Confidence Intervals, Trade offs in CI, Hypothesis test

Introduction to inference

Statistical inference
Want to draw conclusions based on sample data
ie- say something about an entire population based on information in a sample.
Conclusions are subject to sampling error
We want to quantify the margin of error we are likely to encounter.

Confidence is just the probability that your estimate is correct.

Confidence Interval

Best guess +- error of estimation
We take a random sample from the population adn proceed on the basiss of the information we obtain from the sample.

The definition of the CI (Confidence Interval) for mu
P(LL <= mu <= UL) = C
C is a number you choose, often it is 0.95 (This is the level of confidence)

xbar is mu because that is our best middle.
So we just need to find
LL=xbar - M (M is a margin)
UL=xbar + M (M is a margin)

P(xbar - M <= mu <= xbar + M) = C

Trade offs in Confidence Intervals

If we increase the confidence we reduce the accuracy.
The extremes are not useful, it's better to be somewhere in the middle.

Confidence interval
goal is to estimate some parameter of a population.

Test of significance
Goal is to assess the evidence provided by the datat in favor of some claim about the population.