Geography 780 Neighborhoods

Spring 2025

Class Meetings

Meeting	Location	Time
Seminar	SH 325	Mon 12:00-2:40pm

Instructor

Name	Office hours	Location
Sergio Rey	Mon 3:00 - 4:00pm (by appointment)	PSFA 361G

Introduction

This seminar explores the concept of neighborhoods from a theoretical, empirical, and methodological perspective, emphasizing geospatial tools such as PySAL and GeoSnap. We will engage with classic and contemporary research on neighborhood delineation, change, segregation, and accessibility, while also applying geospatial data science techniques to real-world urban policy questions.

Each week will feature student-led discussions, focusing on key academic readings and methodological approaches. The seminar will culminate in a group project where students analyze a neighborhood-related research question using geospatial methods.

Prerequisites

- Graduate standing or permission of instructor

Computational Learning

We will be using open source geospatial software throughout the course together with Jupyter Notebooks, and Python as our scripting language.

All software for the course will be made available through JupyterHub, a web-based framework. Students wishing to install these materials on their own machines will be given instructions to do so, **but this is not required**.

Readings

All required readings are available through the links listed below. Assigned readings should be completed before the date listed in the schedule (see below). Readings are essential for class discussions. Please complete them and reflect on their content before class.

Schedule

Week 1 (01-27) Introduction

- Course Introduction
- Introduction to computational resources

Week 2 (02-03) Neighborhoods

Readings

- Galster, George. "On the Nature of Neighbourhood." Urban Studies (Routledge) 38, no. 12 (November 2001): 2111–24. https://doi.org/10.1080/00420980120087072.
- Sampson, Robert J., Jeffrey D. Morenoff, and Thomas Gannon-Rowley. "Assessing 'Neighborhood Effects': Social Processes and New Directions in Research." Annual Review of Sociology 28, no. 1 (August 2002): 443–78. https://doi.org/10.1146/annurev.soc.28.110601.141114.

Activity

- Python Primer
- Exercise 1 Out (Due 02-21)

Week 3 (02-10) Neighborhood Data

Readings

- Logan, John R., Brian J. Stults, and Zengwang Xu. "Validating Population Estimates for Harmonized Census Tract Data, 2000-2010." Annals of the American Association of Geographers 106, no. 5 (September 2016): 1013–29. https://doi.org/10.1080/24694452.2016.1187060.
- Schroeder, Jonathan P. "Hybrid Areal Interpolation of Census Counts from 2000 Blocks to 2010 Geographies." Computers, Environment and Urban Systems 62 (March 2017): 53–63. https://doi.org/10.1016/j.compenvurbsys.2016.10.001.

Activity

- Geopandas

Week 4 (02-17) Neighborhood Delineation

Readings

- Delmelle, Elizabeth C. "Five Decades of Neighborhood Classifications and Their Transitions: A Comparison of Four US Cities, 1970–2010." Applied Geography 57 (February 2015): 1–11. https://doi.org/10.1016/j.apgeog.2014.12.002.
- Rey, Sergio J., L. Anselin, D.C. Folch, D. Arribas-Bel, M.L. Sastré Gutiérrez, and L. Interlante. "Measuring Spatial Dynamics in Metropolitan Areas." Economic Development Quarterly 25, no. 1 (2011): 54.

Activity

- GeoSNAP
- Exercise 2 Out (Due 02-28)

Week 5 (02-24) Neighborhood Change

Readings

- Kang, Wei, Elijah Knaap, and Sergio Rey. "Changes in the Economic Status of Neighbourhoods in US Metropolitan Areas from 1980 to 2010: Stability, Growth and Polarisation." Urban Studies, 2021, 27.
- Owens, Ann. "Neighborhoods on the Rise: A Typology of Neighborhoods Experiencing Socioeconomic Ascent." City & Community 11, no. 4 (2012): 345–69. https://doi.org/10.1111/j.1540-6040.2012.01412.x.

