



## Stunning Presentations – Radar Charts

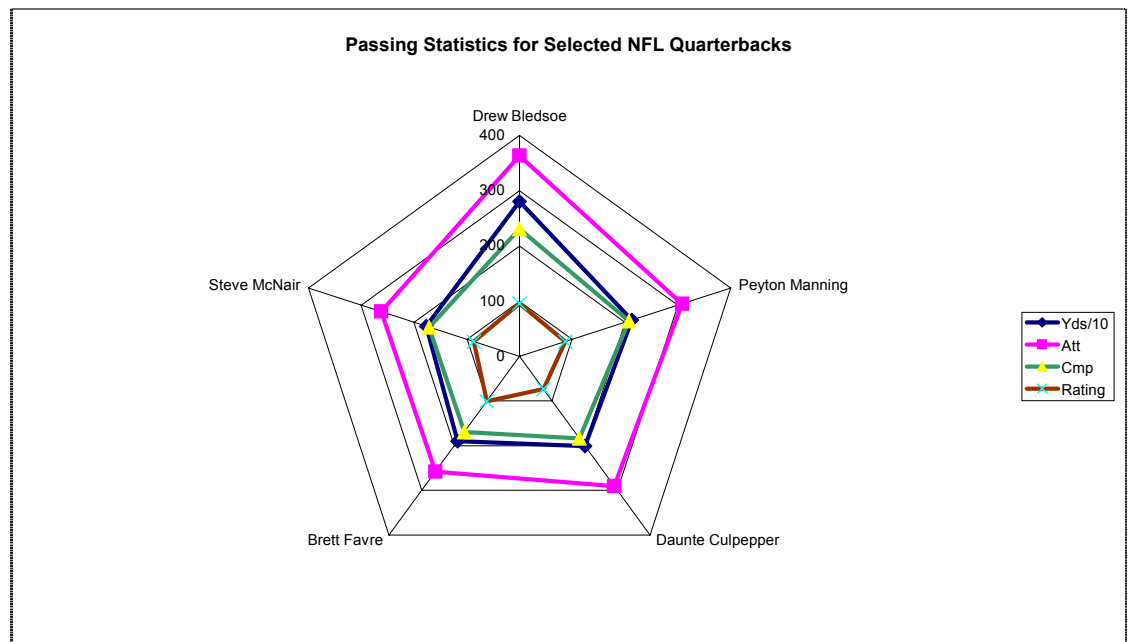
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NOTE: We talked about the efficient use of data ink in a recent issue of the Rollins Journal. The discussion continues with the use of radar charts.

In many business situations, we are comparing one set of values with other sets. Presenters often use bar charts and pie charts to develop their data story. In my quantitative analysis course, I see many interesting examples of the use of these tools derived from Excel-based data. There is an Excel tool that is specifically designed for comparing aggregate values of a number of data series. A radar chart allows us to see data series relationships and make comparisons based on multiple categories.

In a radar chart, each category of values has its own axis radiating from a center point. Lines connect all the values in the same category series. Here is a simple illustration using some recent NFL quarterback statistics.



“...four recent statistics for each of 5 popular NFL quarterbacks. By focusing our eye on the center point (zero) we can interpret the relative performance for each variable.”

We see on the radar chart 4 recent statistics for each of 5 popular NFL quarterbacks. By focusing our eye on the center point (zero) we can interpret the relative performance for each variable. For example, Drew Bledsoe had the most yards completed during the season and significantly more attempts than his colleagues. Bret Favre threw more than 100 fewer passes than Mr. Bledsoe yet earned a higher performance rating.

The radar chart gives us the big picture view of these quarterbacks very quickly and efficiently. In the chart, each performance category has its own axis, which starts in the middle (a low value) and radiates outward (a high value). The point positions are determined by the values in the data series. With this background, let's build a chart and interpret the results.

