

p8105_hw1_rh3195

Ruijie He

2023-09-23

Problem 1

```
library("moderndive")
data("early_january_weather")
```

#variables in dataset

```
variables <- colnames(early_january_weather)
variables
```

```
## [1] "origin"      "year"        "month"       "day"        "hour"
## [6] "temp"        "dewp"        "humid"       "wind_dir"   "wind_speed"
## [11] "wind_gust"   "precip"      "pressure"    "visib"      "time_hour"
```

#Size of dataset

```
num_rows <- nrow(early_january_weather)
num_cols <- ncol(early_january_weather)
num_rows
```

```
## [1] 358
```

```
num_cols
```

```
## [1] 15
```

```
mean_temp <- mean(early_january_weather$temp)
mean_temp
```

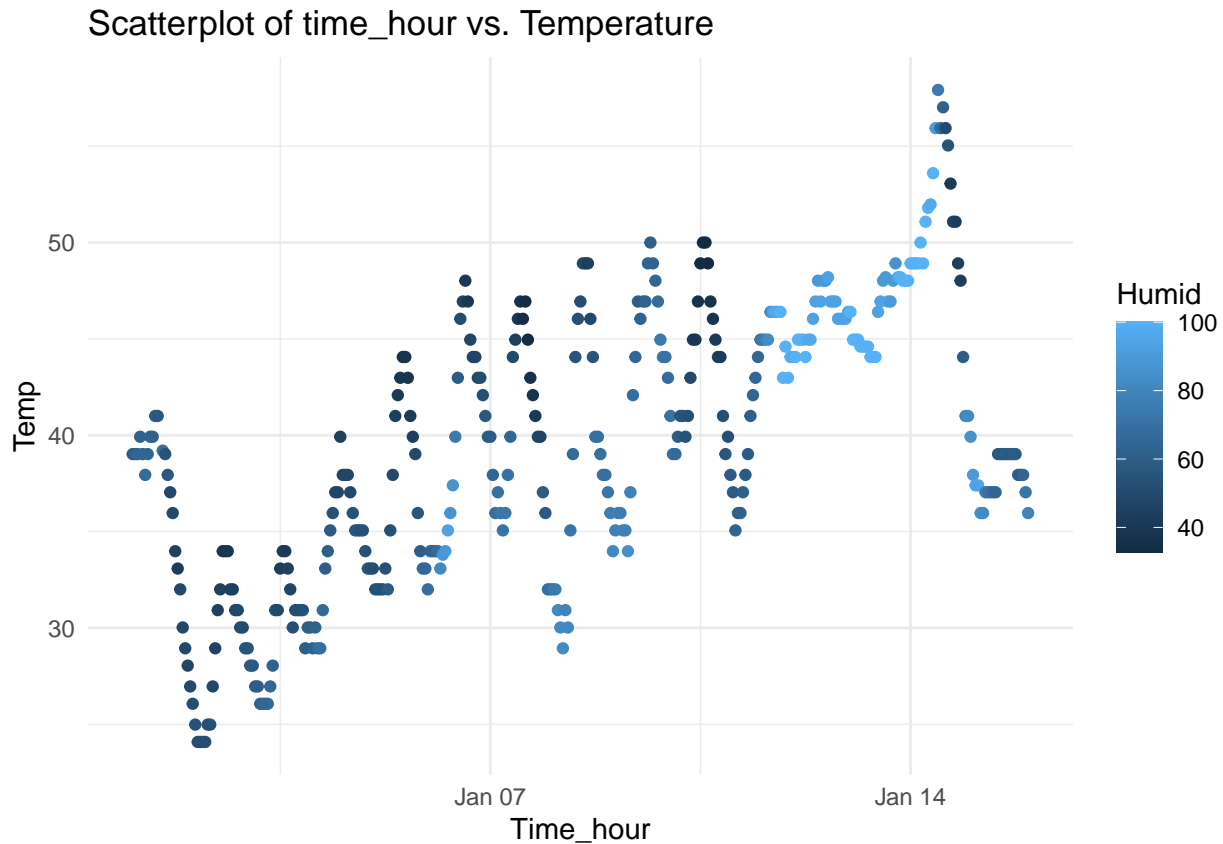
```
## [1] 39.58212
```

- There are 15 variables in this dataset. Some important variables including year, month, day, and time_hour that tells the time. The wind direction, wind speed, and wind-gust that is related to the wind. Also the “temp” tells temperature and “humid” tells the humidity. It has 358 rows and 15 columns. The mean temperature is 39.58 degree.

#Making scatterplot of temp (y) vs. time_hour (x)

```
library (ggplot2)

ggplot(early_january_weather, aes(x = time_hour, y = temp, color = humid)) +
  geom_point() +
  labs(x = "Time_hour", y = "Temp", color = "Humid") +
  ggtitle("Scatterplot of time_hour vs. Temperature") +
  theme_minimal()
```



##Describe pattern of scatterplot##

- The scatterplot shows that the two variables time_hour and temperature are having a positive association. Because as the temperature increases as the time_hour do. And the data points on this plot are assembled closely nearly to a linear line, which illustrating a linear relationship.

```
ggsave("scatterplot_of_time_vs_temperature.pdf", width = 6, height =4)
```

Problem 2

```
library (tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.3      v readr      2.1.4
## v forcats    1.0.0      v stringr    1.5.0
## v lubridate  1.9.2      v tibble     3.2.1
```

```
## v purrr      1.0.2      v tidyr      1.3.0
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
