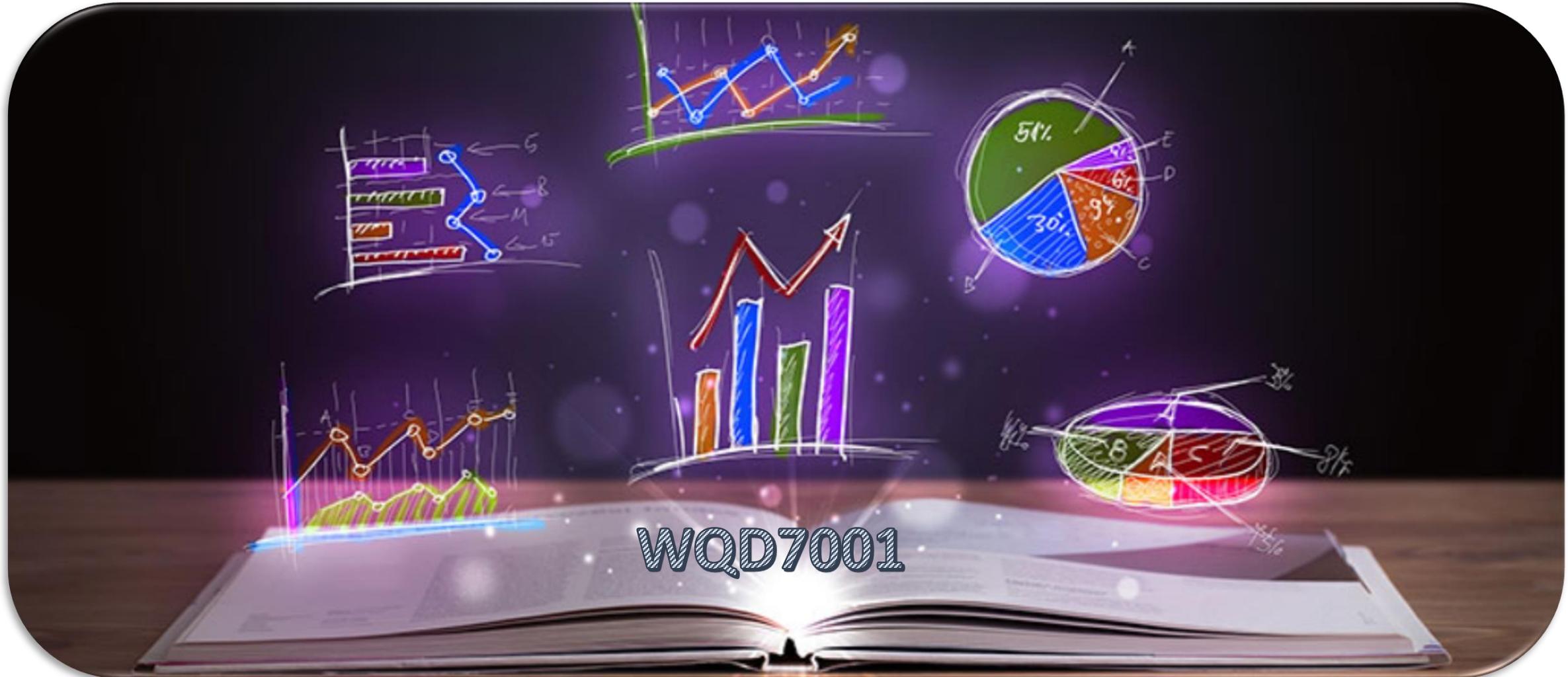


DATA STORYTELLING WITH VISUALIZATION

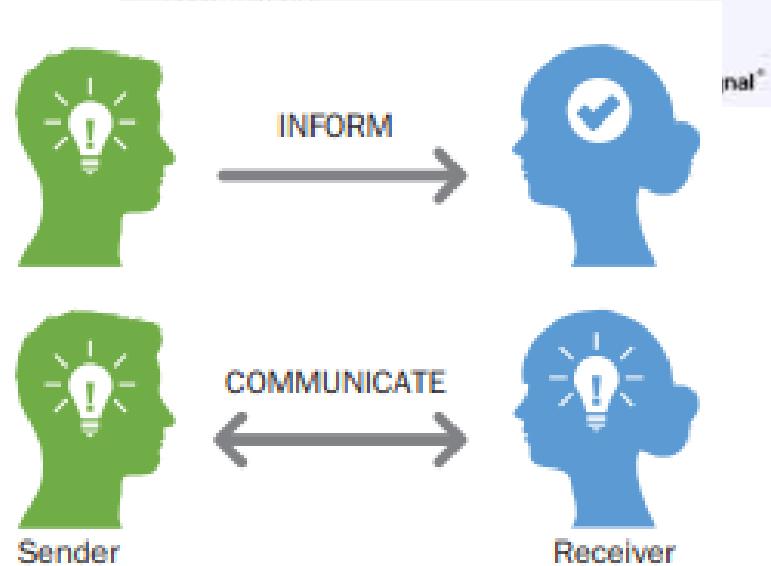


WQD7001

"We rely on data to tell us what has happened, and stories to tell us what it means."

DataStory
NANCY DUARTE

Data visualization helps to bridge the gap between numbers and words



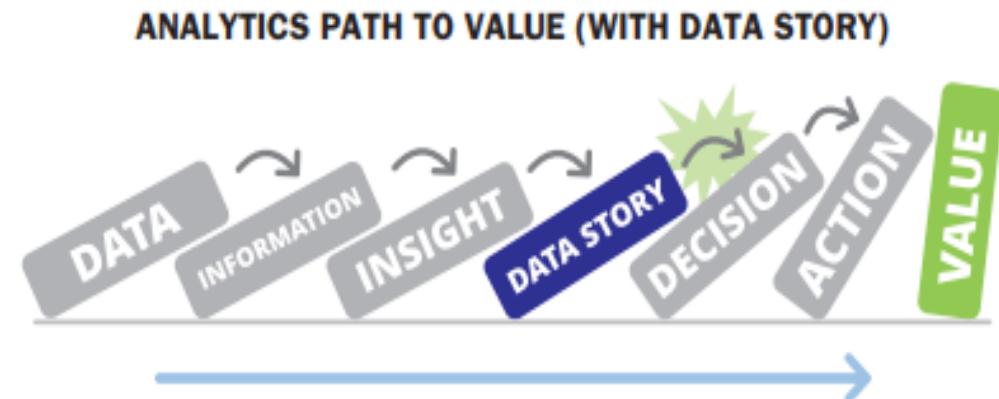
When you **inform** someone of something, you are just passing along information. However, when you **communicate** something to someone, you ensure they understand it as well.

Storytelling is the most powerful way to put ideas into the world today.

Robert McAfee Brown

The purpose of visualization is insight, not pictures

Ben A. Schneiderman



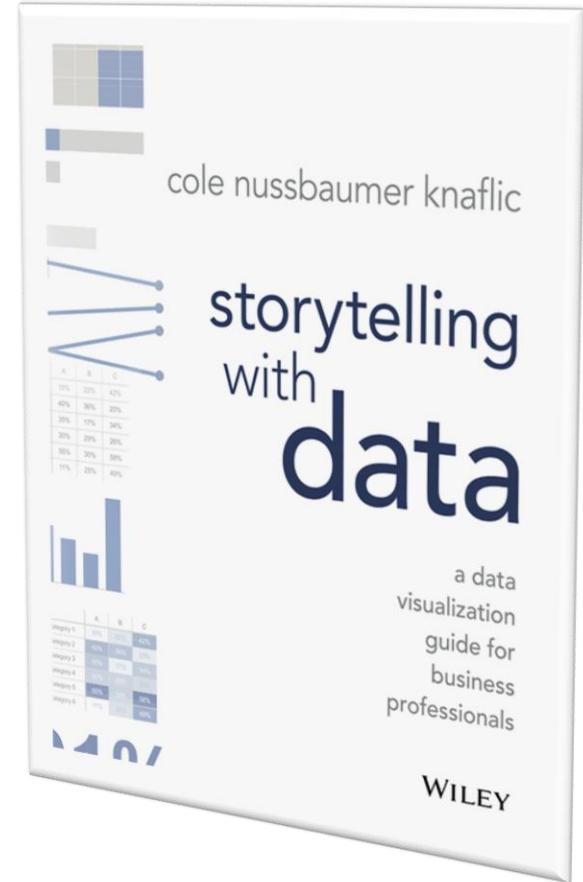
When you present **your insights as data stories**, you're more likely to **influence decisions** and **drive actions** that lead to value creation.



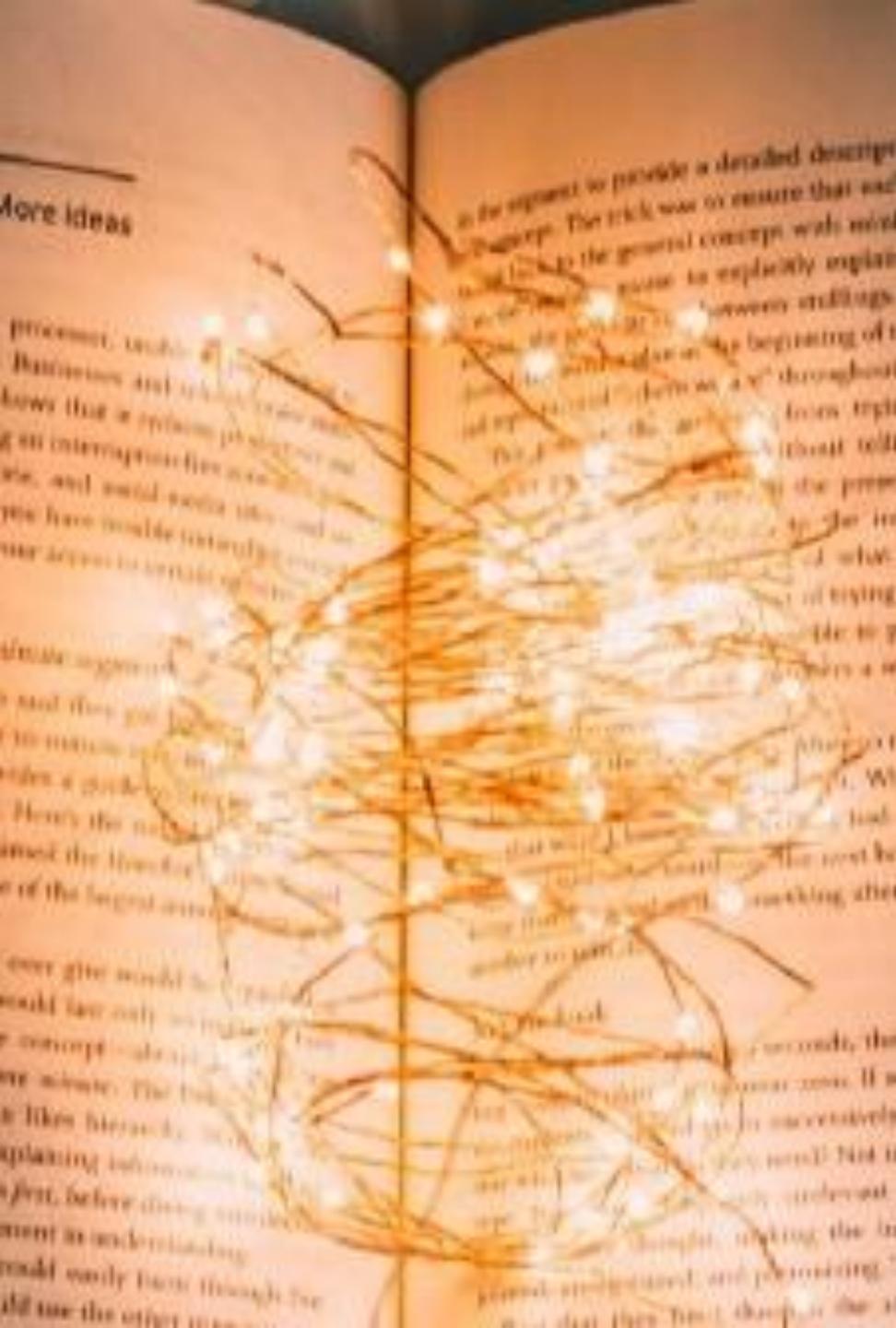
DO NOT simply show your data—**tell a story with it!**

“People hear statistics, but they feel stories.” Forbes, March 2016

“Telling a compelling story with your data helps you get your point across effectively.” InformationWeek, May 2016



Key Skill - the ability
to **communicate**
findings **clearly** and
effectively.



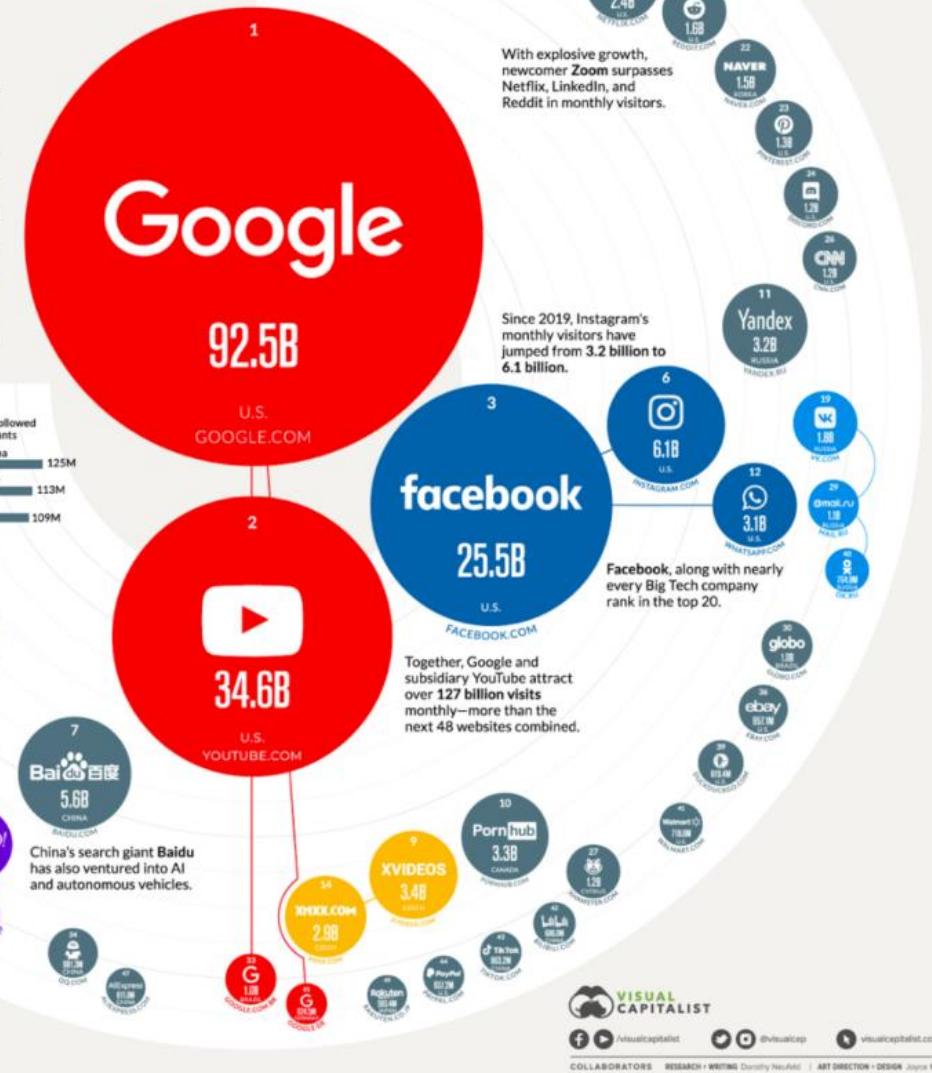
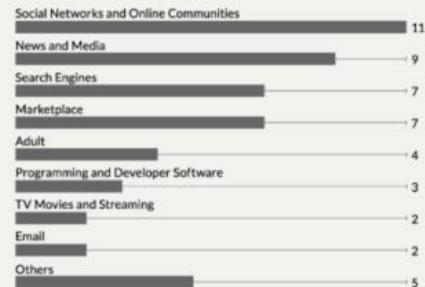
Learning Objectives:

1. To emphasize the importance of data in stories.
2. To explain the purpose of data visualization.
3. To look at visualization of quantitative and qualitative data.
4. To discuss key ingredients of data storytelling.
5. To study ways to improve data storytelling.
6. To browse tools for data visualization.
7. To introduce data sonification.

