**Lab 2**

A manufacturer of a certain brand of 9-colt batteries claims that the average life of the battery is 40 hours when used in a radio, with a certain deviation of 5hours. To test the manufacturer’s, claim a random sample pf 100 batteries was tested.

Solution

X= Life of 9-volt batteries

Sample mean = 38 hrs.

Sample size=100

Descriptive Statistics

|  |  |  |  |
| --- | --- | --- | --- |
| N | Mean | SE Mean | 95% CI for μ |
| 100 | 38.000 | 0.500 | (37.020, 38.980) |

μ: mean of Sample  
Known standard deviation = 5

Test

|  |  |
| --- | --- |
| Null hypothesis | H₀: μ = 40 |
| Alternative hypothesis | H₁: μ ≠ 40 |

|  |  |
| --- | --- |
| Z-Value | P-Value |
| -4.00 | 0.000 |

**Conclusion:**

Since, p-value=0.000 << α=0.05, we strongly reject H0 at 5% level of significance. Since, sample mean is 38 hrs. and the test is significant, we can conclude that the average life of batteries is significantly lower than 40hrs. Hence the manufacturer claim is not valid.

Further there is 95% chance that the population mean is between 37.02 hrs. to 38.98 hrs.