

SOC 593: QUANTITATIVE METHODS

Winter 2020 Syllabus

Portland State University – Thursdays 2p-4:50p
Fariborz Maseeh Hall (formerly Neuberger Hall) B155

QUESTIONS

Instructor. Dara Shifrer, Assistant Professor of Sociology

Office hours: Cramer Hall 217K – Tuesdays 2-3:30p or by appointment, dshifrer@pdx.edu

Asking questions outside of class:

- Step 1: Check to see if your question has been answered in the syllabus or in the D2L discussion thread “Student Questions” (in DSL, click on Activities>Discussions).
- Step 2: Post your question in the D2L discussion thread “Student Questions.” Your question can be answered by classmates or the Instructor. Class communication will become more efficient as classmates with the same question benefit from your post.
- Step 3: If your question is personal or you do not receive an answer after 24 hours on the D2L discussion thread, email me at dshifrer@pdx.edu. If you email me through D2L, I cannot guarantee a response within 24 hours.

LEARNING GOALS

This four-credit course introduces graduate level statistics and quantitative data methodology, with an emphasis on the applied statistical analysis of data focused on social issues. This course progresses from univariate and bivariate analyses through linear and logistic regression. Students will also build research and writing skills as they connect their analyses to theory and learn to accurately and concisely report quantitative results. Additional advanced statistics courses are recommended for students planning to complete a quantitative thesis. The Department of Sociology offers SOC 695 (Advanced Methods in Sociology) in the spring term. The School of Community Health offers a 2-part course: USP 534 in the spring term and USP 554 in the fall term. Recommended prerequisites: graduate status and introductory level statistics course(s).

- Implement effective processes of data science (or quantitative methodology)
- Apply Stata syntax to manage, prepare, and analyze data
- Link statistical theory to applied statistical analyses
- Write and present a preliminary quantitative research paper
- Learn to interpret and evaluate other researchers’ quantitative research

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REQUIRED MATERIALS

Required Textbook. *Data Management Using Stata: A Practical Handbook* by Michael N. Mitchell (2010)

Internet. Many assignments for this course will require the use of a reliable internet connection. Your connection should enable you to search the web, use email, attach and upload documents, and download and save files. Internet issues will not be a valid excuse for a late assignment – find an alternative source for internet now (such as a coffee shop) and do not attempt to complete assignments at the last minute. Finally, you’ll never reach a point where you know all there is to know about data analysis and statistics because they’re always evolving – successful analysts solve problems by re-reading what they already read and teaching themselves new skills – UCLA’s Institute for Digital Research & Education Statistical Consulting webpages are a beloved practical resource for analytic issues (<https://stats.idre.ucla.edu/>).

Stata. In addition to the computers in the classroom, this statistical software is available on computers in Fariborz Maseeh Hall (formerly Neuberger Hall) B155 and Broadway 226. You should also be able to install Stata on your PSU desktop using Self-Service Software (an option after clicking Window’s ‘Start’ icon (bottom left-hand side of screen)), although this may only apply to PSU computers within the College of Liberal Arts and Sciences. Finally, Stata offers a 6-month personal license at a discounted student rate of \$45. You are welcome to complete the assignments in both Stata and a statistical software of your choosing (e.g., SPSS, SAS, R). Learning two softwares may be helpful for students who would like to be trained in the same software their thesis advisor uses or who are interested in PhD programs that emphasize a software other than Stata.

D2L. Many course resources will be available on D2L (<https://d2l.pdx.edu/>). If you have trouble accessing your D2L account, contact the OIT help desk (SMSU 18) at 503-725-HELP (4357) or help@pdx.edu.

Dataset. One of your first tasks will be to find a dataset that can be opened in Stata and is of theoretical interest to you. Those who don’t find their own dataset will use the General Social Survey dataset available on D2L.

GUIDELINES

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Classroom Activities. Class time is structured to maximize your learning by presenting the same idea in different ways; incorporating direct instruction, modeling, and learning-by-doing; and peer interaction and learning-by-teaching. There will often be time at the end of class to work on homework or the Research Paper, as I am available to provide one-on-one assistance. You may not leave early. You are expected to contribute to this classroom environment by being prepared, being an active participant, and being courteous to your classmates. Being prepared includes bringing your textbook to class. Bathroom breaks should be limited to the latter independent-work part of class. Conversations with other classmates should be homework-related and quiet out of respect for your classmates. Laptops and cellphones are not allowed in class. You may only have class-related softwares open (e.g., Stata, Word, Powerpoint). PSU does not allow food or drinks in the laboratories, excepting a closed container of water that must be kept near the door. If your behaviors are negatively impacting the classroom experience and you do not improve after a warning, you will be asked to leave the classroom. Persistent issues will result in a report to the Office of the Dean of Student Life.

