Tableau

Data Visualization

Learning Objectives

By the end of this lesson, you will be able to:

- Explain data visualization
- Explain the need for data visualization
- List examples of effective data visualization techniques
- Explore the ways to present the story with good visualization

Business Scenario

ABC is a software development company which works with large amounts of data. They were facing issues in managing data and realized that visualization is the key to managing and gaining insights from the data.

To effectively create a visualization out of a large amount of data, they must learn the basics of data visualization, the different tools available for visualization, and some examples of effective data visualizations.

They will also benefit by exploring the ways to present a story with good visualization.

Data Visualization

Discussion: Data Visualization

Duration: 10 minutes

- What is data visualization?
- What are the popular data visualization tools available in the market?

Data Visualization

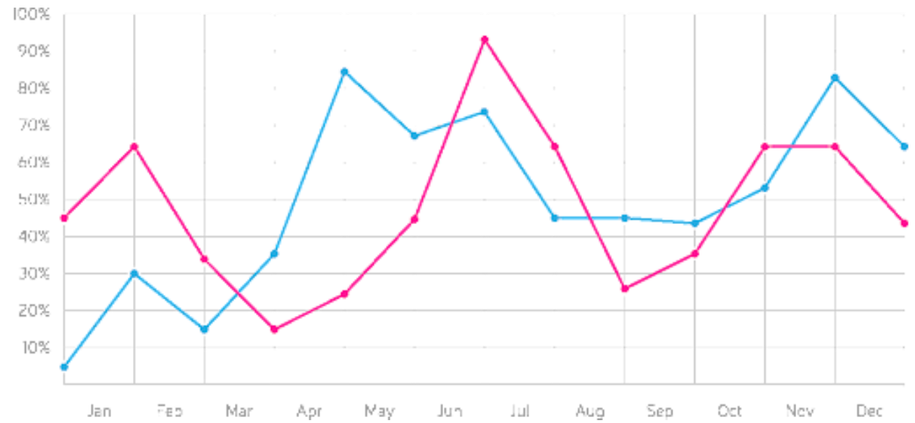
Engaging the audience through narratives can be challenging.

When the audience is a key stakeholder, an effective way to augment narratives is to use visuals.

An Image Conveys a Lot in a Short Time

Advantages of visual representation of data:

It takes 1/10th of a second for a person to interpret the meaning of a visual.



Viral social media posts are usually visuals or videos.

Data Visualization

Data visualization is the graphical or pictorial representation of data.

iso3	iso2	imfn	country	region	income	year
AFG	AF	512	Afghanistan	South Asia	Low income	1960
AFG	AF	512	Afghanistan	South Asia	Low income	1961
AFG	AF	512	Afghanistan	South Asia	Low income	1962
AFG	AF	512	Afghanistan	South Asia	Low income	1963
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AFG	AF	512	Afghanistan	South Asia	Low income	1965
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AFG	AF	512	Afghanistan	South Asia	Low income	1973
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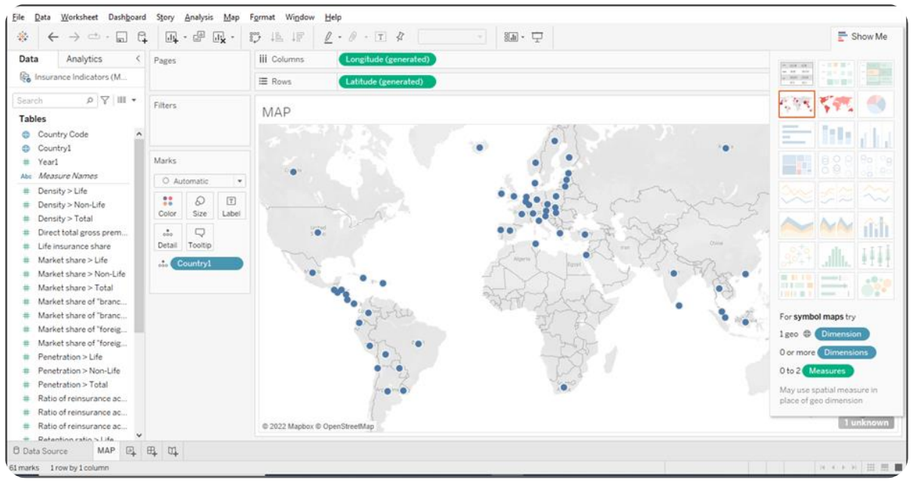
AFG	AF	512	Afghanistan	South Asia	Low income	1975

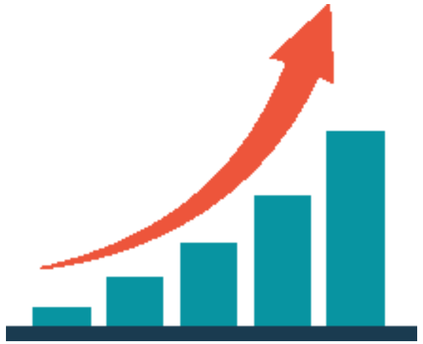


Excel data

Tableau representation

Data Visualization

It is the process of translating data sets into charts and graphs that make it easier to:



Identify trends

Identify patterns and outliers

Get insights

Data Visualization

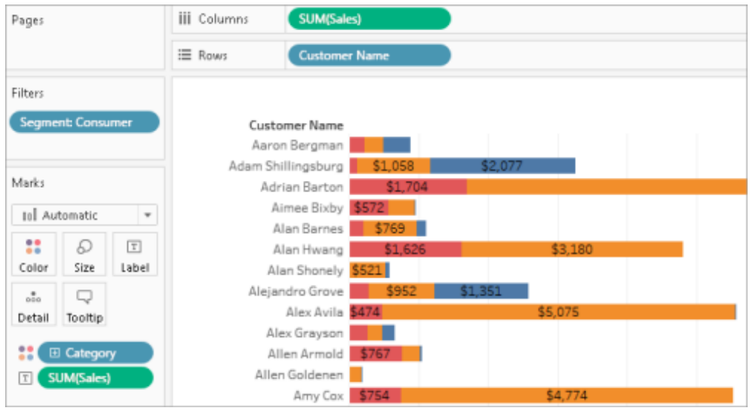
Nowadays, data is collected, analyzed, and used everywhere.

It is crucial to represent data in a way that is easy to interpret and helps to make data-driven decisions.

Data Visualization

Data visualization can be used to deliver numerical data through maps and graphs.

