Tableau 6, Business Intelligence made personal
Is traditional "Business Intelligence" obsolete?

Stephen McDaniel
Principal Analyst and Co-founder
Freakalytics, LLC
www.Freakalytics.com

Tableau 6 is a major leap forward in providing personal data analysis capabilities. I reviewed the capabilities of Tableau 6 prior to the Tableau Customer Conference 2010 and found myself stunned at the major achievements forthcoming in Tableau 6. There are several capabilities in Tableau 6 that will radically change how people think about and use data in their daily work.

These achievements will have a significant impact on analysts of every type and in almost any industry. Because of the new possibilities, I believe Tableau is in a whole new category of software, "**Personal Business Intelligence**" or **PBI**. Personalization is often the most important part of BI, since it is nearly impossible for any centralized team to anticipate the highly varied needs of every audience across an organization.

PBI versus traditional BI (Business Intelligence) differs in several ways: speed of analysis, ease of analysis, quality of insights generated and simplicity of explaining and sharing your findings. For now, I am comfortable stating that Tableau 6 has changed forever how people can use data in their daily business lives.

The next two pages have humorous overviews highlighting the real-world differences in user achievement with big BI versus **PBI**.

I frequently have students in our Tableau training sessions
who express these exact sentiments about their traditional BI tools.

Early on in the traditional BI projects, there is so much
hope and promise, only to find that the time required
to answer questions is well beyond what is practical
for their ever-changing business needs.

The result is frustration amongst business users and IT.
IT simply can't keep up with the deluge of requests.
Both the users and IT are saddled with tools that are
ill-suited for answering a rapid stream of new questions.

Personal Business Intelligence

The 1st time people complete a project in Tableau they are
often amazed at just how easy and addictive using Tableau can be.

Tableau empowers you to ask a stream of related questions
that are directly relevant to your situation at the moment and
to answer complex questions that were previously beyond approach.

<u>Key achievements</u>

With Tableau 6, it is possible to rapidly analyze 10, 20 and even 50 million rows of data on a laptop with sub-second response times for each data query.

In one of my Tableau 6 review examples, I opened a 7 million record customer history data table from Microsoft Access. Using this data with Access, I typically required 25-80 seconds for each data query. After requesting an extract be created in Tableau 6 (just a single mouse click and several minutes of extracting it from Access), I saw the exact same data queries complete in 0.4 to 1.2 seconds- nearly 50 times faster! This can easily save you hours and days for just one standard data analysis project. Of equal importance, it opens the possibility of using this data dynamically in review sessions and to create live dashboards that can be placed in the hands of decision-makers.

Tableau 6 has added an innovative yet simple approach to enabling analysis of disparate data sources.

Suppose you were analyzing multiple months of sales data for sales by product line and even by SKU at a major retailer, pretend it is Macy's. You have pulled a the large chunk of sales data into the Tableau Data Extract engine, creating a 4 gigabyte extract file (about the same size as a DVD movie.) You begin gleefully analyzing massive amounts of data, all on your laptop, you could even be offline.

Just before a big review meeting, a financial planner walks into your office and mentions everyone looks forward to seeing sales by product line and by SKU versus targets. You were unaware of any target data, but he points you to a second database with sales targets by product, product line for each week.

What would you do today, before Tableau 6? You would likely panic, then panic some more, then beg IT to get the data joined in the data warehouse or one of the systems involved in your data pulls.

Well, with Tableau 6, this is now history. You could actually create a 2nd extract with the sales target data and use both data sources simultaneously in Tableau 6. I don't just mean that you can view both of them; you can actually create new calculated fields using data from both data sources,

sales vs. target for example. Most important, performance is not impacted, you simply wait 1-2 seconds (the 1st extract) plus ¼ of a second for the second extract each time you query the data.

In my opinion, this is one of the greatest innovations in any analytic product. Of all people, I have probably used more analytic tools than most and I have used them in real world work since the late 1980's. So I don't take this claim lightly. Many of our Tableau training students and clients have this multiple data source problem occur frequently in their work and it often paralyzes them from using their BI tools (such as Cognos, Business Objects and many others.)

