

PSC 522
Quantitative Methods I for MPA Students
Spring 2022
Mondays 9 – 11:30am
ten Hoor 351

Instructor: Dr. Dana Patton

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Office Hours: Mondays 1 – 2:00pm; Tuesdays 1 – 2:30pm; Thursdays 8:30 – 9am.

Please use this link to reserve your meeting time with me during office hours. All meetings are via Zoom. https://calendly.com/danapatton_meeting/15_minutes

Course Description

Public managers, policy analysts, and nonprofit managers (and many others!) are expected to be familiar with analytical skills in the era of “big data” in order to be successful in their work. This is a course in research methods and fundamental statistics with a strong focus on applied quantitative techniques. In this course, MPA students will learn to competently apply quantitative research methods to real-world inquiries.

Student Learning Objectives

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

- Apply the principles and practices of statistics to problems of public management and policy analysis;
- Understand the research methods that managers and analysts use to gather, analyze, and communicate to relevant stakeholders;
- Create datasets using secondary data sources;
- Correctly interpret statistical output;
- Effectively communicate statistical findings.

Required Textbooks

There are three required textbooks for this course. You may purchase print copies of the books at the Supe Store or from Amazon. If you are purchasing from Amazon, pay attention to when the book will arrive, as there is homework due the first full week of classes. Alternatively, you may purchase the books directly from the author's website as e-text: www.statisticsbyjim.com. The e-texts from the author's website cost \$9.00 for the Introduction book and \$14.00 each for the two other required books. At the time of writing the syllabus, the texts are available on Amazon for ~\$20 each. I do not know what the Supe Store is charging.

Frost, Jim. 2020. *Introduction to Statistics: An Intuitive Guide for Analyzing Data and Unlocking Discoveries*. ISBN: 978-1735431109.

Frost, Jim. 2020. *Hypothesis Testing: An Intuitive Guide for Making Data Driven Decisions*. ISBN: 978-1735431154.

Frost, Jim. 2020. *Regression Analysis: An Intuitive Guide for Using and Interpreting Linear Models*. ISBN: 978-1735431185

Required Learning Resources

You are required to use Excel to complete many of your homework assignments. If you do not have Excel, you have free access to it as a UA student. Simply go to the UA Office of Information Technology's website to find the free software package(s) available to students: <https://oit.ua.edu/>

We use Excel in this course instead of SPSS or STATA for data analysis because in many of the work settings MPA graduates find themselves (e.g., nonprofits, state and local government agencies, etc.), Excel is the only software tool available for data analysis due to the expense of other statistical software packages.

In addition to basic Excel, you must install the “Analysis ToolPak”.

1. Open Excel, click “File”, click “Options”, click “Add-ins”
2. In the “Manage” box, select “Excel Add-ins” and click the “GO” button
3. Select the “Analysis ToolPak” and click “OK”

The following videos may be helpful:

https://www.youtube.com/watch?v=_yNxLFagKgw

Instructions for Mac:

<https://www.youtube.com/watch?v=mtmrAXwLcuU>

Dataset

We are going to cover a lot of ground in this class, so one way to make this easier is to use the same dataset throughout the semester for most of the examples and homework. You should spend some time exploring the following website to better understand the primary dataset we will use:

<https://www.countyhealthrankings.org/>

This dataset has a large number of variables measured at the county and state levels.

We will use data from other sources as well, but this will be our “go-to” data to work with.

Mode of Instruction

This course is taught in-person.

Course Requirements

Blackboard

You will submit homework via Blackboard. I will post some tutorial videos in Blackboard, as well as lecture outlines. Communication with students is via Blackboard Announcements, which I also send to your email.

Homework

Homework is due every week and is a very important part of the course. Not only does it help you master the concepts and techniques we are learning, it also helps me identify any patterns that point to the need for additional instruction on a topic. Homework is due by noon on Fridays and the primary purpose is to reinforce the content of lecture from the previous Monday.

Quizzes

Each class will begin with a multiple choice quiz that is based on the reading assigned for that class session. Quizzes will mostly cover the big points made in the reading – not pick out some tiny detail! If you do the reading in what I would consider to be a typical way of reading new material, you should perform fine on the quizzes.

