

# Data Visualization

Module 5

ADAX Data Star Program



**ADAX**

# Data Visualization

“...to convey information through visual representations”

“...produces (interactive) visual representations of abstract data to reinforce human cognition; thus enabling the viewer to gain knowledge about the internal structure of the data and casual relationships in it.”

## Visualization Goals

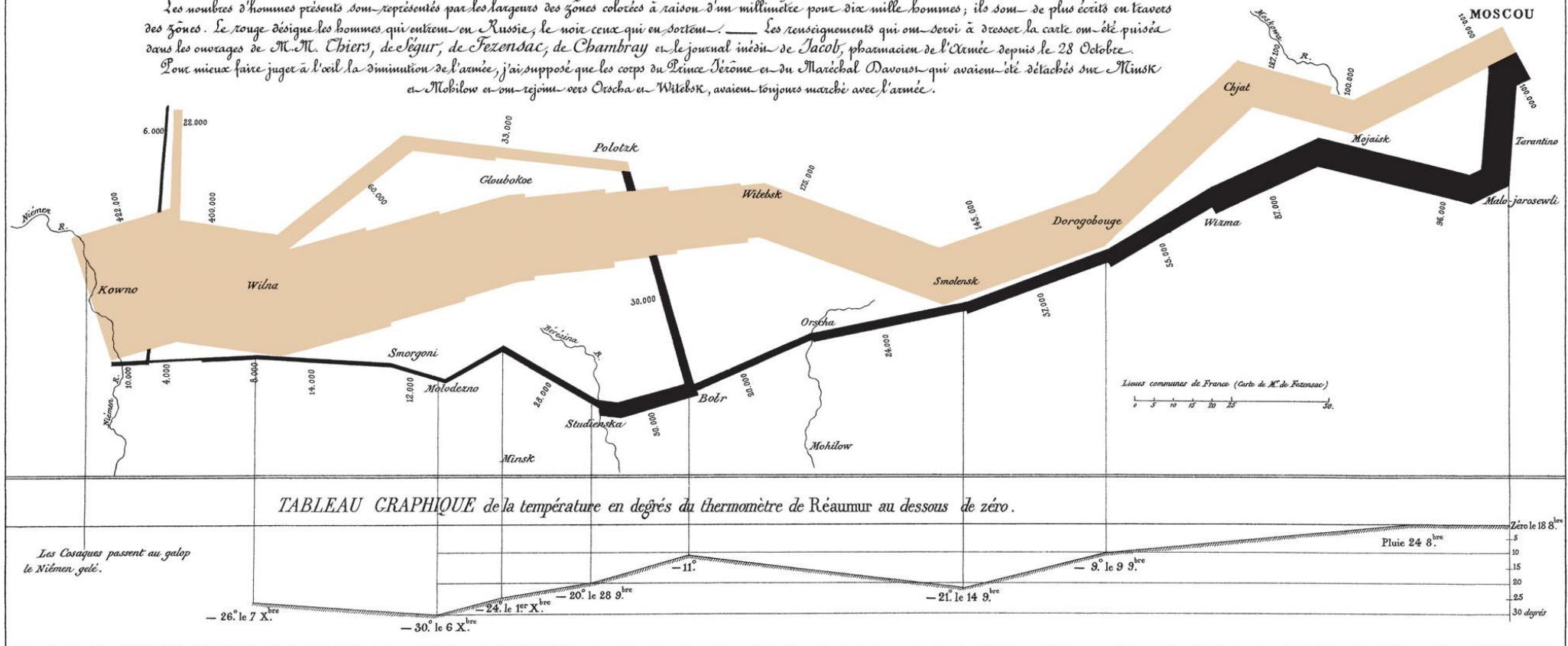
- Answer questions (or discover them)
- Make decisions
- See data in context
- Support graphical calculation
- Find patterns
- Present argument or tell a story
- Inspire

# Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.

Dressée par M. Marnard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. M. Chiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre.

Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davout, qui avaient été détachés sur Minsk et Mohilow et qui rejoignent vers Orscha et Witebsk, avaient toujours marché avec l'armée.

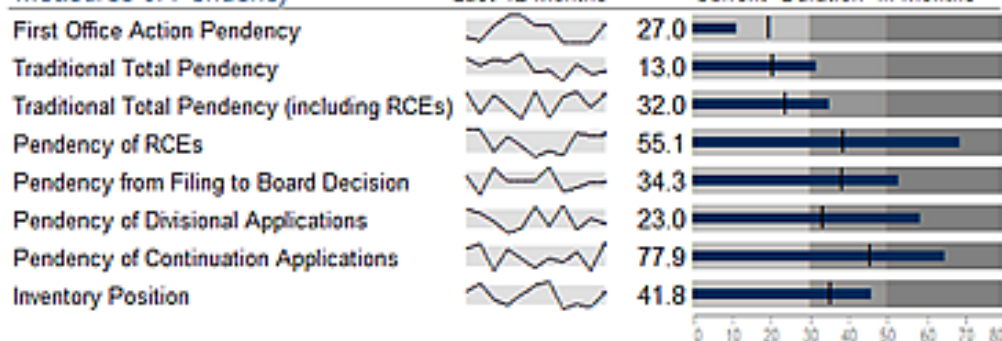


Data for July 2010 as of August 1, 2010

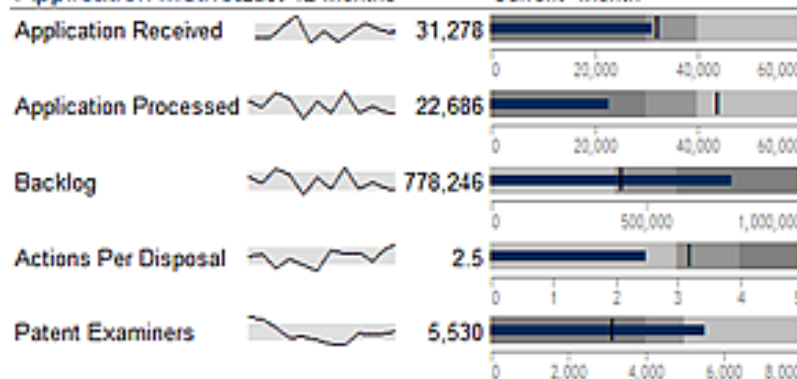
## USPTO Patents Dashboard

August 2010 Good OK Poor

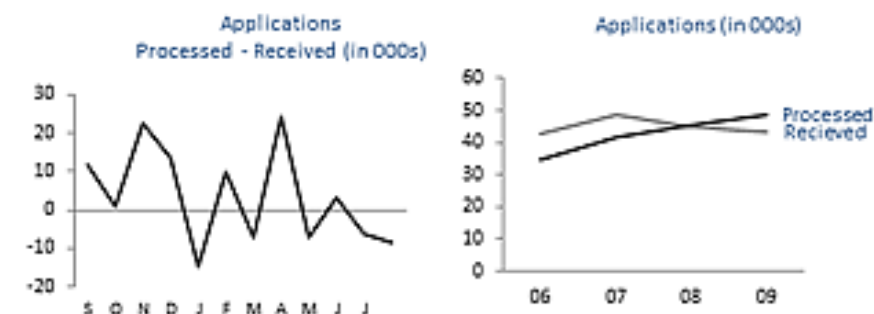
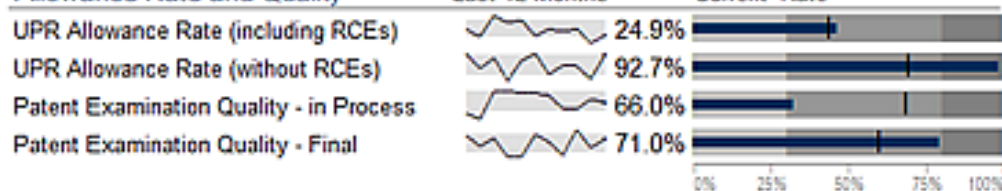
### Measures of Pendency



### Application Metrics



### Allowance Rate and Quality



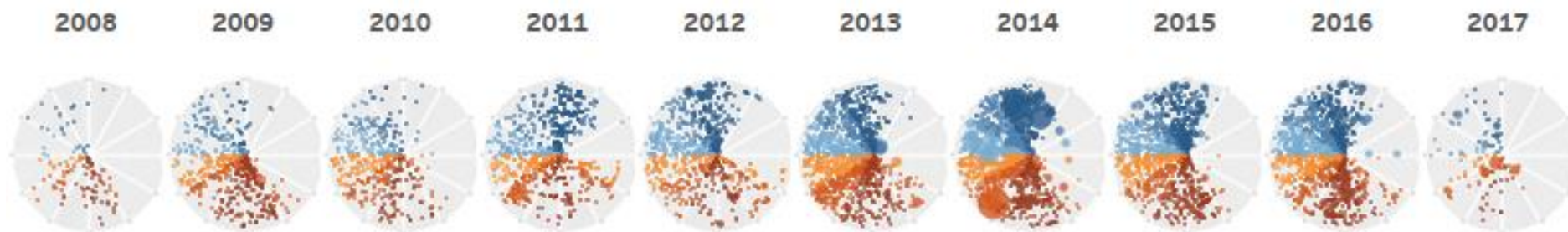
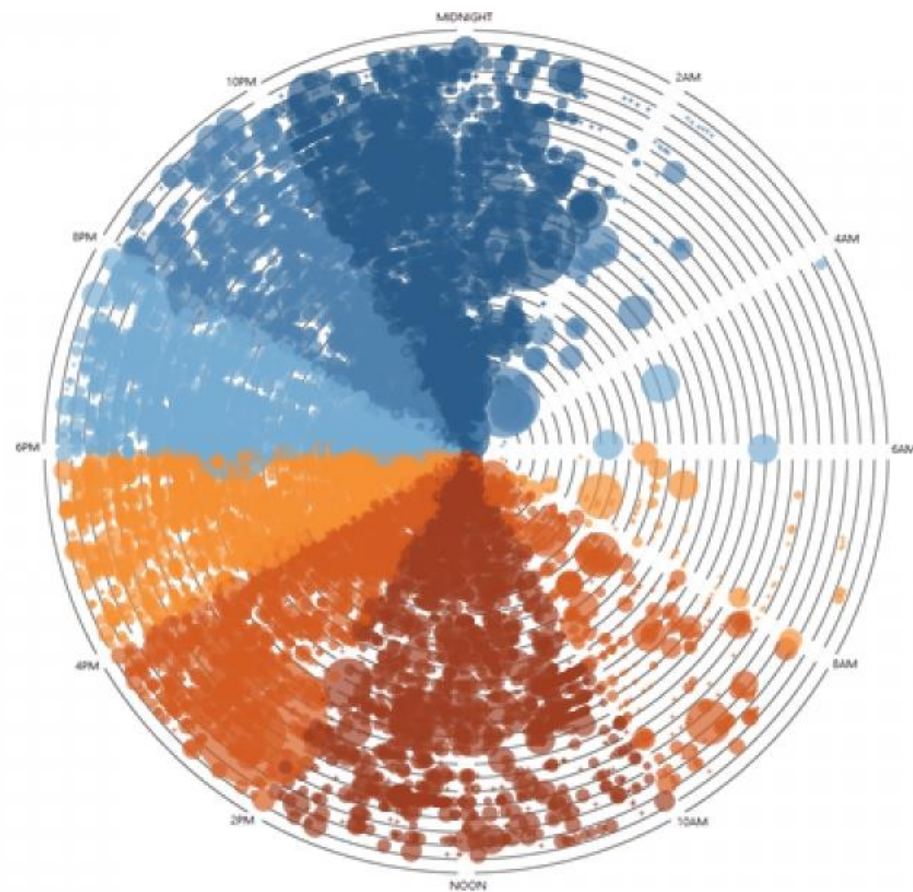
Click on KPI for definition

