Assessing water quality to determine the populations risk to water-borne diseases in Haiti

**BACKGROUND**

In 2010, Haiti suffered from a cholera outbreak, claiming the lives of many. Among other factors, poor water quality was a great contributor to the transmission of the disease. Quality water is critical for our health and well-being. Assessing the state of water quality in Haiti is essential in understanding the population risk to water-borne diseases.

In this project, over 15,000 water sources spread across the Centre, Artibonite, North, and South East Departments in Haiti are assessed to identify communes with a high average number of poor quality water sources. The results are then used to determine the areas at risk and the magnitude of risk.

**METHODOLOGY**

To determine the water quality state, 6 factors were considered (see figure 1). When regarding the population's risk to water-borne diseases, it important to hold water quality standards high. For this project, standards for drinking water provided by the World Health Organization’s Water Quality Guideline were used (see figure 1).

Note that E.coli is considered the only factor that is detrimental to health and is therefore given a higher priority (as discussed to the right).

To determine the risk to the population to a high average number of bad quality water, the final water quality map was overlaid with the total population density of each commune.

**RESULTS and CONCLUSIONS**

The results below are determined by the average water quality below the water quality standards as provided by WHO. Population density is prioritized because more people are at risk of water-borne diseases. Areas of high population density and lower water quality standards are at the most risk.

The limitations of this project is the deficit of data. Ideally, this analysis would be more precise if risk of population around a particular distance from water sources. There was no specific data on particular population types around the sources and so I was forced to average the data. The main disadvantage of this is that the standard deviation for the means varied. It is ideal to have low standard deviations to ensure the average is a true representation of the water quality but that was not case.