Data Analysis

Where should we move to?

Rhythm Osan
Priscilla Kirabo

01

Introduction

Where should we move to?

We'll be applying skills learnt between weeks 4 and 8, including Slice, Reclassify, Select by Attributes, Join, etc., to find the perfect relocation spot.

Using ArcGIS Pro, we'll analyze data layers to assess factors like affordability, weather, and nearness to urban areas and recreational bodies, among others.

02

Factors to consider

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01

Temperature Zones

Our ideal average temperature in a city was approximately 60° F

02

Within a major city

As college students, it's more convenient for us to live in a major city for work and school, but not one with a population too big or too small

03

Near a body of water

We both love going to the beach during the summer, so we looked for cities within 100 miles of a water body

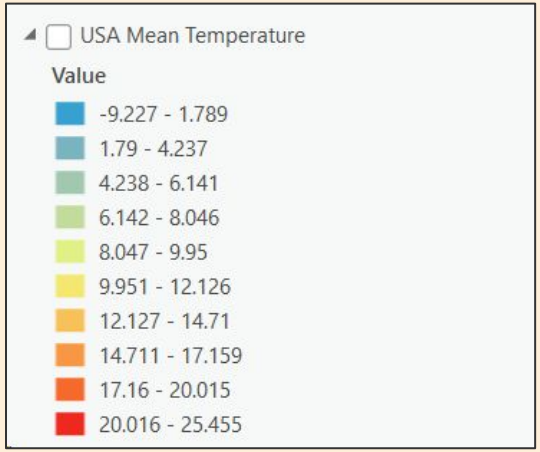
04

Low cost of Living

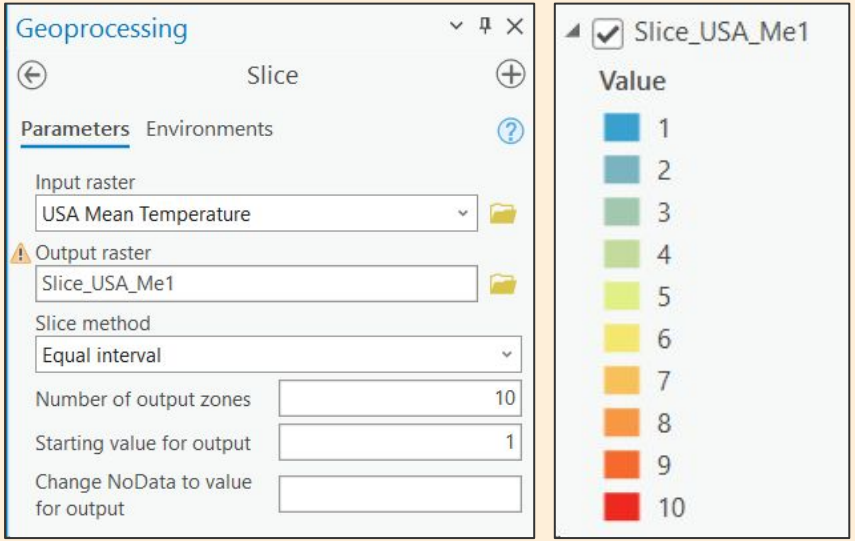
The National benchmark is 100 so the aim is to move to somewhere below that

Temperature Zones

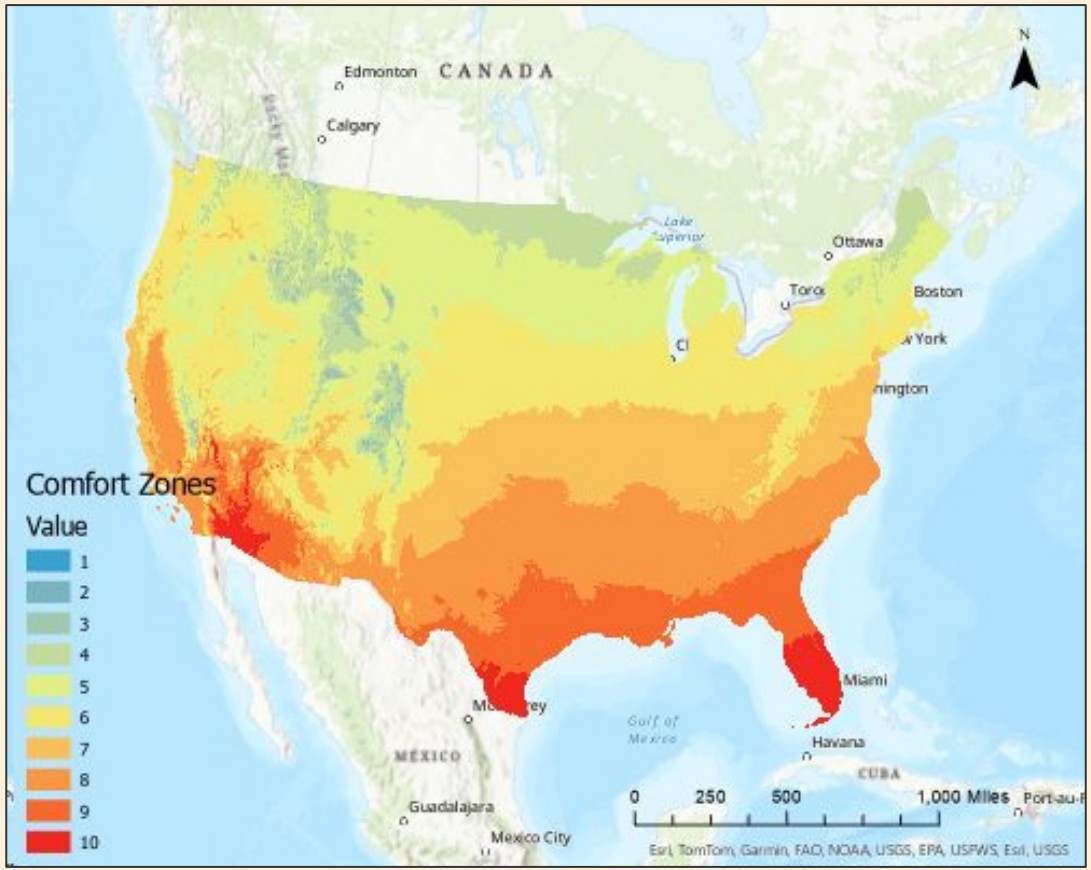
Our ideal average temperature in a city was approximately 60° F

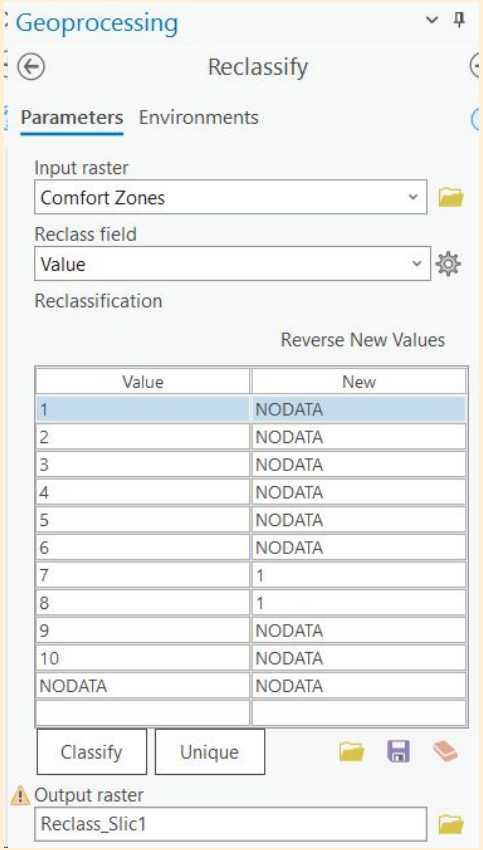


Data was downloaded in raster format in annual mean temperatures for each month (°C) from 1971-2009.



