# Assignment1

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##The follwoing link contains the link to the Dataset source: https://www.kaggle.com/datasets/reenapinto/electric-vehicle-population-data/data

The following packages were installed to run the following code.

Loading the dataset :

```
#evp <- load("~/mydataset.RData")
#head(evp)
evp <- read_excel("evp.xls")
head(evp)
```

```
## # A tibble: 6 x 17
##   `VIN (1-10)` County    City    State `Postal Code` `Model Year` Make   Model
##   <chr>        <chr>     <chr>   <chr>         <dbl>        <dbl> <chr>  <chr>
## 1 3C3CFFGE4E   Yakima    Yakima  WA            98902         2014 FIAT   500
## 2 5YJXCBE40H   Thurston  Olympia WA            98513         2017 TESLA  MODEL X
## 3 3MW39FS03P   King      Renton  WA            98058         2023 BMW    330E
## 4 7PDSGABA8P   Snohomish Bothell WA            98012         2023 RIVIAN R1S
## 5 5YJ3E1EB8L   King      Kent    WA            98031         2020 TESLA  MODEL 3
## 6 5UX43EU02R   Kitsap    Poulsbo WA            98370         2024 BMW    X5
## # i 9 more variables: `Electric Vehicle Type` <chr>,
## #   `Clean Alternative Fuel Vehicle (CAFV) Eligibility` <chr>,
## #   `Electric Range` <dbl>, `Base MSRP` <dbl>, `Legislative District` <dbl>,
## #   `DOL Vehicle ID` <dbl>, `Vehicle Location` <chr>, `Electric Utility` <chr>,
## #   `2020 Census Tract` <dbl>
```

The `quantitative_var` shows the desprictive statistics for the quantitative variables "Electric Range" and "Base MSRP" which includes the summary for the same

```
quantitative_var <- c("Electric Range", "Base MSRP")
summary(evp[quantitative_var])
```

```
##  Electric Range     Base MSRP
##  Min.   :  0.00   Min.   :     0
##  1st Qu.:  0.00   1st Qu.:     0
##  Median :  0.00   Median :     0
##  Mean   : 61.79   Mean   :  1159
##  3rd Qu.: 84.00   3rd Qu.:     0
##  Max.   :337.00   Max.   :184400
```

