

CHRISTOPHER G. PRENER, PH.D.

# READING LIST

SOC 4650 & SOC 5650: INTRODUCTION TO GIS  
SPRING, 2017  
SAINT LOUIS UNIVERSITY



# Reading Notes

Reading Abbreviations	
Abbreviation	Full Title
Brewer	Brewer, Cynthia. 2015. <i>Designing Better Maps: A Guide for GIS Users</i> . Redlands, CA: ESRI Press.
GIS Policy	Thomas, Christopher and Nancy Humenik-Sappington. 2009. <i>GIS for Decision Support and Public Policy Making</i> . Redlands, CA: ESRI Press.
Gorr & Kurland	Gorr, Wilpen L., and Kristen S. Kurland. 2013. <i>GIS Tutorial 1: Basic Workbook</i> . 10.3.x edition. Redlands, CA: ESRI Press.
Mitchell	Mitchell, Michael M. 2010. <i>Data Management Using Stata: A Practical Handbook</i> . College Station, TX: Stata Press.

Reading Locations	
Abbreviation	Location
ER	Electronic Reserves
GH	GitHub
Link	Website URL
PL	Pius Library

*Notes:* Github readings will be available in repository for the week that they are assigned repository; you will need to be a member of the course organization to access them. The password for the Electric Reserves site will be emailed to students at the beginning of the semester.



# Reading List

Week 1 - January 17<sup>th</sup>

## Course Introduction

### Topics

- Spatial Data - Thinking Spatially; What are GIS and GISc?
- Data Management - Intro to Stata, GitHub, and Atom
- Data Visualization - Intro to ArcGIS
- GISc and Public Policy - What We Learn From Maps
- Spatial Research - What is a Workflow?

### Readings

- Goodchild, M.F. 2010. "Twenty Years of Progress: GIScience in 2010." *Journal of Spatial Information Science* 1:3-20. [\[ER\]](#)
- Logan, J.R. 2012. "Making a Place for Space: Spatial Thinking in the Social Sciences and Humanities." *Annual Review of Sociology* 38:507-524. [\[ER\]](#)
- Logan, J.R., W. Zhang, and H. Xu. 2010. "Applying Spatial Thinking in Social Science Research." *GeoJournal* 75(1):15-27. [\[ER\]](#)
- Long, J.S. 2009. "Introduction." Pp. 1-10 in *The Workflow of Data Analysis Using Stata*. College Station, TX: Stata Press. [\[ER\]](#)

### Optional Readings

- Mitchell - Chapter 1
- Wilson, G. et al. 2016. "Good Enough Practices in Scientific Computing." *arXiv*. [\[Link\]](#)

### Lab Activity

- Lab 01 - Introduction to the Course Tools

## Week 2 - January 24<sup>th</sup>

### *Working with Data (Part 1)*

#### Topics

- Spatial Data - Types of Data
- Data Management - Do-Files, Literate Programming, and Exploring Data
- GISc and Public Policy - Open Data and Open GIS; Financial Benefits of GIS
- Spatial Research - Getting Organized for Replication

#### Readings

- Acock, A. 2014. "Working with Commands, Do-files, and Results." Pp. 75-90 in *A Gentle Introduction to Stata*. 4<sup>th</sup> edition. College Station, TX: Stata Press. [\[ER\]](#)
- GIS Policy - Chapter 1, pp. 1-6 & 13-15
- Haghish, E. F. 2016. "markdoc: Literate programming in Stata." *The Stata Journal* 16(4):964-988. [\[Link\]](#)
- Long, J.S. 2009. "Planning, organizing, and documenting." Pp. 11-46 in *The Workflow of Data Analysis Using Stata*. College Station, TX: Stata Press. [\[ER\]](#)
- Longley, P.A. et. al. Rind. 2015. "Representing Geography." Pp. 55-76 in *Geographic Information Science and Systems*. 4<sup>th</sup> edition. New York, NY: John Wiley & Sons. [\[ER\]](#)
- Sui, D. 2014. "Opportunities and Impediments for Open GIS." *Transactions in GIS* 18(1):1-24. [\[ER\]](#)

