IDP Camp Vulnerability in the Central African Republic

Background

The Central African Republic (CAR) remains one of the poorest and most conflict-ridden state on the African continent. Regional armed groups have perpetuated violence which has caused mass displacement of Central Africans. This had led to hundreds of thousands of people fleeing both to neighboring countries and to other parts of the country. The International Organization for Migration (IOM) estimates that there over 640,000 internally displaced people inside CAR.

This large scale of displacement has strained resources in a region which already experiences underdevelopment and high levels of poverty. Furthermore, uneven resource distribution which has led to varying levels of vulnerabilities throughout the country.

Some subprefecutres are more prone to violence, have varying levels of access to infrastructure, and experience different population pressures. On top of these challenges, there is a wide distribution of the internal displacement throughout the country. Through this project, I aim to identify conditions of vulnerability and measure how they are spread throughout the country. These circumstances motivate my spatial question.

Spatial Question

What proportion of IDP camps in the Central African Republic are located in zones of high vulnerability?

Answering this question could inform future policy decisions about how best to respond to internal displacement. By better understanding vulnerabilities that IDPs face, policymakers can direct resources to places where they will be most effective.

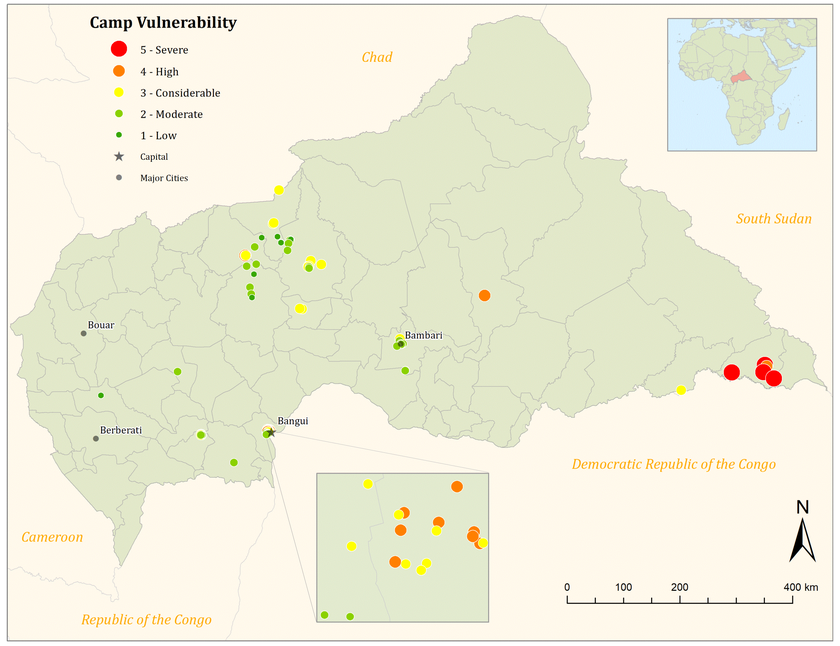
Methodology

In order to answer this spatial question, I used data from UN OCHA, IOM, the World Bank, and Humanitarian Data Exchange. I first created different components of the vulnerability score.

Population
I used a spatial join to connect population data at the sub-prefecture level to the shapefiles for the IDP camps. Then, I calculated a population proportion of the IDP camp population compared to the total population of the sub-prefecture as of 2015. I then assessed the number of people in need of education disaggregated at the sub-prefecture level. The method was the same for this dataset as for the overall sub-prefecture population. It was also joined to the specific IDP campsites. The highest density areas were reclassified as a 5 while the lowest were reclassified as a 1.

Conflict
Violence perpetuated by armed groups and government forces has been pervasive throughout the country for decades. Using a conflict tracker dataset which documented different incidents of conflict between 1997 and 2019, I performed a kernel density analysis to map where conflict was most prevalent. The zones were given a ranking between 1-5, with 5 representing conflict zones with the highest incidents of conflict.

Infrastructure
There were a few components of access to infrastructure that were incorporated into this vulnerability score. Each of these were measured by using the Euclidean distance tool to create a raster layer that measured distance from a different type of infrastructure. Distance was ranked 1-5 with a score of 1 indicating least distance to infrastructure and 5 indicating most distance. This methodology was repeated for access to health centers, roads, and water. These



values were then extracted to IDP campsites, just like the conflict and population data.

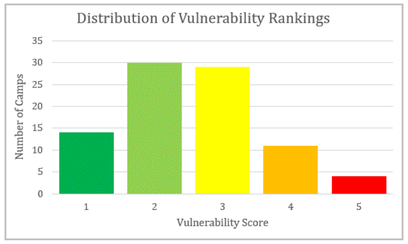
After each of these individual components were created, reclassified, and extracted to the IDP campsite, they were weighted and used to calculate an overall score of vulnerability for each campsite. The formula for the vulnerability score is found below:

Conflict	0.20
Education	0.20
Health Centers	0.20
Population Density	0.15
Roads	0.15
Water	0.10

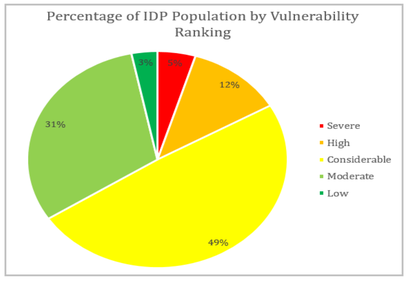
Once each campsite had a designated vulnerability score (1-6), I analyzed the distribution of scores in order to provide group rankings of vulnerability. Using the standard deviations for the distribution, I divided the groups into 5 categories and gave each camp a score of 1-5 to indicate the vulnerability ranking for the camp.

Results

I had access to data for 90 active campsites in the Central African Republic. The mean score of vulnerability was 2.85, with a range of 1.8 to 4.2 out of 6. 14 camps received a 1 or low vulnerability ranking. 30 camps received a 2, with 29 receiving a 3 or considerably vulnerable ranking. 11 camps fell into the 4 category and 4 camps were classified as a 5, meaning they have a high or severe level of vulnerability.



More than just analyzing the number of camps in each of these vulnerability category rankings, I was interested in understanding the number of people in different types of vulnerable camps. The population of each camps were compiled by vulnerability category and then divided by the total number of internally displaced people in CAR. As shown by the pie chart below, nearly 50% of IDPs in CAR live in considerably vulnerable campspaces. 34% live in lower vulnerability camps, while the remaining 17% live in highly vulnerable camps.



These results should inform decisions made by local and international aid agencies when considering where to allocate resources in the Central African Republic. Nearly half of IDPs live in areas of considerable vulnerability. This suggests that targeted resources and programming which strengthens resilience and builds capacity could be effective in mitigating the vulnerability that these populations face.

Limitations

Despite these encouraging results, there are significant limitations to these data. The vulnerability score, while comprehensive, could be leaving important information out of the analysis. Due to the protracted conflict and series of humanitarian crises, the available data for CAR was fairly limited. Additionally, the data might have had qualitative components which were important to capture. For example, the quality of roads and water sources might vary widely. Additionally, conflict severity and types of health clinics might have been important to account for.

Even so, this analysis was able to answer my spatial question, showing the distribution of vulnerability between different IDP camps in the Central African Republic. This project was a good way to begin to understand IDP vulnerability.

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Data source: ACLED, CAR Ed Cluster, GHMP, Global GIS, HDX, IOM, OCHA, World Bank
Projection: Africa_Albers_Equal_Area_Conic