How to Maximize Results and Automate Analyses for Six Sigma®

JMP® software combines comprehensive statistical analysis with unique graphical interactivity and scripting capabilities that enable everyone in an organization to contribute to the productivity gains promised by Six Sigma®.

Graphical Interactivity

JMP makes it easy for everyone in the organization, including those with limited formal statistical training, to analyze data and interpret the results, which are presented in a simple graphical format in one window. Every graph is 'live linked' back to data and other graphs.

Clicking on any item in a graph highlights the information related to that item in all other graphs that are open and also highlights the information in the data table. Conversely, highlighting a row of data causes the related values to be highlighted in all graphs.

Scripting

Scripting records various actions performed in JMP to create an analysis or graph. It is particularly effective when used by content or statistical experts to automate reports and standardize analytical reporting procedures across an enterprise.

Scripting is always happening in the background in JMP. The captured steps can be replayed later or shared with others who need to do the same analysis in their jobs. The steps are saved as a script that can be associated with a data table or can stand alone.

In Figure 2, the user has captured a script to launch a custom pop-up window where others can enter data and perform a specific analysis. In this example, when someone enters the upper bound value of 1.6 and hits 'OK' the script excludes values of deposition metric and runs the analysis automatically. The script runs distributions that automatically exclude the data associated with Row 13 in the data table based on Upper and Lower Bound values entered by the user.
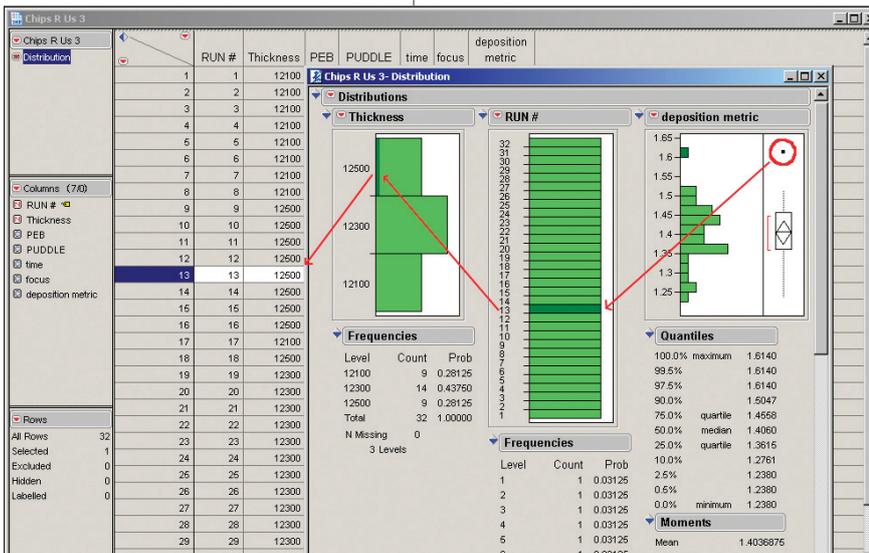

Figure 1. When the user identifies and clicks on outlier 13 in the deposition metric graph, Thickness, Run #, and all related data in the data table are automatically highlighted.
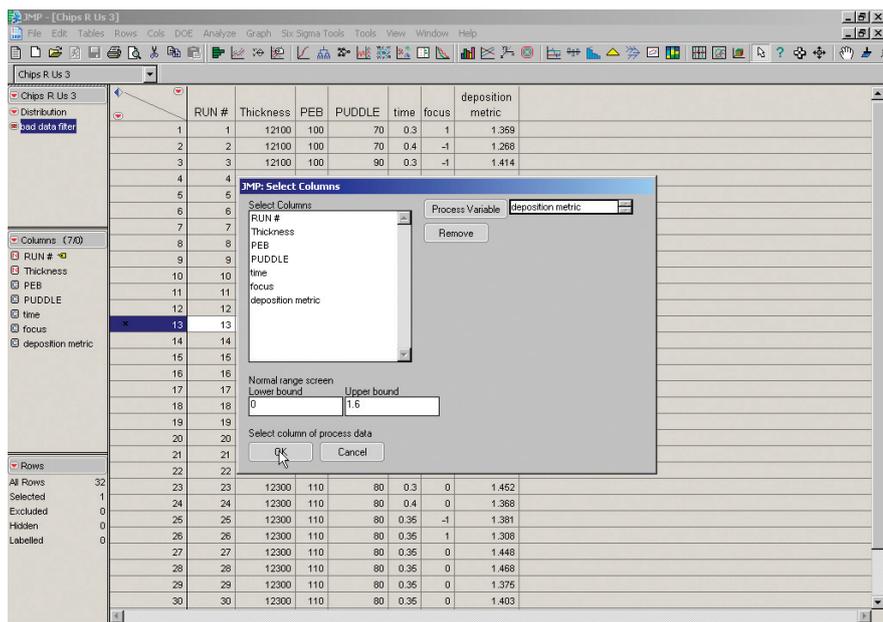
Figure 2. The JMP script builds a custom window with a list box and data entry boxes for Lower and Upper Bound values that will be entered by the any user. The script then launches the appropriate specified analysis.

Conclusions

The analytical tool chosen for Six Sigma efforts must support three goals: 1) provide the power of comprehensive analytics, 2) simplify analyses, and 3) teach beginners to make process improvements. JMP supports these goals with graphical interactivity that makes analysis a simple, visual, point and click process. Scripting in JMP reduces the number of steps a user needs to perform, thereby reducing cycle time and opportunities for error.

There are multiple options for saving scripts. The user may want to collaborate by sending the data table and analysis steps saved in a script to a second person to check the results against a production baseline at another production site. The user chooses Save Script to Data Table from the Script menu. This generates a new data table attribute labeled Distribution that appears in the upper left corner of the data table.

The Distribution script can be run at any time to reproduce the distribution result. In our collaboration scenario, the user now emails the data table with script attached to another analyst to compare results. Collaboration through scripting in this way reduces the software training burden and reduces the chances of making the wrong analysis choices that lead to incorrect conclusions. No knowledge of programming is required to make use of the JMP scripting facility in the way described here.