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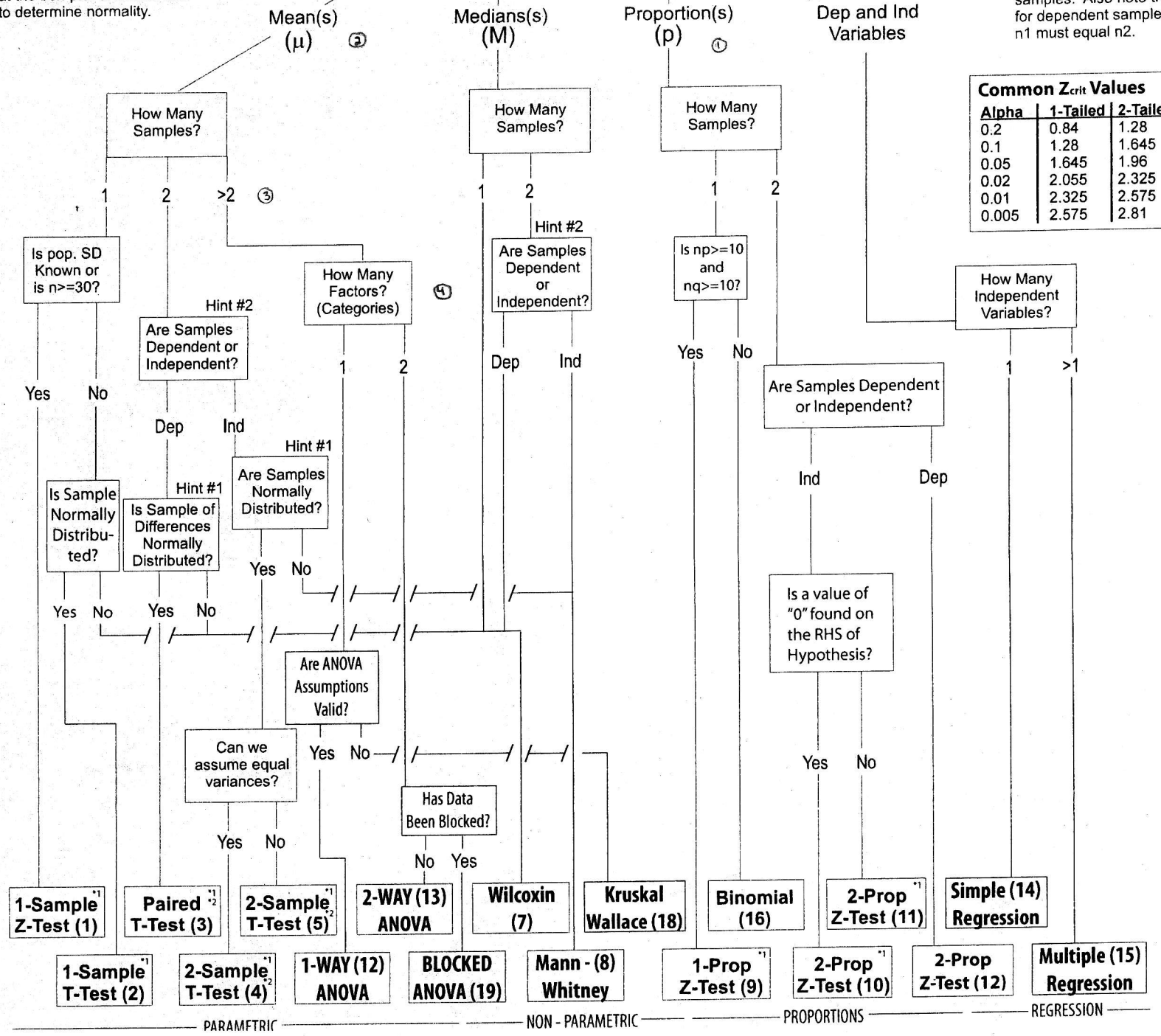
What Type of Data are we Dealing with?

Hint #1 - If we are dealing with independent samples, we look at the box-plot from each sample to determine normality. If we are dealing with dependent samples, we look at the box-plot of differences to determine normality.

Hint #2 - If the task was performed twice by the same tester, the samples are dependent. If the tasks are preformed separately by two different groups of testers, they are independent samples. Also note that for dependent samples, n1 must equal n2.



Common Z_{crit} Values

Alpha	1-Tailed	2-Tailed
0.2	0.84	1.28
0.1	1.28	1.645
0.05	1.645	1.96
0.02	2.055	2.325
0.01	2.325	2.575
0.005	2.575	2.81

16 Binomial

Ho:p = 0.3 Ho:p = 0.4
Ha:p < 0.3 Ha:p ≠ 0.4

$P(X=x) = \frac{n!}{x!(n-x)!} p^x q^{n-x}$

n=# of trials (sample size)
p=probability of a success
q=probability of a failure
q=1-p
x=# of successes in "n" trials
Reject Ho if $p < \alpha$

18 Kruskal-Wallace medians

Ho: $M_1 = M_2 = M_3 ... = M_n$
Ha:not all M equal
-Get p-value from minitab and compare to alpha.
Reject Ho $p < \alpha$

Requred Sample Size

-means: $n = \frac{Z_{\alpha/2}^2 \sigma^2}{E^2}$
-proportion: $n = \frac{Z_{\alpha/2}^2 p\,q}{E^2}$
-if p is not given use 0.5 or use $\hat{p}$ and $\hat{q}$.

Chi Sq-Goodness to Fit

Ho: Data follows described dist.
Ha: Data follows some other dist.

$Chi^2_{stat} = \sum_{i=1}^{k} \frac{(o_i - e_i)^2}{e_i}$ o=observed e=expected df=k-1

Reject Ho if $|Chi^2_{stat}| > |Chi^2_{crit}|$ or $p < \alpha$.

Chi Sq-Test of Independence

Ho: Factor A is independent of Factor B
Ha: Factor A is not independent of Factor B

$Chi^2_{stat} = \sum_{i=1}^{r}\sum_{j=1}^{c} \frac{(o_{ij} - e_{ij})^2}{e_{ij}}$ o=observed e=expected df=(r-1)(c-1)

$e_{ij} = \frac{(i \text{ row total})(j \text{ column total})}{\text{Total sample size}}$

Reject Ho if $|Chi^2_{stat}| > |Chi^2_{crit}|$ or $p < \alpha$.

Step 1 - Calculate all row totals, col totals and grand total
Step 2 - Calculate expected value for each cell
Step 3 - Calculate Chi^2 for each cell
Step 4 - Add the Chi^2 from each cell to get your Chi^2_{stat}
Step 5 - Finish Hypothesis Test.

[1]FPCF - If a sample(s) is more than 5% of the population we must apply the FPCF. Therefore, if n/N>0.05, we multiply the denominator by SQRT((N-n)/(N-1)).

[2]If your sample size(s) are greater than 30, you must use the large sample formulas found in your book. (T-Test then becomes a Z-Test)