



Data Visualization in LCA

Good practice and risks

Raphaël Halloran – *Information Designer* – apptitude.ch

DF52 – 25th of June 2013

THE IMPORTANCE OF DESIGNING INFORMATION

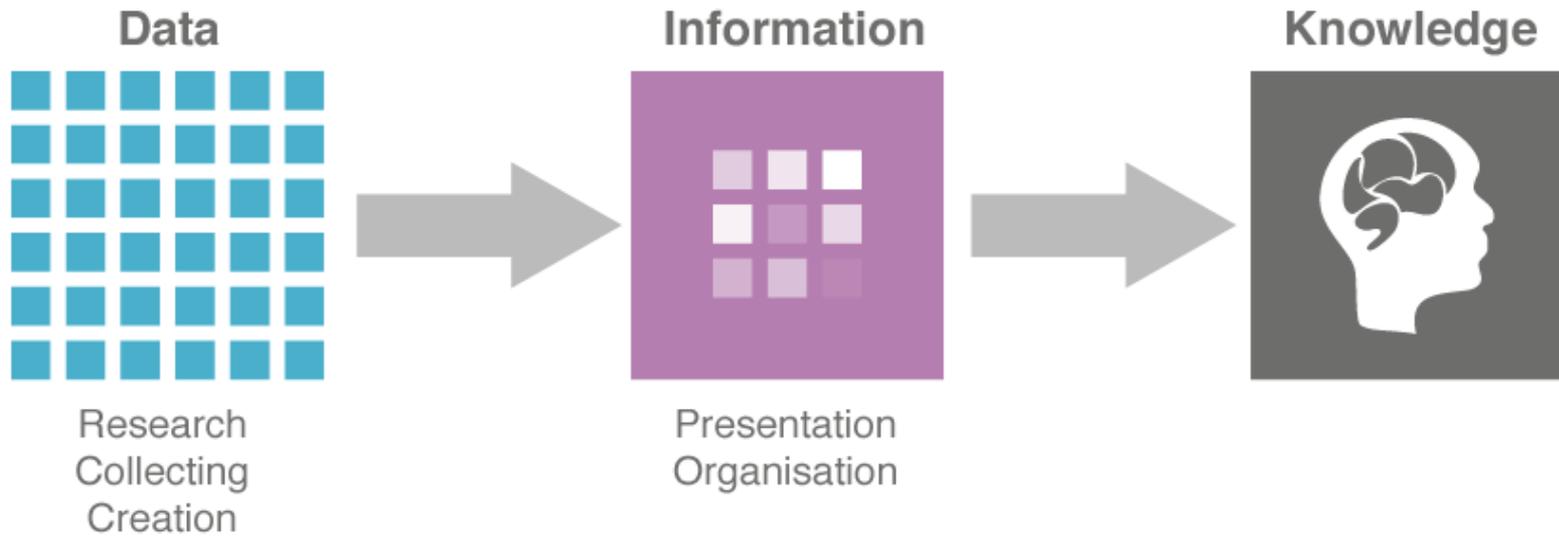
Information is like food.

COLLECTED

PREPARED

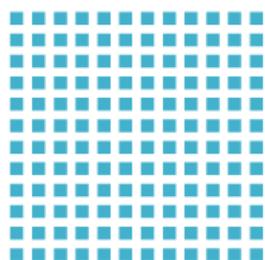
SERVED

CONSUMED



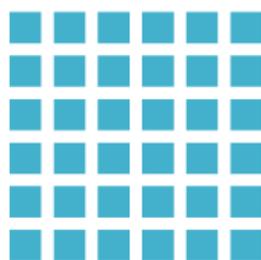
Data

Activity data



quantification

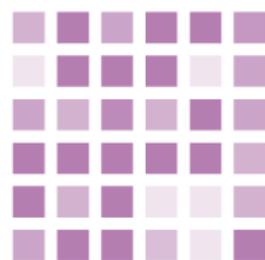
Inventory



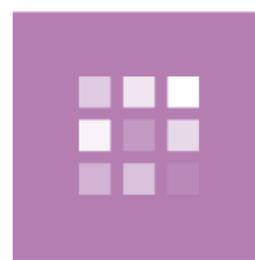
aggregation

Information

Impact assessment



characterization



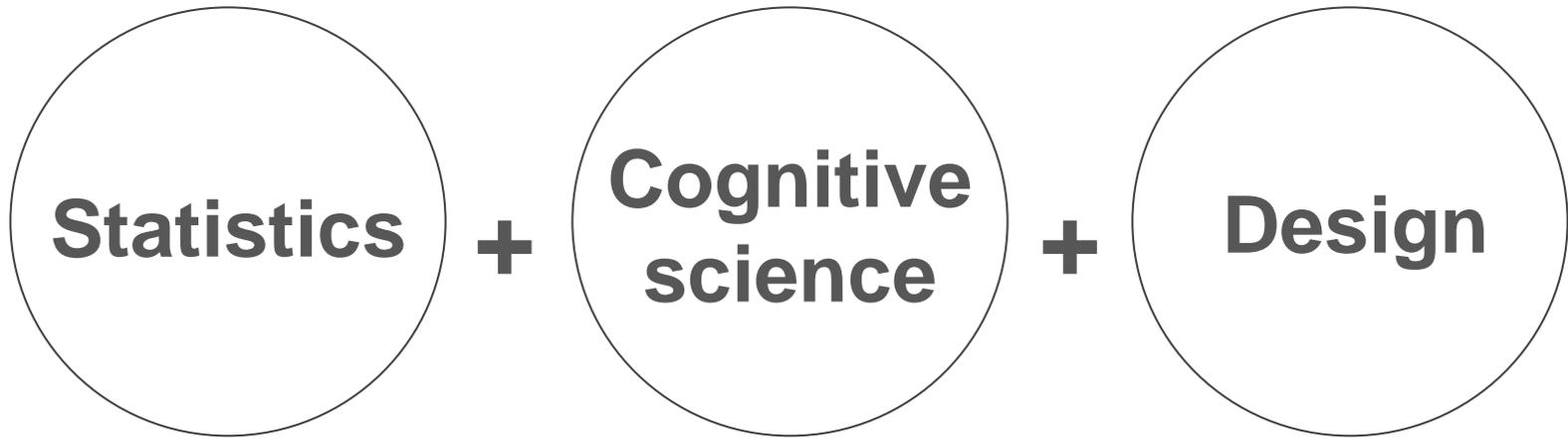
aggregation



aggregation

scientific simplification

graphic simplification



=

**DATA
VISUALIZATION**

Vision is our most powerful sense.



70%



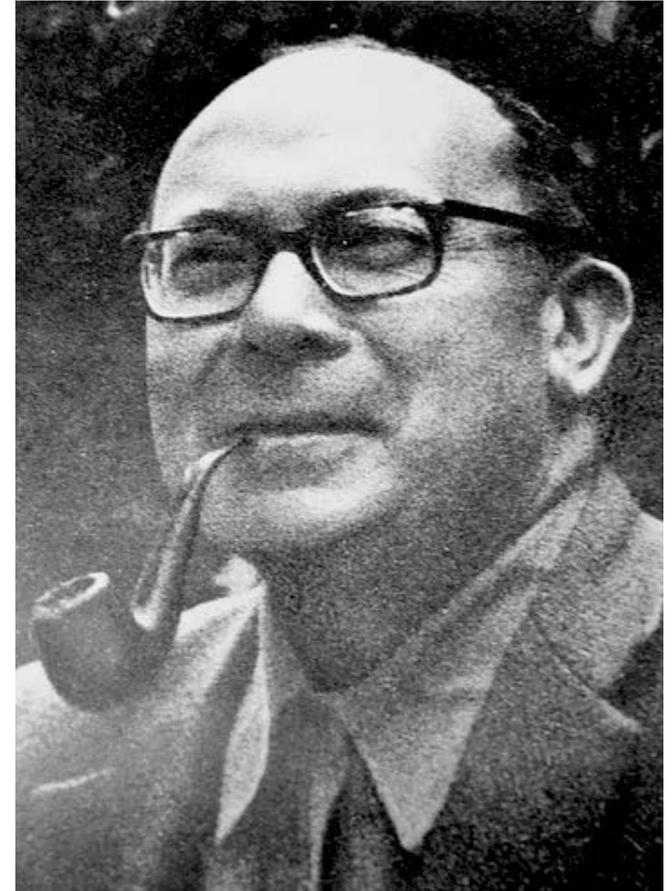
30%

DATA VISUALIZATION

Giving **sense** to data.

