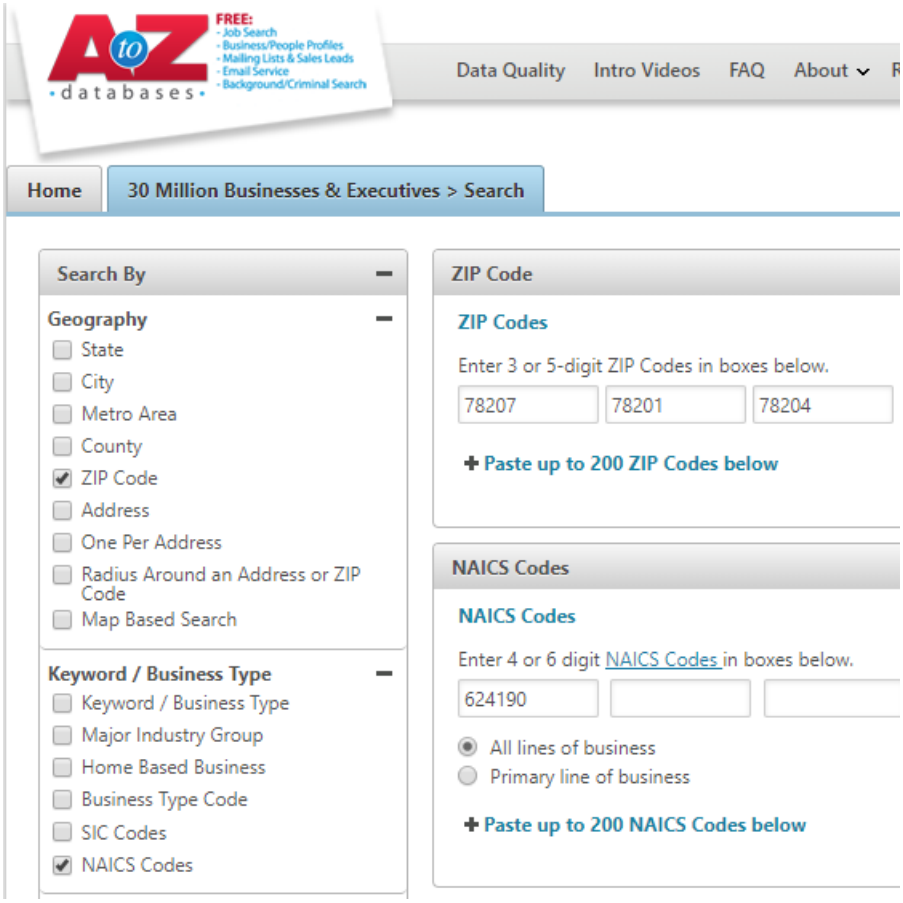
DEM 5093/7093 – Spring 2023
Lab 3
Data Creation and Geocoding

1) Let's get some address data from the AtoZ databases.
Go to lib.utsa.edu → Databases (middle of screen under the search bar) → A → AtoZ Databases (you will need to sign in to your UTSA account)

2) Select the → Get Started option for 30 Million Businesses & Executives (bottom left)

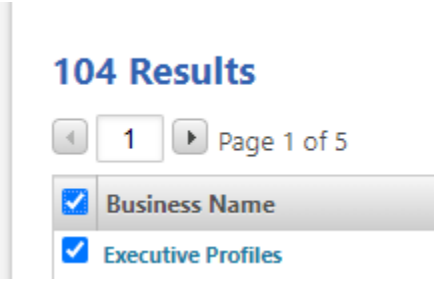
3) We want to limit our search for the zip codes for the West side of San Antonio.
Check Search By → ZIP Code
Enter three zip codes: 78207, 78201, and 78204

We are going to search for WIC (Women, Infants, and Children) clinics.
Check Search By → NAICS Codes
Enter: 624190 (Dr. Sparks Googled this)
(https://www.census.gov/naics/?99967)