Late Assignments. Points received will be reduced by 20% for each day late. For work due in class, work submitted after class up until the following day at 2pm will be considered one day late—and so on. For work due at 5pm on a Friday, work submitted between 5:01pm on that Friday through 5:00pm on Saturday will be considered one day late—and so on.

Academic Honesty. The PSU Student Conduct Code prohibits all forms of academic cheating, fraud, and dishonesty, including but not limited to plagiarism, buying and selling of assignments for others, unauthorized disclosure and receipt of academic information, and other practices understood to academically dishonor. Plagiarism describes the use of another person's words or ideas without giving that person credit. Information on avoiding plagiarism available at <https://owl.english.purdue.edu/owl/resource/589/01/>. Any assignment or exam found to be academically dishonest will receive no credit and you will be referred to the Office of the Dean of Student Life. You will fail the course if any additional incidents of academic dishonesty occur.

Accommodations. Any student with a physical, psychiatric/emotional, or learning disability is encouraged to contact the Disability Resource Center to arrange academic accommodations to support your success in the course (503-725-4150, drc@pdx.edu).

Harassment and Discrimination. As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. Please be aware that as a faculty member, I have the responsibility to report any

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instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find a list of those individuals at <http://www.pdx.edu/sexual-assault/get-help>. For more information about Title IX, please complete the required student module Creating a Safe Campus at <http://www.pdx.edu/sexual-assault/safe-campus-module>.

Recommendation Letters. You will likely need professors to write recommendation letters for you in the future (e.g., further education, jobs, internships). Professors are not obligated to write references for any student who asks. Hardworking, collegial, intellectually inquisitive, and honest students make it easy to write outstanding and effective recommendation letters. Consider maintaining relationships over time with professors, so that they know you well enough to write for you.

ASSIGNMENTS

1000 total points available for the term:

Final draft of Research Paper	430
9 Homework Assignments at 35 points each	315
1 Presentation	100
10 Class Participations at 10 points each	100
Certificate of Completion of Human Subjects Training	55

Grade	%
A	94-100%
A-	90-93%
B+	86-89%
B	82-85%
B-	80-81%
C+	76-79%

Grade	%
C	72-75%
C-	70-71%
D+	66-69%
D	62-65%
D-	60-61%
F	≤59%

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Research Paper (DUE MARCH 17 BY 5PM). The Research Paper will prepare you to communicate complicated quantitative findings in a meaningful way, particularly facilitating your successful completion of a thesis (whether ultimately quantitatively or qualitatively focused). The Research Paper will also increase your capacity to submit articles to academic journals, and generally improve your general writing and critical thinking skills. This Paper will be 15-30 pages in length and based on the quantitative analyses you conduct over the course of this term. The class is designed to ensure your success on this assignment. In addition to staggered deadlines intended to keep you on track, your success will be facilitated by my assistance during class, my feedback on your homework, feedback on a first draft of the paper from a classmate, and feedback from me and classmates after your Presentation.

Homework Assignments. The weekly homework assignments will reinforce what you learn in class and help you complete your Research Paper in manageable steps. Required formatting for homework documents is provided below. Assignment titles are provided at the end of the syllabus – also clearly title the different sections of homework included in single Word documents. Send completed assignments to dshifrer@pdx.edu by due date at 5pm.

- All homework should be submitted as Word documents
- Files should be named according to assignment titles provided at end of syllabus
 - Name, date, and assignment title in upper left corner of header (assignment titles are provided at end of syllabus)
 - Page number in center of footer
- Research Paper Prep assignments:
 - As of Week 2, begin every RPP assignment with most up-to-date research questions for your project
 - Times New Roman or Cambria size 12 font
 - One inch margins on all four sides
 - Single spaced
 - First line of paragraphs indented half an inch
- Stata assignments:
 - Maximize Stata output window before running syntax—if you don't, Stata will wrap lines to fit smaller screen, making the output look really messy
 - Clear headers indicating SYNTAX and OUTPUT, or one section called SYNTAX & OUTPUT with each piece of output copied & pasted immediately after the syntax, and commented out
 - Formatting to increase readability:

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- Change font to Courier New
- Home > Paragraph (little arrow on bottom right) > Set Spacing-Before and Spacing-After to 0 pt > Set Line Spacing to single
- Layout > Orientation > Landscape
- If lines are still wrapping, use a smaller font and/or smaller page margins

Presentation (THURSDAY, MARCH 12). The Presentation will help you consider the organization of your Research Paper from another perspective and will build skills useful at academic conferences and other workplaces. You will also receive feedback from me and your classmates to improve the final draft of your Research Paper.

