

# Visualization Basics

# What is visualization ?

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'Visualization is any technique for creating images, diagrams, or animations to communicate a message.'

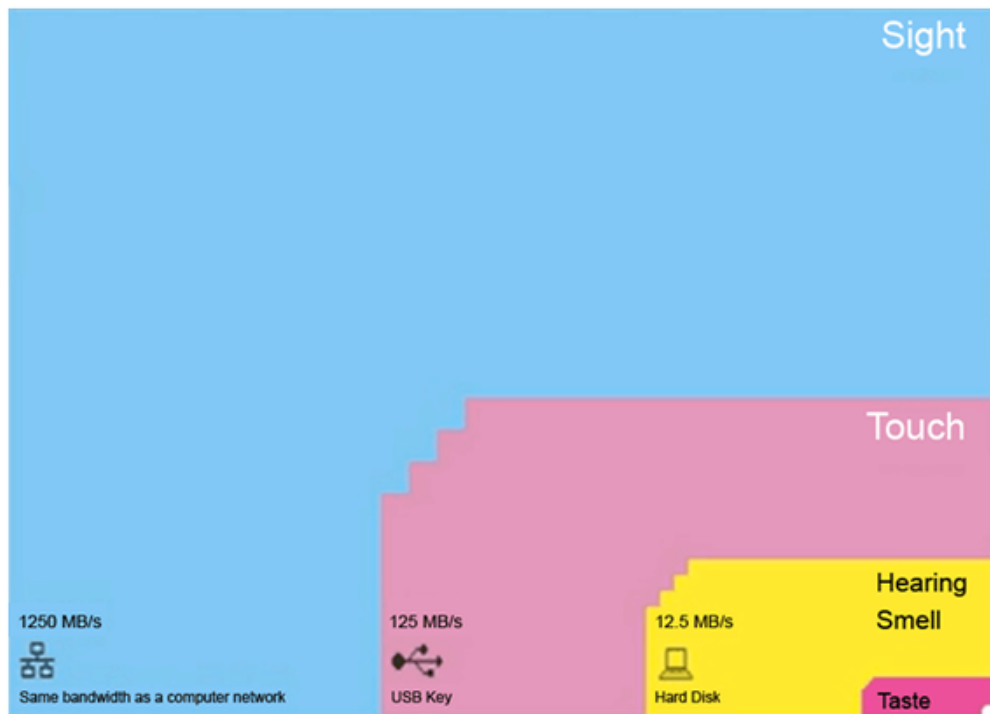
# When does it happen ?

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acquire   clean   filter   aggregate   visualize   communicate



# Why is visualization important ?



# Some Fine Examples

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- Information is beautiful
- Visualizing data
- Data Journalism:
  - FiftyThirtyEight
  - The Guardian
  - The Washington Post

# Agenda

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- Basics
- Exploration Tools: Tableau
- Python tools: Bokeh, Seaborn, ...
- Advanced Charts with D3

# Initial Data

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The data comes as the answer of a question:

- Tabular Form
- Tree Structure

# Types of variables

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- Quantitative Data - Measure
- Categorical Data - Dimension
  - Nominal
  - Ordered



# Visual Encoding

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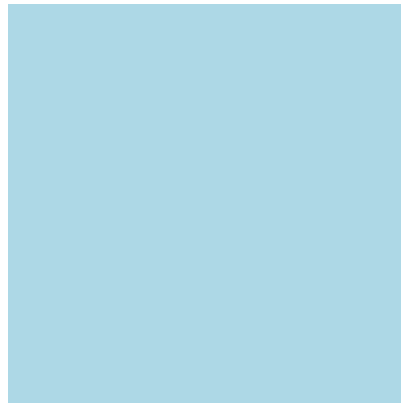
Every variable can be encoded in a visual variable.

