Public Affairs 881: Cost-Benefit Analysis
Fall 2018

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Class Meetings: Mondays/Wednesdays
8:00– 9:15 a.m.
Ingraham 224

Office Hours: Mondays & Wednesdays, 9:30–11:30 a.m. and Monday 2:00–4:00 p.m., North Hall 215.Meetings with project teams immediately after class encouraged. Appointments for 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.

This three-credit course contributes to a number of the Student Learning Goals set out for MPA students. Most fundamentally, it requires demonstration of the following three goals:

"Students will communicate in clear written language: a real-world problem, relevant scholarly studies and practical applications, a policy-analytic method to investigate the problem, and client-oriented advice to mitigate the problem." (Goal III A)

"Students will demonstrate the ability to maintain fidelity to objective social science-based research methods." (Goal IV D)

"Students will complete high-quality group projects, including demonstration of effective project management and teamwork." (Goal V B)

Prerequisites: Familiarity with the basic concepts of microeconomics and statistical inference is assumed. Those taking the course should have completed Public Affairs 880 and Public Affairs 819, 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 both for you as an individual and for your classmates, then you must come to class 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. Your effort will also reward itself in terms of the depth of your understanding of course material. *Ten percent* of your course grade will be based on class participation and assignments.

Second, an in-class midterm examination (**October 31** will give you an opportunity to demonstrate your mastery of the basic concepts of CBA. *Thirty 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. During the semester, each team will make several oral and written progress reports. A complete report is due on **December 7**. December 10 and 12 will be devoted to presentations of the projects. A revised draft is due **December 20** in PDF format with a memorandum outlining revisions. In addition, you should plan on participating in a briefing on the final report at your client's convenience, most likely after the end of the semester. As most policy analysts work in teams, you should view your participation in the project as an important part of your development as a policy analyst. I expect team members to be professional in interactions with their clients as well as among themselves. 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 all aspects of their team's 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 effort you put into the project for your future ability to do cost-benefit analysis. 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 also reserve the right to give a failing grade in the course for anyone who acts unprofessionally.

Fourth, there will be a take-home final examination **distributed December 17 and due December 18 at noon.** *Twenty percent* of your course grade will be based on the final examination. If class attendance after the midterm examination is regular (almost everyone attending each class), and a majority of the class wishes, then I will waive the final and allocate its grade percentage to the final project.

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,* 5th ed. (New York, NY: Cambridge University Press, 2018).

Copies are available in the bookstore and a copy is on reserve at the College Library. Other readings and class materials, including some related to specific projects, are available on Canvas.

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

1. The Supplemental Nutrition Assistance Program (SNAP) is the largest safety net program in the United States providing support to over 20 million households, approximately 42 million individuals, each month. A concerning trend is the disparity in diet quality between SNAP and non-SNAP participants, with nearly all SNAP participants failing to meet the American Heart Association's (AHA) 2020 dietary goals (Zhang, F.F., L. Liu, C.D. Rehm, P. Wilde, J.R. Mande, and D. Mozaffarian. 2018. Trends and Disparities in Diet Quality Among US Adults by Supplemental Nutrition Assistance Program Participation Status. *JAMA Network Open* 1(2), e180237–e180237). There is strong and growing evidence that nutrition incentives are an effective strategy to increase fruit and vegetable consumption among SNAP recipients by subsidizing the costs of these healthier foods. Even so, the expansion of these programs is limited in both geographic scope and setting, with many programs operating in farmers' markets while the majority of SNAP purchases are made in retail grocery stores. This project seeks to conduct a cost-benefit analysis of the rollout of a SNAP incentive program in grocery retail for the entire state of Rhode Island. Using data collected by the Rhode Island Public Health Institute's (RIPHI) Food on the Move program and coalition partners, the team will use data on SNAP enrollment, diet quality, SNAP purchases, health outcomes, and health care utilization to inform the CBA. The goal is to model the overall cost of expanding SNAP across RI as well as the impact on healthcare costs in RI. This CBA will be used to inform RIPHI's advocacy campaign in RI to expand SNAP nutrition incentives. Client: Reece Lyerly, Program Manager of Evaluation, reece.lyerly@riphi.org.

