R Notebook

This is an R Markdown Notebook. When you execute code within the notebook, the results appear beneath the code.

Try executing this chunk by clicking the *Run* button within the chunk or by placing your cursor inside it and pressing *Ctrl+Shift+Enter*.

```r
#commented as it asks for restarting R
#install.packages("remotes")
#remotes::install_github("Shreya-Vaish/BSE658") #saves them to temp, how can i check?
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----------------------- tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```r
library(dplyr)
library(tibble)
```

Add a new chunk by clicking the *Insert Chunk* button on the toolbar or by pressing *Ctrl+Alt+I*.

When you save the notebook, an HTML file containing the code and output will be saved alongside it (click the *Preview* button or press *Ctrl+Shift+K* to preview the HTML file).

The preview shows you a rendered HTML copy of the contents of the editor. Consequently, unlike *Knit*, *Preview* does not run any R code chunks. Instead, the output of the chunk when it was last run in the editor is displayed.

```r
getwd()
```

```
## [1] "C:/Users/ushad/Documents/GitHub/BSE658/Module 1"
```

```r
smokeban<-read_csv("C:\\Users\\ushad\\Downloads\\SmokeBan.csv")
```

```
## Rows: 10000 Columns: 8
## -- Column specification -------------------------------------------------------
## Delimiter: ","
## chr (6): smoker, ban, education, afam, hispanic, gender
## dbl (2): rownames, age
```

```
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```r
#use double backslash or forward slashes
```

```r
spec(smokeban)
```

```
## cols(
##   rownames = col_double(),
##   smoker = col_character(),
##   ban = col_character(),
##   age = col_double(),
##   education = col_character(),
##   afam = col_character(),
##   hispanic = col_character(),
##   gender = col_character()
## )
```

```r
#?cols_condense
#?spec
smokeban
```

```
## # A tibble: 10,000 x 8
##     rownames smoker ban     age education     afam  hispanic gender
##        <dbl> <chr>  <chr> <dbl> <chr>         <chr> <chr>    <chr>
## 1          1 yes    yes      41 hs            no    no       female
## 2          2 yes    yes      44 some college  no    no       female
## 3          3 no     no       19 some college  no    no       female
## 4          4 yes    no       29 hs            no    no       female
## 5          5 no     yes      28 some college  no    no       female
## 6          6 no     no       40 some college  no    no       male
## 7          7 yes    yes      47 some college  no    no       female
## 8          8 yes    no       36 some college  no    no       male
## 9          9 no     yes      49 some college  no    no       female
## 10        10 no     no       44 some college  no    no       male
## # i 9,990 more rows
```

```r
#im ok with the coltype being displayed so I am not #going to make its display false or condense it
```

```r
sum(is.na(smokeban$hispanic))
```

```
## [1] 0
```

```r
filter(smokeban,hispanic=="yes" & smoker=="yes")
```

```
## # A tibble: 247 x 8
##     rownames smoker ban     age education     afam  hispanic gender
##        <dbl> <chr>  <chr> <dbl> <chr>         <chr> <chr>    <chr>
## 1         56 yes    yes      46 some college  no    yes      female
```

```
## 2          85 yes    no      29 hs drop out  no   yes     male
## 3         100 yes    no      28 hs drop out  yes  yes     male
## 4         105 yes    yes     28 hs           no   yes     male
## 5         119 yes    no      67 hs           no   yes     male
## 6         142 yes    no      21 hs drop out  no   yes     female
## 7         152 yes    yes     30 some college no   yes     female
## 8         156 yes    yes     21 hs           no   yes     male
## 9         161 yes    no      28 hs           no   yes     female
## 10        163 yes    no      24 hs drop out  no   yes     female
## # i 237 more rows
```

```r
youngsmokers<-nrow(filter(smokeban, age<25))
newnum<-youngsmokers/(nrow(smokeban))
newnum*100 #how to write this into a string?
```

```
## [1] 11.97
```

```r
#select(smokeban, c(afam,hispanic))
select(smokeban, -c(afam,hispanic))
```

```
## # A tibble: 10,000 x 6
##    rownames smoker ban     age education      gender
##       <dbl> <chr>  <chr> <dbl> <chr>          <chr>
## 1         1 yes    yes      41 hs             female
## 2         2 yes    yes      44 some college   female
## 3         3 no     no       19 some college   female
## 4         4 yes    no       29 hs             female
## 5         5 no     yes      28 some college   female
## 6         6 no     no       40 some college   male
## 7         7 yes    yes      47 some college   female
## 8         8 yes    no       36 some college   male
## 9         9 no     yes      49 some college   female
## 10       10 no     no       44 some college   male
## # i 9,990 more rows
```

```r
newsel<-select(smokeban,smoker, age:afam) #afam means african american
newsel
```

```
## # A tibble: 10,000 x 4
##    smoker   age education    afam
##    <chr>  <dbl> <chr>        <chr>
## 1 yes       41 hs           no
## 2 yes       44 some college no
## 3 no        19 some college no
## 4 yes       29 hs           no
## 5 no        28 some college no
## 6 no        40 some college no
## 7 yes       47 some college no
## 8 yes       36 some college no
## 9 no        49 some college no
## 10 no       44 some college no
## # i 9,990 more rows
```

#Q2 answer was given already in q file

```r
rename(smokeban, idk=afam)
```

```
## # A tibble: 10,000 x 8
##     rownames smoker ban     age education    idk   hispanic gender
##        <dbl> <chr>  <chr> <dbl> <chr>        <chr> <chr>    <chr>
##  1         1 yes    yes      41 hs           no    no       female
##  2         2 yes    yes      44 some college no    no       female
##  3         3 no     no       19 some college no    no       female
##  4         4 yes    no       29 hs           no    no       female
##  5         5 no     yes      28 some college no    no       female
##  6         6 no     no       40 some college no    no       male
##  7         7 yes    yes      47 some college no    no       female
##  8         8 yes    no       36 some college no    no       male
##  9         9 no     yes      49 some college no    no       female
## 10        10 no     no       44 some college no    no       male
## # i 9,990 more rows
```

```r
smokeban
```

```
## # A tibble: 10,000 x 8
##     rownames smoker ban     age education    afam  hispanic gender
##        <dbl> <chr>  <chr> <dbl> <chr>        <chr> <chr>    <chr>
##  1         1 yes    yes      41 hs           no    no       female
##  2         2 yes    yes      44 some college no    no       female
##  3         3 no     no       19 some college no    no       female
##  4         4 yes    no       29 hs           no    no       female
##  5         5 no     yes      28 some college no    no       female
##  6         6 no     no       40 some college no    no       male
##  7         7 yes    yes      47 some college no    no       female
##  8         8 yes    no       36 some college no    no       male
##  9         9 no     yes      49 some college no    no       female
## 10        10 no     no       44 some college no    no       male
## # i 9,990 more rows
```

```r
#rename only shows a temporary change, in order to save #it, you need to assign it the the file like sm
#or assign to a new variable
```

```r
getwd()
```

```
## [1] "C:/Users/ushad/Documents/GitHub/BSE658/Module 1"
```

```r
phddata<-read_csv("C:\\Users\\ushad\\Downloads\\PhDPublications.csv")
```

```
## Rows: 915 Columns: 7
## -- Column specification ----------------------------------------------------
## Delimiter: ","
## chr (2): gender, married
## dbl (5): rownames, articles, kids, prestige, mentor
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
phddata
```

```
## # A tibble: 915 x 7
##    rownames articles gender married  kids prestige mentor
##       <dbl>    <dbl> <chr>  <chr>   <dbl>    <dbl>  <dbl>
## 1         1        0 male   yes         0     2.52      7
## 2         2        0 female no          0     2.05      6
## 3         3        0 female no          0     3.75      6
## 4         4        0 male   yes         1     1.18      3
## 5         5        0 female no          0     3.75     26
## 6         6        0 female yes         2     3.59      2
## 7         7        0 female no          0     3.19      3
## 8         8        0 male   yes         2     2.96      4
## 9         9        0 male   no          0     4.62      6
## 10       10        0 female yes         0     1.25      0
## # i 905 more rows
```

```
newphddata<-mutate(phddata,success_dependency = prestige/mentor)
