A Question of Worth:
Cost Analysis in Evaluation

A lunch seminar
organized by the
Geneva Evaluators Network
and hosted by the
World Health Organization

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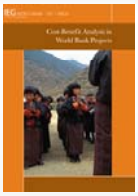
A recent World Bank Report

http://web.worldbank.org/external/default/main?noSURL=Y&theSitePK=1324361&piPK=64252979&pagePK=64253958&contentMDK=22703501&cid=IEG_AnnouncementsEN_P_EXT_MISC_CB1

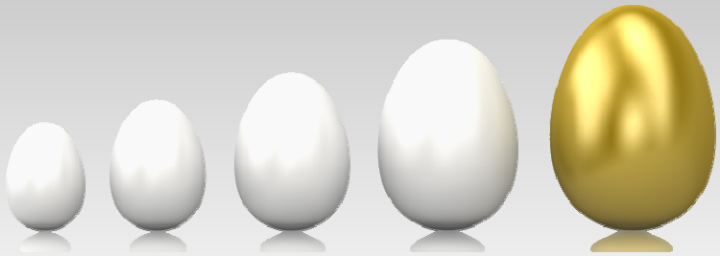
- "Historically, the World Bank's reputation for rigorous analysis was built on its use of cost-benefit analysis . . . to demonstrate . . . commitment to measuring results and ensuring accountability . . . "
- ". . . the percentage of World Bank projects justified by cost-benefit analysis has been declining for several decades, due to both a decline in adherence to policy and difficulty in applying cost-benefit analysis."
- The report



  - "highlights that the Bank needs to revisit the policy for cost-benefit analysis to account for difficulties in quantifying benefits yet preserve a high degree of rigor in justifying projects."
  - "recommends that the Bank implement reforms to ensure quality, rigor, and objectivity in its cost-benefit analysis, and use the results to influence decisions and improve development assistance."

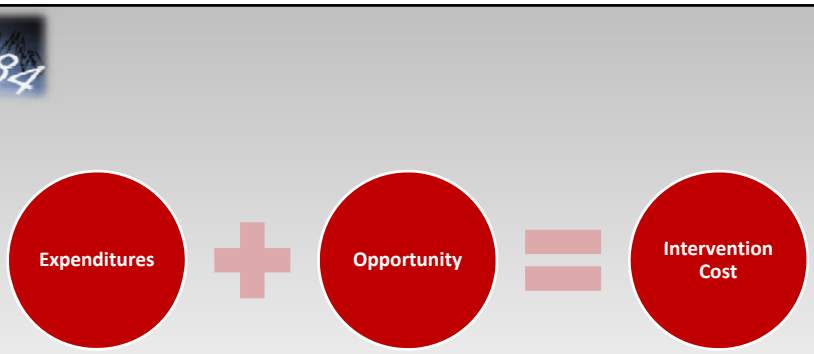
World Bank Quality Criteria for Cost-Benefit Analysis

- Expected values
  - Rather than best-case scenarios
- The counterfactual and alternatives
  - What would have been?
- Risk
  - Sources, magnitude, and effects
- Poverty reduction
- Externalities
  - Effects outside a project's direct, intended reach



Evaluation is the systematic determination of the merit, **worth**, and significance of evaluation objects (e.g., project, program, or policy)

Evaluation



The value of all resources an intervention utilizes had they been assigned to their most valuable alternative use.

Cost Concepts, Definitions, and Measurement

Levin & McEwan's

Ingredient Method

- Estimate
  - Total cost of the program
  - Cost per unit of effectiveness, benefit, or utility
  - Distribution of cost-burden among sponsors, funders, donors, and clients
- Challenge
  - Placing values on ingredients to ascertain their costs

Examples of Hard Data

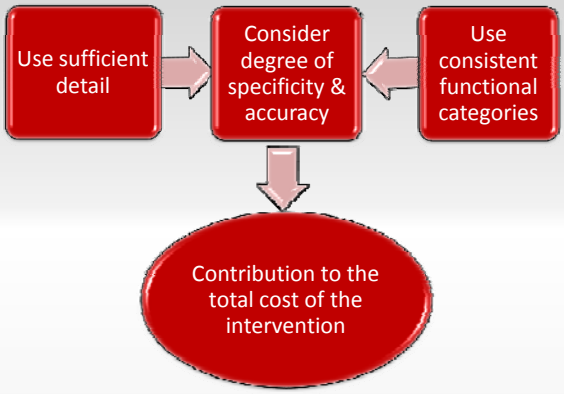
Output	Time	Costs	Quality
Units produced	Processing time	Units costs	Scrap
Items sold	Overtime	Budget variances	Waste
Loans approved	Training time	Variable costs	Rejects
Tons manufactured	Repair time	Fixed costs	Rework
Orders processed	Efficiency	Overhead costs	Shortages
Productivity	Lost time days	Operating costs	Product defects
Shipments	Downtime	Cost savings	Error rates
Students graduated	Supervisory time	Accident costs	No. of accidents

