

How much do you lose?  
Treating (Quasi) continuous measurements as binary responses.

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#### Abstract

Visual inspections can serve two purposes. First, they provide estimates of frequency of defects by type. This information can be used in a process control setting to monitor changes in frequency and type of defects. Secondly, they provide an opportunity to identify and label bad parts so that they can be excluded from further processing. In a basic system, parts are identified as good or bad, and the defects on bad parts are classified into bins of defect types as counts or percentages. In a more detailed system, the degree to which a part exhibits a certain defect type is captured as a continuous or quasi-continuous measurement, and the defect is flagged as bad or good based upon a predetermined criteria. This criterion is usually defined as some level of the continuous measurement where the part is known to fail if exceeded. Using case studies and simulation results, we will discuss the interaction of measurement error, process variation and the selection of the good/bad criteria on classification rates of good and bad parts. We will also identify cases where treating visual inspection results as continuous data are advantageous over a binary classification of parts.