	A	B	C	D	E
1		Category	Category	Category	
2	Customer Name	Furniture	Office Sup	Technology	
3	Aaron Bergman	$391	$274	$222	
4	Adam Shillingsburg	$2,077	$1,058	$120	
5	Adrian Barton	$1,280	$11,489	$1,704	
6	Aimee Bixby	$16	$379	$572	
7	Alan Barnes	$131	$769	$213	



Numerical data

Graphical representation

Data Visualization Tools

Some data visualization tools available in the market are:

Dundas

Zoho

Qlik

Power BI

Matplotlib

Excel

Tableau

Looker

Data Visualization Tools

The current market leaders are listed below in Gartner's Magic Quadrant for analytics and business Intelligence platforms.

Microsoft Power BI

Tableau

Qlik

Discussion: Data Visualization

Duration: 10 minutes

- What is data visualization?

  Answer: Data visualization refers to graphically representing data using visual elements to effectively communicate insights, patterns, and trends.

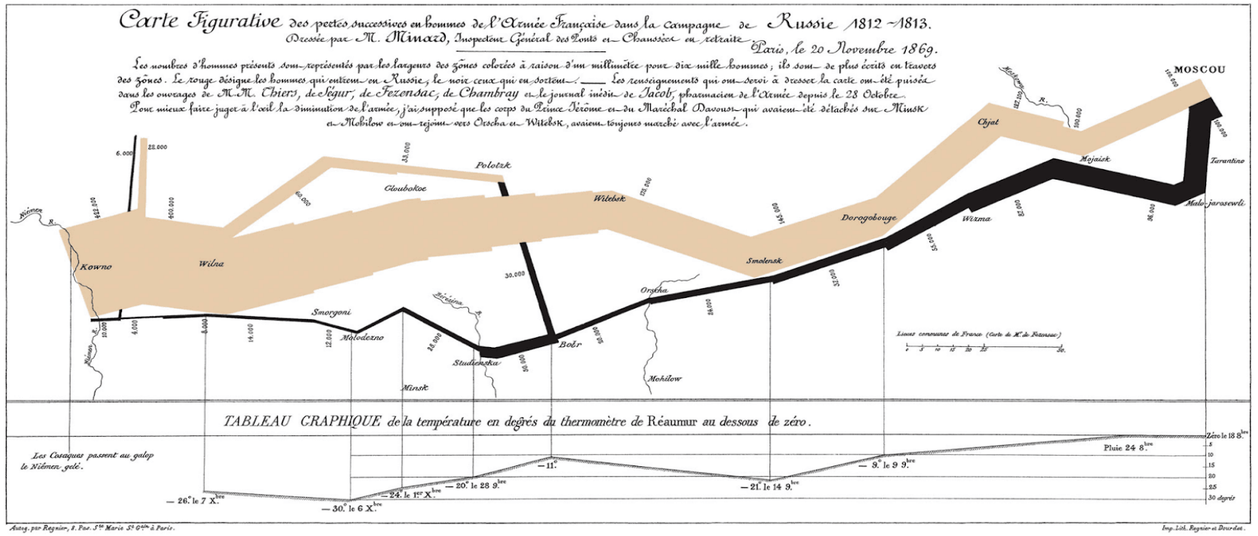
- What are the popular data visualization tools available in the market?

  Answer: Tableau, Power BI, QlikView, Dundas, Zoho, QLik, and Google Data Studio are all popular data visualization tools.

Examples of Effective Visualizations

Napoleon March Map

The Napoleon march map depicts Napoleon Bonaparte’s invasion of Russia and the subsequent retreat of his army.

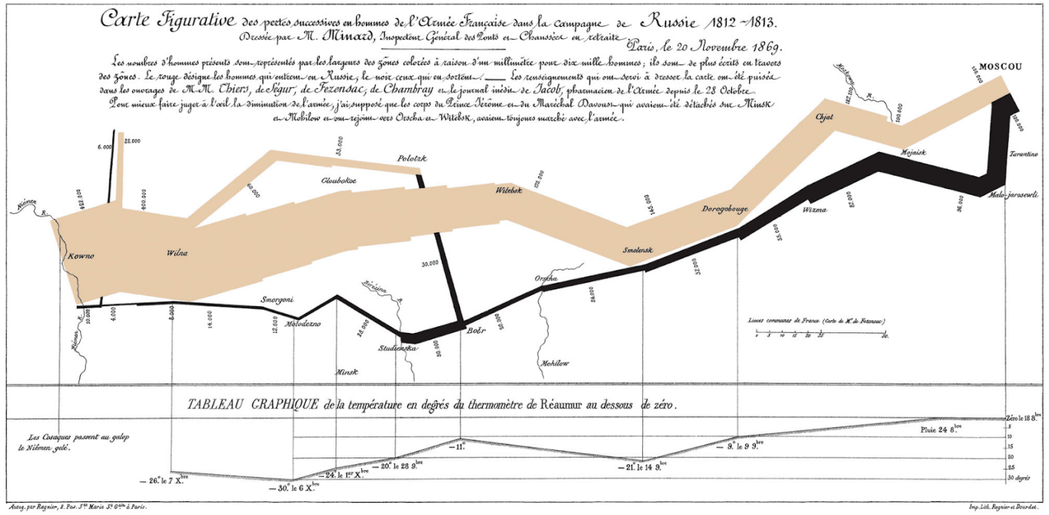


This chart, created by Charles Minard, is considered the best statistical graphic ever produced.

Image Source: https://en.wikipedia.org/wiki/File:Minard.png

Napoleon March Map

The Napoleon March map is a hand-drawn visual that conveys many things through a single visualization.

