



BUSH 631  
Fall 2019  
Allen 1063

Quantitative Methods in Public Management I  
M 4:35-7:20

### Course Description and Prerequisites

Introduction to the common methods for social and policy analysis with a focus on application of methods such as analysis of variance and regression, to tasks including policy analysis, evaluation and survey research; emphasis on the performance of social and policy analysis, although some statistical theory is introduced.

**Prerequisites:** Graduate classification and approval of MPSA or MPIA director; STAT 303 or equivalent.

### Learning Outcomes or Course Objectives

Students will be able to:

Consume and communicate social science research

Craft research designs to test hypotheses related to important research questions

Analyze observational data using linear regression

### Instructor Information

Dr. Garrett N. Vande Kamp  
garrettvandekamp@tamu.edu  
Allen 1059  
W 2:00 – 4:00

### Textbook and/or Resource Material

Textbook: *The Fundamentals of Political Science Research*, 3<sup>rd</sup> Edition. Kellstedt, Paul M. and Guy D. Whitten.

Software: STATA 16, IC. StataCorp. (A six-month license will satisfy the requirements for this course)

Recommended Companion: *A Gentle Introduction to STATA*, 5<sup>th</sup> Edition. Alan C. Acock.

In addition, the following journal articles will be required reading during the semester. They can be accessed through the university's resources available freely to students.

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2005. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 14(1): 63–82.

Braumoeller, Bear. 2006. "Explaining Variance; Or, Stuck in a Moment We Can't Get Out Of." *Political Analysis* 14(3): 268-290.

Dunning, Thad. 2008. "Improving Causal Inference: Strengths and Limitations of Natural Experiments." *Political Research Quarterly* 61(2): 282-293.

Epstein, Lee, Andrew D. Martin, and Christina L. Boyd. 2007. "On the Effective Communication of the Results of Empirical Studies, Part II." *Vanderbilt Law Review* 60(3): 801–846.

Hill, Kim Q. 2004. "Myths about the Physical Sciences and Their Implications for Teaching Political Science." *PS: Political Science & Politics* 37(3): 467-471.

Keele, Luke. 2015. "The Statistics of Causal Inference: A View from Political Methodology." *Political Analysis* 23(3): 313-335.

Mahoney, James and Gary Goertz. 2006. "A Tale of Two Cultures: Contrasting Quantitative and Qualitative Research." *Political Analysis* 14(3): 227-249.

Wasserstein, Ronald L. & Nicole A. Lazar. 2016. "The ASA's Statement on p-Values: Context, Process, and Purpose." *The American Statistician* 70(2): 129-133.

Zigerell, L. J. 2013. "Rookie mistakes: Preemptive comments on graduate student empirical research manuscripts." *PS: Political Science & Politics* 46(1): 142-146.

### Attendance Policy

Attendance is mandatory. Each student will have one unexcused absence for the class. Each subsequent absence will result in a 5% reduction in the student's final grade. University-excused absences will not be subject to this penalty.

For more information on attendance requirements, see <https://student-rules.tamu.edu/rule07/>

### Grading Policies and Grading Scale

Homework	40%	A = 90-100
Final Exam	30%	B = 80-89
Research Paper	20%	C = 70-79
Participation	10%	D = 60-69
		F < 60

**Homework:** Students will assigned homework to ensure engagement with the material and to prepare for the more substantial portions of their grade. Homework will be graded for accuracy. Due to the number of students in the class, the professor cannot review homework prior to submission except during office hours. Unless otherwise specified in writing, all homework will be due one week after it is assigned at the beginning of class. These due dates are mandatory. Written assignments turned in after class but on the due date will be subject to a 10% grade reduction. Assignments turned in after the due date will be accepted with a 25% grade reduction for each day it is late. University-excused absences will waive this penalty only for those days explicitly excused; students will be expected to turn in assignments immediately following their excused absence. All students must submit an individual homework submission, but can collaborate with others. Students should indicate their work partners when submitting assignments. Students may not collaborate on the research paper.

Some homework will involve problem sets on statistical topics. Students will submit typed answers to these problem sets via email. For those problem sets requiring STATA, students should also submit their code as a .do file via email. Such code should include comments to explain how it relates to their homework submission.

Other homework will prepare students for their research paper. Students should note that they may change the topic of their research paper at any time. Therefore, students will not be penalized if the subject of their homework changes over time.

