

RUTGERS School of Criminal Justice

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Teaching Assistant: Zhuoning "Ning" Wu (zw795@scarletmail.rutgers.edu)
Class location and time: CLJ 567, Wednesdays 4:00pm-6:30pm
Brenden's Office Hours: Wednesdays 1:30pm-3:00pm or by appointment
Brenden's Office: CLJ Room 542
Ning's Office Hours: Tuesdays 4:00pm-5:00pm, via Zoom

SCJ 523: Data Analysis & Management, Fall 2025

Course Description

This course is an introduction to methods for analyzing quantitative criminal justice data. Emphasis is placed on understanding data in relation to key methodological concepts, including units of analysis, variables, measurement, and associations. It teaches strategies for presenting data patterns graphically, describing distributions and relationships through summary statistics, and drawing conclusions about sampled populations using inferential statistical methods, including statistical models. In doing so, it will teach methods for assessing univariate, bivariate, and multivariate patterns and relationships.

Course Learning Objectives

1. Define the main characteristics of research designs.
2. Distinguish the levels of measurements and types of variables.
3. Choose, apply, and correctly interpret summary measures.
4. Visualize distributions of continuous and categorical variables.
5. Calculate and interpret measures of association.
6. Explain the principles of statistical inference.
7. Test hypotheses using bivariate analytic techniques.
8. Conduct basic statistical analyses by hand and using computer software.

Requirements and Grading

20% of grade – In-class participation

Our class sessions will involve your active participation in discussions and activities. I use your participation to assess your mastery of the course material and shape the class discussions. If you are not comfortable speaking extemporaneously, don't worry, I will give you plenty of chances to write your responses before sharing them. While we will review some of the assigned material, the class sessions will largely extend the concepts from the readings, so make sure you have completed them thoroughly, including annotating them and rereading sections you don't understand. Come to each class with the reading's main idea and one question you have for the reading. It is a good idea to write down the idea and question ahead of time as I will sometimes ask people to recite theirs. The

question could be something you didn't understand or something you want to discuss further.

20% – Homework

Before some of the classes, you will have a homework assignment to complete like finding a dataset or performing an analysis. The assignments are listed on the syllabus and Brenden will elaborate on them the week before they are due.

60% – Exams

Four times during the semester, you'll complete an at-home exam incorporating the ideas you've learned. The exams are not cumulative, each one will cover the material since the previous exam, but some ideas build on one another. You'll have six days to complete each exam. You will not be able to collaborate on the exam and Brenden will not be able to help you with them. You are welcome to use your notes and the course materials.

Letter grades follow the School of Criminal Justice's grading scheme (below). Percentages are not rounded.

A	90% to 100%
B+	87% to 89.99%
B	80% to 86.99%
C+	77% to 79.99%
C	70% to 76.99%
D	60% to 69.99%
F	0% to 59.99%

Required texts

- Urdan, Timothy. 2022. *Statistics in Plain English*. Taylor & Francis. 5th Edition.
 - PDF posted to Canvas.
 - If you prefer a hard copy, make sure to buy the 5th edition.
- All other materials will be posted to Canvas.

Class Sessions

Most class periods will be a mix of lectures, in-class assignments, discussion, and lab time. During lectures, be sure to take notes because I will not be posting the slides. During discussions, be sure to be an active participant to secure your participation grade. During lab time, that's your chance to work on the assignments and ask Brenden and the TA questions.

Late Work

If you submit work late, the late assignment's grade will be reduced by one letter grade (10%) for every business day it is late. In-class presentations cannot be made up. Technical difficulties are not an excuse for missing deadlines, so allow extra time before the deadline in case you need switch computers or contact [IT Support](#). If there is an emergency life situation, email me 24 hours in advance of the assignment due date.

Rutgers tech help desk

833-OIT-HELP (833-648-4357)
help@newark.rutgers.edu

Technology

We will use the statistical software **Stata** a lot this semester. You can access it through Rutgers' [software portal](#). Brenden will provide instructions for accessing Stata via the software portal.

You will need a **laptop** for most class sessions. If you do not have a laptop, you can [apply to borrow one](#) for the semester from Rutgers's Student Technology Loan Program or you can check one out from [the laptop kiosk](#) in the Campus Center. If you're having any trouble securing a laptop, email me (Brenden).

Plagiarism and LLMs

Plagiarism of any kind will result in you failing the course. For more information, review the university's academic integrity policy [here](#). I may use plagiarism detection software to assess your take-home assignments. You may consult large-language models like Chat GPT or Google Gemini for reference, but you may not include any of their outputs in your work and you may not upload any course materials to them. In class, we'll discuss the best ways to use these tools.

