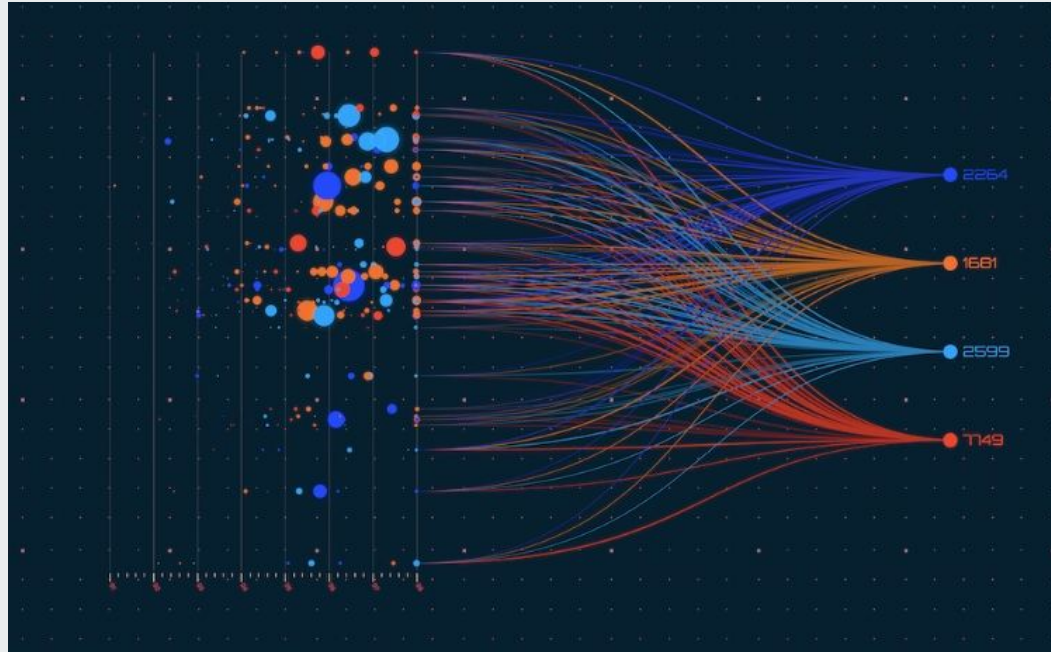


Data Visualization in Ts



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- 1. Introduction**
- 2. How to make a good graph**
- 3. Data Psychology**
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- 5. The Importance of Colors**
- 6. Graphs in TS**

Some important quotes

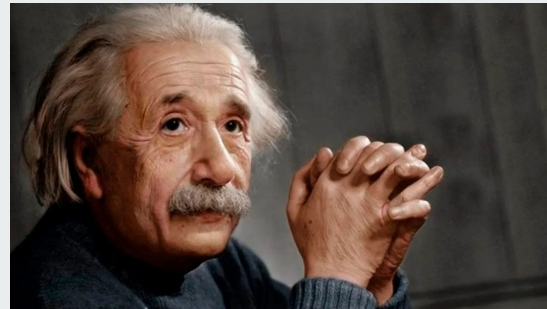
- “The purpose of abstraction is to simplify complexity”
- Robert C. Martin (Creator of *Clean Code*)



- “Data is becoming the new raw material of business.”
–Craig Mundie



- “Information is not knowledge.”
– Albert Einstein



Why Is Data Visualization Important ?



- Big Amount of Data
- Identify patterns and relationships among the data
- Many areas of knowledge

Fast Comprehension

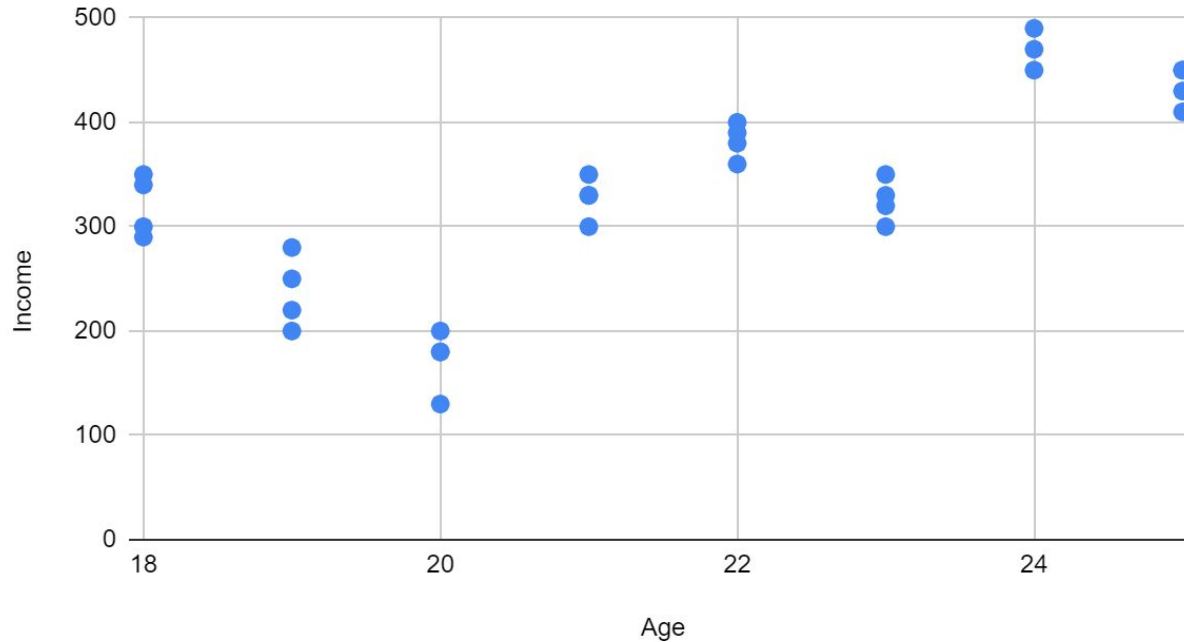


Age	Income
23	350
18	300
20	180
19	220
25	450
22	400
21	350
18	350
19	280
24	490
21	300
22	390
23	320
25	430
20	130

