of benefit-cost analysis, and is the only journal devoted exclusively to the field. Benefit-cost analysis is an evidence-based analytical method for determining if the consequences of specific public actions make society better off overall. JBCA publishes theory, empirical analyses, case studies, and techniques. It is supported by the Society for Benefit-Cost Analysis.

The journal is interdisciplinary in nature, with contributors from a wide range of disciplines and areas of public policy, including social programs related to education, crime, health, poverty, labor and housing, as well as regulations and projects related to the environment, natural resources, transportation, safety, and security. Many of its articles are open access.

Economic Evaluation Primer
CHDS repository link: https://repository.chds.hsph.harvard.edu/repository/4000

Economic evaluation is a powerful tool, encouraging the systematic collection and assessment of the evidence needed to support sound policy decisions. In low- and middle-income countries, where resources are especially scarce and needs are very great, such decisions are exceptionally difficult. In these settings, economic evaluation can be particularly useful in determining how to best improve health and welfare. Typically, cost-effectiveness analysis (CEA) is used to prioritize interventions within the health care sector. This approach involves comparing monetary costs to non-monetary measures of health impacts, focusing on how to best invest limited resources to maximize improvements in health. Outside the health care sector, benefit-cost analysis (BCA) is more often used. Under this approach, all impacts, including health, are valued in monetary terms. The focus is on investing to improve welfare more generally, including health and other aspects of wellbeing. Both approaches provide important and useful information, although each has limitations as well as advantages. This working paper introduces and summarizes these economic evaluation methods.