

Starter 3/6

What does "Define the parameter" mean?

p. 548 #27, 28, 30

9.2a Performing Significance Tests

(4 Step Process)

① State: Hypotheses (H_0, H_a), define the parameter, give α (significance level)

use 0.05 if not given.

② Plan: Identify method, check conditions
Method: called a 1-Sample Z Test for a proportion

Conditions: 1. Random
2. Normal

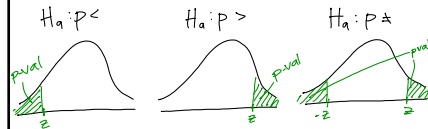
proportions: $np \geq 10$ $n(1-p) \geq 10$
means:

3. Independent - 10% rule

③ Do: Calculate Test Statistic + P-value

test statistic = $\frac{\text{statistic} - \text{parameter}}{\text{st. dev. of statistic}}$

for proportions
$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}}$$



for proportions on calc: $\boxed{\text{Stat}}$ → Tests → 5:1-prop ZTest

④ Conclude: Compare p-value with α
Conclude reject or fail to reject H_0
C ontext

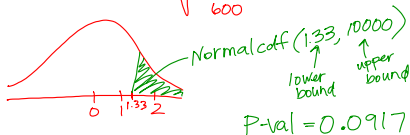
ex:

① State: $H_0: p = \frac{1}{12}$ p is the true proportion of fans who prefer the last contestant
 $H_a: p > \frac{1}{12}$
Test at $\alpha = 0.05$ significance level

② use a 1-sample Z Test for a proportion

Conditions: 1. Random - 600 fans were randomly chosen, order of videos was random
2. Normal - $600(\frac{1}{12}) \geq 10 \rightarrow 50 \geq 10$
 $600(1 - \frac{1}{12}) \geq 10 \rightarrow 550 \geq 10$
3. Independent - there are more than 6,000 fans

③
$$z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}} = \frac{\frac{59}{600} - \frac{1}{12}}{\sqrt{\frac{(\frac{1}{12})(1 - \frac{1}{12})}{600}}} = 1.33$$



④ Conclude: Since the p-value (0.0917) is greater than our α (0.05) we will fail to reject the Null Hypothesis.
We cannot conclude that there is an advantage to going last in American Idol.