18	340
21	330
19	200
25	410
23	300
22	360
24	470
20	180
18	290
25	450
19	250
22	380
21	330
24	450
23	330
20	200

Fast Comprehension

Income by Age



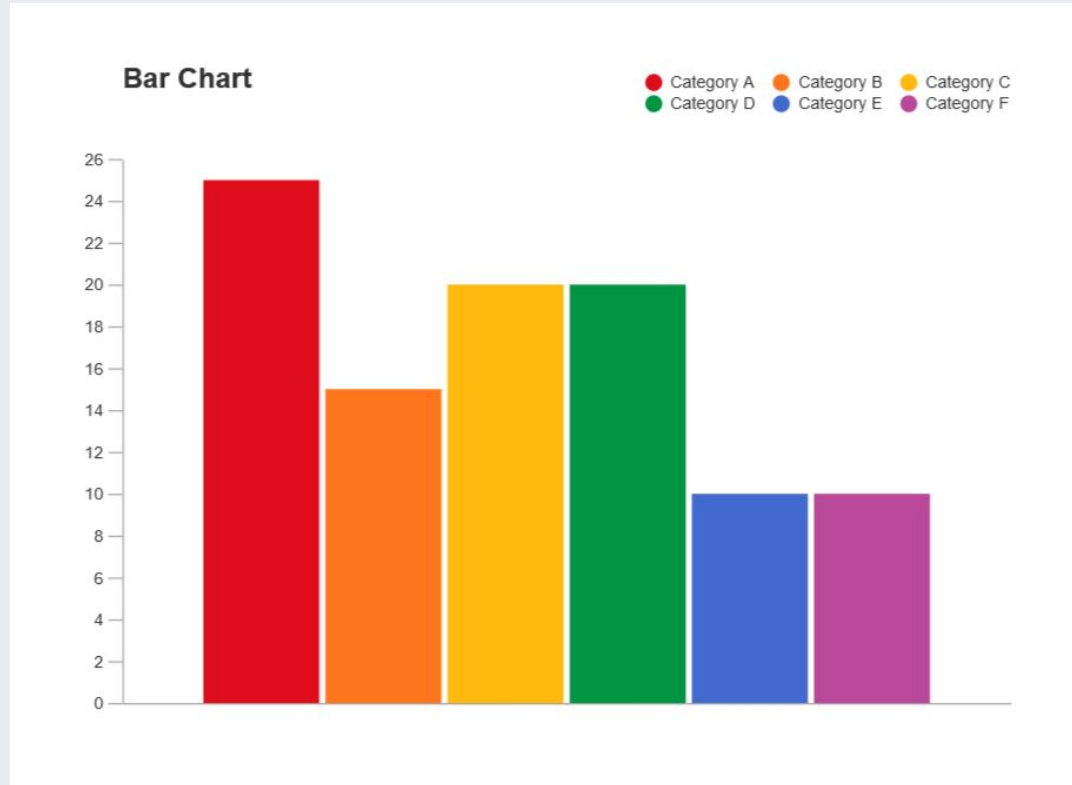
“Information is not knowledge”

Population people

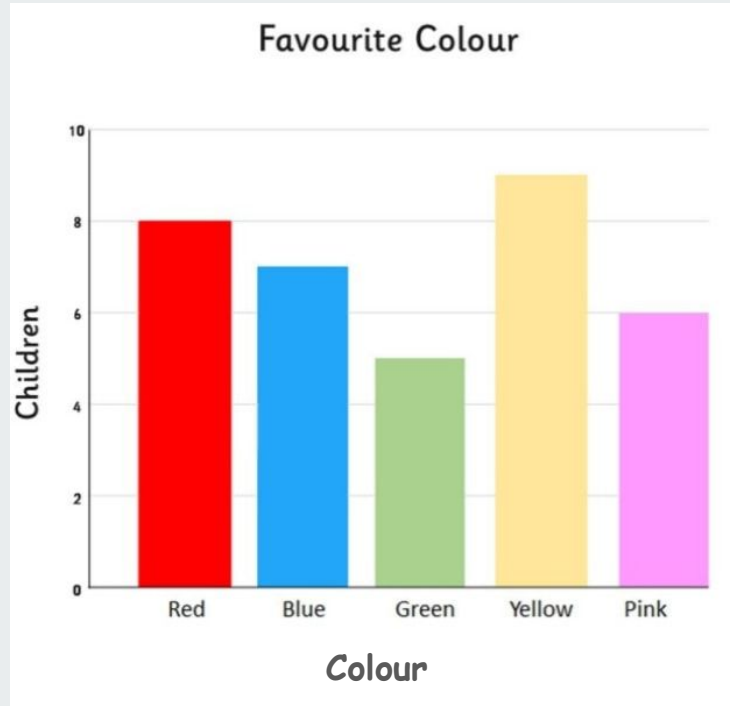
Country/area ↑↓	↑ 1950	↑↓ 2021	↑↓ Absolute Change	↑↓ Relative Change
China	543,979,200	1,425,893,500	+881,914,300	+162%
India	357,021,120	1,407,563,900	+1,050,542,780	+294%
United States	148,281,550	336,997,630	+188,716,080	+127%
Russia	102,580,110	145,102,750	+42,522,640	+41%
Japan	84,353,060	124,612,530	+40,259,470	+48%
Germany	70,964,104	83,408,560	+12,444,456	+18%
Indonesia	69,567,624	273,753,180	+204,185,556	+294%
Brazil	53,955,360	214,326,220	+160,370,860	+297%



