**Name:** Saugat Bikram Thapa

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Subject: Statistics II, (Bsc. CSIT III Sem)

Lab QN 3

**Working Expression:**

t = Sample mean−Population mean

Standard error

**Working Procedure:**

Define variables time in minute in variable view → Type, numeric → Label, Time in

minutes → measure, scale → Insert data in data view → Go to analyze → compare

means → one sample t-test → put in test variables→ options, 95% → continue → test value=30 → ok

**SPSS OUTPUT:**

**One-Sample Test**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Test Value = 30 | | | | | |
| t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Time in minutes | 1.484 | 23 | .151 | 3.66667 | -1.4442 | 8.7775 |

**Setting up Hypothesis:**

H0: The time spent by customers is equal to 30 minutes

H1: The time spent by customers is more than 30 minutes (one tailed test)

**Level of significance**

α =0.05

**Decision:**

Here p-value (two tailed) (2p) = 0.151

P=0.075(one tailed)

Since p=0.075> α =0.05, we accept H0 and H1 is rejected.

**Conclusion:**

Hence, we conclude that time spent by customers is equal to 30minutes.

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Lab QN 4

**Working Expression:**

t = Sample mean−Population mean

Standard error

**Working Procedure:**

Define variables Mbps in variable view → Type, numeric → Label, speed of network → measure, scale → Insert data in data view → Go to analyze → compare means → one sample t-test → put in test variables→ options, 95% → continue → test value=100→ ok

**SPSS OUTPUT:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **One-Sample Test** | | | | | | |
|  | Test Value = 100 | | | | | |
| t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| speed of network | -2.140 | 97 | .035 | -3.26531 | -6.2934 | -.2373 |

**Setting up Hypothesis:**

H0: The download speed of a network is equal to 100 Mbps.

H1: The download speed of a network is more than 100 Mbps (one tailed test)

**Level of significance**

α =0.05

**Decision:**

Here p-value (two tailed) (2p) = 0.035

P=0.017(one tailed)

Since p=0.017< α =0.05, we accept H1 and H0 is rejected.

**Conclusion:**

Hence, we conclude that the download speed of a network is more than 100 Mbps.

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Lab QN 5

**Working Expression:**

**t=  d bar**

**standard error**

**Working Procedure:**

Define variables before, after in variables view → Type, numeric → Label, before training, after training, → measure, scale → put data in data view → Go to Analyze → Compare mean → Pared sample t-test → Put before training in variable 1 → Put after training in variable 2→ Option, fix 95% → Continue → Ok

**SPSS OUTPUT:**

**Paired Samples Test**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | |
|  | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Pair 1 | before training - after training | -1.20000 | 2.78089 | .87939 | -3.18933 | .78933 | -1.365 | 9 | .206 |

**Setting of Hypothesis:**

H0: The training was not effective

H1: The training was effective (one tailed test)

**Level of significance:**

α = 0.05

**Decision:**

2p = 0.206

p = 0.103

Since p = 0.103 >α = 0.05, we accept H0 and H1 is rejected.

**Conclusion:**

Hence, we conclude that the training was not effective.

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Lab QN 6

**Working Expression:**

**t=  d bar**

**standard error**

**Working Procedure:**

Define variables before, after in variables view → Type, numeric → Label, before advertisement, after advertisement, → measure, scale → put data in data view → Go to Analyze → Compare mean → Pared sample t-test → Put before advertisement in variable 1 → Put after advertisement in variable 2→ Option, fix 95% → Continue → Ok

**SPSS OUTPUT:**

**Paired Samples Test**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Pair 1 | before advertisement - after advertisement | -4.12500 | 1.55265 | .54894 | -5.42305 | -2.82695 | -7.514 | 7 | .000 |

**Setting of Hypothesis:**

H0: The advertisement was not effective

H1: The advertisement was effective (one tailed test)

**Level of significance:**

α = 0.05

**Decision:**

2p = 0

p = 0

Since p = 0 < α = 0.05, we accept H1 and H0 is rejected.

**Conclusion:**

Hence, we conclude that the advertisement was effective.