

QGIS Spatial Analysis Appendix

Technical Appendix

Sources:

- 2020 Census Tracts (Clipped to Shoreline), NYC Department of City Planning (Shapefile)
<https://www.nyc.gov/site/planning/data-maps/open-data/census-download-metadata.page>
- Asian Cultural Centers Dataset, Self-created Dataset (Tabular Data)
Compiled through online searches, Google Maps, and social media.
- MTA Subway Stations (Shapefile)
NYC OpenData
<https://data.cityofnewyork.us/Transportation/subway-stations/jaej-er89>
- Asian Population Dataset, US Census Bureau, American Community Survey (Tabular Data)
[https://data.census.gov/table/ACSDT5YSPT2021.B01003?q=race&t=031&g=040XX00US36,36\\$1400000](https://data.census.gov/table/ACSDT5YSPT2021.B01003?q=race&t=031&g=040XX00US36,36$1400000)

Technical Workflow Steps:

1. Coordinate System:

- Use New York State Plane Coordinate System

2. Map/Data Preparation:

- Data Cleaning: Ensure the GEOID in the Census population dataset matches the GEOID field in the Census Tracts shapefile.
- Download Subway shapefile
- Load the 2020 NYC Census Tract shapefile

3. Subway Proximity Analysis:

- Input Coordinates: Import the self-created dataset of cultural center with XY coordinates (longitude/latitude)
- Use the “Buffer” geoprocessing tool to create 0.25-mile buffer around subway stations
- “Dissolve” the buffer to merge overlapping buffer zones.
- Count the number of cultural centers that fall in the buffer zones

4. Asian Population Analysis:

- Input Coordinates: Import the self-created dataset of cultural center with XY coordinates (longitude/latitude)

- Perform a tabular join to attach the Asian population data to the census tracts shapefile
- Buffer creation around cultural centers: create a 0.25-mile buffer around each cultural center using the “Buffer” tool
- Utilize the “Select by Location” Research Tool to select the census tracts that fall within the buffer zone.
- Export the selected areas into a CSV data and upload it to Google Sheets to calculate the sum of Asian populations that are inside the buffer zone

5. Ethnic Group Analysis:

- Input Coordinates: Import the self-created dataset of cultural center with XY coordinates (longitude/latitude)
- Perform a tabular join to attach the Asian population data to the census tracts shapefile
- Filter the Asian cultural center data by each ethnic group
- Buffer creation around specific ethnic cultural centers: create a 0.25-mile buffer around each cultural center using the “Buffer” tool
- Utilize the “Select by Location” Research Tool to select the census tracts that fall within the buffer zone.
- Export the selected areas into a CSV data and upload it to Google Sheets to calculate the sum of Asian populations that are inside the buffer zone
- Repeat these steps for all 12 Asian ethnic groups to analyze spatial distribution and accessibility.

Google Sheets Technical Appendix

Barchart Workflow Steps:

1. Data Import
 - Asian population in NYC Census tracts
 - Asian population totals within cultural center buffer
 - Asian population total within specific ethnic cultural center buffer
2. Upload each CSV file to Google Sheets for processing
3. Population Calculations
 - Sum Asian Population within NYC tract using =SUM() formula to calculate the total Asian population
 - Sum Total Asian Population within cultural center using =SUM() formula to calculate the total Asian population within each cultural center buffer
 - Sum Total Asian Population within specific ethnic cultural center using =SUM() formula to calculate the total Asian population within specific ethnic cultural center buffer
 - Repeat until each Asian ethnic cultural center has been analyzed
4. Calculate Walkability by Percentages
 - Create a new column to calculate the total Asian population that falls within the buffer.

- Use the formula = (Population in Buffer/ Total Asian Population) * 100 formula to compute percentages of the Asian population within 0.25-mile buffers.
5. Preparing for Datawrapper
- Create a new Google Sheet
 - Create two new columns:
 - Cultural Center by Ethnic Group
 - % Asian Population within the buffer
 - Fill each column with information from previous calculations from above
 - Upload data to Datawrapper to create a chart

Tree map Workflow Steps:

- Imported the self-created Asian Cultural Centers in NYC dataset containing ethnicity counts and percentages for Asian cultural centers in NYC.
- Grouped, summarized, and mutated to calculate the percentage of each ethnicity and combined it with the ethnicity names for labeling.
- Styling
 - Franklin gothic heavy
 - Fluorescent yellow
 - Positioned the wording to the top-left corner of each rectangle