SOC 4015 & 5050: Quantitative Analysis

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Preface and Warning

This is the hardcopy version of the **Fall 2018** syllabus.

This `.pdf` version of the course syllabus is automatically created as part of the document generation process. It is meant for students who wish to keep a hardcopy of the course policies and planned course schedule. This may be particularly useful for honors and M.A. students who plan to continue their graduate education after SLU and hope to petition out of a basic statistics requirement. **Since it is automatically created, it is not optimized for easy use** - readers may notice formatting inconsitencies and stray characters that are a result of the markdown to LaTeX conversion process. The web version (located at https://slu-soc5050.github/syllabus/) is meant to be the version of the syllabus used for everyday reference during the semester. As such, this `.pdf` version will not be updated as the semester progresses should any changes to the course schedule be necessary.

Basics

Course Meetings

When: Mondays, 4:15pm to 7:00pm

Where: 3600 Morrissey (GeoSRI Lab)

Course Website

https://slu-soc5050.github.io

Chris's Information

Office: 1918 Morrissey Hall

Email: chris.prener@slu.edu

GitHub: `@chris-prener`

Slack: `@chris`

Office Hours:

- Mondays, 7:00pm to 7:30pm in 3600 Morrissey (GeoSRI Lab)
- Wednesdays, 10:00am to 12:00pm in 3600 Morrissey (GeoSRI Lab)

Hardcopy Syllabus

If you would like to keep a record of the syllabus, there is a `.pdf` download button () in the top toolboar. This may be particularly useful for honors and M.A. students who plan to continue their graduate education after SLU and hope to petition out of a basic statistics requirement. This document will contain a "snapshot" of the course policies and planned schedule as of the beginning of the semester but will not be subsequently updated. See the "Preface and Warning" on page 2 of the `.pdf` for additional details.

License

Part I

Syllabus

Section 1

Course Introduction

> Figures often beguile me, particularly when I have the arranging of them myself; in which case the remark attributed to Disraeli would often apply with justice and force: 'There are three kinds of lies: lies, damned lies, and statistics'.
>
> **Mark Twain (1906)**

This course provides an introduction to applied statistical analysis for both undergraduate and graduate students with an emphasis placed on statistical techniques that are most common in the sociological literature. The statistical techniques introduced include measures of central tendency and dispersion as well as measures of bi-variate association. Multivariate statistical analyses are also introduced along with essential skills for cleaning data, creating plots, and reporting results. While the examples may be specific to the social sciences, the theories and skills that are covered are broadly applicable across academic disciplines.

A Two Courses, One Goal

Students will quickly notice that this course has two numbers. SOC 4015 is the undergraduate section, and SOC 5050 is the graduate section. This quickly leads to anxiety for some students, who worry they have signed up for the wrong class (occasionally this is not misplaced anxiety - make sure you are enrolled in the correct section!) or who worry that they are taking a class that is not appropriate for their skill level. This class is designed for social science students with little to no background in statistics, `R`, and scientific computing more generally. For those students, the level is largely irrelevant - undergraduate and graduate students who have not been exposed to these ideas need to cover the same material.

Graduate students who take this class will have to do some additional work - the final project is more rigorous than the project that undergraduates will complete. Otherwise, the course is the same because what content students need is largely the same as well.

B Course Objectives

This course has four intertwined objectives. After completing the course, students will be able to:

1. *Fundamentals of inferential statistics*: Describe the use of various statistical tests, their requirements and assumptions, and their interpretation; execute these tests both by hand and programmatically using `R`.
2. *Fundamentals of data analysis*: Perform basic data cleaning and analysis tasks programmatically using `R` in ways that support high quality documentation and replication.

3. *Fundamentals of data visualization*: Create and present publication quality plots programmatically using `R` and `ggplot2`.
4. *Quantitative research synthesis*: Plan, implement (using `R`), and present (using `knitr` as well as the word pressing and presentation applications of your choice) a research project that uses linear regression to answer a research question.

C Core Resources

There are two core documents and resources for this course. This **Syllabus** sets out core expectations and policies for the course - i.e. what is *required* for this course. It includes a **Reading List** that contains topics, readings (both required and optional), and assignment due dates for each week. Once the semester starts, these documents will only be updated if a schedule change is necessary.

In addition to these documents, regular updates will be provided on the **course website**. Each lecture will have a corresponding page on the site that includes links to handouts, YouTube videos, sample code, and additional descriptions of concepts covered in class. If bugs or issues arise, they will be documented along with solutions here as well. Please check the website regularly for updates and new content.

D Readings

There are three books required for this course with an optional fourth book. Each book has been selected to correspond with one or more of the course objectives. The books are:

1. Diez, David M., Christopher D Barr, and Mine Cetinkaya-Rundel. 2015. *OpenIntro Statistics*. 3rd edition. OpenIntro.
   - This book is **not** available from the Bookstore. You can download a free copy or purchase a physical copy from Amazon (black & white or color).
2. Prener, Christopher. 2018. *Sociospatial Data Science*.
   - This book is **not** available from the Bookstore. You can access it as a webbook and download it as a `.pdf` here.
3. Wheelan, Charles. 2014. *Naked Statistics: Stripping the Dread from the Data*. New York, NY: W. W. Norton & Company.
   - This book can be purchased in the bookstore or online. Ebook versions are available.
4. Wickham, Hadley and Garrett Grolemund. 2017. *R for Data Science*. O'Reily Media: Sebastopol, CA.
   - This book book can be purchased in the bookstore, online, or accessed for free as a webbook.

I do not require students to buy physical copies of texts. You are free to select a means for accessing these texts that meets your budget and learning style. If eBook editions (e.g. Kindle, iBooks, `pdf`, etc.) of texts are available, they are acceptable for this course. All texts should be obtained in the edition noted above.

All readings are listed on the **Reading List** and should be completed before the course meeting on the week in which they are assigned. Full text versions of most readings not found in the books assigned for the course can be obtained using the library's Electronic Reserves system. The password for the Electric Reserves will be posted on Slack at the beginning of the semester.

E Services

Over the course of the semester, we'll use three web-based services. Each of these will require you to create an account with a username and password. GitHub will require you to enable two-factor authentication as well, and you should also enable this for Slack. I strongly recommend using a password manager.

All of these services have free tiers as well as premium features that require a monthly subscription. None of these premium features are required for this course - what you can access for free is all the functionality you will need!

