Response to the changes made to dfba\_beta-contrast, dfba\_beta\_bayes\_factor, dfba\_sim\_data, dfba\_bayes\_vs\_t\_power, and dfba\_power\_curve functions done on Oct 10th

Hi Dan,

Thanks for your prompt and thoughtful revision in response to my critique of the code for the above five functions. Here are my comments and criticisms of the revised versions of these functions.

1. The dfba\_beta\_contrast documentation looks good, but I detected an error that I missed previously. It is great to see that this function can produce a plot of an R object, but unfortunately the y-axis points and x-axis points are reversed. The y-axis should be as you labelled it “posterior cumulative probability” and the x-axis should be as you labelled it “contrast value” but the cum probabilities are on the [0,1] scale and contrast is a subset within the [-1,1] interval. I think the plot routine for this function has the first two variates reversed.
2. The dfba\_beta\_bayes\_factor looks good, but output when the method=”point” should be “Posterior Probability Density for the Null Hypothesis” and “Prior Probability Density for the Null Hypothesis”. The output is correctly labelled for method=”interval”
3. As for the dfba\_sim\_data function, I like the changes, especially the plotting possibilities! There is some missing sentence fragment in the documentation. The missing part is in the last sentence discussing the Pareto distribution. After the number 20 added the following “percent of the population receives 80 percent of the income” (Hardy, 2010). By the way, I really like the plotting and how is different when design=”paired” versus design=”independent” but I was curious why when it was “paired” the y-axis was C-E where delta itself was E-C. What you have is not wrong, but it might raise a question in the minds of some users.
4. As for the dfba\_bayes\_vs\_t\_power, there is only the same documentation missing sentence fragment mention above for #3 (i.e., After the number 20 added the following “percent of the population receives 80 percent of the income”.
5. Finally, for dfba\_power\_curve, there are a few documentation corrections. In the Arguments section for delta.step it should “which range from 0 to 20\*delta.step. Also in the Details section, the third full paragraph as a stray ‘# which should be removed. Moreover, in that paragraph there are two places where dfba\_bayes\_vs\_t\_power function is mention, but those should be dfba\_power\_curve instead. Also, the same missing sentence fragment mentioned in #3 and #4 are missing here as well.

In conclusion I think these five functions are in great shape! Thanks for your clever programming skills in R. I realize now that the output dataframes can be unpacked into vectors for plotting if the user so desires, although you have cleverly added plots for power and for sim\_data programs. But some users (myself included) like to create multi-panel displays for power. To do that the user needs vectors for the power. I found that a dataframe can be unpacked to it vector components with commands such

delta\_v<-as.vector(F2$outputdf[[1]]) and bayes\_power<-as.vector(F2$outputdf[[2]]) where F2 is an R object created by dfba\_power\_curve(). I suppose everyone knows this, but I did not recall that I did this once before a few years ago.

Finally, my Mac R console is “Dark and Stormy Night” from 2019-12-12. I am resultant to remove it and reinstall the more recent version. By the way my Mac RStudio also uses “Dark and Stormy Night” from the same date, yet it flies for dfba\_power\_curve compared to R Console.

Tomorrow I will return to do the critique of the other DFBA functions on github.

Best,

Rich