

Quiz 2, Business Statistics, Summer 2023

⚠ This is a preview of the published version of the quiz

Started: Jul 16 at 10:46am

Quiz Instructions

You have 1 hour to complete the quiz.

You can start it any time you want in the availability window, but once you start, you have to finish it in an hour.

The test is open book, open notes, open internet, you just can't interact with a person.

There is just one question with 9 parts.

Each part is worth one point.

Question 1

1 pts

Question 1

Let R_1 and R_2 represent uncertain returns with $R_1 \sim N(6,100)$ and $R_2 \sim N(10,144)$.

The correlation between R_1 and R_2 is .4.

What is the expected value of R_1 ?

Question 2

1 pts

What is the variance of R_1 ?

Question 3**1 pts**

What is the standard deviation of R1 ?

Question 4**1 pts**

What is the probability that R1 is in the interval [-4,16] ?

Question 5**1 pts**

What is the probability the $R1 > 0$?

Question 6**1 pts**

Let P be the portfolio which puts 20% into R1 and 80% into R2.

So,

$$P = .2 R1 + .8 R2.$$

What is $E(P)$, the expected value of P ?

Question 7**1 pts**

What is the covariance between $R1$ and $R2$?

Question 8**1 pts**

What is the variance of P ?

Question 9**1 pts****Question 2**

You manage the process that fills boxes of cereal.

You are about to be audited !!!

The audit means that they will take a sample of 5 boxes and see how much cereal goes in them.

If the average weight of the 5 weights is in the interval (330,370) you pass the audit.

As a good quality engineer, you have done statistical analysis of the process and feel that a good model is:

$$W_i \sim N(345, 15^2), i = 1, 2, 3, 4, 5$$

Let A be the average of the weights from the sample of 5 boxes so that

$$A = \frac{W_1 + W_2 + W_3 + W_4 + W_5}{5}$$

What is the expected value of A ?

Question 10**1 pts**

The variance of A is

- 225
- 45
- 15
- 6.7

Question 11**1 pts**

What is the probability that A is in the interval (330,370) <

- .79
- .5
- .92
- .99

Question 12**1 pts****Question 3**

Suppose we take a random sample (sample without replacement) of size $n=1,000$ from a very large population of voters.

60% of the sample (that is 600 out of the 1000) report they would vote for candidate A as opposed to not.

Even though we have only asked 1,000 voters, there is evidence that the true population proportion of voters that would vote for candidate A is greater than .5.

- True
- False

Quiz saved at 9:46am

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