Assignment -2

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```
#It is given that a collection of health-related surveys conducted each year of more than 400,000 Ameri
# Data field info
# 1.MMSA
          The name of the metropolitan area, metropolitan area or metropolitan division available in
# 2.total_percent_at_risk The percent of individuals in that area that are at high risk of becoming s
#3.high_risk_per_ICU_bed
                          The number of high risk individuals per ICU bed in that area
#4.high_risk_per_hospital The number of high risk individuals per hospital in that area
#5.ICU beds The number of ICU beds in the area, based on the Kaiser Family Foundation's data
#6.hospitals
             The number of hospitals in the area, based on the Kaiser Family Foundation's data
#7.total at risk
                  The total number of high risk individuals in the area, per CDC's BRFSS
#Data format : It is a .csv file downloaded from a data source on Github, where the values are separate
library(readr)
library(tidyverse)
## -- Attaching packages ------ tidyverse 1.3.1 --
                    v dplyr 1.0.7
## v ggplot2 3.3.5
## v tibble 3.1.5
                     v stringr 1.4.0
## v tidyr 1.1.4
                    v forcats 0.5.1
## v purrr
           0.3.4
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()
                   masks stats::lag()
library(dplyr)
#Creating a variable that has all the content from .csv file
local_file <- "mmsa-icu-beds.csv"</pre>
# reading csv data using the read function"
Coviddata <- read_csv(local_file)</pre>
## Rows: 136 Columns: 7
## -- Column specification ------
## Delimiter: ","
## chr (2): MMSA, total_percent_at_risk
## dbl (5): high_risk_per_ICU_bed, high_risk_per_hospital, icu_beds, hospitals,...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
\# Now, previewing the data loaded from mmsa-icu-beds into R
head(Coviddata)
```

```
## # A tibble: 6 x 7
##
              total_percent_a~ high_risk_per_I~ high_risk_per_h~ icu_beds hospitals
     MMSA
     <chr>>
                                                                      <dbl>
##
                                           <dbl>
                                                            <dbl>
## 1 San Jua~ 52.88%
                                             NA
                                                               NA
                                                                         NA
                                                                                   NA
## 2 Manhatt~ 47.29%
                                           4490.
                                                            8980.
                                                                                    4
## 3 Hilton ~ 62.72%
                                           3904.
                                                            36439.
                                                                         28
                                                                                    3
## 4 Kahului~ 59.13%
                                                            19303.
                                           3861.
## 5 Spartan~ 66.12%
                                                                                    2
                                           3786.
                                                            85188.
                                                                         45
## 6 Baton R~ 66.60%
                                           3460.
                                                            39001.
                                                                        124
                                                                                    11
## # ... with 1 more variable: total_at_risk <dbl>
#performing two data cleaning function as per question
#1. Find the rows with the missing values
#2. Remove the rows with the missing values from the data
# checking for missing values in the data frame
is.na(Coviddata)
```

