MoCo High School Tableau Tutorial

Exploratory Graphical Analysis Using Tableau Public

This week, we will work on a visualization to explore segregation in education in Montgomery County at the high school level.

The data we will use may be found in our class google drive for datasets: http://bit.ly/data110datasets . You will need to download both the **folder** (all files) for special data, entitled `High School Service Areas`, and a **csv** file, entitled `MoCoHSdata18-19.csv`

`MoCoHSdata18-19.csv` Data from Montgomery County High School District information for the 2018-2019 school year. It contains many fields including `school address, race breakdown, percent of students on FARMS (Free and Reduced Meals), teacher/student ratio, percent graduation, school population, US News school rankings, US News college readiness score, average SAT score`, and other information we will not use in this tutorial.

Step 1: Download Tableau Public Desktop and create a Tableau Public Account

Download Tableau Public from https://public.tableau.com/en-us/s/ (click the "Download the App" button)

Launch Tableau Public Desktop

Under the `Connect` heading at top left, select `Spatial File`, navigate to the folder `High School Service Areas` and `Open`. This file includes what are called "shape files", which create polygon areas for the boundaries of each of the high school districts in Montgomery County.
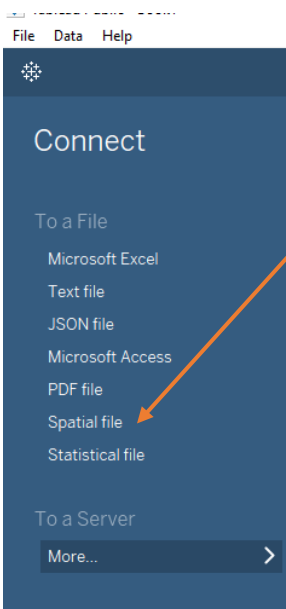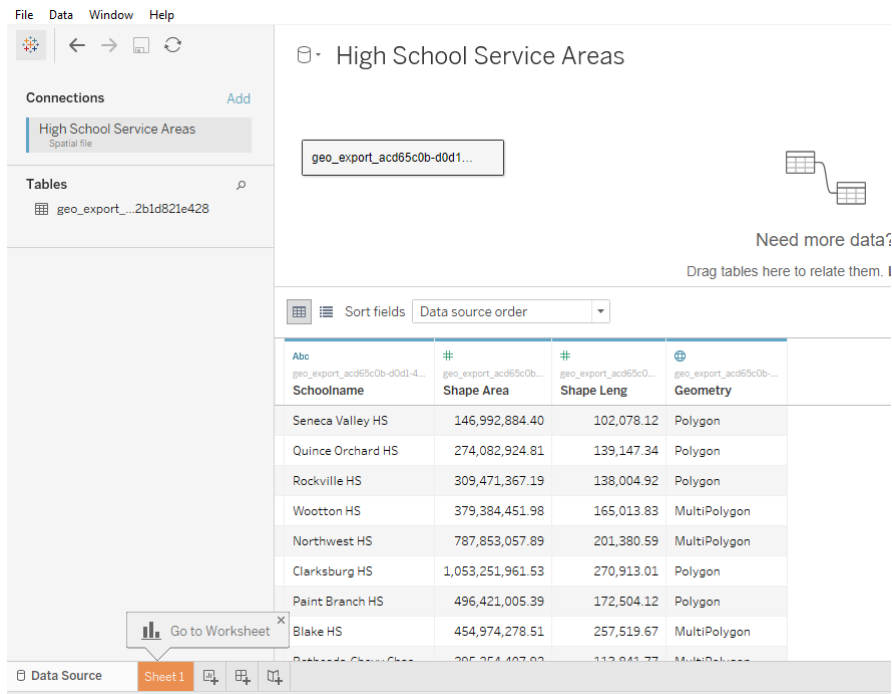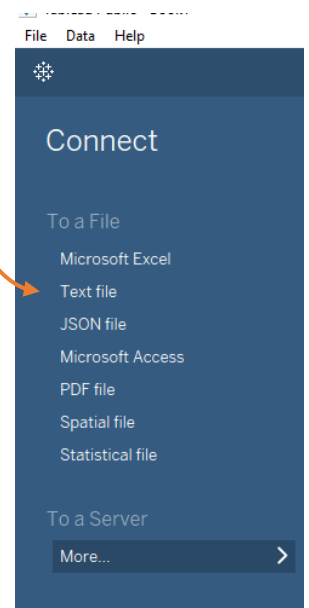
Notice that the 4 columns include Schoolname, Shape Area, Shape Long, and Geometry. The Geometry field has values, such as singular polygons or multipolygons. You will see that some school districts contain more than one separate polygon.
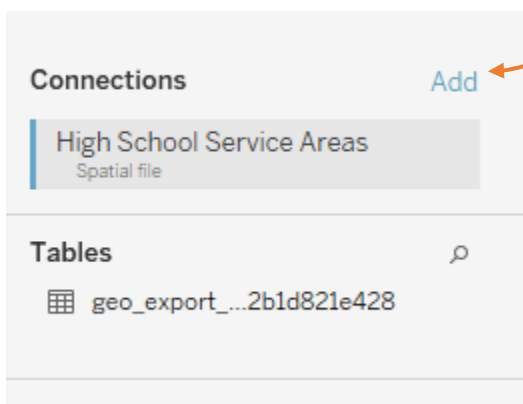
Now you need to "add" the MoCoHSdata18-19.csv. Click the "Add" button and select "Text file"

Drag MoCoHSdata18-19 into the space — you will create a link between the two data sets:

High School Service Areas

geo_export_acd65c0b-d0...

