

White Paper

Towards Effective Decision-Making Through Data Visualization: Six World-Class Enterprises Show The Way

Abstract

We live in an age where it is increasingly becoming important for businesses to make sense of the humongous mound of data that lie at their doorstep. Every click of the mouse, every swipe, every tweet and every check-in is further adding to this data mound. How can businesses analyze all this data and use it for effective decision-making?

The human brain finds it difficult to understand plain numbers but when the same numbers are visualized, it brings the story alive. To solve their data riddle, more and more businesses are therefore taking the data visualization route to gain actionable insights from their data. Also thanks to the developments in technology, the interactivity of these visualizations have reached a whole new level. Users no longer have to be experts in number-crunching skills to gain insights from them. Their charts and dashboards do the job helping them identify patterns and pattern violations (trends, gaps and outliers) in the data.

This white paper highlights 6 such enterprises that have effectively used data visualization to solve their day-to-day business challenges. Whether it is Walmart planning its inventory based on social signals or it is Netflix which is trying to gain more visibility into its operations, data visualization is helping businesses find answers to some critical questions. From P&G uncovering new opportunities for growth to MailChimp providing better ways of targeting and from Twitter monitoring its complex workflows to Airbnb making its search algorithm more location-relevant— data visualization is finding its way into varied roles.

How Walmart uses data visualization to convert real-time social conversations into inventory?

Each week, more than 245 million customers visit Walmart's 10,900 stores and 10 websites worldwide. Its sales figures for fiscal year 2013 stood approximately at \$466 billion and it has close to 2.2 million employees working for it.



At Walmart, data-driven decisions are more like a norm than an exception. A big part of their data endeavors are based on social data—tweets, blogs, pins, comments, shares, and so on. And the task of mining all that data to generate retail-related insights rests on the team at WalmartLabs.

Capturing the social retail pulse through data visualization

As Arun Prasath, Principal Engineer, WalmartLabs, points out in an article published in the WalmartLabs blog, *"Social Media Analytics is all about mining retail-related insights from social channels, a perilous and personally exciting task to us. When our team spent the 22nd of November feverishly following the social retail pulse on Black Friday, we knew the world wasn't preparing for an apocalypse."*

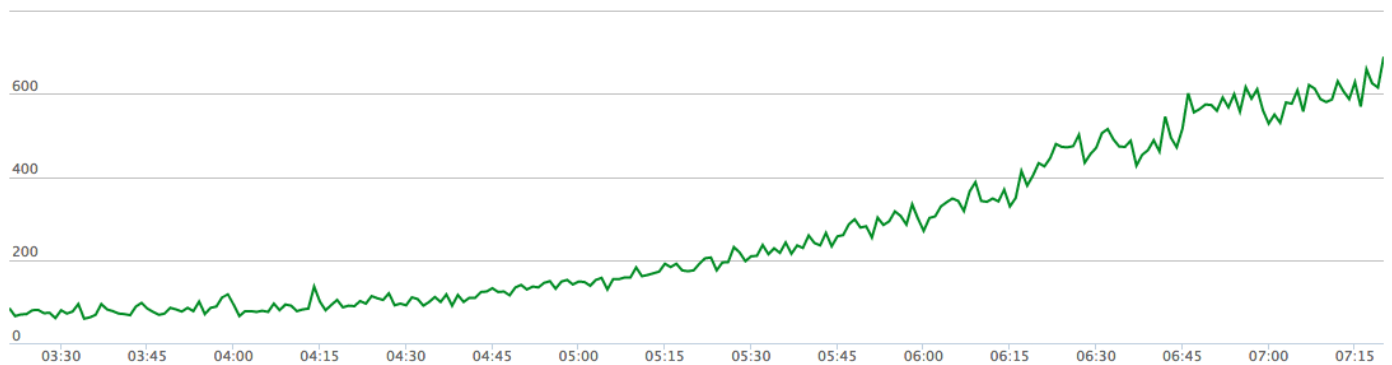


Fig: By using real-time data visualization, the team observed a clear upswing in Walmart related social buzz on 22nd November, 2012 which gently reminded them of the promise that lay hidden deep within the treasure of the social data goldmine. Source: @WalmartLabs blog

In an age where sharing of information has been made easy, thanks to social media, such social buzz typically precedes all important product launches. People are frequently expressing their views about the latest smartphone or the coolest video game to be hitting the shelf. WalmartLabs taps this social buzz and helps buyers plan their inventory and assortment.

Arun Prasath cites the following example. Few days ahead of its launch, Sony's Android phone Xperia Z showed a similar spike in social activity.

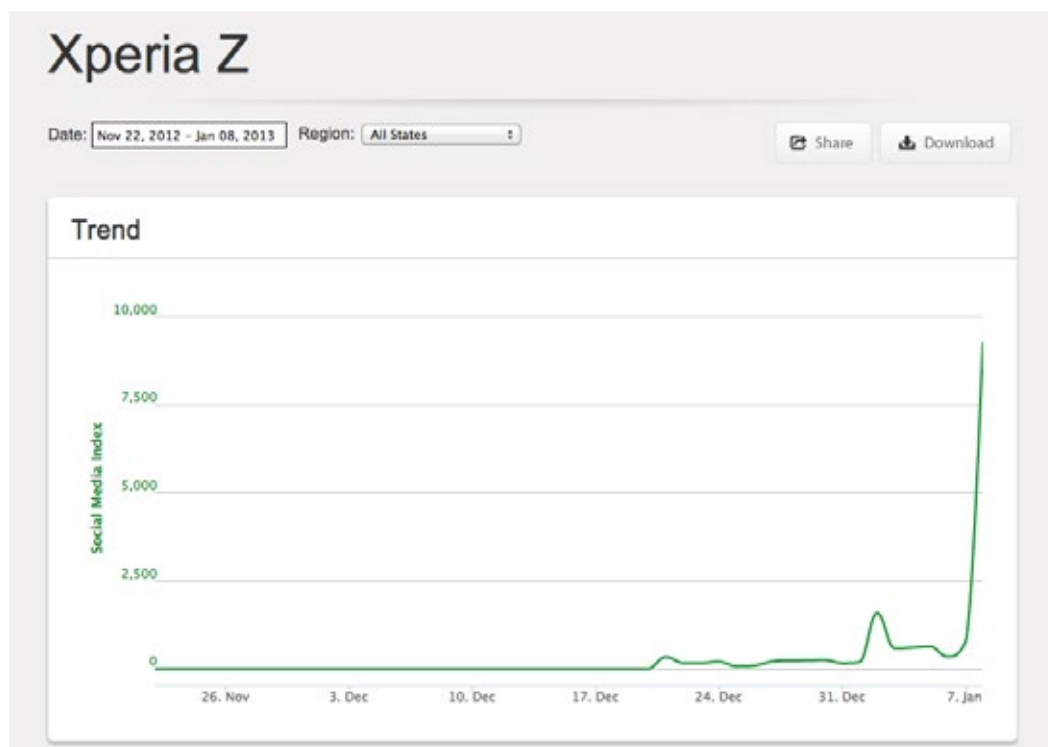


Fig: Such insights gathered through data visualization and social media analytics helps its buyers make smarter decisions ahead of time. Source: @WalmartLabs blog

WalmartLabs uses such spikes in social network chatter to predict demand for out-of-the-ordinary products, too. In 2011, the team correctly anticipated heightened customer interest in cake-pop makers based on social media conversations on Facebook and Twitter. A few months later, it noticed growing interest in electric juicers, linked in part to the popularity of the juice-crazy documentary *Fat, Sick and Nearly Dead*. The team sends these data to Walmart's buyers, who then use it to make their purchasing decisions.

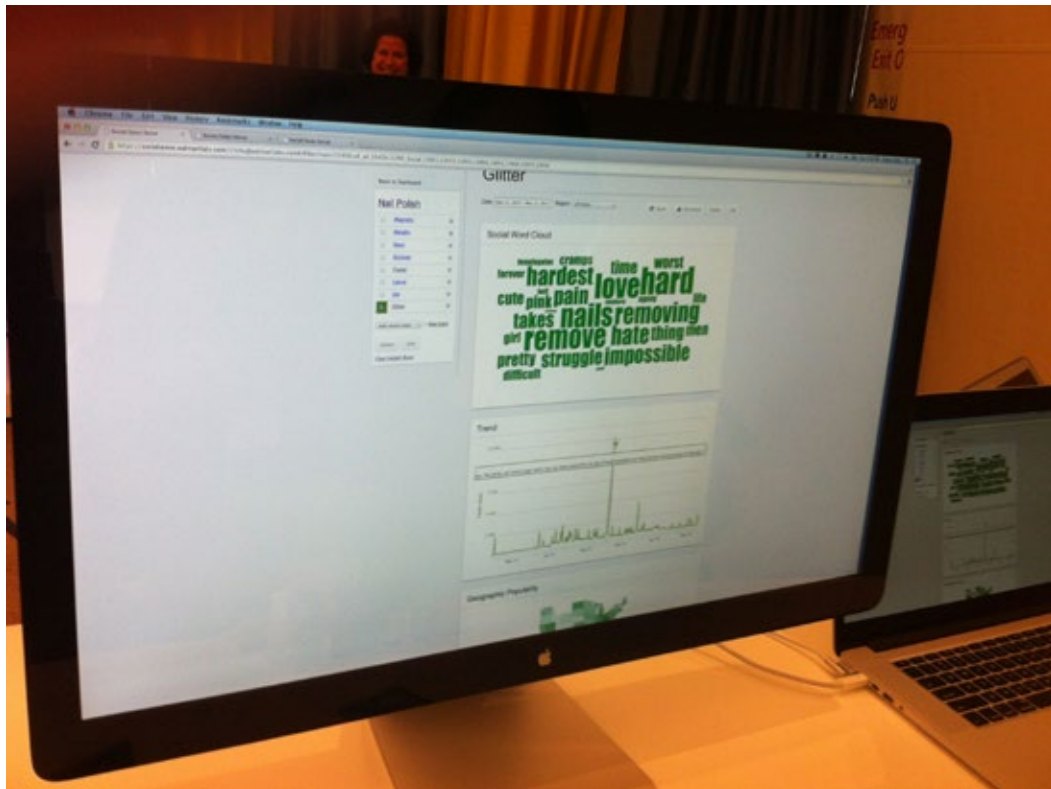


Fig: The Social Media Analytics dashboard for buyers allows them to get better insight into consumers' thoughts on products.
Source: Gigaom.com

Walmart's buyers also get a sense of what they should stock online and in stores by checking out pins on Pinterest. Top pins feed into a social-media analytics dashboard for buyers. So do the reports from Twitter that engineers have created by visualizing and analyzing Twitter feeds. Buyers can see when the number of tweets on, say, gel nail polish peaked and see which colors were the most popular in which locations.

