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Office Hours: Mon 5-6 p.m.
Class Time/Location: 6-8:45 p.m.
Center for Collaborative Policy
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PPA 207: Quantitative Methods

Description

The purpose of this class is to expand students' understanding of the statistical technique used most often in social science and public policy research, OLS regression. We begin with an overview of measurement, hypotheses, and univariate statistics and move quickly into bivariate statistics as an introduction to OLS. Next, we discuss the assumptions of this technique, when it is appropriate to use, and how it works. We also briefly discuss diagnostics that test whether those assumptions are appropriate for any given situation or type of data we might encounter. We finish with a discussion of regression with binary dependent variables, logistic regression.

Unlike most graduate seminars, much of this course will be spent in lecture. I will try to keep lectures down to a minimum, since you will also have done reading on the various topics before coming to class. The greater the comprehension of the reading material, the more time we can spend in discussion and practice on Stata. There may also be extra assignments due throughout the semester. Please be aware of the due dates when announced in class as they may not be listed in the syllabus.

Required Readings

Books: Pollock, *Essentials of Political Analysis*
Pollock, *A STATA Companion to Political Analysis*
Wheelan, *Naked Statistics*
Galvin, *Writing Literature Reviews: A Guide for Students of the Social and Behavioral Sciences* (Should have from PPA 200 or 240A)

Software: The *STATA/IC 13 Grad Plan Statistical Package* available for purchase at http://www.stata.com/order/new/edu/gradplans/campus-gradplan. Specify "RW207" for the GRADPLAN ID. Prices are 69.00/6 months and 189.00/perpetual; use the download version so you can get it in time for first class. If planning on doing a thesis using data and/or a pursuing a career that uses data, you should purchase the perpetual version.

Suggested Prerequisites:

If you have not taken a previous course in statistics, or it has been awhile since doing so, you may want to review the following: http://www.csupomona.edu/~djmoriarty/b211/b211%20Basic%20Statistics%20Review%20-%20Part%20One.pdf .

We may also use Excel spreadsheets. If you are weak in this area, you may want to review this tutorial web link before the first meeting: http://www.baycongroup.com/el0.htm .

Data Sources:

Type	Date Set Name	Description	Location
Education	California Academic Performance Index (API) Data	Academic performance measures	http://www.cde.ca.gov/ta/ac/ap
	California Community Colleges DataMart	Aggregate level info on the individual California community colleges	http://datamart.cccco.edu/
Health	California Health Interview Survey (CHIS)	Measures of health risk behaviors, preventive health practices, and health care access	http://healthpolicy.ucla.edu/chis/about/Pages/about.aspx
	California Health and Human Services Open Data Portal	California public health issues.	https://cdph.data.ca.gov
Census	Demographic	Data Ferret	http://dataferrett.census.gov
State and Local Government	Rand State Statistics	200 datasets: More than 300 databases on state and local government	http://randstatestats.org/index.php?view=all
	Government Financial Reports	Measures related to CA cities, counties, special districts, and pensions.	https://bythenumbers.sco.ca.gov
Housing Sales	Multiple Listing Service (MLS) Data for Sacramento, El Dorado, and Placer County Sales	Sacramento housing data	@ SacCT
Various	Inter-University Consortium for Political and Social Science Research (ICPSR)	University of Michigan data bank	http://www.icpsr.umich.edu/icpsrweb/ICPSR/index.jsp
	Websites for Federal Administrative Data sets	Publicly available data from federal agencies.	@ SacCT
	Statista	Subscription data service (Available to Sac State)	http://xerxes.calstate.edu/sacramento/new-databases/database/340

Requirements

Homework Assignments (25%): Homework assignments for each week will be announced at the end of the previous class period (most are listed on the syllabus but are subject to change). You may miss one without penalty. If you do not miss an assigment, the lowest grade will be dropped. LATE HOMEWORK WILL NOT BE ACCEPTED. I reserve the right to change the required homework assignments when appropriate.

Literature Review (20%): This is due on March 14th. Instructions are at the end of the syllabus.

Final Exam (30%): There will be a take-home, final exam. You will receive the final exam on May 9th and will have one week to finish it. It will be the same format as the midterm.

