EXCEL ‹‹‹‹‹‹

By Bill Jelen

Using Sparklines to Visualize Your Data

Edward Tufte introduced sparklines in his 2006 book, *Beautiful Guidance*. He described them as "data-intense, design-simple, word-sized graphics." Their purpose is to present many data points in the space of a typical word. Microsoft jumped on the idea, adding three types of sparklines to Excel 2010.

Using Sparklines in a Worksheet

To create sparklines, you need a range of numeric data to be plotted and a second range for the sparklines. If the original data is six rows by 12 columns, the sparklines need to occupy either six cells or 12 cells. If you choose six cells, each row becomes a single sparkline. If you choose 12 cells, each column becomes a sparkline. Note that it's easy to transpose sparklines. If you have six rows of data, you can choose a sparkline range that's one row by six columns, and the sparklines will be arranged horizontally instead of vertically.

From the Insert tab of the Excel 2010 ribbon, choose Sparklines. You can choose from the three sparkline options—Line, Column, or Win/Loss—depending on how you want to present

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the data. Figure 1 uses Line. Enter the data range and the location range. In Figure 1, those values are C5:L8 for the data and B5:B8 for the location. Click OK, and the sparklines will appear.

Select a cell that includes a sparkline, and the Design tab appears in the ribbon. You can use the tools on this tab to format the sparklines and add markers to the maximum, minimum, first, and/or last points. For example, in the Show group, choosing the High Point adds a single dot at the highest point in the line (see Figure 1). As you make a cell wider or taller, the sparkline will automatically grow to show more detail.

You can also choose to show both the low point and the high point (see Figure 2) and control the colors. For example, use Sparkline Color, Grey to

make all columns a light grey. Choose Marker Color, High Point to control the color used to mark the highest value. Choose Marker Color, Low Point to control the color used for the lowest value in each sparkline.

Understanding the Axis Size

By default, sparklines axes don't have similar min and max points. This allows you to compare causal variables that might have different scales, as shown in Figure 1.

This default behavior isn't always appropriate. Figure 2 shows column sparklines for the average high temperatures of six cities. The height of row 2 was increased to make the sparklines larger. As you look at the sparklines in Figure 2, notice that the warmest month is typically August or July for Miami, Chicago, and Juneau. Curitiba, Brazil, far in the southern hemisphere, has its warmest month in February, while Equator-hugging Trinidad has a virtual tie in April, May, August, and September. So far, so good.

Now look at the January columns for Miami and Chicago. How can it be that

Miami and Chicago have the same average January temperature? This is the downside to Microsoft's decision to have each sparkline have a different vertical axis. The sparkline axis for Miami runs from 76 to 90. The sparkline axis for Chicago runs from 29 to 84.

The Sparkline Tools Design ribbon tab has an Axis dropdown. By default, the setting is "Automatic for Each Sparkline" for both the Vertical Axis Minimum Value Option and the Vertical Axis Maximum Value Option. Change these settings to "Same for All Sparklines." This allows Excel to recalculate the minimum and maximum axis values in response to the data changing (see Figure 3). For more control, you can choose a custom value for the minimum and maximum value. Perhaps a minimum of 0 and a maximum of 100 would work for this data set.

Sparklines are a great idea from Edward Tufte, and the new sparkline tools in Excel 2010 convey a lot of information in a small space. **SF**

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Figure 1

	A	B	C	D	E	F	G	H	I	J	K	L
3	Economic Indicators 2000-2009											
4			2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
5	Unemployment		4	4.7	5.8	6	5.5	5.1	4.6	4.6	5.8	9.3
6	GDP		9952	10286	10642	11142	11868	12638	13399	14078	14441	14242
7	New Construction		803	840	848	892	992	1103	1168	1151	1072	900
8	Bank Credit		5027	5210	5643	6011	6564	7259	8038	8844	9373	9104

Figure 2

	A	B	C	D	E	F
1	Miami	Chicago	Juneau	Tucson	Trinidad	Curitiba

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Miami	76	77	80	83	86	88	89	90	88	85	80	77
Chicago	29	34	45	58	70	80	84	82	75	63	48	35
Juneau	29	34	39	47	55	61	64	63	56	47	37	32
Tucson	64	68	73	81	90	100	99	97	94	84	73	65
Trinidad	85	86	87	88	88	86	87	88	88	87	87	85
Curitiba	79	80	77	73	69	66	66	68	68	72	75	77

Figure 3