



AP[®] Statistics 2002 Scoring Commentary Form B

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AP[®] STATISTICS
2002 SCORING COMMENTARY (Form B)

Question 1

Response: 1 of 2

Score 4:

This response earned a score of 4. The graph in part (a) is well labeled and the interpretation of the correlation coefficient in part (b) discussed direction, strength, and context. In part (c), the student refers to the graph and attempts to clarify that the association is not just positive but also increasing at a constant rate (which most students failed to do). Finally in part (d), the student gives a correct value of the percent of the variability.

Response: 2 of 2

Score 3:

This response earned a score of 3. The graph in part (a) should have included more information about the scales on the axes. In part (b) the student fails to infer the direction of the association from the positive value of the correlation coefficient. While the discussion of the residual plot in part (c) is good, the student does not explicitly refer to the work in parts (a) and (b). The percent of the variability in part (d) is computed correctly.

Question 2

Response: 1 of 2

Score 4:

This response earned a score of 4. All of the work is presented correctly and in detail with correct notation and excellent summary sentences.

Response: 2 of 2

Score 3:

This response earned a score of 3. The work in parts (a) and (b) is correct. However, in part (c), the student inappropriately assumes independence when attempting to calculate the conditional probability.

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Question 3

Response: 1 of 2

Score 4:

This response earned a score of 4. In part (a) the student gives a complete description of an appropriate design indicating that the subjects will be randomly assigned into two groups, clearly explains the treatments that will be given and the response variable that will be measured. A strong discussion of how the randomization will be done is also provided. In part (b) the student describes an acceptable modification that clearly separates the two genders and randomly assigns subjects to treatments separately within each gender.

Response: 2 of 2

Score 3:

This response earned a score of 3. While the description of the design in part (a) is complete, in part (b) the student fails to clearly discuss how randomization will be used.

Question 4

Response: 1 of 2

Score 4:

This response earned a score of 4. The student clearly identifies the procedure, states and checks the associated conditions, shows details of the confidence interval calculation, interprets the confidence interval in context, and correctly interprets the confidence level. In part (b) the student realized that the grouping of "no adjustments" and "minor adjustments" did not support the conclusion for "no change", thereby earning full credit.

Response: 2 of 2

Score 3:

This response earned a score of 3. While a correct process for determining the confidence interval was evident, the student fails to check the conditions necessary for using this procedure and does not interpret that 95 percent confidence interval in context. The remainder of the work is acceptable.

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Question 5

Response: 1 of 2

Score 4:

This response earned a score of 4. It shows a clear, well-labeled graph, and discusses both the differing ranges and similar IQRs in part (b) and compares centers and spreads in part (c). The comparison of the minimum and maximum values was viewed as extra information but would not have been a sufficient comparison of distributions on their own.

Response: 2 of 2

Score 3:

This response earned a score of 3. The student provides excellent responses in parts (a) and (c) but fails to note the similar spread in the middle of the distributions even while seeming to realize the potential influence on the range of just one extreme observation. In part (b) the student does comment on the first and third quartiles, but this was viewed as a discussion of location, not spread.

Question 6

Response: 1 of 2

Score 4:

This response earned a score of 4. In part (a) the variables are clearly defined, the requirements for the test are clearly checked, and the interpretations of the p -values are excellent. The work in part (b) is complete, however, the second phrase in the statements of the null and alternative hypotheses was not needed because this is not a test of independence of two random variables. Finally, the work in part (c) is a nice example of a follow-up discussion to a significant Chi-square test that describes the differences in the two distributions.

Response: 2 of 2

Score 3:

This response earned a score of 3. It demonstrates very complete inferential procedures (including a check of the conditions) but fails to include graphs in part (c) to accompany the discussion. However, the discussion of the conclusions in parts (a) and (b) is extended. The response could be further improved by referring to the large sample sizes in part (a) and explicitly stating whether the p -value is considered small.