2. Former Wisconsin Governor Tommy Thompson has proposed creation of a Second Chance Skills Institute to provide training to selected Wisconsin prison inmates to increase their prospects for labor force participation upon release. He envisions housing the Institute in either a converted prison or a new facility. A cost-benefit analysis of the proposal requires specification of one or more alternatives for the Institute in terms of facilities, programs, and criteria for inmate participation. It also requires review of the available literature on in-prison and other job preparation and training programs to predict and monetize the impacts of the Institute on workforce participation and recidivism. Research into labor market projections for Wisconsin may also be required to specify an appropriate counterfactual to implementation of the Institute. Client: Ryan Owens, Director, Tommy G. Thompson Center on Public Leadership ryan.owens@wisc.edu.

3. In addition to the County Communications Center operated by the Green County Sheriff's Office, the police departments in the cities of Monroe and Broadhead also have 911 call centers. The centers currently cooperate in providing mutual assistance during outages and periods of peak demand. Can 911 services in Green County be improved? The project has two primary tasks to help answer this question. First, with assistance from the client, formulate a plan to consolidate the 911 centers and then assess its social and fiscal net benefits relative to current arrangements. Second, identify possible efficiencies within the exiting arrangements and

estimate their costs and benefits. These objectives will require a review of the existing literatures on 911 systems, service consolidation, and technology and demographic trends relevant to emergency response. Client: Sam Liebert, Monroe Assistant City Administrator, sliebert@cityofmonroe.org.

4. In addition to the nine states that have legalized recreational marijuana use, thirty states allow marijuana use for medical purposes. Although Wisconsin allows use of CBD oil extracted from marijuana for treating certain seizure disorders, it does not have a comprehensive medical marijuana law like those in neighboring states. As marijuana may be a substitute for some opioid use, assessing the consequences of legalizing medical marijuana use in Wisconsin seems especially timely. Your task is to specify alternatives for legalization of medical marijuana use in Wisconsin and assess their costs and benefits. In doing so, you should take full advantage of relevant medical and criminal justice research as well as the experiences of states that have legalized medical marijuana use. Client: Yogesh Chawla, Dane County Supervisor, Chawla.Yogesh@countyofdane.com.

Tentative Schedule

Introduction (Sept. 5)

> BGVW, Chapter 1

> Team projects organized

> Note: Projects from several previous years and spreadsheets for exercises are available on Canvas.

Class Discussion of Team Projects from Previous Years (Sept. 10)

> BGVW, Chapter 8
> BGVW, skim Chapter 17

Conceptual Foundations (Sept. 12)

> BGVW, Chapter 2 (Exercises 2, 3, and 4)

Valuing in Primary Markets (Sept. 17, 19, 24, and 26, and Oct. 1)

> BGVW, Chapter 3 (Exercises 1 and 2, and Spreadsheet Exercise 3.3)
> BGVW, Chapter 4 (Spreadsheet Exercise 4.2)
> 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.

Project report due (Sept. 19): Each team should prepare a four- to six–page (double-spaced) report that describes the issue being addressed in the project and sketches a plan for completion.

Valuing in Secondary Markets (Oct. 3)

BGVW, Chapter 7 (Exercises 2 and 3 and Spreadsheet Exercise 7.4)
BGVW, Case 8

Basics of Discounting for Time/Social Discount Rate (Oct. 8 and 10)

BGVW, Chapter 9 (Exercises 1, 2, 3, and 4 and Spreadsheet Exercise 9.6)
BGVW, Case 9
BGVW, Chapter 10 (Spreadsheet Exercise 1)

Scan: OMB Guidelines
www.whitehouse.gov/omb/circulars_a004_a-4
UK Guidelines (The Green Book)
www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent
Canadian Guidelines
www.tbs-sct.gc.ca/rtrap-parfa/analys/analys07-eng.asp#Toc178397874
New Zealand Guidelines
www.treasury.govt.nz/publications/guidance/planning/costbenefitanalysis/guide
CPI Calculator
www.bls.gov/data/inflation_calculator.htm

Project report due (Oct. 10): Each team should prepare an annotated bibliography of the ten most relevant studies to its topic that it can find. Give highest priority to finding published CBAs on similar topics.

