GOVT 10:
Quantitative Political Analysis

Instructor: Prof. Brendan Nyhan
Office: 120 Silsby
Email: nyhan@dartmouth.edu
Phone: 603/646-2894

Classroom: Silsby 213
Schedule: MWF 11:30 AM–12:35 PM
x-period: Tuesday 12:15 PM–1:05 PM
Office hours: M 9:00–10:30 AM or by appt.

Course overview

Political scientists frequently use quantitative methods to study elections, legislatures, wars, and other important political phenomena. This course provides students with an introduction to fundamental concepts in statistical analysis, research design, and causal inference as well as contemporary examples of how those concepts can be applied in the real world. The goal is to enable students to not only become sophisticated consumers of quantitative research in political science but to enable them to conduct their own research using computerized data and software and to effectively present the results to others using tools and ideas from the course.

Learning objectives

By the end of the course, you should be able to do the following:

- Present data using graphics and descriptive statistics in a clear and informative manner

- Apply basic concepts from probability theory to social science research questions

- Make inferences about population means and proportions

- Correctly conduct and interpret hypothesis tests

- Analyze and critique survey sampling methods and social science research designs

- Describe the threats to making causal inferences from observational data and identify how they could change the conclusions of a study

- Understand linear regression in theory and practice (i.e., be able to read and interpret regression tables in academic articles)

- Work collaboratively with other students to complete problem sets that apply concepts from class readings and short lectures

- Working in groups without the direct assistance of the instructor: design and conduct an experiment; analyze your data using statistics; and substantively interpret the results

Team-based learning

This course will feature a modest amount of traditional lecturing. Students will be expected to learn the basic content of the readings before class so that the majority of class time can be dedicated to discussion, group work, and hands-on demonstrations, which are more likely to facilitate successful learning. We will work in teams throughout the quarter to maximize active engagement with the course material. By working in teams, students will not only develop communication and collaboration skills but assist each other in understanding and applying concepts successfully. Early in the quarter, you will be assigned to a team of five students. You will work with this team throughout the quarter on both in-class assignments and your final research project. To ensure that each student contributes the group's success, your contributions will be assessed via the self- and peer-evaluation components discussed below.

Course materials

The following textbook is required. It is absurdly expensive so I recommend considering renting a copy from Amazon or another vendor if possible:

- Alan Agresti. *Statistical Methods for the Social Sciences.* 5$^{\text{th}}$ edition. Pearson.

For the class period on March 2, you are also required to read a brief e-book by Edward Tufte that can be purchased and downloaded online for $2 (link below). Other course materials will be posted on Canvas as needed.

Other resources

The Cartoon Guide to Statistics can be a surprisingly helpful supplementary text for students who wish to see the material in the course presented in a different style. Two texts that are less thorough in their coverage but more social science-oriented are *An Introduction to Empirical Legal Research* by Lee Epstein and Andrew D. Martin and *Real Stats* by Michael A. Bailey.

Students who would like extra help might also wish to consult these additional resources, all of which are free and available online:

- The *OpenIntro Statistics* textbook (free!)

- Online Statistics: An Interactive Multimedia Course of Study

- The Statistical Reasoning online tutorial provided by the Open Learning Initiative at Carnegie Mellon

- Khan Academy probability and statistics videos

- *Statistics Gone Wrong*

Studying

Many students do not study effectively. I highly recommend Vox's guide to improving how you prepare for exams. For more information, please contact the Academic Skills Center.

Calculator use

You will also need to borrow or purchase a calculator to use in this course during group and individual work on problem sets and especially exams (computers are not permitted during the latter). I recommend a graphing calculator. While the graphing features are not necessary, that type of calculator will allow you to type in long equations and to store calculated values, which are both very helpful in calculating answers to problem set and exam questions without making rounding errors (or worse).

Statistical software/consulting

We will use Stata statistical software in this course, which is freely available to students. Please install Stata 15 and the Kay Access app on your computer and verify that you can run it successfully as soon as possible.

Installing Stata 15 for Mac:
http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/
stata-macintosh-os-x

Installing Stata 15 for Windows:
http://tech.dartmouth.edu/its/services-support/help-yourself/knowledge-base/
stata-windows

Please note that some people have had trouble installing Stata in the past, so please make sure to do it as soon as you can so you can get help before the first Stata workshop if you run into problems. Also, you must be connected to the Dartmouth network via Ethernet, wireless, or the VPN to install and use Stata and KeyAccess. If you are off campus, you will first need to sign on to the VPN.

