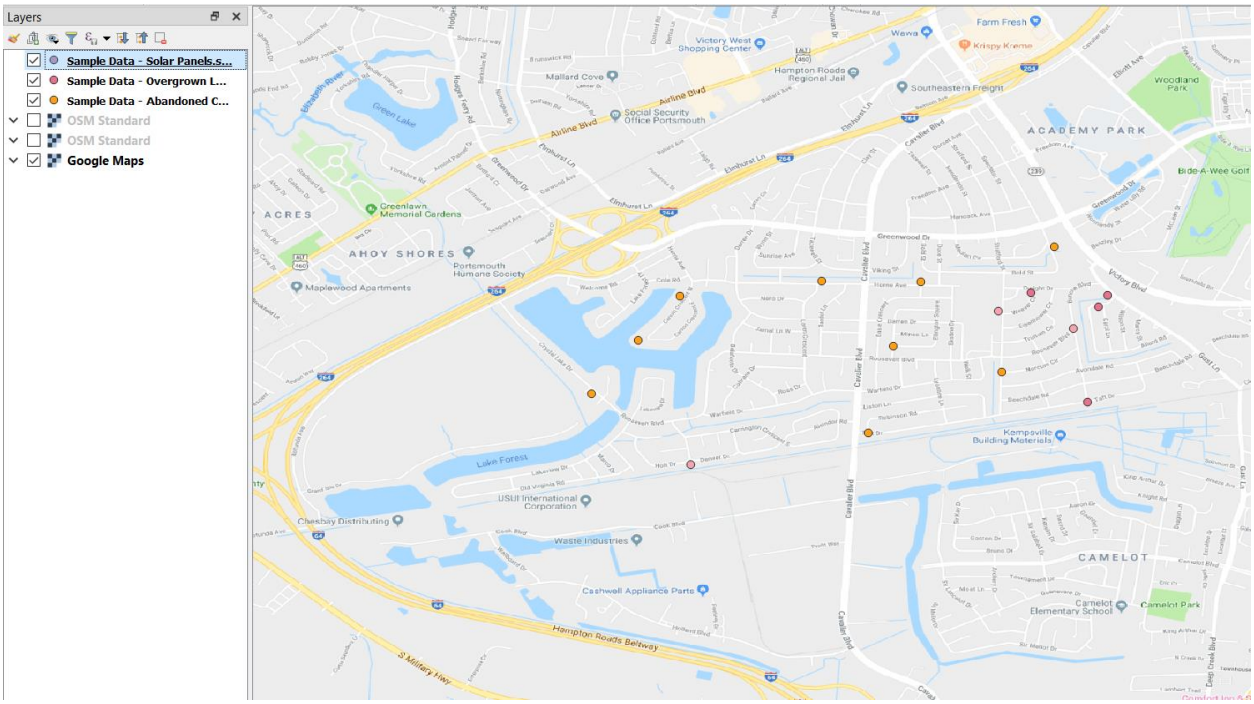
QGIS User Guide

The purpose of this guide is to walk you through step-by-step how to create a map using QGIS. I'll first explain what you'll be creating and then how to create it.

The Map



There are a couple things to note:

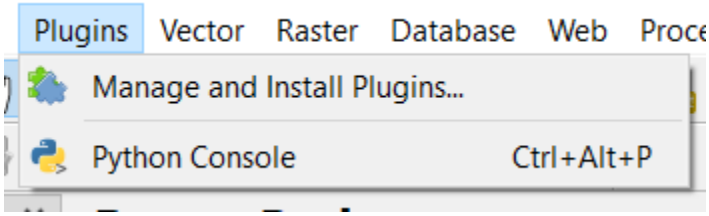
- Each attribute (overgrown lot, solar panels on house, abandoned car) is marked on the map in a unique color.
- Each layer of the map corresponds to an attribute. These layers can be toggled on and off by checking/unchecking the check boxes in the top left of the screenshot above.

I'll discuss other useful tips later, but I wanted to show where we are going with the end product from this guide.

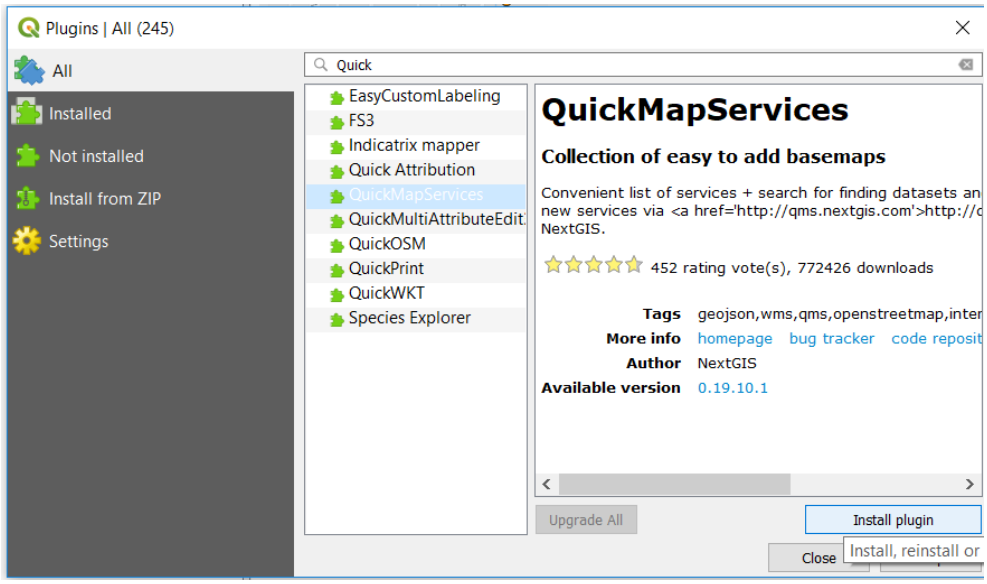
1. Downloading QGIS
    a. Go to https://www.qgis.org/en/site/forusers/download.html and pick the Standalone Installer Version appropriate for your machine. I'll be using the Version 3.4. It's a rather large file, so it'll take some time to download.
    b. Double-click on the .exe file that just downloaded. This window should open.

c. 

d. Click through the prompts, clicking next/agree.
e. It should then proceed to install, this will take some time.

2. Installing Plugins
    a. We'll be installing two plugins
        i. MMQGIS which will allow us to take addresses from a .csv file and convert them into Latitute/Longitutde coordinates to map
        ii. QuickMapServices which will let us use a Google Maps layer as our base map.
    b. Open your copy of QGIS
    c. In the top toolbar, select Plugins->Manage and Install Plugins…
        i. 

    d. In the next window:

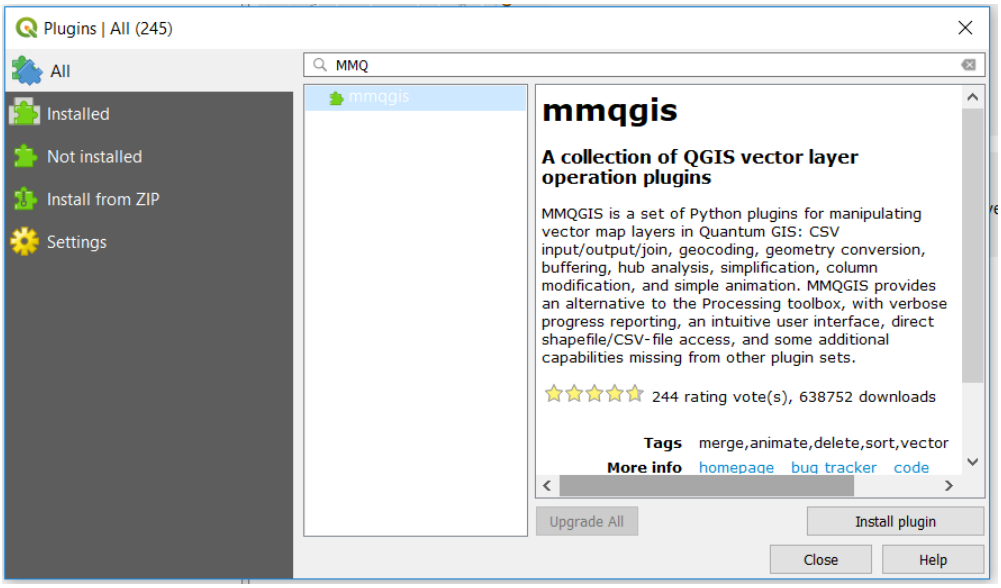
i. 