#### Optional Readings

- Green, R.W. 2005. *GIS in Public Policy: Using Geographic Information for More Effective Government*. 2nd edition. Redlands, CA: ESRI Press. [\[PL\]](#) (previous edition)
- Mitchell - Chapter 2, pp. 9-39

#### Lab Activity

- Lab 02 - Working with Data in Stata

#### Assignment Due

- Student Information Sheet and Syllabus Agreement

## Week 3 - January 31<sup>st</sup>

### *The Nature of Spatial Data (Part 1)*

#### Topics

- Spatial Data - Methodological Challenges in GISc
- Data Management - Cleaning Data
- GISc and Public Policy - Decision Making with GIS (Part 1)

#### Readings

- GIS Policy - Chapter 2, pp. 19-30
- Mitchell - Chapter 3 [\[ER\]](#)

#### Optional Readings

- Anselin, L. 1989. "What is Special About Spatial Data? Alternative Perspectives on Spatial Data Analysis." [\[Link\]](#)
- Haining, R. 2009. "The Special Nature of Spatial Data." Pp. 25-40 in *The SAGE Handbook of Spatial Analysis*, edited by A.S. Fotheringham and P.A. Rogerson. Thousand Oaks, CA: Sage. [\[Link and PL\]](#)

#### Lab Activity

- Lab 03 - Cleaning Data

*Week 4 - February 7<sup>th</sup>*

*The Nature of Spatial Data (Part 2)*

**Topics**

- Spatial Data - Representing Geography
- Data Visualization - Tools for Mapping in ArcGIS; Basic Design Principles
- GISc and Public Policy - Decision Making with GIS (Part 2)

**Readings**

- Brewer - Chapters 1 and 2
- GIS Policy - Chapter 2, pp. 31-44
- Gorr and Kurland - Chapter 1
- Tufte, E. 2001. "Data Maps." Pp. 16-27 in *The Visual Display of Quantitative Information*. 2<sup>nd</sup> edition. Cheshire, CT: Graphics Press. [ER]

**Optional Readings**

- Martin, D. 2009. "The Role of GIS." Pp. 41-62 in *The SAGE Handbook of Spatial Analysis*, edited by A.S. Fotheringham and P.A. Rogerson. Thousand Oaks, CA: Sage. [PL]

**Lab Activity**

- Lab 04 - Basic Map Production

**Assignment Due**

- Problem Set 01 - Cleaning Data



## Week 5 - February 14<sup>th</sup>

### Cartographic Design

#### Topics

- Spatial Data - Cartography and Map Production
- Data Visualization - Designing Maps in ArcGIS; Working with Color
- GISc and Public Policy - Public Participation with GIS (Part 1)

#### Readings

- Brewer - Chapters 7 and 8
- GIS Policy - Chapter 3, pp. 47-57
- Gorr and Kurland - Chapter 2
- Tufte, E. 1990. "Color and Information." Pp. 81-95 in *Envisioning Information*. Cheshire, CT: Graphics Press. [\[ER\]](#)

#### Optional Readings

- Brewer, C.A. 2006. "Basic Mapping Principles for Visualizing Cancer Data Using Geographic Information Systems (GIS)." *American Journal of Preventive Medicine* 30(2S): S25-S36. [\[ER\]](#)
- Brewer, C.A. 2008. *Designed Maps: A Sourcebook for GIS Users*. Redlands, CA: ESRI Press. [\[PL\]](#)
- Harrower, M. and C.A. Brewer. 2003. "ColorBrewer.org: An Online Tool for Selecting Color Schemes for Maps." *The Cartographic Journal* 40(1): 27-37. [\[Link\]](#)

#### Lab Activity

- Lab 05 - Cartographic Design

#### Assignment Due

- Problem Set 02 - Basic Map Production

*Week 6 - February 21<sup>st</sup>*

### *GIS Outputs*

#### **Topics**

- Spatial Data - Geovisualization
- Data Visualization - Building Map Layouts for Dissemination