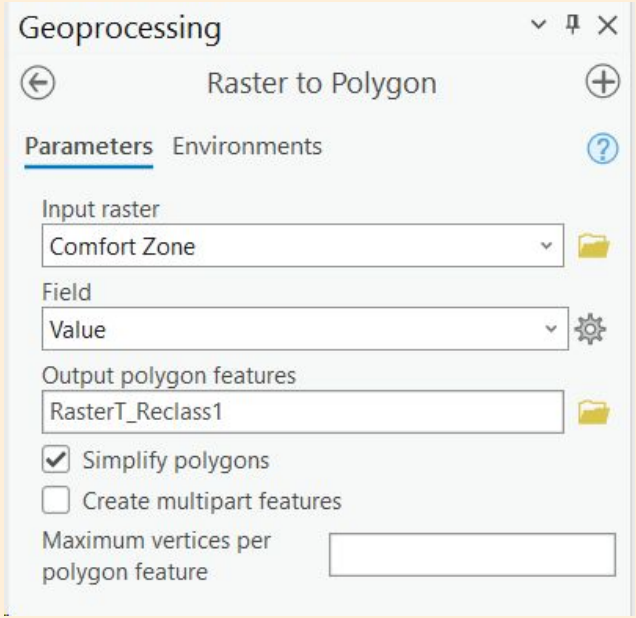
Slice the information into 10 categories from a range of 1-10 to more easily classify the temperature zones.


Comfort Zones
Value
1
2
3
4
5
6
7
8
9
10
CANADA
Edmonton
Calgary
Ottawa
Boston
Miami
Havana
CUBA
MÉXICO
Guadalajara
Mexico City
Gulf of Mexico
Lake Superior
N
0 250 500 1,000 Miles
Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri, USGS



Our ideal temperature was 60°F which is approximately 16°C.

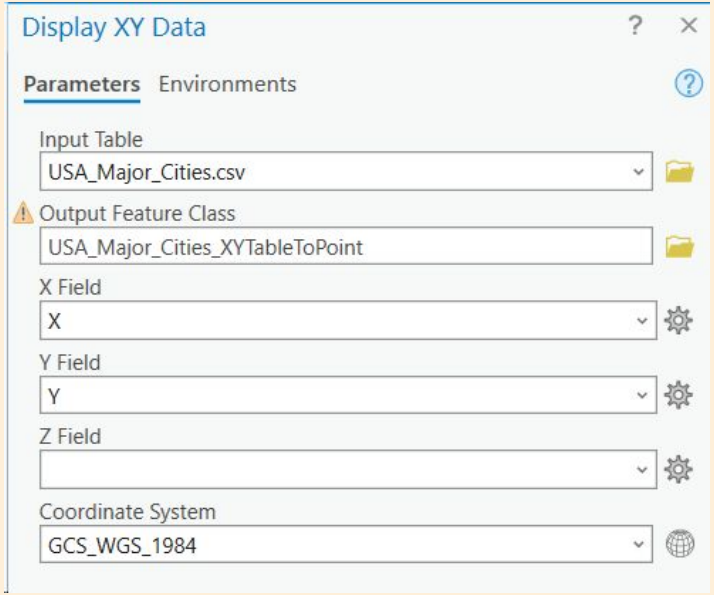
Reclassify to choosing only zones 7 and 8 and setting everything else to NODATA.