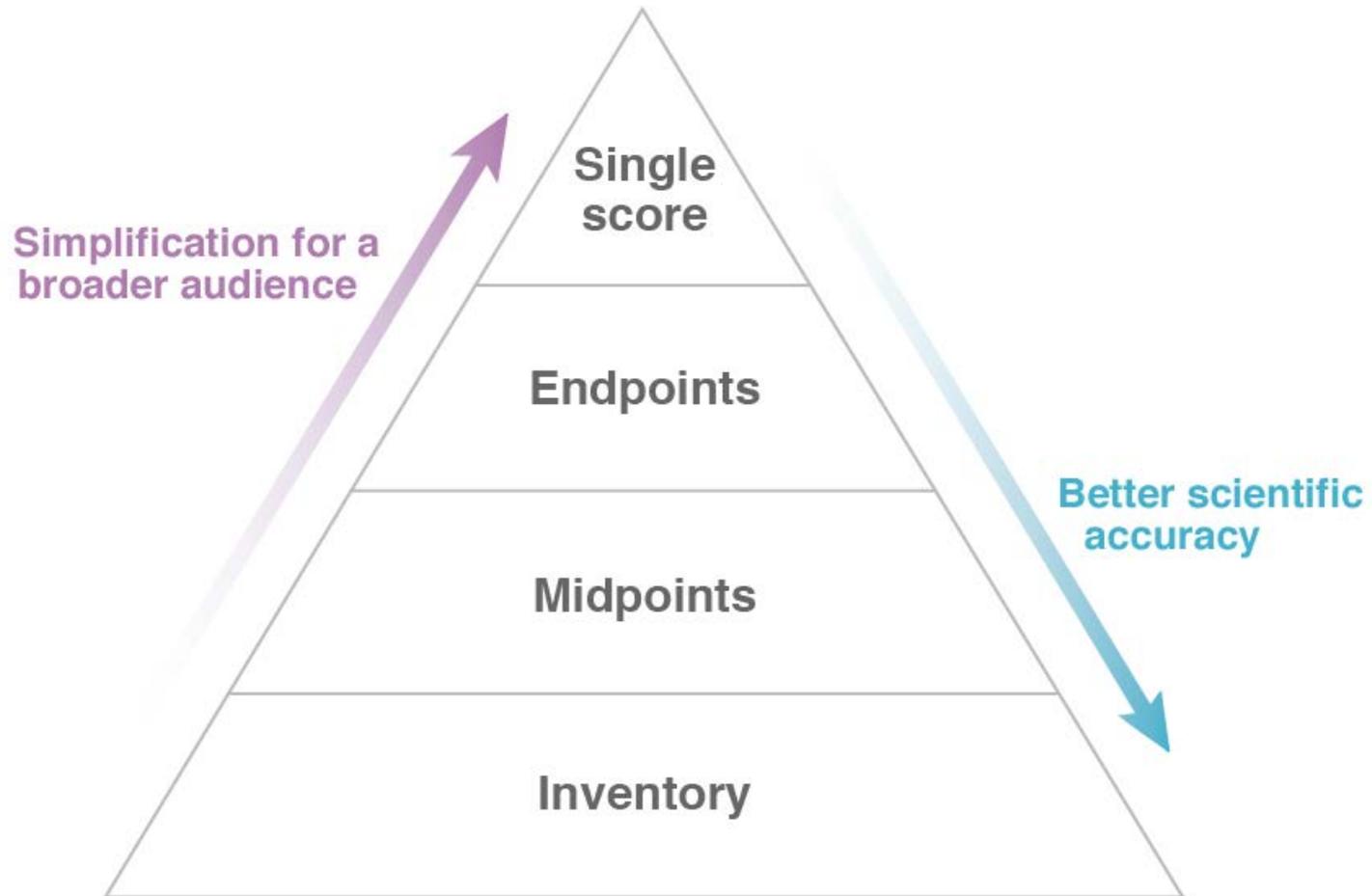
Making complex information
clear & understandable.

« **Simplification** is a
necessity for
communication. »

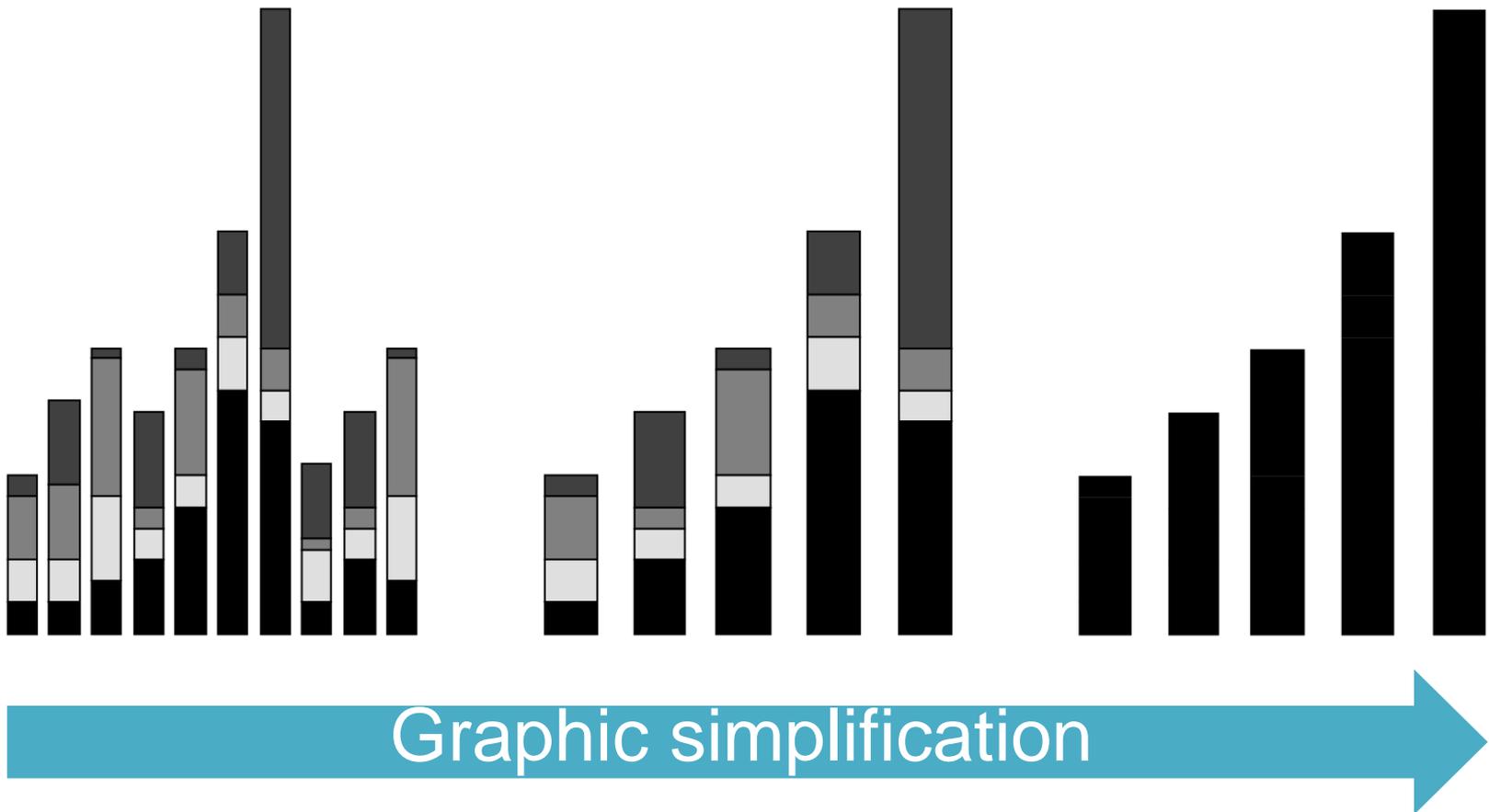


Jacques Bertin
(1918-2010)

Adapt the complexity to the audience.



