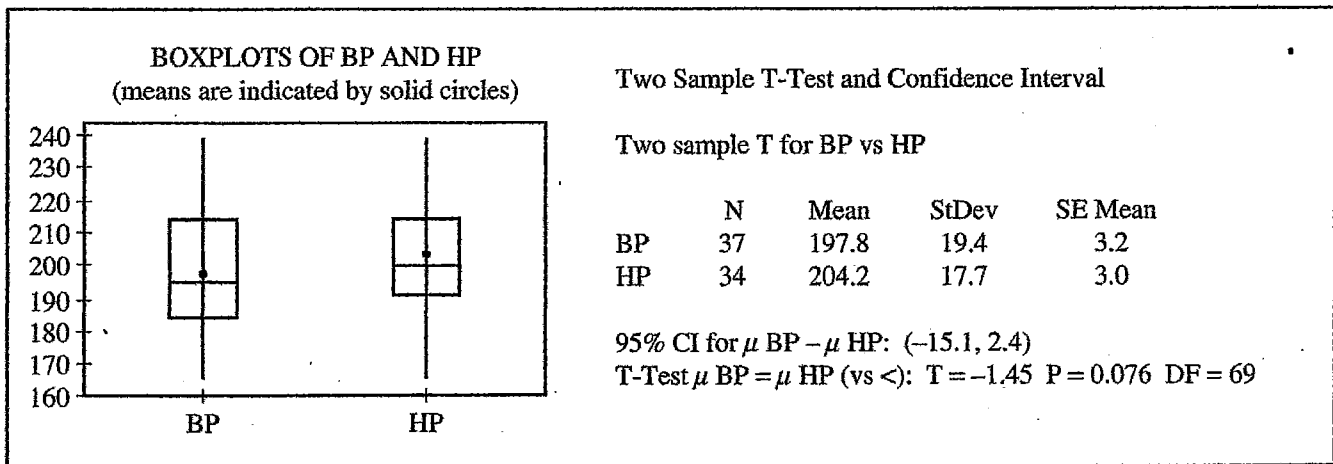


1. A 2001 Harris Poll of 1011 American adults found that 88% said they would trust teachers to tell the truth. This represented an increase of 2% from a similar poll taken in 1998, when 86% said they would trust teachers to tell the truth. Using a 95% confidence interval for the difference between the 2001 and 1998 results, decide whether there is convincing evidence of an increase in the proportion of adults who trust teachers to tell the truth. Assume that the sample sizes were the same in both years and that the samples were random and independent.

- (A) Yes, because the 95% confidence interval for the difference contains 2%.
- (B) Yes, because the 95% confidence interval for the difference contains 0%.
- (C) No, because the 95% confidence interval for the difference contains 2%.
- (D) No, because the 95% confidence interval for the difference contains 0%.
- (E) No, because the 95% confidence interval for the difference does not contain 2%.

37. In a study of the weights of college athletes, player weights for a random sample of baseball players (BP) and for an independent random sample of hockey players (HP) were compared. The computer output shown below gives the results of a test of $H_0: \mu_{BP} = \mu_{HP}$ versus $H_a: \mu_{BP} < \mu_{HP}$.



Which of the following is the best conclusion that can be drawn from the analysis?

- (A) The mean weight of baseball players is not significantly lower than the mean weight of hockey players at the 0.05 level.
- (B) The mean weight of baseball players is not significantly lower than the mean weight of hockey players at the 0.10 level.
- (C) The mean weight of baseball players is significantly higher than the mean weight of hockey players at the 0.10 level.
- (D) The mean weight of baseball players is significantly lower than the mean weight of hockey players at the 0.05 level.
- (E) The mean weight of baseball players is significantly different from the mean weight of hockey players at the 0.05 level.

3. A randomized experiment was performed to determine whether two fertilizers, A and B, give different yields of tomatoes. A total of 33 tomato plants were grown; 16 using fertilizer A, and 17 using fertilizer B. The distributions of the data did not show marked skewness and there were no outliers in either data set. The results of the experiment are shown below.