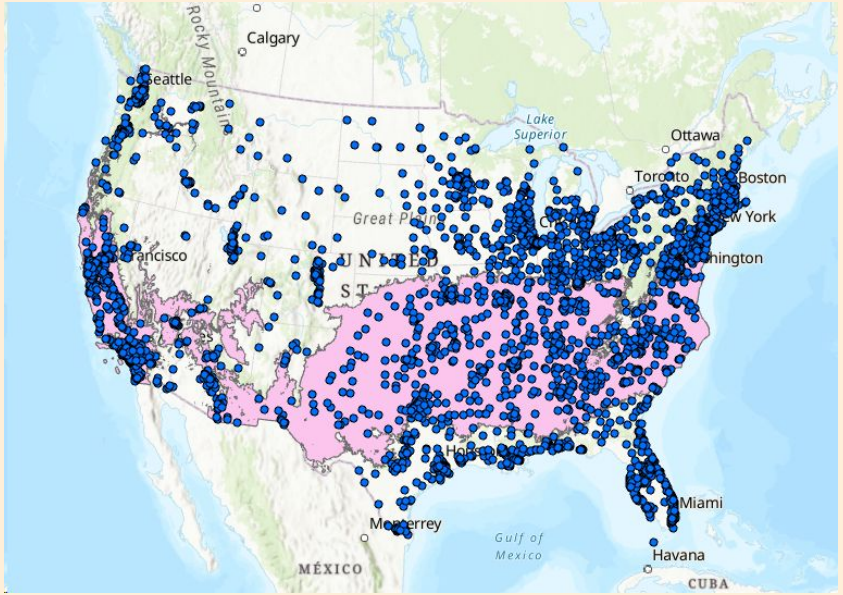


Raster to Polygon for easier workability

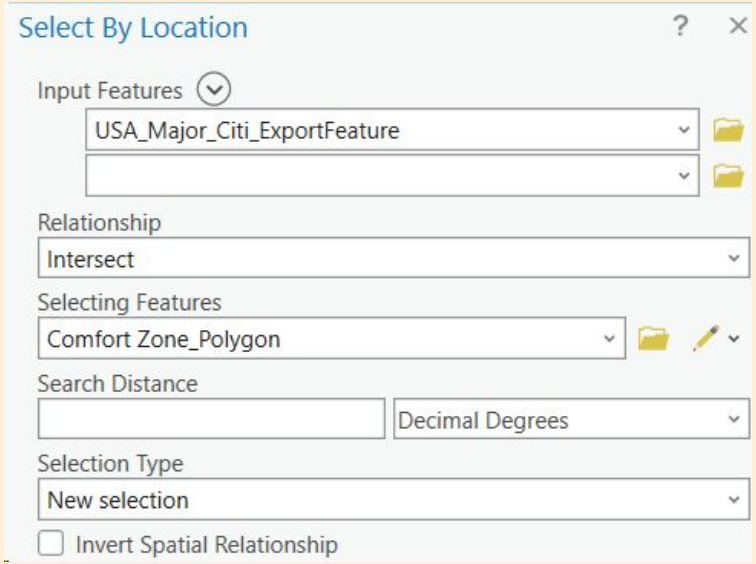
Within a major city

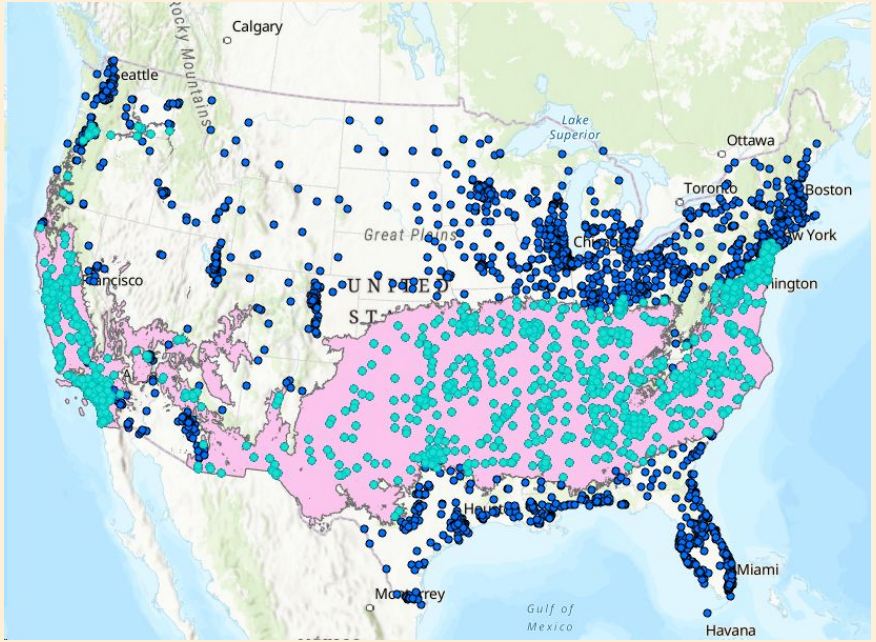
As college students, it’s more convenient for us to live in a major city for work and school



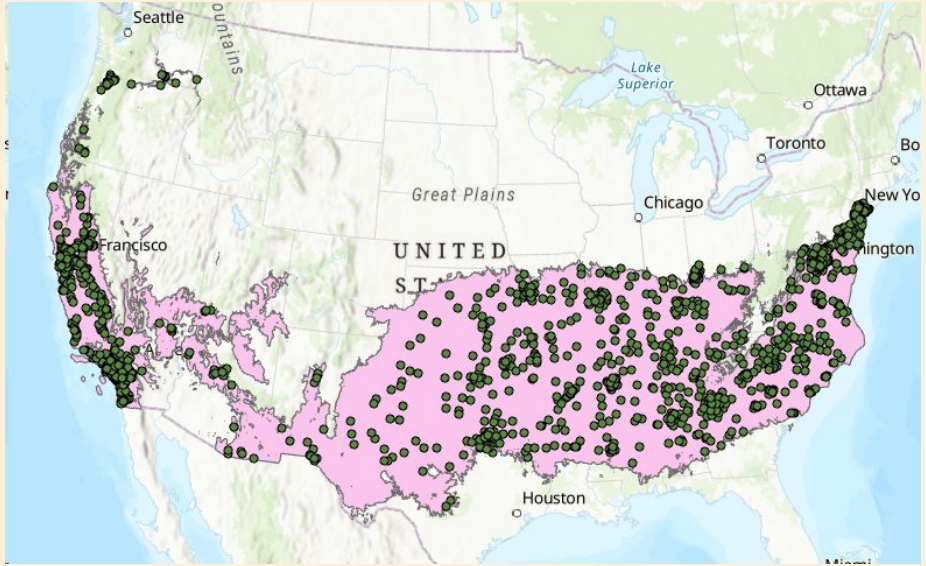


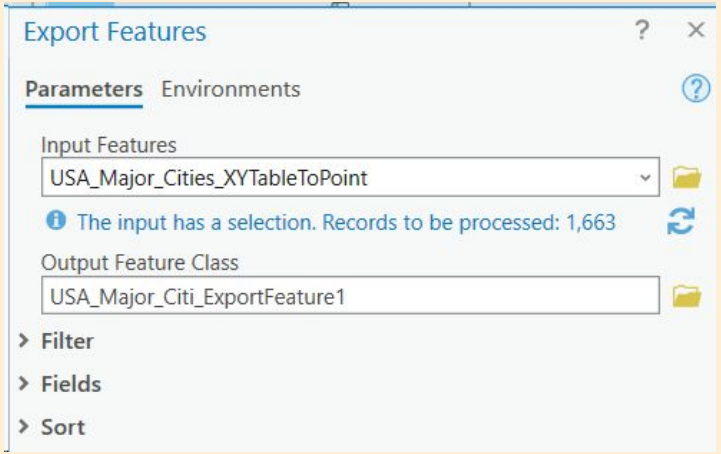
Data was imported as a **CSV** and converted to **XY Data**





Selecting by Location only the cities that fell within the comfortable (pink) range

