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                    Assignment - 10

1.  Import dataset from the following link:
https://archive.ics.uci.edu/ml/machine-learning-databases/00360/
Perform the below written operations:
a.  Read the file in Zip format and get it into R
      airquality <- read.csv("AirQuality.csv")
      View(airquality)
b.  Create Univariate for all the columns.
      summary(airquality)
      describe(airquality)
c.  Check for missing values in all columns.
      summary(airquality)
d.  Impute the missing values using appropriate methods
      library(mice)

      mean(newair$Solar.R)
      mean(newair$Solar.R,na.rm = T)
      #impute  my mean
      newair$Solar.R[is.na(newair$Solar.R)]<- mean(newair$Solar.R,na.rm =
T)
e.  Create bi-variate analysis for all relationships
      library(psych)
      pairs.panels( airquality[,c(1,2,3,4,5,6)],
              method = "pearson", # correlation method
              hist.col = "red",
              density = TRUE,  # show density plots
              ellipses = TRUE, # show correlation ellipses
              lm=TRUE,
              main ="Bivariate Scatter plots with Pearson Correlation &
Histogram"
      )
f.  Test relevant hypothesis for valid relations
       Some of the tests are
       Ho: Mean of first variable - Mean of 2 variable is equal to 0
       Ha: Mean of first variable - Mean of 2 variable is not equal to 0
       t.test(x=airquality$Ozone, y=airquality$Solar.R ,alternative =
"two.sided",mu=0 ,paired = TRUE)
       t.test(x=airquality$Temp, y=airquality$Wind ,alternative =
"two.sided",mu=0 ,paired = TRUE)
       t.test(x=airquality$Ozone, y=airquality$Temp ,alternative =
"two.sided",mu=0 ,paired = TRUE)
       t.test(x=airquality$Day, y=airquality$Solar.R ,alternative =
"two.sided",mu=0 ,paired = TRUE)
g.  Create cross tabulations with derived variables
       mytable<- xtabs(~x+y,data = airquality)
       #crosstabulate

       library(gmodels)
       CrossTable(x,y)
h.  check for trends and patterns in time series
i.  Find out the most polluted time of the day and the name of the
    chemical compound.
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