```
R version 4.1.1 (2021-08-10) -- "Kick Things"
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Platform: x86_64-w64-mingw32/x64 (64-bit)

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  Natural language support but running in an English locale

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Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> # JRodoni_HW06_script.R
> # C:/Users/jackr/OneDrive/Desktop/Graduate School Courses/
> #   STAT 604 - STAT Computation/Homeworks/JRodoni_HW06_script.R
> # Created By: Jack Rodoni
> # Creation Date: 09/27/2021
> # Purpose: STAT 604 Homework 6
> # Last Executed: 09/28/2021
>
>
>
> # Prior to starting your script, execute in the console the function that will display all the
graphics
> # parameters. Locate the parameter that defines the graph margin in inches. Write down the marg
in
> # values so that you can refer to them later in the assignment.
>
> par()
$xlog
[1] FALSE

$ylog
[1] FALSE

$adj
[1] 0.5

$ann
[1] TRUE

$ask
[1] FALSE

$bg
[1] "transparent"

$bty
[1] "o"

$cex
[1] 1

$cex.axis
[1] 1

$cex.lab
[1] 1

$cex.main
[1] 1.2

$cex.sub
```

```
[1] 1

$cin
[1] 0.15 0.20

$col
[1] "black"

$col.axis
[1] "black"

$col.lab
[1] "black"

$col.main
[1] "black"

$col.sub
[1] "black"

$cra
[1] 14.4 19.2

$crt
[1] 0

$csi
[1] 0.2

$cxy
[1] 0.02604167 0.03883810

$din
[1] 6.999999 6.989582

$err
[1] 0

$family
[1] ""

$fg
[1] "black"

$fig
[1] 0 1 0 1

$fin
[1] 6.999999 6.989582

$font
[1] 1

$font.axis
[1] 1

$font.lab
[1] 1

$font.main
[1] 2

$font.sub
[1] 1

$lab
[1] 5 5 7

$las
[1] 0
```

```
$lend
[1] "round"

$lheight
[1] 1

$ljoin
[1] "round"

$lmitre
[1] 10

$lty
[1] "solid"

$lwd
[1] 1

$mai
[1] 1.02 0.82 0.82 0.42

$mar
[1] 5.1 4.1 4.1 2.1

$mex
[1] 1

$mfcol
[1] 1 1

$mfg
[1] 1 1 1 1

$mfrow
[1] 1 1

$mgp
[1] 3 1 0

$mkh
[1] 0.001

$new
[1] FALSE

$oma
[1] 0 0 0 0

$omd
[1] 0 1 0 1

$omi
[1] 0 0 0 0

$page
[1] TRUE

$pch
[1] 1

$pin
[1] 5.759999 5.149582

$plt
[1] 0.1171429 0.9400000 0.1459315 0.8826825

$ps
[1] 12
```

```
$pty
[1] "m"

$smo
[1] 1

$srt
[1] 0

$tck
[1] NA

$tcl
[1] -0.5

$usr
[1] 0 1 0 1

$xaxp
[1] 0 1 5

$xaxs
[1] "r"

$xaxt
[1] "s"

$xpd
[1] FALSE

$yaxp
[1] 0 1 5

$yaxs
[1] "r"

$yaxt
[1] "s"

$ylbias
[1] 0.2

> par(mai = c(1.02,0.82,0.82,0.42)) #= C(bottom, left, top, right)
> #mai = c(1.02,0.82,0.82,0.42) = C(bottom, left, top, right)
> #mar = c(5.1,4.1,4.1,2.1)
> #oma = c(0,0,0,0)
> #omi = c(0,0,0,0)
>
>
>
> # 1.) After the header, include housekeeping steps as you did in the previous assignments.
>
> Sys.time()
[1] "2021-09-28 14:44:54 CDT"
>
> ls()
character(0)
> rm(list = ls())
> library()
> search()
[1] ".GlobalEnv"        "package:stats"     "package:graphics"
[4] "package:grDevices" "package:utils"     "package:datasets"
[7] "package:methods"   "Autoloads"         "package:base"
>
> # 2.) Write an expression in your script to load the workspace from the previous assignment. Sh
ow
> #     the contents of the workspace. Display a summary of the data frame containing data as of
> #     September 12.