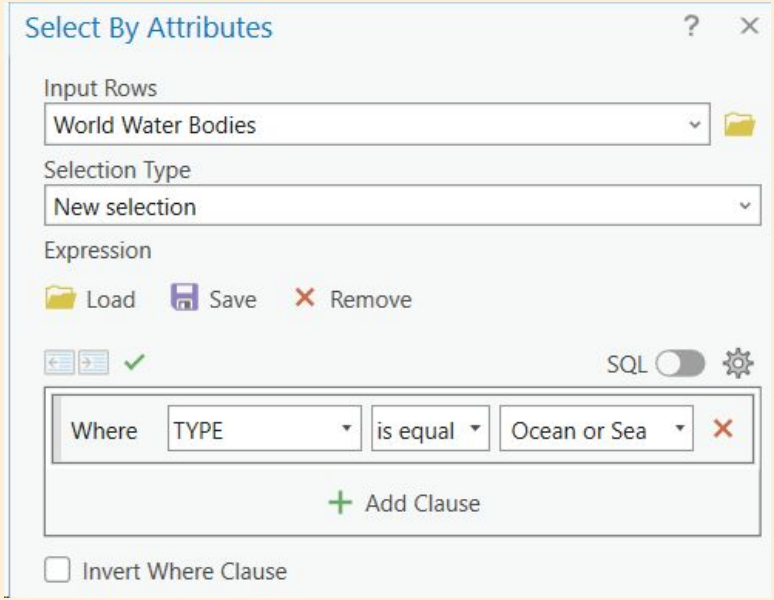




Exporting Features into a separate point class

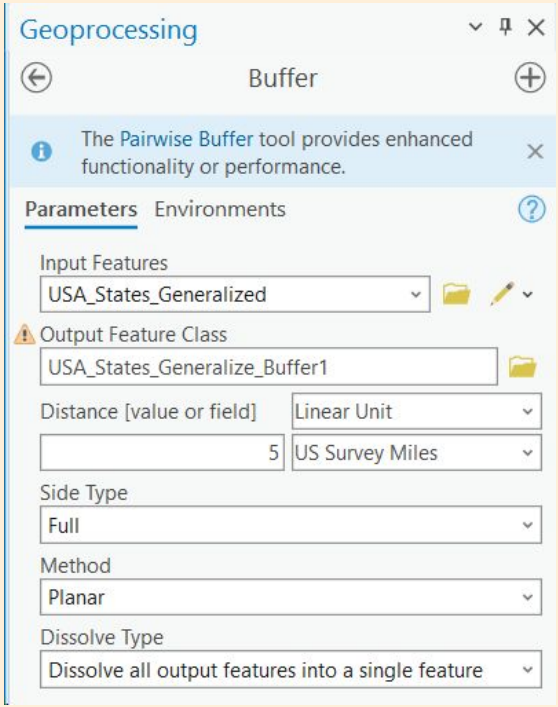
Near a body of water

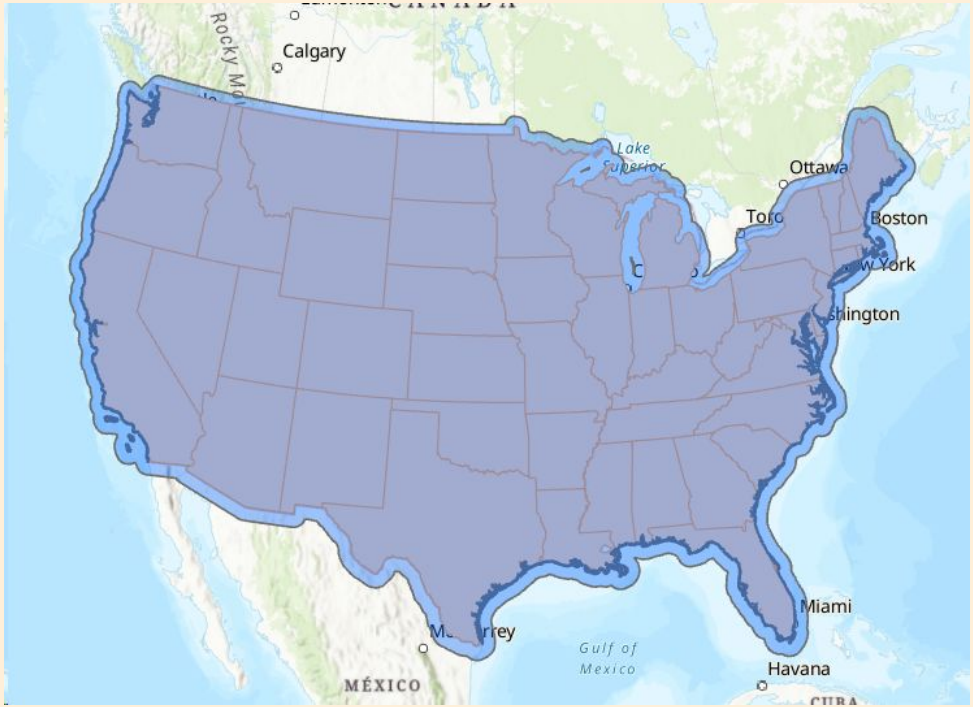
We both love going to the beach during the summer, so we looked for cities within 100 miles of a water body



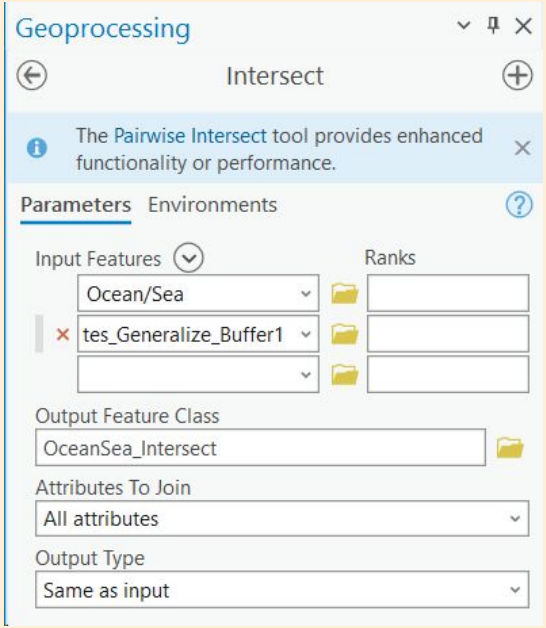
World water bodies was downloaded as a shapefile. **Select by Attributes** to only select oceans/seas, which eliminated rivers, lakes and other internal water bodies.

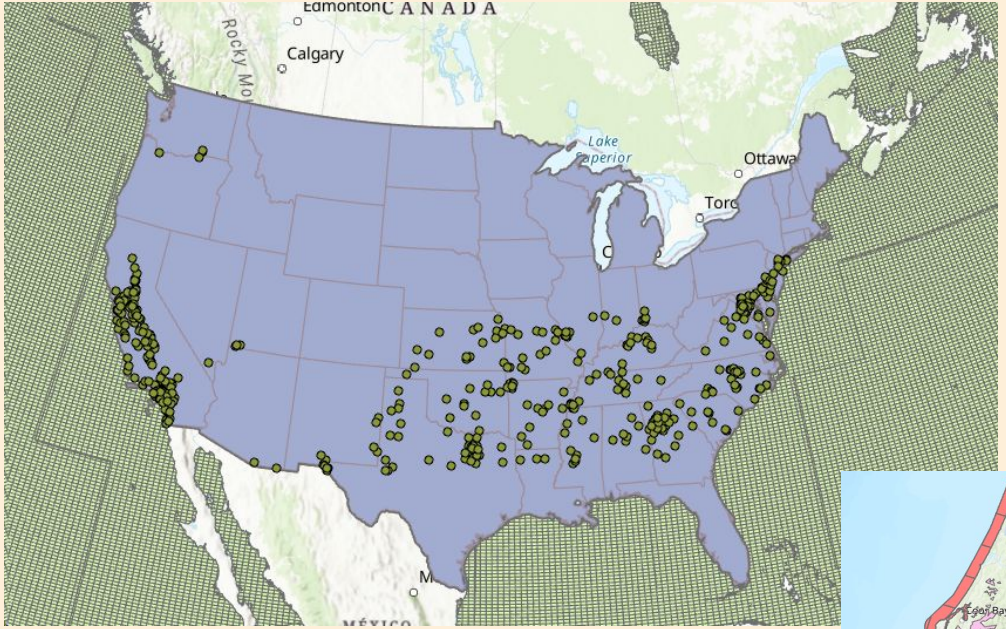
USA Boundary Map was imported

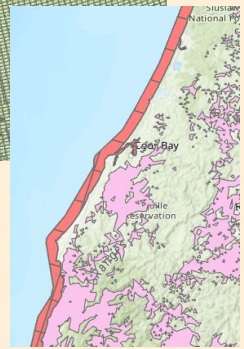




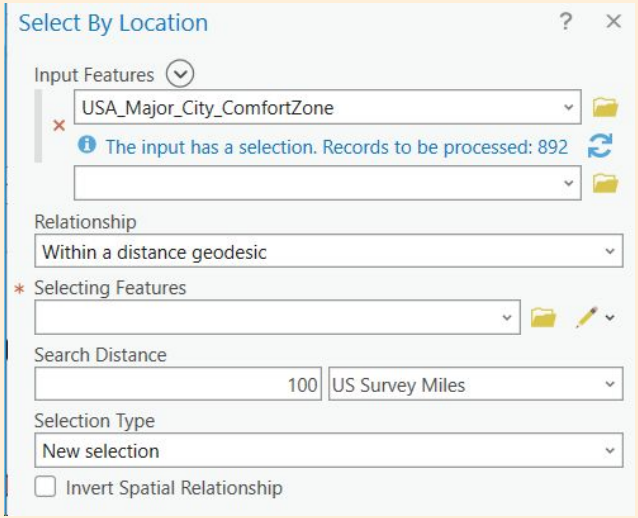
Buffer around the United States Boundary Map of 5 miles



