RUTGERS School of Criminal Justice

47: 202: 302 Data Analysis and Management
3 Credits
Fall, 2018

Tuesdays & Thursdays

1:00 – 2:20 PM

Smith Hall, B22

I. Course Information

Instructor Information:

Instructor: *Kimberly Badgett*
Email: *Kimberly.badgett@rutgers.edu*
Phone: *206-841-3992 (text messaging strongly recommended over calling)*
Office Address: Center for Law and Justice, 123 Washington Street, Room 550
Office Hours: *Wednesdays 12-3pm (tentative)*

Course Overview:

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

Prerequisite:

Criminal Justice Research Methods (21:47:202:301) and the basic undergraduate math requirement.

B.S., Criminal Justice Program Learning Goals

Upon completion of the B.S. in Criminal Justice at Rutgers University-Newark, students should be able to:
1. 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.
2. Describe the mechanisms, correlates, theoretical underpinnings, and situational contexts of crime, criminal behavior and opportunity, and techniques for prevention and treatment.
3. Apply and analyze theories related to the policies and practices of the criminal justice system and its major institutions.
4. Demonstrate the ability to gather, explain, and apply empirical research in the field of criminal justice.
5. 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 Goals:

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. Understand the principles of statistical inference.
7. Test hypotheses using bivariate analytic techniques.
8. Conduct basic statistical analyses by hand and using computer software.

Required Readings:

Workbook: Statistics Interactive Lecture Notes & Lab Workbook, purchasable from the B&N Rutgers Bookstore after August 1, 2018.

There is no textbook for this class; the workbook is designed as a standalone without an accompanying textbook. Throughout the course, select materials available online will be suggested for further reading.

Course Structure:

This course applies a multi-pronged learning approach in order to maximize student engagement and meet the needs of diverse student learning styles. Class time will be guided by the interactive lecture notes, which students are expected to attempt on their own in advance of each class. As the workbook title suggests, the course style is an interactive lecture format where students are encouraged to use their workbook attempts in advance of class to help drive the lectures forward.

Given that SPSS will not be available for in-class instruction, the use of SPSS will be restricted to select online demonstrations of criminal justice data using SPSS to illustrate some of the statistical methods that students learn in the workbook.

Calculators are strongly recommended. Any calculator with basic scientific functions will do (power, square root).

Cell phones are strictly prohibited. (Studies consistently show that students who do not access their cell phones during class take more notes, take better quality notes, are able to recall more lecture content, and score higher on exams![1]). **Laptops are strongly discouraged**, as this is a "workbook + pencil" course.

Course Management:

The course will make routine use of Blackboard for the submission and grading of exercises, exams, the distribution of supplementary course materials, and for student notification.

II. Course Schedule

Every week throughout the course, students should read one chapter ahead in the workbook and attempt the problems before we discuss them in class. Jot down questions to ask in class!

Date	Class Topic	Exercises Due
Week 1	**Gathering and Summarizing Data**	
4-Sep	Statistical Stories and Turning Data into Information	
6-Sep	Turning Data into Information; Gathering Useful Data and Sampling	
Week 2	**Probability**	
11-Sep	Probability	
13-Sep	Probability (cont.)	Exercise 1: Describing Data
Week 3	**Random Variables**	

[1] Kuznekoff, J. H., & Titsworth, S. (2013). The impact of mobile phone usage on student learning. *Communication Education*, *62*(3), 233-252.
Wei, F. Y. F., Wang, Y. K., & Klausner, M. (2012). Rethinking college students' self-regulation and sustained attention: Does text messaging during class influence cognitive learning?. *Communication Education*, *61*(3), 185-204.
Beland, L. P., & Murphy, R. (2016). Ill communication: technology, distraction & student performance. *Labour Economics*, *41*, 61-76.

