

Statistics Test 3

Number of questions—4

Directions: Solve each of the following problems using separate paper, while clearly indicating each problem number when solving. Irrelevant work will detract from your score, while answers without work shown will be awarded no credit. Answers with partially correct work will receive partial credit. Unless otherwise specified, round all answers to 3 decimal places when necessary. You must work alone, but you may use a graphing calculator and the provided appendix tables as a supplement to your own work if you indicate the steps used. You may not use a phone, computer, computational intelligence, AI, or other tools to assist you in solving the problems.

1. Can social media mistakes hurt your chances of finding a job? According to a survey of 1000 hiring managers across many different industries, 73% claim that they use social media sites to research prospective candidates for any job.
 - (a) (6 pts) What are the n , p , q , and r that can be used to determine the probability that out of five job listings, none will conduct social media screening?
 - (b) (6 pts) What is the probability that out of five job listings, none will conduct social media screening?
 - (c) (6 pts) What is the probability that out of five job listings, three or fewer will conduct social media screening?
 - (d) (6 pts) What is the expected number of job listings that will conduct social media screening?
 - (e) (6 pts) What is the standard deviation of the distribution of the number of job listings that will conduct social media screening?
2. Attendance at large exhibition shows in Denver averages about $\mu = 8000$ people per day, with standard deviation of about $\sigma = 500$. Assume that the daily attendance figures follow a normal distribution.
 - (a) (5 pts) What z -value corresponds to 7200 people?
 - (b) (5 pts) What is the probability that the daily attendance will be fewer than 7200 people?
 - (c) (5 pts) 5% of the area under the standard normal distribution lies to the left of what z -value?
 - (d) (5 pts) A show with attendance in the bottom 5% of the probability distribution of attendance figures will not be brought back. What is the cutoff point for attendance for shows that will not be brought back?

3. Templeton World is a mutual fund that invests in both U.S. and foreign markets. Let x be a random variable that represents the monthly percentage return for the Templeton World fund. Based on information from the Morningstar Guide to Mutual Funds (available in most libraries), x has mean $\mu = 1.6\%$ and standard deviation $\sigma = 14.23\%$.
- (a) (5 pts) Templeton World fund has over 250 stocks that combine together to give the overall monthly percentage return x . We can consider the monthly return of $n = 250$ of the stocks in the fund to be a sample from the population of all stocks in the fund. Then we see that the monthly return for this sample is an average return for stocks in the fund. From the central limit theorem, what can you say about the probability distribution of \bar{x} , the average monthly return for Templeton World?
 - (b) (5 pts) What are the mean and standard deviation of the \bar{x} distribution?
 - (c) (5 pts) What is the z -value corresponding to the \bar{x} value of 1%?
 - (d) (5 pts) What is the probability that \bar{x} is less than 1%?
 - (e) (5 pts) Let us assume that x has a distribution that is approximately normal. What is the z -value corresponding to an x value of 1%?
 - (f) (5 pts) What is the probability that x is less than 1%? (Again, assume that x has a distribution that is approximately normal.)
4. The crime rates per 1000 population for a random sample of 46 Denver neighborhoods have mean $\bar{x} = 64.2$ and $s = 27.9$ crimes per thousand population (Source: *The Piton Foundation*, Denver, Colorado).
- (a) (5 pts) What distribution would be appropriate to use to compute a confidence interval for the population mean μ ? Explain your answer.
 - (b) (5 pts) Find the critical value for an 80% confidence level.
 - (c) (5 pts) Find an 80% confidence interval for μ .
 - (d) (5 pts) What does the confidence interval tell us in the context of the problem?