

Project 10 – 1 & 2 Proportion Tests and Their Alternatives

Perform each hypothesis test using the 5-step procedure.

- If a one proportion test fails its conditions ($np(1-p) \geq 10$, $20n \leq N$), use the binomial calculator as the alternative to compute the P -value.
 - If a two proportion test fails its conditions ($n\hat{p}(1-\hat{p}) \geq 10$, $20n \leq N$ for each sample), use the randomization applet for two proportions as the alternative to compute the P -value.
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1) At the 0.05 level of significance, test the claim that female community college students are more likely to pass a college-level math class within their first 6 years of college than male students are.

A random sample of 300 female students had 120 students who passed a college-level math class in their first 6 years of college. Another random sample of 250 male students had 80 students who passed a college-level math class in their first 6 years of college.

2) A random sample of 36 recent college graduates revealed that 26 of them felt that Statistics is the most important course taught in college. Use this sample to test the claim that more than 50% of all college graduates feel that Statistics is the most important course taught in college. Use the 0.05 level of significance.

3) A political reporter claims that 75% of all registered voters plan to vote in the upcoming election. A random sample of 750 registered voters showed that 600 of them plan to vote in the upcoming election. Use this data to test the reporter's claim at the 0.05 level of significance.

4) A survey asked people if they preferred buying name-brand over-the-counter medications or store brand medications. Of the 44 females who were asked, 12 of them purchase name-brand over-the-counter medications. Of the 40 males who were asked, 18 of them purchase name-brand over-the-counter medications. Test the claim that females are less likely to buy name-brand over-the-counter medications than men are. Use the 0.05 level of significance.

Binomial Alternative to One Proportion Test:

Stat > Calculators > Binomial

Enter sample size for n , claimed proportion in H_0 for p

Use \leq for left-tailed P -value, \geq for right-tailed P -value, double the appropriate tail for a two-tailed test

Randomization Test Alternative for Two Population Proportions

Applets > Simulation > Randomization Test for Two Proportions

Left-tailed P -value: use "or below"; Right-tailed P -value: use "or above"; Two-tailed P -value: Use "Total"