

Sophisticated graphics for law departments

Analysts of legal data will gravitate toward greater use of three types of charts: heat maps, mosaics and box plots.

BY REES MORRISON

General counsel need to gather metrics regarding their departments and present those metrics effectively within the department, not to mention to the chief executive officer, their peers and the board. Not only will they manage better as they gain fluency in metrics, they will come to realize that metrics illuminated with good graphics—plots and charts—will lead to insights and will let them proclaim their management results.

Text descriptions of numbers remain woefully abstruse and long; tables of numbers mutely convey their message. As collection and analysis of data in law departments matures, those who work with numbers will increasingly want to employ more sophisticated graphics.

IN-HOUSE COUNSEL

Indeed, the future of law department management rides on data analytics plus graphics that merge some text with vivid charts.

Used appropriately and skillfully, graphical plots make sense out of quantities of data that would otherwise present an unintelligible jumble. Used by data analysts in law departments, they not only visualize insights but also communicate them effectively.

Today, managers of in-house lawyers have some graphical familiarity. They can “read” bar (or column) charts and scatter-plots. They accept histograms, especially if they resemble bell curves, and can make sense of dot charts. Managers are comfortable with the style, message and interpretation of those common graphical tools.

But in coming years, analysts of legal data will gravitate toward more use of the three types of charts discussed in this article: heat maps, mosaics and box plots. Heat maps use color gradients to tell their tale; mosaics rely on relative size to convey proportions and overlap; and box plots summarize the distribution of data. Already, General Counsel Metrics LLC makes use of these tools and others in its benchmark reports on staffing, spending and compensation.

HEAT MAPS

A heat map plots and shades a set of numbers on two axes, each representing a different perspective. For example, a law department could use amounts of invoices it paid during a year as the set of numbers. The plot indicates the size of each law firm the department paid during a year—represented by the number of a firm’s lawyers—on one axis. The number of matters handled by the law firm during the year might be the second perspective on the other axis. The larger the firm, the farther to the right its

position on the plot. The more matters a firm handled, the higher on the left, vertical axis would be its position.

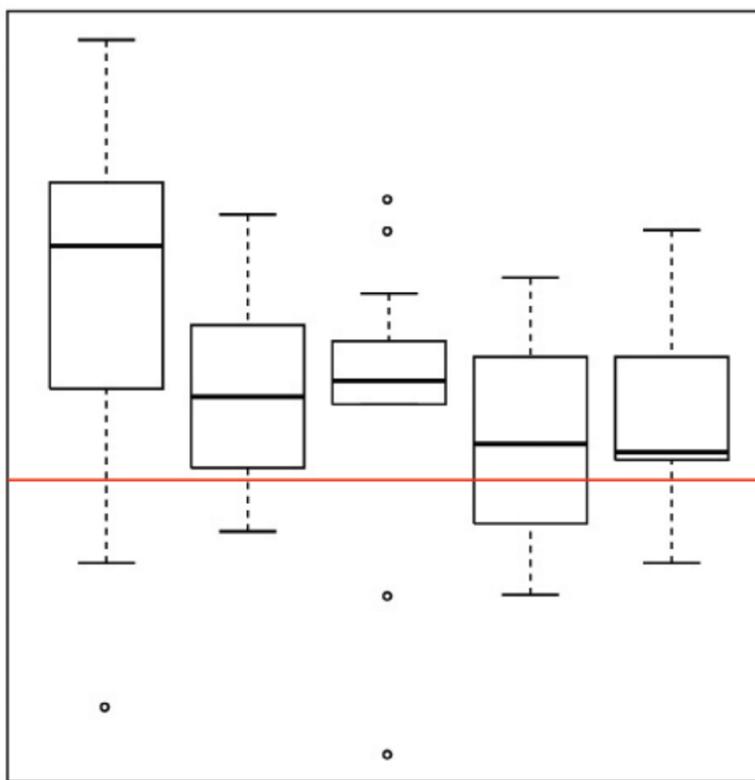
Software can color the cells (the intersection of a firm’s size and number of matters handled) by fees paid so that, for example, the more the firm was paid the more toward the red hue its cell would appear. Thus, a large law firm that handled a large number of matters for big fees would show on the heat map upper right with a dark red shade. The color scheme of the heat map by amount paid to the firm vividly tells part of the story of whether the law department has concentrated its work and spending with larger firms.