If you have trouble getting Stata installed, please visit the IT Walk-in Center at 178J Berry Library or contact Jianjun Hua, who is a statistical consultant providing Stata support for students in this course. His office is Berry Library 178A and he can provide assistance to you with Stata. He can be reached at statistical.consulting@dartmouth.edu or 603/646-6552. You should have Stata working on your computer and ready to use before the tutorial that I will conduct on January 5. Please bring your computer to class on that day.

To learn how to correctly set your working directory and open data in Stata, please consult the guide provided at the end of this syllabus. If you have additional problems, please consult the following resources in this order:

1. Stata help — Simply type "help <command>" for any Stata command in the command window and the help file for that command will appear. For more help, click on the linked title of the help file (e.g., "[R] summarize") to open a PDF of the relevant section of the Stata manual. The manual provides more extensive discussion and examples in the "Remarks" section, which appears below the text from the online help file.

2. Consult the Dartmouth Stata FAQ at http://www.dartmouth.edu/comp/soft-comp/software/statistics/statafaq.html.

3. Consult the sample .do file that I have provided on Canvas, which demonstrates a variety of useful commands with correct syntax, including how to tabulate, summarize, and graph data and perform various statistical tests and analyses. (This file will be especially vital for your group research project.)

4. Google for answers — extensive resources are now available online. Someone has probably asked the same question in the past. UCLA's Stata resources site (https://stats.idre.ucla.edu/stata/) is especially helpful. See also the Stata YouTube channel for demonstration videos.

5. Consult Mr. Hua by email at statistical.consulting@dartmouth.edu or make an appointment to meet with him.

6. Contact me by email at nyhan@dartmouth.edu or make an appointment to meet with me. When you do, please send a precise description of your problem along with your data, .do file, and a screenshot or Stata output, which help me more quickly diagnose the problem.

(Students who want a more detailed guide to Stata usage might wish to consult *A Stata Companion to Political Analysis, Third Edition* by Philip H. Pollock III or *A Gentle Introduction to Stata, Fourth Edition* by Alan C. Acock.)

Office hours

My office hours for this course are Monday from 9:00–10:30 AM. To ensure you have a time that works for you, please schedule a meeting with me using my ScheduleOnce page at http://meetme.so/BrendanNyhan. I will prioritize appointments over walk-ins though I am of course happy to meet with any student if time permits. (If you cannot make it to office hours, please email me to schedule an alternate meeting time.)

Optional study group

An optional study group will be provided for this class by the Tutor Clearinghouse, a program of the Academic Skills Center. If you are interested, please see their website at http://www.dartmouth.edu/~acskills for more information or go to http://studygroups.dartmouth.edu to register after the term begins

(note: a small fee is required). Details on the study group's schedule, location, and leader will be made available online.

Assignments and grading

Grading in this class will be based on the components described below. Late work will not be accepted without prior permission. Makeup exams will not be given, and students who miss exams will receive a score of 0 absent extraordinary circumstances.

Peer assessments – 10%

To help ensure that each team member is actively contributing to the group's success, students will be asked to anonymously evaluate their teammates' contributions, effort, and performance. You will receive ungraded midterm evaluations from your group to help you know how well you are doing and identify areas in need of improvement. You will also complete a midterm self-evaluation of your own contributions, effort, and performance using an identical form to help you reflect on your own effort and performance. The text of all peer and self-evaluation forms are provided at the end of the syllabus. Please download electronic versions of each form from Canvas and submit them there by the appropriate deadlines.

Problem sets, in-class work, and quizzes – 20%

Problem sets will be assigned throughout the course (10%). These are individual assignments that you should prepare yourself, though you may ask your colleagues for help. Please turn them in on the specified date **at the beginning of class** with only your Dartmouth ID number (i.e., not your name). For questions using Stata, you should provide the relevant Stata output in graphical and/or textual format as appropriate. If you have a printing problem, you are responsible for emailing it to me before class starts. Each student's lowest problem set grade will be dropped in the final grade calculations. No additional waivers will be granted.

Individual preparedness assessments (IPAs) are open book multiple-choice quizzes that will be administered on Canvas before each class (5%). They become available after the previous class ends and are available until 15 minutes before the next class begins. These are designed to ensure that students arrive to class prepared to engage in discussion and team activities based on the assigned reading. (Many in-class team activities will be graded, so these assessments are necessary to ensure that all members are ready to contribute.) You should complete these assessments yourself with no assistance from your colleagues; you may not discuss them with other students prior to class. Each student's two lowest IPA grades will be dropped in final grade calculations. No additional waivers will be granted.