"OMG!!! dis is sooo coool! i luv ma new fone."— Challenges & the way forward

The language used in social forums is heavily unstructured, informal, and often ungrammatical. Mining petabytes of such social data to filter out what is relevant and then mapping it to meaningful retail products is an uphill task. Popular text analytics and natural language processing techniques based on standard language models do not suffice.

One of the several techniques which WalmartLabs adopts to overcome this challenge is to look for the several hand-verified n-grams around brands in a large time window.

As Prasath points out, there are several such techniques in the offing. *"It is only after conquering all of these multifold challenges that meaningful recommendation can be made...Our social media analytics project operates on top of a searchable index of 60 billion social documents and helps merchants at Walmart monitor sentiments and popular interests real-time, or inquire into trends in the past. One can also see geographical variations of social sentiments and buzz levels. There are also tools that marry search trends on walmart.com, sales trends in our brick-and-mortar stores and social buzz all in one place, to help make correlations. Together, these tools provide powerful social insights."*

To sum up:

People are constantly talking about products on social media. It is crucial for a retailer to transform this humongous amount of social data into meaningful information and make it available in a form which their buyers can understand and use for assortment and inventory planning.

The secret to successful retailing lies in delivering the right product at the right place and at the right time. And social media analytics coupled with data visualization can help the buyers achieve the same with remarkable results.

How Netflix plans to improve its operational visibility with dynamic data visualization?

In mid-March 2013, Netflix reported a global streaming subscriber list of 33 million. It increased to 36.3 million (29.2 million in U.S.) in April 2013. It had 40.4 million subscribers (31.2 million in U.S.) in September 2013. By Q4 2013, it reported 33.1 million subscribers in U.S alone.



With its subscriber list growing by leaps and bounds, Netflix faces the daunting task of supporting millions of connected devices spread across 40+ countries. At such a big a scale, it is impossible to manually monitor all that data. Imagine having to detect a system fault in an environment that is not only large and complex but also highly distributed.

To thwart such operational nightmares from occurring, the Netflix team is working on a greenfield project that focuses on building the next generation tools for operational visibility that can proactively detect and communicate system faults and identify areas of improvement.

Building systems to create greater visibility into an increasingly complicated and evolving world

In an article posted on the Netflix blog, Ranjit Mavinkurve, Justin Becker and Ben Christensen share their ideas on how they want to extend and improve the existing insight tools at Netflix.

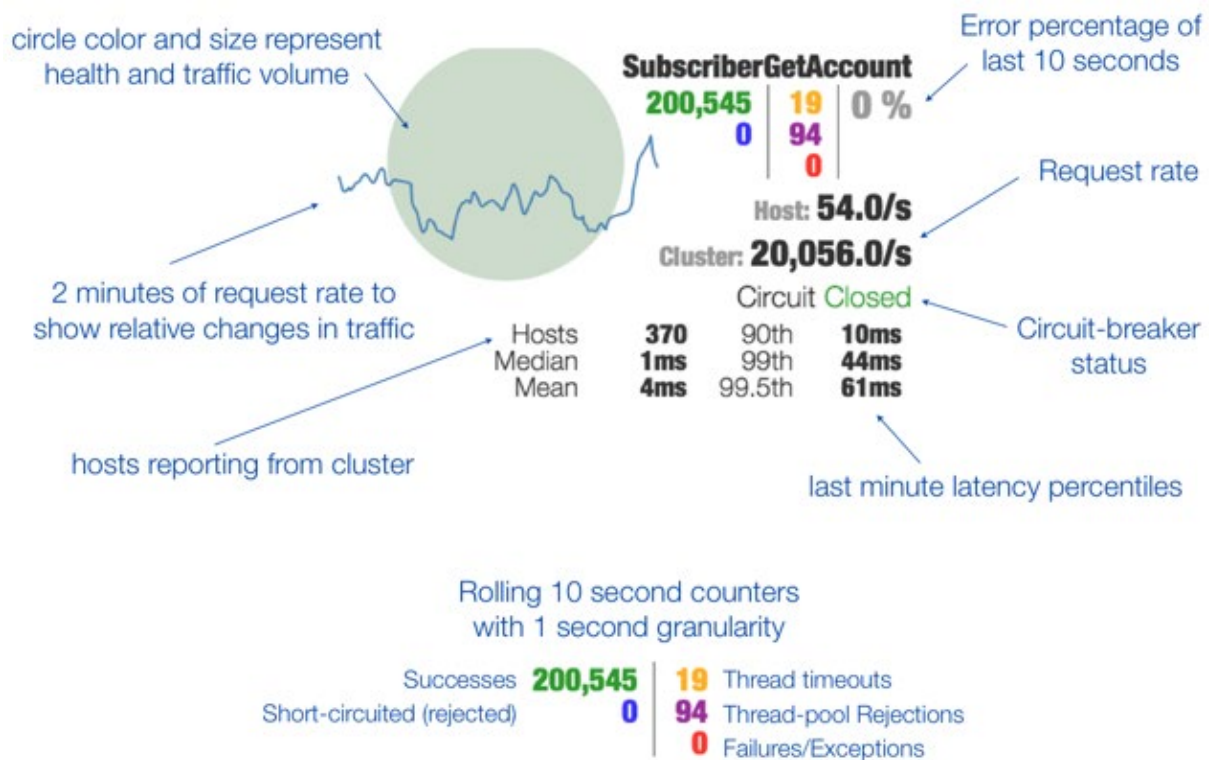


Fig: An excerpt from the current Netflix dashboard along with explanations of what all the data represents. Source: Techblog. netflix

The tools that are currently in Netflix's arsenal include dashboards that display the status of their systems in near real time, and alerting mechanisms that notify them of major problems. While these tools are very helpful, the team feels there is a huge scope of improvement in them.

"With our next generation of insight tools, we have the opportunity to create new and transformative ways to effectively deliver insights and extend our existing insight capabilities. We plan to build a new set of tools and systems for operational visibility that provide the insight features and capabilities that we need."

Improving on their Data Visualization capabilities

Among other things, the team wants to focus on improving the data visualization capabilities of its tools. At Netflix, data visualization has always been of paramount importance. Many of Netflix's major systems contain significant data visualization components and employees routinely look to existing data viz tools

to tweak algorithms, garner new insights, and solve pressing business issues.

The existing insight tools at Netflix are system-oriented. They are built from the perspective of the system providing the metrics. This results in a proliferation of custom tools and views that require specialized knowledge to use and interpret. Also, some of the tools tend to focus more on system health and not as much on the customers' streaming experience.

With the new set of tools, the team wants to tailor the insights and views to meet the needs of the tool's consumers—internal staff members such as engineers who want to view the health of a particular part of the system or look at some aspect of the customers' streaming experience.

"Our existing insight tools have dashboards with time-series graphs that are very useful and effective. With our new insight tools, we want to take our tools to a whole new level, with rich, dynamic data visualizations that visually communicate relevant, up-to-date details of the state of our environments for any operational facets of interest. For example, we want to surface interesting patterns, system events, and anomalies via visual cues within a dynamic timeline representation that is updated in near real-time."

