Team 5 Assignment 1

2022-08-06

```
library(readxl)
library(dplyr)
##
## Attaching package: 'dplyr'
## The following objects are masked from 'package:stats':
##
##
       filter, lag
## The following objects are masked from 'package:base':
##
       intersect, setdiff, setequal, union
SuicideRate <- read_excel("C:/Users/varni/Desktop/Course Documents/GBC Jan 2022/Semester 2/BUS Intro to
View(SuicideRate)
# 1. Print the structure of your dataset -
str(SuicideRate)
## tibble [27,820 x 12] (S3: tbl_df/tbl/data.frame)
                       : chr [1:27820] "Albania" "Albania" "Albania" "Albania" ...
## $ country
                       : num [1:27820] 1987 1987 1987 1987 ...
## $ year
                       : chr [1:27820] "male" "male" "female" "male" ...
## $ sex
## $ age
                       : chr [1:27820] "15-24 years" "35-54 years" "15-24 years" "75+ years" ...
## $ suicides_no
                       : num [1:27820] 21 16 14 1 9 1 6 4 1 0 ...
                       : num [1:27820] 312900 308000 289700 21800 274300 ...
## $ population
## $ suicides/100k pop : num [1:27820] 6.71 5.19 4.83 4.59 3.28 2.81 2.15 1.56 0.73 0 ...
## $ country-year : chr [1:27820] "Albania1987" "Albania1987" "Albania1987" "Albania1987" "...
## $ HDI for year
                       : num [1:27820] NA ...
## $ gdp_for_year ($) : num [1:27820] 2.16e+09 2.16e+09 2.16e+09 2.16e+09 ...
   $ gdp_per_capita ($): num [1:27820] 796 796 796 796 796 796 796 796 796 ...
                       : chr [1:27820] "Generation X" "Silent" "Generation X" "G.I. Generation" ...
## $ generation
# 2. List the variables in your dataset
names(SuicideRate)
  [1] "country"
                             "year"
                                                  "sex"
##
  [4] "age"
                             "suicides_no"
                                                  "population"
                                                 "HDI for year"
## [7] "suicides/100k pop" "country-year"
                            "gdp_per_capita ($)" "generation"
## [10] "gdp_for_year ($)"
# 3. Print the top 15 rows of your dataset
head(SuicideRate, 15)
## # A tibble: 15 x 12
##
      country year sex
                          age
                                   suici~1 popul~2 suici~3 count~4 HDI f~5 gdp_f~6
      <chr>
             <dbl> <chr>
                          <chr>
                                      <dbl>
                                             <dbl>
                                                     <dbl> <chr>
                                                                     <dbl>
                                                                             <dbl>
                          15-24 y~
## 1 Albania 1987 male
                                        21 312900
                                                      6.71 Albani~
                                                                        NA 2.16e9
```

```
## 2 Albania 1987 male
                          35-54 v~
                                        16 308000
                                                      5.19 Albani~
                                                                       NA 2.16e9
## 3 Albania 1987 female 15-24 y~
                                                      4.83 Albani~
                                                                       NA 2.16e9
                                        14 289700
## 4 Albania 1987 male
                                                                       NA 2.16e9
                          75+ yea~
                                            21800
                                                      4.59 Albani~
## 5 Albania 1987 male
                          25-34 y~
                                         9 274300
                                                      3.28 Albani~
                                                                       NA 2.16e9
## 6 Albania 1987 female 75+ yea~
                                         1
                                            35600
                                                      2.81 Albani~
                                                                       NA 2.16e9
## 7 Albania 1987 female 35-54 y~
                                         6 278800
                                                      2.15 Albani~
                                                                       NA 2.16e9
## 8 Albania 1987 female 25-34 y~
                                                                       NA 2.16e9
                                         4 257200
                                                      1.56 Albani~
## 9 Albania 1987 male
                                                                       NA 2.16e9
                          55-74 y~
                                         1 137500
                                                      0.73 Albani~
## 10 Albania 1987 female 5-14 ye~
                                         0 311000
                                                      0
                                                          Albani~
                                                                       NA 2.16e9
## 11 Albania 1987 female 55-74 y~
                                         0 144600
                                                      0
                                                           Albani~
                                                                       NA 2.16e9
## 12 Albania 1987 male
                          5-14 ye~
                                         0 338200
                                                           Albani~
                                                                       NA 2.16e9
## 13 Albania 1988 female 75+ yea~
                                         2
                                                                       NA 2.13e9
                                             36400
                                                      5.49 Albani~
                          15-24 y~
## 14 Albania 1988 male
                                        17 319200
                                                      5.33 Albani~
                                                                       NA 2.13e9
## 15 Albania 1988 male
                                                      4.48 Albani~
                          75+ yea~
                                         1
                                             22300
                                                                       NA 2.13e9
\#\# # ... with 2 more variables: `gdp_per_capita ($)` <dbl>, generation <chr>, and
