URBAN 520
Quantitative Methods in Urban Design and Planning

URBAN DESIGN & PLANNING

Dates of Classes

Tuesdays & Thursdays
09/25/2025 - 12/08/2025

Time of Classes

Tuesdays & Thursdays
1:30 - 4:20

Location of Classes

GLD 114

Instructor:
Dr. Saeideh Sobhaninia
(Saida Sobhani)

Email: sobhani@uw.edu
Office Location: GLD 418
Office Hours:
Wednesdays 10-12 by appointment

Teaching Assistant:
Hoseok SA

Course Information

This course introduces students to fundamental quantitative methods used in urban design and planning. It emphasizes statistical thinking, data analysis, and interpretation to support evidence-based planning. Students will gain hands-on experience using Excel and JMP to perform statistical analyses. The course is practice-oriented, culminating in the application of regression techniques to real-world urban planning datasets.

Course Objectives

• Understand how data analysis and statistics fit into the general design and planning process.
• Test hypotheses using parametric and non-parametric analysis.
• Analyze statistical data.
• Learn the statistical skills required for professional practice and/or for thesis or dissertation research.
•Apply statistical analysis in support of planning problem-solving.
• Develop critical thinking skills necessary to compete in the planning profession

Learning Outcome

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

• Describe and apply basic statistical concepts in planning contexts.
• Use Excel and JMP to perform descriptive, inferential, and regression analyses.
• Identify an appropriate quantitative approach to answer research question and being able to apply the approach
• Interpret and communicate quantitative findings in planning-related projects.

Course Organization

The course is divided into three parts:
• **Descriptive statistics**
• **Inferential statistics**
• **Spatial Statistics**
Each session of the course consists of both lectures followed by required lab exercises. In the lectures, I introduce statistical techniques and discuss their conceptual foundations. We will then work through a number of in-class exercises that apply the various techniques to small data sets or alternatively we learn to apply these techniques to larger, more realistic data sets using JMP and Excel.

Course Format
In-person seminar.

Required Course Resources

Textbook

Required Textbooks
Ewing, R., & K. Park (2020). Basic Quantitative Research Methods for Urban Planners. New York, NY: Routledge Link to Download

AND/OR

Salkind, N. J. (2020). Statistics for people who think they hate statistics (7th ed.).
Thousand Oaks, CA: Sage Publications.

Statistical Software

We will use Statistical Software JMP, Microsoft Excel, and GeoDa in this course. Students will need to install these programs on their personal machines. Please use the following links for installation:

1. JMP

This software is free through your UW credentials (UW Software Library). You need to create an account and verify your UW credentials. Once you create your account (My JMP), you can download and use the software for free (Installation link).

2. Excel

This software is free through your UW credentials (UW Software Library).

3. GeoDa

This software is free and can be through their website (GeoDa).

4. Canvas

We will use Canvas, a web-based instructional medium, as our course communication and information center. I will post copies of this syllabus, the course calendar, lab practica, practica data sets, web site links, and other useful items on our class site. You can reach the class site from XXX

To access Canvas you must have a UW e-mail account. Your UW e-mail name and password are required to log into the system. Non-UW e-mail accounts will not work. To obtain a UW e-mail account, visit: XXX

You are required to check your Canvas notifications for any updates on a regular basis. Most communications are done through Canvas.

Course Assignment & Student Success

Your grade will be determined by exams, weekly and written assignments, a final project, a final presentation, and participation, with rubrics provided separately; all assignments must be submitted through Canvas, and late work will be penalized. **Weekly and Written Assignments** are designed as a scaffolding block for the preparation of the final project for the class and will cover applications of the statistical concepts learned in class. **Final Project** is an individual project based on the topic decided jointly by a student and instructor. The deliverables of the project include the collection of weekly and written assignments. More information regarding the final project is provided on a seprate document. **Class presentation**: A 5-minutes presentation based on your final assignment and structured similar to the 3MT format. Your attendance in both presentation sessions is required. **Participation** is based on your attendance in the class, and participation in reading discussions, lab projects, Canvas discussion board, and office hours.