THE WORLD'S Top 50 Websites

Below, we show the key players—from Google to Twitter—that currently dominate the Internet.

BREAKDOWN BY CATEGORIES (GLOBAL, NOV 2020)



Data Visualization Examples 2022

Best Bubble Chart Visualization

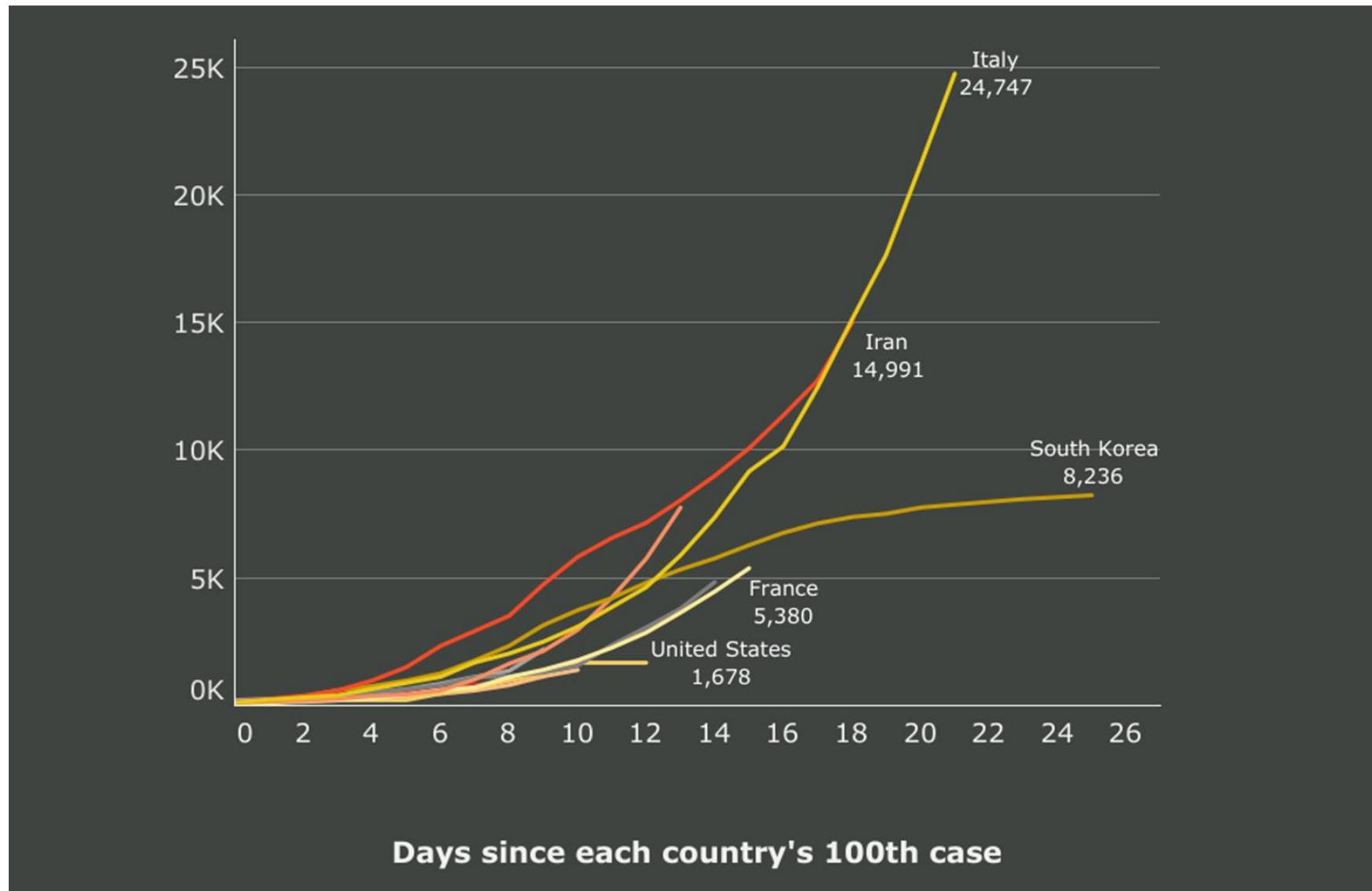
What websites get the most traffic worldwide?

[A bubble chart like this one](#) is perfect for conveying the relative size of different site's audiences.

Also, the creator of this bubble chart included a smaller bar chart within the larger visualization to share the industries that top sites operate within.

<https://www.maptive.com/data-visualization-examples-2022/>

Covid-19 cases: Top 10 worst-affected countries as at 17 March 2020 (excluding China)



Data without story is of no use.
Stories don't have graphs.

A number says,

"I am zero without a story and
I am hero with a story"

Real data storytelling is a way to share facts in the form that your listener **understands, appreciates and remembers best** – the story.

Like any other story, a data story is about a person, a goal, and a challenge. Unlike some other stories, **data stories must be true**, not just emotionally, but **factually**.

Data stories have the same elements as ordinary stories, backed up by **data**.

"Numbers have an important story to tell. They rely on you to give them a clear and convincing voice."

Stephen Few



Which Makes the Stronger Case: Stories or Data?

An experiment “The Identifiable Victim Effect“ carried out by Prof. Deborah Small (Carnegie Mellon University)

- Given a sum of money (\$5) and asked to donate some amount to **TWO** conditions:
 1. **Data - A statistical condition** (*statistics on food shortages in Malawi, lack of rain in Zambia, and the dislocation of millions in Angola which effect 3 million children in Africa*).
 2. **Story - An identifiable condition** (“*Rokia, a 7-year-old girl from Mali, Africa, is desperately poor and faces a threat of severe hunger or even starvation. Her life will be changed for the better as a result of your financial gift. With your support, and the support of other caring sponsors, Save the Children will work with Rokia's family and other members of the community to help feed her, provide her with education, as well as basic medical care and hygiene education.*”).



The picture of Rokia that accompanied her story

Experiment Results

Condition 1 - On average, students who received the **fact-based** appeal from Save the Children donated **\$1.14**.

Condition 2 - Students who read the **story** about Rokia donated an average of **\$2.38**, more than twice as much.

Lesson One: A Story Beats Data

Additional Condition – There is a letter told Rokia's story but also included **statistics** about persistent drought, shortfalls in crop production, and millions of Africans who were going hungry. Those who read the **story plus the data** donated an average of **\$1.43**.

Lesson Two: A Story Beats a Story Plus Data

“Drop-in-the-bucket” effect

If we feel **overwhelmed by the scale of the problem**, we often **do little about it**. Researchers **theorized** that focusing on statistics short-circuits a compassionate response by shifting people into an analytical frame of mind. And when people think analytically, it can hinder their ability to act compassionately.

“If only one man dies of hunger, that is a tragedy. If millions die, that’s only statistics.”
- Lenin

“If I look at the mass, I will never act. If I look at the one, I will.”
-Mother Theresa

Humans Suffer from Scope Insensitivity

Tell ONE Story to Avoid 'Drop in the Bucket'

Narrative
beats
numbers

MYTH:
There are
story people
and data
people



**Every Child
Deserves a Future**

Your Impact Multiplied 10x



GIVE NOW

- Stories captivate → Identifiable Victim Effect
Story about one needy child generated avg. gift of \$2.38
- Statistics numb
Fact-based appeal generated avg. gift of \$1.14
- Combining doesn't help → Drop in the Bucket Effect
Combo generated avg. gift of \$1.43

2007 experiment by
Paul Slovic with Save
the Children

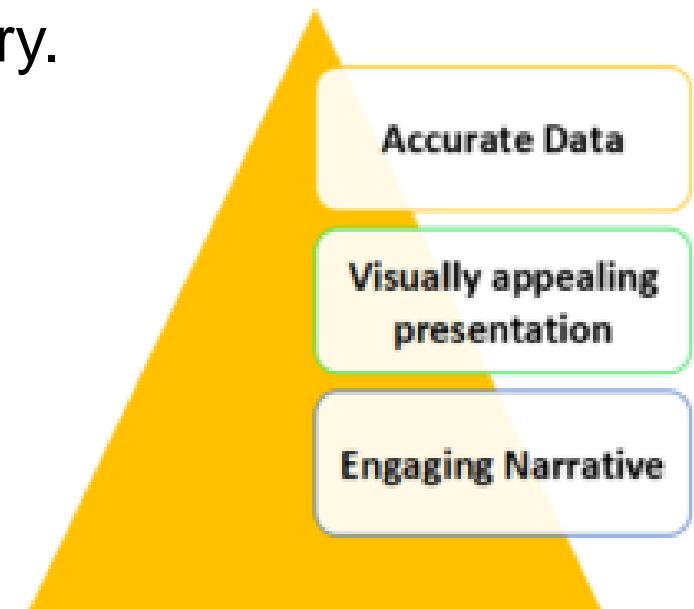
Stories provoke thought and bring out **insights** that could not have been understood or explained before.

Story is **data-driven**.

Data storytelling weaves **data** and **visualization** into a **narrative** tailored to a specific audience in order to convey credibility in the analytical approach, confidence in the results and a compelling set of insights that is **actionable** to the audience.

Data visualization is the presentation of data in a pictorial or graphical format.

Data visualization as story telling is only half of the story.



Why Present Data Visually?



HBR Staff/CAP53/Getty Images

- i. Making data engaging and easily digestible
- ii. Identifying trends and outliers within a set of data
- iii. Telling a story found within the data
- iv. Reinforcing an argument or opinion
- v. Highlighting the important parts of a set of data (key messages)
- vi. Make books, blog posts, reports and videos more engaging

Source: <https://venngage.com/blog/data-visualization/>

(i) Making data engaging and easily digestible

An infographic that organizes the information, with visuals, can demystify concepts for novice readers.

Everything You Need To Know

About Stocks and Shares

- Buy Low, Sell High**
Sounds so simple right? And yet investing is a rare part of our financial lives where things getting cheaper feels like a bad thing.
- A Sure Thing?**
A word to the wise: the conventional wisdom isn't always wrong, but it frequently has terrible timing.
- Get Familiar with Filings**
While some investors might think they have a sixth sense for finding good companies, the rest of us have to do our homework.
- Think Long Term**
Opportunities come when a stock or sector is dismissed by the market and languishes despite steady economic results that will produce a long stream of profits.
- There Is No Perfect Metric**
There is no single number that divides good stocks from bad ones.
- Dividends Are Your Friend**
Dividend-paying stocks aren't immune from declines, but they do offer a degree of insulation that others don't.
A word of warning though – rich dividends that look too good to last often don't.

[Source](#)

● toilet paper

Search term

+ Compare

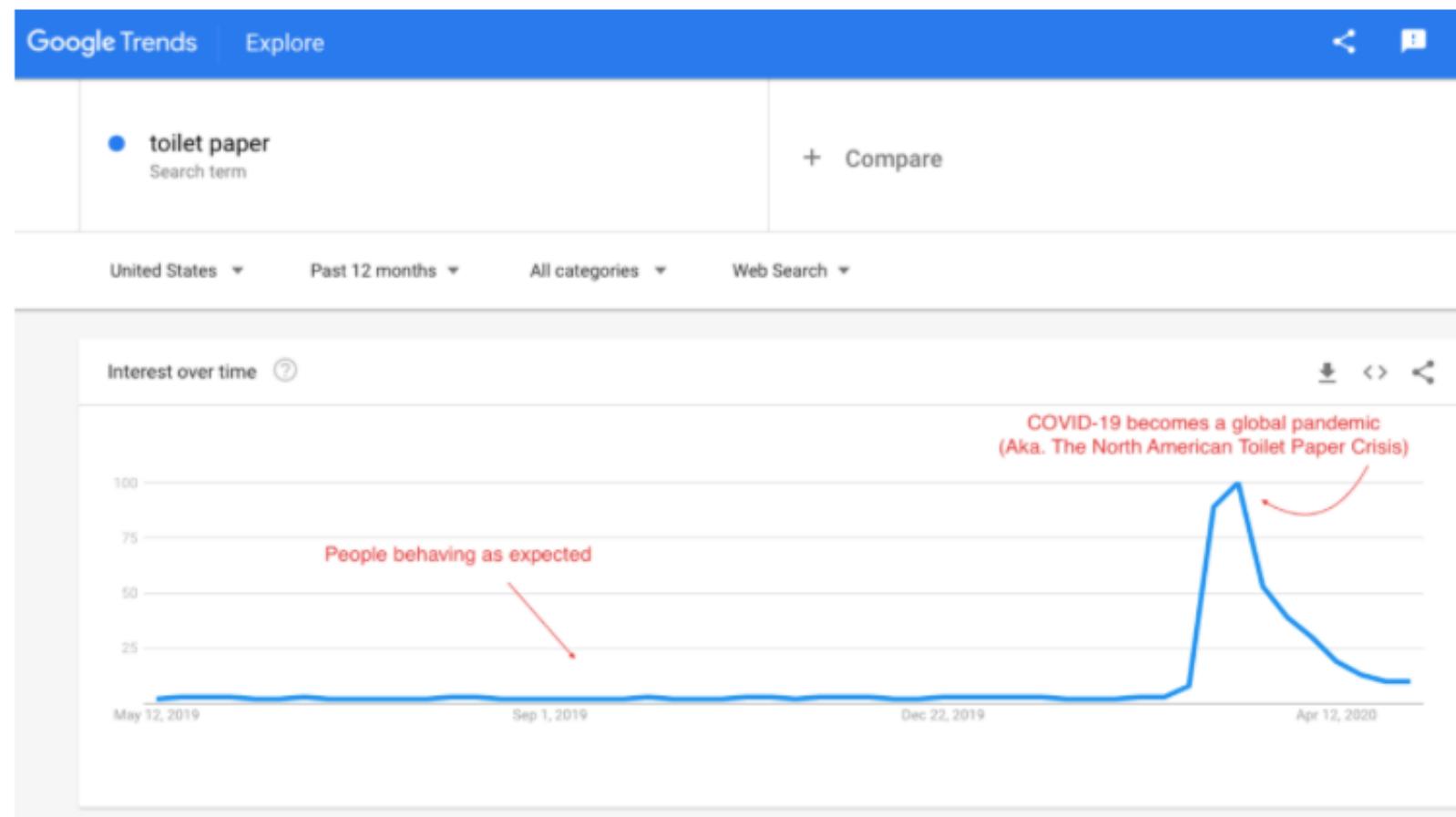
United States

Past 12 months

All categories

Web Search

(ii)
**Identifying
trends and
outliers
within a set
of data**



Source: [How to Use SEO Data to Fuel Your Content Marketing Strategy in 2020](#)

