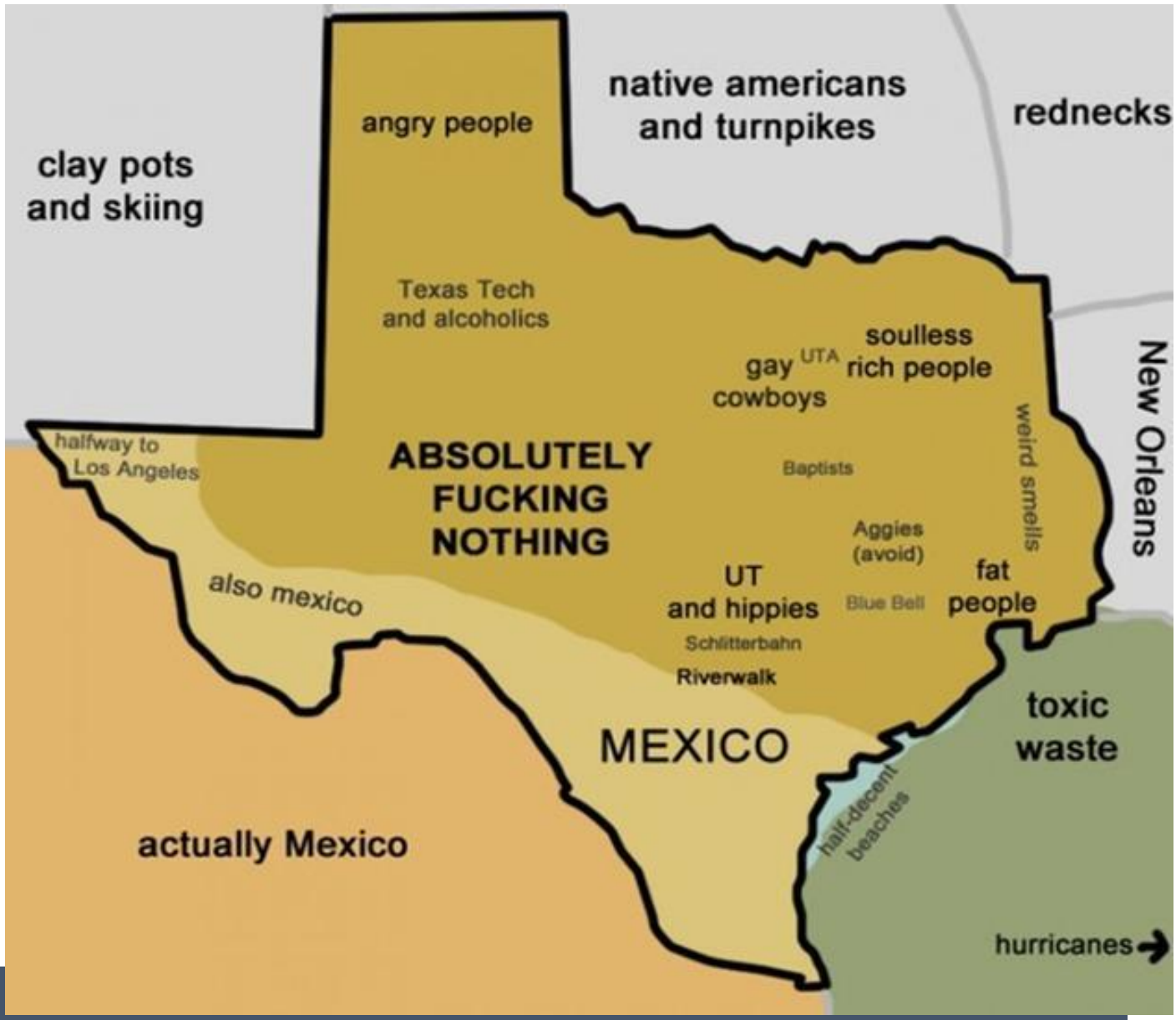

Lab Portfolio

Shay Hoffman, Summer I 2014

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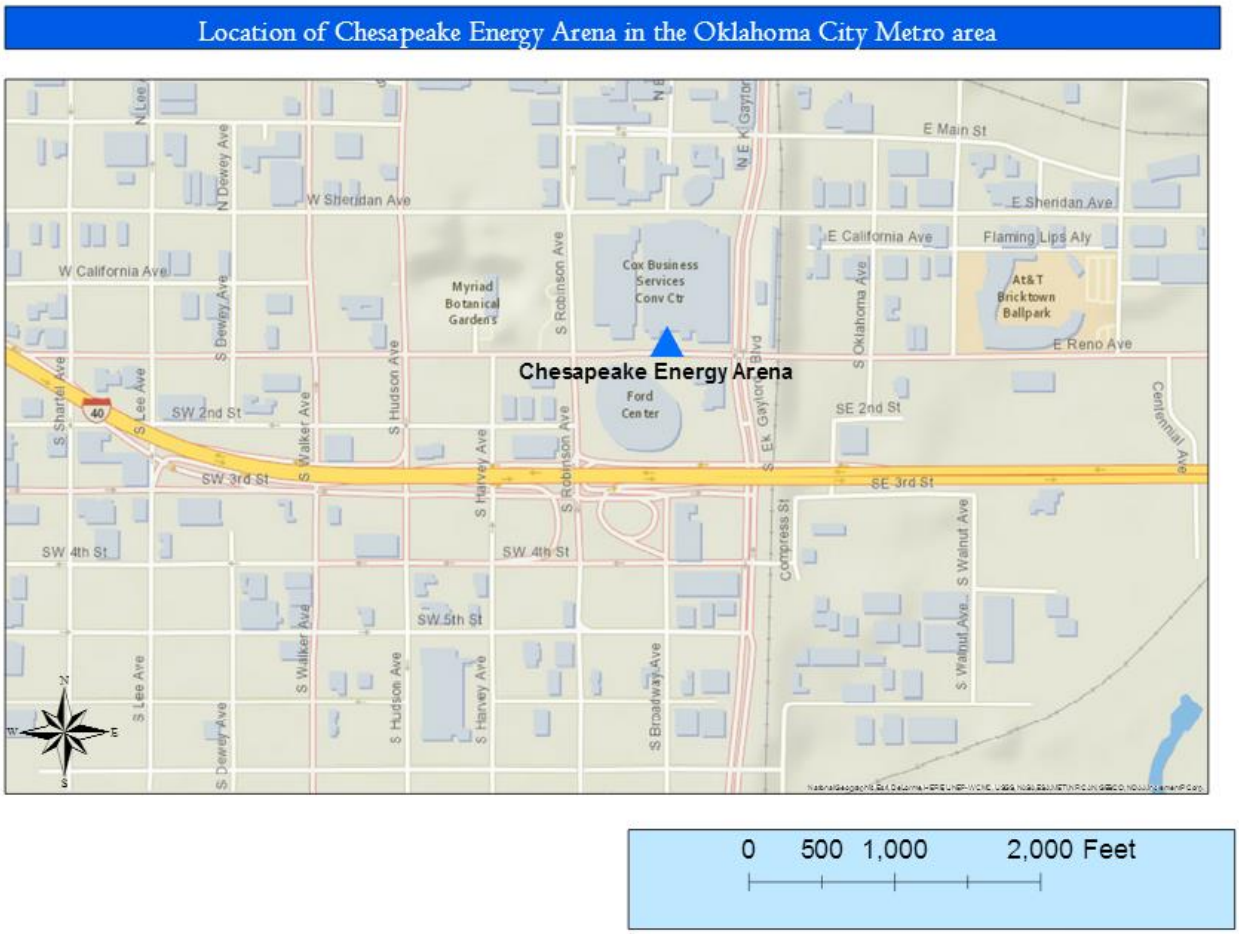

