



# Data Visualization



**BigData4Analytics Ltd** is a Big Data Management Consulting firm – helping enterprises make business sense and achieve measurable outcomes with Big Data and Analytics.

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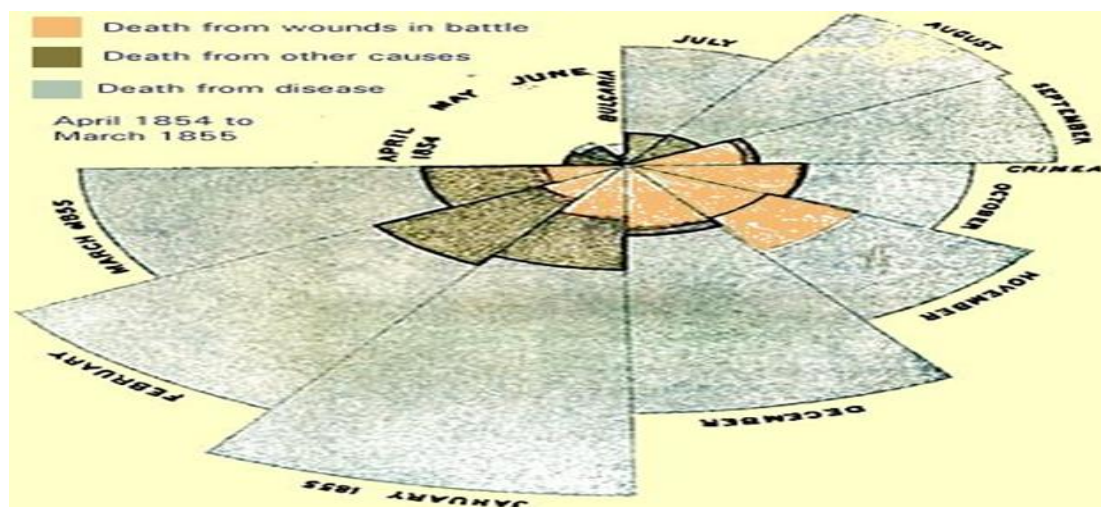
## Data Visualisation – telling your story in pictures

Enormous quantities of data go unused or underused today, simply because people can't absorb the quantities and relationships within the data. As businesses collect more and analyse more and more data, decision makers at all levels need data to be presented visually in a way that enables them to see analytical results - in a way they can understand, find relevance among the millions of variables, communicate concepts and hypotheses to others, and even predict the future.

We all relate to the saying 'a picture paints a thousand words' and so if we can present data in a manner we can relate to, it is easier to understand what the data is telling us.

Data visualization is the presentation of data in a pictorial or graphical format. For centuries, people have depended on visual representations such as charts and maps to understand information more easily and quickly. Indeed, Florence Nightingale used data in a graphical form to push for health reforms. The brutal message of her "rose" charts of mortality, constructed using data from the Crimean war, was both informative and highly influential, showing in stark, uncompromising terms that the numbers of soldiers dying from disease and squalor far outweighed those dying from battle injuries.

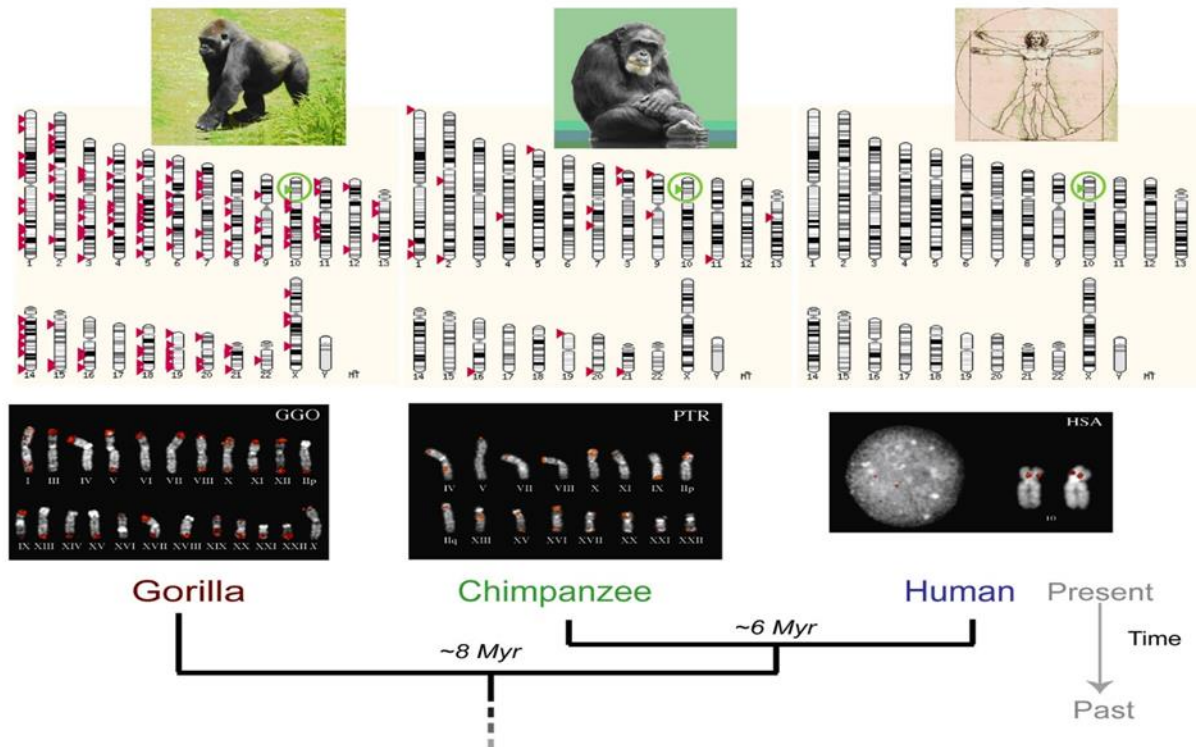
### Rose Petal Diagram



Because of the way the human brain processes information, it is faster for people to grasp the meaning of many data points when they are displayed in charts and graphs rather than poring over piles of spreadsheets or reading pages and pages of reports.

Imagine, how does the human genome compare to those of a chimpanzee or Gorilla? What do the paths that millions of visitors take through my web site look like? What does the supply chain look like for a National Pizza Company? With *Visualizing Data*, you learn how to answer complex questions like these.

This figure shows how human, chimpanzee and gorilla genomes differ more than expected!



## Interactive visualization

Interactive data visualization goes a step further – moving beyond the display of static graphics and spreadsheets to using computers and mobile devices to drill down into charts and graphs for more details, interactively and immediately) changing what data you see and how it is processed.

Visualizations help people see things that were not obvious to them before. Even when data volumes are very large, patterns can be spotted quickly and easily. Visualizations convey information in a universal manner and make it simple to share ideas with others. It lets people ask others, “Do you see what I see?” And it can even answer questions like “What would happen if we made an adjustment to that area?”

## Spreadsheets are hard to visualise

Consider the manufacturing director of product reliability for an international company that produces washing machine motors. One of the director’s principal responsibilities is to determine how reliable the motors will be with each year of use. If the product’s reliability falls short of the standards, his company could lose major contracts and sales.

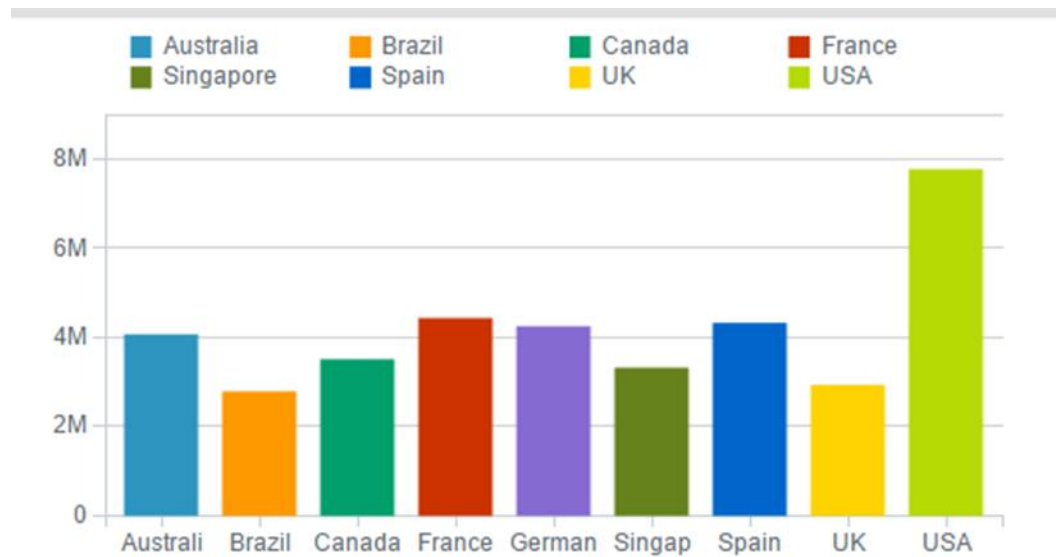
Because of the amount of data typically collected by companies on such items as product reliability, internet browsing profiles, supply chain trends, customer

data records to name but a few, traditional spreadsheets cannot visually represent the information due to data presentation limitations.

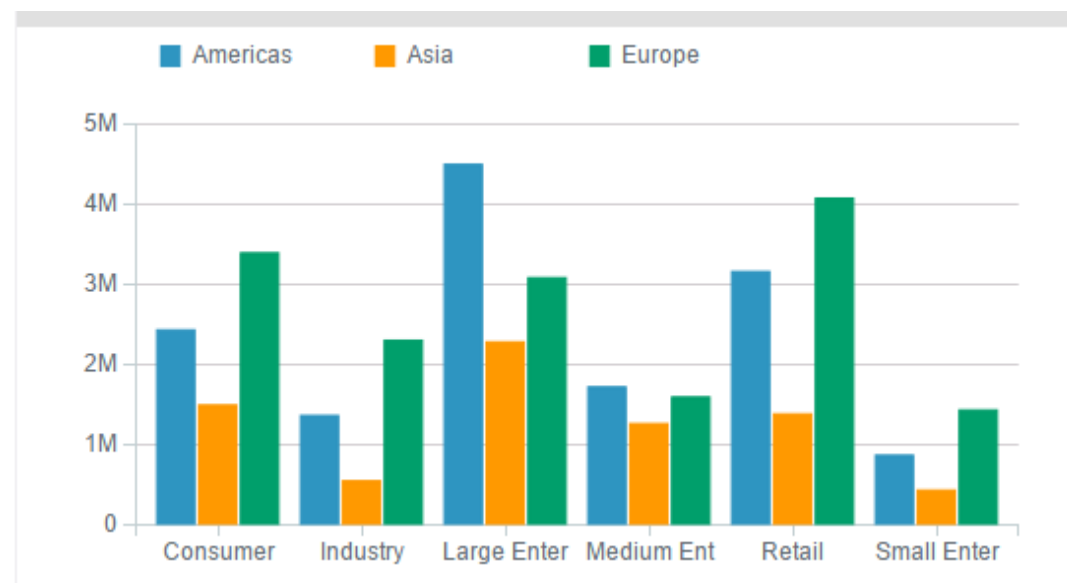
And, if printed out, the spreadsheets would be a massive pile of paper on the Director's desk. The person trying to make sense of the data would spend hours searching among thousands of rows and columns of data with still no concrete answer to the original question about the relationship between in the example of the washing machine motor's age and its reliability.

## Data visualization makes interpretation easier

Data visualization presents the data in a way that can easily be interpreted, saving time and energy. For example, the graph below shows the profit for each country. Clearly the USA is the most profitable.



If we then look at another view of the data by market, it is Large Enterprises for Americas that generate the most profit.



## Conclusion

Data visualization is an art and a science unto itself, and there are many graphical techniques that can be used to help people understand the story their data is telling. To do this you must understand the data you are trying to visualize, as well as your audience and how they process visual information. Then use the best visual that conveys the information in its simplest form.

So effective Data Visualization will allow every picture to tell a story!

The greatest value of a picture is when it forces us to notice what we never expected to see.

**John Tukey, American Mathematician**

“If you can’t explain it simply, you don’t understand it well enough.”

**Albert Einstein, Physicist**

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