Research paper (25%): The final assignment for this class is a regression-based research paper. The instructions are at the end of the the syllabus. The paper requires a data set with at least 500 observations on a dependent variable, and the various explanatory variables that you expect to cause variation in the dependent variable. A variety of datasets are listed above.

By the end of February, you will need to have discussed with me the data set that you wish to use for your course paper. You should start thinking about this right away. This is also an opportunity to set the foundation for an empirically based thesis. If you choose to collect your own dataset, you MUST get my prior approval.

Other information of which you should be aware

Cheating, plagiarism and other acts of academic dishonesty will, at the least, result in a failing grade in this class. Self-plagiarism is cheating and will result in a failing grade as well. If you are unaware of what constitutes plagiarism, come talk to me during my office hours. Ignorance of the rules does not constitute a defense.

Students with disabilities often have special needs. If you are a student with physical, educational or other disability-related needs, please make me aware of any accommodations you require. I am more than happy to work with you in any way necessary. All discussions of this nature will be confidential.

Class Topics and Reading Schedule

January 25: Introduction: Syllabus and course expectations

Reading: Introduction: Essentials
Getting Started and Chapter 1: Workbook

Homework due: Exercises 1-4: Workbook
Find a newspaper article that discusses or proposes an answer to a policy problem
- Write a paragraph explaining the problem and WHY they think their proposal will fix it
- Using common sense, explain what data you would need to support (or refute) their argument. What would the data have to show?
- Attach copy of the newspaper article

February 1: Conceptual and Operational Definitions

Reading: Chapter 1: Naked Statistics
Chapter 1: Essentials

Homework: Exercises 1-6: Essentials

February 8: Measuring and Describing Variables

Reading: Chapters 2 and 3: Naked Statistics
Chapter 2: Essentials
Chapter 2 and 3: Workbook

Homework: Exercises 1-4: Essentials
Exercises 1-5 (Chapter 2): Workbook
Exercises 1 & 3 (Chapter 3): Workbook

February 15: Proposing Explanations, Framing Hypotheses

Reading: Pages 48-58: Essentials

Homework: Exercises 1, 2, 4, & 5: Essentials

February 22: Making Comparisons and Graphing Relationships

Reading: Remainder of Chapter 3: Essentials
Chapter 4: Workbook

Homework: Exercises 3, 5, & 7: Essentials
Exercises 1,3, 6, 7, 9, 11: Workbook

February 29: Research Design

Reading: Chapter 4: Essentials

Homework: Exercises 1-5: Essentials

March 7: **Making Controlled Comparisons**

Reading: Chapters 5: Essentials
Chapter 5: Workbook

Homework: Exercises 1-4: Essentials
Exercises 1-6: Workbook

************************GET MIDTERM MARCH 7TH********************************

March 14: **Sampling and Inference**

Reading: Chapter 6: Essentials
Chapter 6: Workbook

Homework: Exercises 1-6: Essentials
Exercises 1-4: Workbook

***********************MIDTERM DUE MARCH 9TH********************************

March 21: **SPRING BREAK**

March 28: **Probability**

Reading: Chapters 5-6: Naked Statistics

Homework: TBD

April 4: **Significance and Measures of Association**

Reading: Chapter 8: Naked Statistics
Chapter 7: Essentials
Chapter 7: Workbook

Homework: Exercises 1-5: Essentials
Exercises 1-5: Workbook

Apri 11: **Correlation and Linear Regression**

Reading: Chapters 4 & 11: Naked Statistics
Chapter 8: Essentials
Chapter 8: Workbook

Homework: Exercises 1-4: Essentials
Exercises 1-4: Workbook

April 18: **Practicing Linear Regression in Class/Regression Diagnostics**

Reading: Chapter 12: Naked Statistics
Chapter 9: Workbook

Homework: Exercise 5: Essentials
Exercises 5 & 6 (Chapter 8): Workbook
Exercise 5 (Chapter 9): Workbook

April 25: **Analysis with Binary Dependent Variables (Logistic Regression)**

Reading: Chapter 9: Essentials

Homework: TBD

May 2: **Constructing Tables and Writing Results and Critiquing research**

Reading: Chapter 13: Naked Statistics

The following are available on SacCT:
- How to critique a quantitative research report
- Example of a research report critique (DO NOT DO THE ASSIGNMENT, JUST READ)
- *From Numbers to Words*

Homework: Run a simple regression analysis from your paper dataset.
Construct a table of the results and write up a brief summary in text form.

