

Types of Statistical Inference

Single categorical variable

One-proportion z-interval and test
(Chapters 19-21)

Single quantitative variable

One sample t-interval and test
(Chapter 23)

Two quantitative variables

Regression inference (Chapter 27)

Two categorical variables

Two categories each:
Two proportion z-interval and test (Chapter 22)

More than two categories each:
Chi-square tests (Chapter 26)

One categorical, one quantitative variable

Two categories:
2-sample t-interval and test (Chapter 24)
Paired t-interval and test (Chapter 25)

More than two categories:
ANOVA test (Chapter 28)

Paired t-interval and t-test

Main idea: subtract the paired values, and treat the differences like a single sample. The formulas for the paired t-interval and t-test are the same as the one-sample t-interval and t-test.

Interpret the values as differences, like in 2-sample t-intervals and tests.

Paired t-interval: $\bar{y} \pm t^* SE(\bar{y})$ or $\bar{y} \pm t^* \frac{s}{\sqrt{n}}$

with $df = n - 1$ degrees of freedom .

Paired t-test: $t = \frac{\bar{y} - 0}{SE(\bar{y})} = \frac{\bar{y} - 0}{\left(\frac{s}{\sqrt{n}}\right)}$