

1. Problem

The waiting time (in minutes) at the cashier of two supermarket chains with different cashier systems is compared. The following statistical test was performed:

Two Sample t-test

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data: Waiting by Supermarket
t = 3.8575, df = 132, p-value = 0.9999
alternative hypothesis: true difference in means is less than 0
95 percent confidence interval:
  -Inf 3.552905
sample estimates:
mean in group Sparag mean in group Consumo
      5.859404          3.373846
```

Which of the following statements are correct? (Significance level 5%)

- (a) The absolute value of the test statistic is larger than 1.96.
- (b) A one-sided alternative was tested.
- (c) The p value is larger than 0.05.
- (d) The test shows that the waiting time is longer at Sparag than at Consumo.
- (e) The test shows that the waiting time is shorter at Sparag than at Consumo.

Solution

- (a) True. The absolute value of the test statistic is equal to 3.857.
- (b) True. The test aims at showing that the difference of means is smaller than 0.
- (c) True. The p value is equal to 1.
- (d) False. The test aims at showing that the alternative that the waiting time is shorter at Sparag than at Consumo. The test result is not significant ($p \geq 0.05$).
- (e) False. The test result is not significant ($p \geq 0.05$).