

SOCIOLOGY 211: SOCIOLOGY GRADUATE STATISTICS 2

Wednesday, 9:30 am to 12:15 pm, SSM 100

Professor: Charlie Eaton, ceaton2@merced.edu

Office: COB2, Room 219

Office Hours: Wednesday, 1 to 2 pm, or by appointment

Office Hours Signup: <https://wejoinin.com/sheets/xsvti>

Code: <https://github.com/charlieeatonphd>

Teaching Assistant: Hyunsu Oh, hoh8@ucmerced.edu

Office: COB2, Room 240F

Office Hours: Tuesday, 12 to 2 pm

COURSE LEARNING OUTCOMES

1. Know statistical methods and how they contribute to or obscures knowledge and power. (1, 2)
2. Learn Stata with Jupyter to do statistical sociological analyses in useful, replicable, collective, and widely shareable ways. (3, 5, 6)
3. Apply the skills to a substantive question of interest, perhaps even a something that could become your MA paper. (3, 4, 5)

Note: The number in parentheses is for the corresponding graduate program objectives below.

PROGRAM LEARNING OUTCOMES

1. Synthesize, critique, apply, and extend major sociological theories.
2. Critique and evaluate qualitative and quantitative sociological research methods.
3. Design and conduct independent research that makes an original contribution to sociological knowledge.
4. Synthesize, critique, and identify extensions to previous empirical and theoretical work in at least two substantive areas of the discipline.
5. Communicate effectively, both orally and in writing, about sociological theories, arguments, methods, and concepts.
6. Demonstrate proficiency in the professional skills needed to participate in the intellectual and organizational aspects of sociological careers.

MAIN ACTIVITIES AND GRADES

1. In class discussions and exercises (10 percent)
2. 5 problem sets to learn a breadth of statistical methods of analysis. (25 percent)
3. 5 research project assignments to apply the most appropriate statistical methods to your research question. (25 percent)
4. A final paper or a Du Boisian race and student debt data visualization submission to the [Dignity and Debt contest](#). (40 percent)

ATTENDANCE

Attendance is a required. If you need an excused absence, please just email me by the day before to let me know.

TEXTBOOK

Donald J. Treiman. 2009. *Quantitative Data Analysis: Doing Research to Test Ideas*. San Francisco: Jossey-Bass.

RESOURCES

- [Free web-based interactives to learn R](#)
- UCLA Institute for Digital Research and Education Stata [Frequently Asked Questions](#) (add UCLA in your google search and relevant pages appear)
- [Data Carpentries free curriculum in R and Python](#)
- Conning, Jonathan. [Stata and R in Jupyter Notebooks](#)
- Caren, Neal. [Python for Sociology](#)
- Barron, Kyle. [Stata Kernel for Jupyter](#). Example [Jupyter Notebook using Stata](#).

STUDENT ACCESSIBILITY SERVICES

University of California, Merced is committed to creating learning environments that are accessible to all. If you anticipate or experience physical or academic barriers based on a disability, please contact Student Accessibility Services (SAS) at (209) 228-6996 or disabilityservices@ucmerced.edu as soon as possible to explore reasonable accommodations. All accommodations must have prior approval from Student Accessibility Services on the basis of appropriate documentation. If you anticipate or experience barriers due to pregnancy, temporary medical condition, or injury, please feel welcome to contact me so we can discuss options. You are encouraged to contact the Dean of Students for support and resources at (209) 228-3633 or <https://studentaffairs.ucmerced.edu/dean-students>.

ACADEMIC HONESTY

Academic honesty is essential to mutually support each other's learning in this course. Any violations of academic honesty will result in a failing grade for the assignment involved. If an additional instance of academic honesty occurs, the student will receive a failing grade in the course. Acts of academic honesty will also be referred to the UC Merced Office of Student Conduct.

COURSE OUTLINE

January 22 – Introduction and Jupyter installs

- **Read:**
 - Stephenson, Neil. 2000. "[In the Beginning Was the Command Line](#)" pages 1-17 and 65-66
- **Discussion topics:** What is method? What is statistics? What is data science? What is computational sociology? Principles of good and bad statistics. Course overview.
- **Activities:** Jupyter/Stata Kernel/Matplotlib/tabula installation with Matthias Bussonnier, Office of Information Technology

January 29 – Github for replication and workflow

- **Read:**
 - Wilson G, Aruliah DA, Brown CT, Chue Hong NP, Davis M, Guy RT, et al. (2014) [Best Practices for Scientific Computing](#). PLoS Biol 12(1): e1001745.
- **Homework:** Set up Github account and install Git and Bash

February 5 – Data exploration: cross tabs and data visualization

- **Read:**
 - Treiman, Chapter 1, 2.
 - Battle-Baptiste, Whitney, and Britt Russert, eds. “Introduction” to *W.E.B Du Bois's data portraits: Visualizing black America*. Chronicle Books, 2018.
 - Starks, Anthony. “[Recreating W.E.B Du Bois's Data Portraits](#).” *Medium*. 2019.
- **Homework:** Research project assignment 1.

