GEO 441/MPS 604: GIS FOR COMMUNITY DEVELOPMENT / SPECIAL TOPICS IN APPLIED GIS

Final Paper | Department of Geography, DePaul University. Nandhini Gulasingam

This paper requires you to apply what you learnt in this class to carry out a simple GIS analysis on your own, working on a topic of interest to you. In this paper you'll be working more independently, without step by step instructions to follow. The ability to develop and implement your own analysis is critical to your success as a GIS user.

A few special notes for this project:

- Final paper is **due on Aug 17 by 5:45 pm**. **Final paper will not be accepted past the due date** unless a documented medical or personal emergency arises.
- Your final paper should include 1 geographical research question, and spatial analytical operations you learnt in class. The maps you create should be **technically correct** (e.g. correct map type, correct normalization methods, etc.), **usable** (colors, symbols, labels, etc.) and **accurate** (data and map)
- Your final paper should include minimum of 1 maps but not more than 3. The report section (excluding the maps) should be 5-10 pages (singe spaced).
- **You cannot use data or research questions from the lab activities or assignments**; if you use data or research questions discussed in class **you will get an automatic zero for the final paper**.
- The whole paper should be well organized, well written and technically correct. The ideas should be clearly stated. Be precise and concise. I am looking for quality, not quantity. When reporting the findings and providing recommendations, please don't say the same thing in 10 different ways.
- Cite at least 5 reputable papers or articles.

INSTRUCTIONS

STEP-1: Formulate research question

Research question should identify the geographic extent and unit of analysis. For example if your research question was to find "Is there a correlation between population and crime in Chicago communities?" the geographic extent will be Chicago and the unit of analysis will be by Chicago Community Areas. This means you will have to gather attribute data such as population and crime for each of the 77 community areas and spatial data (shapefile) for the Chicago Community Areas.

Make sure that data is readily available to answer your research questions for the geographic extent you selected, and it is geographical in nature so that the spatial data and GIS will provide a new way of studying these research questions. If you cannot find the shapefiles or attribute data, you will have to come-up with a different research question.

STEP-2: Identify data sources

Finding the data to analyze your research question may be the most difficult and time-consuming part of this paper. Remember, you will need to find both the spatial data (in shapefile format or something that can be converted to shapefiles) and attribute data. You may be able to find data in the form of reports, maps, tables etc. in the library or government websites.

STEP-3: Download, clean and convert data

How much and what data you need will depend on your question – some of you may work with a single shapefile, while others may need multiple shapefiles. Your data may be 'ready to go' for analysis, or you

might have to do some sort of additional steps to prepare them, such as joining tables to shapefiles, or transforming from one file format to another.

STEP-4: Perform and describe spatial analysis using GIS

Your next step is to carry out the needed analysis to develop answers to your question. Your analysis should include at least one spatial analytical operation learnt this quarter. Spatial analytical operations you might need to answer your question could include: map types, classifications, normalizations, joins, digitizing, spatial selections or queries, etc. You are welcome to include simple statistical analysis of your data (means, medians, etc.), but these would need to be in addition to your spatial analytical operation. Of course, if more than one operation is required, you will want to write them all down for later inclusion in your paper. The goal here is for you to demonstrate your ability to analyze the sets of data and perform analyses that are extensions of the types of analyses we have performed this term in our lab activities and assignments.

STEP-5: Create maps

In completing this step, make sure that your map implements the principles and design techniques of cartography that we have studied this quarter – design and layout; effective use of text, color, visual hierarchy; include all map elements; use meaningful labels; format legend items; add comma separators, % or $ if necessary, etc. – and be sure to use the most appropriate thematic map type for your data. Be creative and professional in what you produce. Part of what you have learned is presentation.

STEP-6: Report findings or results and types of decisions that can be made

Provide an analytical interpretation for each of the map you have created. The interpretation should answer or inform your research question. Also indicate the types of decisions that could be made using the analysis, interpretation and map(s) you have created.

FINAL REPORT STRUCTURE

Final paper submission should have 2 parts:
(1) The final paper in MS word format – single word document that include the paper and the map(s).
(2) The zip file containing all of the files used to create the maps.

The final paper should include the following sections:

Abstract	Give a short summary of the paper including the goal, approach and important findings.	5 Points
Introduction	State and explain the research question. Describe the problem and/or hypothesis, your point of view of the problem, why it is important, context, motivation etc.	5 Points
Methodology	Steps of your approach, specifically where you obtained the data (site the exact data source), how you processed and what type(s) of spatial analysis did you perform to address your research question.	20 Points
Results and Findings	Include maps, interpret the maps. The map interpretation should address your research question and should explain your findings and recommendations.	50 Points
Future Work	Any additional avenues worth exploring based on what you have discovered so far? Does the current results obtained suggest new directions worth exploring by you? Explain how?	5 Points
References	Papers that you read and cited in your paper/final report, data sources	5 Points
Zip File	Zip the folder with all the data files (raw and cleaned excel/PDF files, all corresponding shape files), map files (mxd), and jpgs used for the final paper.	10 Points