

1. 400 students were randomly sampled from a large university, and 289 said they did not get enough sleep.

Conduct a hypothesis test with significance level 0.05 to determine if this data represents a statistically significant difference from 50%. Do it using (a) confidence intervals and (b) p-values.

2. It is believed that nearsightedness affects about 8% of all children. In a random sample of 194 children, 21 are nearsighted.

Conduct a p-value hypothesis test with significance level 0.05 to determine if this provides evidence that the 8% value is inaccurate.

3. According to a report on sleep deprivation by the Centers for Disease Control and Prevention, the proportion of California residents who reported insufficient rest or sleep during each of the preceding 30 days is 8.0%, while this proportion is 8.8% for Oregon residents. These data are based on simple random samples of 11,545 California and 4,691 Oregon residents.

Conduct a hypothesis test using p-values with significance level 0.05 to determine if the rate of sleep deprivation is the same in both California and Oregon.