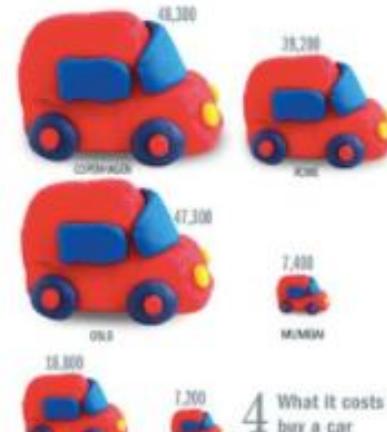
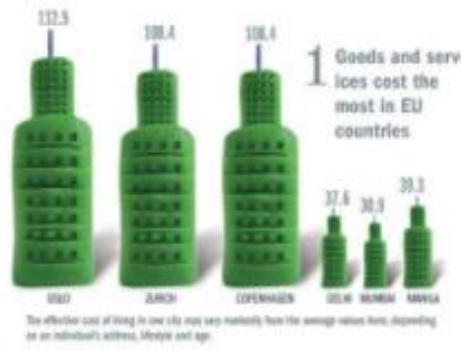
This chart shows an outlier in the general trend for toilet paper-related Google searches. The reason for the outlier? The outbreak of COVID-19 in North America. With a simple data visualization, we've been able to highlight an outlier and hint at a story behind the data.

(iii)

Telling a story found within the data

This infographic gives a visual analysis of the most expensive cities in the world. It gives information for the cost of food, public transportation and goods in several cities globally.

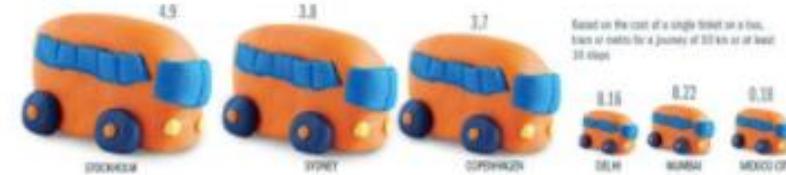
THE MOST EXPENSIVE CITIES



5 Food prices in Switzerland 45% more expensive than the rest of Europe



6 Does it cost less to take the bus? Yes, if you're in Asia



7 Which city gives you the most money for your working time

Effective hourly wages for 14 professions, net after deduction of taxes and social security contributions

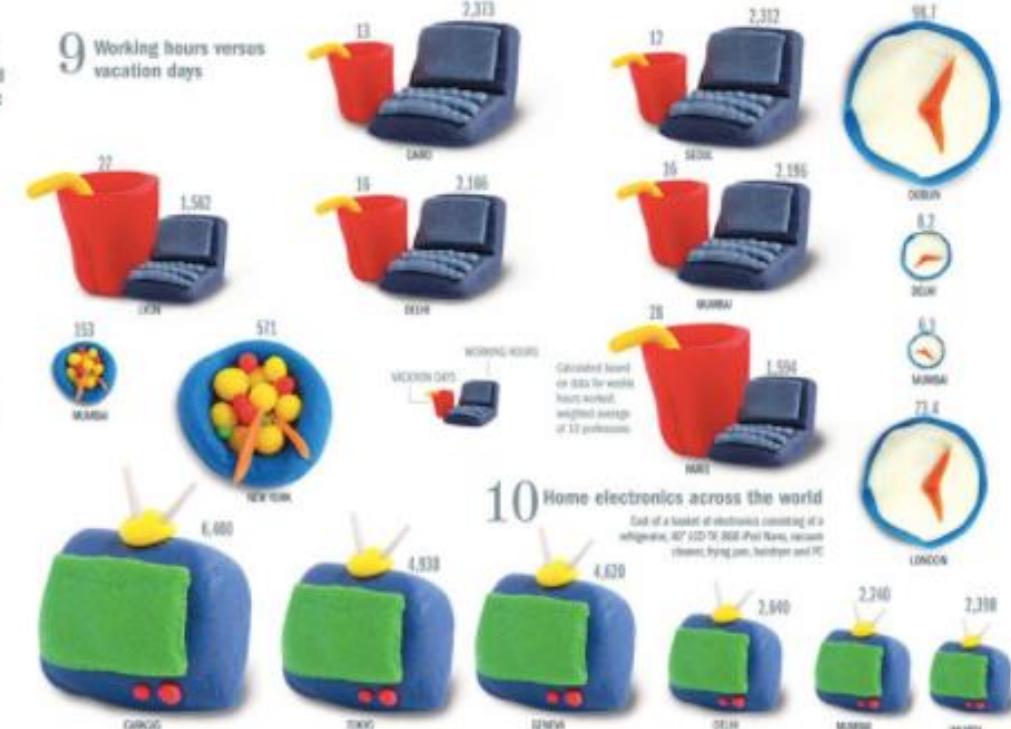


8 Eating out is not cheap in most cities

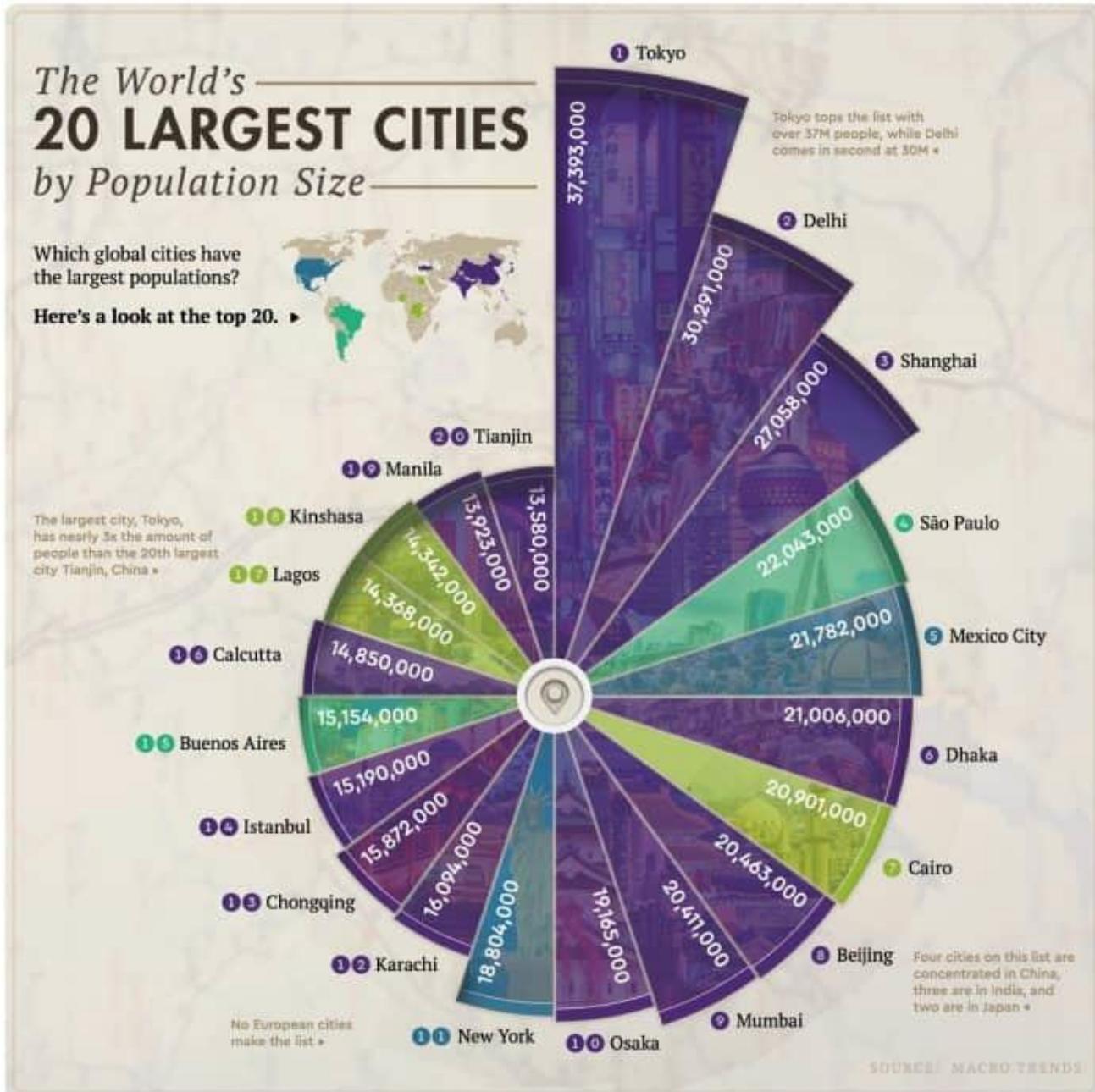
Price of a three-course dinner (starter, main course, dessert, including service charges and tip) in a good restaurant



9 Working hours versus vacation days



(iii)
**Telling a
story
found
within the
data**



STRESS ON YOUR BODY

THE POSITIVE AND NEGATIVE EFFECTS

AT WORK



- you can finish tasks on tight deadlines
- you can perform better
- helps keep a tight task schedule



- causes absenteeism
- may cause distraction from tasks
- can cause anxiety or depression

AT HOME



- you can finish tasks on tight deadlines
- you can perform better
- helps keep a tight task schedule

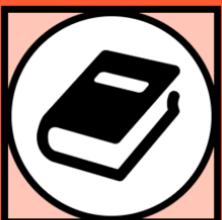


- causes absenteeism
- may cause distraction from tasks
- can cause anxiety or depression

AT SCHOOL



- you can finish tasks on tight deadlines
- you can perform better
- helps keep a tight task schedule



- causes absenteeism
- may cause distraction from tasks
- can cause anxiety or depression

(iv)

**Reinforcing
an argument
or opinion**

VS

CLASSROOM



E-LEARNING



Can be completed anywhere with an internet connection. Anytime a learner is free-progress is saved.



Complete at your own pace. Don't rush to keep up with people around you.



Overhead costs are reduced (no travel time, accommodations etc.)



If you are unsure about something, you can go back over it again and again.



Content is engaging and interactive.



Learners have to be available at the same time and be the same place.



Trainer can focus more on particular topics depending on group needs.



May cost a lot for accommodation and getting to the training venue.



You can ask questions at the time of the training.

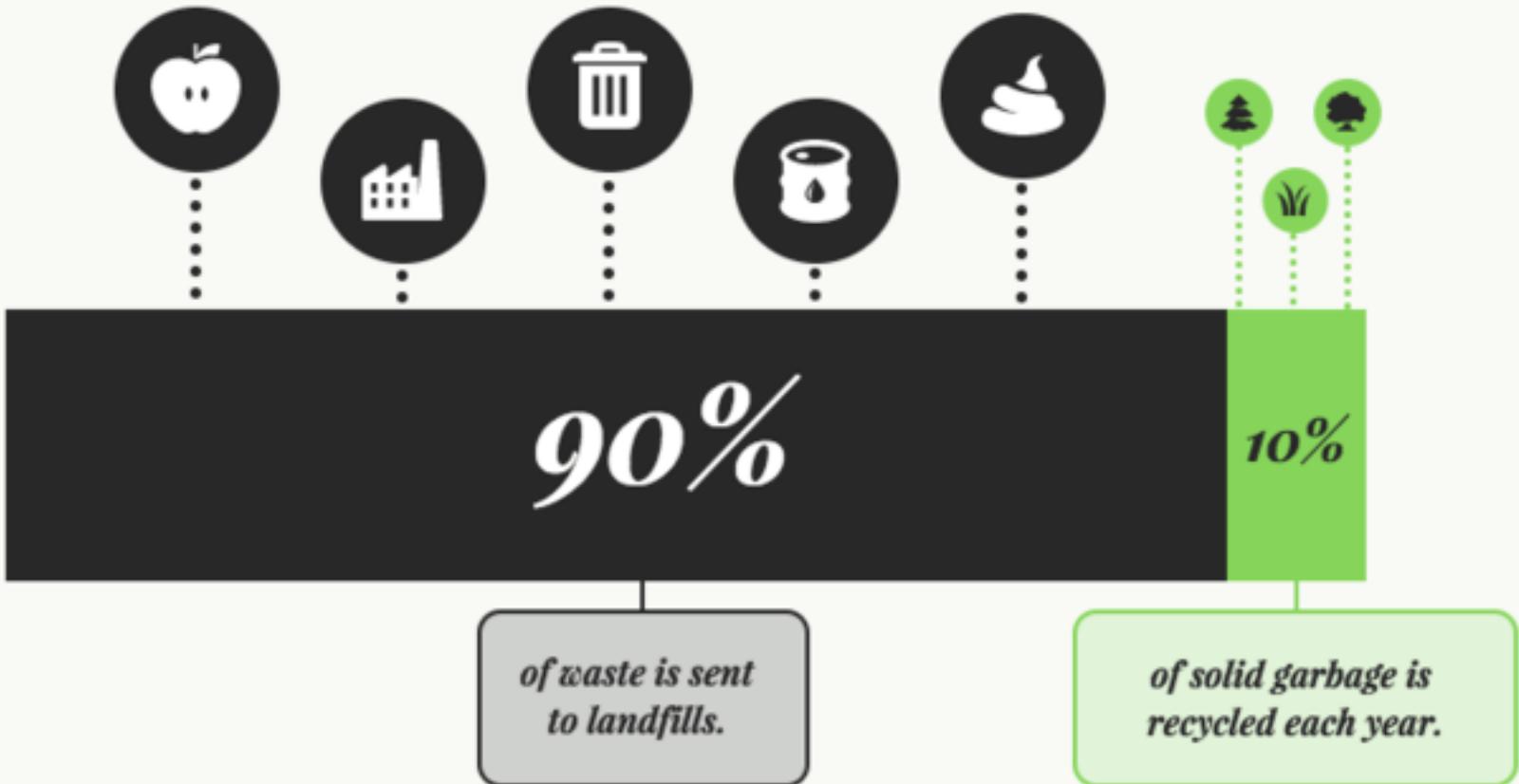


Ideal if the learner group aren't confident using computers.