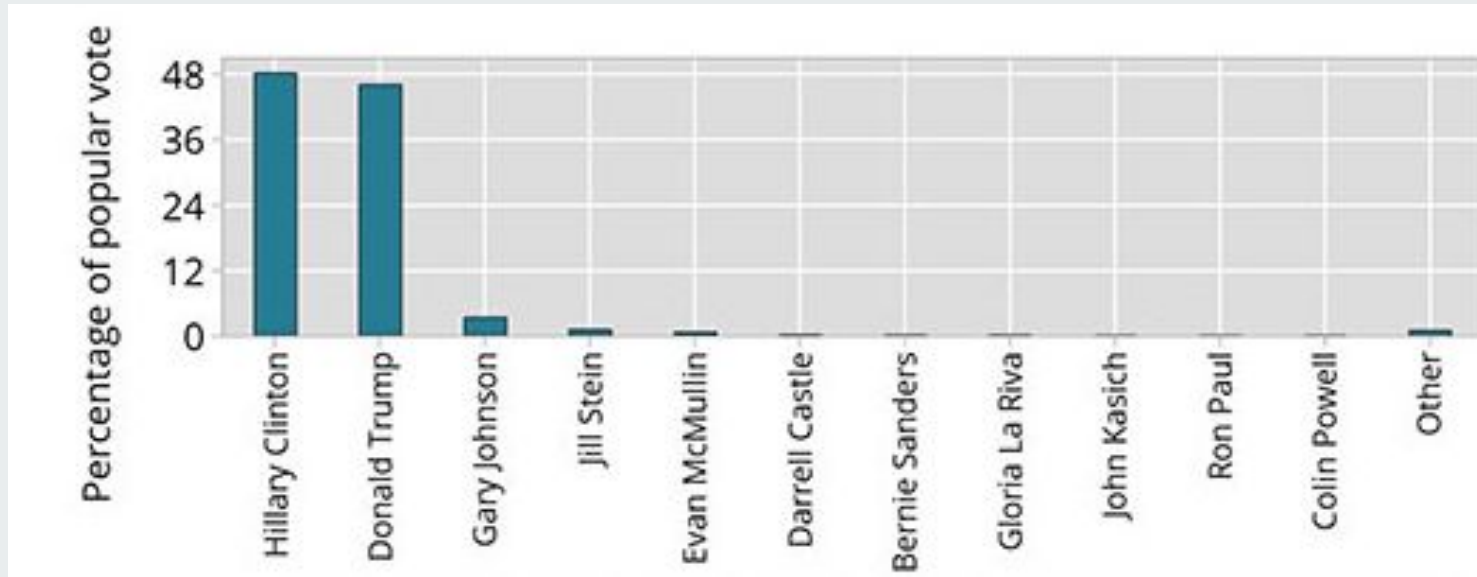
How to make a good graph?



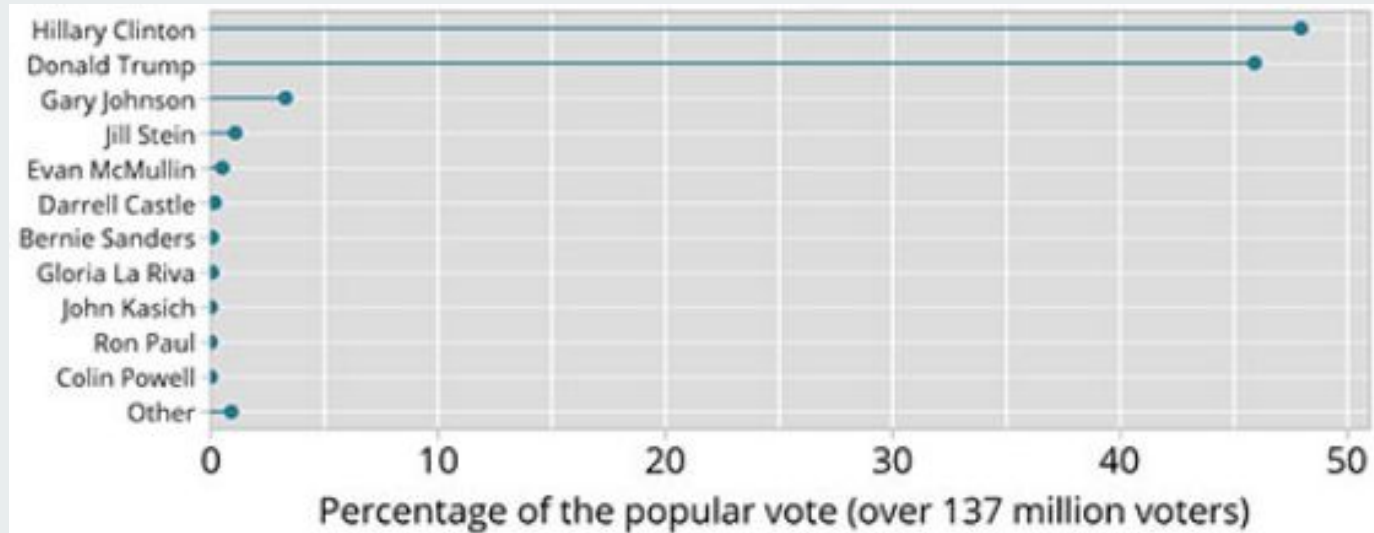
How to make a good graph?



How to make a good graph?



How to make a good graph?