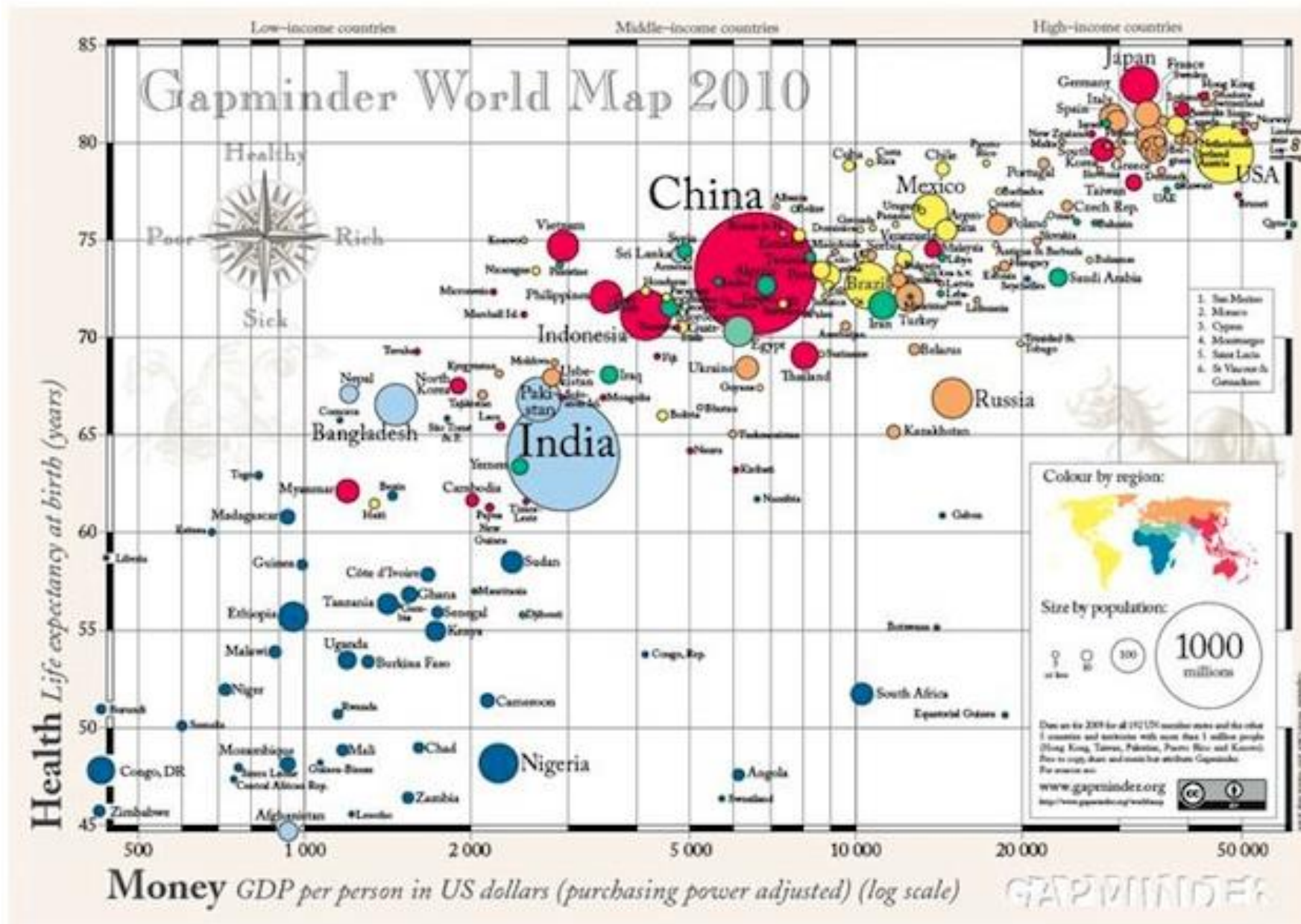
### First Office Action Pendency

First Office Action pendency is the average number of months from the patent application filing date to the date a First Office Action is mailed by the USPTO. Our goal is to reduce first action pendency to an average of 10 months by 2015. The term "pendency" refers to the fact that the application is pending or awaiting a decision. This measure of First Office Action Pendency includes the time until a first action by the USPTO, as well as any time awaiting a reply from an applicant to submit all parts of their application. The first action pendency number displayed, measured in months, is the average for all applications that have a First Office Action mailed over a three-month (one quarter) period.



# How Najib Razak spend his day on Twitter



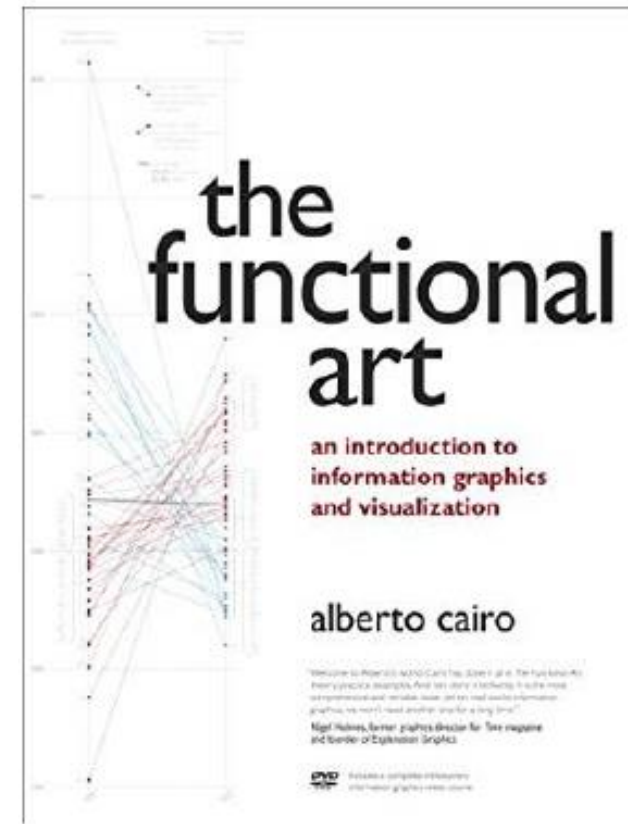
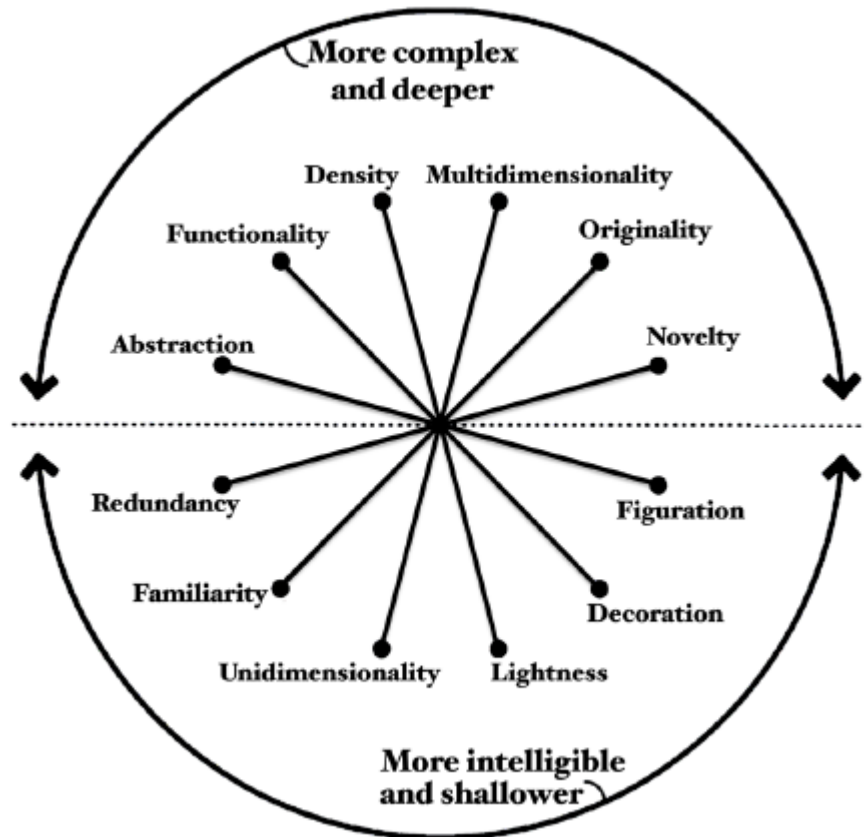


