Statistical Analysis

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| **Test config 1**  F-Test Two-Sample for Variances | | | |
|  |  |  |  |
|  | *Variable 1* | *Variable 2* |  |
| Mean | -1.22982 | -1.34177 |  |
| Variance | 0.013996 | 0.006409 |  |
| Observations | 30 | 30 |  |
| df | 29 | 29 |  |
| F | 2.18372 |  |  |
| P(F<=f) one-tail | 0.019721 |  |  |
| F Critical one-tail | 1.860811 |  |  |

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| t-Test: Two-Sample Assuming Unequal Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -1.22982 | -1.34177 |
| Variance | 0.013996 | 0.006409 |
| Observations | 30 | 30 |
| Hypothesized Mean Difference | 0 |  |
| df | 51 |  |
| t Stat | 4.292545 |  |
| P(T<=t) one-tail | 3.95E-05 |  |
| t Critical one-tail | 1.675285 |  |
| P(T<=t) two-tail | 7.91E-05 |  |
| t Critical two-tail | 2.007584 |  |

**Test config 2**

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| F-Test Two-Sample for Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -3.4499 | -3.56254 |
| Variance | 0.015702 | 0.00823 |
| Observations | 30 | 30 |
| Df | 29 | 29 |
| F | 1.907921 |  |
| P(F<=f) one-tail | 0.043633 |  |
| F Critical one-tail | 1.860811 |  |

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| t-Test: Two-Sample Assuming Unequal Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -3.4499 | -3.56254 |
| Variance | 0.015702 | 0.00823 |
| Observations | 30 | 30 |
| Hypothesized Mean Difference | 0 |  |
| Df | 53 |  |
| t Stat | 3.988351 |  |
| P(T<=t) one-tail | 0.000103 |  |
| t Critical one-tail | 1.674116 |  |
| P(T<=t) two-tail | 0.000205 |  |
| t Critical two-tail | 2.005746 |  |

**Test config 3**

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| F-Test Two-Sample for Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -4.7345 | -4.73524 |
| Variance | 0.004604 | 0.00486 |
| Observations | 30 | 30 |
| df | 29 | 29 |
| F | 0.947338 |  |
| P(F<=f) one-tail | 0.442589 |  |
| F Critical one-tail | 0.5374 |  |

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| t-Test: Two-Sample Assuming Unequal Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -4.7345 | -4.73524 |
| Variance | 0.004604 | 0.00486 |
| Observations | 30 | 30 |
| Hypothesized Mean Difference | 0 |  |
| df | 58 |  |
| t Stat | 0.041573 |  |
| P(T<=t) one-tail | 0.483491 |  |
| t Critical one-tail | 1.671553 |  |
| P(T<=t) two-tail | 0.966982 |  |
| t Critical two-tail | 2.001717 |  |

**Test config 4**

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| F-Test Two-Sample for Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -9.69461 | -9.7342 |
| Variance | 0.006238 | 0.009467 |
| Observations | 30 | 30 |
| df | 29 | 29 |
| F | 0.65886 |  |
| P(F<=f) one-tail | 0.133531 |  |
| F Critical one-tail | 0.5374 |  |

|  |  |  |
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| t-Test: Two-Sample Assuming Unequal Variances | | |
|  |  |  |
|  | *Variable 1* | *Variable 2* |
| Mean | -9.69461 | -9.7342 |
| Variance | 0.006238 | 0.009467 |
| Observations | 30 | 30 |
| Hypothesized Mean Difference | 0 |  |
| df | 56 |  |
| t Stat | 1.730389 |  |
| P(T<=t) one-tail | 0.044534 |  |
| t Critical one-tail | 1.672522 |  |
| P(T<=t) two-tail | 0.089069 |  |
| t Critical two-tail | 2.003241 |  |

To begin the statistical test I assumed that the distribution was not known to be normal and that the sample size was > 29. After running the f-test I found that mean(variable 1) > mean(variable2) and that F > F Critical. Using this information I assumed unequal variances for the t-test.