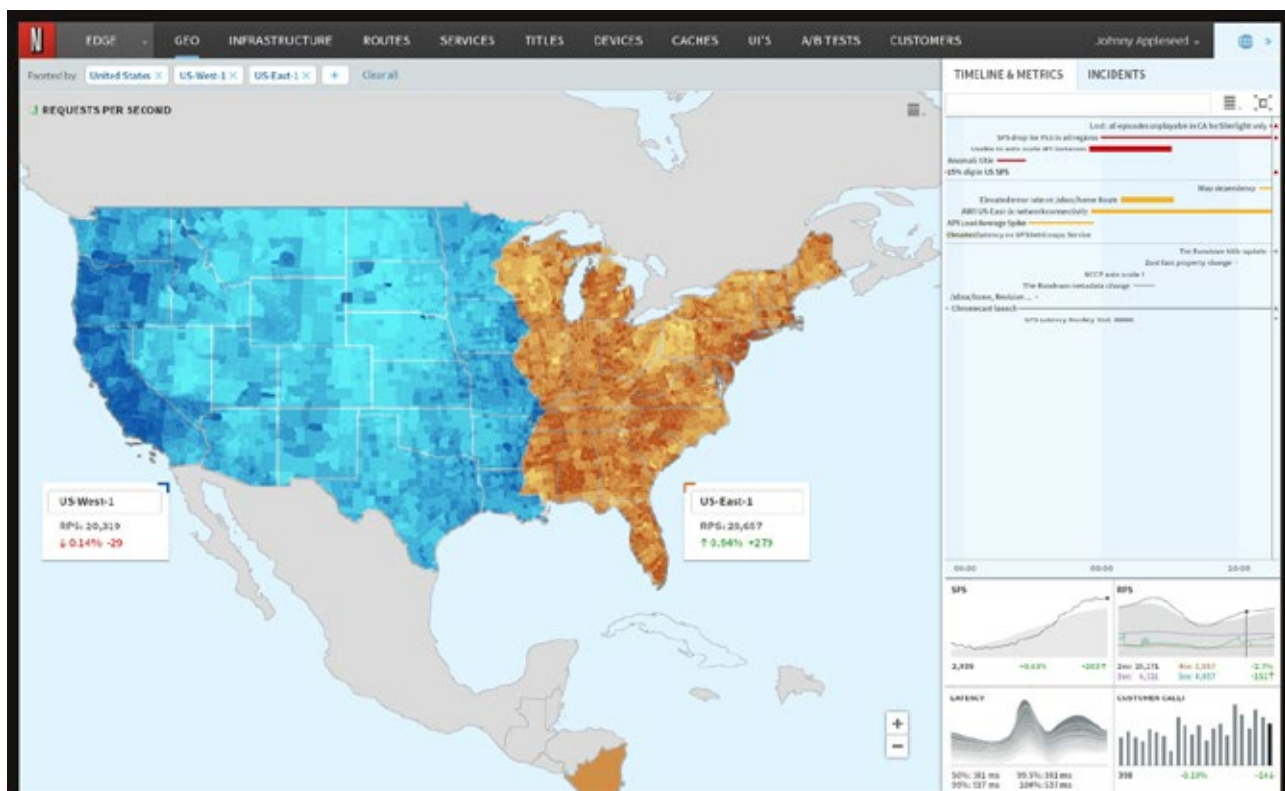


Fig: The mockup (with dummy data) for one of the views shows several components within the design: a top level navigation bar to switch between different views in the system, a breadcrumbs component highlighting the selected facets, a main view module (a map in this instance), a key metrics component, a timeline and an incident view, on the right side of the screen. The main view communicates data based on the selected facets. Source: Techblog.netflix

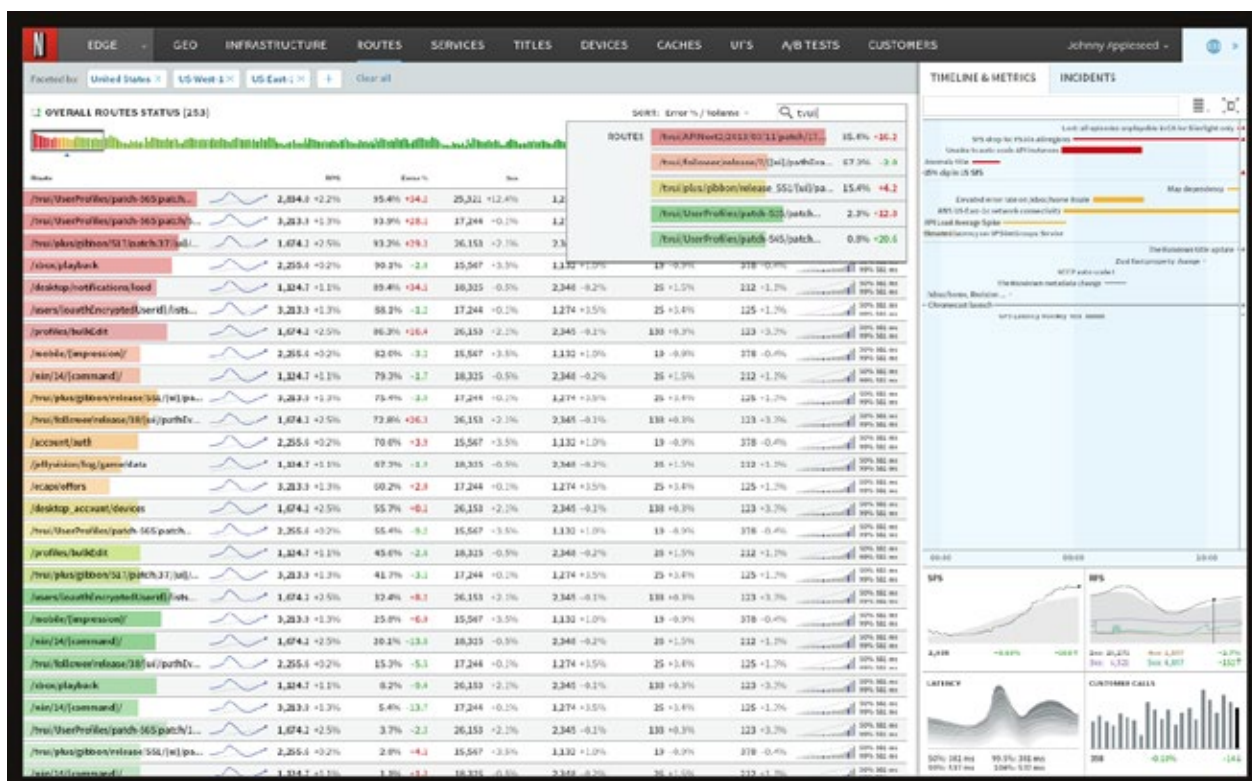


Fig: Another mockup (with dummy data) represents another view in the system and displays routes in their edge tier with request rates, error rates and other key metrics for each route updated in near real-time. Source: Techblog.netflix

As per the team, all views in the new system will be dynamic and will reflect the current operational state based on selected facets. A user can modify the facets and immediately see changes to the user interface.

To sum up:

With the help of dynamic data visualization and real-time insights, Netflix aims to achieve an in-depth understanding of operational systems, make product and service improvements, and find and fix problems quickly so that it can continue to innovate rapidly and delight customers at every interaction. And a happy customer is what it takes to be successful in the long run and Netflix knows that for sure!

How P&G uses data visualization to uncover new opportunities for growth?

With several world famous brands like Pampers, Ariel, Gillette and Olay in its kitty, Procter & Gamble touches 4.4 billion people globally. P&G brands are available in more than 180 countries. As the world's largest consumer packaged goods company they have a lot of data.



To maintain its global leadership status, P&G has to continuously keep a tab on market trends, respond rapidly to them and find new opportunities to improve the lives of its consumers. The ability to analyze this massive amount of data is critical to running the business in real-time and being responsive to changes in the marketplace.

Under its Ex-CEO Bob McDonald, P&G chalked out an agenda to “digitize” the company’s processes from end to end to make data easily accessible to its decision makers. **Business Sufficiency**, **Business Sphere** and **Decision Cockpits** were the primary enablers of that agenda.

Business Sufficiency models to focus on exceptions and provide forward looking projections and scenarios

According to an article published in InformationWeek, “the Business Sufficiency program, gave executives predictions about P&G market share and other performance stats six to 12 months into the future. At its core is a series of analytic models designed to reveal what’s happening in the business now, why it’s happening, and what actions P&G can take.”

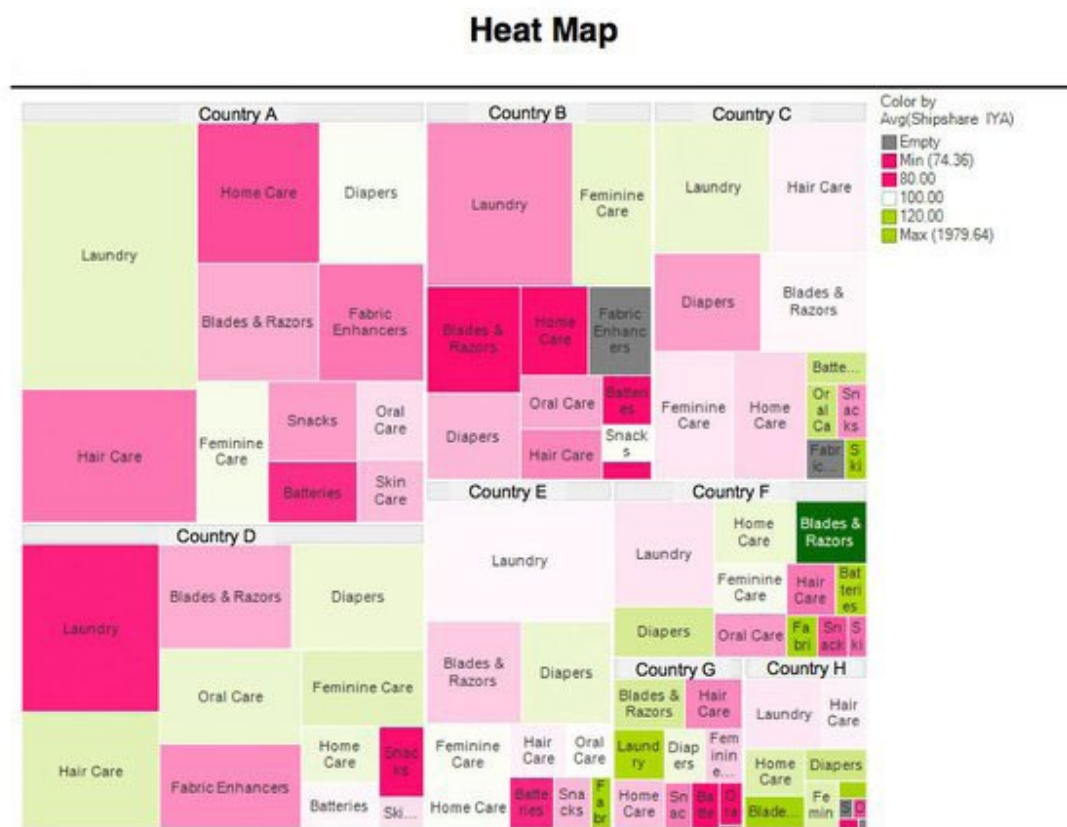


Fig: The heat map simultaneously shows all the markets in which P&G products compete and their relative share (red indicating low market share and green indicating high market share), and also puts in clear perspective the importance of growing the share of any one of those markets. Source: blogs.hbr.org

The “what” models focus on data such as shipments, sales, and market share. The “why” models highlight sales data down to the country, territory, product line, and store levels, as well as drivers such as advertising and consumer consumption, factoring in region and country-specific economic data. The “actions” analyses look at levers P&G can pull, such as pricing, advertising, and product mix, and provide estimates on what they deliver.