#mutate does not work unless you assign a variable to #the changed dataframe
arrange(newphddata,success_dependency)
```

```
## # A tibble: 915 x 8
##    rownames articles gender married  kids prestige mentor success_dependency
##       <dbl>    <dbl> <chr>  <chr>   <dbl>    <dbl>  <dbl>              <dbl>
## 1       328        1 male   yes         1     1.78     77             0.0231
## 2       812        4 male   yes         1     1.86     47             0.0396
## 3       909        9 male   yes         1     1.86     47             0.0396
## 4       915       19 male   yes         0     1.86     42             0.0443
## 5       880        6 female yes         2     1.86     38             0.0489
## 6       303        1 male   yes         0     1.68     34             0.0494
## 7       799        4 male   yes         1     2.96     57             0.0519
## 8        12        0 female no          0    0.755     13             0.0581
## 9       879        6 female yes         0     2.10     36             0.0583
## 10      232        0 male   yes         1     1.68     27             0.0622
## # i 905 more rows
```

```
#prestige is for the grduate program and mentor means #number of papers a mentor has published
```

```
arrange(newphddata,desc(success_dependency))
```

```
## # A tibble: 915 x 8
##    rownames articles gender married  kids prestige mentor success_dependency
##       <dbl>    <dbl> <chr>  <chr>   <dbl>    <dbl>  <dbl>              <dbl>
## 1        10        0 female yes         0     1.25      0                Inf
## 2        15        0 female yes         0     1.79      0                Inf
## 3        29        0 female no          0     3.09      0                Inf
## 4        31        0 female no          0     2.39      0                Inf
## 5        34        0 male   no          0     2.10      0                Inf
## 6        35        0 male   yes         1     1.52      0                Inf
## 7        36        0 female no          0     2          0                Inf
## 8        37        0 female no          0     1.75      0                Inf
```

```
## 9        46       0 male   yes        1    1.18      0              Inf
## 10       52       0 female yes        2    1.97      0              Inf
## # i 905 more rows
```

```
#there are infinite values because some mentors have 0 #published papers!
```

```
write.csv(newphddata, file="newphddata.csv")
list.files()
```

```
##  [1] "241180618_Rass_2a.nb.html"    "241180618_Rass_2a.pdf"
##  [3] "241180618_Rass_2a.Rmd"        "newphddata.csv"
##  [5] "Notebook for chapter 1.nb.html" "Notebook for chapter 1.Rmd"
##  [7] "R notebook tutorial-2.Rmd"    "R notebook tutorial.nb.html"
##  [9] "R notebook tutorial.Rmd"      "README.md"
```

```
getwd()
```

```
## [1] "C:/Users/ushad/Documents/GitHub/BSE658/Module 1"
```

```
read.csv(file="C:/Users/ushad/Documents/GitHub/BSE658/Module 2/newphddata.csv")
```

```
##       X rownames articles gender married kids prestige mentor
## 1     1        1        0   male     yes    0    2.520      7
## 2     2        2        0 female      no    0    2.050      6
## 3     3        3        0 female      no    0    3.750      6
## 4     4        4        0   male     yes    1    1.180      3
## 5     5        5        0 female      no    0    3.750     26
## 6     6        6        0 female     yes    2    3.590      2
## 7     7        7        0 female      no    0    3.190      3
## 8     8        8        0   male     yes    2    2.960      4
## 9     9        9        0   male      no    0    4.620      6
## 10   10       10        0 female     yes    0    1.250      0
## 11   11       11        0   male      no    0    2.960     14
## 12   12       12        0 female      no    0    0.755     13
## 13   13       13        0 female     yes    1    3.690      3
## 14   14       14        0 female     yes    0    3.400      4
## 15   15       15        0 female     yes    0    1.790      0
## 16   16       16        0 female      no    0    3.090      1
## 17   17       17        0 female     yes    0    2.000      7
## 18   18       18        0   male     yes    2    4.290     13
## 19   19       19        0 female      no    0    3.360      7
## 20   20       20        0 female      no    0    4.290      9
## 21   21       21        0 female     yes    0    2.260      6
## 22   22       22        0   male     yes    3    2.960      3
## 23   23       23        0   male     yes    1    4.290      5
## 24   24       24        0   male     yes    1    2.860      4
## 25   25       25        0   male     yes    3    2.760      1
## 26   26       26        0 female     yes    0    1.520      3
## 27   27       27        0 female     yes    1    3.540      8
## 28   28       28        0   male     yes    1    4.290      3
## 29   29       29        0 female      no    0    3.090      0
```

```
## 30   30          30          0    male      yes   0    2.320        3
## 31   31          31          0 female       no    0    2.390        0
## 32   32          32          0    male      yes   0    4.290        8
## 33   33          33          0 female       no    0    1.505       13
## 34   34          34          0    male       no   0    2.100        0
## 35   35          35          0    male      yes   1    1.520        0
## 36   36          36          0 female       no    0    2.000        0
## 37   37          37          0 female       no    0    1.750        0
## 38   38          38          0    male       no   0    4.290        9
## 39   39          39          0    male      yes   1    1.220        2
## 40   40          40          0 female      yes    0    3.750        5
## 41   41          41          0    male       no   0    4.290        9
## 42   42          42          0 female      yes    1    2.860        3
## 43   43          43          0    male       no   0    3.920        5
## 44   44          44          0 female      yes    1    3.360        3
## 45   45          45          0    male       no   0    2.100        6
## 46   46          46          0    male      yes   1    1.180        0
## 47   47          47          0    male      yes   0    2.500        1
## 48   48          48          0    male      yes   0    3.360       25
## 49   49          49          0 female       no    0    4.540       14
## 50   50          50          0 female      yes    0    3.920        8
## 51   51          51          0    male       no   0    4.540        5
## 52   52          52          0 female      yes    2    1.970        0
## 53   53          53          0    male      yes   2    2.960       12
## 54   54          54          0    male      yes   0    4.290        8
## 55   55          55          0    male      yes   1    2.260        2
## 56   56          56          0 female       no    0    2.120       11
## 57   57          57          0 female       no    0    3.210        2
## 58   58          58          0    male      yes   1    3.150        1
## 59   59          59          0    male      yes   1    3.920        1
## 60   60          60          0    male       no   0    2.960        0
## 61   61          61          0 female       no    0    2.860        6
## 62   62          62          0    male      yes   1    2.100        0
## 63   63          63          0 female       no    0    3.750        4
## 64   64          64          0 female      yes    0    3.540        2
## 65   65          65          0 female      yes    0    2.540        1
## 66   66          66          0    male      yes   1    2.760        3
## 67   67          67          0    male      yes   0    4.540       10
## 68   68          68          0    male      yes   0    1.680        6
## 69   69          69          0    male      yes   1    2.200        0
## 70   70          70          0 female       no    0    1.005        0
## 71   71          71          0    male       no   0    2.120        2
## 72   72          72          0 female      yes    2    2.580        0
## 73   73          73          0 female      yes    0    1.790        1
## 74   74          74          0    male       no   0    4.290        2
## 75   75          75          0 female      yes    0    1.280        4
## 76   76          76          0    male      yes   2    2.580        5
## 77   77          77          0    male      yes   2    2.120        0
## 78   78          78          0    male      yes   1    2.210        1
## 79   79          79          0    male      yes   1    2.260        5
## 80   80          80          0 female       no    0    3.210        5
## 81   81          81          0 female       no    0    2.100        2
## 82   82          82          0 female      yes    1    3.540        1
## 83   83          83          0    male      yes   1    3.400       18
```

