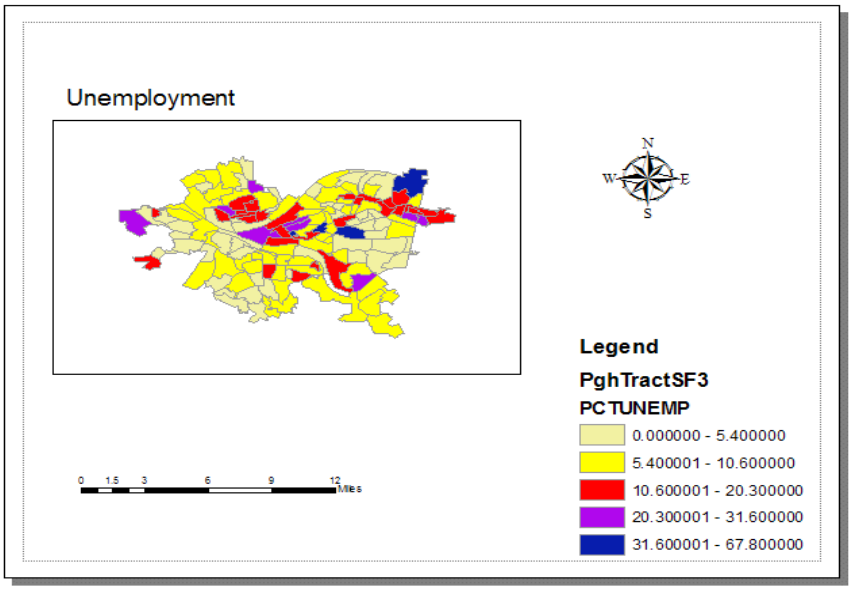
PAF 9186 **Fall 2022**

Midterm Exam

Section 1

1) Identify four problems with the map of *Unemployment in Pittsburgh* below.

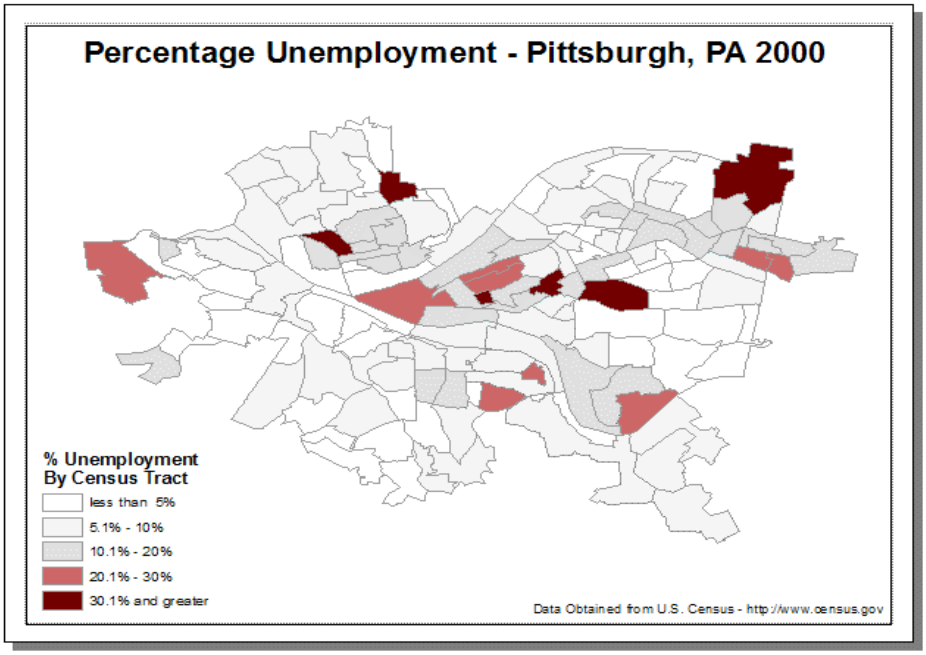


1. The title should include the location of unemployment. The title “Unemployment” is extremely vague and can confuse the audience.