Note: IPAs are set to become available on Canvas after the prior class session ends and to remain available until 15 minutes before the beginning of the class whose content they cover. Each IPA is five minutes long and consists of up to five multiple-choice or multiple-answer questions. You must complete them in one sitting after doing the reading; they may not be paused or retaken and they will automatically be submitted when the time limit expires. The IPAs cannot be returned to preserve the integrity of the quizzes for future classes but we will review the questions and answers at the conclusion of each lecture to ensure that students have learned the material.

In-class assignments will be completed during class with your research team (5%). All members will turn in a single assignment at the end of class and will share their grade. However, **all absent students will receive a zero**; any attempt to include an ID number for an absent student will be considered an academic integrity violation. Students missing more than five minutes of class time will be counted as absent. Each student's two lowest in-class assignment grades will be dropped in the final grade calculations. No additional waivers will be granted. (Absences from class will not be excused except for illness or required team travel for varsity athletes.)

Midterm exam – 20%

The midterm exam will be held during class on February 5 and will cover the material covered in class to that point. Students will be provided with relevant statistical tables and are allowed to use a calculator with no information stored in memory. (Note: This will be curved! Don't panic about your raw score.)

Research project – 20%

Working with an assigned team, students will select a social science research question of interest, design and execute an experiment testing a hypothesis about that question (most likely using the Qualtrics survey research platform at http://dartmouth.qualtrics.com, which will easily allow you to design a randomized experiment — see the guide to using it and project suggestions provided at the end of the syllabus), and conduct a quantitative analysis of their results. These findings will be written up and presented as scientific posters in a public event held in our classroom during our March 2 session (11:30 AM–12:35 PM). Each group must submit a Powerpoint or PDF file of their poster, the survey design from Qualtrics or other experimental materials (Edit Survey → Advanced Options → Export Survey to Word), and replication data/annotated Stata code generating your results to me on Canvas before that class period begins. The best poster (as selected by Government Department faculty) will receive 1% extra credit toward their overall course grade. Note: Don't worry about whether your hypothesis was supported! Evaluation will be based on the criteria specified in the rubric at the end of this syllabus, not the statistical significance of your results. (Your contribution to the project will be assessed

using self- and peer-evaluations as specified above.)

Project timeline:

- Research proposal (1/29)

- Revised proposal (2/7)

- Experimental design/materials draft (2/16)

- Preliminary results/poster (2/28)

- Poster presentation (3/2)

(Note: Failure to meet *any* deadline will result in a reduced project grade.)

Final exam – 30%

A comprehensive final exam will be held on March 9 at 8:00 AM (location TBD). Students will be provided with relevant statistical tables and are allowed to use a calculator with no information stored in memory. (Note: This will be curved! Don't panic about your raw score.)

Prerequisites

The course has no prerequisites.

Academic integrity

Students are responsible for understanding the academic integrity rules at Dartmouth, including how to cite sources appropriately. Ignorance of the Academic Honor Principle or appropriate citation practices will not be considered an excuse if a violation occurs. Beyond any penalties imposed as a consequence of an Academic Honor Principle investigation, any student who is found to have cheated or plagiarized on any assignment will receive a failing grade in the class. Please see me immediately if you have any questions or concerns.

Laptop/electronic device policy

You will frequently make use of computers in this course to conduct statistical analysis in Stata. Please be respectful of your instructor and peers by using your computers only for class-related purposes. Please also make sure to put your phone away before class starts and not take it out during class.

Laptops, cell phones, and other electronic devices may not otherwise be used during class without the permission of the instructor. You should therefore make sure to bring your textbook to class and print all other readings. This policy is motivated by the growing body of research which finds that the use of laptops hinders learning not just for the people who use them but the students

around them as well. Multitasking is unfortunately distracting and cognitively taxing. In addition, research suggests that students take notes more effectively in longhand than when they write on laptops. (Exceptions will be made for students with disabilities who need to be able to use a laptop.)

Students with disabilities

Students with disabilities who may need disability-related academic adjustments and services for this course are encouraged to see me privately as early in the term as possible. Students requiring disability-related academic adjustments and services must consult the Student Accessibility Services office (205 Collis Student Center, 646-9900, Student.Accessibility.Services@Dartmouth.edu). Once SAS has authorized services, students must show the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to me. As a first step, if you have questions about whether you qualify to receive academic adjustments and services, you should contact the SAS office. All inquiries and discussions will remain confidential. (Students with disabilities who require an exception to the laptop policy described above will be granted one; please let me know if we need to discuss this option.)

Religious observances

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.

Course schedule

The tentative schedule for the course is presented below. Please note that certain classes have been replaced with x-periods due to holidays. This course outline is subject to change; please consult the current version of the syllabus on Canvas for the most up-to-date information. In particular, additional readings may be added that are relevant to the material being covered.