“All these models have three things in common. First, they focus on exceptions, what’s doing better and worse than expected, so P&G executives can learn what’s working and copy it, while heading off the flops. Second, the models are all predictive, and delivered through dashboards, charts, and supplemental analytics served up through data visualization and analysis software. The predictions are continually refined toward the end of each quarter. Third, they show a range of possible outcomes, allowing for what-if scenario planning.”

This complex data is presented visually in business processes, allowing decision makers to view the data more easily, process the information faster, and quickly turn insights into actions. Decision makers around the globe see the same business data in the same way at the same time, allowing them to collaborate more effectively.

Business Sphere to allow leaders to actually ‘see’ their data

As the Business Sufficiency models started providing rich data visualizations, P&G’s IT team realized something was missing and after several rounds of brainstorming, the Business Sphere was conceptualized.



Fig: Business Sphere allows company leaders to harness massive amounts of data to make real-time business decisions. Source: Mckinsey.com

The Business Sphere is a meeting room with a football-shaped conference table at its center surrounded by two 30-foot-wide projection screens. Six different dashboard and data visualization views can be projected across the screens. At each end of the room are smaller displays that let executives in far-flung locations join meetings via video. Remote executives can see the same data visualizations displayed in the meeting room from their laptops or iPads.

To answer a set of questions, the program analyzes and connects as much as 200 terabytes of data (equal to the amount of information contained in 200,000 copies of Encyclopedia Britannica), allowing for unprecedented granularity and customization. The way the data is presented uncovers insights, trends, and opportunities for business leaders and prompts them to ask different and very focused business questions. If one question elicits a follow-up question, it can be addressed with data on-the-spot.

The visualization helps people to “see” the data in ways they would not have been able to with just num-

bers and spreadsheets. It challenges assumptions while simultaneously presenting the data in different ways, revealing potential solutions that previously may have not been apparent.

P&G has implemented the Business Sphere in more than 50 offices worldwide.

Decision Cockpits to display key information on desktops

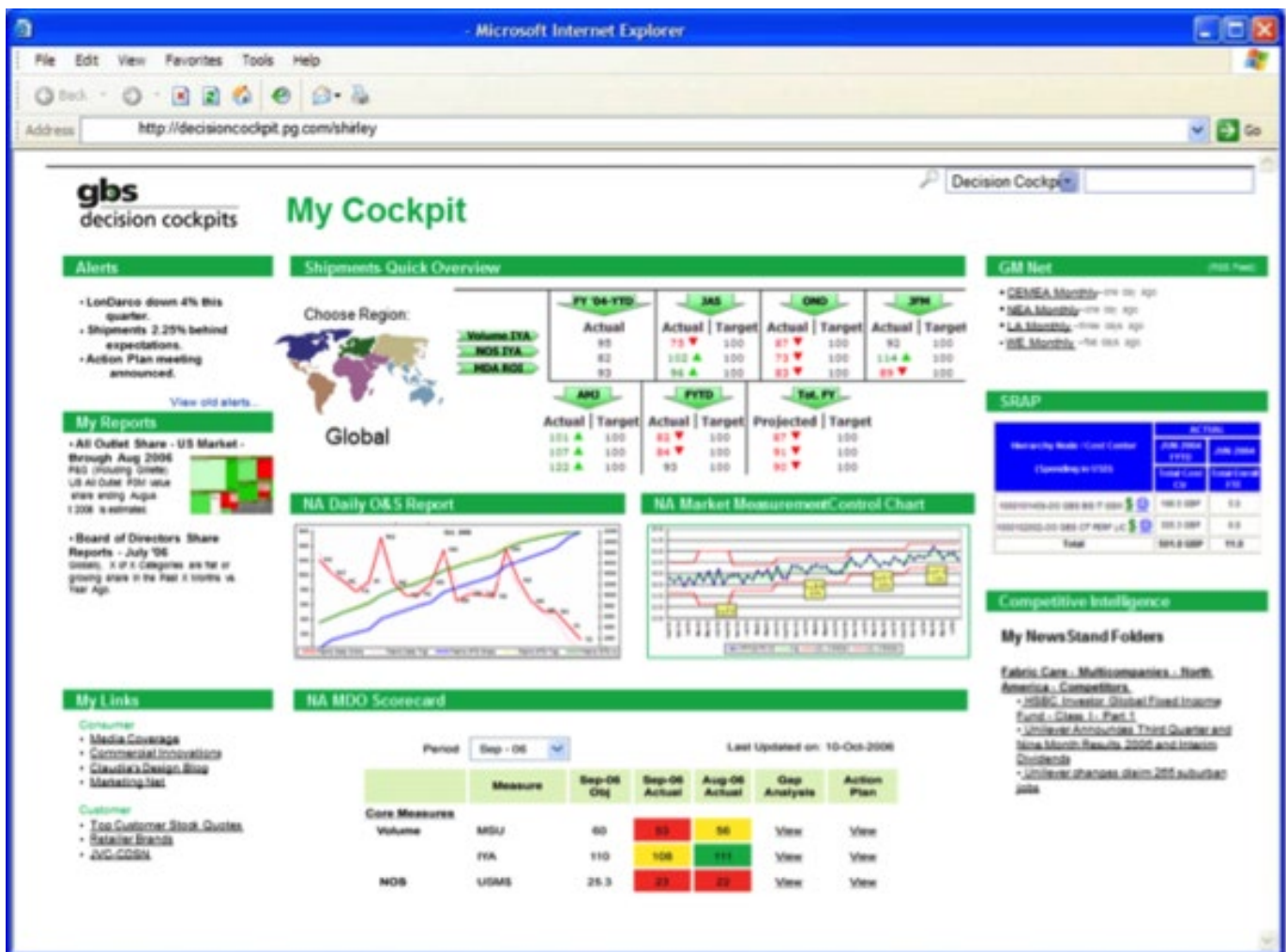


Fig: Decision Cockpit makes data available on the desktops of decision makers. Source: blogs.hbr.org

Pursuing with its goal of 'information democracy', P&G has made data available on the desktops of more than 50,000 employees through the Decision Cockpit. In an article published in Information Week, Filippo Passerini, P&G's Business Services Group President and CIO, explains that "The decision cockpit is focused on forward-looking projections rather than historical reporting, with three-month, six-month and 12-month projected trend lines for market share, cost of goods, and margins. All of the data is drillable, meaning you drop down from the company-wide views to study performance by country, region, brand, and product."

Data offered through the decision cockpit includes business monitoring, end-to-end initiative manage-

ment, business planning and organizational management, as well as business health assessment, initiative tracker and coverflow—all in one location. Users can add “Favorites,” focusing in on just the data they need. Users also can set their own, personalized default page, cutting down on search time.

“With the success of the decision cockpit, P&G has been able to do away with more than 80% of the company’s standardized business intelligence reports. Most users embraced the new approach as more attractive and usable than spreadsheet-based reports sent by email, but in some cases users had to be “forced over the hump” of reliance on the old reports”, Passerini added.

P&G’s single source of truth

Each week, P&G executives across the globe meet in the Business Spheres to review the latest results and forecasts available through the decision-cockpit dashboards. Executives can discuss what to do about gains and losses based available metrics. That might mean adjusting pricing, changing the product mix, changing merchandising approaches or increasing marketing expenditures to regain market share where there are losses or to improve margins where conditions are strong.

“What’s different now is that all this data is coming together in the context of the business discussion,” Passerini said. “And because it’s the single source of truth for P&G executives around the globe, it’s not fragmented by geography or management level and, importantly, it’s coming in real time to make better decisions faster in every single business review we do.”

To sum up:

By eliminating the delay of manually collecting and aggregating data, P&G’s data visualization and analytics systems have improved productivity and collaboration, simplified work processes, reduced the decision-making cycle time, and has enabled them to focus on innovating for the consumer. When data exists outside product and geographic silos and is made comprehensible and accessible, it has the power to create magic, and P&G is a living proof of that.

How MailChimp uses big data & visualization to help users better segment and target their subscribers?

What started off as a side project in 2001 is today used by more than 5 million people to create, send, and track email newsletters. From one man startups to Fortune 500 companies, about 6 billion emails get sent every month using MailChimp. With a focus on usability and good design, MailChimp is undeniably one of the world's most popular email marketing service provider.



In an article published in the MailChimp blog, Ben Chestnut, CEO and Co-Founder, MailChimp says that *"Every once in a while a MailChimp customer will ask me, "Hey, MailChimp's been great for keeping in touch with my loyal customers. But is there any way to buy or rent an email list from you guys, so I can promote my business to potential customers in my area?" That's when I explain to them the perils of purchased emails, and the virtues of organically growing a permission-based list."*

To help users grow their email list more legitimately, MailChimp introduced an app called Wavelength in January 2012.

Wavelength—Helping users discover publishers like them

Simply put, Wavelength allows users to find publishers like themselves and discover at a high level what other content their readership is engaged with. It unveils clusters within an email list and helps a busi-

ness understand its audience's other passions—which can lead to strategic partnerships and inform the content strategy for the business.

John Foreman, Chief Data Scientist, MailChimp was entrusted with the task of digging into millions of email addresses and lists that was part of the MailChimp database and find out patterns and trends from them.

