

Answer on Question #44852 – Math - Statistics and Probability

Who spends more on their vacations, golfers or skiers? To help answer this question, a travel agency surveyed 15 customers who regularly take their spouses on either a skiing or a golfing vacation. The amounts spent on vacations last year are shown here. Can we infer that golfers and skiers differ in their vacation expenses?

Golfer 2450 3860 4528 1944 3166 3275 4490 3685 2950

Skier 3805 3725 2990 4357 5550 4130

Solution

$$H_0: \mu_1 - \mu_2 = 0 \quad H_a: \mu_1 - \mu_2 \neq 0$$

Two-tail F test: $F = 1.04$, p-value = 0.9873; use equal-variances test statistic.

Rejection region: $t < -t_{\frac{\alpha}{2}, v} = -t_{0.05, 13} = -1.771$ or $t > t_{\frac{\alpha}{2}, v} = t_{0.05, 13} = 1.771$.

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{s_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{(3.372 - 4.093) - 0}{\sqrt{\left(\frac{(9-1)755.196 + (6-1)778}{9+6-2} \right) \left(\frac{1}{9} + \frac{1}{6} \right)}} = -1.59.$$

$$p - \text{value} = 0.1368 > .05.$$

There is not enough evidence to infer a difference between the two types of vacation expenses.