MEMORANDUM

To: Dr. Jeff LaMondia, Planner, Thompkins County, NY

From: Lan Liu

Date: April 14, 2017

RE: Distribution of landmarks in New York

I. Purpose

This assignment is made to let students project and reproject data and create the map. From this assignment, students will learn skills about how to determine the projection and datum of the data, and reproject all of the spatial data that have the same projection and datum.

II. Methods of creating a map

A large map was created from three layers and an inset map was created from a data frame with three layers. The final layout was made with following steps:

- First, the data was downloaded and exported into a folder. By navigating to "Data Management Tools", "Define Projection" was used, and three layers (landmarks, roads, and census tracts) with defined projection would appear, respectively. The coordinate system field was changed to "NAD 1983", "North American Datum 1983", and "NAD 1983 StatePlane New York Central FIPS 3102 (Feet)" in the previous step.
- Second, all three layers were removed, and "Project" Wizard Box was clicked to change the coordinate system. Here, the folder icon was clicked to specify the location of the input dataset, and "NAD 1983 StatePlane New York Central FIPS 3102 (Feet)" was set in the "Output Coordinate System" filed for three shapefiles.
- Third, since roads was located in a specific part of the whole census tracts, the inset map was created to show the detail of distribution of landmarks on roads in the specific census tract. After this step, the large map and inset map were ready in layout.

III. Findings

"Define Projection" is used for datsets that have an unknown or incorrect coordinate system defined. Lists of the data sources that are missing spatial reference information will show up in ArcMap with data without defined projection. Students need to be clear that "Define Projection" does not change the projection, which only changes the metadata describing the current projection of the dataset. "Project" is used to project spatial data from one coordinate system to another. This tool is used to change shapefiles.

The disadvantage of "on-the-fly-projections" is that the first layer added defines the data frame's coordinate system. The advantage of this tool is that it can automatically transform the data's projection system to be the same as that used for the map. Importing datasets is the first step to create a map with ArcMap, and the final version of the map is rely on the imported datasets, which shows that practice projecting spatial datasets is really important.

IV. Caveats

Before using "Define Projection", students must know the correct coordinate system of the dataset before using this tool.

V. Appendices

Census tracts

http://www.census.gov/geo/www/cob/tr2000.html#shp

Landmarks-City of Ithaca

http://www.cityofithaca.org/

Roads

http://www.co.tompkins.ny.us/gis/

VI. Bonus question answer

Dr. LaMondia's parents used to live in City of Ithaca, NY.