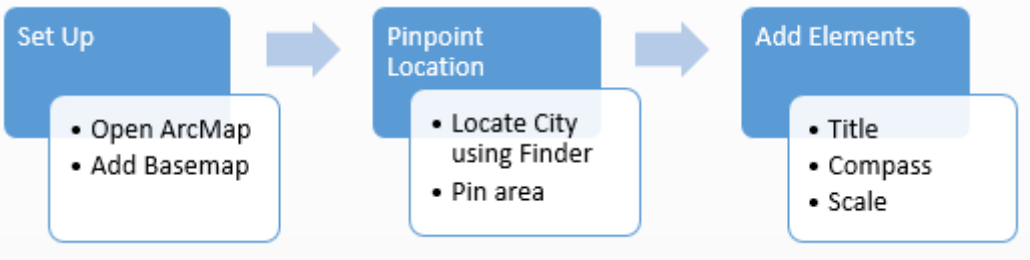

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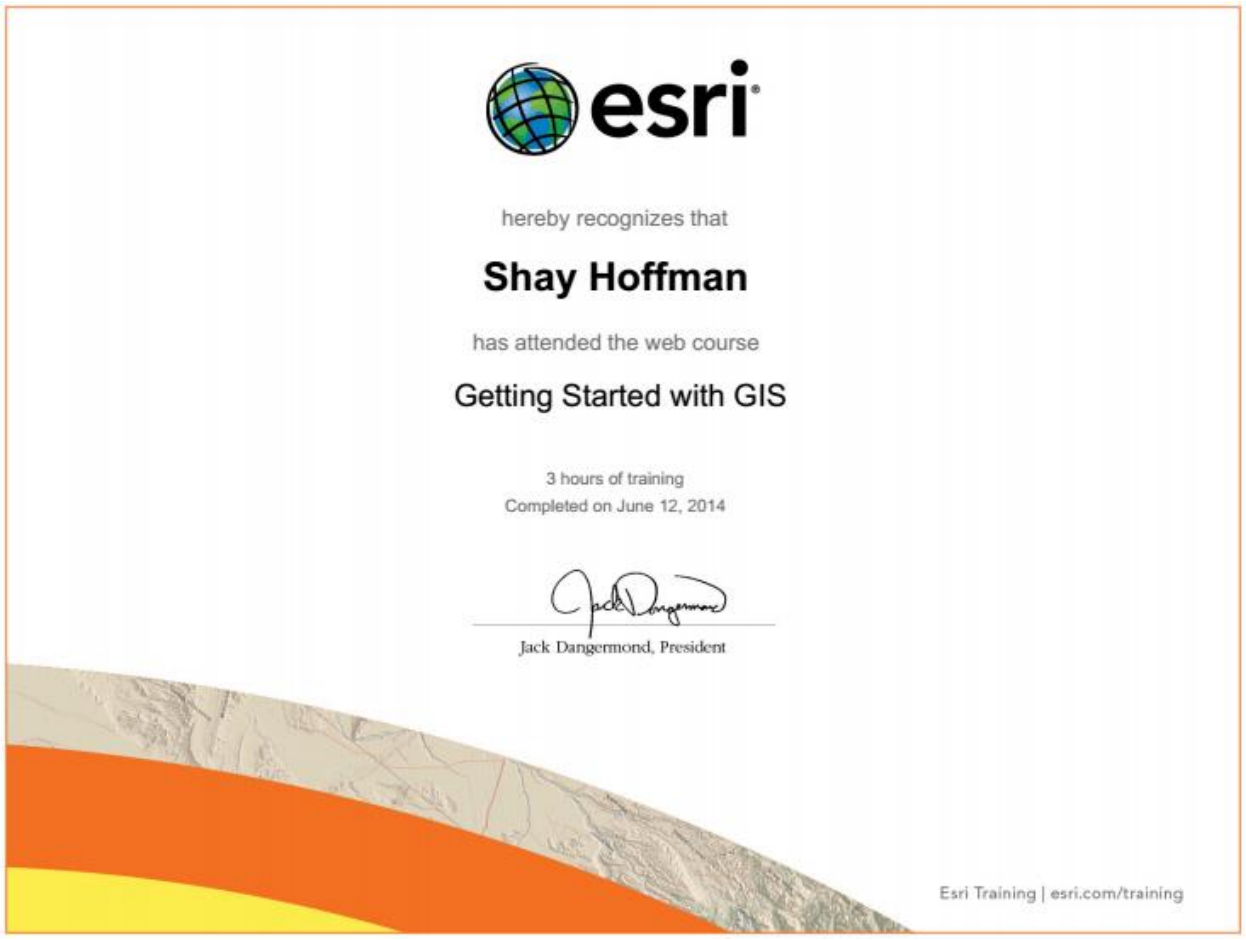
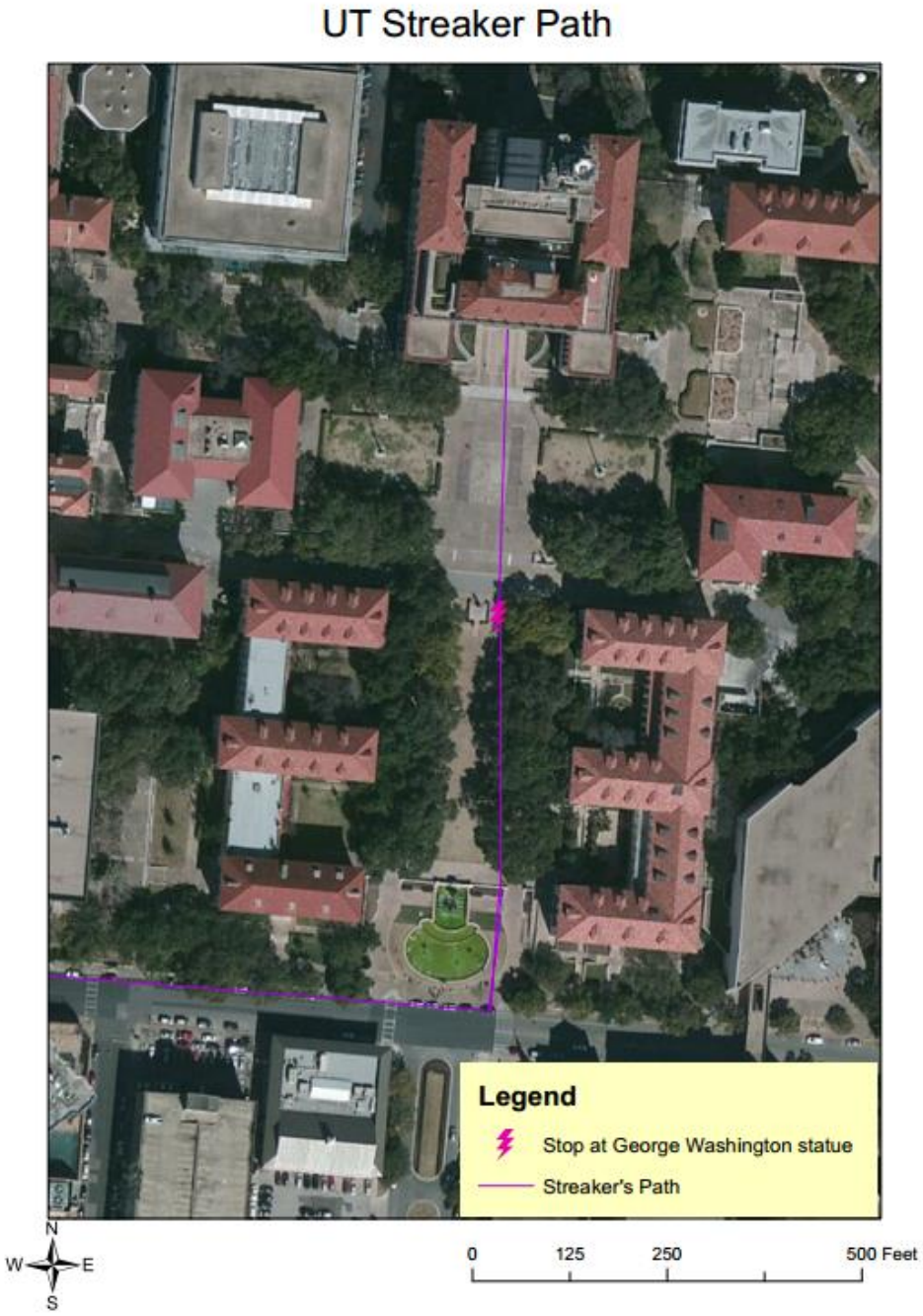
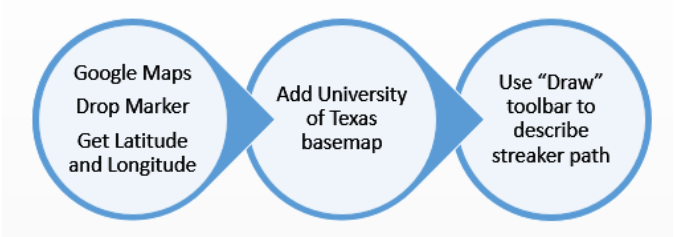
Lab 1: ESRI Certification



