

PA 3311: Analytical Techniques

Module 1, Lecture 1: Course Orientation

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Welcome to PA 3311: Analytical Techniques

This course introduces the analytical tools used across public administration.

You will work with real public-sector datasets, primarily in Excel.

The goal is to help you think critically about data, evidence, and decision-making.

No prior statistics or programming background is required.

What This Course Teaches You (Course Learning Objectives)

By the end of the course, students will:

- Distinguish among major statistical methods used in public and nonprofit management.

- Calculate and interpret descriptive statistics, including measures of central tendency.

- Apply inferential methods including t-tests, correlation, and regression.

- Use Microsoft Excel to perform, visualize, and interpret quantitative analyses.

- Communicate analytical results clearly through writing and graphics.

- Uphold ethical standards in data handling, interpretation, and reporting.

- Integrate evidence-based reasoning into administrative and policy decisions.

Why Analytical Skills Matter in Public Service

Governments and nonprofits rely on data to allocate resources and justify decisions.

Public administrators are expected to interpret reports, performance metrics, and trends.

Analytical skills help you:

- recognize problems early,
- evaluate program outcomes,
- make evidence-based recommendations.

These skills apply across budgeting, policy, operations, HR, and planning.

Course Structure

8 modules over the 16-week semester — one module every two weeks.

We meet in person Tuesdays & Thursdays, 9:30–10:50 a.m., Trauth Huffman Hall 342.

Each module includes:

- In-class instruction and a hands-on Excel lab

- A problem set (hands-on with the dataset)

- A quiz (Modules 2–6)

- Work that builds toward the final project

You will use the same Texas dataset throughout the course to build fluency.

What We Will Do With Data

Work with a panel of **1,180 Texas cities, 2013–2024** (sales-tax revenue and taxable sales).

Perform descriptive statistics and visualizations.

Compare groups (Metro vs. Non-Metro cities; different years).

Analyze changes over time (e.g., 2019 vs. 2023).

Explore simple regression and inference later in the semester.

How You Will Learn

Hands-on practice in Excel every week.

Real public-data examples from cities, nonprofits, and agencies.

Step-by-step exercises that build into your final analytical project.

Structured assignments to help you design and answer your own analytical question.

Clear, guided templates and walkthroughs.

Problem Sets vs. Assignments

Problem Sets

Use the provided Texas city sales-tax dataset.

Teach techniques: summary stats, charts, comparisons.

Build Excel fluency.

Final Project

Builds toward your own analytical question (proposal, then final report).

Focus on writing, reasoning, problem definition, and interpretation.

The Semester Project

You will choose a public-sector topic of interest.

You will develop an analytical question grounded in data.

You will apply course techniques to answer your question step-by-step.

You will submit a final written report with charts, summary statistics, and interpretation.

The project is structured so you build it gradually and never start from scratch.

Expectations for Student Work

Complete weekly problem sets using Excel.

Submit clear, concise written interpretations.

Engage in discussions with real-world examples.

Use academic integrity in all assignments.

Ask questions early—learning analytics is a hands-on process.

What Success Looks Like in This Course

You can read a dataset and understand what each column represents.

You know when to use a mean, median, or percentile.

You can build a histogram, bar chart, or pivot table confidently.

You can compare groups or trends using descriptive techniques.

You can communicate analytical conclusions clearly.

You leave with real, marketable analytical skills for public service careers.

Why We Study Analytical Techniques

Public administrators make decisions that affect budgets, services, and real communities. Strong analysis helps ensure decisions are transparent, defensible, and grounded in evidence—not assumptions or anecdotes.

In modern public administration, many programs generate large amounts of data.

To make sense of that information, you must understand:

- how data are structured,
- how variables are measured,
- and how to interpret summary patterns.

Module 1 creates the foundation for all analytical work in this course.

Module 1 Roadmap

Introduce analytical techniques in public administration

Present the Texas city sales-tax panel used throughout the semester

Explain variables, observations, and units of analysis

Distinguish variable types and measurement levels

Prepare for Problem Set 1 and Module 1 Discussion

Module 1 Discussion Prompt

Prompt

When does relying on data improve decision-making, and when can it mislead or distort outcomes? Provide one example where analytical techniques clarify a problem and one example where data limitations could lead to flawed or inaccurate decisions.

Start Here — Your Week 1 To-Do

Before our next class (Tuesday, Aug. 25)

1. **Read the full syllabus** — on Canvas and at scottlangford.com/pa3311.
2. **Complete the Syllabus Acknowledgment** on Canvas — **due Sunday, Aug. 23, 11:59 p.m.**
3. **Read Module 1 (Textbook Ch. 1–2)** — free online and on Canvas.
4. **Bring a laptop with Excel** to every class from here on.

Everything lives in two places: **Canvas** (readings, datasets, submissions) and **scottlangford.com/pa3311** (textbook, syllabus, slides).

Weekly quizzes & problem sets are due **Sundays, 11:59 p.m. Central**.

Questions? Office hours **T/R 1–3 p.m., Trauth Huffman Hall 355**, or email anytime.