Need more data?

Drag tables here to relate them. Learn more

geo_export_acd65c0b-d0... ▼	4 fields 25 rows		
Abc geo_export_acd65c0b-d0d1-403d-9... **Schoolname**	# geo_export_acd65c0b-d0d1-403d-9... **Shape Area**	# geo_export_acd65c0b-d0d1-403d-9... **Shape Leng**	🌐 geo_export_acd65c0b-d0d1-403d-9... **Geometry**
Seneca Valley HS	146,992,884.40	102,078.12	Polygon
Quince Orchard HS	274,082,924.81	139,147.34	Polygon
Rockville HS	309,471,367.19	138,004.92	Polygon
Wootton HS	379,384,451.98	165,013.83	MultiPolygon
Northwest HS	787,853,057.89	201,380.59	MultiPolygon

File   Data   Window   Help

Connections   Add

High School Service Areas
Spatial file

MoCoHSdata18-19
Text file

Files   🔍

☐ Use Data Interpreter

Data Interpreter might be able to
clean your Text file workbook.

⊞ MoCoHSdata18-19.csv

Tableau wants to create a relationship between the two datasets, based on the common variable, Schoolname.
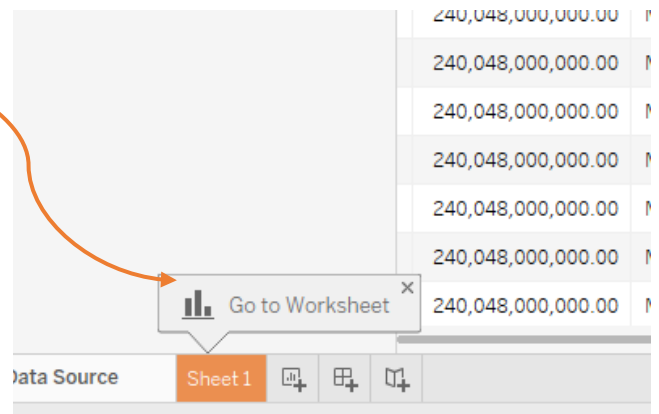
geo_expor... — MoCoHSd... ▼		

How do relationships differ from joins? Learn more

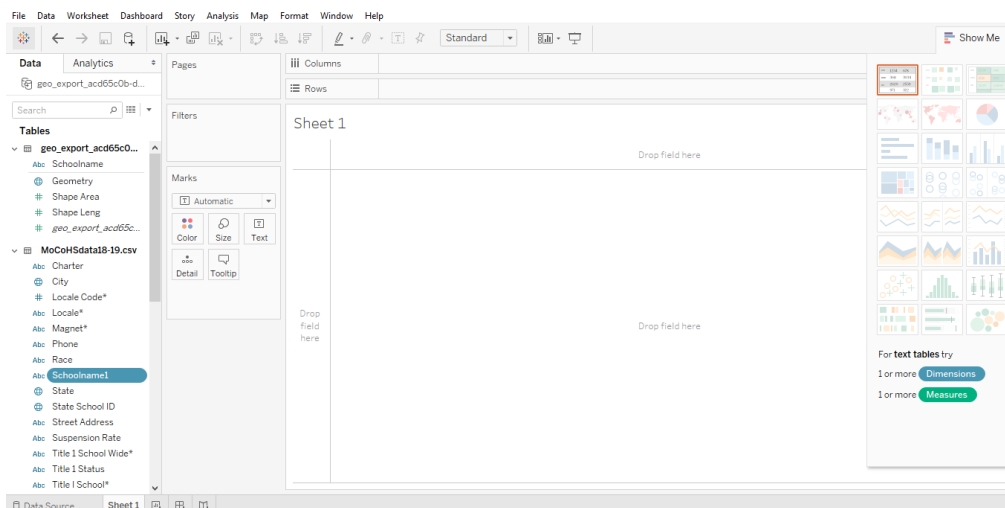| geo_export_acd65c...	Operator	MoCoHSdata18-19....
Abc Schoolname (Ge ▼	= ▼	Abc Schoolname ▼

⊕ Add more fields

Now Click "Sheet 1" to start working with the data.