ii. Press “All” in the left toolbar

iii. Search QuickMapServices and Select

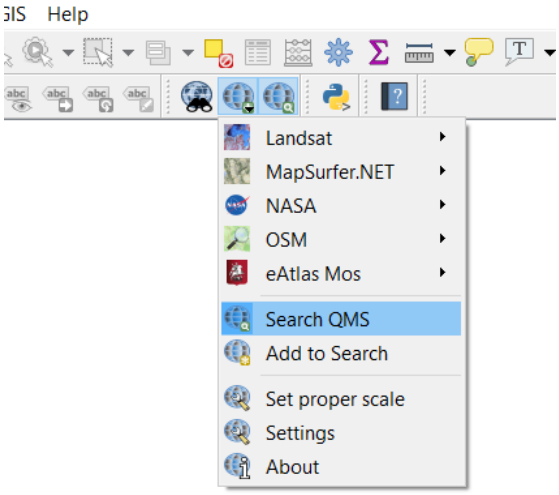
iv. Press Install Plugin, as shown in above photo.

v. Repeat for MMQGIS

vi. 

e. Plugins have now been successfully installed

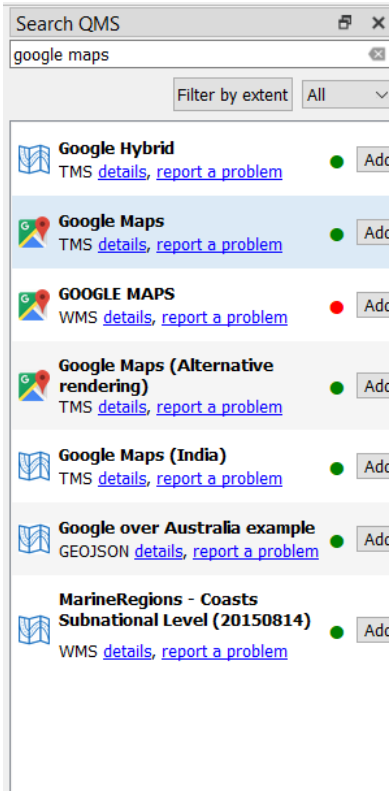
3. Starting New Project
    a. Let’s get some addresses mapped. First we’ll set up the base map.

i. 

ii. Click on middle globe icon in task bar.

iii. In menu, select “Search QMS”

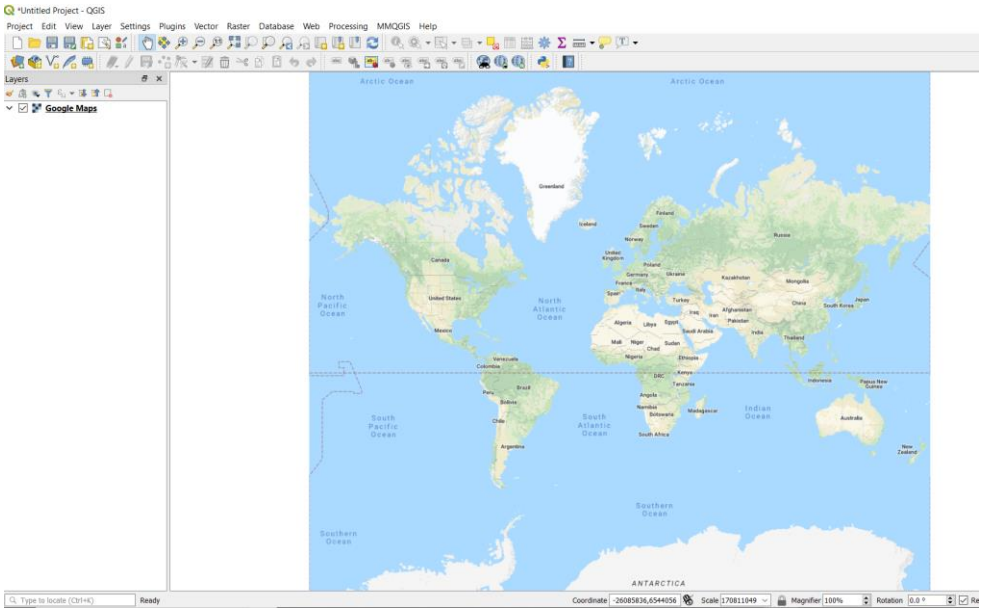
iv. The ensuing menu will let you search among all available map base layers. The one I’ll be using is “Google Maps”.

v. 

vi. Search for “Google Maps”

vii. Press add. I used the first one titled “Google Maps” In the above menu.

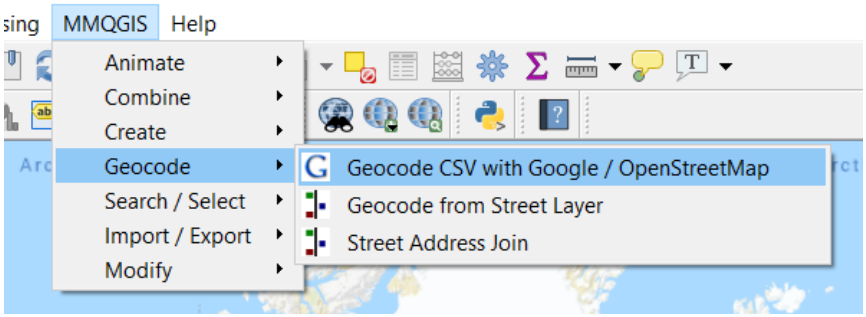
viii. You should now see a map like this.

ix. 

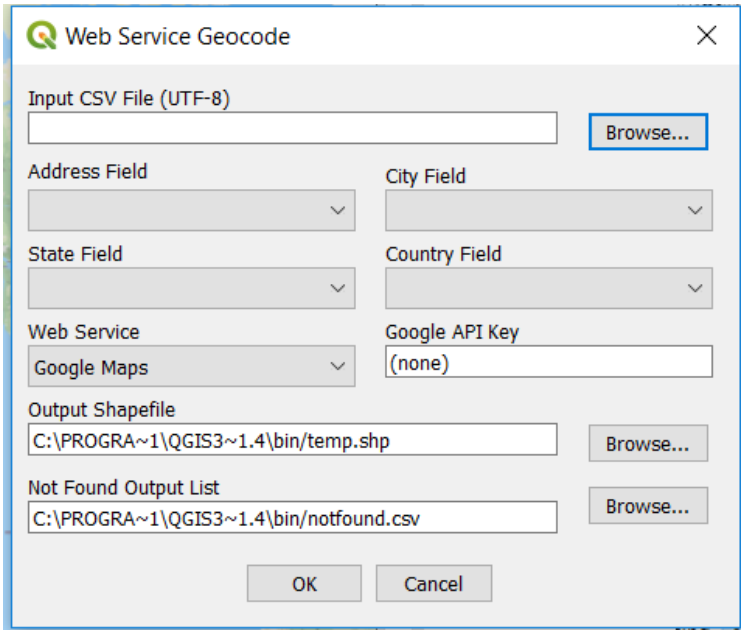
x. You've set up the Base Layer Map!

xi. Note: The layers work such that you see the top layer, then the next, all the way down. What this means is you want your Base Layer to be the last layer in the list, so it doesn't cover any points. This will be important later on when we start to add points.