#### **Readings**

- Brewer - Chapters 3 and 4
- Gorr and Kurland - Chapter 3
- Tufte, E. 1990. "Small Multiples." Pp. 67-79 in *Envisioning Information*. Cheshire, CT: Graphics Press. [ER]
- Tufte, E. 2006. "Analytical Design." Pp. 125-139 in *Beautiful Evidence*. Cheshire, CT: Graphics Press. [ER]

#### **Optional Readings**

- Demsar, Urska. 2009. "Geovisualization and Geovisual Analytics." Pp. 41-62 in *The SAGE Handbook of Spatial Analysis*, edited by A.S. Fotheringham and P.A. Rogerson. Thousand Oaks, CA: Sage. [PL]

#### **Lab Activity**

- Lab 06 - GIS Outputs

#### **Assignments Due**

- Problem Set 03 - Cartographic Design
- Final Project - Topic Memo
- Quiz 01 (covering Weeks 1 through 5)

*Week 7 - February 28<sup>th</sup>*

*Geodatabases*

**Topics**

- Spatial Data - Storing Spatial Data
- Data Management - Creating New Variables
- GISc and Public Policy - Public Participation with GIS (Part 2)
- Spatial Research - Digging in to the Final Project: Planning, Organizing, and Documenting

**Readings**

- GIS Policy - Chapter 3, pp. 58-75
- Gorr and Kurland - Chapter 4, pp. 145-154

**Optional Readings**

- Mitchell - Chapters 4 and 5

**Lab Activity**

- Lab 07 - Geodatabases

**Assignment Due**

- Problem Set 04 - GIS Outputs

*Week 8 - March 7<sup>th</sup>*

*Spatial Joins*

**Topics**

- Spatial Data - Combining Data Sources
- Data Management - Modifying Strings and Merging Data
- GISc and Public Policy - GIS and Public Safety (Part 1)

**Readings**

- GIS Policy - Chapter 4, pp. 77-87
- Gorr and Kurland - Chapter 4, pp. 155 onward

**Optional Readings**

- Mitchell - Chapter 6

**Lab Activity**

- Lab 08 - Spatial Joins

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*Week 9 - March 14<sup>th</sup>*

*Online Lecture: Demographic Data*

**Topics**

- Spatial Data - Georeferenced Demographic Data
- Data Management - Exporting Data
- Spatial Research - Expanding Documentation

**Readings**

- Gorr and Kurland - Chapter 5, pp. 193-203

**Lab Activity**

- Lab 09 - Accessing Demographic Data

*Note: There is no scheduled class meeting this week. Watch the online lecture on your own and complete the lab assignment.*

Week 10 - March 21<sup>st</sup>

### *Working with Projections*

#### Topics

- Spatial Data - Projected Coordinate Systems; Projecting x,y Data
- Data Visualization - Typography
- GISc and Public Policy - GIS and Public Safety (Part 2)
- Spatial Research - Posters (in-class) and Papers (online; SOC 5650 only)

#### Readings

- Brewer - Chapter 5
- GIS Policy - Chapter 4, pp. 88-92
- Gorr and Kurland - Chapter 5, pp. 175-184
- Maher, M. 2013. "Identifying the Projected Coordinate System". Pp. 35-55 in *Lining Up Data in ArcGIS*. 2<sup>nd</sup> edition. Redlands, CA: Esri Press. [\[ER\]](#)
- Maher, M. 2013. "Defining Projections and Their Parameters; Adding x,y Data; Analyzing the Shape of Buffers." Pp. 167-182 in *Lining Up Data in ArcGIS*. 2<sup>nd</sup> edition. Redlands, CA: Esri Press. [\[ER\]](#)

*Note: Read Maher's (2013) chapter on "Defining Projections" before reading her chapter on "Identifying the Projected Coordinate System". Read both of these before reading the assigned section of Gorr and Kurland (2013).*

#### Optional Readings

- Maher, M. 2013. *Lining Up Data in ArcGIS*. 2<sup>nd</sup> edition. Redlands, CA: Esri Press. [\[PL\]](#)

#### Lab Activity

- Lab 10 - Projection Systems

#### Assignment Due

- Problem Set 05 - Spatial Joins
- Final Project - Annotated Bibliography (SOC 5650 only)

