

Assignment 1

Alina Mokrova
01325014

Levente Slajchó
01634250

Maximilian Walterskirchen
11809927

Leminh Nguyen
11945068

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1 Analysis and criticism

1.1 Analysis of the infographic

The infographic *Nutritional Values* by Dan Mariglio in Figure 1 pictures the nutritional comparison between processed and natural/wholesome food. The author visualizes three different infographics for the different food categories; the first graph compares the cost per calorie, another one contrasts the calories per *100g* and the last graphic shows how much sugar is contained in *100g*. The author gives the example that wholesome food is more expensive since the ratio of value to calorie for an apple is higher compared to a bag of potato chips. Mariglio based his visualizations on the layout of common supermarkets and suggests the reader sticking to the periphery of the supermarket to find the natural food. Processed food containing the most calories by weight is located at the centre of the grocery store.

1.2 Criticism of the visual design

In this section, the three infographics in Figure 1 will be criticised according to the visual design principles from the lecture notes. These design principles were defined by Edward Tufte[1]. Since the three illustrations are very similar in design, the criticism will cover the overall design principle choices.

1.2.1 Perception and cognition

On first sight of the infographics as a viewer, there is no immediate understanding of the given information. There are too many bright colours which can distract the viewer to localize the main message or information of the visual design. Further, the visual design carries no preattentive attributes, except the black food labels but many of them are obscured by other visual components or are drowning in the variety of colours which are

more distracting than communication the information with clarity. Thus, on first sight, the infographics are flawed for immediate perception.

The reasons which cause the infographics to be unsatisfactory are the poorly chosen design principles by the author. Instead of the *preattentive processing* paradigm, the author uses the data-driven, Bottom-up approach. Therefore, the graphs should be perceived with the visual processing paradigm and require from the viewer an attentive perception and parallel processing to extract low-level properties of the visual scene. The attentive approach is slow to perceive and viewers easily forget the main message and essential information of the infographic. Furthermore, the visual representation is not friendly for viewers who might suffer from colour blindness since the author uses a wide subset of colours in his visual design.

1.2.2 Deficiency of design principles by Edward Tufte

Principles of Graphical Excellence. Complex ideas should be communicated with clarity, precision and efficiency. Further, The viewer should be able to grasp the ideas of the visualization quick with the least amount of ink in the smallest space. The infographics by Dan Mariglio 1 are inefficient and do not incorporate these principles to guarantee clarity.

Principles of Graphical Integrity. The principles of graphical integrity define that a graphical design should be detailed and labelled with clarity. However, the food graphical components in Dan Mariglio's infographics 1 obscure the actual information and data found in the background. This deficiency impedes the viewer to perceive the message communicated by the author. The Lie factor of this infographic does not provide the desired proportionality of represented numbers since it includes redundant design variation instead of showing data variation. Furthermore, the graphics are represented in 3 dimensions which makes it more complex than the data it visualizes. According to Tufte, the visual representation's dimensions should not exceed the dimensions of the data.

Principles of Data Graphics.

Tufte's first principle of data graphics defines, '*Above all else show the data*' [1]. Although, Mariglio was determined to illustrate the data redundantly in the form of visual food components. The author was too focused on communicating the message where the wholesome food is located in a supermarket and neglected the more important data.

The graphical ink should favourably present new information. It should eliminate or deemphasize redundant and non-data ink without any loss of the data, thus maximizing the *data-ink ratio* and *data density*. Whereas, in Mariglio's infographic the viewer is overwhelmed with redundant information in the form of 3d visual food components and unnecessary food labels which reduces the *data-ink ration*. The graph in the background which represents the concrete data is cluttered with *chartjunk*.

The data of the infographic does not stand out since the non-data ink is given more weight the data-ink. Further, the viewers' eyes are drawn to contrast found in the 3d components which leads them to perceive from the data. Different colours are used for

the different food choices even though they are represented in a single related dataset. This could lead the viewer to differentiate the relationship of the data entries.

Rules by Stephen Few about using colour in charts and graphs.

2 Assessment of redesign

How we decided to redesign the infographic:

- **Deemphasize the non data-ink:** The original graphic has a very low data-ink ratio
- supermarket blueprint/floor-plan in bright grey scales to deemphasize it's value and possibly to overshadow the essential graphs
- augment the data-ink
- Preattentive processing
- declutter
- regroup the data

References

- [1] E. R. Tufte, *The Visual Display of Quantitative Information*. Cheshire, Connecticut: Graphics Press, 2001.

3 Appendix

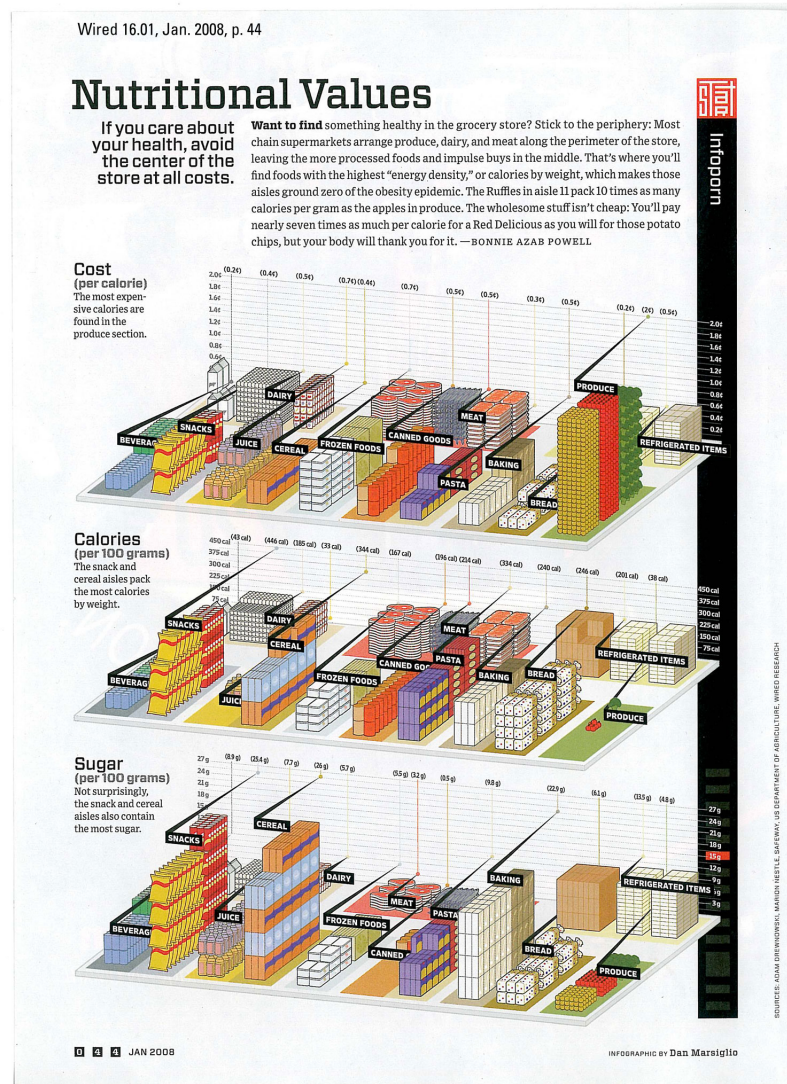


Figure 1: Dan Mariglio's infographic about nutritional values in a supermarket was assigned to our group to criticize.



Figure 2: Redesign of Dan Mariglio's infographic about nutritional values in a supermarket. A .jpg file will be provided in the submission folder.