Examples of Intangible Items

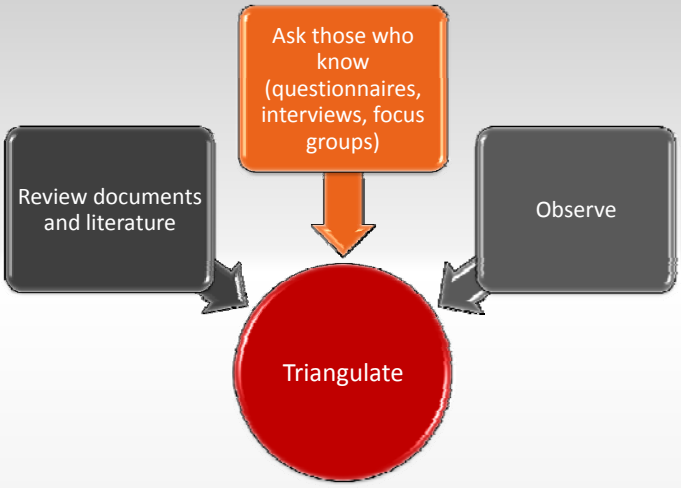
- Accountability
- Capability
- Capacity
- Communication
- Customer satisfaction
- Employee attitudes
- Engagement
- Innovation
- Job satisfaction
- Leadership
- Stress
- Team effectiveness
- Work/life balance

Listing Ingredients

- Familiarize yourself with the intervention and alternatives
- Beware of scope
- Determine what ingredients are required **to create or replicate** the intervention
- Could use
  - A simplified logic model to backtrack ingredients for a given outcome
  - A matrix to brainstorm ingredients

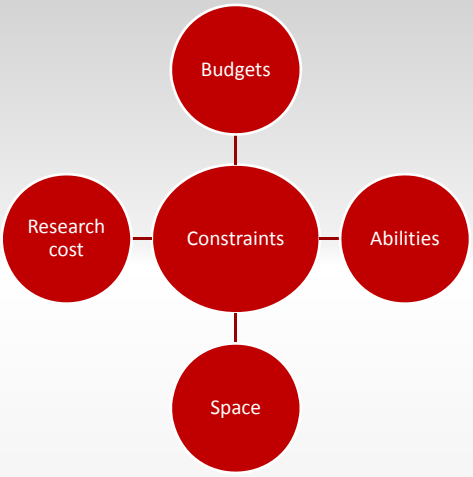


Information Sources



Collecting Data under Resource Constraints

- Sampling: Time periods, persons, places, procedures, etc.
  - Consider variations over time, among people, locations, implementation fidelity
  - Power analysis
  - Use of sample size calculators
- Estimation vs. observation
  - Estimation is low cost but reduces data quality
  - Use worst, best, and most likely scenarios
  - Averaging



Evaluation of alternatives according to their costs and benefits, both of which are measured in monetary terms

Cost Benefit Analysis

Overview

- Key question:
  - Which alternative yields a given level of benefits for the lowest cost (or the highest level of benefits for a given cost)?
  - Are the benefits of a single alternative larger than its costs?
- Measure of cost:
  - Monetary value of resources
- Measure of outcomes:
  - Monetary value of benefits

ALL benefits must be expressed in monetary terms

Strengths

- Clearly illustrates which alternatives have more benefits than costs
- Objectives or outcomes of alternatives can vary
- Shows the alternatives which have the highest benefit to cost ratio

Weaknesses

- Every benefit MUST be assigned a monetary value
- Best when benefits can be readily converted to monetary units
- Acceptable when the benefits that cannot be converted
  - are unimportant, or
  - can be demonstrated to be similar across alternatives

Presents the monetary value of outcomes
Compares program costs with benefits
Most appropriate for expensive or high-profile initiatives
Traditional use relies on "hard data"

Return on Investment

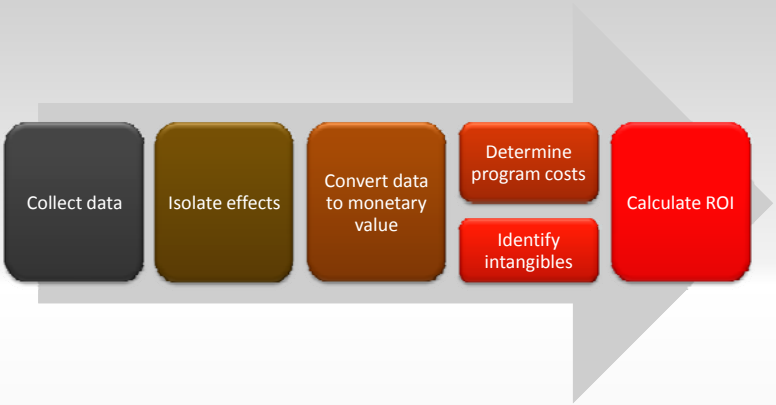
(Slides are based on a presentation by Dr. Wes Martz in February 2009)

Return On Investment

$$ROI = \frac{\text{Net Program Benefits}}{\text{Program Costs}} \times 100$$

- Net program benefits are the program benefits minus the costs.
- Both benefits and costs are discounted to reflect the time value of money.
- Expressed as a percentage of the program costs (investment).