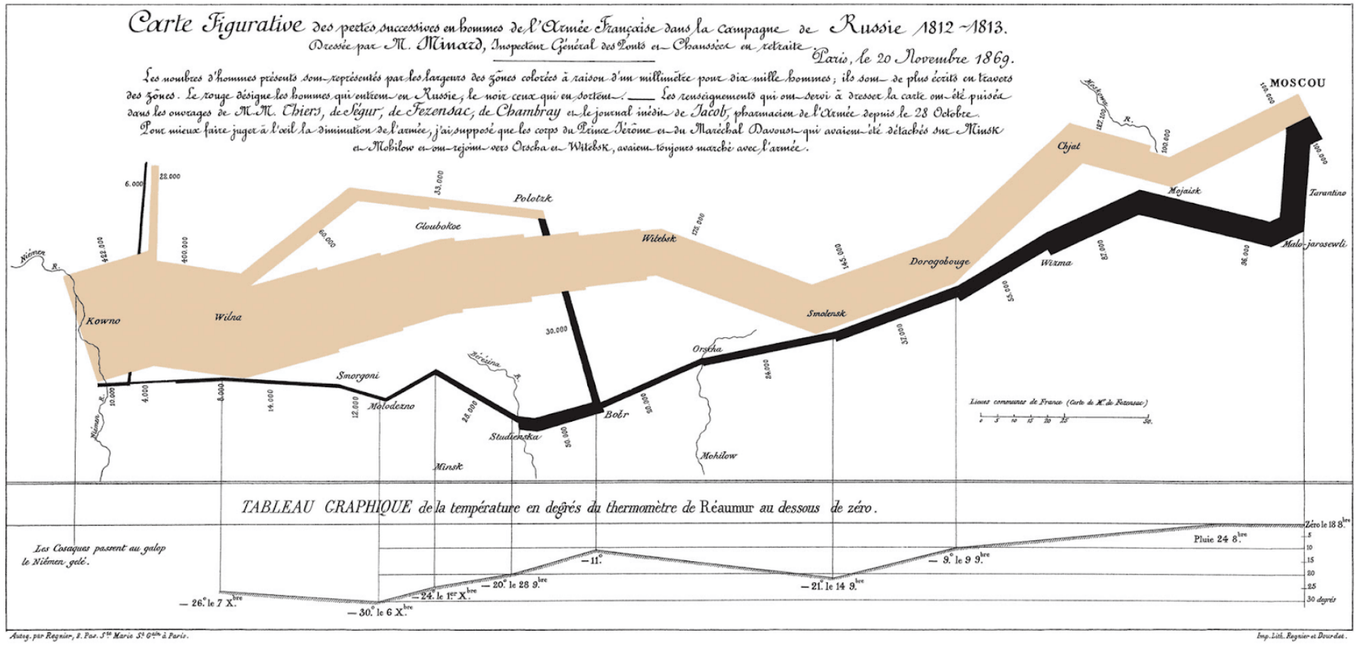


- It depicts the journey made by Napoleon's troops to Moscow in 1812.
- The journey was a disaster.

The troops set out with 470,000 soldiers, of which only 10,000 returned.

Napoleon March Map

The troops are represented by tapering down the width of the line.



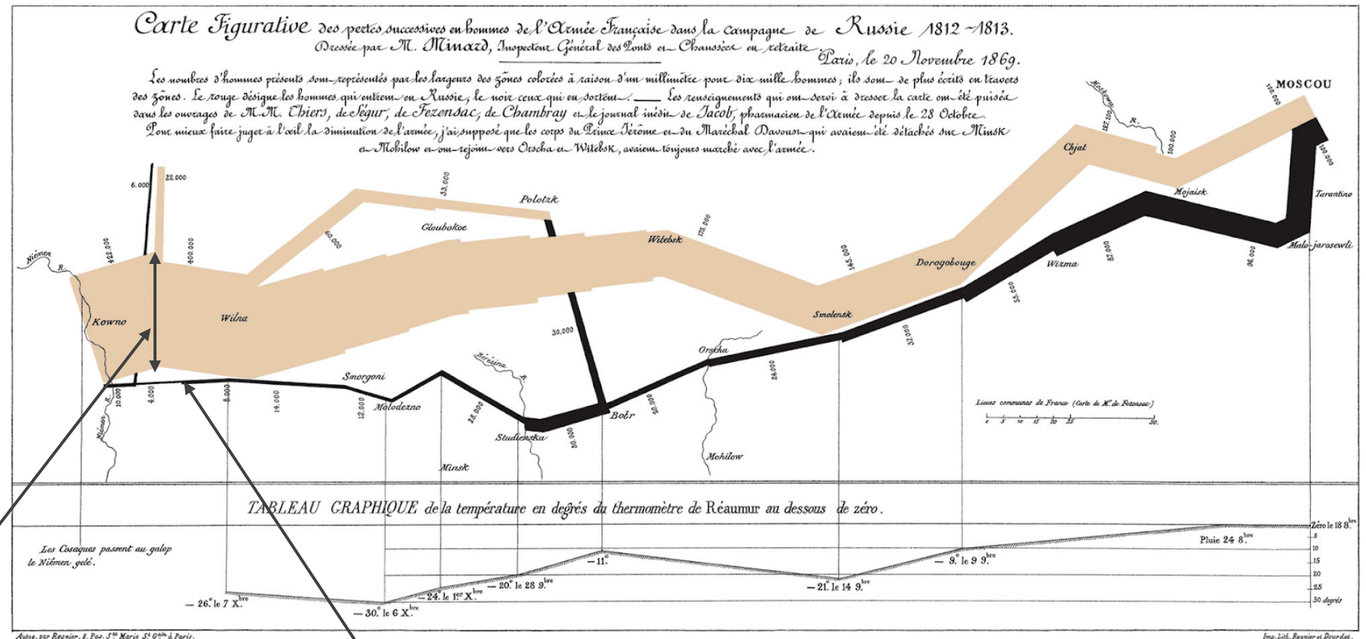
Journey to Moscow

Journey back home

Source: https://en.wikipedia.org/wiki/File:Minard.png

Napoleon March Map

Geographical coordinates are used along the x-axis.



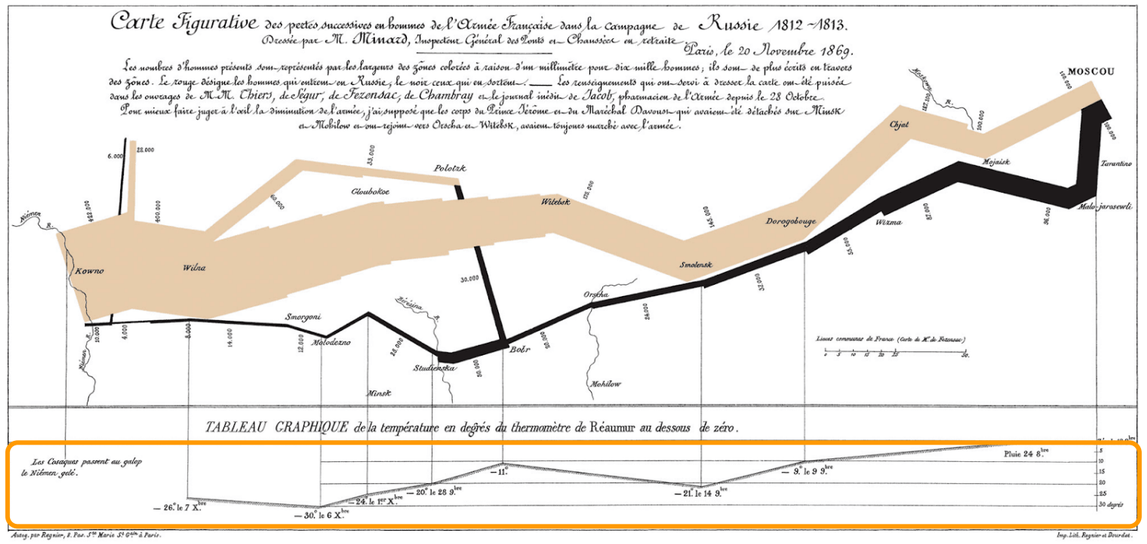
Troop strength upon starting the journey

Troop strength upon return

Troop strength kept reducing in both journeys.