MMSA total_percent_at_risk high_risk_per_ICU_bed high_risk_per_hospital ## [1,] FALSE **FALSE** TRUE TRUE ## [2,] FALSE FALSE FALSE **FALSE** ## [3,] FALSE FALSE FALSE **FALSE** ## [4,] FALSE FALSE FALSE FALSE ## [5,] FALSE FALSE FALSE FALSE ## [6,] FALSE FALSE FALSE FALSE ## [7,] FALSE FALSE FALSE FALSE ## [8,] FALSE FALSE FALSE FALSE [9,] FALSE FALSE FALSE **FALSE** ## [10,] FALSE FALSE FALSE FALSE [11,] FALSE FALSE FALSE **FALSE** [12,] FALSE ## FALSE FALSE **FALSE** [13,] FALSE FALSE FALSE **FALSE** ## [14,] FALSE FALSE FALSE **FALSE** [15,] FALSE FALSE FALSE **FALSE** ## [16,] FALSE FALSE FALSE **FALSE** [17,] FALSE FALSE FALSE FALSE ## [18,] FALSE FALSE FALSE FALSE [19,] FALSE FALSE FALSE FALSE [20,] FALSE ## FALSE FALSE FALSE ## [21,] FALSE FALSE FALSE FALSE [22,] FALSE ## FALSE FALSE FALSE ## [23,] FALSE FALSE FALSE FALSE ## [24,] FALSE FALSE FALSE FALSE ## [25,] FALSE FALSE FALSE FALSE [26,] FALSE FALSE FALSE **FALSE** ## [27,] FALSE FALSE FALSE **FALSE** ## [28,] FALSE FALSE FALSE **FALSE** ## [29,] FALSE FALSE FALSE FALSE [30,] FALSE FALSE FALSE **FALSE** ## [31,] FALSE FALSE FALSE **FALSE** [32,] FALSE FALSE FALSE **FALSE** ## [33,] FALSE FALSE FALSE **FALSE** ## [34,] FALSE FALSE FALSE **FALSE** FALSE ## [35,] FALSE FALSE FALSE FALSE ## [36,] FALSE FALSE FALSE

##	[37,] FALSE	FALSE	FALSE	FALSE
##	[38,] FALSE	FALSE	FALSE	FALSE
##	[39,] FALSE	FALSE	FALSE	FALSE
##	[40,] FALSE	FALSE	FALSE	FALSE
##	[41,] FALSE	FALSE	FALSE	FALSE
##	[42,] FALSE	FALSE	FALSE	FALSE
##	[43,] FALSE	FALSE	FALSE	FALSE
##	[44,] FALSE	FALSE	FALSE	FALSE
##	[45,] FALSE	FALSE	FALSE	FALSE
##	[46,] FALSE	FALSE	FALSE	FALSE
##	[47,] FALSE	FALSE	FALSE	FALSE
##	[48,] FALSE	FALSE	FALSE	FALSE
##	[49,] FALSE	FALSE	FALSE	FALSE
##	[50,] FALSE	FALSE	FALSE	FALSE
##	[51,] FALSE	FALSE	FALSE	FALSE
##	[52,] FALSE	FALSE	FALSE	FALSE
##	[53,] FALSE	FALSE	FALSE	FALSE
##	[54,] FALSE	FALSE	FALSE	FALSE
##	[55,] FALSE	FALSE	FALSE	FALSE
##	[56,] FALSE	FALSE	FALSE	FALSE
##	[57,] FALSE	FALSE	FALSE	FALSE
##	[58,] FALSE	FALSE	FALSE	FALSE
##	[59,] FALSE	FALSE	FALSE	FALSE
##	[60,] FALSE	FALSE	FALSE	FALSE
##	[61,] FALSE	FALSE	FALSE	FALSE
##	[62,] FALSE	FALSE	FALSE	FALSE
##	[63,] FALSE	FALSE	FALSE	FALSE
##	[64,] FALSE	FALSE	FALSE	FALSE
##	[65,] FALSE	FALSE	FALSE	FALSE
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##	[67,] FALSE	FALSE	FALSE	FALSE
##	[68,] FALSE	FALSE	FALSE	FALSE
##	[69,] FALSE	FALSE	FALSE	FALSE
##	[70,] FALSE	FALSE	FALSE	FALSE
##	[71,] FALSE	FALSE	FALSE	FALSE
##	[72,] FALSE	FALSE	FALSE	FALSE
##	[73,] FALSE	FALSE	FALSE	FALSE
##	[74,] FALSE	FALSE	FALSE	FALSE
##	[75,] FALSE	FALSE	FALSE	FALSE
##	[76,] FALSE	FALSE	FALSE	FALSE
##	[77,] FALSE	FALSE	FALSE	FALSE
##	[78,] FALSE	FALSE	FALSE	FALSE
##	[79,] FALSE	FALSE	FALSE	FALSE
##	[80,] FALSE	FALSE	FALSE	FALSE
##	[81,] FALSE	FALSE	FALSE	FALSE
##	[82,] FALSE	FALSE	FALSE	FALSE
##	[83,] FALSE	FALSE	FALSE	FALSE
##	[84,] FALSE	FALSE	FALSE	FALSE
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##	[90,] FALSE	FALSE	FALSE	FALSE

##	[91,]	FALSE		FALSE	FALSE	FALSE
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##	[96,]	FALSE		FALSE	FALSE	FALSE
##	[97,]	FALSE		FALSE	FALSE	FALSE
##	[98,]	FALSE		FALSE	FALSE	FALSE
##	[99,]	FALSE		FALSE	FALSE	FALSE
##	[100,]	FALSE		FALSE	FALSE	FALSE
##	[101,]	FALSE		FALSE	FALSE	FALSE
##	[102,]	FALSE		FALSE	FALSE	FALSE
##	[103,]	FALSE		FALSE	FALSE	FALSE
##	[104,]	FALSE		FALSE	FALSE	FALSE
##	[105,]	FALSE		FALSE	FALSE	FALSE
##	[106,]	FALSE		FALSE	FALSE	FALSE
##	[107,]	FALSE		FALSE	FALSE	FALSE
##	[108,]	FALSE		FALSE	FALSE	FALSE
	[109,]			FALSE	FALSE	FALSE
##	[110,]	FALSE		FALSE	FALSE	FALSE
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	[112,]			FALSE	FALSE	FALSE
##	[113,]	FALSE		FALSE	FALSE	FALSE
##	[114,]	FALSE		FALSE	FALSE	FALSE
	[115,]			FALSE	FALSE	FALSE
	[116,]			FALSE	FALSE	FALSE
	[117,]			FALSE	FALSE	FALSE
	[118,]			FALSE	FALSE	FALSE
	[119,]			FALSE	FALSE	FALSE
	[120,]			FALSE	FALSE	FALSE
	[121,]			FALSE	FALSE	FALSE
	[122,]			FALSE	FALSE	FALSE
	[123,]			FALSE	FALSE	FALSE
	[124,]			FALSE	FALSE	FALSE
	[125,]			FALSE	FALSE	FALSE
##	[126,]	FALSE		FALSE	FALSE	FALSE
	[127,]			FALSE	FALSE	FALSE
	[128,]			FALSE	FALSE	FALSE
	[129,]			FALSE	FALSE	FALSE
	[130,]			FALSE	FALSE	FALSE
##	[131,]	FALSE		FALSE	FALSE	FALSE
	[132,]			FALSE	FALSE	FALSE
	[133,]			FALSE	FALSE	FALSE
	[134,]			FALSE	FALSE	FALSE
	[135,]			FALSE	FALSE	FALSE
##	[136,]			FALSE	FALSE	FALSE
##	_ ,_		hospitals	total_at_risk		
##	[1,]	TRUE	TRUE	FALSE		
##	[2,]	FALSE	FALSE	FALSE		
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##	[112,]	FALSE	FALSE	FALSE
##	[113,]	FALSE	FALSE	FALSE
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##	[115,]	FALSE	FALSE	FALSE
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                                      FALSE
                       FALSE
## [135,]
             FALSE
                       FALSE
                                      FALSE
## [136,]
             FALSE
                       FALSE
                                      FALSE
# removing missing values from coviddata
Coviddata <- Coviddata[complete.cases(Coviddata), ]</pre>