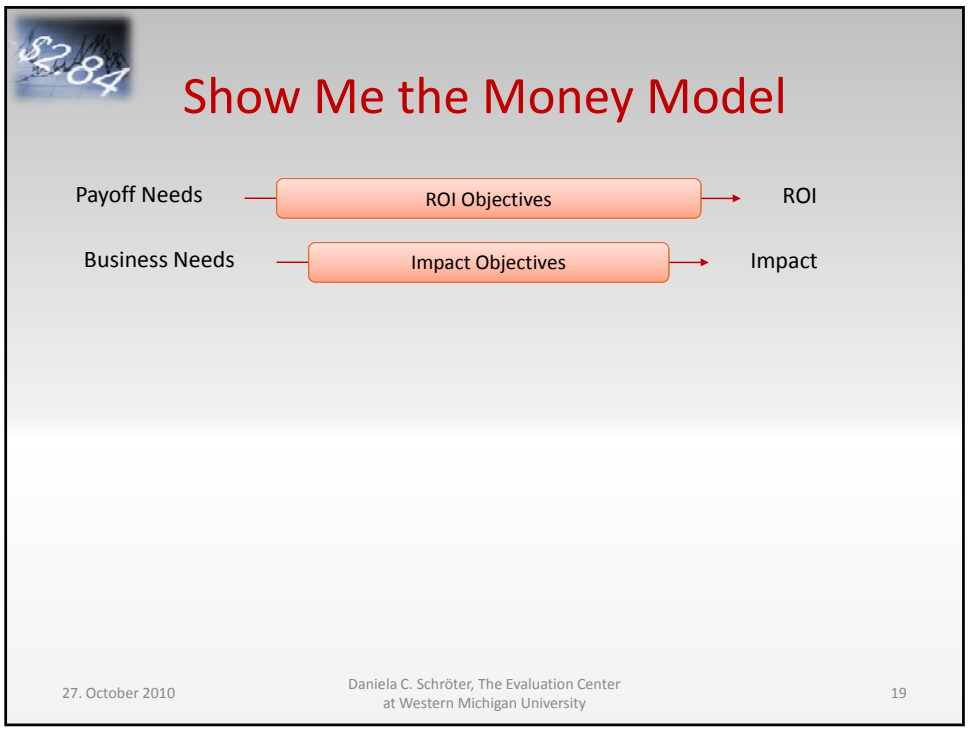
Phillips' ROI Methodology



Adapted from *Return on Investment in Training and Performance Improvement Programs*, J. Phillips, 1997.