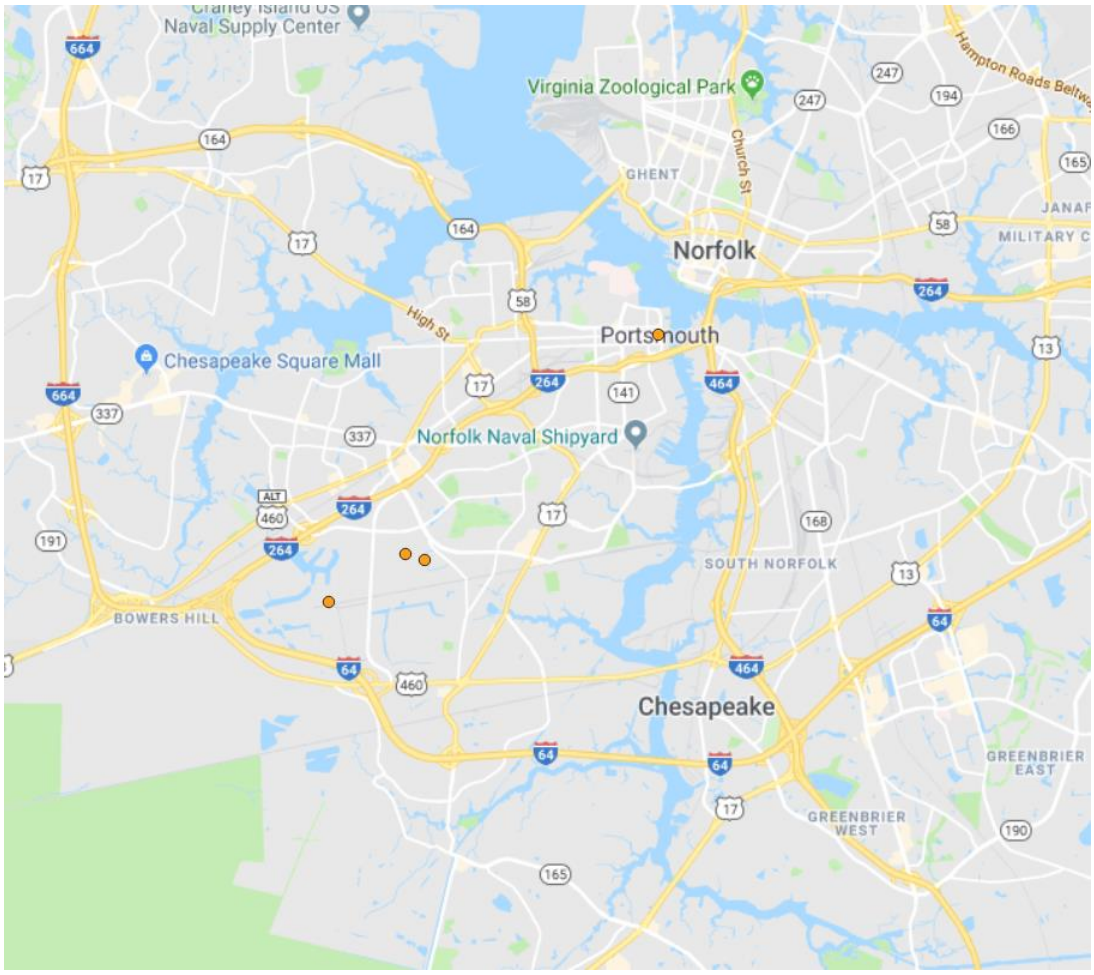
b. Adding Addresses

i. 

ii. Select MMQGIS->Geocode->Geocode CSV with Google/OpenStreetMap

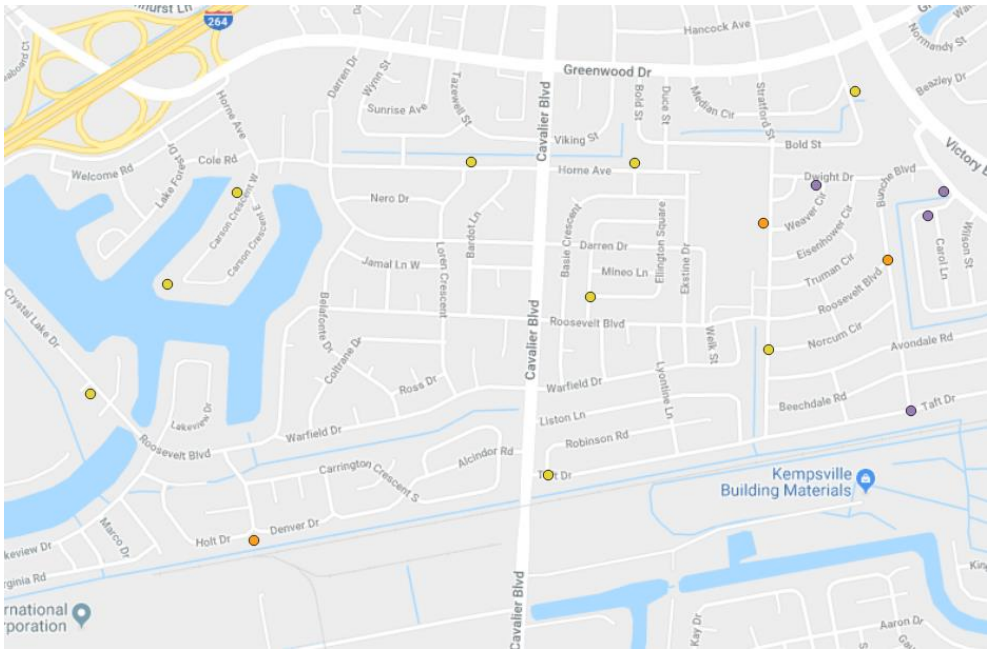
iii. 

iv. Select the .csv file you'd like to add to the map.
    1. It should have the format of a column of addresses, city, and state.
    2. If you use the CSV Splitting Script, it will do this automatically. It takes the master csv file and splits it into a file for each attribute.
v. Make sure the right columns for Address, City, and State are selected.
vi. Input the Google API Key: AIzaSyDu11piRrwANicKrnH8DWZEWXmak-i1fSY
vii. Press "OK"
viii. If all goes well, you should get points on the map. If it fails, try the above steps again. For some reason, QGIS seems to fail to add the points the first time. Trying again has fixed it every time for me.

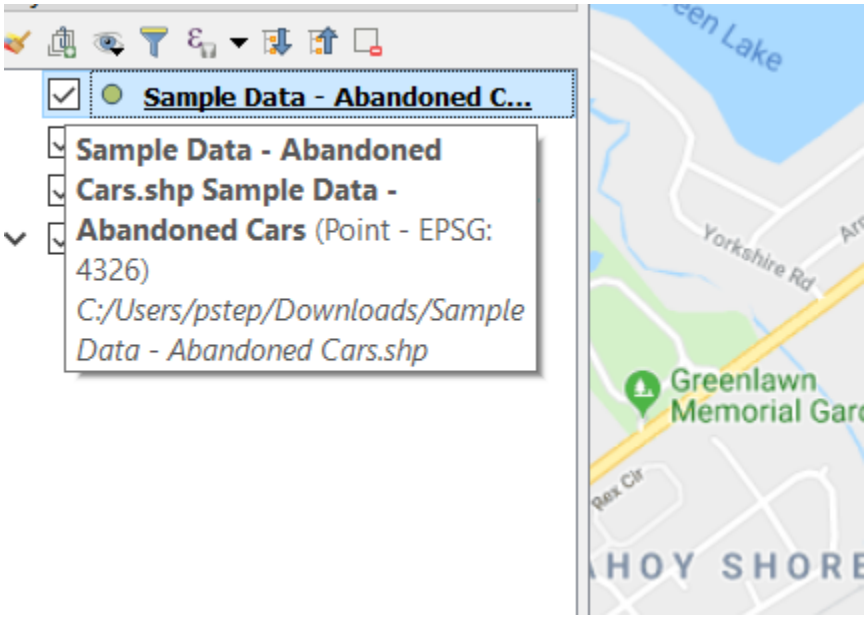
ix. 

x. Repeat for as many attributes/.csv files you want to map.

4. Map Features
    a. Now, that you have all your attributes mapped, let's go over some features.
    b. Here's the map I'll be using.

