GIS Final Project

Course 94-802A
Fall 2022
See Required Work and Deliverables for details

Due dates

- **Project proposal, Monday, November 21, midnight EST** – Word document with proposal outline, data sources identified, and confirmation that data has been obtained.
- **Interim Process logs** - Process logs are especially valuable for student projects so the instructor can assess and diagnose student work and provide feedback. Otherwise, some of the processing steps could remain hidden, and students would not get credit for their hard work. A detailed log is also useful to you if you may have to revise parts of the project, so that you do not have to reinvent steps. Record of the major processing steps that you took, with dates, when accessing, processing, integrating, and generating the data.
    - **Data collection and cleaning process log, Friday, December 2, midnight EST**.
- **GIS data, report, story map and/or dashboard, final process log, Friday, December 9, midnight EST**.

  Includes GIS data submitted as instructed below, a Word report (text used to populate Story Map), a few PowerPoint slides (can be images from your ArcGIS Pro project, Story Map, or Dashboard), and a Story Map or Dashboard. See deliverables for folder and file structure.

  Be sure to carefully follow the folder and naming instructions BEFORE beginning to download and import data.

Objective

In this project you will pose a question and answer it using geospatial analysis. Choose any topic of interest to you. You will find data on your own, visualize, and analyze the data using GIS with tools you have learned in this course.

Criteria

- The project has interesting and relevant data, uses sophisticated GIS processing, analysis, and has noteworthy results.

- Map design and communication are effective and professional.
- Written materials are brief, to the point, and well-done.
- Data folders and files are in the required format, named correctly, and cleaned with no intermediate or unused parts remaining.

Required work

Specifically state the analysis techniques you used in your process logs (see below). If working with a team of two you must use at least two of the analysis techniques listed below or receive approval from Professor Kurland. List each student in the process log and what steps each student completed.

1. Obtain relevant GIS layers and tabular data on your own.
2. Use good cartographic principles (colors, projections, fonts, scales, etc.)
3. Prepare input data as needed (for example, remove unnecessary columns and rows, include only file tables and layers in your file geodatabase, map, etc.)
4. Create new layer(s), from one or more of the following:
    - Data and spatial joins
    - Digitizing new features
    - Geoprocessing: clip, dissolve, merge, intersect, union
    - Geocoding or creating XY data as points
5. Use at one advanced analysis techniques (two if working in a team of 2):
    - Advanced geoprocessing or proximity analysis (for example, gravity model combined with a scatterplot or tabulate intersection)
    - Data mining and cluster/multivariate analysis
    - Network analysis
    - Raster GIS - kernel density estimation
    - Dashboard

    NOTE: Use of advanced external statistical tools (for example, Regression Analysis, R, SAS, etc.) in combination of steps 1-3 can be replace an analysis technique pending approval from Professor Kurland.
6. Written Report
    - For the report, use the outline (or a similar outline) as described below.

- Title
- Introduction/problem statement
- Approach/methodology
- Results, solution/findings
- Conclusion and/or future work
- Images
- Data source(s)
- References

7. Story Map and/or Dashboard
    - Create a Story Map using the text, chart, images, etc. from your Word document and/or GIS data or layers if you map is interactive. Your report and story map will include GIS map and analysis results, but the format of the story map can vary from the report as appropriate.
    - If creating a dashboard launch it directly from a Story Map or provide a direct link to the dashboard in a Word document (see details for presentation folder)
    - You will be graded on the GIS processes, results, and write up for the story maps/dashboards. Be sure to give yourself plenty of time to describe the project problem, approach, results, how to use dashboard, etc.
8. Statistics (for example, in your report or Story Map, do not merely state observations such as "it appears…")
9. Data sources, references, and citation. Be sure to cite all sources for ideas, facts, data, and images used in your report, story map, or dashboard. It's OK to use sources for major ideas, but then you must do original work based on those ideas AND you must cite the sources. This is a major ethical requirement regarding plagiarism.

Deliverables

1. Project proposal and data (due 11/21)

- **GISProposal_YourName(s).docx (uploaded to Canvas)**

  The proposal states the problem or issue, limits the scope of the project to a geographic area and specific purposes. State the intended advanced analysis technique from step 5 above. List data, specific sources, and confirmation that you have obtained the data. Some of the text in the proposal can be reused in the project's report. Note that the details of analysis tools can change slightly as you

work on the project.

NOTE: Points will be deducted if data list and sources are not included.

2. Interim process log (due 12/2)

- **GISDataCleaningProcessLog_YourName(s).docx (uploaded to Canvas)**

  Includes the steps taken to clean and process data per steps 1-4 above. Additional data cleaning can be done past this date, but most of the data cleaning should be complete.

3. All GIS project data including GIS data, Word document report, Story Map or Dashboard links, Power Point slides, and final process log file (due 12/9)

The required folder and file structure of your GIS project (listed below) are the major deliverables of the project.

- Clean all data and include only the relevant data used for the project.
- Do not turn in original files that are not used in the final project (such as original zip files from U.S. Census, ArcGIS Online etc. that are downloaded but not final GIS files) that are in your raw data folder.
- Include only what is used in the ArcGIS project and in your file geodatabase.
- In addition to the entire data set, a separate upload for just the Word document report, Power Point slides, and link to Story Map or Dashboard is required.

Folder and File Structure

\GISProjectYourName(s) - folder with the following files associated with an ArcGIS Pro project including ArcGIS Pro .aprx, project file geodatabase, toolbox, and sub-folders as described below. Do not include spaces or special characters in your folder or file names.

- **\Data** - folder with GIS files such as compressed shapefiles used to upload to ArcGIS Online or a Dashboard, exported layer files (if used in project), etc.
  Do not include extraneous or original downloaded data not used in the final product such as shapefiles that were imported into your file geodatabase.
- **\Documentation** - folder for process logs.
  - **GISDataCleaningProcessLog_YourName(s).docx**

- **GISFinalProcessLog_YourName(s).docx**- A complete process log of data gathering, cleaning, analysis, story maps, etc. You may copy and paste from the data cleaning and analysis process logs.

- **\Presentation**
  - **GISPresentation_YourName(s).pptx** – Create a *brief* Power Point presentation of your project including 6 or so slides.
  - **GISReport_YourName(s).docx**– report using the guidelines below whose *text and images or maps will be used to create your Story Map or Dashboard*.
  - **GISStoryMapDashboardURL_YourName(s).docx**–Word document that includes the following: Story Map or Dashboard title, Your Name(s), URL link.
    - URL ***must be the abbreviated URL*** and must be shared with the public.

Notes:

1. If you are going to use part or this entire project in another class or project, you need to inform Professor Kurland so that we can differentiate the work for both classes. There can be overlap between work for the two classes but generally you will have to do more than what is required for this class alone.
2. The instruction team will be available to help answer technical questions; however, ***we will not give step-by-step instructions nor give feedback on how well your project meets the grading criteria***.

What to turn in

Compress and upload your **GISProjectYourName(s)** folder as a .ZIP file to Canvas under Final Project Assignment > Submit Assignment.

Compress and upload your **GISProjectYourName(s)\Presentation** folder as a .ZIP file to Canvas under Final Project Presentation Files > Submit Assignment.