## 3 Functions of Visualization

- **RECORD:** Store information
- **ANALYZE:** Support reasoning about information
- **COMMUNICATE:** Convey information to others



# Visualization Wheel

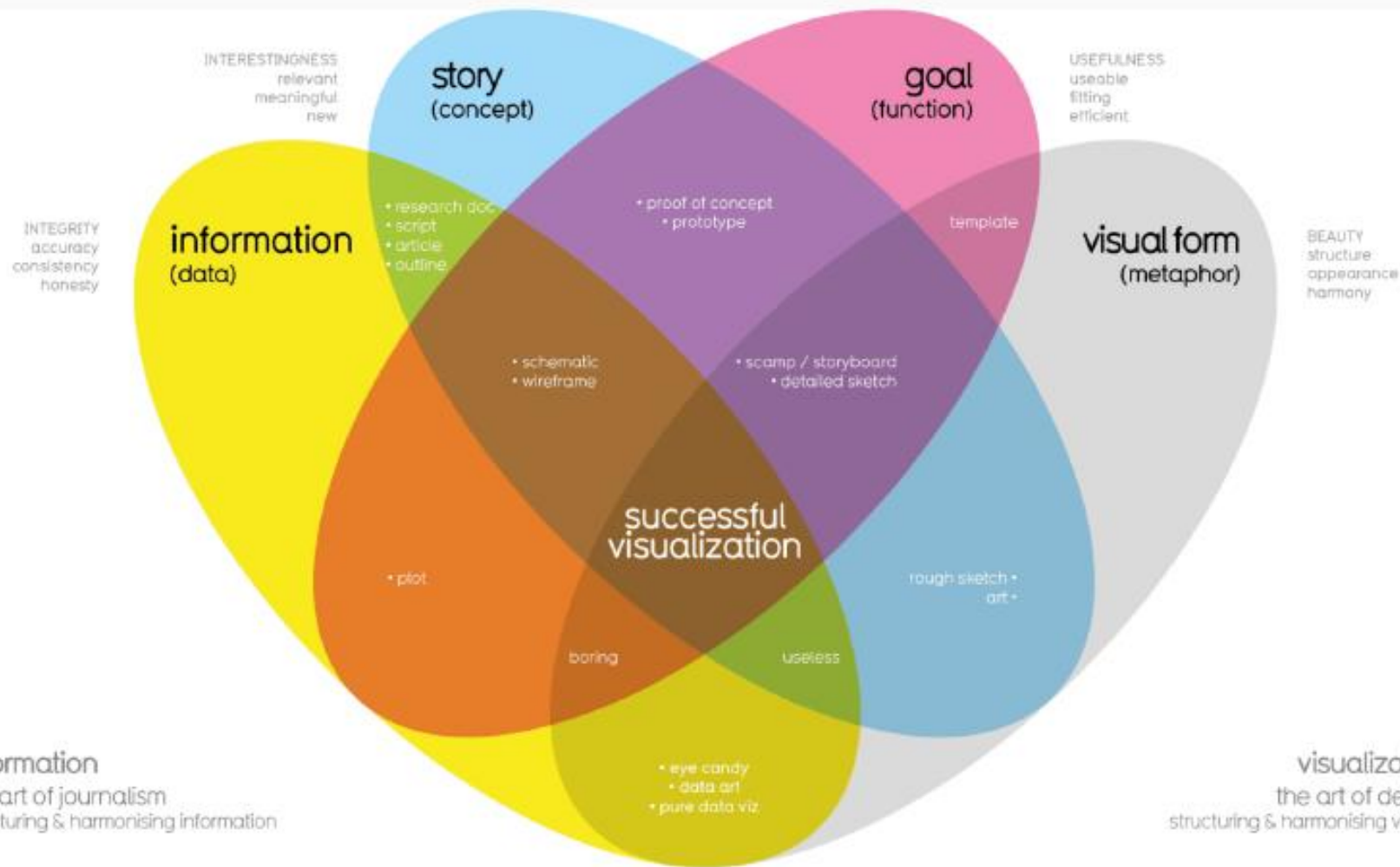


# Visualization Wheel

- **Abstraction – Figuration:** Boxes and charts (abstraction) or real-world physical objects (figuration)
- **Functionality – Decoration:** No embellishments (functionality) or artistic embellishments (decoration)
- **Density – Lightness:** Must be studied in depth (density) or understandable at a glance (lightless)
- **Multidimensional – Unidimensional:** Different aspects of phenomenon (multidimensional) or single or few items of phenomenal (unidimensional)

# Visualization Wheel

- **Originality – Familiarity:** Novel methods of visualization (originality) or established and well understood methods of visualization (familiarity)
- **Novelty – Redundancy:** Explaining each item once (novelty) or encoding multiple explanations of the same phenomenon (redundancy)



David McCandless  
[InformationIsBeautiful.net](http://InformationIsBeautiful.net)

taken from new book  
Knowledge is Beautiful

find out more  
[bit.ly/KIB\\_Books](http://bit.ly/KIB_Books)

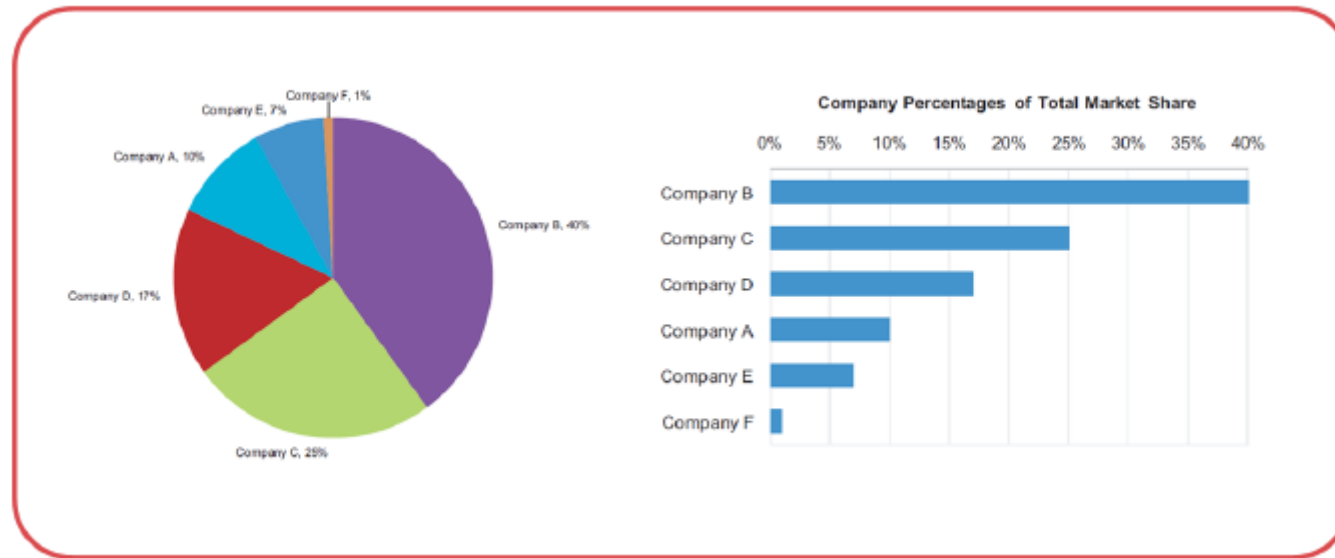


## Qualities of a Great Visualization

- Truthful
  - Avoid deception, misleading your audience
- Functionality
- Beauty
- Insightful
- Enlightening
  - A combination of the previous four, but with a social ethical responsibility

# Practical Considerations

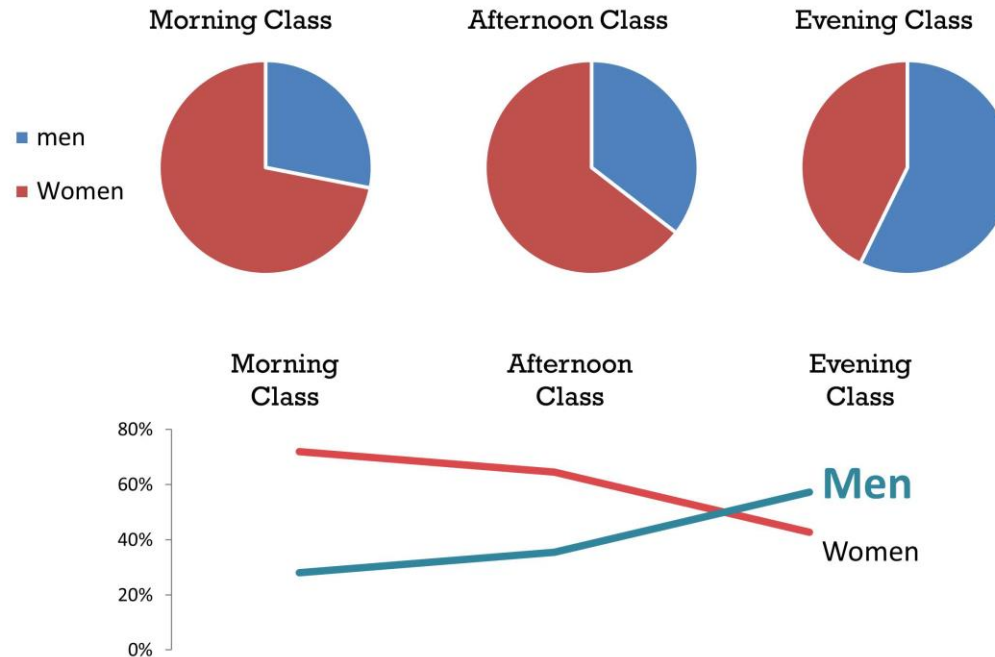
- Beware of pie charts!
  - Stay away from pie charts. A bar chart is almost always the right choice



