GIS Specialization Project: Milestone 4

Congratulations - you've completed the analysis phases of your project. Now all that's left is to share the results with others as maps. In this final milestone, you'll create two maps depicting your results. One is a web map, and the other is a PDF map in a print layout. Each of these should involve all typical elements of that type of map. Remember, as you make your maps, that maps are both your interpretation of the results as well as a tool for others to interpret the results. Your choices of what to include in the maps, how to symbolize the data, and how the map is laid out all influence how the information is perceived. Together the maps tell a story about your data.

This milestone should be relatively straightforward for most of you - requiring only that you make the two maps. But the maps should look **good** and display the data clearly. This milestone is a great time to practice your cartography and refine your sense of design. Show your draft maps to a friend or colleague and ask them how they interpret the map (without telling them anything else). If they have a hard time interpreting the map, or come away with a different message, tell them a bit more about the results and ask them for suggestions on how to improve the map. Design is incredibly iterative and requires understanding the person who will view the results. You can't do that without talking to others to get a sense for how they perceive things. Take your time to make a good map - the map, more than anything else in this project, is your portfolio piece to showcase your GIS abilities.

What to include in your maps

Generally speaking, think of these maps as supporting your written analysis from the previous milestone and vice versa. They should each make the other stronger. That said, your maps don't need to be comprehensive, showing every result in your analysis. Instead, I encourage you to pick a few themes out from your results and focus on displaying those themes well. If you **are** able to display all of your data, and make a map that makes sense, that's wonderful too, but don't feel like you must do so. Choosing what to include in a map is its own art and something that requires practice.

Think of the many interpretations of your result from the previous milestone and see if you can create a map that supports your interpretation. Alternatively, see if you can make a map that supports an alternate interpretation of your result. This is another chance to explore your data - see if you can find anything interesting that you hadn't seen before, and create a map about that. If you **do** make a map that shows themes not previously discussed in your analysis, make sure to update your written analysis to include your new interpretation from the maps.

Print Map

First, you'll need to create a PDF map in a print layout. In creating your print maps, the main question to consider at first is what information to display. if you have a lot of data to show, it can be hard to fit it into a single map, but sometimes it's worth trying and practicing your cartography skills so you can get more data on the map without a loss in clarity. Still, it's completely fine to make multiple maps, or to map just a portion of your results that is representative and submit that map.

Make sure to include all standard map elements. You should know what these are at this point, but they include:

- Your name
- A clear title
- The date published
- Data sources
- A legend
- A north arrow
- A scale bar
- The projection of the data frame (not all parameters, just the name of it)
- (optional) An inset map or graticule
- (optional) Additional explanatory text
- (optional) Your organizational affiliation, when map is done for hire

Again, spend time focusing on your cartography and your full layout. If you have significant map detail, consider making a map book with data driven pages, or multiple map layouts that emphasize different areas or themes (map bookmarks can make this smoother to work with). You only need to create one map for this, but if you want an even stronger portfolio piece, consider making a few others to show off your full analysis.

Web Map

You'll also need to create a web map for this milestone. As you create your web map, think about the different capabilities offered to you by the medium compared with print maps. Web maps allow for a different level of exploration from the viewer, so it's possible to include additional data and context that they can turn on and off if it obscures other data. While ArcGIS Online and other mapping platforms provide even more options for leveraging the web for viewing data, the free accounts are missing many of these options. Still, consider that the map's viewer has many more options in terms of scale and which layers to display than the viewer of your PDF maps will. Make sure to include a good title, clear layer names, and any map annotations that help the viewer understand what the map is showing.

As you create your web map, think of a few use cases for it. The first is similar to the print map, where it may be shown in the context of your analysis, embedded in a page with more information. In this case, it is a support piece that should match the text. You don't need to create the web page, but think of it as supporting your written analysis still. The other use case is as a standalone map that needs to speak for itself and be understood by the viewer with no additional information. If someone is linked directly to the map, will they understand it? Make sure they do by being clear in your cartography, but also in your labeling and annotation.

If your results include vector data, remember that you will need to export a Shapefile of your data and compress it with zip compression to upload it. Remember that a Shapefile is not just a feature class, but a specific file format - use the "Export" options to change formats, or use the Catalog window. See the supporting videos on ArcGIS Online if you need a reminder of how to do this. ArcGIS Online's free accounts only support Shapefiles with fewer than 1000 records. If you have more records, you may need to generalize (dissolve) your data to a different level for your web map, or display only a subset that shows a particular theme. You can also add your data as multiple layers or create multiple maps. Don't get caught up trying to show all of your data though. Consider what you can show with a subset, or the many different themes and characteristics that you can choose to display in your map that don't require your full dataset.

If your results include raster data, make sure to watch the new supporting video on uploading rasters to ArcGIS Online that is included as part of this milestone. With a free ArcGIS Online account, you can't upload standard raster datasets, so the video shows you a way to handle that by exporting a KML file. With a paid ArcGIS Online license, many other powerful methods to accomplish this are available, but for now, this free method is what you'll need to use.

What you'll submit

You'll submit the following for grading:

1. Your PDF map (or maps).
2. A link to your web map (make sure to set the sharing settings to "Everyone").
3. Your written analysis from the previous milestone. Make sure to update it to include any themes in your maps that were not previously discussed.
4. Your Executive Summary of the project.

Resources

If you have the time, it may be worth looking at a few resources for cartography, design, and map layouts.

- Designing Better Maps: A Guide for GIS Users, Second Edition by Cynthia Brewer. Bought locally, or on Amazon. This book discusses in depth techniques for improving your maps.
- Cartographer's Toolkit: Colors, Typography, Patterns. Bought locally, or on Amazon. This book is more of a reference for specific design techniques and involves less discussion.
- For inspiration: The NACIS Atlas of Design has great examples of beautiful cartography. See http://atlasofdesign.org/
- For colors: http://colorbrewer2.org