Class Participation. You will receive 10 points for each class you attend. If you arrive more than 10 minutes late or leave more than 10 minutes before the end of class, you will receive no points for attending class that day.

Human Subjects Training. Follow PSU's IRB guidelines for Human Subjects Research Training (<https://sites.google.com/a/pdx.edu/research/resources/training>). In order to get credit, you will need to save the certificate of completion and email it to dshifrer@pdx.edu. Save a copy for your files to submit with your IRB application. If you have previously completed the CITI or NIH training, you can just submit the certificate of completion from that training to receive credit.

Resources to Support Your Success

The OWL at Purdue University (<http://owl.english.purdue.edu/owl/resource/679/01/>)

The Emory Writing Center (<http://www.writingcenter.emory.edu/>)

Free tutoring at The Learning Center in Millar Library, NW corner, 2nd floor (<https://www.pdx.edu/tutoring/>)

PSU Writing Center (<http://www.writingcenter.pdx.edu>)

PSU Research Tools & Collections (<http://library.pdx.edu/research/>)

PSU Academic Advising (<http://www.pdx.edu/veterans/academic-advising>)

PSU Center for Student Health and Counseling (<http://www.pdx.edu/shac/>)

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COURSE SCHEDULE

Course schedule subject to change with reasonable notice.

Week	Main Topics	Due in Class	Due by Email (5pm)
File names for assignments are provided in italics. PROVIDE CLEAR SUBHEADINGS IN THE BODY OF THE FILE SO I QUICKLY KNOW WHAT PART OF THE ASSIGNMENT I AM READING.			
1	<ul style="list-style-type: none">• Quantitative methods: What & why?• Succeeding in this class• Introduction to Stata• Structure of datasets• Variables• Correlation & causality• General concept of regression	DUE: Jan 9 (Thu) <ul style="list-style-type: none">• Read Creswell 2009 (D2L): The Selection of a Research Design• Read Mehmetoglu & Jakobsen pp. 17-24 (D2L): What is Stata?• Read Mitchell 2010 Sections 1.1, 1.2, 1.3, 2.1, 2.2, 2.3• Read Obtaining a Data Set (D2L)• Read Kliewer 2005: Writing It Up• Read Sample Final Research Papers	DUE: Jan 15 (Wed) <ul style="list-style-type: none">• Research Paper Prep (<i>HW1_FirstName_RPP</i>)<ul style="list-style-type: none">○ Dataset's name and description○ Stata-generated list of variables in your dataset

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2	<ul style="list-style-type: none"> • Mediators and moderators • Research questions & hypotheses • Duplicate IDs/rows • Univariate analysis 	<p>DUE: Jan 16 (Thu)</p> <ul style="list-style-type: none"> • Read Schneider et al. 2007 pp. 10-18 (D2L): The Logic of Causal Inference • Read Sweet & Grace-Martin 2011 pp. 213-223 (D2L): Writing a Research Report • Read Mitchell 2010 Section 3.9: Identifying Duplicates • Read Mitchell 2010 Section 3.3: Checking Individual Variables 	<p>DUE: Jan 22 (Wed)</p> <ul style="list-style-type: none"> • Produce syntax and output duplicating Mitchell 2010 pp. 50-54 (embedding output into syntax) (<i>HW2_FirstName_Stata</i>) • Research Paper Prep (<i>HW2_FirstName_RPP</i>) <ul style="list-style-type: none"> ○ 3 research questions and 3 hypotheses ○ Identify a minimum of 1 dependent variable, 1 predictor of interest, 2 controls, and 1 mediator or moderator (must include continuous and categorical variables) ○ Each variable's <u>name</u>, <u>label</u>, <u>type</u> (continuous, categorical), and <u>function</u> (dependent variable, predictor of interest, control, mediator, moderator) ○ Appropriate univariate analysis (tab, sum) of each variable you plan to use (see syntax handout)