# partial_records <- sampledata[complete.cases(sampledata)]</pre>
# For cleaning process, renaming the column names using dplyr
library(dplyr)
# modifying the coloumn names in coviddata and storing
colnames(Coviddata) <- c("MMSA", "percent_at_risk", "patient_per_ICU_bed", "Patient_per_hospital", "no_icu"
head(Coviddata)
## # A tibble: 6 x 7
##
     MMSA
               percent_at_risk patient_per_ICU~ Patient_per_hos~ no_icu no_hospital
##
     <chr>
               <chr>
                                           <dbl>
                                                             <dbl> <dbl>
                                                                                 <dbl>
## 1 Manhatta~ 47.29%
                                           4490.
                                                             8980.
                                                                        8
                                                                                     4
## 2 Hilton H~ 62.72%
                                           3904.
                                                            36439.
                                                                        28
                                                                                     3
## 3 Kahului-~ 59.13%
                                                                                     4
                                           3861.
                                                            19303.
                                                                        20
## 4 Spartanb~ 66.12%
                                                                                     2
                                           3786.
                                                            85188.
                                                                        45
## 5 Baton Ro~ 66.60%
                                           3460.
                                                            39001.
                                                                       124
                                                                                    11
## 6 Rockingh~ 57.72%
                                           3365.
                                                            40381.
                                                                        60
                                                                                     5
## # ... with 1 more variable: total_at_risk <dbl>
# extracting the top 10 rows to subset the row values
Coviddata %>% sample_n(10, replace=FALSE)
## # A tibble: 10 x 7
##
      MMSA
               percent_at_risk patient_per_ICU~ Patient_per_hos~ no_icu no_hospital
##
                                            <dbl>
                                                             <dbl> <dbl>
                                                                                 <dbl>
      <chr>
               <chr>
## 1 Fargo, ~ 51.26%
                                            870.
                                                            48306.
                                                                       111
                                                                                     2
                                           3279.
                                                            19677.
                                                                                     4
   2 Wichita~ 67.11%
                                                                        24
## 3 Baton R~ 66.60%
                                                            39001.
                                                                      124
                                           3460.
                                                                                    11
## 4 Tuscalo~ 62.40%
                                                            40201.
                                           1371.
                                                                        88
                                                                                     3
## 5 Corpus ~ 61.89%
                                           1868.
                                                            53710.
                                                                      115
                                                                                     4
```

```
## 6 Sacrame~ 54.51%
                                            1924.
                                                             65148.
