Education and Health Services in Za'atari Refugee Camp:

Where Are Children Most in Need of Access?

Background

The conflict in Syria has displaced over four million people, over 600,000 of whom are residing in Jordan. Approximately 80,000 Syrians are registered as refugees in Za'atari Camp, which was established in July 2012 near the border of Syria. Children residing in refugee camps often face numerous challenges, include harsh conditions, safety concerns, and a lack of educational opportunities. Education has the potential to provide stability, hope, and skills for the future. However, many children are not enrolled in formal schooling. According to UNICEF, only 51.6% of children in the camp are attending school. Many factors play a role in school attendance in the camp, including distance from a school, violence, financial circumstances, and differences in curriculum, among others. Secondary school aged children are more likely to be out of school than younger children. School attendance rates are lowest for secondary school aged boys, who are more likely to be working outside of the home.

Research Questions

A primary goal of my project is to determine which residents have the most limited access to education and health facilities. I am also interested in examining access for vulnerable populations, specifically children at risk of not attending school. My main questions include the following: Where in the camp are "infrastructural voids" located? Which blocks are most in need of infrastructure? How many vulnerable children are lacking access?

Methodology

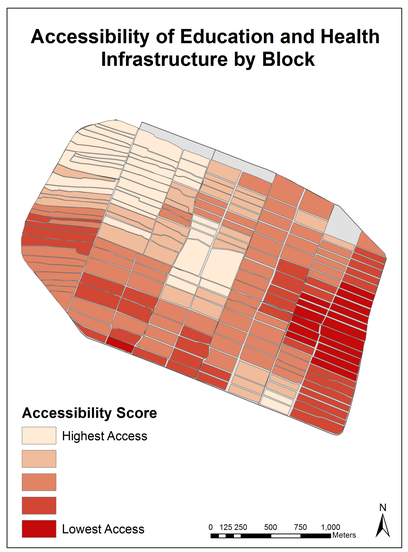
I conducted my analysis in three main parts, as described below:

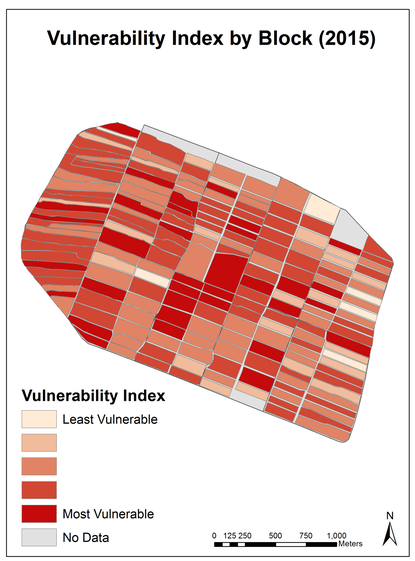
Accessibility Analysis

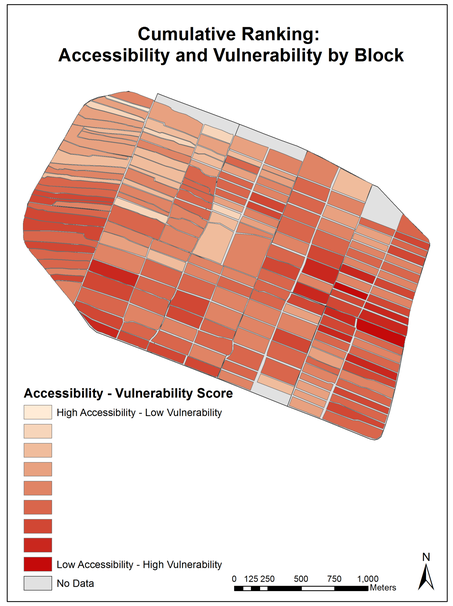
1) Categorizing Infrastructure: I chose to focus on four types of infrastructure: schools, community centres, clinics and hospitals.
2) Euclidean Distance: I measured distance "as the crow flies" to each of the four types of infrastructure.
3) Reclassifying Distance: I assigned each distance interval a score from 1 (closest) to 5 (farthest).
4) Cumulative Score: I combined the distance values for all types of infrastructure. I weighted each category to focus more heavily on educational access in the camp.

Vulnerability Analysis

1) Categorizing Populations: I categorized children by gender and age, focusing on primary and secondary school aged boys and girls.
2) Population Density: I calculated population density by block for each population and reclassified these from 1 (lowest density) to 5 (highest).
3) Cumulative score: I combined each score, weighting them according to the populations most likely to be out of school.







In calculating the cumulative scores, I used the following weights for accessibility and vulnerability, respectively:

Infrastructure (for accessibility)	Weight
Schools	0.3
Community Centres	0.3
Clinics	0.2
Hospitals	0.2

Demographics (for vulnerability)	Weight
Boys 12-17	0.4
Boys 6-11	0.3
Girls 12-17	0.2
Girls 6-11	0.1

Merging Accessibility and Vulnerability

1) Calculating Scores: To merge the two analyses described earlier, I combined accessibility scores with the vulnerability index to determine blocks with the least access and the most vulnerability.

Results and Recommendations

The map illustrating accessibility indicates that access to education and health facilities tends to be highest in the northwestern sections of the camp. This finding is unsurprising since this area is known as "Old City," a section that is older and has better access to services than other areas.

The vulnerability map illustrates that at-risk populations are spread out throughout the camp. When combining the two assessments, it appears that the northwestern and center regions of the camp are least vulnerable with highest access, although there is variation among blocks.

The chart below outlines how many children of each demographic group reside far from infrastructure:

Demographic Categories	Number of Children With Lowest Access
Boys 12-17	393
Boys 6-11	702
Girls 12-17	384
Girls 6-11	644

According to the chart, primary school aged boys are most likely to live in low access areas. Boys aged 12-16, who are least likely to attend school, are not well represented in these low access areas. This suggests that other factors may play a more significant role than distance in determining school attendance.

While these analyses suggest patterns, it is limited in scope. For a more comprehensive assessment, other possible reasons for not attending school should be considered and additional data should be incorporated. In addition, the population counts that I relied upon for my analyses are from 2015 and may change. Further research could address these issues and shed more light on this area with the aim of identifying and supporting children displaced by conflict.

Data Sources

Projection: Jordan JTM, Transverse Mercator (Linear Units: Meters)
Course: DHP P207 GIS for International Applications
Date: May 10, 2016
Sources: ESRI, Humanitarian Data Exchange, OpenStreetMap, REACH Initiative, UNICEF, UNOSAT
Cartographer: Liena Strikis

THE FLETCHER SCHOOL
TUFTS UNIVERSITY