Group three - Assignment 1

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Introduction

This dataset is about Covid analysis

Load dataset

```
covid4=read.csv("C:/Users/h.ameri/Desktop/covid4.csv")
```

Print dataset

print(covid4)

##		submission_date	state	tot cases	conf cases	prob cases	new case	pnew case
##	1	01/25/2021	NE	187923	NA	NA	646	0
##	2	06/12/2021	AL	549716	423193	126523	97	31
##	3	06/15/2020	WI	25480	22932	2548	185	11
##	4	07/31/2020	ND	6602	6602	0	133	0
##	5	08/11/2020	GU	449	NA	NA	15	0
##	6	02/02/2020	GU	0	NA	NA	0	NA
##	7	12/27/2020	CA	2319593	2249322	70271	13613	664
##	8	05/15/2020	CT	36085	34059	2026	621	-11
##	9	07/02/2020	NC	76154	76023	131	2070	12
##	10	03/07/2021	NE	203157	NA	NA	374	0
##	11	06/09/2021	ND	110351	101268	9083	53	16
##	12	05/11/2020	CT	33765	31955	1810	211	-30
##	13	09/13/2020	MO	108944	NA	NA	663	18
##	14	03/31/2021	ND	103299	96726	6573	208	49
##	15	03/09/2020	WI	1	NA	NA	0	NA
##	16	03/09/2021	MS	299992	185580	114412	457	301
##	17	03/16/2020	ME	19	NA	NA	5	NA
##	18	08/17/2020	ID	27942	26091	1851	282	32
##	19	02/14/2021	GU	7699	NA	NA	10	0
##	20	03/13/2020	VT	2	NA	NA	0	0
##	21	07/09/2021	MO	631603	NA	NA	1639	472
##	22	08/23/2020	IL	221595	220178	1417	1893	0
##	23	11/19/2020	MI	423621	388797	34824	6304	384
##	24	08/08/2020	NV	55644	NA	NA	887	1
##	25	03/21/2021	VI	2858	NA	NA	6	0
##	26	05/09/2021	MI	974134	873038	101096	1301	175

##	27	7 03/08/2021 CA		3673952	3534725	139227	2378	197	
	28	09/22/20		810080	804380	5700		44	
	29	07/06/20		678048	613152	64896		5	
##		tot_death cor						created_	at
	1	1894	NA NA	NA	15		01/27/2021	_	
	2	11355	9053	2302	5		06/14/2021		
##	3	700	694	6	2		06/16/2020		
##			103 NA		0		08/01/2020		
##	5	5	NA	NA NA	0		08/12/2020		
	6	0	NA	NA	0		03/26/2020		
	7	29708	NA	NA	570		12/28/2020		
##	8	3285	2524	761	66		05/16/2020		
##	9	1479	1479	0	11		07/02/2020		
##	10	2113	NA	NA	0	0	03/09/2021	12:00:00	AM
##	11	1517	NA	NA	0	0	06/10/2021	02:48:23	ΡM
##	12	3008	2294	714	41		05/12/2020		
##	13	2132	NA	NA	19		09/15/2020		
##	14	1466	NA	NA	0		04/01/2021		
##	15	0	NA	NA	0	NA	03/26/2020	04:22:39	ΡM
##	16	7080	4916	2164	8	5	03/11/2021	12:00:00	AM
##	17	0	NA	NA	0	NA	03/26/2020	04:22:39	ΡM
##	18	273	245	28	4	0	08/18/2020	02:26:55	ΡM
##	19	130	NA	NA	0	0	02/15/2021	02:46:24	ΡM
##	20	0	NA	NA	0	0	03/15/2020	12:00:00	AM
##	21	9387	NA	NA	4	0	07/10/2021	02:17:36	ΡM
##	22	8089	7880	209	6	0	08/24/2020	01:54:34	ΡM
##	23	9011	8600	411	93	3	11/20/2020	12:00:00	AM
##	24	977	NA	NA	30	1	08/09/2020	02:03:10	PΜ
##	25	25	NA	NA	0	0	03/22/2021	01:57:09	PΜ
##	26	19723	18541	1182	58	1	05/10/2021	12:00:00	AM
##	27	59999	NA	NA	101		03/09/2021		
##	28	16351	NA	NA	71		09/23/2020		
##	29	8144	7323	821	0	0	07/07/2021	02:48:49	PΜ
##		consent_cases							
##	1	Not agree		agree					
##	2	Agree	9	Agree					
##		Agree		Agree					
##		Agree		agree					
##		Not agree		agree					
##		Not agree		agree					
##		Agree		agree					
##		Agree		Agree					
##		Agree		Agree					
##		Not agree		agree					
##		Agree		agree					
##		Agree		Agree					
##		Not agree		agree					
##		Agree		agree					
##		Agree		Agree					
##		Agree		Agree					
##		Agree		Agree					
##		Agree		Agree					
##		Not agree		agree					
##	20	Not agree	; NOT	agree					

##	21	Not	agree	Not	agree
##	22		Agree		Agree
##	23		Agree		Agree
##	24				
##	25				
##	26		Agree		Agree
##	27		Agree	Not	agree
##	28		Agree	Not	agree
##	29		Agree		Agree

List Variables

names(covid4)

```
##
        "submission_date"
                            "state"
                                               "tot_cases"
                                                                   "conf_cases"
##
        "prob_cases"
                            "new_case"
                                               "pnew_case"
                                                                   "tot_death"
                                               "new_death"
##
    [9]
        "conf_death"
                            "prob_death"
                                                                   "pnew_death"
  [13] "created_at"
                            "consent_cases"
                                               "consent_deaths"
```