                                                                       508
                                                                                     15
##
   7 San Ant~ 56.62%
                                                             58783.
                                                                       679
                                                                                     18
                                            1558.
## 8 Columbu~ 59.99%
                                            1735.
                                                             52809.
                                                                       548
                                                                                     18
                                                                                      4
## 9 Anchora~ 58.80%
                                            2055.
                                                             44706.
                                                                        87
## 10 Scottsb~ 68.20%
                                             899.
                                                             19784.
                                                                        22
                                                                                      1
## # ... with 1 more variable: total at risk <dbl>
#extracting the top 10 rows to subset the row values
cov <- Coviddata %>% sample_n(10, replace=FALSE)
print(cov)
## # A tibble: 10 x 7
##
      MMSA
               percent_at_risk patient_per_ICU~ Patient_per_hos~ no_icu no_hospital
##
      <chr>
                                            <dbl>
                                                             <dbl>
                                                                     <dbl>
    1 Portlan~ 55.37%
                                                                                     17
##
                                            2649.
                                                             63107.
                                                                       405
   2 Anchora~ 58.80%
                                                             44706.
                                                                        87
##
                                            2055.
                                                                                      4
##
  3 Salisbu~ 68.32%
                                                                        68
                                                                                      6
                                            3292.
                                                             37312.
##
  4 Sioux C~ 60.83%
                                            2320.
                                                             19139.
                                                                        33
                                                                                      4
## 5 Hartfor~ 57.26%
                                            2150.
                                                             55043.
                                                                       256
                                                                                     10
## 6 Hagerst~ 66.46%
                                            2023.
                                                             68778.
                                                                        68
                                                                                      2
## 7 Allento~ 60.18%
                                            1667.
                                                             36367.
                                                                       240
                                                                                     11
  8 Montgom~ 59.69%
                                            2329.
                                                             40299.
                                                                       398
                                                                                     23
## 9 Minneap~ 50.99%
                                            2474.
                                                             43764.
                                                                       566
                                                                                     32
## 10 Richmon~ 60.29%
                                            1572.
                                                             60855.
                                                                       387
                                                                                     10
## # ... with 1 more variable: total_at_risk <dbl>
#extracting the column values and concatenating using c and storing in dfcol
dfcol \leftarrow Coviddata[,c(1,2,3,4)]
```

#inline code output

This dataframe has 135 rows and 7 columns. The names of the columns and a brief description of each are in the table below :

```
#showing description of each coloumn in a table format
library(knitr)
description <- c('The name of the metropolitan area, metropolitan area or metropolitan division availab
description_table <- data.frame(names(Coviddata), description)
kable(description_table, "pipe", col.names = NULL)</pre>
```

```
MMSA The name of the metropolitan area, metropolitan area or metropolitan division available in the CDC's BRFSS

percent_at_risk The percent of individuals in that area that are at high risk of becoming seriously ill from COVID-19 as per CDC's BRFSS

patient_per_ICU_Theel number of high risk individuals per ICU bed in that area

Patient_per_hospitale number of high risk individuals per hospital in that area

no_icu The number of ICU beds in the area, based on the Kaiser Family Foundation's data

no_hospital The number of hospitals in the area, based on the Kaiser Family Foundation's data

total_at_risk The total number of high risk individuals in the area, per CDC's BRFSS
```

```
#Summary of Coloumns choosen are as follows:
#1. patient_per_ICU_bed"
#2 Patient_per_hospital
#3 no_icu
#4 no_hospital
```

```
\#5 \ total\_at\_risk
total summary <- summarise each(Coviddata[,c("patient per ICU bed", "Patient per hospital", "no icu", "no
## Warning: `summarise each ()` was deprecated in dplyr 0.7.0.
## Please use `across()` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was generated.
## Warning: `funs()` was deprecated in dplyr 0.8.0.
## Please use a list of either functions or lambdas:
##
##
     # Simple named list:
     list(mean = mean, median = median)
##
##
##
     # Auto named with `tibble::lst()`:
     tibble::lst(mean, median)
##
##
##
     # Using lambdas
##
     list(~ mean(., trim = .2), ~ median(., na.rm = TRUE))
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was generated.
# print summary
total summary
## # A tibble: 1 x 5
     patient_per_ICU_bed Patient_per_hospital no_icu no_hospital total_at_risk
                   <dbl>
                                        <dbl> <dbl>
                                                            <dbl>
                                                                           <dbl>
##
                                        43787.
## 1
                   1947.
                                                 360.
                                                             13.8
                                                                         665288.
۷ ۷
```