Introduction to GOVT 10 (1/3)

- Introduction and orientation

- Discussion of team-based learning

- Take class survey (http://tuck.qualtrics.com/jfe/form/SV_bl5uqnXX63qCvNX)

- Rent textbook

Stata tutorial (1/5)

- Install Stata

- Stata YouTube videos on the program interface (https://www.youtube.com/watch?v=nV5WfR92LIM), help system (http://youtu.be/UpXNMeTzmuI), and how to import data in Excel (http://youtu.be/N5ZFgzN2_7c) and text delimited formats (http://youtu.be/60RBNsqzL6I)

- Germán Rodríguez, "Stata Tutorial" (http://data.princeton.edu/stata/)

  - Goal: Run each of the code snippets Rodríguez presents from the command window in order while following along in the article. If possible, try also to make and run the full .do file included at the end of the tutorial.

Measurement and data collection (1/8)

- Agresti: 1.1–1.4, 2.1–2.2

Sampling and survey problems (1/10)

- Agresti: 2.3–2.4

- Mark Blumenthal: "2012 Poll Accuracy: After Obama, Models and Survey Science Won The Day" (http://www.huffingtonpost.com/2012/11/07/2012-poll-accuracy-obama-models-survey_n_2087117.html)

- Nate Cohn, Josh Katz, and Kevin Quealy: "Putting the Polling Miss of the 2016 Election in Perspective" (https://www.nytimes.com/interactive/2016/11/13/upshot/putting-the-polling-miss-of-2016-in-perspective.html)

- Nate Cohn: "A 2016 Review: Why Key State Polls Were Wrong About Trump" (https://www.nytimes.com/2017/05/31/upshot/a-2016-review-why-key-state-polls-we html)

- HW 1 due: 1.2, 1.4, 1.6, 1.8, 1.11, 1.16, 2.2, 2.22, 2.34 (for 1.11 and 2.22, use http://www.stat.ufl.edu/~aa/smss/data/Stata/Students.dta; please provide output from Stata to show you loaded the data successfully for 1.11 and tabulated or summarized the relevant variables for 2.22)

Descriptive statistics (1/12)

- Agresti: 3.1–3.4, 3.6–3.7

- YouTube videos: "Descriptive statistics in Stata" (http://youtu.be/kKFbnEWwa2s), "Basic scatterplots in Stata (http://youtu.be/GhVGpe3lb3E), "Histograms in Stata" (http://youtu.be/nPqNZVToGx8), "Bar graphs in Stata" (http://youtu.be/jNjAdtQwW6M), and "Box plots in Stata" (http://youtu.be/y6dngL80xuo)

Probability (1/16–x-period)

- Agresti: 4.1–4.2

- Gonick and Smith: 30–45, 53–63 (Canvas)

- Bernd Beber and Alexandra Scacco, "The Devil Is in the Digits" (http://www.nyu.edu/projects/beber/files/Beber_Scacco_The_Devil_Is_in_the_Digits.pdf)

- HW 2 due: 2.26, 2.38, 3.4, 3.6b/c (use http://www.stat.ufl.edu/~aa/smss/data/Stata/OECD.dta), 3.8, 3.16, 3.24b/c, 3.54 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Students.dta)

Normal distributions (1/17)

- Agresti: 4.3

Sampling distributions (1/19)

- Agresti: 4.4–4.7

- HW 3 due: 4.1, 4.4, 4.8, 4.12, 4.18, 4.22, 4.24

Confidence intervals I (1/22)

- Agresti: 5.1–5.3

- Assignment: Research proposal due on Canvas 1/29

- HW 4 due: 4.30, 4.32, 4.34, 4.36

Research projects/confidence intervals II (1/24)

- Agresti: 5.1–5.3

Hypothesis tests I (1/26)

- Agresti: 6.1–6.2

- YouTube videos: "One-sample t-test in Stata" (http://youtu.be/HwzCyqW-0dc), "t-test for two independent samples in Stata" (http://youtu.be/by4c3h3WXQc), and "t-test for two paired samples in Stata" (http://youtu.be/GiDSnufmZgI)

- HW 5 due: 5.4, 5.8, 5.12, 5.16, 5.20, 5.22, 5.26, 5.28, 5.29, 5.30 (for part b, explain your reasoning and then analyze the data directly in Stata using http://www.stat.ufl.edu/~aa/smss/data/Stata/Students.dta)

Hypothesis tests II (1/29)

- Agresti: 6.3

- Research proposal due 1/29 at 5 PM (submit on Canvas)

Statistical inference with hypothesis tests (1/30–x-period)

- Agresti: 5.4, 6.4–6.5

- Christie Aschwanden, FiveThirtyEight: "Science Isnt Broken: Its just a hell of a lot harder than we give it credit for" (https://fivethirtyeight.com/features/science-isnt-broken/)

Midterm exam review (1/31)

- Study!

