Sawyer Products and Liberian NGOs are partnering with students and faculty from Calvin College in statistics, geography, and public health for a four-year project studying the efficacy of distributing water filters to households in Liberia. Diarrheal disease is one of the leading causes of death in children under 5 years in Liberia [1]. The overall goal of this project is to provide clean drinking water to approximately 100,000 households in Liberia. A study in Bolivia using similar Sawyer filters resulted in an 85% reduction in diarrheal disease among children under 5 [2]. At the time of distribution, Liberian NGOs are conducting surveys with basic questions on demographic information and health-related issues. More data are collected at follow-up visits about two and eight weeks after the installation of the water filters to determine their efficacy.

Our team created preliminary statistical models to determine the effect of the Sawyer filters on the proportion of children with runny stomach.

- **Logistic regression** model
- **Response variable**: probability of a child (under 5 years old) getting runny stomach
- **Predictors**: visit, season, water source, age group, household size, education level of women, and random effect of filter given the district

  - We found that the odds of having runny stomach were reduced by about 95% after the placement of a Sawyer filter (with no important difference detected between the first and second follow-up visits).
  - We found no important effects of median years of education (for women, surveyed at the district level) or household size.
  - We found that seasonality and water source are not strong predictors for runny stomach, except for a few specific water sources, such as open well and river.

Ongoing work will include refining the preliminary models and examining the effects of Sawyer filters (and other important factors) on other aspects of public health, such as days of school and work missed due to illness.