WSS President's Invited Seminar 2018

Karen Kafadar, American Statistical Association's President-Elect

The Critical Role of Statistics in Evaluating Forensic Evidence

May 3, 2018, 2:30-4:00 pm, Reception to Follow

Bureau of Labor Statistics Conference Center, Rooms 9 and 10

2 Massachusetts Ave NE, Washington DC

Metro Stop: Union Station on the Red Line

Dr. Karen Kafadar is President-Elect of the American Statistical Association and will serve as President in 2019. She is a Commonwealth Professor and the Chair of Statistics at the University of Virginia, Charlottesville. She received her BS in mathematics and MS in statistics at Stanford University, and her PhD in statistics from Princeton University. Her research focuses on robust methods; exploratory data analysis; characterization of uncertainty in the physical, chemical, biological and engineering sciences; and methodology for the analysis of screening trials, which includes awards from the Centers for Disease Control and Prevention, American Statistical Association (ASA), and American Society for Quality. She currently serves on the Forensic Science Standards Board and chairs the ASA's Advisory Committee on Forensic Science.

Abstract

Statisticians have been important contributors to many areas of science, including chemistry (chemometrics), biology (genomics), medicine (clinical trials), and agriculture (crop yield), leading to valuable advances in statistical research that have benefitted multiple fields (e.g., spectral analysis, penalized regression, sequential analysis, experimental design). Yet the involvement of statistics specifically in forensic science has not been nearly as extensive, given the importance of the field (ensuring proper administration of justice) and the value it has demonstrated thus far (e.g., forensic DNA, assessment of bullet lead evidence, significance of findings in the U.S. anthrax investigations, reliability of eyewitness identification). Forensic methods in many areas remain unvalidated, as recent investigations have highlighted (notably, bite marks and hair analysis). In this talk, I will provide three examples where statistics played a vital role in the evaluating forensic evidence. I then will propose ways in which statisticians can enhance its involvement in forensic science with the ultimate goal of strengthening forensic evidence to achieve its mission in achieving low error rates (false positives and false negatives), and thereby helping to raise the level of confidence in the reliability of evidence presented in the criminal justice system.