	<u>Fertilizer A</u>	<u>Fertilizer B</u>
Average number of tomatoes per plant	19.54	23.39
Standard deviation	3.68	4.93
Number of plants	16	17

Which of the following statements best describes the conclusion that can be drawn from this experiment?

- (A) There is no statistical evidence of difference in the yields between fertilizer A and fertilizer B ($p > 0.15$).
- (B) There is a borderline statistically significant difference in the yields between fertilizer A and fertilizer B ($0.10 < p < 0.15$).
- (C) There is evidence of a statistically significant difference in the yields between fertilizer A and fertilizer B ($0.05 < p < 0.10$).
- (D) There is evidence of a statistically significant difference in the yields between fertilizer A and fertilizer B ($0.01 < p < 0.05$).
- (E) There is evidence of a statistically significant difference in the yields between fertilizer A and fertilizer B ($p < 0.01$).

(2010 #5)

4. A large pet store buys the identical species of adult tropical fish from two different suppliers—Buy-Rite Pets and Fish Friends. Several of the managers at the pet store suspect that the lengths of the fish from Fish Friends are consistently greater than the lengths of the fish from Buy-Rite Pets. Random samples of 8 adult fish of the species from Buy-Rite Pets and 10 adult fish of the same species from Fish Friends were selected and the lengths of the fish, in inches, were recorded, as shown in the table below.

	Length of Fish	Mean	Standard Deviation
Buy-Rite Pets ($n_B = 8$)	3.4 2.7 3.3 4.1 3.5 3.4 3.0 3.8	3.40	0.434
Fish Friends ($n_F = 10$)	3.3 2.9 4.2 3.1 4.2 4.0 3.4 3.2 3.7 2.6	3.46	0.550

Do the data provide convincing evidence that the mean length of the adult fish of the species from Fish Friends is greater than the mean length of the adult fish of the same species from Buy-Rite Pets?

(2006B #2)

5. A large company has two shifts – a day shift and a night shift. Parts produced by the two shifts must meet the same specifications. The manager of the company believes that there is a difference in the proportions of parts produced within specifications by the two shifts. To investigate his belief, random samples of parts that were produced on each of these shifts were selected. For the day shift, 188 of its 200 selected parts met specifications. For the night shift, 180 of its 200 selected parts met specifications.

(a) Use a 96 percent confidence interval to estimate the difference in the proportions of parts produced within specifications by the two shifts.

(b) Based only on this confidence interval, do you think that the difference in the proportions of parts produced within specifications by the two shifts is significantly different from 0? Justify your answer.

(2012 #4)

6. A survey organization conducted telephone interviews in December 2008 in which 1,009 randomly selected adults in the United States responded to the following question.

At the present time, do you think television commercials are an effective way to promote a new product?

Of the 1,009 adults surveyed, 676 responded "yes." In December 2007, 622 of 1,020 randomly selected adults in the United States had responded "yes" to the same question Do the data provide convincing evidence that the proportion of adults in the United States who would respond "yes" to the question changed from December 2007 to December 2008?

(2006 #4)

7. Patients with heart-attack symptoms arrive at an emergency room either by ambulance or by self-transportation provided by themselves, family, or friends. When a patient arrives at the emergency room, the time of arrival is recorded. The time when the patient's diagnostic treatment begins is also recorded.

An administrator of a large hospital wanted to determine whether the mean wait time (time between arrival and diagnostic treatment) for patients with heart-attack symptoms differs according to the mode of transportation. A random sample of 150 patients with heart-attack symptoms who had reported to the emergency room was selected. For each patient, the mode of transportation and wait time were recorded. Summary statistics for each mode of transportation are shown in the table below.

Mode of Transportation	Sample Size	Mean Wait Time (in minutes)	Standard Deviation of Wait Times (in minutes)
Ambulance	77	6.04	4.30
Self	73	8.30	5.16

(a) Use a 99 percent confidence interval to estimate the difference between the mean wait times for ambulance-transported patients and self-transported patients at this emergency room.

(b) Based only on this confidence interval, do you think the difference in the mean wait times is statistically significant? Justify your answer.