# Practical Considerations

- A line chart is better at showing trends

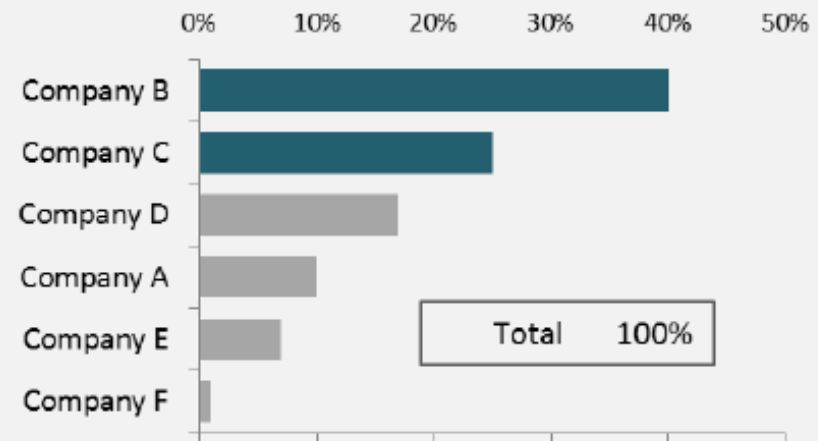
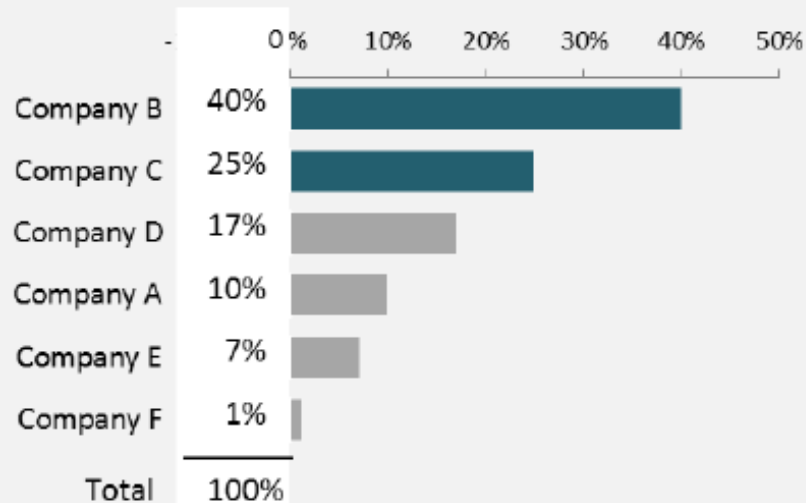
Women are more likely to attend the day classes, while men are more commonly found in the evening class



# Practical Considerations

- Lines won't do that well if you are trying to show a part/whole relationship

65% of the market is controlled by companies B and C

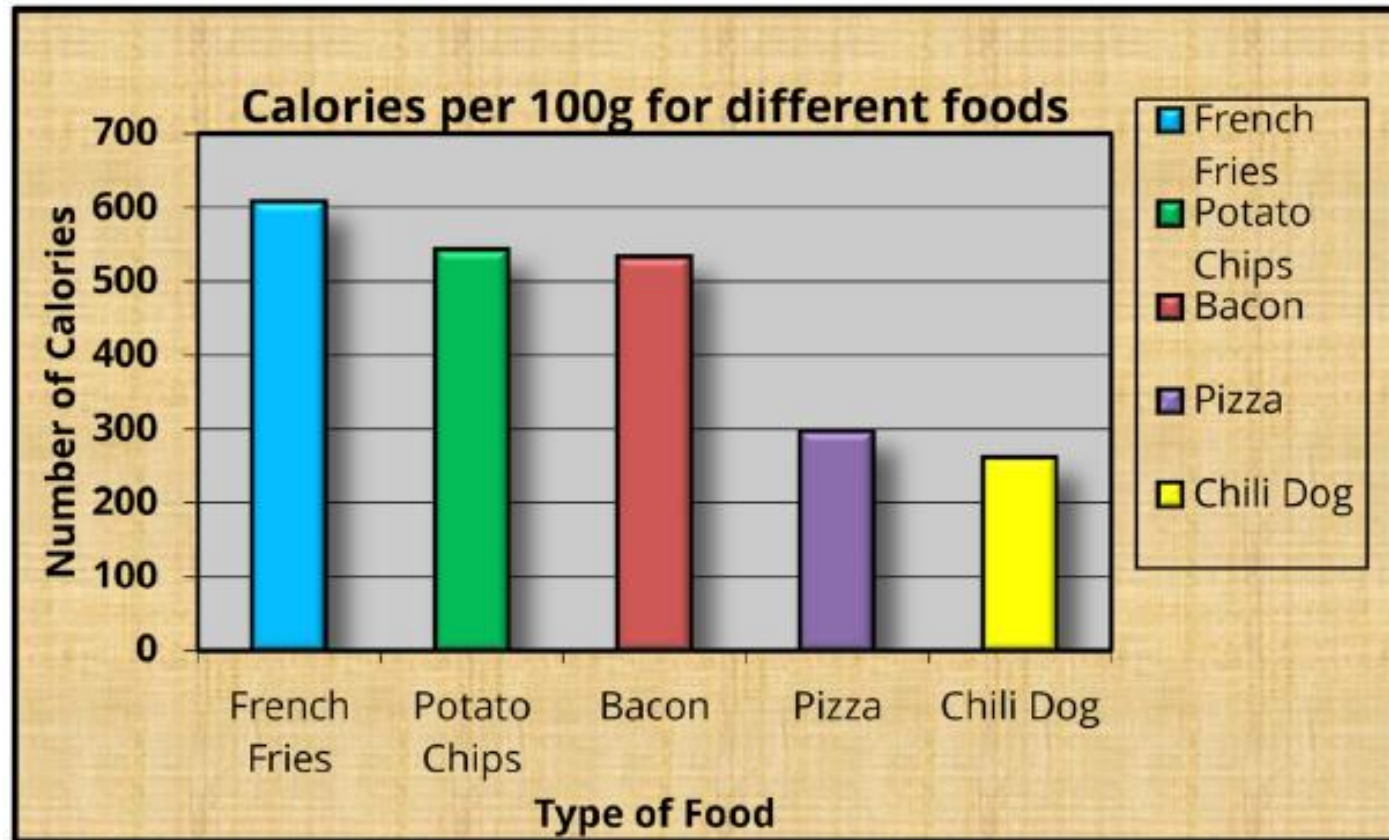




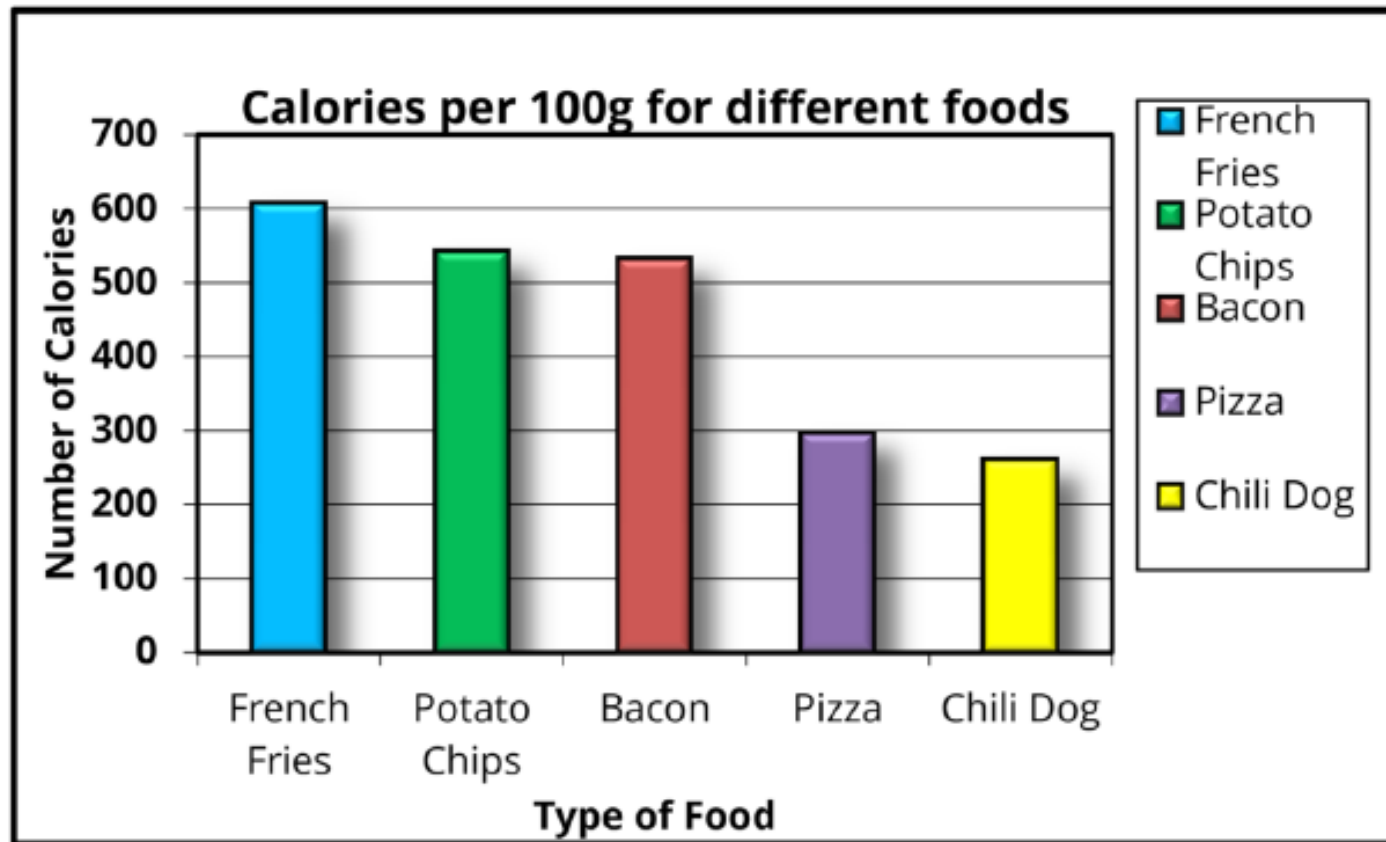
The background of the slide is white, with decorative corner elements consisting of grey dots of varying sizes arranged in a triangular pattern in each of the four corners.

