Techniques of Data Analysis
CJUS K300
Online, 12 weeks

Contact information:

Dr. Jonathan R. Brauer (Instructor)
jrbrauer@indiana.edu

Course materials:

Bachman, Ronet, Raymond Paternoster, & Theodore Wilson. *Statistics for Criminology & Criminal Justice (Fifth Edition).* 2021. Sage.

- The textbook is required for this course. Additional materials (e.g., readings; videos; lectures) will be available on the course Canvas website.

Course goals and objectives

- Course bulletin: K300 covers the properties of single variables, the measurement of association between pairs of variables, and statistical inference. Additional topics, such as the analyses of qualitative and aggregated data, address specific criminal justice concerns. (CASE N&M. P: MATH M014 or equivalent. Credit given for only one of K300, ANTH A306, ECON E370 or S370, MATH K300 or K310, POLS Y395, PSY K300 or K310, SOC S371, STAT K310 or S300, or SPEA K300.)

- Thus, in this course, we will cover basic univariate and bivariate *descriptive statistics*, which are used to summarize a given set of data quantitatively, as well as *inferential statistics*, which are used to extrapolate characteristics of a population from sample data. By the end of the course, you should be able to identify, estimate using a statistical program via coding (R/R Studio), and interpret statistical technique(s) that are appropriate for each of a variety of analytical situations.

Course administration and requirements:

- This course is conducted using a series of weekly "modules" containing course lectures, videos, and assignments that will "unlock" (i.e., open or be available) each week on Monday morning.

- Course grade is determined by:
  - Eleven assignments worth 80 points each (880 total)
  - One final exam worth 120 points

- **Assignments:**   **80pts each (8%); 880pts total (88%)**
  - You will be required to complete eleven assignments to demonstrate knowledge and comprehension of the course materials. Each assignment will cover content from course readings, lectures, and videos.
  - Assignments will be completed online via the course Canvas website. They will "unlock" (i.e., available to complete) each Monday with the weekly module and will be due within one week (i.e., ***assignments due by 11:59pm on Sunday***).

- **Final Exam**   **120 points total (12%)**
  - The final exam will be cumulative and will require you to demonstrate general knowledge and comprehension of the course materials.
  - The final exam will be taken online via the course Canvas website. The exam will be "unlocked" (i.e., available to take) from 8:00am EST Monday to 11:59pm EST Wednesday on the last week of the course. You will have one hour to take the exam.
  - The exam cannot be paused and will automatically submit *either* one hour after it has started *or* at 11:59pm Wed. (whichever is first) – so be sure to start before 11:00pm Wed.!

Course Schedule:

This course schedule is tentative and subject to change. All changes will be announced through email and the course Canvas website. All times refer to Eastern Standard Time (EST).

Chapters listed refer to the required book, *Statistics for Criminology & Criminal Justice (5th Ed.).* Additional required materials (e.g., readings, lectures, videos) are posted on Canvas.

Week/Date		Topic	Reading/Assignments	
1	5/10 – 5/15	Introduction to Course, Book Website, & R Studio/R Markdown	Preface Assignment 1	(Due: 5/15)
2	5/16 – 5/22	Sampling; Key Statistical Terms; Levels of Measurement	Chapter 1 Assignment 2	(Due: 5/22)
3	5/23 – 5/29	Data Distributions; Simple Data Descriptions; Graphical Presentations	Chapters 2-3 Assignment 3	(Due: 5/29)
4	5/30 – 6/5	Measures of Central Tendency	Chapter 4 Assignment 4	(Due: 6/5)
5	6/6 – 6/12	Measures of Dispersion	Chapter 5 Assignment 5	(Due: 6/12)
6	6/13 – 6/19	Probability Theory; Hypothesis Testing	Chapter 6 Assignment 6	(Due: 6/19)
7	6/20 – 6/26	Point Estimation; Confidence Intervals	Chapter 7 Assignment 7	(Due: 6/26)
8	6/27 – 7/3	One Population Mean Tests; One Population Proportion Tests	Chapter 8 Assignment 8	(Due: 7/3)
9	7/5 – 7/10	Hypothesis Tests with Categorical Data	Chapter 9 Assignment 9	(Due: 7/10)
10	7/11 – 7/17	Two Population Hypothesis Tests (Independent Samples; Proportions)	Chapter 10 Assignment 10	(Due: 7/17)
11	7/18 – 7/24	Correlation; Ordinary Least Squares Regression	Chapter 12 Assignment 11	(Due: 7/24)
12	7/25 – 7/27	Final Examination	Available on Canvas (Due: Wed., 7/27)	