2019

Mapping Flood Risk for Tampa City

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The City of Tampa is the largest city in Hillsborough County, is the county seat and is the third most populous city in Florida. It is located on the west coast of Florida, approximately 200 miles northwest of Miami, 180 southwest of Jacksonville, and 20 miles northeast of St. Petersburg. The population of the city represents approximately one-third of the total population of Hillsborough County ("CityofTampa", 2019). There are several causes of flooding within the city of Tampa. The most frequent type of flooding, localized flooding, is caused by rainy season thunderstorms and tropical storms ("Flooding", 2019)".

A Flood Zone is a geographical area that is rated to reflect the severity or type offloading in that area. For this Flood Zone Mapping the data am using I got it from

http://city-tampa.opendata.arcgis.com/datasets/tampa-boundary

- City Boundary
- Road
- Hospital
- Police station
- Fire Station

https://www.census.gov/cgi-bin/geo/shapefiles/index.php

- Block Groups
- Surface Water

https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml

- Total Population
- Housing units by block group

https://hazardsfema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd

- Special Flood Hazard Areas (FEMA)

By using the data's that are available and some basic consideration I used to select a Critical Facilities. Some of the data's related to Flooding and Infrastructure are available in county level and clip by using the city boundary. A critical facility provides services and functions essential to a community, especially during and after a disaster. Therefore, as a facility, I choose to incorporate in my Map Police stations, fire stations are needed for flood response activities before, during, and after a flood. Medical facilities like hospitals should be considered to avoid injury or death during a flood. Most of the time, Schools are used as shelters or evacuation centers; therefore, these facilities should be preventing from flooding. In addition to that, Fire prevention, evacuation, and rescue operations are common emergency response activities associated with flooding. The effectiveness and success of these efforts depend on readily available access for emergency vehicles. However, streets and roads are usually the first to be inundated in the event of a flood.

Thus, the Population density attribute information by block group and Housing units by block group downloaded from American Fact Finder for population density as an excel file and joined with block group shapefile from TIGER/Line with a common attribute field GEOID. The value that we get in the population density takes into account not only the number of people living in a region but also the size of the region after we join it with block group. These maps show the areas that have a high concentration of people and therefore will have more people affected by flooding and need more attention in flooding time. Moreover, by Joining the Attribute information with block group data and Population density map and Housing by Block map is generated.