>
> load(paste("C:/Users/jackr/OneDrive/Desktop/Graduate School Courses/",
```

```
+             "STAT 604 - STAT Computation/Homeworks/HW05.RData", sep = ""))
> ls() # show the contents of the workspace
[1] "Merged_df"                   "Merged_df_Latest_NAsRemoved"
>
> summary(Merged_df_Latest_NAsRemoved)
 COUNTY_NAME        REPORT_DATE          NEW_CASES          TOTAL_CASES
 Length:254         Length:254         Min.   :   0.000   Min.   :     7.0
 Class :character   Class :character   1st Qu.:   0.000   1st Qu.:   838.5
 Mode  :character   Mode  :character   Median :   0.000   Median :  2552.5
                                       Mean   :   9.839   Mean   : 15022.9
                                       3rd Qu.:   0.000   3rd Qu.:  7112.2
                                       Max.   :1030.000   Max.   :526158.0
   NEW_DEATHS        TOTAL_DEATHS        POPULATION         ReportDate
 Min.   : 0.0000   Min.   :   0.00   Min.   :    169   Min.   :2021-09-12
 1st Qu.: 0.0000   1st Qu.:  21.25   1st Qu.:   6765   1st Qu.:2021-09-12
 Median : 0.0000   Median :  56.00   Median :  18695   Median :2021-09-12
 Mean   : 0.5354   Mean   : 237.63   Mean   : 114157   Mean   :2021-09-12
 3rd Qu.: 0.0000   3rd Qu.: 151.75   3rd Qu.:  52346   3rd Qu.:2021-09-12
 Max.   :18.0000   Max.   :7636.00   Max.   :4713325   Max.   :2021-09-12
 PCT_Total_CASES   PCT_NEW_DEATHS       PCT_NEW_CASES        PCT_TOTAL_DEATHS
 Min.   :0.04044   Min.   :0.000e+00   Min.   :0.000e+00   Min.   :0.000000
 1st Qu.:0.11331   1st Qu.:0.000e+00   1st Qu.:0.000e+00   1st Qu.:0.002335
 Median :0.13459   Median :0.000e+00   Median :0.000e+00   Median :0.003003
 Mean   :0.13543   Mean   :5.879e-06   Mean   :8.005e-05   Mean   :0.003128
 3rd Qu.:0.15286   3rd Qu.:0.000e+00   3rd Qu.:0.000e+00   3rd Qu.:0.003758
 Max.   :0.35747   Max.   :1.489e-04   Max.   :1.403e-03   Max.   :0.008658
>
> # 3.) On an assignment statement, use the with function to access the columns in the September
12
> #     data frame and create a new column containing the death rate. Death rate is calculated as
 Total
> #     Deaths divided by Total Cases then multiplied by 100 so it is displayed as a number betwe
en 0
> #     and 100. This expression will be one of the arguments in the with function. Write express
ions
> #     to show the minimum value and maximum value of the new column
>
> Data_Latest = Merged_df_Latest_NAsRemoved
> Data_Latest$DeathRate = with(Data_Latest, (TOTAL_DEATHS/TOTAL_CASES)*100)
> min(Data_Latest$DeathRate)
[1] 0
> max(Data_Latest$DeathRate)
[1] 7.322929
>
> # 4.) Use a line of code to direct all graphic output to your PDF document. Research the availa
ble
> #     arguments for this function and set width to 11 and height to 8.5 so it will fit a normal
 size paper
> #     in landscape orientation. (You may want to wait until you have your graphics working corr
ectly
> #     before you add the line to redirect to PDF so you can see the results in your R session.)
>
> pdf(paste("C:/Users/jackr/OneDrive/Desktop/Graduate School Courses/",
+           "STAT 604 - STAT Computation/Homeworks/JRodoni_HW6_graphics.pdf", sep = ""),
+     width = 11, height = 8.5)
>
>
> # 5.) Create a histogram of the death rate column you created above, forcing the cells to have
a
> #     width of 0.5. Start the breaks at the minimum death rate and continue to the next integer

> #     above the maximum death rate. You may hard code the start and end values when setting up
> #     your break points. (The term “hard coding” refers to entering an actual value like 50 in
your
> #     program code instead of using a formula.) Create the histogram in a manner that will faci
litate
> #     the addition of a distribution curve later. Label the X axis “Percent” and supply an appr
opriate
> #     main title for the graph
>
```

```
> hist(Data_Latest$DeathRate, breaks = seq(0,8,.5),
+      freq = FALSE, xlim = c(0,8), ylim = c(0,.5), xlab = "Percent", main = "COVID Death Rates")
>
>
> length(seq(min(Data_Latest$DeathRate), ceiling(max(Data_Latest$DeathRate)), by = 0.5))
[1] 17
> # 6.) Add to the graph a line that shows the normal distribution density of death rate values.