Considering the speed of the new data extract engine, the flexibility of the new data "blending" capability and the overall ease of use in Tableau it adds up to a true revolution beyond Business Intelligence. It is such a significant change, that I honestly believe it is an insult to Tableau to call them "Business Intelligence", preferring instead "Personal Business Intelligence". Personal Business Intelligence tools require no long wait times for IT to add critical new data into the database, extremely fast data queries, quick interpretation of the results and the ability to easily share the results dynamically.
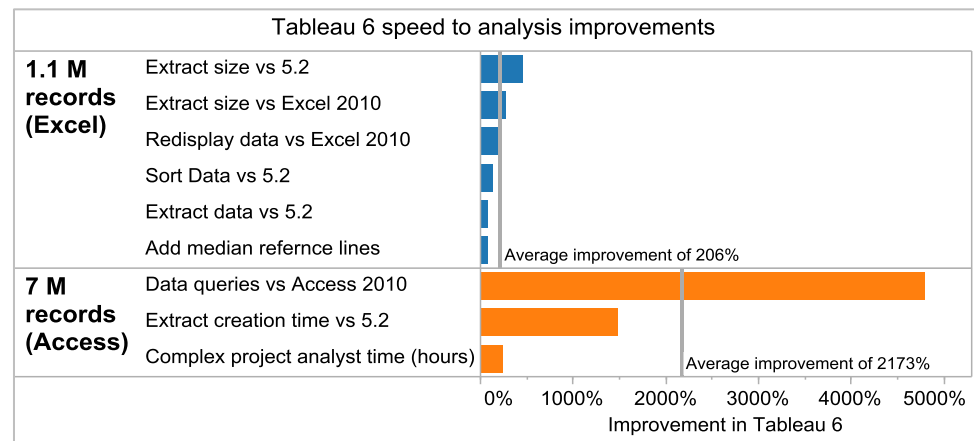
Tableau 6 New Capabilities

Here is a list of new capabilities that I believe will have a significant customer impact in Tableau 6. It isn't comprehensive of all new features in Tableau 6, but these are the ones that strike me as the huge leaps forward in Personal Intelligence capabilities.

1) Speed, your time is money!

    a. Data extracts with larger data sources are incredibly fast, 40 to 100 times faster!
(repeating this since you might think it is a typo, Tableau 6 is 40 to 100 times faster than large Office data sources)

Tableau 6 speed to analysis improvements		
1.1 M records (Excel)	Extract size vs 5.2	
	Extract size vs Excel 2010	
	Redisplay data vs Excel 2010	
	Sort Data vs 5.2	
	Extract data vs 5.2	
	Add median refernce lines	Average improvement of 206%
7 M records (Access)	Data queries vs Access 2010	
	Extract creation time vs 5.2	
	Complex project analyst time (hours)	Average improvement of 2173%
	0% 1000% 2000% 3000% 4000% 5000%	
	Improvement in Tableau 6	

    i. Tableau 6 extracts are up to 100 times faster than desktop data sources. *The first example used a 7 million record customer behavior database in Access 2010.*

        1. Tableau data queries typically completed in 0.4 to 1.2 seconds versus 25 to 80 seconds with Access 2010.
        2. Tableau displayed complex views in 0.3 to 2.5 seconds
        3. Extract creation was 15 times faster than Tableau 5.2, taking just 5 minutes to create on my laptop
        4. The Tableau extract, which contains all of the detailed data in the Access database, was just 10% of the Access 2010 database size.

ii. Using a one million row Excel table, comparing Tableau 6 extracts versus Tableau 5.2 extracts

1. Tableau 6 was 76% faster when creating the extract
2. Tableau 6 was 200%-500% faster when executing my query requests versus Tableau 5.2
3. Tableau 6 extracts were much smaller than the original data source, about 35% of the original Excel file size. They were also much smaller than Tableau 5.2 extracts, about 20% of the 5.2 extract size.
4. Tableau 6 extract data queries were 40 to 100 times faster than the same Excel queries

b. Data blending- easy and fast data merging of disparate data sources, making the lives of analysts easier and less stressful!

i. This example used the 7 million record customer data file in Access (mentioned earlier) and an Excel spreadsheet. Rather than merging and joining these data sources outside of Tableau, I used the new data "blending" feature in Tableau 6.

ii. As described above, this new feature allows the use of disparate data source in the same Tableau view. More important, very little work is required to use this functionality and the data sources are not "merged" as files, the results are simply merged by Tableau dynamically.