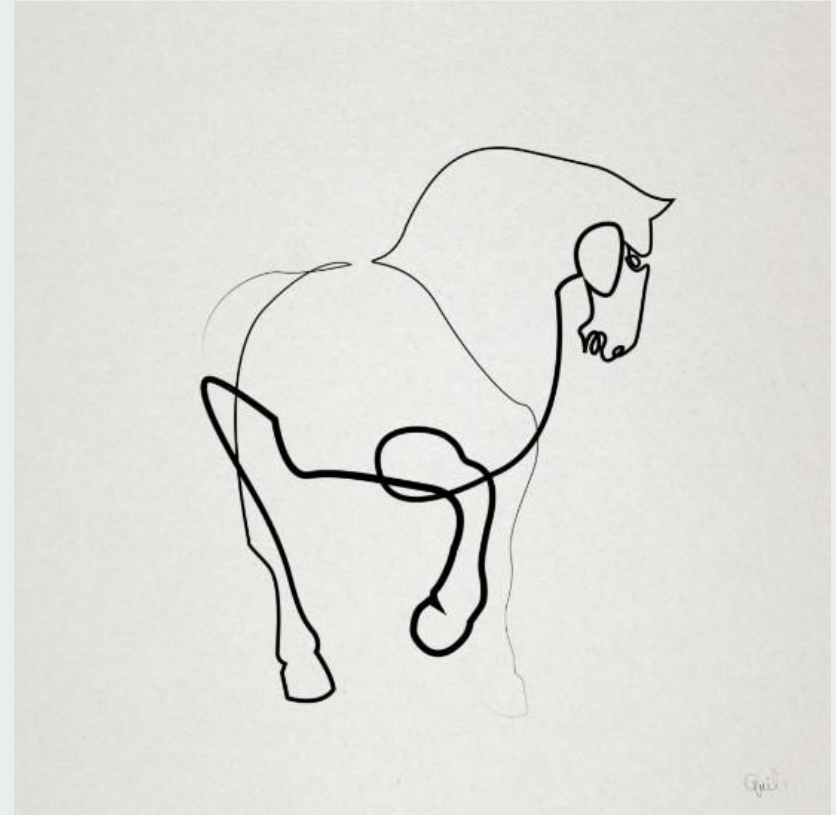
Data psychology

- Multidisciplinary field Data Analysis-Psychology
- Objectives:
 - Identify patterns in human behavior.
 - Predict and explain future behavior.
 - Inform strategies to improve results in different areas

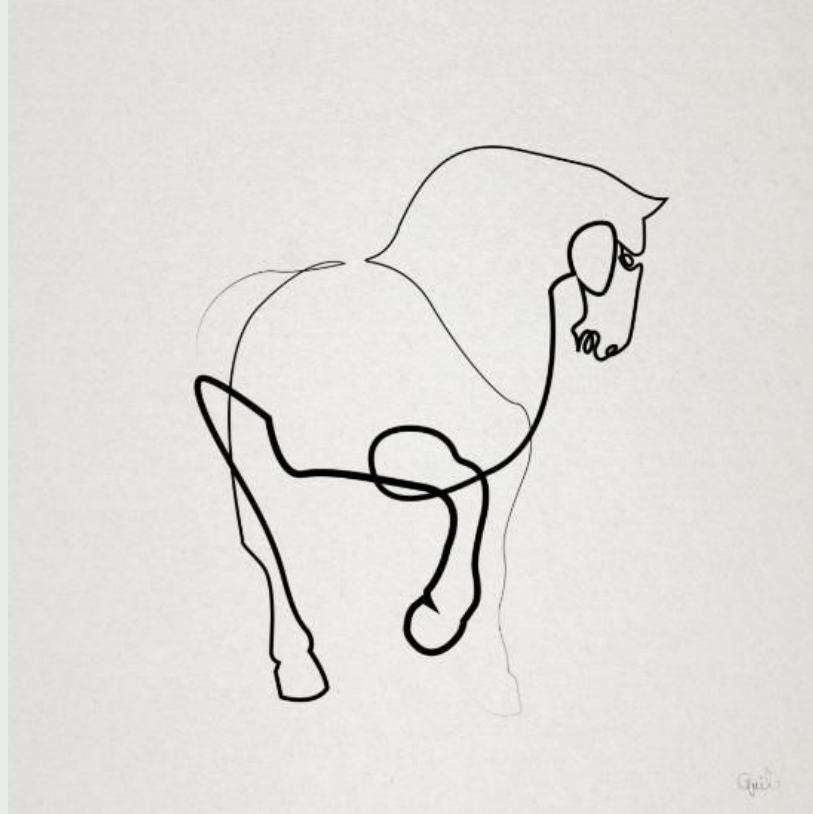
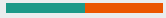


Gestalt psychology

- Perception study
 - Context as a whole
- Visual perception (Highlighted)
- Personal perceptions of the world
- Objective: to understand how the human mind responds to its perception



Gestalt psychology

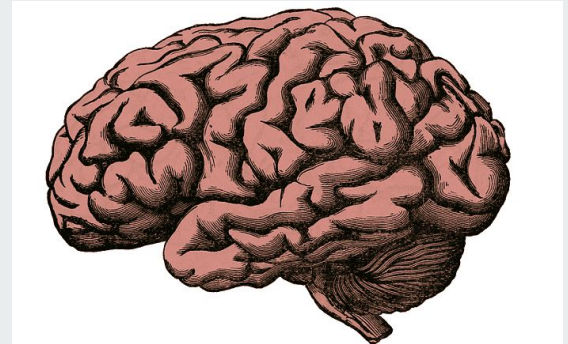
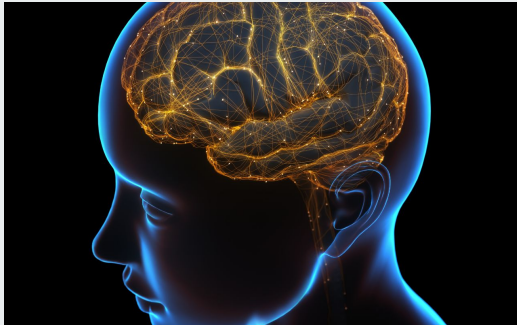


Gestalt psychology



Cerebral Process

- Utilization of speed and efficiency in visual perception:
 - Discussion on how visualizations leverage the brain's ability to process visual information rapidly
- Pre-attentive processing for rapid understanding:
 - Explanation of how the brain processes visual information even before we are consciously aware of it