Remove to improve

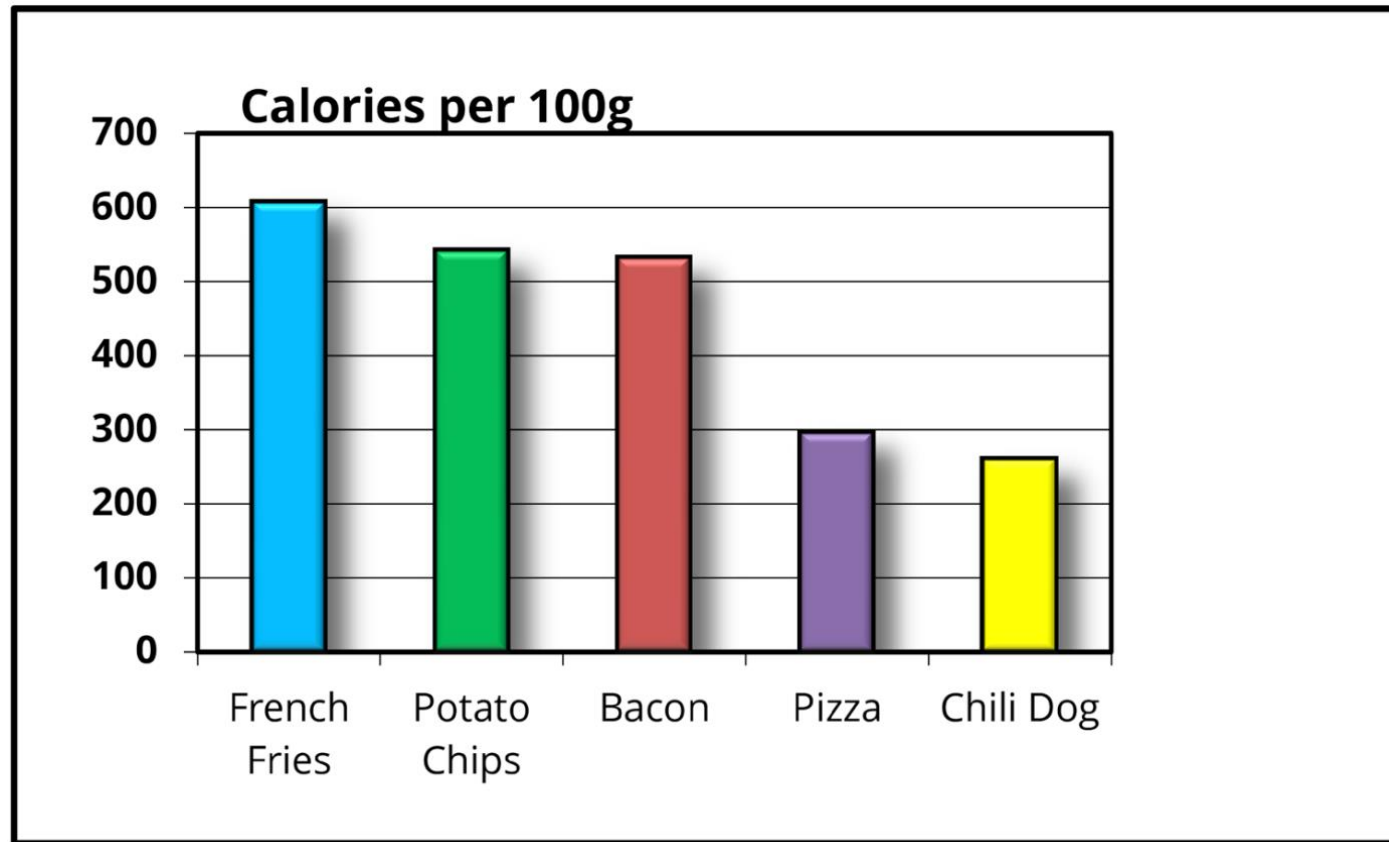
# Remove backgrounds



# Remove redundant labels

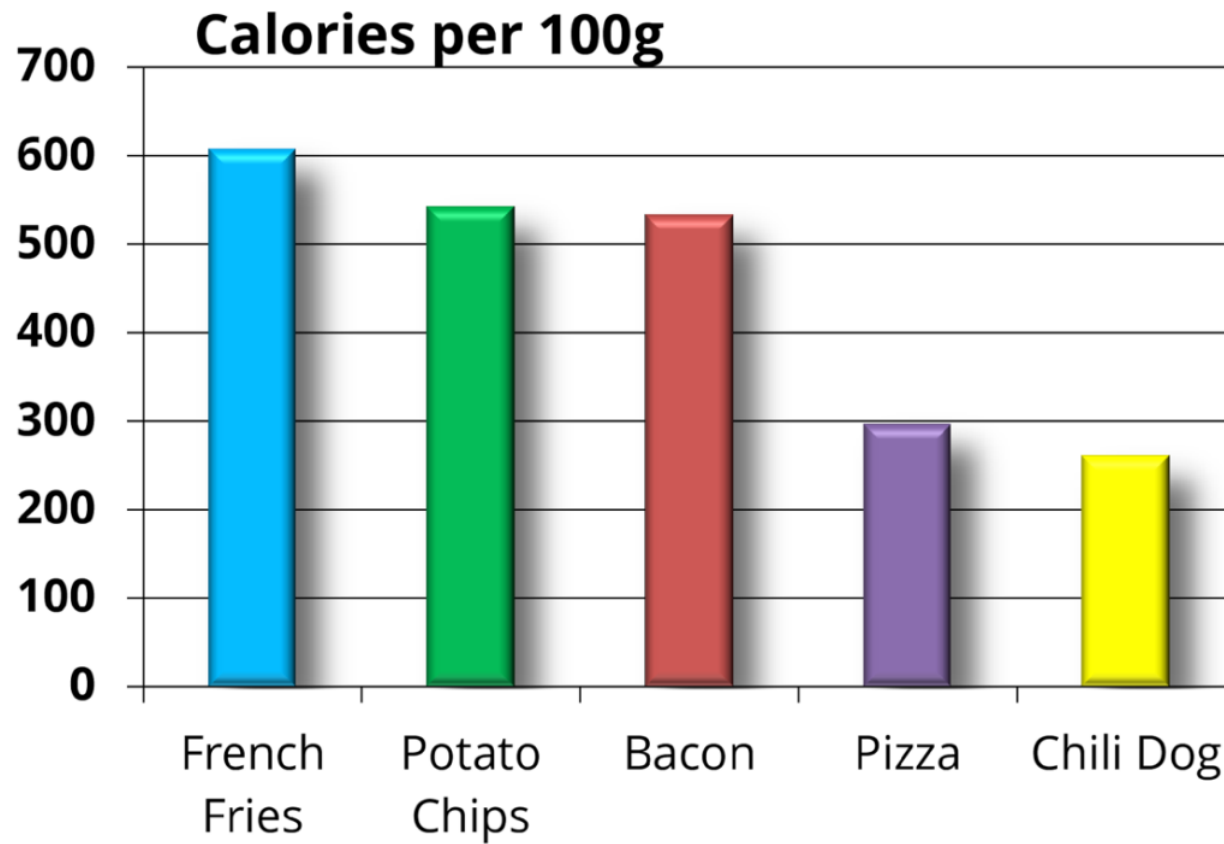


# Remove borders

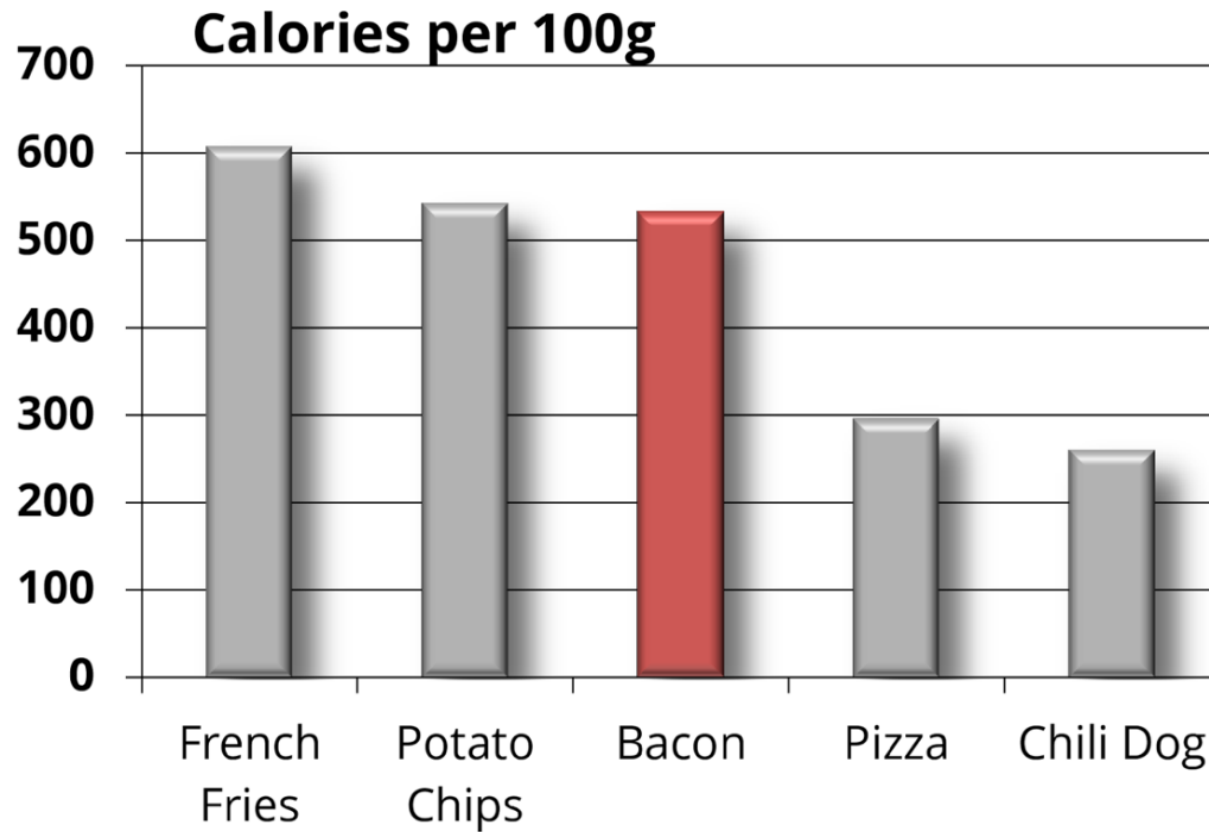




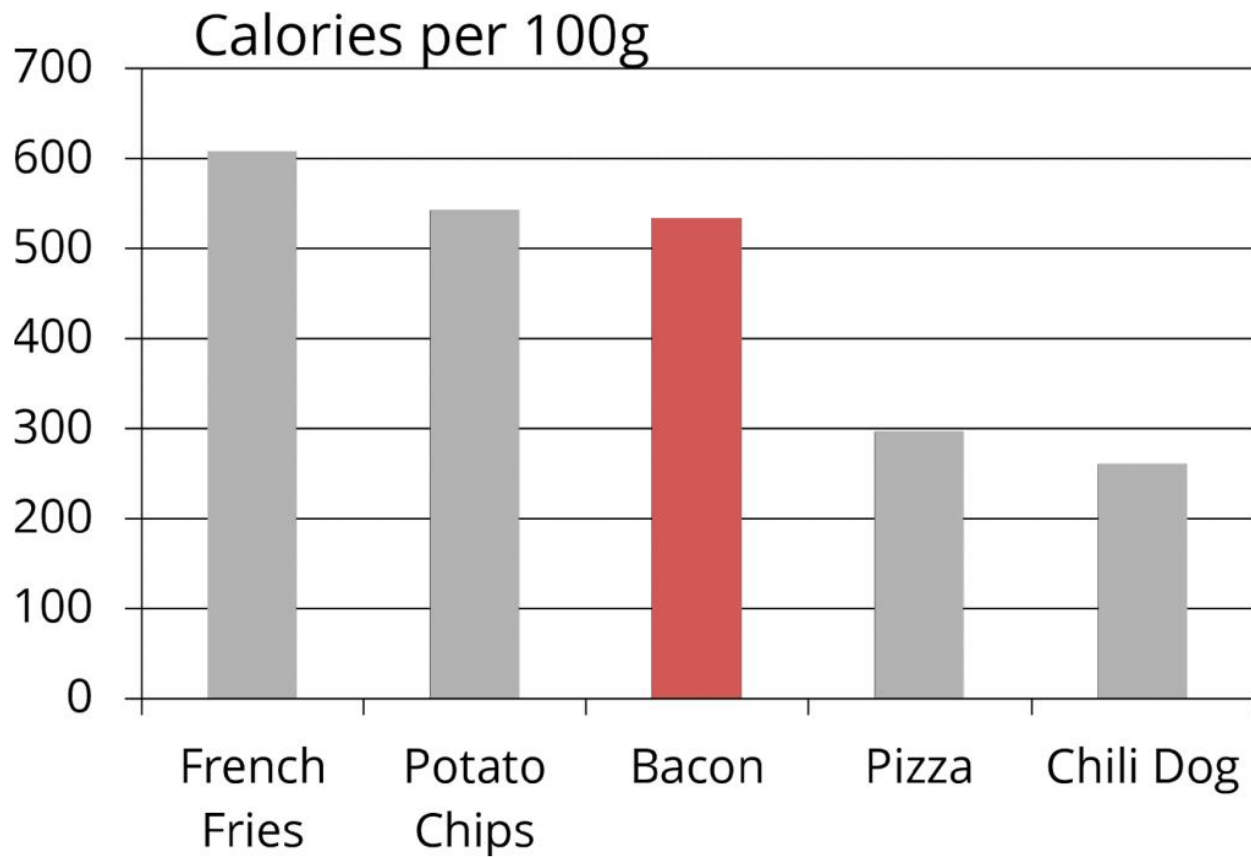
# Reduce colors



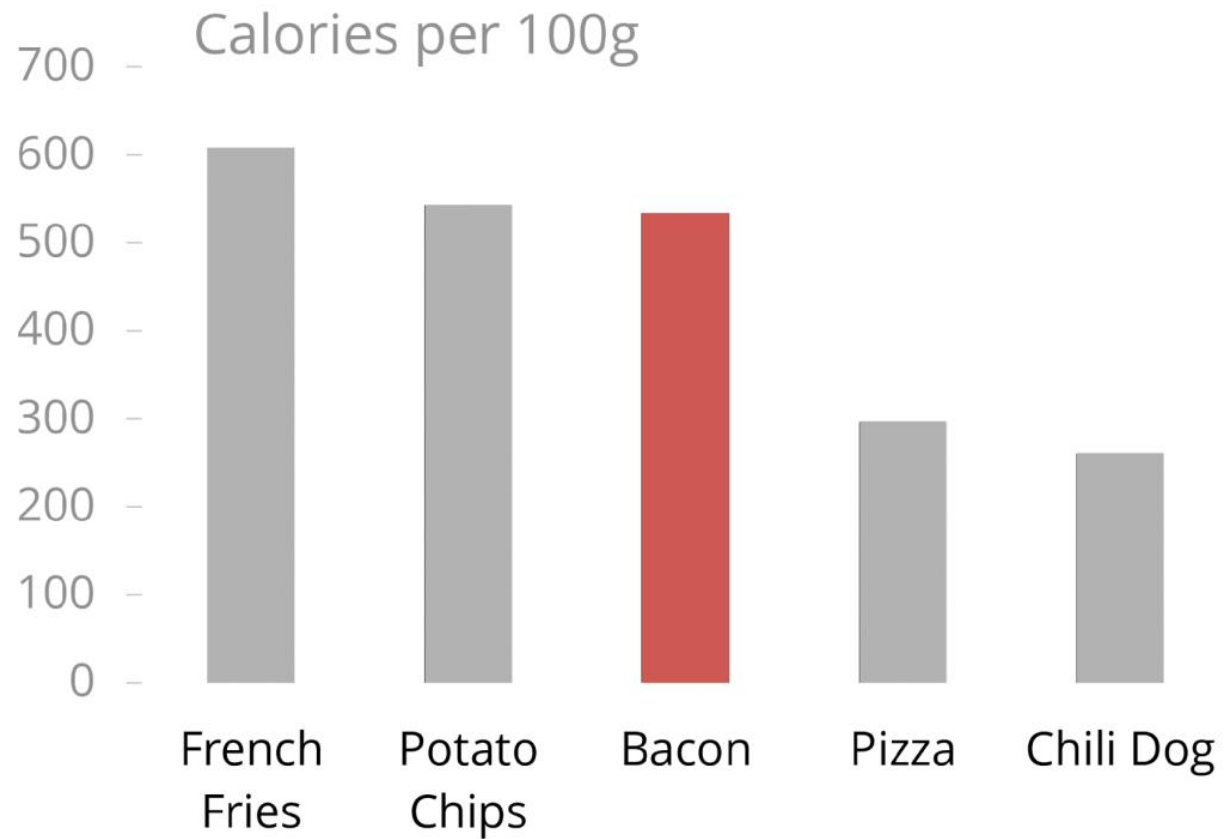