Course Assignments

October	November	December

10/16
Exam 1
50 Points

11/20
Exam 2
50 Points

Weekly Assignments
Find the due dates on the course calendar
5 x 10 = 50 Points

10/07
Written Assignment
10 Points

11/13
Written Assignment
20 Points

11/25
Written Assignment
20 Points

12/02-12/04
Class Presentation
30 Points

12/09
Final Project
70 Points

Class Participation
100 Points

YOU'VE RECEIVED 3 FLEXIBILITY TOKENS!

You can spend one of these to:
- receive a 48-hour extension on an assignment
- resubmit an assignment that did not earn credit

Graduate Grading Scale

Percent	UW	Letter Grade
95% - 100%	3.9 - 4	A
90% - 94%	3.5 - 3.8	A-
87% - 89%	3.2 - 3.4	B+
83% - 86%	2.9 - 3.1	B
79% - 82%	2.5 - 2.8	B-
76% - 78%	2.2 - 2.4	C+
73% - 75%	1.9 - 2.1	C
68% - 72%	1.5 - 1.8	C-
65% - 67%	1.2 - 1.4	D+
62% - 64%	0.9 - 1.1	D
60% - 61%	0.7 - 0.8	D-
0% - 59%	0.0 - 0.6	E

Expectations

- Check the course daily for updates.
- Communicate regularly with your instructor, TA, and peers.
- Create a personal schedule allowing enough time for coursework.
- Complete assignments on time.
- Keep copies and backups of all work.

Fairness
Deadline extensions and make-up exams are only granted for extenuating circumstances, and missed exams must be reported via Canvas by the exam time.

Readings
Complete assigned readings before class to better understand lectures and participate in discussions.

Tentative Course Calendar

Date	Class/Module & Topic	Reading	Class Activity	Assignment
09/25	**The Prequel** Introduction to the course Uses of statistics in planning		Installing JMP Software and GeoDa	
09/30	**Choose Your Fighter: Qual, Quant, or Mixed?** Introduction to types of Research Why Quantitative Methods Matter	Ewing & Park (2020) Chapter 3 OR Salkind & Frey (2020) Chapter 1	Introduction to Excel & JMP interfaces Dataset cleaning and prep in Excel & JMP	Explore the assigned data-sets OR Find new dataset of interest. Submit your data Due: 10/2
10/02	**Data Everywhere, But Which One Do I Pick?** Types of planning data Data Sources for Planners	Ewing & Park (2020) Chapter 4	Importing data in Excel & JMP	Select a topic of interest that can be studied through the identified data set Draft a one-page problem statement Due: 10/7
10/07	**Just the Truth** Conceptual Framework / Validity and Reliability Scales of measurements, Discrete vs. Continuous	Ewing & Park (2020) Chapters 5 & 6 OR Salkind & Frey (2020) Chapter 6	Data types in JMP	Create a Conceptual Framework for the topic of interest Due: 10/9
10/09	**Means to an end: Stats That Describe Your Mess** Descriptive Statistics for one variable: measures of central tendency and dispersion **A picture is worth a thousand words** Data visualization	Ewing & Park (2020) Chapter 7 OR Salkind & Frey (2020) Chapters 2, 3, & 4	Descriptive statistics in Excel & JMP	Calculate Mean, Median, and Mode for the variables of interest Due: 10/14

Tentative Course Calendar (Continued)

Date	Class/Module & Topic	Reading	Class Activity	Assignment
10/14	**When Two Stats Click: Relationships 101** Descriptive Statistics for two variables - correlation, association, and simple regression	Ewing & Park (2020) Chapter 9 OR Salkind & Frey (2020) Chapter 5	Create and interpret correlation matrices in Excel & JMP	
10/16	**Test your question before it tests you** Hypothesis testing Probability and sampling distributions.	Salkind & Frey (2020) Chapters 7 & 8	Exam 1 Building and interpreting confidence intervals in JMP	Develop a hypothesis for the topic of interest Due: 10/21
10/21	**Significantly significant: The Drama of Small p-values** Introduction to inferential statistics: logic of statistical tests **Only the lonely** One-sample z test	Salkind & Frey (2020) Chapters 9 & 10	Create and interpret correlation matrices in JMP	
10/23	No Class – ACSP Conference			
10/28	**Tea for two** Difference of Means Test (T-Tests) Two-sample t-tests	Ewing & Park (2020) Chapter 10 OR Salkind & Frey (2020) Chapters 11 & 12	One-sample and two-sample t-tests in JMP	
10/30	**Statistically Speaking, You're Not All That Different** Introduction to ANOVA Non-parametric tests for comparison between categorical variables	Ewing & Park (2020) Chapter 11 OR Salkind & Frey (2020) Chapters 13 & 14	ANOVA in JMP	

