Observations

Trivial, interesting, need to be checked

The sample

* Most participants are graduate students or postdocs from Western countries doing basic neuroscience.
* Most are studying language, attention, and memory.
* Most do scalp EEG or MEG
* Median number of publications - 3
* Median experience - 6 years
* 50% of them have an intermediate self-assessed level.
* 64% have contributed code.

Plot naming

* Line plot, topoplot, and topomap are the most plotted figures.
* More than half of the participants couldn't provide any name for ERP image, channel image and parallel plot.
* Plot names established in the literature are not always popular with researchers. We need to create a codification of how they are named in the popular toolbox.

We can look at toolbox names and give an opiniated recommendation of how to name them.

Tools

* EEGLAB, Fieldtrip, and MNE are the most popular EEG analysis tools
* Mean participant uses 3 tools. The most common tools are EEGLAB, Fieldtrip, and MNE.
  + Could we say that MNE is rising?
* More younger people use MNE in average.
* More experience - more tools are used.

Preferences in tool features

* Publication readiness, coding, flexible attributes, reproducibility are the most important tools.
* Plotting speed, interactivity, subsetting and zooming are less important.
* GUI clicking is very unpopular.
* More experienced - prefer GUI over coding.
* More experienced - care more about subplotting and less care about publicability
* There is no effect of experience on feature preferences

Channel usage and representation

* 38% of participants use only 25% of the measured channels, 46% use almost all of them.
  + - Can we conclude people should record less channels if they don’t use them anyway? No! Could be useful for pre-processing, or they might want to look at other channels depending on their main analysis etc.
    - Why is this the case? Lot’s of potential to look at all recorded channels. Why don’t people do it? Maybe a) conceptual or computational complexity too hard b) don’t want to “p-hack” c) visualization/interpretation is harder
* The most common baseline periods are 200, 100 and 500 msec.
  + - Our recommendation should be at least the window used for baseline correction, at least 200ms, and if possible, extending the baselinecorrectionwindow; but we recommend doing an empirical study on this; some participants recommend 1/3 to ½ of the stimulus ERP duration.
* 80% of participants are for positive up.
  + The majority of those who against are from language studies.
    - It is time to let the negativity go.

Error bars

* 40% of those who published ERP paper/preprint/poster (141) reported a line plot without error bars
  + - Why is this the case? Errorbars are hard => Within/between, link to plotting issues of uncertainty.
* In 21% of cases, the error bars depict the confidence interval, in 71% - the standard error.

Colour bars

* 39% are not aware of perceptual controversies of colour bars
* 30% are not aware of 2D colour bars.
  + It is possible in fieldtrip, but hard to do
* 76% of those who are aware would like to use them.

Common problems during visualisation

* The most common problem for line plot is drawing an uncertainty.
* For butterfly plot – setting a color scheme.
* For topoplot - channel highlighting
* For topomap (series) – time specification
* For topo array – legibility of scales
* For erp image – sorting
* For channel image – sorting

What else to add/analyse

* Justification for baseline