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Impact of misclassification on estimation of a single proportion.

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From the text: Measurement errors are a constant problem to experimenters yet they are little mentioned in elementary statistics courses. On a topic separate from Bayes Rule, misclassification rates can and should enter our calculation when estimating a proportion. The formulation is in a binomial setting, and we use the large-sample normal-distribution approximation. We present a point estimator and a confidence interval for a single proportion when there might be misclassifications. The analysis is surprisingly simple and can be introduced at any level statistics course. The ideas can be used in the classroom or in easily constructed exercises.

Classification: K70
Keywords: measurement errors; stochastics; probability theory; conditional probability; random variable; binomial distribution; misclassification probabilities; error probabilities; confidence interval; estimation theory; statistical inference; point estimates