Tentative Course Calendar (Continued)

Date	Class/Module & Topic	Reading	Class Activity	Assignment
11/04	**Just friends or something more?** Testing Relationships Using Correlation Coefficient.	Salkind & Frey (2020) Chapter 15	Run and interpret regressions in JMP	
11/06	**Be magical** Predicting the Future using Linear Regression	Ewing & Park (2020) Chapter 12 OR Salkind & Frey (2020) Chapter 16	Run and interpret regressions in JMP	Draft the Methodology (a one to two page on data collection and data analysis methods) **Due: 11/13**
11/11	No Class – Veterans Day			
11/13	**Back to the Future: Regression Reloaded** Linear Regression		Run and interpret regressions in JMP	Hypothesis test for the topic of interest **Due: 11/18**
11/18	**It isn't that easy** Introduction to multiple regression		Running multiple regressions and diagnostics in JMP	
11/20	**Stats with a Sense of Place** Introduction to Spatial Analysis		Exam 2	Draft a one-page document on the result of the analysis **Due: 11/25**
11/25	**Maps That Speak Statistics** Spatial Analysis		Introduction to GeoDa	
11/27	No Class – Thanksgiving Day			
12/02 12/04	Class Presentations			**Final assignment is due by December 6, 2025**

Attendance

Attendance at all classes is expected. A pettern of unexcused tardiness or early departure from class will lead to loosing participation points. I understand that circumctances happen, so please communicate with the instructor or the TA in advance. Unless approved by the instructor/TA ahead of time, all absences will be unexcused. **Three unexcused absences will decrease your ability to participate in class so much so that will result in the loss of a letter grade in the class. Five unexcused absences will result in failure of the course**. The following absences are eligible to be excused: **documented illness, deaths in the immediate family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. Consideration will also be given to students whose dependent children experience serious illness**. While one is not penalized per se for excused absences, s/he is nevertheless responsible for all content missed, including any assignments, knowledge, or skills covered or assigned.

Illness Consideration: If you feel sick, you should not attend the class. Please communicate in advance with instructor/TA.

Collaboration

You are encouraged to discuss material covered in class lectures, readings, and the computer lab with your fellow students. But all work you complete for class assignments are required to be solely your own work. Evidence of excessive collaboration will be dealt with in accordance with the university rules regarding academic dishonesty.

In situations where collaboration is part of the assignment, the expectations will be clearly stated in the assignment overview.

Use of Generative AI

Use of Generative AI Permitted Under Some Circumstances or With Explicit Permission

Some assignments in this course may include or allow use of Artificial Intelligence (AI), including ChatGPT or related tools for the creation of text, images, computer code, audio, or other media. The instructor will inform you when, where and how you may use these tools, and provide guidance for attribution. If at any point you have questions about what is permitted, contact the instructor to discuss before submitting work. The main principle that should guide your interactions with AI in an academic context is "**Chat Don't Cheat**".

Upon using AI in your assignment, please be specific on why you used AI, How it helped the assignment, what software you used, and what process you followed.

Access and Accommodation

Your experience in this class is important to me. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented in this course. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. Contact DRS at disability.uw.edu.
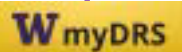
Religious Accommodation

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (/staff-faculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (/students/religious-accommodations-request/).

This syllabus is subject to change at the discretion of the instructor and/or college. Every effort will be made to avoid changes to the syllabus or course schedule, but the possibility exists that unforeseen events will make modifications necessary. If so, changes will be communicated via UW email and/or Canvas.