Maps, Mapping, and Geospatial Technologies

Title: Census Data and Geocoding

Due Date: March 27, 2023 at 11:59 pm

Required Resources:

- An internet enabled computer
- ArcGIS Pro

Purpose:

The purpose of this lab is for you to get hands-on experience searching and download U.S. Census data, loading into ArcPro, and creating a geocoder. This lab will continue to build upon your experience using ArcPro as well as an appreciation for how geospatial data can come in different forms. As you complete the lab exercise today, think about how you could use this in future projects, especially considering the elements of what makes a good web map.

You will also notice that there are fewer cues in the exercise – you can always reach out with any questions (jxsigm@rit.edu), but I would like to challenge you to learn more about the software and the methods, tools, and operations to complete your tasks. **This week's lecture includes a lot of helpful tips!**

Learning Objectives:

- Download geospatial data from the U.S. Census Website
- Create a Locator in ArcPro
- Geocode Addresses in ArcPro

Deliverables:

This week, you will have two deliverables: a shapefile (zipped) and a write-up based on the questions below. ***Your write up should not be a copy of this assignment, but a new word document that answers the questions below.*** The data created may be used in future assignments, so it is important you complete this assignment! Upload your write up to the lab assignment on myCourses. All the tasks below should be included in the same word document (or PDF). Name your write-up using this convention before posting:

[your last name]_Week10_lab.docx

Grading:

This assignment will be graded out of **15** points.

Task 1: Downloading TIGER Shapefiles

For this task, you will go to the TIGER Products website and download an available dataset.

1. Go to the Tiger/Line Shapefiles download page (https://www.census.gov/cgi-bin/geo/shapefiles/index.php)
2. Select **2022** for the year.
3. Select **All Lines** as the layer type.
4. Click on **Submit**.
5. In the next window, select **New York** and **Monroe** county.
6. Select **Download**.
7. Unzip the data (should have an ending of "_edges") and open the Shapefile in ArcPro.
8. Change the basemap to "World Street Map". Zoom in so that line features begin to appear in the basemap.

Question 1: Do your roads line up with the basemap? Why do you think they do (or do not)?
HINT: Think back to earlier lectures…

Question 2: Open the attribute table. Which four attributes do you think you will use for your geocoder to know the "to" and "from" limits for each road?

Task 2: Create the Locator

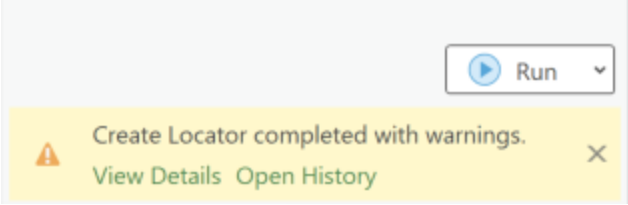
For this task, you will create a locator from the downloaded data in Task 1. Use the information provided during the lecture to create in ArcPro.

Hints:

- Access the Tools in the Analysis tab in ArcPro
- The tool is called "Create Locator"
- The role the downloaded data will play is "Street Addresses"
- Look at the attribute table to see which fields will match in the tool
- You should be able to match (at a minimum) the following fields:
    - Left House Number From
    - Left House Number To
    - Right House Number From
    - Right House Number To
    - Street Name

Question 3: After your process runs, you should see an option to "View Details" in the tool. Select that option to open a new window which should look something like the image below.

Take a screenshot of your result and copy/paste the results of the "Field Mapping" value.



You can ignore warnings this time!

"StreetAddress.FEATURE_ID 'tl_2022_36055_edges.shp'.FID"... (you will have more fields!)

Task 3: Geocode Addresses

For this task, you will download additional data and geocode the results to create a point file.

1. Access the **mystery_locations.csv** file from myCourses.
2. Add it to your map in ArcPro along with the line features from the previous step.
3. Right-click on the layer in the Table of Contents and select **Geocode Table**.
4. Either follow the workflow or go direct to the Tool, depending on your confidence in setting up the variables. Remember the "hands on lesson" in the lecture and refer to it if needed!
5. After matching is complete, select "Yes" to start the rematch process so that you can view each point.
6. **Note: If you need to, you can always run the process again to start the rematch process.**

Question 4: How many features matched?