Napoleon March Map

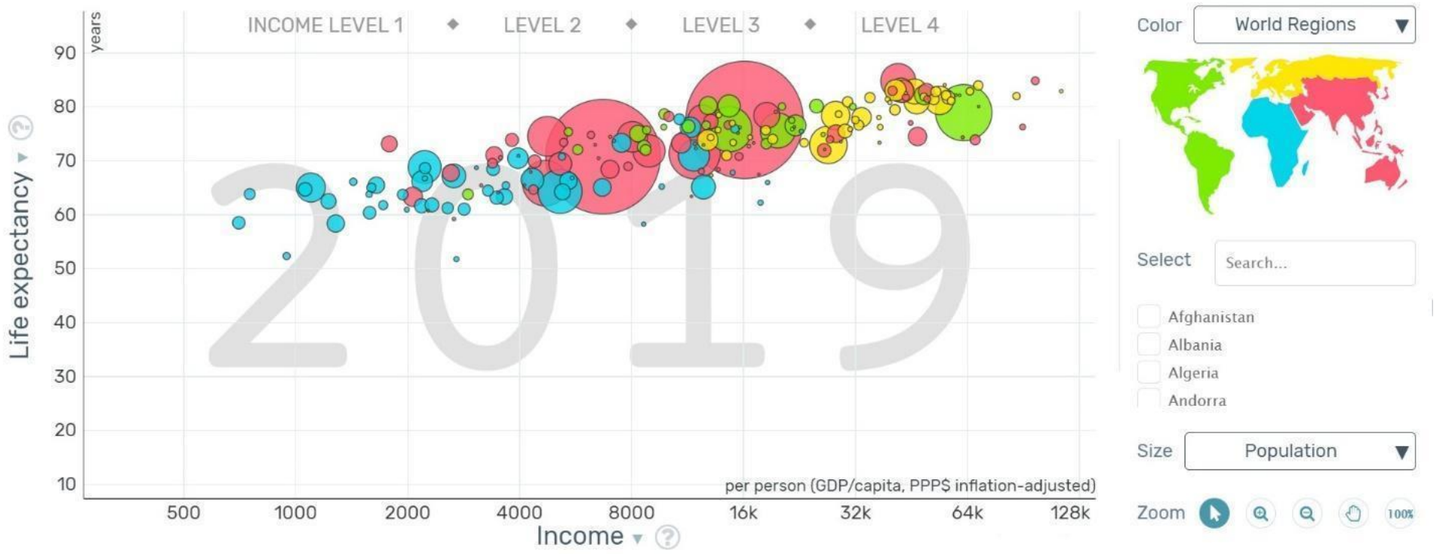
The Napoleon March map is regarded as the most effective and detailed example of data visualization in history.



- A temperature axis is shown at the bottom.
- The temperature is reduced in specific locations on the journey.

Income vs. Life Expectancy Chart

Below is an example of an insightful chart that depicts the relationship between income and life expectancy:

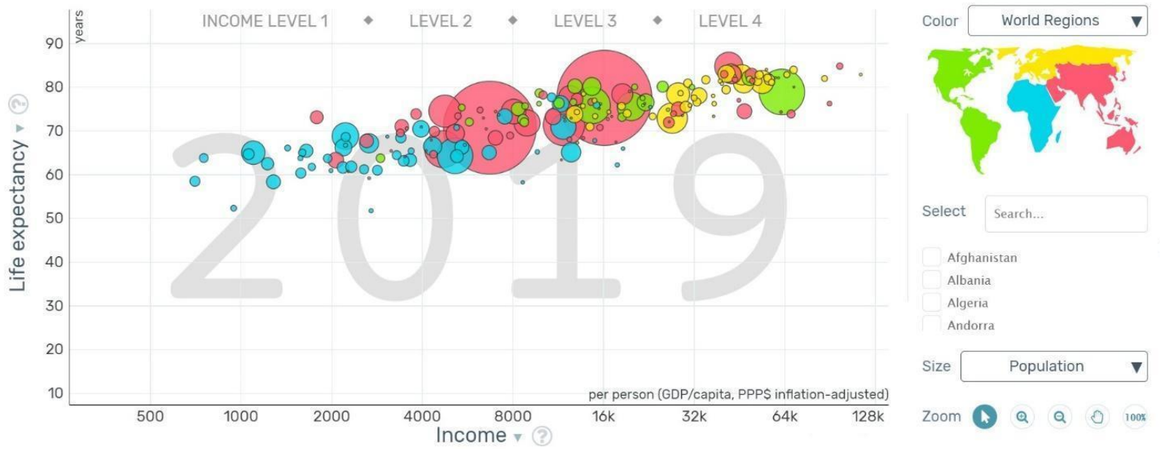


This chart was produced by Hans Rosling.