Include
> #     arguments that will ensure calculations are made even when there are missing values in th
e
> #     data. Use a hex value to “mix” a color for the line that has a Red amount of 22, a Green
amount
> #     of A0 and a Blue amount of EE.
>
> x = seq(from = 0, to = 8, by = .001)
> y = dnorm(x, mean = mean(Data_Latest$DeathRate), sd = sd(Data_Latest$DeathRate))
> lines(x,y, col = "#22A0EE")
>
> #### still need to fix the density line, not sure what he wants
>
> # 7.) Draw a vertical line at the mean death rate value. Use the second color in the R palette
as the
> #     color of the line. Use a function to determine the position of the line instead of hard c
oding the
> #     current mean value. Include an argument to ensure the mean is calculated even if there ar
e
> #     missing values. Draw a line at the median in the same manner except use the color name
> #     green1 to specify the line color
>
> abline(v = mean(Data_Latest$DeathRate, na.rm = TRUE), col = "#DF536B")
> abline(v = median(Data_Latest$DeathRate, na.rm = TRUE), col = "green1")
>
> # 8.) Display in the console the names of all available R colors
>
> colors()
  [1] "white"                "aliceblue"            "antiquewhite"
  [4] "antiquewhite1"        "antiquewhite2"        "antiquewhite3"
  [7] "antiquewhite4"        "aquamarine"           "aquamarine1"
 [10] "aquamarine2"          "aquamarine3"          "aquamarine4"
 [13] "azure"                "azure1"               "azure2"
 [16] "azure3"               "azure4"               "beige"
 [19] "bisque"               "bisque1"              "bisque2"
 [22] "bisque3"              "bisque4"              "black"
 [25] "blanchedalmond"       "blue"                 "blue1"
 [28] "blue2"                "blue3"                "blue4"
 [31] "blueviolet"           "brown"                "brown1"
 [34] "brown2"               "brown3"               "brown4"
 [37] "burlywood"            "burlywood1"           "burlywood2"
 [40] "burlywood3"           "burlywood4"           "cadetblue"
 [43] "cadetblue1"           "cadetblue2"           "cadetblue3"
 [46] "cadetblue4"           "chartreuse"           "chartreuse1"
 [49] "chartreuse2"          "chartreuse3"          "chartreuse4"
 [52] "chocolate"            "chocolate1"           "chocolate2"
 [55] "chocolate3"           "chocolate4"           "coral"
 [58] "coral1"               "coral2"               "coral3"
 [61] "coral4"               "cornflowerblue"       "cornsilk"
 [64] "cornsilk1"            "cornsilk2"            "cornsilk3"
 [67] "cornsilk4"            "cyan"                 "cyan1"
 [70] "cyan2"                "cyan3"                "cyan4"
 [73] "darkblue"             "darkcyan"             "darkgoldenrod"
 [76] "darkgoldenrod1"       "darkgoldenrod2"       "darkgoldenrod3"
 [79] "darkgoldenrod4"       "darkgray"             "darkgreen"
 [82] "darkgrey"             "darkkhaki"            "darkmagenta"
 [85] "darkolivegreen"       "darkolivegreen1"      "darkolivegreen2"
 [88] "darkolivegreen3"      "darkolivegreen4"      "darkorange"
 [91] "darkorange1"          "darkorange2"          "darkorange3"
 [94] "darkorange4"          "darkorchid"           "darkorchid1"
 [97] "darkorchid2"          "darkorchid3"          "darkorchid4"
[100] "darkred"              "darksalmon"           "darkseagreen"
[103] "darkseagreen1"        "darkseagreen2"        "darkseagreen3"
```

```
[106] "darkseagreen4"       "darkslateblue"       "darkslategray"
[109] "darkslategray1"      "darkslategray2"      "darkslategray3"
[112] "darkslategray4"      "darkslategrey"       "darkturquoise"
[115] "darkviolet"          "deeppink"            "deeppink1"
[118] "deeppink2"           "deeppink3"           "deeppink4"
[121] "deepskyblue"         "deepskyblue1"        "deepskyblue2"
[124] "deepskyblue3"        "deepskyblue4"        "dimgray"
[127] "dimgrey"             "dodgerblue"          "dodgerblue1"
[130] "dodgerblue2"         "dodgerblue3"         "dodgerblue4"
[133] "firebrick"           "firebrick1"          "firebrick2"
[136] "firebrick3"          "firebrick4"          "floralwhite"
[139] "forestgreen"         "gainsboro"           "ghostwhite"
[142] "gold"                "gold1"               "gold2"
[145] "gold3"               "gold4"               "goldenrod"
[148] "goldenrod1"          "goldenrod2"          "goldenrod3"