Print top 15 rows

head(covid4, n=15)

```
##
      submission_date state tot_cases conf_cases prob_cases new_case pnew_case
## 1
            01/25/2021
                           NE
                                  187923
                                                   NA
                                                               NA
                                                                        646
                                                                                     0
## 2
            06/12/2021
                           AL
                                  549716
                                              423193
                                                           126523
                                                                         97
                                                                                    31
## 3
                           WI
                                   25480
                                               22932
                                                             2548
                                                                        185
                                                                                    11
            06/15/2020
## 4
                                    6602
                                                6602
                                                                        133
                                                                                     0
            07/31/2020
                           ND
                                                                0
                           GU
## 5
            08/11/2020
                                     449
                                                                         15
                                                                                     0
                                                   NA
                                                               NA
## 6
            02/02/2020
                           GU
                                        0
                                                   NA
                                                               NA
                                                                          0
                                                                                    NA
## 7
            12/27/2020
                           CA
                                 2319593
                                             2249322
                                                            70271
                                                                      13613
                                                                                   664
## 8
            05/15/2020
                           CT
                                   36085
                                                             2026
                                                                        621
                                               34059
                                                                                   -11
## 9
            07/02/2020
                           NC
                                   76154
                                               76023
                                                              131
                                                                       2070
                                                                                    12
## 10
                           NE
                                                                        374
                                                                                     0
            03/07/2021
                                  203157
                                                   NA
                                                               ΝA
## 11
            06/09/2021
                           ND
                                  110351
                                              101268
                                                             9083
                                                                         53
                                                                                    16
            05/11/2020
## 12
                           CT
                                   33765
                                               31955
                                                             1810
                                                                        211
                                                                                   -30
## 13
            09/13/2020
                           MO
                                  108944
                                                   NA
                                                               NA
                                                                        663
                                                                                    18
## 14
            03/31/2021
                           ND
                                  103299
                                               96726
                                                             6573
                                                                        208
                                                                                    49
## 15
            03/09/2020
                           WI
                                                               NA
                                                                                    NA
                                        1
                                                   NA
##
      tot_death conf_death prob_death new_death pnew_death
                                                                              created_at
## 1
            1894
                          NA
                                      NA
                                                  15
                                                               0 01/27/2021 12:00:00 AM
## 2
           11355
                                    2302
                        9053
                                                   5
                                                               2 06/14/2021 12:00:00 AM
## 3
             700
                         694
                                       6
                                                   2
                                                               0 06/16/2020 02:10:11 PM
## 4
             103
                          NA
                                      NA
                                                   0
                                                                 08/01/2020 02:38:12 PM
## 5
               5
                                                               0 08/12/2020 01:50:14 PM
                          NA
                                      NA
                                                   0
## 6
               0
                          NA
                                      NA
                                                   0
                                                              NA 03/26/2020 04:22:39 PM
## 7
           29708
                          NA
                                      NA
                                                570
                                                               0 12/28/2020 12:00:00 AM
                                     761
## 8
            3285
                        2524
                                                  66
                                                               8 05/16/2020 03:46:44 PM
                                                               0 07/02/2020 12:00:00 AM
## 9
            1479
                        1479
                                        0
                                                  11
```

```
## 10
                                                0
                                                            0 03/09/2021 12:00:00 AM
           2113
                         NA
                                    NA
                                                           0 06/10/2021 02:48:23 PM
## 11
           1517
                         NA
                                    NA
                                                0
## 12
                       2294
                                   714
           3008
                                               41
                                                         -10 05/12/2020 05:26:08 PM
## 13
           2132
                                               19
                                                           0 09/15/2020 12:00:00 AM
                         NA
                                    NA
## 14
           1466
                         NA
                                    NA
                                                0
                                                           0 04/01/2021 02:13:30 PM
## 15
              0
                         NA
                                    NA
                                                0
                                                          NA 03/26/2020 04:22:39 PM
##
      consent_cases consent_deaths
## 1
          Not agree
                          Not agree
## 2
              Agree
                              Agree
## 3
              Agree
                              Agree
## 4
              Agree
                          Not agree
## 5
                          Not agree
          Not agree
## 6
          Not agree
                          Not agree
## 7
              Agree
                          Not agree
## 8
                              Agree
              Agree
## 9
              Agree
                              Agree
## 10
                          Not agree
          Not agree
## 11
              Agree
                          Not agree
## 12
              Agree
                              Agree
## 13
          Not agree
                          Not agree
## 14
              Agree
                          Not agree
## 15
              Agree
                              Agree
```

User defined function on dataset

```
testfunction <- function(x,y) {
x+y
}
a=covid4$tot_cases[1]
b=covid4$tot_cases[2]
testfunction(a,b)</pre>
```

[1] 737639

Filter rows based on any logical criteria

```
covid5=as.data.frame(filter(covid4,covid4$new_death>5))
print(covid5)
```

