RUTGERS School of Criminal Justice

Professor: Brenden Beck, PhD (brenden.beck@rutgers.edu)
Teaching Assistant: Chloe Sudduth (cms722@newark.rutgers.edu)
Class location and time: Zoom, Tuesdays 5:00pm-7:00pm
Office hours:
Brenden: Wednesdays 1:00pm-2:30pm or by appointment
Chloe: TBD
Office:
Brenden: 123 Washington St., 5th Floor, Room 542
Chloe: Online

SCJ 523: Data Analysis & Management, Fall 2024

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

Though our class sessions will be on Zoom, they will involve your active participation in discussions and activities. I use your participation to assess your mastery of the course materials and to shape the class discussions. While we will review some of the assigned material in class, the sessions will frequently extend to concepts beyond 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 questions about what you don't understand. I will sometimes start classes by asking people what concepts they struggled

to understand, so you might write at least one question down so you can read them when called on. Classes will involve in-class activities and breakout groups.

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. Each exam will cover the material since the previous analysis, 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 all available non-human resources to complete the exams like your notes, the readings, and the internet.

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.

- Best, Joel. 2013. *Stat Spotting: A Field Guide to Identifying Dubious Data*.
  - PDF posted to Canvas.
  - If you prefer a hard copy, be sure to buy the "updated and expanded" 2013 edition with the orange cover.

- All other materials will be posted to Canvas.

Weekly Schedule

This is an online course with synchronous and asynchronous elements. We will meet for our weekly class sessions on Zoom at the same time, but you will watch the at any time before the class session. Below is the flow of the typical week.

Wednesdays, 12:00pm (noon)	The week's lectures are released. Do all the readings before watching the lectures and watch the lectures before completing the homework (if any). If there is an exam during this week, it will be released now.

Tuesdays, 5:00pm-6:00pm	Class session. We will meet on Zoom at this link. Read all course materials and watch all lectures or videos before this time. We will answer questions and discuss the lectures, readings, and any homework. We will complete in-class activities extending the course materials and sometimes split into breakout groups.
Tuesdays, 6:00pm-7:00pm	Lab. An optional hour during which we will work through individuals' problems, review anything that was confusing, and offer more practice opportunities for those who want them.

Late Work

If you submit work late, the late assignment's grade will be reduced by one letter grade (10%) for every day it is late. 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' virtual computer lab or you can buy it for $94. Brenden will provide instructions for accessing Stata via the virtual computer lab. If you struggle with Stata or the virtual computer lab, contact the Rutgers help desk (info above) or email Brenden and Chloe.

Plagiarism

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. In class, we'll discuss the best ways to use these tools.

Contacting Us

The best way to contact Brenden and Chloe is by email. We respond faster there than via Canvas messages. Please email us both. 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 and Zoom protocols

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.

To provide the most communal and welcoming experience for everyone, please leave your video camera on during class. Because we will be using breakout rooms and to allow everyone to speak freely, we will not be recording the class sessions. The link for every Zoom meeting will be: https://rutgers.zoom.us/j/97199633409?pwd=N6bLAHZLxSDLXjRy8DIaDOlbaXmXbM.1

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/ • Best, *Stat-Spotting*, Part 1 (pp. 3-13) • Watch: Tour of Stata 18 interface: https://www.youtube.com/watch?v=02qrJEblQwk	Complete the course survey and email it to Brenden and Chloe before class.
Week 3 Distributions, Measures of Central Tendency, and Stata 9/17	• 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/ • Urdan, Ch. 2 (pp. 15-22). Measures of Central Tendency • Best, *Stat-Spotting*, Part 2 C & D (pp. 17-40) • Optional, Watch: Getting Started in Stata: https://www.youtube.com/watch?v=YAVq99iUTTI	Homework 1: Using Stata. Due by class time
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, *Stat-Spotting*, Part 2, E & F (pp. 41-63)	Homework: Graph of one variable over time. Due by class time, presented in class. Exam #1 Assigned
Week 5 Normal distributions and z scores 10/1	• Urdan, Ch. 4 (pp. 35-43). Normal distributions. • Urdan, Ch. 5 (pp. 45-57). Z Scores.	**Exam #1 Due 11:00pm on 9/30**
Week 6 Standard Errors and	• Standard Errors (Urdan, ch. 6, pp. 59-74) • Sampling distribution of the mean (*OSB Sampling Distributions,* E, pages 307-310)	No assignment due

Sampling Distributions 10/8	• Best, *Stat-Spotting*, Part 2 G & H (pp. 64-99)	
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, *Stat-Spotting*, 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	• Lane, *Logic of Hypothesis Testing* Parts A, B, and E-I. https://onlinestatbook.com/2/logic_of_hypothesis_testing/logic_hypothesis.html • 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 *t* Tests 10/29	• Urdan, Ch. 8 (pp. 97-116). *t* Tests.	Homework #4: Present a dataset. Due to Canvas by class and presented in class
Week 10 No class 11/5	No class this week. Brenden away. Remember to vote.	
Week 11 11/12 Chi Square Tests	• Urdan, part of Ch. 14 (pp. 222-230) • https://www.mathsisfun.com/data/chi-square-test.html • Lane, *Testing Goodness of Fit*: 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 11/29**
Week 13 11/26	No class. Thursday classes meet on Tuesday this week.	

Week 14 Regression I 12/3	• Urdan, Ch. 13 (pp. 191-214). Regressions.
	• UCLA, *Regression with Stata*, "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

Week 15 Regression II 12/10	• Readings TBD	Exam #4 Assigned
Finals Week 12/16-12/23	No class.	**Exam #4 Due Tuesday 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). 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.