May 9: **Presentation of Papers**

****************************RECEIVE FINAL EXAM******************************

May 16: **FINAL EXAM DUE**

Literature Review Assignment[1]

Your assignment is to write a 1500-2000 word literature review. It needs to be sent to me by 6 p.m. on It is due in electronic form to me by no later than 6 p.m. on Monday, April 6. LATE PAPERS WILL NOT BE ACCEPTED. The grading rubric for the assignment are below. All references to Galvin below refer to the fourth edition.

Required Element	**Points Available**	**Points Earned**
(1) Use a **minimum of seven regression based articles** drawn from academic and preferably refereed journals. You may use more articles that are not regression based.	**10**	
(2) Include a **reference list** at the end of the literature review (that does not count toward your word limit) that is in **APA style**. References made throughout the review should also follow APA style.	**10**	
(3) Read all of your articles in the manner described in Chapter 4 in Galvin for "General Guidelines for Analyzing Literature" and organize your literature review around **three different themes designated as separate sections in your review.**	**10**	
(4) Review Chapter 5 in Galvin on "Analyzing Quantitative Research Literature." Note particularly **Guidelines 4 (cause and effect issues covered), 9 (differences in variable measurement), 10 (sampling issues), 12 (magnitude and statistical significance of regression coefficients), and 13 (flaws in studies observed) and incorporate these suggestions into your analysis and write up.**	**10**	
(5) Review Chapter 7 in Galvin "Building Tables to Summarize Literature." You are to **include a well-crafted table of the type described here** in your review. If you put it in an appendix, it need not count against your six-page limit.	**20**	
(6) As discussed in Chapter 8 of Galvin "Synthesizing Literature Prior to Writing a Review," your **literature review's "voice" is suitable for academic writing and differences among studies are noted (Guideline 5), obvious gaps discussed (Guideline 1), relevant theories discussed and how studies advance them (Guidelines 7 and 8), summaries are offered after each section and at end (Guideline 9), conclusions/implications, and suggestions for future research [your own PPA 207 paper] are included (Guidelines 10 and 11).**	**20**	
(7) You have a coherent essay according to Chapter 10 in Galvin. This means an **overview at start (Guidelines 1 and 2), annotations avoided (Guideline 4), subheadings used (Guideline 5), conclusion at end (Guideline 8), and argument flows well (Guideline 9).**	**10**	
(8) Style and mechanics follow Galvin's suggestions in Chapter 11. In particular **Guideline 3 (no overuse of direct quotations), Guideline 4 (correct APA use of citations), Guideline 6 (spell out acronyms), Guideline 9 (avoid slang), Guideline 11 (check your draft using Microsoft Grammar Editor, avoid passive voice), Guideline 12 (concise and descriptive title), and Guideline 14 (absolutely no plagiarism).**	**10**	
TOTAL	**100**	

[1] Thanks to Professor Wassmer for these (and the following) paper guidelines.

PPA 207 CHECKLIST FOR FINAL PAPER

The following is a rubric for the final paper. It is due during class on May. You must turn in a hard-copy of your paper at the beginning of class on May 9th. LATE PAPERS WILL NOT BE ACCEPTED. You will be

A one after a criterion means that you satisfied it 100%. A decimal value means that you satisfied it at that level, while a zero indicates that it was not done.

OVERALL

- There is a cover page with title, your name, and date handed in. ___
- There are seven major sections in your paper, marked by roman numerals and section titles. ___
- First paragraph of section is an introductory paragraph that briefly describes what is in it. ___
- Sub-sections used within your seven sections and they contain headings. ___
- There are no spelling errors. ___
- There are no grammatical errors. ___
- Transitions between paragraphs are smooth.___
- Paper is 6,500 to 9,500 words (not including bibliography). _____
- Paper includes a list of references at end of paper in APA style. ___
- Style issues follow the APA style given in Hacker's *A Pocket Style Manual* (described at https://owl.english.purdue.edu/owl/resource/560/01). ___
- Paper written in manner that educated layperson working in public policy can follow. ___