E.1 GitHub

The majority of course content (sample code, documentation, and assignments) for this course will be made available using **GitHub**. GitHub is a website used by programmers, data analysts, and researchers to share computer code and projects. GitHub will also be used for assignment submission and feedback. In addition to providing us with platform for hosting course content, using GitHub will give you experience in some of the techniques that researchers use to conduct both open-source and collaborative research. GitHub is free to use but does have some premium features, which students can access for free through their Student Developer program. As I noted above, these premium features *are not required* for this course but are worth knowing about if you decide to continue using GitHub.

E.2 Slack

We will be utilizing the communication service **Slack** to stay in touch. Slack allows me to post announcements and updates about the course that you will receive alerts to. Any changes to our course GitHub repositories will also be posted there automatically. Slack will also provide us with a space to host virtual office hours. This allows students to monitor the types of questions and issues that are arising, and learn from each other's experiences. Slack can be accessed via a web browser or you can optionally install mobile as well as desktop applications available for both Windows and macOS.

F Software

There are two principle applications we'll be using this semester in addition to the services listed previously: RStudio and GitHub Desktop. Both of these are open-source applications that can be downloaded and used without cost. Both applications are available in our classroom, which you will have 24-hour access to throughout the semester.

F.1 `R` and RStudio

The primary tool we will use for data manipulation and analysis is the programming language `R`. `R` is open-source, freely available, and highly extensible analysis environment. We'll use RStudio as the "front end" for our analyses. RStudio makes it easier to write `R` code and to produce well documented analyses. Like the `R` programming language itself, RStudio is freely available.

Regardless if you are going to use RStudio on your computer or in our classroom, you have two options available for accessing the software:

1. Download `R`, RStudio, and the necessary packages manually and manage your own installation of these tools.
2. Access `R` and RStudio via Docker, a tool for creating virtual computing environments.

Students who are not sure whether they will use `R` past this semester, or who are less comfortable with computers, are urged to access `R` via Docker. Students who have more comfort with computers and who already are `R` users or plan to continue using `R` after the semester should consider managing their own installation of these tools.

Detailed instructions are available for both options on the course website.

F.2 GitHub Desktop

You will need another free application called GitHub Desktop. This program allows you to easily copy data from GitHub onto your computer. It also makes it easy to upload files like labs and problem sets to GitHub. If you have already used Git via the command line, you can continue to do so without utilizing GitHub Desktop.

F.3 Additional Software

You will need to use some type of word processing and presentation software. We'll use some specific `R` packages to produce output in Microsoft Word and Powerpoint formats, but these can be readily used with other programs (like Apple's iWork suite) without actually having Microsoft Office installed on your computer. Resources will also be made available for students who wish to use `R` and LaTeX together to produce research deliverables based on plain text files.

Section 2

Course Policies

My priority is that class periods are productive learning experiences for all students. In order to foster this type of productive environment, I ask students to follow a few general policies and expectations:[1]

1. Work each week to contribute to a positive, supportive, welcoming, and compassionate class environment.
2. Arrive to class on time and stay for the entire class period.
3. Silence *all* electronic devices before entering the classroom.
4. Do not engage in side conversations. This is disrespectful to the speaker (whether me or a classmate), and can affect the ability of others in the class to learn.
5. Be respectful of your fellow classmates. Do not interrupt when someone is speaking, monopolize the conversation, or belittle the ideas or opinions of others.
6. Complete the assigned readings for each class in advance, and come prepared with discussion points and questions.

The following sections contain additional details about specific course policies related to attendance, participation, electronic device use, student support, academic honesty, and Title IX.

A Compassionate Coursework

> Being around people who are different from us makes us more creative, more diligent and harder-working
>
> **Katherine Phillips, 2014**

The goal of this course is not just to impart knowledge related to statistics and data science, but to purposefully create an environment where all students feel welcome and supported even as they feel challenged intellectually.[2] This is especially important in a STEM course, where stress levels among students can be generally high. For those of you who have not had significant mathematical coursework since High School, or have not written computer code before, that could be enough to treat statistics coursework with apprehension. Feeling at least a little anxious about a course like this is understandable and to be expected.

In response to this stress, students sometimes develop "impostor syndrome", a feeling that academic gains are not the result of their own abilities and a fear that they will soon be "found out" (Cooper et al. 2018, Lindemann et al. 2016). This is reported with particular frequency by students from social groups traditionally underrepresented in STEM courses (Malone and Barabino 2008, Ong 2005, Ong et al. 2011). Taking these concerns seriously is imperative not just for reasons of academic retention and its future implications

[1] These general expectations were adopted from language originally used by Dr. Shelley Kimmelberg.

[2] Much of this approach to "compassionate coursework" is adopted from April Wensel's work at Compassionate Coding.

(Akinnawonu 2017, Diaz-Garcia et al. 2011, Hill et al. 2010, Nathan and Lee 2015), but also because we are called to do so by the University's mission both in our classrooms and in the wider world.

If you are feeling stressed about the coursework, feel like it is taking what seems like an excessive amount of time, or want to talk about strategies for problem solving, please reach out during class, office hours, or via Slack. This will be my tenth semester teaching research methods, and I have plenty of strategies for success in these courses that I am happy to share!

A.1 Code of Conduct

While I take a leading role in fostering a welcoming and supportive environment, I need each student's help in making that environment a reality. To that end, you should familiarize themselves with Contributor Covenant's Code of Conduct, which is increasingly included in open source projects and is included with each lecture repository on GitHub. The Code of Conduct lays out expectations for how all students should to conduct themselves. I want to emphasize one piece here in the syllabus, which includes concrete examples of things each student *can* and *should* do to help create a compassionate class atmosphere:

> Examples of behavior that contributes to creating a positive environment include: using welcoming and inclusive language, being respectful of differing viewpoints and experiences, gracefully accepting constructive criticism, focusing on what is best for the [class], [and] showing empathy towards other community members

The degree to which students are positively engaged with our class along these lines will be reflected in participation grades given at the mid and end points of the semester. If you feel that a colleague's conduct is not in line with creating compassionate coursework experience, you are encouraged to speak to me. I will treat all discussions with discretion and will work with you to make a plan for addressing any concerns you might have.

