



What Is A Hypothesis Test?

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Example:

Alex claims to be a psychic. To test his ability, we ask him to guess the color of 12 cards (red/black). He guesses correctly 10 of them!

Is this evidence that he's a psychic?
How often do we observe such result?

Assume he guesses randomly, that is $p = 0.5$.

That means if Alex guesses randomly, then _____ of the time, he would guess 10 or more cards correctly.
Thus, it's _____ to see such result!

Components of a Hypothesis Test

A null hypothesis, H_0 , is a statement/claim about a population parameter that we hold true until we have sufficient statistical evidence to conclude otherwise.

Ex: $H_0: p = 0.5$

An alternative hypothesis, H_1 or H_A , is a statement/claim that we try to prove/find evidence for.

Ex: $H_1: p > 0.5$

The hypothesis test is designed to test the strength of the evidence for the alternative hypothesis against the null hypothesis.

	H_0 true	H_0 false
Fail to reject H_0		Type 2 Error
Reject H_0	Type 1 Error	

Significant level α = probability of type 1 error