Week 6 Assignment: Visualize and Reuse GIS Workflows with ModelBuilder in ArcGIS Pro

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In this week's assignment, we follow a short tutorial (Van Rees, n.d.) to introduce us to the ModelBuilder feature of ArcGIS Pro. The intent of this tutorial is to show us how to create a macro-like behavior in ArcGIS Pro and begin to re-use operations we've completed. There are only four steps in this tutorial: downloading the data and instantiating the project, adding Select tool to the model, adding Get Count tool to the model, and saving the model. This tutorial walked us through how to import shapefiles, how to create a model in ArcGIS Pro's ModelBuilder feature, and how to use ModelBuilder to create more Geoprocessing tools. In this tutorial, we will be using data from the Natural Earth Quick Start kit. Let's begin!

Download the Data and Create a New Project in Pro

In the first section of the assignment, we download the data from the Natural Earth Quick Start kit. This kit gives us the initial "ne_10m_populated_places.shp" shapefile with the data we will be working with today. Figure 1 shows this quick start kit.

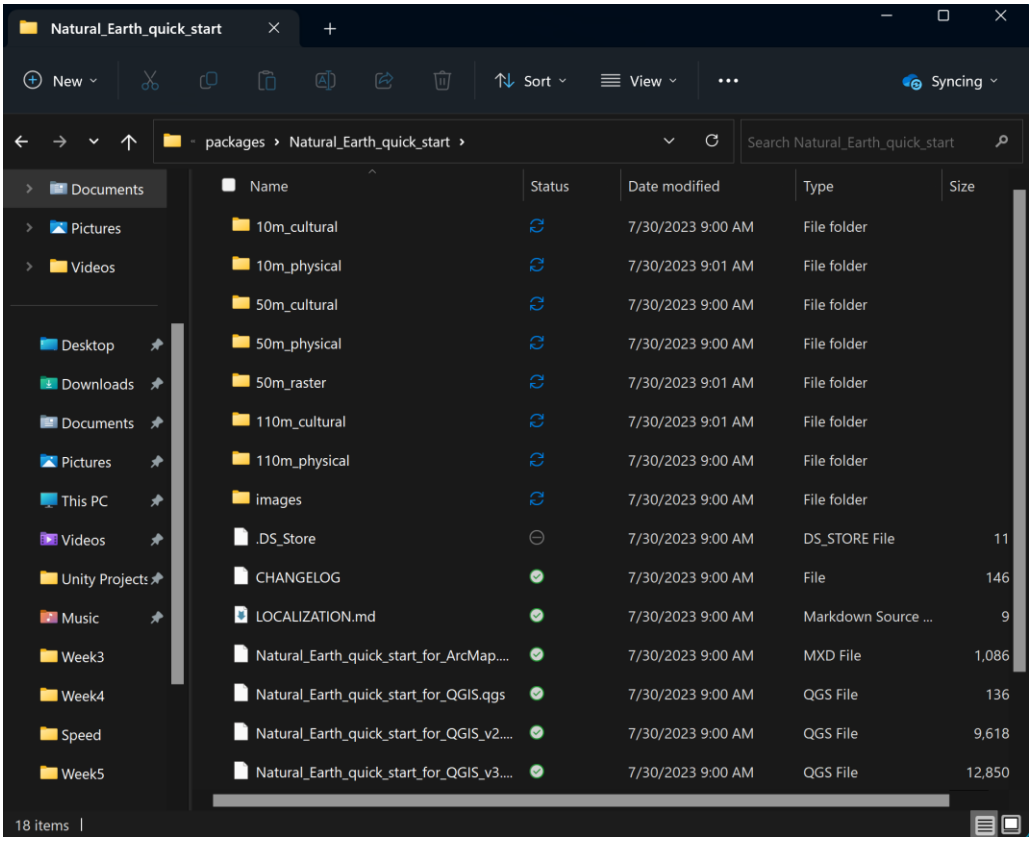

Figure 1: Downloaded Natural_Earth_quick_start files

Figures 2 through 4 show how this folder can be added to ArcGIS Pro as a Folder Connection. The Catalog interface is initially opened as a new project, and then the Folder Connection is made.

