Watch out, numbers!

It is self-evident truth to say that charts represent numbers. In order to illustrate them properly, we need to know at least four rules on how to display numbers.

[Too big to understand]

For the majority of people, very big numbers are completely impossible to understand.

Does anyone remember how much Poland’s debt is? Ask a friend or a colleague at work. It is a big number, but is it a million, a billion or a trillion?

Let’s admit it, these big, abstract numbers mean nothing to us.

If we want to show very big or very small numbers, we need to convert them into sizes that we deal with on a daily basis.

One excellent example is the project “The government spending bill” of the Foundation of Civic Development. It represents government spending per each resident of Poland. That kind of bill is much easier to read. By comparing these amounts with your own budget you will be able to see how the money is being spent and how much of it there is.

[quotients]

When portraying numbers you should take into consideration the type of dependencies between numbers you want to show.

Do you want to show that one figure is twice as big as the other one? Or that they differ by 100,000? Different types of presentations will serve different purposes.

For example, when we compare spending on science in two countries and we want to show that in one country it is twice as high as in the other, we will have to compare relative numbers.

For that, it is best to use the length of bar charts, pie charts or the ratios between various angles.

Looking at the size of two bars we will be able to assess instantly the relative relationship between their sizes.

[intervals]

However, sometimes we don’t want to show the ratios but the differences in value. And in some cases focusing on the ratios will make no sense. For example, showing my year of birth and the year of birth of my child, I’ll probably try to show the difference in years between these two dates. It makes no sense to say that the year of birth of my child is 1% bigger than my own. In order to show the differences in value it is best to show them on a common axis. For example, location of two points. The eye naturally estimates the distance between points and calculates the difference

[arrangement]

There are also features which can be arranged in various sequences, but for which division or subtraction makes no sense. One example is education. While we can say that the person A is more highly educated than the person B, it usually makes no sense to calculate the differences or multiples relating to education. After all, is the difference between grade and high school education bigger or smaller than the difference between high school and college?

When we want to illustrate the arrangement of certain values but the data is not strictly speaking numerical, it can be useful to apply colors along the scale with a color gradient.

On a gradient scale, it is possible to distinguish if one color is darker or brighter than the other.

Just because something is a number, doesn’t mean it can be shown on a diagram. Postal codes and ID numbers are the examples of numerical values which cannot be shown as bars or colors.

When creating a diagram we must always think first what kind of data-based history we want to tell.