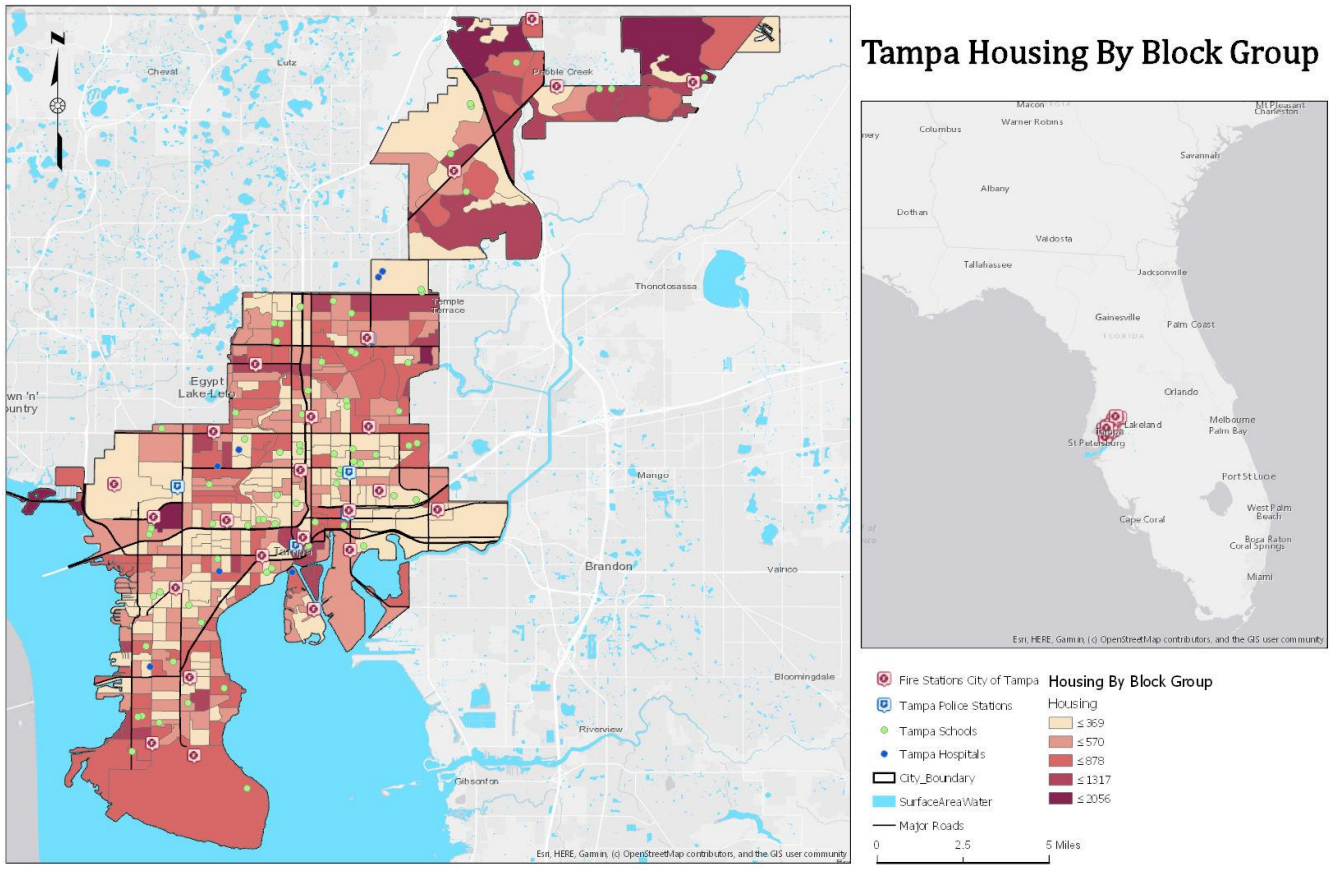

Fig1. Tampa Housing by Block Group

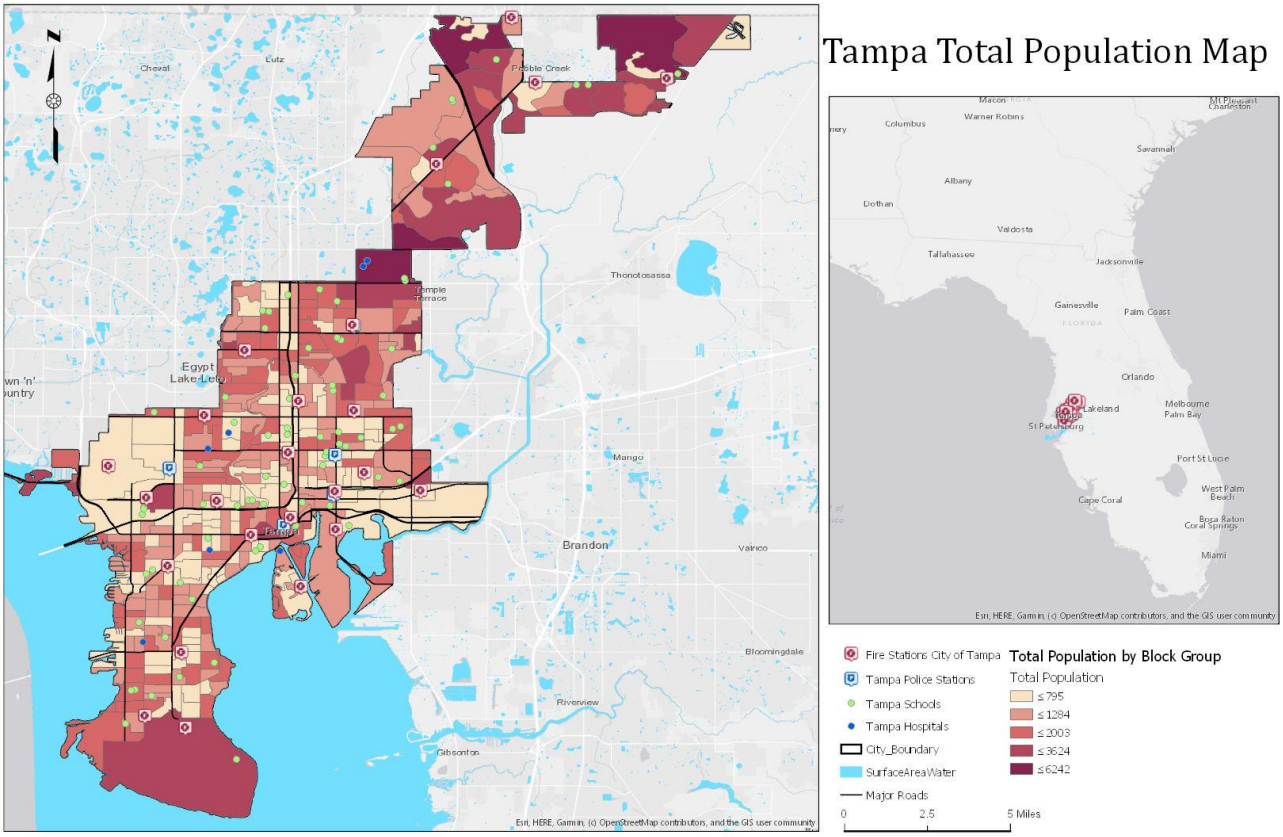

Fig2. Tampa Total Population by Block Group

The Flood hazard data is not accurate data and hard to understand for interpretation and to manage. However, according to the description and the data nature. I use ZONE_SUBTY (Zone Susceptibility) Attribute information to classify and Categories the city into 4 different flood which is

- Flood Way
- 0.2 % Annual Chance of Flood
- Area of Minimal Hazard
- Coastal Flood (Which the Field is Null value, but I define)

Therefore, by using the overlaying each layer, we can see which area is more susceptible to flood. Thus, the southern tip of the city is more susceptible to Coastal Flood, and these areas compared to other areas of city, the population density by block group and the housing is more in number compare to the other areas. Therefore, if the flooding is happening in those areas, the city administration should give priority evacuation and proper emergency response prior to other areas.

Furthermore, most of the areas in the city are falling into minimal hazard zone but which I don't agree, and I understand that there is a data mismatch in FEMA Data to this area for proper

classification Flood Zone. Additionally, the areas in the north part of Tampa specifically house close to water bodies should they prepare before preventing massive damage of flooding Risk.

In addition to that, they should have to prevent more construction and proper management techniques to minimize future risks into these areas.

