The Bonferroni approach to multipe comparisons

stats545.4 545.4 Multivariate confidence intervals

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The multiplicity issue

Consider testing k independent hypotheses, each at level α.
Then, since

$$P[\text{conclusion i is incorrect}] = \alpha$$

we obtain

$$P[\text{conclusion i is correct}] = 1 - \alpha,$$

and therefore

$$P[\text{an error occurs}] = 1 - P[\text{all correct}] = 1 - \Pi_{i=1}^{k} P[\text{conclusion i is correct}]$$

LSD

Consider just doing a whole bunch of t-tests
This amounts to saying "There is something significant going on if there is anything significant seen"
This is the method of **Least Significant Difference** and has a very large potential error rate

Bonferroni confidence intervals

Bonferroni intervals:
Simple
Always work
Conservative

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