

Where We Kill

Mapping the effects of the Saudi-Led Coalition's air war in Yemen



Citations

Cholera data was provided by the World Health Organization
 Demographic data and shapefiles were provided by the Human Data Exchange
 Data on Food Prices was provided by the World Food Program
 Data on Airstrikes was provided by Aclad Data
 Photo was provided by Al-Jazeera

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GIS-101 Introduction to GIS

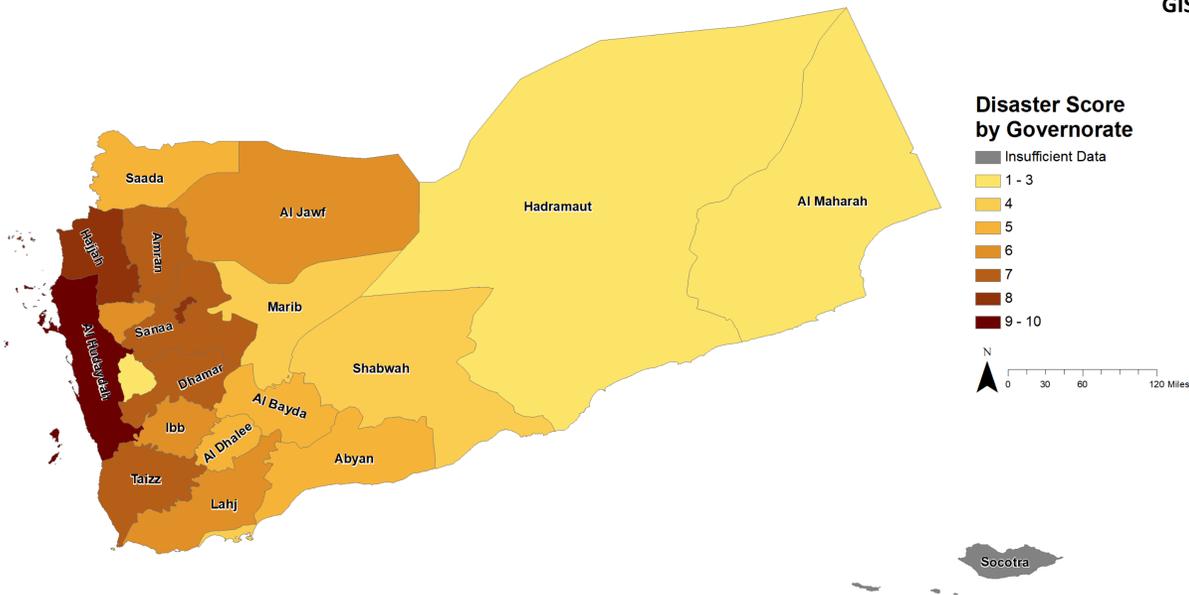


Background

In 2015, conflict erupted in Yemen between the central government and the Houthis, a Shi'ite tribe living in the mountainous northern section of the country. The Houthis steadily gained ground, capturing the capital Sana'a and forcing the government of Abdrabbuh Mansur Hadi to flee. Fearing growing Iranian influence in the Gulf, a group of Arab states led by Saudi Arabia formed a military coalition to defeat the Houthis and restore the Hadi government.

The Saudi-led intervention has taken place primarily through air raids on Houthi and civilian positions. The coalition has launched hundreds of air strikes every month, resulting in large scale death and destruction. Human rights groups have decried the conflict and allege Saudi Arabia is deliberately targeting civilians.

Even more important than the conflict-related deaths are the secondary effects of the airstrikes. Crippled health and food infrastructure has led to the biggest Cholera outbreak on record, and according to the U.N. tens of millions of Yemenis are at risk of starvation. This project aims to identify the governorates of Yemen that have suffered most from the conflict



Methods

This project identified four key metrics for measuring the Disaster Score. First, the number of airstrikes suffered by a governorate since 2016. Second, the number of Cholera cases recorded in each governorate since May 2017. Third, the increase of the price of wheat flour (bread is a key staple of the Yemeni diet) between 2017 and 2018 as a proxy for food security. Fourth, the population of each governorate to identify which areas the scale of the disaster could escalate and in which areas aid should be prioritized.

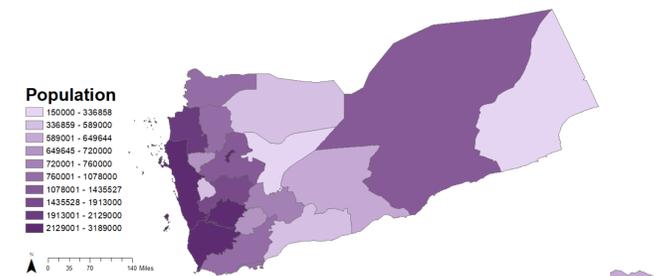
Each governorate was assigned a score between 1 and 10 for all four of these metrics. Scores were based on natural breaks in the data, using Jenk's algorithm. Then, each index was weighted and combined together to form the final Disaster Score Index. Airstrikes and Cholera outbreaks were weighted at 35% each, food price increase was weighted at 20%, and population level was weighted at 10%. One governorate, Socotra, was excluded from this analysis because of a lack of available data.

Outcomes

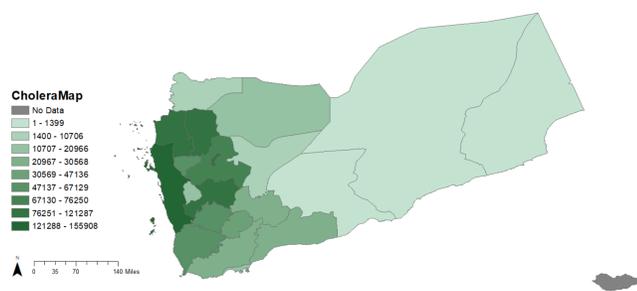
Destruction from the conflict is mostly concentrated in the more populated Western part of the country. Al Hudaydah, a key port which is a major battleground between Houthi and regime forces, was the most severely impacted governorate and the only one with a Disaster Score of 10. The Amanat Al Asimah, governorate which houses the capital Sana'a, and surrounding Sana'a governorate were also hard hit, with respective scores of 8 and 7. Although still seriously affected, regions on the border with Saudi Arabia have only middling scores despite heavy air bombardment due to the low incidence of Cholera there. Finally, it is worth noting that no area had a score below 3, showing that even the relatively better off areas of Yemen are still in dire straits.

Due to time constraints, there are a few areas where this project could be developed further. Future researches could weigh Cholera deaths and airstrike deaths into their analysis, as this project focused solely on the occurrence of airstrikes and Cholera. Better data on food security would also be ideal. Using the price of staple foods is a rather crude proxy for food security, and better data on that subject would better capture the scope of the developing famine in Yemen.

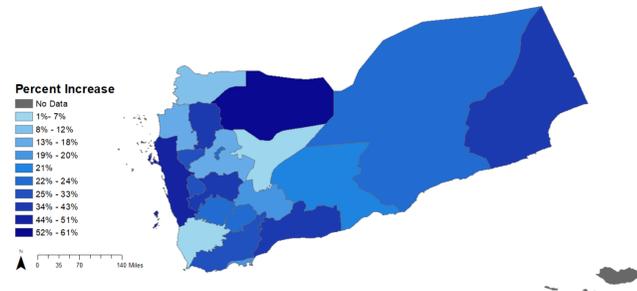
Population Level



Cholera cases 2017-Present



Price Increase in Wheat Flour 2017-2018



Number of Airstrikes 2016-Present

