**From Prediction Models to Shiny App: Creating a tool for contaminated food source prediction in Salmonella and STEC outbreaks.**

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Prediction models are increasingly being developed to address future problems and shiny apps are an easy user-friendly approach to making prediction models accessible. We developed a shiny app that allows outbreak investigators to enter key features of a foodbourne outbreak and view the predicted probability the most common foods are the source. Epidemiologists investigating foodborne outbreaks use experience and knowledge to guide their search for the contaminated food source. Characteristics of the outbreak including geography, pathogen and ages of those affected are predictive. We sought to formalize this knowledge by developing a predictive model using 18 years of CDC data from the National Outbreak Reporting System. We will demonstrate our workflow from model prediction to shiny app development, discussing challenges evaluating models with multiclass probabilities, sparse outcomes, class imbalance and outcomes outside the training data. We will also demonstrate easy incorporation of CSS styles and html tags including the ability to hover instructions using built in R functions.

1100 of 1200 character limit.