##		submission_date	state	tot_cases	conf_cases	<pre>prob_cases</pre>	new_case	pnew_case
##	1	01/25/2021	NE	187923	NA	NA	646	0
##	2	12/27/2020	CA	2319593	2249322	70271	13613	664
##	3	05/15/2020	CT	36085	34059	2026	621	-11
##	4	07/02/2020	NC	76154	76023	131	2070	12
##	5	05/11/2020	CT	33765	31955	1810	211	-30
##	6	09/13/2020	MO	108944	NA	NA	663	18
##	7	03/09/2021	MS	299992	185580	114412	457	301
##	8	08/23/2020	IL	221595	220178	1417	1893	0
##	9	11/19/2020	MI	423621	388797	34824	6304	384

```
## 10
           08/08/2020
                                  55644
                          NV
                                                 NA
                                                                     887
                                                                                  1
## 11
           05/09/2021
                          ΜI
                                 974134
                                                        101096
                                                                    1301
                                                                                175
                                             873038
                                3673952
                                           3534725
## 12
           03/08/2021
                          CA
                                                         139227
                                                                    2378
                                                                                197
## 13
                                             804380
                                                                    2204
                                                                                 44
           09/22/2020
                          CA
                                 810080
                                                          5700
##
      tot_death conf_death prob_death new_death pnew_death
                                                                            created at
## 1
           1894
                         NA
                                     NA
                                                             0 01/27/2021 12:00:00 AM
                                                15
## 2
          29708
                         NA
                                     NA
                                               570
                                                             0 12/28/2020 12:00:00 AM
## 3
                       2524
                                    761
                                                             8 05/16/2020 03:46:44 PM
           3285
                                                66
## 4
           1479
                       1479
                                      0
                                                11
                                                             0 07/02/2020 12:00:00 AM
## 5
                       2294
                                                41
                                                           -10 05/12/2020 05:26:08 PM
           3008
                                    714
## 6
           2132
                         NA
                                     NA
                                                19
                                                             0 09/15/2020 12:00:00 AM
## 7
                                                             5 03/11/2021 12:00:00 AM
           7080
                       4916
                                   2164
                                                 8
## 8
                       7880
                                    209
                                                             0 08/24/2020 01:54:34 PM
           8089
                                                 6
## 9
           9011
                       8600
                                                93
                                                             3 11/20/2020 12:00:00 AM
                                    411
## 10
            977
                                                30
                                                             1 08/09/2020 02:03:10 PM
                         NA
                                     NA
## 11
          19723
                      18541
                                   1182
                                                58
                                                             1 05/10/2021 12:00:00 AM
## 12
          59999
                                     NA
                                               101
                                                             0 03/09/2021 12:00:00 AM
                         NA
## 13
          16351
                         NA
                                     NA
                                                71
                                                             0 09/23/2020 12:00:00 AM
##
      consent_cases consent_deaths
## 1
          Not agree
                          Not agree
## 2
              Agree
                          Not agree
## 3
               Agree
                               Agree
## 4
                               Agree
               Agree
## 5
                              Agree
              Agree
## 6
          Not agree
                          Not agree
## 7
               Agree
                               Agree
## 8
               Agree
                               Agree
## 9
               Agree
                               Agree
## 10
## 11
               Agree
                               Agree
## 12
               Agree
                          Not agree
## 13
               Agree
                          Not agree
```

Reshaping techniques

```
confirmedcases=covid4$conf_cases
probablecases= covid4$prob_cases

totalcases=cbind(confirmedcases,probablecases)

names(totalcases)[1] = "total cases"
names(totalcases)[2] = "probable cases"

print(totalcases)
```

```
confirmedcases probablecases
##
##
    [1,]
                      NA
##
   [2,]
                                126523
                  423193
##
   [3,]
                   22932
                                   2548
   [4,]
                    6602
                                      0
##
```

##	[5,]	NA			NA		
##	[6,]	NA			NA		
##	[7,]	2249322		703	271		
##	[8,]	34059		20	026		
##	[9,]	76023		:	131		
##	[10,]	NA			NA		
##	[11,]	101268		90	083		
##	[12,]	31955		18	310		
##	[13,]	NA			NA		
##	[14,]]	96726		6	573		
##	[15,]]	NA			NA		
##	[16,]	185580		114	412		
##	[17,]]	NA			NA		
##	[18,		26091		18	351		
##	[19,]	NA			NA		
##	[20,]	NA			NA		
##	[21,]	NA			NA		
	[22,		220178			417		
##	[23,		388797		348	324		
##	[24,]		NA			NA		
##	[25,]		NA			NA		
##	[26,]		873038		1010			
##	[27,		3534725		139			
##	[28,		804380		5	700		
##	[29,		613152		648	396		
		(,"name						
##		"total	cases"	=	ble	cases"	NA	NA
##	[5]			NA			NA	NA
##	[9]			NA			NA	NA
##	[13]			NA			NA	NA
##	[17]			NA			NA	NA
##		NA		NA			NA	NA
##		NA		NA			NA	NA
##		NA		NA			NA	NA
##	[33]			NA			NA	NA
##	[37]			NA			NA	NA
##	[41]			NA			NA	NA
##		NA		NA			NA	NA
##	[49]			NA			NA	NA
##	[53]			NA			NA	NA
##	[57]	NA		NA				

Remove missing values

is.na(covid4)

```
##
         submission_date state tot_cases conf_cases prob_cases new_case pnew_case
##
   [1,]
                   FALSE FALSE
                                    FALSE
                                                TRUE
                                                                    {\tt FALSE}
                                                            TRUE
                                                                              FALSE
##
   [2,]
                   FALSE FALSE
                                    FALSE
                                               FALSE
                                                           FALSE
                                                                    FALSE
                                                                              FALSE
  [3,]
                                    FALSE
                                               FALSE
##
                   FALSE FALSE
                                                           FALSE
                                                                    {\tt FALSE}
                                                                              FALSE
## [4,]
                   FALSE FALSE
                                    FALSE
                                               FALSE
                                                           FALSE
                                                                    FALSE
                                                                              FALSE
## [5,]
                   FALSE FALSE
                                    FALSE
                                                TRUE
                                                            TRUE
                                                                    FALSE
                                                                              FALSE
```