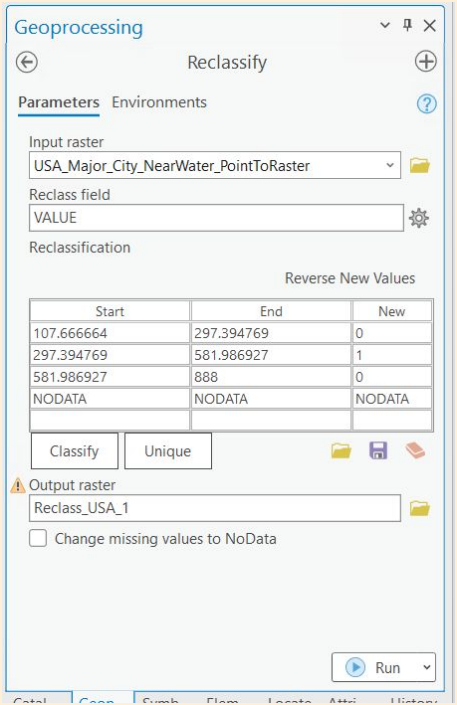


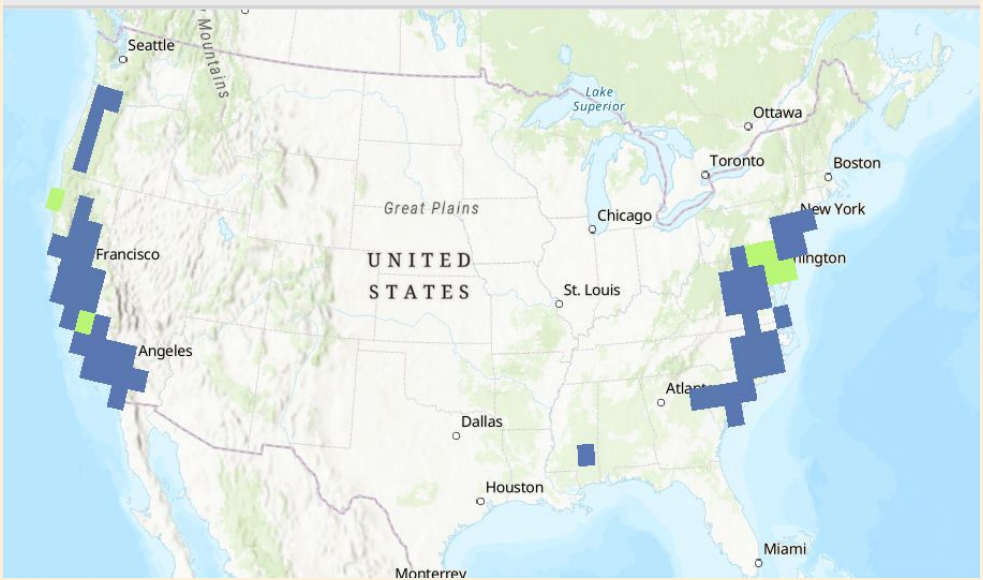


Intersect Tool for the United States Boundary Map of 5 miles and the Ocean/Sea to narrow down the water bodies polygon class to only water around the USA thus creating a polygon feature class of the USA Coastlines.



Using the **Select by Location** tool to only highlight the cities within 100 miles of the coastline

