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GUS 3062

4/28/19

## Final Project

### **Research Question**

Where is the highest density of litter in Philadelphia, Pennsylvania?

### **Data**

I obtained the data for my project from Open Data Philly and American Fact finder. I was able to find neighborhood boundaries, census tract boundaries, and litter survey data from Open Data Philly. I found the total population data by census tract from American Fact Finder.

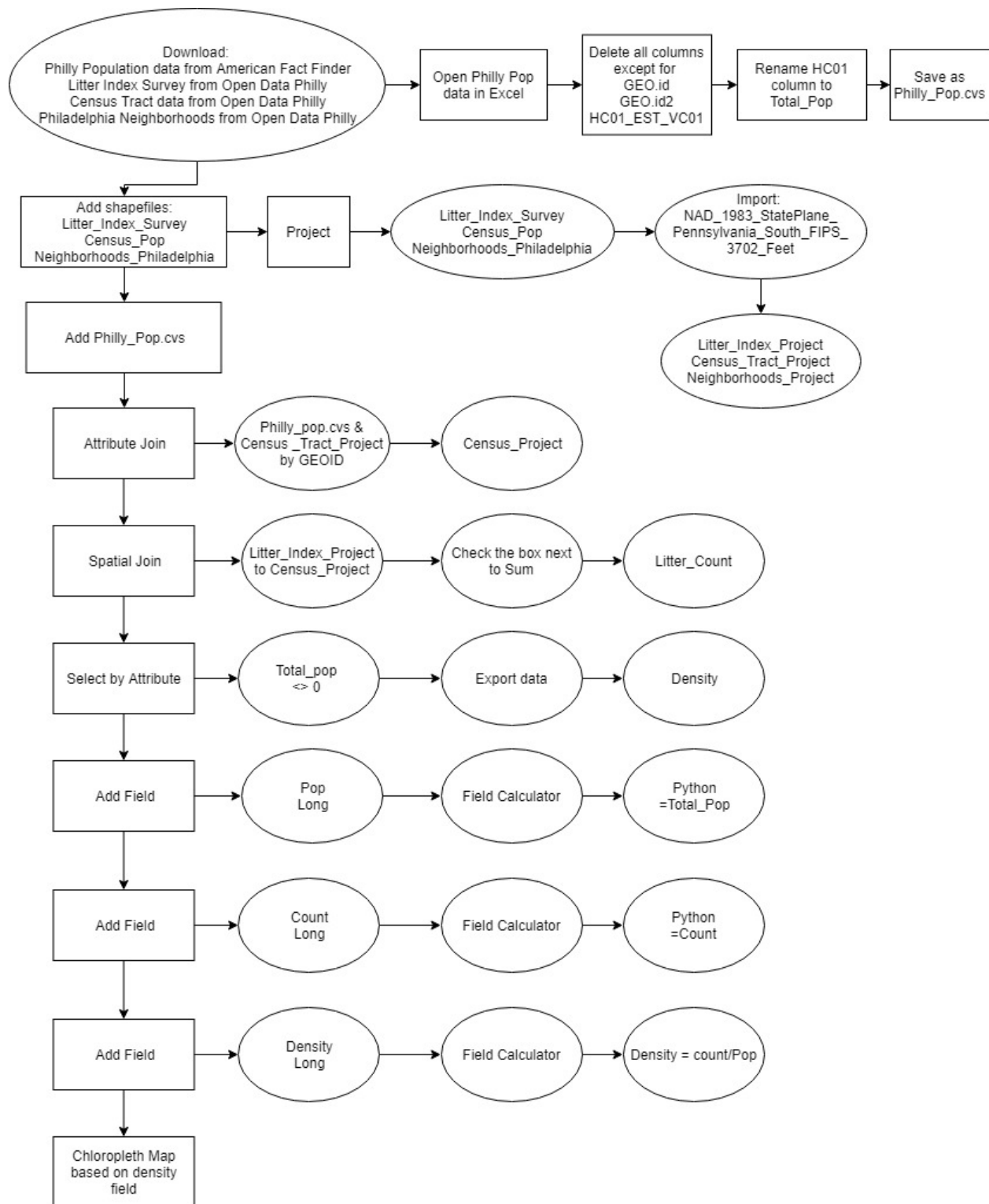
### **Instructions**

1. Download and unzip the 3 data files from Open Data Philly. Open the shapefile associated with each folder.
  - a. Litter\_Index\_Survey
  - b. Census\_Pop (this is the census tract boundary file)
  - c. Neighborhoods\_Philadelphia
2. Download the csv file of the census data by tract. Erase all columns except the one labeled "HC01\_EST\_VC01". Rename this column to "Total\_Pop". Add this new csv file into ArcMap.
3. Project the 3 shapefiles (litter, census boundaries, and neighborhoods) into NAD\_1983\_StatePlane\_Pennsylvania\_South\_FIPS\_3702\_Feet. Rename

the files, Litter\_Index\_Project, Neighborhoods\_Project, and Census\_Tract\_Project.

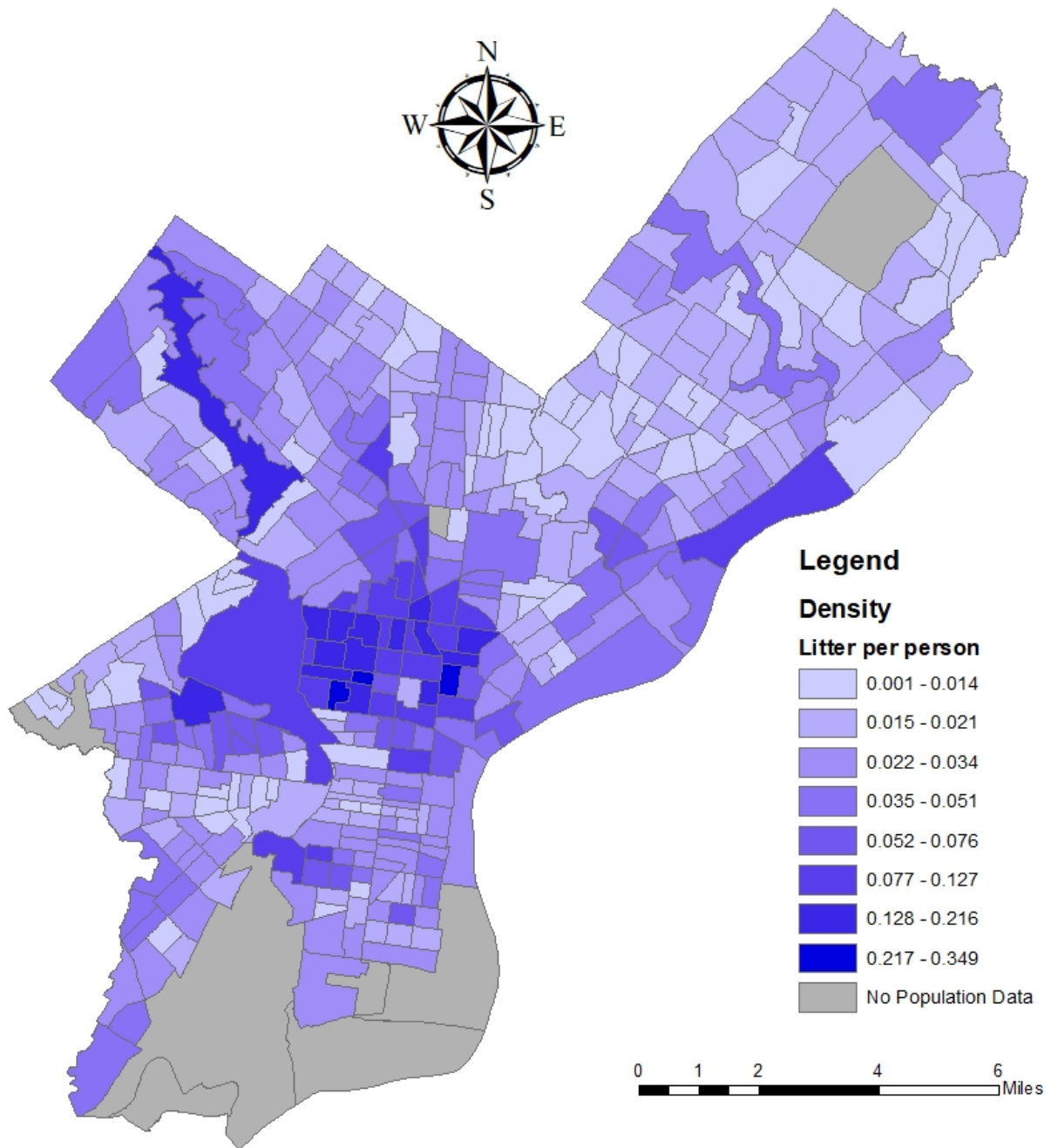
4. Use an attribute join to join the census tract boundaries with the population of each tract using GEOID. Name the new file "Census\_Project".
5. Use a spatial join to join Litter\_Index\_Project and Census\_Project. Check the box next to the "sum" option to get a count of the litter reporting's for each tract. Name this new file "Litter\_count".
6. To get rid of the census tracts with a population of 0, use select by attribute.  $\text{Litter\_Count} = \text{Total\_pop} \neq 0$ . Export this data and call the new file "Density"
7. Since the population data is in a text format while the litter count is in a numerical, we have to convert the population into a numerical form. To do this, add a field named "Pop", select long integer, use the field calculator, choose the python option, then just have the equation equal "Total\_pop".
8. Repeat this step but for the count column to convert the count into long integer.
9. To calculate the density of litter per population of each census tract: create a new field named "density" and choose long integer. Then using the field calculator, set this equal to count/pop.
10. Using these new shapefiles, you can create a choropleth map showing the density of litter per census tract.

