Two Proportions

Claim:

Then

$H_0: P_1 - P_2 = 0$ or $P_1 = P_2$

$H_a: P_1 - P_2 < 0$ or $P_1 < P_2$ Left Tailed

$P_1 - P_2 > 0$ or $P_1 > P_2$ Rt. Tailed

$P_1 - P_2 \neq 0$ or $P_1 \neq P_2$ 2-Tailed

Z STATISTIC

STAT TEST 6

C.I. STAT TEST B

Cookbook problems for Inference of a single sample mean

Show your work:

1. Check the conditions
2. State the claim
3. Write the null and alternative hypotheses
4. State the test statistic
5. State the p-value
6. Make a decision and write it in the context of the claim.

1. A reporter at a large metropolitan area newspaper wondered whether there was a difference related to educational attainment in attitudes toward mandatory testing for detection of serious diseases. He subsequently conducted a survey in which 105 of 150 individuals with, at most, a high school diploma (Population 1) felt that such mandatory testing is necessary. The survey also yielded 28 of 80 individuals with a college degree (Population 2) who felt such mandatory testing is necessary. Use the techniques we have been studying to test the difference in proportions of non-graduates and college graduates who favor mandatory testing for detection of serious diseases.

2. A study by Dr. John A. Benvenuto, Jr., of the National Institute of Drug Abuse in Rockville, Maryland, suggests that one third of all U.S. adults use some form of a tranquilizer at least once a year. A sociologist conducts a study expecting to show that a greater proportion of residents of large cities (more than 100,000 residents) use tranquilizers than residents of small cities (fewer than 100,000 residents). She samples 250 large city residents (Population 1) and finds 105 that take tranquilizers. A sample of 180 small city residents (Population 2) yields 52 who take tranquilizers. Do the results support the sociologist's claim at the 5 percent level of significance?

3. A recent issue of Field & Stream magazine stated that 17 percent of the registered voters in the United States support a ban on handguns. The article was based on findings in a poll taken by the Decision Making Information (DMI) firm A member of a Women for Political Action group in a midwestern city feels the proportion of women in the city (Population 1) who favor a ban on handguns is greater than the proportion of men (Population 2) who favor a ban on handguns. With the help of other members, 140 women voters and 93 men voters were contacted. The results yielded sample proportions pl = 0.33 and p2 = 0.25, respectively, of the women and men voters who support a ban on handguns. Do the data support the expectation of the member of the Action group regarding the residents of this ate? Use a = 0.05.

4. An organization of clergy involved in premarital counseling wants to evaluate its effectiveness in reducing divorce in teenage marriages. A survey of 60 couples who were married in their teens without counseling (Population 1) yielded 35 divorces within the first 7 years of marriage. A survey of 48 couples who were married in their teens after counseling (Population 2) yielded 21 divorces within the first 7 years. Can these numbers support the claim that premarital counseling is effective in reducing the divorce rate in teenage marriages?