##	[6,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	TRUE
##	[7,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[8,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[9,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[10,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
##	[11,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[12,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[13,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
##	[14,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[15,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	TRUE
##	[16,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[17,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	TRUE
##	[18,]		FALSE FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
##	[19,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
##	[20,]		FALSE FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	[21,]		FALSE FALSE		TRUE	TRUE	FALSE	FALSE
	[22,]		FALSE FALSE		FALSE			FALSE
	[23,]		FALSE FALSE		FALSE			FALSE
	[24,]		FALSE FALSE		TRUE		FALSE	FALSE
	[25,]		FALSE FALSE					FALSE
	[26,]		FALSE FALSE					FALSE
	[27,]		FALSE FALSE					FALSE
	[28,]		FALSE FALSE					FALSE
##			FALSE FALSE		FALSE			FALSE
##	_ ,_	tot death	conf_death]					
##	[1,]	FALSE	TRUE	TRUE	FALSE		FALSE	
##	[2,]	FALSE		FALSE	FALSE			
##	[3,]	FALSE		FALSE	FALSE			
##	[4,]	FALSE	TRUE	TRUE	FALSE		FALSE	
##	[5,]		TRUE	TRUE	FALSE	FALSE	FALSE	
		FALSE		111011		LUTOL	LALOL	
##		FALSE FALSE						
## ##	[6,]	FALSE	TRUE	TRUE	FALSE	TRUE	FALSE	
##	[6,] [7,]	FALSE FALSE	TRUE TRUE	TRUE TRUE	FALSE FALSE	TRUE FALSE	FALSE FALSE	
## ##	[6,] [7,] [8,]	FALSE FALSE FALSE	TRUE TRUE FALSE	TRUE TRUE FALSE	FALSE FALSE FALSE	TRUE FALSE FALSE	FALSE FALSE FALSE	
## ## ##	[6,] [7,] [8,] [9,]	FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE	TRUE TRUE FALSE FALSE	FALSE FALSE FALSE FALSE	TRUE FALSE FALSE FALSE	FALSE FALSE FALSE	
## ## ## ##	[6,] [7,] [8,] [9,] [10,]	FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE	TRUE TRUE FALSE FALSE TRUE	FALSE FALSE FALSE FALSE FALSE	TRUE FALSE FALSE FALSE FALSE	FALSE FALSE FALSE FALSE FALSE	
## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,]	FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE	TRUE TRUE FALSE FALSE TRUE TRUE	FALSE FALSE FALSE FALSE FALSE	TRUE FALSE FALSE FALSE FALSE FALSE	FALSE FALSE FALSE FALSE FALSE	
## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,]	FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE	FALSE FALSE FALSE FALSE FALSE FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE	FALSE FALSE FALSE FALSE FALSE FALSE	
## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,]	FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE	FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	FALSE FALSE FALSE FALSE FALSE FALSE FALSE	
## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,]	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	
## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,]	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	
## ## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,]	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE	TRUE TRUE FALSE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	FALSE	TRUE FALSE TRUE FALSE	FALSE	
## ## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,]	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE	TRUE TRUE FALSE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	
## ## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,]	FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	TRUE TRUE FALSE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE FALSE TRUE	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE	FALSE	
## ## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [19,]	FALSE	TRUE TRUE FALSE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE TRUE FALSE	FALSE	
## ## ## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [19,] [20,]	FALSE	TRUE TRUE FALSE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE FALSE FALSE FALSE	FALSE	
## ## ## ## ## ## ## ## ##	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [20,] [20,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE FALSE FALSE FALSE FALSE FALSE	FALSE	
######################################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [19,] [20,] [21,] [22,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	FALSE	
######################################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [19,] [20,] [21,] [22,] [23,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE FALSE TRUE	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE FALSE TRUE FALSE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE	FALSE	
######################################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [20,] [21,] [22,] [23,] [24,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE FALSE TRUE TRUE	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE	FALSE	
##########################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [20,] [21,] [22,] [23,] [24,] [25,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	TRUE TRUE FALSE FALSE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE	FALSE	
######################################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [20,] [21,] [22,] [23,] [24,] [25,] [26,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	TRUE TRUE FALSE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE	FALSE	
#########################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [18,] [20,] [21,] [22,] [23,] [24,] [25,] [26,] [27,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	TRUE TRUE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE TRUE FALSE	FALSE	
#########################	[6,] [7,] [8,] [9,] [10,] [11,] [12,] [13,] [14,] [15,] [16,] [17,] [20,] [21,] [22,] [23,] [24,] [25,] [26,]	FALSE	TRUE TRUE FALSE FALSE TRUE TRUE FALSE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	TRUE TRUE FALSE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	FALSE	TRUE FALSE FALSE FALSE FALSE FALSE FALSE FALSE TRUE FALSE	FALSE	

```
##
         consent_cases consent_deaths
##
   [1,]
                 FALSE
                                 FALSE
   [2,]
                 FALSE
##
                                 FALSE
  [3,]
                 FALSE
                                 FALSE
##
   [4,]
                 FALSE
                                 FALSE
##
  [5,]
                 FALSE
                                 FALSE
## [6,]
                 FALSE
                                 FALSE
## [7,]
                                 FALSE
                 FALSE
## [8,]
                 FALSE
                                 FALSE
## [9,]
                 FALSE
                                 FALSE
## [10,]
                 FALSE
                                 FALSE
## [11,]
                 FALSE
                                 FALSE
## [12,]
                 FALSE
                                 FALSE
## [13,]
                 FALSE
                                 FALSE
## [14,]
                 FALSE
                                 FALSE
## [15,]
                 FALSE
                                 FALSE
## [16,]
                 FALSE
                                 FALSE
## [17,]
                 FALSE
                                 FALSE
## [18,]
                 FALSE
                                 FALSE
## [19,]
                 FALSE
                                 FALSE
## [20,]
                 FALSE
                                 FALSE
## [21,]
                 FALSE
                                 FALSE
## [22,]
                                 FALSE
                 FALSE
## [23,]
                 FALSE
                                 FALSE
## [24,]
                 FALSE
                                 FALSE
## [25,]
                 FALSE
                                 FALSE
## [26,]
                 FALSE
                                 FALSE
## [27,]
                 FALSE
                                 FALSE
## [28,]
                 FALSE
                                 FALSE
## [29,]
                 FALSE
                                 FALSE
```

```
covid6=as.data.frame(filter(covid4,!is.na(covid4$conf_cases)))
is.na(covid6$conf_cases)
```

```
## [1] FALSE FALSE
```

