Research hypothesis

Research hypothesis

1. Basic form

H: Hypothesis

H_n: Null hypothesis, the statement which is contrary to the hypothesis

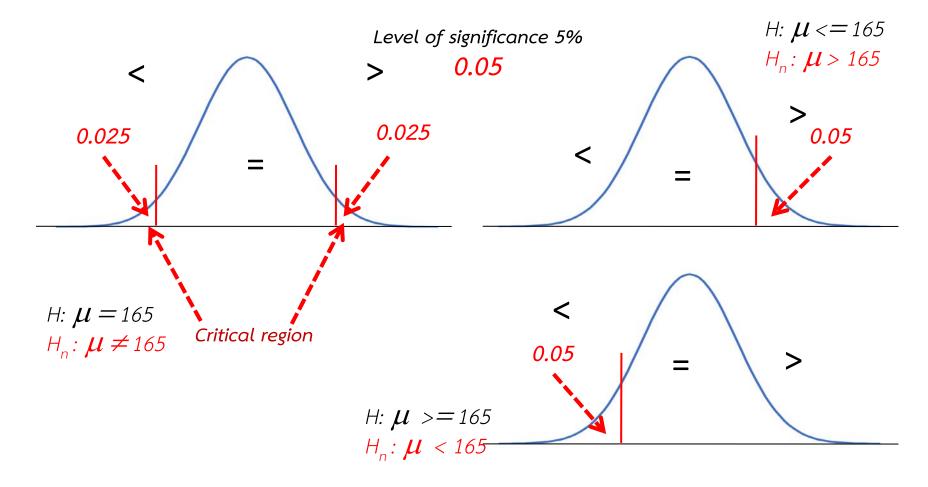
2. Level of significance 0.05 (5%), 0.01 (1%)

3. Level of confidence 0.95 (95%), 0.99 (99%)

Hypothesis

Two-tail Hypothesis

One-tail Hypothesis

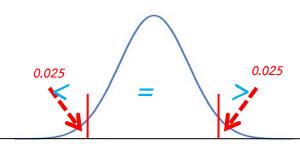


Example of Hypotheses

Two-tail Hypothesis

Question: Do fresh graduates receive an average salary of 15,000 baht?

H: $\mu = 15,000$ H_n: $\mu \neq 15,000$



One-tail Hypothesis

Question: Do fresh graduates receive an average salary greater than 15,000 baht?

H:
$$\mu \le 15,000$$

H_n: $\mu > 15,000$

Mean comparison

Data analysis

	Nominal	Ordinal	Interval	Ratio
	sex	education	temperature	salary
ordered		\checkmark	\checkmark	\checkmark
frequency	\checkmark	\checkmark	\checkmark	\checkmark
Mode	\checkmark	\checkmark	\checkmark	\checkmark
Median		\checkmark	\checkmark	\checkmark
Mean			\checkmark	\checkmark
calculation			~~~	~~~

Mean comparison

$$\neq$$
 = < + >

H: $\mu = 165$

H: $\mu_1 = \mu_2$

• One sample test

compare a mean with <u>a standard value</u> $H_n: \mu \neq 165$

• Independent samples test

compare means between <u>two independent groups</u> $H_{n}: \mu_{1} \neq \mu_{2}$

• Paired sample test $H: \mu_1 = \mu_2$

compare two means of a sample group $H_n: \mu_1 \neq \mu_2$

• ANOVA (Analysis of variance) H: $\mu_1 = \mu_2 = \mu_3$ $H_n: \mu_1 \neq \mu_2 \neq \mu_4$ compare means between <u>three or more independent groups</u>

compare a mean with a standard value

Example:

1. Question: Are Thai men's average-height equal to 165 cm?

H: $\mu = 165$ H_n: $\mu \neq 165$

2. Question: Are Thai men's average-height greater than 165 cm?
H: μ ≤ 165
H_n: μ > 165

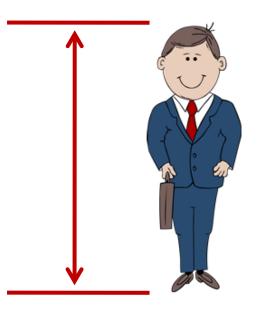
3. Question: Are Thai men's average-height less than 165 cm?

H: $\mu \ge 165$ H_n: $\mu < 165$

compare a mean with a standard value

Question: Are Thai men's average-height equal to 165 cm?

