Yulu Case Study

1. Problem statement : understand the factors affecting the demand for Yulu shared electric cycles in the Indian market
    a. Identify variables that are significant in predicting the demand for shared electric cycles in the Indian market
    b. Understand how significant the found variables are in predicting the demand

2. Checking the structure & characteristics of the dataset - Answer

3. Outlier checking, univariate, bivariate analysis - Answer

4. Hypothesis Testing - Answer

ASSUMPTIONS :

1. For hypothesis testing following assumptions have been taken
    a. Observations in each sample are independent and identically distributed (iid).
    b. Observations in each sample are normally distributed.
    c. Observations in each sample have the same variance
    d. Observations used in the calculation of the contingency table are independent.
    e. 25 or more examples in each cell of the contingency table.

OBSERVATIONS

1. Columns such as ‘temp’, ‘atemp’, ‘humidity’ follow normal distribution.
2. ‘windspeed’ follows binomial distribution and ‘casual’,’registered’, and ‘count’ follows log normal distribution
3. While univariate analysis outliers are found in ‘windspeed’, ‘casual’,’registered‘ and ‘count’
4. In the boxplot analysis, there is an overlap of ranges with outliers for count, humidity, and wind speed when comparing seasons. However, when examining temperature versus season, the boxplots reveal no overlap, and there is a

noticeable difference in median values. Specifically, temperatures are higher during seasons 2 and 3, while they are lower during seasons 1 and 4.

5. Through visual analysis, we observed that on non-holiday working days, there appears to be a relatively higher cycle rental count. However, we were unable to confirm this relationship through statistical significance testing.
6. It seems that as the temperature data increases, the rental count also appears to increase.
7. Humidity and rental count is having an inverse relationship.
8. The rental count, when analyzed according to seasons, follows the following relationship: 3 > 2 > 4 > 1. The statistical significance of this claim is also true through Anova
9. When weather is analyzed with respect to rental count, the following relationship is observed: 1 > 2 > 3 > 4. The statistical significance of this claim is also true through Anova
10. 4 appears to be the worst time for rentals. This certainly suggests that people dislike using two-wheelers in such unsafe weather conditions. Category 4 is characterized by Heavy Rain + Ice Pellets + Thunderstorm + Mist, Snow + Fog
11. Holiday and non working days people are showing less interest towards rental.
12. We have proceeded with the hypothesis testing even though some of the assumptions we initially made have not been fulfilled
13. Weather and season are dependent variables

RECOMMENDATIONS

1. Introducing a reward points system for every registered rental, with a focus on themes such as eco-responsibility, and providing additional rewards during non-working days and holiday rentals, can potentially benefit the business.
2. Rental rates should be kept low on non working and holidays compared to normal days.
3. We observed significantly lower interest during weather condition 4. One strategy is to provide free raincoats to renters. This incentive may encourage people to take rides even in inclement weather. Moreover, offering free rain gear exclusively to registered users could incentivize more people to register with the app, boosting user engagement.
4. Seasonal campaigns are required as we have seen the influence of season and weather on rental counts.

5. This recommendation pertains to technological aspects. Introducing heated grips for the ride is a good idea because, during the winter season this will come handy, this feature is commonly seen in high-end motorbikes only. It can significantly enhance the overall riding experience. Additionally, we can consider implementing a subscription model for this feature. May be like a premium plus feature.