Attendance

Attendance is required. See Course Policies below regarding excused absences.

Exams

There will be three exams. Exams two and three build on content from previous exams. So, exam one is not cumulative, but you should consider exams two and three to be cumulative in the sense that material you learn each week is a foundation for the next week and the week after that. In terms of exam questions, they will be based on the material we have covered since the previous exam, but again, there will be things from earlier in the semester you will have had to master to perform well on the second and third exams.

Grading Summary

Homework	20%
Quizzes	10%
Attendance	10%
Exam 1	20%
Exam 2	20%
Exam 3	20%

A: 90 – 100%; B: 80-89%; C: 70-79%; D: 60-69; F: <59

Per UA Graduate School [policy](#), graduate courses do not receive plus or minus grades.

Per UA Graduate School [policy](#), grades below a “C” are calculated in overall GPA but do not count toward graduation: “Each student must earn and maintain an overall graduate GPA of 3.0 or better for all graduate courses undertaken at The University of Alabama. Grades below "C" are counted in computing scholastic averages, but they do not carry credit toward a degree”.

Course Policies

Cellphones

Please put your phone completely away during class.

Policy on Late Submission of Homework

Each week, we will build on the lessons of the previous week. Falling behind on homework will make it very difficult for you to progress through this course with a passing grade.

Homework may be submitted up to 24 hours past the due date/time. The penalty for late submission of homework is one letter-grade deduction for each 12 hours late. At the point of 24 hours late, a grade of zero will be assigned.

Policy on Homework Due Date/Time Extensions

If you or a family member are seriously ill, please contact me prior to the homework due date/time to discuss an extension. I may request documentation of your illness.

Inability to meet a homework due date/time due to University-approved events should be discussed with me in advance. Documentation is required.

Policy on Quizzes

I will drop your two lowest quiz grades, but a quiz score of “0” due to an unexcused absence will not be dropped from your final grade calculation.

Policy on Excused Absences

There are only a handful of reasons that qualify for an excused absence.

1. University-Sponsored Events. Written documentation is required *prior* to the absence.
2. Professional Development. Absences related to professional development (e.g., conference attendance) *may* be approved. The procedure to request an excused absence due to professional development is to email me details with documentation (e.g., your reason for the absence, website/documentation regarding the event, evidence of your participation, etc.). Only one excused absence for professional development may be granted.
3. Illness. I do **not** require a doctor’s note for illness. Many illnesses do not require a visit to the doctor, but you may be too ill to comfortably attend class. ***I encourage you to stay home if you are ill.*** To receive an excused absence for illness, you must notify me by email *no later than 8am on Monday*. Notification after an absence that you were sick will not be accepted and your absence will be unexcused. There are no exceptions to this policy, so please do not ask.

Policy on Wearing a Mask in Class

For up-to-date information about UA requirements, follow this link: <https://healthinfo.ua.edu/>

Policy on Notification of Changes

I will make every effort to follow the policies and schedule in this syllabus; however, I reserve the right to amend this document as the need arises. In such instances, I will notify students in class and/or via Blackboard announcement/email and will endeavor to provide reasonable time for students to adjust to any changes.

University Statements and Protocols

Statement on Academic Misconduct

Students are expected to be familiar with and adhere to the official [Academic Misconduct Policy](#) provided in the Online Catalog.

Statement On Disability Accommodations

Contact the [Office of Disability Services \(ODS\)](#) as detailed in the Online Catalog.

Severe Weather Protocol

Please see the latest [Severe Weather Guidelines](#) in the Online Catalog.

Pregnant Student Accommodations

Title IX protects against discrimination related to pregnancy or parental status. If you are pregnant and will need accommodations for this class, please review the University's FAQs on the [UAct website](#).

Religious Observances

Under the Guidelines for Religious Holiday Observances, students should notify the instructor in writing or via email during the first two weeks of the semester of their intention to be absent from class for religious observance. The instructor will work to provide reasonable opportunity to complete academic responsibilities as long as that does not interfere with the academic integrity of the course. See full guidelines at [Religious Holiday Observances Guidelines](#).