Contacting Us

We will communicate via email and Canvas. Please email both Brenden and Ning when you reach out. Our email addresses are at the top of this syllabus. If we don't respond in 48 hours, feel free to nudge us with another email. You might consider messaging another student and referring to the syllabus before emailing us.

Attendance

As with any seminar, your attendance and participation will be vital to your getting the most out of the class. Every student can miss one class without penalty, no excuse needed. If you are going to miss more than one, please email me. Unexcused absences will result in a lower participation grade. Whether the absence is excused or not, make sure to coordinate with a fellow student to learn what you missed.

Course Schedule

(Preliminary, see Canvas modules for latest info)

Date of Zoom class	Required Readings	Assignments Due
Week 1 Introduction 9/3		
Week 2 Data Analysis Basics 9/10	• Urdan, Ch. 1 (pp. 1-14). Principles, populations, variables, and distributions • Conjointly, Units of Analysis: https://conjointly.com/kb/unit-of-analysis/ • Wheelan, "Chapter 11, Regression Analysis: The Miracle Elixir" in <i>Naked Statistics</i>, PDF pages 167-185.	Complete the course survey by today.

	Watch: Tour of Stata 19 interface: https://www.youtube.com/watch?v=vLE-N426ib4	
Week 3 Distributions, Measures of Central Tendency, and Stata 9/17	- Urdan, Ch. 2 (pp. 15-22). Measures of Central Tendency - Frequency distributions: https://www.mathsisfun.com/data/frequency-distribution.html - Histograms: https://onlinestatbook.com/2/graphing_distributions/histograms.html - Skew in frequency distributions: https://www.dummies.com/education/math/statistics/how-to-identify-skew-and-symmetry-in-a-statistical-histogram/	Homework 1: Graph of one variable over time. Due via Canvas by 3pm, presented in class
Week 4 Variability 9/24	- Urdan, Ch. 3 (pp. 23-34). Variability. Pp. 33-34 are optional. - Measures of variability: https://onlinestatbook.com/2/summarizing_distributions/variability.html - Best, <i>Stat-Spotting</i>, Part 2, E & F (pp. 41-63)	Homework 2: Frequency Distributions in Stata due by 3pm Exam #1 Assigned
Week 5 Normal distributions and z scores 10/1	- Urdan, Ch. 4 (pp. 35-43). Normal distributions. - Urdan, Ch. 5 (pp. 45-54). Z Scores.	Exam #1 Due 11:00pm on 9/30
Week 6 Standard Errors and Sampling Distributions 10/8	Standard Errors (Urdan, ch. 6, pp. 59-74)	No assignment due
Week 7 Confidence Intervals 10/15	- Urdan, Ch. 7 (pp. 75-96). Statistical Significance, Effect Size, and Confidence Intervals. https://blog.minitab.com/en/statistics-and-quality-data-analysis/what-are-degrees-of-freedom-in-statistics - Best, <i>Stat-Spotting</i>, Part 2 I (pp. 100 – 115) https://www.simplypsychology.org/confidence-interval.html	Homework #3 due Exam #2 Assigned
Week 8 Hypothesis testing 10/22	- Light reading week - Review hypothesis testing section of Chapter 7 from last week - UCLA, "Choosing the Correct Statistical Test." (Skim for the basics, do not worry if some parts are unfamiliar): https://stats.oarc.ucla.edu/other/mult-pkg/whatstat/	Exam #2 Due 11:00pm on 10/21
Week 9 No class 10/29	No class this week. Brenden away.	
Week 10 t Tests 11/5	Remember to vote on November 4th! Urdan Ch. 8, t Tests. Read the front of the chapter (pp 97-107) closely, and skim the examples (pp 108-117)	Homework: Present a dataset. Due via Canvas by 3pm, presented in class

