SOC 593: QUANTITATIVE METHODS
Winter 2023 Syllabus
Portland State University – Thursdays, 2pm-4:50pm
Fariborz Maseeh Hall (FMH) B151

QUESTIONS

Instructor: Dara Shifrer, Assistant Professor of Sociology
Office hours: Tuesdays, 1p-2p, Cramer 217. 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 Canvas discussion thread "Student Questions."
- Step 2: Post your question in the Canvas 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 Canvas discussion thread, email me at dshifrer@pdx.edu.

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).
- 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

REQUIRED MATERIALS

Required Textbook. None.

Stata. In addition to the computers in the classroom, this statistical software is available on the PSU Virtual Lab (VLab)—see Tips for Using VLab on Canvas (Content>Main Files). 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, you can also purchase the student version of Stata ($94). 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.

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 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/).

Canvas. Many course resources will be available on Canvas. If you have trouble accessing your Canvas account, contact the OIT help desk 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 Canvas.

ASSIGNMENTS

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, so that 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. 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. Generally, you should not be using personal laptops/tablets or cellphones, and you may only have class-related softwares open (e.g., Stata, Word, Powerpoint) on your classroom desktop and personal laptop/tablet. PSU does not allow food or drinks in the laboratories, excepting a closed container of water that must be kept near the door.

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.

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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%

Research Paper (DUE MARCH 22 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.

Human Subjects Training. Follow PSU's IRB guidelines for Human Subjects Research Training (https://sites.google.com/a/pdx.edu/research/training?authuser=0). In order to get credit, you will need to save the certificate of completion and email it to dshifrer@pdx.edu. If you have previously completed the CITI or NIH training, you can just submit the certificate of completion from that training to receive credit.

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 and hypotheses 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:
    - 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 (TUESDAY, MARCH 16). 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.

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COURSE SCHEDULE

Course schedule subject to change with reasonable notice.

Week	Main Topics	Due in Class	Due by Email (12pm)
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	- Quantitative methods: What & why? - Succeeding in this class - Introduction to Stata - Structure of datasets - Variables - Correlation & causality - General concept of regression	**DUE: Jan 12 (Thu)** - Read Asher 2011 (Canvas) pp. 2-6: Causal Modeling - Read Creswell 2009 (Canvas): The Selection of a Research Design - Read Pearl et al. 2016 pp. 1-6: Causation - Read Mehmetoglu & Jakobsen pp. 17-24 (Canvas): What is Stata? - Read Obtaining a Data Set (Canvas) - Read Kliewer 2005: Writing It Up - Read Sample Final Research Papers	**DUE: Jan 18 (Wed)** - Research Paper Prep (*HW1_FirstName_RPP*) - Dataset's name and description - Stata-generated list of variables in your dataset

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Week	Main Topics	Due in Class	Due by Email (12pm)
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.		

2	• Mediators and moderators
	• Research questions & hypotheses
	• Duplicate IDs/rows
	• Univariate analysis
		DUE: Jan 19 (Thu)
		• Read Schneider et al. 2007 pp. 10-18 (Canvas): The Logic of Causal Inference
		• Read Hayes 2013 pp. 85-89: Mediation
		• Read Hayes 2013 pp. 207-211: Moderation
		• Read Sweet & Grace-Martin 2011 pp. 213-223 (Canvas): Writing a Research Report
			DUE: Jan 25 (Wed)
			• Research Paper Prep (*HW2_FirstName_RPP*)
			  o 3 research questions (RQs) and 3 hypotheses
			  o Identify a minimum of 1 dependent variable, 1 predictor of interest, 2 controls, and 1 mediator or moderator (must include continuous and categorical variables)
			  o 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)
			  o Univariate analyses (tab, sum) of each variable you plan to use (see syntax handout)

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3	• Process of data science
	• Missing values & imputation
	• Using bivariate analysis to check recoding
	• ASA style
		DUE: Jan 26 (Thu)
		• Read Alley 1987 pp. 3-21: Scientific Writing
			DUE: Feb 1 (Wed)
			• Research Paper Prep (*HW3_FirstName_RPP*)
			  o Updated RQs and hypotheses
			  o Citations (ASA style) for at least five peer-reviewed articles that relate to your dependent variable and predictor of interest
			  o Entire do-file copied into Word of new imputed versions of each variable you plan to use in your study

4	• Analytic samples
	• Recoding variables for regression
	• Constructing scales
	• Literature reviews
	• CITI training
		DUE: Feb 2 (Thu)
		• Read Mehmetoglu & Jacobsen 2017 pp. 270-290: Factor Analysis
			DUE: Feb 8 (Wed)
			• Certification of completion for CITI training (*HW4_FirstName_CITI*)
			• Research Paper Prep (*HW4_FirstName_RPP*)
			  o Updated RQs and hypotheses
			  o Outline for Literature Review
			  o Entire Stata do-file of recoding each study variable copied into Word

Week	Main Topics	Due in Class	Due by Email (12pm)
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.		