FLOW CHART



## Finished Maps

# Density of Litter in Philadelphia, Pennsylvania



Created by: Ashlynn Young  
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**Visual Hierarchy**

Visual hierarchy is the order in which a user processes information to allow the user to process information easily. By keeping this in mind when assigned different characteristics to the different elements on a map, you can influence what the user will consider important. With my particular map, I chose to use colors which were pleasant to look at but while still easily showcasing my point. I also used the color wheel to use complementary colors when choosing the color of the map and the title background. I also made the map of Philadelphia as large as possible as it is the most important aspect of the map. I also made the legend fairly large so that it is easily readable and your eye is drawn to it as it explains what the colors mean. I chose to use a large compass to help fill up that unavoidable white space while drawing your eyes downwards from the title to the focus of the map. Lastly while I put the logos of the sources of my data at the bottom of my map, I kept them fairly large in order to draw some attention to them at the end.

Source:

<https://www.interaction-design.org/literature/topics/visual-hierarchy>

## **Class Reflection**

To start, I would like to say that I am very, very grateful that I chose to take this class. Not only do I feel like I learned a great deal, it is a main reason I am going to pass my other GIS class (Remote Sensing and GIS). I greatly enjoyed your teaching style because it was very laid back which gave us the freedom to explore the program and make mistakes which only

provided learning opportunities. That being said, I definitely struggled with making the flow charts however that is all on me because I would always wait until after the assignment was complete to make them. Had I made them as I went along, I probably would not have hated them so much. I will say that making them after the fact forced me to recall the steps I took sometimes more than a week ago which made me critically think about the steps. I do think it solidified the concepts better for me because of this forced recall. I also struggled labs leading up to independent problem number 2. While I understood the concepts behind the join, I struggled with planning out the steps without seeing the data. I realized my plan was wrong during like step two of the exam. Luckily, I was able to figure it out since I do understand the concept but I definitely struggle with not being able to play around with the data while making a plan.

My dad is a self-proclaimed “computer geek” so I grew up playing around on a lot of different computer programs. If I had room in my schedule I had planned on getting a minor or at least a certificate in computer programming because computers come somewhat easily to me. Had I taken this course earlier, I definitely would have taken other GIS courses and possibly even made room to get the GIS certificate. However I am graduating in 10 days and therefore will not have the opportunity. I have had 2 interviews with an environmental consulting company which uses GIS sporadically, depending on the contract. I am very much hoping to work for this company and get the opportunity to continue to use GIS. If I

had had the opportunity to take more GIS classes I would have loved to take Environmental GIS. I enjoy looking at spatial correlations, especially when it relates to my major (environmental science).