# Remove special effects



# Lighten labels



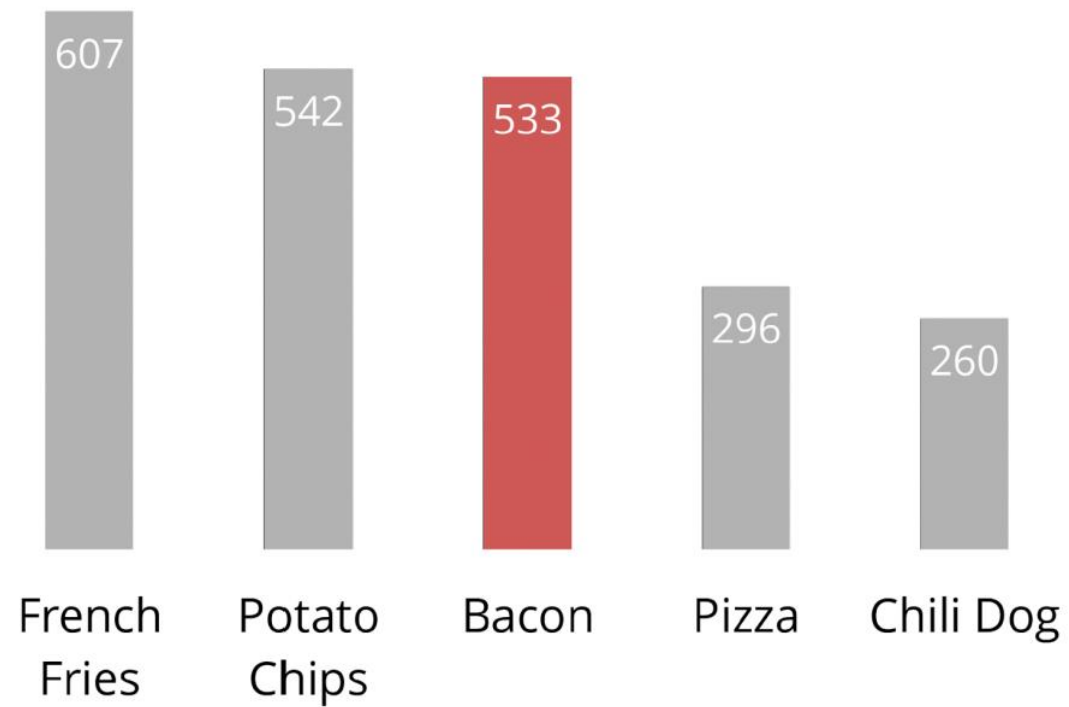
# Direct label



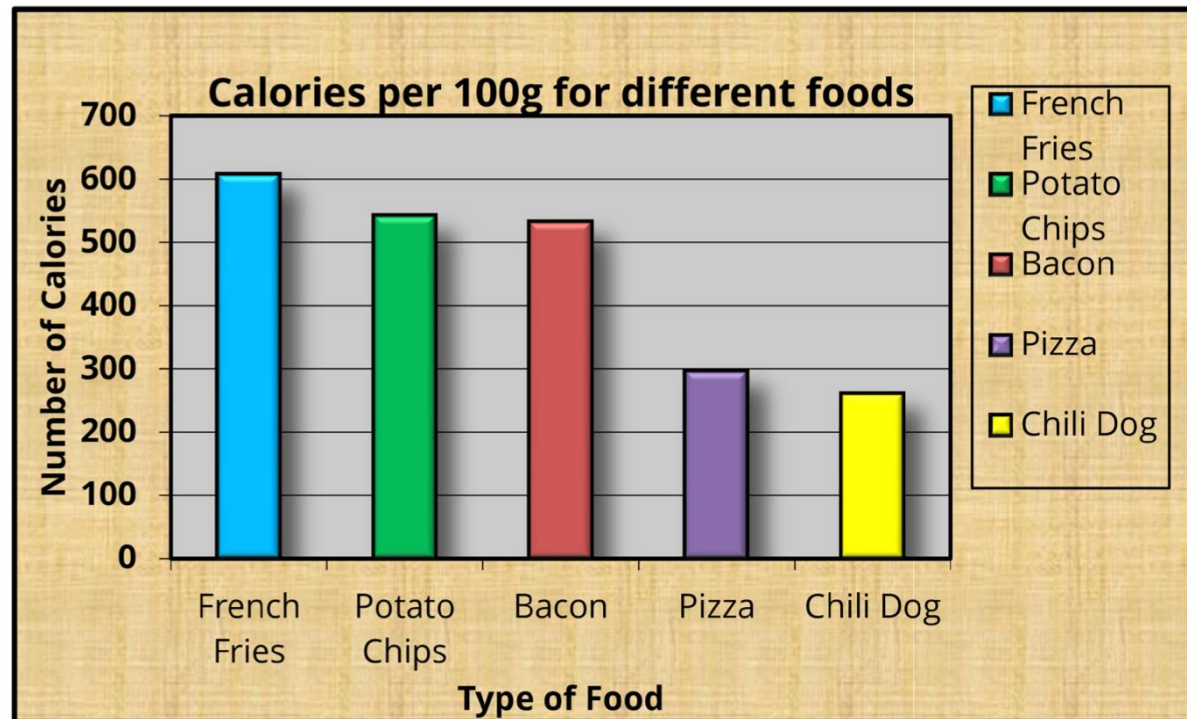


# Direct label

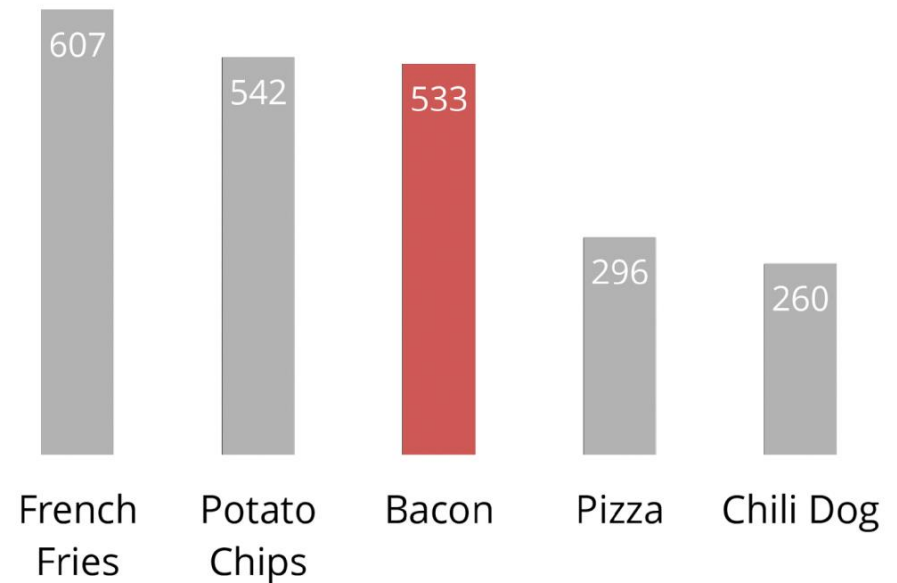
Calories per 100g



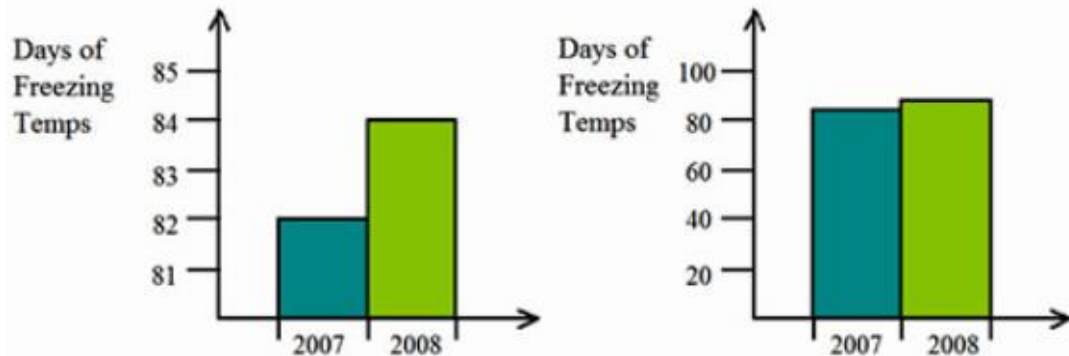
# Before vs. After



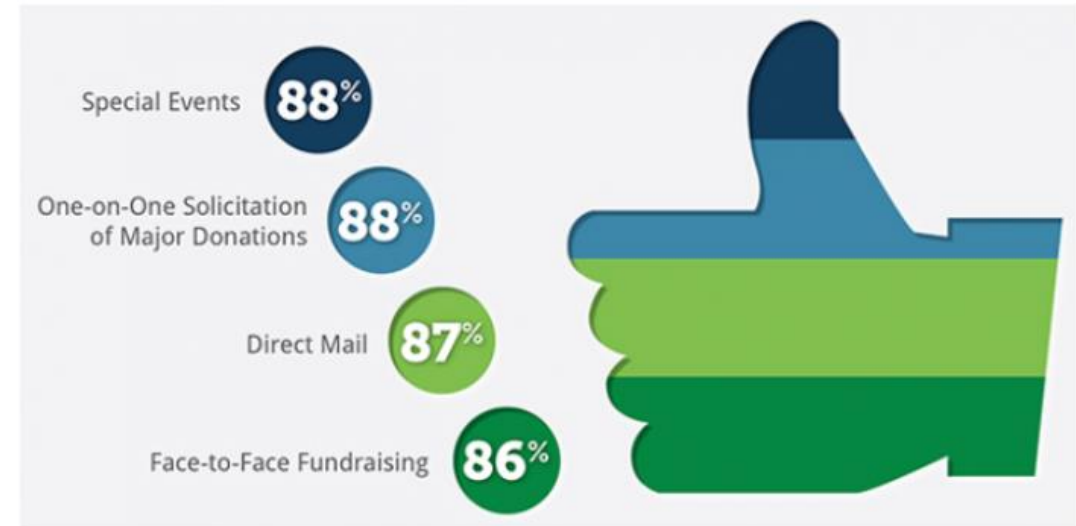
Calories per 100g



