1. Suppose a candidate running for sheriff in a rural community claims that she will **reduce** the average speed of emergency response time to less than 30 minutes, which thought to be the average response time with the current sheriff. There are no past records, so the actual standard deviation of such response times cannot be determined. Thanks to this campaign, she is elected sheriff, and careful records are kept. The response times for the first month are: 26, 30, 28, 29, 25, 28, 32, 35, 24, 23. Using **a p < .05 level of significance** did she keep her promise?

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| Step 1: Assumptions:  DV is scale? Time is a ratio scale  Randomly select? Yes  Normal? N < 30…so we don’t know, no. |
| Step 2:  R: new sheriff < old sheriff  N: new sheriff >= old sheriff |
| Step 3:  M = 28 minutes um = 30 minutes  s = 3.71  Sm = 1.17  N = 10 |
| Step 4:  P < .05, one tailed test, less than  df = N – 1, 10 – 1 = 9  qt(.05/1, 9, lower.tail = T)  **-1.83** |
| Step 5:  Calculate t!  One Sample t-test  data: mydata  **t = -1.7039**, df = 9, p-value = 0.0613  alternative hypothesis: true mean is less than 30  95 percent confidence interval:  -Inf 30.15169  sample estimates:  mean of x  28 |
| Step 6:  Fail to reject (not significant) |
| Confidence Interval:  M = 28.00, SD = 3.71, SE = 1.17, **95%CI[25.34 - 30.66]**  t(9) = -1.70, p = 0.12, d = -0.54, 95%CI[-1.19 - 0.14] |
| Effect size:  d = -0.54, 95%CI[-1.19 - 0.14] (medium effect) |

1. In a particular country, it is known that college seniors report falling in love an average of 2.20 times during their college years. A sample of five seniors, originally from that country but who have spent their entire college career in the United States, were asked how many times they had fallen in love during their college years. Their numbers were 2, 3, 5, 5, 2. Using **the p < .01 significance level**, do students like these who go to college in the US fall in **love more often** than those from their country who go to college in their own country?

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| Step 1: Assumptions:  DV scale? Yes ratio  Randomly select: not really  Normal? N < 30, so not really. |
| Step 2:  R: international students in the US > international students in their home country  N: international students in the US <= international students in their home country |
| Step 3:  M = 3.4 um = 2.2  s = 1.52  Sm = 0.68  N = 5 |
| Step 4:  Df = 4  P < .01  One tailed greater than test  qt(.01/1, 4, lower.tail = F)  **3.75** |
| Step 5:  One Sample t-test  data: mydata  **t = 1.7693**, df = 4, p-value = 0.07578  alternative hypothesis: true mean is greater than 2.2  99 percent confidence interval:  0.8586966 Inf  sample estimates:  mean of x  3.4 |
| Step 6:  Fail to reject |
| Confidence Interval:  M = 3.40, SD = 1.52, SE = 0.68, 9**9%CI[0.28 - 6.52]**  t(4) = 1.77, p = 0.15, d = 0.79, 99%CI[-0.57 - 2.12] |
| Effect size:  d = 0.79, 99%CI[-0.57 - 2.12] (large effect) |