Lab 2.0: Streaker Map





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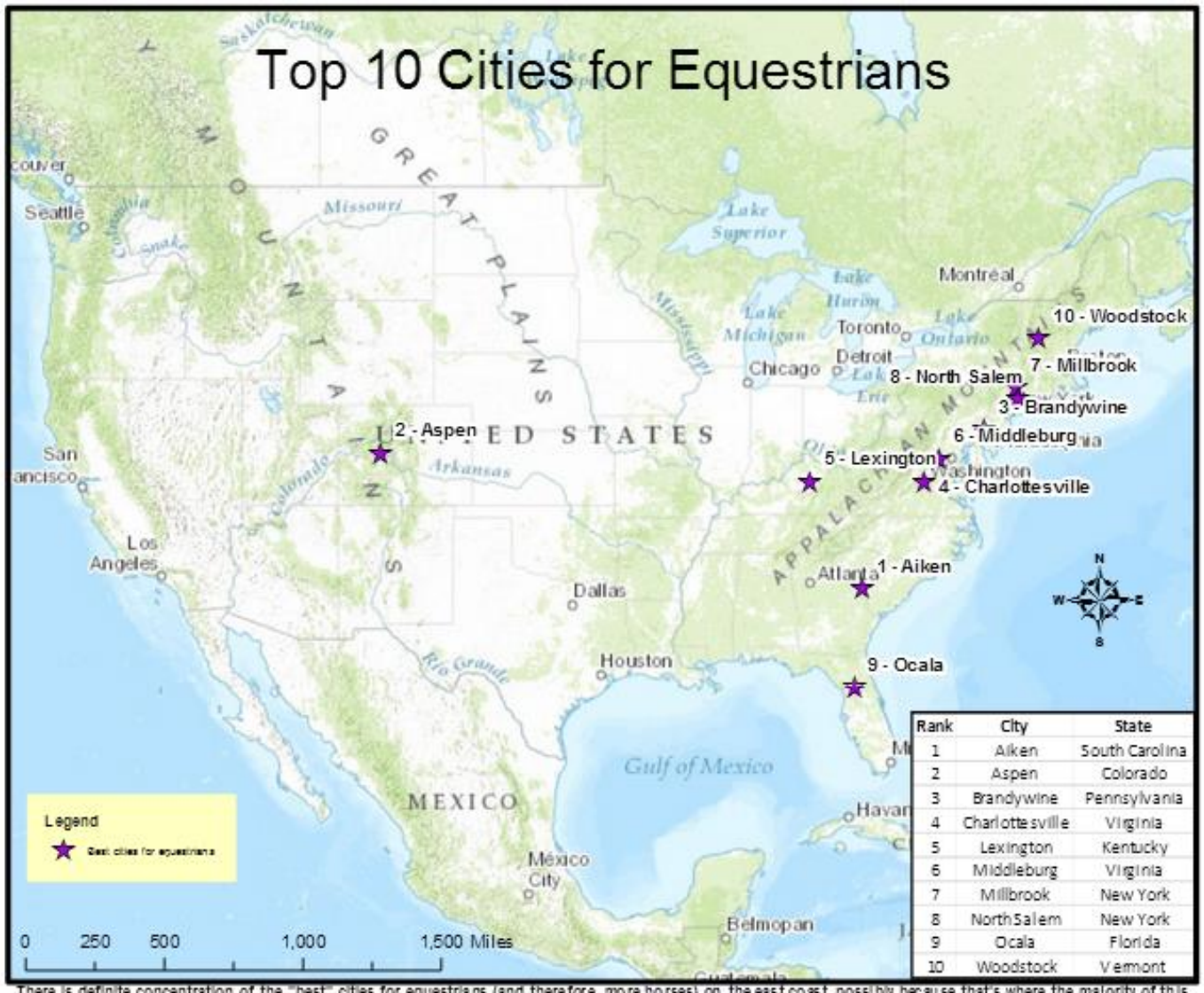
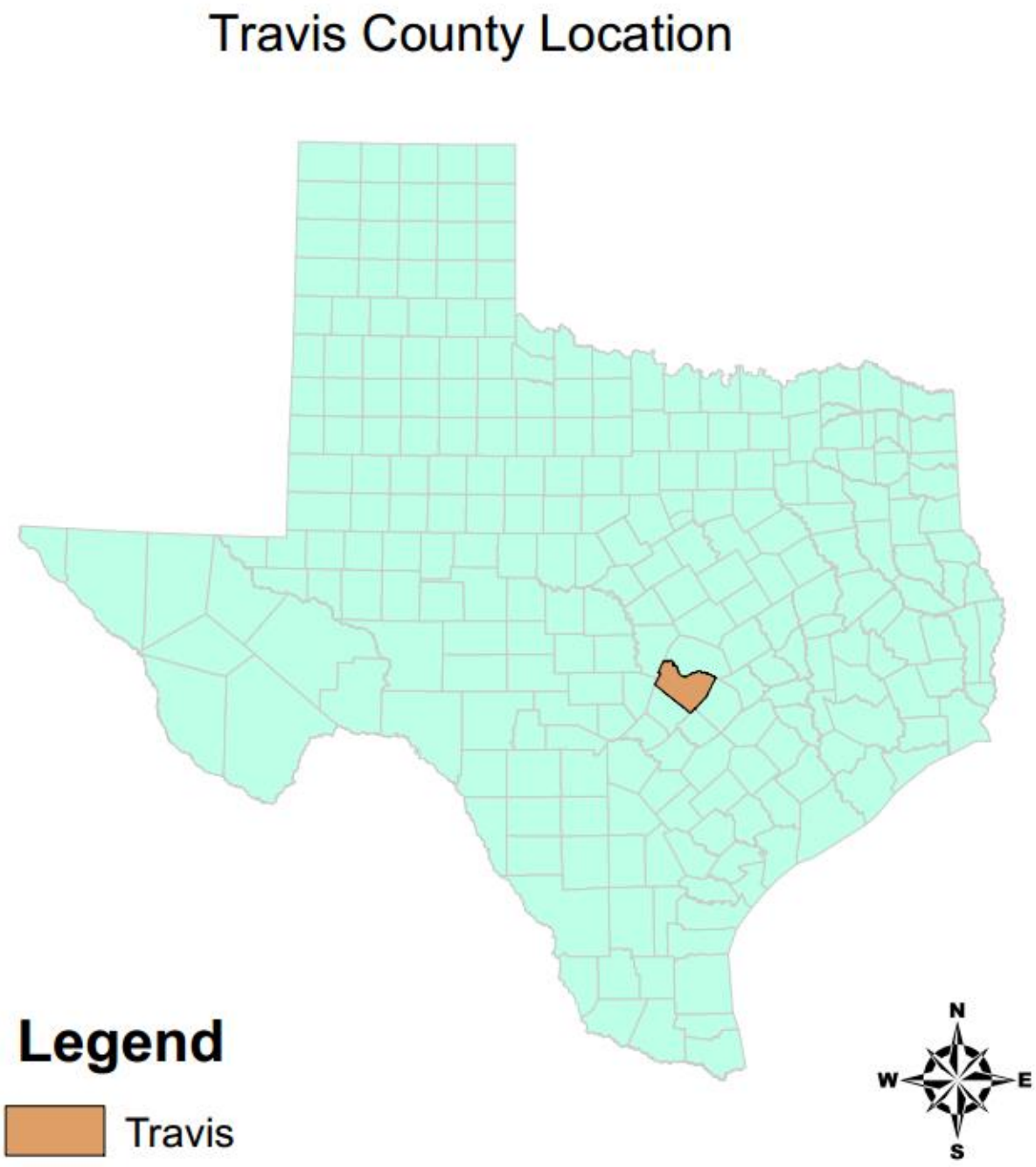
Lab 2.1: Top Cities for…



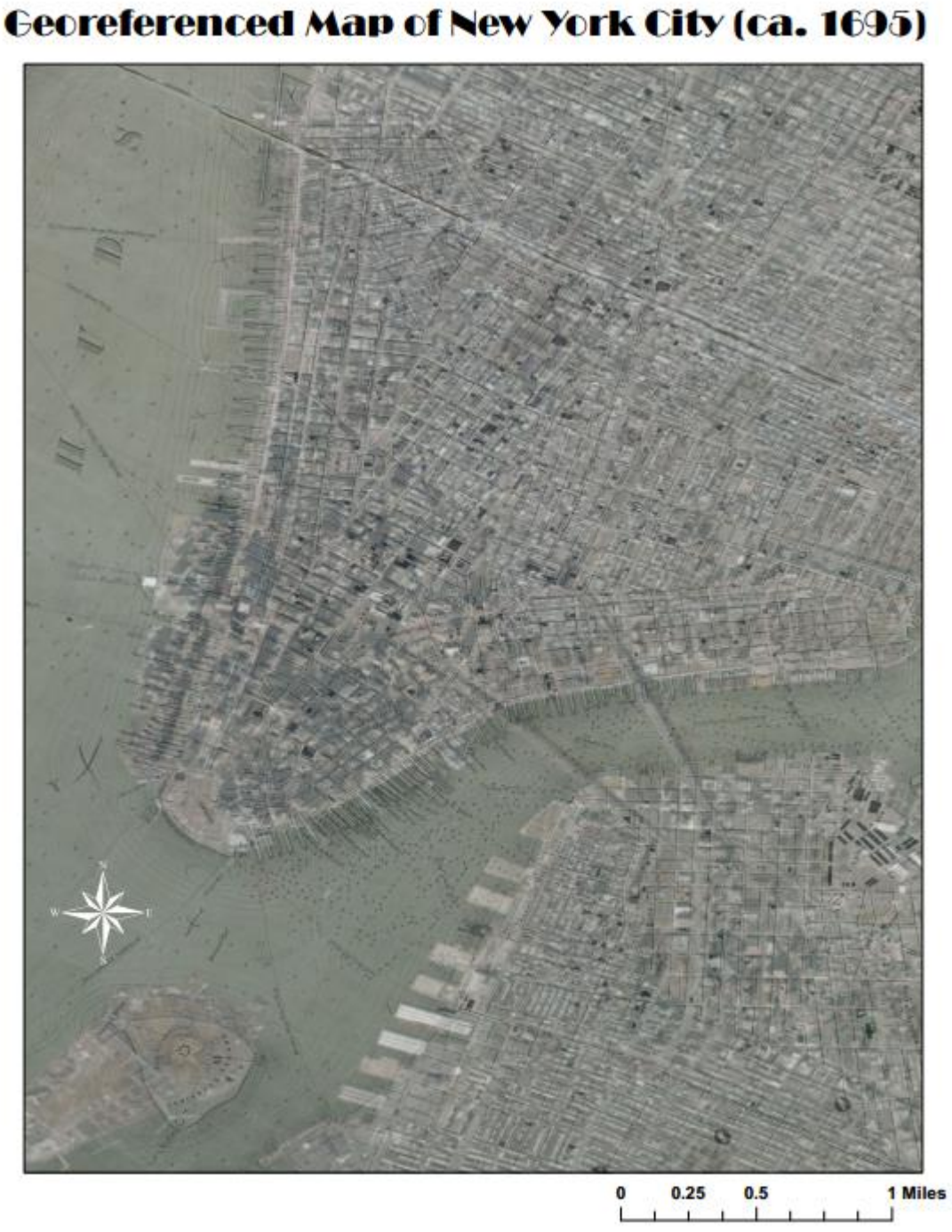
Rank	City	State
1	Aiken	South Carolina
2	Aspen	Colorado
3	Brandywine	Pennsylvania
4	Charlottesville	Virginia
5	Lexington	Kentucky
6	Middleburg	Virginia
7	Millbrook	New York
8	North Salem	New York
9	Ocala	Florida
10	Woodstock	Vermont

There is definite concentration of the "best" cities for equestrians (and therefore, more horses) on the east coast, possibly because that's where the majority of this tradition is. This data was largely based on weather analysis and cost of living, with nearby airports and was collected by editors of the publication "Equestrian Quaterly", making the validity of the system questionable, because it's largely subjective. I created this map using a list found online. I put the data in an Excel sheet, uploaded that to ArcGIS.com, and then moved the uploaded data into the ArcMap program via the internet.