February 12 – More data exploration: Distributions, percentiles, and time comparisons

- **Read:**
 - Hochschild, Jennifer L. “[Lumpers and splitters, individuals and structures](#).” In *Racialized politics: The debate about racism in America* (2000)
 - Eaton, C., Habinek, J., Goldstein, A., Dioun, C., Santibáñez Godoy, D. G., & Osley-Thomas, R. (2016). [The financialization of US higher education](#). *Socio-Economic Review*, 14(3), 507-535.
- **Homework:** Problem set 1.

February 19 – Bivariate relationships and regression

- **Read:**
 - Treiman Chapter 5.
 - Eaton, C., Kulkarni, S., Birgeneau, R., Brady, H., & Hout, M. (2019). [The Organizational Ecology of College Affordability](#). *Socius*. 5, 1-19.
- **Homework:** Research project assignment 2.

February 26 – From cross tabs to multiple regression

- **Read:**
 - Treiman, Chapter 6.
- **Homework:** Problem set 2.

March 4 – Nonlinear relationships: categorical, polynomial, and spline

- **Read:**
 - Treiman, Chapter 7
- **Homework:** Research project assignment 3.

March 11 – Interactions between independent variables

- **Read:**
 - Treiman, Chapter 7 again.
- **Homework:** Problem set 3

March 18 – Uncertainty, heteroskedasticity (uneven variance), and robust standard errors

- **Read:**
 - Treiman, Chapter 10
 - American Statistical Association. 2016. “ASA Statement on Statistical Significance and P-Values.” *The American Statistician*. Vol. 70(2): 131-33.
- **Homework:** Research project assignment 4

March 25 – Spring break, no class.

April 1 – Categorical dependent variables: logit & probit models

- **Read:**
 - Treiman, Chapter 13
 - Eaton, Charlie and Albina Gibadullina. “The Social Circuitry of High Finance: Universities and Intimate Ties Among Economic Elites.”
- **Homework:** Problem set 4

April 8 – No Class

April 15 – Factor analysis and scale construction

- **Read:**
 - Treiman, Chapter 11
 - Bobo, Lawrence and Vincent Hutchings. 1996. “Perceptions of Racial Group Competition: Extending Blumer’s Theory of Group Position to a Multiracial Social Context.” *American Sociological Review* 61: 951-72.
- **Homework:** Research project assignment 5.

April 22 – Longitudinal and multilevel models

- **Read:**
 - Winship, Christopher, and Stephen L. Morgan. "The estimation of causal effects from observational data." *Annual review of sociology* 25.1 (1999): 659-706.
 - Eaton, C., Howell, S., & Yannelis, C. (2020). When Investor Incentives and Consumer Interests Diverge: Private Equity in Higher Education. *Review of Financial Studies*.
 - Recommended: Treiman, Chapter 15
- **Homework:** Problem set 5

April 29 – Content analysis: topic modeling, sentiment analysis and more

- **Reading TBA.**
- **Discussion Activities:** Guest presentation by UCM Poli-Sci professor [Daniel de Kadt](#)

May 6 – Final project workshop.

May 13 – Final paper / data visualization due

Github homework for Wednesday, January 29th

1. Create a Github account on <https://github.com/>
2. Install Bash (if not already installed)
3. Install Git (if not already installed)

Instructions for Mac users:

Bash will already be installed. To see if Git is installed, open the Terminal application (found in /Applications/Utilities) and type the following:

```
git --version
```

If you see a message like "git version 2.20.1" (for example), Git is installed. If you get an error message, you will need to install the XCode command line tools. More recent versions of MacOS will automatically offer to install it for you; if you get a popup window prompting you to install the Xcode command line tools, agree to all of the prompts. Otherwise, type the following:

```
xcode-select --install
```

Instructions for Windows users:

- A. Download the Git for Windows installer: <https://gitforwindows.org/>
- B. Run the installer and follow the steps below:
 1. Click on "Next" four times (two times if you've previously installed Git). You don't need to change anything in the Information, location, components, and start menu screens.
 2. Select "Use the nano editor by default" and click on "Next".
 3. Keep "Git from the command line and also from 3rd-party software" selected and click on "Next". If you forgot to do this programs that you need for the workshop will not work properly. If this happens rerun the installer and select the appropriate option.
 4. Click on "Next".
 5. Select "Use the native Windows Secure Channel library", and click "Next".
 6. Keep "Checkout Windows-style, commit Unix-style line endings" selected and click on "Next".
 7. Select "Use Windows' default console window" and click on "Next".
 8. Leave all three items selected, and click on "Next".
 9. Do not select the experimental option. Click "Install".
 10. Click on "Finish".

If your "HOME" environment variable is not set (or you don't know what this is):

1. Open command prompt (Open Start Menu then type "cmd" and press Enter)
2. Type the following line into the command prompt window exactly as shown:

```
setx HOME "%USERPROFILE%"
```

Press Enter, you should see "SUCCESS: Specified value was saved."

Quit command prompt by typing "exit" then pressing Enter

This will provide you with both Git and Bash in the Git Bash program.