*Week 11 - March 28<sup>th</sup>*

*Geoprocessing (Part 1)*

**Topics**

- Spatial Data - Modifying Shapefiles - Select By, Clip, and Dissolve
- Data Visualization - Labeling Features

**Readings**

- Brewer - Chapter 6
- Gorr and Kurland - Chapter 6, pp. 219-228

**Lab Activity**

- Lab 11 - Geoprocessing (Part 1)

**Assignment Due**

- Problem Set 06 - Working with Projections
- Quiz 02 (covering Weeks 6 to 10)

*Week 12 - April 4<sup>th</sup>*

*Working with Data (Part 2)*

**Topics**

- Spatial Data - Open GIS Data - GeoJSON
- Data Management - Appending and Collapsing Datasets
- Data Visualization - Mapping and Plotting in Stata
- GISc and Public Policy - Supporting Decisions and Policy (Part 1)
- Spatial Research - Presenting Results - Graphs

**Readings**

- GIS Policy - Chapter 5, pp. 93-105
- Tufte, E. 2001. "Chartjunk." Pp. 107-121 in *The Visual Display of Quantitative Information*. 2<sup>nd</sup> edition. Cheshire, CT: Graphics Press. [\[ER\]](#)

**Optional Readings**

- Mitchell, M. 2012. *A Visual Guide to Stata Graphics*. 3<sup>rd</sup> edition. College Station, TX: Stata Press.

**Lab Activity**

- Lab 12 - Working with Data (Part 2)

**Assignment Due**

- Problem Set 07 - Geoprocessing (Part 1)

*Week 13 - April 11<sup>th</sup>*

*Geoprocessing (Part 2)*

**Topics**

- Spatial Data - Modifying Shapefiles - Merge, Intersect, and Union
- Data Visualization - Customizing Symbols
- GISc and Public Policy - Supporting Decisions and Policy (Part 2)
- Spatial Research - Presenting Results - Tables

**Readings**

- Brewer - Chapter 9
- GIS Policy - Chapter 5, pp. 106-117
- Gorr and Kurland - Chapter 6, pp. 229-238

**Lab Activity**

- Lab 13 - Geoprocessing (Part 2)

**Assignment Due**

- Final Project - Poster Drafts (all students) and Paper Drafts (SOC 5650 *only*)



*Week 14 - April 18<sup>th</sup>**Digitizing Data***Topics**

- Spatial Data - Digitizing Data and Working with Raster Data
- GISc and Public Policy - Supporting Policies with GIS (Part 1)

**Readings**

- GIS Policy - Chapter 7, pp. 135-156
- Gorr and Kurland - Chapter 7

**Lab Activity**

- Lab 14 - Digitizing Data

**Assignment Due**

- Problem Set 08 - Geoprocessing (Part 2)
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*Week 15 - April 25<sup>th</sup>**Geocoding Data***Topics**

- Spatial Data - Mating Data to ZIP Codes and Street Addresses
- GISc and Public Policy - Supporting Policies with GIS (Part 2)

**Readings**

- GIS Policy - Chapter 7, pp. 157 onward
- Gorr and Kurland - Chapter 8

**Lab Activity**

- Lab 15 - Geocoding Data

**Assignment Due**

- Problem Set 09 - Digitizing Data

*Week 16 - May 2<sup>nd</sup>*

*Spatial Analyses & Course Wrap-up*

**Topics**

- Spatial Data - Proximity and Site Suitability Analyses, Heatmaps
- Spatial Research - Project Checklist; Final Thoughts

**Readings**

- Gorr and Kurland - Chapter 9, pp. 313-322

**Lab Activity**

- Lab 16 - Spatial Analyses

**Assignment Due**

- Problem Set 10 - Geocoding Data
- Quiz 03 (covering Weeks 11 to 15)

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*Week 17 - May 9<sup>th</sup>*

*Finals Week - Presentations*

**Location:** TBA

**Time:** 4:00pm to 5:50pm

**Assignment Due**

- Final Project - Posters and Brief Presentations
- Final Project - Papers (SOC 5650 *only*)