- HW 6 due: 6.4, 6.6, 6.8, 6.12, 6.14, 6.16

Midterm exam (2/5)

- Study!

- Self and peer evaluations (Canvas) and midterm course survey (http://tuck.qualtrics.com/jfe/form/SV_8bP2sWW3807JHH7) must be submitted to take exam

Midterm review and research project update (2/7)

- Go over midterm

- Research project update and peer review

  - Revise proposal as a group based on my feedback (due on Canvas before class)
  - Bring printed version of proposal to class for peer review

- Stata workshop (time permitting)

Differences of means and proportions (2/12)

- Agresti: 7.1–7.4

- YouTube videos: "t-test for two independent samples in Stata" (http://youtu.be/by4c3h3WXQc), and "t-test for two paired samples in Stata" (http://youtu.be/GiDSnufmZgI)

Associations between categorical variables (2/13–x-period)

- Agresti: 8.1–8.4 (excluding the section on odds ratios starting on page 229)

- YouTube video: "Tables and cross tabulations in Stata" (http://youtu.be/3WpMRtTNZsw) and "Pearson's chi-squared and Fisher's exact test in Stata" (http://youtu.be/DBsMPZqJj-o)

- Kristian Skrede Gleditsch and Andrea Ruggeri, "Political opportunity structures, democracy, and civil war" (http://jpr.sagepub.com/content/47/3/299.full.pdf)

  - Goal: Understand Tables 1 and 2

- HW 7 due: 7.4, 7.14, 7.20, 7.22, 7.24, 7.28

Linear regression I (2/14)

- Agresti: 3.5, 9.1–9.2, 9.4

- YouTube videos: "Pearson's correlation coefficient in Stata" (https://www.youtube.com/watch?v=o7ko844ff-g&feature=youtu.be) and "Simple linear regression in Stata" (http://youtu.be/HafqFSB9x70)

- HW 8 due: 8.4, 8.10, 8.12 (select "GSS - with 'No Weight' as the default" at http://sda.berkeley.edu/GSS/; when you construct the table, select the summary statistics option under Tables: Output Options to get the χ^2 statistic and p-value), 8.14, 8.16, 8.29 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Students.dta; the command in Stata to get the χ^2 value should be of this form: `tabulate var1 var2, chi2`)

Linear regression II (2/16)

- Agresti: 9.3, 9.5–9.6

- Research project update and peer review

  - Submit group experimental design/materials (due on Canvas before class)
  - Bring printed version to class for peer review

Association and causation (2/19)

- Agresti: 10.1–10.3

- Joshua D. Angrist and Jörn-Steffen Pischke, *Mastering 'Metrics: The Path from Cause to Effect*, 1–12 (Canvas)

- Todd Rogers, Lucas Coffman, and Peter Bergman, "Parental involvement overrated? Don't buy it" (http://us.cnn.com/2014/05/05/opinion/rogers-coffman-bergman-education-kids/index.html?hpt=hp_bn7)

- HW 9 due: 9.2, 9.4, 9.10, 9.22a/b, 9.24a, 9.26 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Florida.dta), 9.38 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Guns_suicide.dta)

Multiple regression I (2/21)

- Agresti: 11.1–11.3 (ignore material on F-tests and ANOVA)

- YouTube video: "STATA Tutorials: Multiple Linear Regression" (https://www.youtube.com/watch?v=NbSjQ0n-Gss)

- HW 10 due: 10.2, 10.8, 10.10, 10.16, 10.18, 10.30a (note: the first sentence means you should *treat* the state variable, which classifies the data into two groups, as the explanatory variable)

Multiple regression II (2/23)

- Agresti: Chapter 11.1–11.3

- Costas Panagopoulos, "Extrinsic Rewards, Intrinsic Motivation and Voting" (http://journals.cambridge.org/abstract_S0022381612001016)

  - Goal: Understand Table 2

Interaction terms I (2/26)

- Agresti: 11.4, 13.1–13.3

- HW 11 due: 11.2, 11.4b/c (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Crime2.dta), 11.8a/b (construct scatterplots for 11.8a only; use http://www.stat.ufl.edu/~aa/smss/data/Stata/Florida.dta), 11.16, 11.19a/b (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Houses.dta), 11.46

Interaction terms II (2/27–x-period)

- Agresti: 11.4, 13.1–13.3

- Peter Loewen et al., "A Natural Experiment in Proposal Power and Electoral Success" (http://onlinelibrary.wiley.com/doi/10.1111/ajps.12042/abstract)