The joined data should look like this in a Tableau worksheet. You can see which variables came from which file:

Double click on "Geometry" at the top to create the boundary lines for High School District Areas in Montgomery County.
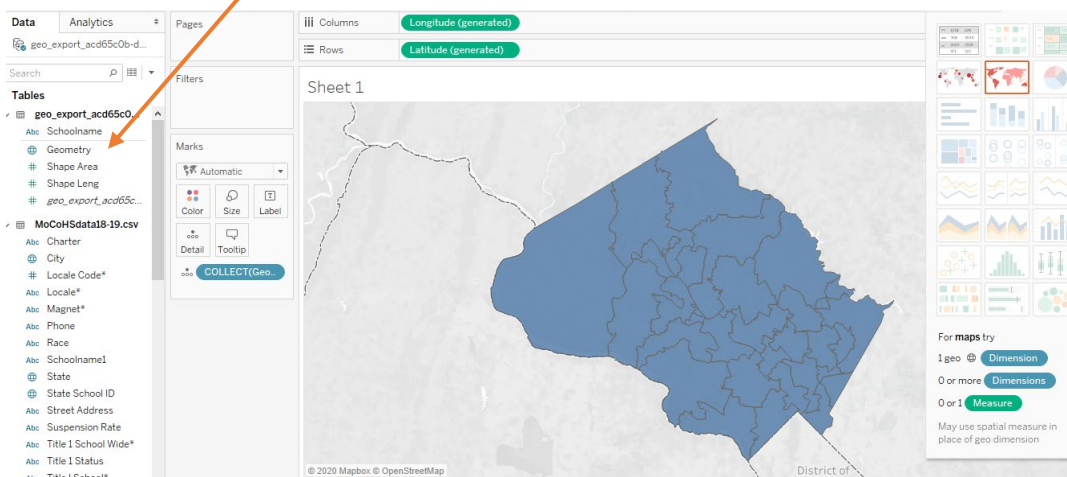
On the right, you will see "Show Me", which gives you all types of visualizations you could create in Tableau, and it will only allow you to use ones for the types of variables you select.

You can click "Show Me" to condense it so that it is not in your way of your work.

On the Left

On the left side, you are in the Data Tab. Scroll all the way down to find `Longitude(generated).`
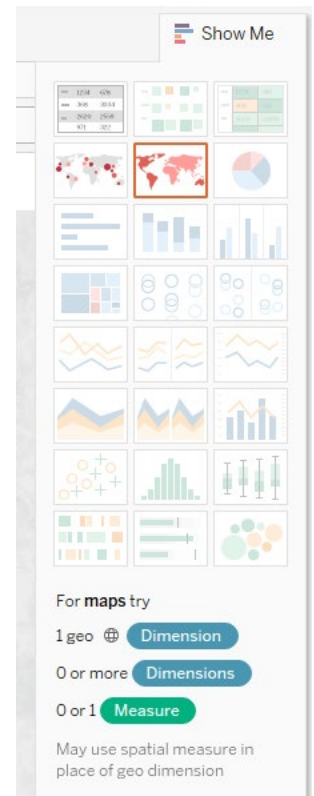
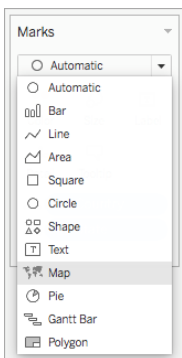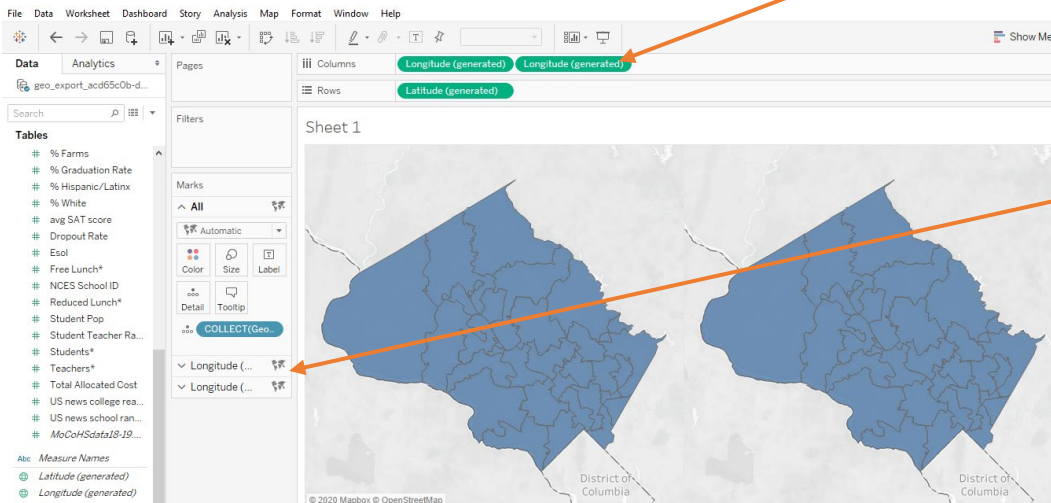
On the Marks card, click the Mark Type drop-down and select **Map**.


We will create a "Dual-Axis Layer".