Activity

- Modeling neighborhood change

Week 6 (03-03) Neighborhood Gentrification

Readings

- Gray, Jennie, Lisa Buckner, and Alexis Comber. "Identifying Neighbourhood Change Using a Data Primitive Approach: The Example of Gentrification." Applied Spatial Analysis and Policy, March 8, 2023. https://doi.org/10.1007/s12061-023-09509-y.
- Rucks-Ahidiana, Zawadi. "Racial Composition and Trajectories of Gentrification in the United States." Urban Studies 58, no. 13 (October 2021): 2721–41. https://doi.org/10.1177/0042098020963853.

Activity

- Measuring gentrification
- Exercise 3 Out (Due 03-14)

Week 7 (03-10) Neighborhood Accessibility

Readings

- Knaap, Elijah. "The Cartography of Opportunity: Spatial Data Science for Equitable Urban Policy." Housing Policy Debate 27, no. 6 (November 2, 2017): 913–40. https://doi.org/10.1080/10511482.2017.1331930.
- Wang, Jianying, Mei-Po Kwan, Gezhi Xiu, and Fangxu Deng. "A Robust Method for Evaluating the Potentials of 15-Minute Cities: Implications for Sustainable Urban Futures." Geography and Sustainability, August 2024, S2666683924000646. https://doi.org/10.1016/j.geosus.2024.07.004.

Activity

- Isochrones and center identification
- Project Call for Proposals

Week 8 (03-17) Neighborhood Segregation

Readings

- Knaap, Elijah, and Sergio Rey. "Segregated by Design? Street Network Topological Structure and the Measurement of Urban Segregation." Environment and Planning B: Urban Analytics and City Science 51, no. 7 (September 2024): 1408–29. https://doi.org/10.1177/23998083231197956.
- Rey, Sergio Joseph, and Elijah Knaap. "The Legacy of Redlining: A Spatial Dynamics Perspective." International Regional Science Review, August 7, 2022, 016001762211165. https://doi.org/10.1177/01600176221116566.

Activity

- Comparative segregation
- Exercise 4 Out (Due 04-11)
- Project Preferences

Week 9 (03-24) Project Studio: Introduction and Proposal Development

- Form project teams
- Identify research question & study area
- Brainstorm data needs and methodology
- Workshop: How to frame a good research question

Spring Break (03-31)

Week 10 (04-07) Project Studio: Data Collection and Processing

- Identify and obtain relevant neighborhood data
- Data integration, cleaning, harmonization and interpolation
- Project Scoping Document (Due)

Week 11 (04-14) Project Studio: Exploratory Data Analysis and Visualization

- Teams create initial exploratory analyses of data and statistical visualizations
- Project Data Bibliography (Due)

Week 12 (04-21) Project Studio: Analytical Methods and Model Development

- Teams explore models and analytics for their specific project
- Project Exploratory Analysis (Due)

Week 13 (04-28) Project Studio: Analysis and Results

- Continued analysis and model refinement
- Generation of initial findings
- Project Analytical Draft (Due)

Week 14 (05-05) Project Studio: Drafting Report and Initial Presentation

- Teams outline final report structure
- Practice presentations in small groups

Final Exam Activity (05-12)

- Teams present their project
- Project Computational Essay and Presentations Due

Grading

GEOG 780 uses specification grading in evaluating student work and in determining your final course grade. The quality and quantity of your work will determine your course grade. The acceptable level of quality demonstrates competency in the concepts and methods covered in the course.

There is a two-step process for determination of your final course grade at the end of the quarter:

1. Using your quizzes, project, and exercise grades together determine your **base grade**.
2. Using your remaining tokens, determine if your base grade includes a ”plus”, ”minus”, or remains as your **final grade**.

Base Grade

For Step 1, the base grade is determined using the following specification:

Thresholds for base grade:

Item	A	B	C	D
Quizzes	6	4	3	2
Discussion Lead	1	1		
Discussion Participation	6	4	3	2
Exercises	4	3	2	1
Project	1	1		

You must pass all the thresholds to obtain the base grade.

Final Grade

For Step 2, your final course grade is determined as follows:

Tokens\Base	A	B	C	D
>=2	A	B+	C+	D+
1	A	B	C	D
0	A-	B-	C-	D-

> **Note**
>
> Note that SDSU grading policy does not allow A+ grades. However, if you have a base grade of A and score 90+ on your exam average, you are eligible for a letter of recommendation from the professor.