      abbreviated variable names 1: suicides_no, 2: population,
      3: `suicides/100k pop`, 4: `country-year`, 5: `HDI for year`,
      6: `gdp for year ($)`
## # i Use `colnames()` to see all variable names
# 4. Write a user defined function using any of the variables from the data set.
mean row = function(newdata)
 result = mean(SuicideRate$suicides_no)
 return(result)
}
print(mean row(SuicideRate))
## [1] 242.5744
# 5. Use data manipulation techniques and filter rows based on any logical criteria that exist in your
install.packages("dplyr")
## Warning: package 'dplyr' is in use and will not be installed
library(dplyr)
SuicideRatenew=select(SuicideRate, -"HDI for year")
SuicideRatenew = filter(SuicideRatenew, year >= 2000 & sex == "female")
head(SuicideRatenew, 15)
## # A tibble: 15 x 11
##
     country year sex
                                   suici~1 popul~2 suici~3 count~4 gdp_f~5 gdp_p~6
                          age
                                     <dbl>
     <chr>
             <dbl> <chr> <chr>
                                             <dbl>
                                                     <dbl> <chr>
                                                                     <dbl>
                                                                            <dbl>
## 1 Albania 2000 female 75+ yea~
                                         2
                                             37800
                                                      5.29 Albani~ 3.63e9
                                                                             1299
## 2 Albania 2000 female 15-24 y~
                                         6 263900
                                                      2.27 Albani~ 3.63e9
                                                                             1299
## 3 Albania 2000 female 35-54 y~
                                         5 332200
                                                      1.51 Albani~ 3.63e9
                                                                             1299
## 4 Albania 2000 female 25-34 y~
                                         3 245800
                                                      1.22 Albani~ 3.63e9
                                                                             1299
## 5 Albania 2000 female 5-14 ye~
                                         0 324700
                                                           Albani~ 3.63e9
                                                                             1299
## 6 Albania 2000 female 55-74 y~
                                         0 168000
                                                           Albani~ 3.63e9
                                                                             1299
                                                      0
## 7 Albania 2001 female 75+ yea~
                                         2
                                            47254
                                                      4.23 Albani~ 4.06e9
                                                                             1451
## 8 Albania 2001 female 15-24 y~
                                        9 271359
                                                      3.32 Albani~ 4.06e9
                                                                             1451
## 9 Albania 2001 female 35-54 y~
                                        12 370191
                                                      3.24 Albani~
                                                                   4.06e9
                                                                             1451
## 10 Albania 2001 female 55-74 y~
                                        6 189799
                                                      3.16 Albani~ 4.06e9
                                                                             1451
## 11 Albania 2001 female 25-34 v~
                                        4 222771
                                                      1.8 Albani~ 4.06e9
                                                                             1451
## 12 Albania 2001 female 5-14 ye~
                                        2 307356
                                                      0.65 Albani~ 4.06e9
                                                                             1451
## 13 Albania 2002 female 15-24 y~
                                        14 275970
                                                      5.07 Albani~ 4.44e9
                                                                             1573
```

```
15 375113
## 14 Albania 2002 female 35-54 y~
                                                      4 Albani~ 4.44e9
## 15 Albania 2002 female 25-34 y~
                                         7 223685
                                                                              1573
                                                      3.13 Albani~ 4.44e9
## # ... with 1 more variable: generation <chr>, and abbreviated variable names
      1: suicides_no, 2: population, 3: `suicides/100k pop`, 4: `country-year`,
      5: `gdp_for_year ($)`, 6: `gdp_per_capita ($)`
## # i Use `colnames()` to see all variable names
# 6. Identify the dependent & independent variables and use reshaping techniques and create a new data
colnames(SuicideRate) [9] = "gdp_year"
Dependent = select(SuicideRate, country, population, gdp_year)
head(Dependent, 15)
## # A tibble: 15 x 3
     country population gdp_year
##
      <chr>
                  <dbl>
                           <dbl>
                 312900
## 1 Albania
                              NA
## 2 Albania
                 308000
                              NA
## 3 Albania
                 289700
                              NA
## 4 Albania
                  21800
                              NA
## 5 Albania
                 274300
                              NA
## 6 Albania
                 35600
                              NA
## 7 Albania
                 278800
                              NA
## 8 Albania
                 257200
                              NA
## 9 Albania
                137500
                              NΑ
## 10 Albania
                 311000
                              NA
## 11 Albania
                 144600
                              NA
## 12 Albania
                 338200
                              NA
## 13 Albania
                  36400
                              NA
## 14 Albania
                 319200
                              NA
## 15 Albania
                  22300
                              NA
# 7. Remove missing values in your dataset.
library(dplyr)
newSuicideRate = SuicideRate
newSuicideRate %>% filter(!is.na("HDI for year"))
## # A tibble: 27,820 x 12
##
     country year sex
                          age
                                   suici~1 popul~2 suici~3 count~4 gdp_y~5 gdp_f~6
##
                                     <dbl>
      <chr>
             <dbl> <chr> <chr>
                                             <dbl>
                                                     <dbl> <chr>
                                                                     <dbl>
                                                                             <dbl>
## 1 Albania 1987 male
                          15-24 y~
                                        21 312900
                                                      6.71 Albani~
                                                                       NA 2.16e9
## 2 Albania 1987 male
                          35-54 y~
                                        16 308000
                                                      5.19 Albani~
                                                                        NA 2.16e9
## 3 Albania 1987 female 15-24 y~
                                        14 289700
                                                      4.83 Albani~
                                                                        NA 2.16e9
## 4 Albania 1987 male
                          75+ yea~