5	• Sampling (statistical significance, weights)
	• Bivariate analysis II (chi-square, correlation, ANOVA, t-test)
	• Conceptual models
	• Model progression
		DUE: Feb 9 (Thu)
		• Read Linneman 2018 pp. 299-302 (Canvas): Calculating the Correlation Coefficient
		• Play http://guessthecorrelation.com/
		• Read Linneman 2018 pp. 158-168 (Canvas): The Chi-Square Test
		• Read Linneman 2018 pp. 253-267 (Canvas): 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
			DUE: Feb 15 (Wed)
			• Research Paper Prep (*HW5_FirstName_RPP*)
			  ○ Updated RQs and hypotheses
			  ○ First draft of Literature Review and Conceptual Model
			  ○ Model progression plan
			• Interpreting the direction and statistical significance of each result, estimate bivariate analyses comparing: (*HW5_FirstName_Stata*)
			  ○ 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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Week	Main Topics	Due in Class	Due by Email (12pm)
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.		
6	• Assumptions of regression • Statistics of regression • Regression in Stata • Interpreting regression • Data and methods sections	**DUE: Feb 16 (Thu)** • Read Linneman 2018 pp. 290-299 (Canvas): Linear Regression • Read Kohler & Kreuter 2012 pp. 253-266, 270-278 (Canvas): Linear Regression • Read Linneman 2018 pp. 482-485 (Canvas): Logistic Regression • Read Kohler & Kreuter 2012 pp. 341-362 (Canvas): Logistic Regression • Watch Prediction by the Numbers	**DUE: Feb 22 (Wed)** • "Stata Homework" on Canvas (*HW6_FirstName_Stata)* • First draft of 'Data and Methods' (*HW6_FirstName_RPP*) ○ Updated RQs and hypotheses
7	• Analytic sample flag • Results sections	**DUE: Feb 23 (Thu)**	**DUE: Mar 1 (Wed)** • First draft of 'Results' (*HW7_FirstName_RPP*) ○ Updated RQs and hypotheses
8	• Introductions, conclusions & abstracts	**DUE: Mar 2 (Thu)**	**DUE: Mar 8 (Wed)** • First draft of Research Paper (*HW8_FirstName_RPP*)

Week	Main Topics	Due in Class	Due by Email (12pm)
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.			
9	• Presentations	**DUE: Mar 9 (Thu)**	**DUE: Mar 15 (Wed)** • First draft of powerpoint for presentation (*HW9_FirstName_PPT_Draft*) • Written feedback on another student's Research Paper (on paper and rubric) *(HW9_FirstName_RPPClassmatesFirstName_Paper), (HW9_FirstName_RPPClassmatesFirstName_Rubric)*
10		**DUE: Mar 16 (Thu)** Presentation to class (*HW9_FirstName_PPT_Final)*	
Final draft of Research Paper due March 22 (Wed) by 5pm *(Final_FirstName_RPP)*			

References

Alley, Michael. 1987. *The Craft of Scientific Writing.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Amrhein, Valentin, Sander Greenland, and Blake McShane. 2019. "Retire Statistical Significance." *Nature* 567:305–7.

American Statistical Association. 2016. "American Statistical Association Releases Statement on Statistical Significance and P-Values: Provides Principles to Improve the Conduct and Interpretation of Quantitative Science." *ASA News.*

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Creswell, John W. 2009. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Third Edition. Thousand Oaks, CA: Sage Publications, Inc.

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Linneman, Thomas J. 2018. *Social Statistics: Managing Data, Conducting Analyses, Presenting Results*. New York, NY: Routledge.

Mehmetoglu, Megmet and Tor Georg Jakobsen. 2017. *Applied Statistics Using Stata: A Guide for the Social Sciences*. London, UK: Sage.

Mitchell, Michael N. 2010. *Data Management Using Stata: A Practical Handbook*. College Station, TX: Stata Press.

Normile, Christopher J., Emily K. Bloesch, Christopher C. Davoli, and Kyle C. Scherr. 2019. "Teacher-Ready Theory Review: Introducing the New Statistics in the Classroom." *Scholarship of Teaching and Learning in Psychology* 5(2):162–68.

Pearl, Judea, Madelyn Glymour, and Nicholas P. Jewell. 2016. *Causal Inference in Statistics: A Primer*. West Sussex, UK: Wiley.

Sweet, Stephen A. and Karen A. Grace-Martin. 2012. *Data Analysis with SPSS: A First Course in Applied Statistics*. Pearson.

Schneider, Barbara, Martin Carnoy, Jeremy Kilpatrick, William H. Schmidt, and Richard J. Shavelson. 2007. *Estimating Causal Effects: Using Experimental and Observational Designs*. Washington DC: American Educational Research Association.

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Accommodations. We will make it our top priority to build a community that is fully inclusive of all body types, identities, and ways of learning. This will require each of us to be attentive, flexible, and vigilant. If we are engaging in any practices throughout the semester that lead you to feel overlooked, unwelcome, or alienated, I welcome you to come talk with me. You will be heard. If you have a documented disability and wish to receive academic accommodations, please contact the Disability Resource Center (DRC) as soon as possible: 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 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.

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.

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.

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/)

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PSU Academic Advising (http://www.pdx.edu/veterans/academic-advising)
PSU Center for Student Health and Counseling (http://www.pdx.edu/shac/)