

ECON 672: Program Analysis and Evaluation
Syllabus
College Park Campus
Spring 2018

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Office Hours: Wednesdays 5:30pm-6:30pm or by appointment (Morrill 1102C)

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Office Hours: Wednesdays and Thursdays from 5:15pm-6:30pm (Morrill 1102D)

Prerequisites: ECON 641 and ECON 645

Meeting Times: Wednesdays 6:30pm-9:15pm (with a 15 minute break around 7:45pm)

Course description

The primary objective of this course is to learn tools used to evaluate the effectiveness of public policies and programs. Even when randomized experiments are possible, learning the truth about the effects of policy is not always straightforward. We will focus on both experimental and nonexperimental methods, and you will learn how to distinguish high from low quality evaluations in both contexts. We will discuss the economics and econometrics of program evaluation, focusing on the methods used for causal inference. We will examine published evaluation research with the intent of showing how research does or does not lead to clear conclusions regarding program performance.

Course objectives

Our program has 7 general learning outcomes for students:

1. Ability to understand, evaluate and analyze economic data
- 2: Ability to understand and interpret statistical evidence from economic data
- 3: Ability to apply empirical evidence to assessing economic arguments
- 4: Ability to apply macroeconomic theories to policy discussions
- 5: Ability to apply microeconomic theories to policy discussions
- 6: Ability to communicate economic ideas to a broader audience
- 7: Ability to evaluate the effectiveness of policy programs using sound economic techniques

The learning outcomes that pertain to this course are: *1, 2, 3, 5, 6, and 7.*

In addition, this class will specifically prepare you to:

- Learn the basics of the economics and econometrics of program evaluation, with a focus on hands on implementation of econometric methods using actual data
- Critically review the evaluation literature via written comments, formal discussant presentations, and general class discussion of published evaluation research with the aim

of showing how the process of knowledge creation through research does or does not lead to clear conclusions regarding program effects

- Critically evaluate how research is presented in the public domain (e.g., media) to be a better consumer of reported findings
- Learn the basics of how the evaluation industry functions and how evaluations affect and are affected by policy

Required Textbooks

Cerulli, G. (2015). *Econometric Evaluation of Socio-Economic Programs: Theory and Applications*. Springer, New York, NY.

Angrist, J. D., and J. Pischke. (2015). *Mastering ‘Metrics: The Path from Cause to Effect*. Princeton University Press: Princeton, NJ.

Course Outline and Readings (Subject to Change)

Date	Topic	Readings
24-Jan	Introduction to course Statistical set up, notation, and assumptions <i>Discussion:</i> Monitoring vs. Evaluation <i>Discussion:</i> Selection on observables & unobservables; characterizing selection bias	Cerulli Chapter 1 J-PAL Intro to Evaluation A&P Chapter 1 Appendix**
31-Jan	Experiments in Economics/ Randomized Control Trials (RCTs) <i>Examples:</i> J-PAL, MCC, & global influence of RCTs	A&P Chapter 1 Angrist et al. 2016 [1/2 class] Hanna, Duflo, & Greenstone 2012 [1/2 class]
7-Feb	Policy Framework and Statistical Design for Counterfactual Evaluations <i>Application of RCTs in Stata</i>	List 2011 Heckman & Smith 1995 Duflo, Glenner, & Kremer 2006**
14-Feb	Regression Adjustment Methods <i>Application of RA in Stata</i> <i>Course presentation overview & discussion</i>	Cerulli 2.1-2.2 A&P Chapter 2 Katz, Kling, & Liebman 2001
21-Feb	Matching Methods Overview Propensity Score <i>Application of PSM and NNM in Stata</i> <i>**Problem set one due**</i>	Heinrich, Maffioli, & Vazquez 2010 Ravallion, Galasso, Lazo, & Philipp 2001**
28-Feb	Matching Methods (con't) Nearest Neighbor Match & Reweighting <i>Course presentations (4)</i>	Cerulli 2.3-2.4 Heggeness, Ginther, Larenas, & Carter-Johnson 2017