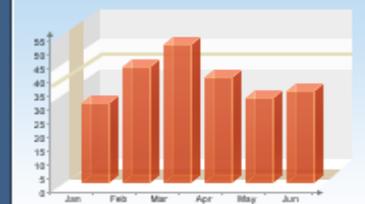
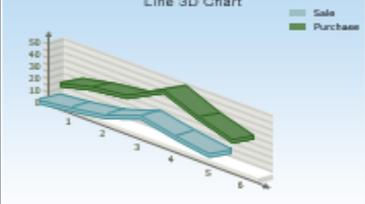
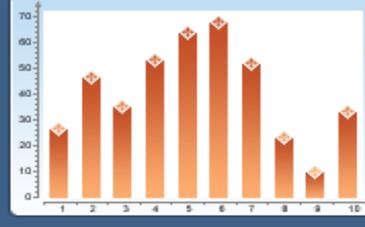
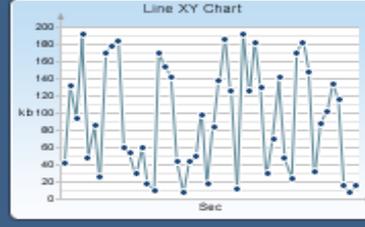
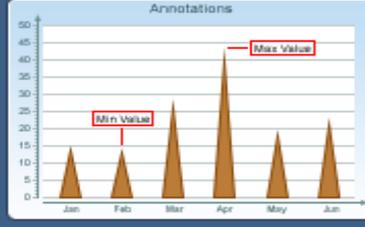
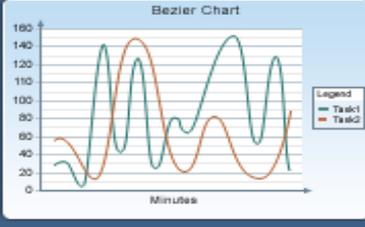
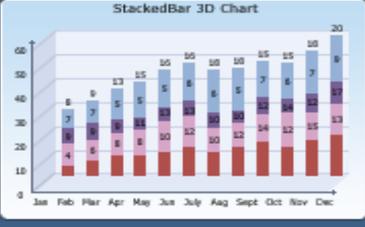
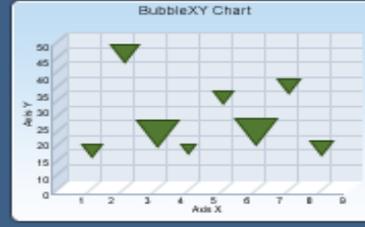
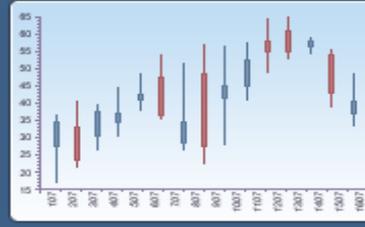
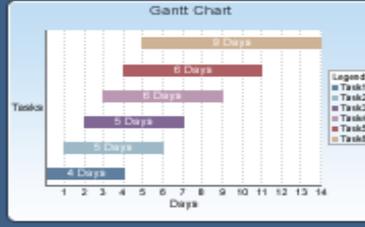
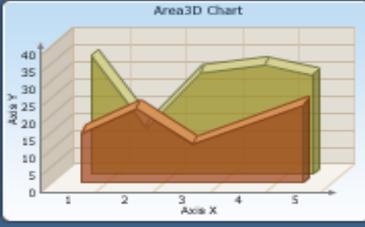
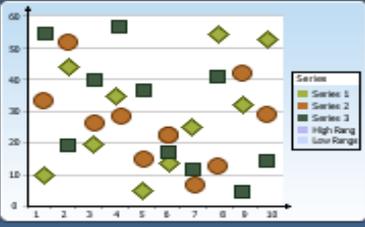
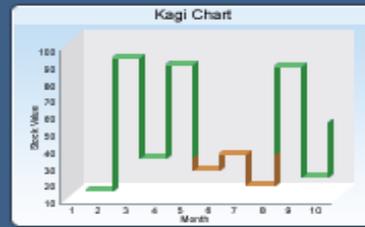
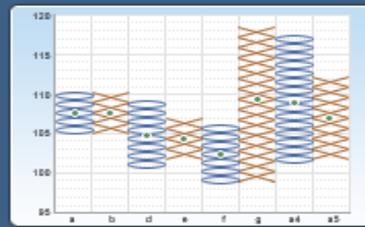
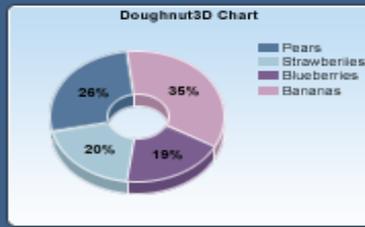
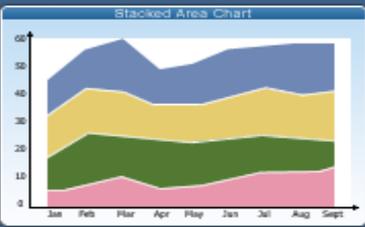
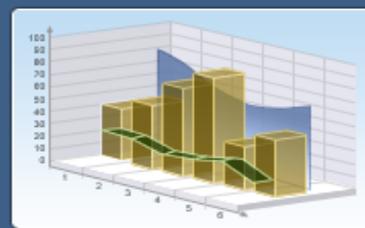
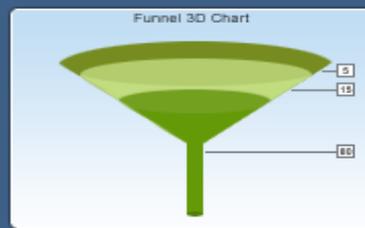
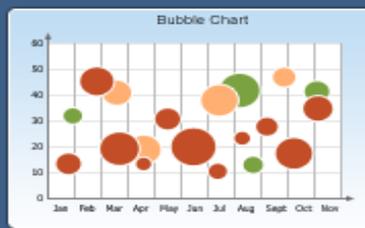
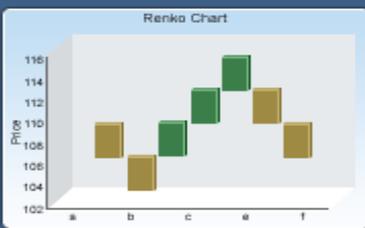
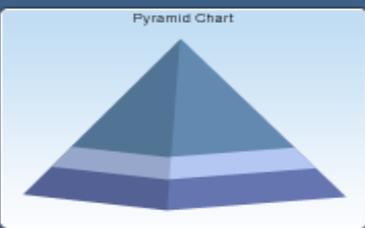
Adapt the complexity to the audience.



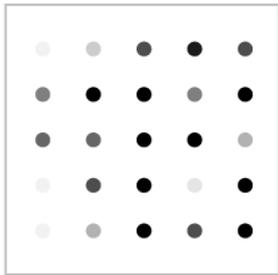
SOME BASIC RULES IN CHART DESIGN

**1 Do you really need a
chart?**

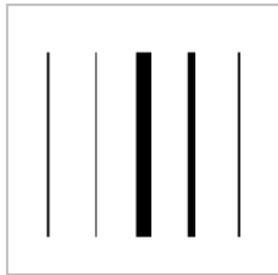
2 Choose the right type of chart.



