

PSC 702

Advanced Research Design and Methodology

Dr. Austin Horng-En Wang

Spring 2020

We 2:30 PM-5:15 PM

Classroom: BEH 102

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Virtual Office Hour: **Th Fr 9:30 am-11:00 am, and by appointment**

Course Description

This course is designed to train you to be a quantitative political scientist. The clear trend in Figure 1 indicates the necessity to be familiar with the quantitative approaches in this field. However, math don't lie but people do. To get the knack of understanding the quantitative approaches, you must go through the whole process of doing research and acquire a variety of tools.

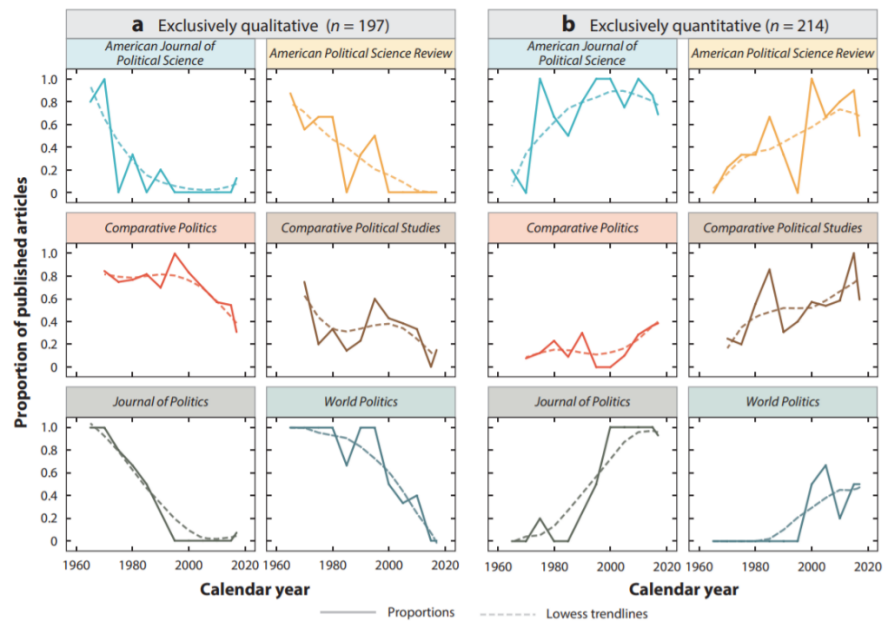


Figure 1. The Paradigm Shifts. Source: Pepinsky, T. B. (2019). The return of the single-country study. *Annual Review of Political Science*, 22, 187-203.

Throughout the semester, you are asked to replicate and extend a published journal article. Imitation is the fast way of learning, and replication can help you quickly figure out the recent replication crisis in many fields. You will then learn a variety of models, including OLS, Logit, HLM, which equips you with the capacity for the replication. Some new topics such as PSM and tree model may extend your perspectives. You will also learn R and Qualtrics to help you collect and analyze the data. The goal of this class is to enable you to understand and criticize the method section of most journal articles and to make you implement your independent research.

Course Format

This course is currently assigned to be taught in-person. Please come to BEH 102 on time. Since we will do many coding practices during the class, you are recommended to bring your own laptop to the class. You can also use the computer in BEH 102, but don't forget to save and copy the codes you wrote. I will also try to record the lecture. During the coding, it is fine to discuss and collaborate with your classmates. But please write in your own code.

Required Textbooks

The following books are required for the course. Used and new copies are all available on your favorite Internet sites. Other assigned readings can be found on Webcampus.

Fox, John. 2016. *Applied Regression Analysis and Generalized Linear Models* (3rd). Sage Publication. (Fox hereafter)

Ward, Michael D., and John S. Ahlquist. 2018. *Maximum Likelihood for Social Science: Strategies for Analysis*. Cambridge University Press. (MLE hereafter)

Grades

Your grade is based on the quality of your performance on 3 dimensions:

- **Replication and Extension Project (50%. R&E hereafter. Deadline: May 13)**

In this semester, you will replicate and extend one journal article of your choice. At the midnight of May 13, you need to send me a paper including:

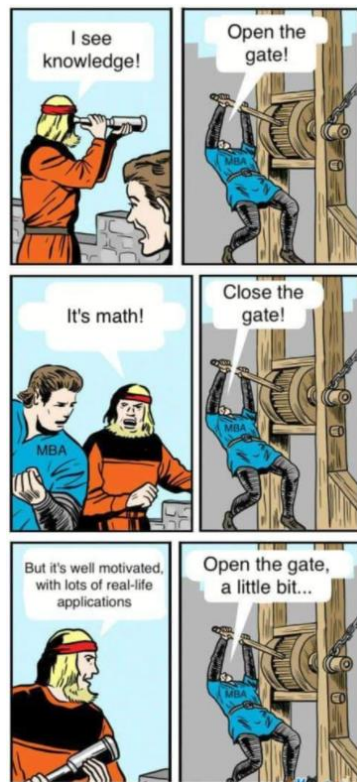
- (1) Replication of the original article (table and statistics), and discussing any issue in replication (10%)
- (2) A section explaining the theory of your extension (5%)
- (3) Extension of the original article: Tables (5%), Specification (10%), Explanation (10%), and visualization (10%).

