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PRESENTATIONS

Data Doesn't Speak for Itself

by Thomas C. Redman

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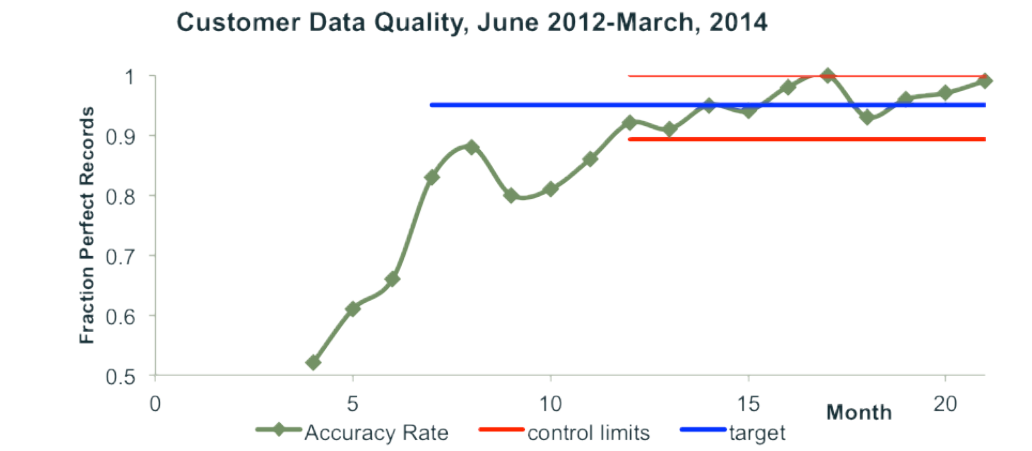
I trained as a statistician and first joined Bell Labs in the network performance group. A year or two after I started, it was time for my first big presentation at AT&T Headquarters. I completed my prep well in advance and rehearsed carefully. Then I was off to the big meeting.

It could not have gone worse. The only impressions I left were bad ones. Young hothead that I was, I blamed everyone but myself, including the audience: "The average manager up here can't even understand a pie chart!"

An established veteran of many such presentations looked me square in the eye and said, "Of course not, Tom. It's your job to make it so they don't have to."

That was my first lesson in data presentation. As a data presenter, you face a tall order in getting others to comprehend and believe data. You have to think through your audience's background and present data in ways that advance their understanding. The best way to do so is to make your plots and the accompanying explanations easy to understand. As Edward Tufte advises, label the axes, don't distort the data, and keep chart-junk to a minimum.

The plot below is a typical result of a well-conceived and -executed data quality program. But it features too many unfamiliar terms such as "accuracy rate" and "fraction perfect records." Without additional explanation, the audience may find themselves lost.



Start by explaining how to interpret the chart at its most basic level: "Here is a time-series plot of the results of our data quality program. I know most of you are familiar with such plots, but let's make sure we're all on the same page here. As you can see, we focused on the quality of customer data. The *x*-axis is time, and here I'm showing one point every month. The *y*-axis is the fraction of data records that were created perfectly each month. That's how we're measuring accuracy. It is a tall standard, and I'll have more to say about that in a minute." Then, explain to your audience how to read the data presented within the chart: "The green line displays our actual results. The blue line shows the target we set for ourselves, and the red lines are control limits. These are a bit technical. I'll explain later. Now before I dig in, are there any questions about how to read the chart?"

Note that you've told your audience where you'll be expanding, but you're focusing on the basics of reading the chart first. This lets them fully comprehend the visual, so they can then put their full attention toward listening to your explanation of the data to come.

Now tell the story of the data in a powerful, animated fashion. In this case, there is much to tell, including how and why the program started; the joys and challenges surrounding the documentation of customer requirements; measurements against those requirements, including the logic of the choice of metric on the *y*-axis; improvement projects; and how you established control — essentially the implications of those red lines. Point out the impact of each out on the plot as you proceed.

Different audiences will have different needs, and you should tell the story in the simplest and most direct way you can for each. For example, a technical community may wish to understand the details in your choice of metric and the software used to draw the plots. A senior leader may wish to understand the significance of the story for extending data quality across the organization. While the main story will be the same for each, the emphases should be very different.