2. The colors do not do a good job in showing the gradual progression of unemployment throughout the area.

3. The map should be way larger. The legend, compass, and distance scale should be inside the same box as the map considering the map is the main focus. Also, the distance scale is too large.

4. The labels of the legend should be clearer. It does not clarify what exactly “PghTractSF3” and “PCTUNEMP” are referring to.



2) What concern(s) do you think the map makers want to address by selecting the classification system and associated color scheme? Do any concerns remain?

Answer = The map makers want to express the different percentages of unemployment throughout the census tracts. Yes, many concerns remain. The color scheme makes it appear as if unemployment is only concentrated in a few areas, however, that is not necessarily the case. For instance, percentages of 10.1% - 20% can be considered quite high, but the color scheme does not express this. Furthermore, it can be quite difficult to distinguish census tracts. The borders need to be thicker.

3) Why might the above map "Percentage Unemployment - Pittsburgh, PA 2000" be missing a scale bar and north arrow?

Answer = It is missing a scale bar and a north arrow because the main focus of the map is Philadelphia and its percentage of unemployment. Our main concerns are not the distance of Philadelphia nor its location on a compass.

4) In the above map, "Percentage Unemployment - Pittsburgh, PA 2000", which of the following classification methods -- natural break, equal intervals, manual, quantiles -- do you think was most likely used (you must state the evidence for your answer)?

Answer = I believe the classification method is manual because on the legend there are labels “less than 5%” and “30.1% and greater.” These labels are not possible for any classification method, except for Manual.

5) If one wants to calculate the absolute distances between any two point features – such as the center of the neighborhoods where unemployment is high and the nearest job placement center, or between this city and the nearest city with more than 500,000 persons where there may be better prospects for employment – what type of coordinate system should one use? (You do not care about relative distance from this location to all others.)

Answer = The best type of coordinate system to use is The State Plane Coordinate as the system is accurate for the small portions of the earth depicted in a state plane map.

Section #2

In this section you will be working with spatial (and non-spatial) data. You will make maps, investigate the data layers, create a table, and analyze your output. Please follow the directions below and answer the questions as you proceed.

6) Identify the School District (by its number) that has no subway line. What is the name of th school district, what Borough is it in (5 points)?

Answer = Number 26 In Queens

a. Using the above map layers, select all stations in the *14th St-Carnasie* line.

Answer = 23 observations

7) How many stations on the 14th St-Carnasie line are located in Manhattan (5 points)?

Answer = 5

FYI: School Districts (SCH_DIST): Manhattan (1-6), Bronx (7-12), Brooklyn (13-23, 32), Queens (24-30)