Show Me the Money Model

Payoff Needs → ROI Objectives → ROI


Show Me the Money Model
Payoff Needs
ROI Objectives
ROI
Business Needs
Impact Objectives
Impact
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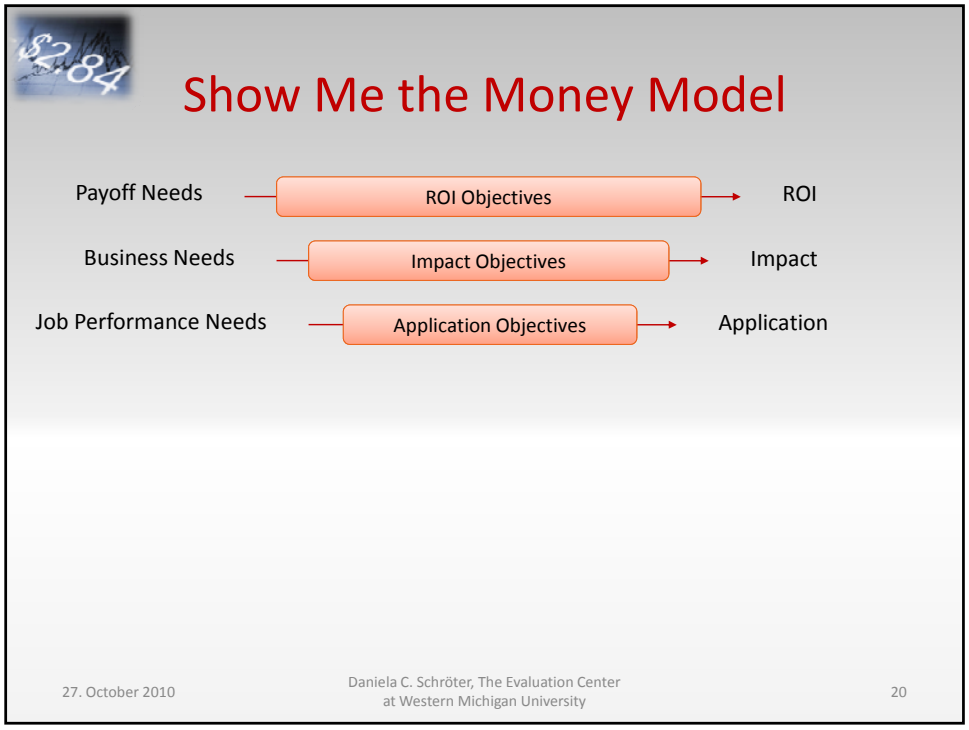
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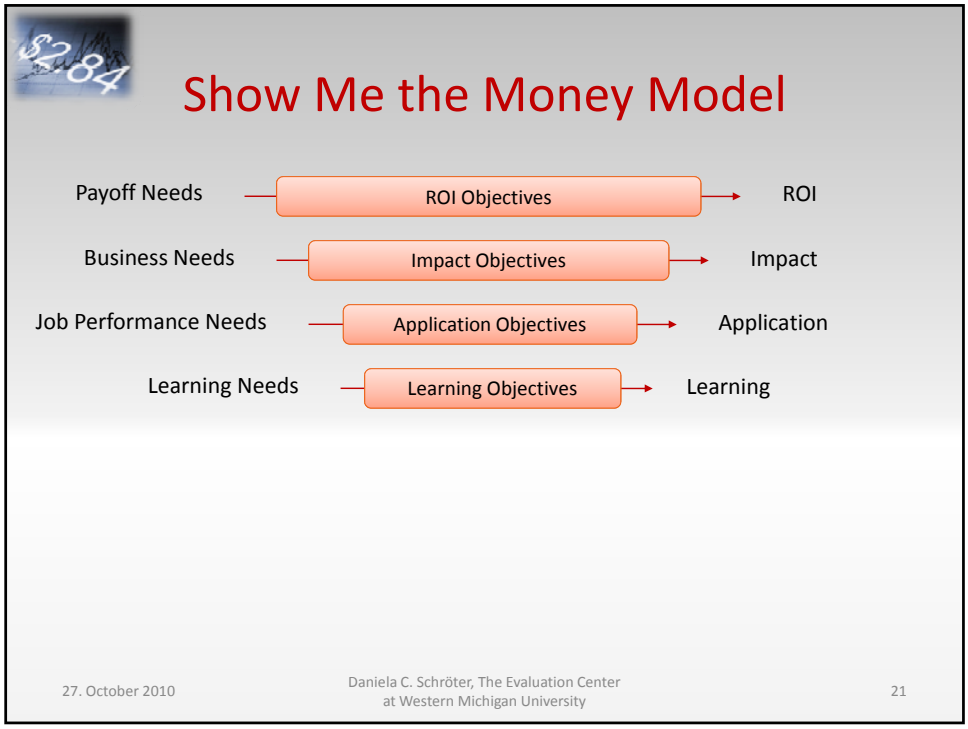
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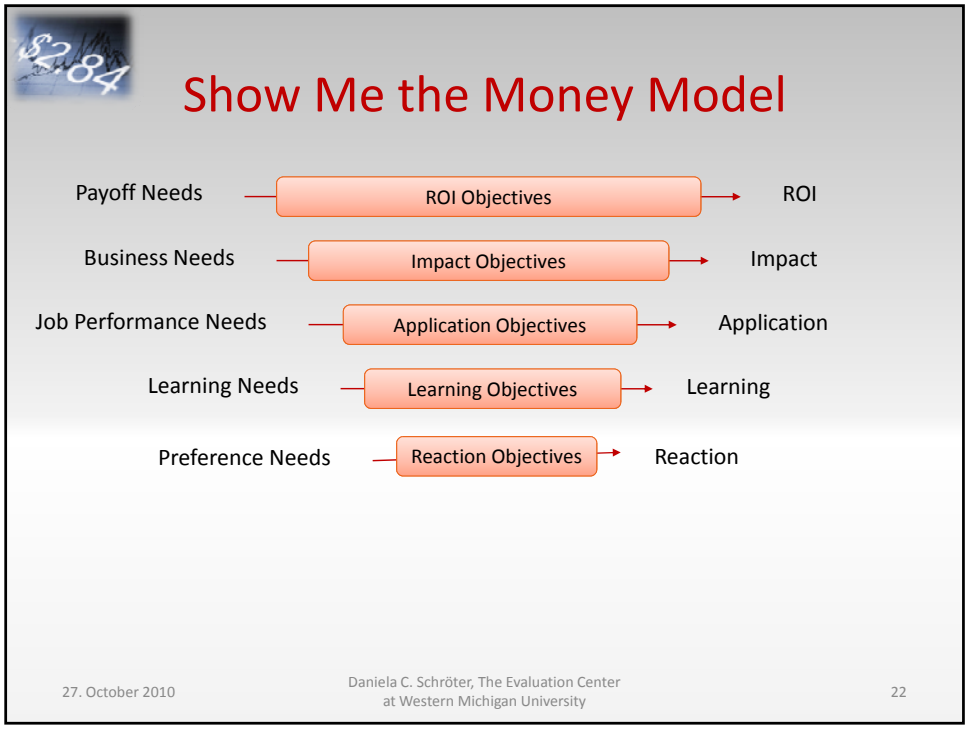
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Reaction Objectives
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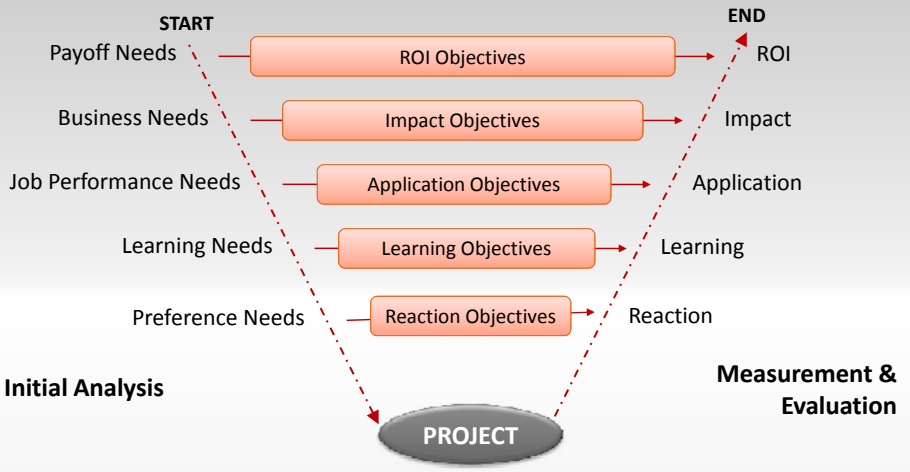