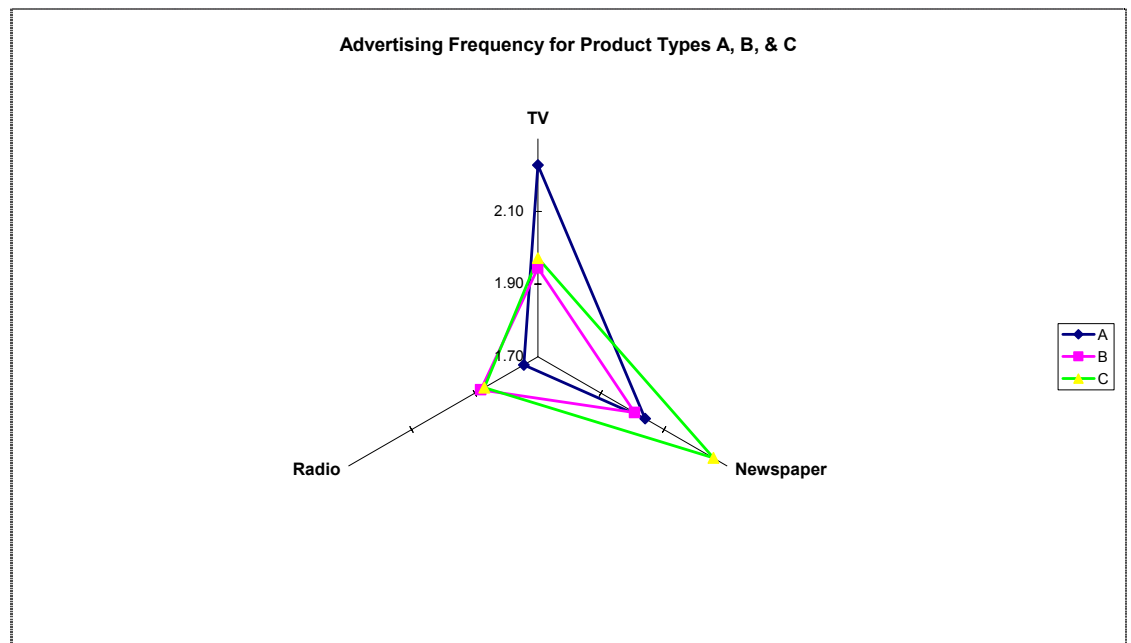
## Creating a Radar Chart

To develop our understanding of radar charts, we will build a couple of charts from some advertising data. The summary data comes from a recent survey. This data is typical of the type a data collected to assess advertising media performance. I have limited the data points for ease of illustration. If you are going to follow along, type the data below into an Excel table.

Frequency				
Type of product	TV	Newspaper	Radio	Magazine
A	2.23	2.04	1.74	2.10
B	1.94	2.01	1.88	2.01
C	1.97	2.26	1.87	2.21

Our data set has 3 types of products and their exposure frequency in 4 advertising mediums. To build our initial radar chart, we select all cells from "Type of Product" to the value 1.87 in the "Radio" column. With our cell selection highlighted, click the Chart Wizard on the tool bar. Choose Radar from the Chart Type list box. Select the Chart Sub-type with the data point markers (in MS Excel XP this is the middle selection). Click Next and Next again to arrive at the Chart Options box. We title our chart "Advertising Frequency for Product Types A, B, & C." Under the Gridlines tab, clear the Major Gridlines check box and select Next. In the Chart Location window, select the location you desire. I usually send my charts to a new page. This gives me lots of room to edit the chart and it is easy to paste the chart back with my data later if needed. This chart should now be shown in Excel.

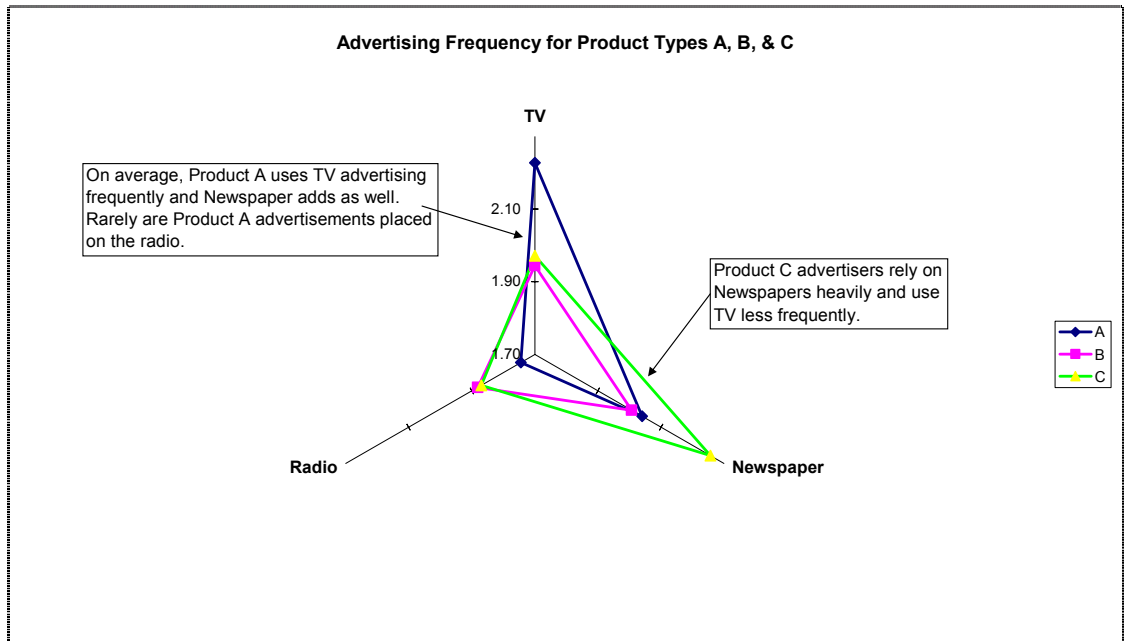
"If we focus on Product C frequency for the three advertising media, we see that Newspaper is highly used. Television is clearly the media of choice for Product A as its point is furthest from the center point."



