

Statistics

Lecture 24



Feb 19-8:47 AM

Testing claims:

claims are made about parameters.

Test the claim for its validity.

claim is valid \rightarrow we support it.

claim is invalid \rightarrow we reject it.

ex: School claims that 5% of all students are left-handed.

$P = .05$ claim

$P \neq .05$ Alternative view

May 28-12:52 PM

School claims that the mean of all
math exams is at least 80. μ
 ≥ 80

$\mu \geq 80$ claim

$\mu < 80$ Alternative View

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School claims the standard deviation
of ages of all students is more than
5 Years. $\sigma > 5$

$\sigma \leq 5$ Alternative View

$\sigma > 5$ claim

May 28-1:00 PM

Testing Methods:

1) Traditional Method

2) P-Value Method

3) Confidence Interval Method.

Every testing comes with a

Significance level α . $0 < \alpha < 1$

when α is not given \rightarrow use .05

May 28-1:03 PM

Testing Types:

1) Right - Tail Test **RTT**

2) Left - Tail Test **LTT**

3) Two - Tail Test **TIT**

May 28-1:08 PM

Testing Process:

1) Set-up H_0 & H_1 .

2) Find P-value.

3) If $p\text{-value} > \alpha$ H_0 valid, H_1 invalid

If $p\text{-value} \leq \alpha$ H_0 invalid, H_1 valid

4) Draw final conclusion about the claim.

Reject the claim OR Fail-to-Reject

(Invalid claim)

the claim

(Valid claim)

May 28-1:10 PM

H_0 Null Hypothesis must contain = Sign
=, \geq , \leq

H_1 Alternative Hypothesis H_a cannot contain = Sign
 \neq , $<$, $>$

Key words for H_0 :

is, same, equal, no difference, at least,
at most,

Key words for H_1 :

is not, not equal, not the same,
different, more than, less than,
greater than, below, above,

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$H_0: =$	$H_0: \geq$	$H_0: \leq$
$H_1: \neq$	$H_1: <$	$H_1: >$
TTT	LTT	RTT

CNN claims that 60% of CA Voters are registered as democrat. $P = .6$

$H_0: P = .6$ claim \uparrow
 H_0

$H_1: P \neq .6$ TTT

May 28-1:24 PM

LA Times claims the mean age of all nurses in LA county is below 50 Yrs.

$H_0: \mu \geq 50$

$H_1: \mu < 50$ claim, LTT

$\mu < 50$
 \uparrow
 H_1

May 28-1:30 PM

LAUSD claims that standard deviation
of all math exams is at most 10.

$$H_0: \sigma \leq 10 \quad \text{claim} \quad \sigma \leq 10$$
$$H_1: \sigma > 10 \quad \text{RTT} \quad \uparrow$$

H_0

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