my_df =
  tibble(
    vec_numeric = rnorm(10),
    vec_logical = vec_numeric > 0,
    vec_char = c("A", "B", "C", "D", "E", "F", "G", "H", "I", "J"),
    vec_factor = factor(
      sample(c("L0", "L1", "L2"), 10, rep = TRUE)
    )
  )
print(my_df)
```

```
## # A tibble: 10 x 4
##   vec_numeric vec_logical vec_char vec_factor
##   <dbl> <lgl>      <chr>   <fct>
## 1    0.0230 TRUE        A       L2
## 2   -1.71 FALSE        B       L0
## 3   -3.26 FALSE        C       L2
## 4   -0.309 FALSE        D       L0
## 5    1.06 TRUE         E       L1
## 6   -0.118 FALSE        F       L2
## 7   -0.265 FALSE        G       L2
## 8   -0.613 FALSE        H       L2
## 9   -0.625 FALSE        I       L0
## 10  -0.239 FALSE        J       L2
```

```
mean_numeric = mean(pull(my_df, vec_numeric))
mean_logical = mean(pull(my_df, vec_logical))
mean_char = mean(pull(my_df, vec_char))
```

```
## Warning in mean.default(pull(my_df, vec_char)): argument is not numeric or
## logical: returning NA
```

```
mean_factor = mean(pull(my_df, vec_factor))
```

```
## Warning in mean.default(pull(my_df, vec_factor)): argument is not numeric or
## logical: returning NA
```

```
print(mean_numeric)
```

```
## [1] -0.6051163
```

```
print(mean_logical)
```

```
## [1] 0.2
```

```
print (mean_char)
```

```
## [1] NA
```

```
print (mean_factor)
```

```
## [1] NA
```

- The variable of `vec_numeric` and `vec_logical` have mean. Character variable and factor variable do not generate mean because they are not numeric number or logical.

```
as.numeric(pull(my_df, vec_logical))  
as.numeric(pull(my_df, vec_char))  
as.numeric(pull(my_df, vec_factor))
```

- The `vec_logical` is converted to binary datapoints where 0 is false and 1 is true. The `vec_factor` also gets translated to 3 categories based on given levels. The only variable that is unable to convert to numeric is the `vec_char`. This helps me to understand what happens when trying to take the mean. It tells that mean should be numeric numbers.