

47: 202: 302 Data Analysis in Criminal Justice

4 Credits

Spring Semester 2019

Course Information

Meeting times: Mon. 08:30am- 09:50am
Thu. 08:30am –09:50am

Location: Engelhard Hall Room 209 (ENG- 209)

First day of class: January 24th, 2019

Instructor Information

Instructor: MSc Christiane Schwarz
Email: christiane.schwarz@rutgers.edu
Office Hours: By appointment
Room: 579E, School of Criminal Justice, 123 Washington Street

Course Overview

This course examines the various types of data used within criminal justice and the fundamentals of statistics and data analysis. It also provides an introduction to the appropriate use of data, the limits of various statistical methods, how data is collected, and how to interpret findings. Policy implications of data will also be discussed.

Prerequisite

21:62:202:301 and the basic undergraduate math requirement.

B.S. Criminal Justice Learning Goals

Upon completion of the B.S. in Criminal Justice at Rutgers University-Newark, students should be able to:

- Describe the development and functions of major criminal justice institutions (e.g., police, courts, corrections, and juvenile justice), the activities of actors within these institutions, and how they relate to one another as well as the broader social, political, and economic world.
- Describe the mechanisms, correlates, theoretical underpinnings, and situational contexts of crime, criminal behavior and opportunity, and techniques for prevention and treatment.
- Apply and analyze theories related to the policies and practices of the criminal justice system and its major institutions.
- Demonstrate the ability to gather, explain, and apply empirical research in the field of criminal justice.
- Obtain a comprehensive knowledge about the process of conducting criminal justice research and develop the skills to conduct criminal justice research with appropriate methodologies.

Course Learning Outcomes

Upon completion of this course, students should be able to:

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

Required Readings

All the textbooks are available for free online for this course in digital format. You can also purchase affordable print copies on Amazon. We will not read entire textbooks but only selected parts.

Diez, D., Barr, C. D., & Çetinkaya-Rundel, M. (2017). OpenIntro Statistics. Third Edition.

<https://www.openintro.org/stat/textbook.php>

Peng, R. D. (2016). R Programming for Data Science. Lean Publishing.

<https://leanpub.com/rprogramming>

Peng, R. D. (2016). The Art of Data Science. Lean Publishing.

<https://leanpub.com/artofdatascience>

Peng, R. D. (2016). Exploratory Data Analysis with R. Lean Publishing.

<https://leanpub.com/exdata>

Computing

We will use the free software for statistical analysis R via RStudio. The software will be available on lab computers and you can also install it for free on your personal computers.

Download R: <https://www.r-project.org/>

Download R Studio: <https://www.rstudio.com/>

Course Structure

The course will be delivered using a combination of lectures and hands-on exercises. You will be expected to use the computer on a regular basis and write simple code for the purposes of statistical analysis of datasets related to crime and criminal justice.

Course Schedule

DATE	CLASS TOPICS
Week 1	Introduction to Statistics and Data Analysis in Criminal Justice
Week 2	Types of Variables and Levels of Measurement
Week 3	Introduction to R and Data Analysis
Week 4	R-Studio – inspecting big datasets
Week 5	Measures of Central Tendency
Week 6	Organizing, Displaying, and Presenting Data
Week 7	Measures of Dispersion
Week 8	Data Management in R

Week 9	Data Visualization in R
Week 10	Probability Distributions
Week 11	Population, Sample and Sampling Distribution
Week 12	Point Estimates and Confidence Intervals
Week 13	Hypothesis Testing: A Conceptual Introduction
Week 14	Hypothesis Testing with Two Population Means or Proportions
Week 15	Introduction to Regression Analysis

Course Assessment and Grading

The final grade will be assessed based upon your performance on the following:

Participation and Attendance (10%)

Students are expected to participate in class exercises, discussions, and in general be an active participant in the classroom. In group assignments, every student needs to contribute equally. This also includes regular attendance.

Weekly quizzes (30%)

Every Monday, students are required to partake in an online quiz on blackboard. Quizzes might range from 3-5 questions based on lecture notes and reading material. Quizzes can only be taken on that specific date. If a student fails to attend class on a Monday, he/she can submit answers online via blackboard.

Homework Assignments (30%)

There will be four homework assignments throughout the semester. All assignments will include programming using R software. Students are not allowed to work in pairs. Homework assignments are announced a week ahead and are submitted via blackboard.

Final Paper (30%)

Previous homework assignments will help students to write a 7-10-page final paper on their own statistical findings of a particular research question. This final paper will encompass material covered in the textbook readings, lectures, and homework assignments. Students are required to

work independently and use different datasets. Student needs to show understanding of various variables, displays data and explains a relationship between two variables.

The following grading scale will be used for this course:

A	90–100%
B+	85-89%
B	80-84%
C+	75-79%
C	70-74%
D	60-69%
F	<60%

Late or Missing Assignment Policy

Late homework assignments will not be accepted unless the student has given prior notification and approval has been granted by the instructor.

Extra Credit Policy

There will be no extra credit opportunities in this class. Plan accordingly by attending class, participating, and doing homework assignments and exams so that they reflect the final grade you hope to achieve.

Course Policies

Classroom Rules

There will be a strict no mobile phone policy during class sessions. If required, students may leave the classroom to receive or make important phone calls.

Academic Integrity

As a member of the Rutgers University community you are not to engage in any academic dishonesty. You are responsible for adhering to basic academic standards of honesty and integrity as outlined in the Rutgers University Policy on Academic Integrity for Undergraduate and Graduate Students <http://studentconduct.rutgers.edu/academic-integrity>

Your academic work should be the result of your own individual effort, you should not allow other students to use your work, and you are required to recognize and reference any material that is not your own. Violations of the university's policy will result in appropriate action.

Academic Resources

Students with Disabilities

Rutgers University is committed to providing equal educational opportunity for persons with disabilities in accordance with the Nondiscrimination Policy of the University and in compliance

with § 504 of the Rehabilitation Act of 1973 and with Title II of the Americans with Disabilities Act of 1990. For additional information please visit the website <https://ods.rutgers.edu/> or contact the representative for the Newark Campus.

Allen Sheffield

Director of ADA Services and Academic Support Robeson Campus Center, Suite 352
350 Martin Luther King Jr. Boulevard

Newark, NJ 07102

Phone: 973.353.5300

Fax: 973.353.5666

E-mail: kate.torres@rutgers.edu Website: <https://ods.rutgers.edu/>

Psychological and Counseling Services

If you experience psychological or other difficulties as a result of this course, or because of other issues that may interfere with your performance in the course, please contact the university's psychological and counseling service center (<http://www.counseling.newark.rutgers.edu>; 973-353-5805), which is located in Blumenthal Hall, room 101. The center offers a variety of free, confidential services to part-time and full-time students who are enrolled at Rutgers.

If you are interested in finding out more about

- Accelerated Master's Program (B.S. /M.A.)
- Criminal Justice National Honor Society (Alpha Phi Sigma)

Please refer to the School of Criminal Justice website <http://rscj.newark.rutgers.edu/>