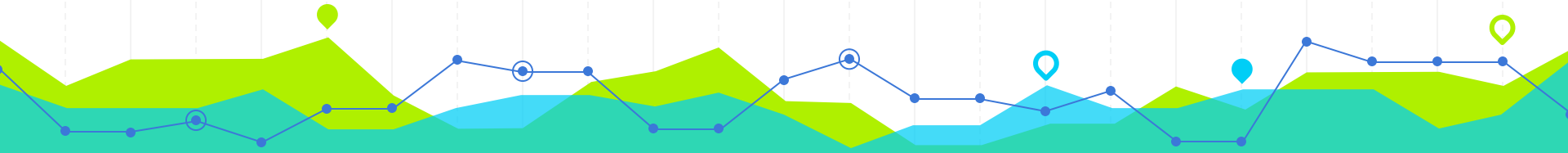


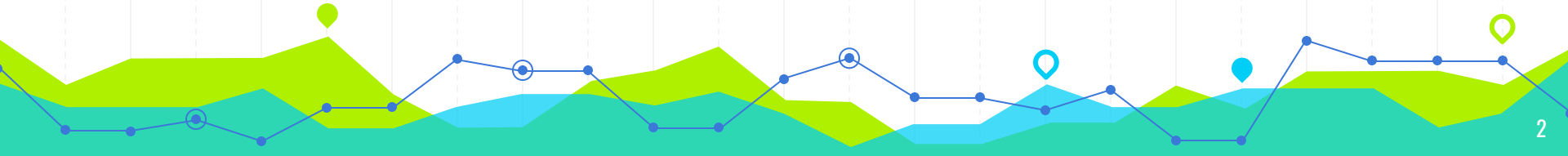
DATA VISUALIZATION

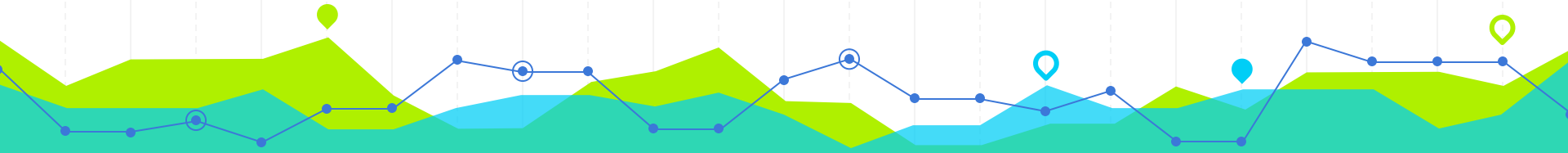
Enrique Viña Alonso - alu0101337760

Aram Pérez Dios - alu0101244488

INDEX

1. INTRODUCTION
2. GOOD PRACTICES
    a. Know your audience
    b. Define a clear purpose
    c. Clean data
    d. Don’t distort the data
    e. Select the right chart
    f. Format
3. Pros and cons of data visualization
4. Data visualization in JS

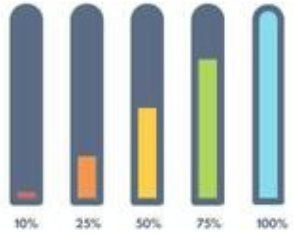




1 INTRODUCTION

And a bit of history

WHAT IS DATA VISUALIZATION



Sample Text

Sample Text

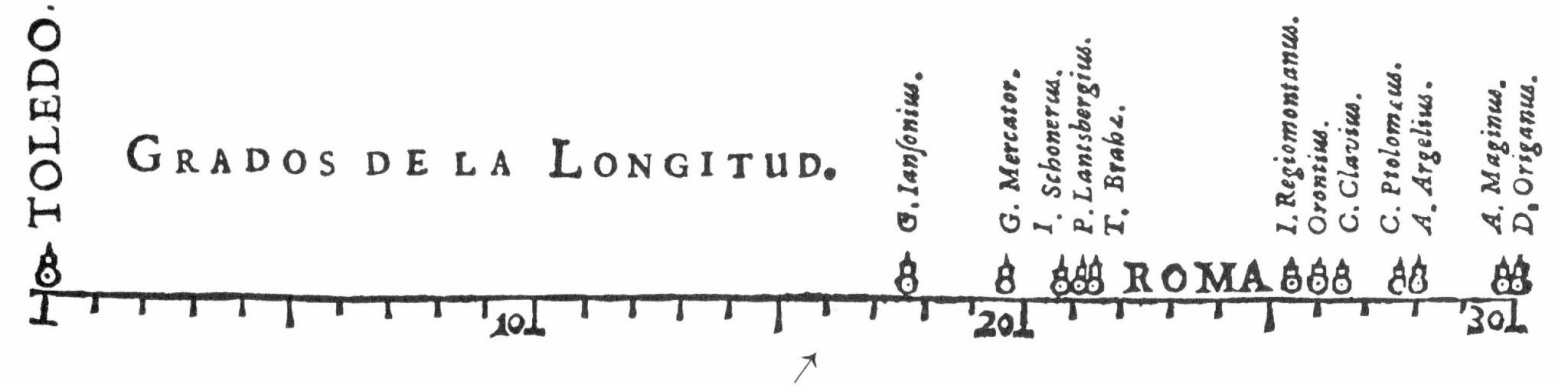
Sample Text

WHY IS DATA VISUALIZATION IMPORTANT

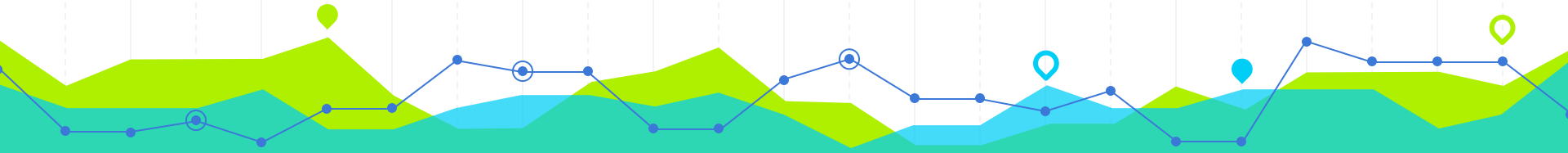
BETTER DECISION MAKING

MEANINGFUL NARRATIVE

DATA VISUALIZATION HISTORY



Michael Florent Van Langren, 1644



GOOD PRACTICES

2

What to do and not to

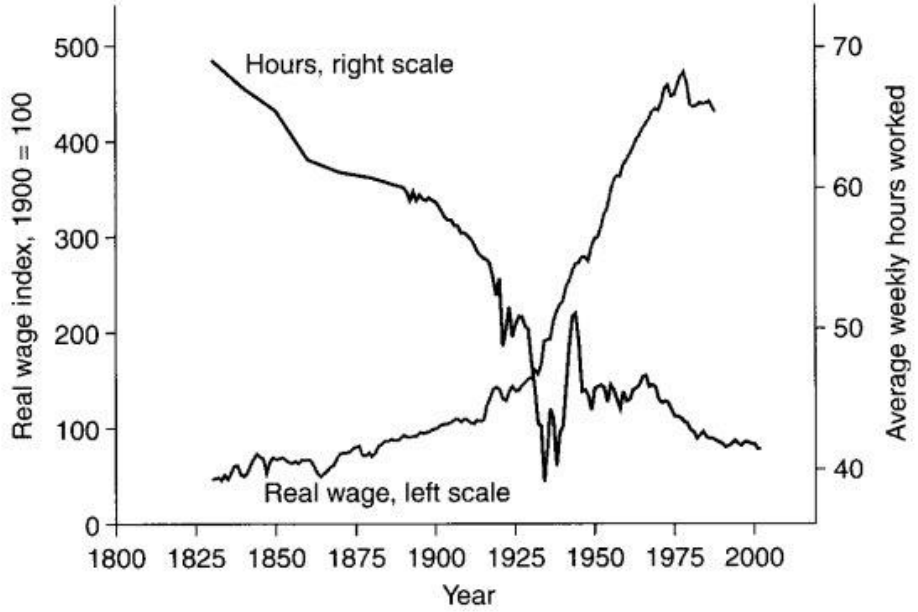
GOOD PRACTICES

a. **Accurate:** The visualization should accurately represent the data and its trends

b. **Clear:** Your visualization should be easy to understand

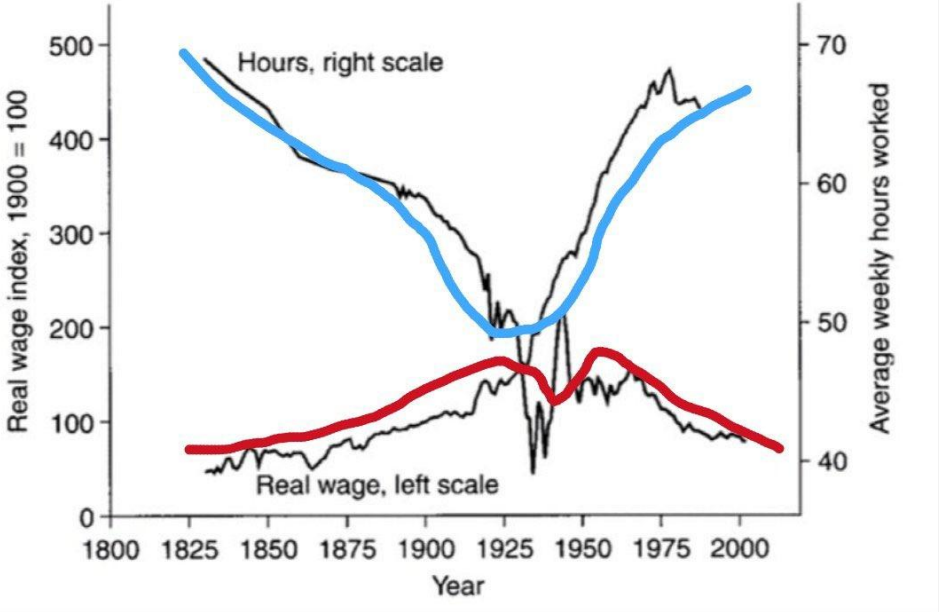
GOOD PRACTICES

Having a clear representation:



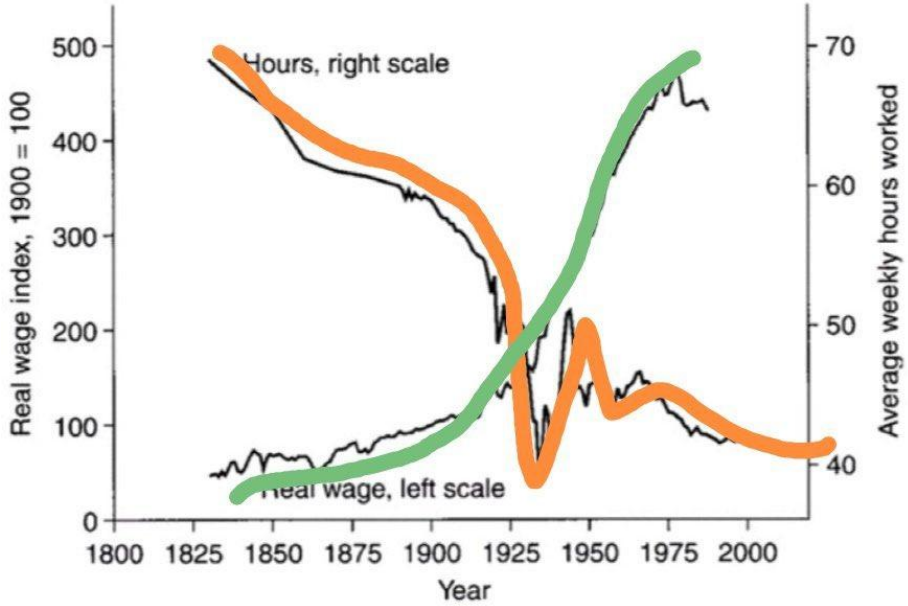
GOOD PRACTICES

Having a clear representation:



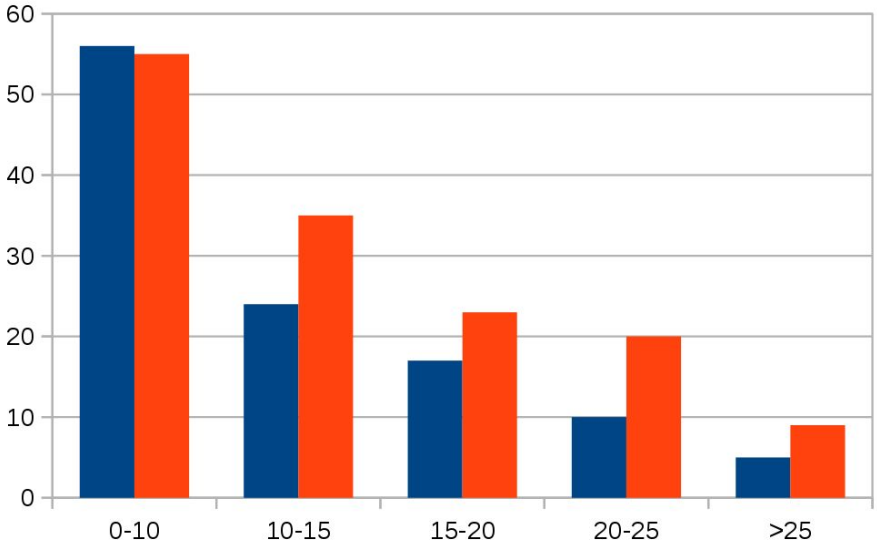
GOOD PRACTICES

Having a clear representation:



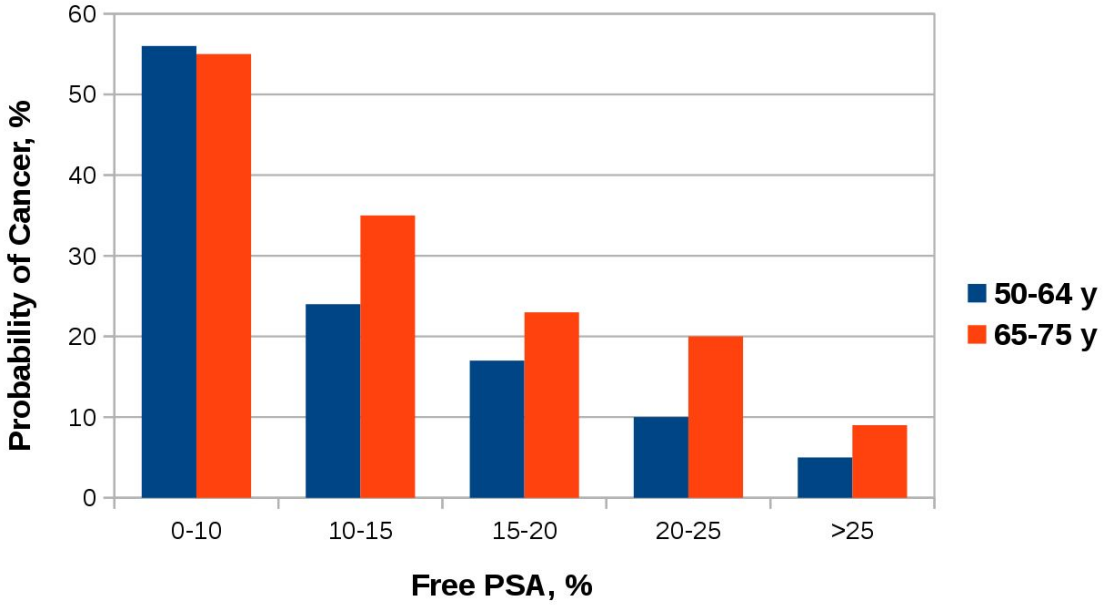
GOOD PRACTICES

Axis labels and graph legend:

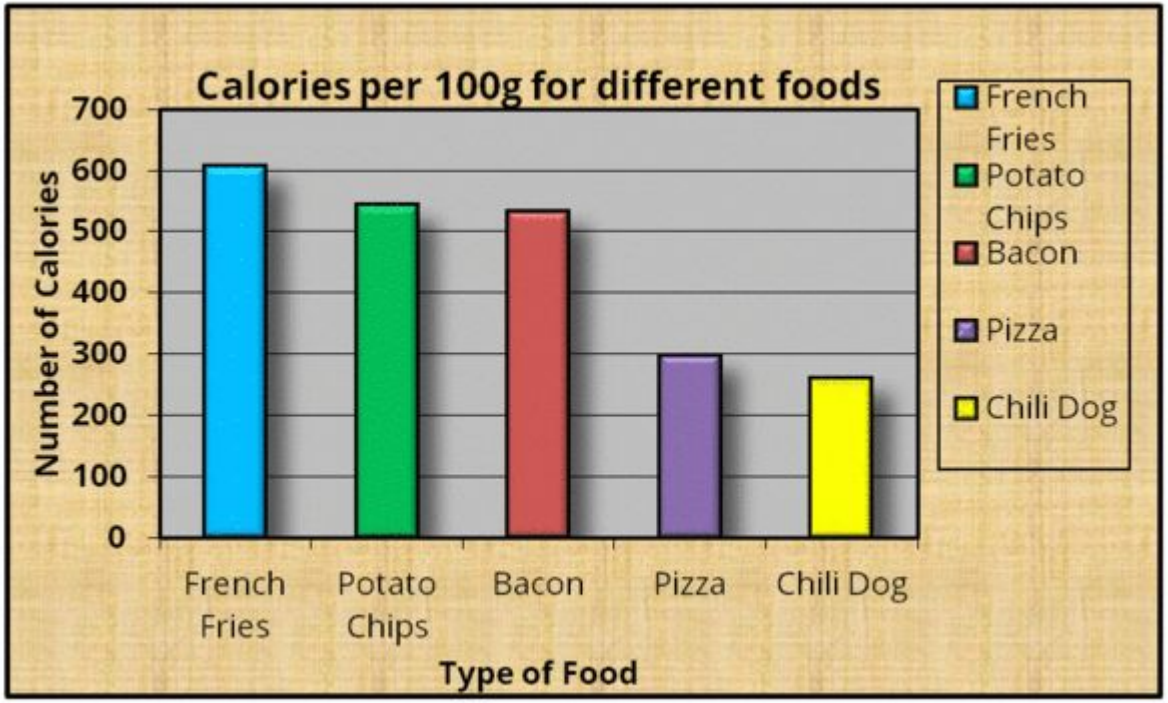


GOOD PRACTICES

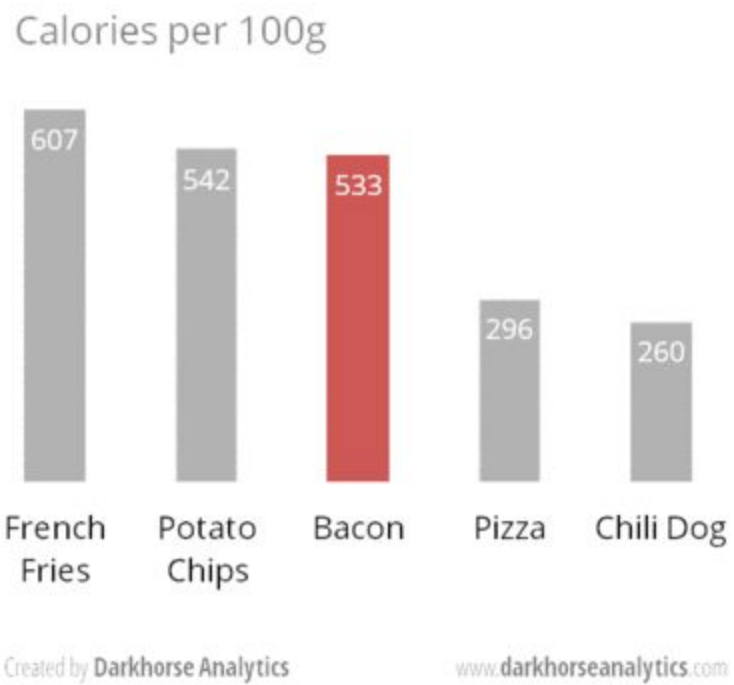
Axis labels and graph legend:



GOOD PRACTICES



GOOD PRACTICES



GOOD PRACTICES

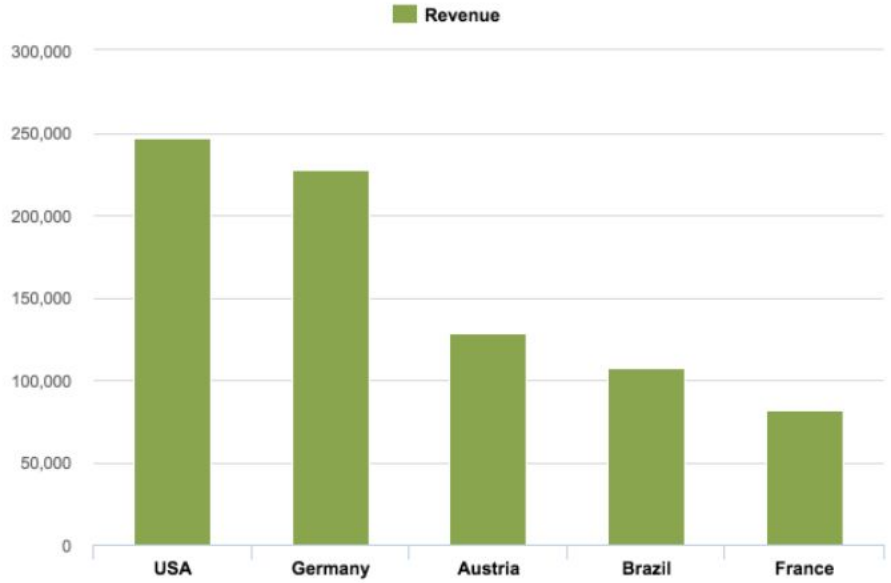
Select the right chart

- Line chart
- Bar Chart
- Pie Chart
- Histogram
- Scatter Plot
- BoxPlot
- Bubble Chart
- Treemap
- radar graph
- Heatmap
- Density Maps
- ...

GOOD PRACTICES

Select the right chart: Column chart

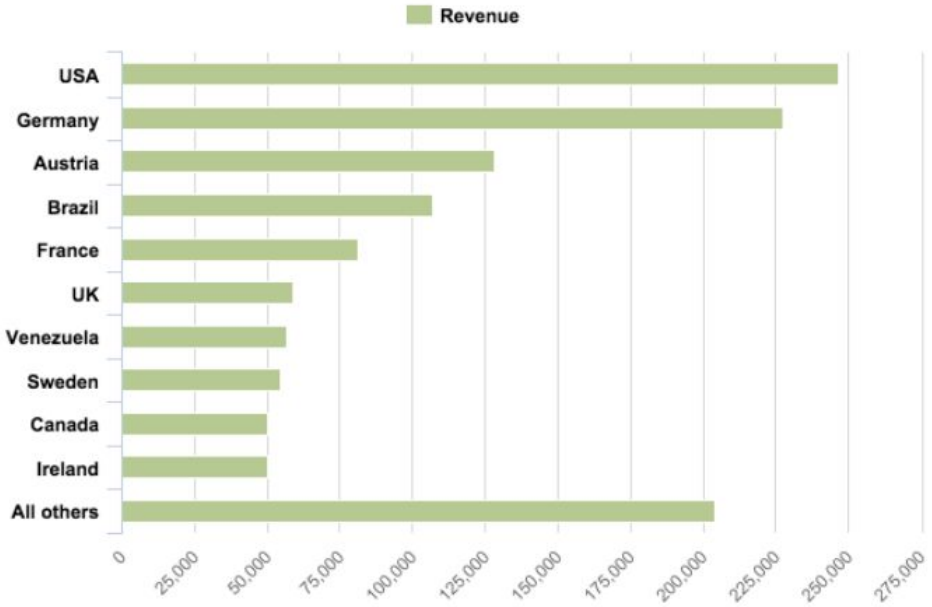
- **For comparisons**
- **Small number of categories**
- **Axis must start at 0**



GOOD PRACTICES

Select the right chart: Bar chart

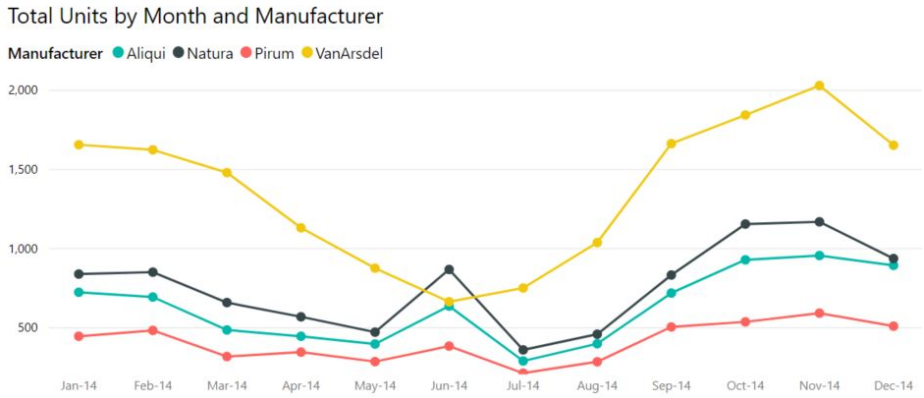
- **Bigger category names**
- **More Categories**



GOOD PRACTICES

Select the right chart: Line chart

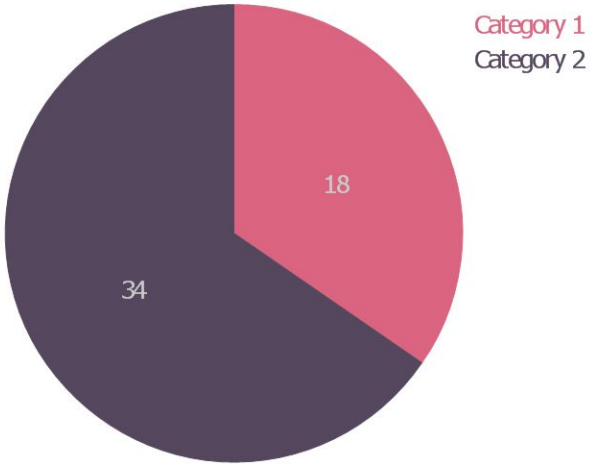
- **When the dataset is continuous**
- **The axis can start as non zero, but not ideal**
- **Careful with the aspect ratio**