[151] "goldenrod4"          "gray"                "gray0"
[154] "gray1"               "gray2"               "gray3"
[157] "gray4"               "gray5"               "gray6"
[160] "gray7"               "gray8"               "gray9"
[163] "gray10"              "gray11"              "gray12"
[166] "gray13"              "gray14"              "gray15"
[169] "gray16"              "gray17"              "gray18"
[172] "gray19"              "gray20"              "gray21"
[175] "gray22"              "gray23"              "gray24"
[178] "gray25"              "gray26"              "gray27"
[181] "gray28"              "gray29"              "gray30"
[184] "gray31"              "gray32"              "gray33"
[187] "gray34"              "gray35"              "gray36"
[190] "gray37"              "gray38"              "gray39"
[193] "gray40"              "gray41"              "gray42"
[196] "gray43"              "gray44"              "gray45"
[199] "gray46"              "gray47"              "gray48"
[202] "gray49"              "gray50"              "gray51"
[205] "gray52"              "gray53"              "gray54"
[208] "gray55"              "gray56"              "gray57"
[211] "gray58"              "gray59"              "gray60"
[214] "gray61"              "gray62"              "gray63"
[217] "gray64"              "gray65"              "gray66"
[220] "gray67"              "gray68"              "gray69"
[223] "gray70"              "gray71"              "gray72"
[226] "gray73"              "gray74"              "gray75"
[229] "gray76"              "gray77"              "gray78"
[232] "gray79"              "gray80"              "gray81"
[235] "gray82"              "gray83"              "gray84"
[238] "gray85"              "gray86"              "gray87"
[241] "gray88"              "gray89"              "gray90"
[244] "gray91"              "gray92"              "gray93"
[247] "gray94"              "gray95"              "gray96"
[250] "gray97"              "gray98"              "gray99"
[253] "gray100"             "green"               "green1"
[256] "green2"              "green3"              "green4"
[259] "greenyellow"         "grey"                "grey0"
[262] "grey1"               "grey2"               "grey3"
[265] "grey4"               "grey5"               "grey6"
[268] "grey7"               "grey8"               "grey9"
[271] "grey10"              "grey11"              "grey12"
[274] "grey13"              "grey14"              "grey15"
[277] "grey16"              "grey17"              "grey18"
[280] "grey19"              "grey20"              "grey21"
[283] "grey22"              "grey23"              "grey24"
[286] "grey25"              "grey26"              "grey27"
[289] "grey28"              "grey29"              "grey30"
[292] "grey31"              "grey32"              "grey33"
[295] "grey34"              "grey35"              "grey36"
[298] "grey37"              "grey38"              "grey39"
[301] "grey40"              "grey41"              "grey42"
[304] "grey43"              "grey44"              "grey45"
[307] "grey46"              "grey47"              "grey48"
[310] "grey49"              "grey50"              "grey51"
[313] "grey52"              "grey53"              "grey54"
```

```
[316] "grey55"                "grey56"                "grey57"
[319] "grey58"                "grey59"                "grey60"
[322] "grey61"                "grey62"                "grey63"
[325] "grey64"                "grey65"                "grey66"
[328] "grey67"                "grey68"                "grey69"
[331] "grey70"                "grey71"                "grey72"
[334] "grey73"                "grey74"                "grey75"
[337] "grey76"                "grey77"                "grey78"
[340] "grey79"                "grey80"                "grey81"
[343] "grey82"                "grey83"                "grey84"
[346] "grey85"                "grey86"                "grey87"
[349] "grey88"                "grey89"                "grey90"
[352] "grey91"                "grey92"                "grey93"
[355] "grey94"                "grey95"                "grey96"
[358] "grey97"                "grey98"                "grey99"
[361] "grey100"               "honeydew"              "honeydew1"
[364] "honeydew2"             "honeydew3"             "honeydew4"