You can use either word or latex. There is no word limit, but you need to present all knowledge you learned in this class. It's not an easy task and cannot be done within one week, so I design 8 pieces of homework during the semester to help you complete the final project.

- **Homework (due before next lecture) (40% = 8 * 5%)**
 - HW1: Install R and Rstudio. Prove me that you can do other HW after the class.
 - HW2: Select a paper you want to replicate. **Prepare a slide** explaining its DV, IV, model used in the paper, and data accessibility. Present it in the next class. Please select the model which we will cover in this class and the data is available. To make sure that you are on the right track, start your search and talk to me as early as possible.
 - HW3: You will be asked to run an analysis of ANES2016, create tables, do the specification, and simulation. Send me a report.
 - HW4: You will be asked to run an analysis of ANES2016, create tables, do the specification, and simulation. Send me a report.
 - HW5: Replicate the article you chose during the Spring break. Show your regression result and table **in a slide**. Present it in the next class.
 - HW6: **Present in a slide** what kind of extension you are going to do. With literature review, data, and plan for visualization.
 - HW7: You will be asked to run an analysis of ANES2016, create tables, do the specification, and simulation. Send me a report.
 - HW8: **Present in a slide** of the result of your extension in the next class. Including Table, specification, visualization, and simulation.
- **Course Participation: 10%**

Subject to Change

I reserve the right to modify the course syllabus. Students will be responsible for knowing any changes made to the syllabus during class time whether they were in attendance or not.



Course Schedule

Week 1

1/20

Warming up – The Replication Crisis and your R&E project

- Janz, N. (2016). Bringing the gold standard into the classroom: replication in university teaching. *International Studies Perspectives*, 17(4), 392-407.
- Key, E. M. (2016). How are we doing? Data access and replication in political science. *PS: Political Science & Politics*, 49(2), 268-272.
- Maxwell, S. E., Lau, M. Y., & Howard, G. S. (2015). Is psychology suffering from a replication crisis? What does “failure to replicate” really mean?. *American Psychologist*, 70(6), 487.

Week 2

1/27

The (Messy) Data Collection Process – Survey, Codebook, and Qualtrics

ANES2016,

“User’s Guide and Codebook for the ANES 2016 Time Series Study”,

<https://electionstudies.org/data-center/2016-time-series-study/>

- Wilson, D. C., Moore, D. W., McKay, P. F., & Avery, D. R. (2008). Affirmative action programs for women and minorities: Expressed support affected by question order. *Public Opinion Quarterly*, 72(3), 514-522.
- Alvarez, R. M., Atkeson, L. R., Levin, I., & Li, Y. (2019). Paying attention to inattentive survey respondents. *Political Analysis*, 27(2), 145-162.
- Macinnes, B., Krosnick, J. A., Ho, A. S., & Cho, M. J. (2018). The accuracy of measurements with probability and nonprobability survey samples: replication and extension. *Public Opinion Quarterly*, 82(4), 707-744.

HW1: Install R and Rstudio

Week 3

2/3

R is for Review

Fox, Chapter 1-4.

(read.csv, head, summary, table, recode, describe, scatterplot, ggplot, histogram, boxplot, aov, mean, sd, t.test, apsrtable, stargazer, lm)

Week 4

2/10

Interaction with Dummies

Fox, Chapter 5-7

Brambor, T., Clark, W. R., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political analysis*, 63-82.

HW2: R&E paper summary (DV, IV, model, accessibility, 3min present)

Week 5

2/17

Model Specifications

Fox, Chapter 11-13, 19

Week 6

2/24

MLE and the Logit Model

Fox, Chapter 14

MLE, Chapter 2-3

HW3: Logit and Simulation (TBA)**Week 7**

3/3

Ordinal and Multinomial

Fox, Chapter 15

MLE, Chapter 7-9

HW4: Multinomial Simulation (TBA)**Week 8**

3/10

Count and MLE Specifications

MLE, 5, 6, 10

HW5: Replicate the article you chose + 3 min present**Week 9**

3/17

Spring Break**Week 10**

3/24

Missing Data

Fox, Chapter 20

MLE, Chapter 12

HW6: Extension + 3 min present**Week 11**

3/31

Hierarchical Linear Model (HLM)

Fox, Chapter 23

Gelman, A. (2006). Multilevel (hierarchical) modeling: what it can and cannot do. *Technometrics*, 48(3), 432-435.**Week 12**

4/7

Experiment (and how to do it)

Fox, Chapter 8

Gelman et al. (2020). *Regression and Other Stories* Chapter 18McDermott, R. (2002). Experimental methods in political science. *Annual Review of Political Science*, 5(1), 31-61.Klar, S., Leeper, T., & Robison, J. (2020). Studying Identities with Experiments: Weighing the Risk of Posttreatment Bias Against Priming Effects. *Journal of Experimental Political Science*, 7(1), 56-60.

