



# Public Health Vulnerability in Cambodia



## Objective

The purpose of this project is to assess current health vulnerability in Cambodia, locating which districts are the most vulnerable in terms of accessibility and demographical risk factors. Demographical analysis assess various health-related factors in Cambodia, such as dependency rate, infant mortality rate, life expectancy, density of physicians, the percentage of medical disability, exposure to unpurified water, and distance of drinking water from households. Analysis on accessibility is conducted to take a look at how accessible existing health-related facilities are. It focused on accessibility to hospitals, health centers, and major roads, and flood zones are also included as floods serve as a major obstacle for people to freely migrate in Cambodia.

## Methodology

I first assessed demographical risk factors by evaluating statistical data available from the 2008 Cambodian Census and other health related researches published by academic institutions. The risk factors consist of seven areas, where score of 1 to 5 were given for each province, reflecting a different level of vulnerability for each factor. The score of 5 represents higher vulnerability whereas the score of 1 represents relatively better environment in relation to each factor. The scores from the seven areas were then combined in the 'Provincial Health Assessment' map to reflect the comprehensive risk factor in each province. As child mortality rate and expected life expectancy at birth are considered as the most important indicators for the quality of health, the two factors were weighted by 125%. The field calculator was heavily used in order to assign each province with different scores.

The second step focused on accessibility. This analysis focused on how far hospitals, health centers, and major roads are from different parts of Cambodia. Just like the health risk factors analysis, high score was given for low accessibility, and low score was given for higher accessibility. In order to better reflect differences and importance, different distances were weighted in score scales. For example, accessibility to hospitals was determined by the distance of 20km, 40km, 60km, 100km, and the rest, whereas accessibility to health centers was determined by the distance of 5km, 10km, 15km, 20km, and the rest. Along with the accessibilities, the obstacle to accessibility, seasonal floods, was also considered. For this exercise, Euclidean distance tool, reclassification, and raster calculator were heavily used. Finally, all scores from accessibilities and the obstacle were added together, projecting the comprehensive 'Accessibility Map' that reflects a different level of accessibility in Cambodia.

