One Sample T-test
Women's Height

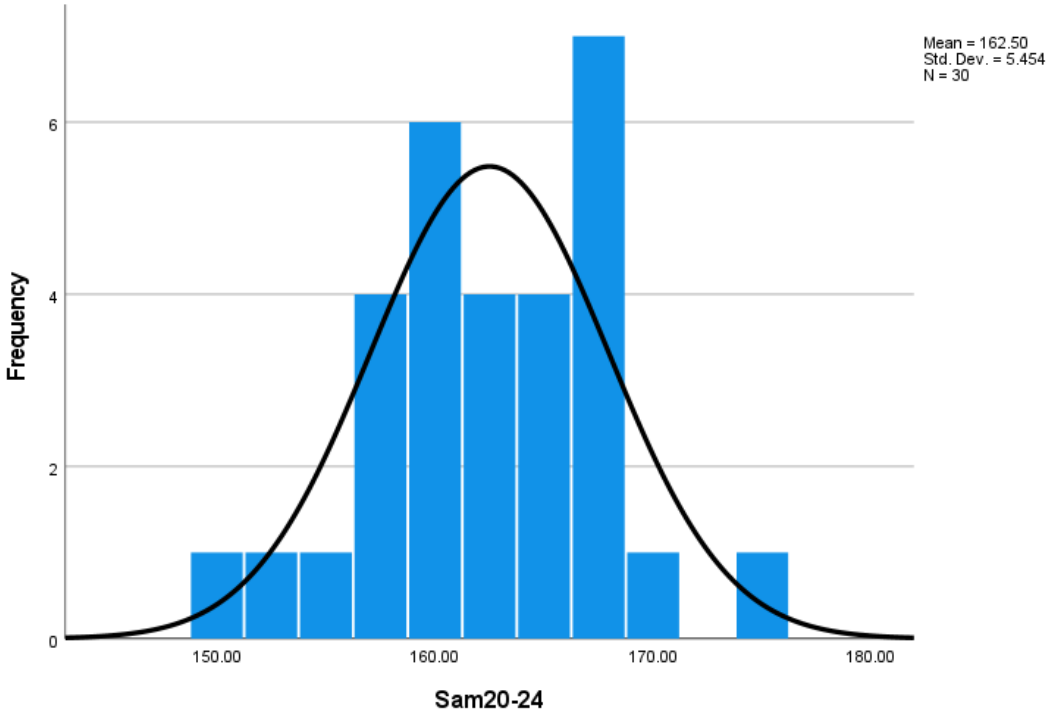
Data on the heights of women of different ages (women, age, height).
– Focusing on just the first column of young women (women from ages 20-24)

– Question:
Is the average height of women ages 20-24 different from 155cm?

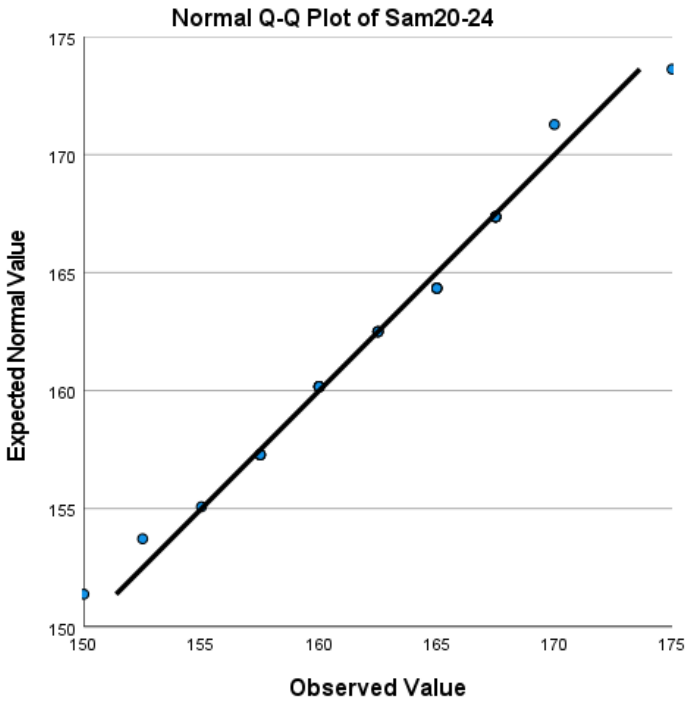
TASK

1. Explore data and check normality

Histogram



QQ-plot



Test for normality

Descriptives

			Statistic	Std. Error
Sam20-24	Mean		162.5000	.99568
	95% Confidence Interval for Mean	Lower Bound	160.4636	
		Upper Bound	164.5364	
	5% Trimmed Mean		162.5463	
	Median		162.5000	
	Variance		29.741	
	Std. Deviation		5.45357	
	Minimum		150.00	
	Maximum		175.00	
	Range		25.00	
	Interquartile Range		8.13	
	Skewness		-.149	.427
	Kurtosis		.136	.833

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sam20-24	.120	30	.200*	.967	30	.466

*. This is a lower bound of the true significance.
Lilliefors Significance Correction

p-values HIGHER than 0.05. That's a good sign because we can assume our data is normal for our analysis

2. Define null and alternative hypothesis to the question.
– Question: Is the average height of women ages 20-24 different from 155cm
– Alternative Hypothesis: There is a difference (younger women different than 155cm)
Based on our statistical test, there is evidence that younger women's height is higher than 155cm”

3. Run t-test (2-sample T-test)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Sam20-24	30	162.5000	5.45357	.99568

One-Sample Test

	Test Value = 155					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Sam20-24	7.533	29	.000	7.50000	5.4636	9.5364

4. Interpret Results
- What is the test statistic, degrees of freedom, and p-value?
• t=7.533 • DF=29 • P-value< 0.05
- Determine if significant
• P-value < 0.05
• Significant
- Did you reject or fail to reject the null?
• Reject Null
- Are young women on average different from a height of 155cm? How so?
Young women were significantly taller (mean=162.5) than the value of 155 cm
(1 -sample t -test, t=7.533, DF=29, p - value <0.0001)