A.2 Harrassment and Title IX

While I have every expectation that each member of the Saint Louis University community is capable and able to treat community members with dignity and respect, I fully recognize that there may be instances where students fall short of that expectation. Students should generally be aware that:

> Saint Louis University prohibits harassment because of sex, race, color, religion, national origin, ancestry, disability, age, sexual orientation, marital status, military status, veteran status, gender expression/identity, genetic information, pregnancy, or any other characteristics protected by law.

All students should also familiarize themselves with Saint Louis University's polices on bias, discrimination, harassment, and sexual misconduct. In particular, they should be aware of policies on harassment and sexual misconduct:

> Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g. sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you to report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member must notify SLU's Title IX Coordinator, Anna R. Kratky (DuBourg Hall, Room 36; anna.kratky@slu.edu); 314-977-3886) and share the basic facts of your experience with her. The Title IX coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.
>
> If you wish to speak with a confidential source, you may contact the counselors at the University Counseling Center at 314-977-TALK.

Instances of abusive, harassing, or otherwise unacceptable behavior should be reported either directly to the instructor or to the University Administration. Consistent with the above policies, I will forward all reports of inappropriate conduct to the Title IX Coordinator's office or to the Office of Diversity and Affirmative Action. Please be aware that University policies may require me to forward information about the identity of any students connected to the disclosure.

Please also be aware that communications over various online services, including (but not limited to) Slack, GitHub, and Google Apps, are covered by this policy.

B Attendance and Participation

Attendance and participation are important components of this course since we only meet once a week. Students are expected to attend all class sessions; missing even one class can create a significant roadblock for many students. If you cannot attend class or arrive on time because of a personal illness, a family issue, jury duty, an athletic match, or a religious observance, you must contact me **beforehand** to let me know. I may ask for more information, such as a note from a physician, a travel letter from Athletics, or other documentation for absences.

A penalty will not be applied to your first unexcused absence or late arrival. Any absences or late arrivals beyond the first will result in no credit (for an absences) or only partial credit (for a late arrival) being earned for that day's participation grade.

Making up missed classes are your responsibility. I do post slide decks on the course website, but my slides are intended only to serve as references. This semester, I am also **experimenting** with Tegrity recordings for this course. Recordings will typically be posted within 24-hours of class and will be linked to through the course website.

The academic literature (see this recent article for a nice overview) suggests that the impact of lecture capture tools like Tegrity is mixed at best. Students tend to rate their experience with lecture capture far more positively than faculty do. Students who continue to attend class regularly and use lecture recordings as part of an *active* approach to studying and filling in specific areas of their notes may benefit from recordings. Students who use recordings as a replacement for attending class do not benefit from the recordings.

Please also note that lectures and discussions cannot be recorded by any means (e.g. audio or video recordings, or photographs) without my permission.

C Communication

Slack and email are my preferred methods of communication.

I am on Slack during workday hours, though I may be "away" during meetings and while I teach my other class. I also may have limited availability on Tuesdays, a day that I am not typically on-campus. I will also monitor Slack during weekday evening hours and will respond to messages if I am able. Likewise, I dedicate time to email responses each workday, meaning that my response time is typically within 24 hours during the workweek. Please use your SLU email account when emailing me.

For both email and Slack, if you have not received a response from me after 48 hours (or by end of business on Monday if you messaged me over the weekend), please follow-up to ensure that your message did not get lost in the shuffle.

All messages regarding course updates, assignments, and changes to the class schedule, including cancellations, will be posted on the `_news` channel in Slack. Changes to the class schedule, including cancellations, will also sent to your SLU email account. It is imperative that you check both Slack and your SLU email account regularly.

Please also ensure that all concerns or questions about your standing in the course are directed to me immediately. Inquires from parents, SLU staff members, and others will not be honored.

D Electronic Devices

During class periods, students are asked to refrain from using electronic devices (including cell phones) for activities not directly related to the course. For this class, I expect students to limit their use of electronic devices to accessing course software, readings, and notes.

There is evidence that using electronic devices during lectures results in decreased retention of course content (Hembrooke and Gay 2003) and lower overall course performance (Fried 2008). Students who are not using a laptop but are in direct view of another student's laptop also have decreased performance in courses (Sana et al. 2013). Conversely, students who take notes the "old fashioned way" have better performance on tests compared to students who take notes on laptops (Mueller and Oppenheimer 2014).

I therefore ask students to be conscious of how they are using their devices, the ways such use impacts their own learning, and the effect that it may have on others around them. I reserve the right to alter this policy if electronic device use becomes problematic during the semester.

E Student Support

E.1 Basic Needs

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live, you are urged to contact the Dean of Students for support. Likewise if you have concerns about your mental or physical health needs, or lack access to health care services you require, you should contact either the Dean of Students, Student Health Services, or the University Counseling Center.[3]

If you feel comfortable doing so, please discuss any concerns you might have with me. Doing so is particularly important if believe your performance in this course might be affected. I will do my best to work with you to come up with a plan for successfully completing the course and, if need be, work with you to identify on-campus resources. I will treat all discussions with discretion, though please be aware that certain situations, including disclosures of sexual misconduct or self harm, must be reported by faculty to the appropriate University office.

E.2 Academic Accommodations

If you meet the eligibility requirements for academic accommodations through the Office of Disability Services (located within the Student Success Center) *and you wish to use them for this class*, you should arrange to discuss your needs with me after the first class. All discussions of this nature are treated confidentially, and I will make every effort to work with you to come up with a plan for successfully completing the course requirements. Please note that I will not provide accommodations to students who are not working with Disability Services, and that I cannot retroactively alter assignments or grades if they have already been completed.

E.3 Writing Services

I also encourage you to take advantage of the University Writing Services (UWS) program. Getting feedback benefits writers at all skill levels and the quality of your writing will be reflected in assignment grades. The

[3]This language is adopted from text written by Dr. Sarah Goldrick-Rab.

UWS has trained writing consultants who can help you improve the quality of your written work. UWS's consultants are available to address everything from brainstorming and developing ideas to crafting strong sentences and documenting sources.

E.4 Student-athletes

If you are a student-athlete who is in-season, you should discuss your game schedule with me after the first class and share your travel letter with me as soon as you have a copy. You are reminded that games and tournaments are not excuses for failing to complete assignments, and that NCAA rules prohibit student-athletes from missing classes for practice. Low grades that jeopardize eligibility must be addressed immediately by you, not by a coach or academic coordinator.

