Public Management 630
Midterm Exam

0.6 Instructions: All answers will be included in a Word (or PDF) document submitted electronically to `empastats@gmail.com` by 7:00pm on 22 October. NO late exams will be accepted. For the multiple choice questions, please write the question number, your answer (letter), and the words corresponding to the correct answer. Write a concise and complete answer to the short answer questions. For the data analysis, please include all graphs and written descriptions where appropriate. Take a deep breath. Do well.

1 Multiple Choice Questions

1. A congresswoman who wants to assess her district's views on an upcoming vote on U.S. policy on Iraq conducts a survey where she randomly selects individuals from each of 6 different age categories and phones them to assess their opinion. This is an example of

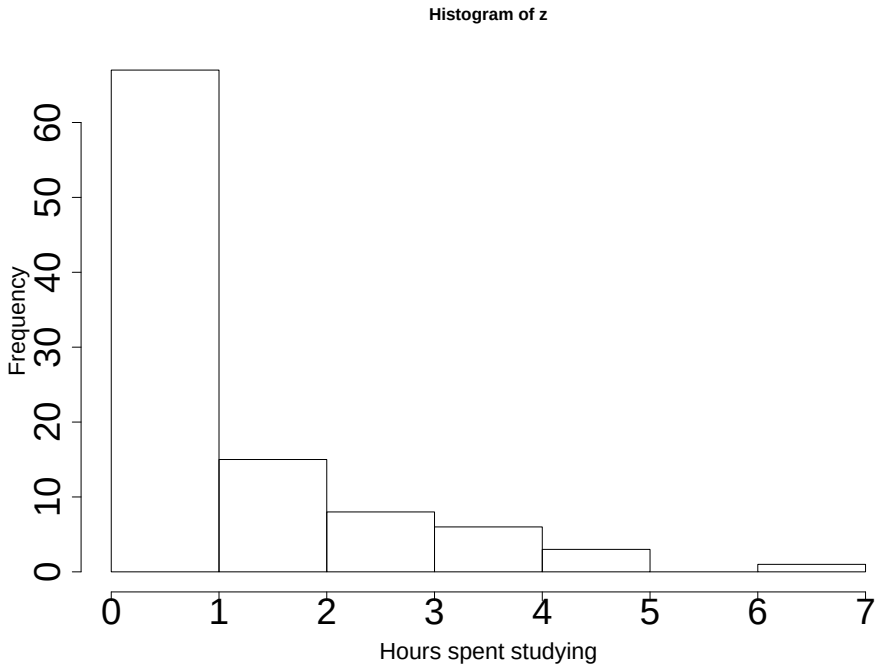
   (a) nonprobability sampling
   (b) simple random sampling
   (c) stratified random sampling
   (d) multistage sampling
   (e) convenience sampling
   (f) none of the above

2. Given a correlation of $r = -.92$ between amount of time sleeping in class (X) and final grade percentage (Y), we know that

   (a) If someone sleeps more in class, this will cause their grade to increase.
   (b) If someone sleeps more in class, this will cause their grade to decrease.
   (c) The two variables have a positive linear relationship.
   (d) The two variables have a curvilinear relationship.
   (e) None of the above conclusions is appropriate.

3. Which of the following are reasons for taking a simple random sample? (circle all that apply)

   (a) remove all biases from sample results
   (b) remove sample to sample variability
   (c) obtain a sample that is an exact representation of the population
   (d) use statistical methods to make inferences about the population



4. The figure above represents a histogram of the number hours spent studying for a job training program for $n = 100$ employees. Approximately what *proportion* of students studied between 1 and 2 hours?

   (a) .15

   (b) .25

   (c) .45

   (d) .84

   (e) not enough information given to answer this question.

5. An administrator for the National Endowment for the Arts wants to know the mean income of Dallas Symphony Orchestra (DSO) patrons. Whenever a person purchases tickets by phone or mail, the customer's name is included on a customer mailing list. From the DSO's customer mailing list, 75 persons are randomly selected, and it is found that the mean income is $\$62,019$ with a standard deviation of $\$13,556$. A critic of the study argues that the results are "hogwash" because many DSO patrons use other methods of purchase. This critic is pointing out that the study exhibits

   (a) under-coverage bias

   (b) non-response bias

   (c) measurement bias due to interviewer

   (d) measurement bias due to question wording

6. Which of the following values of r should be interpreted as "no relationship between X and Y" for two quantitative variables X and Y?

   (a) $R = 1.0$

   (b) $R = -1.0$

   (c) $R = 0.0$

   (d) $R = 0.5$

   (e) $R = -0.5$

   (f) none of the above represents the statement

7. Which of the following is NOT sensitive to outliers? (circle all that all that apply)

   (a) s

   (b) s^2

   (c) M

   (d) $\bar{X}$

   (e) R

8. This question is here to break the tension. If you don't get it right, I'll be very disappointed!

   (a) This is the CORRECT choice

   (b) Wrong

   (c) Wrong

2 Short Answer Questions

1. Briefly describe the two (acceptable) methods of data collection. Include in your description the advantages and disadvantages of each.

2. Auditors often employ stratification when sampling accounts. Why might they do this? How would the strata be formed?

3. The following is a statement from an article on sexual discrimination in the work force made in a national newspaper. Identify the error made by the reporter.

   "A recent survey of the starting salaries for male and female graduates showed a correlation of 0.75 between the sex of the graduate and the starting salary."

3 Data Analysis

1. Summarize completely (graphically AND numerically) the following variables (univariate) from the Productivity dataset included on the Berman CD. In your summary, be sure to make an appropriate description of any graphs:

   - Extent to which workers are treated fairly
   - Extent to employee has authority to make decisions while performing job
   - Workcenter productivity
   - Use and effectiveness of teams

2. Using the Employee Attitudes Data, is there a relationship between "I seldom feel stressed because of my work" and "Safety hazards in my work area are quickly corrected"? Why or why not? Include any graphs, numerical summaries to justify your answer (review steps discussed in class).

3. For the Productivity dataset included on the Berman CD, compute a 90% confidence interval for the population mean number of days missed during the last 12 months due to illness. Include in your answer an appropriate statement of the confidence interval in context of the problem.

4. For the Productivity dataset, provide an appropriate summary (numerical AND graphical) of the relationship between "Knowledge to perform job responsibilities" and "Employee evaluation of workcenter productivity". Make sure to include appropriate descriptions of any graphical summaries.