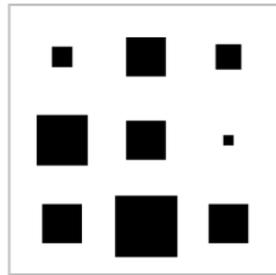
Visual variables



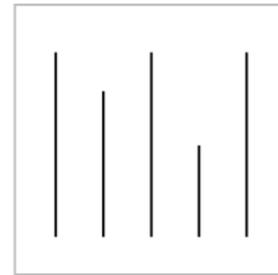
Intensity



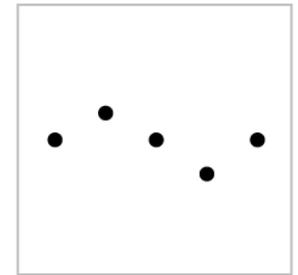
Thickness



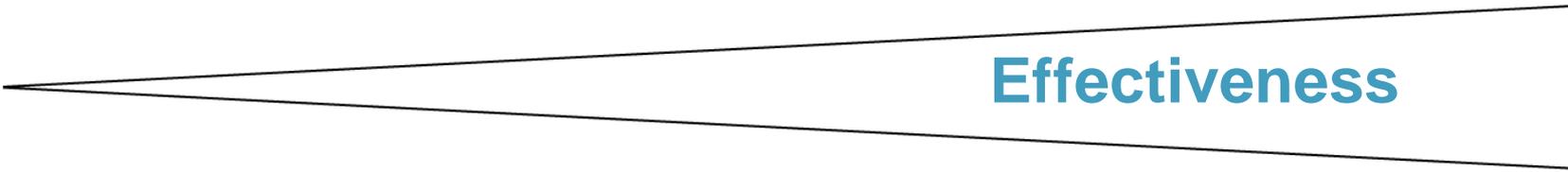
Area



Length

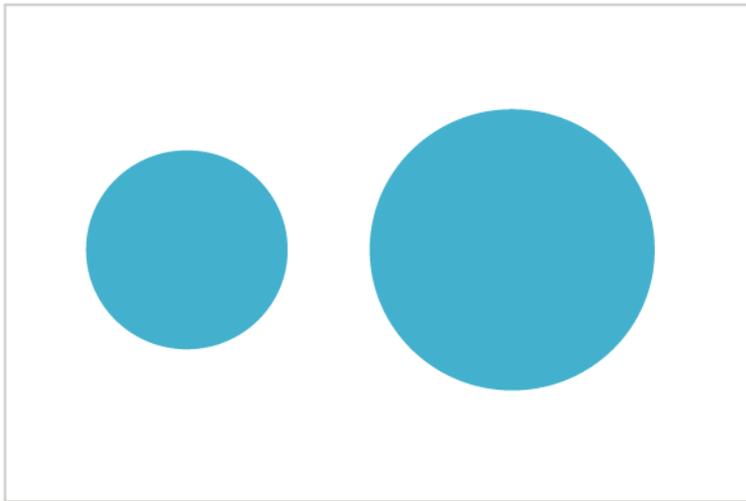


Position



Effectiveness

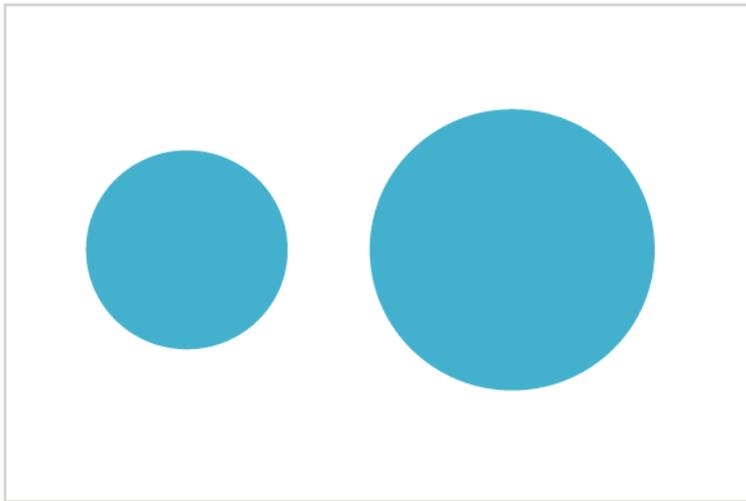
Areas are much more difficult to evaluate than lengths.



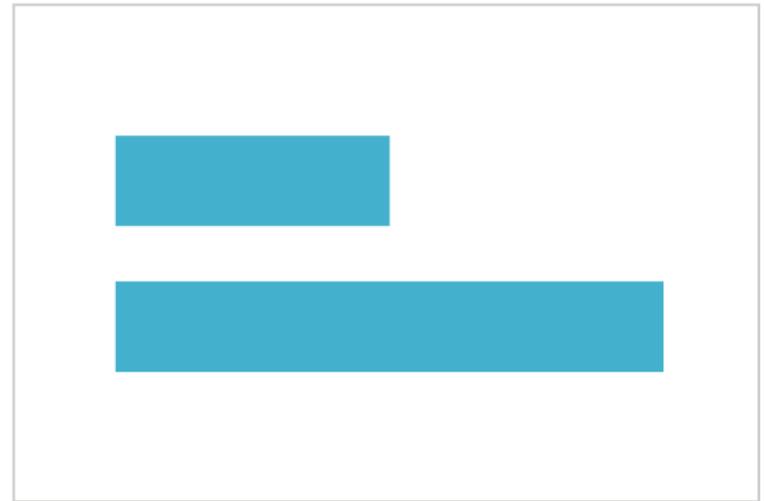
How much bigger is the right circle?

Areas are much more difficult to evaluate than lengths.

1:2

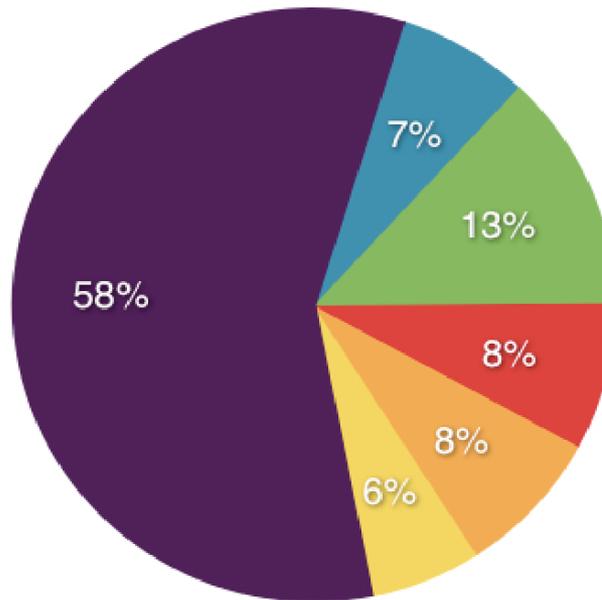


1:2



3 Avoid using pie-charts.

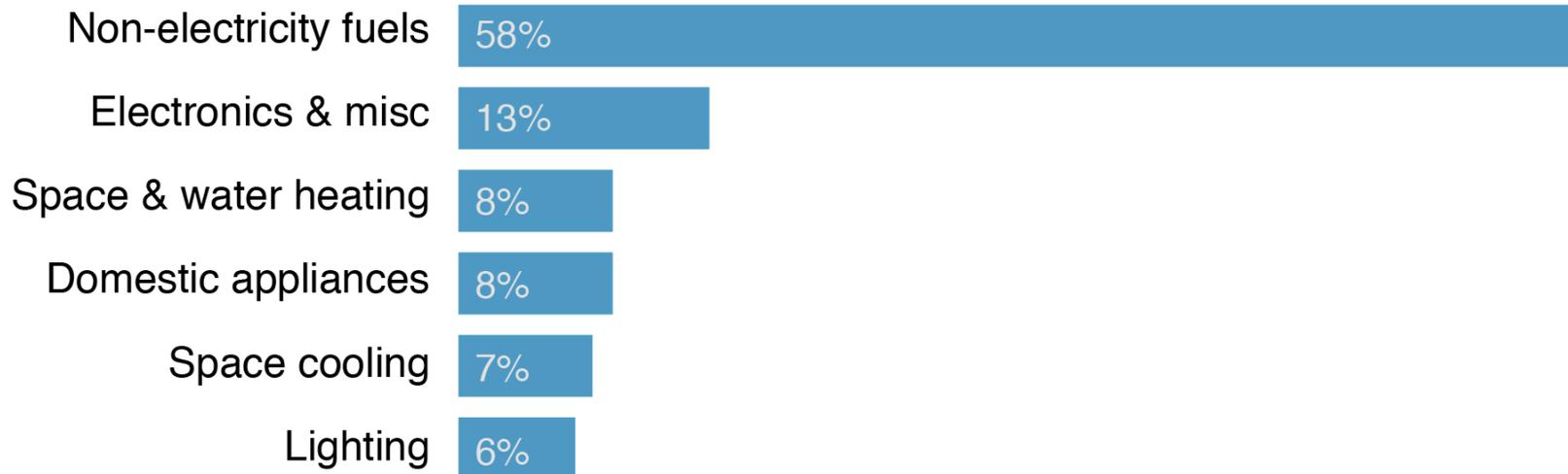
- Non-electricity fuels
- Space cooling
- Electronics & misc
- Space & water heating
- Domestic appliances
- Lighting



