Public Health & Information Technology

Lecture 5

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Inferential Statistics
Hypothesis Test About the Mean

- There are two types of hypothesis:-

1- Null Hypothesis (H0) / It is a claim (or statement) about a population parameter that is assumed to be true until it is declared false.

Null hypothesis is denoted by : H0

Inferential Statistics
Hypothesis Test About the Mean

- **There are two types of hypothesis:-**

1- Null Hypothesis (H0) /**It means there is no difference or relationship between the variables. If there is a significant difference or relationship between variables, we would reject the null hypothesis and accept alternative hypothesis. while, If there is no significant difference or relationship between variables, then we would accept the null hypothesis and reject alternative hypothesis.**

Inferential Statistics
Hypothesis Test About the Mean

- There are two types of hypothesis:-

1- Alternative Hypothesis (H1) or (Ha) / It is a claim about a population parameter that will be true if the null hypothesis is false.

Alternative Hypothesis is denoted by : H1 or Ha

Inferential Statistics
Hypothesis Test About the Mean

- There are two types of hypothesis:-

1- Alternative Hypothesis (H1) or (Ha) /

It means a research hypothesis. This is what the researcher want to prove in his research.

Inferential Statistics
Hypothesis Test About the Mean

- There are two types of errors in hypothesis test:-

1- Type I Error or (α Error):- It means reject null hypothesis when it is true, the probability of making type I error is call Alpha, it can be determined by level of significance **(0.01, 0.05 and 0.10) = (1%, 5% and 10%)**

Inferential Statistics
Hypothesis Test About the Mean

- There are two types of errors in hypothesis test:-

1- Type II Error or (ß Error):- It means accept null hypothesis when it is false, the probability of making type II error is call Beta, it is related to power of the test (1 - Beta) which means the probability of detecting the real difference or relationship between variables so, the power of the test would be increased if we accept the true null hypothesis.

Inferential Statistics
Hypothesis Test About the Mean

- There are two types of errors in hypothesis test:-

Decision	True	False
Accept	Correct	Type II error
Reject	Type I error	Correct

Inferential Statistics
Hypothesis Test About the Mean

- **Example of types of errors in hypothesis test:-**

		Actual Situation	
		The Person Is Not Guilty	The Person Is Guilty
Court's decision	The person is not guilty	Correct decision	Type II or β error
	The person is guilty	Type I or α error	Correct decision

Inferential Statistics
Hypothesis Test About the Mean

- If the P-value is less than < significance level (0.01 or 0.05 or 0.10) then reject null hypothesis and accept alternative hypothesis.

There are enough evidences to reject H0 and accept H1

- If the P-value is greater than > significance level (0.01 or 0.05 or 0.10) then accept null hypothesis and reject alternative hypothesis

There are less evidences to reject H0 and accept H1

Reference

- **Prem S. Mann 1998, Introductory Statistics, 7th edn, New York, USA.**

Good Luck for All Students

- Please do not hesitate to contact me if you have any questions.
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سبحان الله وبحمده سبحان الله العظيم

ذكر الله أعظم ما في الوجود ،، لعل الله يرحمنا بعلم تعلمناه في الحياة الدنيا

أستغفر الله