

**Cost-Benefit Analysis
Public Affairs 881
Fall 2005**

Instructor: Dave Weimer
Phone: 262-5713
E-mail: weimer@lafollette.wisc.edu

Class Meetings: Mondays/Wednesdays
8:30 to 9:45 a.m.
Social Science 6228

Office Hours: Mondays and Wednesdays, 10 a.m. to noon, 201 La Follette
Mondays, 3:30 to 5 p.m., 215 North Hall
Appointments at other times welcome.

Course Objectives: Cost-benefit analysis (CBA) has both narrow and broad applications. In its narrow application, it serves as a decision rule for selecting policies for maximizing economic efficiency. In its broader application, it provides concepts, techniques, and conventions for assessing economic efficiency, or components of economic efficiency, when efficiency is only one of the social goals relevant to policy choice. This course provides the conceptual foundations and craft skills to prepare you to be sophisticated consumers and producers of CBA.

Prerequisites: Some familiarity with the basic concepts of microeconomics and statistics is assumed. Those taking the course should have completed Public Affairs 880 and Public Affairs 818, or their equivalents.

Course Requirements and Grades: Four requirements promote the course objectives:

First, I expect active participation in class and diligence in the completion of problem sets and other assignments. Our class time will be split between lectures and discussion. If this format is to be effective for both you as an individual and your classmates, then you must be prepared to participate in discussion. Sometimes discussion will be around assigned problems, including some that require reading about topics not yet covered in lecture. It is important that you put effort into these problems so that you can fully participate in their discussion. The effort will also reward itself in terms of the depth of your understanding of course material. *Fifteen percent* of your course grade will be based on class participation and assignments.

Second, an in-class midterm examination (**November 2**) will give you an opportunity to demonstrate your mastery of the basic concepts of CBA. *Twenty-five percent* of your course grade will be based on your performance on the midterm examination.

Third, although the theory of CBA can be easily learned in the classroom, the craft for actually doing it in a complex world, with inevitable limitations on the availability time, data, and expertise, probably cannot. To get practice in actually doing CBA, you will participate in a team project on a real problem — this semester about half of the projects have actual clients. The teams and projects will be randomly assigned. During the semester, each team will make several oral and written progress reports. A complete report is due on **December 5**. December 5, 7, 12

and 14 will be devoted to presentation of the projects. A revised draft is due **December 16** in PDF format. As most policy analysts work in teams, you should view your participation in the project as an important part of your development as policy analysts. I expect teams with clients to be professional in interacting with them. I also expect each team member to be fully engaged with the project, and I reserve the right to penalize individuals who are not fully familiar with their teams' products. I will ask each team member to evaluate the effort and contributions of other team members, and I will consider the responses in assigning individual grades. *Forty percent* of your course grade will be based on the team project.

Fourth, there will be a take-home final examination **distributed December 16 and due December 18 at noon**. *Twenty percent* of your course grade will be based on the final examination.

Textbook: We will make extensive use of the following text (BGVW):

Anthony E. Boardman, David H. Greenberg, Aidan R. Vining, and David L. Weimer, *Cost-Benefit Analysis: Concepts and Practice*, 2nd edition (Upper Saddle River, New Jersey: Prentice Hall, 2001).

Copies are available in the bookstore and a copy is on reserve in the College Library.

Team Projects: The topics for team projects are as follows:

*Families and Schools Together (FAST) is a family intervention program intended to increase academic achievement and decrease juvenile delinquency (www.wcer.wisc.edu/FAST). It involves outreach, multi-family group sessions, and monthly reunions of participants. Over the last 12 years it has been implemented at more than 600 sites. Its effects have been estimated through random assignment studies by several different research teams. Drawing on these studies to predict the effects of implementation of FAST for several different target populations, conduct a cost-benefit analysis of new replications.

Client: Merideth Trahan (mrtrahan@wisc.edu), FAST, Wisconsin Center for Education Research.

*Persons who were found to have committed a crime but were adjudged to be Not Guilty by Reason of Mental Disease and Defect under Wisconsin Statutes 971.17 are committed to the care and custody of the Department of Health and Family Services, rather than to the Department of Corrections. They enter into a Conditional Release Program providing extensive supervision and intensive mental health services upon their release to the community to prevent them from committing new offenses. This Conditional Release Program has yielded a re-offense/ return to institution rate far lower than that seen in persons with mental illness who are convicted of a crime and sent to prison. Drawing on this model, design a conditional release wrap-around program that could be used for other categories of inmates diagnosed as mentally ill. Conduct a cost-benefit analysis of the proposed program.