```
## 84   84      84        0   male     yes   0   2.210    6
## 85   85      85        0   male     yes   0   2.210   19
## 86   86      86        0   male     yes   2   0.920    1
## 87   87      87        0 female      no   0   4.290   35
## 88   88      88        0   male     yes   2   3.150    6
## 89   89      89        0   male     yes   0   4.290   19
## 90   90      90        0   male     yes   1   2.510    8
## 91   91      91        0   male     yes   1   4.290    1
## 92   92      92        0 female     yes   0   2.760    0
## 93   93      93        0   male     yes   0   1.420    3
## 94   94      94        0   male     yes   0   2.210   19
## 95   95      95        0   male      no   0   4.140    5
## 96   96      96        0   male     yes   0   1.520    7
## 97   97      97        0   male      no   0   4.620    8
## 98   98      98        0 female      no   0   3.620    7
## 99   99      99        0 female     yes   2   3.750    4
## 100 100     100        0   male     yes   0   4.290    8
## 101 101     101        0 female      no   0   3.750    5
## 102 102     102        0   male     yes   1   2.100    0
## 103 103     103        0   male     yes   2   1.400    7
## 104 104     104        0 female     yes   0   3.190    4
## 105 105     105        0   male     yes   2   1.810    1
## 106 106     106        0   male     yes   1   3.150    2
## 107 107     107        0 female     yes   0   3.750    7
## 108 108     108        0 female      no   0   2.050    6
## 109 109     109        0   male     yes   3   2.210    3
## 110 110     110        0 female     yes   2   3.360    2
## 111 111     111        0 female     yes   0   3.470   11
## 112 112     112        0 female      no   0   2.120    0
## 113 113     113        0 female     yes   1   3.360    2
## 114 114     114        0   male     yes   0   2.540    5
## 115 115     115        0   male     yes   2   2.150    4
## 116 116     116        0   male     yes   1   4.540    3
## 117 117     117        0   male     yes   0   1.680    4
## 118 118     118        0 female     yes   1   2.550    0
## 119 119     119        0 female      no   0   2.120   11
## 120 120     120        0   male     yes   1   3.470    2
## 121 121     121        0 female     yes   0   3.470    1
## 122 122     122        0 female      no   0   3.360    9
## 123 123     123        0   male     yes   1   2.120   10
## 124 124     124        0 female      no   0   2.100    1
## 125 125     125        0 female      no   0   4.290    1
## 126 126     126        0   male     yes   1   2.860   13
## 127 127     127        0 female     yes   1   4.290    9
## 128 128     128        0   male     yes   0   3.210    2
## 129 129     129        0   male      no   0   2.100    0
## 130 130     130        0 female     yes   0   1.810    5
## 131 131     131        0 female      no   0   2.520    2
## 132 132     132        0   male     yes   1   3.360   23
## 133 133     133        0 female     yes   0   4.540    4
## 134 134     134        0 female     yes   1   4.290    4
## 135 135     135        0 female      no   0   2.120    9
## 136 136     136        0   male     yes   2   4.620   30
## 137 137     137        0 female     yes   1   3.590   14
```

```
## 138 138      138      0 female     no   0   3.590    4
## 139 139      139      0   male    yes   3   2.860    1
## 140 140      140      0 female     no   0   1.505    3
## 141 141      141      0 female    yes   1   2.500    0
## 142 142      142      0 female    yes   0   4.620    0
## 143 143      143      0   male     no   0   2.500    0
## 144 144      144      0 female    yes   1   3.360    3
## 145 145      145      0 female     no   0   2.000    2
## 146 146      146      0 female    yes   2   3.410    5
## 147 147      147      0   male    yes   0   2.100    0
## 148 148      148      0 female     no   0   2.000    2
## 149 149      149      0   male    yes   0   3.360    2
## 150 150      150      0   male    yes   3   3.590    7
## 151 151      151      0   male     no   0   2.140    2
## 152 152      152      0 female    yes   0   3.590   12
## 153 153      153      0 female     no   0   2.390   10
## 154 154      154      0   male    yes   3   4.540   11
## 155 155      155      0   male     no   0   2.960    2
## 156 156      156      0   male    yes   1   2.210    5
## 157 157      157      0   male    yes   2   3.690    5
## 158 158      158      0 female    yes   0   1.780    1
## 159 159      159      0 female     no   0   2.860   11
## 160 160      160      0   male    yes   0   2.860    8
## 161 161      161      0 female    yes   0   2.580    3
## 162 162      162      0 female     no   0   3.750    1
## 163 163      163      0 female    yes   1   1.220   11
## 164 164      164      0 female     no   0   2.100    9
## 165 165      165      0 female     no   0   3.590   18
## 166 166      166      0 female     no   0   3.540    5
## 167 167      167      0 female     no   0   2.860   16
## 168 168      168      0 female    yes   0   1.860    6
## 169 169      169      0   male    yes   0   2.960    0
## 170 170      170      0 female    yes   0   3.690    7
## 171 171      171      0 female    yes   0   3.690    2
## 172 172      172      0 female    yes   0   4.290    1
## 173 173      173      0 female     no   0   2.520    1
## 174 174      174      0 female     no   0   1.760   10
## 175 175      175      0   male    yes   2   2.320    2
## 176 176      176      0 female     no   0   3.690    2
## 177 177      177      0 female     no   0   3.750   14
## 178 178      178      0 female     no   0   4.290    5
## 179 179      179      0 female    yes   2   4.540    6
## 180 180      180      0   male    yes   1   2.100    0
## 181 181      181      0 female    yes   1   2.540    0
## 182 182      182      0   male    yes   1   2.210   19
## 183 183      183      0   male     no   0   4.540    8
## 184 184      184      0   male    yes   1   2.100   12
## 185 185      185      0   male     no   0   2.260    5
## 186 186      186      0 female    yes   1   4.620   15
## 187 187      187      0 female     no   0   2.760    4
## 188 188      188      0 female     no   0   4.290   12
## 189 189      189      0 female     no   0   0.755    0
## 190 190      190      0 female    yes   0   1.830    2
## 191 191      191      0 female     no   0   1.790    0
```

```
## 192 192        192        0 female      yes    1    4.290          6
## 193 193        193        0 female       no    0    2.500          0
## 194 194        194        0   male      yes    0    2.140          1
## 195 195        195        0   male      yes    2    3.400         13
## 196 196        196        0 female       no    0    2.870         15
## 197 197        197        0 female      yes    0    2.960          0
## 198 198        198        0 female      yes    2    3.190          0
## 199 199        199        0   male      yes    1    3.690         16
## 200 200        200        0 female      yes    2    1.255          0
## 201 201        201        0   male      yes    2    4.140         12
## 202 202        202        0   male      yes    1    2.390          5
## 203 203        203        0   male      yes    2    3.920          2
## 204 204        204        0 female       no    0    2.960          4
## 205 205        205        0 female      yes    0    2.120          2
## 206 206        206        0 female      yes    2    2.120          1
## 207 207        207        0 female      yes    0    2.610          3
## 208 208        208        0   male       no    0    4.290          0
## 209 209        209        0   male      yes    3    2.860          7
## 210 210        210        0 female      yes    0    2.390          0
## 211 211        211        0   male      yes    2    3.340          1
## 212 212        212        0 female       no    0    3.620          8
## 213 213        213        0 female      yes    1    3.590          8
## 214 214        214        0   male      yes    2    4.540          1
## 215 215        215        0 female      yes    0    3.590          1
## 216 216        216        0   male       no    0    4.290          9
## 217 217        217        0   male      yes    0    1.520          4
## 218 218        218        0   male      yes    0    4.290          6
## 219 219        219        0 female      yes    0    4.620          5
## 220 220        220        0   male      yes    1    4.290         13
## 221 221        221        0   male      yes    0    2.510          3
## 222 222        222        0   male       no    0    2.860          3
## 223 223        223        0 female      yes    0    2.960          8
## 224 