Lab 2.2: Shapefile of Travis County



Lab 3: Georeferencing New York City



This is a georeferenced map of a selected area of New York City, New York. The underlying map is of current day, and the overlaid map is from 1695.

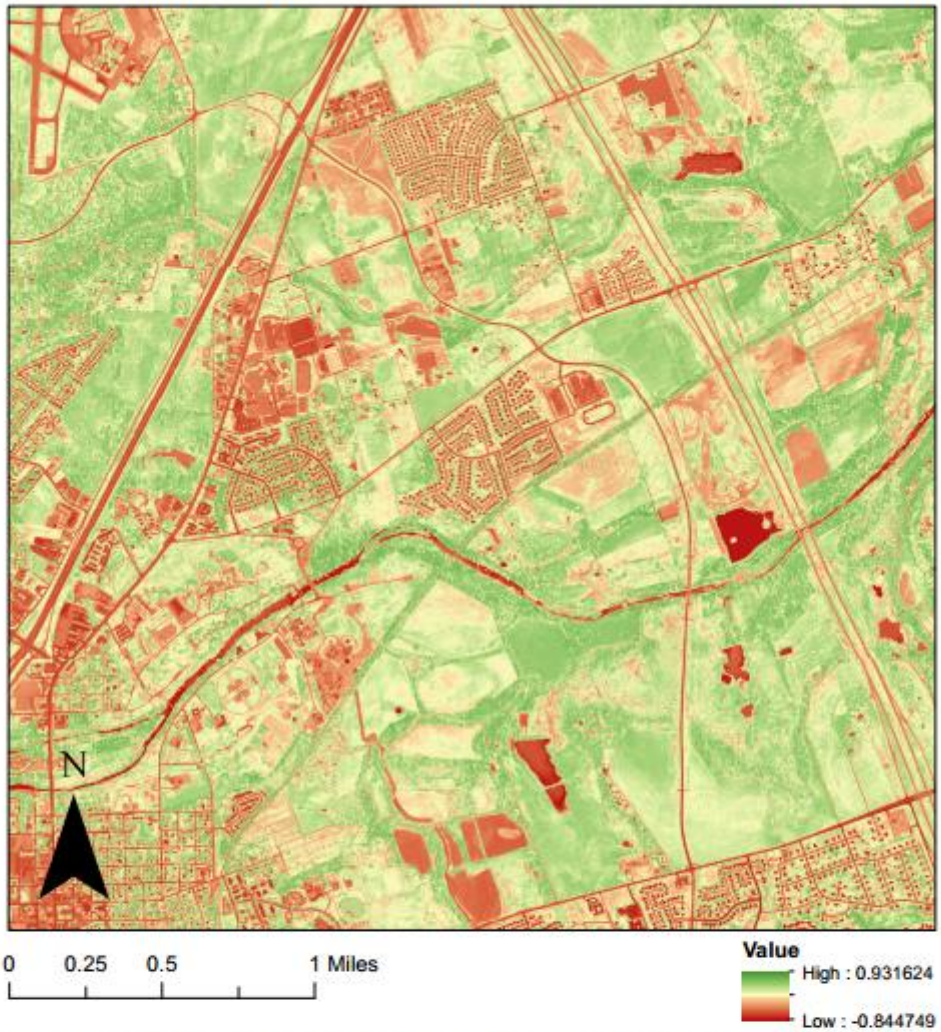
Lab 3.1/3.2: Georeferencing Austin

Georeferenced Map of the Mueller Area in Austin, 1966 and now

The above map is a georeferenced map of the Mueller area in Austin, Texas. The superimposed map is from 1966, and the map below is present day.When you look closely, you are able to see the before and after changes and new developments. I chose my points using distinctive landmarks and intersections, and made sure that my RMS error was below 20. The process involves overlaying an older photograph or map over a current map (or a map of thw age of your choosing with the intent of showing a before and after affect, and choosing points to make the overlay more and more accurate.

Lab 4: NDVI

NDVI Aerial View of Southeast Georgetown, Texas



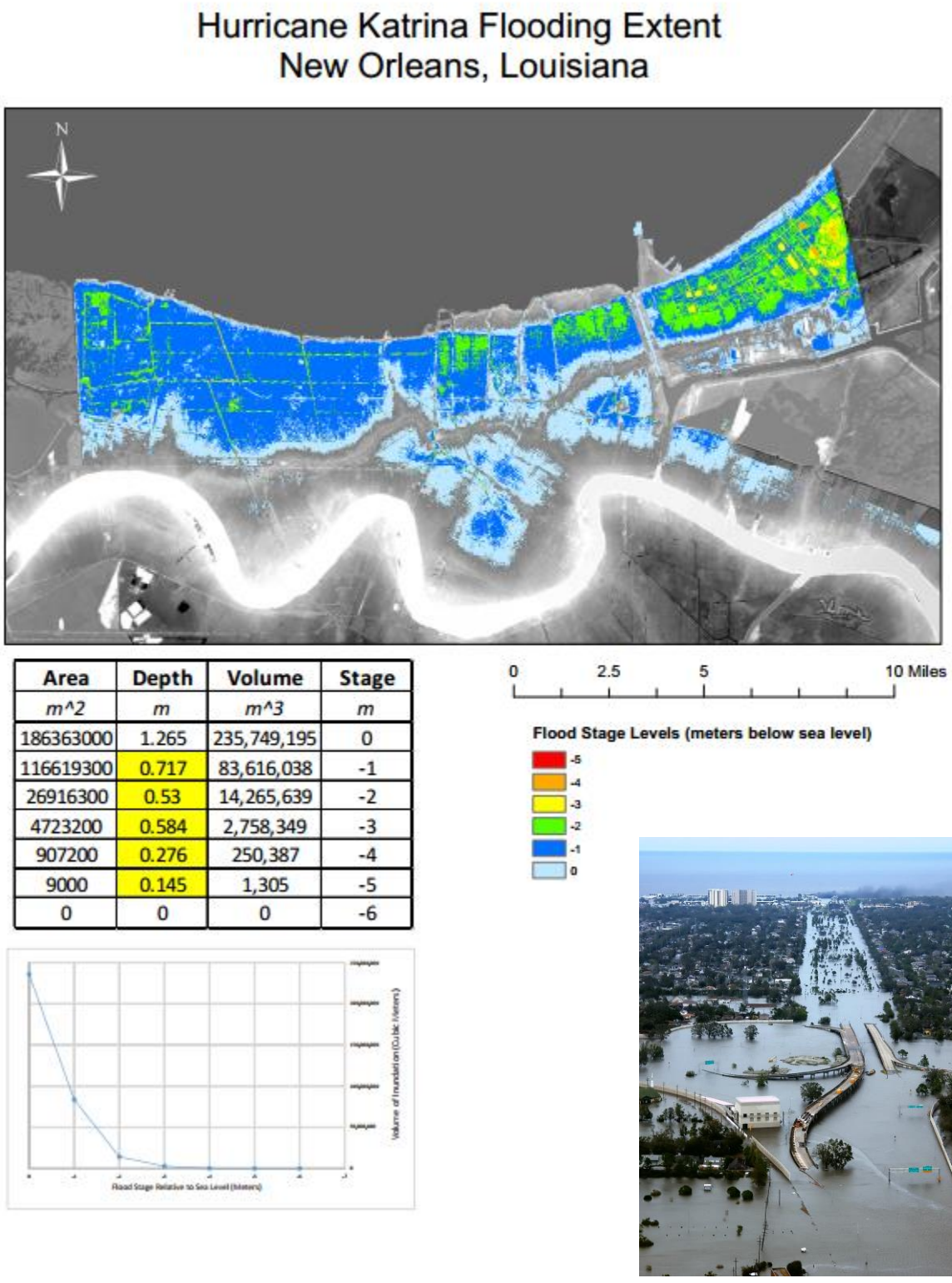
The above map is an aerial NDVI depiction of the southeast quadrant of Georgetown, Texas. The NDVI was created from the photos infrared and redbands and is dated from 2010. Areas shown in green are high values, and represent trees and assorted green plant life. Areas shown in red are low values, and represent assorted facets of human development more devoid of green plant life.

