

ANTHRO 130D/230D, POLISCI 241S
Spatial Approaches to Social Science

Winter 2011

Tue/Thurs 11-12:30
220 Meyer (Flex Lab)
Instructors: Jonathan Rodden and Claudia Engel
Teaching Assistant: Margaret Irving

This is an introductory level course to basic concepts of spatial data and spatial analysis techniques with selected examples as they are being used in the Social Sciences. Students will acquire skills in using relevant GIS software and gain experience in collecting, managing and analyzing spatial data. They will learn to think critically about spatial data and gain the ability to apply a spatial approach to topics of social science research.

The course is organized around two major substantive themes. We will first look at questions about the spatial distribution of population characteristics and their spatial relationships. What explains the location of workers, firms, and economic activity? What explains the rise and fall of cities, suburbs, and residential segregation? What conclusions can we draw about the spatial location of income groups? We will also look at questions of boundaries and discontinuities. What are the geographical underpinnings of regionalism and political polarization? What is the role of political, natural, or imagined boundaries (like neighborhoods) for spatial processes? How do we understand a spatial dynamics that crosses boundaries, like migration/immigration? The second theme will have us take a historical analytical approach. We will look at the socio-cultural history of landscapes and cities and how those have been formed over time. How do we read historical data? What is the relationship of spatial historical patterns to the contemporary world? Throughout the course, we will play close attention to problems of causal inference in the social sciences.

The course is geared towards students with no prior knowledge of GIS. It will require extensive use of computers and software. Since much of the benefit from this course will come from working through the evidence, students are expected to spend a significant amount of time engaging with data and case studies.

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk; phone: 723-1066; web site <http://studentaffairs.stanford.edu/oae>.

Software and Data

1-year student licenses for ArcGIS 10 will be distributed in class. The software is also available on all cluster machines and in the classroom. All project and class related data can be stored on a remote drive

and accessed from anywhere. We will provide instructions on how to do this.

NOTE: A workshop on ArcGIS will be offered for students of this class during the second week of the course. While this is not required part of the class, it will provide you with the necessary basic skills to use this complex software. If you are not familiar with ArcGIS you should take this workshop in order to successfully be able to complete your term project.

Readings

Selected chapters from:

- Boldstad, P (2008): GIS fundamentals : a first text on geographic information systems. White Bear Lake, Minn. : Eider Press,
Demer, M.N. (2003): Fundamentals of Geographic Information Systems. 2nd ed. Wiley & Sons.
Gregory, I.N. And P.S. Ell (2007): Historical GIS, Cambridge Univ. Press
Lillesand TM, R.W. Kiefer and JW Chipman (2008) : Remote Sensing and Image Interpretation 6th ed, Wiley & Sons.
Mitchell, A (2001): The ESRI Guide do GIS Analysis Vol1. Esri Press,.
O'Sullivan, D & D Unwin (2010): Geographic Information Analysis 2nd ed. Wiley & Sons.

Books are on reserve in the library.

Additional readings (articles) will be on coursework.

Evaluation

The course consists of three component: (1) substantive readings, (2) hands-on labs, and (3) a term project. The final grade will be calculated as follows:

Take home assignments:

• Exploring GIS data	5%	(due 1/20)
• Contextual map of project and proposal	15%	(due 1/27)
• GIS analysis (I)	5%	(due 2/10)
• GIS analysis (II)	10%	(due 2/17)
• Historical GIS	10%	(due 2/24)
GIS Project & Final Paper	35%	(paper due 3/17)
Participation in discussion of readings	20%	

Schedule

Week 1

Tue, January 4: Introduction

Course Overview

How to ask spatial questions

What is Tobler's law, and why is it so often true?

GIS and its role in Social Science research

Thurs, January 6

Representing and measuring the earth surface, concepts, limitations, history

Julie Sweetkind and Patricia Carbajales on campus GIS Resources

[Gregory & Ell: Chapter 2]

[O'Sullivan & Unwin Chapter 2]

Week 2

Tue, January 11

Social processes in space: Historical legacies, sorting, contextual effects, and diffusion

Key challenges for spatial social science: Causal inference and modifiable areal units

[V. O. Key, Jr. 1949. *Southern Politics in State and Nation*. Chapter 1: pp 3-12]

[Johnston, Ron and Charles Pattie. 2006. *Putting Voters in their Place: Geography and Elections in Great Britain*. Chapters 2-3: pp. 40-105.]

[“The Big Sort,” *The Economist*, June 19, 2008.]

[Andrew Gelman, Boris Shor, Joseph Bafumi, and David Park. 2007. “Rich State, Poor State, Red State, Blue State: What’s the Matter with Connecticut?” *Quarterly Journal of Political Science* 2: 345-367.]

[Zachary Elkins and Beth Simmons. 2005. “On Waves, Clusters, and Diffusion: A Conceptual Framework.” *Annals of the American Academy of Political and Social Science* 598: 33-51.]

Thurs, January 13

Projections

[CE]

ArGIS workshops are on either Jan 13th or Jan 14th. Participation strongly encouraged.

Spatial patterns of Class, Ethnicity, and Political Preferences

Week 3

Tue, January 18

Cities: From the ancient world to the industrial revolution

Guest speakers: Ian Robertson and Zephyr Frank

[Papers by guest speakers]

[V. Gordon Childe. 1950. “The Urban Revolution.” In Richard LeGates and Frederic Stout, eds., 2000. *The City Reader*, pp. 22-30.]