[367] "hotpink"               "hotpink1"              "hotpink2"
[370] "hotpink3"              "hotpink4"              "indianred"
[373] "indianred1"            "indianred2"            "indianred3"
[376] "indianred4"            "ivory"                 "ivory1"
[379] "ivory2"                "ivory3"                "ivory4"
[382] "khaki"                 "khaki1"                "khaki2"
[385] "khaki3"                "khaki4"                "lavender"
[388] "lavenderblush"         "lavenderblush1"        "lavenderblush2"
[391] "lavenderblush3"        "lavenderblush4"        "lawngreen"
[394] "lemonchiffon"          "lemonchiffon1"         "lemonchiffon2"
[397] "lemonchiffon3"         "lemonchiffon4"         "lightblue"
[400] "lightblue1"            "lightblue2"            "lightblue3"
[403] "lightblue4"            "lightcoral"            "lightcyan"
[406] "lightcyan1"            "lightcyan2"            "lightcyan3"
[409] "lightcyan4"            "lightgoldenrod"        "lightgoldenrod1"
[412] "lightgoldenrod2"       "lightgoldenrod3"       "lightgoldenrod4"
[415] "lightgoldenrodyellow" "lightgray"             "lightgreen"
[418] "lightgrey"             "lightpink"             "lightpink1"
[421] "lightpink2"            "lightpink3"            "lightpink4"
[424] "lightsalmon"           "lightsalmon1"          "lightsalmon2"
[427] "lightsalmon3"          "lightsalmon4"          "lightseagreen"
[430] "lightskyblue"          "lightskyblue1"         "lightskyblue2"
[433] "lightskyblue3"         "lightskyblue4"         "lightslateblue"
[436] "lightslategray"        "lightslategrey"        "lightsteelblue"
[439] "lightsteelblue1"       "lightsteelblue2"       "lightsteelblue3"
[442] "lightsteelblue4"       "lightyellow"           "lightyellow1"
[445] "lightyellow2"          "lightyellow3"          "lightyellow4"
[448] "limegreen"             "linen"                 "magenta"
[451] "magenta1"              "magenta2"              "magenta3"
[454] "magenta4"              "maroon"                "maroon1"
[457] "maroon2"               "maroon3"               "maroon4"
[460] "mediumaquamarine"      "mediumblue"            "mediumorchid"
[463] "mediumorchid1"         "mediumorchid2"         "mediumorchid3"
[466] "mediumorchid4"         "mediumpurple"          "mediumpurple1"
[469] "mediumpurple2"         "mediumpurple3"         "mediumpurple4"
[472] "mediumseagreen"        "mediumslateblue"       "mediumspringgreen"
[475] "mediumturquoise"       "mediumvioletred"       "midnightblue"
[478] "mintcream"             "mistyrose"             "mistyrose1"
[481] "mistyrose2"            "mistyrose3"            "mistyrose4"
[484] "moccasin"              "navajowhite"           "navajowhite1"
[487] "navajowhite2"          "navajowhite3"          "navajowhite4"
[490] "navy"                  "navyblue"              "oldlace"
[493] "olivedrab"             "olivedrab1"            "olivedrab2"
[496] "olivedrab3"            "olivedrab4"            "orange"
[499] "orange1"               "orange2"               "orange3"
[502] "orange4"               "orangered"             "orangered1"
[505] "orangered2"            "orangered3"            "orangered4"
[508] "orchid"                "orchid1"               "orchid2"
[511] "orchid3"               "orchid4"               "palegoldenrod"
[514] "palegreen"             "palegreen1"            "palegreen2"
[517] "palegreen3"            "palegreen4"            "paleturquoise"
[520] "paleturquoise1"        "paleturquoise2"        "paleturquoise3"
[523] "paleturquoise4"        "palevioletred"         "palevioletred1"
```

```
[526] "palevioletred2"       "palevioletred3"       "palevioletred4"
[529] "papayawhip"           "peachpuff"            "peachpuff1"
[532] "peachpuff2"           "peachpuff3"           "peachpuff4"
[535] "peru"                 "pink"                 "pink1"
[538] "pink2"                "pink3"                "pink4"
[541] "plum"                 "plum1"                "plum2"
[544] "plum3"                "plum4"                "powderblue"
[547] "purple"               "purple1"              "purple2"
[550] "purple3"              "purple4"              "red"
[553] "red1"                 "red2"                 "red3"
[556] "red4"                 "rosybrown"            "rosybrown1"