                                        1
                                            21800
                                                      4.59 Albani~
                                                                        NA 2.16e9
## 5 Albania 1987 male
                          25-34 y~
                                        9 274300
                                                      3.28 Albani~
                                                                        NA 2.16e9
## 6 Albania 1987 female 75+ yea~
                                                                        NA 2.16e9
                                         1
                                            35600
                                                      2.81 Albani~
## 7 Albania 1987 female 35-54 y~
                                         6 278800
                                                      2.15 Albani~
                                                                        NA 2.16e9
## 8 Albania 1987 female 25-34 y~
                                         4 257200
                                                      1.56 Albani~
                                                                        NA 2.16e9
## 9 Albania 1987 male
                          55-74 y~
                                         1 137500
                                                                        NA 2.16e9
                                                      0.73 Albani~
## 10 Albania 1987 female 5-14 ye~
                                         0 311000
                                                           Albani~
                                                                        NA 2.16e9
## # ... with 27,810 more rows, 2 more variables: gdp_per_capita (\$) < dbl>,
      generation <chr>, and abbreviated variable names 1: suicides_no,
      2: population, 3: `suicides/100k pop`, 4: `country-year`, 5: gdp_year,
      6: `gdp_for_year ($)`
## # i Use `print(n = ...)` to see more rows, and `colnames()` to see all variable names
```

print(newSuicideRate)

```
## # A tibble: 27,820 x 12
                                  suici~1 popul~2 suici~3 count~4 gdp_y~5 gdp_f~6
##
     country year sex
                          age
##
      <chr>>
             <dbl> <chr> <chr>
                                     <dbl>
                                            <dbl>
                                                    <dbl> <chr>
                                                                    <dbl>
                                                                           <dbl>
##
   1 Albania 1987 male
                          15-24 y~
                                       21
                                           312900
                                                     6.71 Albani~
                                                                      NA 2.16e9
   2 Albania 1987 male
                          35-54 y~
                                       16 308000
                                                     5.19 Albani~
                                                                      NA 2.16e9
## 3 Albania 1987 female 15-24 y~
                                       14 289700
                                                     4.83 Albani~
                                                                      NA 2.16e9
                                                                      NA 2.16e9
## 4 Albania 1987 male
                          75+ yea~
                                       1
                                            21800
                                                     4.59 Albani~
## 5 Albania 1987 male
                          25-34 y~
                                        9 274300
                                                     3.28 Albani~
                                                                      NA 2.16e9
                                     1
## 6 Albania 1987 female 75+ yea~
                                           35600
                                                     2.81 Albani~
                                                                      NA 2.16e9
## 7 Albania 1987 female 35-54 y~
                                        6 278800
                                                     2.15 Albani~
                                                                      NA 2.16e9
## 8 Albania 1987 female 25-34 y~
                                        4 257200
                                                     1.56 Albani~
                                                                      NA 2.16e9
## 9 Albania 1987 male 55-74 y~
                                        1 137500
                                                     0.73 Albani~
                                                                      NA 2.16e9
## 10 Albania 1987 female 5-14 ye~
                                        0 311000
                                                     0
                                                          Albani~
                                                                       NA 2.16e9
## # ... with 27,810 more rows, 2 more variables: `gdp_per_capita ($)` <dbl>,
      generation <chr>>, and abbreviated variable names 1: suicides_no,
      2: population, 3: `suicides/100k pop`, 4: `country-year`, 5: gdp_year,
      6: `gdp_for_year ($)`
## # i Use `print(n = ...)` to see more rows, and `colnames()` to see all variable names
```

8. Identify and remove duplicated data in your dataset duplicated(SuicideRate)

```
##
                                                                                                                                       [1] FALSE FA
##
                                                                                                                         [13] FALSE F
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##
                                                                                                                         [37] FALSE F
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##
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[361] FALSE 
##
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                                                                                                           [373] FALSE FALSE
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[1009] FALSE FALSE
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[1657] FALSE [1669] FALSE ## [1681] FALSE [1693] FALSE [1705] FALSE [1717] FALSE ## [1729] FALSE [1741] FALSE ## ## [1753] FALSE [1765] FALSE [1777] FALSE [1789] FALSE ## [1801] FALSE [1813] FALSE [1825] FALSE ## [1837] FALSE [1849] FALSE ## [1861] FALSE [1873] FALSE ## [1885] FALSE ## [1897] FALSE [1909] FALSE [1921] FALSE ## [1933] FALSE [1945] FALSE ## [1957] FALSE ## [1969] FALSE [1981] FALSE [1993] FALSE [2005] FALSE [2017] FALSE ## ## [2029] FALSE [2041] FALSE ## [2053] FALSE ## [2065] FALSE ## [2077] FALSE ## [2089] FALSE ## [2101] FALSE [2113] FALSE [2125] FALSE ## [2137] FALSE [2149] FALSE ## [2161] FALSE [2173] FALSE ## [2185] FALSE [2197] FALSE ## [2209] FALSE ## [2221] FALSE ## [2233] FALSE [2245] FALSE ## [2257] FALSE ## [2269] FALSE [2281] FALSE [2293] FALSE FALSE

[2305] FALSE ## [2317] FALSE [2329] FALSE [2341] FALSE ## [2353] FALSE [2365] FALSE ## [2377] FALSE [2389] FALSE ## ## [2401] FALSE [2413] FALSE ## [2425] FALSE [2437] FALSE ## [2449] FALSE [2461] FALSE [2473] FALSE ## [2485] FALSE [2497] FALSE ## [2509] FALSE [2521] FALSE ## ## [2533] FALSE ## [2545] FALSE [2557] FALSE [2569] FALSE ## [2581] FALSE ## [2593] FALSE ## [2605] FALSE ## [2617] FALSE [2629] FALSE [2641] FALSE [2653] FALSE [2665] FALSE ## ## [2677] FALSE [2689] FALSE ## [2701] FALSE ## [2713] FALSE [2725] FALSE ## [2737] FALSE ## [2749] FALSE [2761] FALSE [2773] FALSE ## [2785] FALSE [2797] FALSE ## [2809] FALSE [2821] FALSE ## [2833] FALSE [2845] FALSE ## [2857] FALSE ## [2869] FALSE ## [2881] FALSE [2893] FALSE ## [2905] FALSE ## [2917] FALSE [2929] FALSE [2941] FALSE FALSE