224        224        0 female      yes    0    3.690          3
## 225 225        225        0 female      yes    0    3.470          2
## 226 226        226        0   male      yes    2    4.290         15
## 227 227        227        0   male       no    0    4.290          0
## 228 228        228        0 female       no    0    3.920          1
## 229 229        229        0 female      yes    0    2.000          6
## 230 230        230        0   male      yes    0    2.320          4
## 231 231        231        0 female      yes    1    2.000          9
## 232 232        232        0   male      yes    1    1.680         27
## 233 233        233        0   male       no    0    3.470          0
## 234 234        234        0   male      yes    0    2.200          2
## 235 235        235        0   male      yes    1    2.120         10
## 236 236        236        0 female       no    0    1.400         14
## 237 237        237        0 female       no    0    3.360          3
## 238 238        238        0   male      yes    2    4.290         24
## 239 239        239        0   male      yes    1    2.100          0
## 240 240        240        0   male       no    0    4.290          5
## 241 241        241        0 female       no    0    4.290          0
## 242 242        242        0 female       no    0    2.830          1
## 243 243        243        0   male      yes    1    2.580          6
## 244 244        244        0 female      yes    0    3.150          7
## 245 245        245        0   male       no    0    4.290          2
```

```
## 246 246      246      0   male      no   0   2.960      0
## 247 247      247      0   male     yes   2   3.590      5
## 248 248      248      0 female      no   0   2.390     15
## 249 249      249      0 female      no   0   1.250      2
## 250 250      250      0 female      no   0   2.760      1
## 251 251      251      0   male     yes   0   3.400     13
## 252 252      252      0   male      no   0   4.290      7
## 253 253      253      0 female      no   0   3.690      4
## 254 254      254      0 female     yes   0   2.860     13
## 255 255      255      0 female      no   0   4.290      3
## 256 256      256      0 female      no   0   4.140      2
## 257 257      257      0 female     yes   0   2.390      2
## 258 258      258      0   male     yes   2   2.860     11
## 259 259      259      0 female     yes   0   2.960      7
## 260 260      260      0   male      no   0   3.590      8
## 261 261      261      0   male     yes   1   1.810      5
## 262 262      262      0   male     yes   1   4.290      2
## 263 263      263      0   male     yes   1   2.100      0
## 264 264      264      0 female      no   0   3.190      0
## 265 265      265      0   male     yes   2   4.290      2
## 266 266      266      0   male     yes   0   4.290      2
## 267 267      267      0   male     yes   2   3.400      0
## 268 268      268      0   male      no   0   4.290     35
## 269 269      269      0   male     yes   2   2.320      5
## 270 270      270      0   male      no   0   1.680      5
## 271 271      271      0 female     yes   0   2.580      0
## 272 272      272      0   male     yes   0   3.690      3
## 273 273      273      0   male     yes   2   3.410      7
## 274 274      274      0   male     yes   0   2.320      0
## 275 275      275      0   male     yes   1   3.690      8
## 276 276      276      1   male     yes   0   2.540      4
## 277 277      277      1 female     yes   1   1.760      4
## 278 278      278      1   male     yes   1   4.290     13
## 279 279      279      1   male     yes   3   2.100      0
## 280 280      280      1 female     yes   1   3.090     12
## 281 281      281      1 female      no   0   3.360      6
## 282 282      282      1   male     yes   0   2.100      0
## 283 283      283      1 female     yes   1   3.750      7
## 284 284      284      1 female      no   0   2.140      6
## 285 285      285      1 female      no   0   4.290     22
## 286 286      286      1 female      no   0   2.000      2
## 287 287      287      1   male     yes   0   2.000      4
## 288 288      288      1   male     yes   1   2.000     16
## 289 289      289      1   male     yes   1   2.610      6
## 290 290      290      1   male     yes   0   4.250     12
## 291 291      291      1   male      no   0   2.360     14
## 292 292      292      1 female     yes   0   4.290     11
## 293 293      293      1   male     yes   0   2.100      2
## 294 294      294      1 female     yes   0   2.870      5
## 295 295      295      1 female     yes   0   3.470      3
## 296 296      296      1   male     yes   0   1.780      1
## 297 297      297      1   male     yes   0   4.140     15
## 298 298      298      1   male     yes   3   4.290      0
## 299 299      299      1   male      no   0   4.290      3
```

```
## 300 300      300      1   male     no   0   1.810     10
## 301 301      301      1 female     no   0   2.320     15
## 302 302      302      1 female    yes   0   2.610      7
## 303 303      303      1   male    yes   0   1.680     34
## 304 304      304      1 female    yes   0   3.190      3
## 305 305      305      1   male    yes   1   3.590      5
## 306 306      306      1   male    yes   0   2.500      0
## 307 307      307      1   male     no   0   3.400      6
## 308 308      308      1 female     no   0   2.260      4
## 309 309      309      1   male     no   0   3.400     12
## 310 310      310      1   male    yes   1   3.920      0
## 311 311      311      1   male    yes   2   2.960      0
## 312 312      312      1   male     no   0   4.290     15
## 313 313      313      1   male    yes   0   4.290     11
## 314 314      314      1 female    yes   1   3.320     24
## 315 315      315      1   male     no   0   1.860     15
## 316 316      316      1 female     no   0   2.870      6
## 317 317      317      1 female    yes   0   1.640     22
## 318 318      318      1 female     no   0   2.250      7
## 319 319      319      1 female     no   0   2.100      8
## 320 320      320      1 female    yes   0   4.290      6
## 321 321      321      1   male    yes   0   1.750      3
## 322 322      322      1   male    yes   0   2.960      8
## 323 323      323      1 female     no   0   2.250      4
## 324 324      324      1   male    yes   2   4.250     20
## 325 325      325      1   male    yes   2   2.560     22
## 326 326      326      1 female     no   0   3.190     11
## 327 327      327      1   male    yes   2   3.920      2
## 328 328      328      1   male    yes   1   1.780     77
## 329 329      329      1 female    yes   0   3.400     14
## 330 330      330      1   male    yes   1   1.740      4
## 331 331      331      1   male     no   0   4.290      6
## 332 332      332      1 female     no   0   2.000      6
## 333 333      333      1 female    yes   0   2.870     18
## 334 334      334      1   male    yes   0   4.290      6
## 335 335      335      1 female    yes   0   3.190      2
## 336 336      336      1   male    yes   1   1.220      1
## 337 337      337      1 female    yes   2   3.540     17
## 338 338      338      1   male    yes   1   4.290      1
## 339 339      339      1   male    yes   1   4.620      3
## 340 340      340      1 female     no   0   2.000      6
## 341 341      341      1 female     no   0   3.590      3
## 342 342      342      1 female     no   0   3.190      6
## 343 343      343      1   male    yes   1   3.400      2
## 344 344      344      1 female    yes   0   1.280      2
## 345 345      345      1   male    yes   2   1.740      4
## 346 346      346      1   male    yes   1   2.260      1
## 347 347      347      1 female    yes   0   3.590      5
## 348 348      348      1   male    yes   1   4.620     16
## 349 349      349      1 female     no   0   1.400      2
## 350 350      350      1 female     no   0   0.920      4
## 351 351      351      1   male    yes   1   2.390      3
## 352 352      352      1   male    yes   0   2.260      1
## 353 353      353      1   male    yes   2   2.860      7
```

```