# Examples - Angle

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Value to encode

0

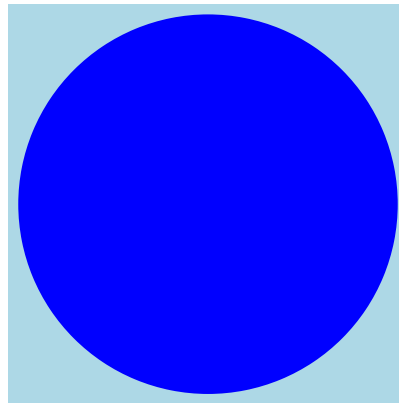


# Examples - Area

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Value to encode

90

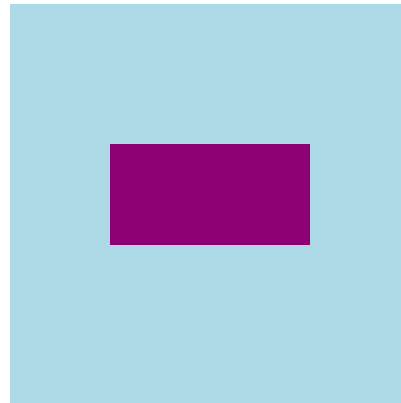


# Examples - Color

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Value to encode

90

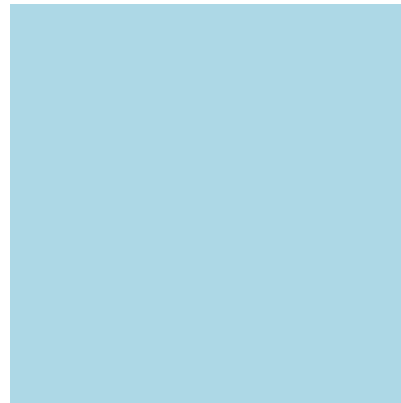


# Examples - Length

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Value to encode

75



# Examples - Position

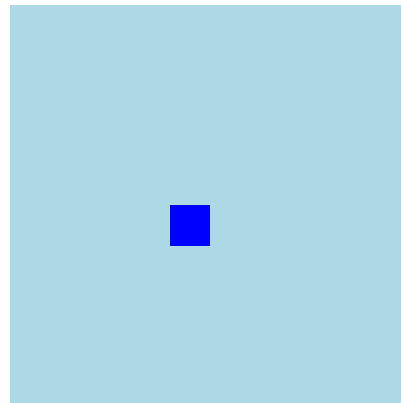
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Values to encode

