

Assignment - Chapter 10

Complete the following problems related to the chapter 10. Upload your work as a single PDF file before deadline.

1. In 2016 the Harris poll estimated that 3.3% of American adults are vegetarian. A nutritionist thinks this rate has increased. The nutritionist samples 150 American adults and finds that 11 are vegetarian. What is the sample proportion of vegetarians? What is the hypothetical proportion of vegetarians? Find the value of the test statistic. Explain the test statistic in context.
2. A 2003 study of dreaming published in the journal *Perceptual and Motor Skills* found that out of a random sample of 113 people, 92 reported dreaming in color. However, the proportion of people who reported dreaming in color that was established in the 1940s was 0.29 (Schwitzgebel 2003). Check to see whether the conditions for using a one-proportion z -test are met assuming the researcher wanted to see whether the proportion dreaming in color had changed since the 1940s. If the conditions are met, perform a hypothesis test using $\alpha = 0.05$.
3. According to a Gallup poll, 11.55% of American adults have diabetes. Suppose a researcher wonders if the diabetes rate in her area is higher than the national rate. She surveys 150 adults in her area and finds that 21 of them have diabetes. Perform the hypothesis test that the diabetes rate in this area is lower from the national rate, using a 0.05 significance level. Also interpret the meaning of the the p -value you get in your hypothesis test.
4. Suppose a poll is taken that shows 220 out of 400 randomly selected Twitter users feel that Twitter should do more to decrease hateful and abusive content on the site. Test the hypothesis that the majority (more than 50%) of Twitter users feel the site should do more to decrease hateful and abusive content on the site. Use a significance level of 0.01.
5. An economist is testing the hypothesis that the employment rate for law school graduates is different from 86.7%. The economist is using a 5% significance level. Explain what the 5% significance level means in context.
6. A Gallup poll asked college students in 2016 and again in 2017 whether they believed the First Amendment guarantee of freedom of religion was secure or threatened in the country today. In 2016, 2089 out of 3072 students surveyed said that freedom of religion was secure or very secure. In 2017, 1929 out of 3014 students felt this way. Determine whether the proportion of college students who believe that freedom of religion is secure or very secure in this country has changed from 2016. Use a significance level of 0.05.
7. Dolly the Sheep, the world's first mammal to be cloned, was introduced to the public in 1997. In a Pew Research poll taken soon after Dolly's debut, 63% of Americans were opposed to the cloning of animals. In a Pew Research poll taken 20 years after Dolly, 60% of those surveyed were opposed to animal cloning. Assume this was based on a random sample of 1100 Americans. Does this survey indicate that opposition to animal cloning has declined since 1997? Use a 0.05 significance level.