[H. D. Kitto. 1951. “The Polis,” from *The Greeks*. In *The City Reader*, pp. 32-36.]

[Henri Pirenne. 1925. “City Origins” and “Cities and European Civilization.” In *The City Reader*, pp.

38-45.]

[Friedrich Engels. 1845. "The Great Towns" from *The Condition of the Working Class in England in 1844*. In *The City Reader*, pp. 46-55.]

Thurs, January 20

GPS and Address geocoding (gpx, kml, Google Earth)

Guest: Trevor Hebert, GIS manager for Jasper Ridge (to be confirmed)

[CE]

Week 4

Tue, January 25

Urban form and the spatial structure of cities

[Alex Anas, Richard Arnott, and Kenneth Small. 1998. "Urban Spatial Structure." *Journal of Economic Literature* 36(3): 1426-1464.]

[Peter Mieszkowski and Edwin Mills. 1993. "The Causes of Metropolitan Suburbanization." *Journal of Economic Perspectives* 7(3): 135-147.]

[Edward Glaeser, Matthew Kahn, and Jordan Rappaport. 2007. "Why do the Poor Live in Cities? The Role of Public Transportation." *Journal of Urban Economics* 63: 1-24.]

[William Rankin, "Urban Legends," *Boston Review* November 2010.]

Thurs, January 27

Mapping Census data (spatial hierarchies, variables, historical census, joins)

[CE]

Week 5

Tue, February 1

Segregation by race and income

Guest speaker: Sean Reardon

[David Cutler and Edward Glaeser. "The Rise and Decline of the American Ghetto." *The Journal of Political Economy* 107, 3: pp. 455-506.]

[Reardon, Sean and Kendra Bischoff. 2010. "Income Inequality and Income Segregation."]

[Elizabeth Oltmans Ananat and Ebonya Washington. 2009. "Segregation and Black Political Efficacy," *Journal of Public Economics* 93, 5-6: 807-822.]

[Schelling, Thomas. 1969. "Models of Segregation." *American Economic Review* 59, 2: pp. 488-493.]

Recommended:

[David Cutler, Edward Glaeser, and Jacob Vigdor. 2008. "When are ghettos bad? Lessons from immigrant segregation in the United States." *Journal of Urban Economics* 63,3: 759-774.]

Thurs, February 3

Spatial Point patterns

[O'Sullivan & Unwin Chap 4.3-4.6 & 5.1-5.2: Point Pattern Analysis]

Week 6

Tue, February 8

Urban form, political preferences, and policy outcomes

[Jonathan Rodden, *The Long Shadow of the Industrial Revolution: Geography and the Representation of the Left* (book manuscript in progress)]

[Jowei Chen and Jonathan Rodden: *Districting and Electoral Bias* (working paper)]

Thurs, February 10

Working with area maps

[ESRI Guide vol 1, Chap 3: Mapping the Most and the Least]

[O'Sullivan & Unwin Chapter 7&8: Spatial Autocorrelation and Local Statistics]

Is geography fate? Spatial patterns in the past and present

Week 7

Tue, February 15

Geography and the deep historical roots of prosperity and poverty

Possible guest: Alberto Diaz-Cayeros

[Stanley Engerman and Kenneth Sokoloff. 1997. "Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies." In Stephen Haber, ed., *How Latin America Fell Behind*, pp. 260-302.]

[Abhijit Banerjee and Lakshmi Iyer. 2005. "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India." *American Economic Review* 94,4: pp.1190-1213.]

[Joana Narotomi, Rodrigo Soares, and Juliano Assunção. "Institutional Development and Colonial Heritage within Brazil." Forthcoming, *Journal of economic History*.

Thurs, February 17

Historical maps (georeferencing, digitizing)

PROJECT REVIEW (in class)

[CE]

Week 8

Tue, February 22

PROJECT REVIEW (in class) -- continued

Geography, GIS, and causal inference

Geography, ethnicity, and conflict

Guest: Ken Schultz

[Ken Schultz and Alex Lee. Title TBA]

[Reread Ananat and Washington from week 5, focusing on railroads as a tool for causal identification].

[Ryan Enos. 2010. "What tearing down public housing projects teaches us about the effect of racial threat on political participation." Working paper, Harvard University.]

Thurs, February 24

Remote sensing, raster analysis, landcover

[Lillesand et al Chap 1 Concepts and Foundations of Remote Sensing]

[Bolstad Chap 10: Topics in Raster Analysis]

Week 9

Tue, March 1

Using remote sensing in the social sciences

Guest: Nicholai Lidow

[Nicholai Lidow, Civilian Abuse and Rebel Governance: Comparing Liberia's Rebels using Satellite Data]

[John Agnew, Thomas Gillespie, Jorge Gonzalez, and Brian Min. 2008. "Badhdad nights: Evaluating the U.S. military surge using nighttime light signatures," *Environment and Planning* 40: 2285-2295.

[Brian Min. 2008. Democracy and Light: Electoral Accountability and the Provision of Public Goods." Working paper, U. of Michigan.]

Thurs, March 3

Map algebra, DEMs, Terrain analysis

[Bolstad Chap 11: Terrain Analysis]

[Demer Chap 10: Statistical Surfaces]

Week 10

Tue, March 8

Thurs, March 10 Presentations