7-Mar	Instrumental Variable (IV) <i>Course presentations (4)</i>	Cerulli 3.1-3.2 A&P pp. 99-115 A&P Appendix Chapter 3**
14-Mar	IV (con't)/Selection Model (Heckman) <i>Application of IV and Selection Model in Stata</i> <i>Midterm Exam last 1/2 of class</i>	Cerulli 3.3 Bloom, Canning, Fink, & Finlay 2009
21-Mar	Spring Break	
28-Mar	Difference-in-Difference (DID) <i>Application of DID in Stata</i>	Cerulli 3.4 A&P Chapter 5 Card & Krueger 1994
4-Apr	Local Area Treatment Effect (LATE) <i>Application of LATE in Stata</i> <i>Course presentations (4)</i>	Cerulli 4.1-4.2 Imbens 2009
11-Apr	Regression Discontinuity Design (RDD) <i>Course presentations (4)</i>	A&P Chapter 4 Cornelissen, Dustmann, Raute, & Schonberg 2016**
18-Apr	RDD (con't) <i>Application of RDD in Stata</i> <i>**Policy memo assignment due**</i>	Cerulli 4.3 Bassok, Dee, & Latham 2017 Lee & Lemieux 2010**
25-Apr	Quantile Regression Evidence Based Policy Making	A&P (2009) Chapter 7 CEP Report to Congress 2017
2-May	Panel Discussion on Monitoring and Evaluation in Federal Government In the Age of Big Data: Using Administrative Data, Household Survey Data, and other Sources to Do Evaluation <i>**Problem set two due**</i>	Presenters: TBD Foster et al. 2017 Bloomquist 2003
9-May	<i>Final Exam</i>	

*Note: Full references available in the back of this syllabus.

** Note that the readings with two asterisks (**) are not required reading and, as such, will not be used on the assignments or exams. They are, however, useful information and tools for you as you embark on a career as a program evaluation professional.

If there is a significant weather event, we may be required to reschedule a meeting. When this happens, the meeting will usually be rescheduled for a Friday, Saturday, or Sunday. It is also possible that schedule adjustments will require pushing the final exam back until Wednesday, May 16th. As such, please do not make plans to leave town before May 16th just in case.

Data & Required Software

Stata is the statistical software required for this course. See details below on acquiring Stata if you do not currently have access to the software. You will do problem sets and learn how to use evaluation tools and techniques with large microdata sets in Stata. If you do not feel comfortable relying on the help functions and resources available online, consider investing in a Stata book (*not required*). Below are two recommended books:

Mitchell, Michael N. 2010. *Data Management Using Stata: A Practical Handbook*, Stata Press.

Acock, Alan. 2008. *A Gentle Introduction to Stata*, 2nd Edition. College Station: Stata Press.

The assignments will involve datasets provided to you in class. These include datasets from federal agencies, IPUMS data products, and other nationally representative datasets. During the class, we will discuss other forms of curating, collecting, and merging big data for program analysis and evaluation.

Assignments and Grading

Grading and assignments (% of grade)

Written memo: due April 18 (10%)

Problem sets: due February 21 and May 2 (15% each)

Course presentation: various dates (10%)

Midterm exam: March 14 (20%)

Final exam: May 9 (30%)

Each assignment (written memo, problem sets, and presentations) will come with their own set of detailed instructions at least two weeks before the assignment is due (and in some cases much earlier). You are responsible for following the instructions closely on each assignment and asking clarifying questions as needed. Assignments that are turned in late will receive a 5% penalty off the final grade for that assignment. Additional general details related to the assignments follow below.

Assignment Details

Problem sets: During class, we will frequently work through program evaluation problems in Stata. Organized along similar lines, two assigned problem sets will give you independent

practice working through the basic econometric evaluation estimators and how they are implemented in Stata using real data. You will be asked to estimate econometric models and interpret the results. It is expected that you have a basic understanding of Stata from your previous econometrics courses, and that you are able to utilize Stata help files to learn new code. Your grade will depend both on whether you estimate what you are asked to estimate correctly and how well you interpret the results. Both of these are valuable skills.

You will receive the assignment two weeks before the due date. You may work together on the problem set, but each student must turn in his or her own version of the assignment. The problem set and the written memos will be submitted via ELMS using the “Submit Assignment” button on the relevant assignment’s page and uploading the required file(s). Please contact the TA via email if you encounter any problems. The problem set will include exercises using Stata as well as short-answer questions. For the problem set, you should turn in a well-organized and well commented Stata log file. Please type your responses to the short-answer questions as comments in your do-file, so that they are displayed in your log file.

