

Benefit-Cost Analysis
PPPA 6015, Section 10
Fall 2024

Trachtenberg School of Public Policy and Public Administration
George Washington University
Thursdays, 12:45 - 2:35 p.m.
Tompkins Hall, Room 309

Course Staff

Instructor

Professor Christopher Carrigan

MPA Building, 601K

(202) 994-5583

ccarrigan@gwu.edu

Office Hours: Tuesdays (video chat or phone) from 4:00 to 6:00 p.m. and Thursdays (MPA 601K, video chat, or phone) from 3:30 to 5:30 p.m., as well as by appointment. Sign up at christophercarrigan.youcanbook.me.

Overview and Learning Objectives

This course seeks to link economic theory with policy analysis, using the tool commonly referred to as “benefit-cost analysis” (BCA) or “cost-benefit analysis” (CBA). As a formal assessment of a policy’s benefits and costs, BCA attempts to measure and compare the economic efficiency of policy options. This type of analysis has become standard practice in policy analysis—particularly in microeconomic policy areas such as government regulation and the provision of public goods. The goal of the course is to provide you with the conceptual foundations and practical skills you will need to be thoughtful consumers and producers of BCA.

The class will draw on qualitative, quantitative, and analytic skills. As a practical matter, a familiarity with microeconomic theory, statistics, and algebra is assumed. The prerequisite for this class is PPPA 6014 (Microeconomics for Public Policy II). If you have not taken this course, you should get my approval before enrolling. Through lectures, discussions, readings, problem sets, an exam, and a course project, students will develop knowledge and skills that will enable them to:

- Conduct a thorough BCA;
- Comprehend and articulate the limitations of BCA;
- Critically analyze BCAs conducted by others;
- Apply economic theory to real-world policy problems;
- Evaluate and compare alternative policies using the tools of BCA and economics generally;
- Understand how BCA is applied in practice.

Expectations

Course grades will be determined through a combination of seven elements based on the percentages listed in parentheses below.

Class Participation (10%): The class sessions will be more interesting to all of us, and you are sure to learn more if you are willing to participate in our discussions. If you do need to miss class, be sure to get notes from one of your classmates as the class discussions will be the best source of material for the test and course project.

Test (30%): The test will be closed book and given during class on November 7. It will cover all course material up to that point. More details to come.

Project (60% Total): Please see the BCA guidelines handout for details. The project will be completed over several steps, with the grading breakdown as follows:

- Proposal (5%)
- List of Potential Benefits and Costs (5%)
- Literature and Data Review (5%)
- Presentation (5%)
- Final Paper (40%)

Practice Problem Sets (0%): Several problem sets will be available to you over the course of the semester, which are designed to help reinforce the concepts from class and assist you in preparing for the test and in completing your projects. You are not required to turn in your solutions, which underscores the importance of reviewing my posted solutions after you work on the problems on your own or with classmates after the relevant class. We will also work on some problems during class.

Reading Materials

The required text for the course is:

Boardman, Anthony A., David H. Greenberg, Aidan R. Vining, and David L. Weimer. *Cost-Benefit Analysis: Concepts and Practice*. 5th Edition. Cambridge, UK: Cambridge University Press, 2018.

In addition, it might be helpful to have a microeconomics textbook handy although that is not required. Here are a few options:

Goolsbee, Austan, Steven Levitt, and Chad Syverson. *Microeconomics*.

Nechyba, Thomas J. *Microeconomics: An Intuitive Approach*.

Finally, each week, I will include additional readings in that week's Blackboard folder, largely to offer examples illustrating how the techniques we are learning are used in practice. While these readings are also required, and we will often discuss them in class, you should not necessarily feel the need to read them in as much depth as the assigned chapters from the Boardman et al. textbook.

Class Schedule, Readings, and Assignments

The schedule as outlined below is tentative in the sense that while I will keep us moving in the right direction, I want to make sure we are covering everything that is relevant, given that the material can be relatively dense at times. To the extent that I do make changes, I will be certain to let you know. An updated version of the syllabus will always be available on Blackboard as well.

1 – August 22 (Overview of BCA)

Topics: Defining BCA; BCA's Usefulness and Limitations; Cost-Effectiveness Analysis

Reading: Boardman et al., Chapters 1 and 2

Practice Problems: Problem Set 1

2 – August 29 (Foundations of Welfare Economics)

Topics: Pareto and Potential Pareto Efficiency; Opportunity Cost and Willingness-to-Pay; Consumer, Producer, and Social Surplus

Reading: Boardman et al., Chapter 3 and Appendix 3A (Doctoral Students)

Practice Problems: Problem Set 2

3 – September 5 (BCA Theory: Valuing Impacts in Primary Markets)

Topics: Efficient and Inefficient Markets

Reading: Boardman et al., Chapter 4

Practice Problems: Problem Set 3

Due: BCA Project Proposal

4 – September 12 (BCA Theory: Valuing Impacts in Inefficient Markets)