GOOD PRACTICES

Select the right chart: Pie chart

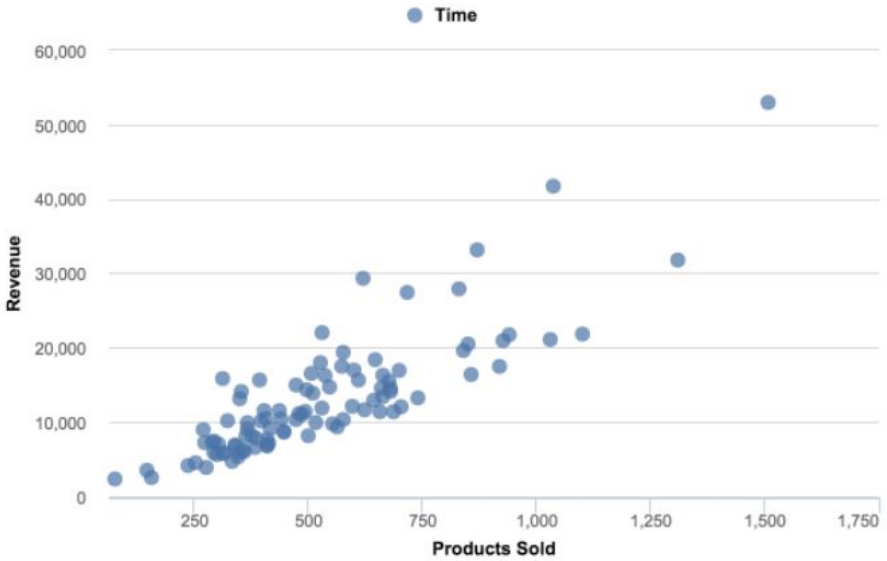
- **Less than 6 categories**
- **Unless there's a dominant class**
- **Ideally, only 2 categories**
- **NO 3D EFFECTS**



GOOD PRACTICES

Select the right chart: Scatter plots

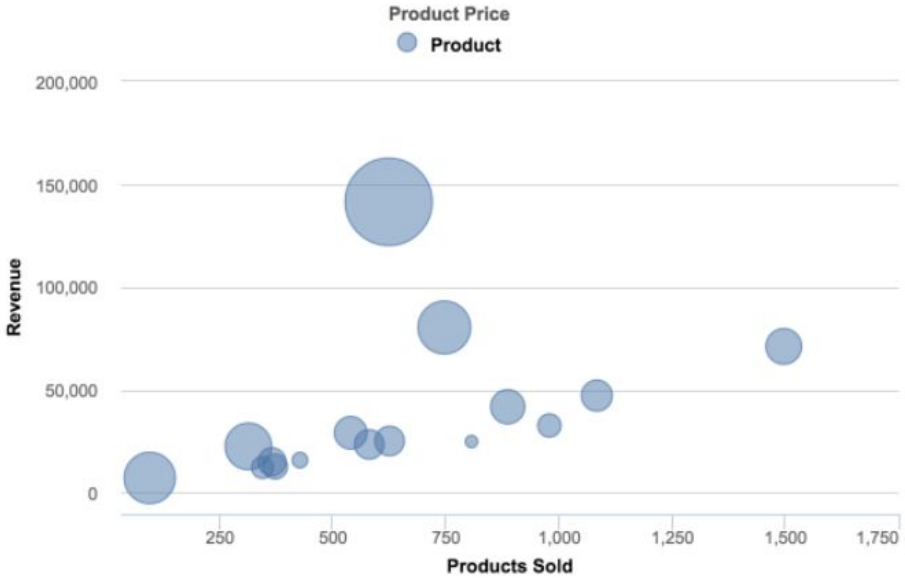
- **Used for dispersion and correlation analysis**
- **Used to represent clusters too**



GOOD PRACTICES

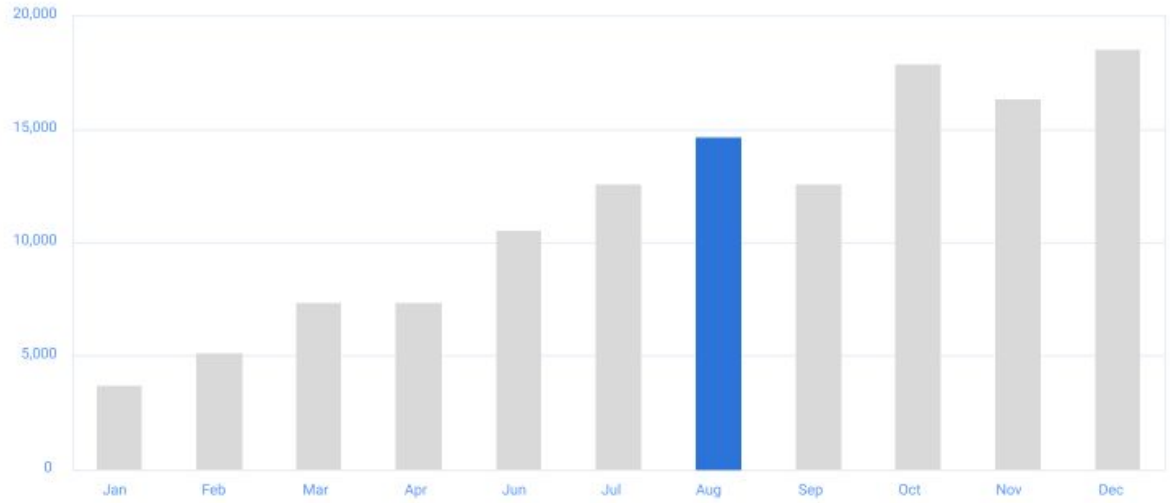
Select the right chart: Bubble plots

- **Used to add a dimension to scatter plots**
- **Used to represent relationships**



GOOD PRACTICES

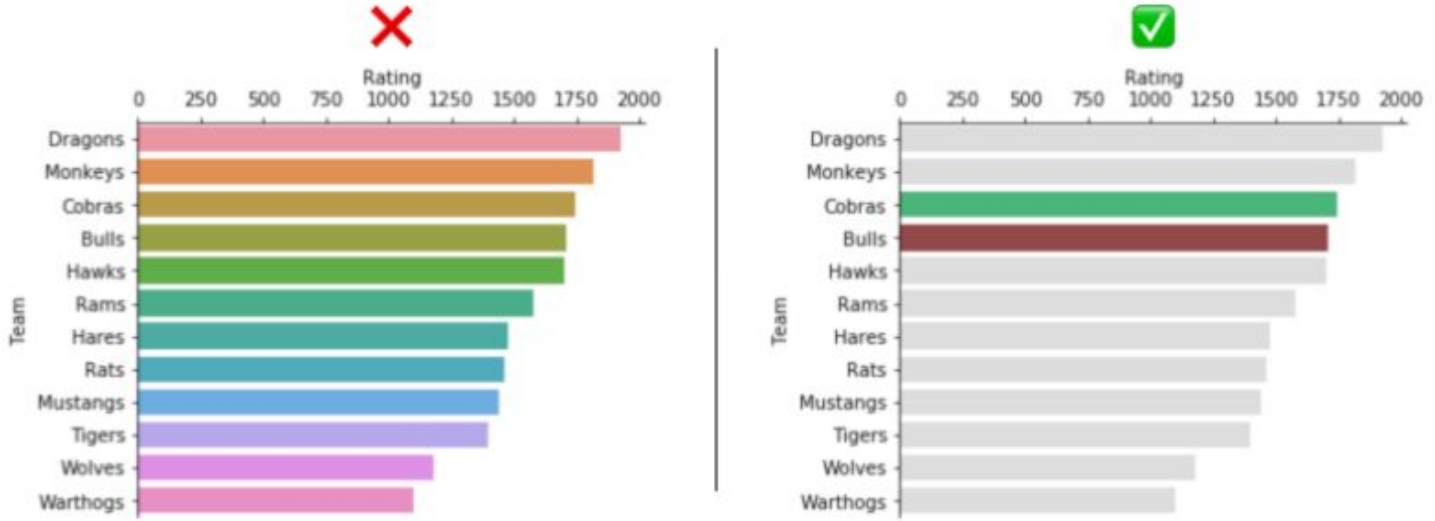
Good use of color:



The blue bar among grey bars clearly communicates the focus point to the audience.