F Academic Honesty

All students should familiarize themselves with Saint Louis University's policies concerning cheating, plagiarism, and other academically dishonest practices:

> Academic integrity is honest, truthful and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care, and community service via which SLU embodies its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern.

Any work that is taken from another student, copied from printed material, or copied the internet without proper citation is expressly prohibited. Note that this includes all computer code, narrative text, and documentation written for class assignments - each student is expected to author and de-bug their notebooks and accompanying files.

All relevant assignments should include in-text citations and references formatted using the American Sociological Association (ASA) style guidelines. Any student who is found to have been academically dishonest in their work risks failing both the assignment and this course.

Section 3

Assignments and Grading

This section provides general details on the different types of assignments for this course. It also contains policies for submitting work, reciving feedback, and late work.

A Assignments

Your grade for this course will consist of a number of different assignments on which points may be earned. Each category of assignment is described below.

A.1 Attendance and Participation

Attendance and participation are worth **10%** of your final grade.

Both attendance and participation are critically important aspects of this class. The class participation grade will be based on (a) attendance, (b) level of engagement during lectures and labs, (c) level of engagement on Slack, and (d) the completion of other exercises including "entry" and "exit" tickets, the student information sheet, a pre-test, and an end of the semester course evaluation.

Each of these elements is assigned a point value and assessed using a scale that awards full, partial, or no credit. Your participation grade will be split, with 50 points (5% of your final grade) for the first half of the semester (through Lecture-08) and another 50 points (5%) for the second half. Since the number of points awarded for participation are variable, the total number of points earned for each half will be converted to a 0 to 50 scale.

I provide the final number of points earned for each half of the course. If you would like a more detailed breakdown of your participation grade, please reach out and I will provide one.

A.2 Lecture Preps

Lecture preps are worth **6%** of your final grade.

Before each course meeting, you will need to complete all assigned readings. For a part of these readings, you will also need to complete a short exercise. These prep exercises are designed to get you ready for the week's material by exposing you to basic, guided examples before class begins. Instructions for the lecture

preps will be posted in the lecture repositories on **GitHub** and will be linked to from the lecture pages on the **course website**. The instructions will also detail the deliverables to be submitted to demonstrate completion of each assignment.

For many of the lecture preps, I will post a YouTube video of me completing the exercise and narrating the process. These videos will be embedded in the lecture pages on the **course website**. You should follow along with the video and use it as a guide for completing the exercise yourself. I will also post replication files that detail the process and, if relevant, the code for completing the lecture prep. Like the instructions, these will be posted in the lecture repositories on **GitHub**.

There will be a total of fifteen lecture preps over the course of the semester, each of which is worth 4 points (0.4% of your final grade). Lecture preps are graded using the "check" grading system. Since replication files are posted, feedback for lecture preps is not generally returned and I will only respond with the number of points awarded if you do not earn full credit.

A.3 Lab Exercises

Labs are worth **15%** of your final grade.

Each course meeting (except the first) will include time dedicated to practicing the techniques and applying the theories described during the day's lecture. These exercises will give you an opportunity to practice skills that correspond with the first four course objectives. Instructions for the labs will be posted in the lecture repositories on **GitHub** and will be linked to from the lecture pages on the **course website**. The instructions will also detail the deliverables to be submitted to demonstrate completion of each assignment. Replication files are also provided in the lecture repositories on **GitHub**.

Lab exercises will be completed in small workgroups, though each student is expected to turn in the required deliverables. We will assign students to workgroups and may shuffle their composition over the course of the semester. Completing a lab entails not just successfully submitting the required deliverables but also actively contributing to the group discussions that help to produce them.

There will be a total of fifteen lab exercises over the course of the semester, each of which is worth 10 points (1.5% of your final grade). Lab exercises are graded using the "check" grading system. Since replication files are posted, feedback for labs is not generally returned and I will only respond with the number of points awarded if you do not earn full credit.

A.4 Problem Sets

Problem sets are worth **28%** of your final grade.

Problem sets will require students to draw on a variety of skills, including cleaning data, performing statistical analyses, producing plots, and reporting results. They are designed to assess your progress with the first four course objectives. Instructions for the problem sets will be posted in the lecture repositories on **GitHub** and will be linked to from the lecture pages on the **course website**. The instructions will also detail the deliverables to be submitted to demonstrate completion of each assignment. Replication files that illustrate my approach to each problem set will be posted on **GitHub** in the `Replications` repository once all students have submitted their problem sets.

There will be a total of eight problem sets over the course of the semester, each of which is worth 35 points (3.5% of your final grade). Each Problem Set will include a simple rubric describing how each problem set is evaluated. A key aspect of these assignments is not only demonstrating comfort with a particular set of statistics skills, but also demonstrating and evolving in your analysis development, programming, and

analytical skills as well. The weight given to quality of your process and code will increase as the semester progresses.

A.5 Final Project

The final project is worth, in total, **41%** of your final grade. Depending on your section, it will be broken down into a variety of assignments, each of which has their own point value. See below for details.

The final project corresponds with the fourth learning outcome. It will be organized slightly differently depending on which section you are enrolled in. Specific instructions will be provided in the **final project guide**, and updates will be posted on the **course website's final project page**.

In brief, all students will select a topic and submit their topic by Lecture-03 (**September 10th**) as an "Issue" in their individual **GitHub** assignments repository. Groups will be formed based on topic area. These groups will be used for support throughout the semester as well as peer review of particular pieces of the project itself.

As work progresses, there will be a number of **waypoints** where students will need to submit updates on their progress. Waypoints beyond the memo submission are as follows:

- Lecture-05 (**September 24th**) - Progress report from each student due as a GitHub issue in each student's final project repository
- Lecture-08 (**October 15th**) - Progress report from each student due as a GitHub issue in each student's final project repository
- Lecture-11 (**November 5th**) - Draft materials due in each student's final project repository
- Lecture-12 (**November 12th**) - Peer reviews due to group members as a GitHub issue in each student's final project repository
- Lecture-15 (**December 3rd**) - Progress report from each student due as a GitHub issue in each student's final project repository
- Final Presentations (**December 17th**) - Response to reviewer due in the GitHub issue opened by the reviewer

Deliverables for each waypoint are described in the **final project guide**. All waypoints are graded using the "check" grading system. Final materials will be due on **December 17th** (during Finals Week), when we will hold a "research conference" in Morrissey Hall. During our conference, each student will present their results using PowerPoint (or similar). Final deliverables differ by course section.