Link to the chart: https://ourworldindata.org/grapher/life-expectancy-vs-gdp-per-capita

Income vs. Life Expectancy Chart

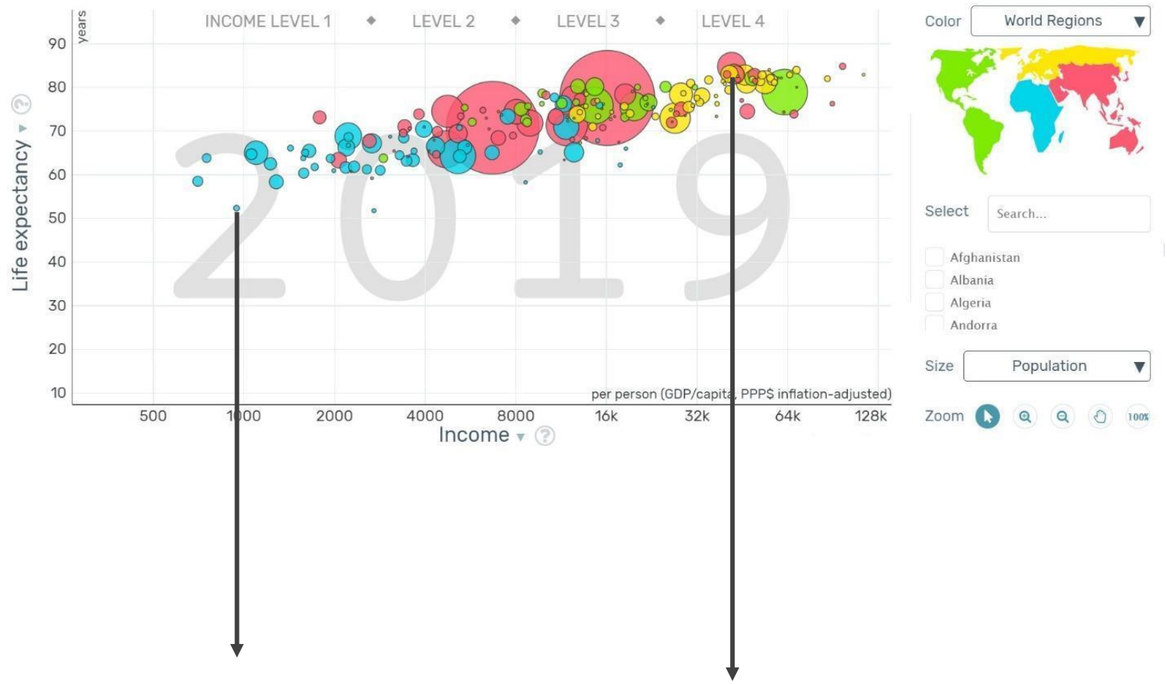
In this chart:



- X- and y-axes represent income and life expectancy, respectively.
- The size of the bubble represents the population.
- Color represents the world region.

Income vs. Life Expectancy Chart

According to this chart:



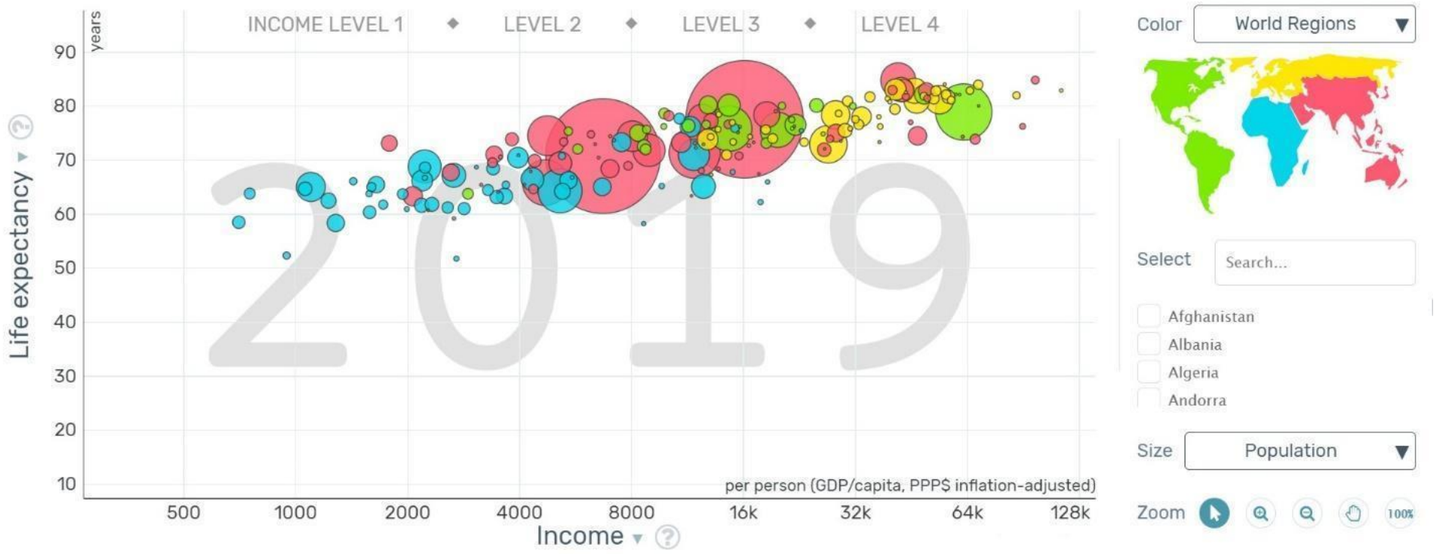
Low-income country

High-income country

High-income countries have greater life expectancy rates than low-income countries

