PA 881 - International Cost-Benefit Analysis

Fall 2018
University of Wisconsin, Madison
La Follette School of Public Affairs
Meeting location: Nancy Nicholas Hall 1125 and Ingraham 224
Meeting time: MW 8:00 - 9:15 a.m.
Office hours: W 4-6 p.m. (in La Follette)
Canvas course URL:
https://canvas.wisc.edu/courses/116354/

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Webpage

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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 necessitates 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.

We will work together towards achieving several goals. By the end of the semester, I hope that you will

- grasp the main tools and concepts of cost-benefit analysis (CBA);

- be able to diagnose whether a project or policy-question is well-suited for a meaningful CBA;

- be able to make and justify relevant modeling assumptions or approximations in a CBA;

- be able to perform a cost-benefit analysis as completely as possible, given the necessary modeling assumptions;

- be able to identify the elements that may compromise the validity of an CBA (such as overly extreme assumptions, data limitations, and political concerns);

- be able to effectively communicate the results of a CBA to relevant parties.

You will also make progress towards key La Follette School learning goals. As part of this course, you will

- improve your ability to read, comprehend, and effectively summarize policy research and policy-relevant academic research;

- improve your ability 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;

- improve your ability to maintain fidelity to objective social science-based research methods;

- improve your ability to complete high quality group projects, including demonstration of effective project management and teamwork.

Official course description: Presents the welfare economics underpinnings for evaluating the social benefits and costs of government activities. Issues such as uncertainty, the social discount rate, and welfare weights will be discussed; case studies from the environmental, social policy, and agricultural areas will be studied.

Official pre-requisites: Graduate/professional standing and (PUB AFFR 818 and 880), or POP HLTH/ISYE 875, or AAE 635

Course requirements & grades

This course will be face-to-face, and we will interact both in class and outside of class via team consultations. We will meet for two 75-minute class periods each week over the fall semester. The course carries the expectation that you will work on course learning activities (reading, writing, problem sets, studying, team work, etc.) for about 3 hours out of the classroom for every class period. Below I describe in detail the meeting times and the expectations for student work.

Several assessment components are designed to help you reach the goals listed above:

1) Discussions and class participation (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 you to actively participate in class and to diligently complete assigned exercises and readings. 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. The educational literature also makes it very clear that "retrieval practice" (the act of repeatedly practicing retrieving information) is crucial for learning. Therefore, the more you prepare for class and practice retrieving the information you already digested through class discussion, the more you will learn!

I also recognize that not everyone is equally comfortable speaking in class. You can therefore boost your participation by actively engaging in online discussions. I will compute the final participation grade based on both in-class and online participation. You can get an excellent participation grade through excellent online discussion participation (and class attendance). I will drop the lowest graded online discussion score.

I expect there to be around 10 online discussions. They will typically be due by 5 a.m. the day before class.

Note on 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.

Online quizzes (10% of course grade)

I will post frequent online quizzes for you to respond to before class (and sometimes after class). There will be many quizzes, so please think of them as low-stakes opportunities to test your own understanding. I will drop the lowest two quiz scores. The pages linked through our Canvas schedule will clearly state what to complete and when.

Stata exercise (5% of your grade)

I will post some Stata materials and a set of exercises followed by an online quiz. This module will be available for the first half of semester, and you can complete it at your own pace. The exercises should help you in your work on the project, so I encourage you to complete the quiz earlier rather than later. I expect that the skills that you pick up will also be useful in many other courses and in your professional lives.

Midterm exam (30% of course grade)

An in-class midterm exam on October 31 will give you a chance to show me what you have learned so far.

Cost benefit project (40% of course grade)

Although you can learn the basics of CBA theory in the classroom, actually carrying one out is part theory, part art. This art is best mastered by practicing it. Toward this end, you will work together in teams to conduct a CBA of a real intervention/program/policy for a real client.

To build up towards a successful project, we have several milestones along the way (Project reports). These assignments are there to keep you on track with your project, and to give me a chance to provide feedback:

1. Project report 1 (summary + plan) is due on September 19.

2. Project report 2 (annotated bibliography) will be due on October 10

3. Project report 3 (categories & measurement) will be due on October 18

4. Project consultations: I will meet with each team on November 21 (but we can also schedule for the 19th or 20th)

5. Team reports due on December 7

6. Teams will present their projects on December 10 and 12

7. A revised report due on December 19, including a clear explanation of revisions in response to feedback from first draft

8. In past years, I have given students a chance to evaluate their team members (upon student request!). I will ask each student to evaluate the effort and contributions of other team members. I will consider the responses in assigning individual grades. The peer evaluation will also be due on December 19. If your team has issues with one of its members, please feel free to come to me for advice before it gets serious!

