What is cost-benefit analysis?

Cost-benefit analysis (CBA) is a technique for evaluating a project or investment by comparing the economic benefits with the economic costs of the activity. This may sound straightforward; during the course of the class you will learn that it is everything but.

Policy decisions always require trade-offs, some more difficult than others. Given scarce resources, deciding how to allocate funding requires careful thinking about what the opportunity costs of those funds are. If we devote more resources to, say, reducing pollution or boosting the resources available to public schools, the money spent can no longer be used for other purposes. CBA can be used as a decision rule to determine whether a project should be carried out, or to compare competing projects. In general, CBA aims to pin down what policy-options will maximize social welfare.

Course objectives

Throughout the course of the semester, you will learn the basics of CBA and discuss the advantages and limitations of the approach. At the end of the semester, I want each of you to be critical consumers of CBAs and to be able to identify weaknesses of existing CBAs – as well as ways of addressing these shortcomings.

You should not be too worried about your grade; instead, you should focus on learning the tools taught in this course. I recommend viewing your grade in this course as a signal of where I think you stand in terms of your understanding and ability to apply the tools of this course.

I hope that you will learn many things, but have identified the following key learning goals:

- By the end of the semester, you will be able to read, comprehend, and effectively summarize policy research and policy-relevant academic research.

- By the end of the semester, you will be able to communicate in clear written language: a real-world policy problem, relevant scholarly studies and practical applications, a policy-analytic method to investigate the problem, and client-oriented advice to mitigate the problem.

- By the end of the semester, you will be able to maintain fidelity to objective social science-based research methods.

- By the end of the semester, you will be able to complete high quality group projects, including demonstration of effective project management and teamwork.
Course requirements & grades

Several components are designed to help you reach these goals:

Participation and attendance (15% of course grade)
Class sessions will mix lectures, discussion, case studies and problem solving to explore both the practical and conceptual aspects of CBA. I expect active participation in class and diligence in the completion of assigned exercises and readings, since class discussions will only be productive if you all do the assigned readings and/or problems prior to class, show up, and participate in the discussions.

Exercises  For most classes, I will assign exercises and/or reading questions on the topics that will be covered in class. My hope is that this will help you do the readings purposefully, and come in to class with questions and comments. We will go over exercises in class, and I may call on students to describe how they approached the problem.

Readings  Some of the readings might be challenging, as they occasionally make use of math or economic theory that you might not be 100% comfortable with. I encourage you to persevere. In your professional life, you are likely to encounter papers and reports outside your comfort zone and you will be forced to extract information from them. I won’t expect you to understand all of the mathematical details; strive instead to grasp the gist of the arguments presented.

Religious observances  If a religious observance will require you to miss class time, please notify me within the first two weeks of class of the specific days or dates on which you request relief. If the date you will miss is an exam, we will schedule a make-up exam time either before or after the regularly scheduled exam.

Midterm exam (35% of course grade)
An in-class midterm exam in October will give you a chance to show me what you have learned so far.

Cost benefit project (50% of course grade)
Although the theory of CBA can be learned in the classroom, carrying one out in reality is part theory, part art; this art is best mastered by actually practising it. Toward this end, you will work together in teams to conduct a CBA of a real intervention/program/policy for a real client.

The course outline lists several milestones, designed to help you keep on track with your project:

1. Project report 1 (summary + plan) is due on September 26
2. Project report 2 (annotated bibliography) will be due on October 10
3. Project report 3 (categories & measurement) will be due on October 31
4. A first draft of the CBA will be due on December 5
5. Class time on December 12 will be devoted to team presentations of their projects
6. A final draft will be due on December 19
7. Last year, students asked me for a chance to evaluate their team members. I will therefore ask each student to evaluate the effort and contributions of other team members, and I will consider the responses in assigning individual grades.
In addition, you should plan on participating in a briefing on the final report at your client’s convenience, most likely near/right after the end of the semester, and most likely via Skype. You are all expected to participate equally in interacting with clients, in the analysis, and in the final presentation; team members should all be familiar with every aspect of the CBA. **Please do not take this course if you are unwilling or unable to give the project a high priority.** I reserve the right to lower the grade of anyone who does not contribute fully to his or her team.

I strongly prefer that you submit course materials electronically through Canvas. Please include FirstName_LastName in file names!

**Academic integrity**

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison’s community of scholars in which everyone’s academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Dean of Students Office for additional review. For more information, or if you have any doubts about how the above terms are defined, please refer to [http://www.students.wisc.edu/doso/academic-integrity/](http://www.students.wisc.edu/doso/academic-integrity/).

The UW Writing Center has a handout on acknowledging, paraphrasing and quoting sources. For the take-home exam in particular, please read this handout – especially if you have any doubts about how to cite sources.