Week 13

4/14

Like an Experiment: Matching and Regression Discontinuity

Dunning, T. (2012). *Natural Experiments in the Social Sciences: a Design-based Approach*. Chapter 1-3.

Gelman et al. (2020). *Regression and Other Stories* Chapter 20-21.

HW7: Propensity Score Matching (TBA)**Week 14**

4/21

Visualization

Zinovyev, A. (2010). Data visualization in political and social sciences. *arXiv preprint arXiv:1008.1188*.

gganimate, shinyapp, colorbrewer, ggmap, among others

HW8: Prepare your presentation (Extension+Simulation+Visualization), 10 minutes (will present in Week 16)**Week 15**

4/28

Lost in the wood: Computational Social Science

Faraway, J. J. (2016). *Extending the linear model with R*. Chapter 16

Montgomery, J. M., & Olivella, S. (2018). Tree-Based Models for Political Science Data. *American Journal of Political Science*, 62(3), 729-744.

Muchlinski, D., Siroky, D., He, J., & Kocher, M. (2016). Comparing random forest with logistic regression for predicting class-imbalanced civil war onset data. *Political Analysis*, 87-103.

Week 16

5/5

R&E Presentation

And be the reviewer 2

Week 17

5/13

R&E paper due at the midnight

Rebelmail

Rebelmail is UNLV's official email system for students and by University policy, instructors and staff should only send emails to students' Rebelmail accounts. Rebelmail is one of the primary ways in which students receive official University communications, information about deadlines, major Campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the University. Emailing within WebCampus-Canvas is also acceptable.

Public Health Directives

Face coverings are mandatory for all faculty and students in the classroom. Students must follow all active UNLV public health directives while enrolled in this class. UNLV public health directives are found at <https://www.unlv.edu/coronavirus/health-requirements>. Students who do not comply with these directives may be asked to leave the classroom. Refusal to follow the guidelines may result in further disciplinary action according to the UNLV Code of Student Conduct, https://www.unlv.edu/sites/default/files/page_files/27/StudentConduct-Code.pdf, including being administratively withdrawn from the course.

Academic Misconduct

Academic integrity is a legitimate concern for every member of the University community. We all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility, and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy, and are encouraged to always take the ethical path whenever faced with choices. Students enrolling at UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's educational mission. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another person, from the Internet or any other source without proper citation of the source(s). See the Student Conduct Code, <https://www.unlv.edu/studentconduct/student-conduct>.

Auditing Classes

Auditing a course allows a student to continue attending the lectures and/or laboratories and discussion sessions associated with the course, but the student will not earn a grade for any component of the course. Students who audit a course receive the same educational experience as students taking the course for a grade, but will be excused from exams, assessments, and other evaluative measures that serve the primary purpose of assigning a grade.

Classroom Conduct

Students have a responsibility to conduct themselves in class and in the libraries in ways that do not interfere with the rights of other students to learn, or of instructors to teach. Use of electronic devices such as pagers, cellular phones, or recording devices, or potentially disruptive devices or activities are only permitted with the prior explicit consent of the instructor. The instructor may rescind permission at any time during the class. If a student does not comply with established requirements or obstructs the functioning of the class, the instructor may initiate an administrative withdrawal of the student from the course.

Copyright

The University requires all members of the University Community to familiarize themselves with,

and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect nor defend you, nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional [copyright policy information](#) is available at <https://www.unlv.edu/provost/copyright>.

Disability Resource Center (DRC)

The [UNLV Disability Resource Center](#) (SSC-A, Room 143, <https://www.unlv.edu/drc>, telephone 702-895-0866) provides resources for students with disabilities. Students who believe that they may need academic accommodations due to injury, disability, or due to pregnancy should contact the DRC as early as possible in the academic term. A Disabilities Specialist will discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours, so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Final Examinations

The University requires that final exams given at the end of a course occur on the date and at the time specified in the Final Exam schedule. The Final Exam schedule is typically available at the start of the semester, and the classroom locations are available approximately one month before the end of the semester. See the [Final Exam Schedule](#), <https://www.unlv.edu/registrar/calendars>.

Identity Verification in Online Courses

All UNLV students must use their Campus-issued ACE ID and password to log in to WebCampus-Canvas.