Visit http://www.tnris.org, download color infrared aerial photography of the southeast quadrant of Georgetown, Texas. Save data to new folder on desktop. Launch ArcMap. Create a folder connection between the new folder and the ArcMap

Add connected band data to the map. Right-click the new layer and change the photo to a CIR. Add each individual band by going to "Add data, and double clicking the data set.

Convert the files from JPG to GRIDs by right-clicking and choosing data>export data. Go to Raster Calculator. Enter: float("band4"-"band1")/float("band4"+"band1"). This creates the NDVI.

Lab 5: NOLA



Area	Depth	Volume	Stage
m^2	*m*	*m^3*	*m*
186363000	1.265	235,749,195	0
116619300	0.717	83,616,038	-1
26916300	0.53	14,265,639	-2
4723200	0.584	2,758,349	-3
907200	0.276	250,387	-4
9000	0.145	1,305	-5
0	0	0	-6

Lab 6.0: Joplin

Before and After Aerial Photography of the Joplin Tornado

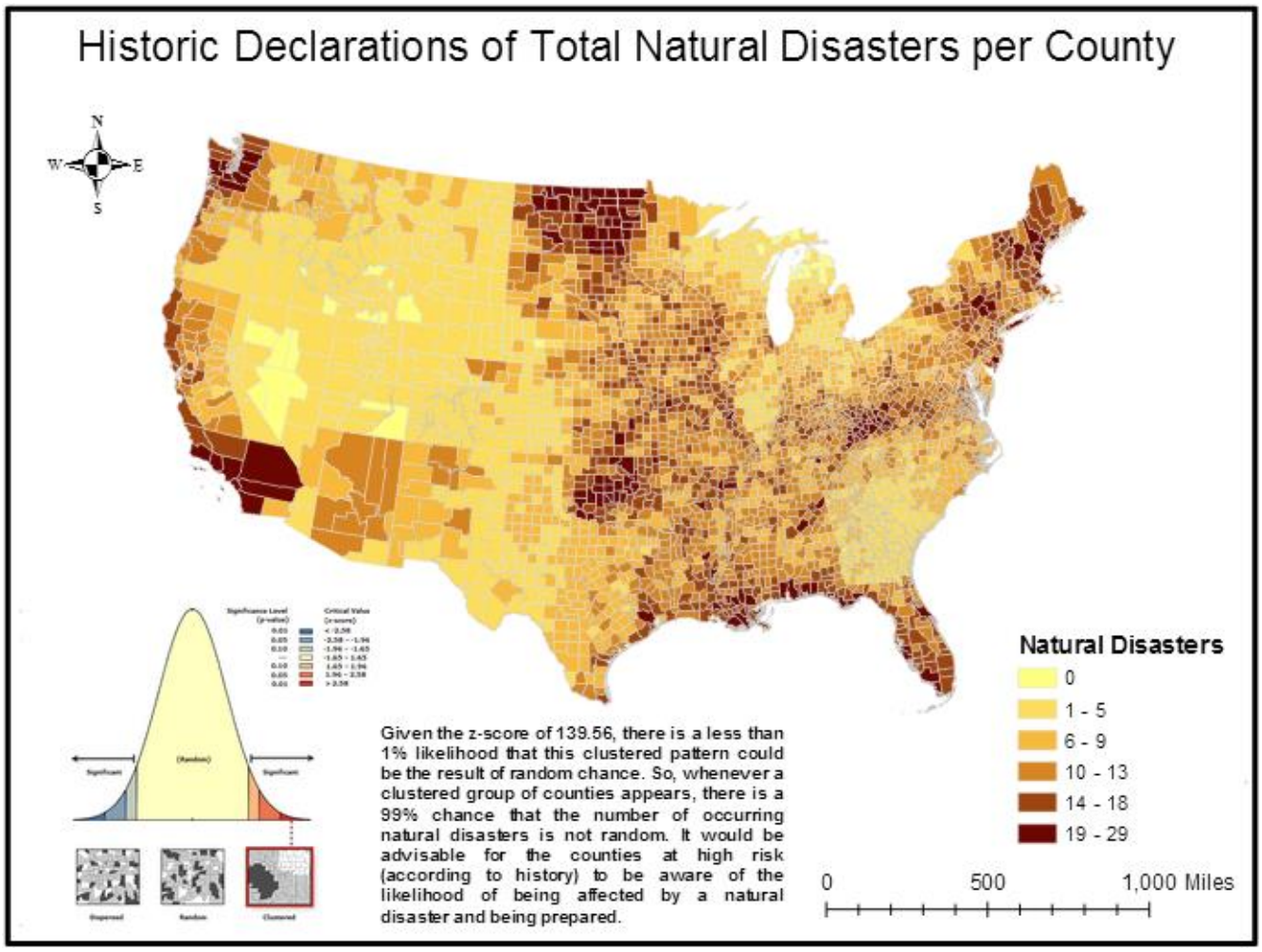
BEFORE

AFTER

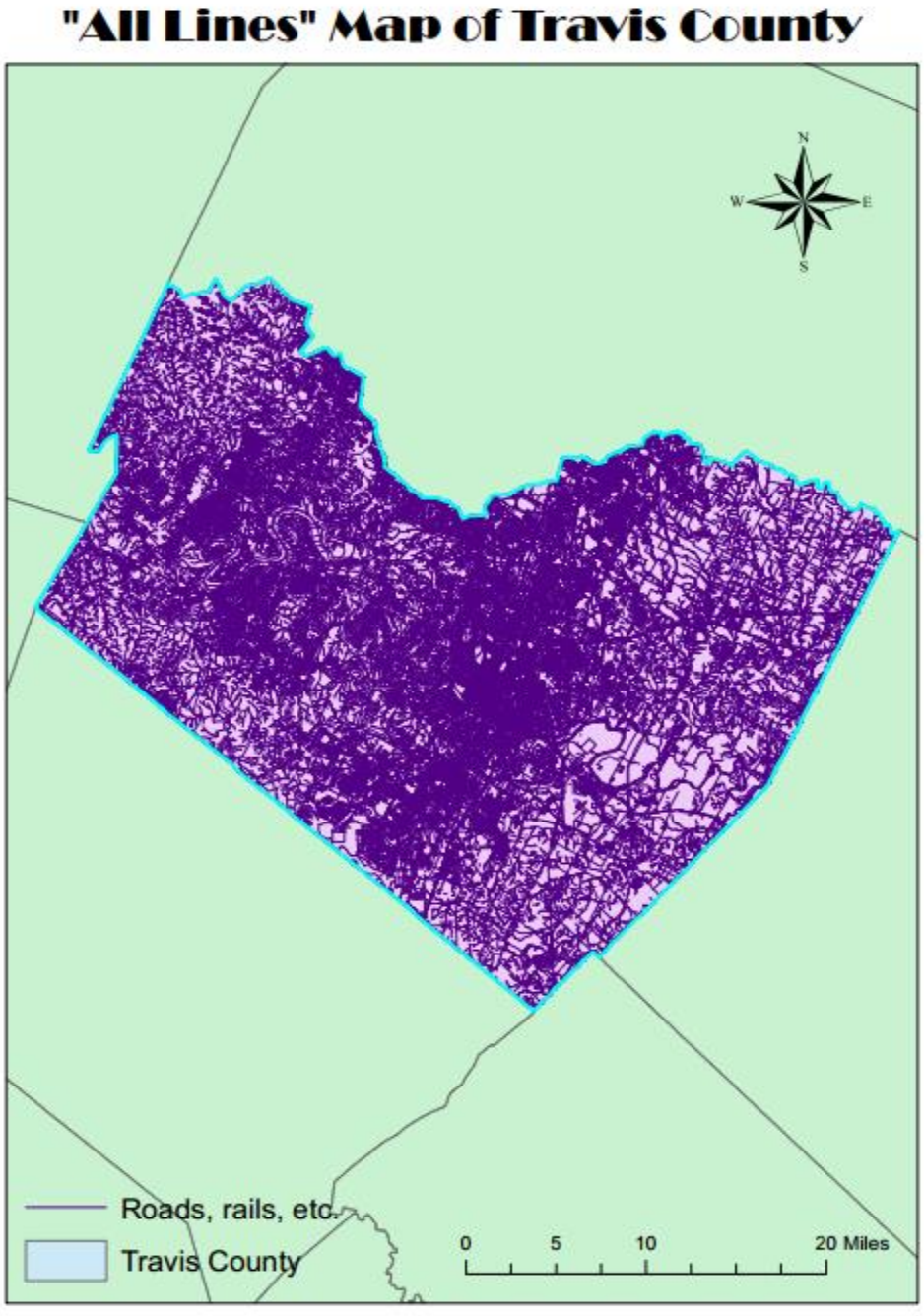
0 0.025 0.05 0.1 Miles

The above before and after photos depict the damage inflicted on a selected neighborhood by the EF-5 , multiple vortex tornado that hit Joplin, Missouri in the afternoon of Sunday, May 22, 2011. The maximum width reached roughly a mile. It tracked eastward across the city and was only the third tornado to hit Joplin since 1971. The tornado resulted in 158 casualties, 1,150 injuries, and caused $2.8 billion in damages. It is the costliest tornado ever recorded.

