

Federal Guidance for Cost Benefits Analysis

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Agenda

- ◆ U.S. Office of Management and Budget Circular A-94.
- ◆ Considerations for Scope of Benefits
- ◆ Consideration for Scope of Costs

OMB Circular A-94

GUIDELINES AND DISCOUNT RATES FOR BENEFIT-COST ANALYSIS OF FEDERAL PROGRAMS

<http://www.whitehouse.gov/omb/circulars/a094/a094.html>

Purpose

- ◆ Promote efficient resource allocation through well-informed decision-making.
- ◆ Provide general guidance for conducting benefit-cost and cost-effectiveness analyses.
- ◆ Provide specific guidance on the discount rates to be used in evaluating Federal programs.

General Principles

◆ *Benefit-cost analysis:*

- the technique to use in a formal economic analysis of government programs or projects.

◆ *Cost-effectiveness analysis:*

- less comprehensive technique, but can be appropriate.
 - When the benefits from competing alternatives are the same.
 - Where a policy decision has been made that the benefits must be provided.

Cost Effectiveness Analysis

- ◆ Cost-Effective – on the basis of life cycle cost analysis of competing alternatives, having the lowest costs expressed in present value terms for a given amount of benefits.
- ◆ Appropriate when it is unnecessary or impractical to consider the dollar value of the benefits provided by the alternatives under consideration.
 - Each alternative has the same annual benefits expressed in monetary terms.
 - Each alternative has the same annual affects, but dollar values cannot be assigned to their benefits (e.g. , analysis of alternative defense systems).

Elements of Benefit-Cost or Cost-Effective Analysis

- ◆ Policy Rationale
 - Address market failure, such as public goods and externalities.
 - Improve the efficiency of the Government's internal operations.

- ◆ Explicit Assumptions
 - Include a statement of the assumptions.
 - Key data and results be reported to promote independent analysis and review.

Elements of Benefit-Cost or Cost-Effective Analysis

- ◆ Evaluation of Alternatives
 - Consider alternative means of achieving program objectives.
- ◆ Verification – retrospective studies

Identifying Benefits and Costs

◆ Incremental Benefits and Costs

- Calculation of NPV be based on incremental benefits and costs.
- Sunk costs and realized benefits should be ignored.

◆ Interactive Effects

- Interactions between benefits and costs being analyzed and other government activities should be considered.

Identifying Benefits and Costs

◆ International Effects

- Focus on benefits and costs to the US citizens.
- Effects outside the US be reported separately.

◆ Transfers

- Should be excluded from calculation because there are no economic gains.
- May have benefits that are less than the program's real economic costs.

Measuring Benefits and Costs

- ◆ **Intramarginal Benefits and Costs**
 - Consumer surplus measures the extra value consumers derive from consumption vis-à-vis value measured at market prices.
- ◆ **Indirect Measures of Benefits and Costs**
 - Willingness-to-pay can be estimated indirectly.
- ◆ **Multiplier Effects**
 - Employment or output multipliers should not be included.

Treatment of Uncertainty

◆ Characterizing Uncertainty

- Probability distributions should be presented.
- Objective estimates of probabilities should be used whenever possible.

◆ Expected Values

- Expected values can be obtained by weighting each outcome by its probability of occurrence.
- If characterized by point estimates, expected value is the appropriate estimate for use.

Treatment of Uncertainty

◆ Sensitivity Analysis

- How sensitive outcomes are to changes in the assumptions.
- Sensitivity analysis should be considered for estimates of (i) benefits and costs; (ii) the discount rate; (iii) the general inflation rate; and (iv) distributional assumptions.

◆ Other Adjustments for Uncertainty

Considerations for Scope of Benefits

Benefits – *Initial Development*

- ◆ Do descriptions of the benefits relate to organizational goals, objectives, missions, functions, and operating environment?
- ◆ Have benefits been identified for each solution alternative?
- ◆ Have both quantitative and non-quantitative benefits been identified?

Benefits – *Initial Development*

- ◆ Have benefits been identified in monetary terms? For those that are not, has justification been documented?
- ◆ Have benefits been rank-ordered using either weighted or un-weighted scoring?
- ◆ Has the method used to estimate benefits been documented?

Benefits – *Update*

- ◆ Review Initial Development for Applicability
- ◆ Have changes to project objectives, benefits and reviews caused any changes to the proposed benefits?
- ◆ Have all benefit categories been re-examined?
- ◆ Has the rank-ordering of benefits been updated to reflect any changes?

Benefits – *Post-Implementation Review*

- ◆ Have the expected benefits of the solution been attained?
- ◆ For any benefits not attained, is there a documented explanation of why not?
- ◆ If another solution originally proposed would have been better, is there a way to improve the process of performing the benefits analysis to ensure a more appropriate analysis in the future?
- ◆ Other?

Possible Quantitative Benefits

Reduced Resource Requirements

- ◆ Personnel
- ◆ Lease, Rental, Maintenance
- ◆ Support Services
- ◆ Training
- ◆ Supplies and Utilities
- ◆ Security

Improved Data Entry

- ◆ Reduced Staff Time
- ◆ Reduced Error Rates

Improved Information Technology Utilization

- ◆ Storage and Retrieval
- ◆ Performance Monitoring
- ◆ Data Compression
- ◆ Centralized or Distributed Processing

Improved Operational Effectiveness

- ◆ Reduced Error Rates
- ◆ Improved Timeliness
- ◆ Better Quality Products
- ◆ Increased Productivity
- ◆ Expanded Capacity or Capability

Cost Avoidance

- ◆ Eliminated Future Staff Growth
- ◆ Eliminate Additional Equipment Requirements
- ◆ Minimize Penalties for Delays

Possible Non-Quantitative Benefits

- ◆ Fulfillment of operating requirements
- ◆ Better management information
- ◆ Improved decision-making
- ◆ Greater versatility or flexibility
- ◆ Better presentation of information
- ◆ Improved report generation (timeliness)
- ◆ Improved staff morale

Considerations for Scope of Costs

Costs – Initial Development

- ◆ Have all required cost categories been evaluated?
Consider items such as:
 - equipment and purchased components
 - Development effort
 - Facilities
 - Supporting organizations
 - Deployment effort and equipment
 - lifetime operations costs
 - lifetime maintenance costs
 - Other?
 - Identification of key factors affecting industry performance.

Costs – Initial Development

- ◆ Have all costs within each category been evaluated?
- ◆ Have all support costs from other organizations been identified and evaluated?
- ◆ Has the method used to estimate costs been documented?

Costs – Update

- ◆ Review Initial Development for Applicability
- ◆ Have all cost categories been examined?
- ◆ Have alternatives been identified/updated and documented?
- ◆ Have the alternatives been evaluated according to documented criteria?

Costs – at Post-Implementation Review

- ◆ Have all cost data been gathered and reviewed against the initial cost estimates?
- ◆ Are all unanticipated costs documented with their sources and reasons for being included?
- ◆ For any costs not originally included, have changes been incorporated into the cost analysis process for future projects to use?
- ◆ Other?

Third Party Data

Federal Data Sources

- ◆ **U.S. Department of Labor**

- Bureau of Labor Statistics

- ◆ **U.S. Department of Commerce**

- Bureau of Economic Analysis
- Census Bureau

- ◆ **U.S. Department of Education**

- National Center for Educational Statistics

- ◆ **Board of Governors, Federal Reserve System**

Discussion