## 354 354        354        1   male    yes    2   2.760        8
## 355 355        355        1   male    yes    1   1.630        8
## 356 356        356        1   male    yes    2   4.290       12
## 357 357        357        1 female     no    0   1.400        3
## 358 358        358        1 female    yes    0   2.120        0
## 359 359        359        1 female    yes    1   2.610        6
## 360 360        360        1   male    yes    0   1.800        1
## 361 361        361        1 female    yes    0   4.290       21
## 362 362        362        1 female     no    0   3.690       18
## 363 363        363        1 female    yes    0   4.620       16
## 364 364        364        1   male     no    0   2.150       10
## 365 365        365        1   male    yes    2   2.100        0
## 366 366        366        1 female    yes    0   2.000        5
## 367 367        367        1 female     no    0   1.255        0
## 368 368        368        1   male    yes    2   1.750        2
## 369 369        369        1 female     no    0   3.850        2
## 370 370        370        1   male     no    0   4.250        4
## 371 371        371        1 female     no    0   3.470        3
## 372 372        372        1   male    yes    1   3.920        8
## 373 373        373        1   male    yes    2   2.510        3
## 374 374        374        1 female     no    0   1.400       12
## 375 375        375        1   male    yes    1   2.000       11
## 376 376        376        1 female     no    0   2.000       10
## 377 377        377        1   male     no    0   4.290        2
## 378 378        378        1   male     no    0   3.360       10
## 379 379        379        1   male    yes    0   4.620        1
## 380 380        380        1   male    yes    1   2.560       16
## 381 381        381        1   male    yes    0   4.620       18
## 382 382        382        1   male    yes    0   3.590       10
## 383 383        383        1   male    yes    2   4.290        6
## 384 384        384        1 female     no    0   3.590        8
## 385 385        385        1 female     no    0   4.290        6
## 386 386        386        1   male    yes    0   3.190        3
## 387 387        387        1 female    yes    0   3.590        1
## 388 388        388        1 female    yes    0   2.960       19
## 389 389        389        1 female     no    0   2.580        2
## 390 390        390        1   male    yes    3   2.960        6
## 391 391        391        1 female    yes    0   4.540       13
## 392 392        392        1   male    yes    1   4.540       10
## 393 393        393        1   male    yes    2   2.500        4
## 394 394        394        1   male    yes    0   1.680        8
## 395 395        395        1   male    yes    0   2.320        4
## 396 396        396        1 female    yes    3   3.190        9
## 397 397        397        1 female     no    0   2.210        2
## 398 398        398        1 female    yes    0   1.250        5
## 399 399        399        1   male     no    0   4.140        5
## 400 400        400        1 female    yes    0   4.620        4
## 401 401        401        1 female     no    0   4.540       37
## 402 402        402        1 female    yes    0   3.150        9
## 403 403        403        1   male     no    0   4.290       11
## 404 404        404        1 female    yes    0   1.950        3
## 405 405        405        1   male     no    0   2.000        9
## 406 406        406        1 female    yes    0   4.540        2
## 407 407        407        1 female    yes    2   2.580        2
```

```
## 408 408      408      1 female    yes   0   3.850   29
## 409 409      409      1   male    yes   1   3.410   10
## 410 410      410      1 female    yes   1   2.260    9
## 411 411      411      1 female     no   0   4.250    2
## 412 412      412      1   male    yes   1   3.590    6
## 413 413      413      1 female    yes   1   2.120    9
## 414 414      414      1   male    yes   0   2.960    7
## 415 415      415      1 female     no   0   2.520    0
## 416 416      416      1 female     no   0   2.260    4
## 417 417      417      1 female     no   0   4.540    9
## 418 418      418      1 female    yes   2   2.860    7
## 419 419      419      1   male    yes   0   4.540    2
## 420 420      420      1   male    yes   0   3.590   12
## 421 421      421      1 female    yes   0   4.620   18
## 422 422      422      1   male    yes   3   1.670    3
## 423 423      423      1   male    yes   2   1.750    1
## 424 424      424      1 female    yes   1   2.830    5
## 425 425      425      1   male    yes   3   3.150   11
## 426 426      426      1   male    yes   1   3.590    9
## 427 427      427      1 female     no   0   3.750   24
## 428 428      428      1 female     no   0   2.050   17
## 429 429      429      1   male    yes   0   4.290    0
## 430 430      430      1   male    yes   2   4.290    0
## 431 431      431      1 female    yes   0   2.390    7
## 432 432      432      1   male    yes   1   4.540    3
## 433 433      433      1   male    yes   0   2.320    4
## 434 434      434      1 female     no   0   4.290   25
## 435 435      435      1   male    yes   1   3.690    5
## 436 436      436      1   male     no   0   4.290    9
## 437 437      437      1   male     no   0   3.920    2
## 438 438      438      1   male    yes   0   2.760    5
## 439 439      439      1   male     no   0   2.760    6
## 440 440      440      1   male    yes   2   3.620    4
## 441 441      441      1   male    yes   1   4.290   14
## 442 442      442      1   male     no   0   2.870   12
## 443 443      443      1 female    yes   1   2.390    9
## 444 444      444      1   male     no   0   4.290   14
## 445 445      445      1   male    yes   0   1.780    4
## 446 446      446      1   male    yes   1   2.100    8
## 447 447      447      1 female    yes   0   2.250    3
## 448 448      448      1   male    yes   1   2.260    5
## 449 449      449      1   male    yes   0   1.860    5
## 450 450      450      1 female     no   0   3.920    4
## 451 451      451      1   male    yes   0   4.340   10
## 452 452      452      1 female     no   0   3.360    4
## 453 453      453      1 female     no   0   2.510    1
## 454 454      454      1 female     no   0   3.750   21
## 455 455      455      1   male    yes   1   4.540   45
## 456 456      456      1 female     no   0   1.630    8
## 457 457      457      1 female     no   0   4.620   10
## 458 458      458      1   male    yes   0   1.520    2
## 459 459      459      1   male    yes   0   2.550   11
## 460 460      460      1 female    yes   0   1.180    1
## 461 461      461      1 female    yes   2   3.090    9
```

```
## 462 462        462          1 female      no    0    4.620        5
## 463 463        463          1 female      yes   0    2.320        1
## 464 464        464          1   male      no    0    2.050        3
## 465 465        465          1   male      yes   0    4.290        1
## 466 466        466          1   male      no    0    3.400        2
## 467 467        467          1   male      no    0    4.290       10
## 468 468        468          1   male      yes   1    3.590        2
## 469 469        469          1   male      no    0    3.360        5
## 470 470        470          1 female      no    0    2.050       13
## 471 471        471          1 female      yes   0    3.590       32
## 472 472        472          1 female      no    0    3.850       18
## 473 473        473          1   male      no    0    3.360        0
## 474 474        474          1 female      yes   0    1.750        0
## 475 475        475          1 female      yes   0    3.470        3
## 476 476        476          1   male      yes   1    2.610        4
## 477 477        477          1   male      no    0    2.760        4
## 478 478        478          1   male      yes   2    4.290        9
## 479 479        479          1 female      no    0    1.400        3
## 480 480        480          1 female      yes   0    4.620       18
## 481 481        481          1   male      yes   1    2.860       17
## 482 482        482          1   male      yes   1    2.860       17
## 483 483        483          1   male      yes   0    2.860       39
## 484 484        484          1   male      no    0    2.000        7
## 485 485        485          1 female      yes   0    1.760        8
## 486 486        486          1   male      yes   0    2.500        0
## 487 487        487          1 female      no    0    4.290       17
## 488 488        488          1   male      no    0    2.560       16
## 489 489        489          1 female      yes   1    3.540       14
## 490 490        490          1 female      yes   0    3.690        1
## 491 491        491          1   male      no    0    2.870        5
## 492 492        492          1 female      no    0    1.655        0
## 493 493        493          1   male      yes   1    4.340        4
## 494 494        494          1   male      yes   0    3.540       11
## 495 495        495          1   male      yes   2    4.290       10
## 496 496        496          1   male      yes   0    1.810        0
## 497 497        497          1 female      no    0    3.400        7
## 498 498        498          1   male      yes   1    1.810        5
## 499 499        499          1 female      no    0    3.190       18
## 500 500        500          1 female      yes   1    2.320        5
## 501 501        501          1 female      no    0    4.540       19
## 502 502        502          1   male      yes   1    4.290        2
## 503 503        503          1   male      yes   1    2.860        2
## 504 504        504          1 female      yes   1    2.860        2
## 505 505        505          1   male      yes   1    1.220        0
## 506 506        506          1   male      yes   0    2.100        0
## 507 507        507          1   male      yes   1    1.680       12
## 508 508        508          1 female      no    0    3.360       34
## 509 509        509          1 female      yes   0    2.870       15
## 510 510        510          1   male      yes   1    3.470        1
## 511 511        511          1   male      no    0    2.760        7
## 512 512        512          1   male      yes   1    3.540       21
## 513 513        513          1 female      yes   0    1.950       11
## 514 514        514          1   male      yes   1    3.590       19
## 515 515        515          1 female      no    0    3.190        3
```