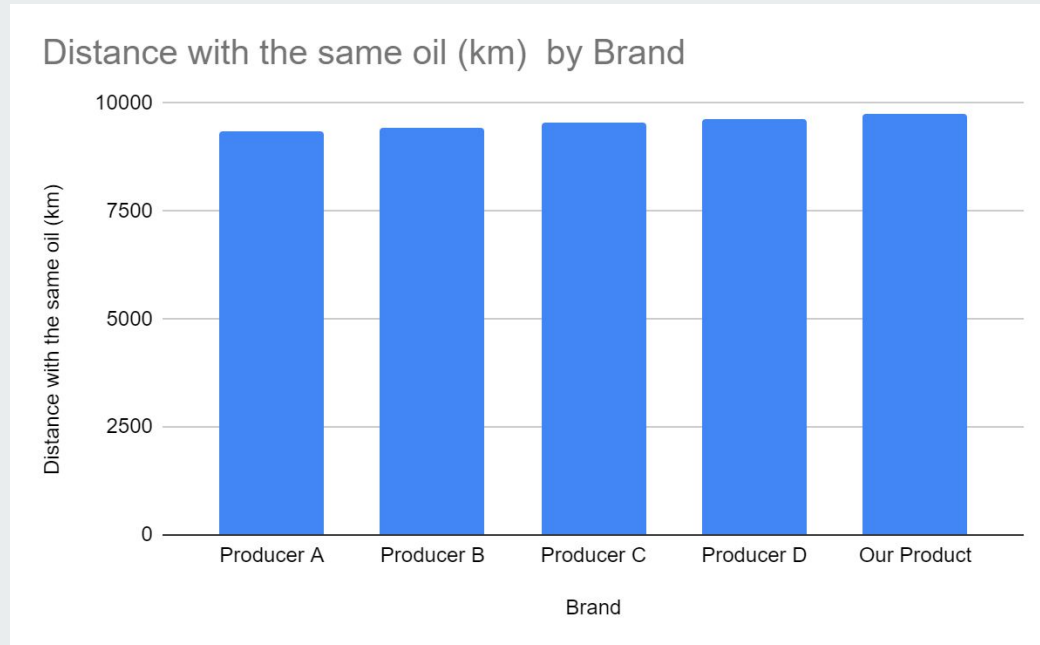
Malicious use of data representation



Malicious use of data representation



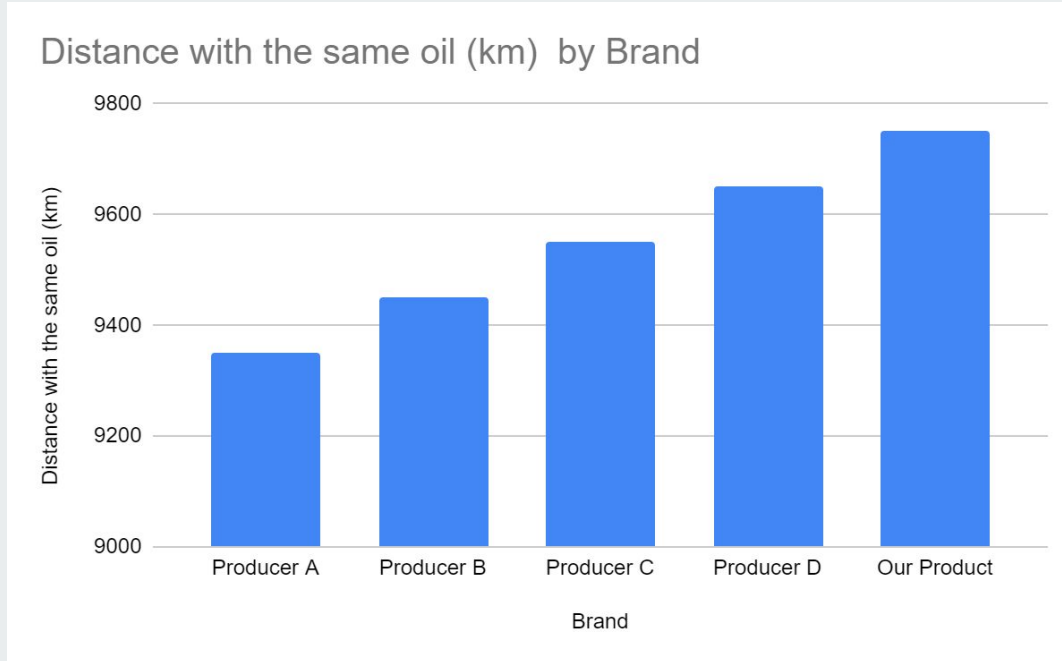
1. Truncated y-axis



Malicious use of data representation



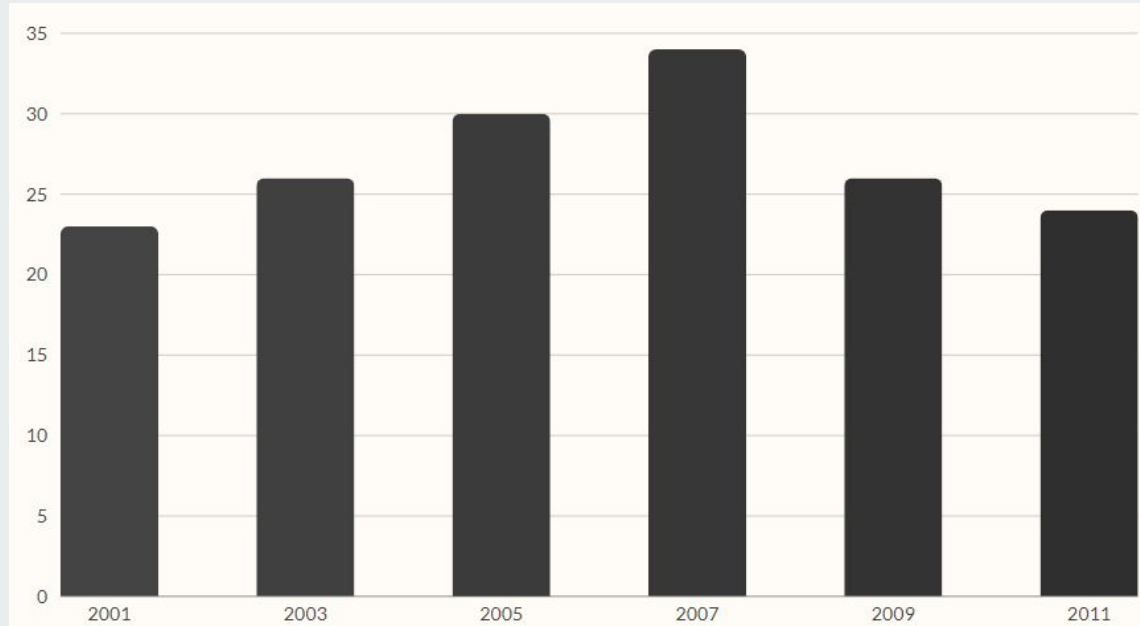
1. Truncated y-axis



Malicious use of data representation



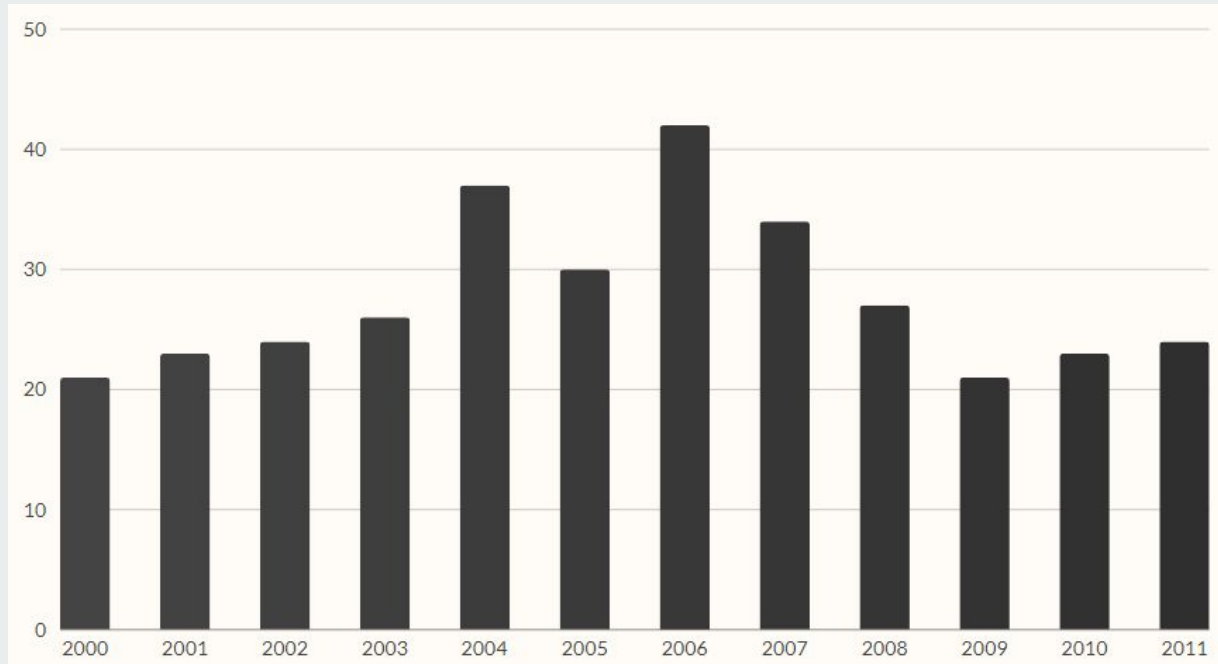
2. Data omission



Malicious use of data representation

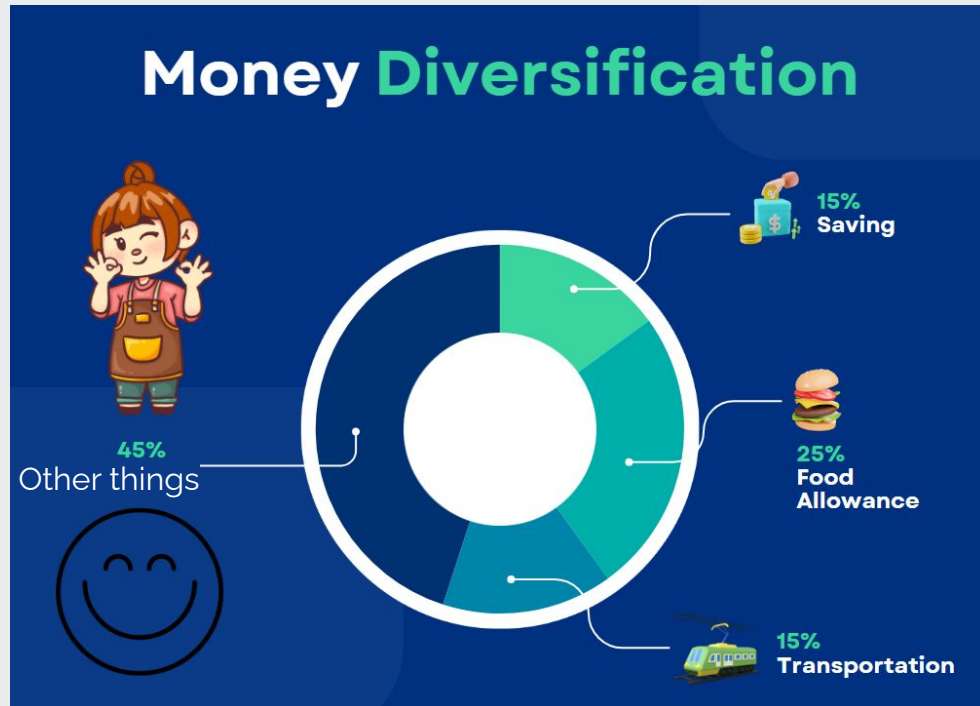


2. Data omission



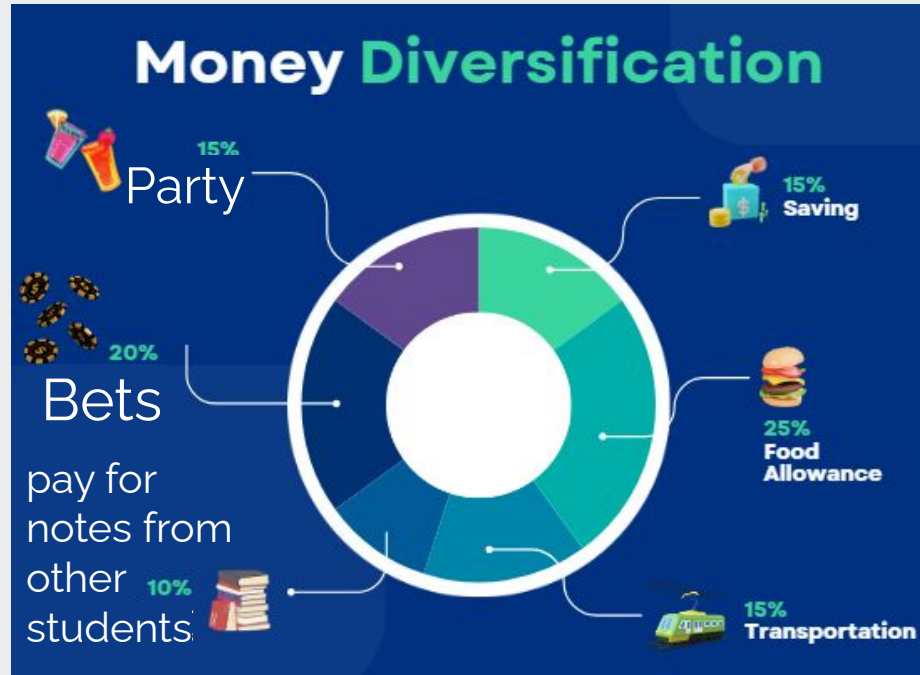