[2953] FALSE [2965] FALSE ## [2977] FALSE [2989] FALSE ## [3001] FALSE [3013] FALSE ## [3025] FALSE [3037] FALSE ## ## [3049] FALSE [3061] FALSE ## [3073] FALSE [3085] FALSE ## [3097] FALSE [3109] FALSE [3121] FALSE ## [3133] FALSE [3145] FALSE ## [3157] FALSE [3169] FALSE ## [3181] FALSE ## [3193] FALSE [3205] FALSE [3217] FALSE ## [3229] FALSE ## [3241] FALSE ## [3253] FALSE ## [3265] FALSE [3277] FALSE [3289] FALSE [3301] FALSE [3313] FALSE ## ## [3325] FALSE [3337] FALSE ## [3349] FALSE ## [3361] FALSE ## [3373] FALSE ## ## [3385] FALSE ## [3397] FALSE [3409] FALSE ## [3421] FALSE ## [3433] FALSE [3445] FALSE ## [3457] FALSE [3469] FALSE ## [3481] FALSE [3493] FALSE ## [3505] FALSE ## [3517] FALSE ## [3529] FALSE [3541] FALSE ## [3553] FALSE ## [3565] FALSE ## [3577] FALSE [3589] FALSE FALSE

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## [24097] FALSE F
## [24109] FALSE FALSE
## [24121] FALSE FALSE
## [24133] FALSE FALSE
## [24145] FALSE FALSE
## [24157] FALSE F
## [24169] FALSE FALSE
## [24181] FALSE F
## [24193] FALSE FALSE
## [24205] FALSE F
## [24217] FALSE FALSE
## [24229] FALSE F
## [24241] FALSE F
## [24253] FALSE F
## [24265] FALSE FALSE
## [24277] FALSE FALSE
## [24289] FALSE F
## [24301] FALSE FALSE
## [24313] FALSE FALSE
## [24325] FALSE FALSE
```

```
## [24337] FALSE FALSE
## [24349] FALSE FALSE
## [24361] FALSE FALSE
## [24373] FALSE F
## [24385] FALSE FALSE
## [24397] FALSE F
## [24409] FALSE F
## [24421] FALSE F
## [24433] FALSE FALSE
## [24445] FALSE F
## [24457] FALSE F
## [24469] FALSE F
## [24481] FALSE F
## [24493] FALSE FALSE
## [24505] FALSE F
## [24517] FALSE F
## [24529] FALSE F
## [24541] FALSE F
## [24553] FALSE FALSE
## [24565] FALSE FALSE
## [24577] FALSE FALSE
## [24589] FALSE FALSE
## [24601] FALSE F
## [24613] FALSE FALSE
## [24625] FALSE FALSE
## [24637] FALSE FALSE
## [24649] FALSE F
## [24661] FALSE F
## [24673] FALSE FALSE
## [24685] FALSE F
## [24697] FALSE F
## [24709] FALSE FALSE
## [24721] FALSE FALSE
## [24733] FALSE FALSE
## [24745] FALSE F
## [24757] FALSE FALSE
## [24769] FALSE FALSE
## [24781] FALSE FALSE
## [24793] FALSE FALSE
## [24805] FALSE F
## [24817] FALSE FALSE
## [24829] FALSE FALSE
## [24841] FALSE FALSE
## [24853] FALSE FALSE
## [24865] FALSE F
## [24877] FALSE FALSE
## [24889] FALSE F
## [24901] FALSE F
## [24913] FALSE FALSE
## [24925] FALSE F
## [24937] FALSE FALSE
## [24949] FALSE FALSE
## [24961] FALSE FALSE
## [24973] FALSE FALSE
```

```
## [24985] FALSE FALSE
## [24997] FALSE FALSE
## [25009] FALSE FALSE
## [25021] FALSE F
## [25033] FALSE FALSE
## [25045] FALSE F
## [25057] FALSE F
## [25069] FALSE F
## [25081] FALSE FALSE
## [25093] FALSE FALSE
## [25105] FALSE F
## [25117] FALSE FALSE
## [25129] FALSE F
## [25141] FALSE FALSE
## [25153] FALSE FALSE
## [25165] FALSE F
## [25177] FALSE FALSE
## [25189] FALSE F
## [25201] FALSE FALSE
## [25213] FALSE FALSE
## [25225] FALSE FALSE
## [25237] FALSE FALSE
## [25249] FALSE F
## [25261] FALSE F
## [25273] FALSE FALSE
## [25285] FALSE F
## [25297] FALSE F
## [25309] FALSE F
## [25321] FALSE FALSE
## [25333] FALSE F
## [25345] FALSE F
## [25357] FALSE FALSE
## [25369] FALSE FALSE
## [25381] FALSE FALSE
## [25393] FALSE F
## [25405] FALSE FALSE
## [25417] FALSE FALSE
## [25429] FALSE FALSE
## [25441] FALSE FALSE
## [25453] FALSE F
## [25465] FALSE FALSE
## [25477] FALSE FALSE
## [25489] FALSE FALSE
## [25501] FALSE F
## [25513] FALSE FALSE
## [25525] FALSE F
## [25537] FALSE F
## [25549] FALSE FALSE
## [25561] FALSE FALSE
## [25573] FALSE FALSE
## [25585] FALSE F
## [25597] FALSE FALSE
## [25609] FALSE FALSE
## [25621] FALSE FALSE
```

```
## [25633] FALSE FALSE
## [25645] FALSE FALSE
## [25657] FALSE FALSE
## [25669] FALSE F
## [25681] FALSE FALSE
## [25693] FALSE F
## [25705] FALSE F
## [25717] FALSE F
## [25729] FALSE FALSE
## [25741] FALSE FALSE
## [25753] FALSE F
## [25765] FALSE F
## [25777] FALSE F
## [25789] FALSE FALSE
## [25801] FALSE F
## [25813] FALSE F
## [25825] FALSE F
## [25837] FALSE F
## [25849] FALSE FALSE
## [25861] FALSE FALSE
## [25873] FALSE FALSE
## [25885] FALSE FALSE
## [25897] FALSE F
## [25909] FALSE F
## [25921] FALSE FALSE
## [25933] FALSE FALSE
## [25945] FALSE F
## [25957] FALSE F
## [25969] FALSE F
## [25981] FALSE F
## [25993] FALSE F
## [26005] FALSE FALSE
## [26017] FALSE FALSE
## [26029] FALSE F
## [26041] FALSE F
## [26053] FALSE FALSE
## [26065] FALSE FALSE
## [26077] FALSE FALSE
## [26089] FALSE FALSE
## [26101] FALSE F
## [26113] FALSE FALSE
## [26125] FALSE FALSE
## [26137] FALSE FALSE
## [26149] FALSE F
## [26161] FALSE FALSE
## [26173] FALSE FALSE
## [26185] FALSE F
## [26197] FALSE F
## [26209] FALSE FALSE
## [26221] FALSE F
## [26233] FALSE FALSE
## [26245] FALSE FALSE
## [26257] FALSE FALSE
## [26269] FALSE FALSE
```

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## [26281] FALSE FALSE
## [26293] FALSE FALSE
## [26305] FALSE FALSE
## [26317] FALSE F
## [26329] FALSE FALSE
## [26341] FALSE F
## [26353] FALSE F
## [26365] FALSE F
## [26377] FALSE FALSE
## [26389] FALSE FALSE
## [26401] FALSE F
## [26413] FALSE FALSE
## [26425] FALSE F
## [26437] FALSE F
## [26449] FALSE F
## [26461] FALSE F
## [26473] FALSE FALSE
## [26485] FALSE F
## [26497] FALSE FALSE
## [26509] FALSE FALSE
## [26521] FALSE FALSE
## [26533] FALSE FALSE
## [26545] FALSE F
## [26557] FALSE F
## [26569] FALSE FALSE
## [26581] FALSE F
## [26593] FALSE F
## [26605] FALSE F
## [26617] FALSE FALSE
## [26629] FALSE F
## [26641] FALSE F
## [26653] FALSE FALSE
## [26665] FALSE F
## [26677] FALSE F
## [26689] FALSE F
## [26701] FALSE FALSE
## [26713] FALSE FALSE
## [26725] FALSE FALSE
## [26737] FALSE FALSE
## [26749] FALSE F
## [26761] FALSE FALSE
## [26773] FALSE FALSE
## [26785] FALSE FALSE
## [26797] FALSE FALSE
## [26809] FALSE F
## [26821] FALSE F
## [26833] FALSE F
## [26845] FALSE F
## [26857] FALSE FALSE
## [26869] FALSE F
## [26881] FALSE FALSE
## [26893] FALSE FALSE
## [26905] FALSE FALSE
## [26917] FALSE FALSE
```

```
## [26929] FALSE FALSE
## [26941] FALSE FALSE
## [26953] FALSE FALSE
## [26965] FALSE F
## [26977] FALSE FALSE
## [26989] FALSE F
## [27001] FALSE FALSE
## [27013] FALSE F
## [27025] FALSE FALSE
## [27037] FALSE FALSE
## [27049] FALSE FALSE
## [27061] FALSE FALSE
## [27073] FALSE F
## [27085] FALSE F
## [27097] FALSE FALSE
## [27109] FALSE FALSE
## [27121] FALSE FALSE
## [27133] FALSE F
## [27145] FALSE FALSE
## [27157] FALSE FALSE
## [27169] FALSE FALSE
## [27181] FALSE FALSE
## [27193] FALSE F
## [27205] FALSE F
## [27217] FALSE FALSE
## [27229] FALSE FALSE
## [27241] FALSE FALSE
## [27253] FALSE FALSE
## [27265] FALSE F
## [27277] FALSE F
## [27289] FALSE F
## [27301] FALSE FALSE
## [27313] FALSE FALSE
## [27325] FALSE F
## [27337] FALSE F
## [27349] FALSE FALSE
## [27361] FALSE FALSE
## [27373] FALSE FALSE
## [27385] FALSE FALSE
## [27397] FALSE F
## [27409] FALSE FALSE
## [27421] FALSE FALSE
## [27433] FALSE FALSE
## [27445] FALSE FALSE
## [27457] FALSE FALSE
## [27469] FALSE FALSE
## [27481] FALSE F
## [27493] FALSE F
## [27505] FALSE FALSE
## [27517] FALSE FALSE
## [27529] FALSE F
## [27541] FALSE FALSE
## [27553] FALSE FALSE
## [27565] FALSE FALSE
```

```
## [27577] FALSE F
## [27589] FALSE FALSE
## [27601] FALSE FALSE
## [27613] FALSE F
## [27625] FALSE FALSE
## [27637] FALSE FALSE
## [27649] FALSE F
## [27661] FALSE FALSE
## [27673] FALSE FALSE
## [27685] FALSE F
## [27697] FALSE F
## [27709] FALSE F
## [27721] FALSE F
## [27733] FALSE FALSE
## [27745] FALSE FALSE
## [27757] FALSE FALSE
## [27769] FALSE FALSE
## [27781] FALSE F
## [27793] FALSE FALSE
## [27805] FALSE FALSE
## [27817] FALSE FALSE FALSE FALSE
# 9. Reorder multiple rows in descending order
SuicideRate = SuicideRate %>% arrange(desc(country), desc(population))
head(SuicideRate, 15)
## # A tibble: 15 x 12
                                                                                                                                                                                                      suici~1 popul~2 suici~3 count~4 gdp_y~5 gdp_f~6
                                  country