On the **Columns** shelf, control-drag (command-drag on a Mac) the **Longitude (generated)** field to copy it, and place it to the right of the first Longitude field. We will use to eventually merge these layers.
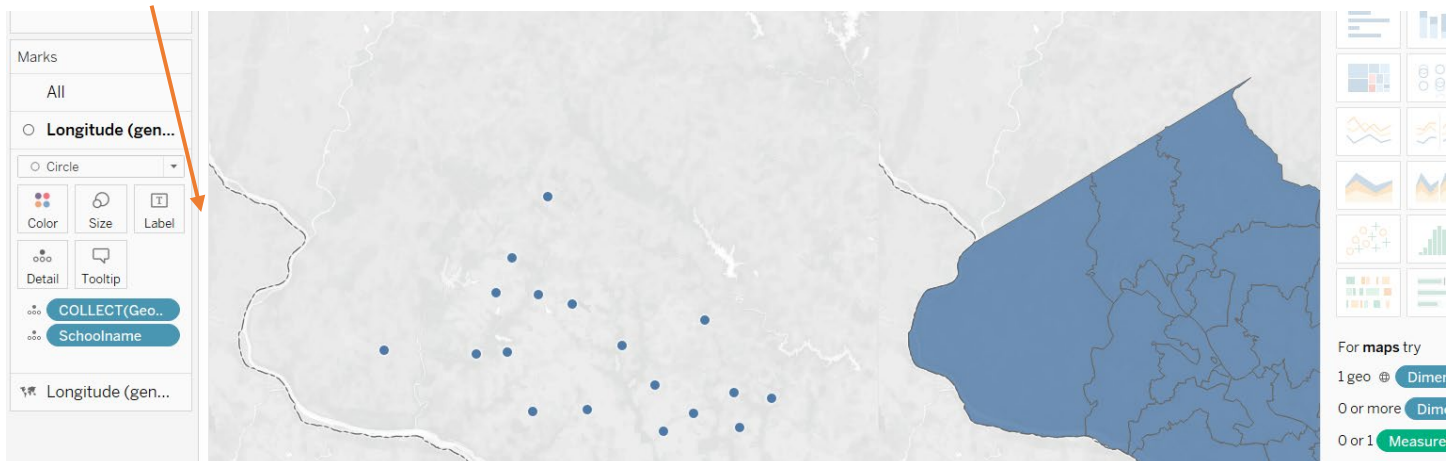

Notice that in the middle under "Marks", you now have 2 "Longitude(generated)" variables.

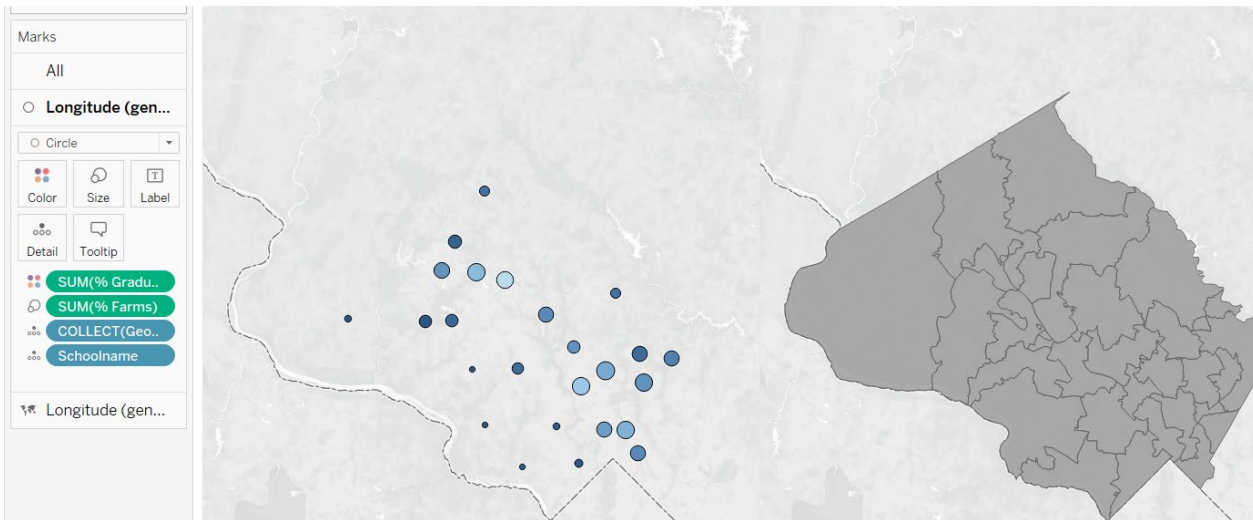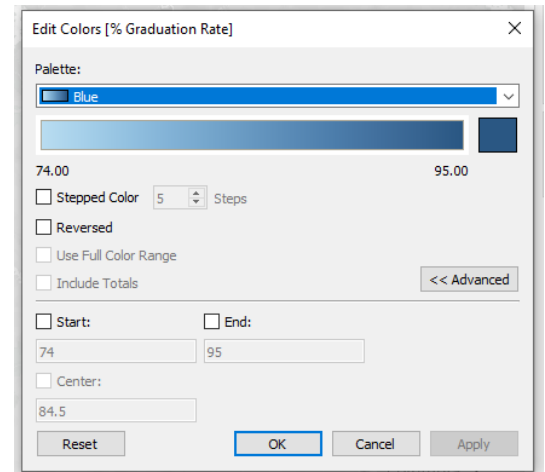Click on the first of the two Longitude variables.

