22: MULTIPLE TESTING

Stat250 S25

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1 Statistical significance vs practical importance

Example: ESP with Zener cards

H_0 :

H_A :

X	N	$\hat{p}$	p-value

Takeaway:

2 Multiple Testing

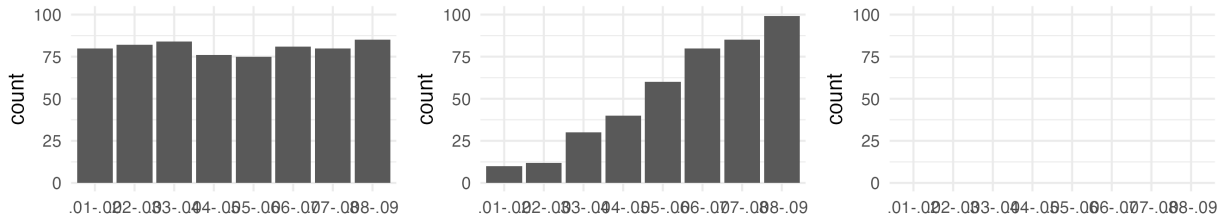
Example: If we do 10 level-α hypothesis tests, what is the probability we make at least one Type I Error?

Family-Wise Error Rate

Sidak Correction

Bonferroni Correction

3 Publication Bias



Six principles from the ASA statement

1. P-values can indicate how incompatible the data are with a specified statistical model.
2. P-values do not measure the probability that the studied hypothesis is true, or the probability that the data were produced by random chance alone.
3. Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold.
4. Proper inference requires full reporting and transparency.
5. A p-value, or statistical significance, does not measure the size of an effect or the importance of a result.
6. By itself, a p-value does not provide a good measure of evidence regarding a model or hypothesis.