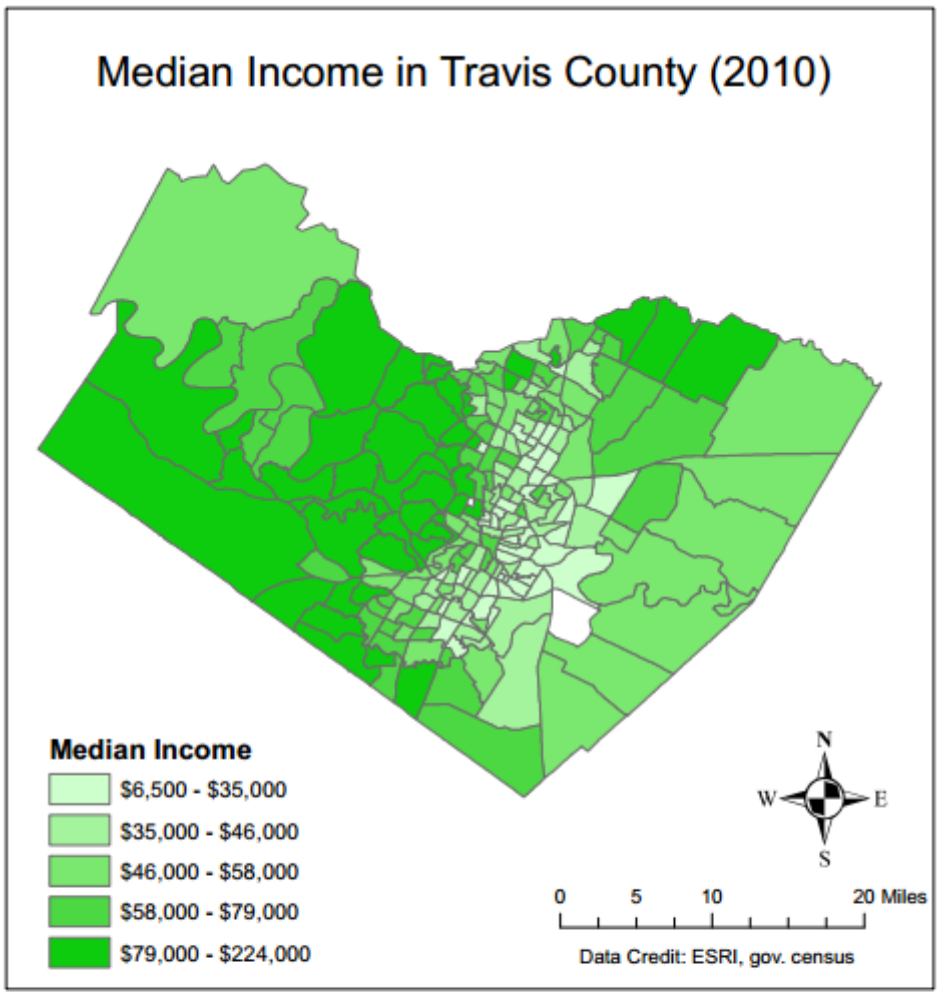
Lab 6.1: FEMA


Historic Declarations of Total Natural Disasters per County
N
W
E
S
Natural Disasters
0
1 - 5
6 - 9
10 - 13
14 - 18
19 - 29
0
500
1,000 Miles
Given the z-score of 139.56, there is a less than 1% likelihood that this clustered pattern could be the result of random chance. So, whenever a clustered group of counties appears, there is a 99% chance that the number of occurring natural disasters is not random. It would be advisable for the counties at high risk (according to history) to be aware of the likelihood of being affected by a natural disaster and being prepared.

Lab 7.1/7.2: Projections

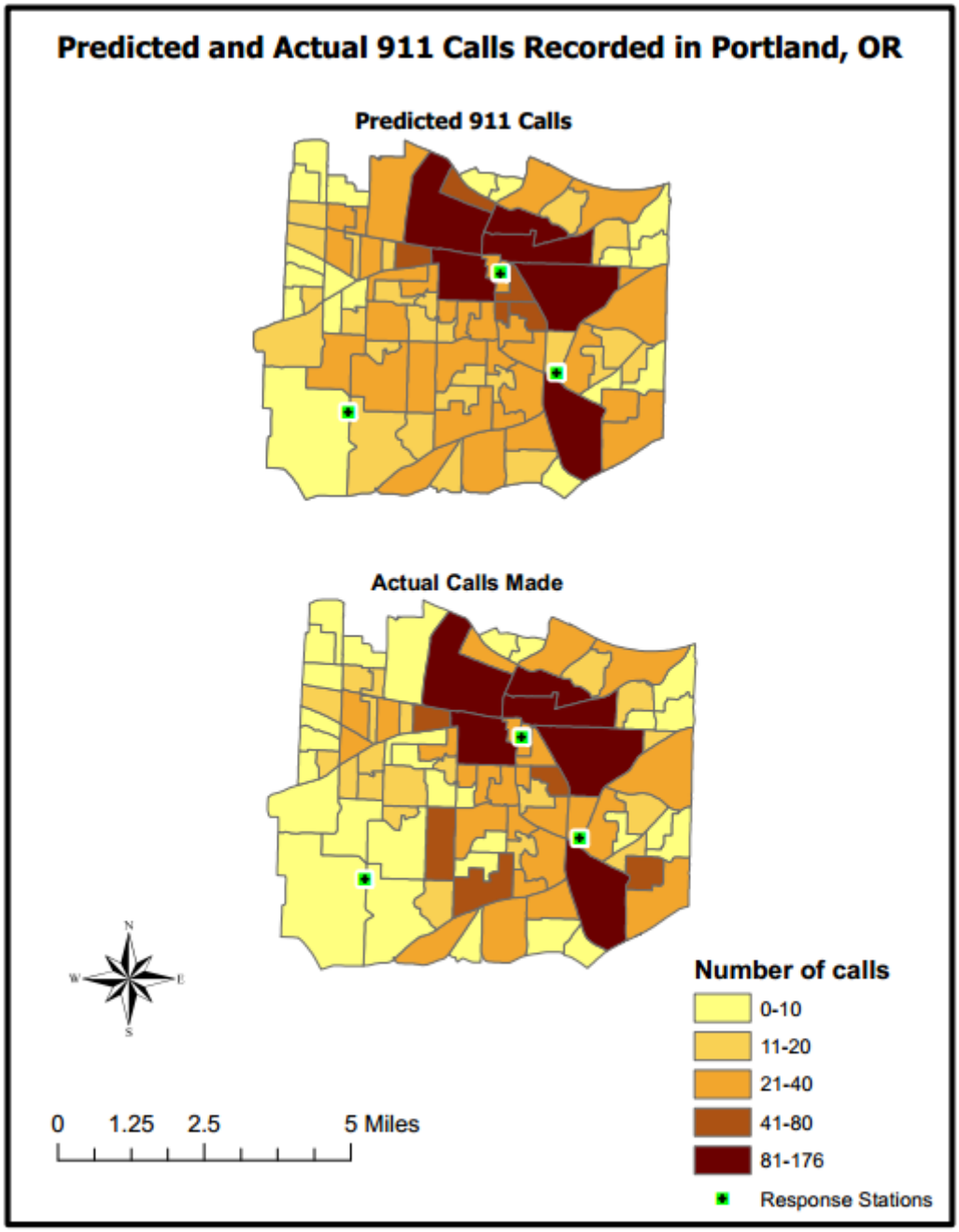


Lab 8: Census Information



The above map is a choropleth map illustrating the distribution of median income in Travis county's census tracts. According to the map, the majority of higher incomes are located in the western area of Travis county, including but not limited to the Lakeway area, Beecave, and the Barton area. Lower incomes are largely concentrated in the east-central area of the county, east of Interstate 35. The outlying areas and suburbs appear to have higher incomes than the inner-city area.

