Eco 631: Applied Policy Methods

Dr. Morgan Boyce
Department of Economics
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Who Am I?

I graduated from UNCG with a PhD in Economics in 2021 and UNCC with a Masters in Mathematical-Finance in 2008. I have worked in the financial services industry for nearly 20 years in various positions and have worked in academia part-time since 2021. My research follows that of my PhD advisor, Al Link, and is related to the program evaluation, as does this course, and the economics of technology policy.

Of course, I welcome the opportunity to get to know each of you at a more personal level that an online course permits. My schedule from week to week can become busy but please set up a Zoom meeting at your convenience, if you are so interested. Or, feel free to contact me at any time using mkboyce@uncg.edu or via canvas, and please put Eco 631 in the subject line

Objectives and Description of the Course

The objectives of this course are:

- to describe to students, through readings and reports, the scope of studies that fall under the rubric of program evaluation; and
- to illustrate to students how to evaluate and/or undertake a program evaluation.

I have assigned readings and reports that cover a wide range of topics so as to meet what I expect are the diverse interests of the class. My assumption in choosing these readings and reports is that evaluation methodology and methods are new to students, and that students are more likely in the future to be consumers rather than producers of program evaluations. Thus, my goal is to emphasize that, regardless of the subject matter, one should proceed to analyze evaluations based on common economic guidelines and principles.

Applied policy evaluation methods (title of this course) fall under the umbrella of *program evaluation*, and such methods include cost-effectiveness analysis and benefit-cost analysis. Cost-effectiveness analysis is emphasized in Professor Bray's Eco 630 course; benefit-cost analysis is emphasized in this course. These two policy evaluation methods are not substitutes for each other. Cost-effectiveness analysis is an effective tool for comparing the costs and effects of alternative programs. Benefit-cost analysis is an effective tool for comparing the benefits (private and social benefits) to the costs (private and social) of achieving the defined benefits.

Grading

Final grades will be based on 10 written assignments and a final exam paper – each assignment paper is valued at 8 points (8 points x 10 assignments = 80 points). The written assignments are intended to prepare students to excel in writing their final paper (which might be used as a writing sample for those seeking their first job). The final exam paper is valued at 20 points.

I grade on a 10 point sale with the upper 2 points being a + and the lower two points being a -. For example. A 91 or 90 is the class is an A-; a 89 or 88 in the class is a B+.

All assignments are due by midnight on Thursdays, as I have marked on the class calendar. All of the assignment portals, except for the final exam paper, are now open for those who like to work ahead. If I may make a suggestion, please think about turning in your assignments early. For some reason, power outages are common in Greensboro beginning about 11:00 pm each Thursday, and for some reason, student computers tend to crash at the same time. With a valid excuse, a late assignment will be accepted via mkboyce@uncg.edu, but it will have a maximum value of 5 points. Exceptions are made for religious obligations. Also if you have a special circumstance that you know will prevent you from turning in your assignment on time, let me know ahead of time and we can make arrangements.

Contact Information

Email: mkboyce@uncg.edu

e-Portfolio

Students enrolled in the Master of Arts in Applied Economics degree program, the Certificate in the Economics of Health Analytics, and the Certificate in Quantitative Business Economics must successfully complete an e-Portfolio of significant assignments and final projects. As a requirement for graduation, students of these programs must receive approval of their e-Portfolio from the Director of Graduate Studies. The e-Portfolio demonstrates a student's cumulative knowledge of the program and fulfills the program's capstone requirement. This body of work can also be shared with prospective employers to help students distinguish themselves in the job market.

Learning Objectives

Dimensions	Rubrics
2.1 Identify the costs, benefits and tradeoffs involved in economic policy making	Derive research questions concerning policy from conceptual and theoretical foundations; integrate institutional context into assessment of policy; identify private and social impacts of policy
2.3 Compare and contrast alternative economic policy assessments to reach a defensible recommendation	Characterize differences in methodology and data used to assess policy; assess weaknesses and strengths of alternative approaches to policy assessment; propose and support an assessment of a policy-related body of

	research
4.2 Present the motivation, methods and conclusions from applied economic research	Describe and motivate an applied economic research question; identify and explain why particular data and methods are appropriate for a given empirical analysis; interpret and communicate results of an empirical analysis

UNCG's Covid-19 Statement

Please uphold UNCG's culture of care to limit the spread of Covid-19 and other airborne illnesses. These actions include, but are not limited to:

- Engaging in proper hand-washing hygiene
- Self-monitoring for symptoms of Covid-19
- Staying home when ill
- Complying with directions from health care providers or public health officials to isolate if ill
- Completing a self-report when experiencing Covid-19 symptoms or testing positive for Covid-19
- Following CDC's exposure guidelines if exposed to someone who tested positive for Covid-19
- Staying informed about the University's policies and announcements via the Covid-19 website

Readings and Assignments

All course material, including readings, are posted on CANVAS under Files. The assignments for this class are listed below and they are listed in a File on CANVAS labeled as Assignments. The final exam paper assignment will be available on April 17, and it is due no later than May 1 at midnight.