[559] "rosybrown2"           "rosybrown3"           "rosybrown4"
[562] "royalblue"            "royalblue1"           "royalblue2"
[565] "royalblue3"           "royalblue4"           "saddlebrown"
[568] "salmon"               "salmon1"              "salmon2"
[571] "salmon3"              "salmon4"              "sandybrown"
[574] "seagreen"             "seagreen1"            "seagreen2"
[577] "seagreen3"            "seagreen4"            "seashell"
[580] "seashell1"            "seashell2"            "seashell3"
[583] "seashell4"            "sienna"               "sienna1"
[586] "sienna2"              "sienna3"              "sienna4"
[589] "skyblue"              "skyblue1"             "skyblue2"
[592] "skyblue3"             "skyblue4"             "slateblue"
[595] "slateblue1"           "slateblue2"           "slateblue3"
[598] "slateblue4"           "slategray"            "slategray1"
[601] "slategray2"           "slategray3"           "slategray4"
[604] "slategrey"            "snow"                 "snow1"
[607] "snow2"                "snow3"                "snow4"
[610] "springgreen"          "springgreen1"         "springgreen2"
[613] "springgreen3"         "springgreen4"         "steelblue"
[616] "steelblue1"           "steelblue2"           "steelblue3"
[619] "steelblue4"           "tan"                  "tan1"
[622] "tan2"                 "tan3"                 "tan4"
[625] "thistle"              "thistle1"             "thistle2"
[628] "thistle3"             "thistle4"             "tomato"
[631] "tomato1"              "tomato2"              "tomato3"
[634] "tomato4"              "turquoise"            "turquoise1"
[637] "turquoise2"           "turquoise3"           "turquoise4"
[640] "violet"               "violetred"            "violetred1"
[643] "violetred2"           "violetred3"           "violetred4"
[646] "wheat"                "wheat1"               "wheat2"
[649] "wheat3"               "wheat4"               "whitesmoke"
[652] "yellow"               "yellow1"              "yellow2"
[655] "yellow3"              "yellow4"              "yellowgreen"
>
> # 9.) We want to observe the correlation between the total number of cases and the total number
 of
>     deaths from each county in the September 12 data. Plot a point for each county with data
using
>     total cases for the x axis and total deaths for the y axis. Use the diamond plot characte
r (◊).
>     Pick an unusual name that sounds interesting to you from the list of colors as the color
of your
>     points. Any color is acceptable if the points show up well. Supply appropriate labels for
 the
>     axes and an appropriate title for the graph
>
> plot(x = Data_Latest$TOTAL_CASES, y = Data_Latest$TOTAL_DEATHS, pch = 5, col =  "darkturquoise"
,
+      xlab = "Total Cases", ylab = "Total Deaths", xaxt = "n",
+      main = "Total Cases Vs Total Deaths")
> axis(1, at = seq(0,500000,100000), labels = c("0","100k","200k","300k","400k","500k"))
>
> # 10.) Add a fit line to the plot
>
> lm1 = lm(Data_Latest$TOTAL_DEATHS~Data_Latest$TOTAL_CASES)
> abline(lm1)
>
> # 11.) Use functions to imbed text showing the date and time of creation in the upper left-hand
 corner
```

```
> #      of the graph area. The exact value of the y coordinate for the time stamp location is no
t critical
> #      if the time stamp is near the corner. You may hard code the coordinates but use 0 as the
 x
> #      coordinate and use an alignment value so the text starts at 0. The date and time must
> #      automatically change each time the script is run.
>
> text(0,7500, Sys.time(), adj = 0)
> # legend("topleft", legend = Sys.time())
>
> # 12.)  Use logic expressions as an index parameter to create a new data frame that is a subset
 of the
> #       Texas COVID data frame where the population of the county is not missing and is greater
 than
> #       500 thousand and the value of the date column created in the previous assignment is gre
ater
> #       than March 14, 2020. When you hard code the date value in your comparison statement,
> #       coerce it to a date so you can be sure R is comparing two values of the Date class. Inc
lude all
> #       columns in the subset. Display a summary of the new data frame. Use the tapply function
 to
> #       display a table showing the median number of New Cases for each county in the data fram
e.