Identifying clusters through big data visualization

In an article published in the MailChimp blog, Foreman explains how they used Big Data, Mathematics and Visualization to identify clusters in a user's mailing list.

For example, they looked at the mailing list of a user that sold t-shirts. The main aim was to help him *"understand unique pockets of his audience and better target individuals based on their interests."*

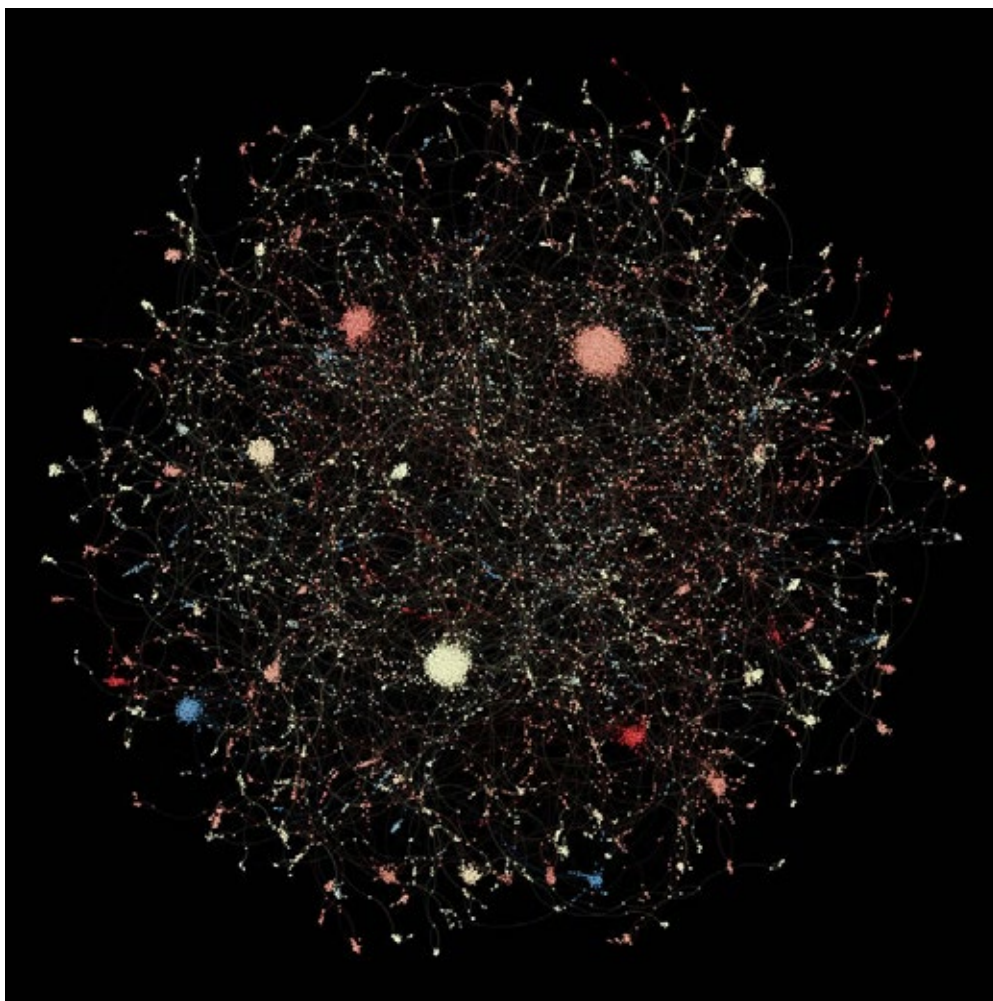


Fig: A high level visualization of a t-shirt seller's subscriber list. Source: Blog.MailChimp.com





Fig: Subscriber cluster with common interests in fitness, knives, high-end sunglasses and Dance Floor Filth 2. Source: Blog. MailChimp.com

They tried similar clustering for other users as well.



Fig: For a user that sent fashion and beauty tips, they identified a cluster with interests in knitting, wedding music, wedding invitations, and customized jewelry. Source: Blog. MailChimp.com

Opening up new opportunities for users

Wavelength neither helps users send a promotion to another list nor does it provide other lists or email addresses to users. It just shows users screenshots of other newsletters that some of their subscribers read. The goal is to help them contact and partner with those publishers. Ideally, users can link to each other and help each other grow their lists organically.

Users can place ads on the related publisher's site to attract more subscribers. They can have promotional offers focusing on the specific interest of a cluster. When combined with engagement data, they could also figure out which clusters are more engaged than the list as a whole, and then plan their own content strategy accordingly. The marketing potential of such cluster based segmentation and targeting is enormous.

To sum up:

By visualizing and analyzing relationships within its enormous database, MailChimp aims to equip its users with better ways of targeting and providing relevant content to its subscribers. And more targeted content means better engagement, which often leads to increased brand affinity and increased sign-ups and ultimately more revenue.

How Twitter uses data visualization to track its complex workflows?

Known as “the SMS of the Internet”, this 140-character online social networking and microblogging service revolutionized the way we connect with people online. As on September 2013, the company’s data showed that 200 million users send over 400 million tweets daily.



To deal with the various tasks that go into managing this huge system, its engineers create workflows using a variety of tools and languages, including Pig and Scalding. Some of these tasks can run in parallel and some in serial fashion, if one job depends on the output of another. One difficulty many of them face when using these tools is visibility—when a Pig script is executed, multiple MapReduce jobs might be launched. As these jobs run, the status of individual jobs can be monitored with the Hadoop Job Tracker UI, but overall progress of the script can be difficult to monitor.

Ambrose, visualizing and monitoring large scale data workflows

Ambrose was born at one of Twitter’s quarterly held Hack Week. Its creators Bill Graham and Andy Schläpfer wanted to have a platform that would allow visualization and real-time monitoring of large scale data workflows.

Ambrose presents a global view of all the MapReduce jobs derived from workflows after planning and optimization. As jobs are submitted for execution on the Hadoop cluster, Ambrose updates its visualization to reflect the latest job status.

Ambrose provides the following in a web UI:

- ▶ A workflow progress bar depicting percent completion of the entire workflow
- ▶ A table view of all workflow jobs, along with their current state
- ▶ A graph diagram which depicts job dependencies and metrics
 - a) Visual weighting of jobs based on resource consumption
 - b) Visual weighting of job dependencies based on data volume
- ▶ Script view with line highlighting

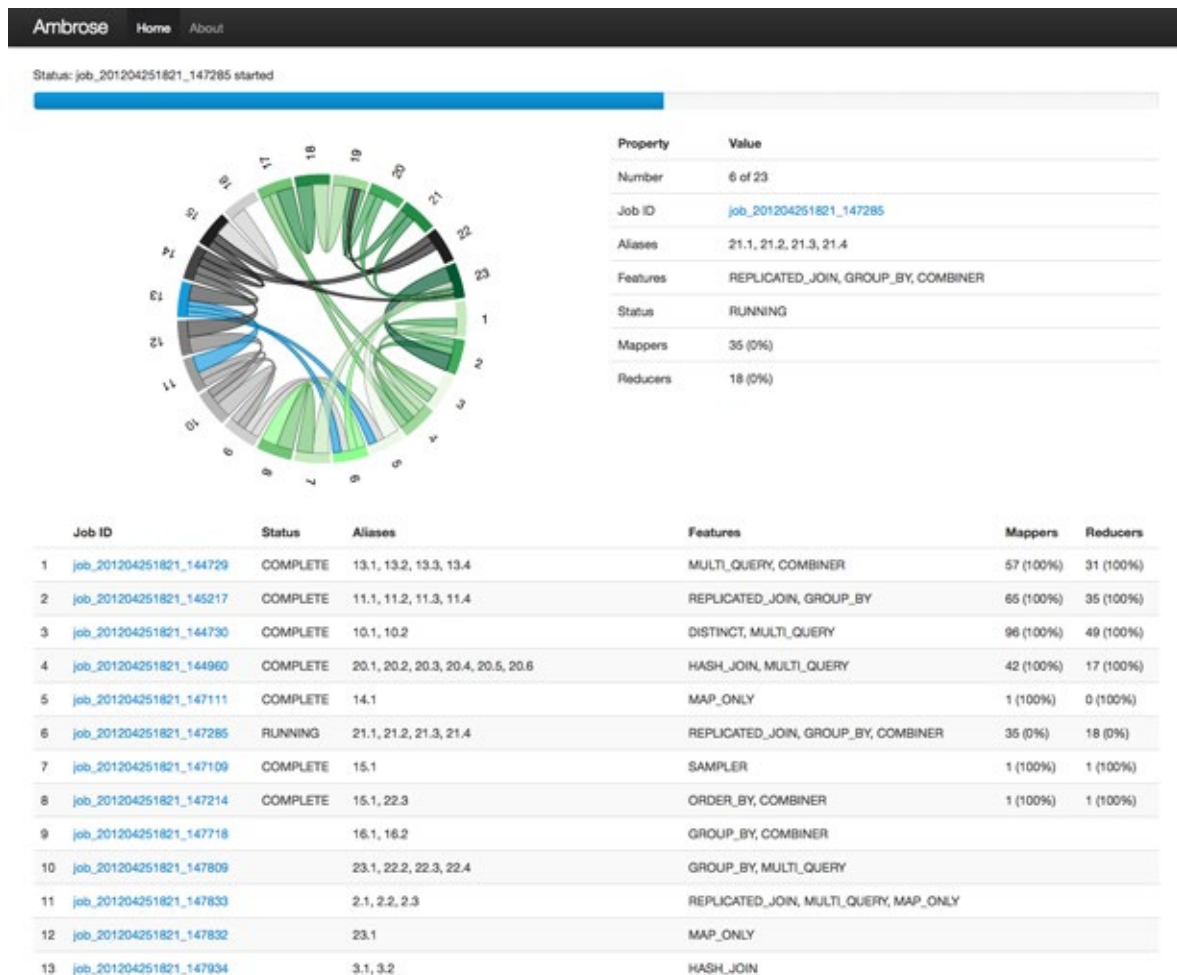


Fig: In this screenshot, we see the Ambrose UI for a workflow compiled from a single Pig script. The circular chord diagram in the upper left highlights dependencies between jobs. As a job's status changes, the color of its arc in the diagram changes. Statistics for the job most recently started are displayed to the right of the chord diagram. Summary information and status of all jobs is displayed in the table beneath these two views. Image Source: [blog.twitter.com](#)