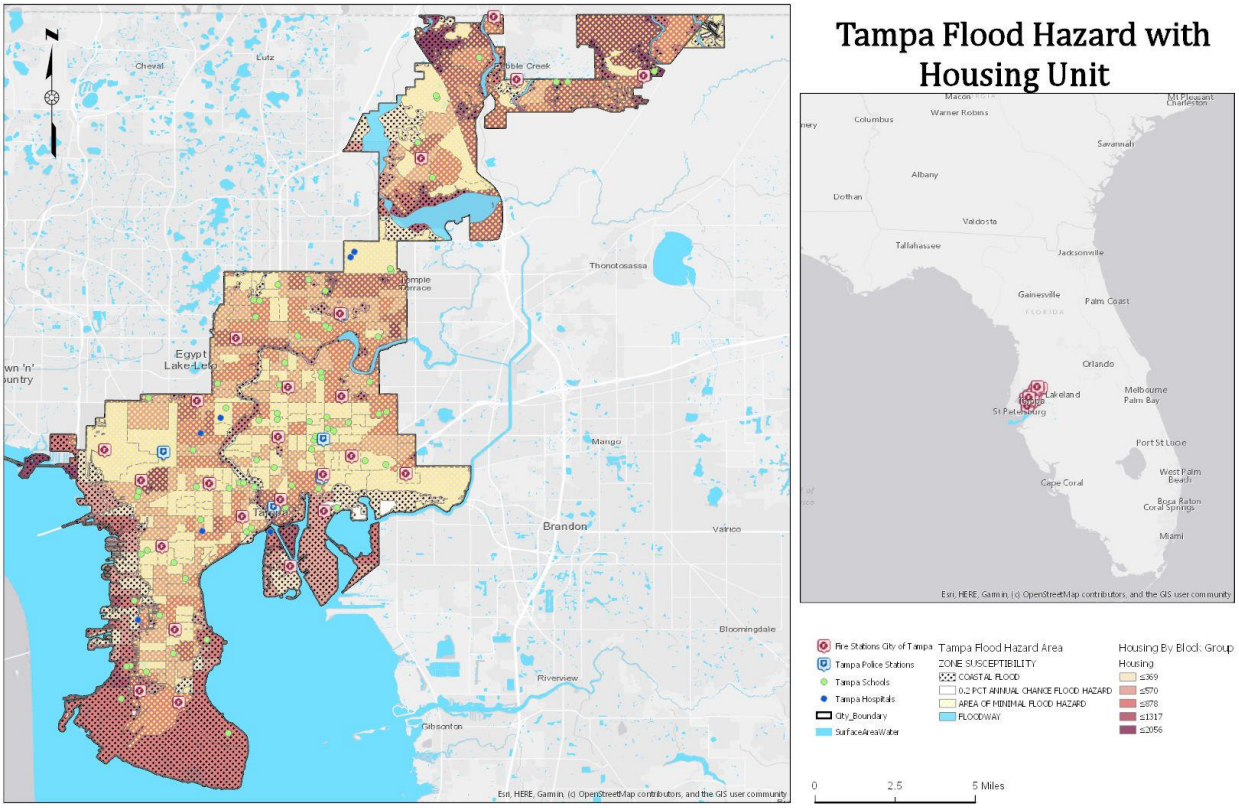

Fig3. Tampa flood Hazard with Housing by Block Group

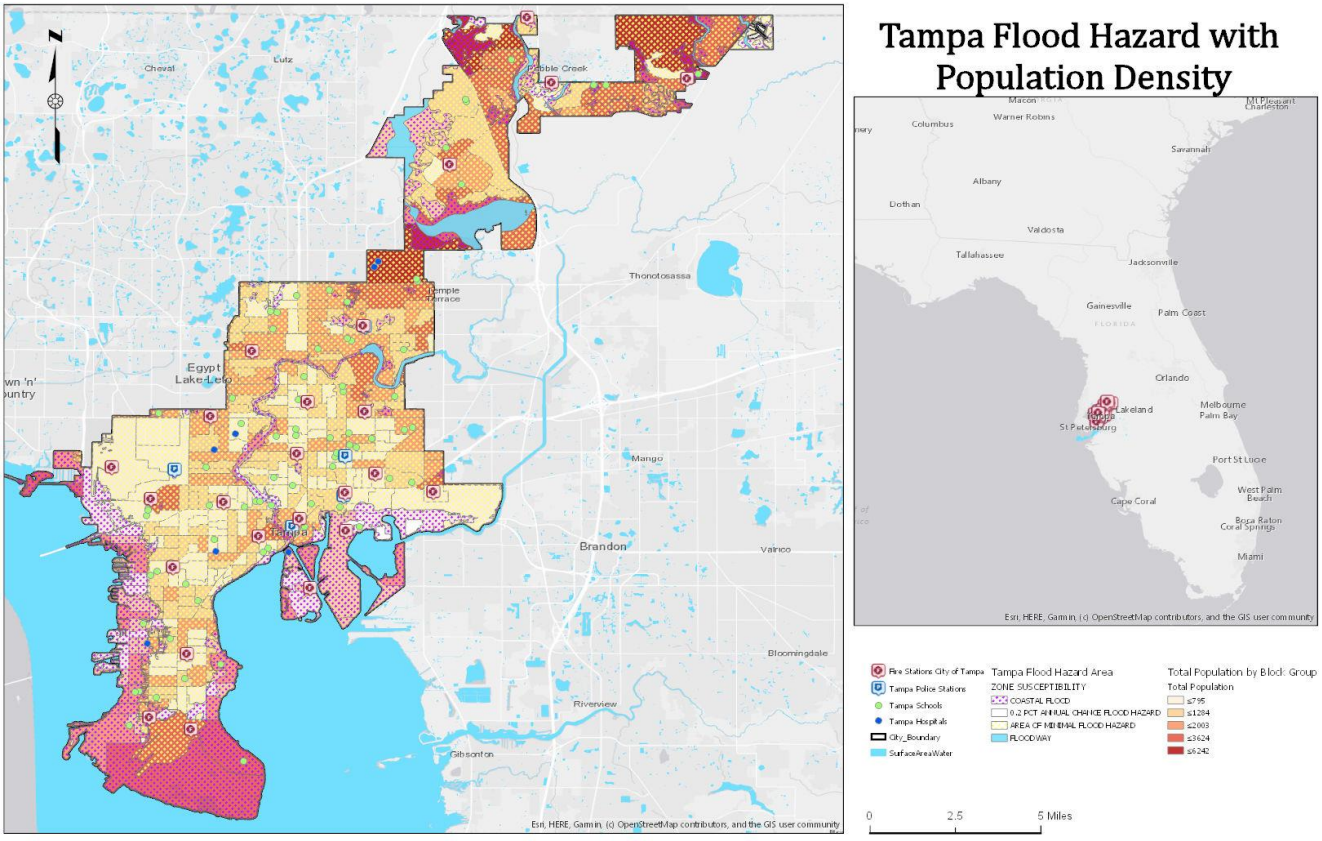

Fig4. Tampa flood Hazard with Population Density by Block Group