Topics: Inefficient Markets (Continued) and Uncertainty

Reading: Boardman et al., Chapter 5

Practice Problems: Problem Set 4

5 – September 19 (Input Markets; Secondary Markets; Predicting and Monetizing Impacts in Markets)

Topics: Statistical and Econometric Methods; Experimental and Quasi-Experimental Methods

Reading: Boardman et al., Chapters 6 (pp. 147-152), 14 (pp. 354-359), and 7 and 8 (Optional)

Practice Problems: Problem Set 5

6 – September 26 (Valuing Non-Market Goods and Services)

Topics: Indirect Market Methods: Market Analogy, Trade-Off, Intermediate Good, Asset Valuation; Survey Methods: Contingent Valuation

Reading: Boardman et al., Chapters 15 and 16

Practice Problems: Problem Set 6

Due: List of Potential Benefits and Costs

7 – October 3 (Special Cases of Non-Market Goods in BCA)

Topics: Valuing Time: Value of Travel Time Savings; Valuing Life: Value of Statistical Life; Valuing Nature: Option Value, Existence Value

Reading: Boardman et al., Chapters 13 and 17

Practice Problems: Problem Set 7

October 10

No Class – Happy Fall Break!

8 – October 17 (Discounting Future Benefits and Costs)

Topics: Discount Rates; Net Present Value; Inflation

Reading: Boardman et al., Chapters 9 and 10 (Doctoral Students)

Practice Problems: Problem Set 8

9 – October 24 (Uncertainty and Equity)

Topics: Sensitivity Analysis: Partial, Extreme Case, Monte Carlo; Distributional and Internal Weighting

Reading: Boardman et al., Chapters 11 and 19

Practice Problems: Problem Set 9

Due: Literature and Data Review

10 – October 31 (Politics of BCA)

Topics: BCA's Role in Policy Decisions; Possible Guest Lecture

Reading: Boardman et al., Chapter 20

Practice Problems: Problem Set 10

October 31

Optional Test Review Session, Start Time at Class End

11 – November 7

Due: Test, 12:45 - 3:15 p.m.

12 – November 14

Due: Presentations (Day 1)

13 – November 21

Due: Presentations (Day 2)

November 28

No Class – Happy Thanksgiving!

14 – December 5

Individual Meetings on BCA Project (In-Person or Video Chat)

15 – December 12

Due: Final Paper by 11:59 p.m.

Additional Information and Policies

Submitting Work: Assignments should be submitted through the course Blackboard site by the day and time they are due. Late submissions will be marked down for each day they are late unless I explicitly make an exception based on your extreme circumstances. To submit your work, click on the link to the assignment on Blackboard and upload your document.

Getting Class Help: I encourage you to participate in office hours if you are having difficulty with the course material. To sign up for a specific time, please use the sign up link at christophercarrigan.youcanbook.me. Getting help from me early in the semester might prove useful as many of the weeks build on concepts from prior sessions.

General Academic Support: A full range of academic support is offered through Academic Commons at academiccommons.gwu.edu. Although more focused on undergraduates, Academic Commons still offers several short videos as well as a variety of live virtual workshops to equip students with the tools they need to succeed. Through Academic Commons, you can also access the GW Writing Center to make an online appointment. The Writing Center cultivates confident writers in the University community by facilitating collaborative, critical, and inclusive conversations at all stages of the writing process. Working alongside peer mentors, writers develop strategies to write independently in academic and public settings.

Late or Missed Class: I assume that students are absent from class for legitimate reasons (e.g., work, religious holiday, etc.). If you are late or absent from class, it is your responsibility to obtain all announcements, assignments, and handouts from Blackboard or from your classmates.

Test Date: Please notify me in advance if you are aware of a conflict, such as a religious holiday you observe, that will preclude you from taking the test at the assigned time. To the extent possible, I will certainly try to accommodate your request.

Grade Changes and Incompletes: No changes can be made to grades after the conclusion of the semester, other than in cases of clerical error. To obtain a grade of incomplete, you must consult with me no later than the last day of classes in the semester. At that time, we will both sign a contract for completing the incomplete and submit a copy to the MPP and MPA or PhD Program Director. Please consult the latest student handbook on the Trachtenberg School's website for the school policy on incompletes.

Average Minimum Independent Weekly Work: Students will spend approximately one hour and 50 minutes per week in class for 12 weeks and approximately 30 minutes in one project meeting as well as one hour and 30 minutes in an optional test review session. In addition, students will have two hours and 30 minutes to complete a test in another week. Time spent reading required readings, reviewing class session recordings, completing problem sets and the class paper, and preparing for the test is expected to take, on average, eight hours per week over 15 weeks. During the course of the semester, students will spend approximately 26.5 hours in class and 120 hours preparing for class, for a total of roughly 146.5 hours.

Academic Honesty: All assignments and projects in this class are to be completed in conformance with the George Washington University Code of Academic Integrity, which can be found at students.gwu.edu/cesa. Cheating and plagiarism will not be tolerated.