> #       There should be 12 Counties displayed and the value for Bexar should be 171.
>
>
> NewDf = subset(Merged_df, is.na(POPULATION) == FALSE & POPULATION > 500000 & ReportDate > as.Da
te("2020-03-14"))
> summary(NewDf)
 COUNTY_NAME        REPORT_DATE          NEW_CASES        TOTAL_CASES
 Length:6564        Length:6564        Min.   :-1222.0   Min.   :     0
 Class :character   Class :character   1st Qu.:   21.0   1st Qu.: 10710
 Mode  :character   Mode  :character   Median :  128.0   Median : 50219
                                       Mean   :  352.6   Mean   : 83711
                                       3rd Qu.:  411.2   3rd Qu.: 96798
                                       Max.   :14129.0   Max.   :526158
   NEW_DEATHS      TOTAL_DEATHS      POPULATION        ReportDate
 Min.   :-21.00   Min.   :   0.0   Min.   : 590551   Min.   :2020-03-15
 1st Qu.:  0.00   1st Qu.: 157.0   1st Qu.: 832350   1st Qu.:2020-07-29
 Median :  2.00   Median : 600.5   Median : 960968   Median :2020-12-13
 Mean   :  4.83   Mean   :1240.6   Mean   :1530698   Mean   :2020-12-13
 3rd Qu.:  5.00   3rd Qu.:2019.2   3rd Qu.:2028294   3rd Qu.:2021-04-29
 Max.   :455.00   Max.   :7636.0   Max.   :4713325   Max.   :2021-09-12
 PCT_Total_CASES   PCT_NEW_DEATHS       PCT_NEW_CASES
 Min.   :0.00000   Min.   :-3.556e-05   Min.   :-1.407e-03
 1st Qu.:0.01124   1st Qu.: 0.000e+00   1st Qu.: 2.126e-05
 Median :0.04455   Median : 1.232e-06   Median : 1.036e-04
 Mean   :0.05377   Mean   : 3.129e-06   Mean   : 2.290e-04
 3rd Qu.:0.08790   3rd Qu.: 3.575e-06   3rd Qu.: 2.881e-04
 Max.   :0.17063   Max.   : 9.653e-05   Max.   : 4.216e-03
 PCT_TOTAL_DEATHS
 Min.   :0.0000000
 1st Qu.:0.0001477
 Median :0.0006170
 Mean   :0.0008158
 3rd Qu.:0.0010142
 Max.   :0.0036652
>
> with(NewDf, tapply(NEW_CASES, COUNTY_NAME, median))
     Bexar     Collin     Dallas     Denton    El Paso  Fort Bend     Harris
       171        104        343         85        142         60        608
   Hidalgo Montgomery    Tarrant     Travis Williamson
        97         44        273        102         21
>
> # 13.) Increase the bottom and left margins to be one-half of an inch larger than their default
 values
> #      recorded at the beginning of this assignment. Create a boxplot of the number of New Case
s
> #      grouped by county using the data frame of large counties created in the previous step. S
upply
```

```
> #      an appropriate Y axis label and a main title for the chart. Remove the X axis label by u
sing two
> #      quotes with nothing inside them as the value for this label. The inside of the boxes is
maroon.
> #      Supply an argument that will cause the whiskers of the plot to be 4 times the interquart
ile
> #      range. Add the argument las=2 to cause the county names to be displayed vertically.
>
> # mai = c(1.02,0.82,0.82,0.42) = C(bottom, left, top, right)
> par(mai = c(1.52, 1.32, 0.82, 0.42))
>
> boxplot(NewDf$NEW_CASES ~ NewDf$COUNTY_NAME,
+         xlab = "", ylab = "New Cases", range = 4, las = 2, col = "maroon")
>
> dev.off()
windows
      2
> # 14.)
> # a.) The maximum number of new cases on Sep 12 was 1030
> # b.) Not normally distributed because it seems to be skewed right.
> # c.) There seems to be a strong positive relationship between the number of
> #      total cases and the total deaths in a county.
> # d.) Dec 13,2020
> # e.) 142
> # f.) Harris county, approximately 14000
>
```