{r catvar} shows the descriptive statistics for the categorial variable “Electric Vehicle Type”, “State”,“Make”,“Model”) which gives the summary for the same

```
categorical_var<- c("Electric Vehicle Type", "State","Make","Model")
for(var in categorical_var){
  cat(paste("summary for", var, ":\n"))
  print(table(evp[var]))
}
```

```
## summary for Electric Vehicle Type :
## Electric Vehicle Type
##         Battery Electric Vehicle (BEV) Plug-in Hybrid Electric Vehicle (PHEV)
##                                  51704                                  13831
## summary for State :
## State
##    AE    BC    WA
##     1     1 65533
## summary for Make :
## Make
##           ALFA ROMEO                 AUDI       AZURE DYNAMICS
##                   17                 1440                    2
##              BENTLEY                  BMW             CADILLAC
##                    1                 3059                   83
##            CHEVROLET             CHRYSLER                DODGE
##                 4735                 1171                    7
##                 FIAT               FISKER                 FORD
##                  353                    9                 2699
##              GENESIS                  GMC                HONDA
##                   60                    2                  281
##              HYUNDAI               JAGUAR                 JEEP
##                 1612                   92                 1823
##                  KIA            LAND ROVER                LEXUS
##                 2635                   13                  119
##              LINCOLN                LUCID                MAZDA
##                   62                   93                  116
##        MERCEDES-BENZ                 MINI           MITSUBISHI
##                  575                  383                  306
##               NISSAN              POLESTAR              PORSCHE
##                 5409                  378                  464
##               RIVIAN                SMART              SUBARU
##                 1402                  106                  407
##                TESLA                TH!NK              TOYOTA
##                30008                    2                 2121
##            VOLKSWAGEN                VOLVO WHEEGO ELECTRIC CARS
##                 1786                 1703                    1
## summary for Model :
## Model
##                     330E                      500                     530E
##                      165                      353                      172
##                     740E                     745E                       A3
##                        8                        4                      264
##                       A7                     A8 E                   ACCORD
##                        3                        1                        3
##                      AIR                    ARIYA                  AVIATOR
```

```
##                   93                  181                   40
##              B-CLASS           BLAZER EV             BOLT EUV
##                   55                    4                  696
##              BOLT EV               BZ4X              C-CLASS
##                 2431                   71                    9
##               C-MAX                  C40              CAYENNE
##                 473                  153                  152
##                CITY              CLARITY              CORSAIR
##                    2                  278                   22
##           COUNTRYMAN           CROSSTREK                  CT6
##                   89                   20                    3
##              CX-90                E-GOLF              E-TRON
##                  115                  452                  414
##           E-TRON GT      E-TRON SPORTBACK                  EDV
##                   52                   55                   53
##                ELR             EQ FORTWO           EQB-CLASS
##                   23                   23                  112
##       EQE-CLASS SEDAN         EQE-CLASS SUV       EQS-CLASS SEDAN
##                   32                   98                   72
##         EQS-CLASS SUV              ESCAPE                  EV6
##                   89                  137                  726
##                EV9                F-150           FLYING SPUR
##                    2                  367                    1
##              FOCUS              FORTWO    FORTWO ELECTRIC DRIVE
##                   69                   27                   56
##             FUSION                G80            GLC-CLASS
##                  516                   13                   89
##          GLE-CLASS         GRAND CHEROKEE                 GV60
##                   15                  358                   40
##               GV70              HARDTOP               HORNET
##                    7                  294                    7
##       HUMMER EV PICKUP              I-MIEV               I-PACE
##                    2                   20                   92
##                 I3                   I4                   I5
##                828                  432                    7
##                 I7                   I8                 ID.4
##                  1                   26                 1334
##              IONIQ              IONIQ 5              IONIQ 6
##                 87                  847                   91
##                 IX               KARMA                 KONA
##                280                    4                   91
##        KONA ELECTRIC                 LEAF                LYRIQ
##                326                 5228                   57
##            MODEL 3              MODEL S              MODEL X
##              11575                 2962                 2267
##            MODEL Y        MUSTANG MACH-E                MX-30
##              13180                 1046                    1
##               NIRO                   NX                OCEAN
##               1264                   67                    5
##             OPTIMA            OUTLANDER             PACIFICA
##                 39                  286                 1171
##            PANAMERA               PRIUS       PRIUS PLUG-IN
##                 52                   28                  341
##          PRIUS PRIME                  PS2                   Q4
```

```
##                     935                     378                     194
##                      Q5                   Q5 E                      Q8
##                      60                     296                      86
##                     R1S                     R1T            RANGE ROVER
##                     743                     606                       2
##       RANGE ROVER SPORT                  RANGER                    RAV4
##                      11                       4                      22
##              RAV4 PRIME                ROADSTER           RS E-TRON GT
##                     724                      24                      14
##                RZ 450E                 S-CLASS                     S60
##                      52                       4                      57
##                     S90                SANTA FE                SOLTERRA
##                      10                      72                     387
##                  SONATA                 SORENTO                    SOUL
##                      24                     183                     148
##                 SOUL EV                   SPARK                 SPORTAGE
##                      88                      91                     185
##                     SQ8                  TAYCAN                  TONALE
##                       1                     260                      17
##                 TRANSIT TRANSIT CONNECT ELECTRIC                  TUCSON
##                      87                       2                      74
##                     V60                    VOLT                  WHEEGO
##                      17                    1513                       1
##                WRANGLER                      X3                      X5
##                    1465                     142                     994
##                    XC40                    XC60                    XC90
##                     437                     438                     591
```

