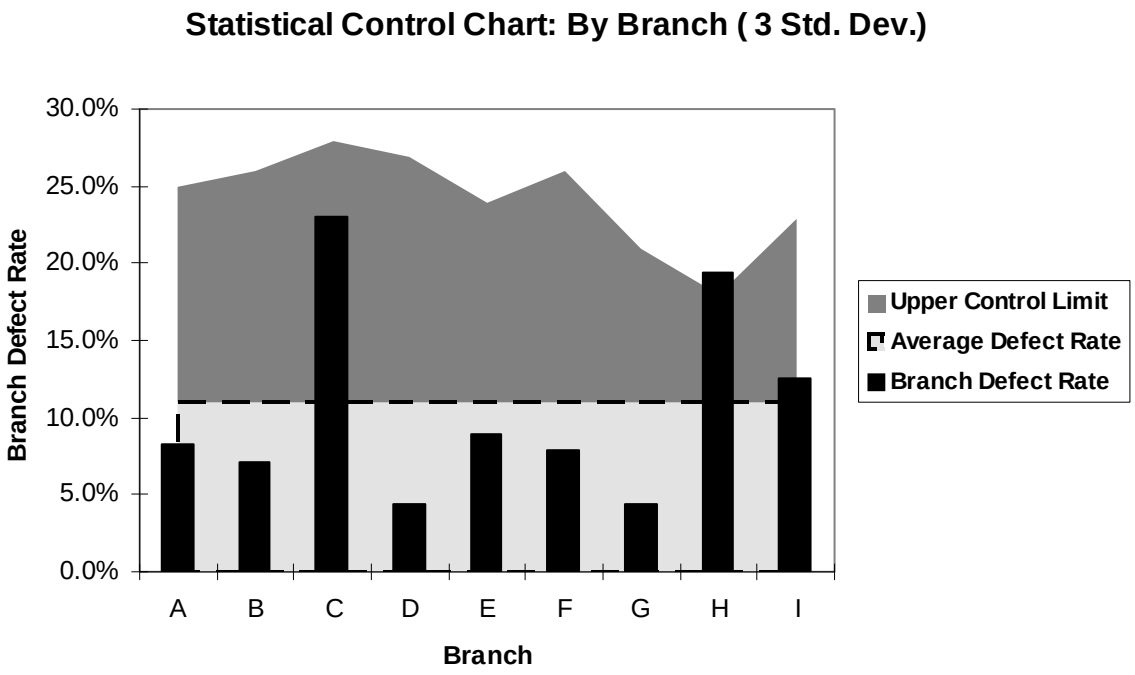
COGENT
ECONOMICS

Control Charts: A Quick Reference

Control charts are a graphical approach to quality control that seek to establish whether the defect or critical error rate for a given unit of the origination process differs significantly from other similar units. Control charts are premised on the notion that any time one deals with a process, such as sampling and review, there will be an element of variability in the outcome of that process. But, at the same time, that variability can be predicted, and fluctuations beyond the predicted limit are not the result of sampling error or chance occurrences. Below is an example of one of Cogent ProductionQC's control charts.



The control chart above plots the defect rate for 9 different branches of the same firm in a given period. Those defect rates are represented by black bars. The dashed line defines the average defect rate. Observe that the average defect rate is about 11% for this firm. The dark gray region above the dashed line defines the area above the average that is still within statistical control. That is, it represents the defect rate that could reasonably be expected to result from sampling error and normal variability. The top of the dark gray region is the upper control limit, or the point where chance error can no longer explain variability. This chart illustrates that Branches C, H, and I all have above average defect rates. Branch C has the highest defect rate, but Branch H is the only one that is out of statistical control. Therefore, to have the most significant impact on profits, resources should be invested towards improving origination processes at Branch H.

The upper control limit is a statistical measure calculated by taking the distance three standard deviations above the average and then multiplying it by a factor that varies for each branch. The multiplier is determined by reviewing each branch's production volume, the sample size of loans reviewed at each branch, and the defect rate for each branch. This generates the jagged line that represents the upper control limit. The software performs these calculations automatically.

Control charts are an extremely powerful method for isolating process flaws in the origination stage. They allow you to target anomalous behaviors for review and quickly determine whether there is a statistically sound explanation for the defect rates you observe. Similar control charts can also evaluate underwriters, appraisers, or other participants in origination.