A.5.1 SOC 4015

If you are enrolled in SOC 4015, you will need to pick a continuous variable from the 2012 General Social Survey to use as your main study variable. You will then clean the data and conduct an analysis of this variable using a variety of statistical tests covered this semester. Your final results will be presented as a PowerPoint presentation during finals week.

A.5.2 SOC 5050

If you are enrolled in SOC 5050, you will need to identify an appropriate data set that contains a continuous variable that you can use as your main study variable. You will then clean the data and conduct an analysis of this variable using a variety of statistical tests covered this semester. Your final results will be presented as a PowerPoint presentation during finals week.

Table 3.1: SOC 4015 Final Project Breakdown

Assignment	Points	Quantity	Total
Memo	20 pts	x1	20 pts
Waypoints	20 pts	x6	120 pts
Draft Code & Docs	20 pts	x1	20 pts
Draft Slides	20 pts	x1	20 pts
Final Code & Docs	100 pts	x1	100 pts
Final Slides	100 pts	x1	100 pts
Final Presentation	30 pts	x1	30 pts

Table 3.2: SOC 5050 Final Project Breakdown

Assignment	Points	Quantity	Total
Memo	10 pts	x1	10 pts
Waypoints	10 pts	x7	70 pts
Annotated Bibliography	15 pts	x1	15 pts
Draft Code & Docs	15 pts	x1	15 pts
Draft Slides	15 pts	x1	15 pts
Draft Paper	15 pts	x1	15 pts
Final Code & Docs	35 pts	x1	35 pts
Final Slides	100 pts	x1	100 pts
Final Presentation	35 pts	x1	35 pts
Final Paper	100 pts	x1	100 pts

You will also have to produce a 5,000 word final journal article manuscript that places your project in the relevant social science literature, presents your data and methods, and provides a summary and discussion of your results. An annotated bibliography will be due at Lecture-07 (**October 8th**) and the draft paper will be due at Lecture-12 (**Novemeber 12th**; note that this is one week *after* the other draft materials). Peer reviews of papers will be due at Lecture-13 (**Novemeber 19th**).

B Submission and Late Work

B.1 Assignment Submission

Copies of all assignment requested deliverables should be uploaded to your private assignments repository on GitHub before class on the day that the assignments are due. All assignments will contain details on required deliverables.

The GitHub submission policy is in place because it facilitates clear, easy grading that can be turned around to you quickly. Submitting assignments in ways that deviate from this policy will result in a late grade (see below) being applied in the first instance and a zero grade for each subsequent instance.

B.2 Licensing of Student Work

All assignment repositories are licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. This license explicitly gives you copyright to all work you create for this course. The license gives Chris permission to copy your work (such as for grading) and to

Table 3.3: SOC 4015 and 5050 Points Breakdown

Assignment	Points	Quantity	Total	Percent
Participation	50 pts	x2	100 pts	10%
Lecture Preps	4 pts	x15	60 pts	6%
Labs	10 pts	x5	150 pts	15%
Problem Sets	35 pts	x8	280 pts	28%
Final Project	410 pts	x1	410 pts	41%

re-use your work later for non-commercial purposes (such as in-class examples) so long as you are given credit for it. However, your work cannot be used for monetary gain (such as in a textbook) and derivative works based on your work are prohibited.

The syllabus agreement at the end of the Student Information Sheet includes an acknowledgement of this licensing arrangement. If you have questions about this, please contact Chris before submitting the form.

B.3 Late Work

Once the class begins, any assignments submitted will be treated as late. Assignments handed in within 24-hours of the beginning of class will have 15% deducted from the grade. I will deduct 15% per day for the next two 24-hour periods that assignments are late. After 72 hours, I will not accept late work. If you cannot attend class because of personal illness, a family issue, jury duty, an athletic match, or a religious observance, you must contact me beforehand to discuss alternate submission of work.

C Extra Credit

From time to time I may offer extra credit to be applied to your final grade. I will only offer extra credit if it is open to the entire class (typically for something like attending a lecture or event on-campus). If I offer extra credit, I will typically require you to submit a short written summary of the activity within a week of the event to obtain the credit. When offered, extra credit opportunities cannot be made-up or substituted if you are unable to attend the event.

D Grading

Grades will be included with assignment feedback, which will be disseminated through Github's **Issues** tool. At midterms, Lecture 15, and finals, I will upload a summary of all assignment grades to a new **Issue** on GitHub.

All grades that use a "check" system (the lecture preps, labs, and some aspects of the final project) will be calculated using the following approach. A "check-plus" represents excellent work and will get full credit. A "check" represents satisfactory work and will get 85% of the points available for that assignment. A "check-minus" represents work that needs substantial improvement and will get 75% of the points available for that assignment.

I use a point system for calculating grades. The following table gives the weighting and final point totals for all assignments for this course:

All feedback will include grades that represent number of points earned. If you want to know your percentage on a particular assignment, divide the number of points earned by the number of points possible and then multiply it by 100.

Table 3.4: Course Grading Scale

GPA	Letter	Percent	GPA	Letter	Percent
4.0	A	93.0% - 100%	2.3	C+	77.0% - 79.9%
3.7	A-	90.0% - 92.9%	2.0	C	73.0% - 76.9%
3.3	B+	87.0% - 89.9%	1.7	C-	70.0% - 72.9%
3.0	B	83.0% - 86.9%	1.0	D	63.0% - 69.9%
2.7	B-	80.0% - 82.9%	0.0	F	$< 63.0\%$

Final grades will be calculated by taking the sum of all points earned and dividing it by the total number of points possible (1,000). This will be multiplied by 100 and then converted to a letter grade using the following table:

Borderline grades (i.e. a grade within half a percentage point of the next highest letter grade) *will* be rounded up before final grade submission at the end of the semester. A grade of 89.6% would therefore be submitted to SLU as an "A-" while a grade of 89.4% would be submitted to SLU as a "B+". The final grade report will include both the original letter grade and the rounded letter grade if applicable.

No chances will be given for revisions of poor grades. Incomplete grades will be given upon request only if you have a "C" average and have completed at least two-thirds of the assignments. You should note that incomplete grades must be rectified by the specified deadline or they convert to an "F".