UAct Statement

The University of Alabama is committed to an ethical, inclusive community defined by respect and civility. The UAct website (www.ua.edu/uact) provides extensive information on how to report or obtain assistance with a variety of issues, including issues related to dating violence, domestic violence, stalking, sexual assault, sexual violence or other Title IX violations, illegal discrimination, harassment, hate or bias incidents, child abuse or neglect, hazing, threat assessment, retaliation, and ethical violations or fraud.

Statement on COVID-19

All University faculty, staff, and students are expected to maintain a commitment to the health and safety of our campus community. Due to the current COVID-19 pandemic, specific health and safety standards are in place to minimize exposure and community spread on campus. In the interest of your health and safety and that of all UA students, faculty and staff, the University reserves the right to change the mode of instruction or schedule of instruction at any time, based upon prevailing public health and other guidance. While the method of delivery may change, educational instruction and opportunities will continue. As such, the University will not provide a refund of tuition, in whole or in-part, based on any such changes. Detailed information on changes in format or schedule can be found at studentaccounts.ua.edu and financialaid.ua.edu.

In accordance with current CDC and [UA System Comprehensive Health and Safety Task Force](#) guidance, [face coverings are no longer required](#) for those who are fully vaccinated in most University of Alabama facilities. Masks will continue to be required in all clinical settings, inside the University Medical Center and the Student Health Center, and on the Crimson Ride buses. Individuals may choose to continue to wear a mask in circumstances where one is not required. All unvaccinated faculty, staff and students are required to wear face coverings inside all University buildings. Physical distancing of at least 3 feet is still required.

People are considered fully vaccinated two weeks after their final dose of the COVID-19 vaccine. Getting vaccinated is the best way to [protect yourself and our herd](#). COVID-19 vaccines are being administered by the [University Medical Center, the Student Health Center](#) and various businesses and healthcare providers. To help UA officials plan for supplies, let UA know if you were [vaccinated off campus](#).

Wellness Resources

If you or someone you know is facing a challenging time or dealing with academic or personal stress, anxiety, depression, or other concerns, we strongly encourage and support you to seek assistance or to help friends find the care that they may [need](#).

If you are experiencing a personal crisis and need urgent assistance, you can also contact the following resources:

Counseling Center

- Monday-Friday during routine Center hours (205-348-3863).
- Weekends, holidays, after-hours (contact UAPD at 205-348-5454 and ask to speak with the on-call counselor).
- You may also text BAMA to 741-741 to text with a trained volunteer.

Women and Gender Resource Center

- Monday-Friday during routine Center hours (205-348-5040).
- Weekends, holidays, after-hours (contact UAPD at 205-348-5454 and ask to speak to the on-call advocate for the WGRC).

Course Schedule and Important Dates

Week 1: January 17

- MLK Day: UA Closed

Week 2: January 24: Introduction to Statistics

Chapter 1: The Importance of Statistics

Chapter 2: Data Types, Graphs, and Finding Relationships

Chapter 3: Summary Statistics and Relative Standing

- Practice Quiz: Chapters 1 – 3 (Practice quiz to see what the quizzes will be like.)
- Lecture: Chapters 1 – 3
- Homework due Friday, January 28, by noon. See Blackboard.

January 19: Last day to add a course or drop a course without a grade of “W”. If you are considering adding or dropping any MPA course(s), please consult with me first so we can be sure you will remain on track to graduate when you plan to.

Week 3: January 31: Introduction to Statistics

Chapter 4: Probability Distributions (read pages 125 – 131)

Chapter 5: Descriptive and Inferential Statistics

Chapter 6: Statistics in Scientific Studies

- Quiz: Chapters 4 – 6
- Lecture: Chapters 4 – 6
- Homework due Friday, February 4, by noon. See Blackboard.

Week 4: February 7: Introduction to Statistics

Chapter 7: Experimental Methods

Chapter 8: Evaluating Experiments

Chapter 9: Wrapping Up and Your Next Steps

- Quiz: Chapters 7 – 9
- Lecture: Chapters 7 – 9
- No homework due this week. Study for Exam 1.

