Data Visualization

# Summary

Good visualization goal: **limit cognitive load, while providing required insights**

Simplify your visualization (less is more)

Know the audience (level of details) / context

What so you want to say (what is the final message, don’t leave insights to them – give your opinion? What is the most important question / insight? If not sure, do you actually need to present.

Crazy colorful graphs – “**Sweet Candies**”

Decrease **non-data ink**

Attention span **7 sec:** by looking on the data, person needs to understand what it is

Limit number of items to focus on (max 7; ideally **2-5 items**)

**Give audience a task and instruction** how to use the visualization (start with it – top left corner)

Easiest to compare (measures) – **length** (horizontal bar chart)/**position**; **color intensity** (not precise)

If need to compare items - place them near to each other (easier)

Category (dimensions) differentiate – **color hue; special grouping**

**Sort** in ascending/descending order (usually highest/positive first)

Use **color, enclosure** for calling **attention**

Consider moving information from legend to view

The most important – top left corner

Check axis: starts from 0, fixed (if filters), sync if dual axis

Treemap map be a good graph (a lot of data)

Simplify Scatterplot -> quadrants (easier)

**Eliminate non-data ink:**

1. Unnecessary labels, headers, legends (text)
2. Grid lines
3. Images, tick marks
4. Unnecessary colors
5. Tableau: use interaction (tooltip)

**Use color:**

1. Neutral colors or white background
2. Consider vision deficiency (red / green – hard to read)
3. Max 7 color hue (less better)
4. Use company/brand colors
5. Be aware about color associations
6. Use color consistent through the report/dashboard (same colors for the same variables)
7. Default grey

**Dashboard best practices (Tableau):**

1. Left top – instructions, focus, task to audience
2. Left top – macro view
3. Add message that you want to deliver
4. 3x sheets per dashboard (use additional pages)
5. 3x filters per dashboard
6. Avoid scroll bar (use filters to limit output)
7. Use tooltips/interactions (Highlight feature instead of filter)

**Chart types / situations:**

**Details** – table, highlight table, heat map; sort (important at the top); minimize amount of details (precision – consistent);

**Comparison** – bar chart (horizontal the best); sort (highest to lowest); use color;

**Eye-catching element** – bubble charts, donut charts, pie charts, word clouds; good for dashboard navigation; hard to compare;

**Compare part to whole** – stacked bar chart, treemap (combine with bar chart); pie chart – limited; limit segments (2-5; 7 max); details in tooltip

**Compare part to whole over time** – area chart (low variability at the bottom), limit segments (5 max); line charts, sparkline charts;

**Compare measure** – bar-in-bar, bullet charts; show stage progress (50%, 75%)

**Correlation, trend, outliers** – scatter plots; use color, shape; transparency on overlapping; use trend line / best fit line; use highlight;

**Distribution** – histogram, box-and-whisker plots;

**Data over time** – line chart, highlight table; area chart (limited); add reference line / trend line; cycle plot chart (if appropriate); might consider start axis not from 0;

**Location** – map chart (good looking, not always easy to use)