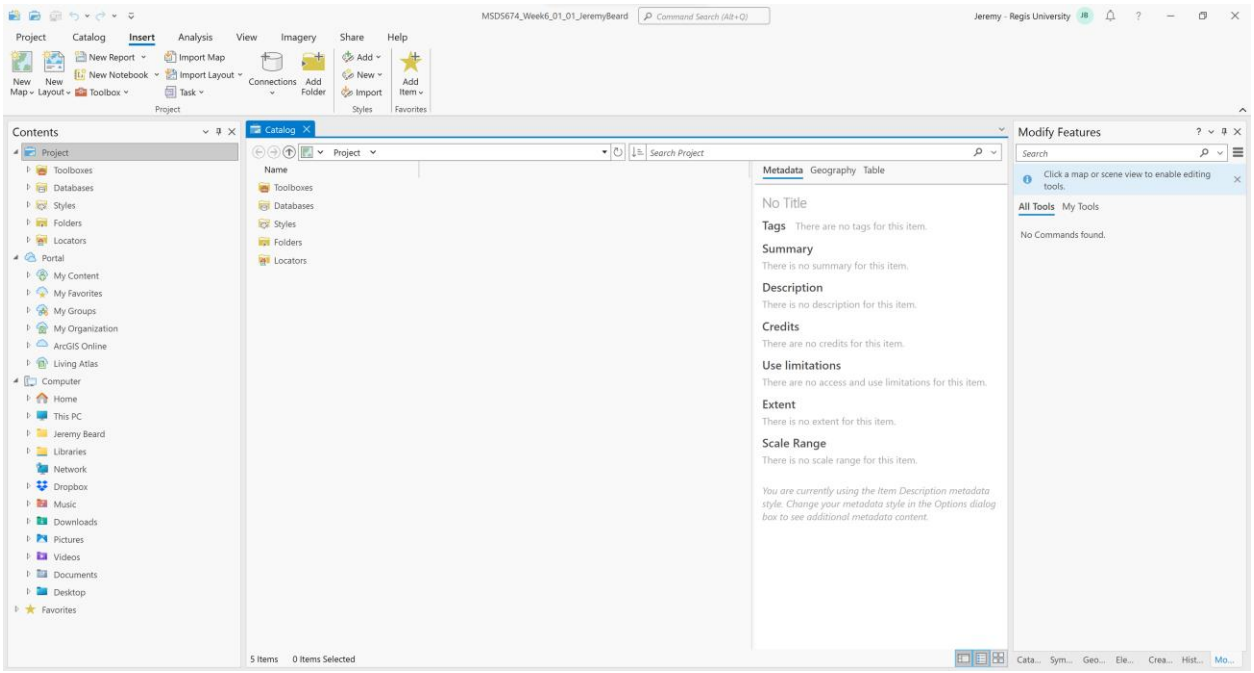

Figure 2: Opening ArcGIS Pro to the Catalog interface

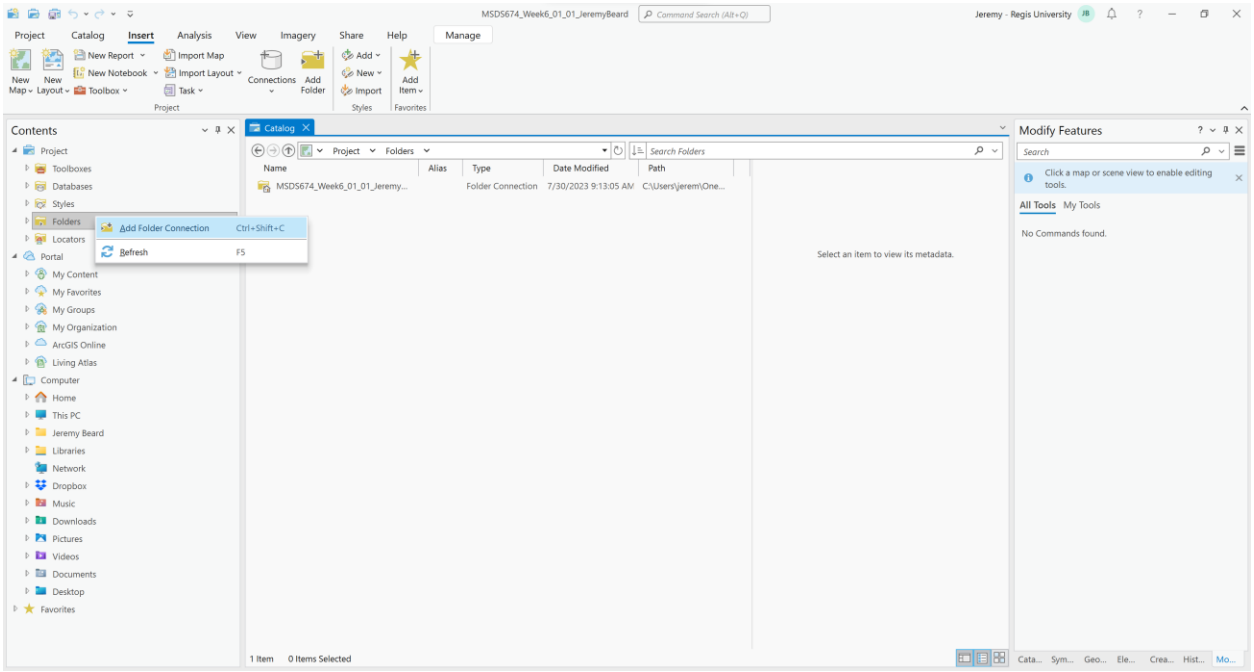

Figure 3: Adding a New Folder Connection

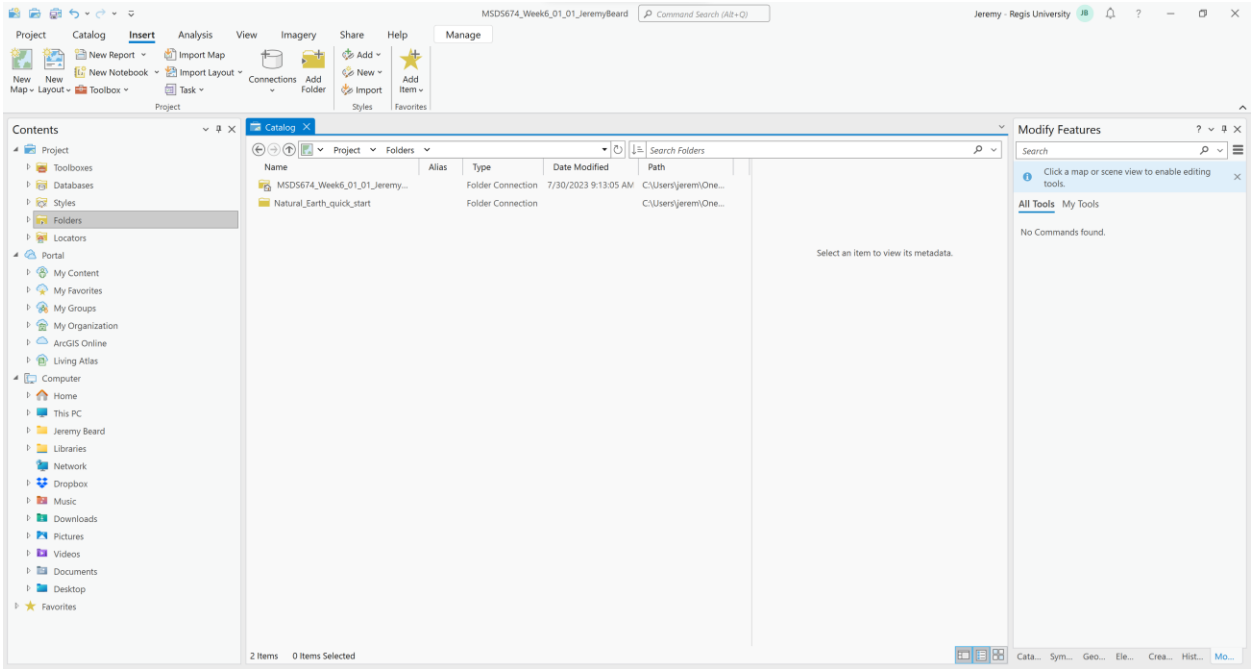

Figure 4: After adding Natural_Earth_quick_start as a Folder Connection

After adding the Natural Earth Quick Start kit as a Folder Connection, we can add the specific shapefile desired to the map. The window of ArcGIS Pro is split, and the ne_10m_populated_places.shp file is added to the map. This shows data across the world.

