

**Cost-Benefit Analysis
Public Affairs 881
Fall 2008**

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Class Meetings: Mondays/Wednesdays
8:30 to 9:45 a.m.
6116 Social Science

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Mondays, 3:30 pm to 4:30 pm, 215 North Hall

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 3**) 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 issue for an actual client. 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 3**. December 3, 8, and 10 will be devoted to presentation of the projects. A revised draft is due **December 15** 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 to be professional in interacting with their clients. 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. I cannot overemphasize the importance of the project for learning how to do cost-benefit analysis.

Fourth, there will be a take-home final examination **distributed December 15 and due December 17 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*, 3rd edition (Upper Saddle River, New Jersey: Prentice Hall, 2006).

Copies are available in the bookstore and a copy is on reserve in the College Library. Other readings are also on reserve at the college library. Some materials will be made available on learn@UW.

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

1. The Village of Fox Point, together with Veolia Environmental, collects all garbage (municipal solid waste or MSW), recycling, yard waste and leaves for residents of the Village. Collection of MSW and recycling is performed by three Village Department of Public Works' (DPW) staff employees and two Veolia employees who each use personalized scooters with hoppers attached to the back of the scooters (somewhat like large golf carts that have been modified) to collect the material at each garage. Employees will drive up the driveway in the scooters, manually unload the material into the hopper, and proceed to the next residence until the hopper is full and then will dump the material into a packer truck (garbage or recycling collection vehicle). The Village of Fox Point is undertaking this cost benefit analysis at this time because the contract with Veolia expires on December 31, 2009. The cost benefit analysis must evaluate the current means of collecting the materials as well as evaluating four other options for collection of the materials including (1) having the Village collect all materials (no third party contractor) in the same manner as currently performed; (2) the Village collects all materials, but collection is performed roadside using carts and modified packers; (3) the Village collects all materials at the roadside using fully automated packers; and (4) a third party contractor collects all materials at the roadside using fully automated packers. Another alternative may include the Village collecting all MSW at the roadside and a third party contractor collecting all recyclables at the roadside, both using fully automated packers. The cost benefit analysis and results of all surveys collected will be presented to the Village Board as well as Village residents for a

determination of the manner in which the public prefers to have its MSW and recycling picked up. Client: Scott Brandmeier, Director of Public Works, Village of Fox Point, sbrandmeier@vil.fox-point.wi.us.

2. Wisconsin has two state-operated mental health institutes (hospitals). These two facilities are Mendota Mental Health Institute (MMHI), located in Madison, and Winnebago Mental Health Institute (WMHI), located in Oshkosh. Although there are some variations in the levels of security and the types of patients served at each facility, each facility serves civil patients (usually under some level of the Ch. 51, Wis. Stats., commitment process) and forensic patients (males and females under competency to stand trial assessment or treatment, or found not guilty of a crime by reason of mental disease or defect). There are 242 beds at WMHI (139 forensic and 103 civil) and 264 beds at Mendota (181 forensic and 83 civil). The two Institutes are both the ultimate back-up and safety net for the state's most challenging and aggressive individuals with a mental illness. Consequently, the optimum design of any building or facility requires a safe and secure environment that, at the same time, promotes individual patient stabilization and recovery. What is the adequate supply of state-operated inpatient beds for civil and forensic patients given various projections of need in 10 to 20 years? What should be the supply of beds for various populations of civil and forensic patients? In view of the projected need and supply of beds, what are the costs and benefits of maintaining/renovating existing buildings compared to the costs and benefits of construction of new buildings? If new buildings are required, what are the costs and benefits of locating them at the sites of the current facilities compared to alternative locations? Contact Person: John Easterday, Administrator, Division of Mental Health and Substance Abuse Services, Department of Health and Family Services, John.Easterday@Wisconsin.gov.

3. Milwaukee County sponsors a number of programs intended to divert some of those entering the criminal justice system from pre-trial incarceration, prosecution, or post-conviction incarceration. For example, the Pretrial Mental Health Intervention Program, which is administered by Justice 2000, Inc., a private non-profit organization, works to promote and expand opportunities for the safe release and community integration of criminal offenders. The Milwaukee County District Attorney would like to consider possible expansion of diversion programs. Propose a representative set of new programs and program expansions that would divert as many as 30 percent of those arrested in Milwaukee County from the criminal justice system. Divide your task into two parts. First, assuming that the programs were successful in diverting the offenders they target, what would be the benefits of the diversion taking account of future offenses as well as criminal justice system and other social savings? Second, what would be the programmatic costs of achieving the increased diversions? Contact Person: Jeffrey Altenburg, Milwaukee District Attorneys Office, Jeffery.Altensburg@da.wi.gov.