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3	<ul style="list-style-type: none"> • Process of data science • Missing values & imputation • Using bivariate analysis to check recoding • ASA style 	<p>DUE: Jan 23 (Thu)</p> <ul style="list-style-type: none"> • Read Mitchell pp. 2010 Sections 9.1, 9.2, 9.3, 9.4: Data Management 	<p>DUE: Jan 29 (Wed)</p> <ul style="list-style-type: none"> • Research Paper Prep (<i>HW3_FirstName_RPP</i>) <ul style="list-style-type: none"> ○ Updated research questions ○ Citations (ASA style) for at least five peer-reviewed articles that relate to your dependent variable and predictor of interest ○ Entire do-file copied into Word of new imputed versions of each variable you plan to use in your study
4	<ul style="list-style-type: none"> • Analytic samples • Recoding variables for regression • Constructing scales • Literature reviews • CITI training 	<p>DUE: Jan 30 (Thu)</p> <ul style="list-style-type: none"> • Read Mitchell 2010 Section 3.4: Checking Categorical by Categorical Variables • Read Mitchell 2010 Section 3.5: Checking Categorical by Continuous Variables • Read Mitchell 2010 Section 3.6: Checking Continuous by Continuous Variables • Read Mitchell 2010 Sections 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7: Creating Variables • Read Mehmetoglu & Jacobsen 2017 pp. 270-290: Factor Analysis 	<p>DUE: Feb 5 (Wed)</p> <ul style="list-style-type: none"> • Produce syntax and output duplicating Mitchell 2010 pp. 54-62 (<i>HW4_FirstName_Stata</i>) ((you may get a different answer for the list command on page 58)) • Certification of completion for CITI training (<i>HW4_FirstName_CITI</i>) • Research Paper Prep (<i>HW4_FirstName_RPP</i>) <ul style="list-style-type: none"> ○ Updated research questions ○ Outline for Literature Review ○ Tablists comparing each recoded variable to original variable(s) (for scales, also estimate an alpha)

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5	<ul style="list-style-type: none"> • Sampling (statistical significance, weights) • Bivariate analysis II (chi-square, correlation, ANOVA, t-test) • Conceptual models • Model progression 	<p>DUE: Feb 6 (Thu)</p> <ul style="list-style-type: none"> • Read Linneman 2018 pp. 299-302 (D2L): Calculating the Correlation Coefficient • Play http://guessthecorrelation.com/ • Read Linneman 2018 pp. 158-168 (D2L): The Chi-Square Test • Read Linneman 2018 pp. 253-267 (D2L): T-Tests and ANOVA • Read American Statistical Association 2016: Statement on Statistical Significance • Read Amrhein et al. 2019: Retire Statistical Significance • Read Normile et al. 2019: Introducing the New Statistics 	<p>DUE: Feb 12 (Wed)</p> <ul style="list-style-type: none"> • Research Paper Prep (<i>HW5_FirstName_RPP</i>) <ul style="list-style-type: none"> ○ Updated research questions ○ First draft of Literature Review and Conceptual Model ○ Model progression plan • Interpreting the direction and statistical significance of each result, estimate bivariate analyses comparing: (<i>HW5_FirstName_Stata</i>) <ul style="list-style-type: none"> ○ Predictor of interest(s) & dependent variable(s) ○ Control variables & predictor of interest(s) ○ Control variables & dependent variable(s) ○ Mediator/moderator & predictor of interest(s) ○ Mediator/moderator & dependent variable(s)

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6	<ul style="list-style-type: none"> • Assumptions of regression • Statistics of regression • Regression in Stata • Interpreting regression • Data and methods sections 	DUE: Feb 13 (Thu) <ul style="list-style-type: none"> • Read Linneman 2018 pp. 290-299 (D2L): Linear Regression • Read Kohler & Kreuter 2012 pp. 253-266, 270-278 (D2L): Linear Regression • Read Linneman 2018 pp. 482-485 (D2L): Logistic Regression • Read Kohler & Kreuter 2012 pp. 341-362 (D2L): Logistic Regression • Watch Prediction by the Numbers 	DUE: Feb 19 (Wed) <ul style="list-style-type: none"> • “Stata Homework” on D2L (<i>HW6_FirstName_Stata</i>) • First draft of ‘Data and Methods’ (<i>HW6_FirstName_RPP</i>) <ul style="list-style-type: none"> ○ Updated research questions
7	<ul style="list-style-type: none"> • Analytic sample flag • Results sections 	DUE: Feb 20 (Thu)	DUE: Feb 26 (Wed) <ul style="list-style-type: none"> • First draft of ‘Results’ (<i>HW7_FirstName_RPP</i>) <ul style="list-style-type: none"> ○ Updated research questions
8	<ul style="list-style-type: none"> • Introductions, conclusions & abstracts 	DUE: Feb 27 (Thu)	DUE: Mar 4 (Wed) <ul style="list-style-type: none"> • First draft of Research Paper (<i>HW8_FirstName_RPP</i>)

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9	• Presentations	DUE: Mar 5 (Thu)	DUE: Mar 11 (Wed) <ul style="list-style-type: none">• First draft of powerpoint for presentation (<i>HW9_FirstName_PPT_Draft</i>)• Written feedback on another student's Research Paper (on paper and rubric) (<i>HW9_FirstName_RPPClassmatesFirstName_Paper</i>), (<i>HW9_FirstName_RPPClassmatesFirstName_Rubric</i>)
10		DUE: Mar 12 (Thu) Presentation to class	
Final draft of Research Paper due March 17 (Tue) by 5pm (<i>Final_FirstName_RPP</i>)			

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References

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