                                                                                                   year sex
                                                                                                                                                                     age
##
                                                                                                                                                                                                                 <dbl>
                                                                                                                                                                                                                                                              <dbl>
                                  <chr>
                                                                                               <dbl> <chr>
                                                                                                                                                                     <chr>>
                                                                                                                                                                                                                                                                                                         <dbl> <chr>
                                                                                                                                                                                                                                                                                                                                                                                                   <dbl>
                                                                                                                                                                                                                                                                                                                                                                                                                                               <dbl>
                     1 Uzbekistan 2014 female 35-5~
                                                                                                                                                                                                                      107 3620833
                                                                                                                                                                                                                                                                                                               2.96 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.675 6.31e10
                     2 Uzbekistan
                                                                                                  2013 female 35-5~
                                                                                                                                                                                                                            99 3547895
                                                                                                                                                                                                                                                                                                               2.79 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.672 5.77e10
                     3 Uzbekistan 2012 female 35-5~
                                                                                                                                                                                                                             89 3474788
                                                                                                                                                                                                                                                                                                              2.56 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.668 5.18e10
                                                                                                                                                                                                                      519 3421300
              4 Uzbekistan 2014 male
                                                                                                                                                                     35-5~
                                                                                                                                                                                                                                                                                                    15.2 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.675 6.31e10
## 5 Uzbekistan 2011 female 35-5~
                                                                                                                                                                                                                         78 3404363
                                                                                                                                                                                                                                                                                                            2.29 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.661 4.59e10
                                                                                                                                                                                                                    481 3346411
## 6 Uzbekistan 2013 male
                                                                                                                                                                     35-5~
                                                                                                                                                                                                                                                                                                        14.4 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.672 5.77e10
                                                                                                                                                                                                                  101 3339076
                   7 Uzbekistan 2010 female 35-5~
                                                                                                                                                                                                                                                                                                              3.02 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.655 3.93e10
                                                                                                                                                                                                                      64 3281449
                                                                                                                                                                                                                                                                                                         1.95 Uzbeki~ NA
                    8 Uzbekistan 2001 male
                                                                                                                                                                    5-14~
                                                                                                                                                                                                                                                                                                                                                                                                                                    1.14e10