Adapted from *Show Me the Money*, Phillips & Phillips, 2003.

Selecting the Isolation Method

- Feasibility
- Accuracy
- Credibility
- Cost
- Work disruption

What will our sponsor accept as persuasive evidence that the program produced the result?

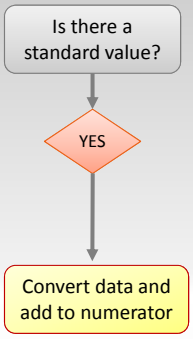
Converting Data to Monetary Value

- Focus on a unit of measure
- Determine the value of each unit
- Calculate the change in performance data
- Determine the annual amount of change
- Calculate the annual value of improvement

Converting Data to Money

Is there a standard value?

Converting Data to Money



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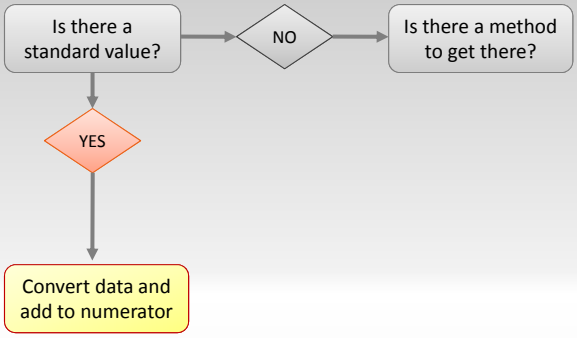