PLEASE PUT YOUR NAME ON EACH ASSIGNMENT IF YOU WANT IT GRADED.

You may turn in an assignment any time before its due date, but once an assignment is turned in it cannot be retrieved or redone. In other words, you can progress through this course at your own pace but due dates for assignments are firm. I will not begin to grade any assignment until the due data for that assignment. Please turn in all assignments through CANVAS, and prepare them in WORD and Excel (when needed). 6TECH is available to help those who are new to CANVAS.

I am asking for written assignments to be completed in WORD so that I can easily make corrections and/or offer comments within the document. Analytical assignments are to be done using Excel. Please keep the written assignments under 500 words. Assignments are due by 12:00 midnight each Thursday.

No assignment is due on March 13 due to Spring Break (March 8th through March 17th).

As mentioned above, I have selected assignment readings and reports that cover a wide spectrum of topics, and I have selected some readings and reports that are done in an excellent manner and some that are poorly done. One learns from both types. Many of the assignments ask for a critique. Please pay attention to my comments on each assignment. The purpose of each assignment is to prepare students, step-by-step, to write an outstanding final paper. To no one's surprise, the final paper will ask for a critique of a report! Thus, each assignment builds on the previous one.

Finally …

PLEASE, PLEASE, PLEASE PUT YOU NAME ON EACH ASSIGNMENT IF YOU WANT IT GRADED.

Assignment #1

Due January 23, 2025, by 12:00 midnight

Please read "Public-Sector Program Evaluation." This is draft material from a book by Al Link Jeremy Bray.

Please consider the data in the following table:

Year	Benefits ($2023M)	Costs ($2023M)
0	0	40
1	0	60
2	30	80
3	70	40
4	100	20
5	200	10
6	400	10
7	100	10
8	30	10

The purpose of this assignment is to make sure that each of you can implement correctly relevant evaluation metrics. More assignments like this will follow. Benefits and costs are measured in the table in millions of constant (inflation adjusted) dollars ($2023). Using a real discount rate of 3%, calculate the IRR, B/C, and NPV. Please submit your Excel sheet (with your name on it) that shows your calculations in detail. Remember to discount to year 0 as in the formulas in "Evaluation Metrics." No separate write-up is needed.

Assignment #2

Due January 30, 2025, by 12:00 midnight.

Please read **Applied Economics (2003)**. Like anyone who is a consumer of program evaluations, there will be concepts that are new, and one simply has to figure them out (**Gold et al. 2002** might help) to understand categorical measures of benefits that are often used in program evaluation studies. Please discuss the strengths and weaknesses that you perceive in the way the consulting firm measured benefits and measured costs. All benefit and cost measures have strengths and weaknesses. Then, using Excel, replicate the NPV and the BCR using the data in Table 7.1. There are some rounding issues with the values in the table, but that can be ignored.

You will note that the consulting firm did a sensitivity analysis by simply changing the discount rate. One sees that method a lot but it is not an economically sound method. Theory should guide one when selecting a discount rate, and that should be it. A better sensitivity analysis would have been to use a different methodology for measuring benefits. I will come back to this point in later assignments.

Assignment #3

Due February 6, 2025, by 12:00 midnight

Returning to the report by Applied Economics, it seems to be that some of the benefit categories are measuring the same concept. This is an interesting "trick" that some consulting firms use to increase the value of the calculated metrics, but such an approach is not economically sound. Is there a relationship between length of life and quality of life?

How would you suggest determining if these two variables are approximating the same benefit measure? If you think that there is double counting going one, recalculate the NPV and BCR using deleting one of the benefit measures, and recalculate again deleting the other benefit measure based on Table 7.1. What have you learned?

Assignment #4

Due February 13, 2025, by 12:00 midnight

Consider the following hypothetical data on benefits and costs. You have been asked (in 2023) to evaluate this hypothetical program using the historical data on constant dollar costs and constant dollar benefits in the table below. As is often the case in retrospective benefit-cost evaluations, cost data will be missing. Discuss how you would estimate the missing data based on the data that are available – in reality if this occurred as part of your job, your job might depend on the soundness of your approach for the missing data. With your estimated cost values, calculate a benefit-cost ratio for this hypothetical project using a 2% discount rate. Include your Excel sheet.