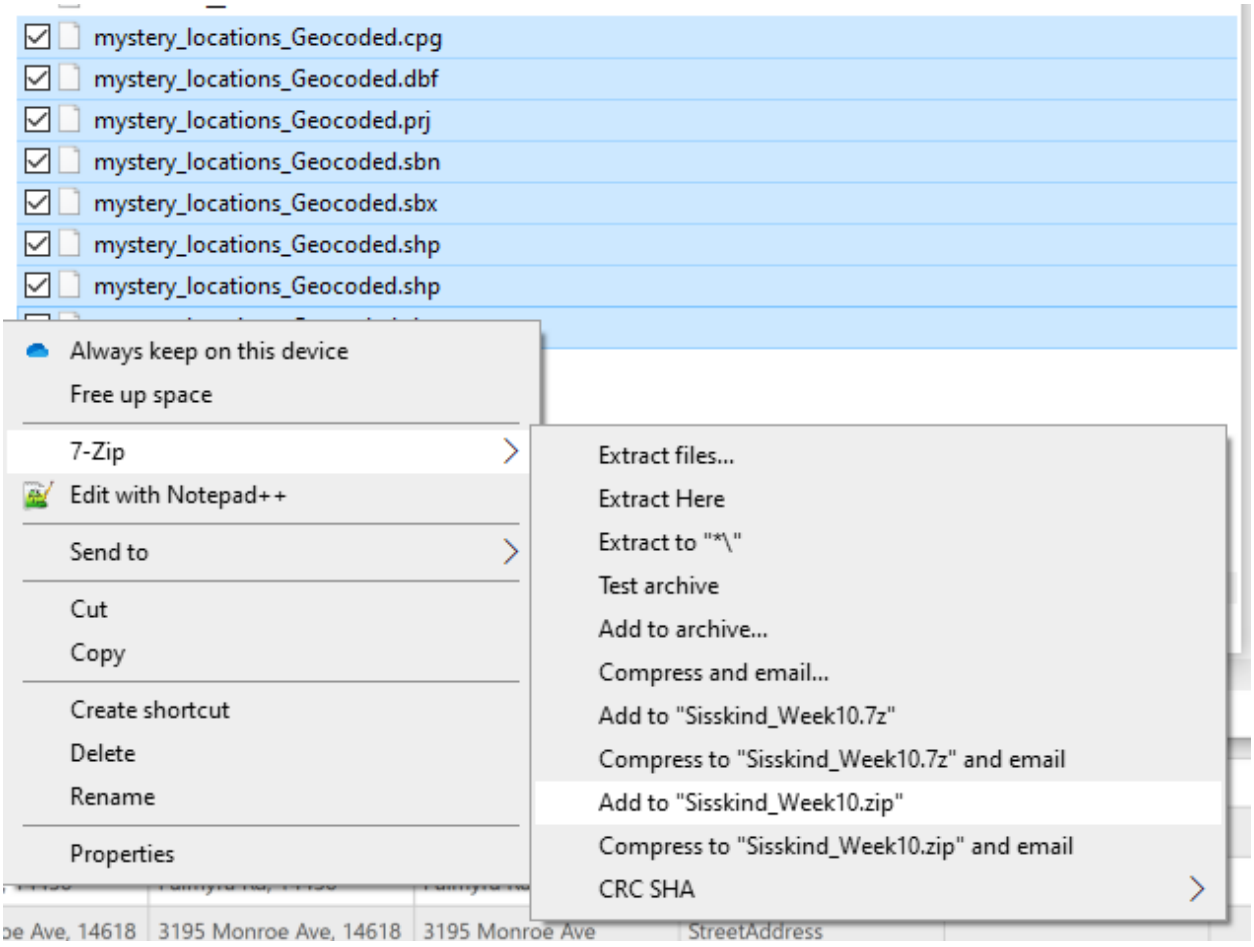
Question 5: In case you did not figure it out, the mystery locations were Wegmans Grocery Stores. How well did your locator work to geocode your addresses? Why did it (or did it not)?

Task 4: Submit Your Work

For this task, you will export your geocoded addresses as a shapefile

1. Open the Tools window and search for "Feature Class to Shapefile".
2. Select the geocoded features as your input features and a folder to export your shapefile.
3. Select "Run".

4. Go to the folder where the data was exported. You should see the same file name with a lot of extensions (remember how Shapefiles have a number of different files!).
5. Select all the files and compress to a .zip (see an example below):



6. Submit this .zip along with the answers to the questions in this assignment. This step is important to validate you were able to complete the previous tasks.