Waste Management

(v) **Highlighting the important parts of a set of data**

Make it easier for readers to explore the data and come to their own conclusions.



(vi)
**Make books,
 blog posts,
 reports and
 videos more
 engaging**



Data Visualization

Data visualization is **NOT** data storytelling.

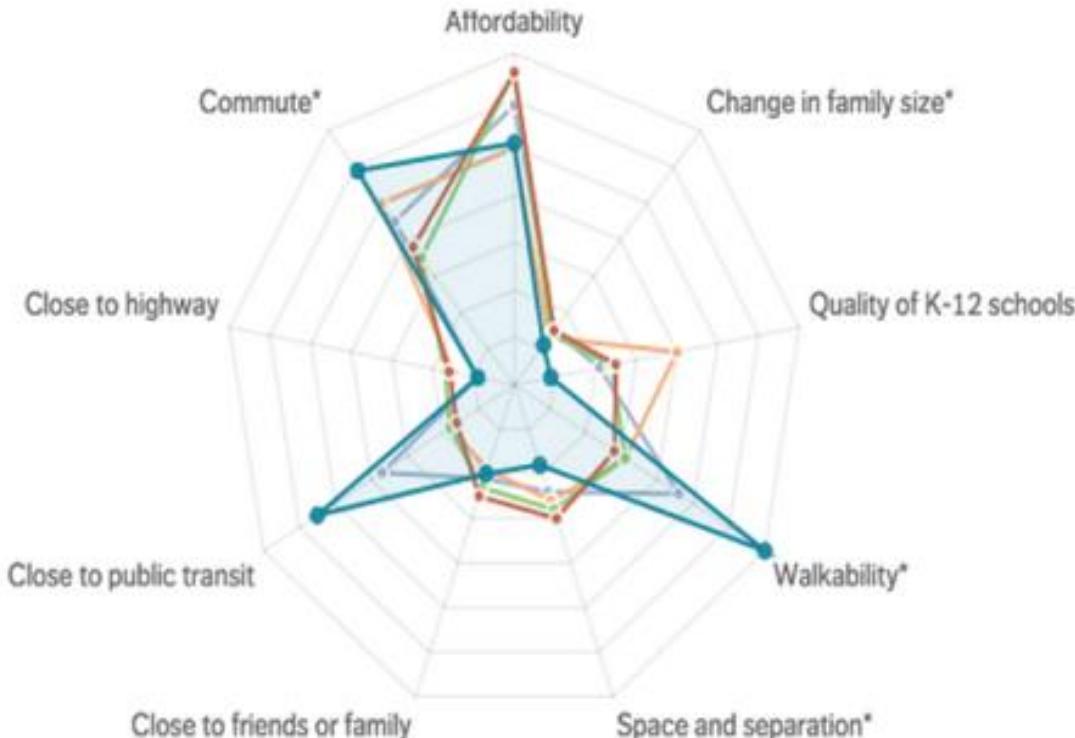
- **Data visualization** (simple or complex) helps us **make sense of data**, but rarely **generates insights that stimulate action**.
- All business **narratives** are designed to help people to take **action**.
- **Stories** are always about experiences people have, help listeners make an experience that's being shared personally meaningful. If designed in a certain way, those stories can **inspire listeners to take action**.
- So, **data visualizations** are terrific **tools** to use when telling the data story because they provide credibility and give weight to points being made in the story.
- It involves **communicating findings and insights effectively** through **graphical means** (graphs, charts, mind maps, infographics, and other visuals).

Data Visualization Purposes

- **Comparison** - to compare one set of values with another.
- **Relationships** - to show the relationship between series of variables.
- **Distributions** - to show the distribution of a set of values.
- **Compositions** - to show how various parts of the data comprise the whole.
- **Deviation** - to show which values deviate from the norm.
- **Trends** - to understand the trend over time of some data variables.

How Seattle Residents Determine Housing

Radar Chart



GRAPH LEGEND

- Remainder of Seattle
- Eastside
- South King County
- Snohomish
- Central Seattle

NOTE*

Walkability: Walkable neighborhood and being near local activities

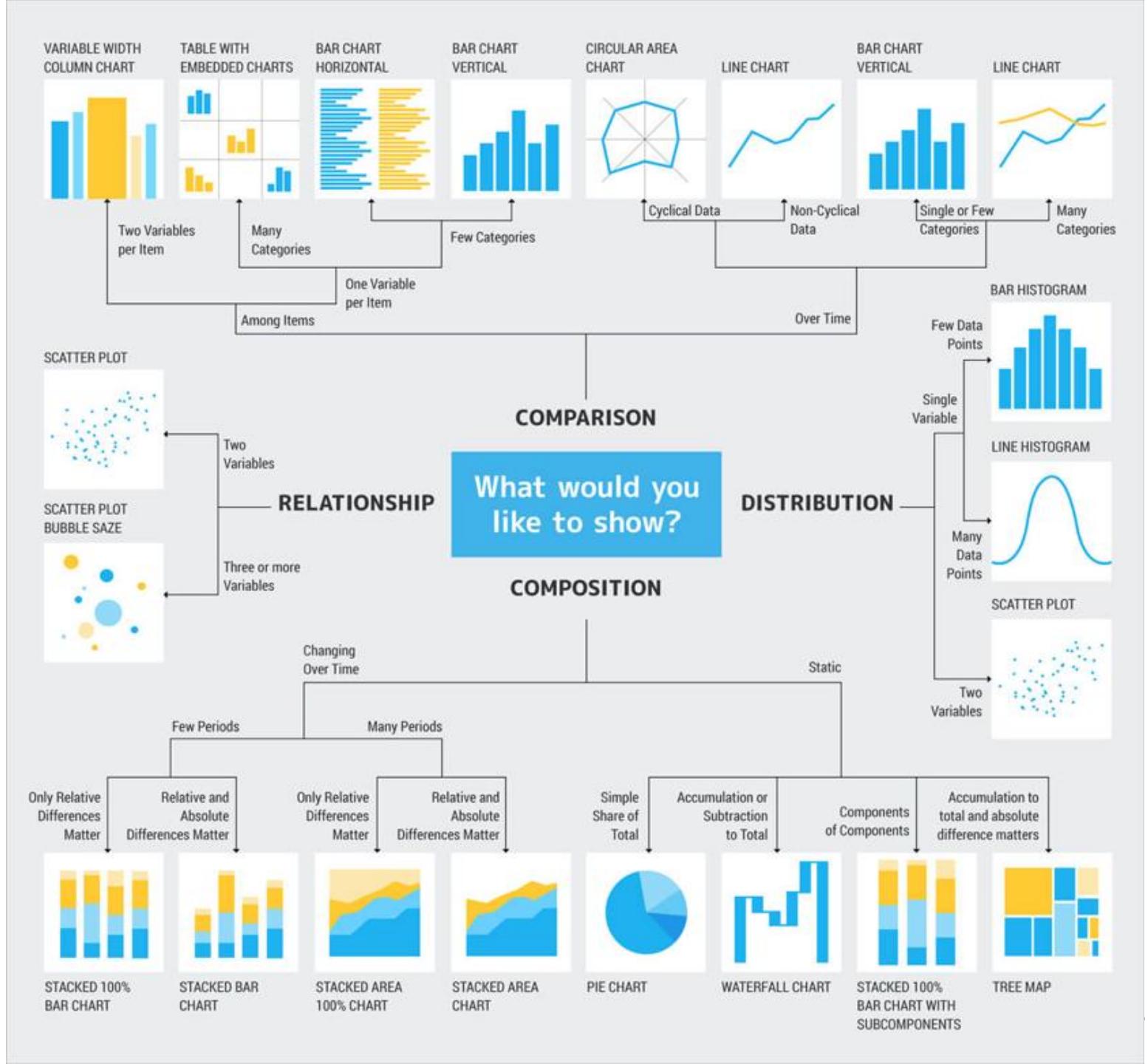
Space and separation: Having space and separation from others

Commute: Within 30-minute commute to work

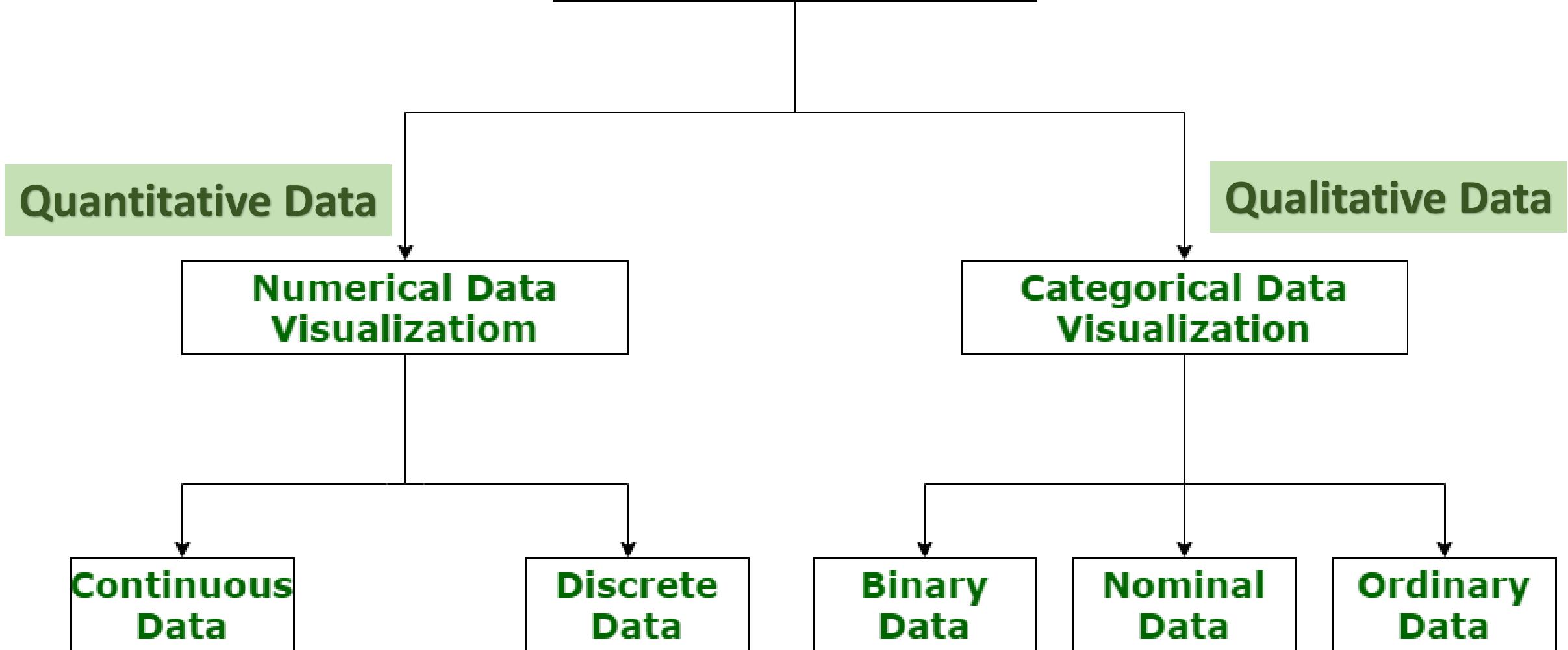
Change in family size: Change in family size or marital/partner status

Source: Puget Sound Regional Council

Crazy Egg does a great job of summarizing potential data storytelling visuals (how meta!) by grouping them by **relationship**, **comparison**, **distribution**, or **composition**.



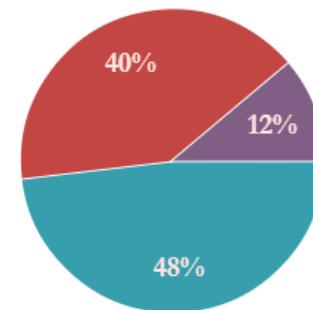
Data Visualization



Quantitative Data

Quantitative data is information about **quantities**; that is, information that can be **measured** and written down with **numbers**.

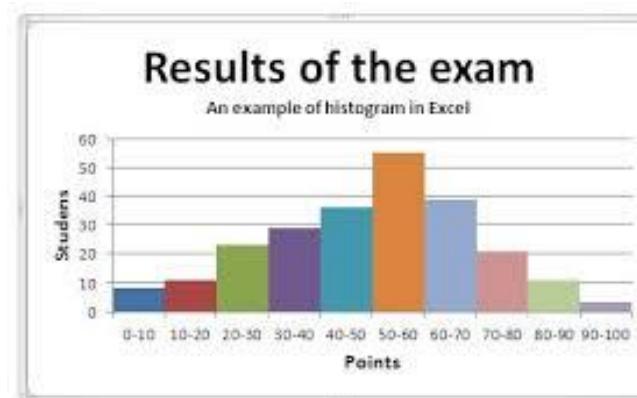
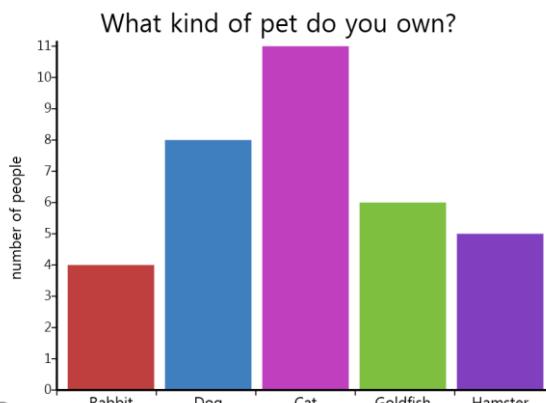
How my time is spent in a week?



