Statics Probability Job Interview Questions And Answers

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Statics Probability Interview Questions And Answers Guide.

Question - 1:

There is substantial overlap between two sets of confidence intervals on an error bar chart. The chart shows confidence intervals for boys and girls on a depression questionnaire. What could we make of this?

Ans:

1. We can be 95% confident that the population means are within the intervals indicated on the chart. As there is much overlap between the two sets of confidence intervals we cannot be sure whether there is a difference in the population means. It seems likely that there is no difference but we cannot draw any firm conclusions.
   2. We can be 95% confident that the population means are within the intervals indicated on the chart. As there is much overlap between the two sets of confidence intervals this would suggest that there is a real difference in the population means.
   3. It would appear that 95% of girls are more depressed than boys according to the confidence intervals.
   4. We can be 5% confident that the population means are within the intervals indicated on the chart. As there is much overlap between the two sets of confidence intervals we can be sure that there is a real difference in the population means.

Answer: We can be 95% confident that the population means are within the intervals indicated on the chart. As there is much overlap between the two sets of confidence intervals we cannot be sure whether there is a difference in the population means. It seems likely that there is no difference but we cannot draw any firm conclusions.

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Question - 2:

In error bar charts the larger the confidence interval the _____ the line is through the mean.

Ans:

1. More curved
   2. More overlapping
   3. Shorter
   4. Longer

Answer: longer

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Question - 3:

Which of the following is the correct statement?

Ans:

1. The standard error of the sampling distribution of the mean tells us how much our samples tend to vary around the population mean.
   2. The standard deviation of the sampling distribution is called the sampling error.
   3. The mean of several sample means gives the best estimate of the population means.
   4. The larger the sampling size the larger the sampling error.

Answer: The mean of several sample means gives the best estimate of the population means.

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Question - 4:

Sampling distributions tend to be what in shape?

Ans:

1. Bimodal.
   2. Positively skewed.
   3. Normal.
   4. Flat.

Answer: Normal.

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Question - 5:

Which of the following type of graph can display confidence intervals?

Ans:

1. Venn diagrams.
    2. Histograms.
    3. Error bar charts.
    4. Regression lines.
Answer: Error bar charts.

Question - 6:

A sample mean is a _____ estimate and we do not know how close it is to the population mean.

Ans:

1. Confidence
    2. Point
    3. Sample
    4. Distribution
Answer: point

Question - 7:

To calculate confidence intervals we need make use of:

Ans:

1. Sampling distributions.
    2. Histograms.
    3. z-scores.
    4. None of the above.
Answer: sampling distributions.

Question - 8:

The standard error has been calculated as 2.6 and the sample mean is 10.00. Thus the 95% confidence interval lies between:

Ans:

1. 4.904 to 15.096
    2. 7.40 to 12.60
    3. 3.85 to 26
    4. There is not enough information available to work out the confidence interval.
Answer: 4.904 to 15.096

Question - 9:

In another study you have a standard deviation of 12, a mean of 20 and a sample size of 50. What is the standard error?

Ans:

1. 0.089
    2. 0.069
    3. 1.7
    4. 0.589
Answer: 1.7

Question - 10:

Finally, you still have the same data (a sample size of 7, a mean of 8 and a standard deviation of 4.2) plus the standard error and you know how to calculate the 95% confidence interval. Thus what is the 95% confidence interval?

Ans:

1. 2.80 to 10.80
    2. 3.36 to 11.36
    3. 4.90 to 11.10
    4. 3.98 to 11.98
Answer: 4.90 to 11.10

Question - 11:

You still have the same data (a sample size of 7, a mean of 8 and a standard deviation of 4.2) plus the standard error. Next how would you calculate the 95% confidence intervals?

Ans:

1. To work out the 95% confidence interval you would have to multiply the standard error by 1.96.
    2. To work out the 95% confidence interval you would have to multiply the square root of the sample size.
    3. To work out the 95% confidence interval you would have to multiply the standard error by the standard deviation.
    4. To work out the 95% confidence interval you would have to multiply the standard error by 95.
Answer: To work out the 95% confidence interval you would have to multiply the standard error by 1.96.

Question - 12:

Consider the following data to answer the next 3 questions.
You have the following sample data; a sample size of 7, a mean of 8 and a standard deviation of 4.2. From this, what is the standard error?

Ans:

1. 2.65
2. 5.8
3. 2.05
4. 1.58

Answer: 1.58

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Question - 13:

Normal distribution theory tells us that for large samples, 95% of sample means lie within how many standard deviations above and below the population mean?

Ans:

1. 95
2. 1.96
3. Whatever the z-score is.
4. The square root of the sample size.