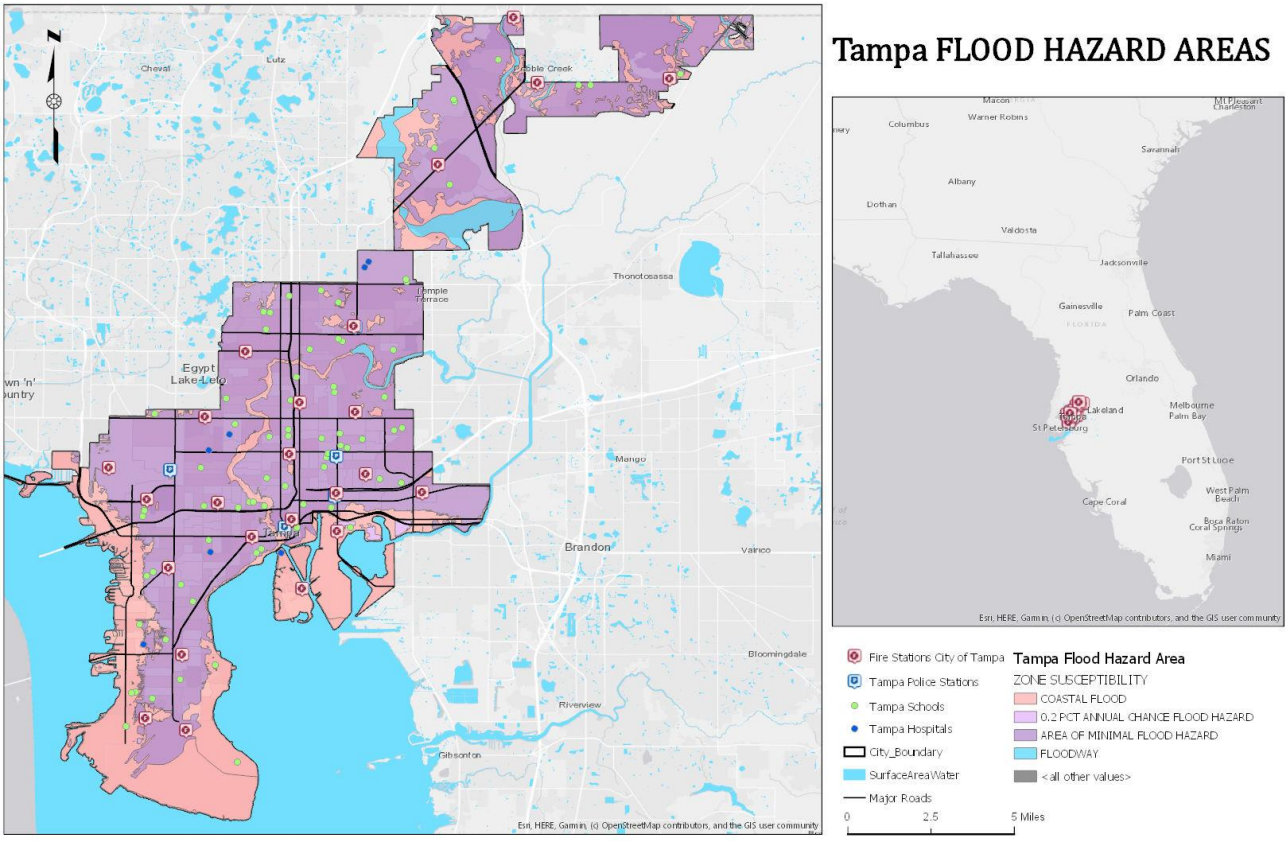

Fig5. Tampa flood Hazard Areas

Reference

Flooding. (2019). Retrieved from https://www.tampagov.net/tss-stormwater/info/flood

Cityoftampa. (2019). Retrieved from https://www.tampagov.net/about-us