Select **Circle**
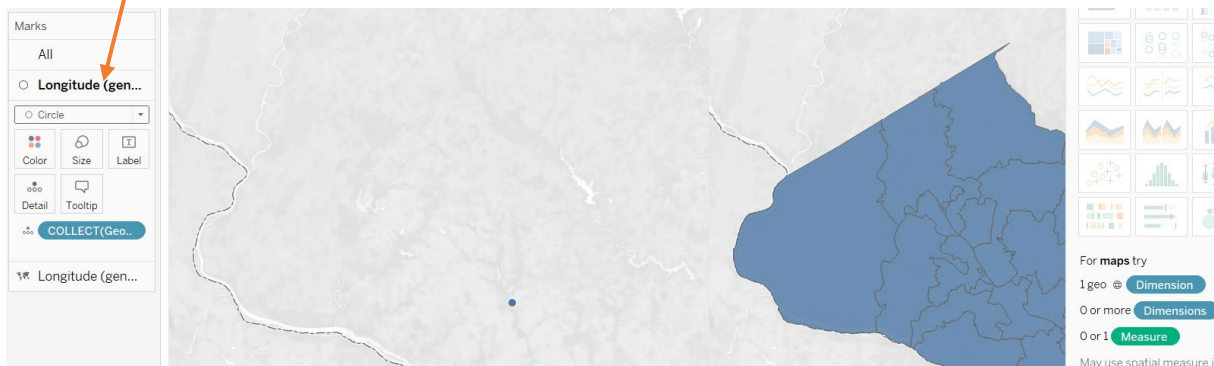
Drag `Schoolname` into **Detail** in Marks.

1. Slide "% Graduation" to Color. Click on the "Color" mark and change it to Blues.
2. Change the border from "Automatic" to Black.
3. Slide "% Farms" to Size.

Click on the SECOND Longitude in Marks. (It will have a map image next to it, and the FIRST Longitude should have a circle image on the right.)

Drag Race to Color – these colors are not so lovely – we will change them in a bit. Note that "race" in this case means that a district's plurality is that particular race. Some districts do not have any overwhelming plurality.
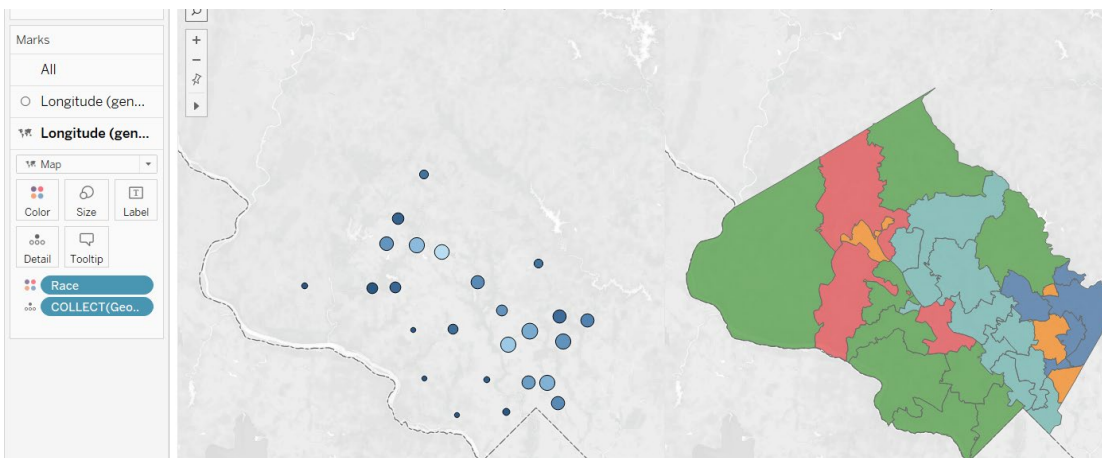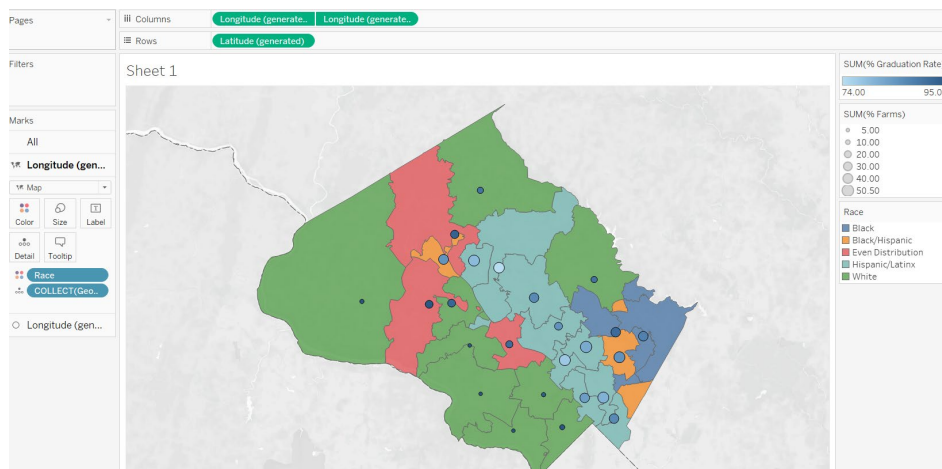
Merge the two layers