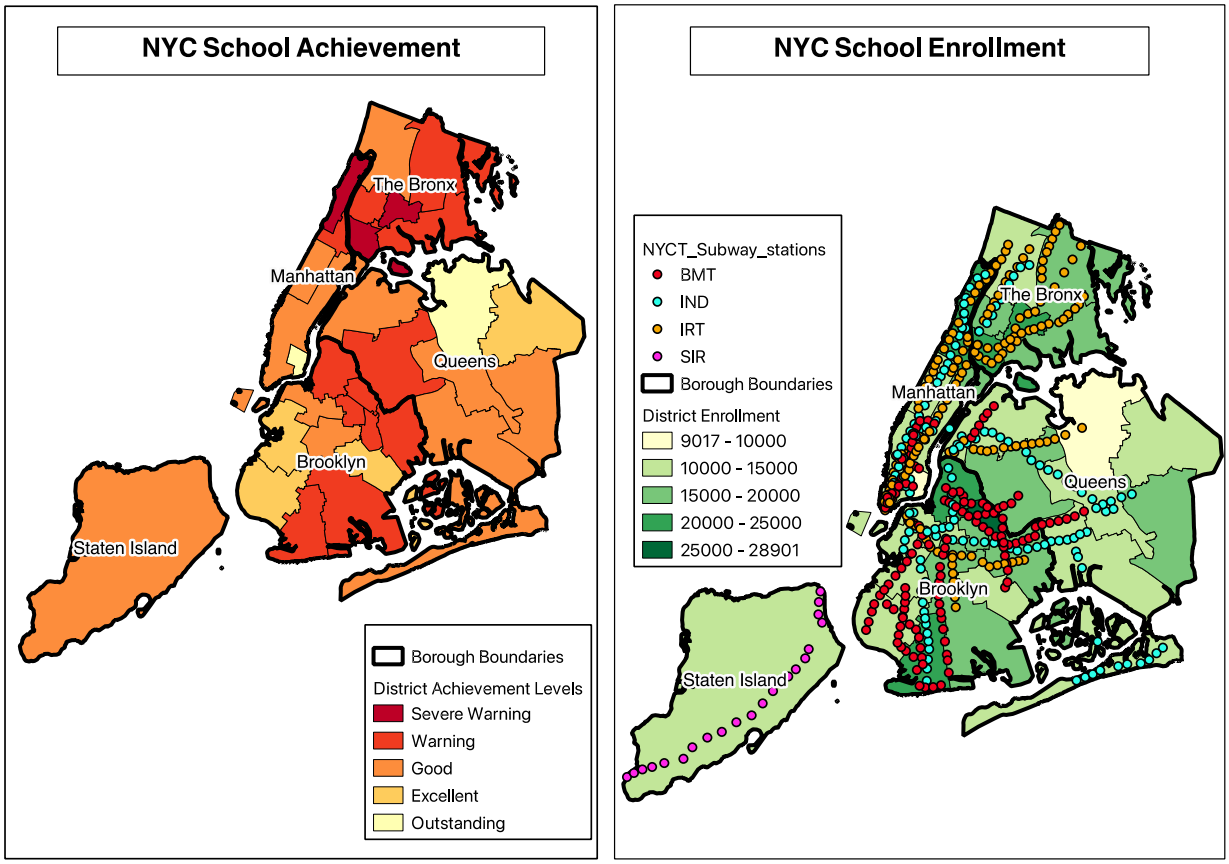
8) How many school districts have an outstanding score (5 points)?

Answer = 2

9) Which borough(s) is/are the school district(s) with outstanding scores in (5 points)?

Answer = Manhattan (school district 1) and Queens (school district 25)

10) Two Panel Map



11) From Panel 2 in your map above, what type of theme did you choose to display enrollment and why (5 points)?

Answer = I chose a graduated theme to display enrollment as I wanted to show progression of enrollment numbers throughout NYC.

12.

	Number of School Districts	Scores			Enrollment
Borough Name		Min	Max	Mean	Sum
Bronx	7	5.9	8.1	7.08571	130226
Brooklyn	12	6.9	8.9	7.66667	210083
Manhattan	6	6.5	9.2	7.81667	92900
Queens	7	7.5	9	8.14286	94287
SI (optional)	1	8.1	8.1	8.1	10297

12) Describe the method you used to create this table (5 points).

Answer = I used the Groupstats function. To find out the # of school districts in each borough I put the BoroName in the Rows section, SchoolDist in value, and Count in Columns. As for the statistics of the Scores, I added BoroName in the Rows section, ACH_SCORE in value, and Average, Min, Max in columns. Finally, for Enrollment, I put BoroName in Rows, ENROLMNT in value, and SUM in columns.

Describe your maps, and associated summary data table, in analytical terms by answering the following questions. Refer to your map and table as evidence for your observations below:

13) What relationship do you see broadly between the patterns of achievement and enrollment (5 points)?

Answer = From my perspective, there appears to be a pattern between achievement level and enrollment. For instance, school districts with the highest level of achievement levels seem to be correlated with the lowest school enrollments. This also means that school districts with the lowest level of achievements scores coincide with districts with the highest school enrollments. This belief is further supported by the table as the boroughs, Bronx and Brooklyn, have the highest sum of enrollments and the lowest achievement mean score. Meanwhile, the boroughs with the lowest sum of enrollments, which are Queens, Manhattan, and Staten Island, have the highest achievement mean score. I hypothesize that a possible explanation could be that higher enrollment numbers could be associated with higher number of students in classrooms making it more difficult for teachers to dedicate enough time to students, which in the end leads to lower achievement score averages.

14) Describe the association between enrollment or achievement and subway stations (5 points).

Answer = There are a significant amount of subway stations clustered around areas of high enrollment.