What is a good plot?

What is a good plot?

A good plot ...

- helps the reader to clearly understand the information
- is not misleading
- encourages correct comparisons (no different y-axis/length scales)
- let's the reader judge the information (no "squeezing", only log-plots when they make sense).
- is consistent
- contains information about the data (a comic might be illustrative, but does not contain information about the data).

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Principles of design and organization

- Is the display **consistent with the model or hypothesis** being tested?
- Maximize **data-ink ratio**
- **Remove "empty dimension"** that do not carry information or might be distort the information
- Display an **honest and transparent portrayal of the data**
- Keep **Lie factor** around 1

[Allen et al. 2012, Neuron; https://infovis-wiki.net/wiki/Lie_Factor]

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Axes

- Always label your axes (with readable font size).
- Choose the appropriate scale: linear, log, or radial?
- Does each axis label describe the variable and its units (use "a.u." for arbitrary units)?
- Are axes limits appropriate for the data (The graphic should not be bounded at zero if the data can take on both positive and negative values.)?
- Is the aspect ratio appropriate for the data (x and y axes show the same variable: aspect ratio=1.)?

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[Allen et al. 2012, Neuron]

Colormap

- Is a color bar provided?
- Is the color map sensible for the data type (does the data extend to both ±, does it live in an interval, is it circular)?
- Are contrasting colors consistent with a natural interpretation?
- Has red/green contrast been avoided to accommodate common forms of colorblindness?
- Can features be discriminated when printed in grayscale?

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Simple

Informative

Understandable

Honest