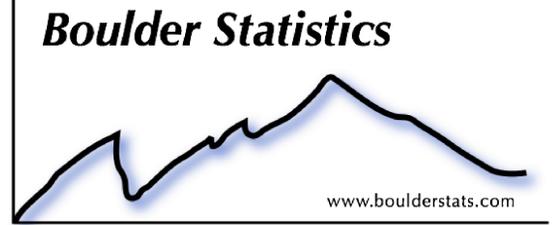


# Automated reporting: JMP® graphics and JSL for benchmarking dashboards

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## Using JMP graphics and Scripting (JSL) to generate extensive on-demand dashboard collections

Boulder Stats LLC and Global Pragmatica LLC® collaborated on an unparalleled study of global professional services rates and pricing practices of a particular industry's largest companies, analyzing and preparing custom dashboard reports from pricing data for 6 job titles at 25 companies in 35 countries, with over 1500 data points on a host of pricing practices, including things like discounting behavior, sales incentives, and pricing policies.

We leveraged JMP and JSL to analyze the full raw dataset. Our premium reports, generated on demand for any member company who opted to purchase them, safeguard competitor companies data privacy but enable a company to benchmark performance against competitors with fine granularity. By dramatically increasing the potential value of the survey data, our upgrade option also promises to increase member companies' attention to future such surveys.

Automating the process with JSL meant that a several-hour task to produce 2pp. became a 6-minute task to produce 74pp.

### Analytic considerations

We designed dashboards to compare specific target company data against both overall and grouped benchmarks.

The primary graphic on each page benchmarks a given company's rates for services against other companies, both overall (box plots for spread of all companies) and against specific groups (mean lines). Data for the target company is indicated by a prominent star.

Bar charts showing % variance from target were designed to show the average for comparative groups using a bar along with a single point for the target company. The single point allows for quick reading of the chart and is true to the data, in that there is only one value for the company yet multiple values for the multiple companies depicted by the bars.

Challenges included:

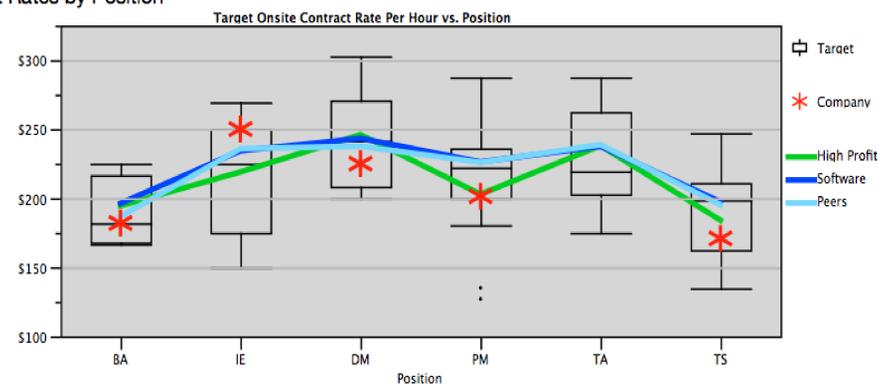
**Sparsity of data.** There were only 25 companies who participated in the survey, and data needed to be presented such that one could not deduce a competitor's data from the graphics. This led to the use of box plots rather than raw data points in the primary graphic.

**Non-statistician audience.** Graphics had to be self-explanatory and

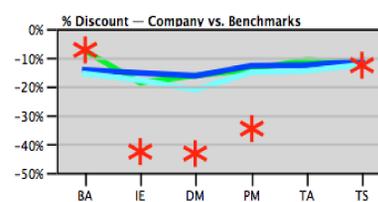
### USA — Contract Rates

Number of companies reporting data: 23. Local currency converted with rate USD = 1\*USD.

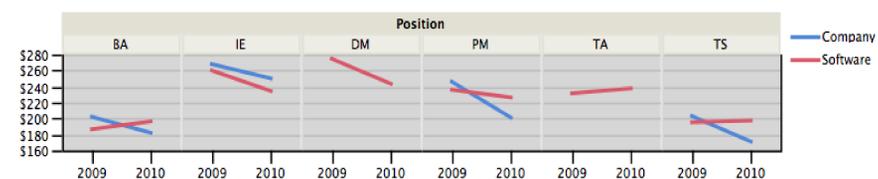
#### Target Rates by Position



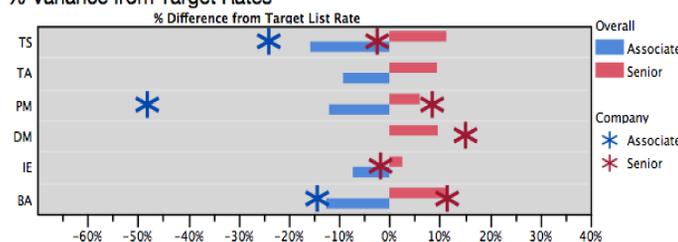
Pos	High Profit	Software	Peers	Company
	Mean	Mean	Mean	Mean
BA	194.50	196.25	186.67	182.00
IE	219.00	234.29	235.83	250.00
DM	246.00	243.30	237.57	225.00
PM	202.86	226.28	225.92	201.00
TA	238.00	237.55	238.75	-
TS	184.00	197.25	195.17	171.00



#### Average Target Rate Trends



#### Associate & Senior % Variance from Target Rates



### Scripting considerations

Automating report production presented numerous JSL challenges both subtle and complex:

**Custom per-company reports.** Since reports would be produced on-demand for any of 25 purchasing companies, the script first loops on selected companies, performs a series of data manipulations and statistical calculations, and loops again to produce 2pp. dashboards for each of 37 countries.

**Sparsity.** Suppressing plot elements that would have depicted too few companies to ensure data confidentiality required *if-then* controls.

**Custom graphics.** The star-marker/line/box plots and the star/bar charts required generating multiple graphics and combining specific elements of these graphics. First we used *select* and *rowstate* commands to produce the target-company-only stars; then we cleared the *rowstates* to plot boxes or bars of overall data; then we produced line plots of grouped data. Finally we used *copy frame contents* and *paste frame contents* commands to composite all these elements into a single plot.

**Precise two-page layouts.** JSL's limited page-layout controls and info-dense dashboards required eliminating unnecessary elements and carefully specifying dimensions in a trial-and-error method to produce consistent pagination, then printing to PDF for final delivery.