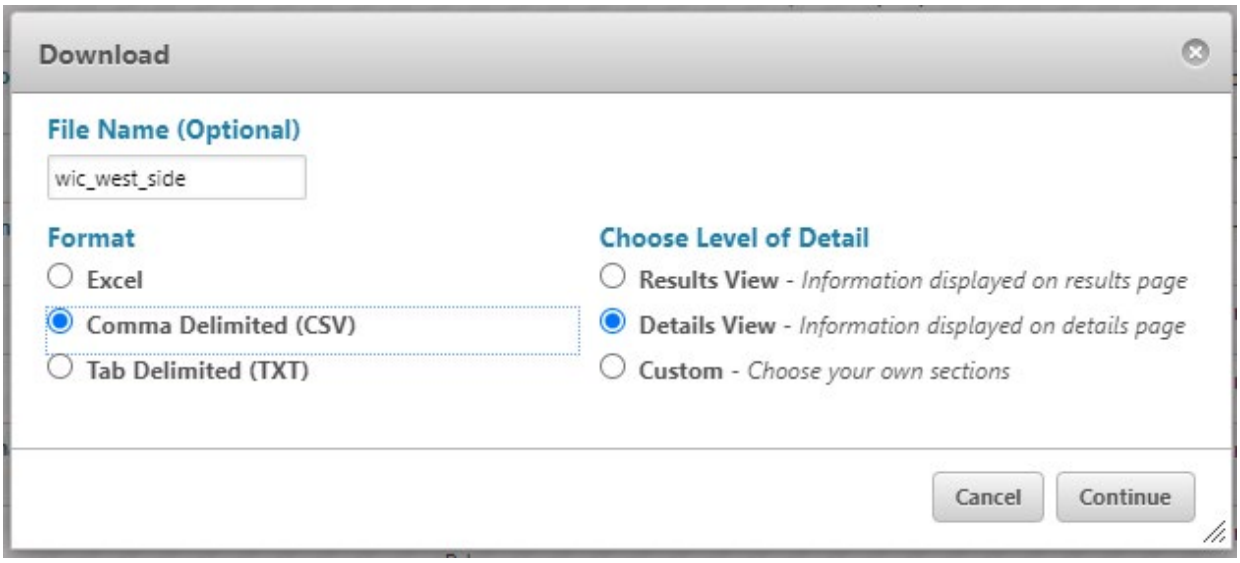
And click Search.

I got 104 results (in 2023 – you may get more/less another time). Now's the hard part, we need to select all of these.
Right under the results number there is a check box. Check it, then hit the arrow button to go to the next page and check the box for each of the 5 pages.



Do this for all 5 pages.

Then select Download.
Format: CSV
Choose Level of Detail: Details View
File Name: wic_west_side



And hit Continue. The CSV should download.
Move it to your GIS class folder!

You can open it and look at it.