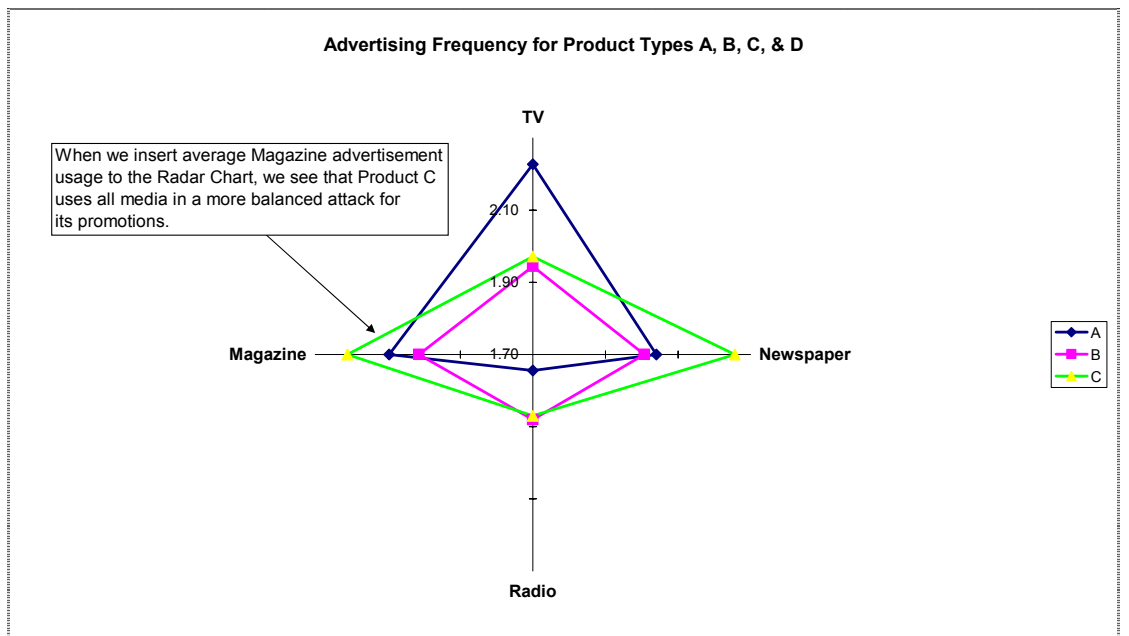
You may need to adjust your axis values if your default values make the chart hard to read. I increased the line size for the three advertising variables to improve readability. [Note: radar charts may also be constructed in PowerPoint using similar steps.]

## Interpretation and Introducing New Categories

If we focus on Product C frequency for the three advertising media, we see that Newspaper is highly used. Television is clearly the media of choice for Product A as its point is furthest from the center point.



To add a new category to our radar chart, select the Magazine data from our Excel table. Choose Edit | Copy from the menu bar (or CTRL C). Go to the radar chart and choose Edit | Paste Special from the menu bar. Select the New Point(s) and Rows option buttons. Also, make sure that the Categories (X Labels) In First Row check box is selected, and then click OK to close. The resulting chart is shown below.



With the interpretation practice we had earlier, the new axis is easy to read. We can also add a new series to our radar chart using similar Excel choices for the series you want to add.

### Changing the Scale

If we look back at our opening radar chart, we notice that Passing Yards was divided by 10 to reduce the scale differential between the categories. We may use a similar technique anytime that large scale differentials make reading the radar chart difficult. Another method for adjusting large scale differentials is to standardize to a common interval scale. I usually set all values between 0 and 1. You may set the value "1" to the best performer in the data set and

“0” to the worst performer.

As with any new technique, it may take you a time or two to get used to developing and interpreting radar charts. Once you are over this brief learning curve I believe you will find these charts an excellent addition to your data presentations.

Radar charts may be effectively used with up to 10 categories of data. Although the added lines will mean spending some additional time “cleaning up” your chart so that your data story is clear to the audience.

This presentation tool should help tell your story from your data analysis. Give it a try and let me see some of your outputs.

Please send your comments to me at [jgilbert@rollins.edu](mailto:jgilbert@rollins.edu).