    - Goal: Understand Table 1 and Figure 1

Communicating scientific results/poster working session (2/28)

- Lee Epstein and Andrew D. Martin, *An Introduction to Empirical Legal Research*, Oxford University Press, Chapters 10–11 (Canvas)

- Edward Tufte, "Visual and Statistical Thinking: Displays of Evidence for Making Decisions" (\$2 e-book at http://www.edwardtufte.com/tufte/ebooks)

    - Submit preliminary results/poster (due on Canvas before class)
    - Bring printed version to class for peer review

Poster presentations (3/2)

- Present your research project (public event in our classroom)

Final exam review (3/5)

- Study!

- HW 12 due: 11.22, 11.23 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Houses.dta, 13.2, 13.4, 13.7 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Houses.dta), 13.8 (use http://www.stat.ufl.edu/~aa/smss/data/Stata/Houses.dta), 13.12/13.13 (http://www.stat.ufl.edu/~aa/smss/data/Stata/Income.dta)

Final exam (3/9 — 8–10 AM, location TBD)

- Study!

Poster rubric

Score:	5	4	3	2
Introduction and theory	Precisely identifies null and alternative hypotheses and provides strong substantive and theoretical motivations for research project	Identifies null and alternative hypotheses and provides substantive and theoretical motivations for research project	Hypothesis described but null and/or alternative hypotheses not precisely or correctly specified; substantive and theoretical motivations incomplete or unconvincing	Theory incorrectly or vaguely stated; lacks appropriate substantive and/or theoretical motivation
Methods	Specifies all important aspects of how study was conducted in detailed and replicable fashion; convincingly motivates and defends key choices in design process	Specifies most important aspects of how study was conducted in relatively clear manner; addresses possible concerns about key choices in design process	Specifies some important aspects of how study was conducted; methods not always well-explained; does not sufficiently address possible concerns about choices in design process	Does not provide or clearly explain most important aspects of how study was conducted; lacks appropriate justification of key design choices
Results	Figures and tables illustrate findings in an intuitive and easy-to-understand way; text explains results precisely and without statistical errors; investigation of hypothesis thorough and detailed	Figures and tables illustrate findings reasonably clearly; textual explanations of results is clear; statistical approach largely correct and error-free	Figures and tables unappealing or poorly constructed; some imprecision or errors in textual discussion of results; hypotheses not thoroughly investigated	Figures and tables sloppy or hard to understand; text vague or incorrect; statistical errors in analysis; cursory investigation of hypotheses
Limitations and conclusions	Perceptive and detailed discussion of limitations of findings, potential explanations for those findings, substantive and theoretical conclusions, and possible future research	Clear and thoughtful discussion of limitations of findings, potential explanations for those findings, substantive and theoretical conclusions, and possible future research	Some useful discussion of limitations of findings, potential explanations for those findings, substantive and theoretical conclusions, and possible future research	Vague, incomplete, or unconvincing discussion of limitations, implications, and conclusions
Statistical analysis (poster)	Innovative use of statistical methods to answer research question; no errors in statistical analysis	Correct use of statistical methods to answer research question; no or few errors in statistical analysis	Potentially problematic use of statistical methods to answer research question; some errors in statistical analysis	Flawed use of statistical methods to answer research question; significant errors in statistical analysis
Statistical analysis (.do file)	Replicates poster findings exactly from original data; clear, descriptive, and precise comments; correct and error-free statistical analyses and use of Stata	Statistical analysis and Stata code are largely correct; comments relatively clear and descriptive	Some errors in statistical analysis or Stata code; failure to fully replicate poster or provide appropriate comments	Does not replicate poster; lacks comments; many statistical and/or Stata errors
Graphical design	Exceptionally attractive design and layout; free of formatting problems	Attractive design and layout; no or few formatting problems	Somewhat attractive poster; some formatting problems	Difficult-to-read or messy poster design; many formatting problems
Writing quality	Exceptionally well-written—precise, clear, and mistake-free; concise and elegant	Very well-written—clear and articulate; few or no typos; not too long	Moderately well-written; some typos; wordy or vague	Unclear, awkward, or imprecise writing; numerous typos; too long and wordy or too short and vague

Self evaluation form (mid-quarter; ungraded)

Team #:
Your name:

Part 1: Quantitative assessment (check one box for each item)

Cooperative learning skills	Never	Sometimes	Often	Always
Arrives on time and remains with team during activities				
Demonstrates a good balance of active listening and participation				
Asks useful or probing questions				
Shares information and personal understanding				

Self-directed learning	Never	Sometimes	Often	Always
Is well-prepared for team activities				
Shows appropriate depth of knowledge				
Identifies limits of personal knowledge				
Is clear when explaining things to others				

Interpersonal skills	Never	Sometimes	Often	Always
Gives useful feedback to others				
Accepts useful feedback from others				
Is able to listen and understand what others are saying				
Shows respect for the opinions and feelings of others				

Part 2: Qualitative assessment (1–3 sentences each)

1) What is the single most valuable contribution you make to your team?

