**[Business-Case-Yulu-Bicycles](https://github.com/Pulkit-kapoor/Business-Case-Yulu-Bicycles" \l "business-case-yulu-bicycles) – Hypothesis Testing**

* Imported the dataset and do usual exploratory data analysis steps like

1. Checking the structure & characteristics of the dataset
2. Checking for Null Values
3. Changing the Data types
4. Univariate Analysis

**Concept Used**

* Bi-Variate Analysis
* 2-sample t-test: testing for difference across populations
* ANNOVA
* Chi-square

**Bi – Variate Analysis**

**Doing Box Plot for**

Season v/s Count

Weather V/s Count

Workingday v/s Count

Holiday v/s count

**T-Test**

2- Sample T-Test to check if Working Day has an effect on the number of electric cycles rented:

mu1--> mean of non - working day

mu2--> mean of working day

Null Hypothesis: Working day has no effect on the number of cycles being rented.-> mu2<=mu1

Alternate Hypothesis: Working day has effect on the number of cycles being-->mu2>mu1

rented.

Significance level (alpha): 0.05

We will use the 1-Sample T-Test to test the hypothesis defined above

p\_value : 0.3184312192961206

We Fail to Reject Ho

Interpretation : Since p\_value is greater than 0.05 so we failed to reject the Null hypothesis. We don't have the sufficient evidence to say that working day has effect on the number of cycles being rented

**ANNOVA**

*# Weather Check*

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Null Hypothesis: Number of cycles rented is similar in different weather --> mean of all the weather are same

Alternate Hypothesis: Number of cycles rented is different in weather --> mean of all the weather are diifferent

Significance level (alpha): 0.05

Result :

p\_value: 9.136763731489565e-24

Reject Ho

Weather has effect on rented cycle

*# Season Check*

Null Hypothesis: Number of cycles rented is similar in different weather --> mean of all the weather are same

Alternate Hypothesis: Number of cycles rented is different in weather --> mean of all the weather are diifferent

Significance level (alpha): 0.05

Result : p\_value: 1.5440589696519812e-47

Reject Ho

season has effect on rented cycle

**Chi – Square**

Chi-square test to check if Weather is dependent on the season

Null Hypothesis (H0): Weather is independent of the season

Alternate Hypothesis (H1): Weather is not independent of the season

Significance level (alpha): 0.05

Result – As p\_value was 2.8260014509929343e-08

We reject the Reject Ho

Interpretation : Weather and season are associated

**Insights**

Insights

1.In summer and fall seasons more bikes are rented as compared to other seasons.

2.Whenever its a holiday more bikes are rented.

3. It is also clear from the workingday also that whenever day is holiday or weekend, slightly more bikes were rented.

4.Whenever there is rain, thunderstorm, snow or fog, there were less bikes were rented. • Whenever the humidity is less than 20, number of bikes rented is very very low.

5. Whenever the temperature is less than 10, number of bikes rented is less. 6.Whenever the windspeed is greater than 35, number of bikes rented is less.

**Recommendation**

1.In summer and fall seasons the company should have more bikes in stock to be rented. Because the demand in these seasons is higher as compared to other seasons.

2.With a significance level of 0.05, workingday has no effect on the number of bikes being rented.

3.In very low humid days, company should have less bikes in the stock to be rented.

4.Whenever temperature is less than 10 or in very cold days, company should have less bikes.

5.Whenever the windspeed is greater than 35 or in thunderstorms, company should have less bikes in stock to be rented.