Week 11 11/12 Chi Square Tests – class online	Do not meet in person this week. Watch the lecture and complete the online discussion post. • Urdan, part of Ch. 14 (pp. 222-230), “Chi-square (χ^2) Test of Independence” • https://www.mathsisfun.com/data/chi-square-test.html • Lane, <i>Testing Goodness of Fit</i>: https://onlinestatbook.com/2/chi_square/one-way.html	Exam #3 Assigned
Week 12 Correlations 11/19	• Urdan, Ch. 12 (pp. 171-190). Correlations. ◦ You may skip the descriptions of mathematical calculations set off in the boxes.	Exam #3 Due at 11:00pm on 11/18
Week 13 11/26	No class. Friday classes meet on Wednesday this week.	
Week 14 Regression I 12/3	• Urdan, Ch. 13 (pp. 191-214). Regressions. • UCLA, <i>Regression with Stata</i>, “Simple and Linear Regression.” (Skim section 1.2, skip section 1.7). ◦ https://stats.oarc.ucla.edu/stata/webbooks/reg/chapter1/regressionwith-statachapter-1-simple-and-multiple-regression/ • Optional: UCLA, Stata Annotated Output ◦ https://stats.oarc.ucla.edu/stata/output/regression-analysis/	Homework #5 due by 3pm
Week 15 Regression II 12/10	• Wheelan, “Chapter 12, Common Regression Mistakes” in <i>Naked Statistics</i>, PDF pages 189-199.	Exam #4 Assigned
Finals Week 12/16-12/23	No class.	Exam #4 Due Wednesday 12/17, 5pm

Accommodation and Support Statement

Rutgers University Newark (RU-N) is committed to the creation of an inclusive and safe learning environment for all students and the University as a whole. RU-N has identified the following resources to further the mission of access and support:

For Individuals Experiencing Disability: The Office of Disability Services (ODS) works with students with medical, physical, and/or mental conditions who encounter disabling barriers in order to determine reasonable and appropriate accommodations for access. Students who have completed the process with ODS and have approved accommodations are provided a Letter of Accommodation (LOA) specific to each course. To initiate accommodations for their course students must both provide the LOA to and have a conversation with the course instructor about the accommodations. This should occur as early in the semester as possible. More information can be found at the [RU-N ODS website \(ods.newark.rutgers.edu\)](https://ods.newark.rutgers.edu). Contact ODS at (973) 353-5375 or via email at ods@newark.rutgers.edu.

For Individuals who are Pregnant: The Office of Title IX and ADA Compliance is available to assist with any concerns or potential accommodations related to pregnancy. Students may contact the Office of Title IX and ADA Compliance at (973) 353-5063 or via email at TitleIX@newark.rutgers.edu.

For Short-term Absence Verification: The Office of the Dean of Students can provide assistance for absences related to religious observance, emergency or unavoidable conflict (illness, personal or family emergency, etc.). Students should refer to [University Policy 10.2.7](#). Students requesting a letter of verification should submit information using the following link: <https://go.rutgers.edu/Verification>.

For Individuals with temporary conditions/injuries: The Office of the Dean of Students can assist students who are experiencing a temporary condition or injury (broken or sprained limbs, concussions, or recovery from surgery). Students experiencing a temporary condition or injury should submit a request using the following link: <https://temporaryconditions.rutgers.edu>.

For Gender or Sex-Based Discrimination or Harassment: The Office of Title IX and ADA Compliance can assist students who are experiencing any form of gender or sex-based discrimination or harassment, including sexual assault, sexual harassment, relationship violence, or stalking. Students can report an incident to the Office of Title IX and ADA Compliance by calling (973) 353-1906 or emailing TitleIX@newark.rutgers.edu. Incidents may also be reported by using the following link: <https://go.rutgers.edu/RUNReportingForm>.

For support related to Interpersonal Violence: The Office for Violence Prevention and Victim Assistance (VPVA) can provide any student with confidential support. The office does **not** have a reporting obligation to Title IX. Students can contact the office by calling (973) 353-1918 or emailing run.vpva@rutgers.edu. There is also a confidential text-based helpline available to students; students can text (973) 339-0734 for support. Students do not need to be a victim/survivor of violence; any student can receive services, information and support.

For Crisis and Concerns: The Campus Awareness Response and Education (CARE) Team works with students in crisis to develop a plan of support plan and address personal situations that might impact their academic performance. Connect with the CARE Team by using the following link: <https://go.rutgers.edu/RUNReportingForm> or emailing careteam@newark.rutgers.edu.

For Psychological Support (Stress, Mood, Family Issues, Substance Use concerns and other personal challenges): The Rutgers University-Newark Counseling Center provides individual therapy and support groups for students dealing with psychological issues. To schedule an appointment, email counseling@newark.rutgers.edu or call (973) 353-5805. Additional support is available through Uwill services:

- Uhelp: Crisis support at 833-646-1526 (available 24/7/365).
- Urise: Wellness-based video collection with a free account.
- Umatch: Teletherapy with flexible scheduling, starting with a free account.

Access Uwill@RUN at <https://my.rutgers.edu> using your netid. Services are confidential and free.

For emergencies, call 911 or Rutgers University Police Department at (973) 353-5111.