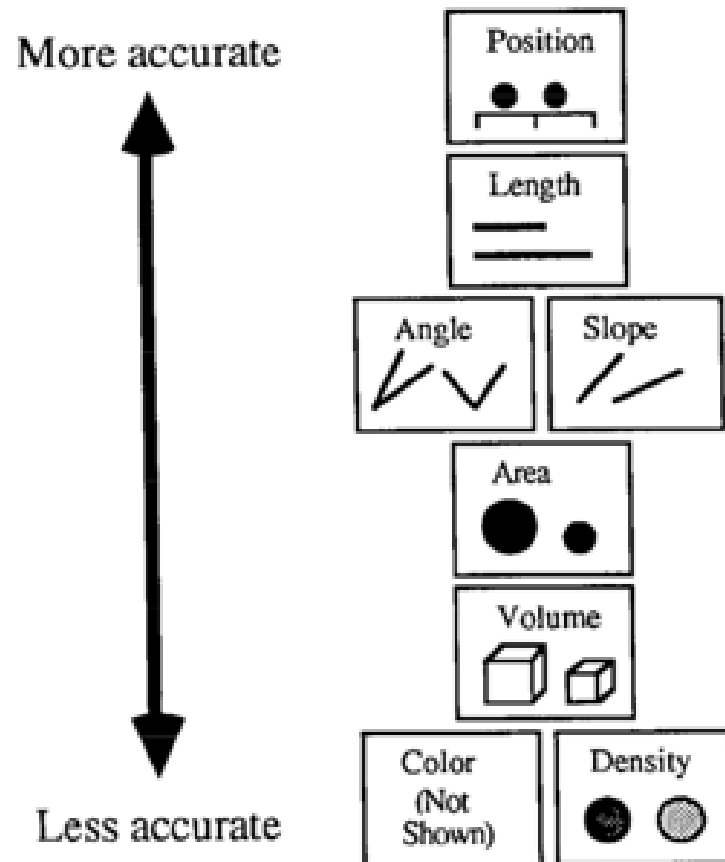
90



90



# Visual Encoding Ranking



# Preattentive Processing

7	8	2	4	8	1	4	7	9	7
8	8	3	5	9	3	7	5	3	1
2	7	4	6	5	1	4	9	2	3
7	5	6	0	9	6	2	2	6	7
4	7	10	4	2	1	2	2	1	8
5	2	4	2	1	3	2	4	5	1
6	8	8	9	4	6	10	3	2	7
9	8	2	6	5	8	6	3	8	4
0	8	10	9	5	10	6	1	7	8
9	10	4	9	4	4	2	3	7	7

