

HYPOTHESIS TESTING CHEAT SHEET

Hypothesis	NULL The starting point	ALTERNATIVE
Notation	H _o	H _a
Assumption	Assumes status quo	Assumes change
Mathematical expression	Always has =, ≥, ≤	Always has ≠, <, >
Examples: Means	$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$
Standard dev	$\sigma_1 = \sigma_2$	$\sigma_1 \neq \sigma_2$
Proportion	P ₁ =P ₂	$P_1 \neq P_2$
Confidence level	0.95 typically	0.95 typically
Level of Significance	α = 0.05 typically	α = 0.05 typically
P value	P > α no change	P ≤ α change
P test conclusion	Fail to reject the null	Reject the null

e.g. when comparing two samples a $\frac{2 \text{ sample t-Test}}{2 \text{ shows}}$

P = 0.128 where $\alpha = 0.05$

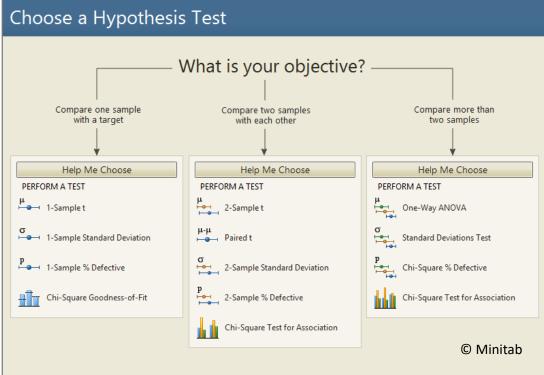
 $P > \alpha$, so the means of the samples not statistically different (to 95% confidence level)

Fail to reject (i.e. "accept") the null hypothesis H₀

"When p is low, the null must go"

"When p is high, the null will fly"

	REALITY	
DECISION	Null Hypothesis is True	Null Hypothesis is False
Fail to reject	ок ©	Beta ⊗
H _o	Confidence Level	Type II Error
ů	= 1-Alpha	Escape / Consumer's
		Risk
Reject	Alpha 🖰	ок 🕲
H _o	Type 1 Error	Power
•	False Alarm /	= 1-Beta
-	Producer's Risk	



www.LeanIreland.ie 2