Description of Bike-Sharing Data

Bike-sharing systems represent a modern evolution of traditional bike rentals, where the entire process - from membership to rental and return - has been automated. This innovation allows users to easily rent bikes from one location and conveniently return them to another. With over 500 bike-sharing programs worldwide, encompassing a staggering 500,000 bicycles, these systems have garnered significant attention due to their pivotal role in addressing traffic congestion, and environmental concerns and promoting public health.

The appeal of bike-sharing systems extends beyond their practical applications; they offer a wealth of valuable data for research purposes. Unlike other modes of transport like buses or subways, bike-sharing systems record precise details such as travel duration and specific departure and arrival positions. This unique attribute transforms these systems into virtual sensor networks that effectively capture mobility patterns across the city. As a result, these datasets hold the potential to detect and monitor crucial events and trends, contributing to the understanding of urban dynamics and fostering smarter city planning.

Data Set

Bike-sharing rental process is highly correlated to the environmental and seasonal settings. For instance, weather conditions, precipitation, day of week, season, hour of the day, etc. can affect rental behaviors. The core data set is related to the two-year historical log corresponding to the years 2011 and 2012 from Capital Bikeshare system, Washington D.C., USA which is publicly available at http://capitalbikeshare.com/system-data. We aggregated the data on two hourly and daily basis and then
extracted and added the corresponding weather and seasonal information. Weather information is extracted from http://www.freemeteo.com.

Columns Details with their encoded labels:

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- instant: record index
- dteday : date
- season : season (1:springer, 2:summer, 3:fall, 4:winter)
- yr : year (0: 2011, 1:2012)
- mnth : month (1 to 12)
- hr : hour (0 to 23)
- holiday : weather day is holiday or not (extracted from http://dchr.dc.gov/page/holiday-schedule)
- weekday : day of the week
- workingday : if day is neither weekend nor holiday is 1, otherwise is 0.
- weathersit :
- 1: Clear, Few clouds, Partly cloudy, Partly cloudy

- 2: Mist + Cloudy, Mist + Broken clouds, Mist + Few clouds, Mist
- 3: Light Snow, Light Rain + Thunderstorm + Scattered clouds, Light Rain + Scattered clouds
- 4: Heavy Rain + Ice Pallets + Thunderstorm + Mist, Snow + Fog
- temp : Normalized temperature in Celsius. The values are divided into 41 (max)
- atemp: Normalized feeling temperature in Celsius. The values are divided into 50 (max)
- hum: Normalized humidity. The values are divided into 100 (max)
- windspeed: Normalized wind speed. The values are divided into 67 (max)
- casual: count of casual users
- registered: count of registered users
- cnt: count of total rental bikes including both casual and registered

https://www.kaggle.com/datasets/harbhajansingh21/bike-sharing-dataset