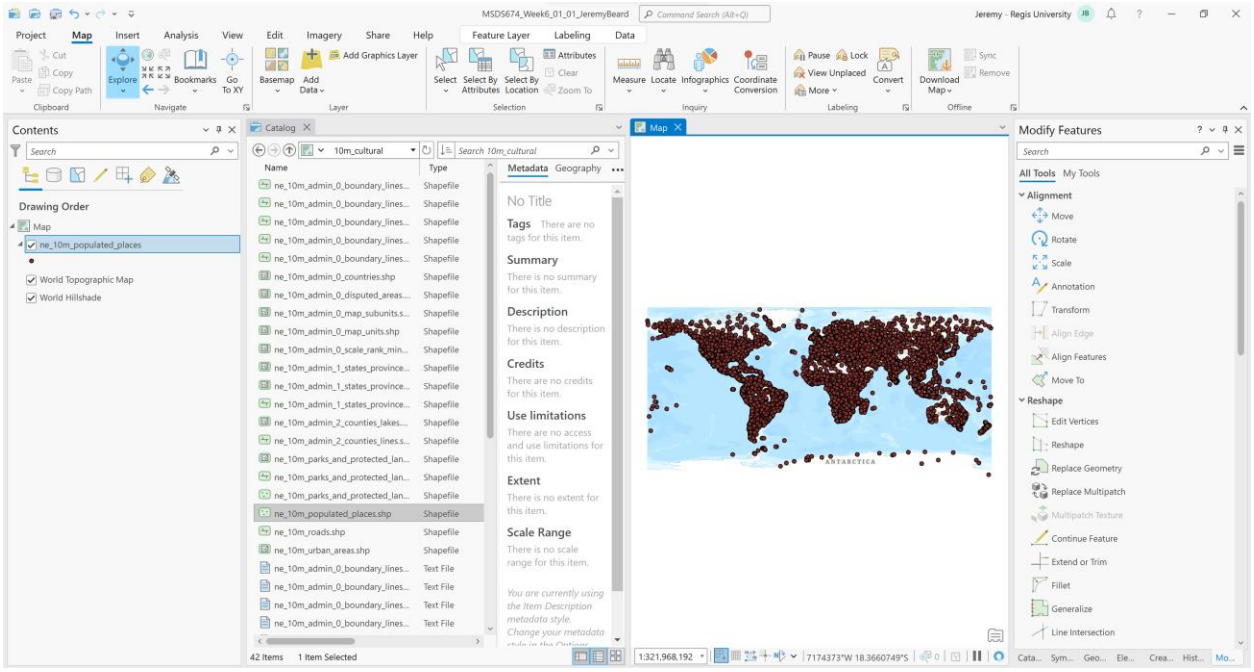

Figure 5: Adding the ne_10m_populated_places.shp to the map

Add the Select Tool to the Model Builder

In the next part of the assignment, Model Builder is started. Using Model Builder, the Select tool is chosen and added to the Model UI. This Select tool was then configured to select only points where the ADM0NAME parameter equals “United States of America”. Figure 8 shows this configuration. We’re almost ready to run the model.