Income vs. Life Expectancy Chart

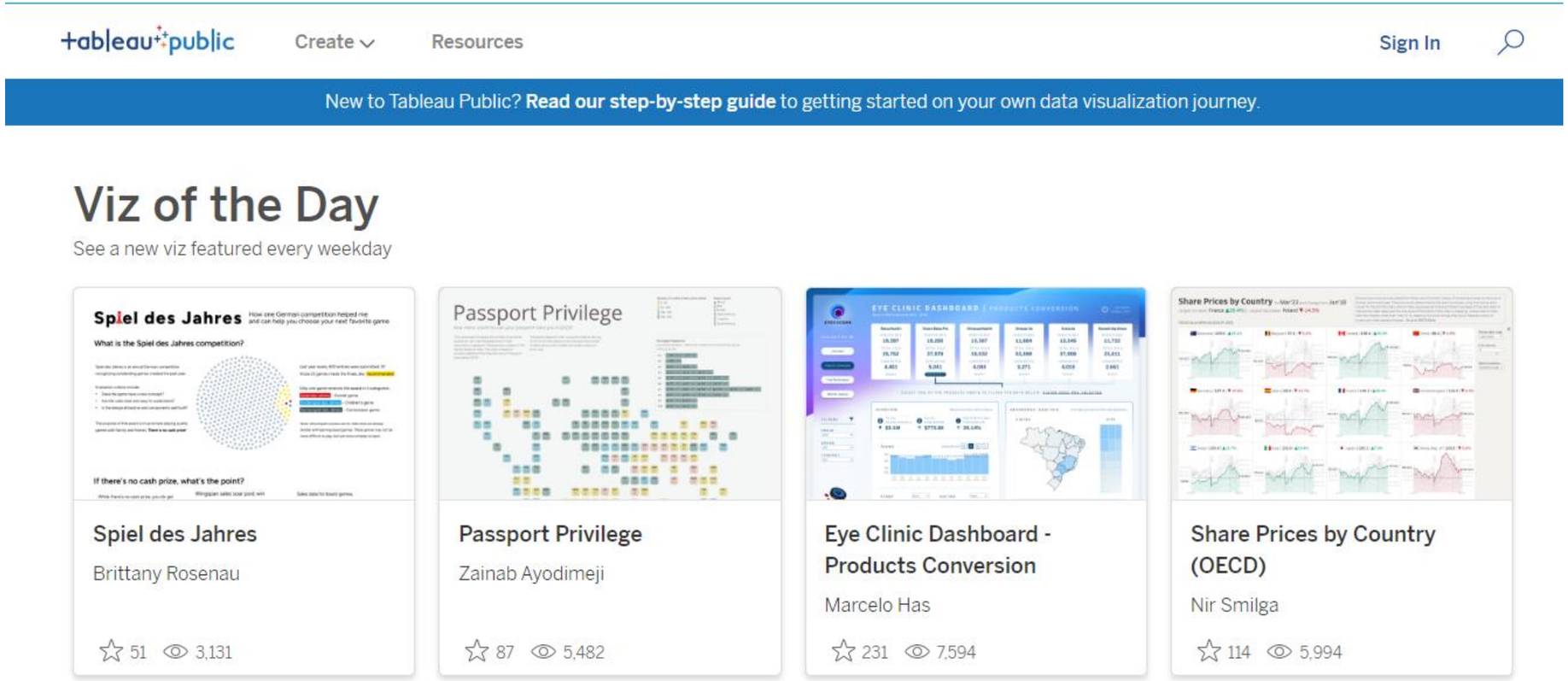
The video uses graphs from the years 1801 to 2019 to show how things changed over this period.



This makes the visual informative and engaging.

Tableau’s Viz of the Day

Tableau’s Viz of the Day is a treasure trove of effective visualizations.



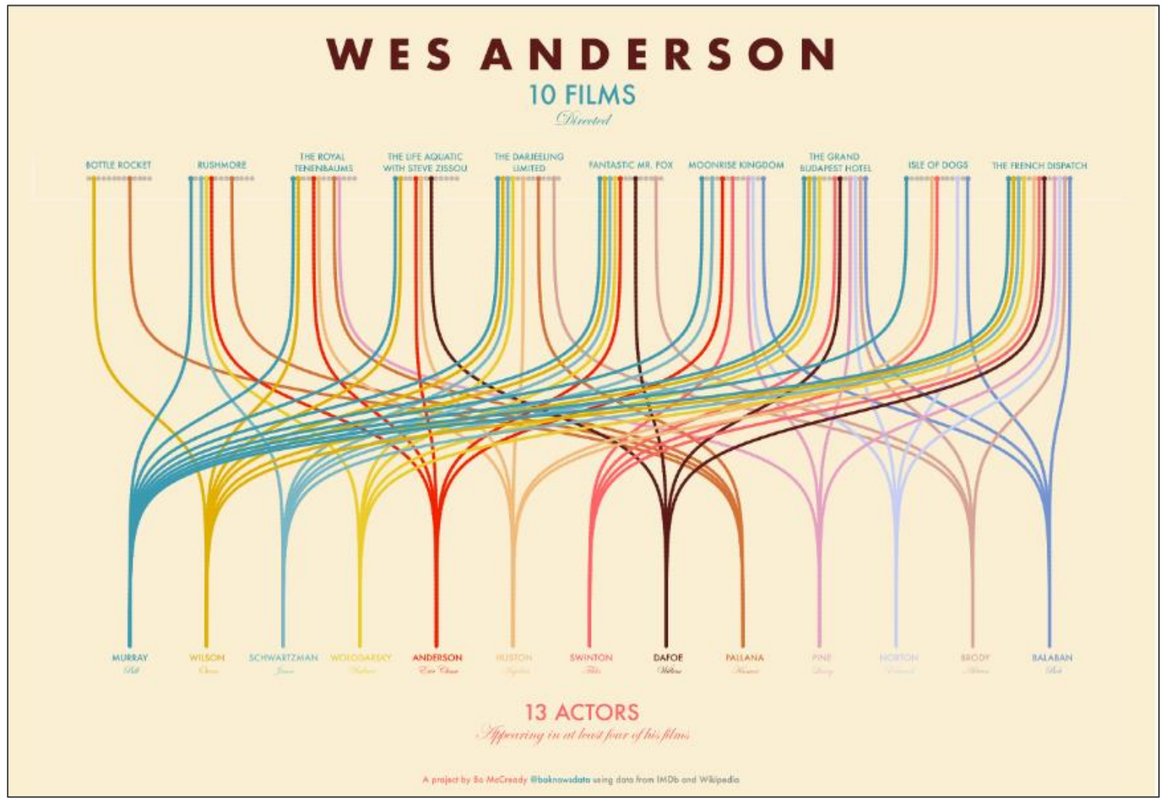
Tableau’s Viz of the Day

The site highlights visualizations picked by the Tableau team every day.

A new Viz is released daily, providing new insights and inspiration

Examples of Visualizations Published on Viz of the Day

This visual maps 10 films directed by filmmaker Wes Anderson and 13 actors who appeared in at least four of his films.



For more information, refer to the Wiz of the Day section in Tableau.

Source: https://public.tableau.com/app/profile/bo.mccready8742/viz/WesAndersonFilms/WesAndersonFilms

Examples of Visualizations Published on Viz of the Day

This visual represents the test career of cricket legend Brian Lara.

For more information, refer to the Viz of the Day section on Tableau.

Explore the link https://public.tableau.com/en-us/gallery to know more.

Storytelling with Data

Storytelling with Data

Data is continuously mined and analyzed these days.