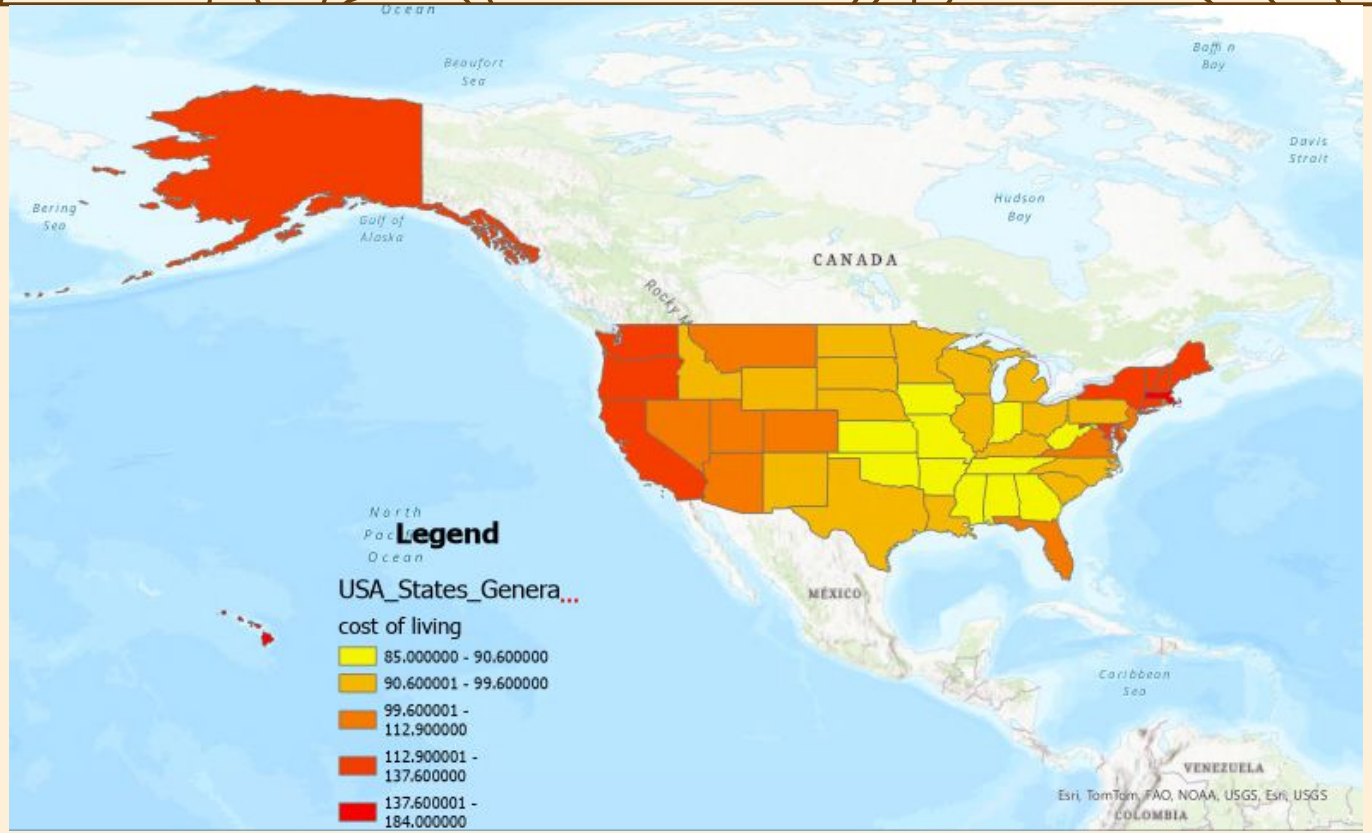




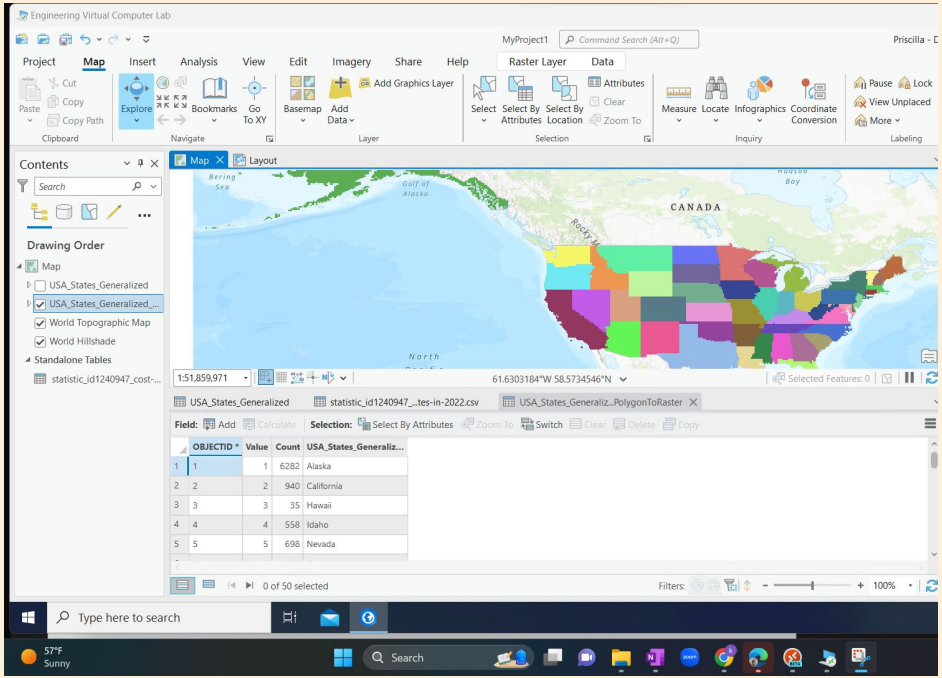
We then did a Point to Raster using the population field to make the cities near water a Raster data. Thereafter, we reclassified the raster to find cities with mid-sized population because we did not want to live in a very large city, nor did we want to live in a smaller city.

Low Cost of Living

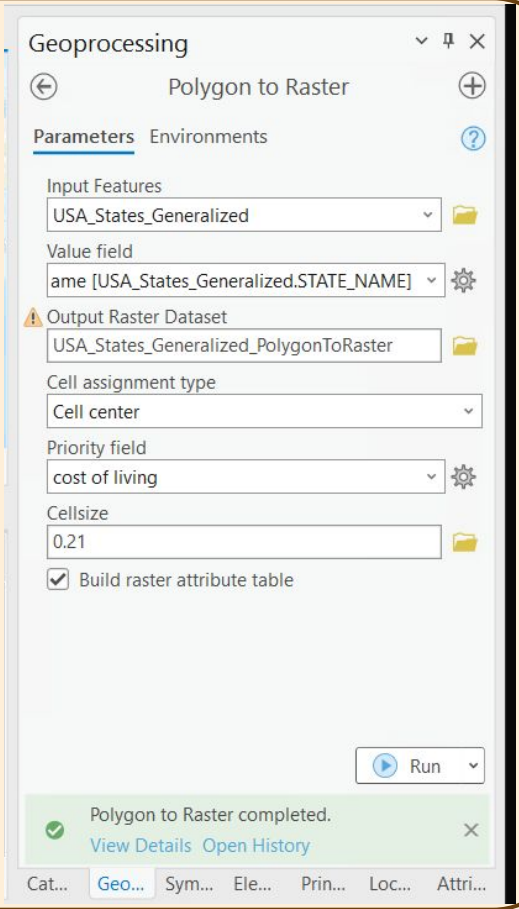
The National benchmark is 100 so the aim is to move to somewhere below that

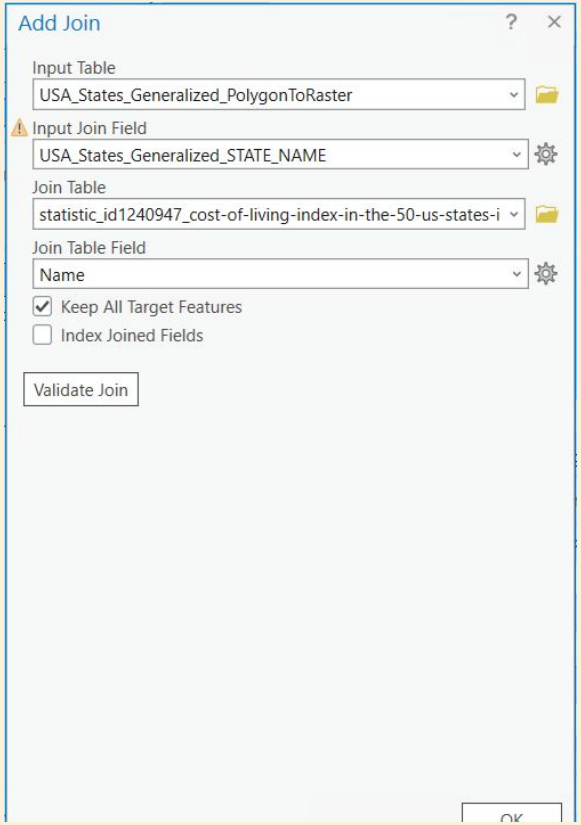


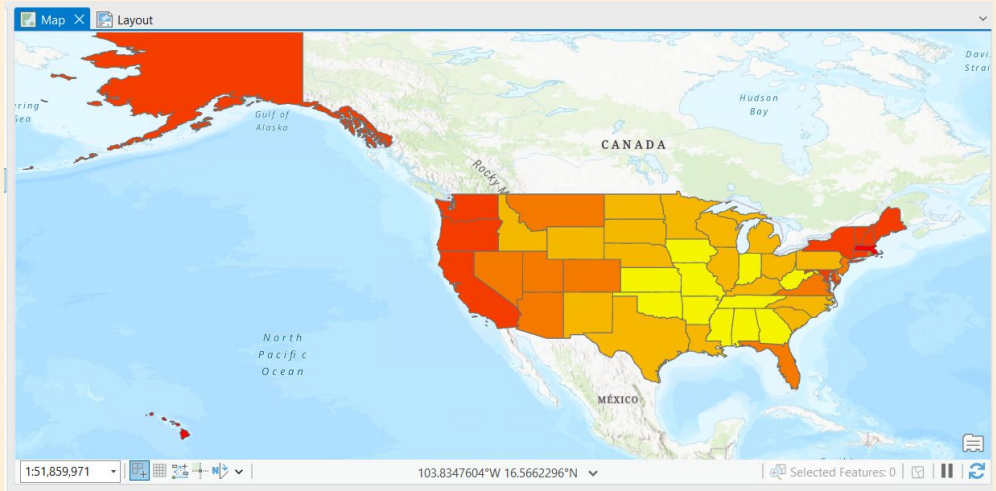
General cost of living of all U.S states.



