Bike Rental Report

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1. Business Overview

Over a two year period a bike rental company has collected data on the number of daily rentals, daily weather conditions and day type. The company has commisioned the NICD to analyse and deliver business insights from this data set. The company would like help to understand how the change in weather effects the number of bikes the company rent out each day.

1.1 Data mining goals and success criteria

This project will focus on data description and summarisation of the data set to help develop insights into the impact weather has on bike rentals.

The goal of this project is to:

Identify how the change in weather effect the number of bikes rented out each day.

1.2 Requirements, assumptions, and constraints

Requirements:

- A report with a maximum of 500 words and 2 figures, detailing how the data has been interpreted and what insights have been gained.
- A Git repository or the work completed
- A ProjectTemplate folder containing reports and source code

Assumptions and constraints:

- We can only work with the data set provided
- No meta date has been provided. All data assumptions should be logged so they can be verified later

2. Data Overview and Preparation

One data set was provided by the bike rental company as a csv file. The data set is complete with no missing values.

The next step was to investigate what information is contained within the data set and evaluate which variables relate to the project goal. The section below contain:

- a snapshot of the first 5 vectors of the data file. This provides the column headers and vector class
- a table providing details on each variable
- a summary explaining which elements are most helpful at addressing the project goal
- a summary of data assumptions
- data preparation considerations: any initial thoughts that should be considered before data preparation or analysis

```
head(bike.rental.data, 5)
```

```
## # A tibble: 5 x 12
##   season    yr mnth  holiday weekday workingday weathersit  temp   hum windspeed
##   <chr>  <int> <chr> <chr>   <chr>   <chr>      <chr>      <dbl> <dbl>     <dbl>
## 1 SPRING  2011 JAN   NO HOL~ SAT     NO WORKIN~ MISTY       8.18  80.6      10.7
## 2 SPRING  2011 JAN   NO HOL~ SUN     NO WORKIN~ MISTY       9.08  69.6      16.7
## 3 SPRING  2011 JAN   NO HOL~ MON     WORKING D~ GOOD        1.23  43.7      16.6
## 4 SPRING  2011 JAN   NO HOL~ TUE     WORKING D~ GOOD        1.4   59.0      10.7
## 5 SPRING  2011 JAN   NO HOL~ WED     WORKING D~ GOOD        2.67  43.7      12.5
## # ... with 2 more variables: cnt <int>, days_since_2011 <int>
```

Column Header	Class	Example	Description
season	character	"SPRING"	The season, spring, summer, fall or winter
yr	integer	2011	The year, either 2011 or 2012
mnth	character	"JAN"	The month, all in shortened character form (e.g. "JAN", "FEB", "MAR")
holiday	character	"NO HOLIDAY"	Whether the day is a holiday "HOLIDAY" or not "NO HOLIDAY"
weekday	character	"SAT"	The day of the week, all in shortened character form (e.g. "SAT", "SUN", "MON")
weathersit	character	"MISTY"	The overall weather category ("GOOD", "MISTY" or "RAIN/SNOW/STORM")
temp	numeric	8.18	Temperature (degrees celsius, °C)
hum	numeric	80.6	Relative humidity (%)
wind speed	numeric	10.7	Wind speed (mph)
cnt	integer	985	The number of bikes rented that day (rental count)
days_since_2011	integer	0,1,2	A sequence of numbers starting a 0 on 1 January 2011 and increasing by 1 each day

An initial review of the data shows that

A bike rental company has been collecting data on how many bikes they have rented out to customers each day for a period of 2 years. In addition to the number of bikes rented, they have also captured the weather conditions of each day. The company would like help to understand how the change in weather effects the number of bikes the company rent out each day. Please see the attached dataset labelled 'bike rental data'.