Malicious use of data representation

3. Selective Selection



Malicious use of data representation

3. Selective Selection



Malicious use of data representation

How to avoid it ?

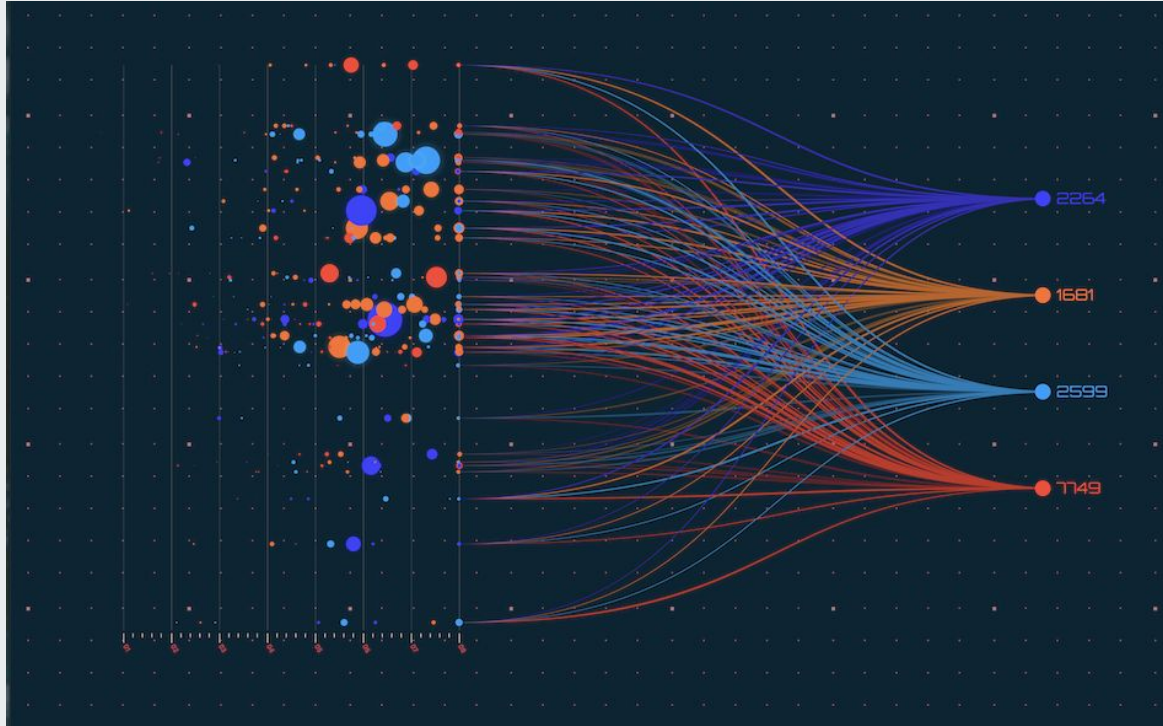
- Be critical
- Find information on our own
- Review the information slowly



The importance of Colors



Graphs in TS



Graph in TS



FusionCharts

- JavaScript library
- Simple Syntax
- Personalization
- As powerful as d3.js, plotly.js...

FusionCharts



Code Division

`{.json}`



More sophisticated examples



La Liga Standings

- https://github.com/JorgeEliasGarcia/pai_presentation/tree/master/la-liga
- 3D, bar3D, line...?

Data Rendering

```
25    // Renderiza el gráfico
26    FusionCharts.ready(function () {
27        const chart = new FusionCharts({
28            type: 'column3d',
29            renderAt: 'chart-container',
30            width: '1200',
31            height: '800',
32            dataFormat: 'json',
33            dataSource
34        });
35        chart.render();
36    });
```



More graphs?