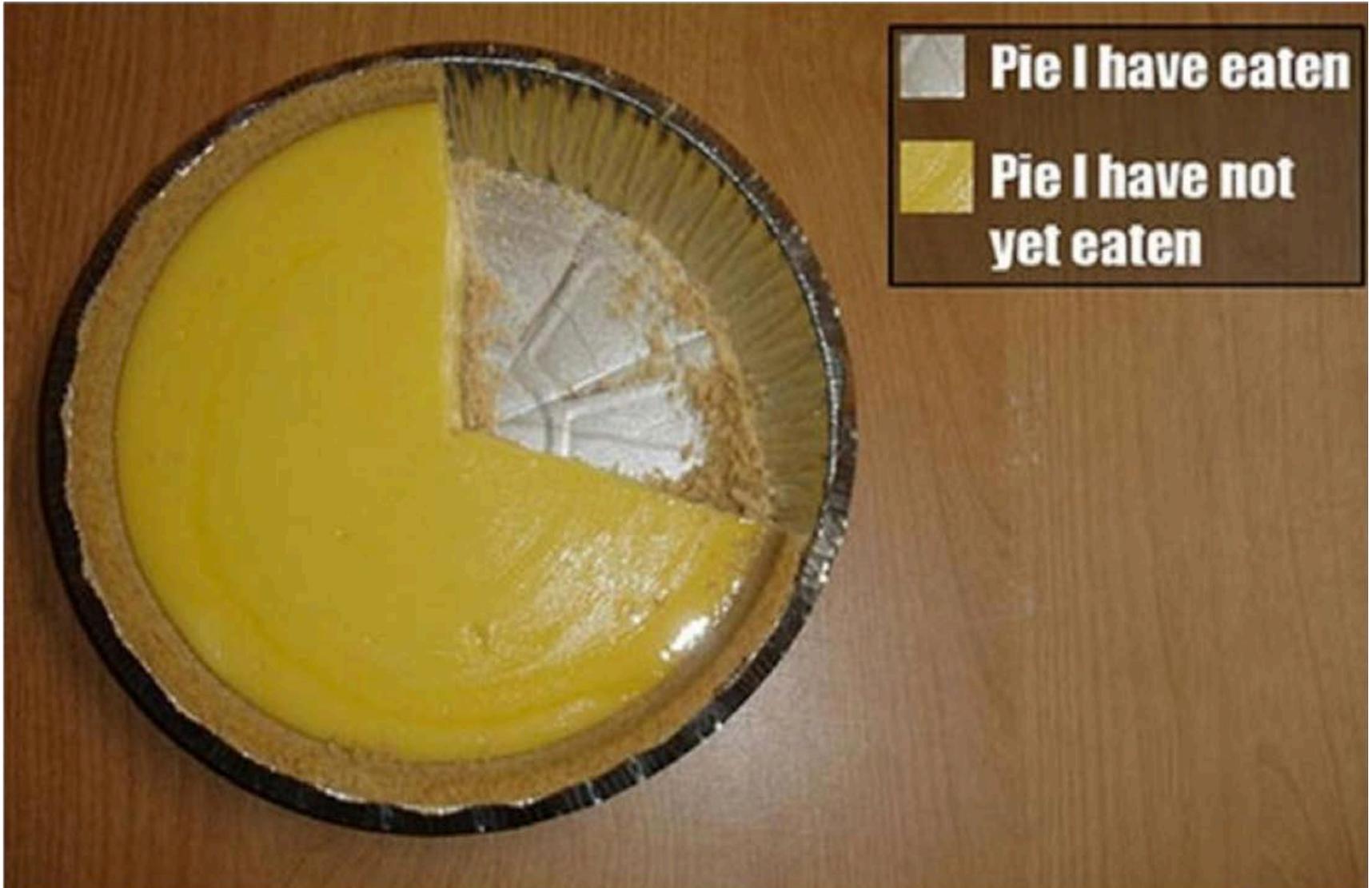
Domestic energy consumption 2009. Source: U.S. Energy Information Administration

A bar chart will always do the job better.

Domestic energy consumption 2009.

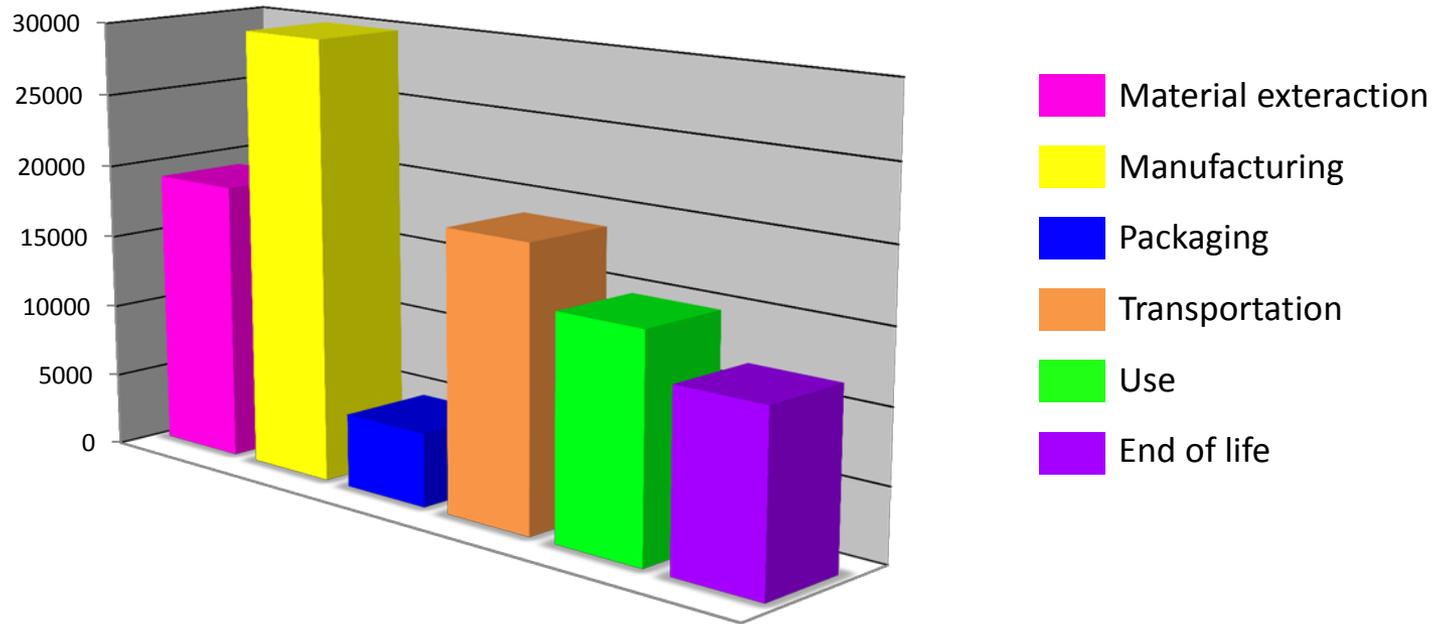


Save the pies for dessert.



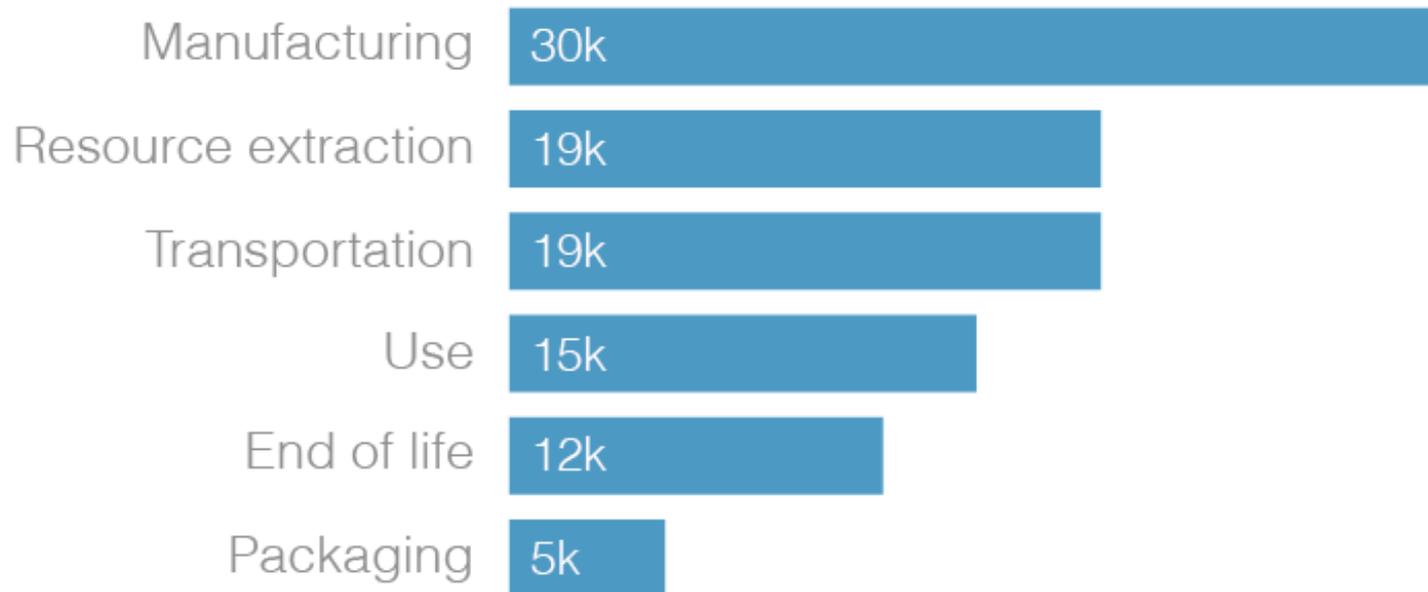
4 Avoid visual overload.

