

1135-K5-1036      **Howard Troughton\*** (htroughton@babson.edu). *Bayes' Theorem and Lie Detector Tests.*

At one time lie detector tests were used to help determine the innocence or guilt of a person. It was believed that an impartial machine would be able to objectively assess whether a person was lying or not. As it turned out, lie detectors are not perfect since they rely on bio-metric measures such as heart rate, perspiration, and others. In fact, a lie detector with 95% accuracy has the disturbing side effect that 32% of people it sends to jail are actually innocent! For this reason, lie detector tests are no longer admissible in a court of law. The reason for this side effect has to do with Bayes' Theorem, which is a one of the most challenging topics to teach students in introductory statistics courses. Using this lie detector example the presenter will illustrate Bayes' Theorem and also show how this example relates to another challenging topic in statistics: Type I versus Type II errors. (Received September 18, 2017)