Question #1 of 8

Question ID: 1572888

A test of independence based on contingency table data uses a(n):

A) chi-square statistic.

B) *F*-statistic.

C) *t*-statistic.

Explanation

A test for independence based on contingency table data uses a chi-square statistic.

(Module 9.1, LOS 9.b)

Question #2 of 8

Question ID: 1572889

For a test of independence based on contingency table data, the test statistic is calculated as the:

A) mean absolute deviation of all table cells' actual values and their expected values, if the two characteristics are independent.

B) sum of differences between each table cell's actual value and its expected value, if the two characteristics are independent.

C) sum of squared differences between each table cell's actual value and its expected value, if the two characteristics are independent.

Explanation

The chi-square statistic for a test of independence based on contingency table data is the sum of squared differences between each table cell's actual value and its expected value, if the two characteristics are independent.

(Module 9.1, LOS 9.b)

Question #3 of 8

Question ID: 1572882

Critical values from Student's t-distribution for a two-tailed test at a 5% significance level:

df	
28	2.048
29	2.045
30	2.042

A researcher wants to test a hypothesis that two variables have a population correlation coefficient equal to zero. For a sample size of 30, the appropriate critical value for this test is plus-or-minus:

A) 2.048.

B) 2.045.

C) 2.042.

Explanation

The test statistic for a hypothesis test concerning population correlation follows a t-distribution with n − 2 degrees of freedom. For a sample size of 30 and a significance level of 5%, the sample statistic must be greater than 2.048 or less than −2.048 to reject the hypothesis that the population correlation equals zero.

(Module 9.1, LOS 9.a)

Question #4 of 8

Question ID: 1572886

A test of the hypothesis that two categorical variables are independent is *most likely* to employ:

A) population parameters.

B) *t*-statistics.

C) contingency tables.

Explanation

A hypothesis test whether of two categorical variables (e.g., company sector and bond rating) are independent can be performed by constructing a contingency table and calculating a chi-squared statistic.

(Module 9.1, LOS 9.b)

Question #5 of 8

Question ID: 1572887

In a test of independence based on contingency table data, degrees of freedom are the:

A) sum of the number of rows and the number of columns.

B) product of the number of rows minus one and the number of columns, minus one.

C) sum of the number of rows and the number of columns, minus two.

Explanation

Degrees of freedom for a test for independence are [(r – 1) (c – 1)], where r and c are the number of rows and the number of columns in the contingency table.

(Module 9.1, LOS 9.b)

Question #6 of 8

Question ID: 1572883

To test a hypothesis that the population correlation coefficient of two variables is equal to zero, an analyst collects a sample of 24 observations and calculates a sample correlation coefficient of 0.37. Can the analyst test this hypothesis using only these two inputs?

A) Yes.

B) No, because the sample standard deviations of the two variables are also required.

C) No, because the sample means of the two variables are also required.

Explanation

The t-statistic for a test of the population correlation coefficient is $\frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$, where r is the sample correlation coefficient and n is the sample size.

(Module 9.1, LOS 9.a)

Question #7 of 8

Question ID: 1572885

A researcher wants to test whether the weekly returns on two stocks are correlated. The test statistic for the appropriate test follows a:

A) chi-square distribution.

B) t-distribution with n − 1 degrees of freedom.

C) t-distribution with n − 2 degrees of freedom.

Explanation

The test statistic for the significance of the correlation between two random variables follows a t-distribution with n − 2 degrees of freedom. (Module 9.1, LOS 9.a)

Question #8 of 8

Question ID: 1572884

Student's t-distribution, level of significance for a two-tailed test:

df	0.20	0.10	0.05	0.02	0.01	0.001
16	1.337	1.746	2.120	2.583	2.921	4.015
17	1.333	1.740	2.110	2.567	2.898	3.965
18	1.330	1.734	2.101	2.552	2.878	3.922
19	1.328	1.729	2.093	2.539	2.861	3.883
20	1.325	1.725	2.086	2.528	2.845	3.850

Based on a sample correlation coefficient of −0.525 from a sample size of 19, an analyst calculates a t-statistic of $\frac{-0.525\sqrt{19-2}}{\sqrt{1-(-0.525)^2}}$ = −2.5433. The analyst can reject the hypothesis that the population correlation coefficient equals zero:

A) at a 2% significance level, but not at a 1% significance level.

B) at a 1% significance level.

C) at a 5% significance level, but not at a 2% significance level.

Explanation

With 19 − 2 = 17 degrees of freedom, the critical values are plus-or-minus 2.110 at a 5% significance level, 2.567 at a 2% significance level, and 2.898 at a 1% significance level. Because the t-statistic of −2.5433 is less than −2.110, the hypothesis can be rejected at a 5% significance level. Because the t-statistic is greater than −2.567, the hypothesis cannot be rejected at a 2% significance level (or any smaller significance level).

(Module 9.1, LOS 9.a)