Part II

Reading List

Section 4

Course Schedule

The following is a high-level schedule that details the general topic covered by each lecture.

A Planned Online Lectures

This semester, we have two classes that fall on official university holidays: Labor Day (Lecture-02, **September 3rd**) and Fall Break (Lecture-09, **October 22nd**). These weeks will have materials assigned for them, which will include lectures posted on YouTube. These lectures will be shorter than typical in-class lectures. Students should view these lectures during that week and complete the associated readings and lab exercises. Videos will be embedded in the lecture pages on the **course website**.

B Class Progression

Each lecture will be broken down roughly the same way. Students are expected to arrive having already completed the previous week's work as well as the assigned readings and lecture prep. Class will begin with any relevant "front matter" including follow-up from the previous weeks and relevant announcements. When assigned, we will then segue into a discussion of the Wheelan text before spending the majority of class focused on the day's main topic, which will typically be related to one or more of the first three learning outcomes. Around 6:00pm, we will take a short break. Most classes will end with time dedicated to working through the lab exercise. After class, students are expected to finish the lab and, if necessary, the assigned problem set as well.

C Scheduling Notes

The lecture schedule may change as it depends on the progress of the class. However, you must keep up with the reading assignments. In the event of a cancellation due to weather or another disruption, I may alter the lecture schedule.

Since this course only meets once per week, cancellations are particularly disruptive. I will make every effort to schedule make-up classes at a time that works for at least a portion of the class. These class sessions will be recorded and made immediately available using YouTube for students who are unable to attend the make-up class. All students will be responsible for either attending the make-up class or watching the lecture as well as completing all readings, lab assignments, and problem sets for make-up classes.

Table 4.1: SOC 4015 and 5050 Course Overview

Lecture	Date	Topic
	prior to August 27^th^	Course Preview
01	August 27^th^	Course Introduction
02	September 3^rd^	Working with Data
03	September 10^th^	Describing Distributions
04	September 17^th^	Probability
05	September 24^th^	The Distribution of Random Variables
06	October 1^st^	Foundations for Inference
07	October 8^th^	Difference of Means (Part 1)
08	October 15^th^	Difference of Means (Part 2)
09	October 22^nd^	Working with Factors
10	October 29^th^	Correlations (Part 1)
11	November 5^th^	Correlations (Part 2)
12	November 12^th^	OLS Regression (Part 1)
13	November 19^th^	OLS Regression (Part 2)
14	November 26^th^	OLS Regression (Part 3)
15	December 3^rd^	Analysis of Variance
16	December 10^th^	Chi-Squared
	December 17^th^	Final Presentations

Section 5

Lecture Schedule

Select a lecture from the menu to see details about topics, readings, and assignments. Additional notes and links to course materials are available through the course website, which has dedicated pages for each lecture. Links to these pages are included on each lecture's reading list entry.

The primary readings will be referred to with an abbreviation each time they appear in the reading list:

Course Preview

View on Course Website

Topics

- **Data Analysis:** Plain Text Science and Analysis Development

Videos

Required

1. Wickham, Hadley. 2018. "You can't do data science in a GUI." Presented at Loyola University, March 7, Chicago, IL. (watch only through 18:30; Link)
2. Parker, Hilary. 2017. "Opinionated analysis development." Presented at rstudio::conf, Orlando, FL. (Link)

Table 5.1: SOC 4015 and 5050 Primary Readings

Abbreviation	Citation
OpenIntro	Diez, David M., Christopher D. Barr, and Mine Cetinkaya-Rundel. 2012. *OpenIntro Statistics.* CreateSp
R4DS	Wickham, Hadley and Garrett Grolemund. 2016. *R for data science: import, tidy, transform, visualize, a
SSDS	Prener, Christopher. 2018. *Sociospatial Data Science.*
Wheelan	Wheelan, Charles. 2013. *Naked statistics: Stripping the dread from the data.* New York, NY: WW Nort

Readings

Required

- Healy, Kieran. 2018. "Introduction." In *The plain person's guide to plain text.* (Link)

Optional

- Parker Hilary. 2017. "Opinionated analysis development." *PeerJ Preprints* 5:e3210v1. (Link)
- Thieme, Nick. 2018. "R generation."" *Significance* 15(4):14-19. (Link)

Assignments

Due Before *Next* Class

- Lecture Prep 01 - Course Onboarding
- Lecture Prep 02 - Course Preview

Lecture-01: Course Introduction

View on Course Website

Topics

- **Syllabus Overview**
- **Inferential Statistics:** Defining quantitative data
- **Data Analysis:** Intro to `R` and RStudio
- **Quantitative Research:** What is a workflow?

Readings

Required

- OpenIntro: Chapter 1, pages 7-26 (ER)
- R4DS:
  - *Print* - Preface ***or***
  - *Web* - Chapter 1 (Link)
- SSDS - Chapters 1 through 5 (Link)
- Wheelan - Chapter 1 (ER)

Optional

- Wilson, Greg, Jennifer Bryan, Karen Cranston, Justin Kitzes, Lex Nederbragt, and Tracy K. Teal. 2017. "Good enough practices in scientific computing."" *PLoS computational biology* 13(6):e1005510. (ER)

Assignments

Due Before Class

- *From Prior Lecture:* Lecture Prep 01 and Lecture Prep 02

Due Before ***Next*** Class

- *none*

Lecture-02: Working with Data

View on Course Website

Topics

- **Data Visualization:** An Introduction to `ggplot2`
- **Data Analysis:** Reading Data, An Introduction to Data Wrangling
- **Quantitative Research:** Structuring Notebooks

Readings

Required

- Healy, Kieran. 2018. *Data Visualization: A practical introduction.*
  - Chapter 1 - "Look at data" (Link)
  - Chapter 2 - "Get started" (Link)
- R4DS:
  - *Print* - Chapters 1, 2, and 3 ***or***
  - *Web* - Chapters 2 through 5 (Link)

Notes on R4DS: For the "Data visualization"" chapter, read up to the section on "Facets". For the "Data transformation" chapter, read up through the section on "Group summaries with `summarise()`".