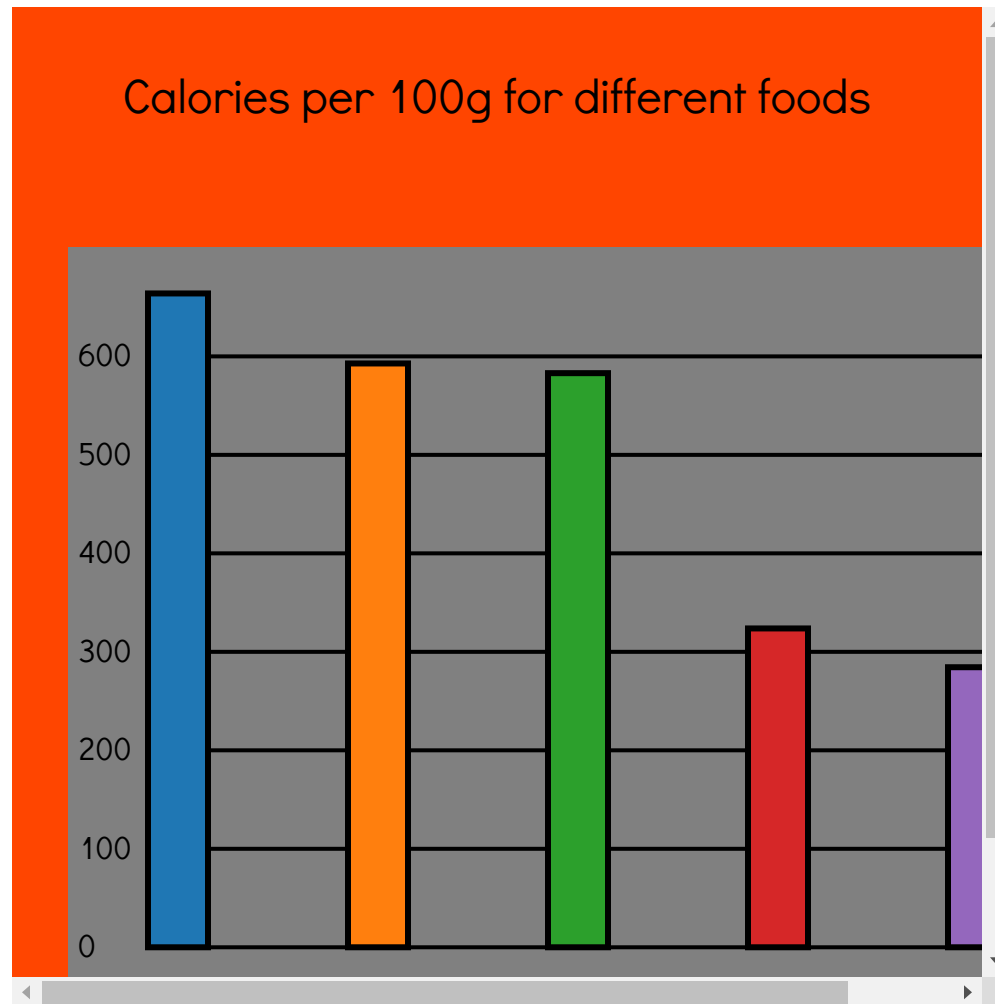
Colour

Area

Shape

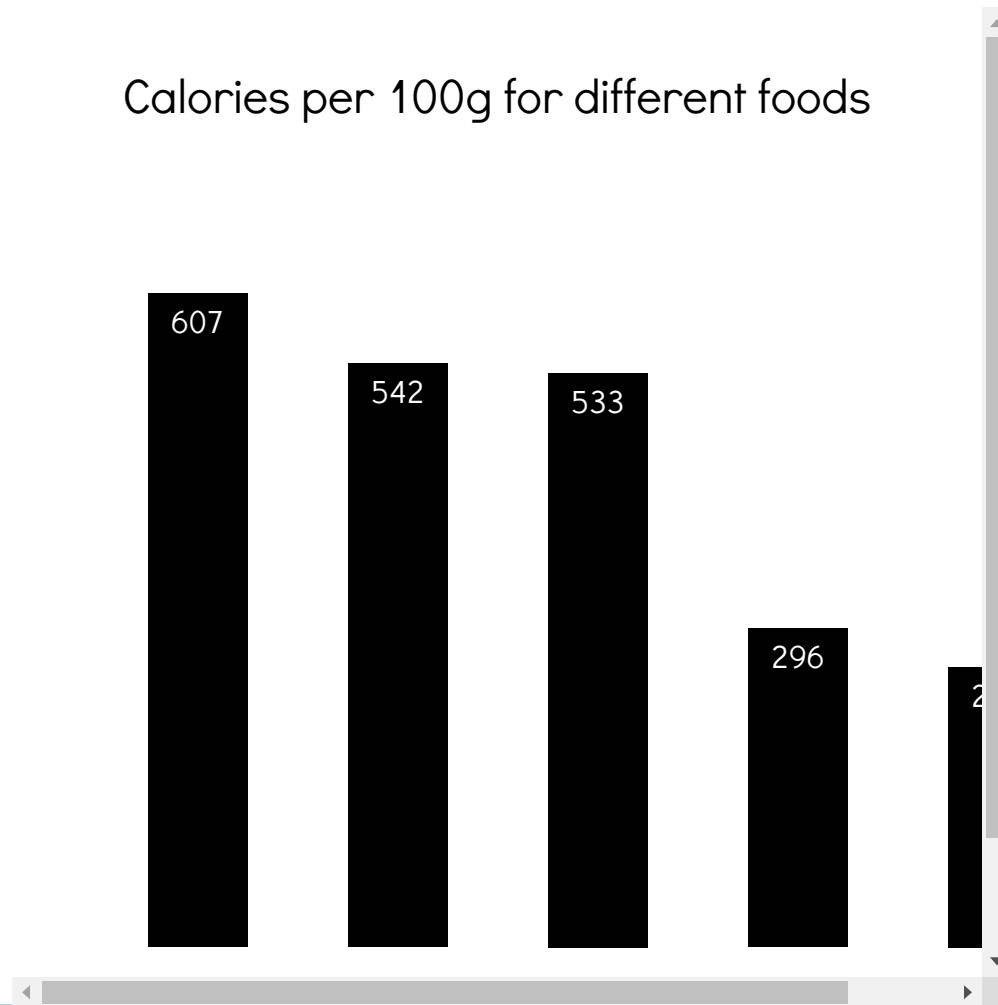


## Data-Ink Ratio - Bad Example



# Make it right in B&W

Calories per 100g for different foods



# Use Hue Color

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# Basic Charts

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- Bar Chart / Histogram: Comparison
- Line Chart: Evolution
- Scatter Plot: Relationship
- Map: Location
- Stacked Charts: Composition