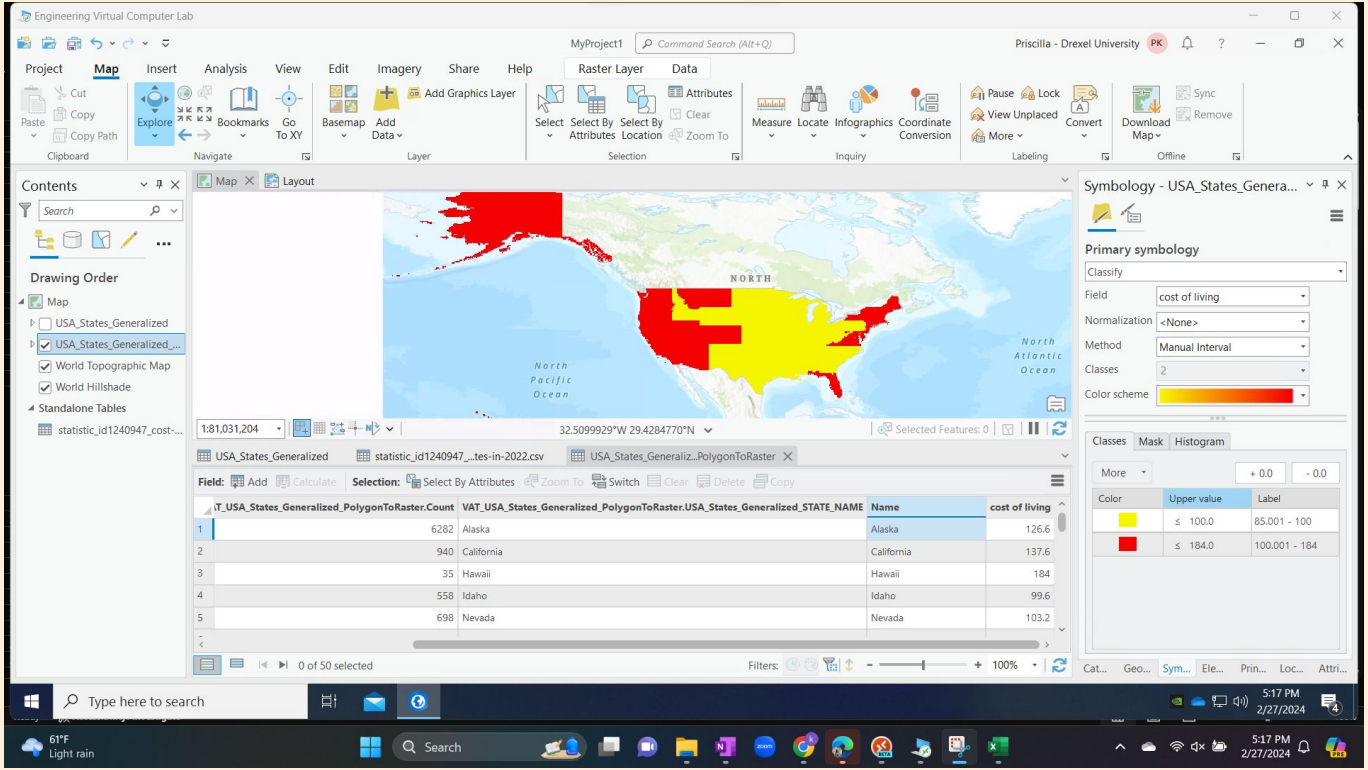
Imported the U.S. States as polygon data and proceeded to change the polygon to a Raster using the **Polygon to Raster** tool.