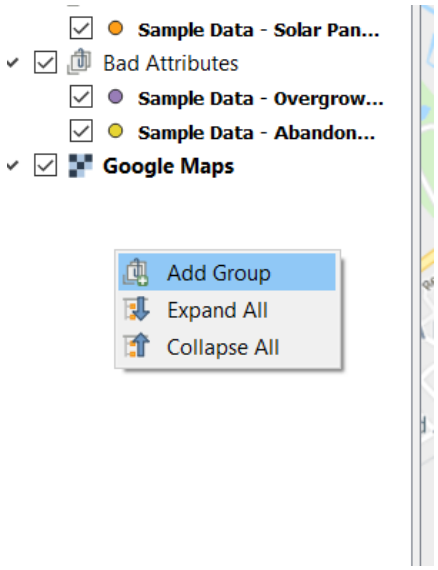
i. 

c. Toggling Layers

i. 

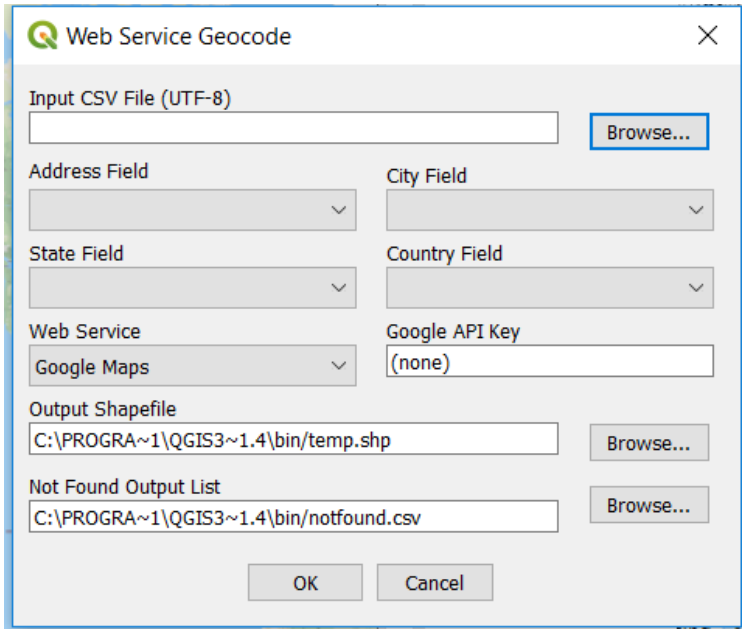
ii. You can toggle layers by unchecking/checking the checkboxes as shown above.

d. Grouping Layers

i. 

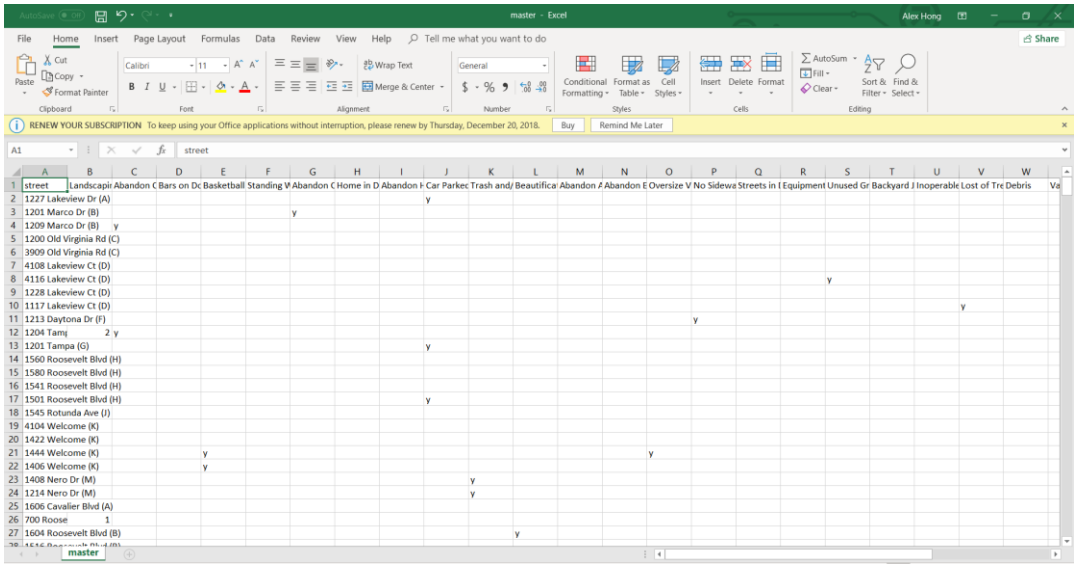
ii. To add a group, right-click on the side bar of map layers and choose ‘Add Group’
iii. Now, drag layers you want to add to this group into it.
iv. Now you can toggle a group of layers at once.

The Script



Like the above interface, QGIS fully works only with specific format of CSV file. Because the dataset was not fit to this format, the team developed a script converting the format of CSV file.

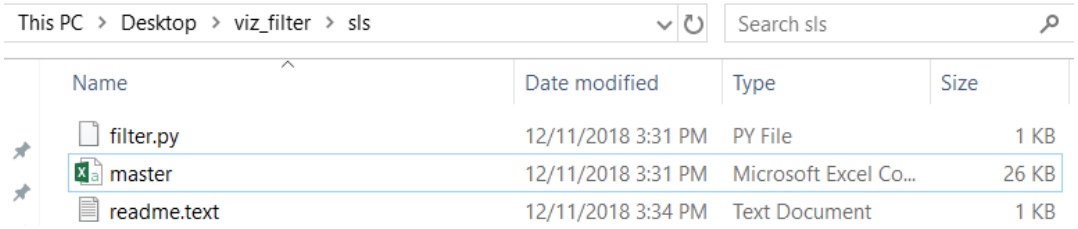
1. Setting
    a. The name of the dataset, that you want to convert, should be “master.csv”. If the name is different the script won’t work, so please change the name to “master” if the name is different.



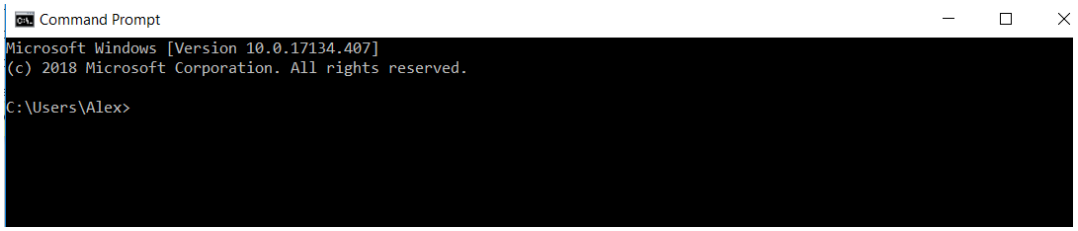
Original “master.csv” file cannot work with QGIS since it only reads specific format

    b. The filter.py script should locate in the folder which also contains “master.csv”

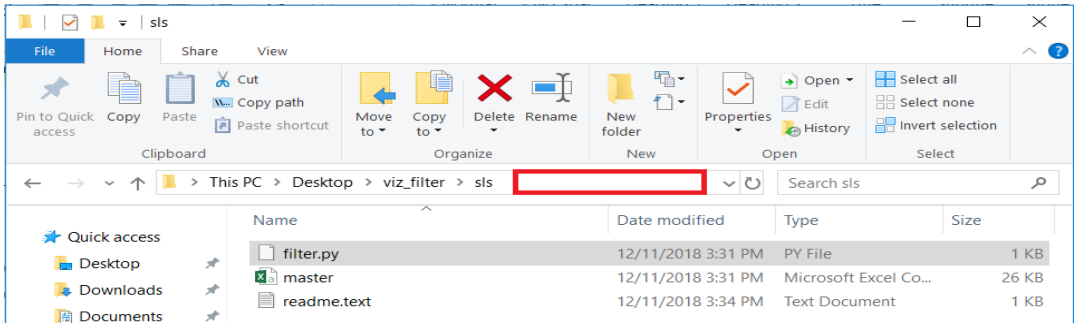
c. You need Python with Pandas library to run this program