# Bad Visualization

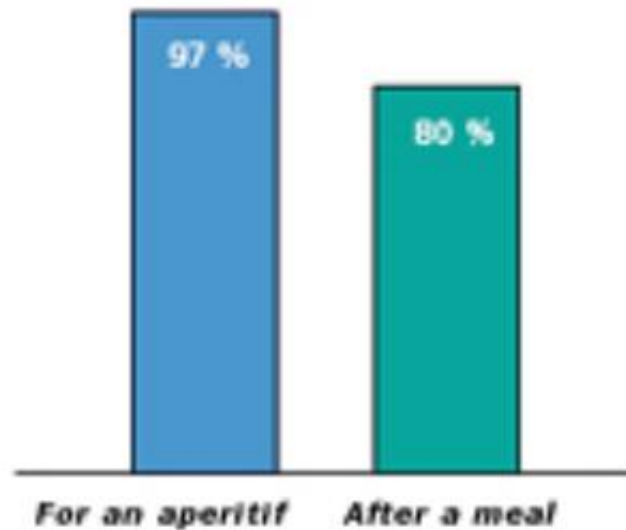


Both show exactly the same data. However, the graph on the left makes the change appear to be much larger than it really is because the numbers on the vertical axis do not start at 0. Each vertical mark on the left graph represents 1 and each mark on the right represents 20 (the scale changes).

