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**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 used to guide decisions. Shiny apps are an easy user-friendly way of making prediction models more accessible to end users. We developed a shiny app that allows outbreak investigators to enter key features of a foodbourne outbreak and view the predicted probability of common food sources. Epidemiologists investigating foodborne illness outbreaks routinely rely on their experience and knowledge to guide their hypothesis about the implicated food source. Characteristics of the outbreak often used to guide hypothesis generation include geography, pathogen subtype, and ages of those affected. 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.