Water consumption in litres



Keep it as simple as possible.

Water consumption (Litres)



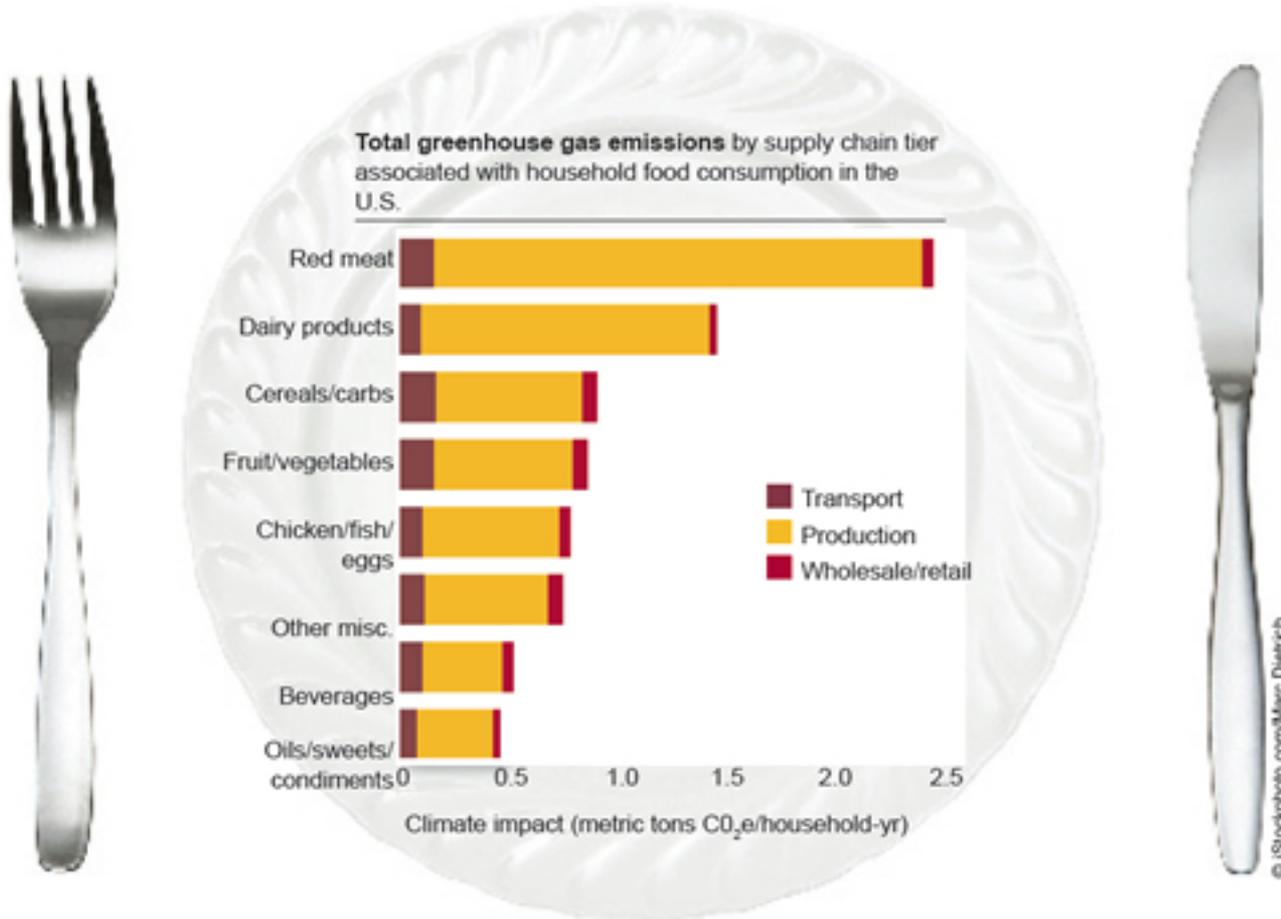


« **Perfection** is achieved, not when there is nothing left to add, but when there is **nothing left to take away.** »

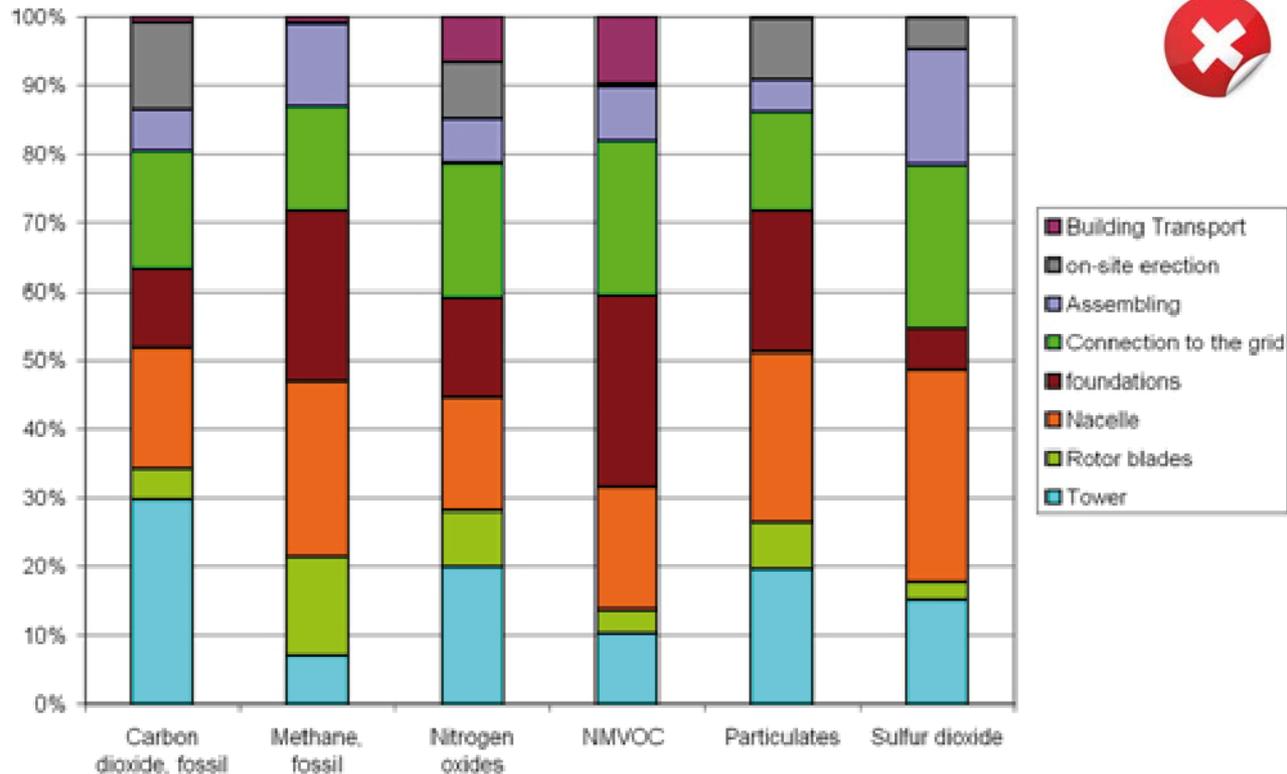
Antoine de St-Exupéry

(1900-1944)