**Course materials**

We will rely extensively on the assigned (required) textbook:


I will additionally make other readings and class materials available on Canvas. All readings in the textbook are required; additional required readings are marked with an asterisk.
Schedule/overview

Rough outline of topics. Please note that I may add or drop readings during the semester; I will announce changes in class and update the syllabus on Canvas.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Book chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/12</td>
<td>Introduction: What is CBA? How is it used? Discussion of projects</td>
<td>1</td>
</tr>
<tr>
<td>9/19</td>
<td>Conceptual foundations; previous projects</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><em>Guest speaker:</em> Caitlin Tulloch, the International Rescue Committee</td>
<td></td>
</tr>
<tr>
<td>9/26</td>
<td>Valuing C &amp; B when markets exist - primary markets</td>
<td>3, 4</td>
</tr>
<tr>
<td>10/3</td>
<td>Valuing C &amp; B when markets exist - secondary markets</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Discounting &amp; the social discount rate</td>
<td>6, 10</td>
</tr>
<tr>
<td>10/10</td>
<td>Uncertainty (I): Expected values, sensitivity analysis</td>
<td>7</td>
</tr>
<tr>
<td>10/17</td>
<td>Midterm exam</td>
<td></td>
</tr>
<tr>
<td>10/24</td>
<td>Uncertainty (II): Value of information, option values, quasi-option values</td>
<td>7, 8</td>
</tr>
<tr>
<td></td>
<td><em>Guest speaker:</em> Sarah Stillman (staff writer at the New Yorker)</td>
<td></td>
</tr>
<tr>
<td>10/31</td>
<td>Revealed preferences (I): experiments and quasi-experiments</td>
<td>11, 12</td>
</tr>
<tr>
<td>11/7</td>
<td>Revealed preferences (II): demand curves and shadow prices</td>
<td>13, 14</td>
</tr>
<tr>
<td>11/14</td>
<td>Valuing life &amp; time</td>
<td>16</td>
</tr>
<tr>
<td>11/21</td>
<td>Catch-up &amp; project consultation</td>
<td></td>
</tr>
<tr>
<td>11/28</td>
<td>Existence value, stated preferences, CV</td>
<td>9, 15</td>
</tr>
<tr>
<td>12/5</td>
<td>Behavioral economics &amp; cases</td>
<td></td>
</tr>
<tr>
<td>12/12</td>
<td>Presentations</td>
<td></td>
</tr>
</tbody>
</table>

In addition to the regular classtimes, I will also try to schedule two (optional) Stata computer lab sessions outside of class – one on how to handle, transform (merging, appending, reshaping) and summarize data, and a second one on data visualization and loops.

“I would add one word for any student beginning economic study who may be discouraged by the severity of the effort which the study, as he will find it exemplified here, seems to require of him. The complicated analyses which economists endeavour to carry through are not mere gymnastic. *They are instruments for the bettering of human life.*”

Detailed schedule

**September 12**
Intro: What is Cost-Benefit Analysis? How is it used?
- BGVW, Chapter 1
* EPA. 2014. “Guidelines for Preparing Economic Analyses.” [Sections 1 & 3]
- Copenhagen Consensus, Post-2015 Consensus

**September 19**
Conceptual foundations: decision rules, welfare measures
Discussion of past projects
*Guest speaker:* Caitlin Tullock from the International Rescue Committee
- BGVW, Chapter 2
* Cost-Benefit Analysis of IRC Programming in Lebanon
* Organic Certification for Yaqona on Kadavu, Fiji – A Cost-Benefit Analysis
* Cost-Benefit Analysis of Afforestation Projects for Erosion Control in New Zealand
- EPA. 2014. “Guidelines for Preparing Economic Analyses.” [Sections 4.1, 4.6 & 4.7]

**September 26**
Valuing C & B when markets exist - primary markets
- **Project report 1:** Describe the issue being addressed in your project; sketch a plan for completion (5-7 pages)
- BGVW, Chapter 3 & 4 (Chapter 3 should hopefully feel like review; if you need additional review, you might want to consult a microeconomics textbook. Please let me know if you would like suggestions.)
October 3
Valuing C & B when markets exist - primary markets (cont.)
Valuing C & B when markets exist - secondary markets
Discounting: mechanics, the social discount rate

- BGVW, Chapter 5, 6, 10


- OMB Circular A-4, Office of Management and Budget’s guidance to Federal agencies on the development of regulatory analysis: https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a004/a-4.pdf (skim)

October 10
Uncertainty (I): Expected values, sensitivity analysis

- **Project report 2:** Prepare an annotated bibliography with the 10 studies that are the most relevant to your topic; give highest priority to published CBAs on similar topics

- BGVW, Chapter 7, pp. 167-187

October 17
Midterm

October 24
Uncertainty (II): Value of information, option values, quasi-option values

* Guest speaker: Sarah Stillman, staff writer the New Yorker

• BGVW, Chapter 7, 8


October 31
Revealed preferences: experiments and quasi-experiments

• **Project report 3:** Prepare a list of the relevant categories of costs and benefits; indicate how each can be measured

• BGVW, Chapter 11, 12

• TBD

November 7
Revealed preferences: natural experiments

• BGVW, Chapter 13, 14


November 14
Valuing life and time

• BGVW, Chapter 16


November 21
Catch-up class / cases / project consultation

• BGVW, Chapter 15


November 28
Existence value, stated preferences, contingent valuation

• BGVW, Chapter 9, 15


Journal of Economic Perspectives Symposium on Contingent Valuation:


December 5
Implications of behavioral economics

• First draft of CBA due


Cases: early childhood interventions

December 12
Presentations