Statistics 104 - Laboratory 5

Group Answer Sheet

Names of Group Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **Activity 1:** Sampling Rectangles

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Guess | Judgment Sample | Judgment Sample Mean Area | Random Sample | Random Sample Mean Area |
|  |  | #’s: |  | #’s: |  |
| Areas: | Areas: |
|  |  | #’s: |  | #’s: |  |
| Areas: | Areas: |
|  |  | #’s: |  | #’s: |  |
| Areas: | Areas: |
|  |  | #’s: |  | #’s: |  |
| Areas: | Areas: |

1. We could cut out the rectangles, laminate them, put them in a bag, mix thoroughly and draw from the bag. Do you think this would give you a random sample? Explain briefly.
2. Roll the die ten times and record the results on the group answer sheet. Explain how you can use the rolls of the die to select a simple random sample of 5 rectangles.

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1. Are sample mean areas the same for all the random samples? Why?
2. How do the random sample means compare to the judgment sample means and guesses?
3. Which do you think will be a better guess of the true mean area of the 100 rectangles, the random sample mean of 5 rectangles or the random sample mean of 20 rectangles? Explain briefly.
4. **Activity 2:** Sampling from the census
   * + 1. Is this study and example of an experiment or an observational study? Explain your answer.

* + - 1. Explain to them why the random selection is important.
      2. Explain Jill’s this idea would not create a representative sample to pursue our goal.
      3. Which of these is the explanatory variable? Which is the response?
      4. Describe what this scatterplot tells us about the association these variables.
      5. Report and ***interpret*** the slope within the context of this situation.
      6. What is wrong with Bob’s claim regarding the correlation coefficient?
      7. Explain in general why collecting a stratified random sample is a better plan than a simple random sample for answering this question.
      8. Report the mean and 5-number summary for the income of the sample from the males (sex = 1).
      9. Report the mean and 5-number summary for the income of the sample from the females (sex = 2).
      10. Compare the distribution of income in males and females using the values from parts i and j.
      11. What would be a good way to **visually display** this information so aid in making these comparisons? Explain your answer.
      12. Why might this information not be representative of the population that we may have intended? Hint: look at the age column in the sample you have collected.