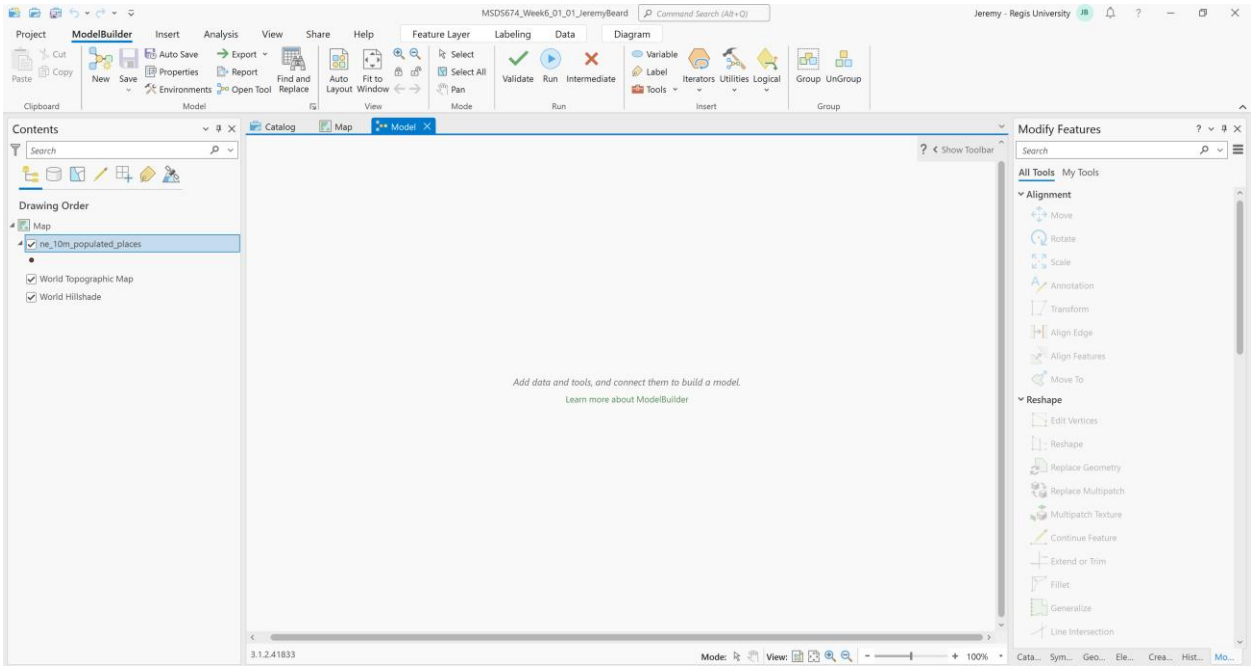

Figure 6: Starting the ModelBuilder tool

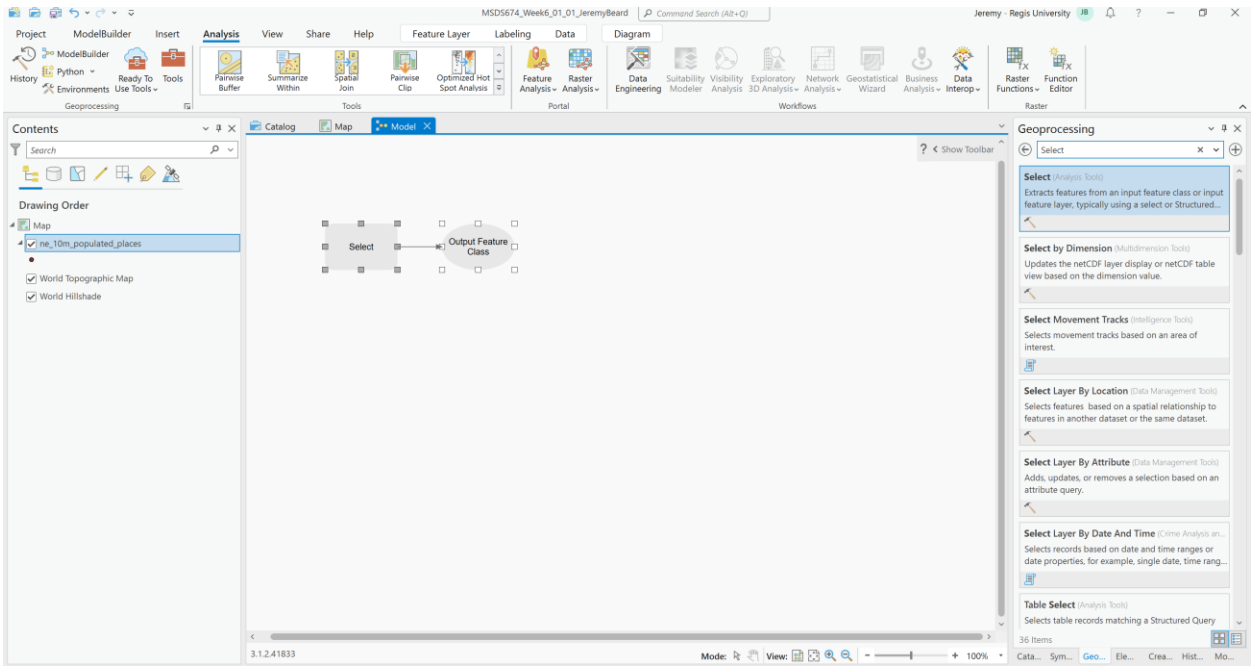

Figure 7: Adding the ‘Select’ tool to ModelBuilder

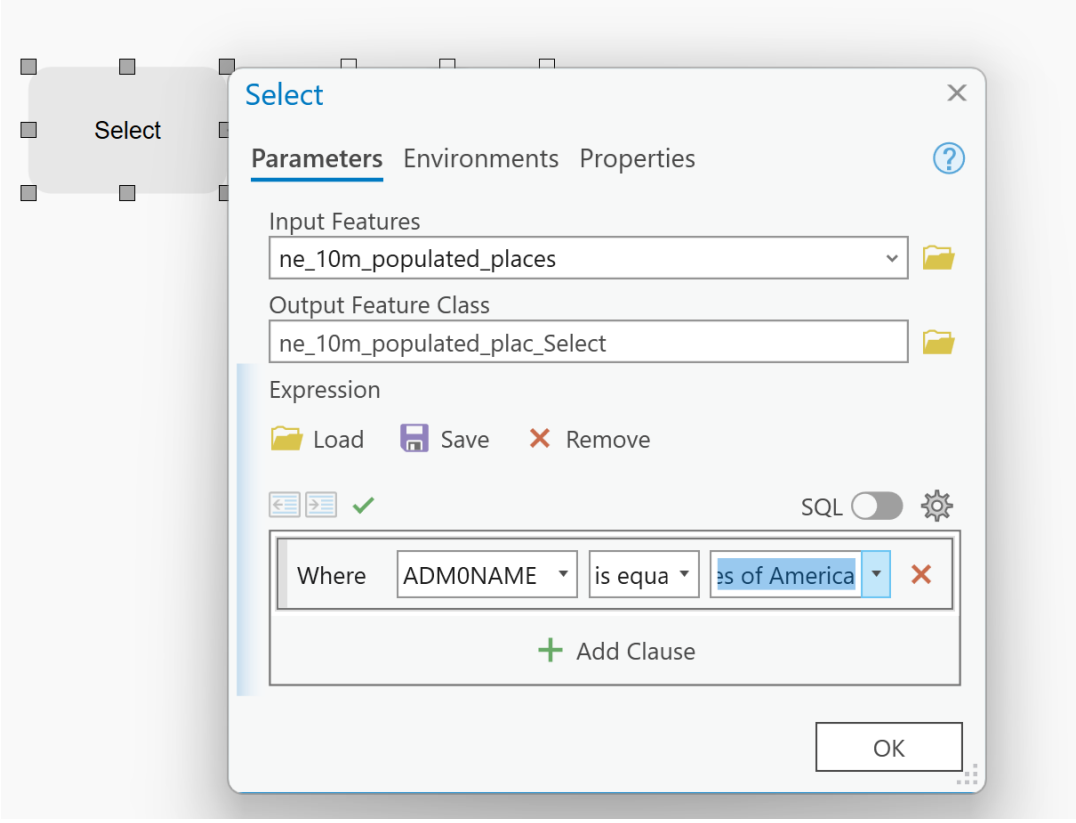

Figure 8: Configuring the Select tool

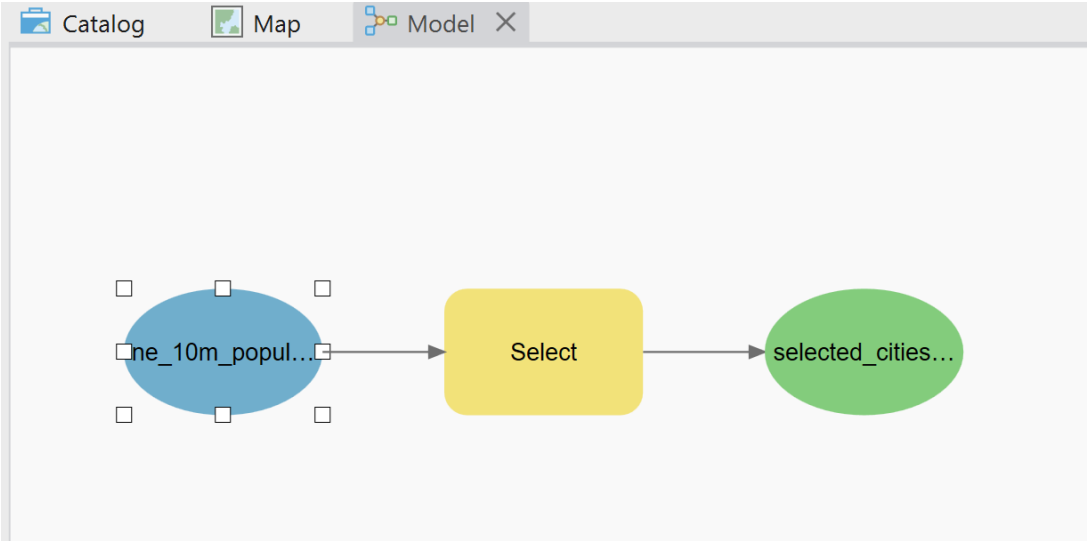

Figure 9: Output after configuring Select tool

Add the Get Count Tool to Model Builder

After adding and configuring the Select tool in Modul Builder, we need to add one more tool before running the model. We search for the Get Count tool and add it to the Model UI. We then connect everything together and run the model! Figure 11 shows the model being run.

