MULTIPLE LINEAR REGRESSION MODEL

Objective

Solved this using Linear Regression.In this case study,applied the techniques learnt in Linear Regression,understand through the model the prediction of demand for shared bikes.

General Information

General Information about the project :- To get an idea how real world problems are solved using Linear Regression,the case study of BoomBikes, a US Bike Sharing Provider.

Background of the project:- A US bike-sharing provider BoomBikes has recently suffered considerable dips in their revenues due to the ongoing Corona pandemic. The company is finding it very difficult to sustain in the current market scenario. So, it has decided to come up with a mindful business plan to be able to accelerate its revenue as soon as the ongoing lockdown comes to an end, and the economy restores to a healthy state. In such an attempt, BoomBikes aspires to understand the demand for shared bikes among the people after this ongoing quarantine situation ends across the nation due to Covid-19. They have planned this to prepare themselves to cater to the people's needs once the situation gets better all around and stand out from other service providers and make huge profits.

They have contracted a consulting company to understand the factors on which the demand for these shared bikes depends. Specifically, they want to understand the factors affecting the demand for these shared bikes in the American market. The company wants to know:

a) Which variables are significant in predicting the demand for shared bikes.
b) How well those variables describe the bike demands

Based on various meteorological surveys and people's styles, the service provider firm has gathered a large dataset on daily bike demands across the American market based on some factors.

Business Problem that is being solved:-

We are required to model the demand for shared bikes with the available independent variables. It will be used by the management to understand how exactly the demands vary with different features.

They can accordingly manipulate the business strategy to meet the demand levels and meet the customer's expectations. Further, the model will be a good way for management to understand the demand dynamics of a new market.

Dataset used:-

It contains the complete dataset containing different variables:-

Instant,dteday,season,yr,month,holiday,weekday,workingday,weathersit,temp,atemp,hum,windspeed,casual,registered and cnt.

Conclusions

We can see that equation for best fitted line is:-

cnt= 0.246*yr-0.083*holiday-0.198*spring-0.321*Light rain_Light snow_Thunderstorm-0.090*Mist_cloudy+0.063*3+0.123*5+0.148*6+ 0.153*8+0.193*9-0.049*Sunday+0.126*7+0.116*10

a) We can see the demand for bikes depends mainly on below variables:
yr , holiday ,Spring, Mist_Cloudy, Light rain_Light snow_Thunderstorm,3 ,5 ,6, 8, 9, sunday, 7, 10.
b) Demands increases in the month of 3, 5, 6, 8 ,9, 7 , 10 and yr.
c) Demand decreases if it is holiday , Spring, Light rain_Light snow_Thunderstorm, Mist_cloudy, Sunday.

Final recommendations for the company :-
Demand is higher in month of 3, 5 , 6, 8, 9 ,7 and 10

Technologies Used

- Python 3.8
- Microsoft Powerpoint
- Jupyter Notebook

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