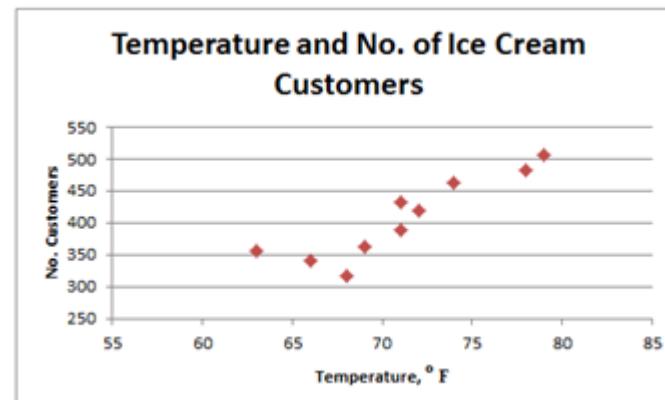
▲ Time At Work ■ Time At Home ● Time Spent Out

Some other aspects to consider about quantitative data:

- Focuses on numbers
- Can be displayed through graphs, charts, tables, and maps
- Data can be displayed over time (such as a line chart)



See <https://datavizcatalogue.com/>



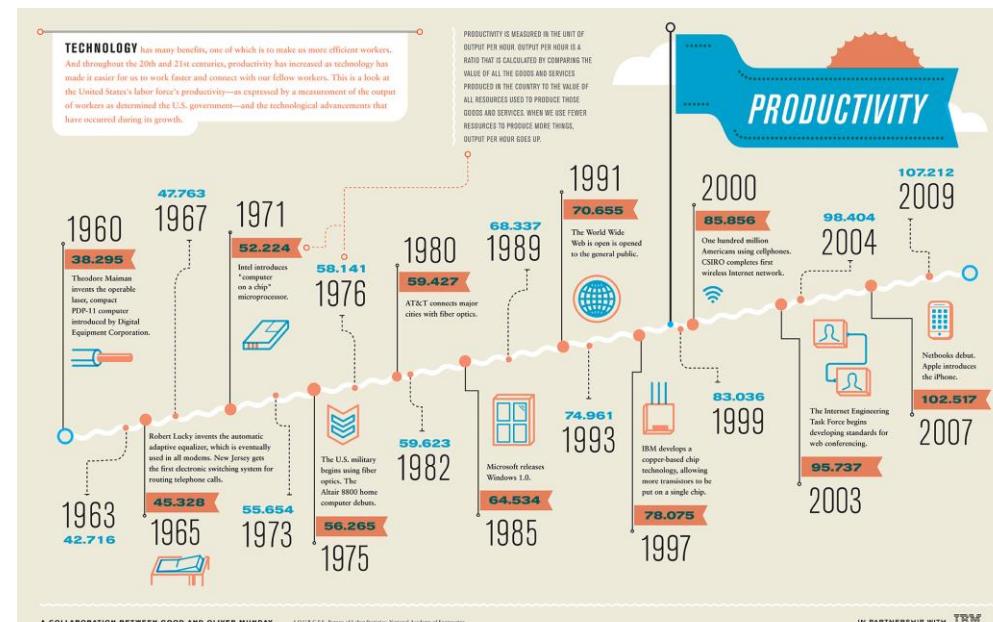


Qualitative Data

Qualitative data is information about **qualities**; information that can't actually be measured.

Some other aspects to consider about qualitative data:

- Represented through pictures that explore the data in a visual way
- Visual representations focus on the themes found in the data
- Can tell a story
- Can also be displayed graphically as a pie chart or bar graph, the same as quantitative data, however, this can be tricky and can be done incorrectly easily.
- See <http://stephanieevergreen.com/qualitative-chart-chooser/>



Exploratory analysis is what you do to get familiar with the data. You may start out with a hypothesis or question, or you may just really be delving into the data to determine what might be interesting about it.

Explanatory analysis is what happens when you have something specific you want to show an audience .

Here are 3 ways we can move beyond simply showing qualitative data:

1. Use **color** to draw the audience's attention to the most important aspects.
2. Reduce the amount of text: pithier, more **concise wording** will help the audience process the information more efficiently.
3. Evaluate the **audience's needs**: consider quantifying the data if doing so provides important context.

The power of COLOR:

To illustrate, check out the difference between how you process these two blocks of text:

BEFORE

When responding to the question "What could have been improved?", customers' top 3 responses were complaints with A/V (poor video quality), the presenter's visuals and an unclear agenda.

Complaints with A/V quality:

- "The main challenge was logging into the webinar."
- "The A/V quality is was difficult."
- "Sometimes the presenter's voice was very garbled for me. Very distracting to the flow and when asking a question, I didn't know if I was heard/understood."

The presenter's visuals were lacking:

- "Technical issues impacted my ability to see the presenter's visuals."
- "Many times the PPT froze or didn't work."

The agenda was unclear:

- "The webinar started late with a lot of time wasted."
- "Bad pre-sharing of information, no time keeper, no clear goal."
- "The agenda seemed very fluid and I was confused around the main point."

AFTER

Top 3 customer concerns:

When asked, "What could have been improved?"

Poor A/V quality:

- "The main challenge was logging into the webinar."
- "The A/V quality is was difficult."
- "Sometimes the presenter's voice was very garbled for me. Very distracting to the flow and when asking a question, I didn't know if I was heard/understood."

Deficient visuals:

- "Technical issues impacted my ability to see the presenter's visuals."
- "Many times the PPT froze or didn't work."

Unclear agenda:

- "The webinar started late with a lot of time wasted."
- "Bad pre-sharing of information, no time keeper, no clear goal."
- "The agenda seemed very fluid and I was confused around the main point."

Ideas for Displaying Qualitative Data

INFOGRAPHIC OF INFOGRAPHICS

Data visualization is a popular new way of sharing research. Here is a look at some of the visual devices, informational elements, and general trends found in the modern day infographic.

DESIGN

CHART STYLE
Percentage of infographics with the following charts:

Chart Style	Percentage
Pie Chart	22%
Pictorial Chart	24%
Line Chart	24%
Bar Chart	32%

FONT

Font Type	Percentage
Sans Serif	85%
Condensed Sans Serif	15%
Serif	0%

CONTENT

COUNTRIES FEATURED

Country	Percentage
United States	88%
China	22%
United Kingdom	12%
Australia	12%
Canada	10%
India	10%
France	10%
Mexico	8%

THEME
Relative popularity of different infographic themes:

KEY INFO
Percentage of infographics with key:

Symbol	Percentage
0	33%
T	33%
L	33%

Average number of symbols per key: 5.1

BASE COLOR

Color	Percentage
Blue	29%
Grey	18%
White	18%
Light Blue	13%
Yellow	10%

NAVIGATIONAL ICONOGRAPHY
Frequency of arrows & connecting lines in infographics:

Iconography Type	Percentage
arrows	13%
lines	38%
both	13%

SECTIONS
AVERAGE NUMBER OF SECTIONS PER INFOGRAPHIC: 2.12

CREDITED SOURCES
Average number of sources per infographic: 2.29

TITLE
Average number of words per infographic title: 4.36

Ideas for Displaying Qualitative Data

17. If your organization worked with an external evaluator in 2011, what was your experience?



18/19. Why do you think the experience was/wasn't positive?

"[The external evaluator] was very involved, great listener, knowledgeable about evaluations, very willing to change and edit evaluation tool so that it worked for our programs. She met with us whenever necessary."

"Our external evaluators increased our capacity to do in-depth case studies on strategies and provided a valuable independent perspective."

"While we knew we needed a 'makeover' and major staff changes, it was stressful to open up to outsiders and admit the need."

"Backed out because of the amount of work involved as compared to the payment."

"Need more \$ to pay them."

Showcasing Open-Ended Survey Data Beside Closed-Ended Data

MH STRATEGIES

Getting help, giving help



Don't underestimate the interpreter's needed skill set: "There is a lack of understanding of the competency, knowledge, skill and ability needed by an interpreter to be effective. Just because someone is bilingual doesn't mean they can interpret," said **Mara Youdelman** of the National Health Law Program.

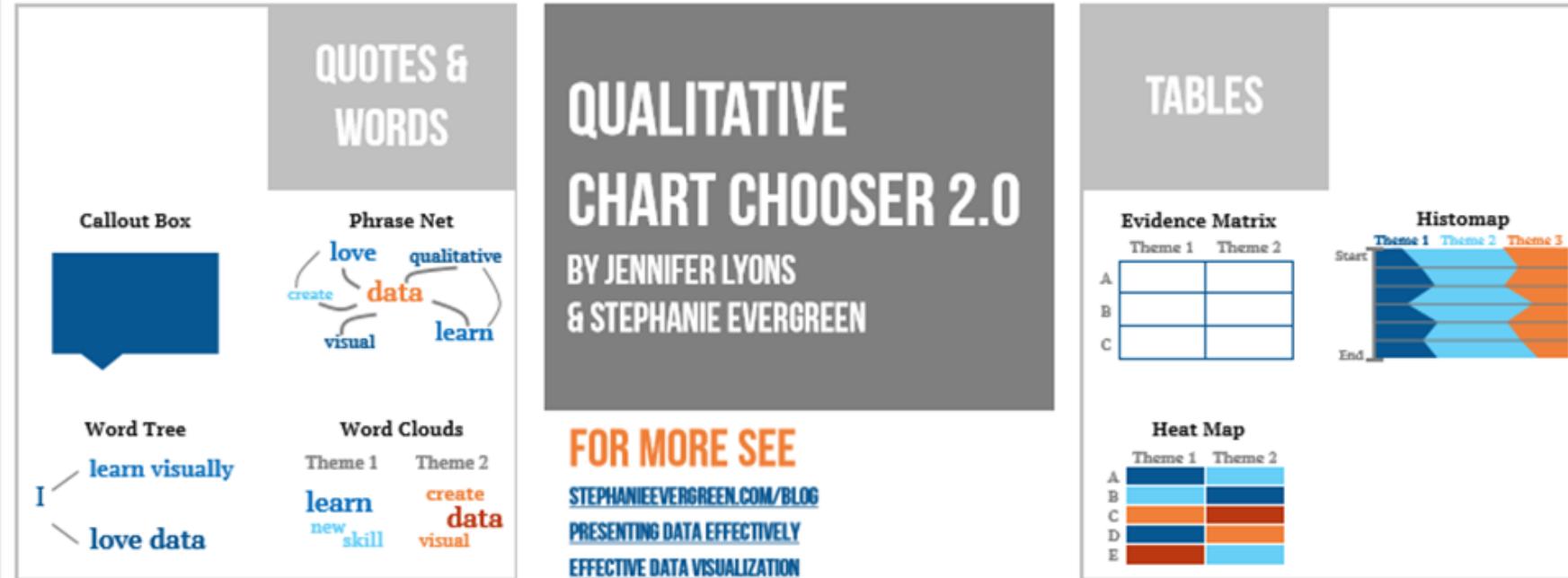
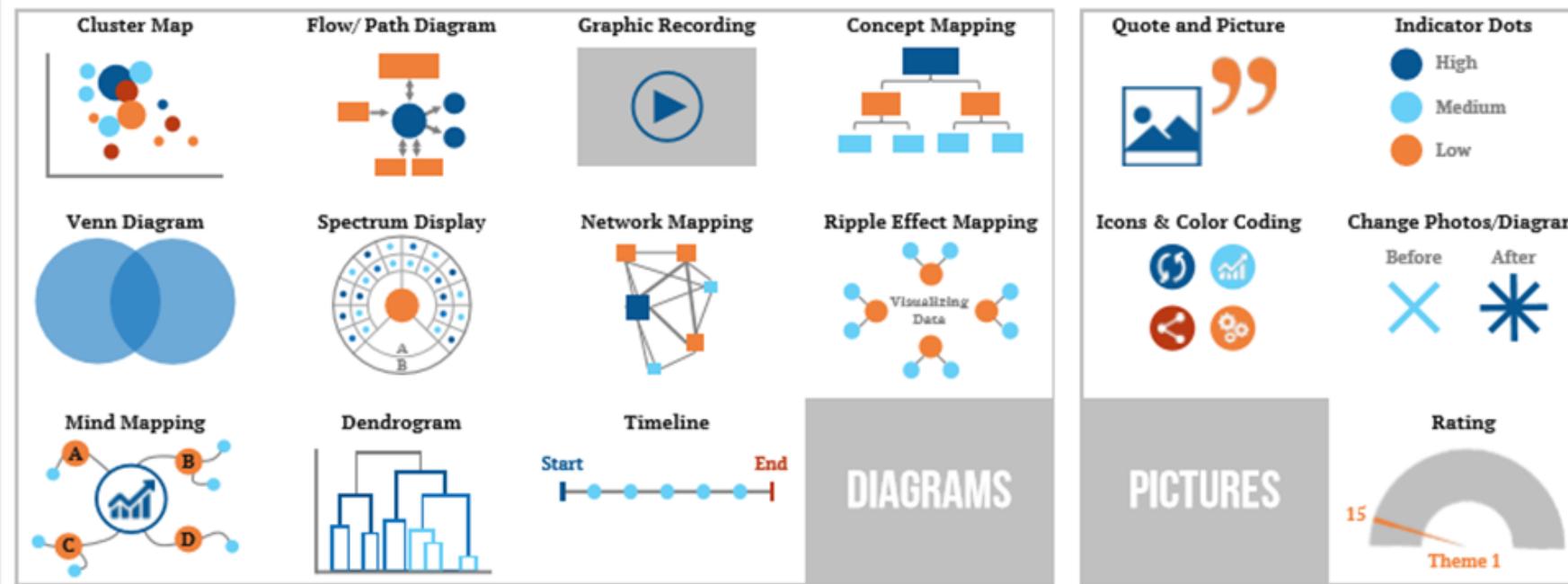


Evaluate and incentivize bilingual staff: Take an assessment of bilingual staff, ensure they are fluent and offer incentives such as bonuses, says **Dr. Glenn Flores** of the UT Southwestern Children's Medical Center. "It should be part of diversifying your workforce."



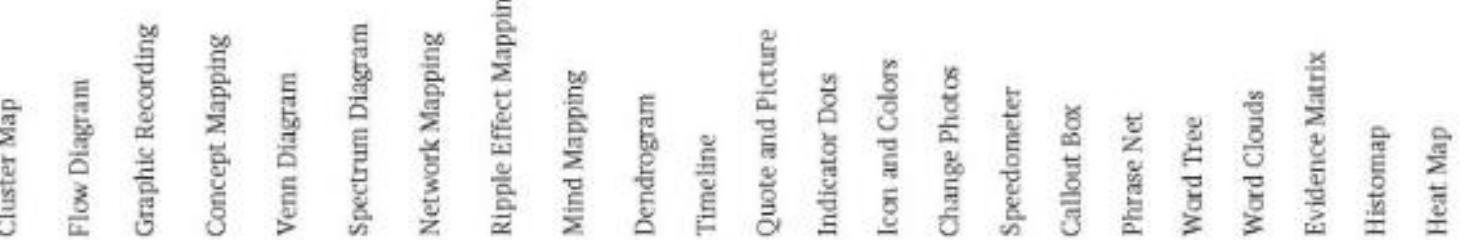
Assess and improve general health literacy: It's a challenge even for patients who speak English, says the Joint Commission's **Dr. Ana Pujols-McKee**. "Assessing a patient's ability to communicate effectively with a healthcare professional is an important part of the evaluation."

Photos Beside Participants' Responses



WHAT STORY ARE YOU TRYING TO TELL?