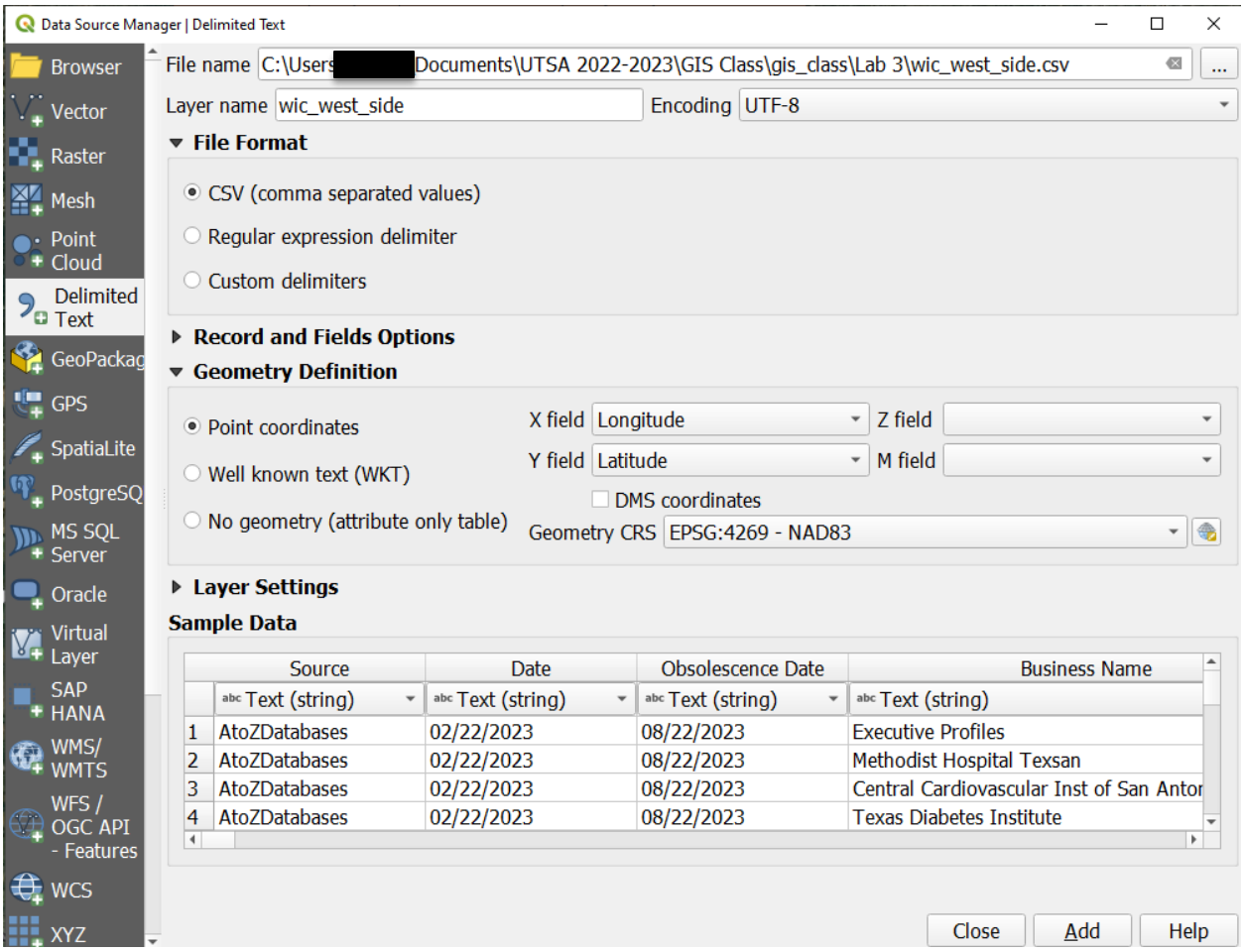
We are going to use this for two different purposes. First, we will add the data to our Lab 2 project (did you save it?).

Open your Lab 2 project in QGIS.

Go to Layer → Add Layer → Add Delimited Text Layer → browse to your class folder and select the CSV file you downloaded.

Check Geometry Definition. The following should have been filled automatically:
X field: Longitude
Y field: Latitude
Geometry CRS: EPSG:4269 - NAD83

Here's what mine looked like:

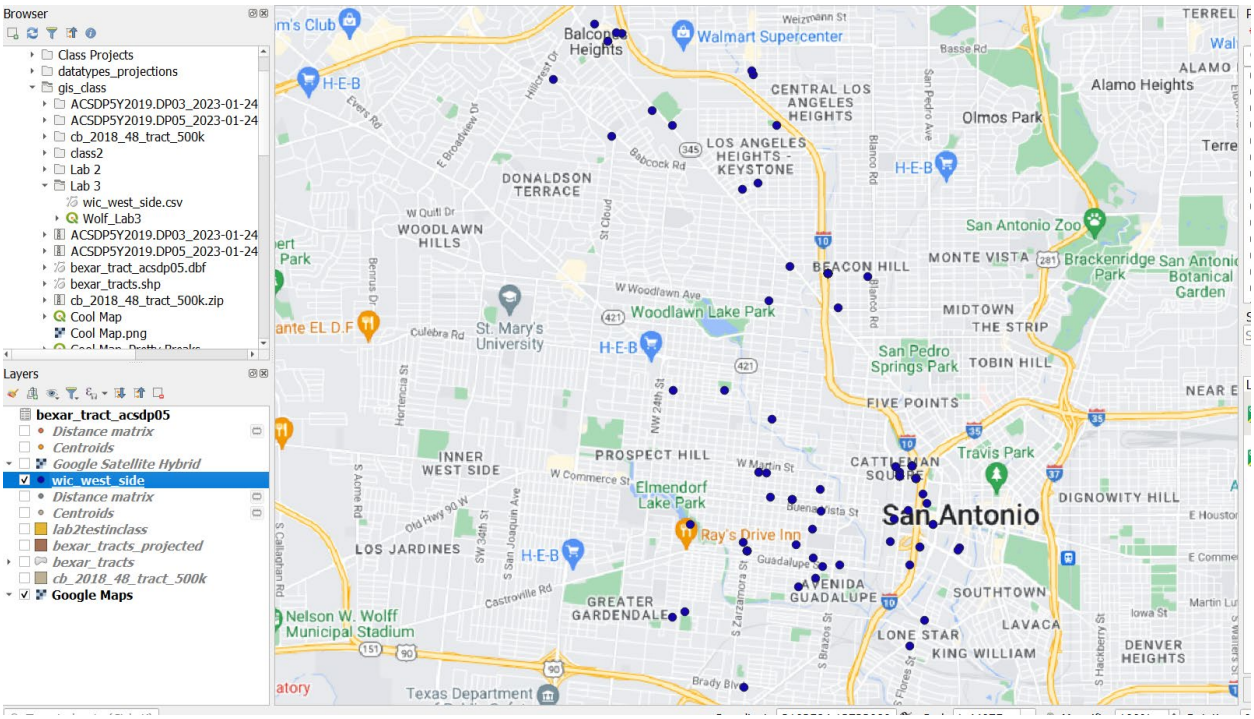


Hit Add.
Hit Close.
You should now have lots of dots on the west side of San Antonio.

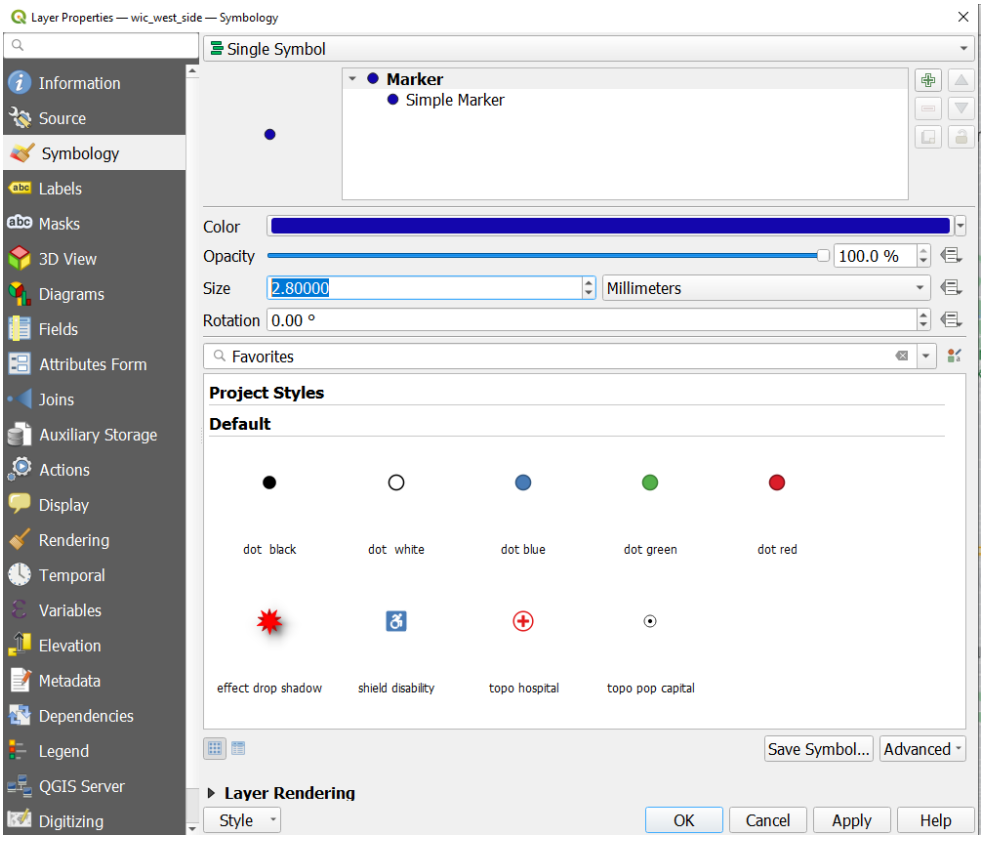
Right click on the layer and hit Zoom to Layer(s).