Identify duplicated data

```
duplicated(covid4$new_death)
```

```
## [1] FALSE FALSE FALSE TRUE TRUE TRUE FALSE FALSE TRUE TRUE TRUE FALSE
## [13] FALSE TRUE TRUE FALSE TRUE FALSE TRUE TRUE TRUE FALSE FALSE FALSE
## [25] TRUE FALSE FALSE TRUE
```

Remove duplicated data

```
covid7=as.data.frame(covid4 %>% distinct(covid4$new_case))
covid7
```

```
##
      covid4$new_case
## 1
                   646
## 2
                    97
## 3
                   185
## 4
                   133
## 5
                    15
## 6
                     0
## 7
                 13613
## 8
                   621
## 9
                  2070
## 10
                   374
## 11
                    53
## 12
                   211
## 13
                   663
## 14
                   208
                   457
## 15
## 16
                     5
## 17
                   282
## 18
                    10
## 19
                  1639
## 20
                  1893
## 21
                  6304
## 22
                   887
## 23
                     6
## 24
                  1301
## 25
                  2378
## 26
                  2204
## 27
                    40
```

Reorder multiple rows in descending order

```
covid9=as.data.frame(covid7 %>% arrange(desc(covid7)))
covid9
```

```
##
      covid4$new_case
## 1
                 13613
## 2
                  6304
## 3
                  2378
## 4
                  2204
## 5
                  2070
## 6
                  1893
## 7
                  1639
## 8
                  1301
## 9
                   887
## 10
                   663
## 11
                   646
## 12
                   621
## 13
                   457
## 14
                   374
## 15
                   282
## 16
                   211
## 17
                   208
```

```
## 18
                     185
## 19
                     133
## 20
                      97
## 21
                      53
## 22
                      40
## 23
                      15
## 24
                      10
## 25
                       6
## 26
                       5
## 27
                       0
```

Rename some of the column names

```
names(covid4)[1] = "name1"
names(covid4)[2] = "name2"

print(covid4)
```

```
name1 name2 tot_cases conf_cases prob_cases new_case pnew_case
##
## 1
      01/25/2021
                      NE
                             187923
                                                                  646
                                             NA
                                                         NA
                                                                                0
## 2
      06/12/2021
                      AL
                             549716
                                         423193
                                                     126523
                                                                   97
                                                                              31
## 3
      06/15/2020
                      WI
                             25480
                                          22932
                                                       2548
                                                                  185
                                                                              11
## 4
      07/31/2020
                      ND
                               6602
                                           6602
                                                          0
                                                                  133
                                                                                0
## 5
      08/11/2020
                      GU
                                449
                                             NA
                                                         NA
                                                                   15
                                                                               0
## 6
      02/02/2020
                      GU
                                  0
                                             NA
                                                         NA
                                                                     0
                                                                              NA
## 7
                                        2249322
                                                      70271
                                                                              664
      12/27/2020
                      CA
                           2319593
                                                                13613
## 8
      05/15/2020
                      CT
                             36085
                                          34059
                                                       2026
                                                                  621
                                                                              -11
## 9
      07/02/2020
                      NC
                             76154
                                          76023
                                                        131
                                                                 2070
                                                                              12
## 10 03/07/2021
                      NE
                             203157
                                                         NA
                                                                  374
                                                                               0
                                             NA
## 11 06/09/2021
                      ND
                             110351
                                         101268
                                                       9083
                                                                   53
                                                                              16
## 12 05/11/2020
                      CT
                             33765
                                          31955
                                                       1810
                                                                  211
                                                                              -30
## 13 09/13/2020
                      MO
                             108944
                                             NA
                                                         NA
                                                                  663
                                                                              18
## 14 03/31/2021
                      ND
                             103299
                                          96726
                                                       6573
                                                                  208
                                                                              49
## 15 03/09/2020
                      WΙ
                                                                              NA
                                  1
                                             NA
                                                         NA
                                                                     0
## 16 03/09/2021
                             299992
                      MS
                                         185580
                                                     114412
                                                                  457
                                                                              301
## 17 03/16/2020
                      ME
                                 19
                                             NA
                                                         NA
                                                                    5
                                                                              NA
## 18 08/17/2020
                      ID
                             27942
                                          26091
                                                       1851
                                                                  282
                                                                              32
## 19 02/14/2021
                      GU
                               7699
                                             NA
                                                         NA
                                                                   10
                                                                                0
## 20 03/13/2020
                      VT
                                  2
                                                         NA
                                                                     0
                                                                                0
                                             NA
                                                                              472
## 21 07/09/2021
                      MO
                             631603
                                             NA
                                                         NA
                                                                 1639
## 22 08/23/2020
                      ΙL
                             221595
                                         220178
                                                       1417
                                                                                0
                                                                 1893
## 23 11/19/2020
                      ΜI
                             423621
                                         388797
                                                      34824
                                                                 6304
                                                                              384
## 24 08/08/2020
                      NV
                                                                  887
                             55644
                                             NA
                                                         NA
                                                                                1
## 25 03/21/2021
                      VI
                               2858
                                             NA
                                                         NA
                                                                     6
                                                                                0
## 26 05/09/2021
                      MI
                                         873038
                                                     101096
                                                                 1301
                                                                              175
                             974134
## 27 03/08/2021
                      CA
                           3673952
                                        3534725
                                                     139227
                                                                 2378
                                                                              197
## 28 09/22/2020
                                         804380
                      CA
                             810080
                                                       5700
                                                                 2204
                                                                              44
## 29 07/06/2021
                      WI
                             678048
                                         613152
                                                      64896
                                                                   40
                                                                                5
##
      tot_death conf_death prob_death new_death pnew_death
                                                                              created_at
## 1
                                                               0 01/27/2021 12:00:00 AM
            1894
                          NA
                                      NA
                                                  15
## 2
                        9053
                                    2302
                                                   5
                                                               2 06/14/2021 12:00:00 AM
           11355
```

