Research Methods and Applied Statistics  
PPPA 6002, Section 12  
Fall 2015  
Trachtenberg School of Public Policy and Public Administration  
George Washington University

Class Meetings: Wednesdays, 6:10 - 8:00 pm, 1957 E Street, Room B17  
Labs: Wednesdays, 8:10 - 10:00 pm, Rome Hall (801 22nd Street), Room B104

Course Staff

Instructor  
Professor Christopher Carrigan  
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(202) 994-5583  
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Office Hours: Wednesdays from 4:00 - 5:30 pm and Thursdays from 4:00 - 5:30 pm, as well as by appointment

Teaching Assistant  
Melissa McShea  
mfmcshea@gwmail.gwu.edu  
Office Hours: During lab as well as by appointment

Overview and Learning Objectives

Having a working knowledge of research methods and statistics is essential for managers and analysts in the public and nonprofit sectors to make thoughtful decisions and evaluate others’ recommendations. This course introduces students to the relevant foundational concepts and tools while emphasizing quantitative applications to public policy and public administration decision-making. The primary objective of the course is to provide students with a sound understanding of the research process, research design, and quantitative data analysis.

By the end of the semester, students will be comfortable with many of the key concepts of statistics and be able to read, understand, and conduct basic data analysis. No prior study of research methods and statistics is necessary although some familiarity with computation and algebra is helpful. Through this course, students are exposed to concepts and tools that will allow them to build the skills to be able to:

- Identify the role of statistics in policy debates, public management, and day-to-day life.
- Formulate problem statements, research questions, and testable hypotheses that are used to conduct policy and social science research.
- Implement and evaluate the various techniques for sampling from populations and collecting data.
- Evaluate the methodological integrity of experimental and non-experimental research designs.
- Describe, present, and interpret data in visual and numeric forms.
- Conduct basic statistical analyses using SPSS, a widely-used statistical software.
- Write a policy research report that summarizes the results of a statistical analysis for a non-technical audience.
**Expectations**

In this course, you will be required to demonstrate the following three kinds of proficiency: 1) the ability to compute statistics by hand with the aid of a hand-held calculator; 2) the ability to manipulate data and compute statistics using SPSS; and 3) the ability to interpret statistical information in both technical and non-technical language. Grades will be determined through a combination of five elements based on the percentages listed in parentheses below.

**Class Participation (10%)**: Please come to class and come prepared by reading the materials assigned in advance. The class sessions will be more interesting to both of us, and you are certain to learn more if you prepare. If you do need to miss class, be sure to get notes from one of your classmates as the class discussions will be the best source of material for the exams.

**Homework Assignments (15%)**: There will be ten homework assignments over the course of the semester, of which the top nine will be counted in computing your final grade. Thus, you can choose to skip one assignment, or if you decide to turn in all ten, the one with the lowest grade will be dropped. The homework assignments will require proficiency of all three types and will be graded on a check-plus, check, and check-minus system. To the extent you find it useful, you should feel free to work on these assignments with classmates. However, if you do decide to work with other students, you must still turn in your own solutions and list the names of those individuals at the top of your homework. Responses should be submitted via the course Blackboard site which is located at http://blackboard.gwu.edu prior to the beginning of class.

**Midterm Exam (20%)**: The midterm will be a closed book exam given during class on October 14 and will cover all course material up to that point. It will primarily test proficiency of types one and three. However, you will not be required to memorize formulas and can bring one page of notes (i.e. one side of one sheet). The necessary tables will be provided. You should plan to bring a calculator to the exam, but you are not allowed to use the programming function of the calculator if it has one.

**Final Report (25%)**: This is your chance to apply what you have learned to a real data set. Your final report, which is due on the last class meeting prior to the final exam, will enable you to demonstrate your knowledge of statistical analysis by generating relevant statistics and interpreting them in both technical and non-technical language using a data set you select. Additional details will be provided after the midterm.

**Final Exam (30%)**: The final will also be a closed book exam and is scheduled for December 16. Like the midterm, the final exam will test proficiency of types one and three. You can bring two pages of notes (or one page double-sided) and a calculator, again without using its associated programming function. You will be provided with any necessary tables. The exam will cover all of the course material but will place a relative emphasis on the information discussed after the midterm.

**Reading Materials**

The textbook for the course is:
The book is available at the GW bookstore, and no supplemental materials are needed. Unfortunately, there are enough changes that I would recommend against using the 8th edition. A 10th edition recently came out, but I have not yet reviewed it to see how it compares. If you do decide to use a different edition, it is your responsibility to make sure that you are both covering the same material when reading and answering the correct problems given that the book will be used as a source for some of the homework problems.

The course requires you to have access to SPSS. SPSS is installed on the computers in the lab and so is available during the scheduled time. In addition to Rome Hall, SPSS can also be found in the computer labs at the Gelman Library and the Hall of Government. While it is widely-used, SPSS is not necessarily the same software used in the more advanced statistics courses at GW such as PPPA 6013. The idea is to expose you to different types of software especially given that once you learn the language of one, it is easier to learn the language of the others. As a result, you should not feel that you need to purchase the software. Still, if you do decide you want a copy of SPSS for your computer, it is available at the bookstore.