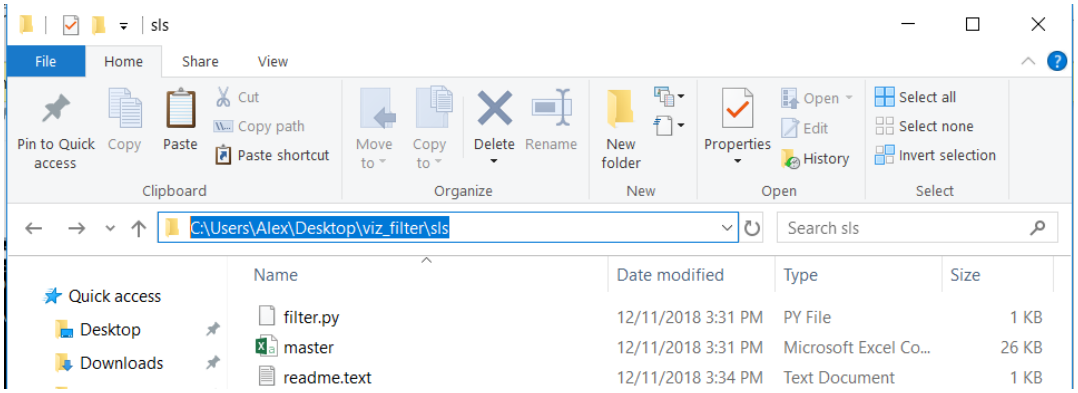
2. Run the script
   a. Open the CMD window



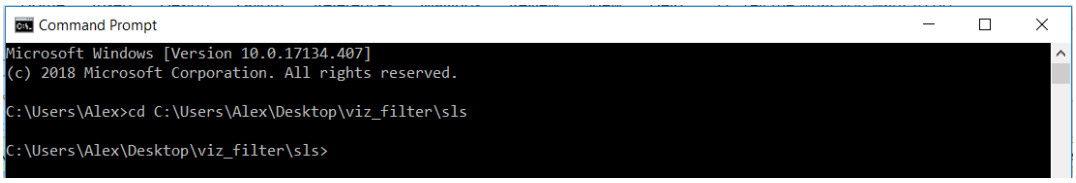
   b. Type “cd <path>”. <path> means the location of the folder that contains both master.csv and filter.py files. Finding Path is easy. If you click the red black part of the folder, your computer automatically shows the path



Click the red black part, then

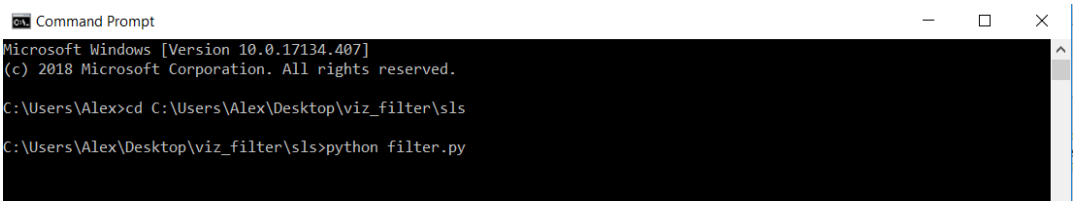


The highlighted part is the path of the folder

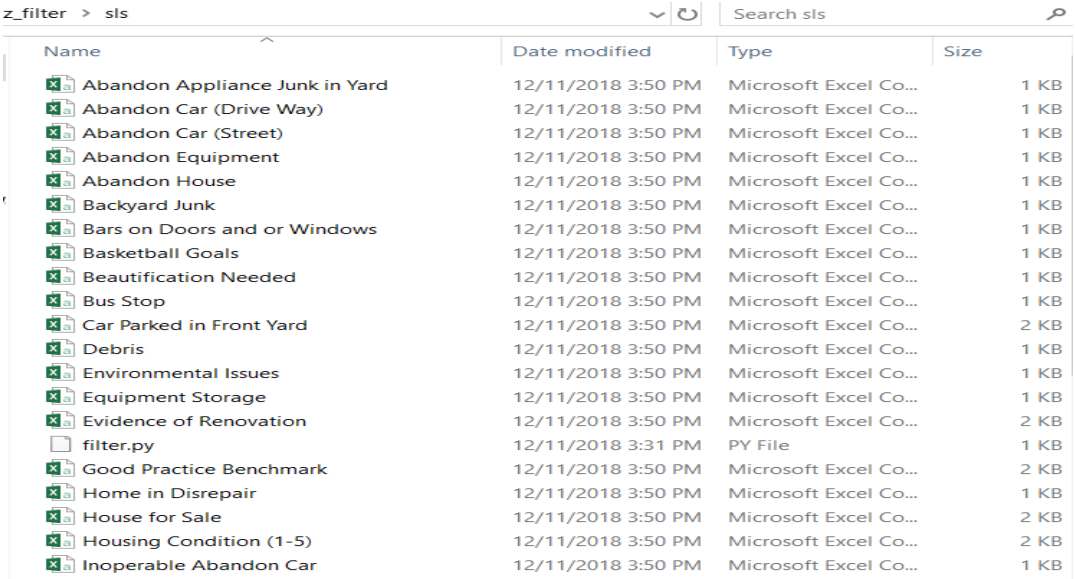


Type cd <path> then hit enter.

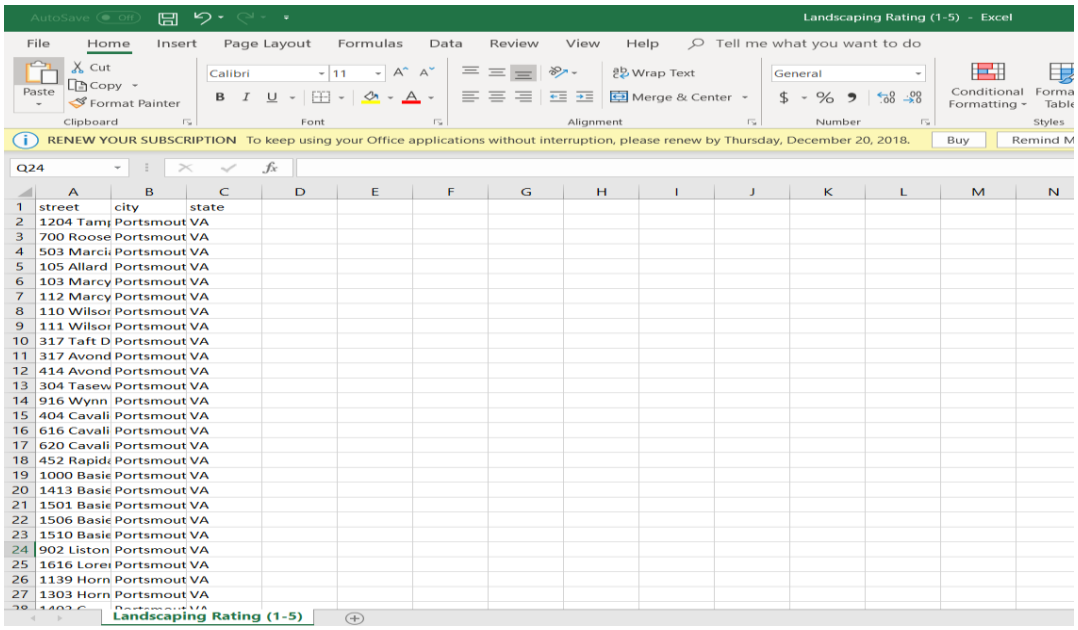
c. Simply type “python filter.py” then hit enter



d. If you go back to the folder, you can see the converted files that can be used in QGIS.