Written memo: Every day, findings from studies and evaluations are reported in popular press. In an attempt to generate headlines, the press often turns to evaluations based on very weak research designs. The objective of this assignment is to challenge you to be a critical consumer of research findings. It is healthy to approach articles as though the basic claims being stated are wrong, and to think of ways to debunk the claims being made. The assignment asks you to write a two page memo assessing the findings of a recent program evaluation study. This should consist of a concise summary and critique of a study reported on in popular press (e.g., New York Times, Washington Post, or the Wall Street Journal). This critique should be based solely on the description in the article, not on the original research. Assume that you work for the Secretary of a branch of government under whose purview this program or policy would fall. For example, if you select an article on tax policy, you would be writing a memo for Commerce Secretary Wilbur Ross. The memo should have four sections: objective of the study, design of the study, findings from the study, and critique. The first three sections should be very short (half a page to a page). The majority of the memo should focus on the weaknesses of the study. A copy of the article must be also be submitted with the memo. Note that, while your critique should only be based on the news article’s description, you must choose a news article that offers sufficient opportunity to describe and critique a study using concepts taught in this course.

Course presentation: You will each formally discuss a small number of papers. There will be two or three formal discussants per paper. The formal discussant remarks should resemble those at academic conferences, and we will discuss what this means in on **February 14**. Discussant remarks should last no more than 15 minutes per group. Following the formal discussant remarks, there will be a question and answer/discussion of the remarks and paper. It is advisable that you start preparing for the formal discussant remarks well in advance, in case you have questions about the economics or the econometrics of the paper you are assigned to discuss. Practicing your formal discussant remarks is also a good idea. You are strongly encouraged to send draft slides to Professor Heggeness in advance for comment, but this must be done at least 48 hours prior to class. The papers for presentation will be announced later.

Calculation of final grades: All assignments and exams will be graded out of 100 points each. Each item will then be weighted (based on the weights defined above) so that the total sum of points for the course equals 100 total ‘course points.’ Final grades will then be assigned under the following scale:

93-100 A	80-89 B+	60-69 B-	40-49 C	20-29 D+	0-9 F
90-92 A-	70-79 B	50-59 C+	30-39 C-	10-19 D	

Extra Credit: Some of the recent literature on learning has shown that taking hand written notes improves learning and retention of the material. To encourage your own enhanced learning, I will provide a total of 5 points extra credit on the 100 total course points above for those who take hand written notes in class. To get the credit, you must: (1) take hand written notes in class, and (2) show me your hand written notes at the end of each class and make sure that I mark you as having taken hand written notes that day. Three lectures of hand written notes is the equivalent of one point of extra credit. If you take hand written notes for all 14 classes and document it with me at the end of class, you will receive the total of 5 points of extra credit.

Relevant Websites and Toolkits

J-PAL Introduction to Evaluations

<https://www.povertyactionlab.org/sites/default/files/resources/Introduction%20to%20Evaluations%20%281%29.pdf>

Using Randomization in Development Economics: A Toolkit

<https://www.povertyactionlab.org/sites/default/files/documents/Using%20Randomization%20in%20Development%20Economics.pdf>

A Primer for Applied Propensity Score Matching

<https://publications.iadb.org/handle/11319/1681>

Python for Economists http://scholar.harvard.edu/files/ambell/files/python_for_economists.pdf

Impact Evaluation of Social Programs: A Policy Perspective

http://siteresources.worldbank.org/SAFETYNETSANDTRANSFERS/Resources/Evaluation_Bloquist.pdf

Commission on Evidence-Based Policymaking (CEP) Final Report: The Promise of Evidence-Based Policymaking <https://www.cep.gov/cep-final-report.html>

Strengthening Evidence-Based Policy in the Australian Federation: Roundtable Proceedings

<http://www.pc.gov.au/research/supporting/strengthening-evidence/roundtable-proceedings-volume1.pdf>

Standard Policies for the Program and the University of Maryland

Course Website: Copies of the course syllabus, your grades, and other relevant links and documents will be posted on the course's ELMS/Canvas website. You can access the site via www.elms.umd.edu. You will need to use your University of Maryland "directory ID" and password.

Email: Email is the primary means of communication outside the classroom, and I will use it to inform you of important announcements. Students are responsible for updating their current email address via <http://www.testudo.umd.edu/apps/saddr/> AND for paying attention to messages I send to the class via ELMS. Failure to check email, errors in forwarding email, and returned email due to "mailbox full" or "user unknown" will not excuse a student from missing announcements or deadlines. I will do my best to respond to email within 36 hours.

Work Load: Mastering the material covered in this course requires a significant amount of work outside of class. Students should expect to spend more time outside of class than in class – typically at least twice as much time.

Academic Integrity: The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards applicable to all undergraduate and graduate students, and you are responsible for upholding these standards as you complete assignments and take exams in this course. Please make yourself aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information see www.studenthonorcouncil.umd.edu

Student Conduct: Students are expected to treat each other with respect. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility to one another or myself will be referred to the Office of Student Conduct. You are expected to adhere to the Code of Student Conduct.