HIGHLIGHT A PERSON'S COMMENT



Data Storytelling

- The phrase - associated with **data visualizations**, **infographics**, **dashboards**, **word clouds** and so on.
- Data storytelling - interpreted as just **visualizing data effectively!**
- Much more than just creating visually-appealing data charts.
- **Data storytelling** is a structured approach for communicating data insights, and it involves a combination of **three key elements**: **data**, **visuals**, and **narrative**.

Data Storytelling: Definition

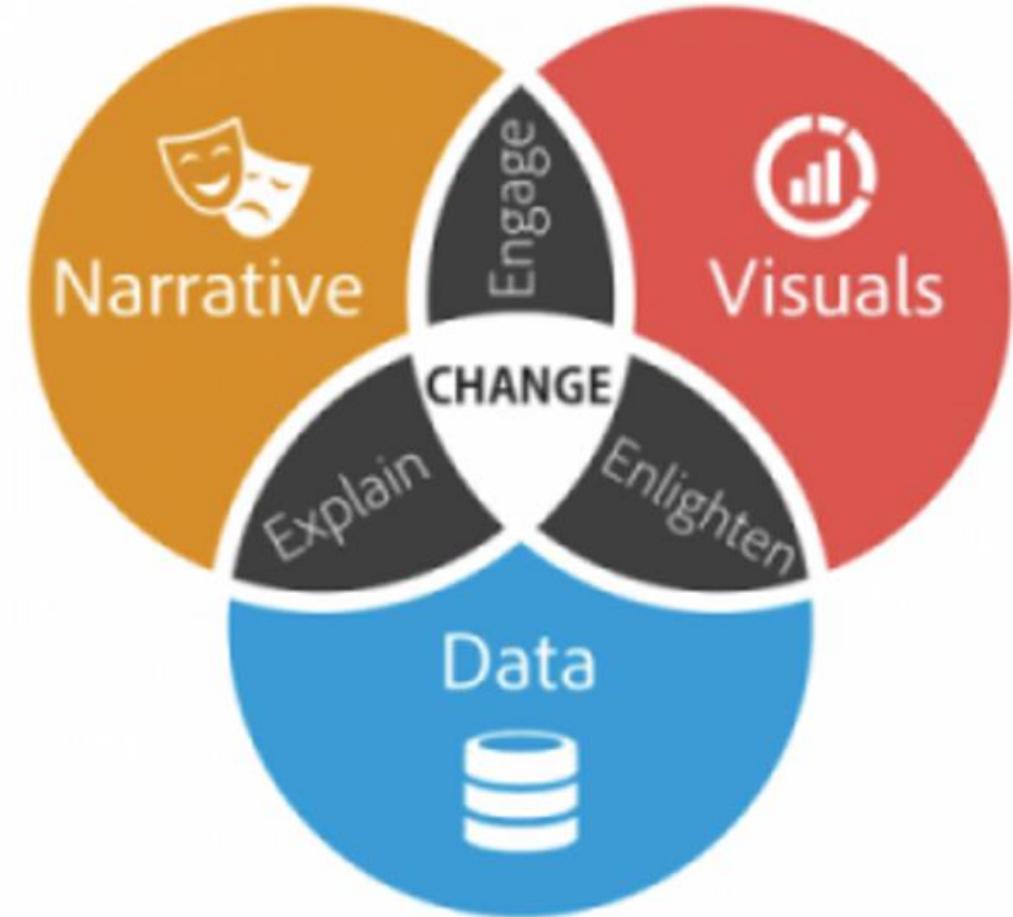
A method of delivering messages derived from complex data analysis in a way that allows the audience to quickly and easily assimilate the material, understand its meaning and draw conclusions from it.

Key Elements Structured Approach of Data Storytelling for Communicating Data Insights



According to **LeAnna Kent**, the data scientist at Elder Research, “Data story telling marries **data visualization** with a **guided narrative**.

It pairs **data** and the **graph** with **words**. It is not only describing what can be seen in the graph, but also telling a story to lead the audience through the analysis process.”



Effective data storytelling can help your insights drive change.



Explain.
Help your audience interpret and understand your insights.



Enlighten.
Use data visualizations to reveal insights hidden in the data.



Engage.
Combine narrative with visuals to connect with your audience.

Storytelling = visualization + narrative + data

Storyboarding

A **Storyboard** is simply the visual layout of how you are going to tell your story.

Storyboards are valuable for four reasons:

- ❖ Storyboards force you to assimilate your information, thus causing you to clarify the logic of your hypothesis and supporting assertions
- ❖ Storyboards help you to focus the analysis
- ❖ A storyboard can identify gaps in your analysis
- ❖ Storyboards prevent work that is unnecessary or redundant (story creep)

Storyboarding for Data Stories in business reports relates two aspects: the structure and flow of each story content in the report and the layout of the pages of the report.



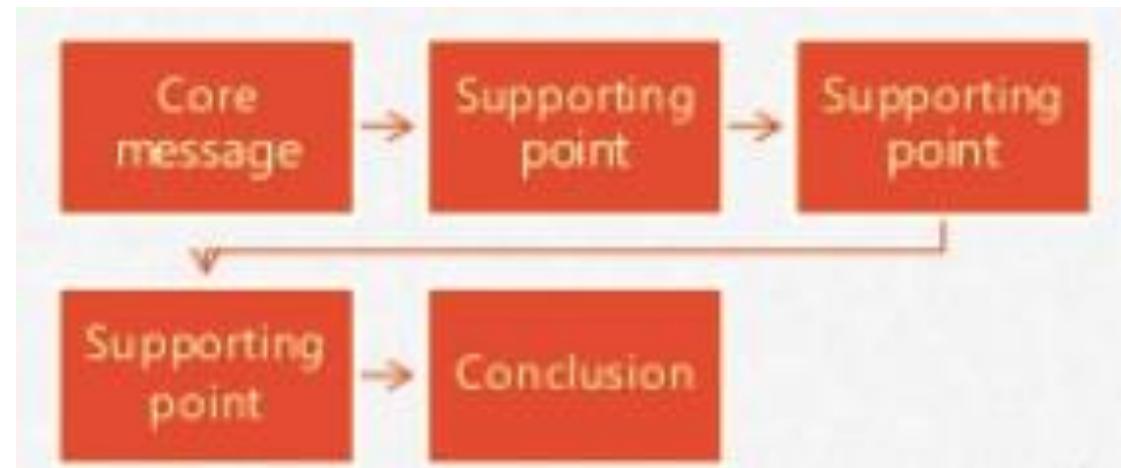
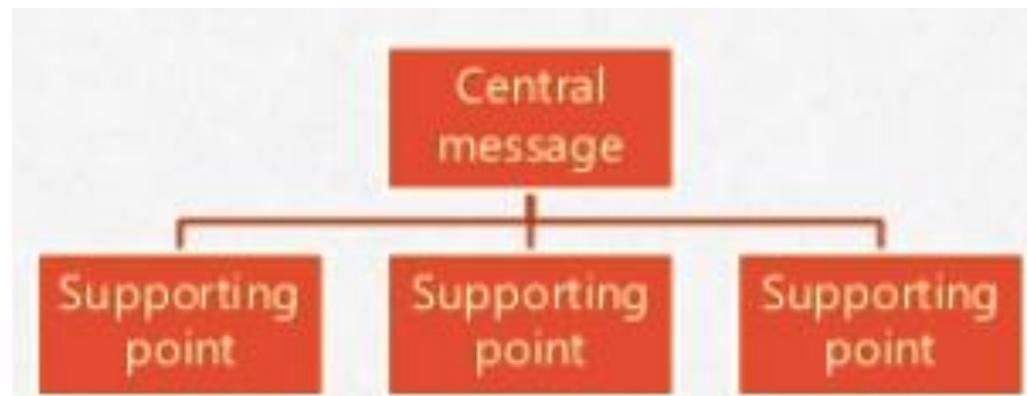
Five simple steps to content storyboards:

The quickest and most useful way to storyboard is to go back to pen and paper.

Post-its are invaluable here, though some people prefer to write on a whiteboard.

1. For each individual story, write the core message that you wish to convey on one post-it.
2. Then write down all the supporting points and other relevant information you wish to include in your story on further post-its.
3. Start physically arranging your post-its to give your story structure, checking back that it makes logical sense to an uninitiated reader. There is no one right way – use one that makes sense to you and your material
4. Remove any superfluous information – does the story still make sense?
5. Check back: is your message clear and concise?

Two examples of content Storyboards



Using “Data Storytelling” with a Chord Diagram

Switching behavior between phone brands of the Dutch 2014 Edition

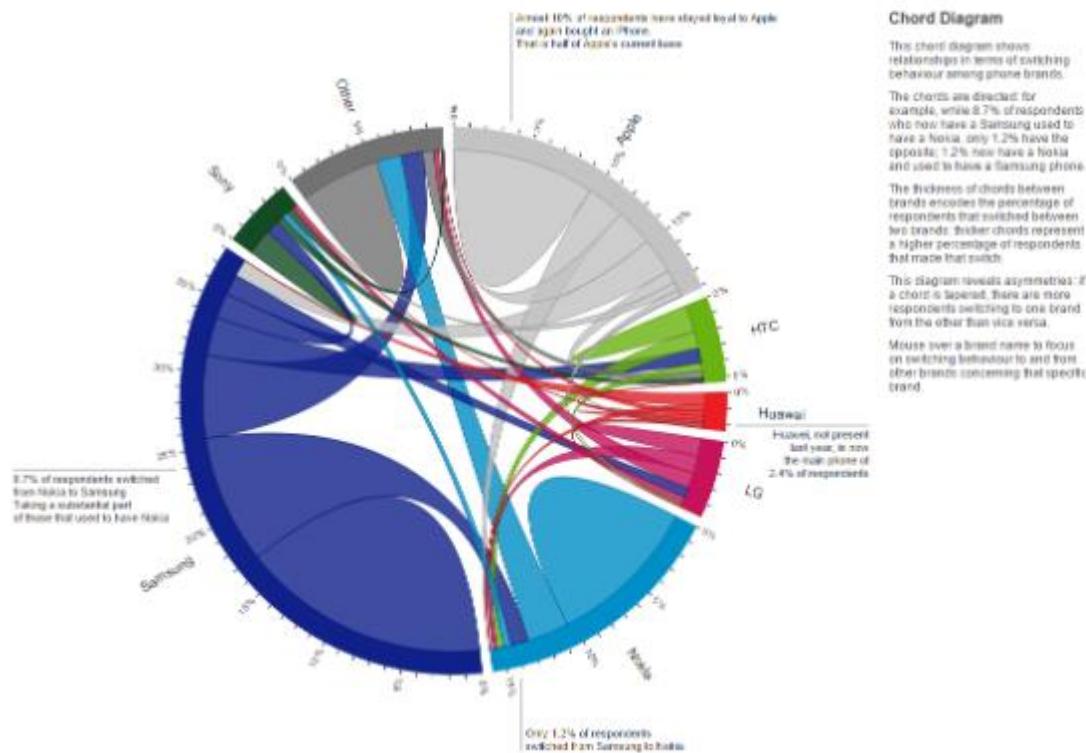
Analyzing the results of the Deloitte Mobile Consumer Survey – Netherlands Edition
Mouse over a brand to highlight.

While almost everyone in the Netherlands has a phone, many consumers switch to a new phone whenever their contract allows it. But how do people switch? And how does this differ per brand? To understand the complete flows of people switching phone brands (or staying loyal) we have analysed the connection between the respondent's current and previous main phone brand by visualizing the data in the Chord Diagram above. The chord diagram's outer ring represents the current main brand shares of all the respondents while the chords help to show what the brand of the previous was used to be.

EXPLAINING THE CHORD DIAGRAM

The circle is split up into 8 brands with the arc length of each group scaled to the current brand's market share. The percentages along the outer rim of the chord diagram give the share-per-brand. This shows that Samsung dominates the installed base with a 38% share, Apple is 2nd with 19% and Nokia is 3rd with 16%.

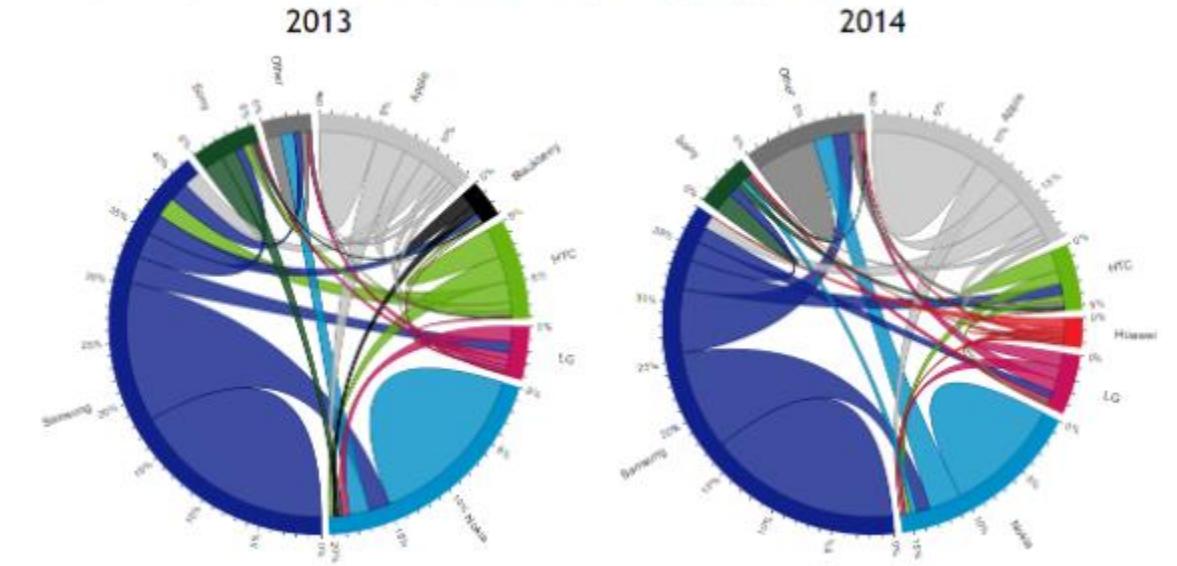
The chords between the arcs visualize the switching behaviour of the respondents between brands in both directions. For example, the big dark blue chord connecting Samsung and Nokia in the lower left section shows the part of respondents that moved from Samsung to Nokia and from Nokia to Samsung. The figure shows that Nokia has lost its installed base share to Samsung, as 8.7% of all respondents that used to own a Nokia now own a Samsung. At the same time, only 1.2% of the Nokia owners previously owned a Samsung.



<https://www.visualcinnamon.com/blog/>

COMPARING 2014 TO LAST YEAR'S RESULTS

Since this is the 2nd year that we have created a Chord Diagram from the GMCI data, we can compare the years to find changes that have occurred since last year. Below you can see the Chord diagram from last year on the left and the one from 2014 (thus the same as the big one at the top of the page) on the right.

