Data Analysis and Statistical Inference
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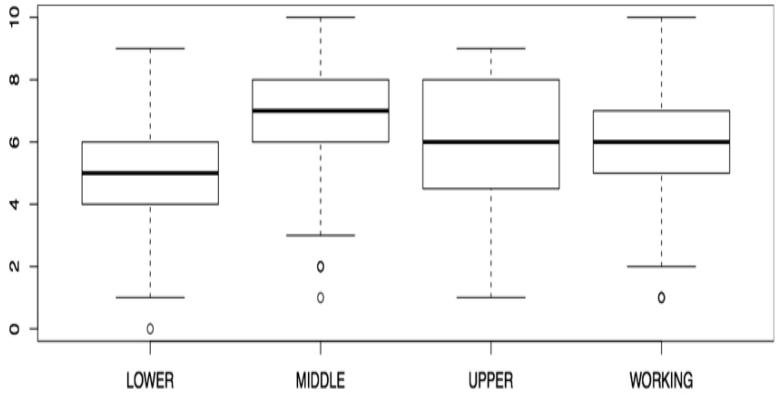
In-Video Quiz Questions for
Unit 4: Part 4 – (4) Multiple Comparisons

(02:08) – slide 2, after "So the solution we're going to propose here is to use a modified significance level."

1. Based on the side-by-side box plots below, which of the pairs of groups are **least** likely to have statistically significantly different means?



(a) lower vs. middle

(b) upper vs working

(c) middle vs. upper

(02:55) – slide 3, after "An easy way to get at that is simply, the number of groups, times the number of groups minus one, divided by two."

2. If the explanatory variable in an ANOVA has 3 levels, and the F-test in ANOVA yields a significant result, how many pairwise comparisons are needed to compare each group to one another?

(a) 2
(b) 3
(c) 6
(d) 9
(e) 12

(10:23) – slide 8, after "But even with how stringent that significance level is, the p-value is still less than that, and therefore we would reject the null hypothesis."

3. What does it mean to reject the null hypothesis in this example?

The data provide convincing evidence that:

(a) at least one pair of means are different from each other.

(b) all means are different from each other.

(c) average vocabulary scores of self-identified middle and lower class Americans are different.

(d) none of the means are different from each other.

(e) average vocabulary scores of self-identified middle class Americans is different from means of all other groups.

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Answers:

1. b

Explanation: Upper and working have the closest means among pairs that are listed.

2. b

Explanation: K = k (k - 1) / 2 = 3 * 2 / 2 = 3

3. c