Client: Todd Winstrom (toddw@w-c-a.org), Wisconsin Coalition for Advocacy

*The Day Reporting Center provides an alternative to incarceration for pre-trial defendants and sentenced offenders in Milwaukee County. A joint effort of Milwaukee County and the non-profit Benedict Center (www.benedictcenter.org), the Day Reporting Center monitors participants and provides them with a variety of services intended to reduce recidivism. Conduct a cost-benefit analysis of the Day Reporting Center at current and expanded levels of operation. Client: Ms. Kit McNally, Executive Director, Benedict Center (kmcnally@benedictcenter.org) Primary Program Contacts: Deputy Brian Barco and Deputy Angela Cleveland (414-933-0902)

*Jefferson County's Delinquency Prevention Council sponsors Project Join, a set of juvenile justice programs including Teen Court, community service, restitution, and the First Offender Program. Teen Court offers first-time and minor repeat juvenile offenders ages 10 to 16 (or 17 for status offenses) the opportunity to be sentenced by a jury of their peers in lieu of going through circuit court or municipal court. The program is intended to decrease juvenile delinquency and increase youth developmental assets. Youth who are sentenced through Teen Court are ordered to complete community service, serve jury duty on future teen court cases, and complete any other task ordered by the jury, such as apology letters, essays, and educational classes. Youth who successfully complete Teen Court have the charges for which they were ordered to teen court dismissed. Conduct a cost-benefit analysis of Teen Court. Extend the analysis to include related programs as necessary and feasible. Client: Kris Moelter, Director, Delinquency Prevention Council(kris@oppinc.com)

*Many light-duty vehicles and medium- and heavy-duty trucks and buses can be fueled with E-85, a fuel mixture including 85 percent ethanol. E-85 is available in many locations in the Midwest and at over 150 fueling stations nationally. The price of E-85, and therefore demand for it, reflects a variety of taxes and subsidies. Does fueling with E-85 offer net social benefits relative to fueling with conventional gasoline blends? To answer this question conduct an appropriate cost-benefit analysis.

*A recently developed technology, Integrated Gasification Combined Cycle (IGCC), has the potential to transform traditional coal power plants into low-emitting "clean coal" operations. This technology offers a way to separate emissions from coal and extract them, thereby leaving a mixture of synthetic gas for electricity, comprised of hydrogen and carbon monoxide, while removing the sulfur, carbon dioxide and hydrogen. The Energy Policy Act of 2005 provides support to a collaborative, commercial-scale IGCC plant, called FutureGen, but does not provide incentives for other utility initiatives. Governor Doyle recently formed task force to research IGCC coal and its feasibility in Wisconsin. IGCC is costly and considered risky in view of a lack of fully-deployed pilots and well understood costs and benefits. At the same time, the potential advantages to building IGCC coal plants may come from reduced emissions (and thereby greater carbon credit if such a program operates nationally in the future), as well as the availability of hydrogen to be used for hydrogen fuel cells. Conduct a cost-benefit analysis to determine whether building IGCC plants is a desirable option for Wisconsin.

*Morbid obesity involves many severe health risks. Bariatric surgery, a gastrointestinal

operation that reduces the size of the stomach and the capacity of the intestines to absorb nutrients, is sometimes used to help morbidly obese patients lose weight. Should bariatric surgery be a procedure covered by Medicaid in Wisconsin? To help answer this question, conduct a cost-benefit analysis of bariatric surgery.

I will evaluate each team in terms of how much progress it makes in light of the scope of the topic, the complexity of the issue, and the availability of information. For those projects with actual clients, my assessment will reflect comments from the client on the usefulness of the product and the professionalism of the team.

Tentative Schedule

Introduction (Sept. 7)

BGVW, Chapter 1

Team projects organized

Note: Selected projects from last year will be distributed as PDF files by e-mail. Also, during the course of the semester, a number of additional readings and spreadsheet exercises will also be distributed by e-mail.