2) What is the single most important way you could alter your behavior to more effectively help your team?

(Fill out electronic version online and submit on Canvas)

Peer evaluation form (mid-quarter; ungraded)

Team #:
Colleague you are evaluating:
Your name (evaluator):

Part 1: Quantitative assessment (check one box for each item)

Cooperative learning skills	Never	Sometimes	Often	Always
Arrives on time and remains with team during activities				
Demonstrates a good balance of active listening and participation				
Asks useful or probing questions				
Shares information and personal understanding				

Self-directed learning	Never	Sometimes	Often	Always
Is well-prepared for team activities				
Shows appropriate depth of knowledge				
Identifies limits of personal knowledge				
Is clear when explaining things to others				

Interpersonal skills	Never	Sometimes	Often	Always
Gives useful feedback to others				
Accepts useful feedback from others				
Is able to listen and understand what others are saying				
Shows respect for the opinions and feelings of others				

Part 2: Qualitative assessment (1–3 sentences each)

1) What is the single most valuable contribution this person makes to your team?

2) What is the single most important way this person could alter their behavior to more effectively help your team?

(Fill out electronic version online and submit on Canvas)

Peer evaluation form (end of quarter)

Name/team #:

Please assign scores that reflect how you really feel about the extent to which the other members of your team contributed to your learning and/or your team's performance. This will be your only opportunity to reward the members of your team who worked hard on your behalf. (Note: If you give everyone pretty much the same score, you will be hurting those who did the most and helping those who did the least.)

Instructions: In the space below, please rate each of the other members of your team. Each member's peer evaluation score will be the average of the points they receive from the other members of the team. To complete the evaluation you should: 1) List the name of each member of your team in the alphabetical order of their last names; 2) **assign an average of ten points to the other members of your team using integers only**; 3) differentiate some in your ratings; for example, you must give at least one score of 11 or higher (maximum = 15) and one score of 9 or lower.

Team member	Score
1.	
2.	
3.	
4.	

Additional feedback

Please briefly describe the reasons for your highest and lowest ratings in the space below. Note: Your comments should be descriptive, not evaluative; as clear and specific as possible; phrased in constructive terms; and focused on areas in which the student has made especially valuable contributions or could improve in the future.

Reason(s) for your highest rating(s):

Reason(s) for your lowest rating(s):

(Fill out electronic version online and submit on Canvas)

Guide to setting your directory and opening data in Stata

1. All analysis in Stata should be conducted using `.do` files, which are scripts we use to ensure that our results are replicable. Each should begin by opening the original source data (don't modify it!).

2. Your `.do` file *must* begin with the `clear` command. This will ensure that you clear the memory of Stata before opening a dataset, preventing an error that will otherwise occur if you already have data open (even if you opened the data during a previous run of the `.do` file that you are working on).

3. The `clear` command should be followed by a `cd` command telling Stata the path to the folder where your data lives, which is called the working directory (you can get the correct path by selecting the data file and choosing Get Info on a Mac from the file menu or right-clicking on a file in Windows and selecting Properties). The path should be specified as `"/users/..."` or `"C:"` depending on whether you have a Mac or PC. Type `help cd` in Stata or click the link in the help file to the manual for more. (Note: I recommend creating a GOVT 10 Stata folder for your data and `.do` files, which will help keep you organized and avoid cluttering your desktop.)

4. The CSV data files needed for the problem sets are listed above — make sure to save them to the correct directory. To open them, use the `import delimited` command, which opens non-Excel spreadsheet files that aren't in Stata format (see `help import delimited` for more). To open a Stata data file (`.dta`) that is in your working directory, use the `use` command instead. Sample code for my computer:

```
clear
cd "/Users/bnyhan/Documents/Dropbox/Quantitative Political Analysis/Outside data/"
import delimited "Iran_2009.csv"
```

or

```
clear
cd "/Users/bnyhan/Documents/Dropbox/Quantitative Political Analysis/Outside data/"
use "gdpvote.dta"
```

5. Any operations or analysis that you wish to perform should follow in the `.do` file below the code described above. Stata will run each line of the file in order.

