experiment sandbox



resource: experimental design 4 the life sciences 4e



single-factor randomization

simple experiments have merit



n-factor experiment or n-way is n > 1 factors

know the difference between factors and levels



factor is a key variable that relates to or predicts/describes a response variable

levels are the unique steps or categories within a categorical variable identified as a factor

being mindful of number of factors AND levels engenders better design thinking in experiments





choosing how many levels to examine within a factor is a critical design decision randomization of subjects to experimental groups is a useful design strategy

likelihood of bias is reduced through randomization

randomization not a perfect process



design thinkers

- a. random resample as needed to ensure equitable variation (ie reduce bias)
- b. randomize at higher levels(blocks, tables, plots, patches)

STAR WARS BATTLEFRONT

haphazard is NOT random

randomize for space and time





seek balance (versus unbalanced designs) although not always critical

design **principle**

larger experiment with many levels of same factor more powerful



do the maths on extent of replication needed for every level of each factor (even in a single-factor simple experiment) many small experiments with different methods obfuscates truth

John P.A. Ioannidis 2005