Assignments

Due Before Class

- *none*

Due Before ***Next*** Class

- *From This Lecture:* Lab 01 - Initial Data Cleaning
- *For Final Project:* Memo
- *For Next Lecture:* Lecture Prep 03 - Interpreting Plots

Lecture-03: Describing Distributions

View on Course Website

Topics

- **Inferential Statistics:** Mean, Median, Mode, Variance, & Standard Deviation
- **Data Visualization:** Exploratory Data Analysis
- **Data Analysis:** Describing Distributions
- **Quantitative Research:** Getting Organized

Readings

Required

- Healy, Kieran. 2018. "Keep a Record" In *The plain person's guide to plain text.* (Link)
- OpenIntro: Chapter 1, pages 26-50
- SSDS: Chapter 8 (Link)
- R4DS:
  - *Print* - Chapters 4 through 6 ***or***
  - *Web* - Chapters 6 through 8 (Link)
- Wheelan - Chapters 2 and 3

Assignments

Due Before Class

- *From Prior Lecture:* Lab 01 - Initial Data Cleaning
- *For Final Project:* Memo
- *For This Lecture:* Lecture Prep 03 - Interpreting Plots

Due Before ***Next*** Class

- *From This Lecture:*
  - Lab 02 - Describing Distributions
  - Problem Set 01 - Cleaning and Describing Data
- *For Next Lecture:* Lecture Prep 04 - What are the chances?

Lecture-04: Probability

View on Course Website

Topics

- **Inferential Statistics:** Probability and Bayes' Theorem

Readings

Required

- OpenIntro: Chapter 2, pages 76-102
- Silver, S. (2012). Less and Less and Less Wrong. In *The Signal and the Noise* (pp. 232-261). New York, NY: Penguin Books.
- Wheelan: Chapters 5, 5.5, and 6

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 02 - Describing Distributions
  - Problem Set 01 - Cleaning and Describing Data
- *For This Lecture:* Lecture Prep 04 - What are the chances?

Due Before ***Next*** Class

- *For This Lecture:* Lab 03 - Probability
- *For Next Lecture:* Lecture Prep 05 - The Normal Approximation

Lecture-05: The Distribution of Random Variables

View on Course Website

Topics

- **Inferential Statistics:** Bionomial, Poisson, and Gaussian Distributions; Testing for Normality
- **Data Visualization:** Normality Plots
- **Data Analysis:** Calculated Probabilities for Random Variables; Normality Tests in `R`

Readings

Required

- OpenIntro: Chapter 3

Notes: Pay closest attention to the sections on the normal, binomial, and Poisson distributions.

Assignments

Due Before Class

- *From Prior Lecture:* Lab 03 - Probability
- *From Final Project:* Meeting report submitted in each group's Slack channel
- *For This Lecture:* Lecture Prep 05 - The Normal Approximation

Due Before *Next* Class

- *For This Lecture:*
  - Lab 04 - Working with Random Variables
  - Problem Set 02 - Probability and Normality
- *For Next Lecture:* Lecture Prep 06 - The Law of Averages

Lecture-06: Foundations for Inference

View on Course Website

Topics

- **Inferential Statistics:** Standard Error, Confidence Intervals, and the Central Limit Theorem

Readings

Required

- OpenIntro: Chapter 4, pp. 168-203
- Wheelan: Chapters 8 and 9

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 04 - Working with Random Variables
  - Problem Set 02 - Probability and Normality
- *For This Lecture:* Lecture Prep 06 - The Law of Averages

Due Before *Next* Class

- *For This Lecture:*
  - Lab 05 - Foundations for Inference
  - Problem Set 03 - Foundations for Inference
- *For Next Lecture:* Lecture Prep 07 - Tibbles

Lecture-07: Difference of Means (Part 1)

View on Course Website

Topics

- **Inferential Statistics:** One and Two Sample T-Tests
- **Data Analysis:** More Data Wrangling - Reshaping Data Theory

Readings

Required

- OpenIntro: Chapter 26, pp. 488-500
- R4DS:
  - *Print* - Chapters 7 and 9 ***or***
  - *Web* - Chapters 10 and 12 (Link)

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 05 - Foundations for Inference
  - Problem Set 03 - Foundations for Inference
- *For This Lecture:* Lecture Prep 07 - Tibbles

Due Before Class, ***SOC 5050 only***

- *From Final Project:* Annotated bibliography due

Due Before ***Next*** Class

- *For This Lecture:* Lab 06 - T-Tests by Hand and Reshaping Data
- *For Next Lecture:* Lecture Prep 08 - `knitr` Basics

Lecture-08: Difference of Means (Part 2)

View on Course Website

Topics

- **Data Visualization:** Plotting T-Test Results
- **Data Analysis:** One and Two Sample T-Tests in `R`; Effect Sizes and Power Analyses for T-Tests
- **Quantitative Research:** Getting Started with `knitr`

Readings

Required

- *TBA* from Yihui Xie, J. J. Allaire, and Garrett Grolemund. 2018. *R Markdown: The Definitive Guide.* New York, NY: CRC Press. (Link)

Assignments

Due Before Class

- *From Prior Lecture:* Lab 06 - T-Tests by Hand and Reshaping Data
- *From Final Project:* Progress report from each student due as a GitHub issue in each student's final project repository
- *For This Lecture:* Lecture Prep 08 - `knitr` Basics

Due Before ***Lecture-10***

- *For This Lecture:*
  - Lab 07 - T-Tests and Reshaping Data in `R`
  - Problem Set 04 - Difference of Means Testing

Lecture-09: Working with Factors

View on Course Website

Topics

- **Data Analysis:** Working with Factors

Readings

Required

- R4DS:
  - *Print* - Chapter 12 ***or***
  - *Web* - Chapter 15 (Link)

Assignments

Due Before Class

- *none*

Due Before ***Next*** Class

- *From Last Lecture:*
  - Lab 07 - T-Tests and Reshaping Data in `R`
  - Problem Set 04 - Difference of Means Testing
- *From This Lecture:* Lab 08 - Factors
- *For Next Lecture:* Lecture Prep 09 - Interpreting Scatterplots

Lecture-10: Correlations (Part 1)

View on Course Website

Topics

- **Inferential Statistics:** Pearson's r
- **Data Visualization:** Interpreting Scatterplots
- **Data Analysis:** Public Polling
- **Quantitative Research:** More with `knitr`

Readings

Required

- OpenIntro: Chapter 7, pp. 331-340
- Wheelan: Chapters 4 and 10
- *TBA* from Yihui Xie, J. J. Allaire, and Garrett Grolemund. 2018. *R Markdown: The Definitive Guide.* New York, NY: CRC Press. (Link)