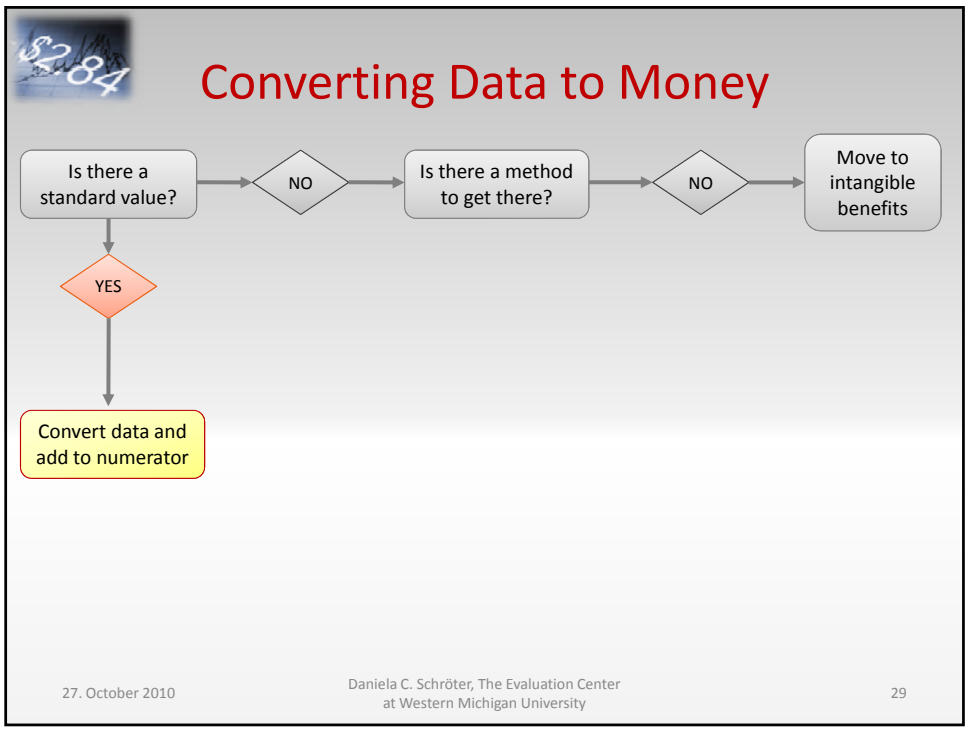
Converting Data to Money
Is there a standard value?
NO
Is there a method to get there?
NO
Move to intangible benefits
YES
Convert data and add to numerator
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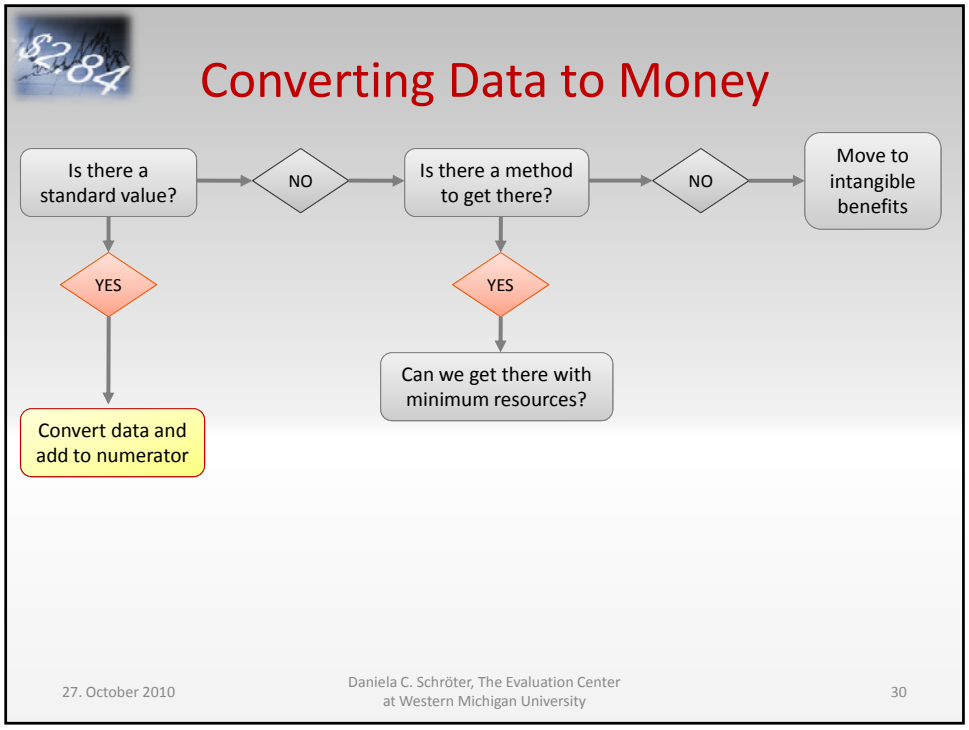
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Can we get there with minimum resources?