4. In Wisconsin drivers who are convicted of violating traffic laws must pay fines (traffic forfeitures). In Dane County, if a forfeiture is not paid within 60 days of judgment, the Circuit Court routinely suspends the person's driver's license and turns the case over to a collection agency. The suspension of the drivers' licenses involves costs to the Circuit Court, the Division of Motor Vehicles, and the drivers. To gather data relevant to assessing the efficacy of

suspending drivers' licenses the Circuit Court conducted an experiment between August 2, 2007 and October 30, 2007, randomly assigning those who had not paid their forfeitures within 60 days of judgment into four groups: suspend drivers' licenses but do not send to collection agency (540 cases); send to collection agency but do not suspend licenses (381 cases); suspend drivers' licenses, wait 30 days, then send to collection agency (418 cases); and send to collection agency, wait at least 150 days, and then suspend licenses (382 cases). The payment history and other relevant data can be extracted from the Consolidated Court Access Program (CCAP) for the approximately one-year follow-up period. Using these experimental data to assess impacts, conduct a cost-benefit analysis of the four collection policies. Client: Todd E. Meurer, Circuit Commissioner, Todd.Meurer@wicourts.gov.

5. Systematic implementation of alcohol and drug screening, brief intervention, referral, and treatment (SBIRT) services is an important evidence-based strategy for preventing and addressing risky, problem, and dependent substance use. A program was initiated in Wisconsin in 2007 to implement SBIRT in primary care settings. Eventually, this program will provide evidence for assessing its impact. While sufficient data are accumulating to conduct a cost-benefit analysis of the Wisconsin intervention, it would be very helpful to develop the methods that can be used for monetizing impacts. As a preliminary analysis, conduct a cost-benefit analysis of a generic SBIRT program using available evidence in the literature about its consequences. Clients: Dr. Paul Moberg, Deputy Director, UW Population Health Institute, dpmoberg@wisc.edu and Dr. Rich Brown, Clinical Director, Wisconsin Initiative to Promote Healthy Lifestyles, rlbrown@wisc.edu.

6. The Delinquency Prevention Council has been implementing a Juvenile Restorative Justice Program for the past ten years in Jefferson County. The Juvenile Restorative Justice Program consists of several components that interact in varying ways with the juvenile justice system: Teen Court, restitution, community service, victim-offender conferencing, and mentoring. Through involvement in these programs, youth receive a second chance to make amends, without further consequences, and sometimes the revoking of consequences such as fines or charges on their records. This model is sometimes viewed as a rehabilitation process for first-time or low-level offenders who, if involved in the traditional system, may engage in further criminal activity. Benefit-cost analyses have previously assessed the Teen Court and First-Offender Program in Jefferson County. Drawing on these analyses as appropriate, conduct a cost-benefit analysis of the Juvenile Restorative Justice Program as a whole, both in terms of continuation of the current program and plausible alternative program configurations. Client: Monica M. Wagner, Youth Services Manager, Delinquency Prevention Council, mwagner@oppinc.com.

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. My assessment will reflect comments from the client on the usefulness of the product and the professionalism of the team.

Tentative Schedule

Introduction (Sept. 3)

BGVW, Chapter 1

Scan: EPA Guidelines

(<http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html>)

Team projects organized

Note: Selected projects from prior years be distributed through learn@UW. Also, during the course of the semester, a number of additional readings and spreadsheet exercises will be distributed by e-mail.

Class Discussion of Team Projects from Previous Years (Sept. 8)

Conceptual Foundations (Sept. 10 and 15)

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

Valuing in Primary Markets (Sept. 17, 22, 24 and 29)

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. 1)

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. 6 and 8)

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

BGVW, Chapter 10 (Prepare exercise 1 for class)

Scan: OMB Guidelines
(<http://www.whitehouse.gov/omb/circulars/a094/a094.html>)
UK Guidelines
(<http://greenbook.treasury.gov.uk/>)

Spreadsheet Exercise 6.6

Expected Values and the Value of Information (Oct. 13 and 15)

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

Sensitivity Analysis (Oct. 20 and 22)

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

Project report due (Oct. 23): 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. 27)

BGVW, Chapter 8

Spreadsheet Exercise 8.3

Life-Cycle Analysis (Oct. 29)

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.

Midterm Examination (Nov. 3)

Estimation Based on Revealed Preferences: Demonstrations and Experiments (Nov. 5)

BGVW, Chapter 11 (Prepare exercise 2 for class)

Estimation Based on Revealed Preferences: Natural Experiments (Nov. 10 and 12)

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 Values: 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. 17 and 19)

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/~rberrens/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.

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

Mark Dickie and Victoria L. Messman, "Parental Altruism and the Value of Avoiding Acute Illness: Are Kids Worth More than Parents?" *Journal of Environmental Economics and Management* 48:3 (2004), 1146-1174.

Cost-Effectiveness (Nov. 24 and 26)

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

Spreadsheet Exercise 17.3

Shadow Prices in Developing Countries (Dec. 1)

BGVW, Chapter 16

Spreadsheet Exercise 16.4

Presentations (Dec. 3, 8, and 10)

Team reports due December 3

Revised project reports (PDF file) and explanation of revisions due (Dec. 15)

Final Examination (distributed December 15 by e-mail; due at noon December 17)