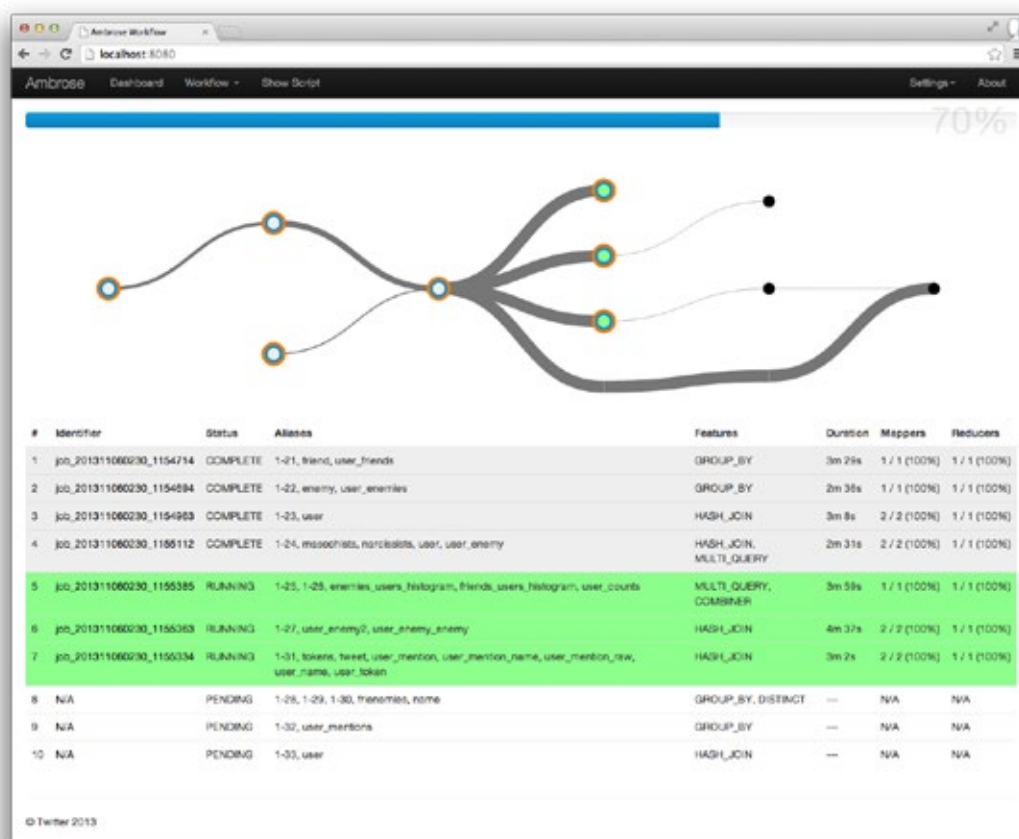


Fig: With Ambrose, the real-time status of a complex series of MapReduce jobs can be visualized succinctly, so that users can quickly understand how far computation has progressed and diagnose failures in context. Image Source: github.com/twitter/ambrose

The interface presents multiple responsive “views” of a single workflow. Just beneath the toolbar at the top of the window is a workflow progress bar that tracks overall completion of the workflow. Below the progress bar is a graph diagram which depicts the workflow’s jobs and their dependencies. Below the graph diagram is a table of workflow jobs.

All views react to mouseover and click events on a job, regardless of the view on which the event is triggered. Moving your mouse over the first row of the table will highlight that job’s table row along with the job’s node in the graph diagram. Clicking on a job in any view will select it, updating the highlighting of that job in all views. Clicking again on the same job will deselect it.

Because sharing is caring—going open source



Image Source: blog.twitter.com

At the Apache Pig Hackathon held in May 2012, Twitter open-sourced Ambrose. Initially when it was open sourced it only worked with Pig, however with contributions from the open source community the framework allowed support for other runtimes like Hive, Cascading and Scalding.

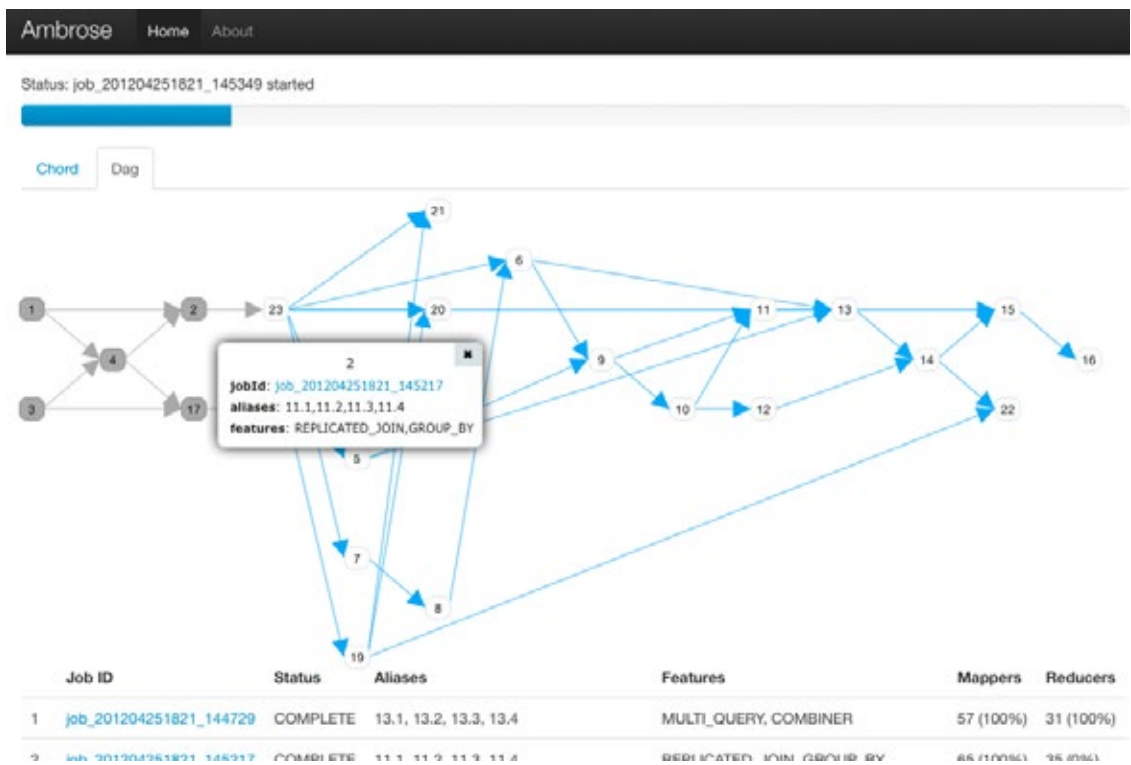


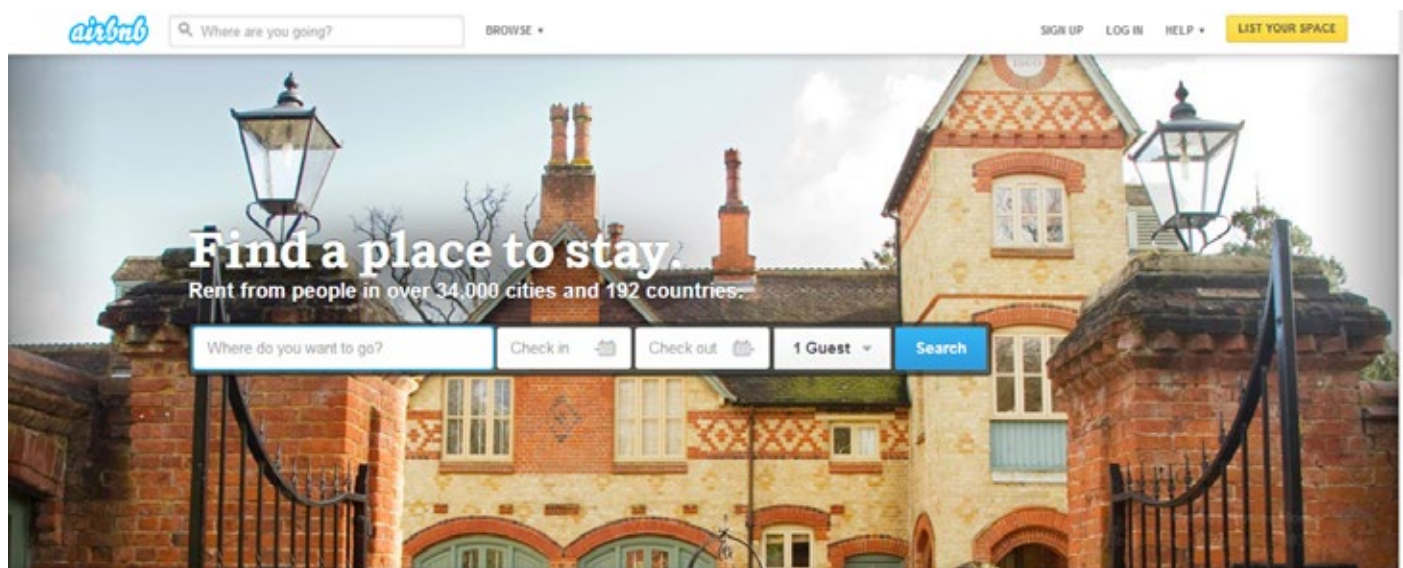
Fig: The open sourced version also included a graph layout of Pig EXPLAIN data. This visualization can be used to debug and better understand the Pig scripts. Image Source: Hortonworks

To sum up:

Comprehensive visibility is the first step to managing complex workflows and Twitter's data visualization tool Ambrose helps in providing that visibility into jobs. By providing the right context, it makes it easier for you to plan your jobs properly, monitor progress and diagnose failures well in time.