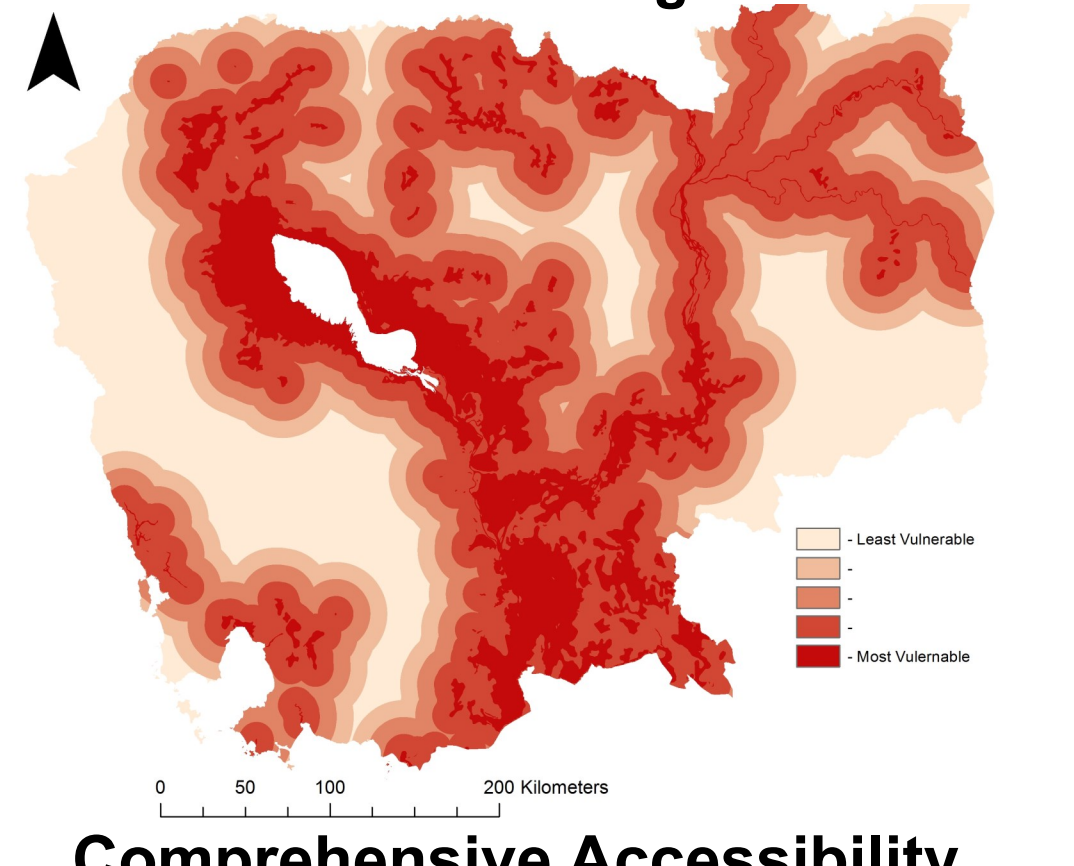
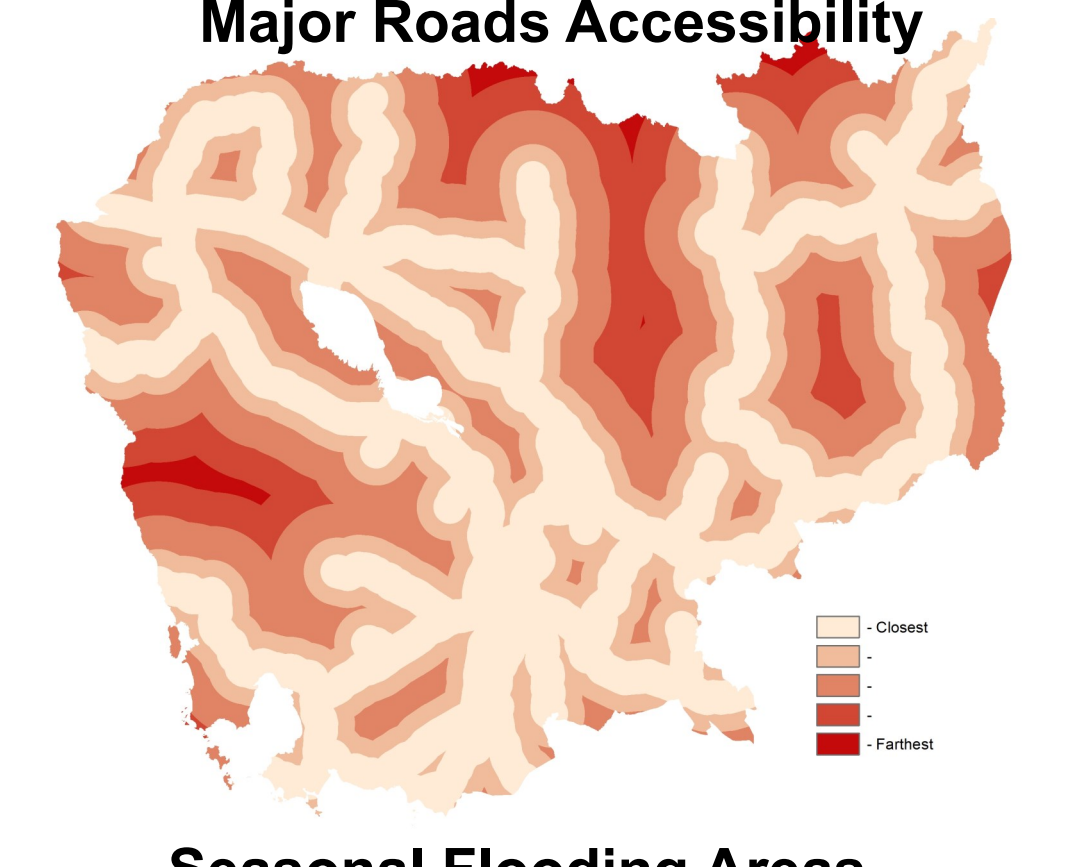
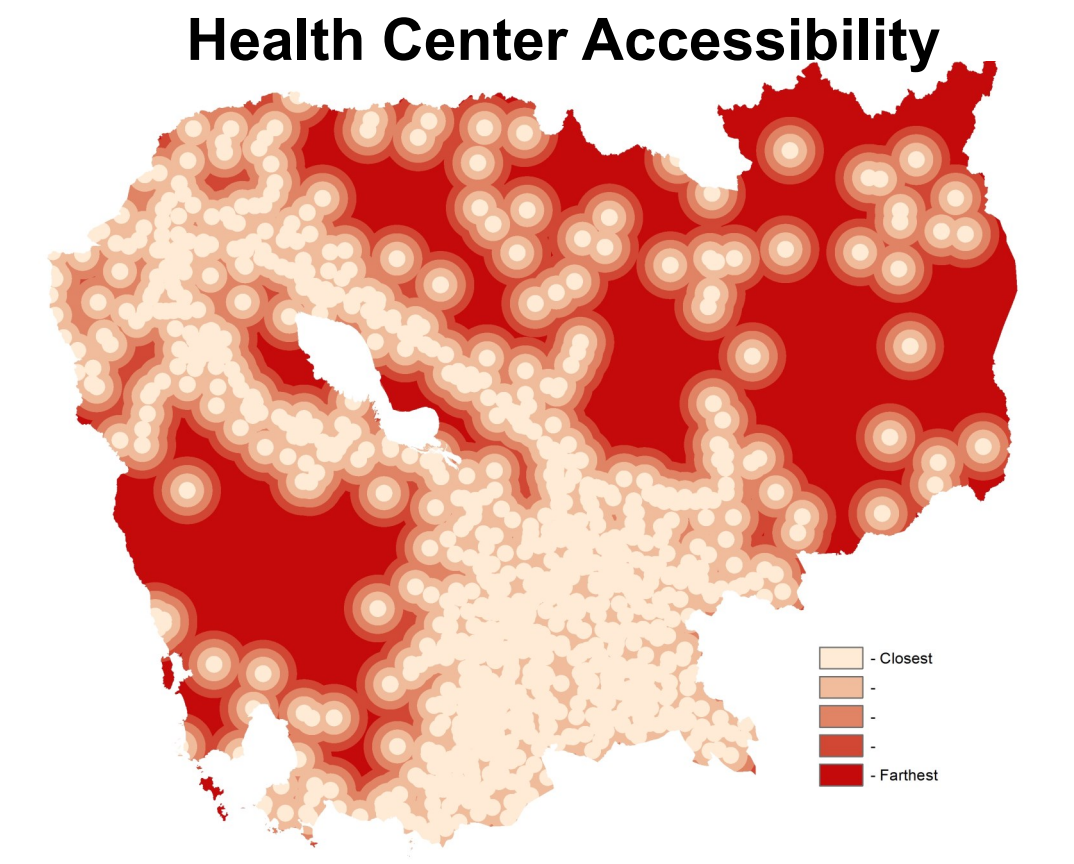
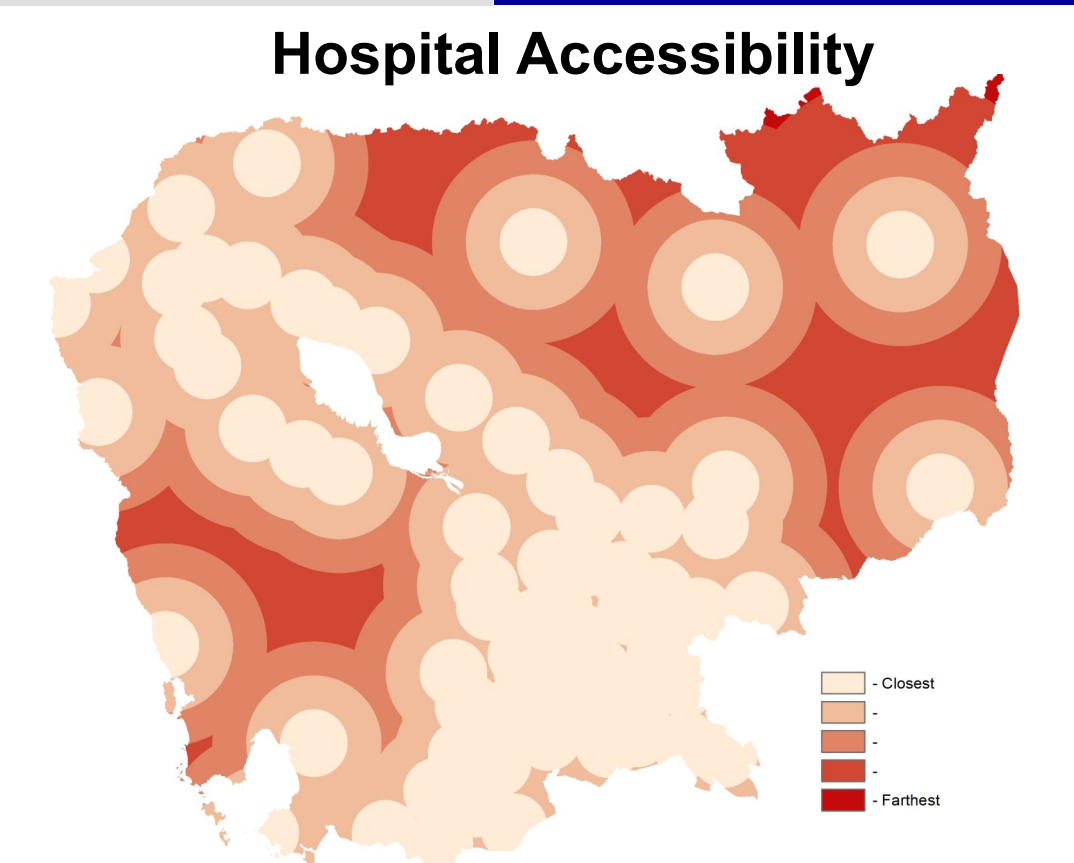
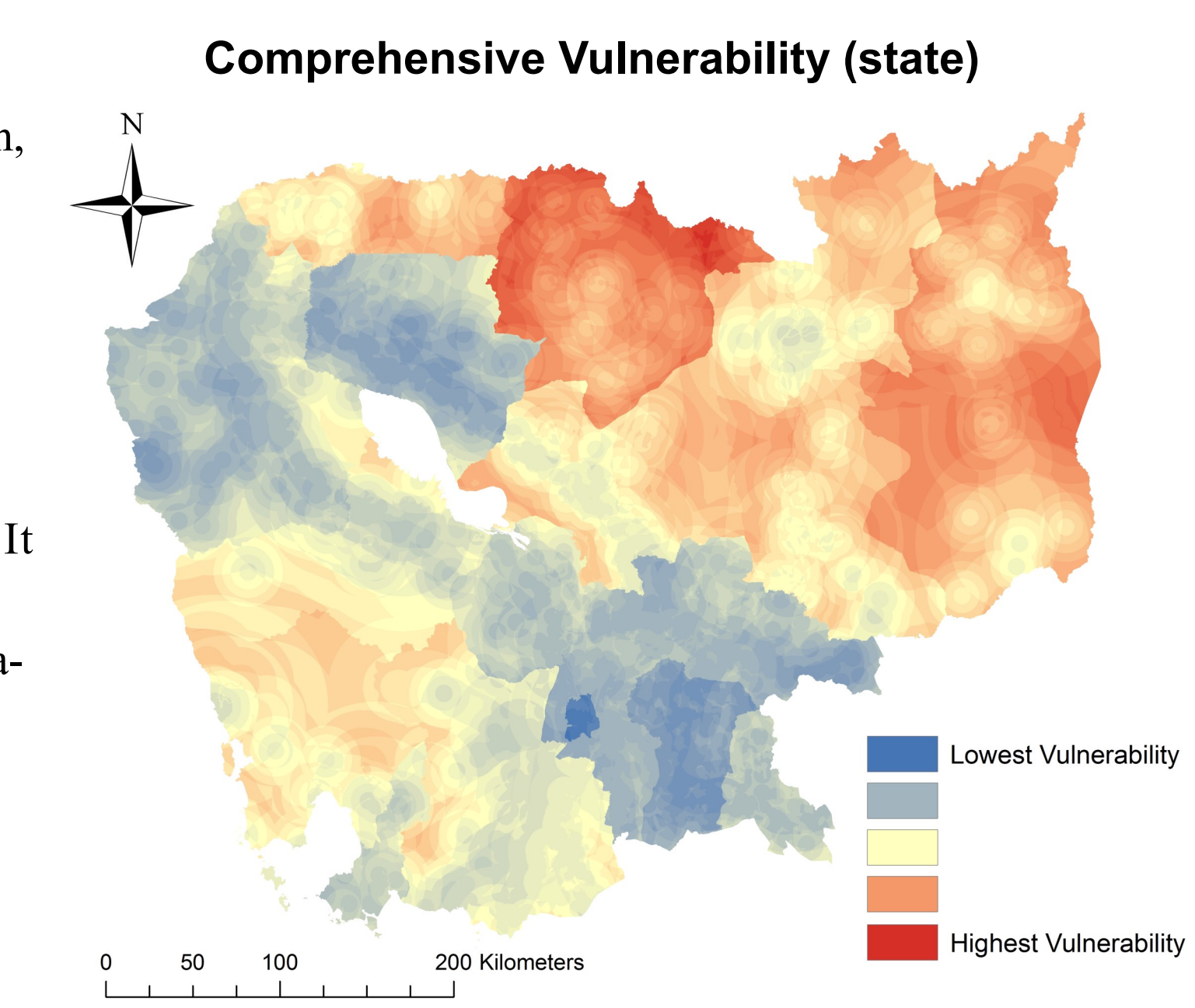
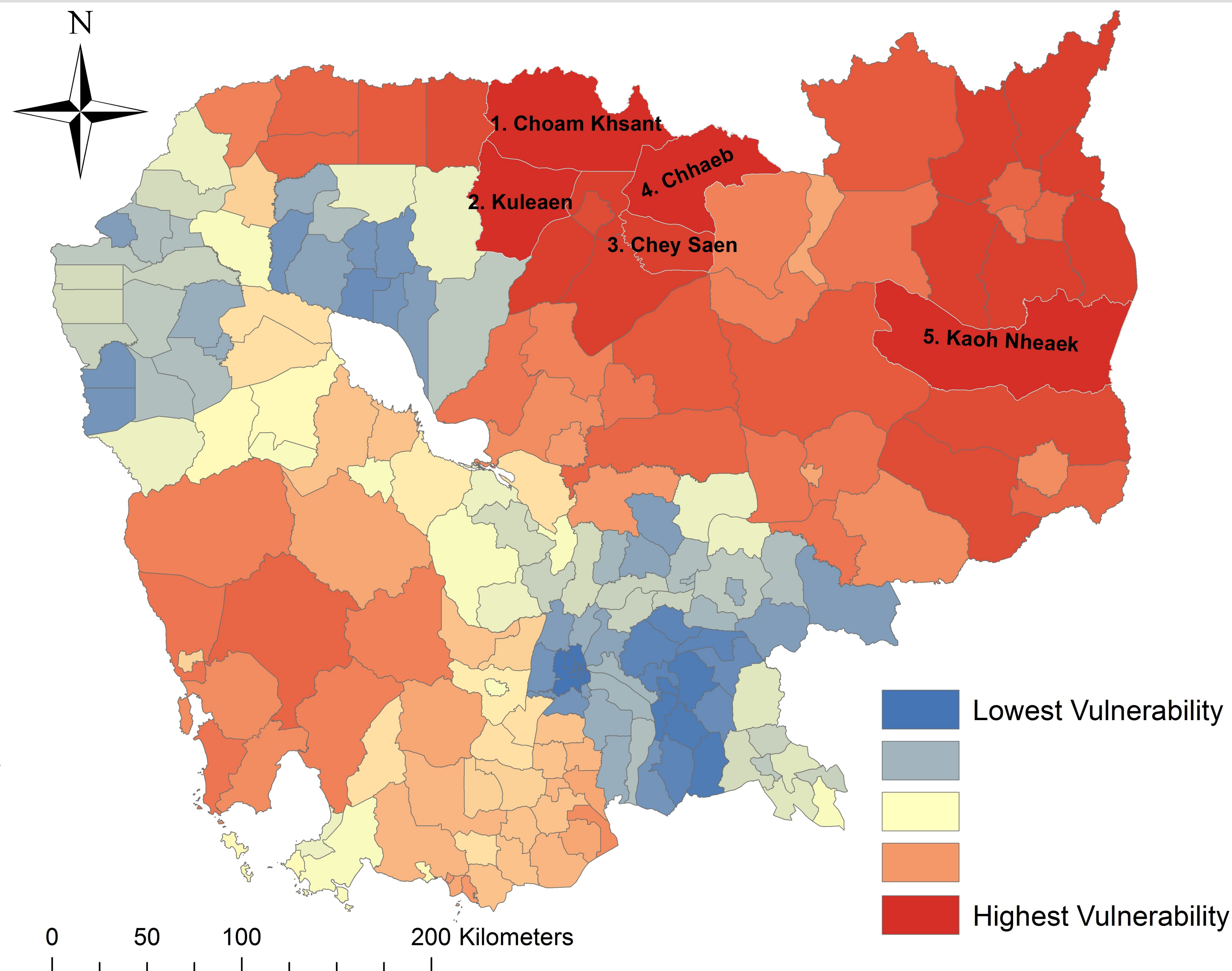
The Provincial Health Assessment map and the Accessibility Map were then combined to reflect overall health related vulnerability in the 'Public Health Vulnerability