                    9 Uzbekistan 2000 male
                                                                                                                                                                                                                       57 3279407
                                                                                                                                                                    5-14~
                                                                                                                                                                                                                                                                                                              1.74 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.594 1.38e10
                                                                                                                                                                                                          404 3273281
## 10 Uzbekistan 2012 male
                                                                                                                                                                     35-5~
                                                                                                                                                                                                                                                                                                         12.3 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                  0.668 5.18e10
                                                                                                                                                                                                                   65 3263931
## 11 Uzbekistan 2009 female 35-5~
                                                                                                                                                                                                                                                                                                             1.99 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                          NA
                                                                                                                                                                                                                                                                                                                                                                                                                                    3.37e10
## 12 Uzbekistan 2002 male
                                                                                                                                                                    5-14~
                                                                                                                                                                                                                          49 3260824
                                                                                                                                                                                                                                                                                                              1.5 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                                                                    9.69e 9
## 13 Uzbekistan 1999 male
                                                                                                                                                                     5-14~
                                                                                                                                                                                                                                 59 3260451
                                                                                                                                                                                                                                                                                                               1.81 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                          NA
                                                                                                                                                                                                                                                                                                                                                                                                                                    1.71e10
## 14 Uzbekistan 1998 male
                                                                                                                                                                     5-14~
                                                                                                                                                                                                                                 53 3222800
                                                                                                                                                                                                                                                                                                               1.64 Uzbeki~
                                                                                                                                                                                                                                                                                                                                                                                           NA
                                                                                                                                                                                                                                                                                                                                                                                                                                    1.50e10
## 15 Uzbekistan 2003 male
                                                                                                                                                                     5-14~
                                                                                                                                                                                                                                 45 3219722
                                                                                                                                                                                                                                                                                                               1.4 Uzbeki~ NA
                                                                                                                                                                                                                                                                                                                                                                                                                                    1.01e10
## # ... with 2 more variables: `gdp_per_capita ($)` <dbl>, generation <chr>, and
                                      abbreviated variable names 1: suicides_no, 2: population,
                                      3: `suicides/100k pop`, 4: `country-year`, 5: gdp_year,
                                      6: `gdp_for_year ($)`