On the SECOND `Longitude(generaged)` in the column shelf, click on the dropdown menu and click "Dual Axis". Notice we have lost the points. Drag the FIRST Longitude to the RIGHT of the SECOND longitude, and the circles will reappear.
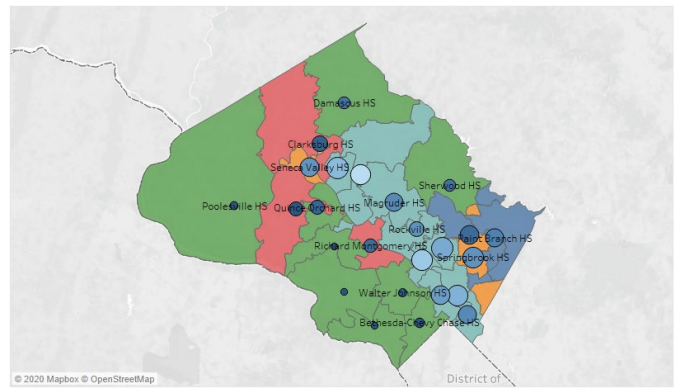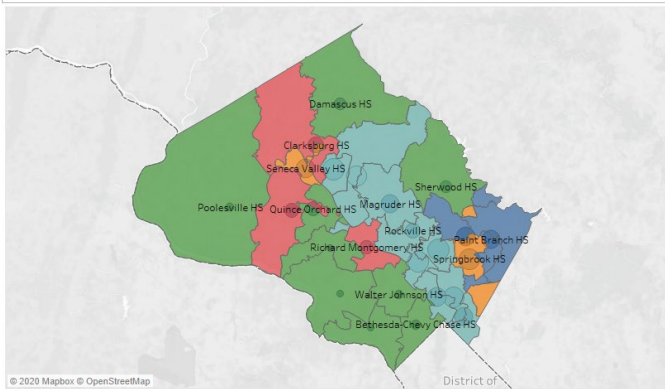

Click the **Show Me** tab on the right to minimize that menu. You should see legends for `Race, % Farms, and % Graduation Rate.`