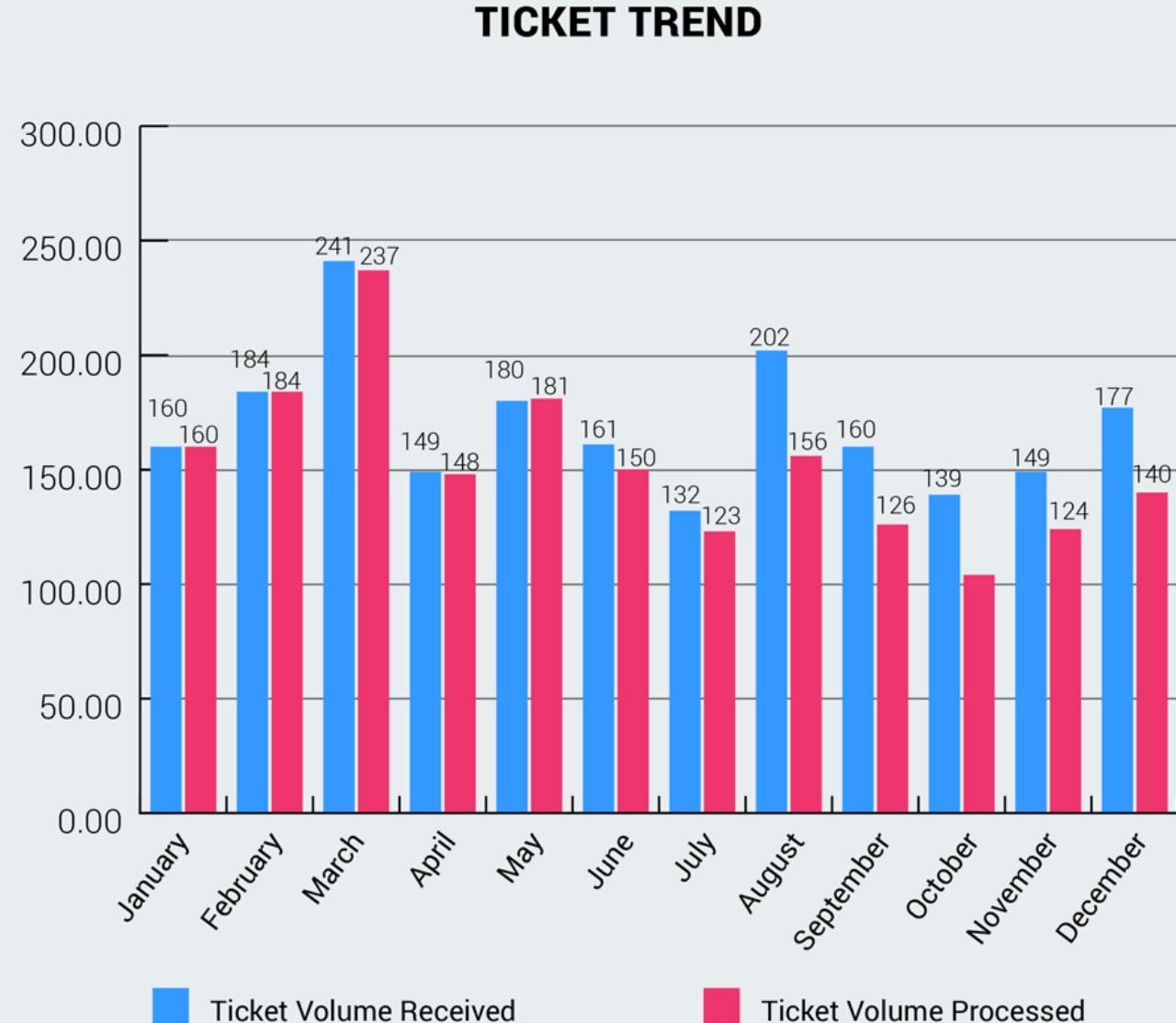


- <https://www.visualcinnamon.com/2014/12/using-data-storytelling-with-chord>

Examples of How to Improve Data Storytelling

Before

This bar chart displays the number of tickets received and processed in a year.



Source: Storytelling With Data by Cole Nussbaumer Knaflic

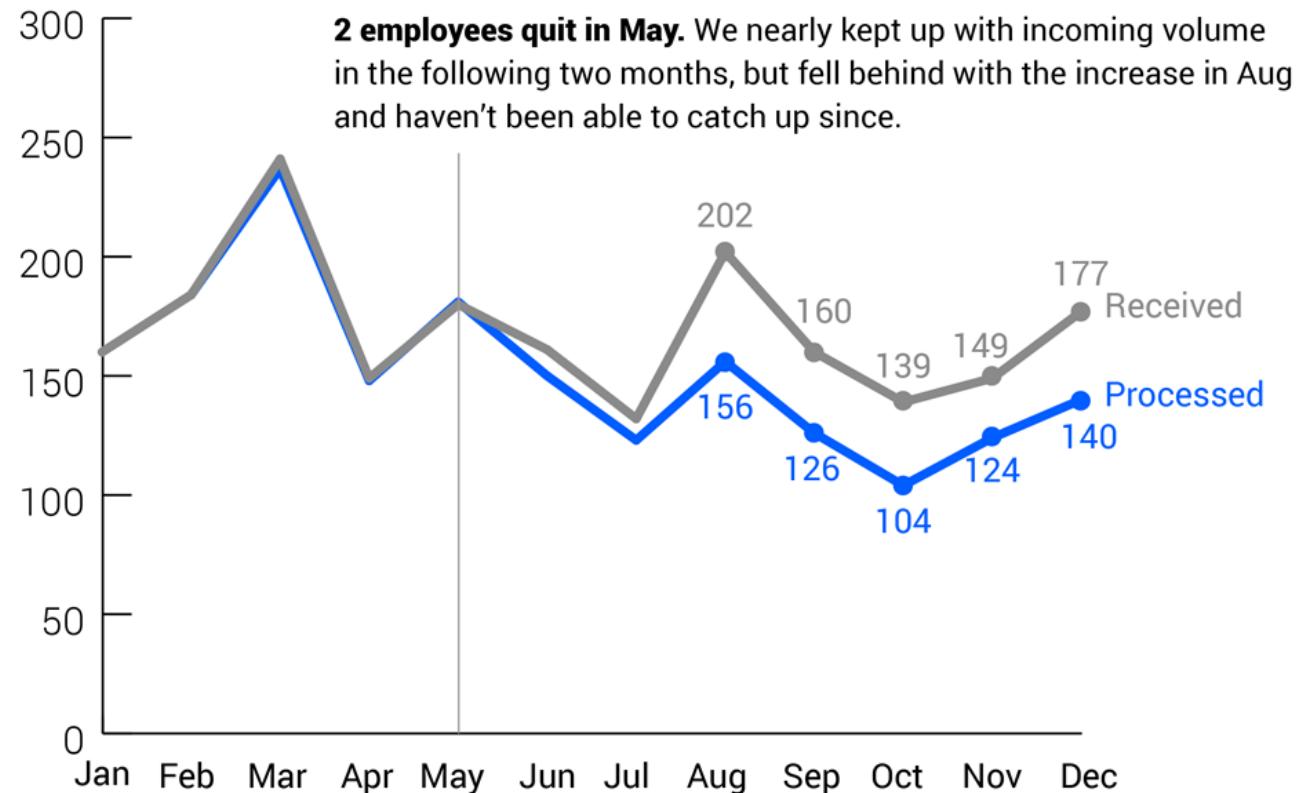
After

If your purpose is to convey a message and move someone to a specific action (in this case, the hire of two new employees), then this is much better.

Please approve the hire of 2 FTEs

to backfill those who quit in the past year

Ticket volume over time



Source: Storytelling With Data by Cole Nussbaumer Knaflic

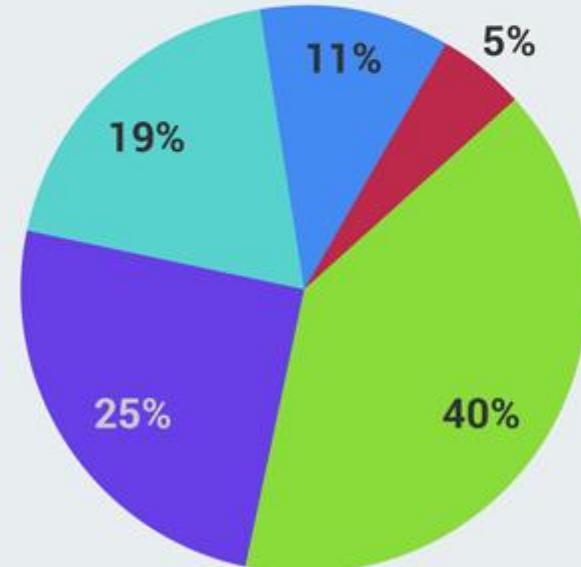
Before

This is another example of data displayed without a narrative or clear message.

Survey Results

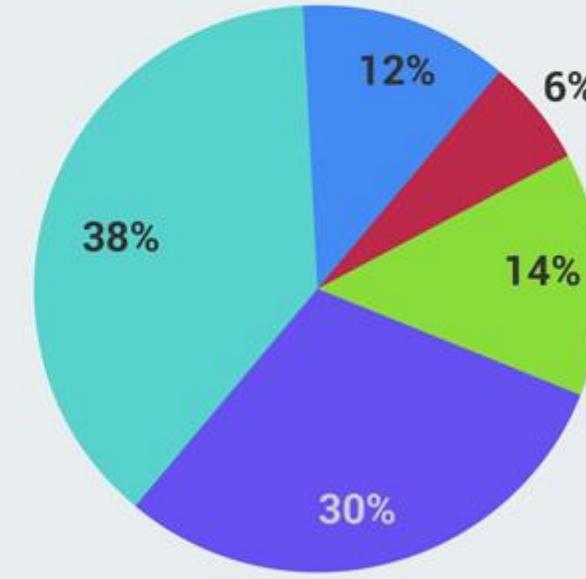
PRE: How do you feel about
doing science?

■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



POST: How do you feel about
doing science?

■ Bored ■ Not great ■ OK ■ Kind of interested ■ Excited



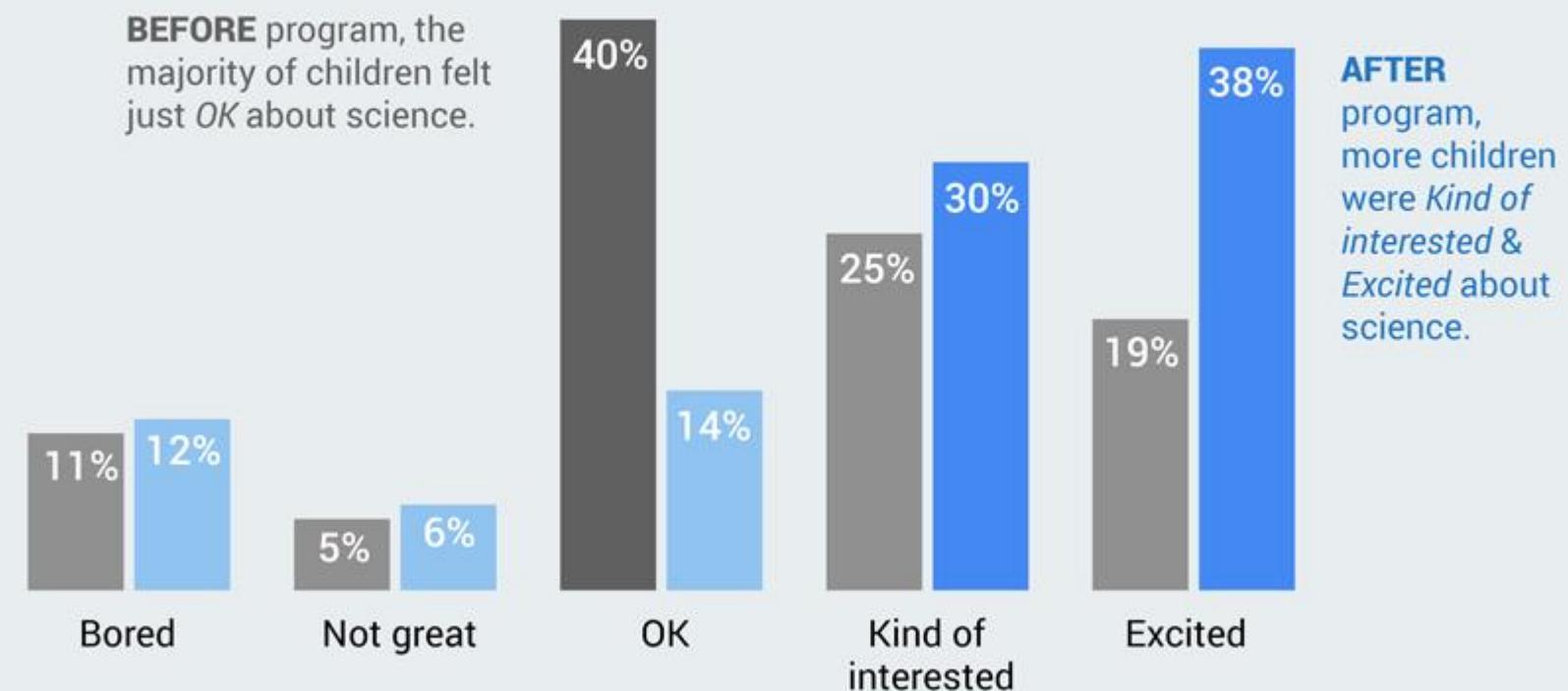
Source: Storytelling With Data by Cole Nussbaumer Knaflic

After

Now look at this same data set presented in a completely different manner. Big difference, right? The central message is immediately clear: More children were excited about science after the program.