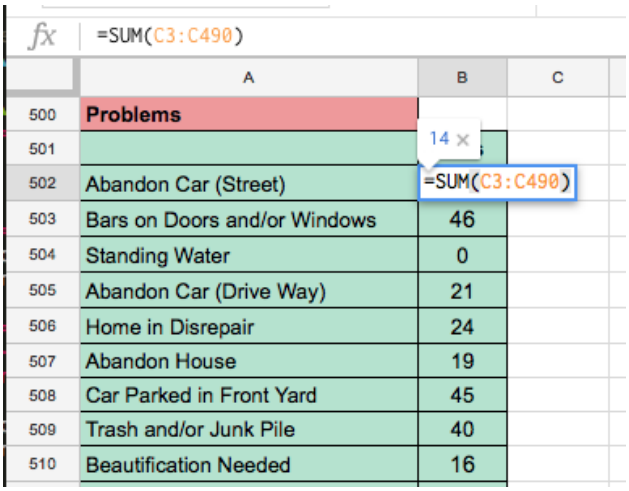
After run the “filter.py” file, new csv files are made in the same folder



Only this format [three attributes with street, city, and state] can be visualized in QGIS

Excel Graph Guide

1. Getting Sum of Each Category:



i. Double click the cell next to the category.

ii. Type in =SUM(), and in the parenthesis, the first letter and number combination, C3 in the picture above, is the cell the data starts at, and the next is where it ends. Once hitting enter. It will sum all cells between those two cells, giving you the total for that category.

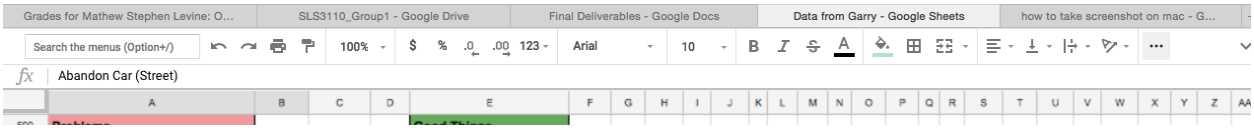
iii. Do this to fill in all of the totals into the Problems and Good Things tables.

2. Adding The Graphs:

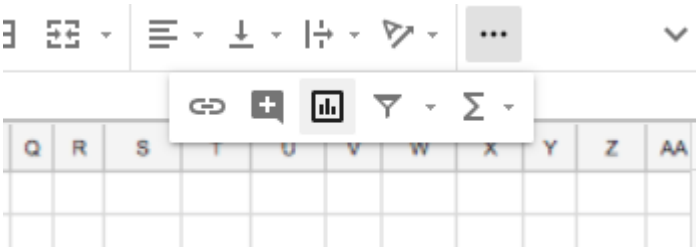
501		Totals
502	Abandon Car (Street)	14
503	Bars on Doors and/or Windows	46
504	Standing Water	0
505	Abandon Car (Drive Way)	21
506	Home in Disrepair	24
507	Abandon House	19
508	Car Parked in Front Yard	45
509	Trash and/or Junk Pile	40
510	Beautification Needed	16
511	Abandon Appliance/Junk in Yard	13
512	Abandon Equipment	3
513	Oversize Vehicle	23
514	No Sidewalks	27
515	Streets in Disrepair	96
516	Unused Greenspace	68
517	Backyard Junk	2
518	Inoperable/Abandon Car	23
519	Loss of Trees	7
520	Debris	1
521	Vacant Lots	9
522	Environmental Issues	17
523	Evidence of Renovation	38
524	Multiple Cars Parked in Yard	17
525	House for Sale	39
526	Storm Drain Blocked	6
527		

i. Highlight all of the cells you wish to include in the graph. Dont include the cell with **“Totals”** in it. Do so by clicking the top left most cell you wish to include, and dragging over the other cells.

ii.

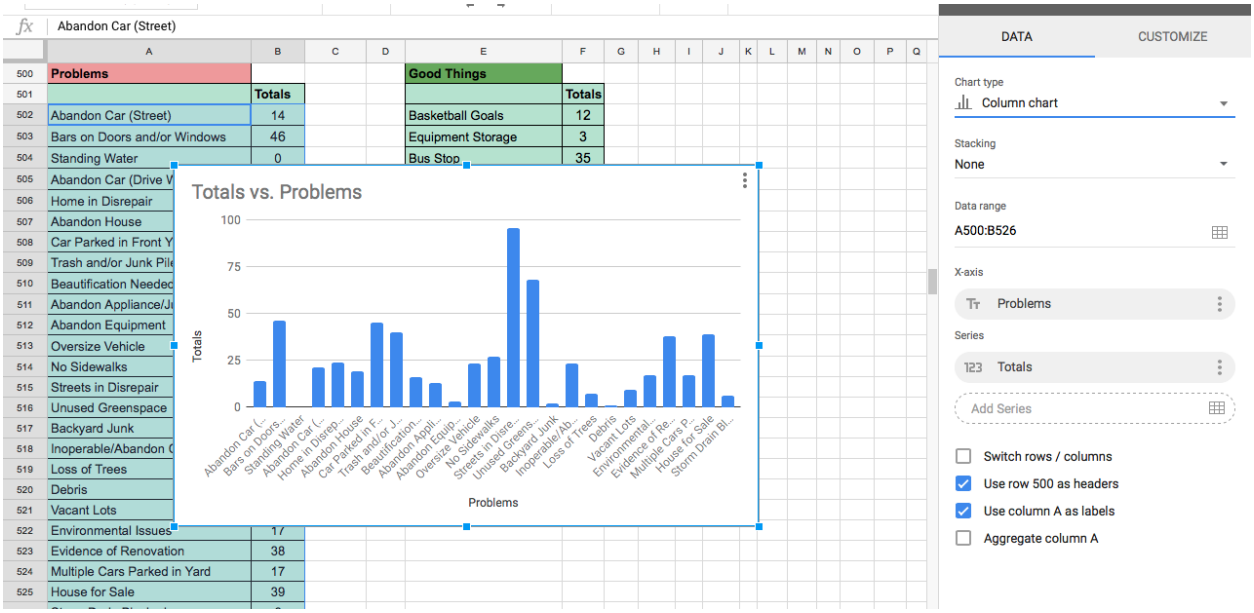


Click the [...] Box in the top right of the tool bar, seen below.

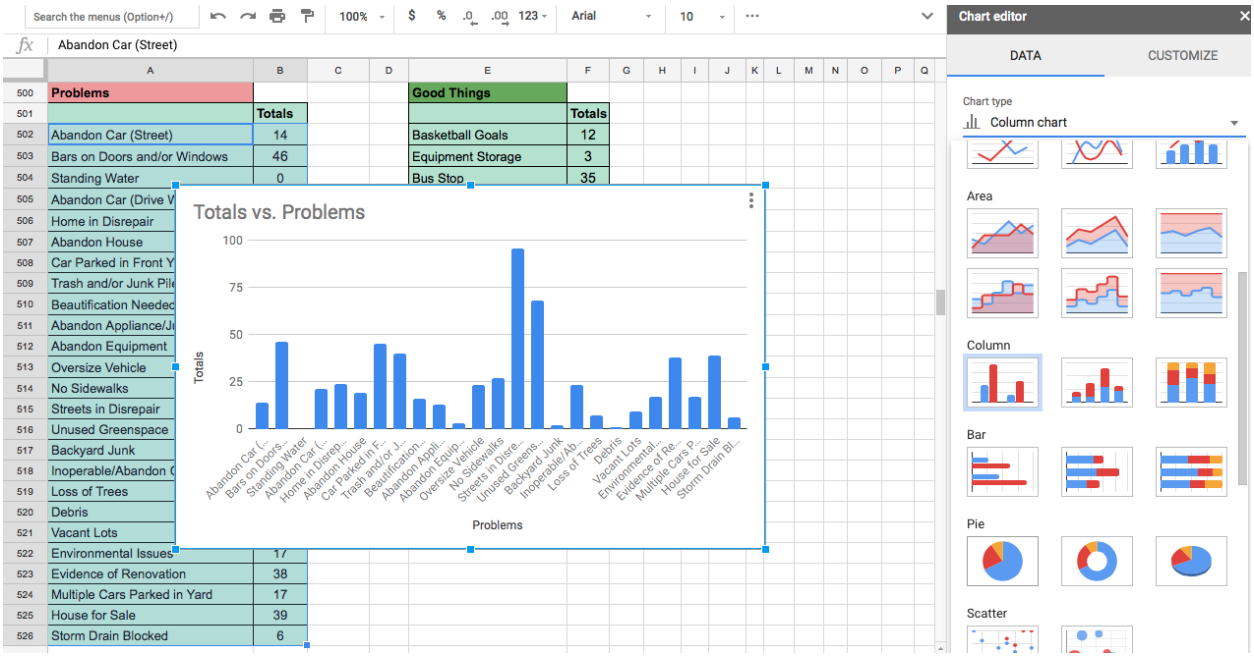


iii. Then click the chart symbol: 

iv. This will create a bar graph of your highlighted data, and present it on the screen:



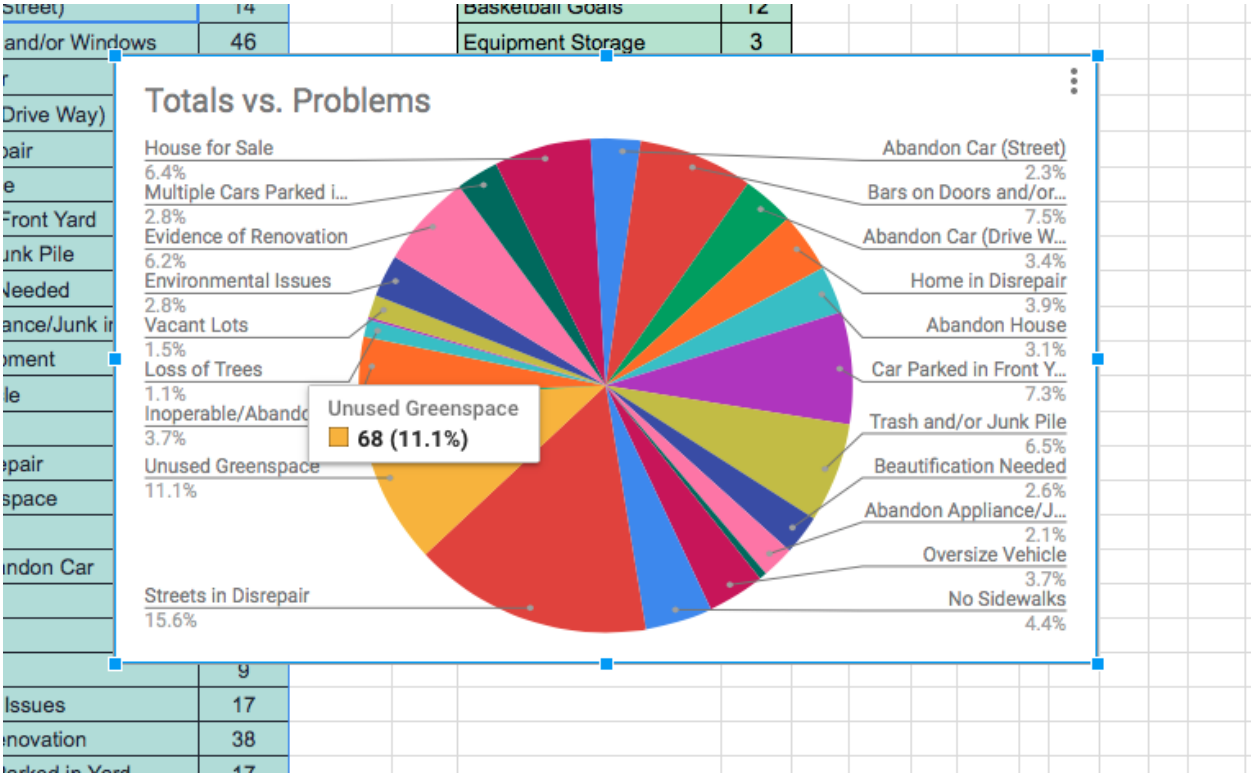
v. To change the graph type, click the chart type drop down arrow, seen in the top right of the picture above.



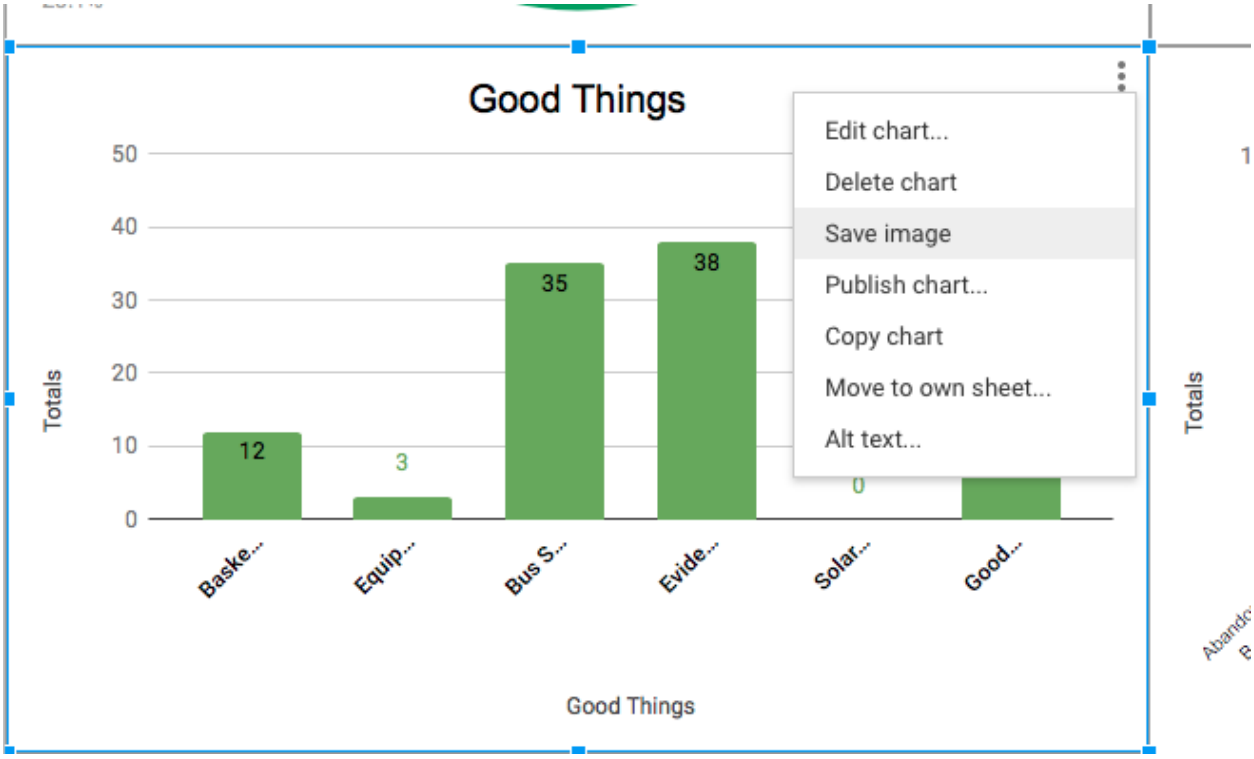
vi. It will drop down all of the graph options.

vii. To change the title of a graph, just double click the title itself, and it will allow you to edit it.

viii. Hovering over a part of the graph, such as a bar in the bar graph or a slice of the pie graph, will show you its percentage and total value.