Or consider a heat map to convey a client-satisfaction survey’s results. Assume that clients evaluate the law department on a scale from one to seven for various attributes (knowledge of the law, timeliness, etc.). The horizontal axis could represent the level of the individual clients who responded from the lowest level (“junior manager”) on the left to the highest level (C-suite) on the right of the axis. The vertical axis could correspond to three categories for how much each particular client interacted with the law department during the year (lots, moderate, little). The coloring scheme could be a gradient ranging along the spectrum according to the overall average ratings of clients at each intersection of level and amount of interaction. At a glance, this heat map describes much about client satisfaction from what otherwise would be a mish-mash of numbers.

MOSAIC PLOTS

To move to the second tool, a mosaic plot lets law departments show how frequently two things happen when there is an overlap between them. The plot shows a set of boxes corresponding to the two things, called factors. The horizontal axis corresponds to one factor and the vertical axis corresponds to the other.

For example, take the gender of each timekeeper from law firms who worked on matters of a law department. That factor encompasses three categories across the horizontal axis: male, female or not reported. How wide the rectangle is above the category represents its proportion of the whole. A second factor could be the number of matters worked on by each of those same timekeepers during the most recent fiscal year. You could place each timekeeper into one of three groups: those who worked on one to three matters, four to six matters or seven-plus matters. These rectangle boxes overlap horizontally with the verti-



BOX PLOT: This type of chart summarizes the distribution of data, such as levels of staff pay.

cal gender rectangles, also proportionately sized, and would be colored differently.

The thickness of the rectangles together with their color immediately shows patterns that might not be apparent at all from a table that displays the very same data. A textual description of the same insights would be convoluted and lengthy. The mosaic plot instantly highlights patterns of the overlap of gender and matter number.

BOX PLOTS

Box plots are a third method of visually displaying data and another up-and-comer for law departments. Typically a box plot is a vertical rectangle with a line across somewhere in the middle. That horizontal line shows the middle value of the group of numbers when sorted high to low—the median.

Midway between the median and the lowest value is the first quartile, identified by the left vertical axis, and which marks the bottom of the rectangle. Midway between the median and the highest value is the third quartile, the top line of the rectangle. The difference between the first and third quartile is what is called the inter-quartile range (IQR). So half of the data falls within the box or rectangle, and the difference between the value of the 75th percentile and the 25th percentile.

For box plots, an “outlier value” is larger than the third quartile up to 1.5 times the IQR, which is usually shown by a dashed line called a whisker extending up from the top edge of the rectangle, or smaller than the lower quartile minus 1.5 times the IQR, which is the bottom whisker.

An example of how to use a box plot in law departments would be to describe, succinctly and pictorially, the compensation of staff by various levels. For each level, such as junior lawyer or senior paralegal, a box plot would show much

information very efficiently. Alternatively, the same graphical tool could show years of experience by lawyers at different levels.

In a more sophisticated variation where you have multiple box plots, the width of the box varies according to how many data points fall in the particular box. A law department could do a box plot of client-satisfaction average scores by client group, each group having a box of a different width because of different numbers of clients. Even more illuminating than variable width, so-called violin plots present the distribution of individual data points in the midst of the basic median and quartile data.

A wide range of less familiar types of graphical

plots flourish that some general counsel perhaps have never seen—and probably won’t for a while. These esoteric tools of data scientists include radar plots, doughnuts, three-dimensional scatter plots, organizational networks, contour plots, dendrograms and choropleth maps. Some of these or other graphs will show up in the world of law department metrics. Meanwhile, a significant step for progressive law departments will be to take advantage of the three kinds of plots described here.

It will take time before good practices develop that guide the mixture of text, tables, graphics and infographics. Large law departments will lead the way into better data visualization with well-chosen and well-constructed plots because (1) they or their company or consultants have staff who are adept with software that designs such plots—Excel can handle some of it but other programs are far superior; (2) they have enough data to push them toward more advanced analyses and graphical tools; and (3) they enjoy a greater payoff from understanding and explicating their performance metrics. Heat maps, mosaic charts and box plots can contribute more than traditional graphics as they represent a next step in the evolution of legal data analytics.

The Internet offers many examples of these three plot types. As metrics become more salient for general counsel, and as general counsel become more fluent in probing and presenting their department’s performance in quantitative terms, they will call into service a wide range of graphical plots.

Rees Morrison leads General Counsel Metrics LLC, which offers law departments at no cost the world’s largest benchmark report on staffing and spending and compensation. He specializes in law-department data analytics and graphical presentations.