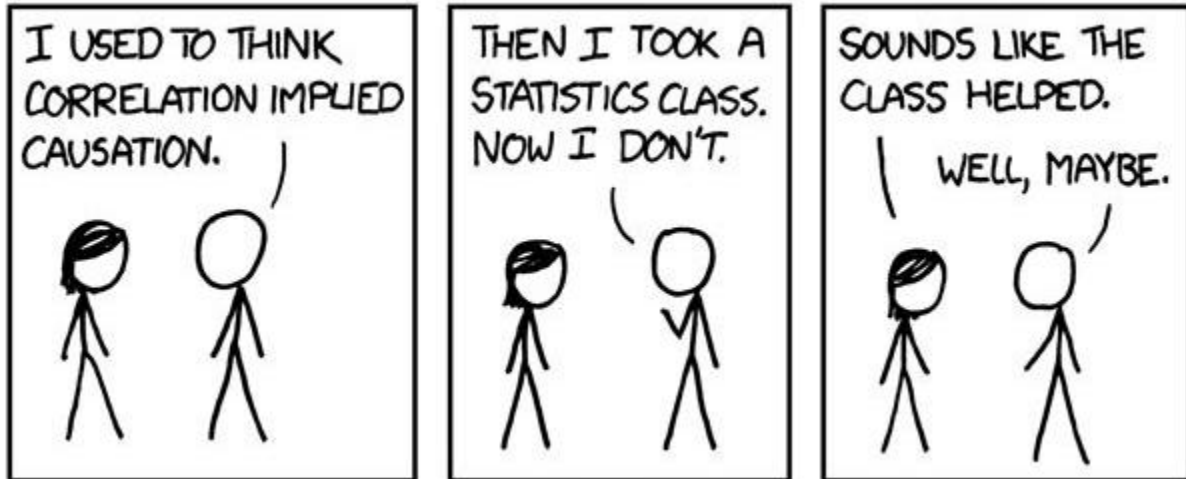


# Introduction to Social Statistics

*Sociology 2201*



## **Professor Information—**

Junia Howell, Ph.D.

Email—JuniaHowell@pitt.edu

Office—WWPH 2421

Office Hours—Tuesday 2.20-3.30 pm or by appointment

## **Class Information—**

Days—Tuesday, Thursday

Room—WWPH 2431

Time—1.00 to 2.15 pm

## Course Description and Objectives

This course provides an introduction to social quantitative methods. It begins with a sociohistorical examination of research methodologies and their inseparable relationship to colonialism, racism, and patriarchy. The course then uses this critical lens to examine descriptive statistics, frequency distributions, bivariate associations, and data visualization. This course emphasizes the application of quantitative methods in the social sciences and requires no prior knowledge of statistics. Students will leave the course with a broader understanding of how statistics can be utilized in social scientific research.

## Expected Learning Outcomes

At the completion of this course, it is expected that you have learned how to:

- ✓ Identify and craft quantitative research question, select appropriate unit of analyses, choose theoretically methods and questions, and operationalize variables
- ✓ Recognize how social inequities shape research methodologies themselves
- ✓ Conduct and theoretically interpret bivariate and multiple regressions with interactions and nonlinear terms on population and sample data

## Reference Texts (*Not Required*)

Agresti, Alan and Barbara Finlay. 2009. *Statistical Methods for the Social Sciences*. Pearson / Prentice Hall. 4<sup>th</sup> edition.

Greene, William. 2008. *Econometric Analysis*. Pearson / Prentice Hall. 6<sup>th</sup> edition.

Agresti, Alan and Christine Franklin. 2012. *Statistics: the Art and Science of Learning from Data*. Pearson / Prentice Hall. 3<sup>rd</sup> edition.

## Statistical Software

This course primarily focuses on the theoretical and conceptual uses of statistics. To this end, we will use a mix of calculators (i.e. throwback calculators, your phone or the internet is fine), Excel, and some Stata. Both Excel and Stata are available to Pitt students for free. You are encouraged to download them onto your personal computer.

## Course Requirements

### *Daily Exercises*

Exercises are due at 8 am on every class day. Exercises will be posted on CourseWeb. They will include reflections on the assigned readings, problem sets, data preparation, and modeling tasks. Each exercise will be worth 2 points (2 percent of the final grade). They will be graded on completeness, correctness, and provided rationales.

### *Pre- and Post-Course Test*

Given the novel approaches implemented in this course, students will take a pre- and post-course test to evaluate what students have learned during the semester. The pre-test will not be evaluated on correctness but simply completion. The post-course test, however, will be graded on the merit of students' answers.

### *Assessments*

This course will have two assessments: one at the mid-term (due Tuesday October 16<sup>th</sup> at 8 am) and one at the completion of the course (due Tuesday December 11<sup>th</sup> at 8 am). These assessments will be mini quantitative analyses where students will be asked to clean and analyze data; playing particular attention to how their theoretical assumptions influence their operationalization of variables and interpretation of results.