In addition, you should plan on participating in a briefing on the final report at your client's convenience, most likely via Skype. I expect each team member to engage fully with the project, but please appoint a single team member for client communications. Each team member should be familiar with every aspect of

the CBA. I reserve the right to lower the grade of students who do not contribute fully to his or her team. **Please do not take this course if you are unwilling or unable to give the project a high priority.**

> All course materials and submissions will be due electronically in PDF format on Canvas. Please name files according to this convention:
>
> - Assignment_FirstName_LastName (for individual work)
>
> - Assignment_ProjectName (for group projects)

Course materials

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

- Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer, Cost- Benefit Analysis: Concepts and Practice, 5th ed. (Upper Saddle River, New Jersey: Prentice Hall, 2018).

I will additionally make other readings and class materials available on Canvas. Unless specifically noted, all readings are required.

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. I will forward substantial or repeated cases of misconduct 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/.

The UW Writing Center has a handout on acknowledging, paraphrasing and quoting sources. Many borderline plagiarism cases could have been avoided if the students had a clearer sense of the rules of how to cite sources.

Diversity and inclusion

I wholeheartedly endorse the UW-Madison statement on diversity. Diversity in all its flavors constitutes a source of strength, creativity, and innovation for the university and for the country. I value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich our community.

Religious observances

If a religious observance will require that you 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.

Schedule/overview

Our Canvas site (<https://canvas.wisc.edu/courses/116354/pages/schedule>) outlines the topics that we will cover. Each topic links (or will link) to a topic page. This page in turn lists the preparatory work to complete before class (and in some cases work to complete after class). I also detail the readings below (but a few may be subject to change).

> "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."*
>
> Pigou, Arthur C. "The economics of welfare, 1920." McMillan&Co., London (1932).

Detailed schedule of readings

September 5
Intro: What is Cost-Benefit Analysis? How is it used?

- BGVW, Chapter 1

- Weiner, Zachary. "Ethical Fourier Transform." Saturday Morning Breakfast Cereal. http://www.smbc-comics.com/index.php?id=3831

September 10
Discussion of past projects (details on Canvas)

- Past project reports (details on Canvas)

- BGVW, Chapter 8

- BGVW, Chapter 17 [skim]

September 12
Conceptual foundations of CBA

- BGVW, Chapter 2

  - End-of-chapter exercises 2, 3, and 4

September 17, 19, 24, 16 and Oct 1
Valuing C & B when markets exist - primary markets

- BGVW, Chapter 3 (Exercises 1 & 2; spreadsheet exercise 3 – spreadsheet on Canvas)

- BGVW, Chapter 4 (Spreadsheet exercise 2)

- BGVW, Case 4

- BGVW, Chapter 5 (Exercise 2)

- BGVW, Chapter 6 (Exercise 1)

- Robert H. Haveman and David L. Weimer, "Public Policy Induced Changes in Employment: Valuation Issues for Benefit-Cost Analysis," Journal of Benefit-Cost Analysis 6(1) 2015, 112–153.

October 3
Valuing C & B when markets exist - secondary markets

- BGVW, Chapter 7 (Exercises 2 & 3; spreadsheet exercise 4)

- BGVW, Case 8

October 8 & 10
Discounting

- BGVW, Chapter 9 (Exercises 1, 2, 3 & 4; spreadsheet exercise 6)

- BGVW, Case 9

- BGVW, Chapter 10 (Spreadsheet exercise 1)

- Skim/scan the following:

    - OMB Guidelines (link)
    - UK Guidelines (The Green Book) (link)
    - Canadian Guidelines (link)
    - New Zealand Guidelines (link)
    - Bureau of Labor Statistics CPI Calculator (link)

October 15, 17, and 22
Uncertainty (I): Expected values, value of information, sensitivity analysis

- BGVW, Chapter 11 (Exercises 1, 3, 4 & 6; spreadsheet 5)

- BGVW, Case 11

- Consider WSIPP displayed results: `http://www.wsipp.wa.gov/BenefitCost`

- David L. Weimer and Mark A. Sager, "Early Identification and Treatment of Alzheimer's Disease: Social and Fiscal Outcomes," Alzheimer's & Dementia 5(3) 2009, 215–226.