	_								
##		700	694	6	2		06/16/2020		
##		103	NA	NA	0		08/01/2020		
##		5	NA	NA	0		08/12/2020		
##		0	NA	NA	0		03/26/2020		
	7	29708	NA	NA	570		12/28/2020		
##	8	3285	2524	761	66		05/16/2020		
##		1479	1479	0	11		07/02/2020		
	10	2113	NA	NA	0		03/09/2021		
##	11	1517	NA	NA	0		06/10/2021		
##	12	3008	2294	714	41		05/12/2020		
##	13	2132	NA	NA	19		09/15/2020		
##	14	1466	NA	NA	0		04/01/2021		
##	15	0	NA	NA	0		03/26/2020		
##	16	7080	4916	2164	8		03/11/2021		
##	17	0	NA	NA	0		03/26/2020		
##	18	273	245	28	4		08/18/2020		
##	19	130	NA	NA	0		02/15/2021		
##	20	0	NA	NA	0		03/15/2020		
	21	9387	NA	NA	4		07/10/2021		
	22	8089	7880	209	6	0	08/24/2020	01:54:34	ΡM
	23	9011	8600	411	93	3	11/20/2020	12:00:00	AM
	24	977	NA	NA	30		08/09/2020		
##	25	25	NA	NA	0	0	03/22/2021	01:57:09	PM
##	26	19723	18541	1182	58	1	05/10/2021	12:00:00	AM
##	27	59999	NA	NA	101		03/09/2021		
##	28	16351	NA	NA	71	0	09/23/2020	12:00:00	AM
##	29	8144	7323	821	0	0	07/07/2021	02:48:49	ΡM
##		${\tt consent_cases}$	consent_c	deaths					
##	1	Not agree	Not	agree					
##	2	Agree		Agree					
##		Agree		Agree					
##		Agree	Not	agree					
##		Not agree	Not	agree					
##		Not agree	Not	agree					
##		Agree	Not	agree					
##		Agree		Agree					
##		Agree		Agree					
	10	Not agree	Not	agree					
	11	Agree	Not	agree					
	12	Agree		Agree					
	13	Not agree	Not	agree					
	14	Agree	Not	agree					
	15	Agree		Agree					
	16	Agree		Agree					
	17	Agree		Agree					
	18	Agree		Agree					
	19	Not agree	Not	agree					
	20	Not agree	Not	agree					
	21	Not agree	Not	agree					
##		Agree		Agree					
	22			6-00					
##	23	Agree		Agree					
## ##	23 24								
## ## ##	23 24 25	Agree		Agree					
## ## ##	23 24								

```
## 27 Agree Not agree
## 28 Agree Not agree
## 29 Agree Agree
```

Adding new variables

```
covid10=as.data.frame(covid4 %>% mutate(newcolumn = new_death+4))
covid10
```