19-Sep	Random Variables	
20-Sep	Random Variables (cont.)	
Week 4	**Learning about the Difference in Population Proportions**	Exercise 2: Probability and Random Variables
25-Sep	Distribution for a Sample Proportion	
27-Sep	Estimating Proportions with Confidence	
Week 5	**Learning about a Population Proportion (cont.); Learning about the Difference in Population Proportions**	Exercise 3: Confidence Intervals for a Population Proportion
2-Oct	Testing about a Population Proportion	
4-Oct	Distribution for a Difference in Population Proportions	
Week 6	**Learning about the Difference in Population Proportions (cont.)**	`
9-Oct	Confidence Interval for a Difference in Population Proportions	Exercise 4: Hypothesis Testing for a Population Proportion
11-Oct	Testing about the Difference in Population Proportions	
Week 7	**Learning about a Population Mean; Midterm 1**	Exercise 5: Understanding Normal and Random Data
16-Oct	Distribution for a Sample Mean; Confidence Interval for a Population Mean	
18-Oct	Midterm 1	
Week 8	**Population Mean (cont.); Population Mean Difference**	Exercise 6: Learning about a Population Mean
23-Oct	Testing about a Popualtion Mean	
25-Oct	Distribution for the Difference in Sample Means	
Week 9	**Learning About the Population Mean Difference**	
30-Oct	Confidence Interval for a Population Mean Difference	

	1-Nov	Testing about the Population Mean Difference	
Week 10		**Learning about the Difference in Population Means (i.e. paired data)**	
	6-Nov	Distribution for a Difference in Sample Means	Exercise 7: Paired Data
	8-Nov	Confidence Interval for a a Difference in Population Means	
Week 11		**Comparing Two Means; ANOVA**	
	13-Nov	Testing about the Difference in Population Means	
	15-Nov	ANOVA: Analysis of Variance	Exercise 8: Comparing Two Means
Week 12		**ANOVA; Midterm 2; Thanksgiving**	
	20-Nov	ANOVA, continued; Midterm 2	
	22-Nov	Thanksgiving Day	
Week 13		**Simple Linear Regression**	
	27-Nov	Learning about Relationships between Quantitative Variables: Regression	Exercise 9: ANOVA
	29-Nov	Simple Linear Regression, continued	
Week 14		**Regression (cont.) and Chi-Square**	
	1-Dec	Simple Linear Regression, continued	Exercise 10: Exploring Linear Regression
	3-Dec	**Learning about Relationships between Categorical Variables: Chi-Square**	
Week 15		**Chi Square and Final Exam Review**	
	8-Dec	Chi-Square, continued	Exercise 11: Regression Inference
	10-Dec	Exam 2 Review	

15-Dec	no class	Exercise 12: Chi-Square
TBD	Final Exam	

III. Course Assessment and Grading

Grade Assessment:

A) Attendance and general participation (10% of course grade)
Students are required to attempt the class workbook section before class, attend all classes, and participate in the interactive lectures.
B) Statistics exercises (40% of course grade)
Students are required to complete twelve exercises reflecting the statistical concepts taught in class. The lowest two scores will be dropped from the final grade (NOT including missing exercises, which will receive a zero). Thus, each of ten out of twelve exercises will count as 4% of the course grade. These exercises are as follows (more detailed protocols will be handed out in class):
     1) Describing data
     2) Probability and Random Variables
     3) Confidence Intervals for a Population Proportion
     4) Hypothesis Testing for a Population Proportion
     5) Understanding Normal and Random Data
     6) Learning about a Population Mean
     7) Paired Data (aka population mean difference) Analysis
     8) Comparing Two Means
     9) One-Way Analysis of Variance (ANOVA)
     10) Exploring Linear Regression
     11) Regression Inference
     12) Chi-Square Tests
C) Exams (50% of course grade)
     1) First Midterm (12.5%)
     2) Second Midterm (12.5%)
     3) Final Examination (25%)

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 assignments will be deducted 5% per day, including weekends and holidays. Assignments that are 10 days late or more will not be accepted without a doctor's note that meets the following criteria:
- The note is a note from your doctor that explicitly states you were unable to complete schoolwork for the designated days and times
- The note is an original with your doctor's signature in ink, meaning not a photocopy or a photograph of a note
- The note includes a phone number which I can call to verify the authenticity of the note
- The doctor's note is submitted to me within 5 calendar days of the missed assignment.

Exam Policy:

Missed exams may not be made up for any reason. The final exam will be cumulative, and the lowest midterm grade will be replaced with the score of the final exam if the final exam score is better.

If a student knows in advance that he or she will not be available for an exam date, the student must notify Ms. Badgett at least two weeks prior to the exam. Ms. Badgett will determine if the excuse is sufficient cause to arrange the exam to be taken sooner. No individual student exam will ever be rescheduled for a later date.

IV. Course Policies

Classroom Rules

Participation matters! Student engagement during each class. Students who complete the required lecture notes sections in advance of class will be equipped to participate effectively and learn the most from this course.

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.

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.

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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/

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