I. EXECUTIVE SUMMARY (1 – 2 pages)

- Follows the suggestions offered in "Executive Summaries Complete the Report," – http://www.csun.edu/~vcecn006/summary.html ___

II. INTRODUCTION (2 - 3 pages)

- The first paragraph clearly contains your research question. What are you trying to discover through regression analysis? What is the dependent variable? What is (are) the key explanatory variable(s)? ___
- The remainder of your introduction motivates the reader to continue by placing your question in the context of current events and public policy. __
- Cite at least two newspaper or magazine articles that point out the populist importance of determining the impact of your key explanatory variable(s) on the dependent variable. Use search engines like http://www.sacbee.com/ , http://www.latimes.com/ , and/or http://www.sfgate.com/ . ___
- Include at least one figure/diagram (not a numeric table) that helps the reader understand patterns in your dependent variable and/or relationship(s) with you key explanatory variable(s). ___
- The last paragraph contains a description of what is contained in the remaining five sections of your paper. A one-sentence description for each section is appropriate. __

III. LITERATURE REVIEW (5 - 6 pages)

- It must contain a description of at least at least seven regression-based research articles in the area of your policy topic. You can find this research by searching the Sacramento State Library's Web Page of literature bases http://library.csus.edu/databases . I would suggest using ECONLIT and EBSCOhost as two literature sources that will have regression studies in them. Search using keywords that include "regression" and your topic. ___
- Divide your literature review into at least three labeled themes (or subsections). ___
- **Attach a copy of your literature review to the back of paper with my comments included and your note on each as to how handled. ____**

- Address all of the comments I offered on your midterm in a new draft of the lit review that you contain in the paper. (If you wish to ignore something, explain why next to the comment.) ___

IV. MODEL (2 - 3 pages)

- Offer a motivation for your choice of a dependent variable. How does it relate to your research question? ___
- Specifically describe where your dependent and explanatory variables come from (units of observation, dates) and any concerns that arose in using this data. ____
- Include a description of the factors expected to cause variation in your dependent variable. The factors should first be listed as broad causes (say causes A, B, C, etc.) and the specific variables which represent broad causes {$A = f(x_1, x_2, x_3)$, $B = f(x_4, x_5)$, $C = f(x_6, x_7, x_8)$, etc.) ___
- What variables do you use to specifically proxy for each of the broad causes? Justify your choices. ___
- Write out the regression model as described on p. 291 in Miller. ___
- Do not use acronyms anywhere in your paper to describe x_1, x_2, etc., instead write out a short 3 to 5 word description. ___
- What is the expected direction of effect for each of the specific causes (positive, negative, uncertain)? Justify with a verbal cause and effect table and description. ___

V. DATA (2 - 3 pages)

- Create a Table 1 that provides description and source for each variable used. (No direct STATA results allowed for any tables. Create tables in your own form and be consistent throughout. Place title on all tables.) ___
- Create a Table 2 that provides descriptive statistics for all variables used (name, mean, standard deviation, maximum, and minimum). ___
- Create a horizontal Table 3 that provides simple correlation coefficients between all explanatory variables. If large, place this in an appendix. ___
- Describe in paragraph form what is in Tables 1 – 3. ___

VI. REGRESSION ANALYSIS (3 - 4 pages)

- List your OLS or logistic regression results in table form. (No direct STATA results allowed.) ___
- Discuss how you checked for multicolinearity. Was it an issue, and if it was, how you corrected for it? Be sure to include VIF values and refer to partial correlation coefficients. __
- Check for heteroskedasticity in your regression. If heteroskedasticity is present in your regression analysis, provide the appropriately corrected results. ___

VII. CONCLUSION (2-3 pages)

- For your significant coefficients, how do they compare to the expected signs you described in model section? If findings are different, give a reason why it may be the case. ___
- For your significant coefficients, describe the substantive significance of the variables based upon the magnitude of the coefficients. ___
- Interpret the R-Squared (OLS) or hit ratios (Logit). ___
- What does your regression results indicate as an answer to your research question? ___
- What is the specific policy lessons learned from your results? Offer responses to the policy questions you raised in your introduction. ___
- Suggest improvements that you would undertake if you had the time. Is potential here for a thesis? ___