1. Formulate and present the rationale for a hypothesis test that par could use to compare the driving distances of the current and new golf balls.

Under this the null and alternative hypothesis are :

H0: There is no significant difference between the mean.

H1: There is significant difference between the mean.

Level of Significance Alpha =0.05

1. Analyse the data to provide the hypothesis testing conclusion. What is the p-value for your test? What is your recommendation for Par Inc.?

N Mean. Standard Deviation. SE MEAN

Current: 40. 270.27 8.75 1.4

New: 40 267.50 9.90 1.6

Difference: = mu current- mu New

Estimate for Difference- 2.77

95% Confidence Interval for difference (-1.39, 6.94)

T- Value = 1.33. P-Value= 0.188. DF= 76

From the above data we can see that the t=1.33 and P= 0.188 which is greater than the level of significance so we have failed to reject the null hypothesis and conclude that significant difference is there in the two mean values.

3. Provide descriptive statistical summaries of the data for each model

|  |  |  |
| --- | --- | --- |
|  | Current | New |
| count | 40 | 40 |
| Mean | 270.28 | 267.50 |
| Sample Variance | 76.61 | 97.95 |
| Sample Standard Deviation | 8.75 | 9.90 |
| Minimum | 255 | 250 |
| Maximum | 289 | 289 |
| Mode | 272 | 263 |

From the above output we observe that the mean for current data is 270.28 and mean for new data is 267.50. The variance value for the current data is 76.61 and New value is 97.95.

4. What is the 95% confidence interval for the population mean of each model, and what is the 95% confidence interval for the difference between the means of the two population?

Here we need to find the 95% CI for both data sets.

Variable N. Mean. Standard Deviation. SE Mean. 95%CI

Current: 40. 270.27. 8.75 1.38 (267.48, 273.03)

New: 40. 265.50 9.90 1.56 (264.33, 270.67)

From the above data we have 95% CI Data for Current (267.48, 273.03)and New (264.33, 270.67).

95% CI for the difference between the means are (-1.39, 6.94).

5. Do you see a need for larger sample sizes and more testing with the golf balls? Discuss

There is no need to increase the sample since the given data provides the sufficient proof to compare the driving distance of two types of balls.