

Intro to Hypothesis Testing: Null and Alternative Hypothesis

Def: Hypothesis Test
A procedure for testing a claim about a population

Def: Population Claim
What someone thinks is true about a population

One / Two-pop Hyp Tests
 $H_A: <$ (less than) - Left-tailed Test
 $H_A: >$ (greater than) - Right-tailed Test
 $H_A: \neq$ (not equal) - two-tailed Test

Def: Null Hypothesis
A statement about the population that involves equality, no change, no effect or no relationship H_0

Ex 1: "Pop. % of people that have side effects used to be 4%. Now we think it is higher."

$H_A: \pi > 0.04$ CLAIM
 $H_0: \pi = 0.04$
 Right-Tailed Test

$$\pi_1 > \pi_2$$

$$\mu_1 < \mu_2$$

Def: Alternative Hypothesis
A statement about the population that does not involve equality. Statement involving change, effect or relationship. H_A

Ex 2: "Many people thought that the pop. mean are normal body temp. is 98.6°F. Evidence now suggests it is lower."

$H_A: \mu < 98.6$ CLAIM
 $H_0: \mu = 98.6$
 Left-Tailed Test

Ex 3: "Standard IQ tests have a pop. mean are of 100."

$H_0: \mu = 100$ CLAIM
 $H_A: \mu \neq 100$
 Two-tailed test

Steps H_0 H_A

- ① Write claim
- ② Write opposite or opposing view to claim
- ③ $H_0: =, \leq, \geq$
- ④ $H_A: \neq, >, <$

opposites

$$< \leftrightarrow \geq$$

$$> \leftrightarrow \leq$$

$$\neq \leftrightarrow =$$