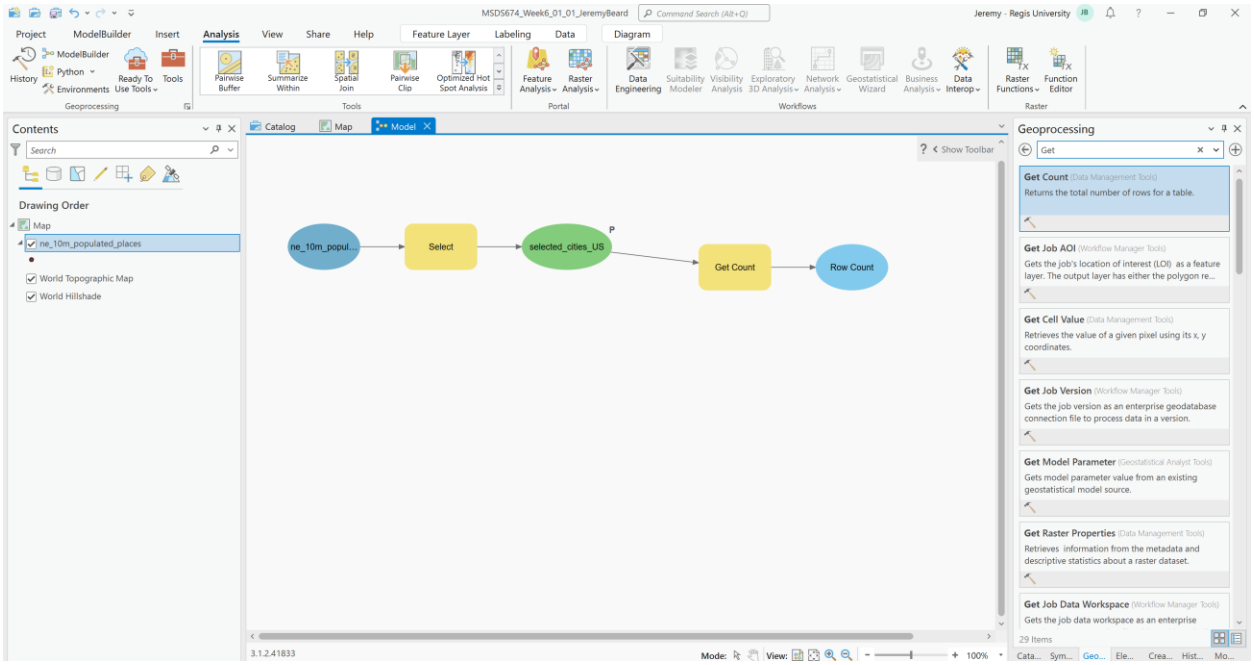

Figure 10: Adding the Get Count tool and connecting with an arrow

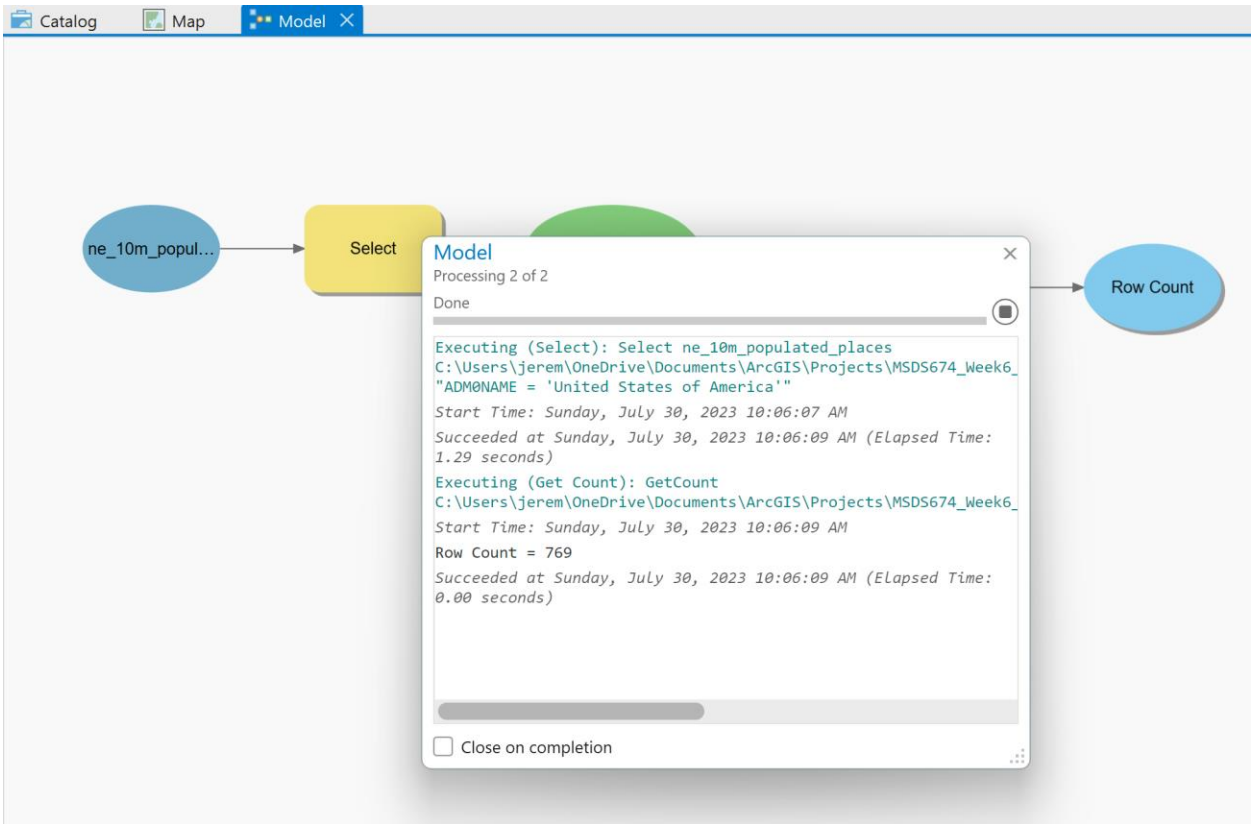

Figure 11: After running the model

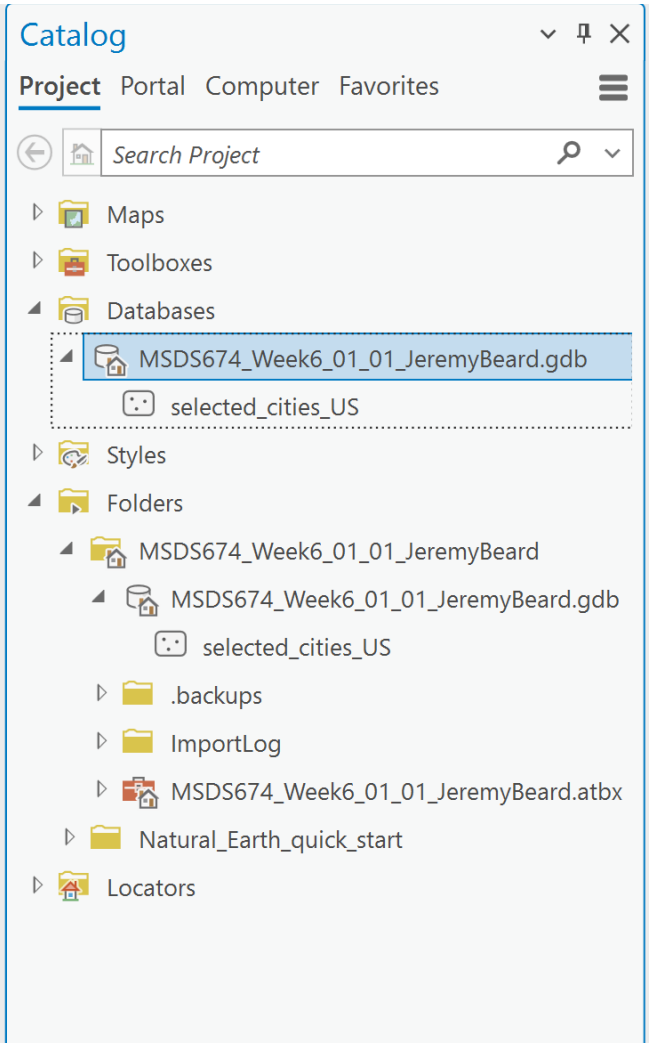

Figure 12: Newly created “selected_cities_US” shapefile

Figure 12 above shows the result of the model being ran. A new shapefile is created to reflect the result of this model run, “selected_cities_US.shp”.

Save the Model

Finally, we save the model. Before that, we add the newly created shapefile, mentioned above, to the map. When we disable the original dataset and enable the new shapefile, it shows

only datapoints from the United States. This is shown in Figure 13. Following that, we save the model. Finally, we confirm that a new “Select and Count US Cities” tool available in the Geoprocessing pane. This effectively is a representation of the model we just created. This confirmation is shown in Figure 15.