Class Discussion of Team Projects from Previous Years (Sept. 12)

Conceptual Foundations (Sept. 14)

BGVW, Chapter 2 (Prepare exercises 2, 3, and 4 for class)

Valuing in Primary Markets (Sept. 19, 21, 26 and 28)

BGVW, Chapter 3 (Prepare exercises 1 and 2 for class)

BGVW, Chapter 4 (Prepare exercises 1, 2, and 3 for class)

Spreadsheet Exercise 3.3

Spreadsheet Exercise 4.4

Valuing in Secondary Markets (Oct. 3)

BGVW, Chapter 5 (Prepare exercises 1, 2, and 3 for class)

Project report due: Each team should prepare a five- to seven-page (double-spaced) report that describes the issue being addressed in the project.

Spreadsheet Exercise 5.4

Basics of Discounting for Time/Social Discount Rate (Oct. 5 and 10)

BGVW, Chapter 6 (Prepare exercises 1, 3, and 4 for class)

BGVW, Chapter 10 (Prepare exercise 1 for class)

Spreadsheet Exercise 6.6

Mark A. Moore, Anthony E. Boardman, Aidan R. Vining, David L. Weimer, and David H. Greenberg, "Just Give Me a Number! Practical Values for the Social Discount Rate," *Journal of Policy Analysis and Management* 23:4 (2004), 789-812.

Expected Values and the Value of Information (Oct. 12 and 17)

BGVW, Chapter 7, pp. 156-166, 176-185 (Prepare exercises 1, 3, 4, and 6 for class)

Sensitivity Analysis (Oct. 19 and 24)

BGVW, Chapter 7, pp. 166-176 (**Hand-in write-up of exercise 5 — Spreadsheet Exercise 17.5**)

Project report due (Oct. 19): Each team should prepare a list of the relevant categories of costs and benefits, and indicate how each can be measured. *Read BGVW, Chapter 15, to get an idea of available shadow prices from secondary sources. Those working on criminal justice projects should also review Steve Aos, et al., "The Comparative Costs and Benefits of Programs to Reduce Crime, v. 4.0, Washington State Institute for Public Policy, May 2001 (<http://www.wsipp.wa.gov/>).*

Option Price and Option Value (Oct. 26)

BGVW, Chapter 8

Spreadsheet Exercise 8.3

Estimation Based on Revealed Preferences: Demonstrations and Experiments (Oct. 31)

BGVW, Chapter 11 (Prepare exercise 2 for class)

Midterm Examination (Nov. 2)

Estimation Based on Revealed Preferences: Natural Experiments (Nov. 7 and 9)

BGVW, Chapter 12 (Prepare exercises 1 for class)

BGVW, Chapter 13 (**Hand-in write-up of exercise 3**)

Spreadsheet Exercise 12.2

David L. Weimer and Michael Wolkoff, "School Performance and Housing Value Using Non-Contiguous District and Incorporation Boundaries to Identify School Effects," *National Tax Journal* 54:2 (2001), 231-253.

W. Kip Viscusi and Joseph E. Aldy, "The Value of a Statistical Life: A Critical Review of Market Estimates Throughout the World," *Journal of Risk and Uncertainty* 27:1 (2003), 5-76.

Contingent Valuation (Nov. 14 and 16)

BGVW, Chapter 9 (Passive use)

BGVW, Chapter 14 (Prepare exercise 2 for class)

Prior to beginning of section, complete survey at <http://www.unm.edu/instpp/gcc/>

Bruce Johnson and John C. Whitehead, "Value of Public Goods from Sports Stadiums: The CVM Approach," *Contemporary Economic Problems* 18:1 (2000), 48-58.

Cost-Effectiveness (Nov. 21 and 23)

BGVW, Chapter 17* (**Hand-in write-up of exercise 2**)

Revised chapter provided.

Spreadsheet Exercise 17.3

Distributionally Weighted CBA (Nov. 28)

BGVW, Chapter 18 (Prepare exercise 2 for class)

Shadow Prices in Developing Countries (Nov. 30)

BGVW, Chapter 16

Spreadsheet Exercise 16.4

Presentations (Dec. 5, 7, 12, and 14)

Team reports due December 5

Revised project reports (PDF file) and explanation of revisions due (Dec. 16)

Final Examination (distributed December 16; due at noon December 18)