Edit Colors for Race

On the SECOND Longitude (with the map image), click Colors → Edit Colors

You can choose 5 colors you prefer, or you can mimic the colors I have chosen. To change each individual race color, double click on that race. Off to the right is the grey-scale choices that I used for Black, Black/Hispanic, and Even Distribution.
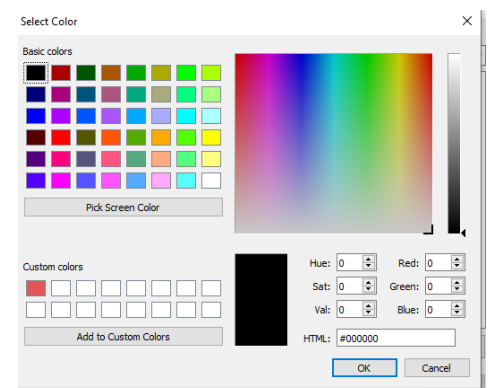
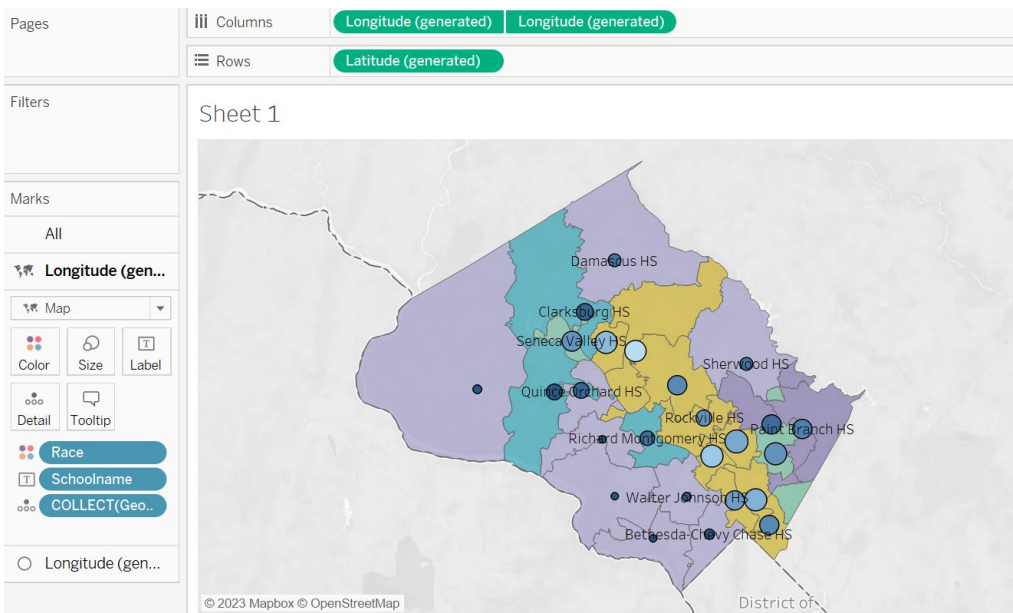I selected `Nuriel Stone.` Then I changed the transparency level to 75%.
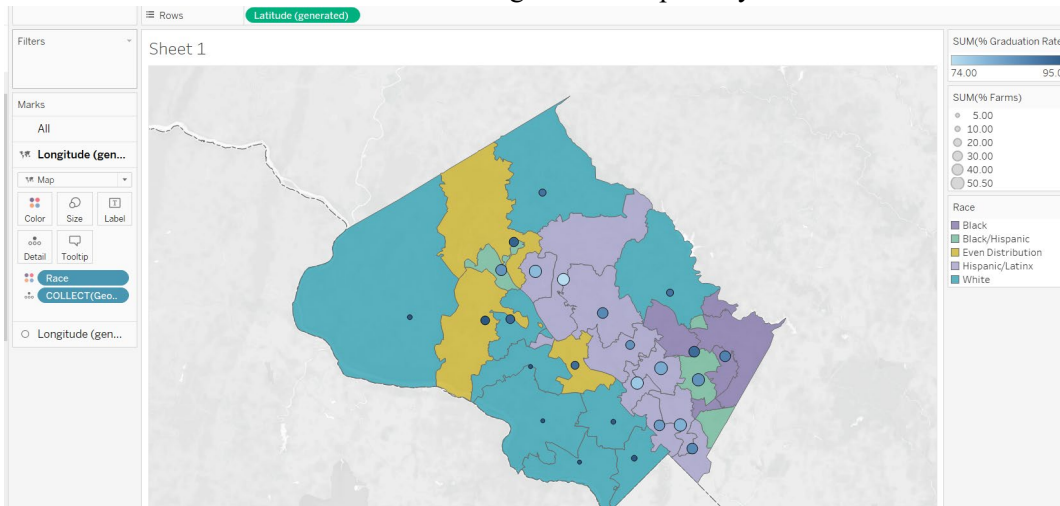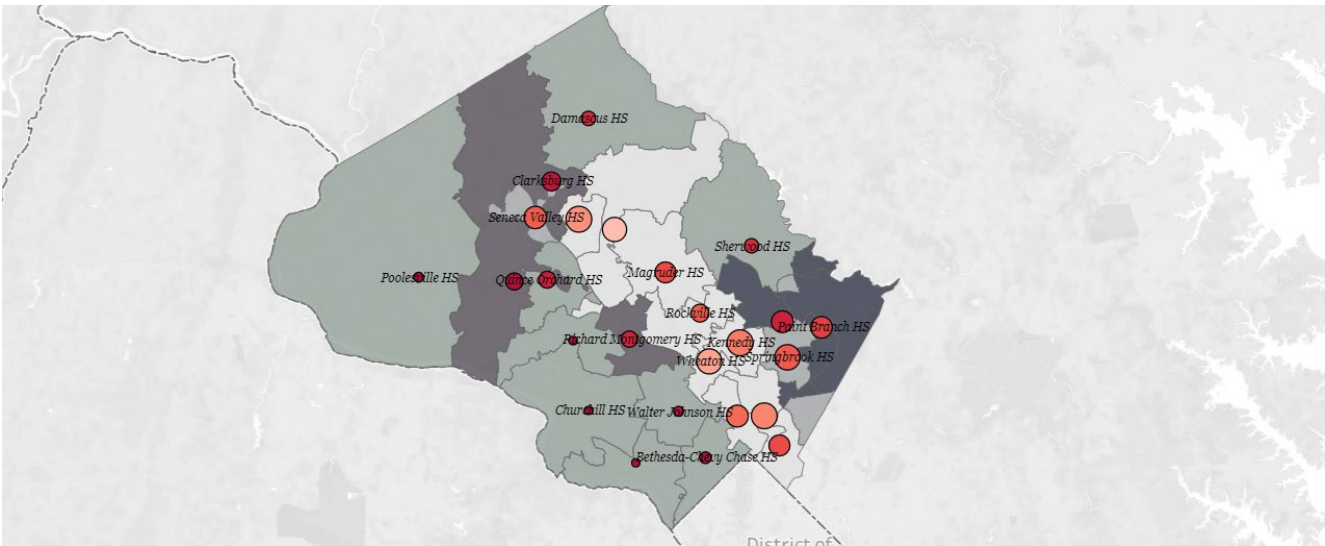

** This next step is important –

Slide `SchoolName` into Label (in the Marks for the **Map Area layer**). You will see the labels appear.

You can change your colors to a custom palette as well, as I have done below. This gray-scale palette I created manually is my preferred final version. I also edited the **Font** for the Labels.

Finalizing the Display

1. Double Click on Sheet 1 to edit the Title. Write "Montgomery County High School District Information 2018-19".
2. Highlight the text and make it bold. Change the font to Georgia.
3. Notice the Legends have been on the right side. You can edit the Legend titles to be more specific.
4. Double click on Label for the circles – you can change the font to Georgia and make it *Italics*.
5. On the tab at the top of Tableau, click on the **Worksheet** tab. Click "Show Caption."
   Source:

   Montgomery County High School Data 2018-2019
   https://nces.ed.gov/ccd/schoolsearch/
   High School Service Areas (DATA.gov)
   https://catalog.data.gov/dataset/high-school-service-areas