Be aware that many people are skeptical about analytics, big data, data mining, and statistics (perhaps recalling the famous observation, "There are three kinds of lies. Lies, damned lies, and

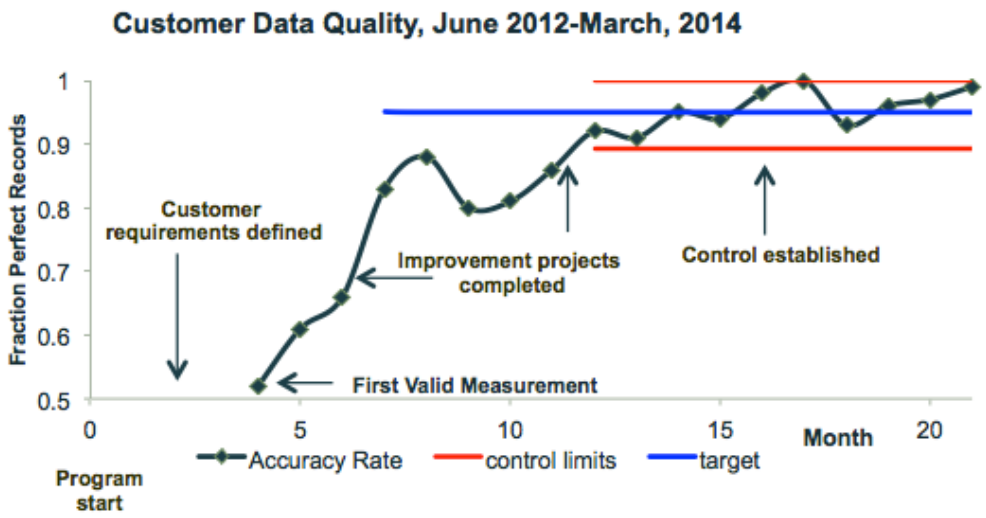
statistics."). Whether this skepticism is justified or not, it does enormous damage by slowing, or even stopping, the penetration of good ideas into organizations. As a data presenter, you have a sacred trust to build support for data among your audience. You must:

1. Present the facts in the most straightforward, accurate way you can. This is especially true when the results aren't favorable. Further, if your results are counter to established wisdom, simply state that this is the case.
2. Present a comprehensive picture. Leaving out a key fact is the worst kind of lie.
3. Provide proper context, including where the data originate and what you've done to ensure they are of high-quality. (If you've done little, you must explicitly state, "The data are of unknown quality. This could impact results.")
4. Summarize your analysis, including shortcomings and alternative explanations for the results you see.

It is fine (and often appropriate) to state your opinion, but you must clearly separate your opinion from the facts. Even the best analysis goes only so far; then intuition takes over. Make the dividing line clear.

Now take your concern for the audience a step further. Successful oral presentations live on as people pass on PowerPoint decks or links to them. People reading a slide deck alone will not have the benefit of your oral explanations, so you must think of their needs as well. As I heard in my early days at Bell Labs, "People spend an average of 15 seconds looking at a chart. Don't make them spend 13 of those seconds figuring out how to read the chart. Build in explanations in wherever possible. Even better, make the graphic tell the story."

With this in mind, take two steps. First, provide your explanation of how to read the chart in the notes page of your PowerPoint or slide deck program. Second, annotate the graphic, as below. While annotations do not replace a well-told story, they do give the reader some inkling of what's involved.



To most audiences, an ounce of insight is worth a ton of analysis. Thus, one outstanding graphic that cuts to the heart of the issue at hand and guides next steps is worth more than hundreds of mediocre ones. Seek that graphic. Presented this way, data are power.

None of what I've proposed here is particularly difficult in practice, once you have an important insight or result to share. Leaders — even skeptics — hunger for ways to improve their departments and companies. Your job as a data presenter is to tap into and satisfy that hunger in the simplest, most transparent way that you can.

Thomas C. Redman, Ph.D, "the Data Doc," helps companies, including many of the Fortune 100, improve data quality. His most recent book *Getting In Front on Data: The Who Does What* (Technics Publications, 2016) has just been published.