An effective data presentation:

- Communicates in such a way that it is easy to understand and assimilate
- Plays a crucial role in converting insights into actionable outcomes

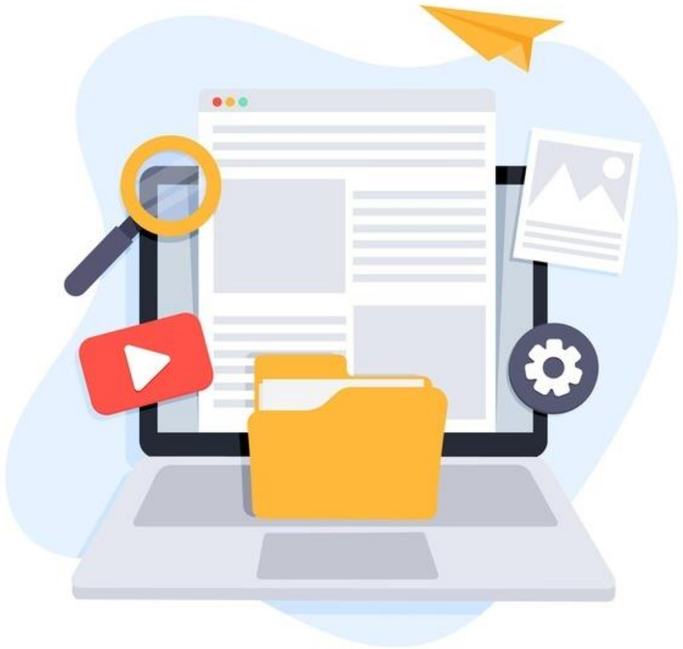
Data Storytelling

Data storytelling uses a compelling narrative to communicate information that is tailored to a specific audience.

It requires an understanding of the context in order to be effective.

Understand the Context

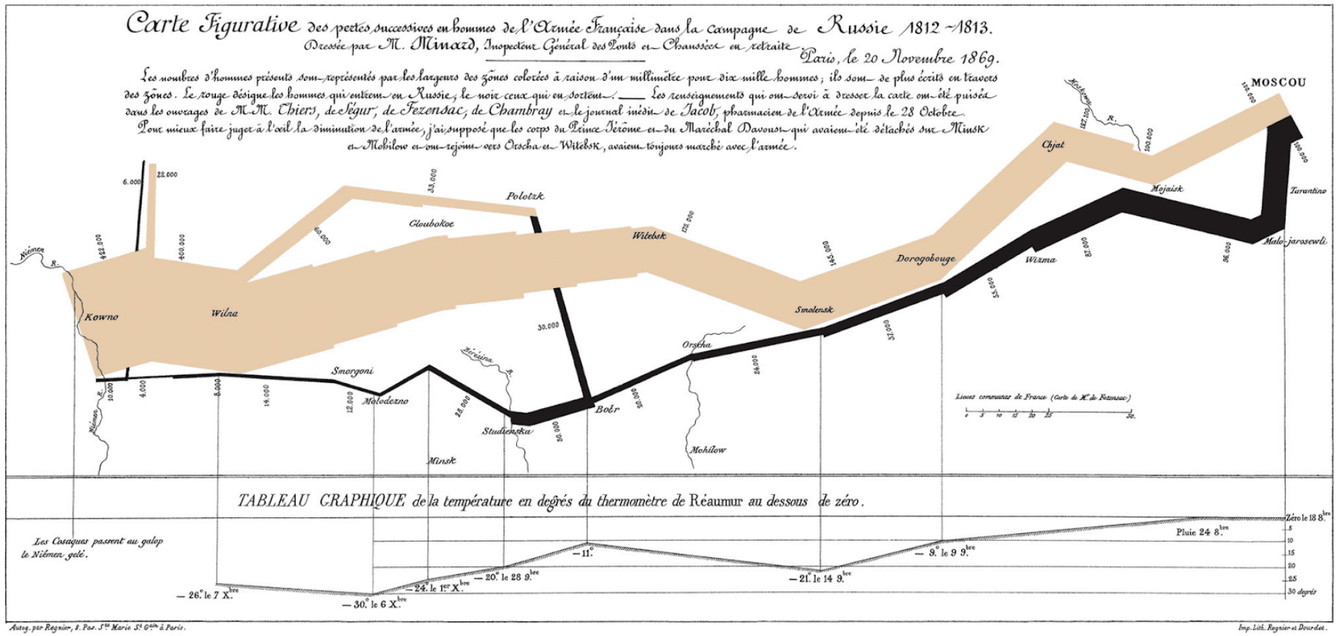
Context is a condition in which something exists or happens.



- Context forms the basis for the storytelling.
- One must understand the context before presenting the story from the data.

Understand the Context

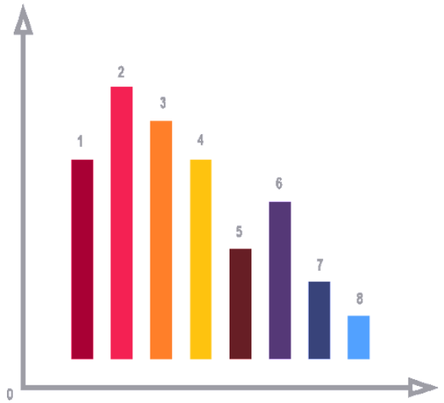
Consider the Napoleon March map:



The context here is what happened when Napoleon marched to Moscow.

Choose an Effective Visual

An effective visual communicates a story effectively to the audience.

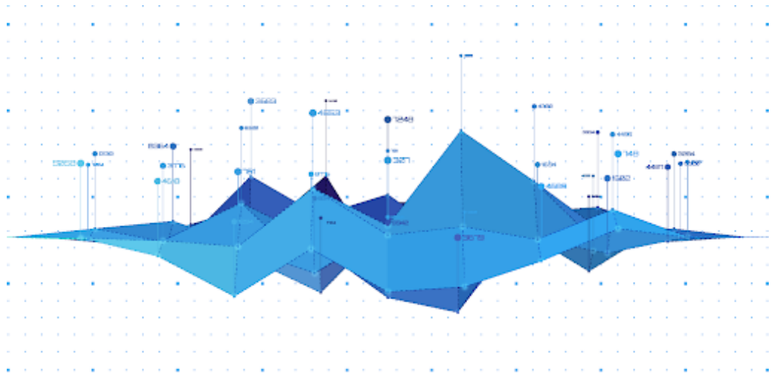


Depending on the context, decide the type of graph or visual that will keep the audience effectively engaged.

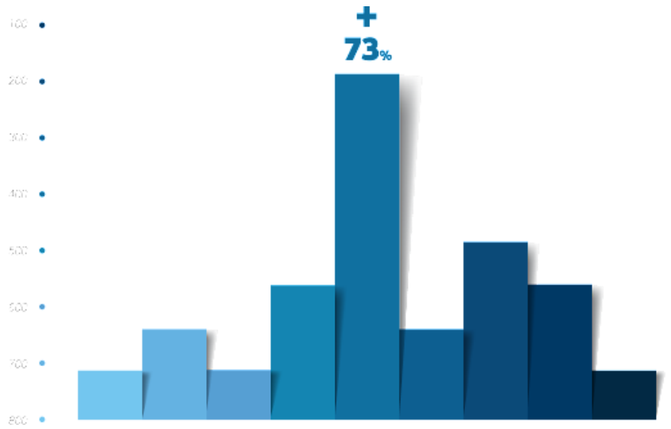
It needs to convey the point that the presenter is trying to make.

