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Assignment 3

QGIS Method Walkthrough

1. Get Raw NHGIS Microdata
  - a. NHGIS.org > Select Data
  - b. GIS 2018 TIGER/Line+ Files: Tract, ZCTA, 2014-2018
  - c. Source Tables: C17002, B19013, B19058, B25002, B25003, B25003B, B25003D, B25003H, B25003I, B25004, B25024, B25032, B25037, B25039, B25061, B25064, B25071, B25077, B25085
  - d. Specify "no headers" or QGIS will import .csv integer variables as strings
  - e. Download zipped tables and GIS files
  - f. Unzip
  - g. Saved to main project folder > "nhgis\_raw\_sf\_and\_tabular" > shp folder & csv folder
2. Get Jersey City boundary polygon
  - a. NJ Office of GIS > [Municipal Boundaries of NJ](#) > Download (or plug URL from within QGIS via Layer > Add Layer > Add ArcGIS REST Server Layer)
3. QGIS > New Project
  - a. Project EPSG:4326
  - b. Add vector layer: Municipal Boundaries of NJ.shp
    - i. Filter > Municipality = "Jersey City" > Select > Save selected ("jc\_boundaries")
  - c. Add vector layers
    - i. Add Vector > NHGIS tract & zip .shp files
    - ii. Project CRS (4326)
  - d. Add tabular layer
    - i. Add Delimited > Tract (I had the ZCTA files but wound up not using them this go-round) > no geometry
    - ii. I selected a subset of variables I knew I wanted to map: a mercy to my literal and spiritual RAM
  - e. Select tabular and vector features within Jersey City boundaries
    - i. SHP: filter down to Hudson County, then select all tracts within & intersecting Jersey City boundaries. Clean up edges by clicking manually where necessary. Save selected. Ditch the giant file.
    - ii. CSV: Attribute table > filter
      1. FIPS: NJ 34, HudCo 017
      2. Filter 18 census tracts: (lower("STATEFP")=lower('34')) AND (lower("COUNTYFP")=lower('017'))
      3. Click to make sure og data remains editable after merge

- f. Join tract-level .shp & .csv
    - i. To/from target variables = "GISJOIN"
- 4. Generate new variables
  - a. Field Calculator
    - i. c\_burd: > 30% rent burden indicator:
      - 1. "acs\_18AJ3LE001" > 30
    - ii. pct\_asst: percent hh in tract receiving public assistance
      - 1.  $\text{round}((\text{"acs\_18AJZVE002"} / \text{"acs\_18AJZVE001"}) * 100, 2)$
    - iii. pct\_wh\_a: percent householders white alone, not hispanic or latinx
      - 1.  $(\text{"acs\_18AJ12E001"} / \text{"acs\_18AJ1UE001"}) * 100$
    - iv. pct\_n\_w\_a: percent householders not white alone
      - 1.  $((\text{"acs\_18AJ1UE001"} - \text{"acs\_18AJ12E001"}) / \text{"acs\_18AJ1UE001"}) * 100$
    - v. pct\_rent:
      - 1.  $(\text{"acs\_18AJ1UE003"} / \text{"acs\_18AJ1UE001"}) * 100$
    - vi. pct\_own:
      - 1.  $(\text{"acs\_18AJ1UE002"} / \text{"acs\_18AJ1UE001"}) * 100$
- 5. Layers
  - a. Basemap: QMS > Dark Matter
  - b. ZIP boundaries > no fill, labels, border
  - c. City boundary border > low-opacity glow to make the edges stand out against Dark matter while letting the details beneath show through; I didn't love this in the end but went with it
  - d. Tract-level census data: Continuous variables as graduated layer, discrete as categorical
    - i. Main maps in writeup = median gross rent as % of median income, both graduated across all tracts and is a logical T/F binary indicator for med rent percentage is/isn't >30% (see above)
  - e. Demolition data: I wound up just keeping as a separate layer rather than joining bc I was terrified of QGIS continuing to crash every time I opened a new file or moved anything around. It was prohibitively difficult to do almost any calculations from joined vector/point data across tract levels without it crashing multiple times an hour (I once got 7 crashes in a 2-hr period with a very small file?) or sitting with the beach ball of doom for >= 5 minutes at a stretch. Mac OSX ftw?!
    - i. Demolished houses & units: Add Layer > Delimited > .csv exported from R with geocoded lat/long > point coordinates > project CRS
      - 1. Styling > Symbols > Graduated > Value: unit count > Method: Size
    - ii. For the frequent-flyers demolition points laid over heatmap, I used a rule-based argument to get the sizes of dots to align with number of units per house they wrecked
    - iii. Heatmap: Viridis color ramp, weight by unit count, overlay demolition points layer

- f. Layer Styling > Graduated > acs\_18AJ3LE001 > Pretty Breaks > Viridis Color Ramp > Classify > Apply; Symbol, Settings > Stroke Color > Transparent Stroke
- g. Toggle Edit mode > hand select Census Tract 58.02, GEOID 34017005802 (Liberty State Park) > click backspace icon on right-hand side of each generated variable > sets values to NULL (insufficient observations)
- h. Selected the southeast and northwest railyard tracts that tend to null out due to insufficient data, made them a very light transparent gray separate layer, added them in to maintain city boundaries. Also kept the city boundary itself as a hairline with an almost transparent outer glow effect.
6. Legends: yeesh. Did basics in layout manager, then tweaked in Mac's native photo editor after (including screenshotting a tiny version of the heatmap color gradient and pasting over an older legend, since it wouldn't render.
7. ArcGIS Redlining Layer: Add Layer > Add ArcGIS REST Server Layer > url = [https://services.arcgis.com/jlL9msH9OI208GCB/arcgis/rest/services/HOLC\\_Neighborhood\\_Redlining/FeatureServer](https://services.arcgis.com/jlL9msH9OI208GCB/arcgis/rest/services/HOLC_Neighborhood_Redlining/FeatureServer) > only import features within area visible on map > manually selected features within Jersey City boundaries > overlaid demolitions layer
8. Screenshotted maps & added titles/source attributions/legends externally
9. See "plots" subfolder within main project folder.