

	<i>minutes_watched_22_US</i>	<i>minutes_watched_22_IN</i>
Mean	73.07053569	78.42208628
Variance	95208.64187	101975.5527
Observations	6459	21210
df	6458	21209
F	0.933641833	
P(F<=f) one-tail	0.000347535	
F Critical one-tail	0.967314359	

### Hypotheses testing: For the Variance of minutes Watched between USA and INDIA

#### F-Test Interpretation:

F-Statistic (F): 0.9336

p-value (P(F<=f) one-tail): 0.0003475

F-Critical (one-tail): 0.9673

#### Step-by-Step Interpretation:

1. Null Hypothesis ( $H_0$ ): The variances of minutes watched in the US and India are equal ( $\sigma_1^2 = \sigma_2^2$ ).

2. Alternative Hypothesis ( $H_1$ ): The variances of minutes watched in the US and India are not equal ( $\sigma_1^2 \neq \sigma_2^2$ ).

#### Decision Rule:

Compare the p-value to your significance level ( $\alpha = 0.05$ ).

If p-value <  $\alpha$ , reject the null hypothesis ( $H_0$ ).

Here, the p-value (0.0003475) is much smaller than the significance level (0.05), so we reject the null hypothesis. This means that the variances of minutes watched in the US and India are significantly different.

#### What Does This Mean?

Since the variances are different, you should proceed with a t-test assuming unequal variances (Welch's t-test).

t-Test: Two-Sample Assuming Unequal Variances		
	<i>minutes_watched_22_US</i>	<i>minutes_watched_22_IN</i>
Mean	73.07053569	78.42208628
Variance	95208.64187	101975.5527
Observations	6459	21210
Hypothesized Mean Difference	0	
df	11001	

t Stat	-1.210387573	
P(T<=t) one-tail	0.113078106	
t Critical one-tail	1.644992151	
P(T<=t) two-tail	0.226156213	
t Critical two-tail	1.960179649	

### Hypotheses:

Null Hypothesis ( $H_0$ ): The average number of minutes watched in the US is equal to or greater than in India ( $\mu_1 \geq \mu_2$ ).

Alternative Hypothesis ( $H_1$ ): The average number of minutes watched in the US is less than in India ( $\mu_1 < \mu_2$ ).

### Interpretation:

One-Tailed Test: The p-value (0.1131) for the one-tailed test is greater than the significance level (0.05). Since  $p > 0.05$ , we fail to reject the null hypothesis for the one-tailed test. This means there is not enough evidence to conclude that the engagement in the US is lower than that in India.

Two-Tailed Test: The p-value (0.2262) for the two-tailed test is also greater than the significance level (0.05).

Since  $p > 0.05$ , we fail to reject the null hypothesis for the two-tailed test. This means there is no significant difference in the average number of minutes watched between the US and India.

### Conclusion:

1. For the one-tailed test: We cannot conclude that the average minutes watched in the US is lower than in India.
2. For the two-tailed test: We cannot conclude that there is a significant difference in the average minutes watched between the US and India.