{r transform} depicts the transformation for the variable "Electric Range" which depicts the results after the number are squared from the original variable.

```r
#evp$transformed_var<-evp$'Electric Range'^2
head(evp)
```

```
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##   `VIN (1-10)` County    City    State `Postal Code` `Model Year` Make   Model
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## #   `Electric Range` <dbl>, `Base MSRP` <dbl>, `Legislative District` <dbl>,
## #   `DOL Vehicle ID` <dbl>, `Vehicle Location` <chr>, `Electric Utility` <chr>,
## #   `2020 Census Tract` <dbl>
```
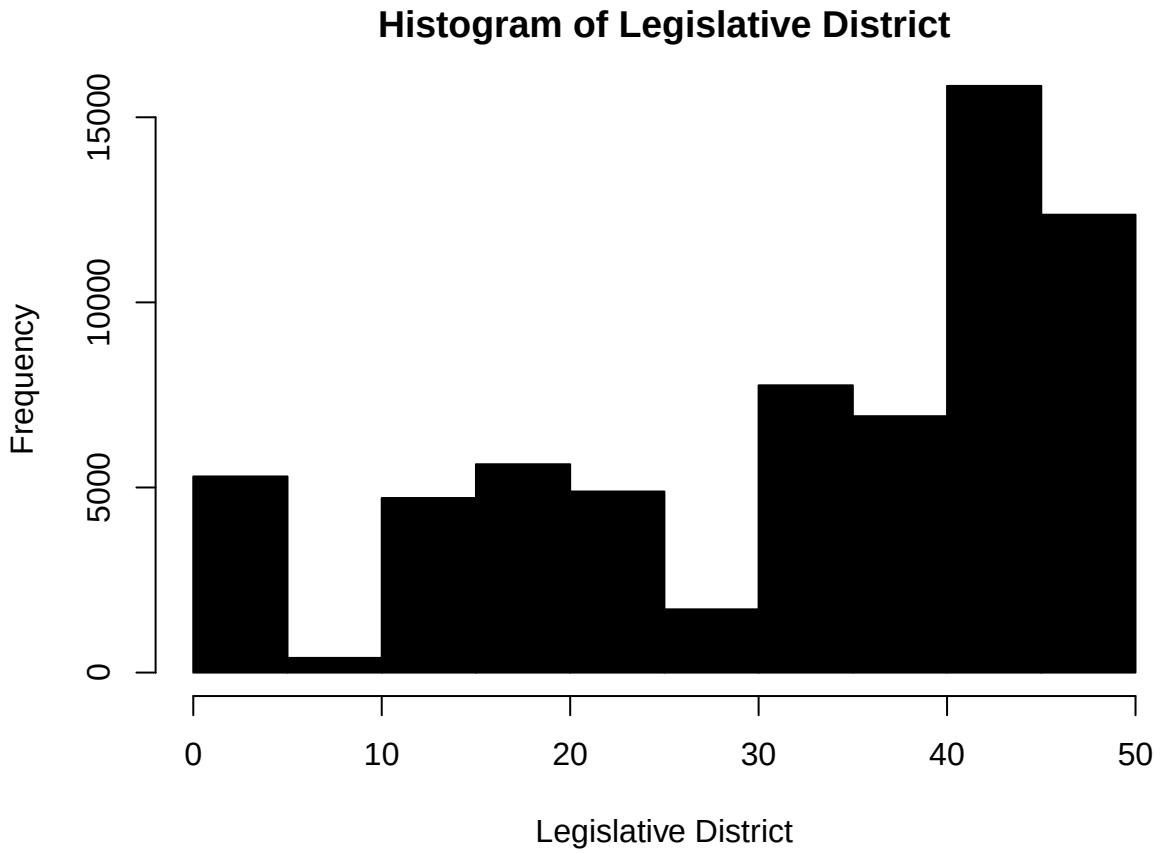
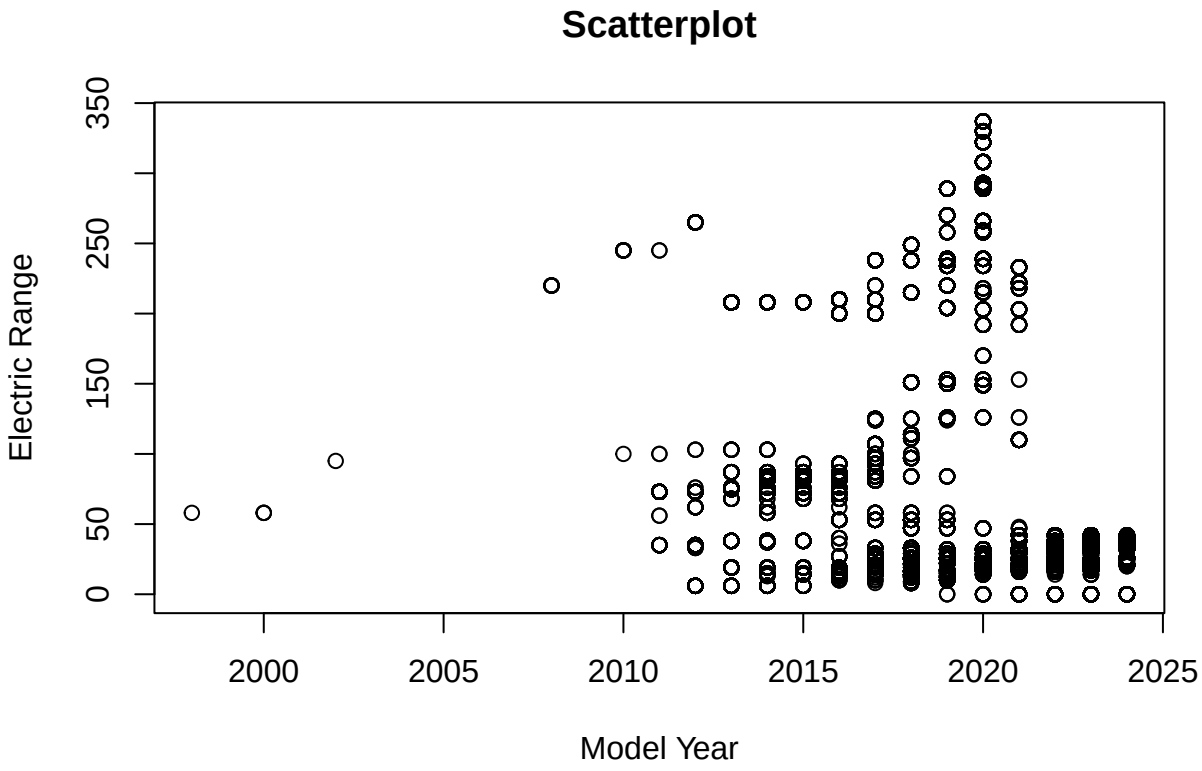

{r hist} This command contains the histogram graph for Legislative District which is a quantitative variable

```r
par(mar=c(4,4,2,2))
hist(evp$'Legislative District', main="Histogram of Legislative District",xlab="Legislative District",c
```




## Including Plots The final command shows the scatterplot which has the X axis label = “Model Year”, and y axis label”Electric Range”)




Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.