Discussion

A key component of the first part of the course is a focus on readings from the scientific literature on neighborhoods. Each student will be assigned a discussion lead, and all students are expected to participate in the class discussions of the weekly readings. All weekly readings are available on the canvas course site.

Quizzes

Beginning in week two, there will be a pre-class quiz that needs to be completed before the meeting. These quizzes assess your understanding of the mandatory background readings and are graded on a pass/fail basis. As they must be completed within ten minutes of starting, you should only attempt them after finishing the required readings.

Exercises

Four exercises are assigned on the dates listed in the syllabus. These exercises are evaluated based on whether they demonstrate a sufficient understanding of the covered content. When an assignment is deemed satisfactory, it indicates that the student has effectively showcased their comprehension of the subject matter.

Project

The final project is a key component of this seminar, where students will collaborate in small teams to address a neighborhood-centric research question. Projects will require applying the theory, concepts, and geospatial tools covered in the first part of the class, including PySAL, GeoSnap, and other open-source geospatial resources.

Teams will:

- Formulate a Research Question: Identify a meaningful and feasible research question related to neighborhoods, incorporating theoretical insights and practical challenges.
- Collect and Process Data: Gather and harmonize neighborhood-related datasets necessary for their analysis.
- Conduct Exploratory and Analytical Work: Perform exploratory spatial data analysis, statistical modeling, and visualization to address the research question.
- Present Findings: Share their research results through a formal presentation and a written report, which will include a clear discussion of methods, results, and implications.

The project will be evaluated based on the quality of the research design, execution, and presentation. It is intended to synthesize learning from the seminar, offering students an opportunity to engage with real-world urban policy challenges and produce tangible outcomes that showcase their skills.

Tokens

Each student is provided with three tokens at the beginning of the semester.

Using Tokens

1. Credit for a reading quiz that was failed (1 token).
2. Obtaining an extension for an exercise (1 token).
3. Revising an exercise that was submitted on-time but evaluated as unsatisfactory (2 tokens).

Policies

Accommodations

If you are a student with a disability and are in need of accommodations for this class, please contact Student Ability Success Center at (619) 594-6473 as soon as possible. Please know accommodations are not retroactive, and I cannot provide accommodations based upon disability until I have received an accommodation letter from Student Ability Success Center.

Privacy and Intellectual Property

Student Privacy and Intellectual Property: The Family Educational Rights and Privacy Act (FERPA) mandates the protection of student information, including contact information, grades, and graded assignments. I will use Canvas to communicate with you, and I will not post grades or leave graded assignments in public places. Students will be notified at the time of an assignment if copies of student work will be retained beyond the end of the semester or used as examples for future students or the wider public. Students maintain intellectual property rights to work products they create as part of this course unless they are formally notified otherwise.

Academic Integrity

The SDSU student academic integrity policy lists violations in detail. These violations fall into eight broad areas that include but are not limited to: cheating, fabrication, plagiarism, facilitating academic misconduct, unauthorized collaboration, interference or sabotage, noncompliance with research regulations and retaliation. For more information about the SDSU student academic integrity policy, please see the following: https://sacd.sdsu.edu/student-rights/academic-dishonesty.

Code of Conduct

As course instructor, I am dedicated to providing a harassment-free learning experience for all students, regardless of gender, sexual orientation, disability, physical appearance, body size, race, religion, or choice of operating system. All course participants are expected to show respect and courtesy to other students throughout the semester. As a learning community we do not tolerate harassment of participants in any form.

- All communication should be appropriate for a professional audience including people of many different backgrounds. Sexual language and imagery are not appropriate in this course.
- Be kind to others. Do not insult or put down other students. Behave professionally. Remember that harassment and sexist, racist, or exclusionary jokes are not appropriate for this course.
- Students violating these rules may be asked to leave the course, and their violations will be reported to the SDSU administration.

This code of conduct is an adaptation of the SciPy 2018 Code of Conduct.