5 Avoid eye-candy.

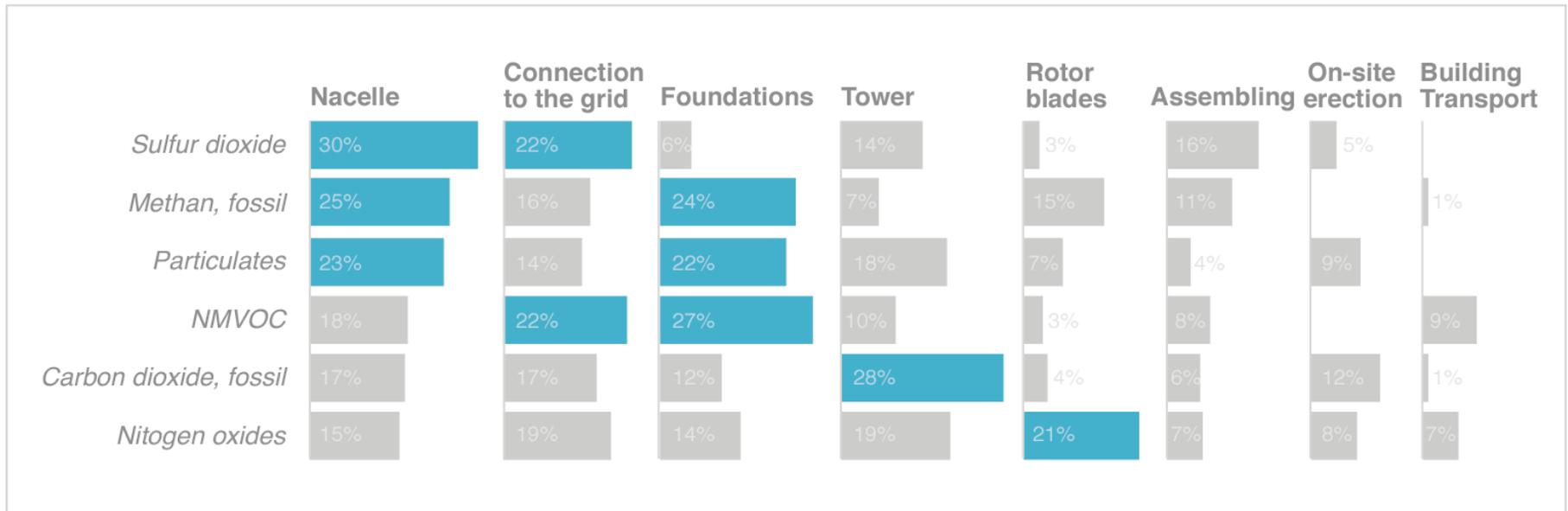


6 Avoid stacking up too many series of data



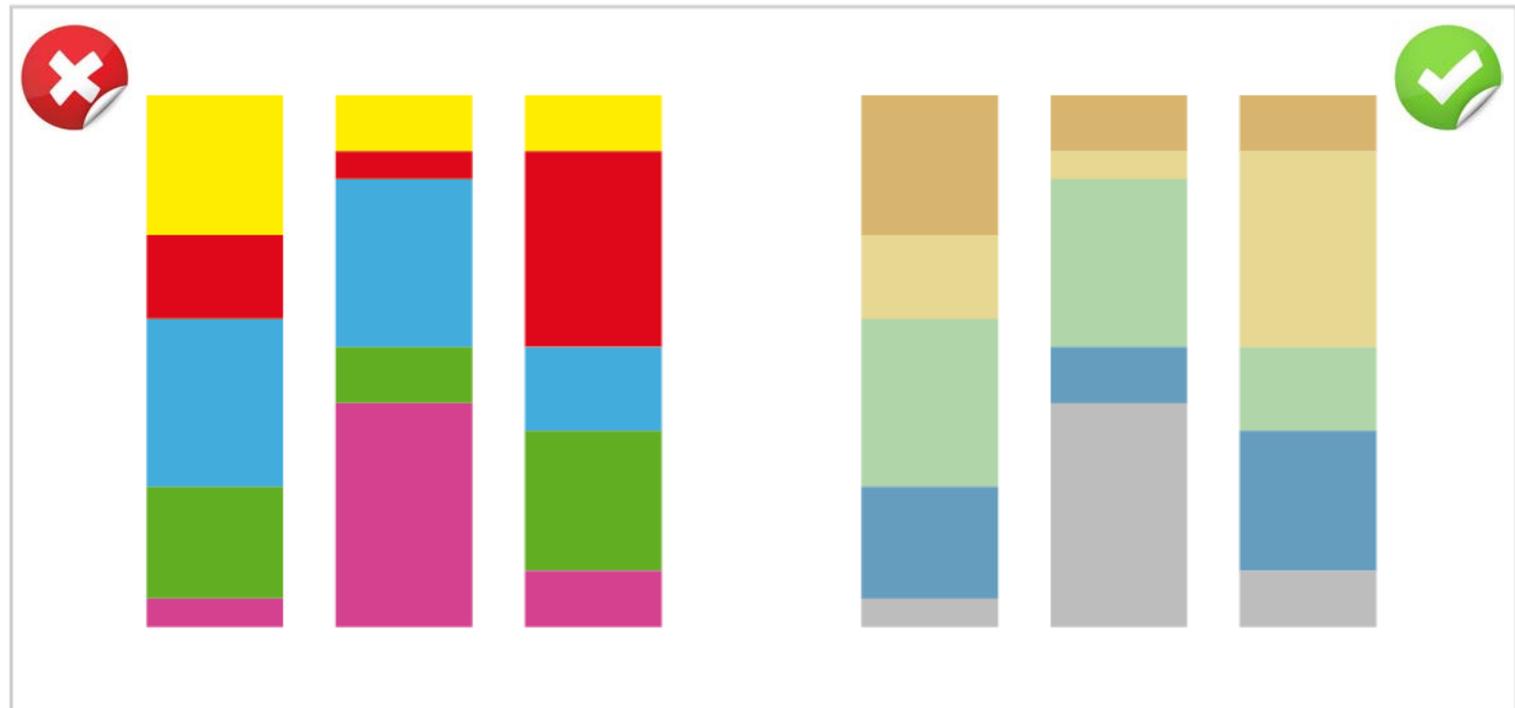
Divide the information into small graphs instead.

CONTRIBUTION OF LIFE CYCLE PHASES TO ENVIRONMENTAL IMPACTS OF THE WINDMILL

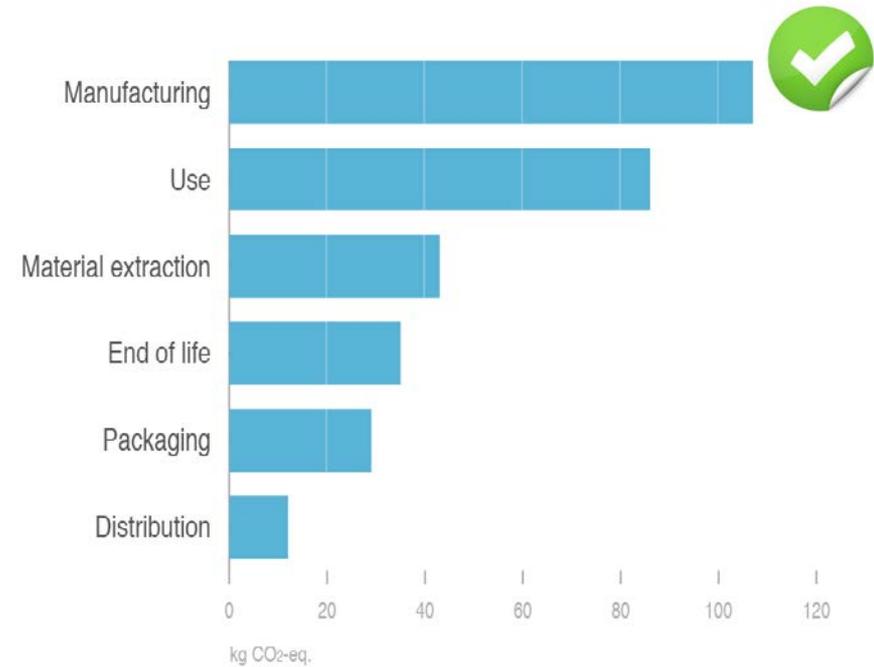
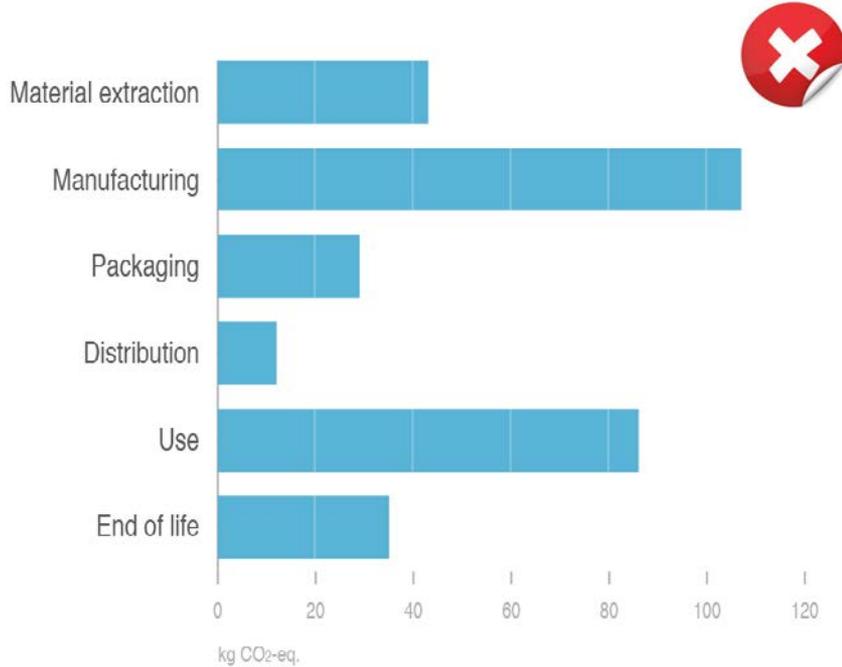