### *Attendance and Participation*

Attendance and participation are essential. Not only for your own learning but also for your peers and the professor who will be challenged to expand their thinking by your questions, comments, and epiphanies. Each student will begin the course with 10 points for attendance and participation. Each class you did not attend and/or participate 2 points will be deducted from your grade.

### Grade Allocation

|                                              |           |
|----------------------------------------------|-----------|
| Daily Exercises (2 points each, 26 in total) | 48 points |
| Pre-Course Test                              | 2 points  |
| Post-Course Test                             | 10 points |
| Mid-Term Assessment                          | 15 points |
| Final Assessment                             | 15 points |
| Attendance and Participation                 | 10 points |

### Grading Scale

|        |    |       |    |       |    |
|--------|----|-------|----|-------|----|
| 98-100 | A+ | 83-87 | B  | 70-72 | C- |
| 93-97  | A  | 80-82 | B- | 68-69 | D+ |
| 90-92  | A- | 78-79 | C+ | 63-67 | D  |
| 88-89  | B+ | 73-77 | C  | 60-62 | D- |

## Policies

### Course Discussions

All students come into the classroom shaped by their social location (e.g. gender, race, class, sexuality, age, nationality, etc...) and a personal perspective. In course discussions, I ask you to be self-reflective about your own and your classmates' socialization.

Specifically, I ask all students to follow these three guidelines:

1. Be ready and willing to learn. Not only from experts and scientific observations but also from the experiences of your fellow classmates.
2. Respect the emotions and impressions of your classmates while acknowledging the institutional oppression that affords individuals divergent amounts of power.
3. Do not presume misinformation is the result of moral failure. Instead, accept responsibility to seek and share correct information.

### Late Work

No late work will be accepted. Exceptions will only be made for extenuating circumstances. In such cases, email me as soon as possible. If because of a learning disability or a mental health concern, you are concerned about meeting deadlines, come to office hours as soon as possible and we will create an assignment completion plan.

### Course Changes

This syllabus, assignments and course schedule are subject to change. Changes will be announced in class and posted on CourseWeb. You are responsible for checking your Pitt email and CourseWeb. Being unaware of changes is not an acceptable excuse for late or incorrect assignments.

### *Academic Integrity*

Students are expected to abide by the University of Pittsburgh's Dietrich School of Arts and Sciences' Academic Integrity Conduct Guidelines ([as.pitt.edu/fac/policies/academic-integrity](http://as.pitt.edu/fac/policies/academic-integrity)). Violations include, but are not limited to, submitting the work of another person as your own (aka, plagiarism). When in doubt about what constitutes academic dishonesty, ask. Ignorance of this policy is not an acceptable excuse for noncompliance. Any student suspected of violating this policy will be required to participate in procedural process.

### Students with (Dis)abilities and/or Special Circumstances

The goal of this course is for each student to meet the course objectives and learning outcomes listed above. Yet, there are multiple ways these goals could be met. If you have a (dis)ability or special circumstance that requires adjusted assignments please come speak to me. I have personal and academic experience adjusting assignments to maximize students' ability to learn and to demonstrate their knowledge. That said, the later you wait to inform me about needs, the less I can do to ensure your experience in the course is adapted to maximize your learning. So, please speak to me as soon as possible.

If you are unsure you need or “qualify” for such adjustments but are struggling, please come and discuss with me the challenges you are facing. I can work alongside you to ensure you are able to meet your full academic potential. All conversations will remain confidential. I also encourage you to consult with Disability Resources and Services, the Student Counseling Center, and the Student Health Service to receive the assistance you need to academically, relationally, physically, and emotionally thrive while on campus.

### Copyright Statement

This syllabus is protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials. See the Library of Congress Copyright office and the University Copyright Policy ([library.pitt.edu/copyright-pitt](http://library.pitt.edu/copyright-pitt)).

## Course Schedule

### Week One—What is Quantitative Research?

Tuesday August 28: How do we answer the questions we have?

Topics: Research questions, Utility of quantitative method; Communication—  
language vs numbers

**Course Survey due at 8 am**

Thursday August 30: What do we want to learn this semester?

Topics: Samples vs Populations; Experiments vs Observational  
Reading: Syllabus

**Pre-Course Test due at 8 am**

### Week Two—How Did and Does Colonialism and Racism Shape Research?

Tuesday September 4: How has colonialism shaped research methods?

Topics: Colonial history; Collecting Data; Positivism; Unit of Analysis

Reading: Smith, L. T. 2012. *Decolonizing Methodologies: Research and  
Indigenous Peoples* (University of Otago Press)

Thursday September 6: How has racial hierarchies shape quantitative methods?

