

Help can be found in class lecture, topics review or related PowerPoints

Remark: This practice quiz only focus on estimating population proportion but to be ready for quiz 10 you need to review quizzes # 8 and #9 one more time.

- a) What is the point estimate for the difference between two population **means** $\mu_1 - \mu_2$?
- b) What is the error formula for the difference between two population **means**?
- c) How to use TI to estimate for the difference between two population **means**?
- d) What conclusion can we draw if the lower bound of the estimate happened to be zero or negative?
- e) What conclusion can we draw if the both bounds of the estimate happened to be negative?
- f) What is the point estimate for the difference between two population **proportions** $P_1 - P_2$?
- g) What is the error formula for the difference between two population **proportions**?

$$\mu_1 - \mu_2 = (\bar{x}_1 - \bar{x}_2) \pm E \qquad E = Z_{\alpha/2} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}} \qquad \text{(for z- value use table page 3)}$$

Hint for TI: See **page 15** of part III topics review

1) According to AMA, the average annual earnings of radiologists in the US are \$250,000 and those of surgeons are \$240,000. Suppose that these means are based on random samples of 400 radiologists and 500 surgeons and that the population st. dev. of the annual earnings of radiologists and surgeons are \$30,000 and \$35,000. Construct a 97 % confidence interval for the difference between the annual mean earnings of radiologists and surgeons.

$$E = \qquad \mu_R - \mu_S = \qquad 5295.56 < \mu_R - \mu_S < 14704.44$$

2) I surveyed 50 people from a poor area of town and 70 people from an affluent area of town about their feelings towards minorities. I counted the number of negative comments made. I was interested in comparing their attitudes. The average number of negative comments in the poor area was 14 and in the affluent area was 12. The standard deviations were 5 and 4 respectively. Let's determine a 95% confidence for the difference in mean negative comments.

$$E = \qquad \mu_P - \mu_A = \qquad 0.33 < \mu_P - \mu_A < 3.67$$

3) In a sample of 40 Boston male smokers, vitamin C levels had a mean of 0.60 mg/dl and an SD of 0.32 mg/dl while in a sample of 40 Boston male nonsmokers had a mean of 0.90 mg/dl and an SD of 0.35 mg/dl. Let's determine a 90% confidence for the difference in mean vitamin C level between smokers and nonsmokers.

$$E = \qquad \mu_{ns} - \mu_s = \qquad -0.42 < \mu_{ns} - \mu_s < -0.18$$

4) The following data shows women and men that were polled on whether they favored legalized abortion, and the results were as follows: $P_w - P_m = ?$

	Women	Men
$n = \text{Sample Size}$	$n_w = 100$	$n_m = 80$
$x = \text{Number in Favor, x}$	$x_w = 65$	$x_m = 40$

Find 95% confidence interval between the proportions of women and men who favored legalized abortion

$$E = \qquad P_w - P_m = \qquad 0.6\% < P_w - P_m < 29.4\%$$

5) 300 men and 400 women we asked how they felt about taxing Internet sales. 75 of the men and 60 of the women agreed with having a tax. Find a 90% confidence interval for the difference in proportions of men and women. (Write your answers in percentages with 2 decimal places)! ? $P_m - P_w$?

$$E = \qquad P_m - P_w = \qquad 4.95\% < P_m - P_w < 15.05\%$$

6) There are two surveys; one was carried out in East coast and another in West coast. In both surveys, random samples of 1,400 adults in a country were asked whether they were satisfied with their life. The results in East coast showed 462 were satisfied with their life and in West coast 674 were satisfied with their life. Find a 90% confidence interval for the difference in proportions of adults who are satisfied with their lives between East and West coast.

$$E = \qquad P_{EC} - P_{WC} = \qquad -18.3\% < P_{EC} - P_{WC} < -12.27\%$$