Expected Values, Value of Information, and Sensitivity Analysis (Oct. 15, 17, and 22)

BGVW, Chapter 11 (Exercises 1, 3, 4, and 6 and Spreadsheet Exercise 11.5)
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.

Project report due (Oct 18): Each team should prepare a list of the relevant categories of costs and benefits, and indicate how each can be measured. *Read BGVW, Chapter 16, to get an idea of available shadow prices from secondary sources.*

Option Price and Option Value (Oct. 24)

BGVW, Chapter 12 (Spreadsheet Exercise 12.3)

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 (Oct. 31)

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

BGVW, Chapter 12 (Prepare exercise 2 for class)

Estimation Based on Revealed Preferences: Observational Studies (Nov. 7 and 12)

BGVW, Chapter 14 (Exercise 2)
BGV W, Case 14
BGVW, Chapter 15 (Spreadsheet Exercise 15.3)
BGVW, Case 17

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.

Trudy Ann Cameron, "Euthanizing the Value of a Statistical Life," *Review of Environmental Economics and Policy* 4(2) 2010, 161–178.

Contingent Valuation (Nov. 14 and 19)

> BGVW, Chapter 13
> BGVW, Chapter 16 (Exercise 2)
> BGVW, Case 16

>> Robert P. Berrens, Alok K. Bohara, Hank C. Jenkins-Smith, Carol L. Silva, and David L. Weimer, "Information and Effort in Contingent Valuation Surveys: Application to Global Climate Change Using National Internet Samples," *Journal of Environmental Economics and Management* 47(2) 2004, 331–363.

>> 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.

>> EcoRessources Consultants, *Evidence of the Socio-Economic Importance of Polar Bears for Canada*, June 2011.

>> James K. Hammitt and Kevin Haninger, "Valuing Fatal Risks to Children and Adults: Effects of Disease, Latency, and Risk Aversion," *Journal of Risk and Uncertainty* 40(1) 2010, 57–83.

>> Blomquist, Glenn C., Paul A. Coomes, Christopher Jepsen, Brandon, C. Koford, and Kenneth R. Troske, "Estimating the Social Value of Higher Education: Willingness to Pay for Community and Technical Colleges," *Journal of Benefit-Cost Analysis* 5(1) 2014, 3–41.

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

Project Consultation (Nov. 21)

Contingent Valuation (continued) (Nov. 26 and 28)

> Review Survey for Bishop et al. contingent valuation of BP Oil Spill

>> Richard C. Bishop, Kevin J. Boyle, Richard T. Carson, David Chapman, W. Michael Hanemann, Barbara Kanninen, Raymond J. Kopp, Jon A. Krosnick, John List, Norman Meade, Robert Peterson, Stanley Presser, V. Kerry Smith, Roger Tourageau, Michael Welsh, Jeffrey M. Woodridge, Matthew DeBell, Colleen

Donovan, Matthew Konopka, and Nora Scherer, "Putting a Value on Injuries to Natural Assets: The BP Oil Spill," *Science* 356(6335) 2017, 253–254.

Cost-Effectiveness (Dec. 3)

BGVW, Chapter 18 (Spreadsheet Exercise 18.3)

Implications of Behavioral Economics for CBA (Dec. 5)

Team reports due at noon on December 7

Presentations (Dec. 10 and 12)

Revised project report (PDF) and explanation of revisions due December 20

Evaluation of teammates due December 20