Topics: Racialized Statistics; Operationalizing variables; Variable types

Reading: Zuberi, T and E. Bonilla-Silva. 2008. *White Logic, White Methods:  
Racism and Methodology* (Roman and Littlefield) Introduction,  
Chapter 6, and Conclusion

Turner, James. 1978. "The Founding Fathers of American Sociology:  
An Examination of Their Sociological Theories of Race Relations."  
*Journal of Black Studies* 9(1): 3-14.

Roberts, Dorothy. The Problem with Race-Based Medicine. Video.  
[https://www.youtube.com/watch?v=KxLMjn4WPBY&feature=youtu.be&list=PLkz3-JUYU0OaQq3qGNeX\\_Ty4fDKtHldfj+Human+Genome](https://www.youtube.com/watch?v=KxLMjn4WPBY&feature=youtu.be&list=PLkz3-JUYU0OaQq3qGNeX_Ty4fDKtHldfj+Human+Genome)

*Optional Reading:* Roberts, Dorothy. 2015. "Can Research on the Genetics of  
Intelligence Be "Socially Neutral"?" *The Genetics of  
Intelligence: Ethics and the Conduct of Trustworthy  
Research, special report, Hastings Center Report* 45(5)  
Zuberi, Tukufu. 2001. *Thicker Than Blood: How Racial  
Statistics Lie*.

#### MEAN PSYCHOLOGY



*Week Three—How Has Research Been Shaped By Structural Inequalities?*

Tuesday September 11: How has gender hierarchies shape quantitative methods?

Topics: Summarizing Data—Center vs Variability

Reading: Fine, Cordelia. 2017. *Testosterone Rex: Myths of Sex, Science, and Society* (W. W. Norton & Company)

—OR—

Dusenbery, Maya. 2017. *Doing Harm: The Truth about How Bad Medicine and Lazy Science Leave Women Dismissed, Misdiagnosed, and Sick* (HarperOne)

*Optional Reading:* Miller, Lisa R., and Eric Anthony Grollman. 2015. “The Social Costs of Gender Non-Conformity for Transgender Adults: Implications for Discrimination and Health.” *Sociological Forum* 30: 809-31.

Thursday September 13: How is intersectional theory applied in quantitative studies?

Topics: Calculating—Center and Variability

Reading: Choo, Hae Yeon and Myra Marx Ferree. 2010. “Practicing Intersectionality in Sociological Research: A Critical Analysis of Inclusions, Interactions, and Institutions in the Study of Inequalities.” *Sociological Theory*. 28(2): 129-149.

Bowleg, Lisa. 2008. “When Black + Lesbian + Woman ≠ Black Lesbian Woman: The Methodological Changes of Qualitative and Quantitative Intersectionality Research.” *Sex Roles*. 59 (5-6): 312-325.

*Optional Reading:* Scott, Nicholas A. and Janet Siltanen. 2017. “Intersectionality and Quantitative Methods: Assessing Regression from a Feminist Perspective.” *International Journal of Social Research Methodology*. 20(4): 373-385.

*Week Four—What Techniques Help Us Explore Data?*

Tuesday September 18: How can visualization help us explore data?

Topics: Visualization of Data—Graphs and Tables

Thursday September 20: How do we know if two discrete things are related?

Topics: Association between Categorical Variables—Contingency Tables

Reading: Schneider, Sandra K. and William G. Jacoby. 2016. “Graphical Displays for Public Opinion Research.” In Lonna Rae Atkeson and R. Michael Alvarez (Editors) *The Oxford Handbook of Polling and Polling Methods*. Oxford, UK: Oxford University Press.  
(<http://polisci.msu.edu/jacoby/research/statgrph/grphlist.htm>)

*Week Five—How Do We Establish Relationships With Quantitative Variables?*

Tuesday September 25: How do we evaluate relationships between quantitative variables?

Topics: Association between Quantitative Variables—Correlation

Thursday September 27: How do we compare categorical and quantitative variables?

Topics: Association between Categorical and Quantitative Variables

Reading: DuBois, W.E.B. 1996 (1899). *The Philadelphia Negro: A Social Study*. Philadelphia: University of Pennsylvania Press. Chapters 1-2 and 18.

Meeting in Sociology Conference Room

*Week Six—How Can We Tell A Story With Quantitative Variables?*

Tuesday October 2: What can associations tell us about the world?

Topics: Bivariate Regression

Thursday October 4: How about blank?

Topics: Lurking Categorical Variables—Contingency Tables

Reading: Howell, Junia and Elizabeth Korver-Glenn. “Neighborhoods, Race, and the Twenty-First-Century Housing Appraisal Industry.” *Sociology of Race and Ethnicity*. DOI: 10.1177/2332649218755178

*Week Seven—How Do We Consider Complexity in Regression Models?*

Tuesday October 9: But, is it really blank?