```
## 516 516      516      1 female      no   0  2.760      2
## 517 517      517      1 female     yes   2  4.290     13
## 518 518      518      1   male     yes   2  3.190      5
## 519 519      519      1   male     yes   0  2.960      0
## 520 520      520      1   male     yes   1  2.760      7
## 521 521      521      1 female     yes   0  1.810     11
## 522 522      522      2   male     yes   0  3.360      4
## 523 523      523      2   male      no   0  3.090     14
## 524 524      524      2 female      no   0  3.750      8
## 525 525      525      2 female     yes   0  4.540     10
## 526 526      526      2 female      no   0  1.630      6
## 527 527      527      2 female     yes   0  3.090      2
## 528 528      528      2 female      no   0  3.690      4
## 529 529      529      2 female      no   0  2.120      2
## 530 530      530      2 female      no   0  2.260      3
## 531 531      531      2   male     yes   1  4.290      2
## 532 532      532      2 female     yes   1  1.740      4
## 533 533      533      2   male     yes   2  2.960      8
## 534 534      534      2 female      no   0  2.580      5
## 535 535      535      2   male     yes   1  4.540     10
## 536 536      536      2 female      no   0  4.620     12
## 537 537      537      2   male     yes   1  4.290     13
## 538 538      538      2 female      no   0  4.540     13
## 539 539      539      2 female     yes   0  3.590      0
## 540 540      540      2 female      no   0  4.290      5
## 541 541      541      2   male      no   0  3.690     26
## 542 542      542      2 female      no   0  3.210      0
## 543 543      543      2 female     yes   1  3.470     11
## 544 544      544      2   male      no   0  4.540     37
## 545 545      545      2   male     yes   0  1.950      4
## 546 546      546      2   male     yes   2  2.960     46
## 547 547      547      2   male     yes   1  4.540     53
## 548 548      548      2   male     yes   0  3.400      9
## 549 549      549      2   male     yes   0  2.100      4
## 550 550      550      2   male     yes   2  4.290      8
## 551 551      551      2 female      no   0  3.750      5
## 552 552      552      2 female      no   0  2.050      2
## 553 553      553      2   male     yes   1  2.500      2
## 554 554      554      2 female     yes   1  4.620     17
## 555 555      555      2 female     yes   0  1.800     10
## 556 556      556      2 female      no   0  3.090      0
## 557 557      557      2   male      no   0  4.290     10
## 558 558      558      2   male     yes   2  1.800      6
## 559 559      559      2 female     yes   0  3.590      5
## 560 560      560      2   male     yes   0  2.760      3
## 561 561      561      2   male     yes   0  4.140     16
## 562 562      562      2   male      no   0  3.590      3
## 563 563      563      2 female      no   0  4.540     12
## 564 564      564      2 female     yes   0  0.920      0
## 565 565      565      2 female      no   0  4.290     15
## 566 566      566      2   male     yes   1  2.390      4
## 567 567      567      2   male     yes   0  1.180      0
## 568 568      568      2   male     yes   2  4.540      2
## 569 569      569      2 female     yes   2  3.850     47
```

```
## 570 570      570      2   male    yes    2   2.960      21
## 571 571      571      2 female    yes    0   3.360       8
## 572 572      572      2 female    yes    0   3.190       5
## 573 573      573      2 female    yes    1   3.690      15
## 574 574      574      2   male    yes    0   1.630       8
## 575 575      575      2   male    yes    0   1.720       1
## 576 576      576      2 female    yes    0   2.580       5
## 577 577      577      2   male    yes    0   1.520       5
## 578 578      578      2   male     no    0   2.860       4
## 579 579      579      2 female    yes    2   1.220       4
## 580 580      580      2 female     no    0   2.540       4
## 581 581      581      2 female     no    0   3.360       4
## 582 582      582      2   male    yes    2   2.870      20
## 583 583      583      2   male    yes    1   3.150       7
## 584 584      584      2 female     no    0   4.620      14
## 585 585      585      2   male    yes    1   1.760       7
## 586 586      586      2   male    yes    1   1.520       3
## 587 587      587      2   male     no    0   4.290       5
## 588 588      588      2   male    yes    2   4.290      10
## 589 589      589      2   male    yes    1   2.560       5
## 590 590      590      2   male     no    0   4.540      29
## 591 591      591      2 female    yes    0   1.860       5
## 592 592      592      2 female     no    0   4.290       1
## 593 593      593      2 female    yes    0   3.920       7
## 594 594      594      2   male     no    0   2.260       2
## 595 595      595      2   male    yes    1   4.290      14
## 596 596      596      2 female    yes    1   3.690      10
## 597 597      597      2   male    yes    2   1.970       0
## 598 598      598      2   male    yes    1   3.190      10
## 599 599      599      2 female     no    0   4.540       5
## 600 600      600      2   male     no    0   4.290      25
## 601 601      601      2   male    yes    0   2.830       1
## 602 602      602      2   male    yes    3   4.340       7
## 603 603      603      2 female     no    0   3.360       3
## 604 604      604      2 female     no    0   3.410      14
## 605 605      605      2 female     no    0   2.860       3
## 606 606      606      2   male    yes    0   4.290      24
## 607 607      607      2   male    yes    1   2.760       8
## 608 608      608      2 female    yes    0   3.750       0
## 609 609      609      2   male    yes    1   4.290      12
## 610 610      610      2   male    yes    2   2.210      12
## 611 611      611      2   male    yes    0   3.540      21
## 612 612      612      2   male    yes    0   2.960       2
## 613 613      613      2 female    yes    0   2.120       2
## 614 614      614      2   male     no    0   2.390       4
## 615 615      615      2 female     no    0   3.190       5
## 616 616      616      2 female     no    0   1.970       8
## 617 617      617      2 female    yes    0   4.540       9
## 618 618      618      2 female     no    0   2.550      36
## 619 619      619      2   male    yes    0   1.760       0
## 620 620      620      2   male    yes    2   4.340      17
## 621 621      621      2 female    yes    0   2.520      16
## 622 622      622      2   male    yes    1   2.560       7
## 623 623      623      2   male     no    0   4.540      10
```

```
