



Cost/ Benefit Analysis:

- Introduction to the principles of policy analysis
- Monetized policy benefits of alternatives
- Monetized policy costs of alternatives
- Opportunity costs
- Total net benefit and discounting
- The fundamental rule of cost: benefit analysis
- Sensitivity analysis

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Introduction to CBA

- Why do we need CBA?
 - Because there's a lot more to making public policy than emotion, want, need, or personal or political agenda
 - We must examine the economical impacts of policies
 - If we are going to spend funds on any public health policy or initiative, we must assess the costs of this program and weigh them against the benefits
 - Essential to epidemiology because data inquiries and analyses drive the formation of public policies



Introduction to CBA

- CBA consist of the following:
 - Purpose of Cost/Benefit Analysis
 - Proposed Benefits
 - Opportunity Costs/Alternative Options
 - Proposed Costs
 - Review of empirical studies about subject
 - Monetized Benefits
 - Monetized Costs
 - Monetized Costs of Doing Nothing
 - Monetized Benefits of Doing Nothing
 - Total Net Benefits and Discounting
 - Application of the Fundamental Rule
 - Sensitivity Analysis
 - Executive Summary
 - Limitations/Influences of Funding/Feasibility
 - Equity Considerations and Conclusion



Introduction to CBA

- Introduction:
 - Provide introductory statements:
 - What is the problem?
 - What public health policy or policies has/ have been used to address this problem in the past (if any)?
 - Who is affected by this problem?
 - Why is it significant?
 - What are you proposing to do about this problem?
(Provide a *very* brief overview of your proposed program)



Introduction to CBA

- Purpose of the Cost/Benefit Analysis:
 - What is it that you want to accomplish with this CBA?
 - This is very similar to a “Purpose of Study” section in a formal research project, thesis, or dissertation
 - State: The purpose of this cost/benefit analysis is to...
 - Be short and concise:
 - This section shouldn't be more than 1 paragraph 2 at the **MOST**



Proposed Benefits of CBA

- What are the proposed FISCAL benefits to your plan?
- Are there non-fiscal benefits? If so, it's okay to discuss these BUT...
 - THINK MONEY!!! Can these non-tangible benefits translate into financial ones?
 - EG: Reducing overall obesity within a population can have positive psychological effects on that population:
 - Research indicates that obese people suffer from a greater number of psychiatric disturbances than non-obese people
 - BUT: We can save \$ by not having to prescribe medications and keep clients out of the system if we prevent them from becoming obese (THIS TRANSLATES TO \$\$\$)



Proposed Benefits of CBA

- Opportunity Costs/ Alternative Options:
 - EVERY choice we make in life carries opportunity costs
 - While its important to support your plan, it strengthens your plan when you also examine:
 - What losses your plan proposes to other initiatives
 - Are there other options to your plan?
 - Are there other ways to implement your plan to lessen these opportunity costs?



Proposed Costs of CBA

- NOTHING IN LIFE IS FREE
- Think about the last time you attended an in-service and enjoyed “free” dinner at Ruth Chris at the expense of a drug company?
 - Typical dinner (w/o ETOH) for 2 at Ruth Chris is about \$130
 - Who really “paid” for your dinner?
 - Pharmaceutical companies generate their income from sales of their products to human and animal clients;
 - 100% of the income of a pharmaceutical company is derived from these sources; therefore, no matter how you look at it, clients paid for that dinner, the pharmaceutical company simply connected clinicians with that money to pay for dinner



Proposed Costs of CBA

- We must examine costs of your program in terms of dollars
- What will this program COST us?
- Remember, you're going to have to monetize your costs and your benefits:
 - Provide a detailed budget— remember there are startup costs associated with every new initiative— also remember: unless your program is a one-time only expenditure, the costs will perpetuate as long as the program is in existence



Critically Review the Literature

- What do data-driven studies show about your problem?
- What do data-driven studies show about your proposed solution?
- Don't hide anything: **GET IT ALL OUT IN THE OPEN:**
 - Do data exist which refute your plan?
 - If so, address this and discuss it empirically, not personally or politically
 - Briefly discuss the limitations to your literature review
 - Do data exist which strengthen your proposed plan?
 - EG: Data show that smoking cessation is most successful with nicotine replacement therapy and counseling; this is why we must fund BOTH initiatives instead of monotherapy



Monetized Benefits

- Take the benefits you propose with your plan and convert them into \$\$\$:
 - Remember, these must be REAL numbers and they must be accurate, otherwise your entire CBA is garbage
 - Calculate *every* associated benefit of your plan in-terms of \$\$\$\$ for a one-year period
 - Tally these numbers
 - Select a proposed number of individuals who will benefit from your plan using evidenced-based estimates
 - Multiply this number by your total calculated benefits
 - Next, if this number is going to remain constant, summate the total benefits over a 5-year period



Monetized Costs

- Just like monetizing our benefits, we must do the same with our costs:
 - What is *every* cost the organization is going to have to pay-out to cover the expenses of your plan over the next year?
 - Don't forget about startup costs—**EVERY** new plan or initiative is going to have startup costs; subsequent years will not have these expenses
 - Calculate all of the proposed costs to implement your plan for an entire year
 - Multiple this by a 5-year period (always make sure your longitudinal comparison between costs and benefits are the same)



Monetized Benefits and Costs of “Nothing”

- It is essential to discuss the repercussions of doing “nothing”:
 - The benefits of doing nothing are essential the same as your total monetized costs
 - The costs of doing nothing are essential the same as your total net benefit (next slide)



Total Net Benefits and Discounting

- Now that we've calculated our costs and benefits, we must determine if our plan is fiscally wise:
 - List the total amount of the monetized benefits of your plan
 - List the total amount of the monetized costs of your plan
 - Next, subtract these numbers to derive your total net benefit



Total Net Benefits and Discounting

- If your total benefits are greater than your total costs, you must apply market forces to your proposal:
- This must be done for each year in your 5-year proposal and will be a comparison between the benefits of implementing your plan versus the benefits of doing “nothing”

$$PV = \frac{S_n}{(1+r)^n}$$

S = Sum of Costs and Benefits
 n = Given Year
 r = Discount Rate (.05)*

- After calculating these, you next compare your results and select the plan which yields the higher calculation



The Fundamental Rule of CBA

- The fundamental rule states that:
 - “In any choice situation, select the alternative that produces the greatest net (marginal) benefit” (Korosec, 2003).
 - It is obtained using the following equation:
 - $\text{Net Benefits} = \text{Benefits} - \text{Costs}$
 - If your plan yields a greater net benefit than doing nothing and the costs of your plan, then it is fiscally-wise to implement your plan



Sensitivity Analysis

- “Sensitivity analysis measures the impact on project outcomes of changing one or more key input values about which there is uncertainty” (Dorf, 1999).
- Find some variables in your calculation which possess some uncertainty
- Complete the SAME steps you used to perform your original CBA using your original values but substitute the value of the variable(s) of uncertainty with one(s) that is/are evidence-based (if no data exist, state this and provide the justification for the value(s) you input)



Executive Summary

- The final component of preparing your CBA is to provide a comprehensive discussion of your entire work (lit. review; proposed/monetized benefits; opportunity costs; proposed/monetized costs; total net benefits and discounting; application of the fundamental rule)
- This is also where you need to discuss limitations and influences of funding and feasibility and possible solutions and alternatives to these limitations
- Finally, you must discuss equity considerations and conclude your discussion