in Cambodia' Map. This was done by Zonal Statistics provided in a Spatial Analyst Toolbox. The tool averages out different scores presented in the 'Accessibility Map' by each district, and the projected scores were then added together with the other scores presented in the 'Provincial Public Health' map. The five most vulnerable districts were noted by means of combined scores, and it was reconfigured based on populations. The five most vulnerable districts based on scores and populations are Choam Khsant, Kulean, Chey Saen, Chhaeb, and Kaoh Nheak.

## Conclusion

According to the findings, Northeastern Cambodian districts bordering Laos and Vietnam were presented as the most suffering districts in relation to health. It is not surprising that Phnom Penh and its surrounding areas showed best accessibility and the quality of health. The result shows that even though urbanized areas in Cambodia are showing progress in improving the quality of health, rural areas far away from the capital still lacks basic access to health care. It is important to note that not all possible factors are presented in this map. Even though the seven different indicators were considered to analyze the quality of health in Cambodia, other factors, such as vaccination coverage or immunization rates, could be used and vary from my findings.

Data Source: *Cambodia 2008 Census (Tufts M: Drive)*, *Global Administrative Areas (accessible at <http://www.gadm.org/>)*

Uy, Sophoat. "Current Problems in National Hospitals of Phnom Penh: Finance and health care." *Nagoya J. Med. Sci.* 69. (2007): 71-79.



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