Zur LVA in TISS

Dashboard / Meine Kurse / 107.254-2022W / Tests / Test 9 - One sample z-test, one-sample t-test, two-sample t-test, test for proportions

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Verbrauchte Zeit	17 Minuten 1 Sekunde
Bewertung	**10** von 10 (**100**%)
Feedback	Congratulations! You have successfully passed the test!

Frage **1**
Vollständig
Erreichte Punkte 1 von 1

Five hundred random samples of size $n = 900$ are taken from a large population in which 10% are left-handed. The proportion of the sample that is left-handed is found for each sample and a histogram of these 500 proportions is drawn. Which interval covers the range into which about 68% of the values in the histogram will fall?

- a. $(0.090,\ 0.110)$
- b. $(0.0833,\ 0.1167)$
- c. $(0.0800,\ 0.120)$
- d. $(0.0866,\ 0.1134)$

Frage **2**
Vollständig
Erreichte Punkte 1 von 1

A political candidate is anxious about the outcome of the election. He wants to perform a survey to determine the proportion of voters who will vote for him. How many voters does he need to sample in order to *guarantee* that his survey produces a 95% confidence interval with width no larger than 0.05?

Note that the width of the interval is a function of the proportion that will vote for him, which is unknown. Assume he takes a simple random sample and ignores finite-sample corrections as the population is many times larger than potential sample sizes.

- a. Without knowing the true proportion, we cannot compute a sufficient sample size.
- b. 385
- c. 1537
- d. 895

Frage **3**
Vollständig
Erreichte Punkte 1 von 1

Which of the following statements about t-distributions are true?

I The greater the number of degrees of freedom, the narrower the tails.

II The smaller the number of degrees of freedom, the closer the curve is to the normal curve.

III Thirty degrees of freedom gives the normal curve.

- a. I and III
- b. I and II
- c. I only
- d. II and III

Frage **4**
Vollständig
Erreichte Punkte 1 von 1

A pharmaceutical company claims that 8% or fewer of the patients taking their new statin drug will have a heart attack in a 5-year period. In a government-sponsored study of 2300 patients taking the new drug, 198 have heart attacks in a 5-year period. Is this strong evidence against the company claim?

- a. No, because the P-value is only 0.086087.
- b. No, because the P-value is over 0.10.
- c. Yes, because the P-value is 0.086087.
- d. Yes, because the P-value is 0.005657.

Frage **5**
Vollständig
Erreichte Punkte 1 von 1

A 90% confidence interval for a population mean based on a sample of size 500 was (35, 38). Which of the following is the best interpretation of the interval?

- a. Across many samples, 90% of intervals created using this method would capture the true population mean.
- b. Across many samples, 90% of sample means should lie within an interval made by this method.
- c. There is a 90% probability that the true value of the population mean is in (35, 38).
- d. 90% of data points should lie within this interval.

Frage **6**
Vollständig
Erreichte Punkte 1 von 1

A study is to be performed to estimate the proportion of voters who believe the economy is *heading in the right direction*. Which of the following pairs of sample size n and population proportion p will result in the smallest variance for the sampling distribution of $\hat{p}$?

- a. $n = 100$ and $p = 0.99$
- b. $n = 1000$ and $p = 0.5$
- c. $n = 100$ and $p = 0.1$
- d. $n = 1000$ and $p = 0.1$

Frage **7**
Vollständig
Erreichte Punkte 1 von 1

A company selling home appliances claims that the accompanying instruction guides are written at a 6th grade reading level. An English teacher believes that the true figure is higher and with the help of an AP Statistics student runs a hypothesis test. The student randomly picks one page from each of 25 of the company's instruction guides, and the teacher subjects the pages to a standard readability test. The reading levels of the 25 pages are given in the following table:

Reading grade level	5	6	7	8	9	10
Number of pages	6	10	4	2	2	1

Assuming that the conditions for inference are met, is there statistical evidence to support the English teacher's belief?

- a. Yes, the P-value is between 0.05 and 0.10 indicating some evidence for the teacher's belief.
- b. No, because the P-value is greater than 0.10.
- c. Yes, the P-value is between 0.001 and 0.01 indicating strong evidence for the teacher's belief.
- d. Yes, the P-value is between 0.01 and 0.05 indicating evidence for the teacher's belief.

Frage **8**
Vollständig
Erreichte Punkte 1 von 1

In the situation of a two-sided one-sample t-test we find $\bar{x} = 10$, $s^2 = 36$ and $n = 9$. For a given significance level we find the rejection region $R = (-\infty, -2.2] \cup [2.2, \infty)$. Then for the null hypothesis $H_0 : \mu = 5$ it holds

- a. we do not reject H_0, but we would reject if only the significance level was chosen large enough
- b. we reject H_0, and we would also reject for any smaller significance level
- c. we reject H_0, and we would also reject for any larger significance level
- d. we do not reject H_0, but we would reject if only the significance level was chosen small enough

Frage **9**
Vollständig
Erreichte Punkte 1 von 1

Let the normal distribution with unknown μ and known standard deviation $\sigma = 10$ be the model assumed to describe the monthly income of a population of interest. From an observed sample of size $n = 100$, we obtained $\sum_{i=1}^{100} x_i = 5254$. Which is the 95% confidence interval for the population average income μ?

The following table should be used. Note, z_α is the number that satisfies $P(z \leq z_\alpha) = \alpha$, for $\alpha \in [0, 1]$.

z_α	$z_{0.05}$	$z_{0.25}$	$z_{0.50}$	$z_{0.75}$	$z_{0.90}$	$z_{0.95}$	$z_{0.975}$	$z_{0.99}$	$z_{0.995}$
	-1.645	-0.674	0.000	0.674	1.282	1.645	1.960	2.326	2.575

Table: z_α-values

- a. (51.93, 53.17)
- b. (50, 53)
- c. (50.58, 54.50)
- d. (49.96, 55.12)

Frage **10**

Vollständig

Erreichte Punkte 1 von 1

A hypothesis test comparing two population proportions results in a P-value of 0.032. Which one of the following is a proper conclusion?

a. The probability that the alternative hypothesis is true is 0.032.

b. The difference in sample proportions is 0.032.

c. The probability that the null hypothesis is true is 0.032.

d. None of the above are proper conclusions.

◀ Test 8 - Basic ideas of hypothesis testing

Direkt zu:

Test 10 - Confidence intervals ▶