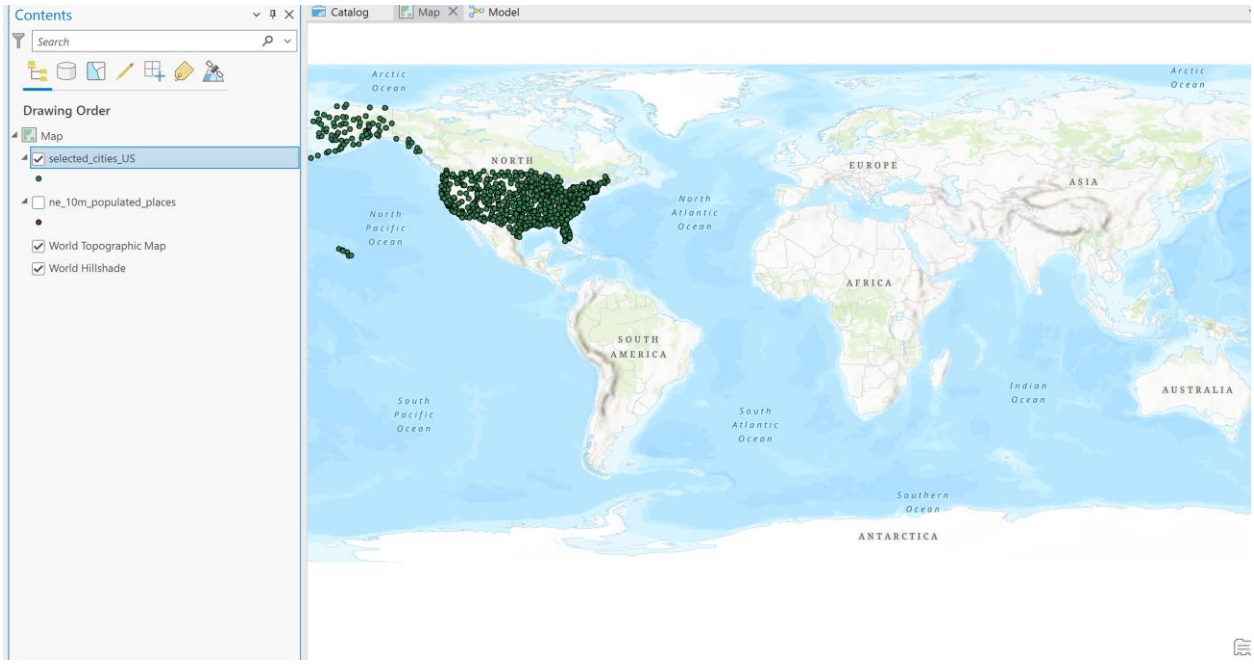

Figure 13: Showing only the new “selected_cities_US” shapefile layer

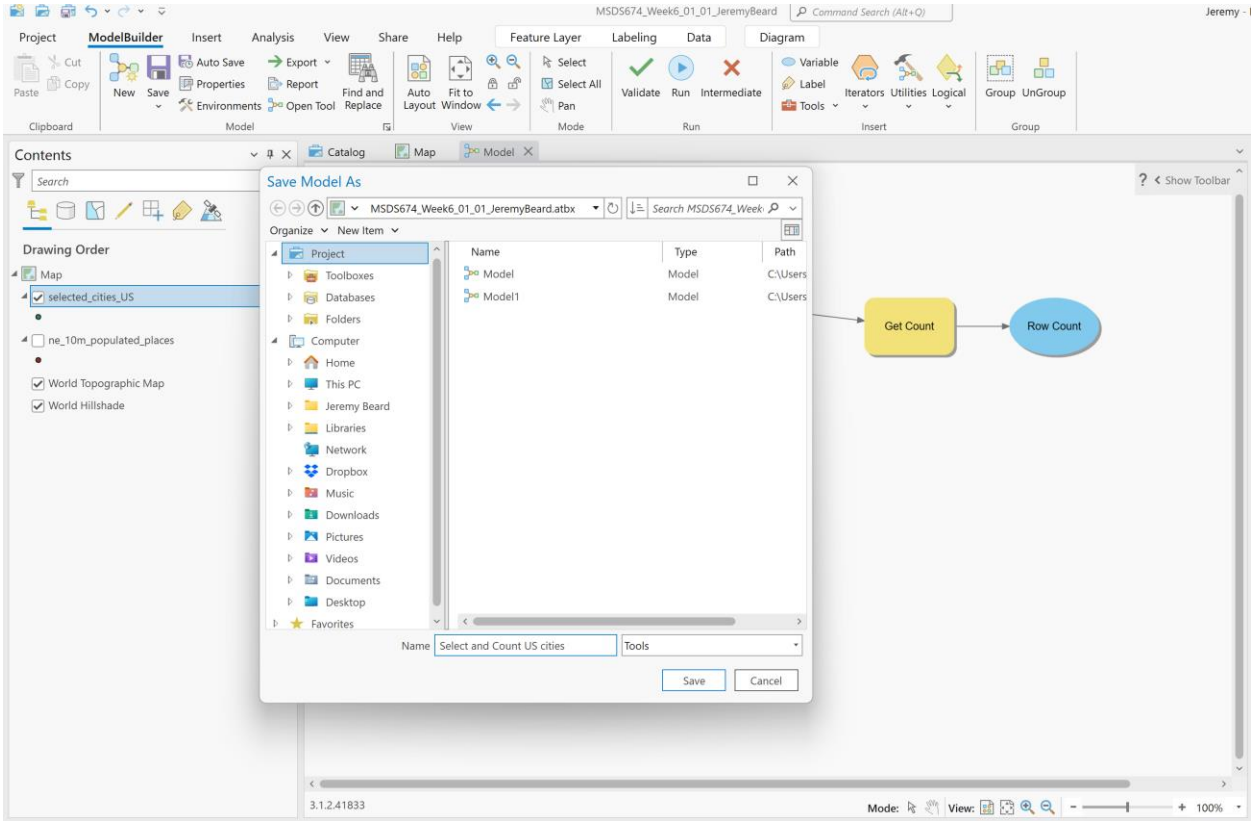

Figure 14: Saving the model

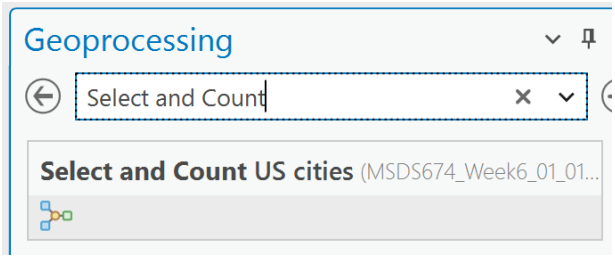

Figure 15: Newly saved model shown in Geoprocessing pane

Conclusion

This tutorial was a quick introduction into the world of Model Builder in ArcGIS Pro. We load in some sample data spanning the entire world, and subsequently create a model to filter through these datapoints to select only US cities. We also count this resulting value and the count is outputted. Finally, we save the model and confirm a new Geoprocessing tool has been created. I had never explored the Model Builder feature of ArcGIS Pro before this assignment, so I learned about initial model creation and beginning capabilities of the Model Builder tool. I like the fact that new Geoprocessing tools can be created, kind of like creating “macros” for certain GIS operations. I’m sure we will use this more in the coming weeks!

References

Van Rees, E. (n.d.). *Tutorial: Visualize and Reuse GIS Workflows with Model Builder in ArcGIS Pro*. https://geospatialtraining.com/tutorial-visualize-and-reuse-gis-workflows-with-model-builder-in-arcgis-pro/