GOOD PRACTICES

Good use of color:



GOOD PRACTICES

Good use of color:

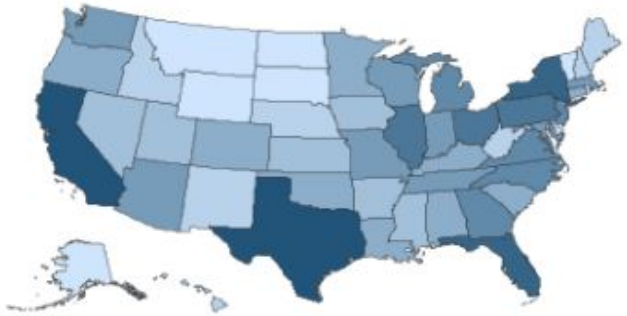
2010 US Population

564K 37.3M

2010 US Population

564K 37.3M

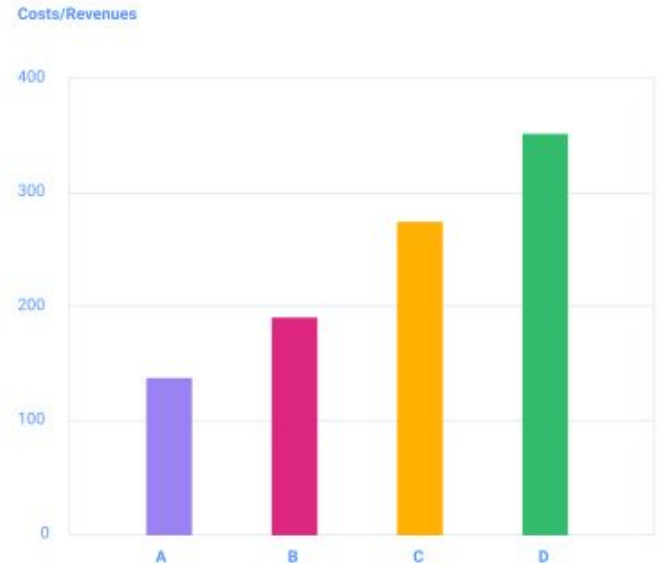
1.1M 2.2M 3.3M 5.5M 7M 10M 15M 20M

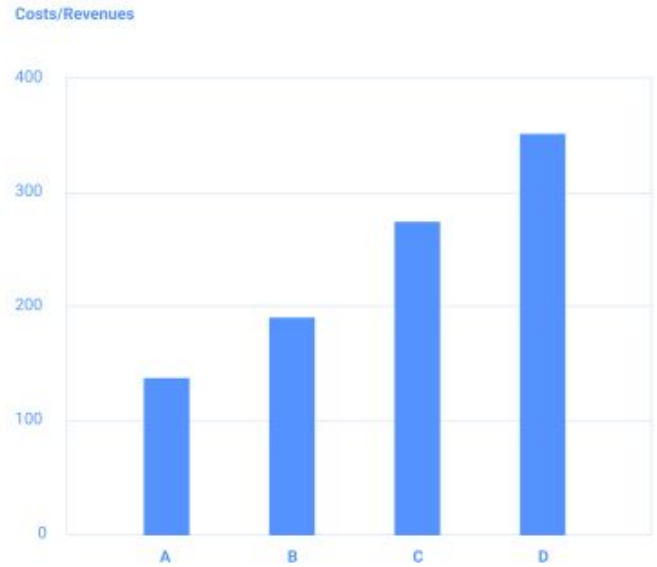


GOOD PRACTICES

Applying the Gestalt principles:

- **Similarity**

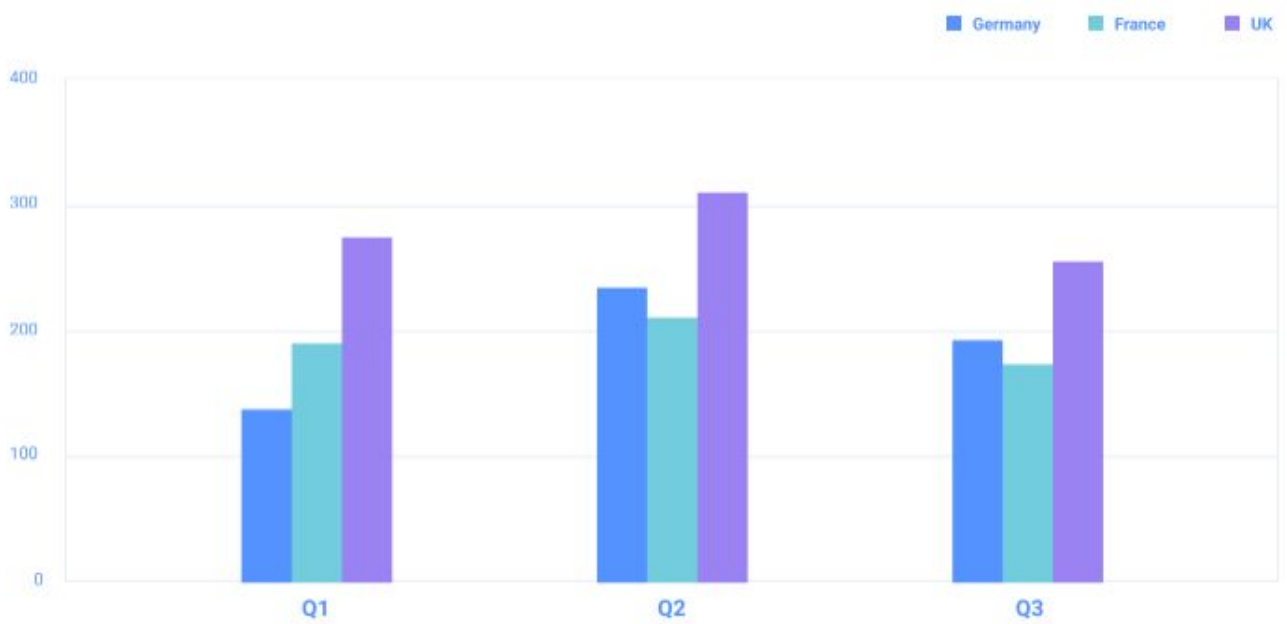




GOOD PRACTICES

Applying the Gestalt principles:

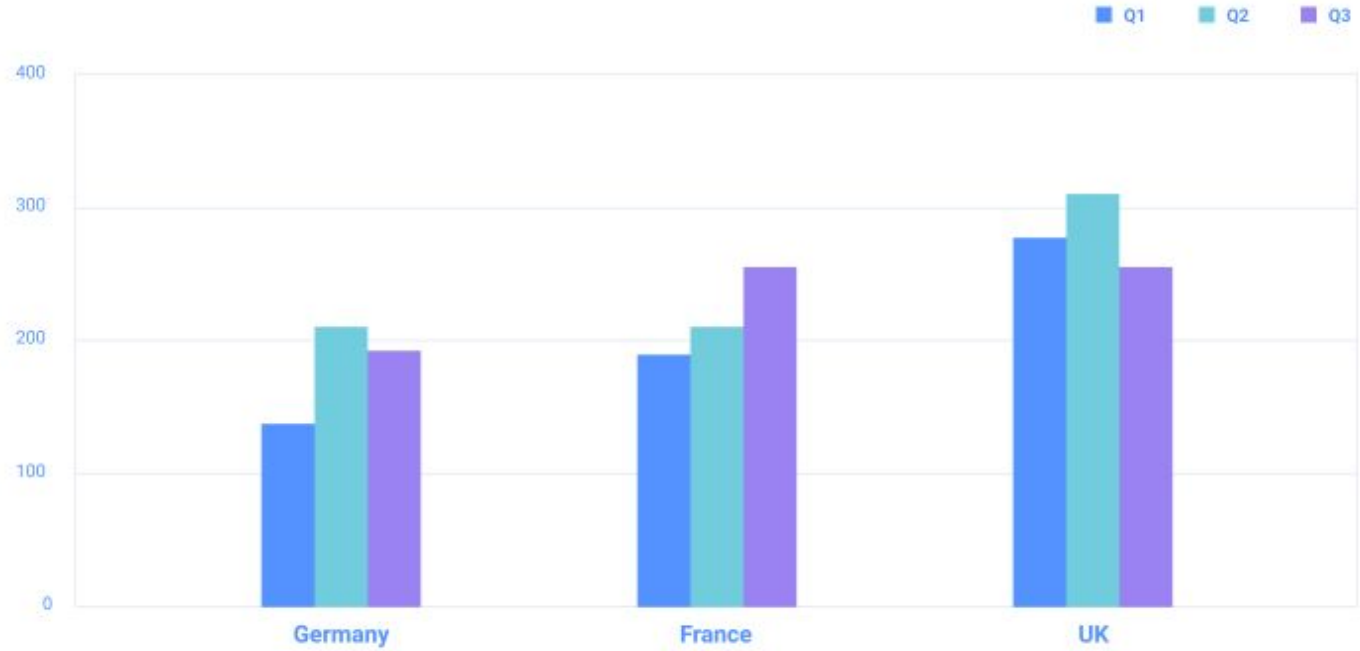
- **Proximity**



GOOD PRACTICES

Applying the Gestalt principles:

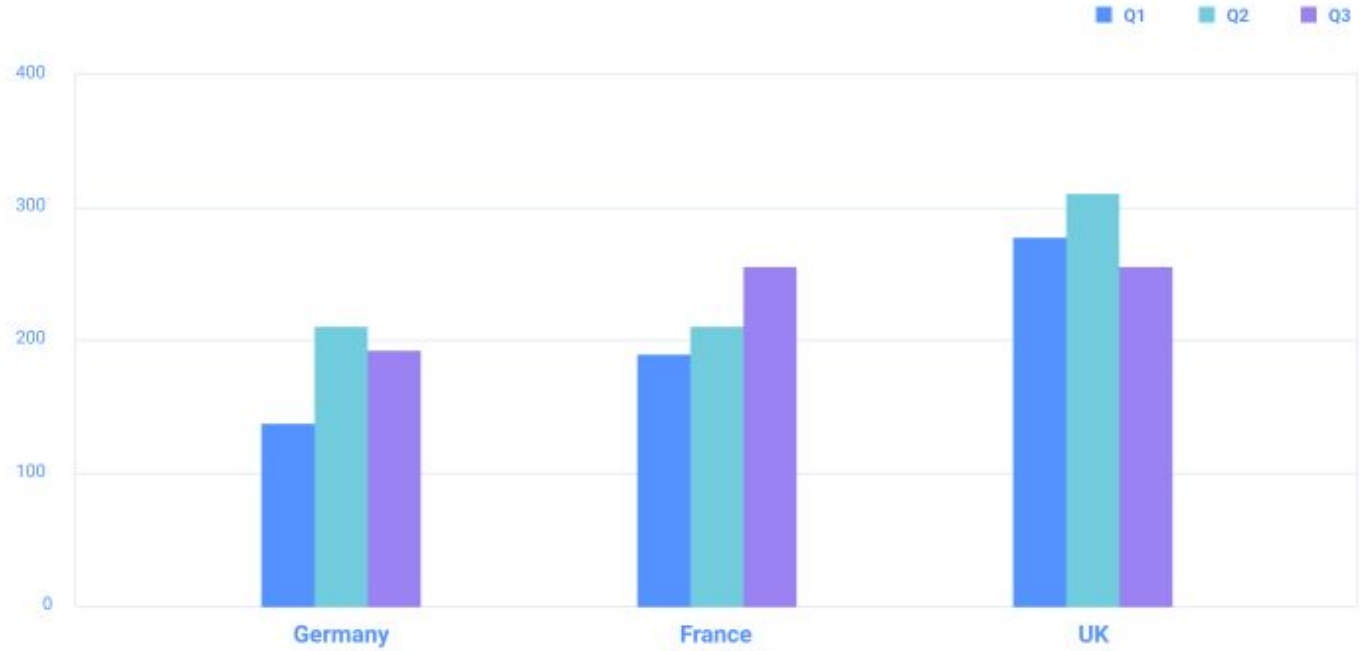
- **Proximity**



GOOD PRACTICES

Applying the Gestalt principles:

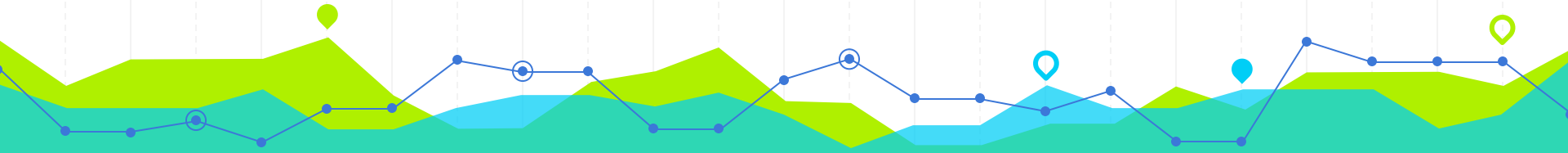
- **Proximity**



GOOD PRACTICES

Applying the Gestalt principles:

- **Enclosure**



PROS AND CONS OF DATA VISUALIZATION

3

PROS OF DATA VISUALIZATION

Information sharing:

Table I

Iris setosa				*Iris versicolor*				*Iris virginica*			
Sepal length	Sepal width	Petal length	Petal width	Sepal length	Sepal width	Petal length	Petal width	Sepal length	Sepal width	Petal length	Petal width
5·1	3·5	1·4	0·2	7·0	3·2	4·7	1·4	6·3	3·3	6·0	2·5
4·9	3·0	1·4	0·2	6·4	3·2	4·5	1·5	5·8	2·7	5·1	1·9
4·7	3·2	1·3	0·2	6·9	3·1	4·9	1·5	7·1	3·0	5·9	2·1
4·6	3·1	1·5	0·2	5·5	2·3	4·0	1·3	6·3	2·9	5·6	1·8
5·0	3·6	1·4	0·2	6·5	2·8	4·6	1·5	6·5	3·0	5·8	2·2
5·4	3·9	1·7	0·4	5·7	2·8	4·5	1·3	7·6	3·0	6·6	2·1
4·6	3·4	1·4	0·3	6·3	3·3	4·7	1·6	4·9	2·5	4·5	1·7
5·0	3·4	1·5	0·2	4·9	2·4	3·3	1·0	7·3	2·9	6·3	1·8
4·4	2·9	1·4	0·2	6·6	2·9	4·6	1·3	6·7	2·5	5·8	1·8
4·9	3·1	1·5	0·1	5·2	2·7	3·9	1·4	7·2	3·6	6·1	2·5
5·4	3·7	1·5	0·2	5·0	2·0	3·5	1·0	6·5	3·2	5·1	2·0
4·8	3·4	1·6	0·2	5·9	3·0	4·2	1·5	6·4	2·7	5·3	1·9
4·8	3·0	1·4	0·1	6·0	2·2	4·0	1·0	6·8	3·0	5·5	2·1
4·3	3·0	1·1	0·1	6·1	2·9	4·7	1·4	5·7	2·5	5·0	2·0
5·8	4·0	1·2	0·2	5·6	2·9	3·6	1·3	5·8	2·8	5·1	2·4
5·7	4·4	1·5	0·4	6·7	3·1	4·4	1·4	6·4	3·2	5·3	2·3
5·4	3·9	1·3	0·4	5·6	3·0	4·5	1·5	6·5	3·0	5·5	1·8
5·1	3·5	1·4	0·3	5·8	2·7	4·1	1·0	7·7	3·8	6·7	2·2
5·7	3·8	1·7	0·3	6·2	2·2	4·5	1·5	7·7	2·6	6·9	2·3
5·1	3·8	1·5	0·3	5·6	2·5	3·9	1·1	6·0	2·2	5·0	1·5
5·4	3·4	1·7	0·2	5·9	3·2	4·8	1·8	6·9	3·2	5·7	2·3
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4·8	3·4	1·9	0·2	6·4	2·9	4·3	1·3	6·7	3·3	5·7	2·1
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5·4	3·4	1·5	0·4	5·5	2·4	3·7	1·0	7·9	3·8	6·4	2·0
5·2	4·1	1·5	0·1	5·8	2·7	3·9	1·2	6·4	2·8	5·6	2·2
5·5	4·2	1·4	0·2	6·0	2·7	5·1	1·6	6·3	2·8	5·1	1·5
4·9	3·1	1·5	0·2	5·4	3·0	4·5	1·5	6·1	2·6	5·6	1·4
5·0	3·2	1·2	0·2	6·0	3·4	4·5	1·6	7·7	3·0	6·1	2·3
5·5	3·5	1·3	0·2	6·7	3·1	4·7	1·5	6·3	3·4	5·6	2·4
4·9	3·6	1·4	0·1	6·3	2·3	4·4	1·3	6·4	3·1	5·5	1·8
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4·5	2·3	1·3	0·3	6·1	3·0	4·6	1·4	6·9	3·1	5·1	2·3
4·4	3·2	1·3	0·2	5·8	2·6	4·0	1·2	5·8	2·7	5·1	1·9
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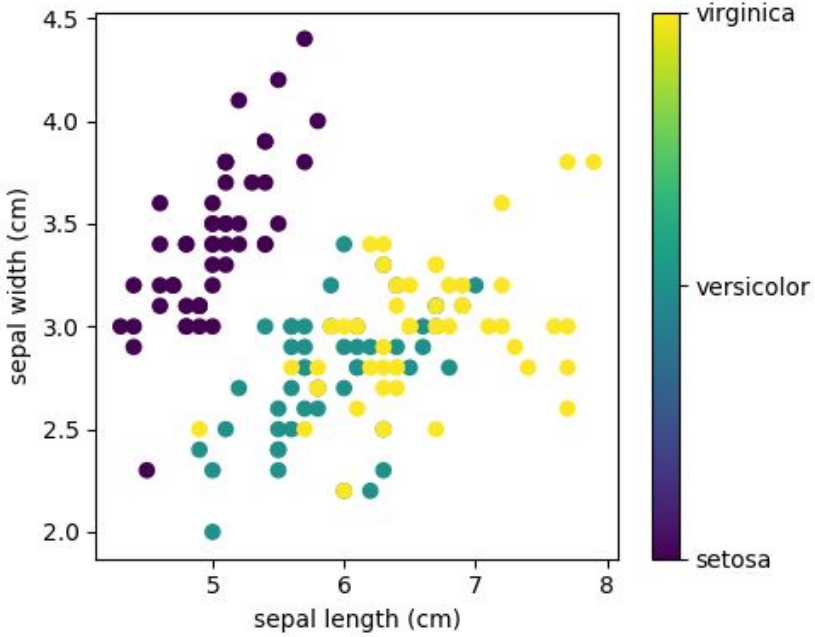
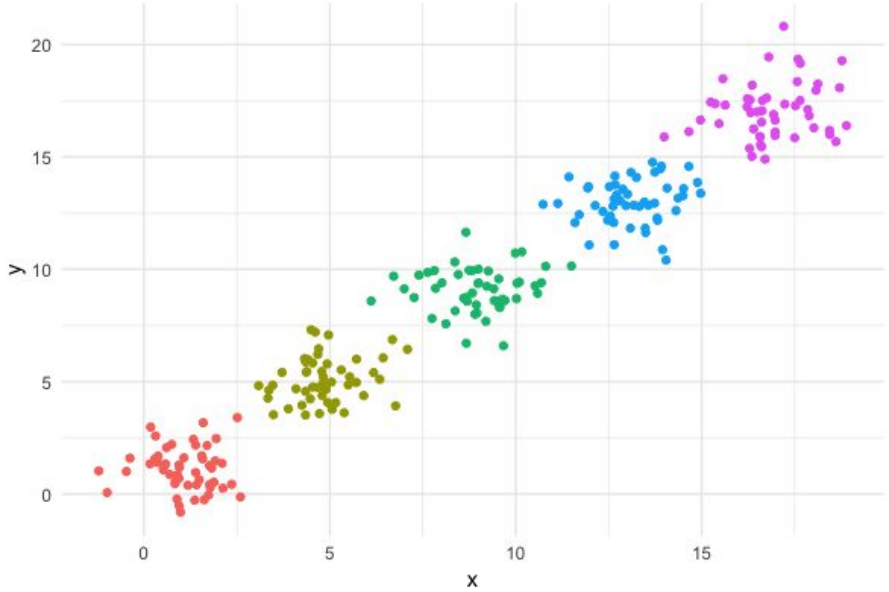
4·8	3·0	1·4	0·3	5·7	3·0	4·2	1·2	6·7	3·0	5·2	2·3
5·1	3·8	1·6	0·2	5·7	2·9	4·2	1·3	6·3	2·5	5·0	1·9
4·6	3·2	1·4	0·2	6·2	2·9	4·3	1·3	6·5	3·0	5·2	2·0
5·3	3·7	1·5	0·2	5·1	2·5	3·0	1·1	6·2	3·4	5·4	2·3
5·0	3·3	1·4	0·2	5·7	2·8	4·1	1·3	5·9	3·0	5·1	1·8

