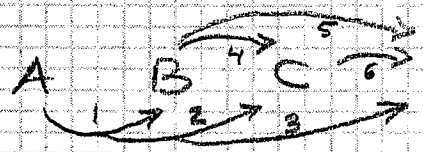
MULTIPLE COMPARISONS OF MEANS

ANOVA Complete Randomized Design with four treatments A, B, C, D

H_0: $\mu_A = \mu_B = \mu_C = \mu_D$

H_a: At least two treatment means differ

Post-ANOVA or Post-Hoc procedure



K = # of treatments

C = # comparisons

$$C = \frac{K(K-1)}{2} = \frac{4*3}{2} = \frac{12}{2} = 6$$

95% C.I for $\mu_A - \mu_B$ error rate of .05

95% CI for $\mu_C - \mu_D$ " " " .05

Tukey

Pairwise comparisons

Equal sample sizes

Bonferroni

Pairwise comparisons

Does not require equal sample sizes

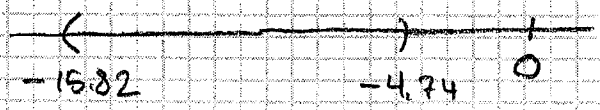
Scheffe

All possible linear combinations

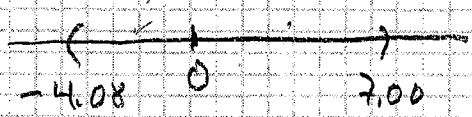
Does not require equal sample sizes

CI wider than Bonferroni and Tukey

Comparison	95% C.I	
$\mu_A - \mu_B$	$(-15.82, -4.74)$	$\Rightarrow \mu_A - \mu_B < 0 \Rightarrow \mu_A < \mu_B$



$\mu_A - \mu_C$	$(-24.71, -13.63)$	$\Rightarrow \mu_A - \mu_C < 0 \Rightarrow \mu_A < \mu_C$
$\mu_A - \mu_D$	$(-4.08, 7.007)$	$\Rightarrow$ $\overline{\mu_A \mu_D}$



$\mu_B - \mu_C$	$(-, -)$	$\Rightarrow \mu_B - \mu_C < 0 \Rightarrow \mu_B < \mu_C$
$\mu_B - \mu_D$	$(+, +)$	$\Rightarrow \mu_B - \mu_D > 0 \Rightarrow \mu_B > \mu_D$
$\mu_C - \mu_D$	$(+, +)$	$\Rightarrow \mu_C - \mu_D > 0 \Rightarrow \mu_C > \mu_D$

$\overline{\mu_A \mu_D \; \mu_B \mu_C}$

$\bar{x}_A$	234.78	μ_A	μ_B	μ_C
$\bar{x}_D$	233.32	μ_D	245.06 $\bar{x}_B$	253.95 $\bar{x}_C$

FUTURE VIDEOS: Tukey, Bonferroni and Scheffe by hand using tables