SAS/QC® 14.1
More Comprehensive Techniques

Overview

SAS/QC software provides a wide range of statistical and graphical tools that help you improve products, optimize processes, and increase levels of customer satisfaction. It enables you to go beyond basic process control by incorporating advanced statistical analyses for a deeper understanding of process variation. SAS/QC 14.1 includes process monitoring for rare events and enhancements in other areas.

Control Charts for Rare Events

The new RAREEVENTS procedure, which is experimental in SAS/QC 14.1, produces control charts for rare events. The data that are plotted in a rare events chart represent the times between successive events. Usually these events represent unwanted outcomes in a process, such as an incorrectly recorded bank deposit, a patient falling in a hospital, or a chemical spill. Rare events charts have gained acceptance in health-care quality improvement applications because they are easier to use and are suitable for processes that have low defect rates.

Conversely, a value that is less than the lower limit indicates that events are occurring more frequently, which can signal a decline in the process.

Multivariate Process Monitoring

The MVPMODEL, MVPMONITOR, and MVPDIAGNOSE procedures, referred to collectively as the MVP procedures, provide capabilities for multivariate process monitoring.

The MVPMODEL procedure provides computational and graphical tools for building a principal component model from multivariate process data in which the measured variables are continuous and correlated. It implements principal component analysis (PCA) techniques that reduce the dimensionality of the data by projecting the process measurements to a low-dimensional subspace that is defined by a small number of components. The principal component model and other output from PROC MVPMODEL serve as input to the MVPMONITOR and MVPDIAGNOSE procedures.

The MVPMONITOR procedure creates control charts for multivariate process data. Multivariate control charts detect unusual variation that would not be uncovered by individually monitoring the process variables with univariate control charts, such as Shewhart charts. Beginning with SAS/QC 13.1, PROC MVPMONITOR also creates control charts for principal component scores.
The MVPDIAGNOSE procedure produces principal component score plots and process variable contribution plots that are used to investigate the causes of unusual variation in a process.

**Reliability Analysis**

Beginning with SAS/QC 13.1, PROC RELIABILITY fits Gompertz distributions to lifetime data and produces recurrent events plots.

**Quality Control for Health-Care Laboratories**

Beginning with SAS/QC 13.1, the SHEWHART procedure supports the Westgard rules for quality control in health-care laboratories.

The Westgard rules were developed to monitor the consistency and accuracy of laboratory measurement processes in order to determine whether patient results should be reported.

**Measurement System Analysis**

Effective process monitoring and control depend on accurate and consistent measurements. Beginning with SAS/QC 13.1, four macros are available for evaluating the measurement process (EMP) and measurement system analysis (MSA):

- The %basicemp macro performs a basic EMP analysis.
- The %shortemp macro performs a short EMP study for characterizing relative utility.
- The %msagrr macro performs a traditional gauge repeatability and reproducibility (R&R) analysis.
- The %hongrr macro creates an “honest” gauge R&R report.

**ODS Graphics Editor Support**

In SAS/QC 14.1, the SHEWHART, ANOM, CUSUM, and MACONTROL procedures are capable of producing graphs that you can edit by using the ODS Graphics Editor.

**For More Information**

SAS/QC 14.1 is now available. For complete information, see support.sas.com/qc/.