Excused Absences: The University of Maryland's policy on excused absences is posted here: <http://www.president.umd.edu/administration/policies/section-v-student-affairs/v-100g>

Please note:

If you miss any class meetings for any reason, you are still responsible for all material covered during the meeting you missed. It is your responsibility – not the instructor's – to make sure you catch up on the missed material. Instructors routinely facilitate things by posting lecture notes, etc.

If you need to miss an exam or other graded course requirement because of illness, injury, or some other emergency: Follow doctor's orders and get documentation. Get in touch with the instructor as soon as you're able – preferably prior to missing the exam or deadline. Communicate with the instructor to make up the course requirement as soon as possible. You are entitled to recover before you make up the course requirement, but you are not entitled to extra days to study beyond the time the doctor's note says you're incapacitated. If you are incapacitated for more than a week or so beyond the end of the term, your grade in the course will be an "Incomplete". In such cases you must negotiate a plan with your instructor for completing the course requirements. Once you make up the course requirement the instructor will change your "I" to the appropriate letter grade.

School Closings and Delays: Information regarding official University closing and delays can be found on the campus website and the snow phone line: (301) 405-SNOW (405-7669) The program director will also announce cancellation information to the program as an announcement on the program's ELMS/Canvas site. This will generally be done by 1:00 p.m. on days when weather or other factors are an issue. If classes need to be cancelled during the semester, it may be necessary to move the final exam back a week so missed classes can be made up.

Students with Disabilities: The University of Maryland does not discriminate based on differences in age, race, ethnicity, sex, religion, disability, sexual orientation, class, political affiliation, or national origin. Reasonable accommodations will be arranged for students with documented disabilities. Students who have an accommodations letter from the Accessibility and Disability Service (ADS) should meet with me during the first few weeks of the semester to discuss and plan for the implementation of your accommodations. If you require reasonable accommodations but have not yet registered with ADS, please contact the Accessibility and Disability Service at 301-314-7682 or adsfrontdesk@umd.edu.

Academic Progress: The graduate school requires that students maintain a GPA of at least 3.0. Students whose cumulative GPA falls below 3.0 will be placed on academic probation by the graduate school. Students on academic probation must ask the program's director to petition the graduate school if they want to remain in the program. The petition must include a plan for getting the student's GPA up to at least 3.0. Students who do not live up to their plan can be forced to leave the program without having earned the degree. Note: a grade of "B" corresponds to a GPA of 3.0. A grade of "B-" corresponds to a GPA of 2.7.

Access to Morrill Hall and Morrill 1102: Morrill Hall is locked every day from 7:00 p.m. - 7:00 a.m. Your university ID gives you swipe access to the back door of the building.

Laptop Computer Requirement: Completing some of this course's requirements will require a laptop computer (not a notebook or a tablet!) with at least 1 GB of RAM and at least 5 GB of free space available on the hard-drive. We recommend laptops with at least a 15-inch screen. Screens smaller than 13 inches are probably not practical.

Purchasing Stata: Students in our program must purchase Stata. Stata offers different "flavors" and different lengths of licensing. Price varies according to these two factors. We do not recommend Small Stata since it is too limited for the coursework in our program. Stata/IC is the least expensive and sufficient version for your coursework. With a single-user license, you can install Stata on up to three computers. Description of all the flavors are given here:

<http://www.stata.com/products/which-stata-is-right-for-me/>

You can obtain Stata at discounted rates through the Campus GradPlan, in which University of Maryland, College Park is a participating institution. To benefit from the discounted prices, click on the link below and pick the Stata version you would like to buy.

(Note: Disregard the warning at the top which states that you must be a faculty or staff member. That is not correct.)

<http://www.stata.com/order/new/edu/gradplans/campus-gradplan/>

Through the Campus GradPlan you can buy either an annual (\$125 for Stata/IC) or a perpetual license (\$198 for Stata/IC). The perpetual license does not expire and is the most cost effective option assuming that you will stay in the program for at least 15 months. There are also upgrade discounts provided to perpetual license holders. During the checkout process you will be asked to verify your "@umd.edu" email address.

If you wish to buy a 6-month license (\$75 for Stata/IC), you need to order it as a regular student using the following link:

<http://www.stata.com/order/new/edu/gradplans/student-pricing/>

During the checkout process you will be asked to upload a copy of your student ID or another document as a proof of your enrollment.

References

You will be responsible for all of the journal articles that are listed in the syllabus accompanying lecture. These can be accessed through the library. If you need help obtaining electronic access to articles, the TA can provide assistance.

