Course Description: The purpose of this course is to provide students advanced knowledge in ArcGIS and spatial statistical analysis as tools for public policy decision making. GIS technology has been employed particularly for local governments’ policy decision making processes balancing key values such as efficiency, equity, community viability, and environmental quality (O’Looney 2000; Thomas and Humenik-Sappington 2009). We explore various case studies employing GIS analytical tools and replicate some of the analyses.

This course begins with surveying the application of GIS for decision support for public policy making. Then, the course moves to univariate descriptive and multivariate spatial analysis using ArcGIS and Geoda. The course ends by analyzing various urban issues focusing on the key values in public policy makings with GIS methods.

Textbooks

Require

Weekly readings are available for downloadable from Dropbox or UH MD Anderson library.

Grading Scheme

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and class participation</td>
<td>10%</td>
</tr>
<tr>
<td>Term paper presentation</td>
<td>10%</td>
</tr>
<tr>
<td>Assignments</td>
<td>40%</td>
</tr>
<tr>
<td>Term paper</td>
<td>40%</td>
</tr>
</tbody>
</table>
Assignments

There will be several assignments over the course of the semester. Students are using assigned GIS or spatial analytical tool(s) to analyze the assigned data and to provide a written report of their findings. Both assignment documents and data sets are available from our class Blackboard. If the data exceed the upload capacity of blackboard, I will send you via email.

Term Paper

Each student can choose his or her research topic relating his or her area of interests. You will present your research at the last day of the course, December 1st, and submit your final version of your term paper by December 8th.

Submission deadlines

Unexplained late submission will not be graded. In special circumstance, the student can negotiate a later submission deadline by contacting me. All assignments and term paper must be submitted electronically.

University Policies

Academic Honesty Policy (http://www.uh.edu/provost/policies/uhhonesty_policy.html)

Academic Accommodations for Students with Disability (http://www.uh.edu/provost/fac/Policy_disab.html)

*If you need special accommodation to meet any of the requirements of this course, please contact me by the second class session.

Attendance

If you miss three class sessions without my approval, I will take out all of your participation points. Also please avoid being late for class since it is very disturbing to the other students. A student being late for class frequently will lose his or her participation points.

Course Schedule

Introduction (August 25th)

Lecture Series 1: GIS for decision support (Reading Assignment)

Readings

Greene, R. W. 2000. GIS in Public Policy. Redlands: ESRI Press. Chapter 1-Education, Chapter 2-Health and Safety, Chapter 4-Environment, Chapter 5-Social Services


   Chapter 1: Decision Support for Budget and finance
   Chapter 2: Defending a decision/reaching a compromise
   Chapter 3: facilitating public participation in decision making
   Chapter 4: Making decisions under pressure
   Chapter 5: Decision support for allocating resources
   Chapter 6: Making decisions on the fly
   Chapter 7: Supporting policies with GIS

Case studies


Lecture Series 2: Introduction to Spatial Data and ArcGIS exploratory analysis (September 8 & 15)
Gorr & Kurland GIS Tutorial 1, 2 & 3

Mapping where things are
Mapping the most and least
Mapping density


*Maanteay and Ziegler: Chapter 2 Spatial Data and Basic Mapping Concept
Gorr & Kurland: GIS Tutorial 1

More on Coordinate & Projections


Recommended

Selecting Color Scheme for Maps
Consult www.ColorBrewer.org


The assignment 1 document and datasets are downloadable from the course blackboard.

Lecture Series 3: Spatial Data Construction (September 22 and September 29)

Geodatabases, Importing data, Digitizing, and Geocoding

Map projection

Searching data

ESRI Business Analyst (Online Free trail)

Simply Map

Reference USA

Gorr & Kurland GIS Tutorial 4, 5, 6, AND 7


The assignment 2 document and datasets are downloadable from the course blackboard.

Lecture Series 4: Spatial Data Manipulations and Model Builder (October 6)

Gorr & Kurland GIS Tutorial 8

Finding what’s inside
Finding what's nearby
Mapping change


Maroko, Andrew, Juliana A Maantay, Nancy L Sohler, Kristen L Grady and Peter S Arno. 2009. “The complexities of measuring access to parks and physical activity sites in New York City: a quantitative and qualitative approach” International Journal of Health Geographies 8: 34 - 57


The assignment 3 document and datasets are downloadable from the course blackboard.

Lecture Series 5: Methods of Spatial Data Analysis (October 13)

Gorr & Kurland GIS Tutorial 9
Measuring geographic distribution
Analyzing patterns
Identifying clusters

Maantay and Ziegler: Ch 9, Methods of Spatial Data Analysis


The assignment 4 document and datasets are downloadable from the course blackboard.

Lecture Series 6: Raster Layers and Kernel density map (October 20)

Gorr & Kurland GIS Tutorial 10 & 11


The assignment 5 document and datasets are downloadable from the course blackboard.

Lecture Series 7: Spatial statistical analysis (October 27, November 3, 10 & 17)

Using ArcGIS

Spatial Correlation (Global and Local)

Spatial Regression


Koheeld, Carol W., and John Sprague. 2002. “Race, space, and turnout” Political Geography 21: 175-193

Spatial analysis with Geoda

Exploratory analyses
Spatial Correlation
Spatial regression analysis
The assignment 6 document and datasets are downloadable from the course blackboard.

November 24

Thanks Giving Holiday

December 1

Students’ project presentation