Choose an Effective Visual

Simple visual is the most effective as it is easy to understand.



Complex graph



Simple graph

In other words, instead of creating a visual that is complex, try making it simple and effective.

Dos and Don'ts of Visualizations

To create a good visual:

- Use only those elements that are necessary for creating the visual.
- Ensure the visual effectively communicates a data story.

- Don’t use too many elements and labels.

Tell a Story

Stories are the most engaging way to remember anything.

The insights discovered should be woven into a story that is appropriate for the audience to understand.

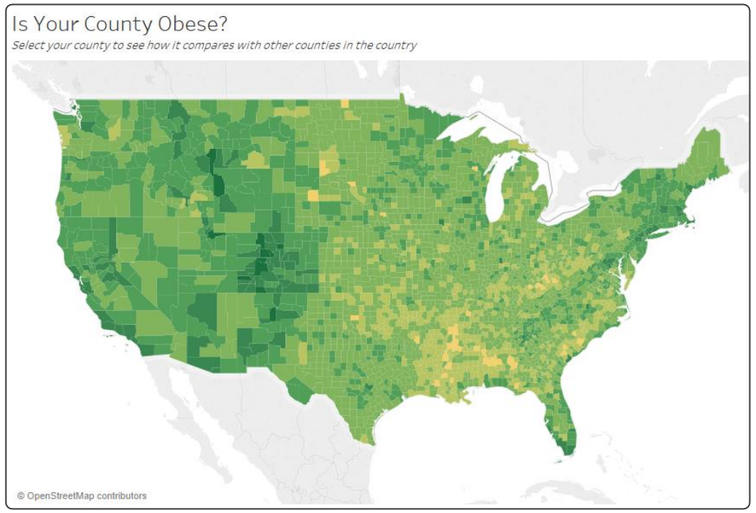
Tell a Story

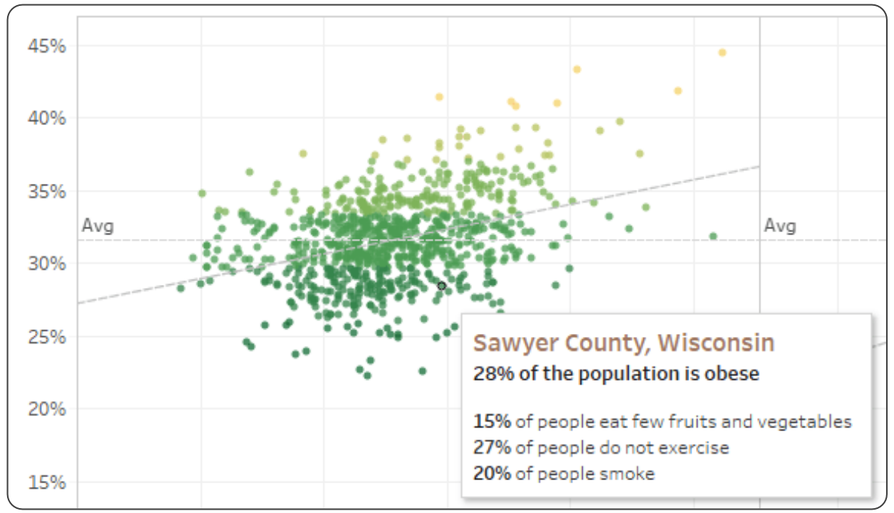
While presenting the data:

- Start with a problem statement
- Discuss how the data has been analyzed to discover insights
- Recommend a solution

Tell a Story

One can use a series of visualizations if a single visual is not sufficient.





Limit the number of visuals to four or five

Data Visualization: Best Practices

Know Your Audience

An audience may consist of people from various backgrounds.

It is very important to know your audience and their perspective.

Know Your Audience

The audience could include your team members (who understand technical jargon) or a business stakeholder (who may not).

Internal stakeholders

External stakeholders

Understand the Audience and Data

- Based on the audience, create either detailed visuals or a story.
- Create visuals after mastering the ins and outs of all data.
- Spend some time understanding and exploring the data before creating any visuals.

Use Colors Purposefully

The audience will be distracted if too many colors are used.

The essence of the message gets lost when this happens.

Use Colors Purposefully

Highlight with just one color in a visual

- If the situation demands it, two colors can be used to highlight.
- Minimal use of color is the best practice.
- Simple visuals are easy to understand.

Less Is More

Do not put every data point in a single visual

Use only those points that are important to understand the context.

Get Feedback Early and Often

Get feedback from the team and supervisor

- One should not wait until the last minute.
- It could lead to the reworking of the entire visual.

Key Takeaways

- Graphs make it easier to identify trends and analyze data.
- Effective data presentation plays a crucial role in converting insights into actionable outcomes.
- A good visual effectively communicates the story of the graph.
- Data storytelling uses a compelling narrative to communicate information that is tailored to a specific audience.

Knowledge Check

Knowledge Check 1

_____ is a graphical way of representing information and data.

A. Data pane

B. Business intelligence

C. Data visualization

D. Tableau Public

Knowledge Check 1

_____ is a graphical way of representing information and data.

A. Data pane

B. Business intelligence

C. Data visualization

D. Tableau Public

The correct answer is **C**

Data visualization is a graphical way of representing information and data. It uses pictures to represent data.

Knowledge Check

2

Data visualization makes it easier for a user to _____.

A. Identify trends

B. Identify patterns and outliers

C. Get insights

D. All of the above

Knowledge Check 2

Data visualization makes it easier for a user to _____.

A. Identify trends

B. Identify patterns and outliers

C. Get insights

D. All of the above

The correct answer is **D**

Data visualization makes it easier for a user to identify trends and patterns, detect outliers, and get other insights.

Knowledge Check 3

_____ forms the basis of storytelling.

A. Visualization

B. Data

C. Context

D. Color patterns

Knowledge Check 3

_____ forms the basis of storytelling.

A. Visualization

B. Data

C. Context

D. Color patterns

The correct answer is **C**

Context forms the basis of storytelling.

Thank You