**Research Paper:** Students will write a research paper on a topic of their choice that is related to their major and concentration. The paper will identify an important research question, engage the scholarly research on that question, derive a hypothesis about their topic, describe a research design to test that hypothesis, and then test it using the quantitative methods learned in this class. The hypothesis in the paper does not have to be original; students may choose to replicate a result from the literature. If replicating prior work, however, students must ensure that they fully employ the methods of this class even if other scholars do not. Any paper shorter than 10 double-spaced pages will be given a zero; there is no maximum length to the project.

The professor will grade the research paper at least as stringently as the homework designed to prepare students for the research paper. Students are highly encouraged to fix any problems noted in their homework to prevent additional deductions. To reemphasize, however, students may change their topic at any time; the subject of their research paper does not have to match the subject of their homework.

**Participation:** Students are expected to come to class having read the week's material. Students will also occasionally be expected to complete reasonable tasks in order to ensure class runs smoothly.

## **Major Class Dates**

Friday, November 15: Last day to “Q-drop”  
Thursday-Friday, November 28-29: Thanksgiving Break  
Monday, December 2: Research Project Due  
Monday, December 9: Final Exam

## **Americans with Disabilities Act (ADA)**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>.

## **Academic Integrity**

*“An Aggie does not lie, cheat, or steal, or tolerate those who do.”*

Students are expected to know all examples of academic misconduct, including the problems associated with cheating, fabrication, falsification, and plagiarism. This class has zero-tolerance for academic misconduct; all instances will be reported to the Aggie Honor System Office.

For additional information please visit: <http://aggiehonor.tamu.edu>

## **Syllabus as a Contract**

This syllabus is a contract between the professor and the individual student. Every student in this class receives an identical syllabus; therefore, every student in this class will be taught and evaluated in the same manner. This syllabus is unique to this class; therefore, the students in this class may not be taught and evaluated as students in other sections of this class, past or present, even if taught by the same professor.

## **A Word of Thanks**

Teaching is a difficult task, and even the creation of a course syllabus is difficult. I appreciate the help of all the faculty members who have helped me along the way: Paul Kellstedt, Guy Whitten, Kim Hill, Carlisle Rainey, Rotem Divir, Valerie Hudson, Ren Mu, Jessica Gottlieb, and Joanna Lahey.

That being said, this syllabus and the course materials referenced in it is the intellectual property of the instructor and subject to copyright law. Do not reproduce any course materials without explicit written permission.

## Tentative Course Calendar

### Basics of Social Science Research

#### **Week 1: Philosophy of Science and Introduction to STATA**

Readings: K&W Chap 1, Hill 2004

#### **Week 2: Literature Review and Theory**

Readings: K&W Chap 2

Homework: Annotated Bibliography (Due on Week 5)

#### **Week 3: Causality**

Readings: K&W Chap 3, Mahoney and Goertz 2006, Keele 2015 Sections 1 and 2

Homework: Problem Set

#### **Week 4: Research Design**

Readings: K&W Chap 4, Keele 2015 Section 3, Dunning 2008

Homework: TAMU IRB Certification for Social & Behavioral Studies

### Statistics for Scientific Research

#### **Week 5: Probability and Descriptive Statistics**

Readings: K&W Chap 6

Homework: Problem Set, Rough Draft of First Half of Research Paper (Due on Week 8)

#### **Week 6: Inferential Statistics**

Readings: K&W Chap 7, Wasserstein and Lazard 2016

Homework: Problem Set

#### **Week 7: Bivariate Hypothesis Testing**

Readings: K&W Chap 8-9

Homework: Problem Set

#### **Week 8: Multiple Regression**

Readings: K&W Chap 10, 9.5

Homework: Problem Set

#### **Week 9: Communication of Research**

Readings: K&W Chap 10.9, Zigerell 2013, Epstein, Martin, and Boyd 2007

### Multiple Regression: Problems and Solutions

#### **Week 10: Linearity**

Readings: K&W Chap 11, Brambor, Clark, and Golder 2005

Homework: Problem Set, Rough Draft of Second Half of Research Paper (Due on Week 14)

#### **Week 11: Heteroskedasticity**

Readings: Braumoeller 2006

Homework: Problem Set

#### **Week 12: Autocorrelation**

Readings: K&W Chap 12.3

Homework: Problem Set

#### **Week 13: Non-Normally Distributed Data**

Readings: K&W Chap 12.2

Homework: Problem Set,

#### **Week 14: Advanced Topics**