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# Debunking the Visual vs Tabular Preference Dichotomy in Data Analysis Presentations

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We often come across people that self-identify as fitting into one of two categories: visual people or numbers people. This discussion often comes up when determining how data should be presented to different business audiences using business intelligence and analytics tools that have been purchased by the company or custom-developed in-house. Often times we hear some executives saying that they want pure numbers in table-oriented formats, and others saying that they would like their information presented visually in charts. When the goal is to standardize reports and dashboards across the company, it often becomes necessary to hammer out a consensus between the groups in order to come up with requirements for the standardized reports and dashboards. Is that overhead necessary?

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We believe that this preference dichotomy between visual and formatted numeric output is not a useful way to think about ongoing data analysis, and that our brains are wired well for both kinds of processing regardless of preference. It should be noted, however, that the brain is particularly well-suited for pattern recognition, and therefore it is the kind of data processing that ultimately should drive data analysis preferences. Put clearly, simple displays of tabular information can be just the right thing for summary-level analysis, but if there is an opportunity to identify problems or opportunities that may present as visual patterns in the data, we are more likely to capture that information visually than we would in a tabular format. In fact, our brains are more likely to identify many types of patterns and anomalies than even high-powered computers running software that attempts to do the same.

The Big Data Era can be characterized in many ways. One of the more interesting ways is to consider what can be thought of as the reciprocal relationship between humans and computers in which humans conduct data to computers for processing and in which computers generate information from the raw data which can then be used for interpretation and judgement by humans, with a constant expansion of input data being fed into the funnel as the cycle continues. In this cycle, computers carry out bulk data processing because they are much better-suited for data processing activities such as calculations, sorting, indexing, and massive searches, than our brains are.

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However, it is interesting to note that the human brain still handles certain kinds of data processing better than computers. One such example is the brain’s ability to recognize patterns.

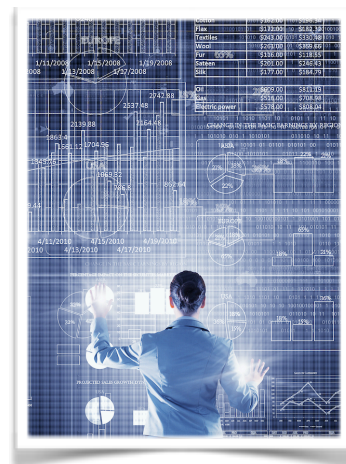
When we are reminded of this fact, we are provided with an opportunity to reexamine the ways in which we disseminate information through our organizations; are we keeping data in a highly structured, perhaps even machine-readable format, or are we providing information and tools which allow people to detect meaningful patterns in the data? There are interesting real-world examples of how scientific organizations are facilitating the latter. This is interesting in its own right because scientific organizations generally have at their disposal the highest standards of computing power and technological tools with which to perform their tasks, yet they are still relying on grey matter for certain kinds of processing.

As an example of this phenomenon, consider NASA’s Planet Hunters program, which recruits volunteer citizen scientists to visually analyze images captured by the Kepler space telescope with the goal of detecting patterns.

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As stated on the Planet Hunters web page on NASA's website, NASA is betting that "that there will be a number of surprises in the data that the computer algorithms will miss, that there will be planets which can only be found via the remarkable human ability for pattern recognition." This program that harnesses human's ability to discern patterns or aberrations (specifically by harnessing our ability to detect a true dip in star brightness) has already produced excellent results, including some very strange phenomenon that have many researchers scratching their heads (for an eerie example see *The Most Interesting Star in Our Galaxy*, written by Ross Andersen of *The Atlantic*).

Aside from NASA's Planet Hunters program, there are many other examples of how scientific programs are leveraging the brain's pattern recognition abilities, including Agent Exoplanet and Cities At Night, a project that leverages citizen scientists (and their cognitive abilities) to identify and reduce light pollution. This project provides volunteers with images taken from the International Space Station, who then use their pattern recognition skills to identify objects in a dark background that are not easily identifiable by computer algorithms (mostly lighting patterns) and which can pinpoint locations such as cities or large objects within cities.



These examples of how our brains are wired for pattern detection should go a long way in reminding us to leverage our investments in big data and business analytics in the right ways, one of which includes providing ample opportunity for visual processing of information that would otherwise go missing.

Any tool that can render simple charts can go a long way in doing this, but when augmented with the ability to see data in terms of color, brightness, position /shape, and grouping, as well as other visual cues, we are able to fully utilize the power of our brains to make decisions and solve business problems.

## Key Takeaways

- Human brains are hardwired to acquire visual information in ways yet unmatched by computers.
- BI tools like Microsoft Power BI, Qlik, and Tableau, among others, are built to capitalize on common knowledge of human visual perception, meaning effective data analyses can be achieved out of the box.
- Some power users may express a strong preference for tabular data layout presentations. This can be accommodated, but the design team should do its best to incorporate effective data visualizations.

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## About the Author

Jared Decker is the founder and president of Expert Analytics, and provides advisory consulting services to clientele regarding their strategic data platforms and initiatives. He has more than 16 years in BI and data analytics consulting, with 15+ years in data architecture roles, designing data warehouses and BI platforms for clients in verticals such as commercial real estate, capital management, credit card, and consumer retail. He is the co-author of several analytics books published by Wiley, is a frequent big data columnist for executive tech publications, and has provided onsite training engagements for numerous *Fortune 500* companies, including Halliburton, Humana, Pepsico, PPG Industries, and consulting companies that service *Fortune 500* and government clientele.

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Our experts help you achieve success with your most strategic initiatives and improve your teams' performance across a range of projects through mentoring and advanced expertise.

Expert Analytics, based in Dallas, Texas, was created by data warehousing and analytics veterans and thought leaders. From the beginning, **expertise is the company's culture** and is deeply woven into every client delivery.

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