Week 5: February 14: Introduction to Statistics Exam; Hypothesis Testing

- Exam 1 from 9 – 10:15am
- Short break

Chapter 1: Fundamental Concepts

- Lecture: Chapter 1 (I encourage you to wait to read this chapter after the lecture and spend your time studying for the exam. Some of the information I will lecture on from Chapter one of the Hypothesis Testing book is review from the Introduction book or an extension of something you already learned).
- No homework due this week.

Week 6: February 21: Hypothesis Testing

Chapter 1: Fundamental Concepts

Chapter 2: T-Test Uses, Assumptions, and Analyses

Chapter 3: Test Statistics and Their Sampling Distributions

Chapter 4: Interpreting P-values

- Quiz: Chapters 1 – 4
- Lecture Chapters 2 – 4
- Homework due Friday, February 25, by noon. See Blackboard.

Week 7: February 28: Hypothesis Testing

Chapter 5: Types of Errors and Statistical Power (read pages 105 – 113)

Chapter 6: One-Tailed and Two-Tailed Hypothesis Tests

Chapter 7: Sample Size Considerations

- Quiz: Chapters 5 – 7
- Lecture: Chapters 5 – 7
- Homework due Friday, March 4, by noon. See Blackboard.

March 4: Last day to submit a degree application online through myBama.

Week 8: March 7: Hypothesis Testing

Chapter 8: Data Types and Hypothesis Tests

Chapter 9: ANOVA Compares More than Two Groups (read pages 193 – 211)

Chapter 13: Categorical Variables

- Quiz: Chapters 8 – 9; 13
- Lecture: Chapters 8 – 9; 13
- Homework due Friday, March 11, by noon. See Blackboard.

Week 9: March 14: SPRING BREAK!!!

Week 10: March 21: Hypothesis Testing

- Review; Catch-up; In-Class practice activities
- No homework due this week. Study for Exam 2.

Week 11: March 28: Hypothesis Testing Exam; Regression Analysis

- Exam 2 from 9 – 10:15am
- Short break.

Chapter 1: Correlation and an Introduction to Regression

- Lecture: Chapter 1 ((I encourage you to wait to read this chapter after the lecture and spend your time studying for the exam. Some of the information I will lecture on from Chapter one of the Hypothesis Testing book is review from the Introduction book or an extension of something you learned).
- No homework due this week.

March 28: Registration for Summer and Fall 2022 begins.

March 30: Last day to drop a course with a grade of “W”. Please consult with me before dropping any MPA courses.

Week 12: April 4: Regression Analysis

Chapter 1: Correlation and an Introduction to Regression

Chapter 2: Regression Basics and How it Works

Chapter 3: Interpreting Main Effects and Significance

- Quiz: Chapters 1 – 3
- Lecture: Chapters 2 – 3
- Homework due Friday, April 8, by noon. See Blackboard.

Week 13: April 11: Regression Analysis

Chapter 6: Goodness-of-Fit

Chapter 7: Specify Your Model (read pages 143 – 162)

- Quiz: Chapters 6 – 7
- Lecture: Chapters 6 – 7
- Homework due Friday, April 15, by noon. See Blackboard.

Week 14: April 18: Regression Analysis

Chapter 9: Checking Assumptions and Fixing Problems (read pages 214 – 224)

Chapter 11: Tips, Common Questions, and Concerns

- Quiz: Chapters 9; 11
- Lecture: Chapters 9; 11
- Homework due Friday, April 22, by noon. See Blackboard.

Week 15: April 25: Regression Analysis

- Review; Catch-up; In-Class practice activities

April 29: Classes end for Spring Semester.

April 29: Last day to withdraw (all classes) from the Spring semester without requiring approval from the Dean's Office. Please consult with me if you are considering doing this.

Exam 3: Friday, May 6, at 8am

I'm sure an exam on the last day of finals week at 8am is inconvenient for many of you for a variety of reasons. I will have a sign-up in Bb for students who wish to take the exam during the last week of classes or earlier in finals week and will see if I can secure a room. This is not required or guaranteed, but I will try to accommodate students who wish to take the exam early. I have no problem with the scheduled day/time.