

Exercise: Selecting Parcels Near an Interstate

Summary

This exercise uses QGIS to identify tax parcels that are near one of the Interstate highways in Onondaga County.

Input Data

There are three input files. The first two are TIGER/Line shapefiles that will be downloaded from the Census below. The third is a file of tax parcel centroids called `Onondaga-Tax-Parcels-Centroid-Points-SHP.zip` that can be downloaded from the class Google Drive directory for this exercise.

Deliverables

There are three deliverables: a QGIS project file called **highway.qgz**, a GeoPackage file called **onondaga.gpkg**, and a PNG file called **highway.png**.

Instructions

1. Go to the Census TIGER/Line page and then to the web interface. Select 2018 and then download two layers: (1) "Counties (and equivalent)", which should be `tl_2018_us_county.zip`, and (2) "Roads" -> "Primary and Secondary Roads" -> "New York", which should be `tl_2018_36_prisecroads.zip`.
2. Load the counties layer into QGIS and filter it down to Onondaga County using "STATEFP" equal to '36' and "COUNTYFP" equal to '067'. Note that single and double quotes are **not** equivalent in QGIS: double quotes are used with variable names and single quotes are used with strings. If you build the query by clicking on the variable name under "Fields" and the value under "Values" QGIS will use the correct quoting.
3. Change the project projection using the button with the globe icon at the lower right. Set it to EPSG:6347 "NAD83(2011) / UTM Zone 18N", which is the New York State GIS Clearinghouse recommended projection. The county should become narrower and look like it usually does in other maps.
4. Export the resulting layer to a GeoPackage file called `onondaga.gpkg` in the GitHub directory for the assignment. Call the layer itself `boundary` and make sure the "Add saved file to map" box is checked. Then remove the original layer to leave a single layer called `onondaga boundary`.
5. Add the roads layer to the map. Then filter it down to interstates only using "RTTYP" equal to 'I'.
6. Now clip the roads using the county boundary. Export the layer to the GeoPackage file you created above but use the layer name `interstates` and set the coordinate reference system (CRS) to the project CRS, which should now be EPSG:6347.
7. Remove both the original road layer and the layer called `Clipped`. You should end up with two layers: one called `onondaga boundary` and one called `onondaga interstates`.
8. Select `onondaga interstates` and create a buffer using a distance of 500 meters. Scroll down and check the "Dissolve result" box. Save the buffer in the GeoPackage file with the layer name `buffer 500m`. Then remove the Buffered layer.
9. Add the tax parcel centroid layer.
10. Clip the parcel layer using `buffer 500m` as the overlay.
11. Uncheck the original parcel layer. That should leave the parcels that are within 500 meters of the highways.
12. Save the project in the GitHub directory as `highway.qgz`.
13. Export the map to a PNG file called `highway.png`.

Submitting

Once you're happy with everything and have committed all of the changes to your local repository, please push the changes to GitHub. At that point, you're done: you have submitted your answer.

Tips

- In practice, a study like this would usually go further by exporting the clipped parcels to a CSV file so they could be subjected to further statistical analysis. We'll do that in a subsequent exercise involving additional buffers.