Choose yourself!

- <https://www.fusioncharts.com/dev/chart-attributes>

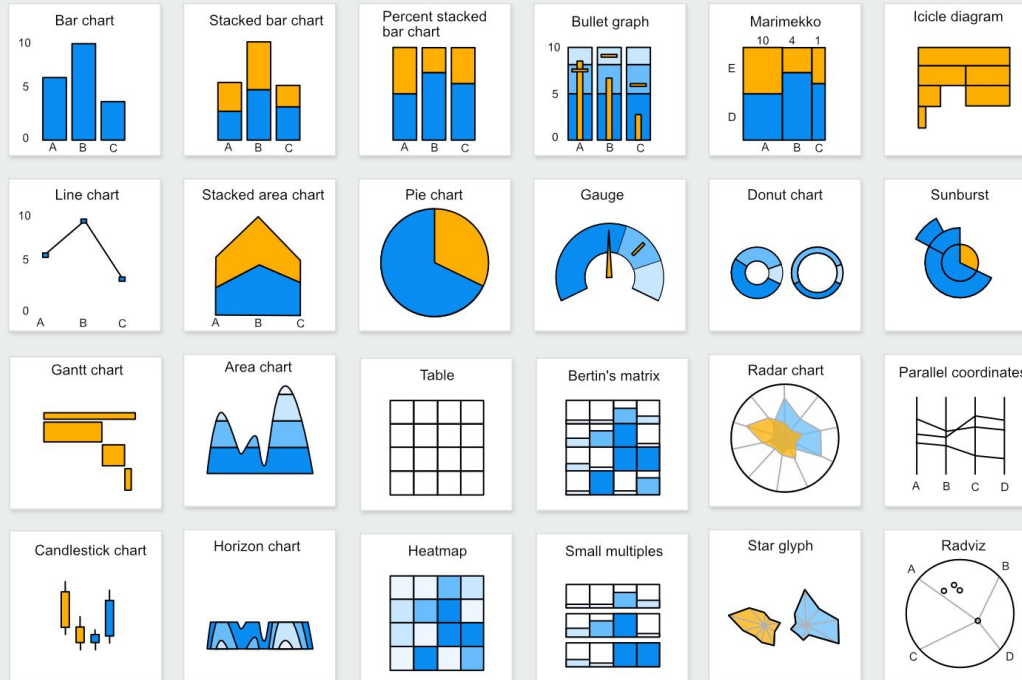
Recommendations against Data Analysis

Importance



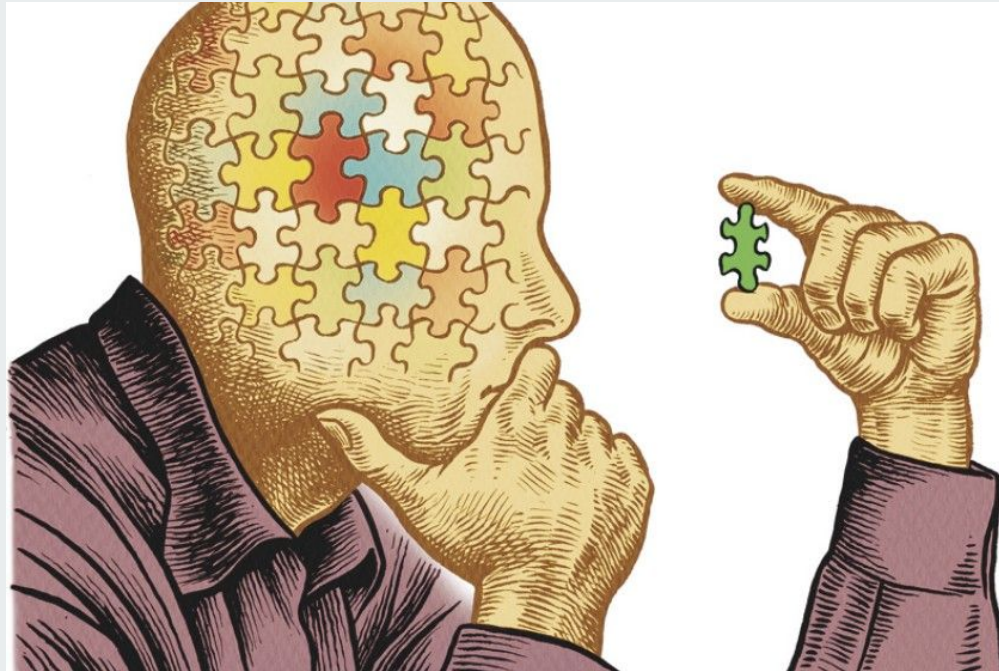
Recommendations against Data Analysis

Moderately know the types of graphics



Recommendations for Data Analysis

Be critical



Recommendations against Data Analysis



Use it responsibly



Bibliography



- Top Javascript Libraries
<https://www.softwaretestinghelp.com/best-javascript-visualization-libraries/>
- Data application tools for application developers
<https://awesome.cube.dev/>
- Psychology behind data visualization
<https://treehousetechgroup.com/the-psychology-behind-data-visualization/>
- Malicious use of data visualization
<https://www.datapine.com/blog/misleading-data-visualization-examples/>
- FusionChart
<https://www.fusioncharts.com/dev/chart-attributes/>

Bibliography



- Important quotes
<https://thedataliteracyproject.org/20-best-data-visualization-quotes/>
- How to choose the right chart
<https://infogram.com/blog/choose-the-right-chart/>
- Proper Colors
<https://www.atlassian.com/data/charts/how-to-choose-colors-data-visualization>
- Best Practices for Designing Charts
<https://app.uxcel.com/courses/ui-components-best-practices/charts-best-practices-201>

Any Questions?





THANK YOU

FOR WATCHING!