##		name1	name2	tot cases	conf_cases	prob	cases	new	case	pnew o	case	
##	1	01/25/2021	NE	187923	NA	F	NA		646	r	0	
##	2	06/12/2021	AL	549716	423193		126523		97		31	
##	3	06/15/2020	WI	25480	22932		2548		185		11	
##	4	07/31/2020	ND	6602	6602		0		133		0	
##	5	08/11/2020	GU	449	NA		NA		15		0	
##	6	02/02/2020	GU	0	NA		NA		0		NA	
##	7	12/27/2020	CA	2319593	2249322		70271	1	13613		664	
##	8	05/15/2020	CT	36085	34059		2026		621		-11	
##	9	07/02/2020	NC	76154	76023		131		2070		12	
##	10	03/07/2021	NE	203157	NA		NA		374		0	
##	11	06/09/2021	ND	110351	101268		9083		53		16	
##	12	05/11/2020	CT	33765	31955		1810		211		-30	
##	13	09/13/2020	MO	108944	NA		NA		663		18	
##	14	03/31/2021	ND	103299	96726		6573		208		49	
##	15	03/09/2020	WI	1	NA		NA		0		NA	
##	16	03/09/2021	MS	299992	185580		114412		457		301	
##	17	03/16/2020	ME	19	NA		NA		5		NA	
##	18	08/17/2020	ID	27942	26091		1851		282		32	
##	19	02/14/2021	GU	7699	NA		NA		10		0	
##	20	03/13/2020	VT	2	NA		NA		0		0	
##	21	07/09/2021	MO	631603	NA		NA		1639		472	
##	22	08/23/2020	IL	221595	220178		1417		1893		0	
##	23	11/19/2020	MI	423621	388797		34824		6304		384	
##	24	08/08/2020	NV	55644	NA		NA		887		1	
##	25	03/21/2021	VI	2858	NA		NA		6		0	
##	26	05/09/2021	MI	974134	873038		101096		1301		175	
##	27	03/08/2021	CA	3673952	3534725		139227		2378		197	
##	28	09/22/2020	CA	810080	804380		5700		2204		44	
##	29	07/06/2021	WI	678048	613152		64896		40		5	
##			conf_de	_	death new_d		pnew_de	eath			created	i_at
	1	1894		NA	NA	15					12:00:00	
##	2	11355	9	9053	2302	5					12:00:00	
	3	700		694	6	2			•	•	02:10:11	
	4	103		NA	NA	0					02:38:12	
	5	5		NA	NA	0					01:50:14	
	6	0		NA	NA	0			•	•	04:22:39	
	7	29708		NA	NA	570					12:00:00	
##	8	3285		2524	761	66					03:46:44	
	9	1479	1	1479	0	11					12:00:00	
	10	2113		NA	NA	0					12:00:00	
##	11	1517		NA	NA	0					02:48:23	
##	12	3008	2	2294	714	41		-10	05/12	2/2020	05:26:08	3 PM

```
0 09/15/2020 12:00:00 AM
## 13
            2132
                          NA
                                      NA
                                                 19
## 14
            1466
                                                  0
                                                              0 04/01/2021 02:13:30 PM
                          NA
                                      NA
                                                             NA 03/26/2020 04:22:39 PM
## 15
               0
                          NA
                                      NA
                                                  0
                                                                03/11/2021 12:00:00 AM
## 16
            7080
                        4916
                                    2164
                                                  8
## 17
               0
                          NA
                                      NA
                                                  0
                                                                03/26/2020 04:22:39
## 18
                                      28
                                                  4
                                                              0 08/18/2020 02:26:55 PM
             273
                         245
## 19
                                                  0
                                                              0 02/15/2021 02:46:24 PM
             130
                          NA
                                      NA
## 20
                                                              0 03/15/2020 12:00:00 AM
               0
                          NA
                                      NA
                                                  0
## 21
            9387
                          NA
                                      NA
                                                  4
                                                              0 07/10/2021 02:17:36 PM
## 22
                                     209
                                                              0 08/24/2020 01:54:34 PM
            8089
                        7880
                                                  6
## 23
            9011
                        8600
                                     411
                                                 93
                                                              3 11/20/2020 12:00:00 AM
             977
## 24
                                                 30
                                                                08/09/2020 02:03:10 PM
                          NA
                                      NA
                                                              0 03/22/2021 01:57:09 PM
##
  25
              25
                          NA
                                      NA
                                                  0
                                                               1 05/10/2021 12:00:00 AM
## 26
           19723
                       18541
                                    1182
                                                 58
## 27
           59999
                                                101
                                                              0 03/09/2021 12:00:00 AM
                          NA
                                      NA
## 28
           16351
                          NA
                                      NA
                                                 71
                                                              0 09/23/2020 12:00:00 AM
## 29
            8144
                        7323
                                     821
                                                              0 07/07/2021 02:48:49 PM
##
      consent_cases consent_deaths newcolumn
## 1
                                              19
          Not agree
                           Not agree
                                Agree
                                               9
##
  2
               Agree
## 3
               Agree
                                Agree
                                               6
## 4
                                               4
               Agree
                           Not agree
                                               4
## 5
          Not agree
                           Not agree
## 6
                                               4
          Not agree
                           Not agree
## 7
               Agree
                           Not agree
                                             574
## 8
               Agree
                                Agree
                                              70
## 9
                                              15
               Agree
                                Agree
## 10
                                               4
                           Not agree
          Not agree
                                               4
## 11
               Agree
                           Not agree
## 12
                                              45
               Agree
                                Agree
## 13
           Not agree
                           Not agree
                                              23
## 14
                           Not agree
                                               4
               Agree
                                               4
## 15
               Agree
                                Agree
## 16
                                              12
               Agree
                                Agree
## 17
                                               4
               Agree
                                Agree
## 18
                                               8
               Agree
                                Agree
## 19
          Not agree
                           Not agree
                                               4
## 20
                                               4
          Not agree
                           Not agree
## 21
                                               8
          Not agree
                           Not agree
## 22
                                              10
                                Agree
               Agree
## 23
                                              97
               Agree
                                Agree
## 24
                                              34
##
  25
                                               4
## 26
                                              62
                                Agree
               Agree
## 27
                                             105
               Agree
                           Not agree
## 28
                                              75
               Agree
                           Not agree
                                Agree
## 29
               Agree
                                               4
```

Create a training set using random number generator engine

```
set.seed(143)
covid11=as.data.frame(covid4 %>% sample_n(10, replace = FALSE) )
```

covid11

##		name1	name2	tot_cases	conf	_cases	prob	_cases	new_	case	pnew_c	case	
##	1	08/08/2020	NV	55644		NA		NA		887		1	
##	2	02/02/2020	GU	0		NA		NA		0		NA	
##	3	03/13/2020	VT	2		NA		NA		0		0	
##	4	05/15/2020	CT	36085		34059		2026		621		-11	
##	5	01/25/2021	NE	187923		NA		NA		646		0	
##	6	05/11/2020	CT	33765		31955		1810		211		-30	
##	7	08/23/2020	IL	221595	:	220178		1417		1893		0	
##	8	03/21/2021	VI	2858		NA		NA		6		0	
##	9	05/09/2021	MI	974134	;	373038		101096		1301		175	
##	10	07/02/2020	NC	76154		76023		131		2070		12	
##		tot_death c	onf_de	ath prob_o	death	new_de	eath	pnew_de	eath			created	_at
##	1	977		NA	NA		30		1	08/09	/2020	02:03:10	PM
##	2	0		NA	NA		0		NA	03/26	3/2020	04:22:39	PM
##	3	0		NA	NA		0		0	03/15	/2020	12:00:00	AM
##	4	3285	2	524	761		66		8	05/16	3/2020	03:46:44	PM
##	5	1894		NA	NA		15					12:00:00	
##	6	3008	2	294	714		41		-10	05/12	2/2020	05:26:08	PM
##	7	8089	7	880	209		6		0	08/24	/2020	01:54:34	PM
##	8	25		NA	NA		0		0	03/22	2/2021	01:57:09	PM
##	9	19723	18	541	1182		58		1	05/10	/2021	12:00:00	AM
##	10	1479	1.	479	0		11		0	07/02	2/2020	12:00:00	AM
##		consent_cas	ses con	sent_deatl	ns								
##	1												
##		Not agr	ee	Not agre	ee								
##	3	Not agr	ee	Not agre	ee								
##	4	Agr	ee	Agre	ee								
##	5	Not agr	ee	Not agre	ee								
##	6	Agr	ee	Agre	ee								
##	7	Agr	ee	Agre	ee								
##													
##		Agr		Agre	ee								
##	10	Agr	ee	Agre	ee								

