ANALYZING ACCESS TO EMERGENCY SERVICES WITHIN LOS ANGELES VULNERABLE COMMUNITIES

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Hector Corral
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ABSTRACT

Los Angeles is prone to many manmade and natural disasters. Although the city has done extensive planning in many respects for catastrophic emergencies, it is important that its vulnerable populations are taken into high consideration. Nine vulnerable communities within Los Angeles have been identified and their overall proximity to hospitals, healthcare facilities, and fire stations have been analyzed. Due to factors such as high density populations for these areas, it would be recommended that Los Angeles concentrate on creating more emergency facilities within and around the nine communities.

BACKGROUND

As one of the largest cities in the world, second largest in the country, and largest on the West Coast, Los Angeles is home to over 3.8 million people (American Fact Finder, 2013). In addition to this large population within the city limits, several millions more live in the surrounding areas and millions visit every year. Like the majority of major cities, Los Angeles faces a challenge of keeping its entire large population prepared and safe in the event of a major disaster. Disaster preparedness is not necessarily universal either, as each region of the world is susceptible to different types of disasters. However, one important detail that should not be overlooked in disaster preparedness for any major city, including Los Angeles, is preparing the populations that would be most vulnerable to catastrophe.

LOCAL DISASTERS

The federal government has identified 16 natural and manmade disasters, of which Los Angeles is prone to 13 of them. Of these 13, the four most pressing concerns for the City are earthquakes, floods, wildfires, and landslides (LA EMD, 2015). What is worse is that these four disaster types have the capability of creating additional disasters. Examples would include landslides as a result of rain in a recently extinguished wildfire area or an earthquake caused explosion creating wildfires. Los Angeles covers an expansive amount of land, so all areas are not particularly vulnerable to all of the disaster
types. Yet, this only adds an additional layer of preparedness by regions to the challenge that the City faces in keeping all of its communities resilient to disaster.

EMERGENCY SERVICES

Unfortunately, even the most prepared city is going to face casualties during a disaster that occur at the catastrophic level. During that time it will be vital that everyone has access to emergency services in order to mitigate the number of casualties and injuries. Emergency and medical services can encompass a wide array of services such as police officers and stations, recreation centers (that are used as cooling centers, heating areas, and emergency shelters), hospitals and doctors, healthcare facilities (such as urgent care and clinics), pharmacies, and fire stations and firefighters. The different sectors, organizations, professionals, and resources will need to be coordinated in order to ensure the most efficient response in a disaster.

For this paper, access to medical services and facilities will be the main concentration and include a look at hospitals, healthcare facilities, and fire stations within Los Angeles. Those who are seriously injured would most likely seek out hospitals first as they are obviously the most equipped to deal with the most serious medical issues. However, during a disaster local hospitals would probably become overcrowded and begin to suffer from extensive wait times. For this reason, healthcare facilities would become important as well. Please refer to Appendix A for locations of hospitals and healthcare facilities in Los Angeles. It should be noted that
healthcare facilities refers to any general establishment where medical services are available, such as clinics, urgent care, surgery centers, medical centers, etc. Many of these establishments would be able to take care of patients with less than life-threatening injuries. Examples of medical care from healthcare facilities might include broken bones, burns, and sickness.

Fire stations play an important role due to the fact that fire fighters are usually the first to arrive at an emergency scene and have emergency medical technician (EMT) training. Having fire stations within close proximity will allow responders to arrive to a medical emergency situation faster. Please refer to Appendix B for the location of fire stations within Los Angeles. Even in the event of disasters that are non-fire related, fire fighters will play a vital role in ensuring the public receives needed services.

VULNERABLE COMMUNITIES

Los Angeles is a huge region that is encompassed by a large number of smaller communities that are diverse in landscape and culture. Unfortunately, some of these communities are more vulnerable to disasters than others and previous research has shown that our most vulnerable communities make up a large proportion of those affected by an emergency. For example, after the 1989 Loma Prieta earthquake, only 1.5% of housing was lost, but of that 60% belonged to low and moderate-income families (Prepare LA, 2013). Examples like these show that it is vital that emergency managers take in to consideration these areas when planning for disasters.

Appendix B: Fire Stations in Los Angeles
For the purpose of this paper, the definition of vulnerable communities is taken from the American Red Cross Los Angeles region study, *Prepare LA Vulnerable Communities Project*. The researchers of the study used eight indicators to define vulnerable communities in terms of disasters: race/ethnicity and poverty, age dependency ratio, single parent head of household, educational attainment, limited English proficiency, car-less households, population density, and access and functional needs populations. Using five year census data from 2012 and statistical methods they determined there to be nine vulnerable communities within the city of Los Angeles: Boyle Heights, Central-Alameda, Florence, Historic South Central, Koreatown, Pico-Union, South Park, Watts, and Westlake (*Prepare LA*, 2013). These nine communities are all geographically located within close proximity of each other in the southeastern portion of Los Angeles. Please see Appendix C for vulnerable communities within Los Angeles and Appendix D for a zoomed in area of the vulnerable communities.
These communities are typically made up of high-minority populations, have a large proportion of residents under the poverty level, and have a large proportion of their populations who are dependent on others (the elderly and minors). Additionally, these nine communities are likely to have large amounts of people who do not speak English well, live in carless homes, have low levels of education, and live in densely populated areas. Please refer to Appendices E and F for information on density and poverty levels respectively.