## # i Use `colnames()` to see all variable names
# 10. Rename some of the column names in your dataset
colnames(SuicideRate) [9] = "gdp_year"
names(SuicideRate)
## [1] "country"
                                                                                                                                                                "year"
                                                                                                                                                                                                                                                                                     "sex"
              [4] "age"
##
                                                                                                                                                                "suicides_no"
                                                                                                                                                                                                                                                                                    "population"
```

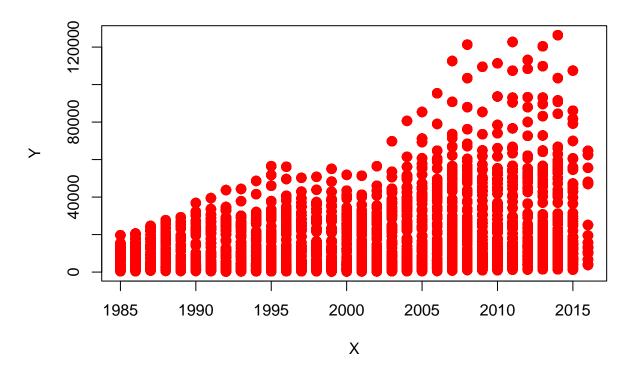
```
## [7] "suicides/100k pop" "country-year"
## [10] "gdp_for_year ($)"
                            "gdp_per_capita ($)" "generation"
# 11. Add new variables in your data frame by using a mathematical function (for e.g. - multiply an exi
SuicideRate$double_suicide <- SuicideRate$suicides_no*2</pre>
print(SuicideRate)
## # A tibble: 27,820 x 13
##
      country
                                   suici~1 popul~2 suici~3 count~4 gdp_y~5 gdp_f~6
                             age
                <dbl> <chr> <chr>
##
                                     <dbl> <dbl>
                                                     <dbl> <chr>
                                                                     <dbl> <dbl>
      <chr>>
## 1 Uzbekistan 2014 female 35-5~
                                       107 3620833
                                                      2.96 Uzbeki~
                                                                     0.675 6.31e10
## 2 Uzbekistan 2013 female 35-5~
                                       99 3547895
                                                     2.79 Uzbeki~
                                                                     0.672 5.77e10
## 3 Uzbekistan 2012 female 35-5~
                                       89 3474788
                                                    2.56 Uzbeki~
                                                                     0.668 5.18e10
## 4 Uzbekistan 2014 male
                                      519 3421300
                                                     15.2 Uzbeki~
                                                                     0.675 6.31e10
                             35-5~
## 5 Uzbekistan 2011 female 35-5~
                                       78 3404363
                                                     2.29 Uzbeki~
                                                                     0.661 4.59e10
## 6 Uzbekistan 2013 male
                             35-5~
                                       481 3346411
                                                     14.4 Uzbeki~
                                                                     0.672 5.77e10
## 7 Uzbekistan 2010 female 35-5~
                                      101 3339076
                                                     3.02 Uzbeki~
                                                                     0.655 3.93e10
## 8 Uzbekistan 2001 male
                             5-14~
                                       64 3281449
                                                      1.95 Uzbeki~ NA
                                                                           1.14e10
## 9 Uzbekistan 2000 male
                             5-14~
                                        57 3279407
                                                      1.74 Uzbeki~
                                                                     0.594 1.38e10
## 10 Uzbekistan 2012 male
                             35-5~
                                       404 3273281
                                                     12.3 Uzbeki~
                                                                     0.668 5.18e10
## # ... with 27,810 more rows, 3 more variables: gdp_per_capita (\$) < dbl>,
      generation <chr>, double_suicide <dbl>, and abbreviated variable names
      1: suicides_no, 2: population, 3: `suicides/100k pop`, 4: `country-year`,
      5: gdp_year, 6: `gdp_for_year ($)`
## # i Use `print(n = ...)` to see more rows, and `colnames()` to see all variable names
# 12. Create a training set using random number generator engine
head(SuicideRate)
## # A tibble: 6 x 13
##
                                   suici~1 popul~2 suici~3 count~4 gdp_y~5 gdp_f~6
    country
                year sex
                            age
                                     <dbl>
##
    <chr>>
               <dbl> <chr> <chr>
                                             <dbl> <dbl> <chr>
                                                                     <dbl>
## 1 Uzbekistan 2014 female 35-54~
                                      107 3620833
                                                     2.96 Uzbeki~
                                                                     0.675 6.31e10
## 2 Uzbekistan 2013 female 35-54~
                                       99 3547895
                                                      2.79 Uzbeki~
                                                                     0.672 5.77e10
## 3 Uzbekistan 2012 female 35-54~
                                       89 3474788
                                                     2.56 Uzbeki~
                                                                     0.668 5.18e10
                                       519 3421300
## 4 Uzbekistan 2014 male
                            35-54~
                                                    15.2 Uzbeki~
                                                                     0.675 6.31e10
## 5 Uzbekistan 2011 female 35-54~
                                       78 3404363
                                                      2.29 Uzbeki~
                                                                     0.661 4.59e10
## 6 Uzbekistan 2013 male
                            35-54~
                                      481 3346411
                                                    14.4 Uzbeki~
                                                                     0.672 5.77e10
## # ... with 3 more variables: `gdp_per_capita ($)` <dbl>, generation <chr>,
      double_suicide <dbl>, and abbreviated variable names 1: suicides_no,
      2: population, 3: `suicides/100k pop`, 4: `country-year`, 5: gdp_year,
      6: `gdp_for_year ($)`
## # i Use `colnames()` to see all variable names
h <-runif(nrow(SuicideRate))</pre>
rate<-SuicideRate[order(h), ]</pre>
str(rate)
## tibble [27,820 x 13] (S3: tbl_df/tbl/data.frame)
                       : chr [1:27820] "Poland" "Hungary" "Colombia" "Brazil" ...
## $ country
## $ year
                       : num [1:27820] 2009 2010 1987 1985 2003 ...
## $ sex
                       : chr [1:27820] "female" "female" "female" "male" ...
## $ age
                       : chr [1:27820] "15-24 years" "25-34 years" "5-14 years" "35-54 years" ...
## $ suicides_no
                     : num [1:27820] 75 37 9 1011 191 ...
                     : num [1:27820] 2740576 748440 3796166 11986300 2795116 ...
## $ population
## $ suicides/100k pop : num [1:27820] 2.74 4.94 0.24 8.43 6.83 ...
```

```
: chr [1:27820] "Poland2009" "Hungary2010" "Colombia1987" "Brazil1985" ...
## $ country-year
## $ gdp_year
                       : num [1:27820] NA 0.821 NA 0.576 NA NA NA 0.874 NA NA ...
## $ gdp_for_year ($) : num [1:27820] 4.40e+11 1.31e+11 3.64e+10 2.23e+11 9.07e+11 ...
## $ gdp_per_capita ($): num [1:27820] 12141 13761 1299 1898 22701 ...
                       : chr [1:27820] "Millenials" "Generation X" "Generation X" "Silent" ...
