**Mapping Social Vulnerability and Flood Damages: Public Housing Units in Lumberton, North Carolina after Hurricane Matthew**

Sayma Khajehei,

MCRP

**Brief elevator speech**

In this project, I will use census data and a part of survey data of my thesis. I will create a map that shows the social vulnerability at the block-group level in Lumberton, NC, the location of public housing developments in the city, and the damage assessment of public housing units’ samples of my thesis survey. This will help me to show the relationship between the location of public housing units and the social vulnerability distribution in the city as well as the severity of damages in these developments.

**Expanded Abstract**

Scholars believe that residents of public housing are one of the most socially vulnerable people that face significant damages in disasters. Hurricane Matthew made landfall in North Carolina on October 8, 2016, as a Category 1 storm. Several communities including Lumberton were devastated by heavy rainfall and the river flooding that began after Hurricane Matthew. Lumberton is a diverse socio-demographic city with one-third of households who live at or below the poverty level. Also, Lumberton has a particular combination of minorities with a high percentage of African American and Native American. This city has 729 public housing units. The flood destroyed 37% of public housing units in Lumberton.

In my thesis, I am attempting to find the specific vulnerabilities of the public housing residents in Lumberton, North Carolina and how these vulnerabilities affect the impact of flood damages in these developments. I will show these issues on the map. I will use social vulnerability weighted Index to show the distribution of vulnerability in the city. Then, I will show the location of public housing developments and the damages to these units based on damage assessment of the sampled units to show the severity of damages. I will add some information about the city and the public housing units in the form of HighChart in addition to the maps.

My thesis is a part of a larger study in the Center of Excellence (CoE) for community resilience planning at Colorado State University with collaborators from NIST.

**Technology**

* Excel
* GeoJSON.io, AJAX
* HTML, CSS, JavaScript, and JQuery
* Leaflet maps
* HighCharts/HighMaps

**Data**

* 2015 ACS-5 year estimation data: Preparing them in Excel to calculate the social vulnerability index weighted
* Census Bureau block-groups
* CoE Survey Data: Using the damage assessment of the sampled units
* Housing Authority of City of Lumberton (HACL) data and information of Public Housing units

**Key Challenges**

* Preparing my damage assessment data that I have to reduce the sampled units for this project. I have 596 samples and I need 88 of them for this project.
* Making Choropleth maps
* Find a way to present all the information on a single map.
* Working on the format of the webpage to present maps and charts and the texts