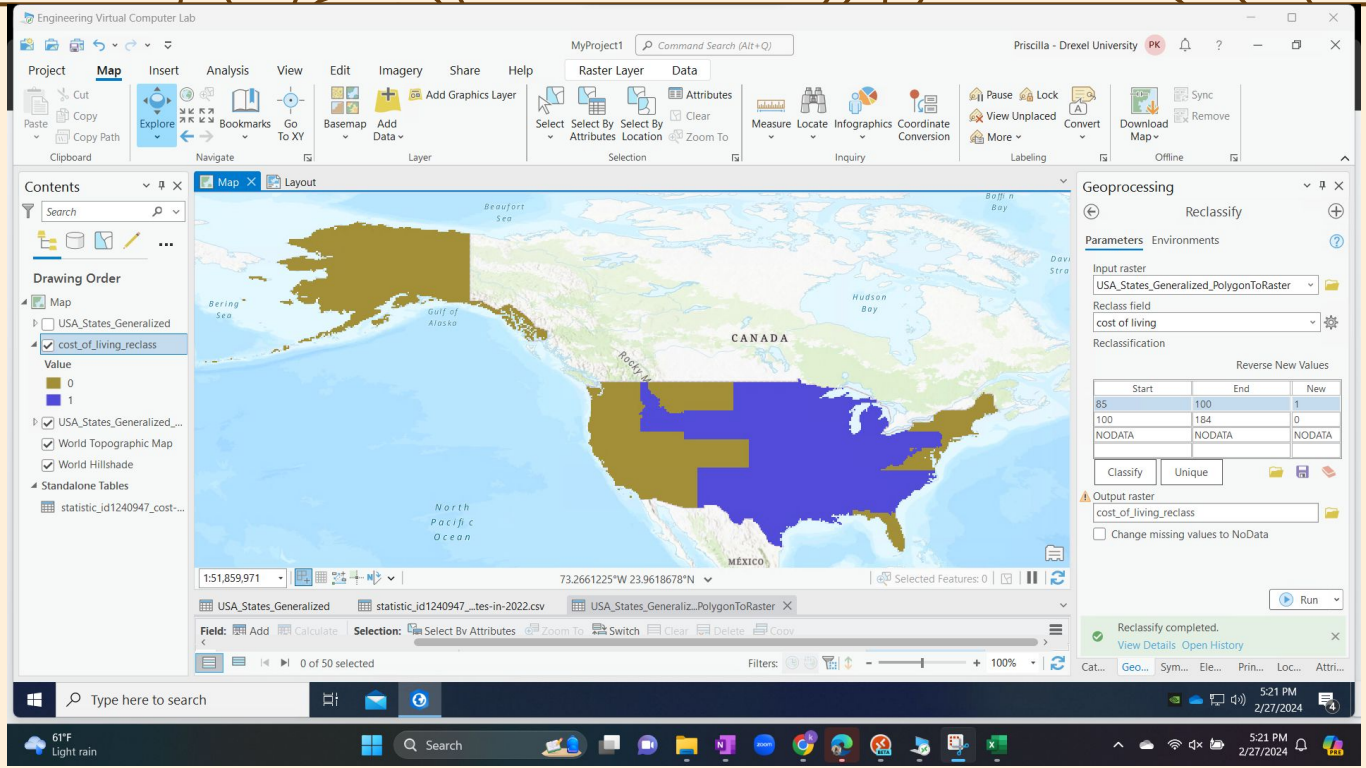




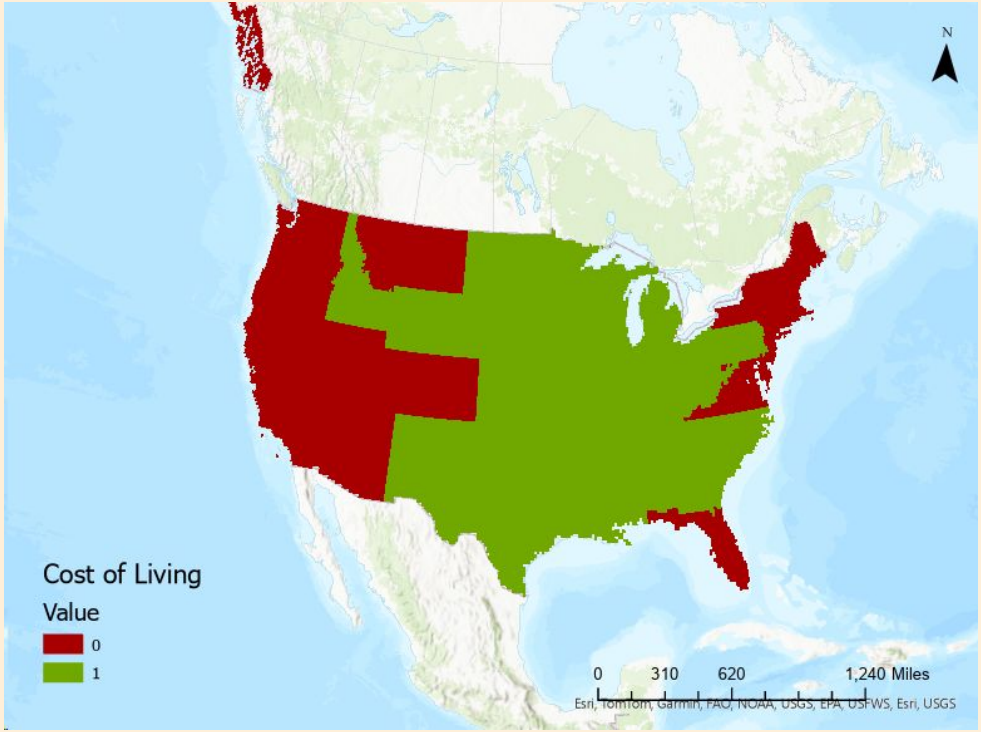
Went on to add the Cost of Living Data which was contained in a csv table to the Raster data. The **Add Join** tool was used for this step



As mentioned in the introduction, the U.S. average cost of living is 100 so we edited the **Symbology** to differentiate the states with lower cost of living from those with higher living costs.

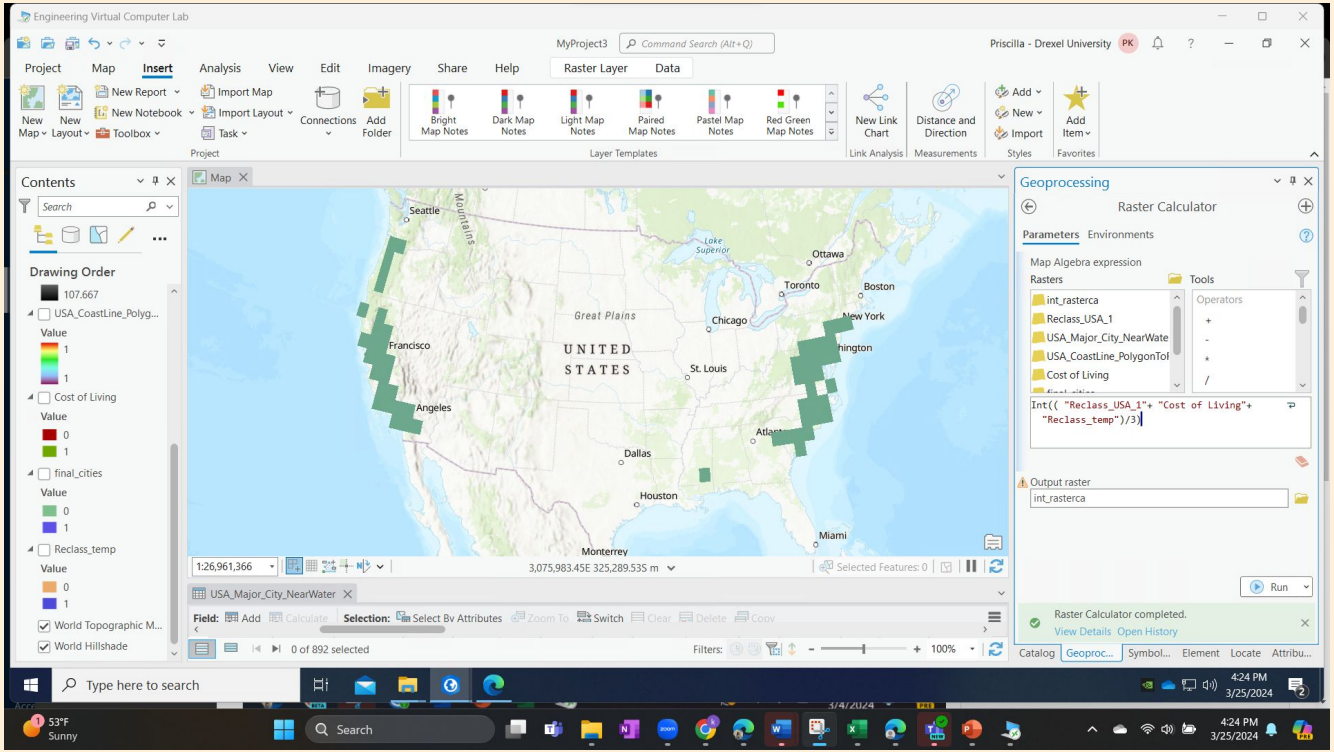


Using this symbology, we were able to use the **Reclassify** tool to reclassify the Raster data into the two classes i.e. 1 - Lower cost of living, 0 - Higher cost of living.



Overall, the red zones are high costs of living, while green zones mark a low cost of living

Raster Calculate



To narrow down suitable locations, we used raster calculate with the reclassified cities near water raster, the cost of living raster, and the reclassified temperature raster. The outcome was the location colored green on the map.

04

References

- https://hub.arcgis.com/datasets/1612d351695b467eba75fdf82c10884f/explore?location=29.499214%2C-99.025106%2C4.34
- https://www.arcgis.com/home/item.html?id=e750071279bf450cbd510454a80f2e63
- https://www.arcgis.com/home/item.html?id=4bd9b6892530404abfe13645fcb5099a
- https://hub.arcgis.com/content/e750071279bf450cbd510454a80f2e63/about
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- https://www.arcgis.com/home/item.html?id=4c6c0d9b6c294664afad07a326a37aca
- Website (Missouri Economic Research and Information Center). (January 2, 2023). Composite cost of living index in the different states of the United States as of 2022 [Graph]. In *Statista*. Retrieved February 26, 2024, from https://www.statista.com/statistics/1240947/cost-of-living-index-usa-by-state/