## $ generation
## $ double suicide
                       : num [1:27820] 150 74 18 2022 382 ...
train <- rate[1:36, ]</pre>
SuicideRateclean = na.omit(SuicideRate)
set.seed(1234)
SuicideRateTraining = as.data.frame(SuicideRateclean %>% sample_frac(0.75,replace = FALSE))
# 13. Print the summary statistics of your dataset
summary(SuicideRate)
##
      country
                           year
                                         sex
                                                            age
   Length: 27820
                      Min.
                             :1985
                                     Length: 27820
                                                        Length: 27820
##
  Class : character
                      1st Qu.:1995
                                     Class : character
                                                        Class : character
                      Median:2002
                                                        Mode :character
  Mode :character
                                     Mode :character
##
                      Mean
                             :2001
                      3rd Qu.:2008
##
##
                      Max.
                             :2016
##
##
                       population
                                        suicides/100k pop country-year
    suicides_no
  Min.
         :
               0.0
                     Min. :
                                  278
                                        Min.
                                             : 0.00
                                                          Length: 27820
                                97498
                                                          Class : character
##
   1st Qu.:
               3.0
                     1st Qu.:
                                        1st Qu.: 0.92
  Median :
              25.0
                     Median: 430150
                                        Median: 5.99
                                                          Mode :character
  Mean
         : 242.6
                     Mean : 1844794
                                        Mean : 12.82
   3rd Qu.: 131.0
                     3rd Qu.: 1486143
                                        3rd Qu.: 16.62
##
   Max.
         :22338.0
                     Max. :43805214
                                        Max.
                                               :224.97
##
##
      gdp_year
                   gdp_for_year ($)
                                       gdp_per_capita ($) generation
  Min. :0.483
                   Min. :4.692e+07
                                                  251
##
                                       Min. :
                                                          Length: 27820
   1st Qu.:0.713
                   1st Qu.:8.985e+09
                                       1st Qu.: 3447
                                                          Class : character
  Median :0.779
                  Median :4.811e+10
                                       Median: 9372
                                                          Mode :character
## Mean
         :0.777
                          :4.456e+11
                                       Mean : 16866
                   Mean
## 3rd Qu.:0.855
                                       3rd Qu.: 24874
                   3rd Qu.:2.602e+11
          :0.944
## Max.
                   Max.
                          :1.812e+13
                                       Max.
                                             :126352
## NA's
          :19456
## double_suicide
## Min.
               0.0
## 1st Qu.:
               6.0
## Median :
              50.0
## Mean
         : 485.1
## 3rd Qu.: 262.0
## Max. :44676.0
##
# 14. Use any of the numerical variables from the dataset and perform the following statistical functio
# 14.1 Mean
summary(SuicideRate$population)
##
            1st Qu.
                      Median
                                 Mean 3rd Qu.
      Min.
##
       278
              97498
                      430150 1844794 1486143 43805214
```

```
summary(SuicideRate$population)
##
                        Median
                                    Mean 3rd Qu.
       Min.
             1st Qu.
                                                       Max.
                        430150 1844794 1486143 43805214
##
        278
                97498
# 14.3 Mode
vec1 <- SuicideRate$population</pre>
getmode <- function(v)</pre>
  uniqv <- unique(v)</pre>
  uniqv[which.max(tabulate(match(v, uniqv)))]
result <- getmode(vec1)</pre>
print(result)
## [1] 24000
# 14.4 Range
range(SuicideRate$population)
## [1]
            278 43805214
# 15. Plot a scatter plot for any 2 variables in your dataset
library(ggplot2)
plot(SuicideRate$year, SuicideRate$`gdp_per_capita ($)`, col='red', pch=19, cex=1.3, xlab='X', ylab='Y'
```

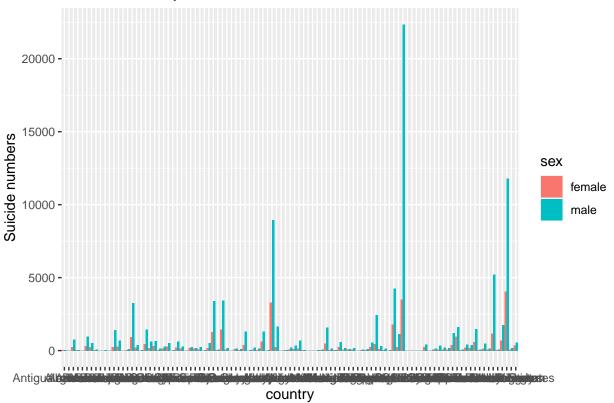
14.2 Median

Scatterplot of Two Variables



```
# 16. Plot a bar plot for any 2 variables in your dataset
ggplot(SuicideRate, aes(fill=sex, y=suicides_no, x=country)) + geom_bar(position='dodge', stat='identite')
```

suicide rates by countries



```
# 17. Find the correlation between any 2 variables by applying least square linear regression model
Y<- SuicideRate[,"population"]
X<- SuicideRate[,"suicides_no"]
head(X)</pre>
```

```
## # A tibble: 6 x 1
     suicides no
##
           <dbl>
              107
## 1
## 2
               99
## 3
               89
## 4
             519
## 5
               78
## 6
              481
```

head(Y)

```
## # A tibble: 6 x 1
## population
## <dbl>
## 1 3620833
## 2 3547895
## 3 3474788
## 4 3421300
```

```
## 5 3404363
## 6 3346411
```

xycorr <- cor(Y,X, method="pearson")</pre>