## 624 624      624      2 female      yes      0      1.400      0
## 625 625      625      2   male      yes      2      3.320     27
## 626 626      626      2   male      yes      0      2.510      5
## 627 627      627      2 female      yes      2      2.580      3
## 628 628      628      2   male      yes      2      3.540     16
## 629 629      629      2   male      yes      0      4.540     11
## 630 630      630      2   male       no      0      4.290     17
## 631 631      631      2   male      yes      0      4.340      5
## 632 632      632      2 female      yes      1      3.470      4
## 633 633      633      2 female       no      0      3.470      5
## 634 634      634      2   male      yes      2      2.500      5
## 635 635      635      2   male      yes      3      2.000      8
## 636 636      636      2   male       no      0      3.920     10
## 637 637      637      2 female      yes      0      4.620     23
## 638 638      638      2 female       no      0      3.090      6
## 639 639      639      2 female       no      0      2.320      4
## 640 640      640      2 female       no      0      4.290     21
## 641 641      641      2 female       no      0      3.360      7
## 642 642      642      2   male      yes      0      3.690      5
## 643 643      643      2   male      yes      0      4.290     17
## 644 644      644      2 female       no      0      3.590     11
## 645 645      645      2   male      yes      0      4.290     13
## 646 646      646      2 female      yes      1      3.210      7
## 647 647      647      2 female       no      0      2.260      8
## 648 648      648      2   male      yes      0      2.500      0
## 649 649      649      2   male       no      0      2.260      3
## 650 650      650      2 female      yes      0      3.750      4
## 651 651      651      2 female       no      0      4.290      4
## 652 652      652      2   male      yes      0      3.190     11
## 653 653      653      2 female      yes      1      2.000      7
## 654 654      654      2 female      yes      0      3.090      1
## 655 655      655      2 female      yes      1      3.590      2
## 656 656      656      2 female      yes      0      4.340     11
## 657 657      657      2 female       no      0      2.870      9
## 658 658      658      2   male      yes      0      2.100      2
## 659 659      659      2 female       no      0      2.830     26
## 660 660      660      2   male      yes      1      2.100      3
## 661 661      661      2   male      yes      1      1.780      1
## 662 662      662      2   male      yes      0      2.510      0
## 663 663      663      2   male      yes      1      2.520     10
## 664 664      664      2 female      yes      1      3.400      4
## 665 665      665      2 female      yes      1      3.090      3
## 666 666      666      2   male      yes      0      4.290     13
## 667 667      667      2 female      yes      0      2.960      8
## 668 668      668      2 female      yes      2      3.590     11
## 669 669      669      2   male       no      0      4.540     55
## 670 670      670      2 female      yes      0      3.590     11
## 671 671      671      2   male      yes      1      3.420      3
## 672 672      672      2 female      yes      1      4.290      4
## 673 673      673      2 female       no      0      3.190      4
## 674 674      674      2 female      yes      1      4.290     11
## 675 675      675      2   male      yes      0      4.620      3
## 676 676      676      2   male      yes      2      1.860      6
## 677 677      677      2   male      yes      0      4.620      8
```

```
## 678 678       678        2 female    yes   2   4.540      48
## 679 679       679        2 female    yes   0   3.750       8
## 680 680       680        2   male    yes   0   1.760       0
## 681 681       681        2 female    yes   0   3.410      31
## 682 682       682        2   male    yes   0   2.550      24
## 683 683       683        2   male    yes   1   1.250       2
## 684 684       684        2 female    yes   0   1.480       9
## 685 685       685        2 female    yes   0   2.830       3
## 686 686       686        2 female    yes   0   4.290       6
## 687 687       687        2 female     no   0   3.190      10
## 688 688       688        2 female     no   0   1.400       0
## 689 689       689        2 female    yes   2   3.210       2
## 690 690       690        2   male     no   0   4.620       9
## 691 691       691        2 female    yes   0   1.450       7
## 692 692       692        2 female    yes   1   3.340       4
## 693 693       693        2 female     no   0   4.540      23
## 694 694       694        2   male    yes   2   4.290      30
## 695 695       695        2 female     no   0   3.690       7
## 696 696       696        2 female     no   0   2.580       2
## 697 697       697        2 female    yes   1   4.540       7
## 698 698       698        2   male    yes   1   4.540       6
## 699 699       699        2   male     no   0   4.290       9
## 700 700       700        3 female     no   0   4.290      12
## 701 701       701        3 female     no   0   3.750       0
## 702 702       702        3   male     no   0   4.620       8
## 703 703       703        3   male    yes   2   4.540      31
## 704 704       704        3   male    yes   0   3.090       5
## 705 705       705        3   male    yes   1   1.950      14
## 706 706       706        3 female    yes   1   3.590       3
## 707 707       707        3   male    yes   1   2.610       5
## 708 708       708        3   male     no   0   2.870      12
## 709 709       709        3   male     no   0   4.290      30
## 710 710       710        3 female    yes   0   3.410      19
## 711 711       711        3 female    yes   1   2.320       5
## 712 712       712        3 female    yes   0   2.120       3
## 713 713       713        3   male    yes   0   4.540      37
## 714 714       714        3   male    yes   0   2.960       8
## 715 715       715        3   male     no   0   2.870      12
## 716 716       716        3   male    yes   0   2.320       4
## 717 717       717        3   male    yes   2   1.800       6
## 718 718       718        3 female     no   0   2.390      11
## 719 719       719        3 female    yes   1   4.620      14
## 720 720       720        3 female     no   0   4.290      10
## 721 721       721        3   male    yes   0   4.540       5
## 722 722       722        3   male     no   0   3.590      16
## 723 723       723        3   male    yes   2   4.290       0
## 724 724       724        3   male    yes   1   2.960       5
## 725 725       725        3   male    yes   2   4.290      25
## 726 726       726        3   male    yes   1   4.290      18
## 727 727       727        3   male    yes   1   2.540       6
## 728 728       728        3   male     no   0   3.920       0
## 729 729       729        3   male     no   0   2.320       8
## 730 730       730        3 female     no   0   4.620      22
## 731 731       731        3 female    yes   0   3.750       6
```

19

```
## 732 732      732     3   male    yes  2  1.950    3
## 733 733      733     3   male    yes  1  1.800    4
## 734 734      734     3   male    yes  0  2.760    8
## 735 735      735     3   male     no  0  3.590    7
## 736 736      736     3   male    yes  0  4.250   20
## 737 737      737     3   male    yes  2  2.830    7
## 738 738      738     3 female     no  0  2.520    4
## 739 739      739     3 female    yes  0  1.180    0
## 740 740      740     3 female    yes  0  3.360   11
## 741 741      741     3 female    yes  0  4.290   21
## 742 742      742     3 female    yes  1  4.620   49
## 743 743      743     3   male     no  0  2.830    8
## 744 744      744     3   male    yes  0  3.690   24
## 745 745      745     3   male    yes  0  2.260   12
## 746 746      746     3 female     no  0  2.050    5
## 747 747      747     3   male    yes  1  4.290   19
## 748 748      748     3   male    yes  0  1.420    3
## 749 749      749     3 female    yes  2  1.890   16
## 750 750      750     3   male    yes  0  3.690   26
## 751 751      751     3 female    yes  0  2.960   22
## 752 752      752     3 female    yes  1  1.860    1
## 753 753      753     3 female    yes  0  2.260    6
## 754 754      754     3   male    yes  0  4.290   15
## 755 755      755     3 female    yes  0  3.150    4
## 756 756      756     3   male    yes  0  2.610    0
## 757 757      757     3 female     no  0  4.540    3
## 758 758      758     3   male    yes  1  2.210   10
## 759 759      759     3   male    yes  0  1.780    0
## 760 760      760     3   male    yes  1  3.620    5
## 761 761      761     3   male    yes  0  3.920    0
## 762 762      762     3 female    yes  0  4.620   10
## 763 763      763     3   male    yes  0  2.610    5
## 764 764      764     3 female    yes  1  3.360    3
## 765 765      765     3 female    yes  0  3.690   12
## 766 766      766     3   male    yes  0  3.470   14
## 767 767      767     3   male    yes  0  1.250    4
## 768 768      768     3   male    yes  0  4.620   18
## 769 769      769     3   male    yes  1  3.590   14
## 770 770      770     3 female     no  0  3.360    2
## 771 771      771     3   male    yes  0  4.290   38
## 772 772      772     3   male     no  0  3.540   12
## 773 773      773     3   male    yes  2  2.580    2
## 774 774      774     3   male     no  0  1.520    3
## 775 775      775     3   male    yes  0  3.470    8
## 776 776      776     3 female    yes  0  4.620   14
## 777 777      777     3   male     no  0  3.540   25
## 778 778      778     3   male    yes  2  2.100    4
## 779 779      779     3   male    yes  2  1.380    8
## 780 780      780     3   male    yes  1  3.090    5
## 781 781      781     3   male    yes  3  2.860    3
## 782 782      782     3 female     no  0  4.290    5
## 783 783      783     3 female    yes  1  1.220    3
## 784 784      784     4   male    yes  0  2.830    5
## 785 785      785     4 female    yes  0  4.540   16
```