- Angrist, Joshua D. 1990. "Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security." *American Economic Review* 80(3): 313-336.
- Angrist, Joshua and William Evans. 1998. "Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size." *American Economic Review* 88(3).
- Angrist, Joshua D., Sarah R. Cohodes, Susan M. Dynarski, Parag A. Pathak, and Christopher R. Walters. 2016. "Stand and Deliver: Effects of Boston's Charter High Schools on College Preparation, Entry, and Choice." *Journal of Labor Economics* 34(2): 275-318.
- Bassock, Daphna, Thomas Dee, and Scott Latham. 2017. "The Effect of Accountability Incentives in Early Childhood Education." NBER Working Paper No. 23859: 1-55.
- Bell, Alexander. 2016. "Python for Economists." Unpublished manuscript.
- Blomquist, John. 2003. "Impact Evaluation of Social Programs: A Policy Perspective." World Bank.
- Bloom, David E., David Canning, Gunther Fink, and Jocelyn E. Finlay. (2009) "Fertility, Female Labor Force Participation, and the Demographic Dividend." *Journal of Economic Growth* 14(2): 79-101.
- Card, David and Alan Krueger. 1994. "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania. *American Economic Review* 84(8): 772-793.
- Carrell, Scott, Mark Hoekstra, James E. West. 2011. "Does Drinking Impair College Performance? Evidence from a Regression Discontinuity Approach." *Journal of Public Economics* 95(1-2): 54-62.
- Cornelissen, Thomas, Christian Dustmann, Anna Raute, and Uta Schonberg. 2016. "From LATE to MTE: Alternative Methods for the Evaluation of Policy Interventions." *Labour Economics* 41: 47-60.
- Coutemache, Charles, James Marton, Benjamin Ukert, Aaron Yelowitz, & Daniela Zapata. 2016. "Early Impacts of the Affordable Care Act on Health Insurance Coverage in Medicaid Expansion and Non-Expansion States." *Journal of Policy Analysis and Management* 36(1): 178-210.
- DeAngelo, Gregory, and Benjamin Hansen. 2014. "Life and Death in the Fast Lane: Police Enforcement and Traffic Fatalities." *American Economic Journal: Economic Policy* 6(2): 231-257.
- Duflo, Esther, Rachel Glennerster, and Michael Kremer. 2006. *Using Randomization in Development Economics Research: A Toolkit*.
- Foster, Ian, Rayid Ghani, Ron S. Jarmin, Frauke Kreuter, and Julia Lane. 2017. "Big Data and Social Science: A Practical Guide to Methods and Tools – Chapter 1." CRC Press: Boca Raton, FL.
- Hanna, Rema, Esther Duflo, and Michael Greenstone. 2012. "Up in Smoke: The Influence of Household Behavior on the Long-Run Impact of Improved Cooking Stoves." NBER Working Paper 18033. Cambridge, MA.
- Heckman, James J., and Jeffrey A. Smith. 1995. "Assessing the Case for Social Experiments." *Journal of Economic Perspectives* 9(2): 85-110.

- Heggeness, Misty L., Donna Ginther, Maria Isabel Larenas, and Frances Carter-Johnson. 2017. "The Impact of Early Independent Research Funding on Subsequent Federally Funded Biomedical Research Careers." Unpublished manuscript.
- Heinrich, Carolyn, Allesandro Maffioli, and Gonzalo Vazquez. 2010. "A Primer for Applied Propensity Score Matching." World Bank.
- Imbens, Guido. 2009. "Better LATE Than Never: Some Comments on Deaton (2009) and Heckman and Urzua (2009)." *Journal of Economic Literature* 48(2): 399-423.
- J-PAL Policy Bulletin. 2017. "What Can We Learn from Charter School Lotteries in the United States?" Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.
- Lee, David S., and Thomas Lemieux. 2010. "Regression Discontinuity Designs in Economics." *Journal of Economic Literature* 48: 281-355.
- List, John A. (2011). Why Economists Should Conduct Field Experiments and 14 Tips for Pulling One Off. *Journal of Economic Perspectives* 25(3): 3-15.
- Ravallion, Martin, Emanuela Galasso, Teodoro Lazo, Ernesto Philipp. 2001. Do Workfare Participants Recover Quickly from Retrenchment? World Bank Series, Washington DC.
- Smith, Jeffrey and Arthur Sweetman. 2010. "Putting the Evidence in Evidence-Based Policy" in Productivity Commission (ed.), *Strengthening Evidence Based Policy in the Federation*, Volume 1: Proceedings. Canberra: Productivity Commission, 59-102. Australian