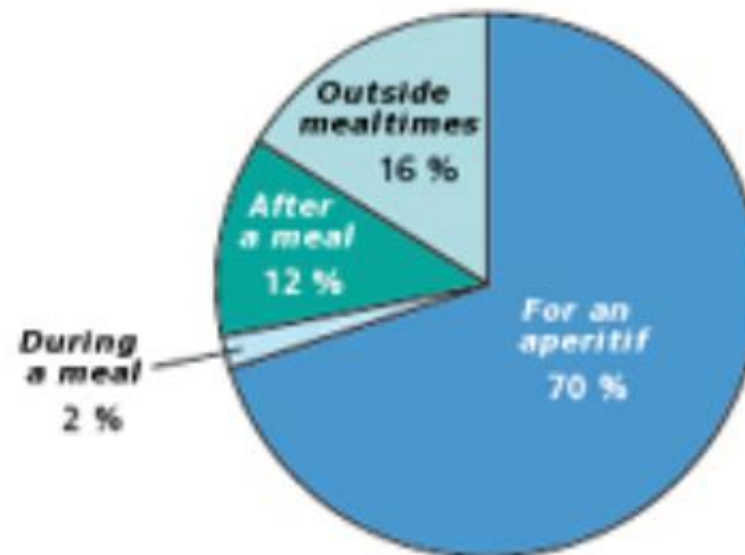


# Bad Visualization

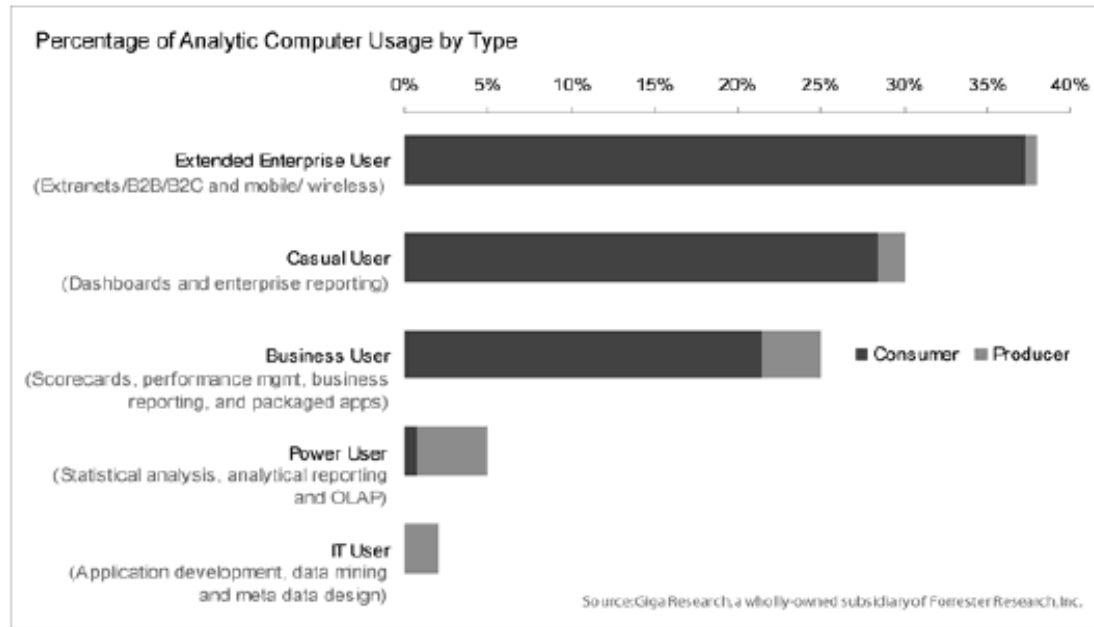
**Penetration** by consumption occasion  
(% of individuals having consumed at this moment of the meal)



**Consumption acts**  
(% of acts by occasion)



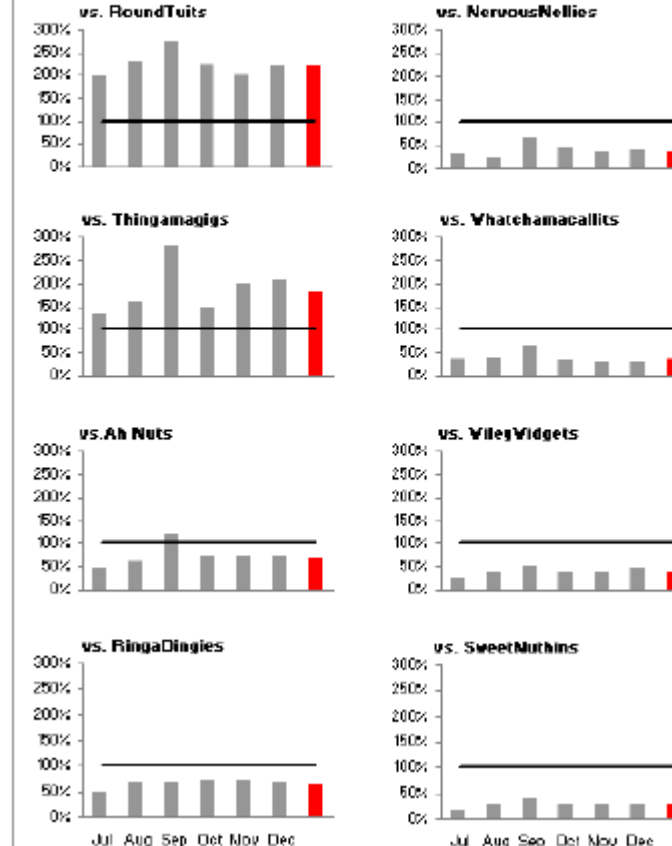
# Good Visualization



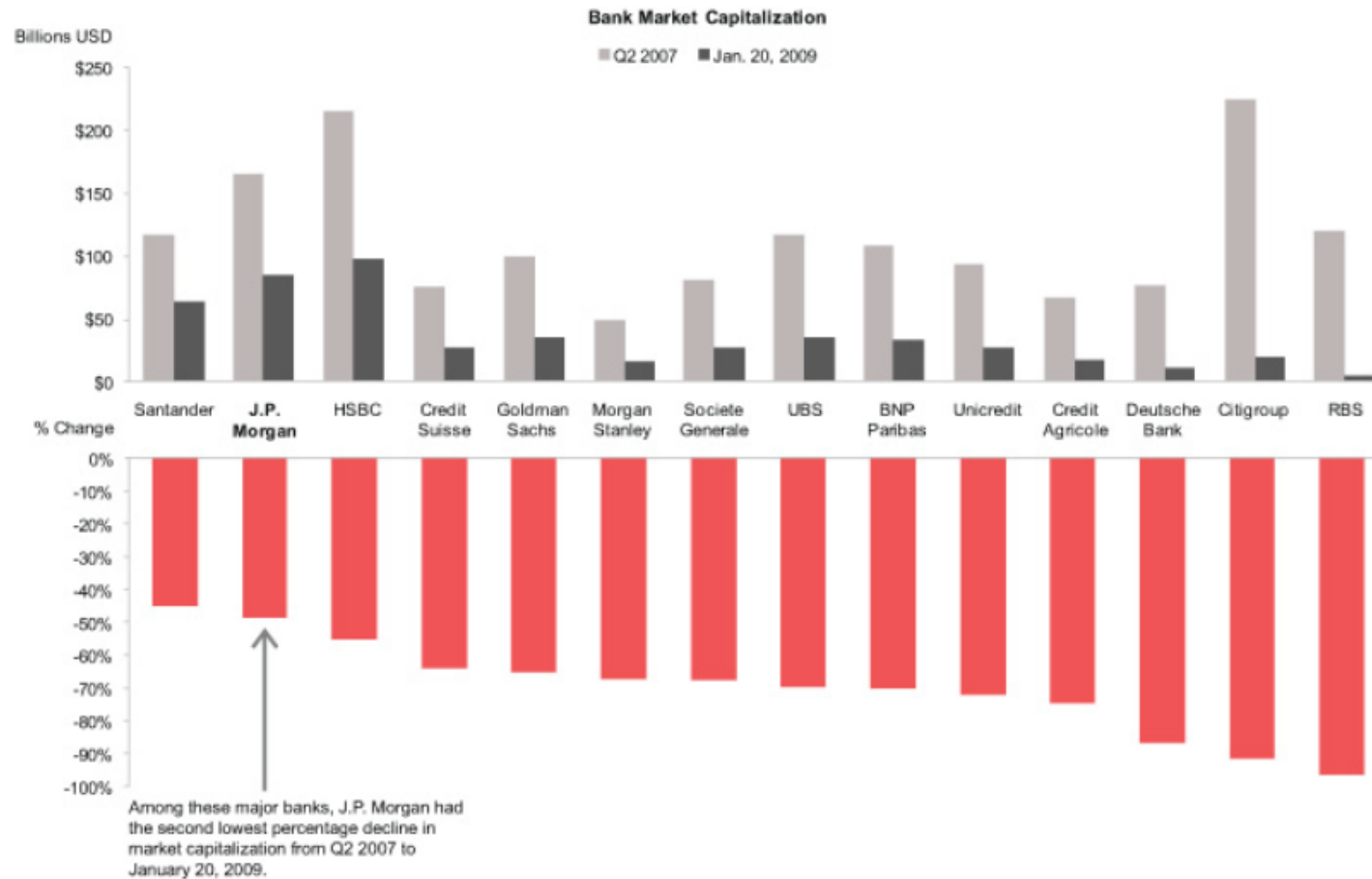
## Sales of SlicersDicers Compared to Other Products

July - December, 2003

(SlicersDicers' sales are displayed as black reference lines of 100%; the red bars represent the average monthly sales percentage for July through December.)



# Good Visualization





# ENABLING DATA DRIVEN DECISION MAKING



[www.adax.asia](http://www.adax.asia)

An initiative by  
**MDEC**