**Class Schedule, Readings, and Assignments**

The schedule as outlined below is somewhat tentative. While I will keep us moving forward, I want to make sure we are covering everything that is relevant given that, for many, this will be a first course in research methods and statistics. Moreover, I may change some of the readings as we go. To the extent that I do make changes, I will be certain to let you know in class. Furthermore, an updated version of the syllabus will always be available on the Blackboard site. Aside from the readings from Healey, the supplementary articles that I assign (which are not all listed below because some may be drawn from what is in the news at the time) will be available on Blackboard as well.

During the allotted lab time, the class TA, Melissa McShea, will hold regular office hours and provide assistance with SPSS to help you with the homework assignment. She will be available until 9 pm or as long as students continue to require assistance. Attendance at the lab sessions is encouraged but not mandatory as you may prefer to teach yourself how to use the software. In many of these sessions, Melissa will also provide instruction on the specific functions of SPSS that are important to completing that week’s assignment.

1 – September 2  
Topic: Variables and Hypotheses  
Readings: Healey, Prologue and Chapter 1  
Chambliss and Schutt (C & S), Chapter 1

2 – September 9  
Topic: Measurement, Sampling, and External Validity  
Readings: C & S, Chapters 4 and 5  
Due: Homework 1

3 – September 16  
Topic: Data Collection Methods  
Readings: C & S, Chapter 9  
O’Sullivan, et al., Chapters 6 and 7  
Due: Homework 2
4 – September 23  
Topic: Causal Designs and Internal Validity  
Readings: C & S, Chapter 6  
Due: Homework 3

5 – September 30  
Topic: Univariate Descriptive Statistics  
Readings: Healey, Chapters 2, 3, and 4  
Due: Homework 4

6 – October 7  
Topic: Normal Curve, Sampling Distribution  
Readings: Healey, Chapters 5 and 6  
Due: Homework 5

7 – October 14  
Midterm Exam, 6:10 - 8:40 pm  
Hand Out Final Report Assignment

8 – October 21  
Topic: Estimation  
Readings: Healey, Chapter 7

9 – October 28  
Topic: Hypothesis Testing and Difference of Means  
Readings: Healey, Chapters 8 and 9  
Due: Homework 6

10 – November 4  
Topic: Contingency Tables and Chi Square Test  
Readings: Healey, Chapter 11  
Due: Homework 7

11 – November 11  
Topic: Bivariate Correlation and Regression  
Readings: Healey, Chapters 12 (through p. 317) and 14  
Due: Homework 8

12 – November 18  
Topic: Controlling for Third Variables  
Readings: Healey, Chapter 15 (except pp. 418-420)  
Due: Homework 9

November 25  
No Class – Happy Thanksgiving!

13 – December 2  
Topic: Multiple Regression  
Readings: Healey, Chapter 16  
Due: Homework 10

14 – December 9  
Topic: Final Exam Review  
Due: Final Report
15 – December 16
Final Exam, 6:10 - 8:40 pm
Note: The date, time, and location for the final exam are tentative pending confirmation sometime in October.

Additional Information and Policies

Getting Help: I encourage you to come to office hours to ask questions if you are having difficulty with the course material. Getting help from me and/or the teaching assistant, Melissa McShea, early in the semester might prove useful as many of the weeks build on concepts from prior sessions. For questions about homework assignments specifically, Melissa is likely your best first source for assistance.

Submitting Work: Assignments should be turned in by the beginning of class on the date they are due. Homeworks should be submitted via the course Blackboard site, and final projects should be handed in at the start of class or left in my mailbox prior to the deadline. Late homework assignments will not be accepted, and final reports will be marked down for each day they are late unless I explicitly make an exception based on your extreme circumstances.

Late or Missed Class: I assume that students are absent from class for legitimate reasons (e.g., work, religious holiday, etc.). If you are late or absent from class, it is your responsibility to obtain all announcements, assignments, and handouts from Blackboard or from your classmates.

Exam Dates: Please notify me in advance if you are aware of a conflict, such as a religious holiday you observe, that will preclude you from taking either the midterm or the final at the assigned time. To the extent possible, I will certainly try to accommodate your request.

Academic Honesty: All assignments and projects in this class are to be completed in conformance with the George Washington Code of Academic Integrity which can be found at http://studentconduct.gwu.edu/code-academic-integrity. Cheating and plagiarism will not be tolerated.

Grade Changes and Incompletes: No changes can be made to grades after the conclusion of the semester, other than in cases of clerical error. To obtain a grade of incomplete, you must consult with me no later than the last day of classes in the semester. At that time, we will both sign a contract for completing the incomplete and submit a copy to the School Director. Please consult the latest TSPPPA Student Handbook on our website for the school policy on incompletes.

Accommodation for Students with Disabilities: If you need extra time on exams or assignments because of a disability, please let me know as soon as possible. In order to receive accommodations on the basis of disability, you will need to give notice as well as provide proper documentation to Disability Support Services, Rome Hall, Suite 102, (202) 994-8250.