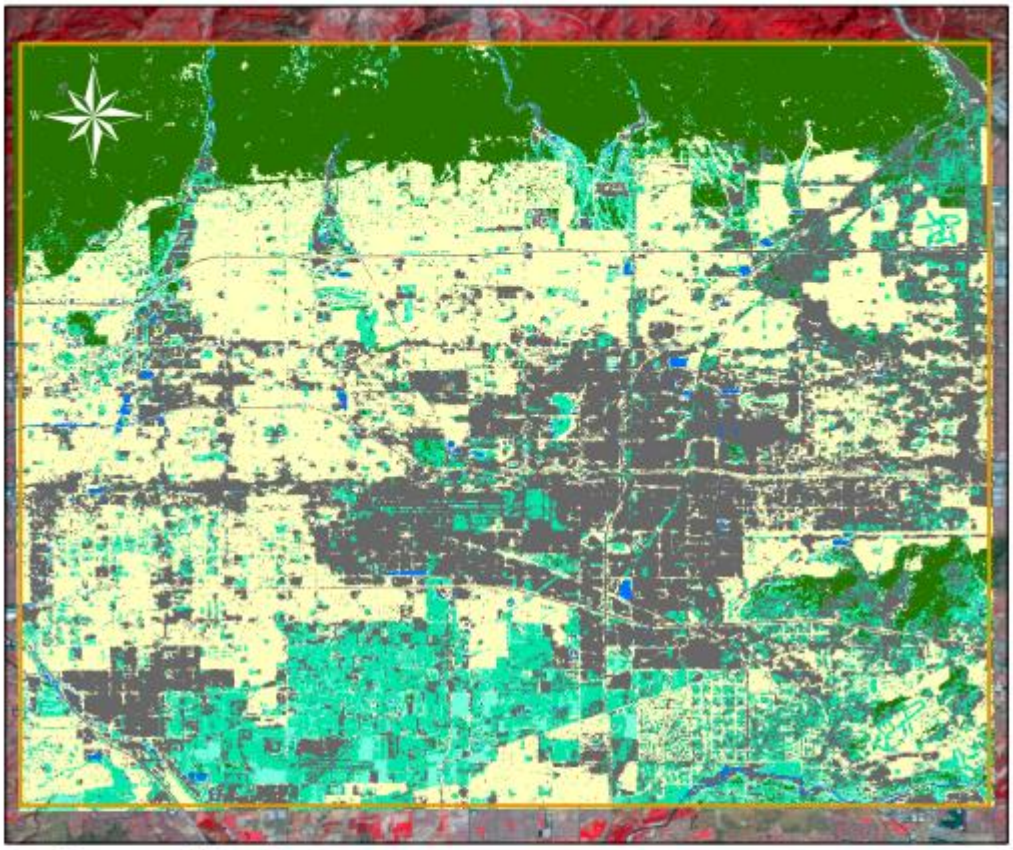
Lab 9: Geographic Weighted Regression



The above maps illustrate predicted (top) and actual (bottom) number of 911 calls made in Portland, Oregon, taking into account distance from response centers, education level, jobs and population. The top map predicts more calls than are actually made. These maps could help determine the future placement (or possible relocating, in the case of the center in the lower left area of the maps) of response centers; there is greater need for one where there is a higher volume of calls.

Lab 10: Image Classification

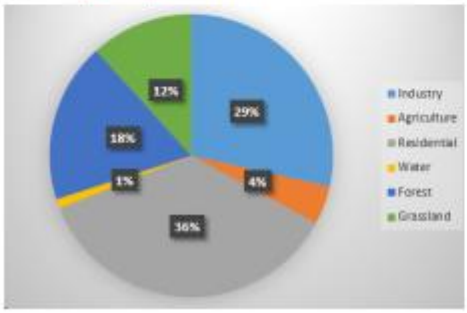
Image Classification



Classes of Land

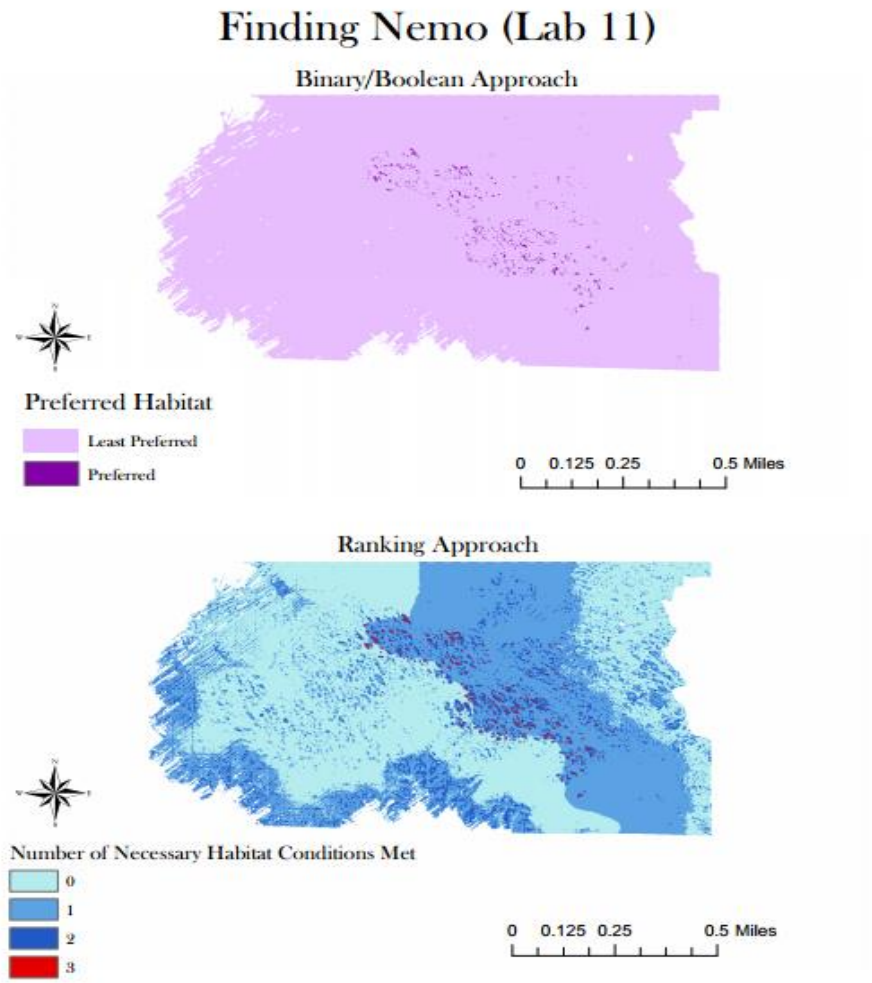
- Industry
- Agriculture
- Residential
- Water
- Forest
- Grassland

0 2.5 5 10 Miles

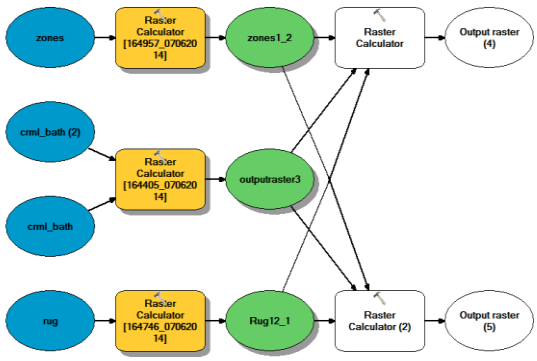


The above graph is an image classification of a sampling of land originally potrayed as a multi-band raster image. The classes overlaid were taken from creating polygon samples and represent Industry, Agriculture, Residential areas, Water, Forest and Grassland, and the amount of land taken up and the location. The pie chart (left) is another representation of which classes take up how much of the sample of land in the map, total.

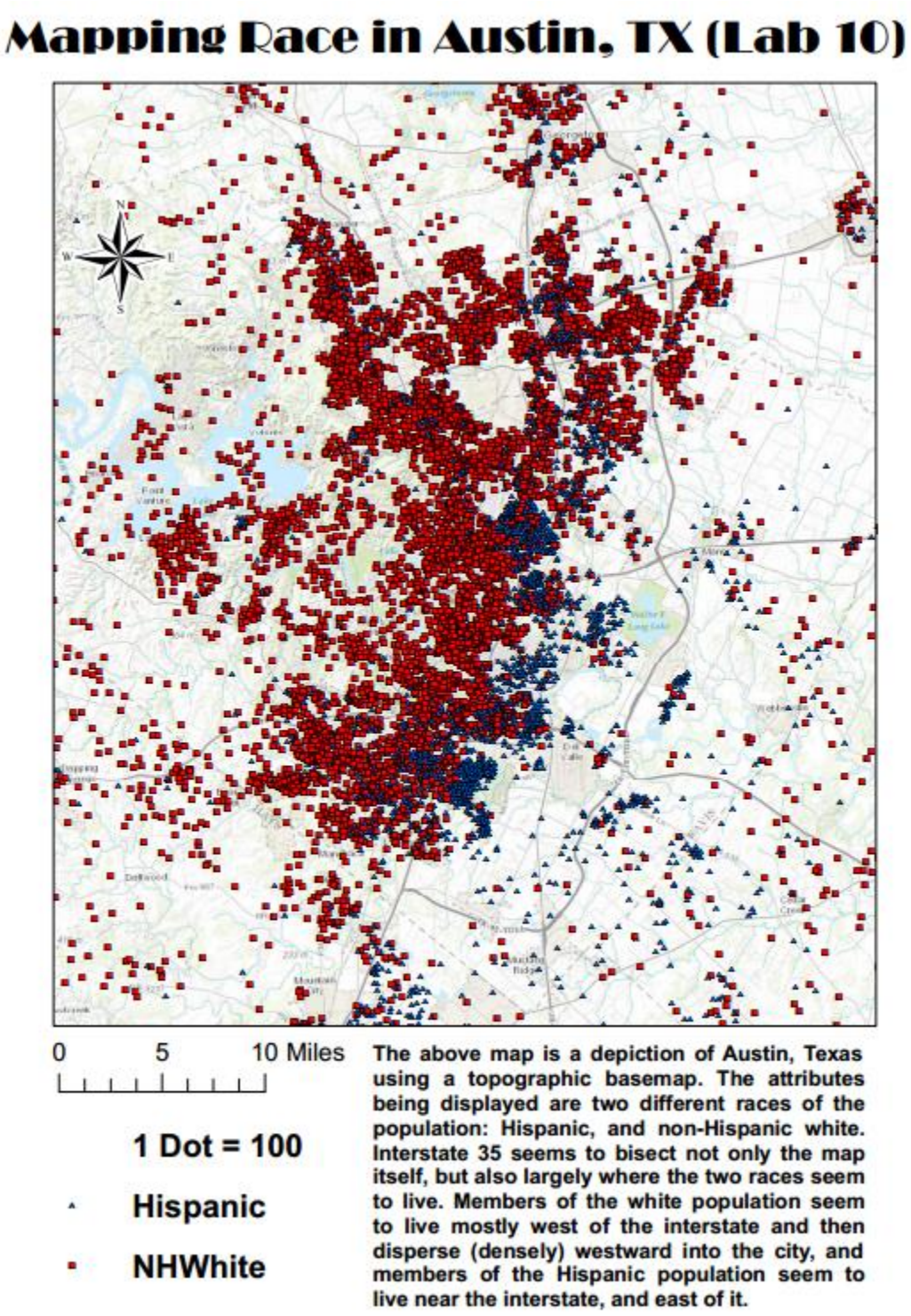
Lab 11: Ecological Niche Modeling



The two above maps depict where a particular species of fish wants to live or is able to live in a designated environment. The top map represents a binary or Boolean map, in which the results are divided into only two categories: 1 or 0, or in this case, suitable for habitation or unsuitable. The bottom depicts the ranking approach, with three conditions necessary for the fish to inhabit this area. The color gradient represents the number of necessary attributes being met in different locations,with a range from zero conditions being met to all three being met.