6. The sample `.do` file provided on Canvas includes Stata code that you can easily adapt for your own analyses.

7. For more assistance, please consult the many resources listed earlier in the syllabus.

Notes on Qualtrics and general project suggestions

Qualtrics notes:

- You typically want to randomize at the block level in Qualtrics - see http://www.qualtrics.com/university/researchsuite/advanced-building/survey-flow/block-randomization. In the simplest version, you put the treatment condition in one block, control condition in another, and randomly present one (see instructions at link above), but this design can easily be made more complex as needed. (Note: You must have at least two blocks so that Qualtrics can randomize among them. Do not turn on "Evenly present elements" — we want a random draw for each respondent.)

- You can also randomize question order (see http://www.qualtrics.com/university/researchsuite/advanced-building/blocks-and-block-options/question-randomization) and the order of response options (see http://www.qualtrics.com/university/researchsuite/basic-building/question-options/choice-randomization).

- To insert an image, see http://www.qualtrics.com/university/researchsuite/basic-building/editing-questions/rich-text-editor/insert-an-image.

- Qualtrics has very useful files that you can find using Google. For instance, I found the link above with `insert image qualtrics` as my search terms. So if you're stuck, just Google. For instance, to create a new block, you would search for `qualtrics new block`, which will lead you to http://www.qualtrics.com/university/researchsuite/advanced-building/blocks-and-block-options/about-blocks.

- After completing your study in Qualtrics and downloading the data, you will have to process it slightly before it is ready for use in Stata. Usually the first row in a data file consists of variable names and the observations begin on the second row, but Qualtrics puts variable labels or question wording in row 2 below the variable name, which causes Stata to create a phantom observation and treat all of your variables as strings. You should create a new version of the spreadsheet, delete row 2, save the spreadsheet, and import that file (once saved) into Stata.

- To determine which randomized block was viewed by respondents in the Qualtrics data, your best bet is to look at the text for each variable in the results. The blocks should be listed as two (or more) different variables in the CSV output file that you open in Excel. If you tell it to code unseen items as -99 on the download results screen, you should most likely see 1 in the column corresponding to the block they saw and clicked through and -99 for the one they didn't. Or if they didn't click through on the block that they saw, it should be blank instead of taking a value of 1. You can then use these values to generate a treatment variable in Stata that takes

a value of 1 if they were in the treatment condition and 0 if they were in the control condition (or correspondingly for more complicated designs).

- Your data will come from Qualtrics in a form that often doesn't mean anything. For instance, if your treatment variable `qualtricstr` has the values of 1 for treatment and 4 for control, you need to make a new variable in Stata like this:

```
gen treatment=. /*missing as default*/
replace treatment=0 if qualtricstr==1
replace treatment=1 if qualtricstr==4
```

  If your outcome variable starts with low values as high or in some other form that is nonsensical to analyze directly, then you need to make a new variable where the values make sense. Consider an Obama approval variable that comes in from Qualtrics as 1=approve, 2=disapprove, 3=don't know. You need to make a new variable to analyze where high values represent what the variable is called and/or means like this:

```
gen obamaapp=.
replace obamaapp=1 if approve==2
replace obamaapp=2 if approve==3 /*treats DK as neutral/middle*/
replace obamaapp=3 if approve==1
```

- Once your data are imported into Stata and you have made new variables to work with in this way (when necessary), I recommend consulting the sample do-file on Canvas for syntax to follow in performing common statistical procedures.

Project suggestions:

- Carefully consult the assignment description and grading rubric provided earlier in the syllabus as well as the sample posters on Canvas.

- Make sure to create a do-file that replicates the analysis in your poster and to submit it along with your poster, data, and experimental materials.

- Take statistical power concerns seriously. Invite as many students to take part in your study as possible but also consider whether enough are likely to take part for you to measure an effect of the magnitude that you expect in your experiment.

- Do not report too many digits in your statistical results! False precision is not helpful to the reader.

- Attractive graphics often convey more information than statistical tables.

- Student participants are likely to fail to read long blocks of text and to drop out of time-consuming studies — remember, many will take your experiment during a spare minute or two on their phone. Your study should be very brief and use a high-impact experimental intervention.

- Beware of ceiling and floor effects in measuring people's attitudes and beliefs — on some topics, people's attitudes don't have much room to move up or down, respectively.

- Make sure to collect basic demographic characteristics so that you can analyze how representative your sample is of the Dartmouth student body. If you have a theoretical expectation that your treatment effect will differ between groups (e.g., men and women), make sure you measure that characteristic as well.

- Be sensitive to respondents in phrasing your questions. Provide an alternate option to the male/female question, for instance. Consider also whether you are asking any questions that respondents are likely to answer dishonestly (or skip) given the way the question is phrased.