vs



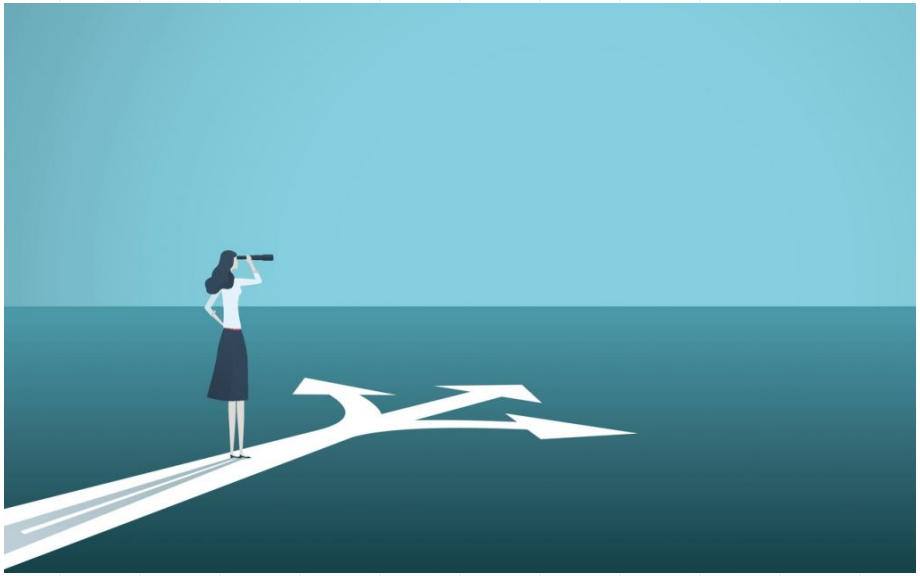
PROS OF DATA VISUALIZATION

Easier pattern recognition:



PROS OF DATA VISUALIZATION

Faster decision making:



CONS OF DATA VISUALIZATION

- COMPLEX DATA VISUALIZATION IS HARD
- VISUALIZED DATA IS PRONE TO MISINTERPRETATION
- WRONG-MINDED INDIVIDUALS CAN EXPLOIT IT

EXAMPLES OF MALICIOUS DATA VISUALIZATION

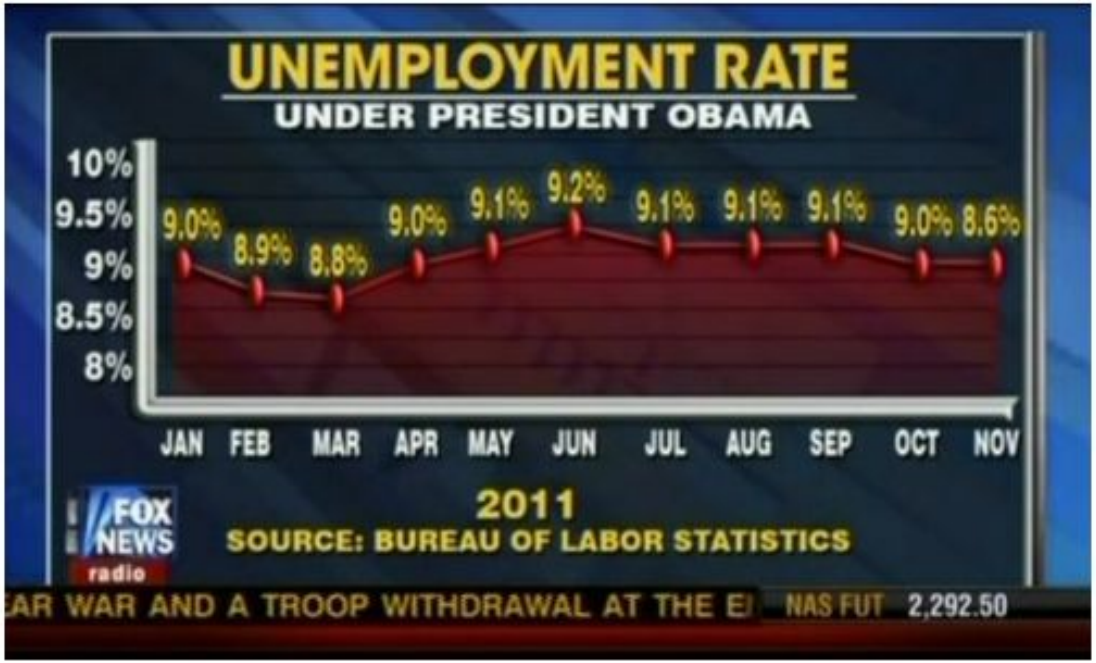
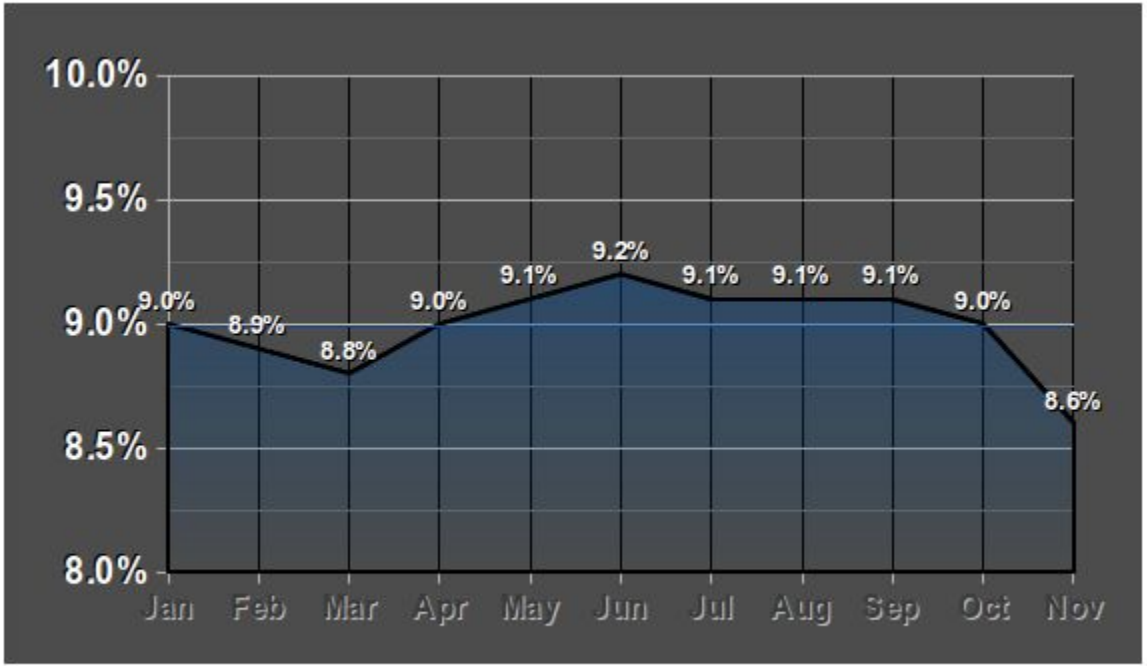