6. Edit the colors of the bubbles indicating `% FARMS` to reds.

Editing the Tooltips for Mouse-over Information

What information would you be interested in seeing about each district? When you mouse-over the district a tooltip will pop up with any information you include. To do this,
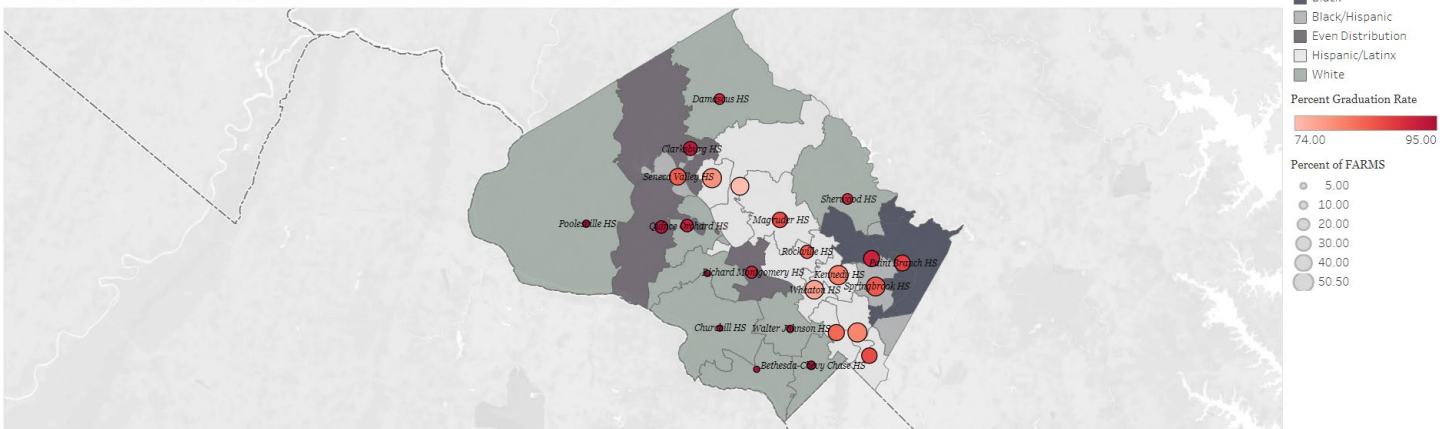
1. Slide % Asian, % Black, % White, % Hispanic/Latinx, % Grad Rate, % Farms, avg SAT Score, % dropout rate, Student Pop, Student Teacher Ratio, US News college readiness, and anything else you would like to see.
2. Doubleclick on Tooltip to rearrange the order you would like the information to be presented. Hit Okay.
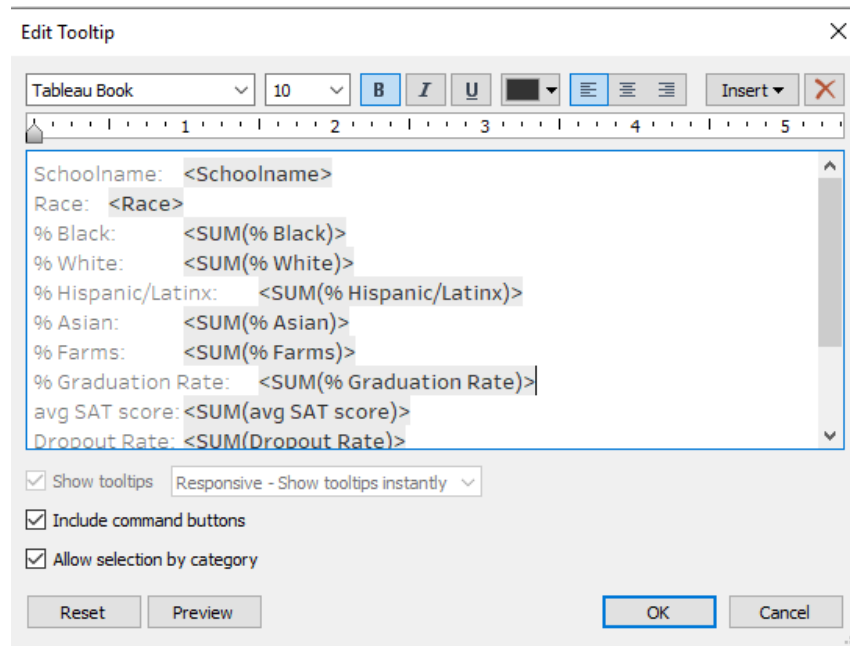
Preview Your Work

Click on the "Large Screen" image at the top on the far right. You can see what your visualization will look like when published. You can hit "Esc" when you want to get out of the preview mode.

Save your work

Select "Save to Tableau Public As" and name it "Montgomery County High School District Information".

Look at what pops up in HTML under your Tableau Public Account.

Once the visualization is online, use the Share link at the bottom to obtain an embed code, which can be inserted into the HTML of any web page.

Here is my link:

https://public.tableau.com/app/profile/rachel.saidi/viz/MontgomeryCountyHighSchoolDistrictInformation-GreyScale/MoCoHSDistrictInfo

Further reading/viewing

Tableau Public training videos

Gallery of Tableau Public visualizations: Again, you can download the workbooks to see how they were put together.

Tableau Public Knowledge Base: Useful resource with the answers to many queries about how to use the software.