Use of Generative Artificial Intelligence (GAI) Tools: GAI tools such as ChatGPT are becoming important resources in many fields and industries. Accordingly, you are permitted to use such tools to generate content submitted for evaluation in this course, including the class paper. While you may use

GAI tools to help generate ideas and brainstorm, you should note that the material generated by these tools may be inaccurate, incomplete, or otherwise problematic. Beware that use may also stifle your own independent thinking and creativity. If you include content (e.g., ideas, text, code, images, etc.) that was generated, in whole or in part, by GAI tools in work submitted for evaluation in this course, you must document and credit your source, just like you would any other source. For example, text generated using ChatGPT-4o should include a citation such as: "ChatGPT-4o. (YYYY, MM DD of query). 'Text of your query.' Generated using OpenAI. chat.openai.com." Material generated using other tools should be cited accordingly. In addition, even if you do not directly quote material in your work from a GAI tool but use it for other purposes such as generating ideas, still include a footnote in your submission indicating how it was used. Failure to do so in this course constitutes failure to attribute under the George Washington University Code of Academic Integrity.

Use of Electronic Course Materials and Class Recordings: Our class sessions will be recorded and accessible after class through the "GW Lecture Capture" link on Blackboard. Students are encouraged to use the electronic course materials, including these recorded class sessions, for private personal use in connection with their academic program of study. Electronic course materials and any recorded class sessions should not be shared or used for non-course related purposes unless express permission has been granted by me as the instructor. Students who impermissibly share any electronic course materials are subject to discipline under the Code of Student Conduct, which can be found at students.gwu.edu/code-student-conduct. Please contact me if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions. In addition, because our class sessions will be video recorded, as part of this course, you may be recorded. The recordings will only be made available to students enrolled in this class for the duration of the semester and are not allowed to be shared. If you do not wish to be recorded, please contact both me and the GW Privacy Office (privacy@gwu.edu) the first week of class (or as soon as you enroll in the course, whichever is latest) with your privacy concern.

Accommodation for Students with Disabilities: If you need extra time on tests or assignments because of a disability, please let me know as soon as possible. In order to receive accommodations based on a disability, you will need to give notice as well as provide proper documentation to Disability Support Services, Rome Hall, Suite 102, (202) 994-8250.

Classroom Code of Conduct: Higher education works best when it encourages a vigorous and lively exchange of ideas in which all points of view are heard. Free expression in the classroom is an integral part of the process. At the same time, this process is most effective when all approach the enterprise with empathy and respect for others, irrespective of their views or identity. Moreover, it is my intent that students from all backgrounds and perspectives will be well served by this course, that students' learning needs will be addressed both in and out of class, and that the diversity that students bring to this class will be viewed as a resource, strength, and benefit.

GW Support Services: GW and its faculty are committed to creating a safe and open learning environment for all students. If you or someone you know has experienced sexual harassment, including sexual assault, dating or domestic violence, or stalking, please know that help and support are available. You may contact the Title IX Office at (202) 994-7434 or at titleix@gwu.edu. Please be aware that faculty members are required to disclose information about suspected or alleged sexual harassment or other potential violations of the Title IX Sexual Harassment and Related Conduct Policy to the Title IX Office. If you or another student you know wishes to speak to a confidential resource who does not have this reporting responsibility, please contact Counseling and Psychological Services

through the Student Health Center at (202) 994-5300, or the Office of Advocacy and Support at (202) 994-0443 or at oas@gwu.edu.

GW Campus Emergency Information: GW Emergency Services can be contacted at (202) 994-6111, and situation-specific instructions can be found at safety.gwu.edu/emergency-response-handbook. GW Alert is an emergency notification system that sends alerts to the GW community. GW requests students, faculty, and staff maintain current contact information by logging on to alert.gwu.edu. Alerts are sent via email, text, social media, and other means, including the Guardian app. The Guardian app is a safety app that allows you to communicate quickly with GW Emergency Services, 911, and other resources.

Protective Actions: GW prescribes four protective actions that can be issued by University officials depending on the type of emergency. All GW community members are expected to follow directions according to the specified protective action. The protective actions are Shelter, Evacuate, Secure, and Lockdown, with details provided below:

1. Shelter

- Protection from a specific hazard.
- The hazard could be a tornado, earthquake, hazardous material spill, or other environmental emergency.
- Specific safety guidance will be shared on a case-by-case basis.

Action

- Follow safety guidance for the hazard.

2. Evacuate

- Need to move people from one location to another.
- Students and staff should be prepared to follow specific instructions given by first responders and University officials.

Action

- Evacuate to a designated location.
- Leave belongings behind.
- Follow additional instructions from first responders.

3. Secure

- Threat or hazard outside of buildings or around campus.
- Increased security, secured building perimeter, increased situational awareness, and restricted access to entry doors.

Action

- Go inside and stay inside.
- Activities inside may continue.

4. Lockdown

- Threat or hazard with the potential to impact individuals inside buildings.
- Room-based protocol that requires locking interior doors, turning off lights, and staying out of sight of corridor window.

Action

- Locks, lights, out of sight.
- Consider run, hide, fight.