

In-Video Quiz Questions for
Unit 5: Part 1 – (3) Hypothesis Test for a Proportion

(09:27) – slide 5, after “With such a small p value, the conclusion is going to be to reject the null hypothesis.”

1. Which of the following is correct based on the hypothesis test?

- (a) There is almost 0% chance that majority of Americans believe in evolution.
- (b) There is almost 0% chance that only 50% of Americans believe in evolution.
- (c) There is almost 0% chance of obtaining a random sample of 1,983 Americans where 60% or more believe in evolution, if in fact 50% of Americans believe in evolution.
- (d) There is almost 0% chance of obtaining a random sample of 1,983 Americans where 60% or less believe in evolution, if in fact 50% of Americans believe in evolution.

Answers:

1. c

Explanation: Remember, $p\text{-value} = P(\text{observed or more extreme outcome} \mid \text{null hypothesis true})$

- (a) suggests $p\text{-value}$ is the $P(\text{the alternative hypothesis being true})$ - which is not correct as per the definition of the $p\text{-value}$
- (b) suggests $p\text{-value}$ is the $P(\text{the null hypothesis being true})$ - which is not correct as per the definition of the $p\text{-value}$
- (c) suggests $p\text{-value}$ is the $P(\text{observed or more extreme outcome} \mid \text{the null hypothesis is true})$ – which is correct since this is the definition of the $p\text{-value}$
- (d) suggests $p\text{-value}$ is the $P(\text{observed or less extreme outcome} \mid \text{the null hypothesis is true})$ - which is not correct since "more extreme" needs to be in the direction of the alternative hypothesis which suggests that majority of Americans believe in evolution