Assignments

Due Before Class

- *From Lecture-08:*
  - Lab 07 - T-Tests and Reshaping Data in `R`
  - Problem Set 04 - Difference of Means Testing
- *From Last Lecture:* Lab 08 - Factors
- *For This Lecture:* Lecture Prep 09 - Interpreting Scatterplots

Due Before ***Next*** Class

- *For This Lecture:* Lab 09 - Pearson's r by Hand
- *For Next Lecture:* Lecture Prep 10 - Creating Scatterplots with `ggplot2`

Lecture-11: Correlations (Part 2)

View on Course Website

Topics

- **Data Visualization:** Creating Scatterplots
- **Data Analysis:** Pearson's r in `R`; Power Analyses for Correlations
- **Quantitative Research:** LaTeX Equations

Readings

Required

- Yihui Xie, J. J. Allaire, and Garrett Grolemund. 2018. "Math expressions." In *R Markdown: The Definitive Guide.* New York, NY: CRC Press. (Link)

Assignments

Due Before Class

- *From Prior Lecture:* Lab 09 - Pearson's r by Hand
- *From Final Project:* Draft materials due in each student's final project repository
- *For This Lecture:* Lecture Prep 10 - Creating Scatterplots with `ggplot2`

Due Before ***Next*** Class

- *For This Lecture:*
  - Lab 10 - Pearson's r in `R`
  - Problem Set 05 - Correlations and Scatterplots
- *For Next Lecture:* Lecture Prep 11 - The Regression Equation in LaTeX

Lecture-12: OLS Regression (Part 1)

View on Course Website

Topics

- **Inferential Statistics:** Regression Theory and Bivarite Regression
- **Data Analysis:** Bivariate Regression in `R`
- **Quantitative Research:** Regression Equations in LaTeX

Readings

Required

- OpenIntro: Chapter 7, pp. 340-355
- Wheelan: Chapter 11

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 10 - Pearson's r in `R`
  - Problem Set 05 - Correlations and Scatterplots
- *From Final Project:* Peer reviews due to group members as a GitHub issue in each student's final project repository

- *For This Lecture:* Lecture Prep 11 - The Regression Equation in LaTeX

Due Before Class, *SOC 5050 only*

- *From Final Project:* Draft paper due

Due Before *Next* Class

- *For This Lecture:*
  - Lab 11 - Bivariate Regression in `R`
  - Problem Set 06 - Bivariate Regression in `R`
- *For Next Lecture:* Lecture Prep 12 - Citations with `knitr` and LaTeX

Lecture-13: OLS Regression (Part 2)

View on Course Website

Topics

- **Inferential Statistics:** Multivariate Regression Theory
- **Data Analysis:** Multivariate Regression in `R`
- **Quantitative Research:** Citing Sources with `knitr` and LaTeX

Readings

Required

- OpenIntro: Chapter 8, pp. 372-381
- Yihui Xie, J. J. Allaire, and Garrett Grolemund. 2018. "Inline formatting" In *R Markdown: The Definitive Guide.* New York, NY: CRC Press. (Link)

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 11 - Bivariate Regression in `R`
  - Problem Set 06 - Bivariate Regression in `R`
- *For This Lecture:* Lecture Prep 12 - Citations with `knitr` and LaTeX

Due Before Class, *SOC 5050 only*

- *From Final Project:* Peer reviews of papers due to group members as a GitHub issue in each student's final project repository

Due Before *Next* Class

- *For This Lecture:*
  - Lab 12 - Multivariate Regression in `R`
  - Problem Set 07 - Multivariate Regression in `R`
- *For Next Lecture:* Lecture Prep 13 - Regression Tables with `knitr`

Lecture-14: OLS Regression (Part 3)

View on Course Website

Topics

- **Inferential Statistics:** Multivariate Regression Assumptions and Model Fit
- **Data Visualization:** Plots for Model Fit
- **Data Analysis:** Checking Regression Assumptions in `R`
- **Quantitative Research:** Regression Tables with `knitr`

Readings

Required

- OpenIntro: Chapter 8, pp. 382-401
- Wheelan: Chapter 12

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 12 - Multivariate Regression in `R`
  - Problem Set 07 - Multivariate Regression in `R`
- *For This Lecture:* Lecture Prep 13 - Regression Tables with `knitr`

Due Before *Next* Class

- *For This Lecture:*
  - Lab 13 - Checking Regression Assumptions
  - Problem Set 08 - Checking Regression Assumptions
- *For Next Lecture:* Lecture Prep 14 - Details with `ggplot2`

Lecture-15: Analysis of Variance

View on Course Website

Topics

- **Inferential Statistics:** ANOVA Tests
- **Data Visualization:** Finalizing Plots with `ggplot2`
- **Data Analysis:** ANOVA Tests in `R`

Readings

Required

- OpenIntro: Chapter Chapter 6, pp. 274-302
- R4DS:
  - *Print* - Chapter 22 ***or***
  - *Web* - Chapter 28 (Link)

Assignments

Due Before Class

- *From Prior Lecture:*
  - Lab 13 - Checking Regression Assumptions
  - Problem Set 08 - Checking Regression Assumptions
- *From Final Project:* Progress report from each student due as a GitHub issue in each student's final project repository
- *For This Lecture:* Lecture Prep 14 - Details with `ggplot2`

Due Before ***Next*** Class

- *For This Lecture:* Lab 14 - ANOVA in `R`
- *For Next Lecture:* Lecture Prep 15 - Crosstabs with `janitor`

Lecture-16: Chi-Squared

View on Course Website

Topics

- **Inferential Statistics:** Chi-squared Test; Some Final Points on Statistical Analyses
- **Data Analysis:** Chi-squared Test in R; Power Analyses for Chi-squared Tests

Readings

Required

- OpenIntro: Chapter 6, pp. 274-302

Assignments

Due Before Class

- *From Prior Lecture:* Lab 14 - ANOVA in `R`
- *For This Lecture:* Lecture Prep 15 - Crosstabs with `janitor`

Due Before Final Presentations

- *For This Lecture:* Lab 15 - Chi-squared in `R`
- *For Final Project:*
  - Response to reviewers due in reply to GitHub issues opened
  - Final code and documentation
  - Final slides and presentation

Due Before Final Presentations, ***SOC 5050 only***

- *For Final Project:* Final paper