

Classroom Voting Questions: Elementary Statistics

Use and Abuse of Tests

1. Robert is asked to conduct a clinical trial on the comparative efficacy of Aleve versus Tylenol for relieving the pain associated with muscle strains. He creates a carefully controlled study and collects the relevant data. To be most informative in his presentation of the results, Robert should report
 - (a) whether a statistically significant difference was found between the two drug effects.
 - (b) a P -value for the test of no drug effect.
 - (c) the mean difference and the variability associated with each drug's effect.
 - (d) a confidence interval constructed around the observed difference between the two drugs.

2. A P -value represents
 - (a) the probability, given the null hypothesis is true, that the results could have been obtained purely on the basis of chance alone.
 - (b) the probability, given the alternative hypothesis is true, that the results could have been obtained purely on the basis of chance alone.
 - (c) the probability that the results could have been obtained purely on the basis of chance alone.
 - (d) Two of the above are proper representations of a P -value.
 - (e) None of the above is a proper representation of a P -value.

3. Two studies investigating the effect of motivation upon job performance found different results. With the exception of the sample size the studies were identical. The first study used a sample size of 500 and found statistically significant results, whereas the second study used a sample size of 100 and could not reject the null hypothesis. Which of the following is true?
 - (a) The first study showed a larger effect than the second.
 - (b) The first study was less biased than the second study for estimating the effect size because of the larger sample size.
 - (c) The first study results are less likely to be due to chance than the second study results.

- (d) Two of the above are true.
- (e) All of the above are true.