 Contributes to more than 20% of the given impact

7 Use pale colors for color-coding. Use flashy colors only to highlight.



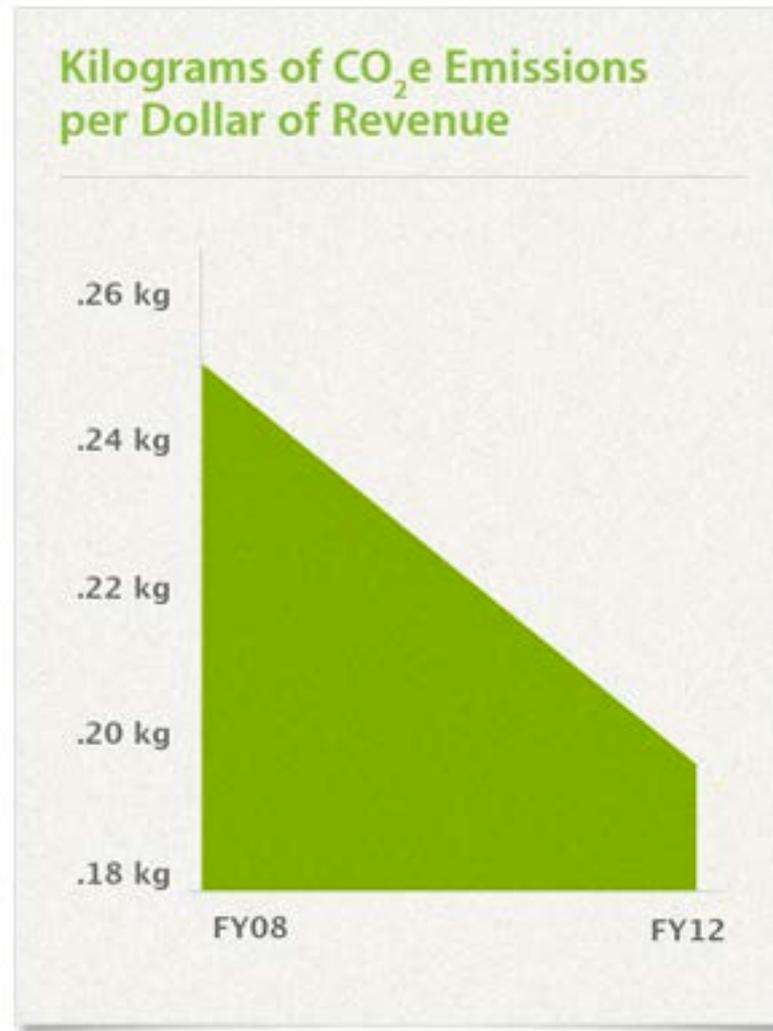
8 Organize the data by order of importance.



9 Do not lie with your data.

Apple's original chart

<http://www.apple.com/environment/our-footprint/>



Apple's chart **corrected**

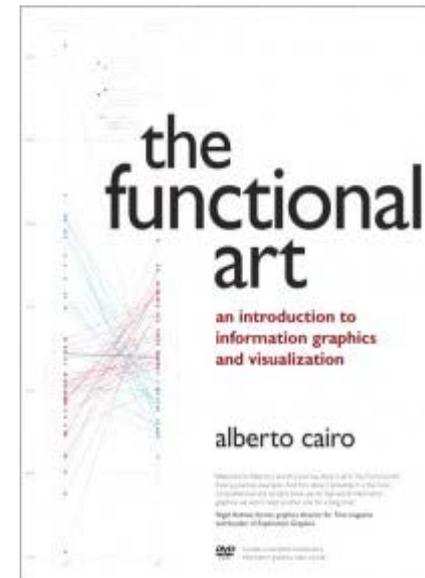
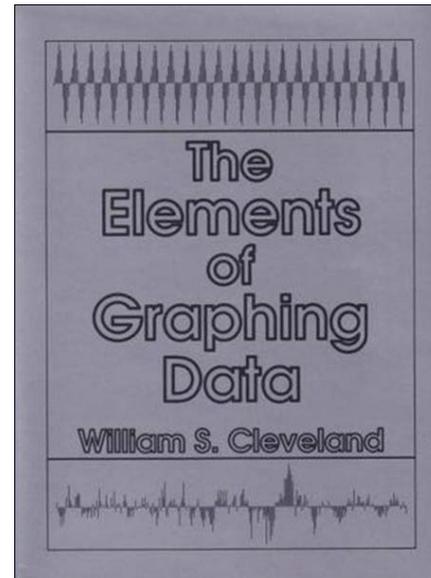
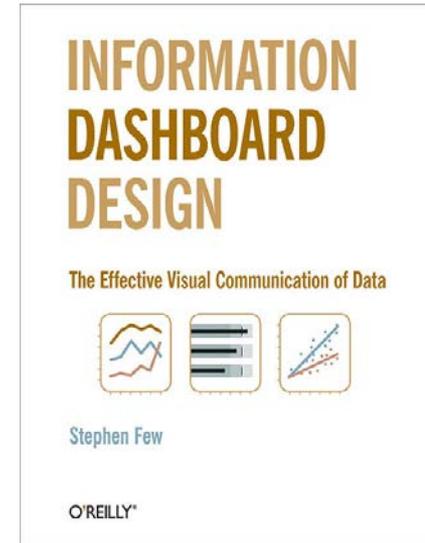
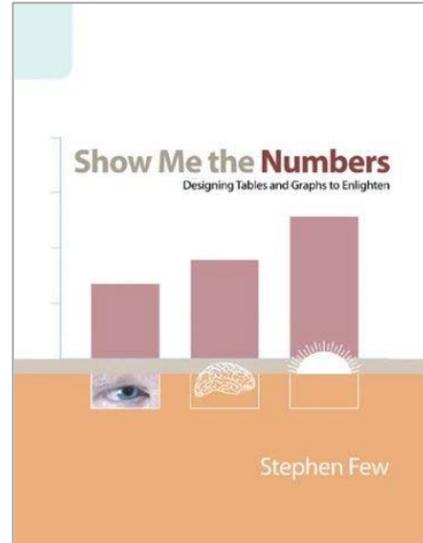
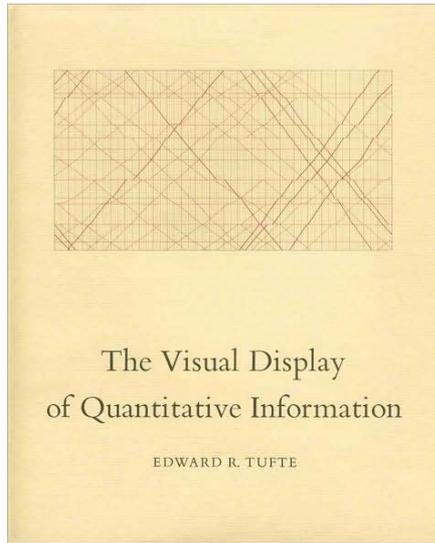


Dataviz in LCA studies often lacks good information design.

Chart design is not about making things look prettier, but more effective.

The basics of chart design are not intuitive and must be well known in order to create effective data visualizations.

Interested in **dataviz**? Check out some **literature!**



**Thank you for your
attention 😊**

**Questions?
Answers!**