Answer: 1.96

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Question - 14:

We do not know whether the pattern of results found in our samples accurately reflects what is happening in the population or if it is the result of _____ error.

Ans:

1. Distribution
2. Mean
3. Sampling
4. Confidence

Answer: sampling

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Question - 15:

Suppose that some assessment results for two types of offenders (sex offenders and violent offenders) were 60 and 50 respectively. Which type of offender did better in comparison to other offenders on the treatment course and which may need further treatment? The group means and SDs are 50 and 9 for sex offenders and 45 and 3 for violent offenders.

Ans:

1. To make such comparisons you need to convert the assessment results into z-scores. Thus the violent offender scored better in comparison to other offenders on his treatment course and you may perhaps want to refer the sex offender for more treatment.
2. 95.15% of violent offenders scored better in comparison to this offender on his treatment course. You may perhaps want to refer the sex offender for more treatment.
3. It is not possible tell from this data.
4. The sex offender scored better in comparison to other offenders on his treatment course and you may perhaps want to refer the violent offender for more treatment.

Answer: To make such comparisons you need to convert the assessment results into z-scores. Thus the violent offender scored better in comparison to other offenders on his treatment course and you may perhaps want to refer the sex offender for more treatment.

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Question - 16:

You have the IQs of a set of people. The mean of these IQs is 100. The standard deviation is 15. One student scored 90 on the test. This produced a z-score of -0.67 or -0.7 to 1 decimal place. Using the z-score table in appendix 1, what does this mean?

Ans:

1. Taking the z-score to 1 decimal place the table tells us that 75.80% of people in the set would have IQ's equal to, or greater than, the student. In other words the student is not very intelligent.
2. Taking the z-score to 1 decimal place the table tells us that 75.80% of people in the set would have IQ's equal to, or lower than, the student. In other words the student is very intelligent.
3. Taking the z-score to 1 decimal place the table tells us that 24.20% of people in the set would have IQ's equal to, or greater than, the student. In other words the student is very intelligent.
4. None of the above.

Answer: Taking the z-score to 1 decimal place the table tells us that 75.80% of people in the set would have IQ's equal to, or greater than, the student. In other words the student is not very intelligent.

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Question - 17:

The mean of a set of IQs is 100 and the standard deviation is 15. The z score for one student is +2.2 Using the necessary z-score table in appendix 1, what does this mean?

Ans:

1. It tells us that the score is 2.20 standard deviations below the mean.
2. 98.61% of scores are equal to or greater than this student's score - they are not very bright.
3. Only 1.39% of scores are equal to or greater than this student's score - they are very bright.
4. 1.39% of scores are equal to or lower than this student's score - they are not very bright.

Answer: Only 1.39% of scores are equal to or greater than this student's score - they are very bright.

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Question - 18:

Convert the age of a 32 year old to a z-score if the mean of the set of ages is 40 years and the standard deviation of age is 6 years.

Ans:

1. -4.25
   2. -1.33
   3. 1.33
   4. It is not possible to convert these figures into z-scores.
Answer: -1.33

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Question - 19:

In order to use standard normal distribution you need to transform the scores in the sample to the standard normal scores. This is achieved by which of the following? What is the result called?

Ans:

1. Subtracting the score from each mean and then dividing by the standard deviation. The result is called a z-score.
   2. Subtracting the mean from each score and then dividing by the standard deviation the result is called a z-score.
   3. Subtracting the score from the standard deviation and then dividing by mean of each score. The result is called a probability distribution.
   4. Subtracting the mean from the standard deviation and then dividing by each score. The result is called a probability distribution.
Answer: Subtracting the mean from each score and then dividing by the standard deviation the result is called a z-score.

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Question - 20:

What is the probability 1 in 12 expressed as a percentage?

Ans:

1. 0.0833
   2. 0.12
   3. 0.2
   4. 0.0012
Answer: 0.0833

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Question - 21:

Which of the following is not a conditional probability?

Ans:

1. The probability of passing your exam without any revision.
   2. The probability of suffering a sports injury while playing rugby.
   3. The probability of falling down stairs.
   4. The probability of contracting a disease whilst working in a hospital unit for contagious diseases.
Answer: The probability of falling down stairs.

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Question - 22:

If you have a negative z-score it will be below the mean.

Ans:

* True
   * False
Answer: TRUE

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Question - 23:

Inferential statistics deal with:

Ans:

1. Making conclusions and generalizations about population/s from our sample data.
   2. The tabulation and organization of data in order to demonstrate their main characteristics.
   3. Giving the best estimate of the population mean.
   4. Both the second and third statement.
Answer: making conclusions and generalizations about population/s from our sample data.

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