October 22
Uncertainty: Option price and option value

- BGVW, Chapter 12 (Spreadsheet exercise 3)

October 29
Life cycle analysis

- Joule A. Bergerson and Lester B. Lave, "Should We Transmit Coal, Gas, or Electricity: Cost, Efficiency, and Environmental Implication," Environmental Science and Technology 39(16) 2005, 5905–5910.

- Visit: www.eiolca.net and do the tutorial for the EIO-LCA model.

October 31
Midterm

November 5
What is different about CBA in developing countries?

- Brent, Robert J. 2009. "15 Cost-Benefit Analysis and the Evaluation of the Effects of Corruption on Public Projects." Handbook of Research on Cost-Benefit Analysis, 388.

- Quah, Euston. 2017. "Using Cost-Benefit Analysis In Developed And Developing Countries: Is It The Same?" Macroeconomic Review. Monetary Authority of Singapore, Economic Policy Group.

November 7
Revealed preferences: experiments & natural experiments

- BGVW, Chapter 14 (Exercise 2)

- BGVW, Case 14

November 12
Revealed preferences: observational studies

- BGVW, Ch 15 (Spreadsheet exercise 3)

- BGVW, Case 17?

- Weimer, David L., and Michael J. Wolkoff. 2001. "School Performance and Housing Values: Using Non-Contiguous District and Incorporation Boundaries to Identify School Effects." National Tax Journal 54 (2): 231–53.

November 14
Valuing life and time

* Belenky, Peter. 2011. "Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis." *pp. 1-2, 11-14, skim the rest*

- León, Gianmarco, and Edward Miguel. 2017. "Risky Transportation Choices and the Value of a Statistical Life." American Economic Journal: Applied Economics 9 (1): 202–28.

- Fezzi, Carlo, Ian J. Bateman, and Silvia Ferrini. 2014. "Using Revealed Preferences to Estimate the Value of Travel Time to Recreation Sites." Journal of Environmental Economics and Management 67 (1): 58–70.

- Wolff, Hendrik. 2014. "Value of Time: Speeding Behavior and Gasoline Prices." Journal of Environmental Economics and Management 67 (1): 71–88.

November 19
Land conservation classroom game

- Read game set-up document

November 21
Project consultations

November 26
Valuing the environment (I): invasive species

- Lodge, David M., Paul W. Simonin, Stanley W. Burgiel, Reuben P. Keller, Jonathan M. Bossenbroek, Christopher L. Jerde, Andrew M. Kramer, et al. 2016. "Risk Analysis and Bioeconomics of Invasive Species to Inform Policy and Management." Annual Review of Environment and Resources 41 (1): 453–88.

- Davidson, Alisha D., Chad L. Hewitt, and Donna R. Kashian. 2015. "Understanding Acceptable Level of Risk: Incorporating the Economic Cost of Under-Managing Invasive Species." PLOS ONE 10 (11): e0141958.

November 28
Valuing the environment (II): case study Comoros

- Dale Whittington, "Improving the Performance of Contingent Valuation Studies in Developing Countries," Environmental and Resource Economics 22(1&2) 2002, 323–367.

December 3
Valuing the environment (III): contingent valuation

- BGVW, Chapter 13

- BGVW, Chapter 16 (Exercise 2)

- BGVW, Case 16

December 5
Implications of behavioral economics for CBA

* Robinson, Lisa A., and James K. Hammitt. 2011. "Behavioral Economics and Regulatory Analysis." Risk Analysis 31 (9): 1408–22.

- Portney, Paul R. 1992. "Trouble in Happyville." Journal of Policy Analysis and Management 11 (1): 131–32.

- Salanié, François, and Nicolas Treich. 2009. "Regulation in Happyville." The Economic Journal 119 (537): 665–79.

- Sunstein, Cass R. 2003. "Terrorism and Probability Neglect." Journal of Risk and Uncertainty 26 (2-3): 121–36.

December 10 & 12
Presentations