UNLV students enrolled in online or hybrid courses are expected to read and adhere to the [Student Academic Misconduct Policy](#), <https://www.unlv.edu/studentconduct/misconduct/policy>, which states that “acting or attempting to act as a substitute for another, or using or attempting to use a substitute, in any academic evaluation or assignment” is a form of academic misconduct. Intentionally sharing ACE login credentials with another person may be considered an attempt to use a substitute, and could result in investigation and sanctions, as outlined in the Student Academic Misconduct Policy.

UNLV students enrolled in online courses are also expected to read and adhere to the [Acceptable Use of Computing and Information Technology Resources Policy](#), <https://www.it.unlv.edu/policies/acceptable-use-computing-and-information-technology-resources-policy>, which prohibits sharing university accounts with other persons without authorization.

To the greatest extent possible, all graded assignments and assessments in UNLV online courses should be hosted in WebCampus-Canvas or another UNLV-managed platform that requires ACE login credentials for access.

Incomplete Grades

The grade of “I” (Incomplete) may be granted when a student has satisfactorily completed three-fourths of course work for that semester/session, but cannot complete the last part of the course for reason(s) beyond the student’s control and acceptable to the instructor, and the instructor believes that the student can finish the course without repeating it. For undergraduate courses, the incomplete work must be made up before the end of the following regular semester. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the period indicated, a grade of “F” will be recorded, and the student’s GPA will be adjusted accordingly. Students who are fulfilling an Incomplete grade do not register for the course, but make individual arrangements with the instructor who assigned the “I” grade.

Library Resources

Librarians are available to consult with students on research needs, including developing research topics, finding information, and evaluating sources. To make an appointment with a subject expert for this class, please visit the [Libraries’ Research Consultation](https://guides.library.unlv.edu/appointments/librarian) website, <https://guides.library.unlv.edu/appointments/librarian>. You can also [ask the library staff](https://ask.library.unlv.edu/) questions via chat and text message at <https://ask.library.unlv.edu/>.

Missed Classwork

Any student missing class, quizzes, examinations, or any other class or laboratory work because of observance of religious holidays will be given an opportunity during that semester to make up the missed work. The make-up opportunity will apply to the religious holiday absence only. It is the responsibility of the student to notify the instructor within the first 14 calendar days of the course for Fall and Spring courses (except for modular courses), or within the first 7 calendar days of the course for Summer and modular courses, of their intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit the Missed Work policy, under Registration Policies, on the [Academic Policies](https://catalog.unlv.edu/content.php?catoid=29&navoid=7326) webpage, <https://catalog.unlv.edu/content.php?catoid=29&navoid=7326>.

In accordance with the policy approved by the Faculty Senate regarding missed class time and assignments, students who represent UNLV in any official extracurricular activity will also have the opportunity to make up assignments, provided that the student provides official written notification to the instructor no less than one week prior to the missed class(es).

The spirit and intent of the policy for missed classwork is to offer fair and equitable assessment opportunities to all students, including those representing the University in extracurricular activities. Instructors should consider, for example, that in courses which offer a “Drop one” option for the lowest assignment, quiz, or exam, assigning the student a grade of zero for an excused absence for extracurricular activity is both contrary to the intent of the Faculty Senate’s policy, and an infringement on the student’s right to complete all work for the course.

This policy will not apply in the event that completing the assignment or administering the examination at an alternate time would impose an undue hardship on the instructor or the University that could be reasonably avoided. There should be a good faith effort by both the instructor and the student to agree to a reasonable resolution. When disagreements regarding this

policy arise, decisions can be appealed to the Department Chair/School Director, College/School Dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to: academic recruitment activities, competitive intercollegiate athletics, fine arts activities, liberal arts competitions, science and engineering competitions, and any other event or activity sanctioned by a College/School Dean, and/or by the Executive Vice President and Provost.

Tutoring and Coaching

The Academic Success Center (ASC) provides tutoring, academic success coaching, and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, please visit the [ASC website](https://www.unlv.edu/asc), <https://www.unlv.edu/asc>, or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of SSC A, Room 254. Drop-in tutoring is located on the second floor of the Lied Library, and on the second floor of the College of Engineering building (TBE A 207).

UNLV Writing Center

One-on-one or small group assistance with writing is available free of charge to UNLV students at the [Writing Center](https://writingcenter.unlv.edu/), <https://writingcenter.unlv.edu/>, located in the Central Desert Complex, Building 3, Room 301 (CDC 3–301). Walk-in consultations are sometimes available, but students with appointments receive priority assistance. Students may make appointments in person or by calling the Center, telephone 702-895-3908. Students are requested to bring to their appointments their Rebel ID Card, a copy of the instructions for their assignment, and two copies of any writing they have completed on their assignment.