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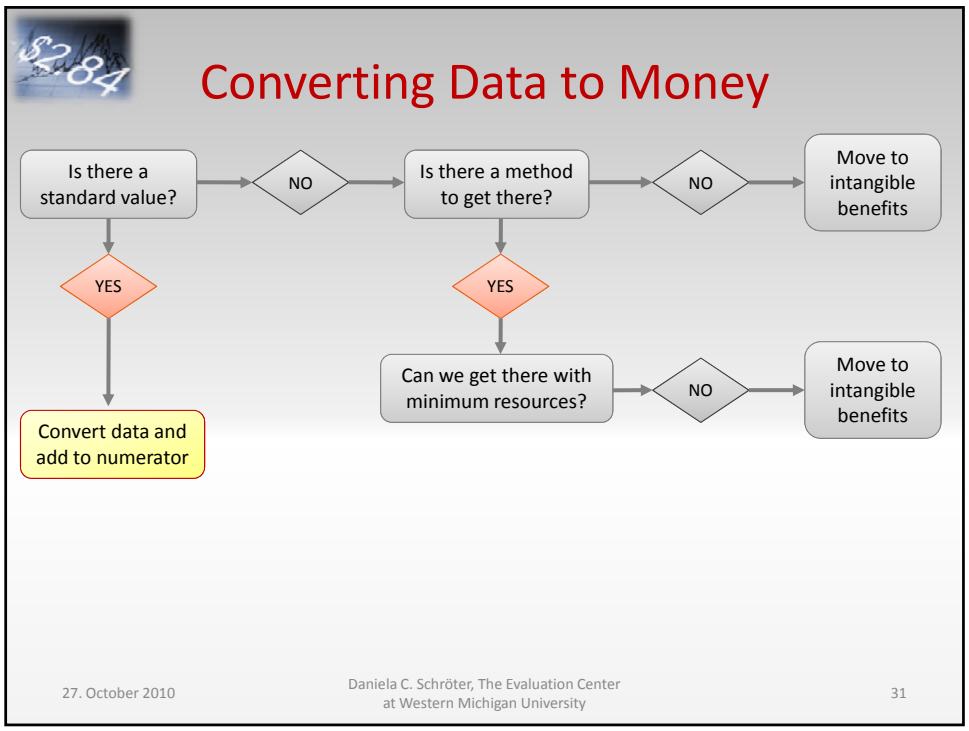
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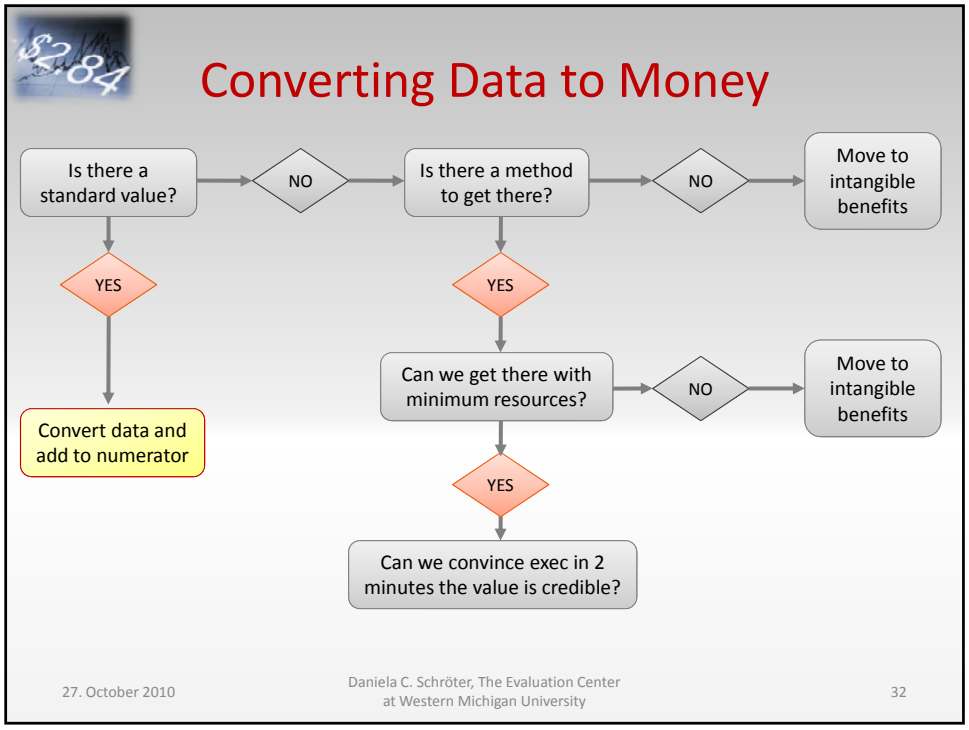
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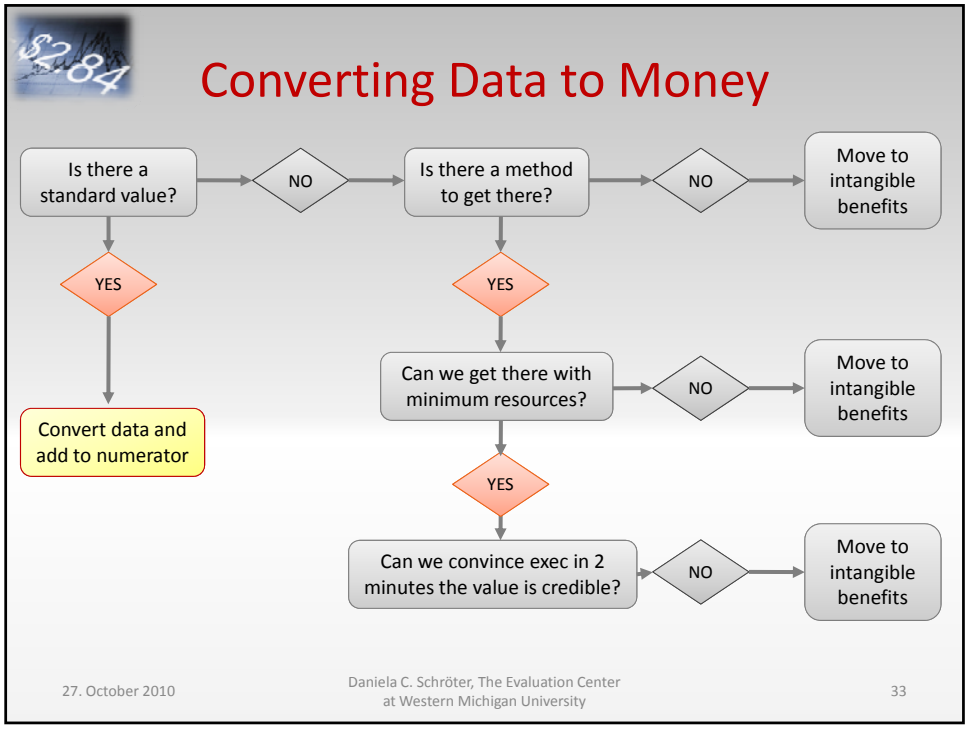
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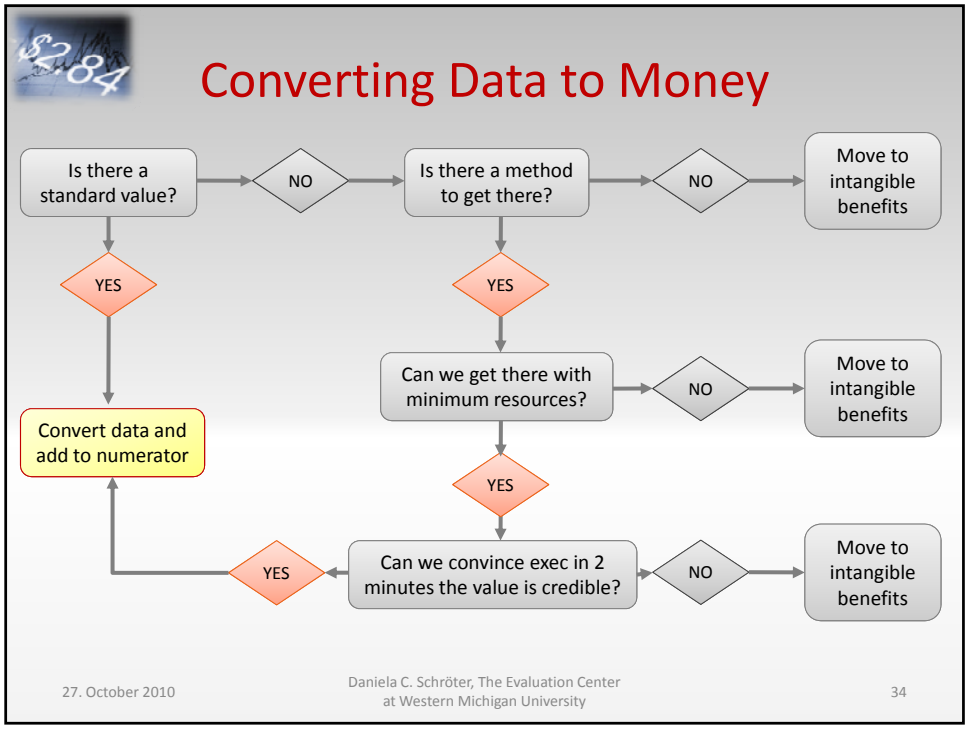
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Presenting ROI Results