The result is an incredible flexibility for personal analytics. It would be very easy to merge sales by customer from an online data source with sales by customer from a separate in-store database. This is done with minimal performance impact; just add up the response times of the two queries plus a little extra work time in Tableau.

c. **Application responsiveness and view rendering**

    i. My experience shows that common tasks in Tableau feel much snappier, with many important tasks such as manual sorting or very complex chart rendering running 75-150% faster.

2) Data analysis

a. **Parameters for Tableau blows open the possibilities for flexible view and dashboard creation**, including

    i. Allowing users to select a dimension from a dashboard, they may want the dashboard map to be drawn at the country, state or city level. With Tableau 6 and parameters, this is now possible without understanding how this works. From a user perspective, it would appear similar to a quick filter in Tableau 5.

    ii. Create optimization scenarios in Tableau, addressing optimization problems in Tableau without the need to first build the optimization results in the database since users can specify optimization criteria, such as percent of sales to be spent on marketing, as inputs to calculated fields.

    iii. Set dynamic boundaries for data inclusion in your view. Examples include user-specified sales targets, price discount and reference bands.

b. The Quick Table and Table Calculation features are now available via the calculated field function editor, enabling ultimate flexibility in complex financial and marketing analytics.

    i. Users can now combine database functions with table calculation capabilities in the same dialog

Combining standard SQL functionality with Tableau table calculation functionality to calculate cumulative profit ratio as a % of sales
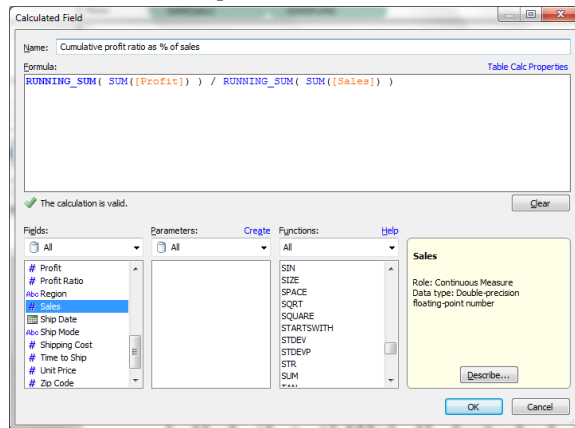

	Cumulative profit ratio as % of sales	Running Sum of Profit	Running Sum of Sales
Office Machines	12.7%	$276,590	$2,171,343
Telephones and Communica..	14.6%	$593,542	$4,060,657
Tables	8.9%	$532,271	$5,947,871
Chairs & Chairmats	8.9%	$682,209	$7,692,016
Copiers and Fax	9.6%	$849,571	$8,822,378
Storage & Organization	8.6%	$852,087	$9,922,152
Binders and Binder Accesso..	10.6%	$1,159,262	$10,946,674
Bookcases	9.6%	$1,126,091	$11,768,656
Computer Peripherals	9.7%	$1,220,625	$12,565,210
Appliances	9.9%	$1,318,648	$13,312,543
Office Furnishings	10.1%	$1,415,526	$13,978,455
Paper	10.1%	$1,461,513	$14,427,952
Envelopes	10.3%	$1,510,225	$14,604,250
Pens & Art Supplies	10.3%	$1,517,776	$14,771,775
Scissors, Rulers and Trimme..	10.2%	$1,509,977	$14,852,771
Labels	10.2%	$1,523,666	$14,891,813
Rubber Bands	10.2%	$1,523,589	$14,907,053

This opens up truly exciting possibilities for advanced data analysts who push Tableau 5 table calculations to their limits

c. **Easily create data hierarchies in the dimension pane, quickly organize complex data sources for efficient data drill-down and drill-up**

    i. Using relational data sources or extracts, user can now drill down and up across geographies or groups of the company, such as all employees, division, department and team. Users can easily rearrange the hierarchy for various sets of problems.
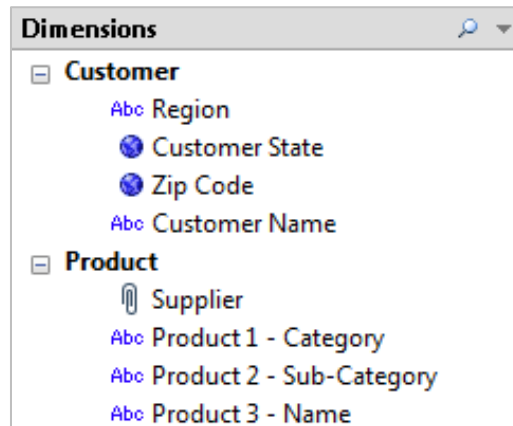
3) Charts and graphs

a. **You can now overlay two chart types** in Tableau 6

i. Bar line charts are now possible, allowing easy creation of Pareto charts

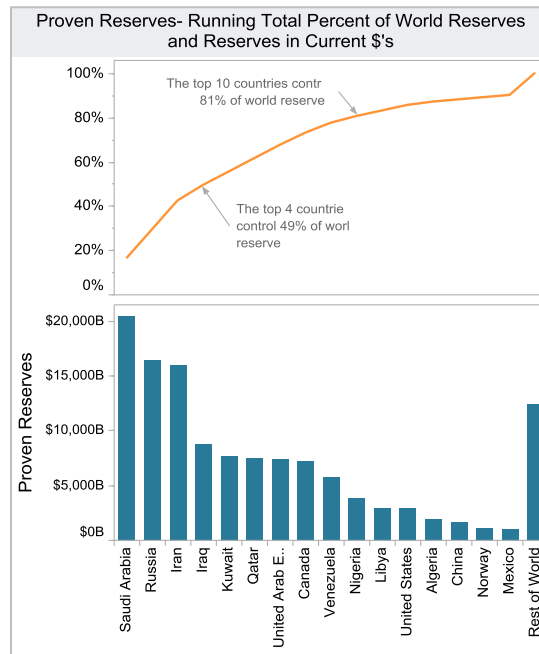*Tableau 5, two views on a dashboard, similar but not an actual Pareto Chart*
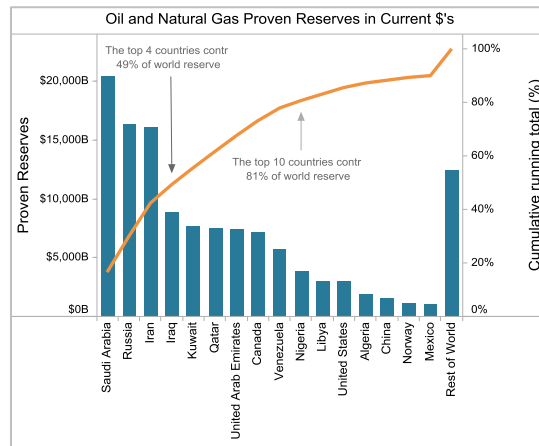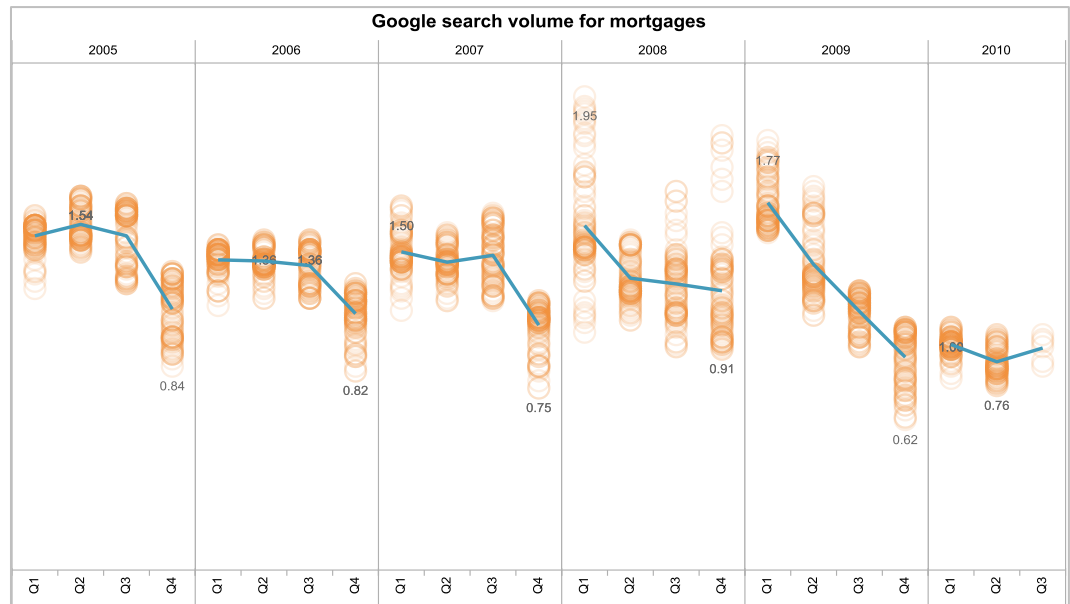

Tableau 6, two metrics on a view as a Pareto Chart

Copyright © 2010 Freakalytics, LLC

ii. One of my personal favorites, display a line of average Google mortgage searches by quarter combined with a scatter plot overlay of searches by day for the same quarter. This informs your audience of the average outcome while easily understanding the variability and range of outcomes in a quarter, all in a single display.

Google search volume for mortgages

| 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |

1.95

1.77

1.54

1.50

1.36

1.00

0.91

0.84

0.82

0.76

0.75

0.62

Q1 Q2 Q3 Q4 | Q1 Q2 Q3 Q4 | Q1 Q2 Q3 Q4 | Q1 Q2 Q3 Q4 | Q1 Q2 Q3 Q4 | Q1 Q2 Q3

b. Show history of data points with the page filter

    i. Similar to the path function in 5.2, but even more powerful. As you page through the data in a scatter plot, watch how different products grow over time across multiple measure, such as sales and profitability
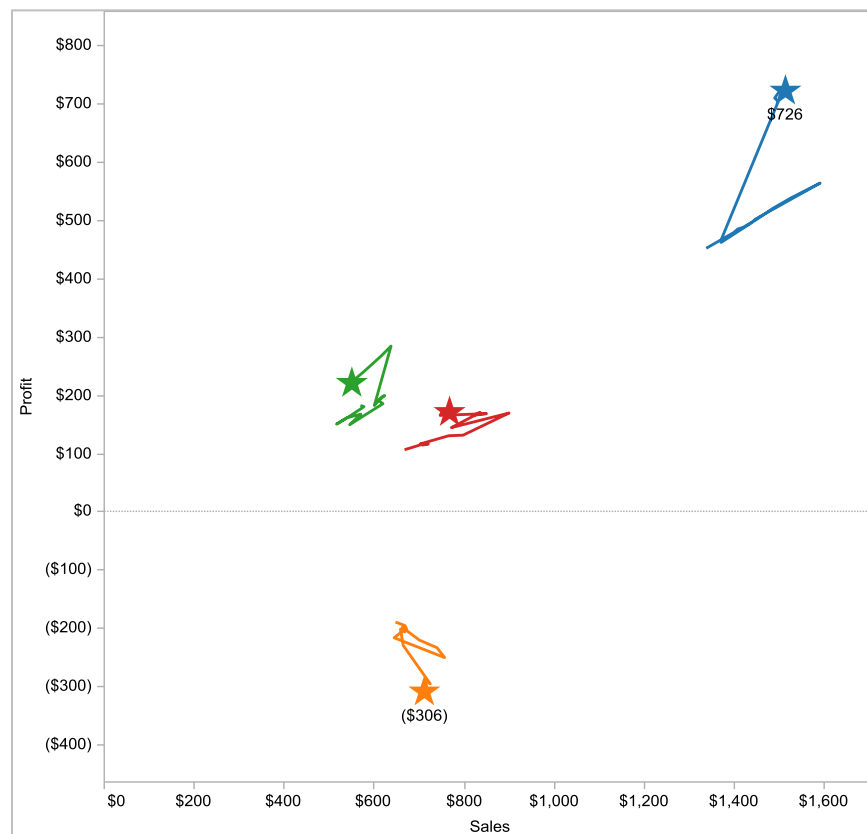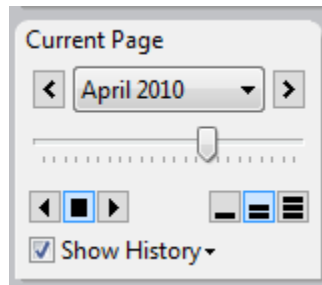
4) Dashboards

    a. You can now use the page filter in dashboards

        i. This is valuable since the page filter selects optimal axis ranges for all views and legends to ensure that the scale doesn't vary as you change filter values. This was a frequent training attendee request, since people also like the "Play" feature of the page filter, allowing the ability to animate the dashboard.

Footnote

I had already titled this article before seeing Stephen Few speak on the last day of the Tableau Customer Conference. It is ironic that he had a similar theme for his talk, "The Disinformation Age". As part of his talk, Stephen demonstrated a new and "innovative" product from SAP Business Objects. Just prior to this demonstration, he worked up the audience with clips from a 1970's movie showing people screaming out the windows, "***I'm mad as hell and I'm not going to take this anymore!***"

By the end of Stephen's demonstration of Business Objects Explorer, he had incited people in the audience to yell at him from the floor to please stop the demonstration! This was not because of Stephen, but rather because of the incredibly poor insights he could create with the product. The irony of this demonstration was that Stephen was using some fairly small but interesting sample data or an online retailer, but every time he tried to create a reasonable view of the data, the product stymied his attempts with poor design, defaults and overall very poor capabilities to make sense of the data.

I wanted to run up on stage and say, "Don't worry Stephen; the BI era has come to an end, the madness is over. Welcome to a new era of **Personal Business Intelligence**! People will actually be able to use their data to ask a question, visually see the results, explore possible causes of unusual outcomes and easily share their findings. All of this is now possible in just a few minutes! They will no longer be mad as hell; instead, they will actually be able to make sense of their data and take informed action!"

Tableau 6 is slated for release in late 2010. It is currently in Beta release for select customers.

About Freakalytics

Offering dynamic, live training in the techniques and tools needed to discover the value long hidden in your data. Our training empowers you to make informed decisions and achieve success in your daily work.

Freakalytics is a Tableau Education Partner, an instructor for the American Marketing Association and authors of "*Rapid Graphs with Tableau Software*" and "*SAS for Dummies*". We offer public and on-site Tableau training and Tableau Certification world-wide.

About this paper

Please note that the views in this article are those of Freakalytics and are based on pre-release, non-production software. While it is currently understood by Freakalytics that all of the discussed functionality will be released in Tableau 6, Freakalytics can't guarantee that these features will be released in the production release of Tableau 6 with the final decision of features and release dates lying solely in Tableau Software's hands.

Further, no warranty of suitability for your work is made or implied. Best practices and common sense dictate that you should test any software product in your actual work setting before selecting said product. Actual performance results may vary widely based on data structure and analysis scenarios. Freakalytics has acted in good faith for this article by testing scenarios that are realistic in our opinion.

All photos in this paper are from Flickr under a [Creative Commons 2.0 license](). All rights are reserved by their original publisher. All other content is the exclusive property of Freakalytics, LLC and is covered by US Copyright and Trademark laws. Freakalytics is a Tableau Software education partner.