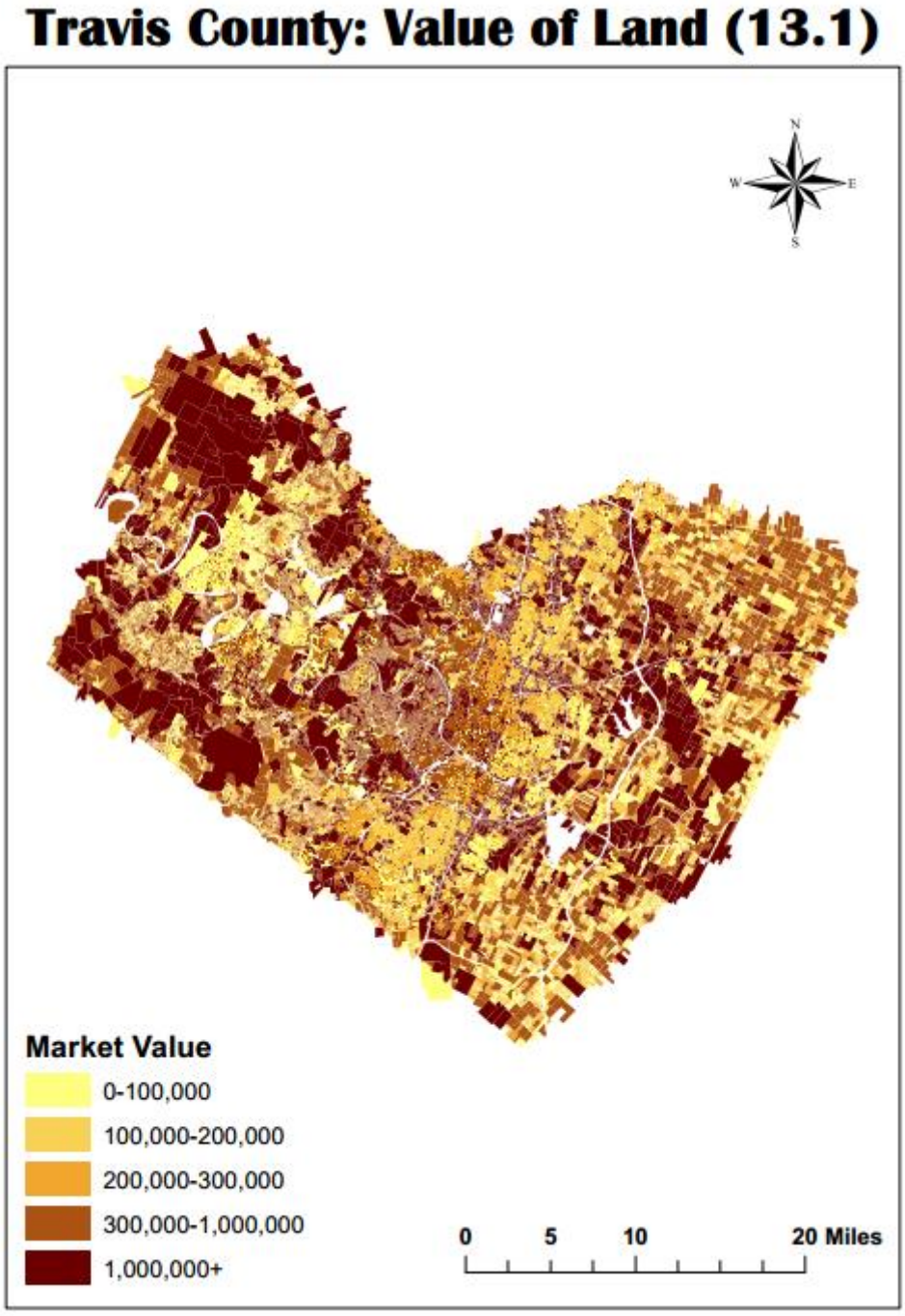


Lab 12: Mapping Race of Central Texas

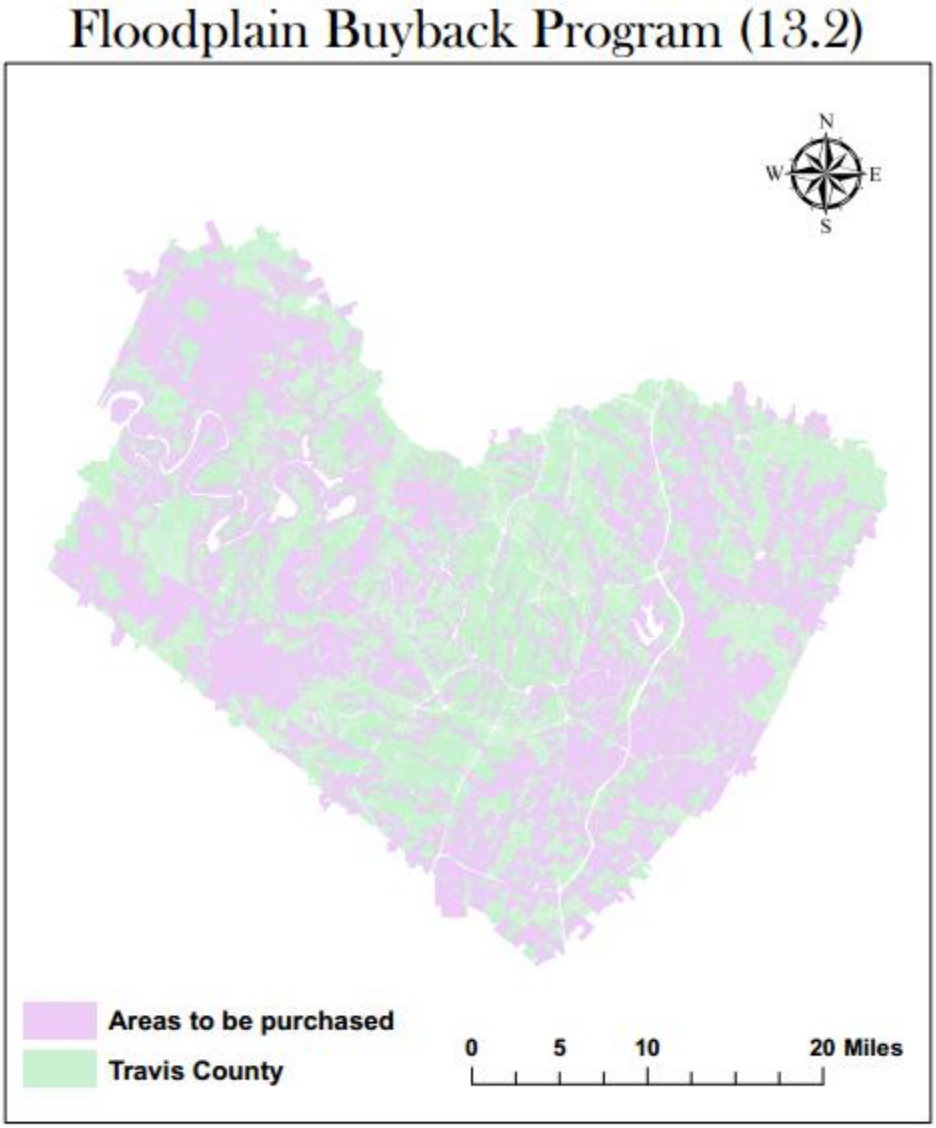


The above map is a depiction of Austin, Texas using a topographic basemap. The attributes being displayed are two different races of the population: Hispanic, and non-Hispanic white. Interstate 35 seems to bisect not only the map itself, but also largely where the two races seem to live. Members of the white population seem to live mostly west of the interstate and then disperse (densely) westward into the city, and members of the Hispanic population seem to live near the interstate, and east of it.

Lab 13.1: Mapping Property Values of Central Texas



Lab 13.2: Floodplain Buyback Program



The above map is a depiction of Travis county (green), and the overlaid areas (pink) are the areas of the county that are at high risk in the floodplain of flooding. In order to become totally flood-proofed, it would cost $17,845,032,246. The GDP of the entire US comes to 16 trillion dollars. It would cost more than the GDP to floodproof this area, and thus, the project is not feasible.

Lab 14: UTography

Shay's Favorite On-Campus Haunts