Print the summary statistics

summary(covid4)

```
##
      name1
                                                         {\tt conf\_cases}
                        name2
                                        tot_cases
  Length:29
                     Length:29
                                       Min. :
                                                    0 Min. : 6602
  Class :character
                                       1st Qu.:
                                                 7699
                                                       1st Qu.: 34059
                     Class :character
##
   Mode : character
                     Mode :character
                                       Median : 103299
                                                       Median: 185580
##
                                       Mean : 398921
                                                       Mean
                                                             : 569884
                                       3rd Qu.: 423621
                                                       3rd Qu.: 613152
##
##
                                             :3673952
                                                       Max.
                                      Max.
                                                              :3534725
                                                       NA's
##
                                                              :12
##
     prob_cases
                                    pnew_case
                                                    tot_death
                      new_case
## Min. : 0
                   Min. : 0
                                  Min. :-30.00
                                                  Min. :
  1st Qu.: 1851
                   1st Qu.: 40
                                  1st Qu.: 0.00
                                                  1st Qu.: 130
```

```
Median: 6573
                  Median: 282
                                 Median: 11.50 Median: 1894
##
   Mean : 40140 Mean : 1252
                                 Mean : 91.19 Mean : 6826
   3rd Qu.: 70271
                  3rd Qu.: 1301
                                 3rd Qu.: 47.75 3rd Qu.: 8144
                  Max. :13613
                                 Max.
                                        :664.00 Max.
##
  Max.
         :139227
                                                       :59999
##
   NA's
         :12
                                 NA's
                                        :3
##
     conf_death
                   prob_death
                                 new_death
                                                  pnew_death
                                                 Min.
         : 245
                 Min. : 0.0
                                Min. : 0.00
                                                      :-10.0000
  Min.
   1st Qu.: 1886
                                                 1st Qu.: 0.0000
                  1st Qu.: 118.5
                                 1st Qu.: 0.00
##
##
   Median: 4916
                 Median : 714.0
                                 Median: 4.00
                                                 Median : 0.0000
##
  Mean
        : 5777
                  Mean : 781.6
                                 Mean : 38.07
                                                 Mean : 0.3846
   3rd Qu.: 8240
                  3rd Qu.:1001.5
                                 3rd Qu.: 30.00
                                                 3rd Qu.: 0.0000
                                                          8.0000
##
  Max.
         :18541
                        :2302.0
                                 Max. :570.00
                                                 Max.
                  Max.
  NA's
                  NA's
                                                 NA's
##
         :18
                        :18
                                                       :3
##
   {\tt created\_at}
                    consent_cases
                                      consent_deaths
## Length:29
                    Length:29
                                      Length:29
##
   Class :character
                    Class :character
                                      Class :character
##
  Mode :character
                    Mode :character
                                      Mode :character
##
##
##
##
```

Calculating Mean

```
mean(covid4$new_case)
```

[1] 1251.552

Calculating Median

```
median(covid4$new_case)
```

[1] 282

Calculating Mode

```
mode(covid4$new_case)
```

[1] "numeric"

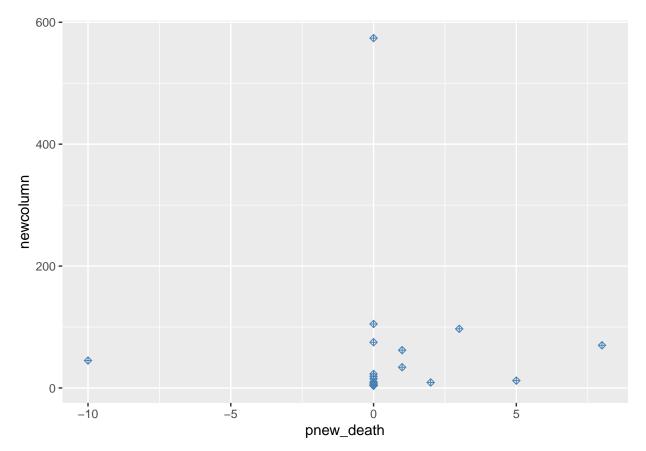
Calculating Median

```
median(covid4$new_case)
```

[1] 282

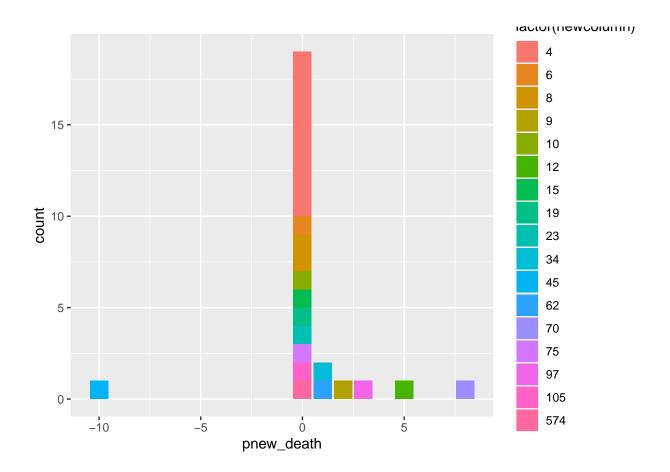
Scatter plot for any 2 variables

```
covid10=as.data.frame(filter(covid10,!is.na(covid10$pnew_death)))
ggplot(data = covid10, aes(x=pnew_death,y=newcolumn))+geom_point(color="steelblue",shape=9)
```



Scatter bar plot for any 2 variables

```
ggplot(data=covid10,aes(x=pnew_death,fill=factor(newcolumn)))+geom_bar()
```



Finding the correlation between any 2 variables

```
x=covid4[,"tot_death"]
y=covid4[,"new_death"]
xycorr<-cor(x,y,method="pearson")
xycorr</pre>
```

[1] 0.5203182

Conclusion

Based on above calculation x and y are correlated