PAM 6950 - Spring 2020 - Professor Rich
Homework #05

Introduction

This homework assignment requires you to apply spatial thinking to a policy-oriented question. Suppose you have been commissioned to analyze the spatial distribution of child poverty in Tompkins County, New York. Policy-makers are concerned about both urban and rural poverty. Here is data you have available:

Format:	*Filename:*	*Description:*
Shapefile	tomp_bgroups.zip	Tompkins block group shapefile with data
Stata dataset	tomp_poverty.dta	Tompkins block group poverty data
CSV dataset	tomp_sites.csv	Possible sites for child support centers

Note: You are not required to bring in any external data for this dataset, but you may do so if you have the time and interest. Three sites to explore:

- https://cugir.library.cornell.edu/?utf8=%E2%9C%93&q=new+york+state
- http://tompkinscountyny.gov/gis/data
- http://gis.ny.gov/gisdata/inventories/details.cfm?DSID=932

Question 1:

Provide background information on Tompkins County, drawing upon block-group data from the pooled 2010-14 American Community Survey. These data are estimated counts based on a small subsample of households.

a) What is the average poverty rate among families with children living in urban versus rural areas of Tompkins County? Would you characterize childhood poverty as an especially urban or rural phenomenon? Why? What about poverty measured among all families?

b) Describe segregation of families with children in poverty versus families with children not in poverty using any index of your choice. In 1-3 sentences, explain how to interpret this index and whether this is a low, middle, or high level of segregation.

c) We've discussed several issues that should make us cautious when analyzing American Community Survey data at small spatial scales such as the block group. Mention two of these issues. Briefly explain each issue in 1-3 sentences each.

Question 2:

A new initiative will open two free child-care centers in Tompkins County for families with children in poverty. You've been hired to decide **which two sites** should be selected out of eleven potential sites. The goal is to maximize proximity for the most poor families with children. A CSV dataset has been provided with the addresses and coordinates of each potential child-care center site.

a) Create a professional map (in color) illustrating how the number of families with children in poverty (fpovkids) is distributed across block groups.
    a. One layer of the map should display counts of poor children (a choropleth map or some other approach of your choice).
    b. Another layer should display the point locations of all day-care sites.
    c. Your map should include a legend, a scale, a title, and clarifying notes. The map should provide context and be projected appropriately.
    d. Make sure you project the final product using NAD 1983 State Plane New York Central.

b) Create a replica of the map in 2a that could be read even when printed without color. What (if any) information did you give up compared to map 2a?

c) County officials have suggested "Dryden" and "Trumansburg" as their favorite locations. Calculate the distance (as the crow flies) between each block group's internal point and both "Dryden" and "Trumansburg". Then, determine the following:
    a. How many families with children in poverty live within three miles of Dryden?
    b. How many families with children in poverty live within three miles of Trumansburg?
    c. Give two reasons why this method of calculating distance may not capture commute experience for families in Tompkins County.

d) Briefly (1-2 paragraphs): Explain *which two locations* you recommend for the day-care centers. Justify your recommendation based on your map, your distance calculations, or other relevant observations. There are no incorrect answers as long as you provide a rationale for your decision. You might consider creating an additional map/figure/table to support your argument.

    [Optional: you can use the "Network Analysis" toolkit in ArcGIS along with road network data, but this is an advanced skill we will not have time to address in class. If you try this, please share how you did it via Campuswire.]