How Airbnb used conditional probability models and data visualization to make its search algorithm more location relevant?

Founded in August 2008, Airbnb is an online community marketplace for people to list, discover, and book unique accommodations around the world. With over 500,000 listings in more than 34,000 cities and 192 countries, Airbnb connects people to unique travel experiences.



To create those memorable experiences for its guests, Airbnb has to continuously come up with creative ways to help people find what they are looking for, sometimes in places they know very little about. The key to this is their search algorithm—a system that combines dozens of signals to surface the listings guests want.

Perfecting the search algorithm

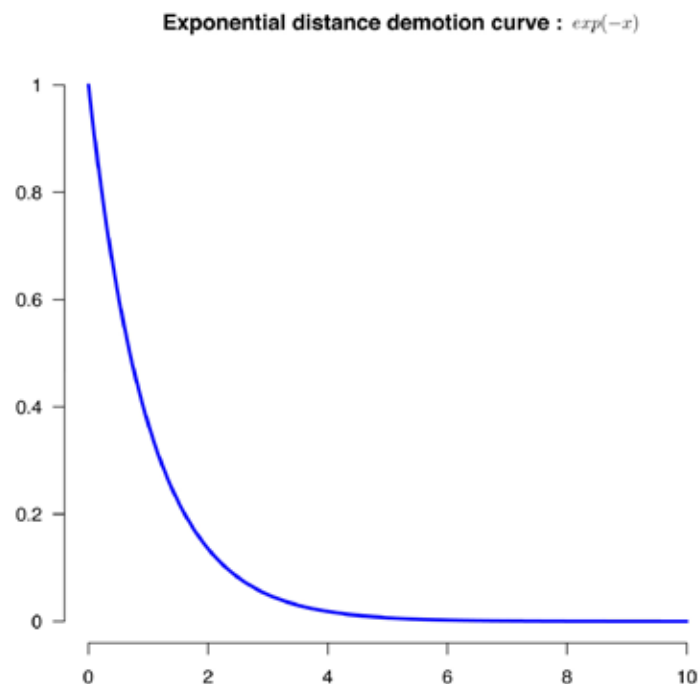
In an article published in the Airbnb blog, Maxim Charkov, Riley Newman & Jan Overgoor talk about how they went on to improve their search algorithm.

Initially when there was not enough data to understand what a guest would want, *"they returned what they considered to be the highest quality set of listings within a certain radius from the center of wherever someone searched (as determined by Google)."*



Fig: SF heatmap of listings returned without location relevance model. Image Source: nerds.airbnb.com

However, they soon realized that this model will not suffice in the long run. The listings that came up for a specific search query was spread randomly across the town, sometimes even outside the town. *"This is a problem because the location of a listing is as significant to the experience of a trip as the quality of the listing itself. However, while the quality of a listing is fairly easy to measure, the relevance of the location is dependent upon the user's query."*

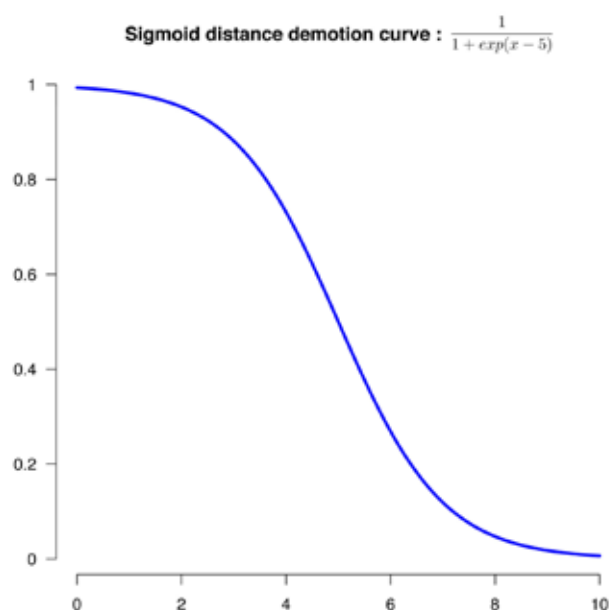


To improve on this, they “introduced an exponential demotion function based upon the distance between the center of the search and the listing location, which they applied on top of the listing’s quality score.” The logic behind being, listings that are closer to the center of the search area are more relevant to the query.



Fig: SF heatmap with distance demotion. Image Source: nerds.airbnb.com

Though this was a step forward in the right direction because it removed the issue of random locations, but the model overemphasized centrality, returning listings predominantly in the city center as opposed to other neighborhoods where people might prefer to stay.



To improve on the algorithm further, they "tried shifting from an exponential to a sigmoid demotion curve. This had the benefit of an inflection point, which we could use to tune the demotion function in a more flexible manner."

Listing Density from City Center

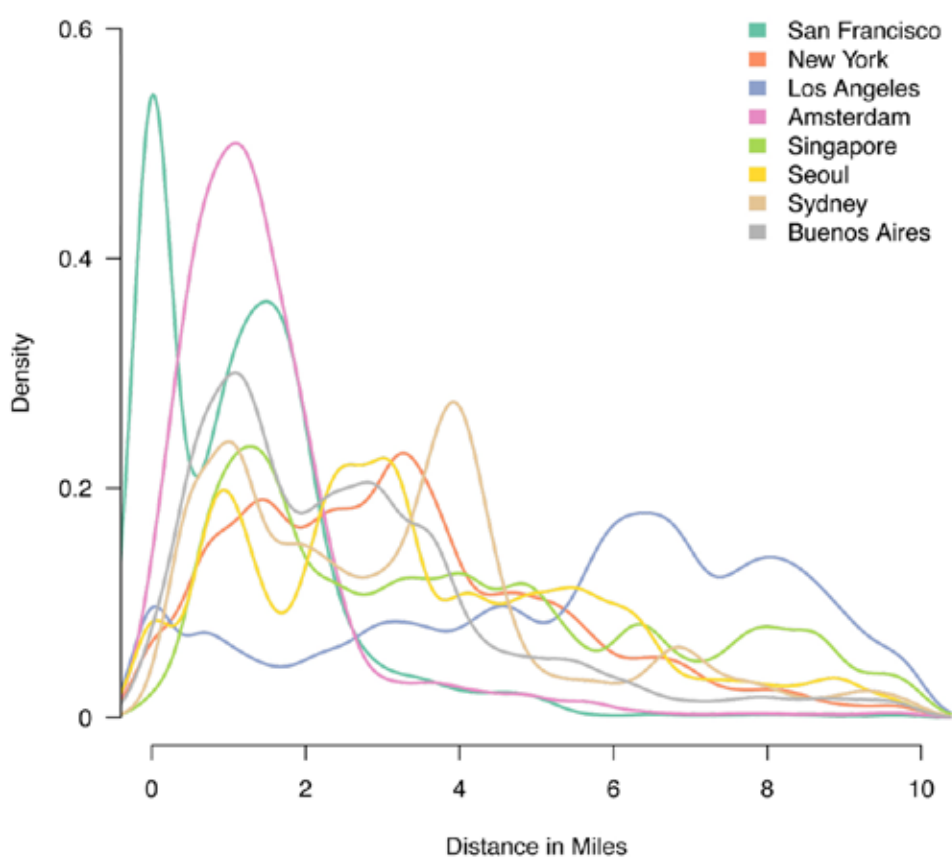


Fig: Listing Density from City Center. Image Source: nerds.airbnb.com

However, this modification was far from perfect too. Every city required individual tweaking to accommodate its size and layout. And the city center still benefited from distance-demotion. It quickly became clear that predetermining and hardcoding the perfect logic was too tricky when thinking about every city in the world all at once.