H: $\mu = 165$ *H_n*: $\mu \neq 165$



#	sex	height
1	m	167
2	m	162
3	m	168
4	m	162
5	m	162
6	m	165
7	m	166
8	m	166
9	m	160
10	m	165

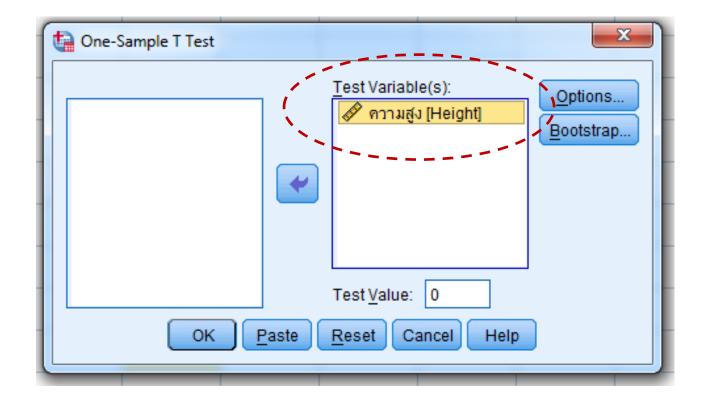
SPSS

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SPSS

3. Click Analyze > Compare Means > One-Sample T Test

Then select Height as a Test Variable

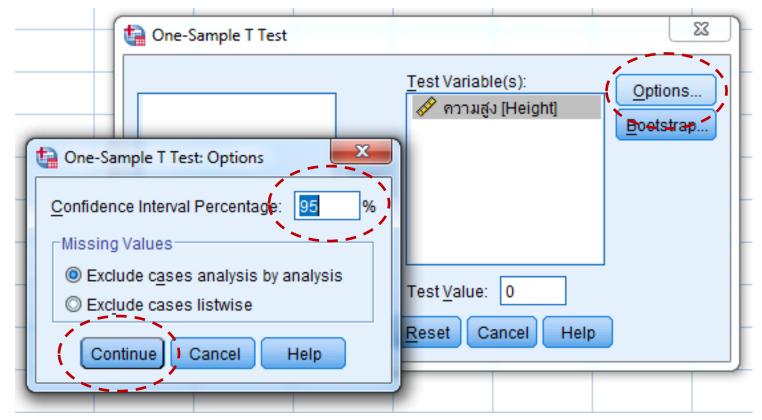


SPSS

4. Click Options...

Set Confidence Interval Percentage 95%

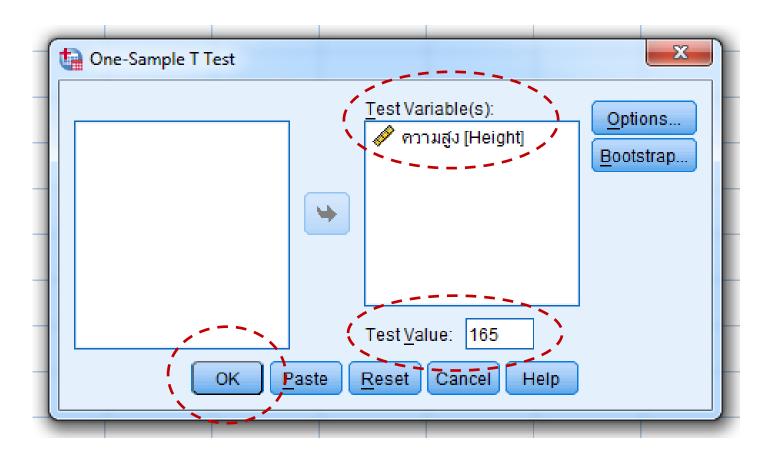
click Continue



SPSS

5. Define Test Value 165

click OK



Results

T-TEST

/TESTVAL=165

/MISSING=ANALYSIS

/VARIABLES=Height

/CRITERIA=CI(.95).

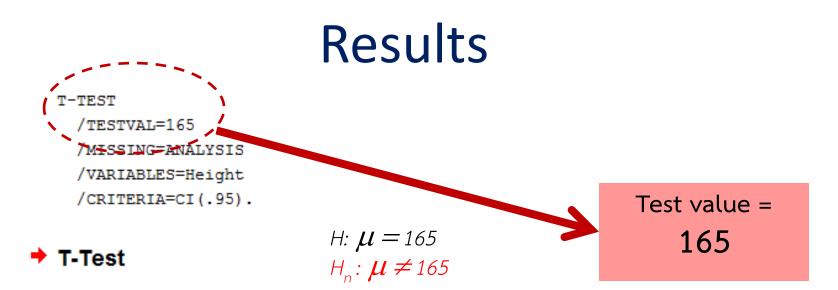
T-Test

[DataSet1] C:\Users\Administrator\Documents\slide1-testData.sav

		One-Sample	e Statistics	
	Z	Mean	Std. Deviation	Std. Error Mean
ความสูง	10	164.3000	2.62679	.83066

One-Sample Test

	Test Value = 165					
				Mean	e Interval of the ence	
	t	df	Sig. (2-tailed)	Difference	Lower	Upper
ความสู่ง	843	9	.421	70000	-2.5791	1.1791



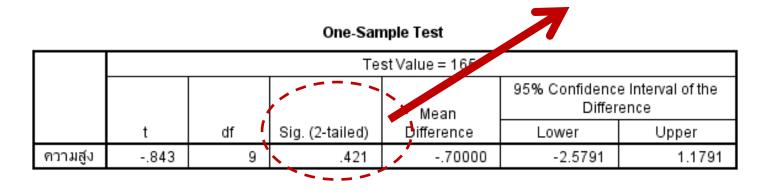
[DataSet1] C:\Users\Administrator\Documents\slide1-testData.sav

significance level = 0.05

	Ν	Mean	Std. Deviation	Std. Error Mean
ความสูง	10	164.3000	2.62679	.83066

One-Sample Statistics

٦	Sig (2-tailed) = 0.421 == Less than 0.05 >>> Reject H >>Accept Hn (significant)
	== Less than 0.05
	>>>> Reject H >>Accept Hn (significant)



conclusion

Hypotheses:

H: $\mu = 165$ H_n: $\mu \neq 165$

Sig (2-tailed) = 0.421 that is greater than 0.05

Therefore, accept *H*: μ =165

Thai men's average-height is equal to 165 cm