As discussed previously, not all areas of Los Angeles are susceptible to all different types of disasters. Areas near mountains are primarily more concerned with wildfires and landslides, whereas valleys might be most concerned with flooding. However, as many may already know, all of Los Angeles is prone to earthquakes and resulting disasters. Southern California in general is vulnerable to earthquakes as many fault zones reside within the region, including the large San Andreas Fault just to the east of Los Angeles. Additionally, many smaller fault areas with the capabilities to create tremors lie within the area. Please refer to appendix G for the locations of fault zones in Los Angeles and their proximity to the nine vulnerable communities. As seen from the map, the region of vulnerable communities is surrounded by fault zones which adds to the additional need for them to be highly incorporated in emergency planning.

**ANALYSIS**

There are 50 hospitals, 562 healthcare facilities, and 106 fire stations in the city of Los Angeles. Of these facilities, 12 hospitals, 79 healthcare facilities, and 8 fire stations lie within the boundaries of the nine...
vulnerable communities. Geographically speaking many of these facilities are spaced out evenly amongst Los Angeles. Please note Appendix H for a zoomed in look at the locations of hospitals, healthcare facilities, and fire stations within the vulnerable communities.

Fire stations especially are arranged evenly spaced throughout the city in a much uniformed pattern. This pattern does put a fire station at the boundary of or in every vulnerable community. However, considering how densely populated these areas are that may not be sufficient. Take into consideration a community such as Playa Vista that has one of the lowest density levels in Los Angeles. It has one fire station in that area, whereas Koreatown also has one fire station. However, Koreatown’s density level is significantly higher than that of Playa Vista making that region more vulnerable to emergencies.

Hospitals are also mostly evenly spaced with some areas lacking. For example, in our vulnerable areas there are no hospitals below the north-most point in Historic South Central, leaving most of South Central, Florence, South Park, Watts, and Central-Alameda with limited hospital options. On the other hand, the northern area of the vulnerable communities, specifically Westlake and Boyle Heights, have several hospital options each. Based on the map, it appears that hospitals may have been strategically placed in a circle around Downtown Los Angeles.

Healthcare facilities are the most sporadically placed of the three and have a large amount more points spread throughout the city. Similar to hospitals, there is a large portion in the northern section of our

Appendix H: Hospitals, Healthcare Facilities, and Fire Station Locations within the Vulnerable Communities
vulnerable communities area, covering Westlake and Koreatown extensively. Yet, there is a noticeable absence of facilities in the southern section with Florence and Central-Alameda having none and the surrounding vulnerable areas with few. Further research would need to be done to look at each facility individually and see what type of medical services they offer to see how evenly distributed different services are.

LIMITATIONS

There are several limiting factors that if resolved could make this analysis more impactful. First, it should be noted that healthcare facilities includes a broad array of establishments. This makes it difficult to know what type of medical services are offered without looking at each facility separately. For example, an urgent care in Watts may offer x-rays, whereas the urgent care in Florence may not. It would need to be determined what type of medical services are most important during a regional emergency and then examine each facility separately to see what services are lacking in what areas.

Another area for further research would be the neighboring cities outside of Los Angeles, but still within Los Angeles County. This is especially true for the vulnerable communities as most of them are at the city limits and boarder other cities. This would allow these areas access to emergency facilities that are close by, but in another city. An analysis of the whole county would allow for a more comprehensive view on vulnerable communities and their access to emergency services within the City and the County.

CONCLUSION

There are two primary concerns within the vulnerable communities and access to emergency services. First, is the lack of facilities overall in this region. Watts, Florence, South Park, and Central-Alameda are especially limited with hospital and healthcare facility options. This is also a concern when you take into consideration factors such as high populations of families without cars that enable them to travel to other areas for services. Secondly, a uniform distribution is not an adequate system for Los Angeles
when density populations are considered. Areas such as Koreatown, which is one of the most densely populated areas in the country, needs more than one fire station. A uniform pattern should be replaced by a population-need pattern.

Unfortunately, if it were easy to establish more emergency services into these vulnerable communities it would probably already be done. Providing compelling research is the first step, which the city has already taken steps to doing. Once the research is available, the city will then have to take on the daunting task of convincing residents and politicians of the City to enact change. However, once support is established the biggest challenge is finding the revenues to build new facilities. This is a process that will take years to complete, or even see movement for that matter.

If the city is able to establish the groundwork to start giving more access to emergency facilities to these vulnerable communities we could start to see a more resilient Los Angeles. Providing these types of services could also lead to improving other problematic areas that make these communities vulnerable. Obviously, the biggest benefit would be that these areas would be more prepared to handle and survive a local disaster. With further research on a countywide level, a clear picture of the lack of emergency facilitates in the vulnerable communities could be produced in order to help facilitate change and incorporation of these areas more into emergency planning.
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Appendix A: GIS data provided by LA EMD.
Appendix B: GIS data provided by LA EMD.
Appendix C: GIS data provided by LA EMD, vulnerable communities based off Prepare LA.
Appendix D: GIS data provided by LA EMD, vulnerable communities based off Prepare LA.
Appendix E: Data from Prepare LA.

Density (People Per Square Mile)

- Westlake: 46,201
- Watts: 19,444
- South Park: 24,303
- Pico-Union: 28,470
- Koreatown: 51,762
- South Central: 23,541
- Florence: 19,635
- Central-Alameda: 21,406
- Boyle Heights: 19,818

Appendix F: Data from Prepare LA.

Below 200% of Federal Poverty Line

- Westlake: 67.40%
- Watts: 71.10%
- South Park: 76%
- Pico-Union: 71.70%
- Koreatown: 57.50%
- South Central: 77.40%
- Florence: 71.40%
- Central-Alameda: 76.60%
- Boyle Heights: 67.10%
Appendix G: GIS data provided by LA EMD, vulnerable communities based off Prepare LA, fault zone data downloaded from ArcGIS Online.
Appendix H: GIS data provided by LA EMD, vulnerable communities based off Prepare LA.