Image Source: http://cloudfront.mediamatters.org

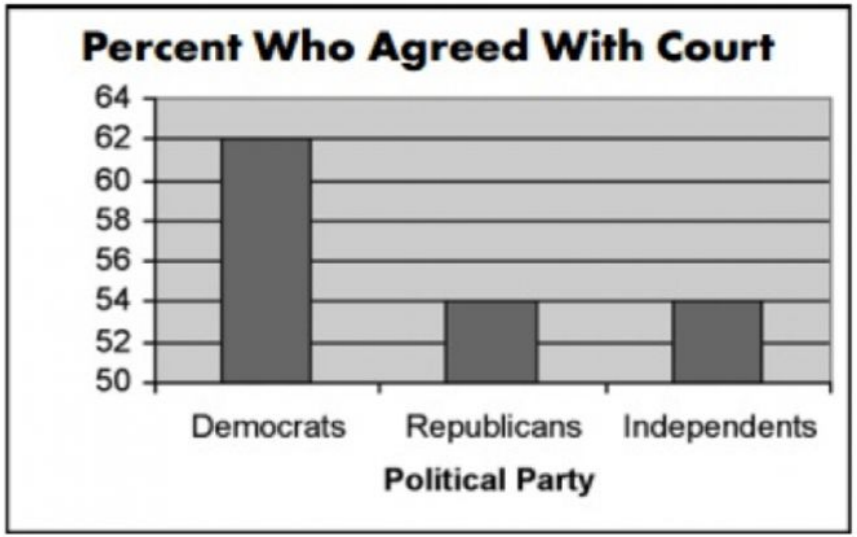
EXAMPLES OF MALICIOUS DATA VISUALIZATION

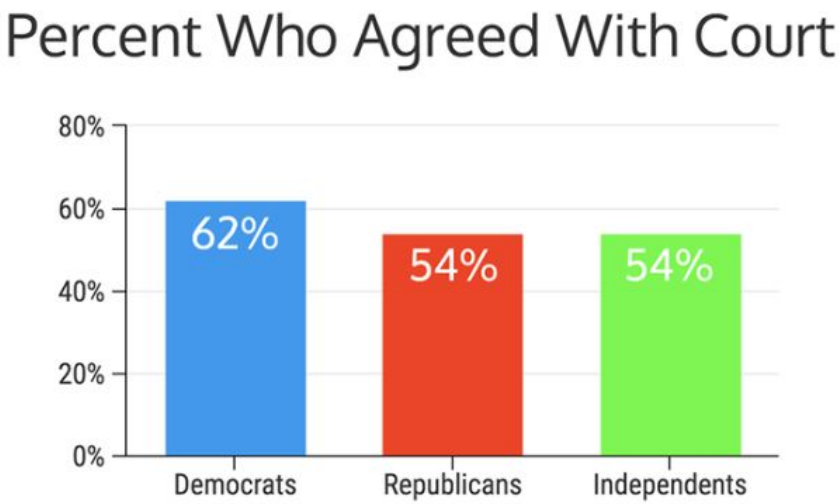


Source: http://freethoughtblogs.com/lousycanuck/2011/12/14/im-better-at-graphs-than-fox-news/

EXAMPLES OF MALICIOUS DATA VISUALIZATION

Truncating the graph:





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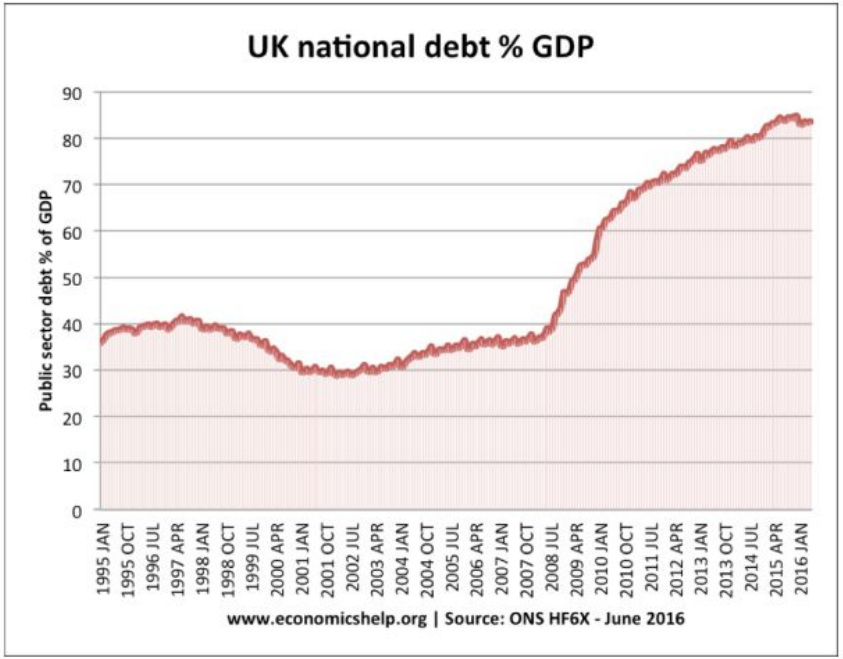
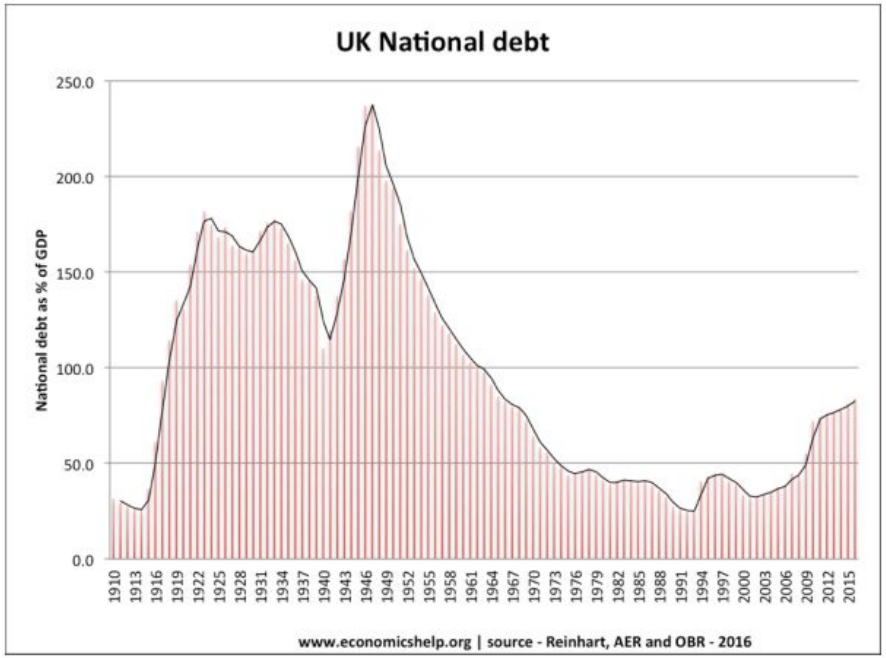
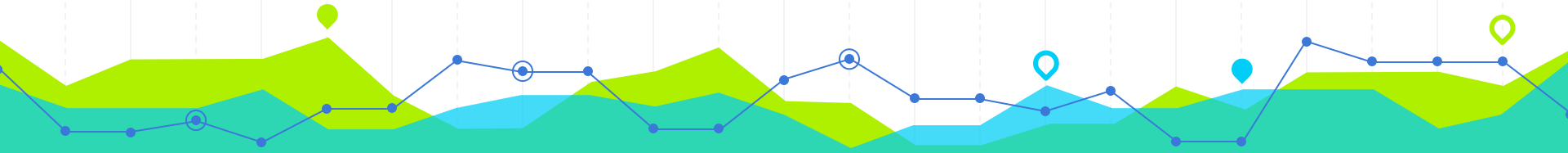


Source: www.economicshelp.org



Source: www.economicshelp.org



DATA VISUALIZATION IN JAVASCRIPT 4

Chart.js

THANKS!

Any questions?

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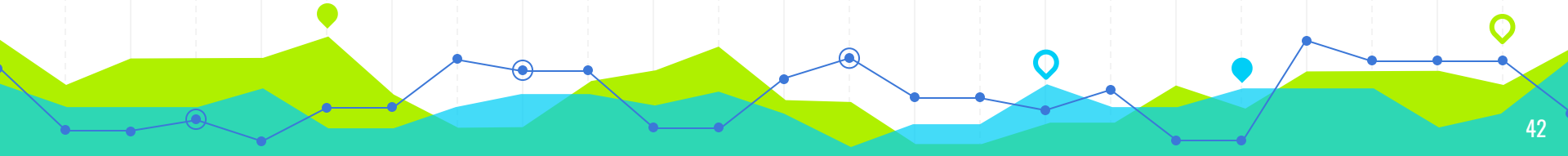

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