STAT420

HW2

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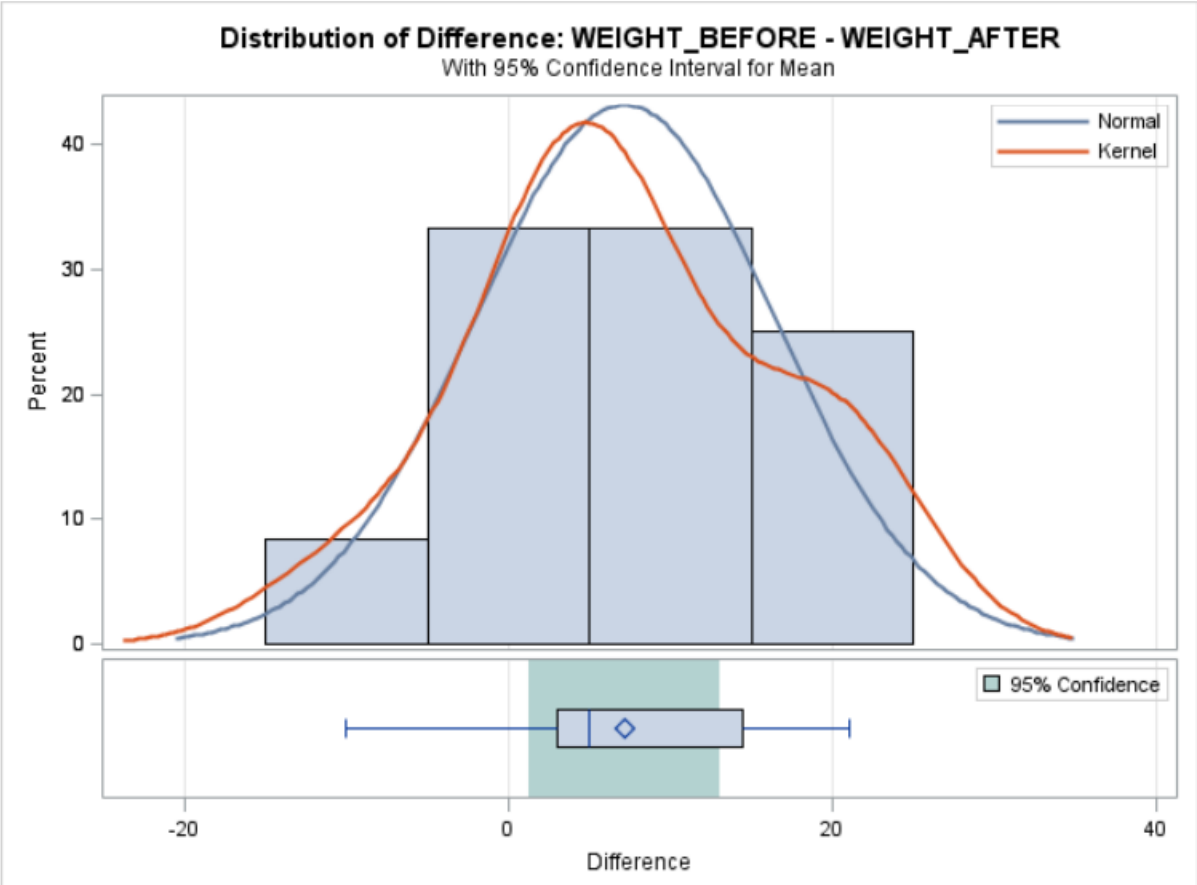
Q1: The company should select buying the rights to the South Beach Diet

Q2: From the T test, we have the Difference: WEIGHT_BEFORE - WEIGHT_AFTER the that is reduced to 7.1667 after we select the South Beach Diet. On the confidence level 95% we have the p value of the difference is p-value=0.0212/2=0.0106. We can have the accepted p value < 0.05 from the one-sided t test but the result is corresponding to the two-sided test. Therefore, the company should accept South Beach Diet.

Q3: We have used T-test. The T-hypothesis testing needs data from the normal distribution. WEIGHT_BEFORE - WEIGHT_AFTER, is the normal distribution. From the UNIVARIATE procedure we can see the distribution of (WEIGHT_BEFORE - WEIGHT_AFTER) is the normal. So we can use the UNiVRIATE procedure in the analysis. The distribution of WEIGHT_BEFORE is normal. Because the P values of Shapiro Wilk Test, Kolmogorov-Smirnov test, Cramer-von Mises test, and Anderson-Darling test are all greater than 0.05 given the confidence interval 95%. Meaning we have the H0 to be accepted . Therefore we have the distribution of WEIGHT_BEOFRE to be the normal

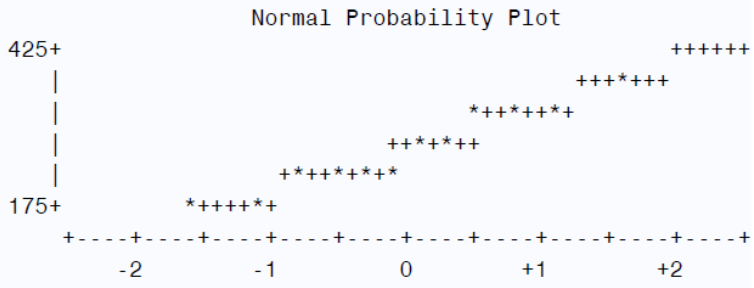
The following picture shows that we have 95% confidence so that the difference follows a normal distribution.



Similar to the WEIGHT_BEFORE, the distribution of WEIGHT_AFTER is also a normal since the P value of all four values of normality tests are greater than 0.05, and we can also use the box plot to tell the probability as well.

Variable: WEIGHT_AFTER

```
Stem Leaf                     #             Boxplot
   4 0                        1                |
   3                                           |
   3 033                      3             +-----+
   2 69                       2             *--+--*
   2 0244                     4             +-----+
   1 68                       2                |
     ----+----+----+----+
  Multiply Stem.Leaf by 10**+2
```



WEIGHT BEFORE and WEIGHT AFTER also have a linear connection. If a patient weighed more before starting the diet, they will lose more weight during it.

Difference: WEIGHT_BEFORE - WEIGHT_AFTER

N	Mean	Std Dev	Std Err	Minimum	Maximum
12	7.1667	9.2425	2.6681	-10.0000	21.0000

Mean	95% CL Mean		Std Dev	95% CL Std Dev	
7.1667	1.2942	13.0391	9.2425	6.5474	15.6927

DF	t Value	Pr > |t|
11	2.69	0.0212