Hypothesis Testing: The Framework

Hypothesis Testing Process

1. State Hypotheses
H0: null hypothesis (status quo)
H1: alternative (what we want to prove)

2. Choose Significance

alpha = 0.05 (5% false positive rate)

3. Collect Data

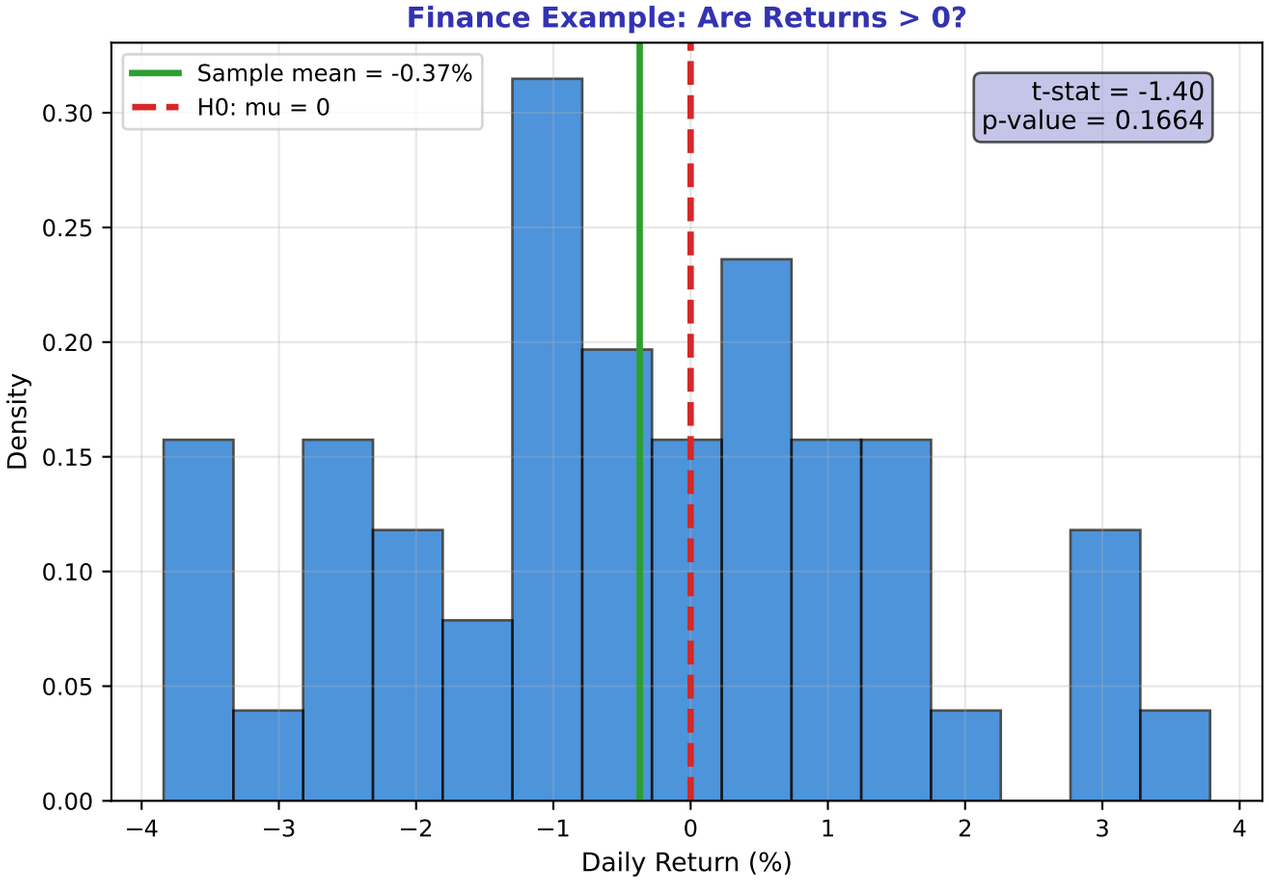
Sample from population

4. Calculate Test Statistic

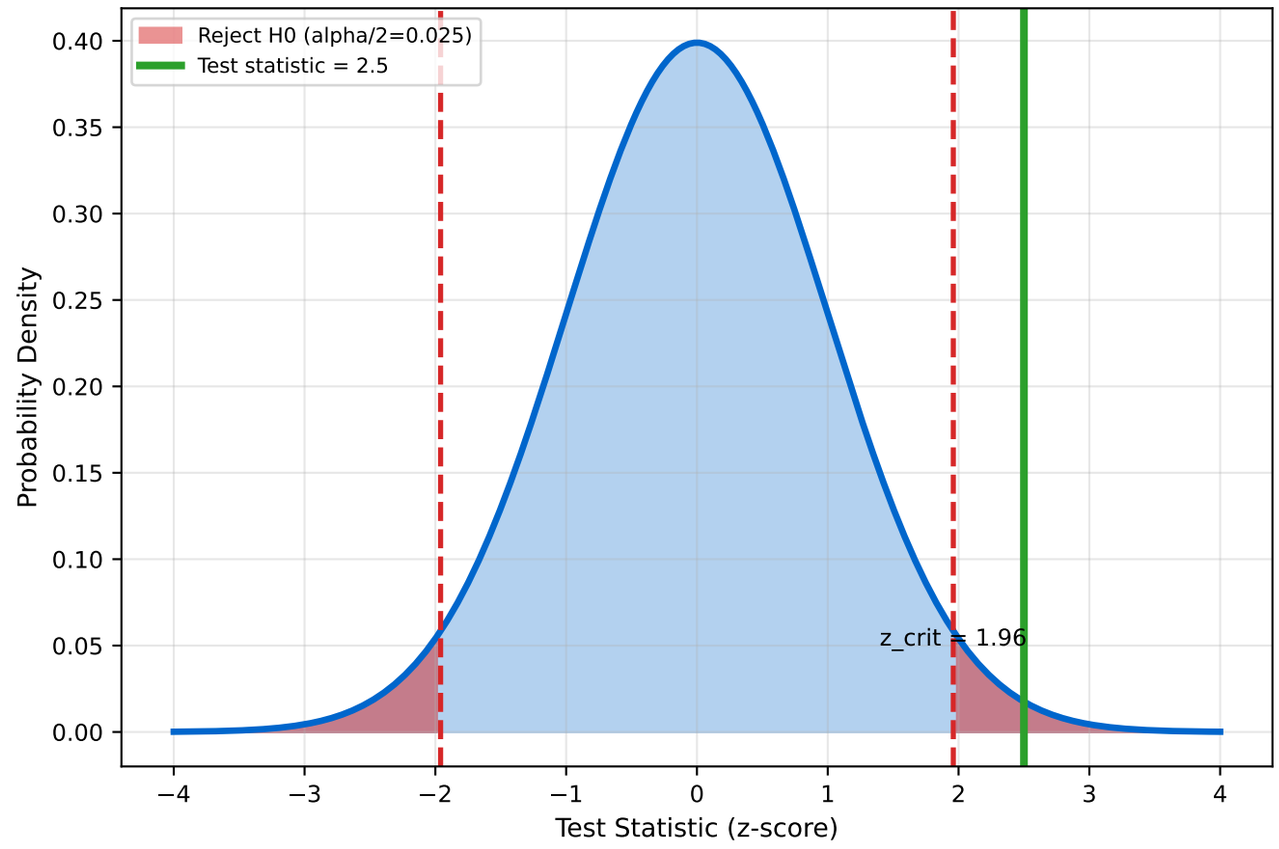
z, t, chi-squared, F, etc.

5. Make Decision

Reject H0 if p-value < alpha



Two-Tailed Test (alpha = 0.05)



Decision Rule

p-value < alpha

REJECT H0
Evidence supports H1

p-value >= alpha

FAIL TO REJECT H0
Insufficient evidence

Common alpha values: 0.05 (5%), 0.01 (1%), 0.10 (10%)

Note: "Fail to reject" is NOT the same as "accept H0"