Great, you've got data now!

Here's mine:



If your dots are difficult to see, you can change the color and size of them by right clicking on the layer and selecting Properties. You can change the Color and Size.



Next, we will try to geocode these addresses ourselves to see how that is done.

If you haven't done so, go to Plugins → Manage and Install Plugins and search for MMQGIS and install it. Close this window when it's done.

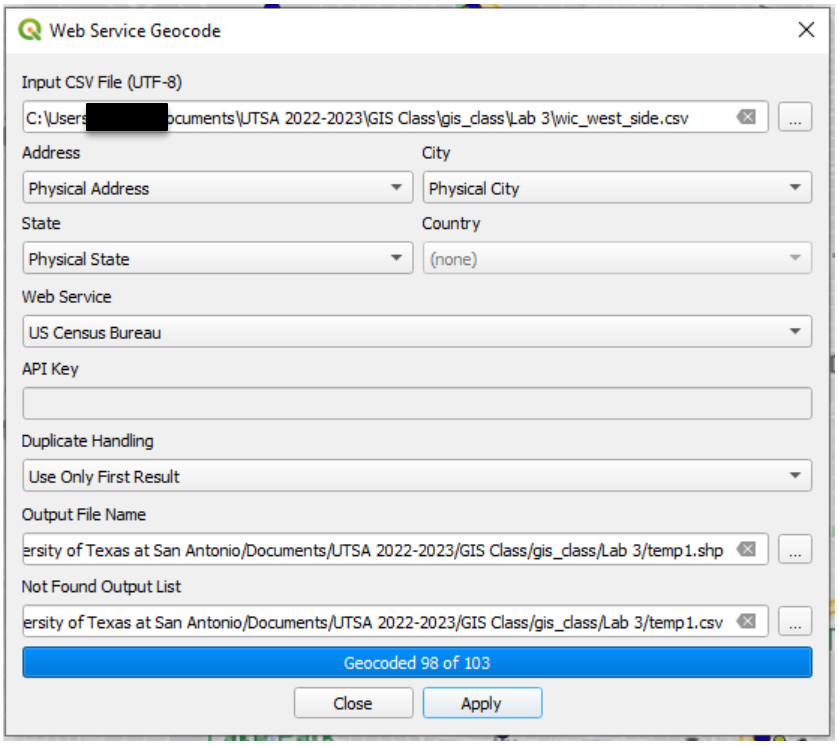
Go to your class folder and open the CSV file you downloaded from AtoZ.

Sort the sheet by Physical Address (column F). There is one record without an address (it will be sorted to the last row whether you do Sort A to Z or Sort Z to A). Delete that row.

Save it again and close it.

Go to the MMQGIS menu, and select Geocode → Geocode CSV with Web Service
Select the CSV file you just created.
Address: Physical Address
City: Physical City
State: Physical State
Country: none
Web Service: US Census Bureau
Output File Name: Change temp1.shp to WIC1.shp (**note**: I didn't change mine below, but you should to help with Homework 4).