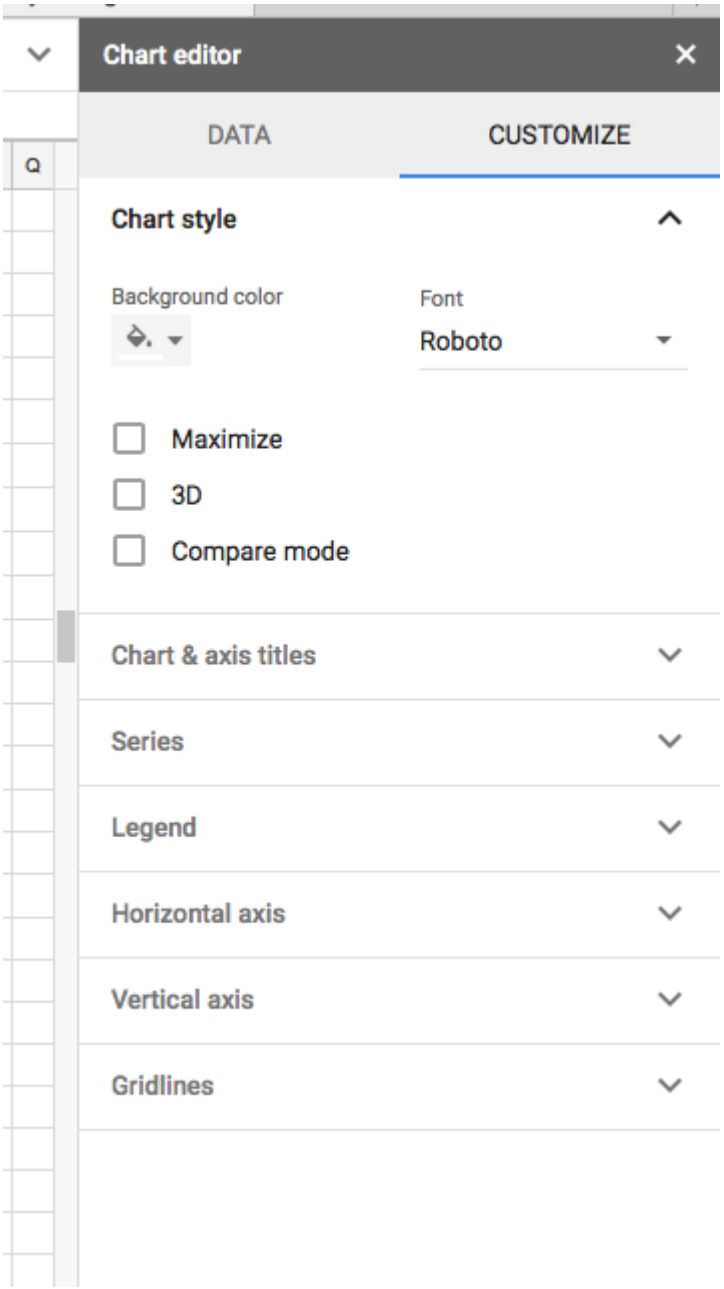


ix. To save a graph, click it once to highlight it, and then press the three vertical dots in the top right corner of the graph, opening the options shown below. Then click save image. This graph can now be used on other documents.



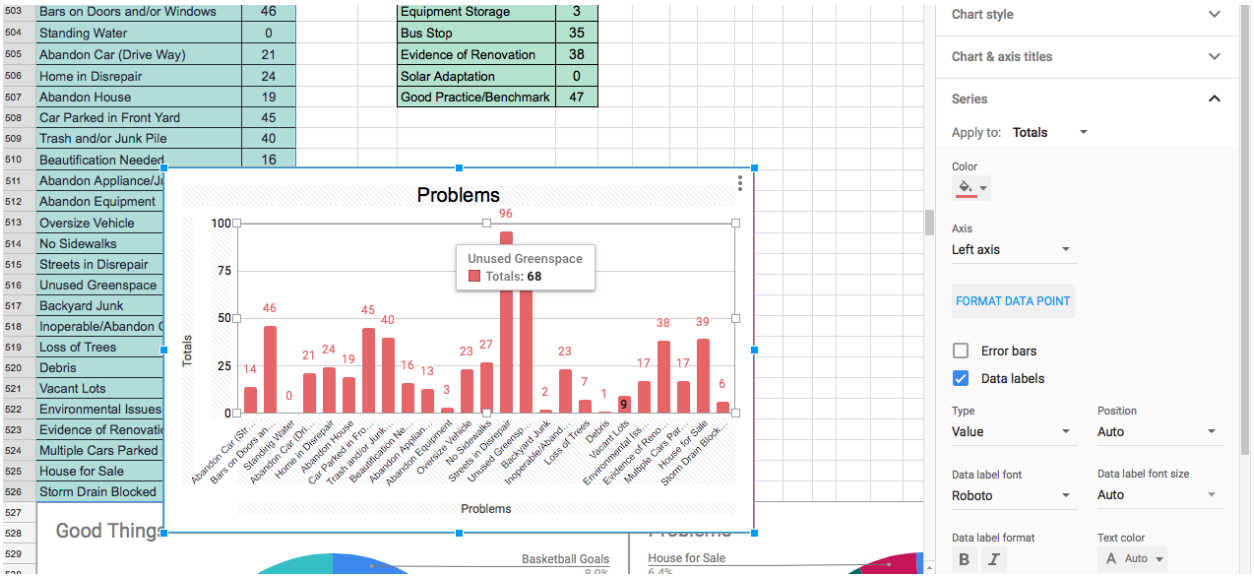
3. Customizing The Graph

To customize the graph, click customize tab in the top right corner of the chart editor screen. It will open this:

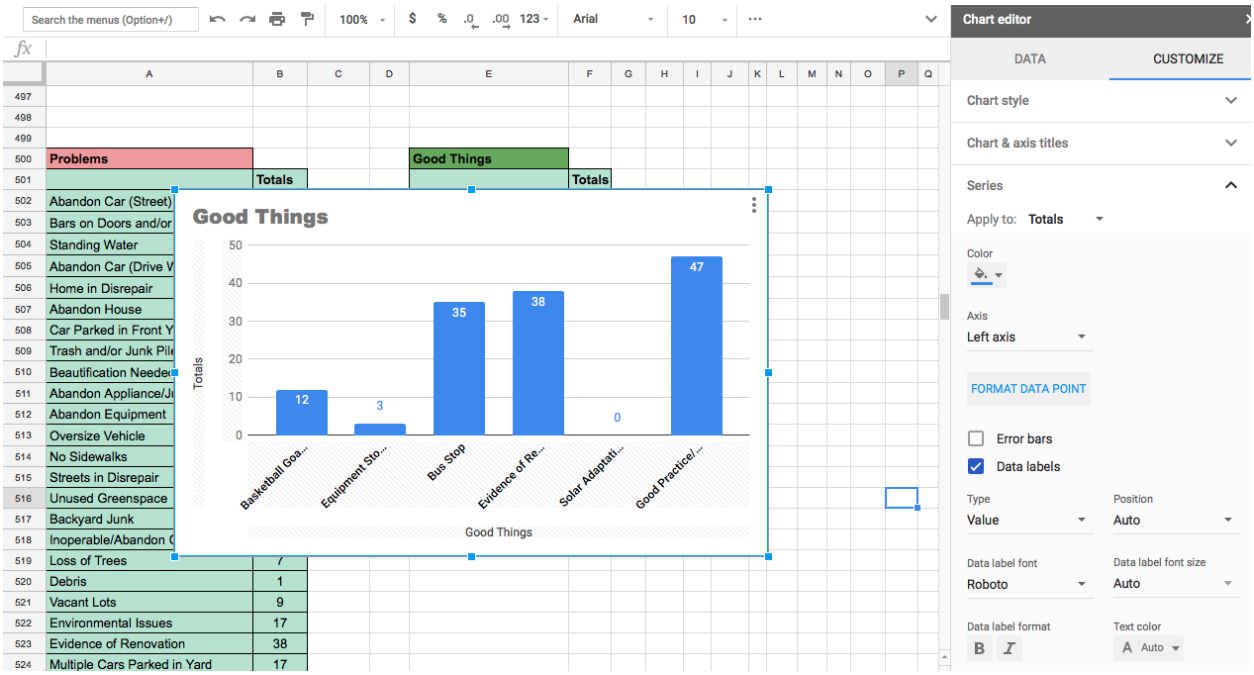


- All of the drop-downs above offer customization features to edit the graph.
- To change the color of the graph,

- To change to color of the data in the graph, click the Series drop down tab, and press the paint bucket to choose a color.



- To have the data points shown above the bar graph, like above, check the “Data Labels” box, seen below as well as above under the Series drop-down tab.



Feel free to explore the other customization features Excel and Google Sheets offers to make your graph look the way you want it. We used these customization features in this guide to

create the graphs below: