Data Visualization – The New Art Of Understanding

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By Ruben Alcaraz

At The Market Research Event (TMRE) Orlando last year, I gave a presentation covering the history of Data Visualization going from its known origins to some of today’s best practices (my top 10). In case you missed them, the top 10 visualizations I covered in the presentation were: word clouds, phrase net diagrams, word trees, stream graphs, billion dollar-gram, network diagram, motion charts, timelines, narrative charts and maps. Immediately after the presentation, I received a lot of positive feedback and questions about additional perspectives on data visualization and how these could affect market research.

 While I view Data Visualization as still being in its infancy, it can be easily found today. If you don’t believe me, just go to Google.com and type “data visualization” on the search box and you will get somewhere in the neighborhood of 26 million results in a fraction of a second (depending on the speed of your internet connection). These results cover definitions, white papers, examples, books and more. To provide a point of comparison, type “statistics” on the search box and the engine you will return close to 3 billion records on the subject. This is where I would like to begin…

 Let’s start with how I define data visualization – it is as a process that combines data, creativity and images to create an easy to understand visual that can be shared with an audience that paints an easily understood story.

 The main reason why I got into this subject was because of a constant hurdle that I kept coming across — having results be easily understood and fuel strategy and how these hurdles began to paint an image of the future for me. This may be an assumption on my part, but I think that the translation of knowledge and understanding obtained from data immersion in a way that is clear and engaging to a wider audience is not commonplace in the research and insights fields. Today, reaching a wider audience is not as complicated as it used to be (thanks to Twitter, Facebook and the like); however, being clearly understood is.

 In the corporate setting, traditional ways of socializing research findings involve a PowerPoint presentation with charts, graphs and text. These vehicles of communication, can be efficient, but can also place a heavy burden on the audience who may not be in-tune with the intricacies of research, statistics or its terminology. For example, most researchers cringe at the thought of using words such “significant” or “correlation” without having first performed statistical analysis to determine if that is indeed true… not always the case in other areas within organizations. Data Visualization offers a way to break out of this by helping people deliver a message to an audience that may not be received or understood otherwise.

 One cannot talk Data Visualization without recognizing that technological advances are making it possible. Remember the days when we used floppy disks? When Excel had 65 thousand rows? When DVD drives were not standard on computers? When Microsoft & Apple spreadsheets were not fully compatible? These are all distant memories, but improvements on each along the way were done (at least partially) to address the growing amount of information and its storage. It is my belief that these are still not enough given the excessive amount of data being generated daily and that yet another form of storage is needed for our field. The likes of Amazon and Apple are growing by making our digital music libraries accessible anywhere and anytime that has internet connection. Their approach is quite intuitive considering that in-device memory capabilities are expensive, limited and that the personal digital content is growing daily. Their solution: cloud storage.

 Visualization, as we know it, is starting to spread through individual contributors and niche companies forging the path. A lot of these individuals are learning as they go and using available tools and technologies, but invariably data access and computing capabilities to specific information are limitations that still require heavy investments. May be wishful thinking today, but what if the tech giants no longer just focused on individuals and their music. Imagine if companies began releasing other information on the cloud? (Yes, after addressing security concerns) Would this revolutionize and advance Data Visualization? You know my answer.

I see that something big is happening to the ecosystem of analytics through ‘big data’ forcing a dramatic change on corporate strategies from just a few decades ago. Mining information used to be limited to few individuals who had to write code or be statisticians in order to retrieve and later interpret data. I firmly believe that presentation of results should be anything but complicated. I equate this to trying to read a legal document, where terminology seems too confusing and even generate some kind of irrational fear in the mind of the average person. So, let’s not emulate lawyers or take their approach to communication.

 As people begin to experiment with the creation and interpretation of visualizations and including them in presentations, a not-so-apparent shift will take place in the background where the traditional ‘analyst‘ role slowly morphs to give way to a new breed — the storytellers — who will be more strategic and consultative in nature and not data-waiters, statisticians or always comfortable with extreme analytics, but can create, interact, discover and explain relationships in the information and become the go-to people leadership looks for to understand and make quick decisions for their business through data. I view this evolution as similar to what happened when sound was introduced to films in the 1920s. Going from “silent” to “talkies” had deep impacts into the movie industry from actors (going from body language to natural dialogue), to directors (sound staging techniques) and audiences who had to adapt to this new way of experiencing entertainment. Within a decade, talking pictures became the new standard.

 The Visualization Enabled Analysis

Often times when discussing data analysis on projects with colleagues, it is obvious that the analytical framework of individuals is somewhat similar. Up to now, most of us approach data analysis in a straight line and from the bottom up, meaning that we analyze disparate sources and then attempt to connect the dots to understand how things are happening, what are the drivers to then generate recommendations. This linear approach can take a long time (depending on the number of data sources) and can produce dead ends due to the lack of connections between data sources.

 Visualization enables a non-linear way of analyzing information where one can first see the shape of the story, understand patterns and relationships, and then only look into meaningful components to provide recommendations in real time. This enhanced capability presents a change on how we communicate today in corporate settings. Storytellers will be able to display and interpret data movements and answer questions on-the-fly rather than take additional time to perform data cuts. Of course, this could also mean a change in the composition of our toolbox.

The Human Side of Things

A lot of infographics and data visualizations floating on the web are beautiful, and can be easily understood. Beauty and simplicity can easily eclipse and at times entirely avoid the need of someone to help explain it… and this represents a difficult problem. You see, part of what engages audiences in presentations is the presenter, so not having a presenter limits the effectiveness of engaging audiences creating the opposite effect of what was originally intended. This is where I feel that storytellers will be most needed to explain data visualizations before they are distributed.

 The closest example to a storyteller that I can provide is Hans Rosling, professor of International health at Karolinska Institutet (Rosling is also the pioneer behind motion charts). Watching Professor Rosling combine data trends, human history with the excitement of a sportscast are not just informational but also inspirational and exciting. And, just to make sure you remember his presentation, he sometimes performs a sword swallowing act!

If you haven’t seen him in action already, take a look at two of my favorite Hans Rosling presentations:

 The Best Stats You’ve Ever Seen (great audience engagement):

<http://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html>

New Insights of Poverty (most memorable end of a presentation ever):

 <http://www.ted.com/talks/hans_rosling_reveals_new_insights_on_poverty.html>

In any case, a storyteller will be someone who fully understands trends and patterns in the data, but can still present it in a manner that is accurate, exciting, and engaging leaving the audience entirely at awe.

Standardization

At the end of the day, if visualization continues to infiltrate the mainstream there could be permanent changes on the way information is shared, displayed, analyzed and ultimately interpreted. There are many things happening in the world of visualization, the ability to identify trends in seconds can bridge the gap and get researchers that much closer to real time behavior/insights and the coveted seat at the table. However, there are considerations that I believe should be part of the learning curve prior to releasing Data Visualization into the mainstream.

 Ubiquitous data and data visualization tools are things to carefully consider. Spreading information in an engaging and simple form is a powerful tool and at the same time dicey; if not done properly, it can lead to incorrect knowledge going amuck. Let’s think about this example… in centuries past, the popular belief was that the earth was flat and maps of ancient times depicted this “common knowledge” and it wasn’t until Columbus challenged this with his travels that a new truth was established, but “the earth is flat concept” was perpetuated by the visualization for a very long time.

 Colors, shapes, and forms while engaging can also be distracting. This is where a lot can go wrong since people can be wowed by engaging data visualizations, but we should carefully examine and challenge them (the same way as we challenge spreadsheets or presentation) at least until there is official consensus and guardrails. Hopefully in the coming years we will see these guardrails created on the art and science of visualizations to ensure they are done properly to only disperse the truth.

Infographics and Dashboards

An area of visualization that trips people are the differences between Infographics and Dashboards. While both are ways to visualize information, infographics tend to be artistic and less restrictive in nature but need to be created from scratch which requires time and specialized skills. On the other hand, dashboards are more turn-key where data just needs to be uploaded and formatted. As an industry, we will need to come to a resolution on when it is appropriate to use one or the other. As a starting point, I would offer the following considerations to help navigate such situations:

 A coveted commodity in most corporate environments is Time where “a.s.a.p.” and “yesterday” are commonplace when setting deadlines. Everyone is usually time-starved with short attention spans.

 While getting cheaper, Data housing and and availability makes a big difference. Usually, it can be a costly proposition to migrate or combine disparate sources.

 It is unlikely that our educational system will turn graphic design into a core requirement for graduation. So, a lot of those skill sets may continue to be niche.

 Communication of new ideas or findings can be a daunting task; gaining acceptance tends to be easier through established platforms that organizations are already familiar or comfortable with.

I guess it depends on the specific field you’re in, but most organizations I have encountered prefer a way to dynamically connect data across many sources and have it available and integrated in real-time. While I would prefer to say that infographics will be commonplace, the above points I described suggest a better environment for dashboards to become the prevalent form of communicating information from larger data sources in corporate environments.

The New Era

I am not 100% sure about what exactly lies ahead, but one thing is certain… the amount of information and the knowledge to be gleaned from data will continue. We are heading into a world where less is more, there is not enough time to learn or be exposed to all and it is likely that these trends will continue so my bet is that Data Visualization is poised for growth. There are things to be cautious of, some of these watch outs I mentioned before while others will be revealed as we journey along the learning curve.

Remember that data visualization is but one way to interact with information and does not represent an excuse to not having an in-depth knowledge on the subject (different from knowing the statistics), that is still your responsibility. If you want to become a true storyteller, you should be willing to take the necessary steps do this form of communication justice.

I would love to see visualization become a standard over the next few years but before we scream in the street that we’re there, we should take steps to ensure we are prepared and have a roadmap with guidelines that will ensure the success and integration of Data Visualization into the mainstream.