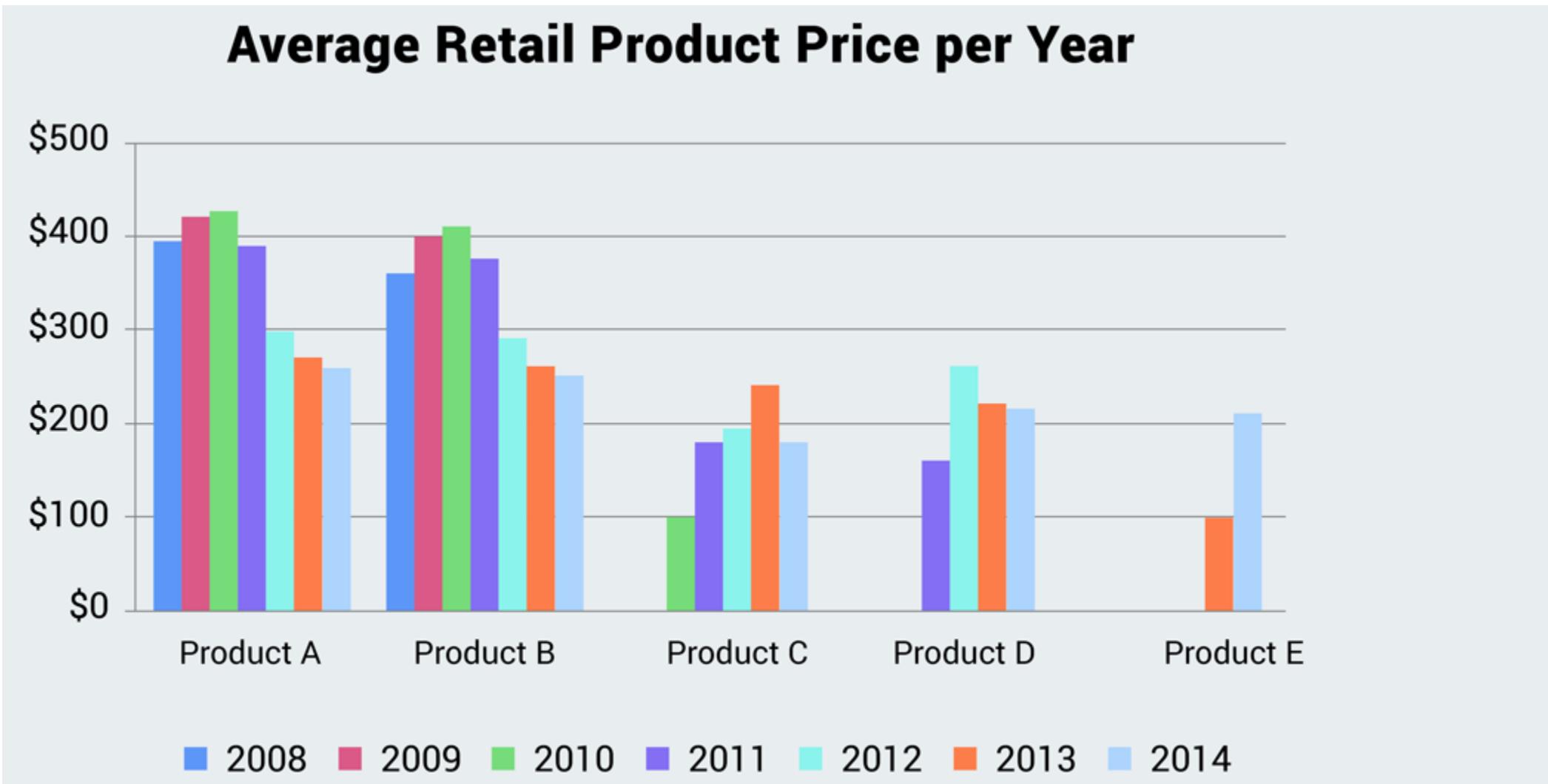
Pilot program was a success

How do you feel about science?



Before

Another example of an ineffective chart that is accurate but does not communicate or persuade an audience to take a specific action.

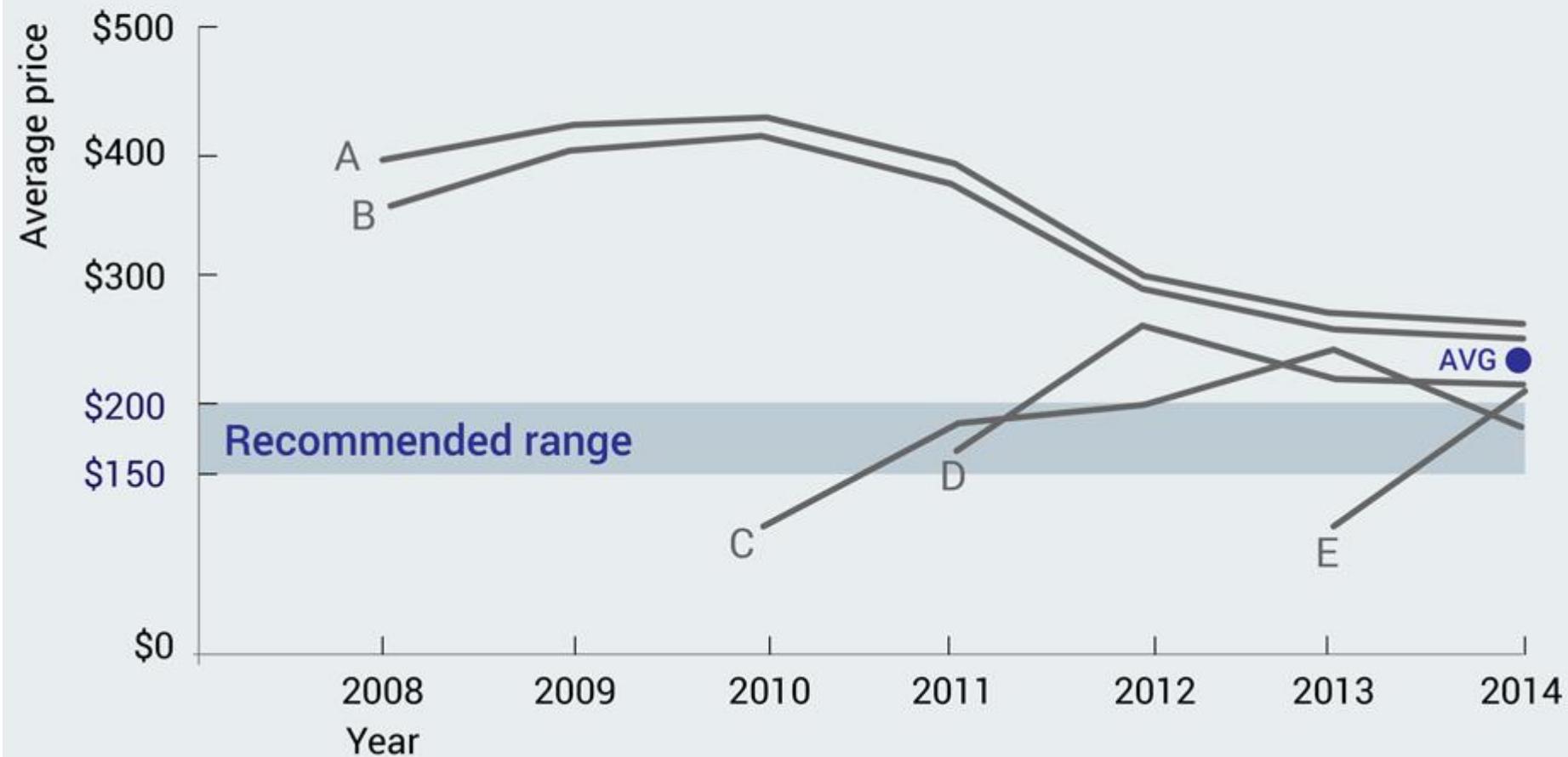


After

In this chart, our eyes are immediately drawn to the blue strip, the gray lines and the blue dot representing the average price point.

To be competitive, we recommend introducing our product below the **\$223 average price point in the \$150-\$200 range**

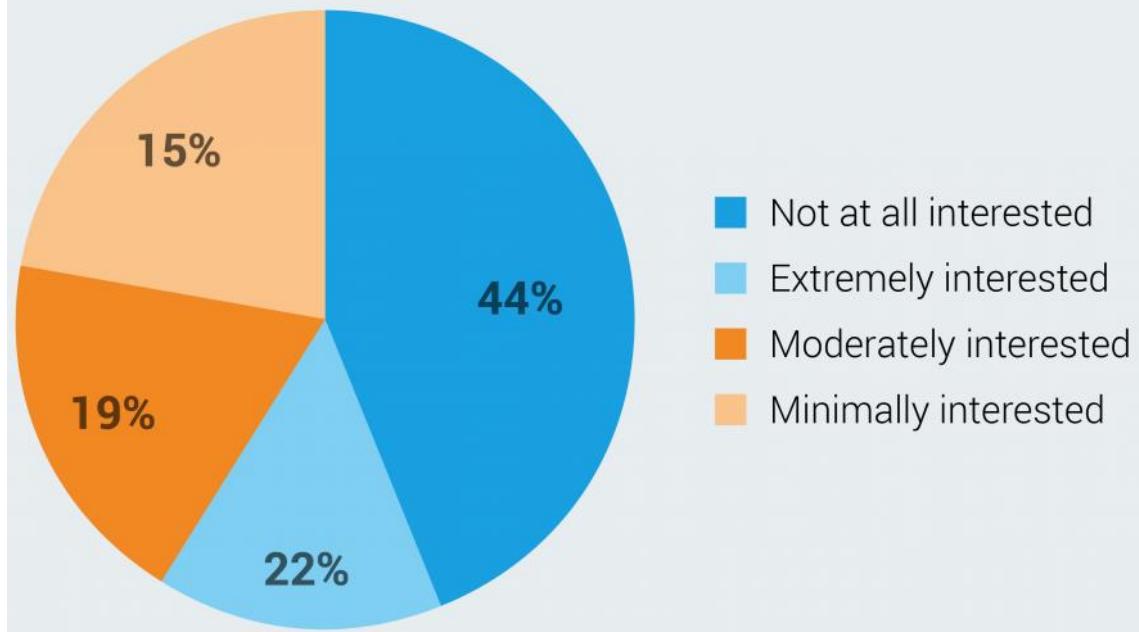
Retail price over time by product



Before

At first glance, this pie chart seems clear enough, but upon deeper analysis, you'll find that it doesn't abide by several conventions that allow viewers to quickly grasp the information.

HOW INTERESTED ARE YOU IN THIS PRODUCT?



After

This is much easier to decipher at first glance. Arranged according to the values on a scale, we quickly understand that a majority of people are not interested in this particular product.

HOW INTERESTED ARE YOU IN THIS PRODUCT?



Tools for Data Visualization

Top 15 Data Visualization Tools For 2022 (<https://www.simplilearn.com/data-visualization-tools-article>)

1. Tableau
2. Dundas BI
3. Jupyter
4. Zoho Reports
5. Google Charts
6. Visual.ly
7. RAW
8. IBM Watson
9. Sisense
10. Plotly
11. Data Wrapper
12. Highcharts
13. Fusioncharts
14. Power BI
15. QlikView

Data visualization tools for everyone

- Tableau
- Visme
- Infogram
- Jupyter/i>
- Zoho Reports

Data visualization tools for coders

- Plotly
- Sisense
- IBM Watson Analytics

Tools for complex data visualization and analytics

- Power BI
- Kibana
- Grafana

<https://datascience.foundation/sciencewhitepaper/a-quick-intro-into-big-data-visualization-techniques-and-tools>

1

BEGIN WITH A QUESTION

Set up your story. What is your audience going to learn?

2

END WITH AN INSIGHT

If we can't learn something useful from the data, the story isn't worth telling.

3

TELL A COMPELLING STORY

People remember stories, not data. Take them on your journey.

4

EXPLAIN WITH VISUALS, NARRATE WITH WORDS

People understand metrics, trends and patterns better with visuals. Use words to add your voice to the data.

5

BE HONEST AND CREDIBLE

The clients we want value honesty. Don't sugarcoat the negatives.

6

BE CLEAR AND CONCISE

Remove everything that is not part of your story. Save the good bits for another time.

7

KNOW AND CATER TO YOUR AUDIENCE

What are their interests and goals? Do they want the details, or just the high-level summary?

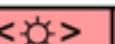
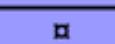
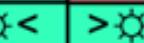
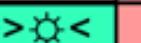
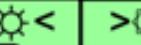
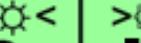
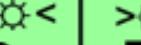
8

PROVIDE CONTEXT

Compare metrics over time or to industry benchmarks. Numbers are meaningless without context.

THE 8 COMMANDMENTS OF STORYTELLING WITH DATA

A PERIODIC TABLE OF VISUALIZATION METHODS

	Data Visualization Visual representations of quantitative data in schematic form (either with or without axes)		Strategy Visualization The systematic use of complementary visual representations in the analysis, development, formulation, communication, and implementation of strategies in organizations.															
 Tb table	 Ca cartesian coordinates		Information Visualization The use of interactive visual representations of data to amplify cognition. This means that the data is transformed into an image, it is mapped to screen space. The image can be changed by users as they proceed working with it		Metaphor Visualization Visual Metaphors position information graphically to organize and structure information. They also convey an insight about the represented information through the key characteristics of the metaphor that is employed	 Me meeting trace	 Mm metro map	 Tm temple	 St story template	 Tr tree	 Ct cartoon							
 Pi pie chart	 L line chart		Concept Visualization Methods to elaborate (mostly) qualitative concepts, ideas, plans, and analyses.		Compound Visualization The complementary use of different graphic representation formats in one single schema or frame	 Co communication diagram	 Fp flight plan	 Cs concept skeleton	 Br bridge	 Fu funnel	 Ri rich picture							
 B bar chart	 Ac area chart	 R radar chart	 Ac cobweb	 Pa parallel coordinates	 Hy hyperbolic tree	 Cy cycle diagram	 T timeline	 Ve venn. diagram	 Mi mindmap	 Sq square of oppositions	 Cc concentric circles	 Ar argument slide	 Sw swim lane diagram	 Gc gannt chart	 Pm perspectives diagram	 D dilemma diagram	 Pr parameter ruler	 Kn knowledge map
 Hi histogram	 Sc scatterplot	 Sa sankey diagram	 In information lens	 E entity relationship diagram	 Pt petri net	 Fl flow chart	 Cl clustering	 Lc layer chart	 Py minto pyramid technique	 Ce cause-effect chains	 Ti toulmin map	 Dt decision tree	 Cp cpm critical path method	 Ef concept fan	 Co concept map	 Ic iceberg	 Lm learning map	
 Tk tukey box plot	 Sp spectrogram	 Da data map	 Tp treemap	 Cn cone tree	 Sy system dyn./simulation	 Df data flow diagram	 Se semantic network	 So soft system modeling	 Sn synergy map	 Fo force field diagram	 Ib argumentation map	 Pr process event chains	 Pe pert chart	 Ev evocative knowledge map	 V vee diagram	 Hh heaven 'n' hell chart	 I infomural	

Data Sonification

Sonification: telling data stories through sound.

Data sonification is the presentation of data as sound using sonification (process of producing sound).

It is the auditory equivalent of the more established practice of data visualization (Wikipedia).

4 unique examples showing how music and sound can be used in data science → <https://towardsdatascience.com/sonification-telling-data-stories-through-sound-fbd1f98d0071>

How sonification can bring your data storytelling to life –

<https://datajournalism.com/read/longreads/data-sonification>

Data Visceralization is the enhanced version of visualization. When you visualize, you try to make mental pictures. When you visceralize, you work to add sound, movement and other sensations.

Making data mean more through storytelling

| Ben Wellington | TEDxBroadway



https://www.youtube.com/watch?v=6xsvGYIxJok&feature=emb_logo

Credit & References

Data Storytelling: The Essential Data Science Skill Everyone Needs - Brent Dykes

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