- Explain where the data comes from
- Break out “hard” benefits from “soft”
- Be conservative and know the ROI threshold
- Include a sensitivity analysis
- Numbers are another perspective, not another reality
- Resist the urge to show enormous returns

Benefits of Using ROI

- Simple to use, easy to understand
- Provides support for evaluative conclusions
- Measures the contribution of a specific program
- Facilitates prioritization for future investment
- Puts the focus on results
- Supports decision-making
- Encourages accountability

Limitations of ROI

- Inappropriately conveys implicit rigor
- ROI can be easily manipulated
- Attempts to maximize ROI may not align with the organization's mission
- May encourage short-term perspectives

Common ROI Errors

- Treating cost avoidance as a financial return
- Pseudo cost (time) savings
- Underestimating costs
- Overestimating return
- Inappropriate "dollarizing" of benefits

Evaluation of alternatives according to both costs and effects with regard to producing some outcomes

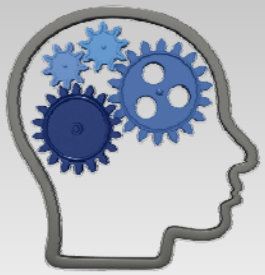
Cost Effectiveness Analysis

Overview

- Key question:
  - Which alternative yields a given level of effectiveness for the lowest cost (or the highest level of effectiveness for a given cost)?
- Measure of cost:
  - Monetary value of resources
- Measure of outcomes:
  - Units of effectiveness

Strengths & Weaknesses

- Easy to incorporate standard evaluations of effectiveness
- Useful for alternatives with a single or small number of objectives
- Difficult to interpret results when there are multiple measures of effectiveness
- Cannot judge overall worth of a single alternative; only useful for comparing two or more alternatives



Evaluation of alternatives according to both costs and utility/value

Cost-Utility Analysis

Overview

- Key question:
  - Which alternative yields a given level of utility at the lowest cost (or the highest level of utility at a given cost)?
- Measure of cost:
  - Monetary value of resources
- Measure of outcomes:
  - Units of utility

Strengths & Weaknesses

- Incorporates individual preferences for units of effectiveness
- Can incorporate multiple measures of effectiveness into single measure of utility
- Promotes stakeholder participation in decision making
- Sometimes difficult to arrive at consistent and accurate measures of individual preferences
- Cannot judge overall worth of a single alternative; only useful for comparing two or more alternatives.

Limitations

- Assumed independence of attributes
- Preferences of different professional groups in using one method over the other
- Potential scaling problems with non-probabilistic methods

Costing benefits and utilities

A Case to Consider

Fatal Disease 1

By attending this lunch seminar today, you have been exposed to a rare, fatal disease. The probability that you have the disease is one in a thousand. If you have the disease you will die a quick and painless death in one week. There is a cure for the disease that always works, but it has to be taken now. We do not know how much it will cost. Please write down the MOST you would be willing to pay for this cure. If the cure ends up costing more you wont get it. If it costs less you will pay the stated price, not the maximum you stated.

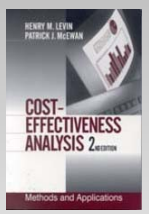
How much will you pay?

A Case to Consider: Fatal Disease 2

We are conducting experiments on the same, fatal disease for which we need subjects. A subject will just have to expose him or herself to the disease and risk a one-in-a-thousand chance of death.

What is the minimum fee you would accept to become such a subject?

Questions, Feedback, Critique



For references to key readings, please visit:

My course web site:
http://sites.google.com/site/schroeteronevaluation/Home/readings

Updated PPT presentation:
http://www.wmich.edu/evalctr/2010/06/daniela-schroter-ph-d/

Key Readings & Other Resources


Thank you!!!
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