There is some uncertainty in your benefit-cost since there is uncertainty in the way in which the missing cost data were constructed. For a sensitivity analysis, propose an alternative method for determining the missing cost values, and recalculate the benefit-cost ratio on a second Excel sheet.

Calendar Year	Costs (millions $2022)	Benefits (millions $2022)
2000	34.55	0
2001	33.79	0
2002	33.28	0
2003	32.63	0
2004		0
2005		0
2006		18.94
2007		19.81
2008		20.78
2009		21.98
2010	6.19	23.03
2011	6.06	22.57
2012	5.95	22.16
2013	5.85	21.78
2014	5.75	21.41
2015	5.70	21.21
2016	5.64	21.01
2017	5.54	20.65
2018	5.42	20.18
2019	5.33	19.85
2020	5.26	19.59
2021	5.03	18.73
2022	4.70	17.50

Assignment #5

Due February 20, 2025, by 12:00 midnight

Please read **Lawrence and Mears (2004)**. The discussion in the Lawrence and Mears report is very simple, and it relates only to benefits in one time period and costs in that same period. Of course, that is unrealistic; benefits and costs exist over time as you already know. Do not assume that the report represents a complete evaluation study; its purpose is to reinforce the concept of measuring (in $ terms) benefits and measuring costs. As I hope you learn during this semester, program evaluation involves both art and science. The science part relates to the mathematical calculations that are involved. The art part involves a bit of cleverness on how to measure (or approximate) benefits given available data.

Assume that the discussed benefit categories and cost categories are accurate in $ terms. Can you think of other benefit and cost categories that were omitted from Table 1? If so, please explain them in detail. Can all of your categories be measured?

Assignment #6

Due February 27, 2025, by 12:00 midnight

Please read **Link and Scott (2012)**. The purposes of this assignment are (1) to refresh each of you on the concept of consumer surplus and (2) to think about whether or not a measurable benefit category is an actual benefit category. In other words, reflect on the wisdom of Albert Einstein: "Not everything that can be counted counts, and not everything that counts can be counted."

Please critique all aspects of how Link and Scott measured social benefits. Don't hold back if you have thoughts.

Assignment #7

Due March 6, 2025, by 12:00 midnight

I don't think it is fair to make an assignment that might impinge on students' Spring Break. Anyway, this next assignment will require some additional thought.

First, please read **Hetter and Mays (2024)**. I am assigning CNN story simply to provide context for this assignment and to teach a bit of history. Second, please read **Kotchen and Grant (2011)**. The Kotchen and Grant paper contains analytic tools go beyond the level of this course, but you will still be able to understand in concept the experiment that the authors performed.

Do you think the Kotchen and Grant study correctly falls under the rubric of an evaluation study? Why or why not? Please critique the method the authors use to quantify what might be called benefits and costs. Please off an alternative method for determining the "net benefits" or "net gains" from Daylight Savings Time, if on net there are any.

Welcome to the world of art as related to program evaluation.

Assignment #8

Due March 27, 2025, by 12:00 midnight

Please read **CEA (2011)**. The purpose of this assignment is to gain a greater understanding of the counterfactual evaluation method. While the topic of the report is out of date, the conceptual approach remains relevant.

A counterfactual analysis was used in Link and Scott (2012). A counterfactual evaluation approach is also used in CEA. See Figure 4 in CEA.

Do you agree that the counterfactual situation shown in Figure 4 is convincing? Why or why not and please be specific.

Assignment #9

Due April 10, 2025, by 12:00 midnight

Please read **Muller (1980)**. The purpose of this assignment is to develop more skills for how to critique succinctly an analysis done by others. *One critiques another's work based on the assumptions that the other person has made.* Those assumptions go beyond simply questioning the correctness of the analysis (i.e., the math) of the data in hand.

Please critique the Mueller (1980) study. Hint: As a starting point you might first list the author's starting assumptions. Hint, hint: The author does not have a table that lists the assumptions; most of the assumptions are implicit so please read carefully.

Assignment #10

Due April 17, 2025, by 12:00 midnight

Please read **HHS (2008)**. This is a typical government agency evaluation study. Note section 9.1 of the report in which the assumptions of the study are listed. Are all of the relevant assumptions listed? Are there other benefit categories that are omitted? If yes, how would you measure them? Did the authors discuss measurement variance which could affect the numerical conclusions? Thinking about the key benefit categories, if the presented measurement of the major one was + or – say 10%, would the findings change? Is such a consideration an appropriate sensitivity consideration?