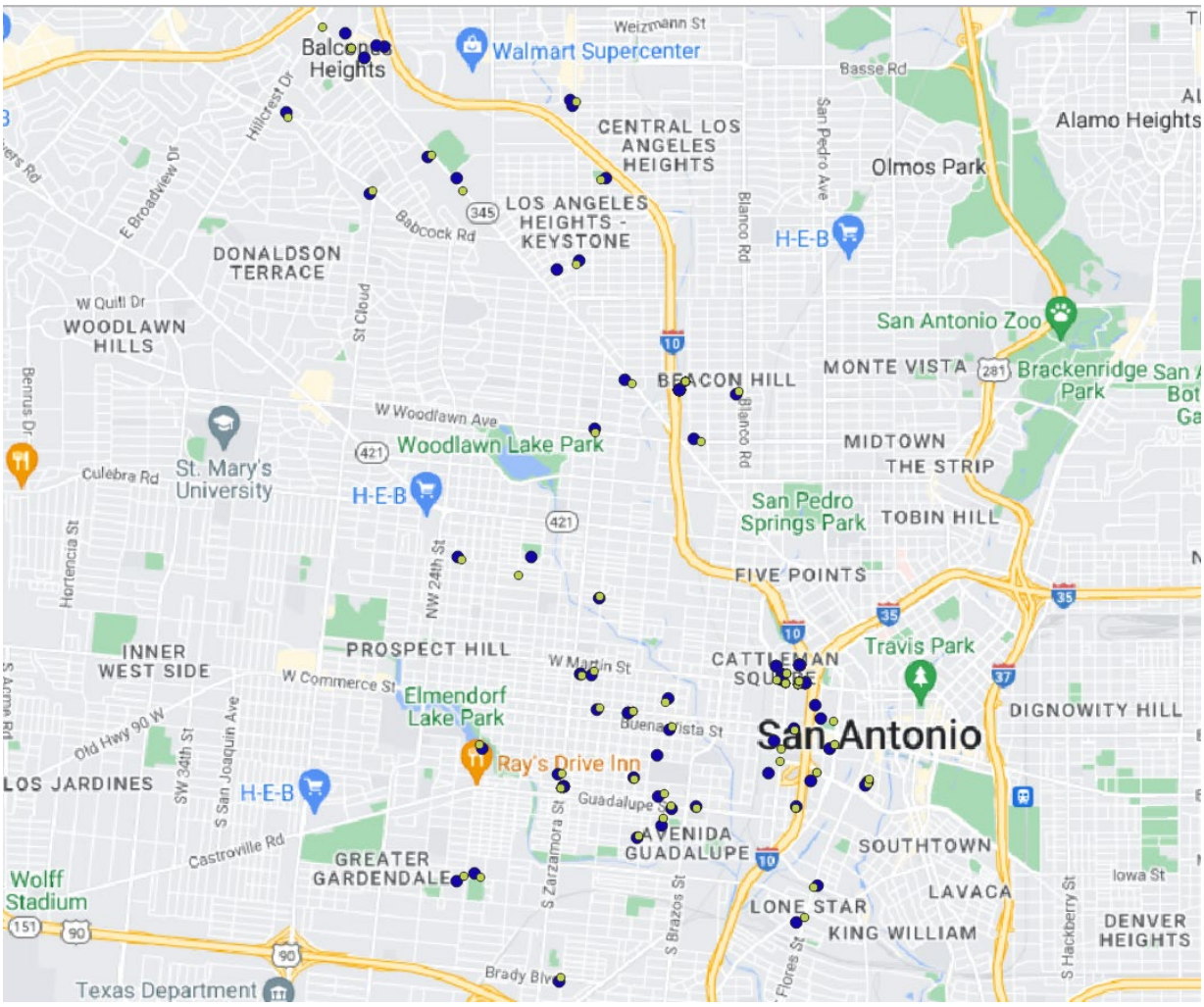
Hit Apply. It will take a few minutes to finish, as it works it will tell you how many it's found. Just let it go until it's finished.



Mine got 98 of 103.

The process created a file in your class folder with the mistakes (temp1.csv; you could have named it in the last step). You can open it and look at the ones it couldn't find. Most of mine were W Interstate 10 addresses.

I can also see that some of the geocoded addresses are not exactly the same as the Lat/Long points we initially loaded in. In the map below, the dark blue circles are the Lat/Long points and the light green circles are the geocoded points we just did with the addresses.



You can repeat this process with the OpenStreetMap/ Nominatim service (instead of the US Census Bureau). You may get a different number matched.

This is an imperfect process.

If you zoom in, you'll see the geocoded dots are in streets but slightly on the right or left side. The Lat/Long dots are exactly where the buildings are off the streets.

Homework 4. – Only in QGIS.
Repeat this process in the same map project, but use NAICS code 445110, for grocery stores. Use the same zip codes to search within. Generate an image of your map with a legend for both the WIC and grocery store layers (**Hint**: remember Lab 1?).

Report the geocoding results in terms of % correctly geocoded. Use the US Census Bureau's geocoding service.

Submit your map with the data displayed via Blackboard before **6pm on 3/1/2023**.

Hint for the Legend (This is only Lab 3 showing, I haven't added the homework part yet):