Topics: Lurking Quantitative Variables—Multiple Regression; Mediation

Thursday October 11: Did you consider blank?

Topics: Multiple Regression—Categorical Independent Variables

*Week Eight—What Have We Learned From These Models?*

Tuesday October 16: Fall Break No Class

Mid-Term Assessment due at 8 am



Thursday October 18: How do you determine substantive significance?

Topics: Standardized Coefficients and  $R^2$

Reading: Smiley, Kevin T., Junia Howell, and James R. Elliott “Disasters, Local Organizations and Poverty in the United States, 1998 to 2015.”

*Week Nine—How Do We Consider Divergent Effects?*

Tuesday October 23: How can we model intersectionality?

Topics: Categorical Interactions

Reading: Robnett, Belinda, and Cynthia Feliciano. 2011. "Patterns of Racial-Ethnic Exclusion by Internet Daters." *Social Forces* 89(3): 807-828.

Thursday October 25: How can we model nonlinear relationships?

Topics: Quantitative Interactions and Nonlinearity

Reading: Howell, Junia. "The Truly Advantaged: Examining the Effects of Privileged Places on Educational Attainment."

*Week Ten—How Do We Check And Revise Our Models?*

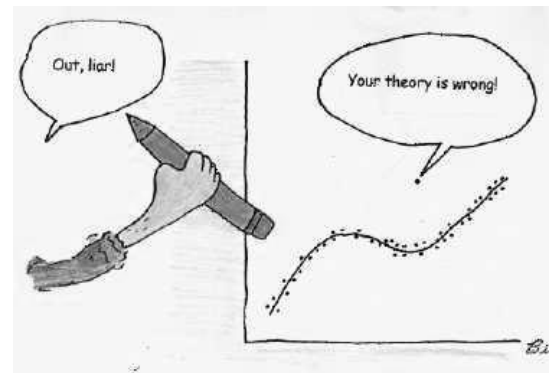
Tuesday October 30: How do we know if our model reflects the data?

Topics: Residuals, Form, Homoscedasticity, Outliers, Conditional Normality

Thursday November 1: How do we model non-continuous outcome variables?

Topics: Noncontagious Outcomes—Generalized Linear Models

Reading: Pager, Devah. 2003. "The Mark of a Criminal Record." *American Journal of Sociology*. 108(5): 937-975.

*Week Eleven—What to Do If Data on the Entire Population is Not Available?*

Tuesday November 6: How do we collect a representative sample?

Topics: Sampling

Thursday November 8: How do you infer estimates about a population from a sample?

Topics: Central Limit Theorem

Reading: Bobo, Lawrence D. and Victor Thompson. 2006. "Unfair by Design: The War on Drugs, Race, and the Legitimacy of the Criminal Justice System." *Social Research* 73: 445-472.

*Week Twelve—How Do We Infer About A Population From A Sample?*

Tuesday November 13: How do you estimate summary parameters from a sample?

Topics: Point Estimates

Thursday November 15: Is that association the sample or the population?

Topics: Association between Categorical Variables—Chi Square

### Week Thirteen—How Can We Differentiate Between Quantitate Variables?

Tuesday November 20: How can we examine statistical distinctions?

Topics: Association between Categorical and Quantitative Variables—T-test

Thursday November 22: Thanksgiving

Topics: Gratefulness. Thank those in your life for whom you are grateful.

Reading: Read something that gives you life and reminds you why you are in graduate school in the first place.

### Week Fourteen—How Do We Interpret Regression Conducted With Samples?

Tuesday November 27: How to evaluate statistical significance in bivariate regressions?

Topics: Bivariate Regression; P-Values

Reading: Hill, Mark E. 2002. "Skin Color and the Perception of Attractiveness Among African Americans: Does Gender Make a Difference?" *Social Psychology Quarterly* 65(1): 77-91.

Thursday November 29: How to evaluate statistical significance in multiple regressions?

Topics: Multiple Regression—Mediation; Interactions; Nonlinearity

Reading: Krysan, Maria, Mick P. Couper, Reynolds Farley and Tyrone A. Forman. 2009. "Does Race Matter in Preferences? Results Neighborhood from a Video Experiment." *American Journal of Sociology*. 115(2): 527-559

### Week Fifteen—How Do We Evaluate Our Own Models and Learning?

Tuesday December 4: How to examine model fit for sample data?

Topics: Multiple Regression—Diagnostics

Reading: Flores, René, and Edward Telles. 2012. "Social Stratification in Mexico: Disentangling Color, Ethnicity, and Class." *American Sociological Review* 77(3):486-494.

Thursday December 6: What have we learned this semester?

Topics: Comparing Pre- and Post-Course Assessments; Remaining Questions

Post-Course Test due at 8 am

Final Assessment—What Have You Learned This Semester?

Final Assessment due Tuesday December 11<sup>th</sup> at 8 am

