RUTGERS School of Criminal Justice

47:202:302 Data Analysis in Criminal Justice
4 Credits
Fall 2018

I. Course Information

Instructor Information:

Instructor: Gary Wenger
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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 (21:62:202:301) 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 Objectives:

By the end of this course, students will be able to:

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.

Required Readings:

Bachman, R. D., & Paternoster, R. (2017). *Statistics for Criminology and Criminal Justice* (4th Ed.). Los Angeles, CA: SAGE Publications, Inc.

Course Requirements:

Students are required to read assigned readings and participate in classroom discussions in a manner that reflects familiarity with the readings and previous class sessions.

Course Structure:
The course will be delivered through lectures and will consist of frequent group discussions.

Classroom learning is a group activity that depends upon everyone's full participation in order to succeed. I expect students to be prepared to begin class on time, and be prepared to discuss homework, submit assignments on time, and assist your classmates. You can expect that I will be on time and prepared for every class, answer your questions, make every class engaging and valuable, and respect your contributions to class.

II. Course Schedule

Date	*Class Topic*	*Readings & Assignments*
Week 1	Introduction Basics of Probability	Syllabus Chapter 6 (1st half)
Week 2	Exploring Univariate Data Visual Representations of Data	Chapters 1-3
Week 3	Univariate Analysis Center and Spread of Distributions	Chapters 4-5
Week 4	Probability Distributions and Z-Scores	Chapter 6 (2nd half)
Week 5	**Test #1: Descriptive Statistics and Probability** Introduction to Sampling Distributions	Chapter 7
Week 6	Hypothesis Testing for Means and Proportions Tests with One and Two Populations	Chapter 8 Chapter 10
Week 7	Confidence Intervals with Means and Proportions Tests with One and Two Populations	Chapter 8 Chapter 10
Week 8	Implications with Tests of Significance Type 1, Type 2 Errors	Chapter 8 Chapter 10
Week 9	Comprehensive Review of Statistical Inference **Test #2: Hypothesis Tests and Confidence Intervals**	
Week 10	Bivariate Correlation	Chapter 12
Week 11	Linear Regression Models	Chapter 12
Week 12	Testing Hypothesis with Categorical Data	Chapter 9
Week 13	Conditional Probability and Chi-Square Analysis	Chapter 9
Week 14	ANOVA Significance Tests with Three or More Populations	Chapter 11
Week 15	**Test #3: Linear Regression, Chi-Square, & ANOVA**	

III. Course Assessment and Grading

There will be three equally-weighted exams. The course content progresses in a cumulative manner, so each exam will naturally draw upon previously learned concepts. However, the 2nd and 3rd exams will primarily emphasize the most recent material learned since the previous exam. Make-up exams are only permitted in the case of extreme emergency and with proper documentation for the absence.

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

Class Participation:	10%
Exam I:	30%
Exam II:	30%
Exam III:	30%

Assignment Description	Linked to SLO	% of Course Grade
Assignment #1 Class Participation	SLO #1-8	10%
Assignment #2 Test on Descriptive Data and Probability	SLO #2 and 3	30%
Assignment #3 Test on Statistical Inference	SLO #6,8	30%
Assignment #4 Test on Linear Regression and Chi-Square	SLO #4,5,7	30%

Class Participation (10%):

The frequency and quality of your participation in class discussions will be noted, as will your constructive critical feedback and support offered to other classmates throughout the semester.

Test #1: Descriptive Data and Probability (30%):

The test will be graded on a 100-point scale. Examinations are designed to measure your understanding of the major concepts presented in class. There are no makeups without formal documentation of exigent circumstances.

Test #2: Inferential Statistics, Hypothesis Testing, and Confidence Intervals (30%):

The course content progresses in a cumulative manner, so each exam will naturally draw upon previously learned concepts. However, this 2nd exam will primarily emphasize the most recent material learned since the 1st exam. The test will be graded on a 100-point scale. Examinations are designed to measure your understanding of the major concepts presented in class. There are no makeups without formal documentation of exigent circumstances.

Test #3: Linear Regression and Chi-Square Analysis (30%):

The course content progresses in a cumulative manner, so each exam will naturally draw upon previously learned concepts. However, this 3rd exam will primarily emphasize the most recent material learned since the 2nd exam. The test will be graded on a 100-point scale. Examinations are designed to measure your understanding of the major concepts presented in class. There are no makeups without formal documentation of exigent circumstances.

ATTENDANCE and **PARTICIPATION**

Your participation grade is based on your commitment, preparedness, level of engagement, respect for the classroom environment, timeliness, and attendance throughout the semester.

In statistics, each new topic builds upon the previous one. To build a firm foundation in statistics, you are expected to attend every class, arrive on time, remain for the entire class period, come prepared and be constructively and respectfully engaged while you are here.

Attendance is both mandatory and essential for success in this course. Class meetings will introduce, explain, and reinforce the material presented in the textbook. Be mindful of your individual level of commitment, preparedness, engagement, respect for the classroom environment, timeliness, and attendance throughout the semester.

If an emergency arises and you must miss class, it is your responsibility to notify the instructor about the reason for your absence as early as possible. If you miss class, you are still responsible for anything assigned for the next class or classes, including obtaining any handouts given in the class you missed.

Unexcused absences may result in a failing grade for the course. An absence is excusable only for the following reasons: (A) an officer comes into the class and removes you, (B) you are in court and it is verified by the institution, (C) you are in the hospital and it is verified by the institution, (D) you are observing a religious holiday that can be verified by the institution, (E) an officer has prevented you from leaving your unit and a staff person can document this.

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%

IV. Course Policies

Late or Missing Assignment Policy:

Do not assume that you are entitled to make up any tests that you miss. Decisions will be made on a case-by-case basis. Make-up exams are only permitted in the case of extreme emergency and with proper documentation for the absence.

Classroom Rules

All members of this class are required to conduct themselves in an appropriate and professional manner. I am hopeful that the course materials will spark interesting discussion, however, any type of disrespectful comments toward other class members about their experiences, backgrounds, or statements will not be tolerated. Please do not engage in side-line discussions. If you need to clarify a point, wait for a break in the flow of the lecture to do so.

Use the restroom prior to the start of class, or during class breaks. Unless you have an emergency, you may not "come and go" during class. It is disrespectful to the work we are doing together to wander in and out, so plan to be able to concentrate for the duration of the class. Please wait until the class has officially ended before you pack up your books.

Expect that due to unforeseen circumstances (i.e. facility on lockdown, etc.), there may be a class that must be cancelled. In that event, please keep up with the readings and assignments as scheduled given the resources you have.

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. 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.