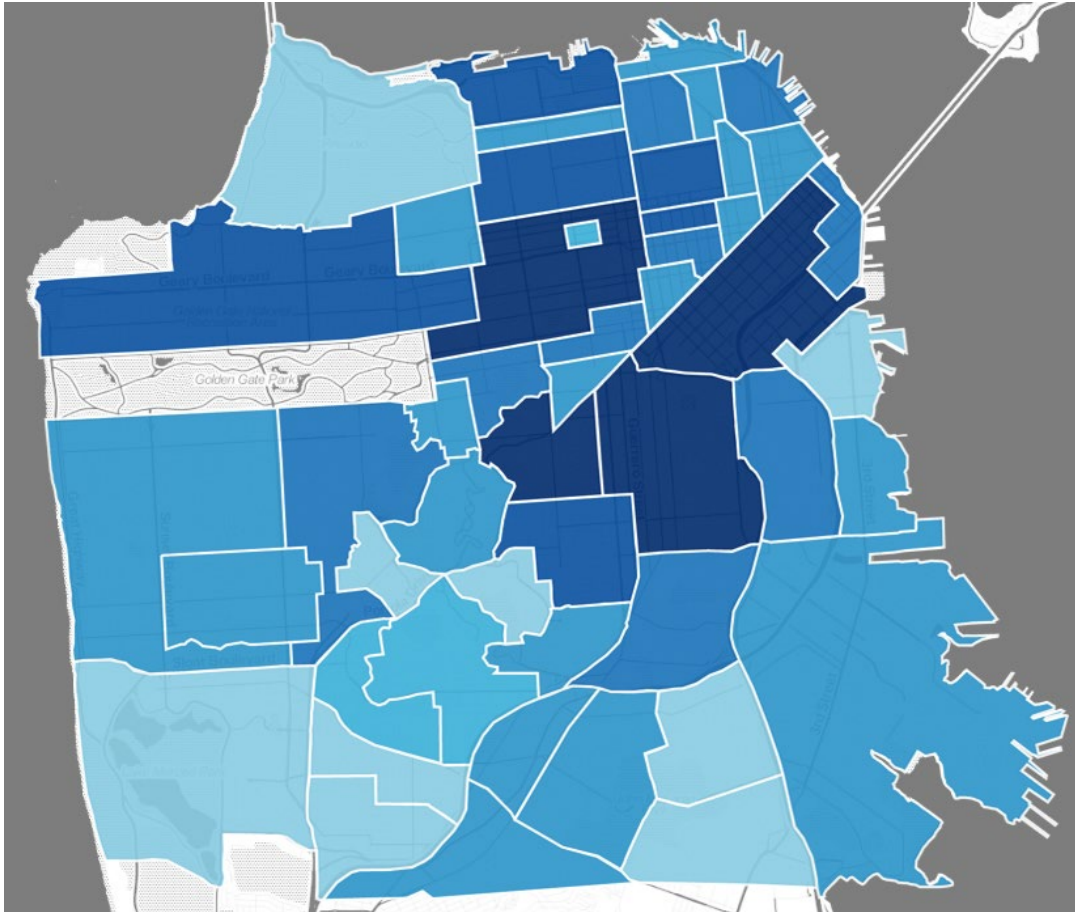


Fig: Choropleth of probability of booking given a general query for San Francisco. Image Source: nerds.airbnb.com

To solve this riddle further, they looked towards their community data. *"Using a rich dataset comprised of guest and host interactions, we built a model that estimated a conditional probability of booking in a location, given where the person searched. A search for San Francisco would thus skew towards neighborhoods where people who also search for San Francisco typically wind up booking."*

This solved their centrality problem and A/B test showed positive lift over the previous model. However, two issues cropped up with this new change. One, they were pulling every search to where they had the most bookings thereby excluding the unexplored but exquisite experiences they had on offer. Secondly, by tightening their search results they removed all possibilities of guests discovering some unique experience serendipitously. *"The mushroom dome, for example, is a beloved listing for our community, but few people find it by searching for Aptos, CA. Instead, the vast majority of mushroom dome guests would discover it while searching for Santa Cruz. However by tightening up our search results for Santa Cruz to be great listings in Santa Cruz, the mushroom dome vanished."*

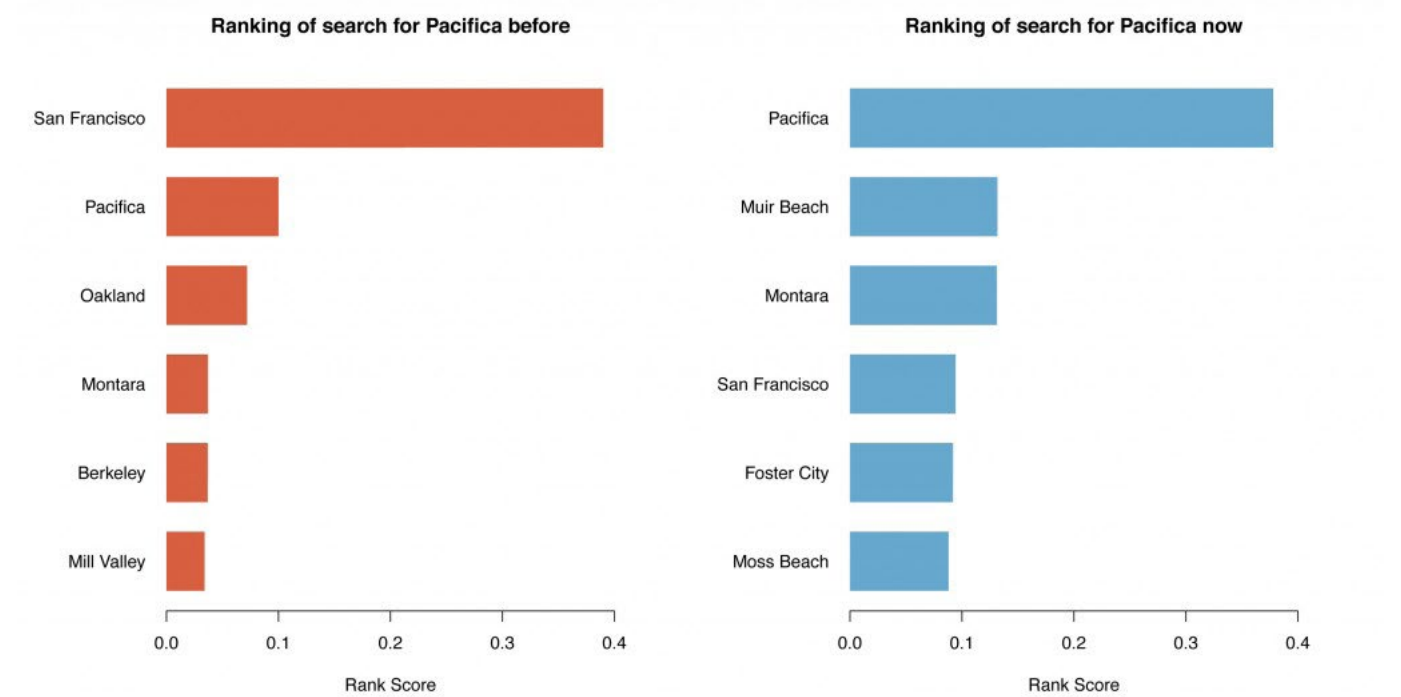


Fig: Change in location ranking score for Pacifica before and after normalization. Image Source: nerds.airbnb.com

To solve the first issue they “tried normalizing by the number of listings in the search area”.

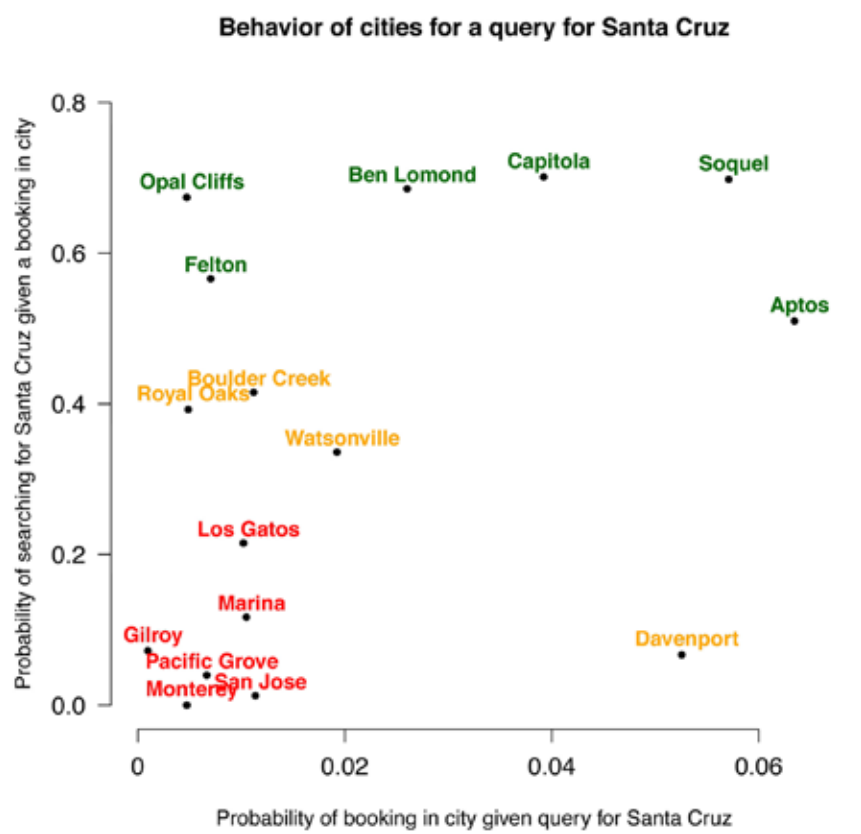


Fig: Behavior of cities for a query for Santa Cruz. Image Source: nerds.airbnb.com

To solve the second issue, they “decided to layer in another conditional probability encoding the relationship between the city people booked in and the cities they searched to get there.”

“While all of the cities in the graph (above) have a low booking likelihood relative to Santa Cruz itself, they are also mostly small markets and we can give them some credit for depending on Santa Cruz for searches for their bookings. At the same time places like San Jose and Monterey have no clear connection to Santa Cruz, so we can consider them as completely separate markets in search. It was important that improvements to the model do not lead to regressions in other parts of the world. In this case, little changed for our bigger markets like San Francisco. But this additional signal brings back the mushroom dome and other remote but iconic properties, facilitating the unique experiences our community is looking for.”

To sum up:

By analyzing user behavior data with the help of statistical models and data visualization, Airbnb created a search algorithm which was more location relevant for its users. The modified algorithm allowed their community to dynamically inform future guests where they will have great experiences. It also made it possible for Airbnb to apply the same model uniformly to all places around the world where their hosts are offering up places to stay.

Conclusion

The use of data visualization to understand metrics is not something new. Since time immemorial humans have visualized data in some form or the other to make sense of it. From the cave paintings used by our forefathers to the modern day interactive and intuitive dashboards, data visualization has always played a key role in our cognitive process.

Thus the key to understanding the enormous amount of data that now lie at our disposal also lies in data visualization. When data is represented in a manner that we can comprehend, it becomes more accessible and usable thereby empowering our decisions. Therein lies the magic of numbers; therein lies the magic of data.

About FusionCharts

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