```
## 786 786      786      4   male    yes   0   4.290   22
## 787 787      787      4   male     no   0   4.290    7
## 788 788      788      4   male    yes   0   3.540    9
## 789 789      789      4   male     no   0   2.520    6
## 790 790      790      4 female     no   0   1.400    3
## 791 791      791      4 female    yes   0   4.340    6
## 792 792      792      4 female    yes   1   2.510    2
## 793 793      793      4   male    yes   0   4.290    2
## 794 794      794      4   male    yes   1   2.960    0
## 795 795      795      4   male     no   0   3.850   47
## 796 796      796      4   male     no   0   4.540    5
## 797 797      797      4 female    yes   0   3.400    5
## 798 798      798      4   male     no   0   3.410   21
## 799 799      799      4   male    yes   1   2.960   57
## 800 800      800      4 female    yes   0   3.540    5
## 801 801      801      4   male    yes   2   1.720    2
## 802 802      802      4   male    yes   2   2.860   15
## 803 803      803      4   male    yes   2   4.540   66
## 804 804      804      4   male    yes   1   1.760   11
## 805 805      805      4   male    yes   2   1.860   15
## 806 806      806      4   male    yes   0   3.470    4
## 807 807      807      4   male     no   0   3.410    7
## 808 808      808      4   male    yes   0   1.810   10
## 809 809      809      4   male    yes   2   2.050   13
## 810 810      810      4   male     no   0   4.620   18
## 811 811      811      4 female    yes   0   2.260    3
## 812 812      812      4   male    yes   1   1.860   47
## 813 813      813      4 female    yes   1   4.290    4
## 814 814      814      4   male    yes   2   3.540    2
## 815 815      815      4   male    yes   0   4.290   30
## 816 816      816      4   male    yes   0   2.540   11
## 817 817      817      4 female    yes   0   4.250   13
## 818 818      818      4 female     no   0   2.500   10
## 819 819      819      4 female    yes   1   3.540   12
## 820 820      820      4 female    yes   0   3.190    8
## 821 821      821      4   male    yes   2   4.540   21
## 822 822      822      4 female     no   0   2.860   39
## 823 823      823      4 female    yes   0   2.580   14
## 824 824      824      4 female    yes   0   1.280    4
## 825 825      825      4 female    yes   0   3.210   14
## 826 826      826      4 female     no   0   2.870    6
## 827 827      827      4 female     no   0   3.340   11
## 828 828      828      4 female     no   0   3.150    8
## 829 829      829      4 female     no   0   2.320    8
## 830 830      830      4   male     no   0   4.290   19
## 831 831      831      4   male     no   0   3.690    7
## 832 832      832      4   male    yes   1   2.550   21
## 833 833      833      4 female     no   0   4.620    3
## 834 834      834      4 female    yes   0   2.360    5
## 835 835      835      4   male    yes   1   4.250   29
## 836 836      836      4   male    yes   1   4.290    5
## 837 837      837      4 female    yes   0   3.190    7
## 838 838      838      4 female     no   0   3.190    3
## 839 839      839      4 female     no   0   2.560   23
```

21

```
## 840 840      840      4   male    yes    0   1.760      7
## 841 841      841      4   male    yes    1   2.580     25
## 842 842      842      4 female    yes    0   3.410      4
## 843 843      843      4 female     no    0   3.590      9
## 844 844      844      4 female    yes    0   1.780      4
## 845 845      845      4 female     no    0   3.750      3
## 846 846      846      4   male    yes    2   3.690     16
## 847 847      847      4   male    yes    0   3.620      5
## 848 848      848      4   male    yes    0   1.505      4
## 849 849      849      4   male    yes    2   2.580      6
## 850 850      850      4   male     no    0   2.870     15
## 851 851      851      5 female    yes    0   2.260     16
## 852 852      852      5 female     no    0   3.750     13
## 853 853      853      5   male    yes    2   3.850     15
## 854 854      854      5   male    yes    1   3.150      5
## 855 855      855      5   male    yes    1   3.150     27
## 856 856      856      5   male    yes    0   4.340      6
## 857 857      857      5   male    yes    0   4.250     12
## 858 858      858      5   male     no    0   3.360     11
## 859 859      859      5 female     no    0   3.590     14
## 860 860      860      5   male    yes    1   2.580     25
## 861 861      861      5   male    yes    1   3.590     21
## 862 862      862      5   male    yes    1   2.960      4
## 863 863      863      5   male    yes    0   4.540     13
## 864 864      864      5   male    yes    0   4.290     30
## 865 865      865      5 female     no    0   2.870     12
## 866 866      866      5 female    yes    0   4.540     15
## 867 867      867      5 female    yes    1   3.850      1
## 868 868      868      5   male    yes    0   2.500      4
## 869 869      869      5   male    yes    1   3.470      0
## 870 870      870      5 female    yes    0   2.860     24
## 871 871      871      5 female    yes    0   4.620      0
## 872 872      872      5   male    yes    1   4.540     53
## 873 873      873      5   male    yes    0   1.250      2
## 874 874      874      5 female    yes    0   3.210     19
## 875 875      875      5   male    yes    1   1.760     11
## 876 876      876      5 female     no    0   2.580      6
## 877 877      877      5 female     no    0   3.620      3
## 878 878      878      6   male    yes    1   4.620      8
## 879 879      879      6 female    yes    0   2.100     36
## 880 880      880      6 female    yes    2   1.860     38
## 881 881      881      6   male    yes    0   4.340      9
## 882 882      882      6 female    yes    0   4.290     24
## 883 883      883      6   male    yes    2   2.510     11
## 884 884      884      6   male    yes    1   2.960     13
## 885 885      885      6   male     no    0   4.290     18
## 886 886      886      6   male     no    0   3.400     14
## 887 887      887      6 female     no    0   4.540     12
## 888 888      888      6   male    yes    1   3.850     16
## 889 889      889      6 female     no    0   3.150      9
## 890 890      890      6 female     no    0   4.540     15
## 891 891      891      6   male     no    0   3.470      6
## 892 892      892      6 female    yes    0   4.290      1
## 893 893      893      6   male     no    0   1.970      4
```

22

```
## 894 894       894       6 female     no  0 3.320      6
## 895 895       895       7   male    yes  0 3.590      1
## 896 896       896       7   male     no  0 2.540      6
## 897 897       897       7   male     no  0 3.410     20
## 898 898       898       7   male    yes  1 1.970      0
## 899 899       899       7 female     no  0 3.150      9
## 900 900       900       7   male     no  0 4.620     15
## 901 901       901       7   male     no  0 4.540     42
## 902 902       902       7   male    yes  0 3.690      9
## 903 903       903       7   male     no  0 4.340     19
## 904 904       904       7   male     no  0 4.290     19
## 905 905       905       7   male    yes  1 3.590     27
## 906 906       906       7   male     no  0 3.690     19
## 907 907       907       8   male    yes  0 2.510     11
## 908 908       908       9   male    yes  1 2.960     23
## 909 909       909       9   male    yes  1 1.860     47
## 910 910       910      10 female    yes  0 3.590     18
## 911 911       911      11   male    yes  2 2.860      7
## 912 912       912      12   male    yes  1 4.290     35
## 913 913       913      12   male    yes  1 1.860      5
## 914 914       914      16   male    yes  0 1.740     21
## 915 915       915      19   male    yes  0 1.860     42
##      success_dependency
## 1           0.36000000
## 2           0.34166666
## 3           0.62500000
## 4           0.39333332
## 5           0.14423077
## 6           1.79499996
## 7           1.06333335
## 8           0.74000001
## 9           0.76999998
## 10                 Inf
## 11          0.21142857
## 12          0.05807692
## 13          1.23000002
## 14          0.85000002
## 15                 Inf
## 16          3.08999991
## 17          0.28571429
## 18          0.33000000
## 19          0.47999999
## 20          0.47666666
## 21          0.37666667
## 22          0.98666668
## 23          0.85799999
## 24          0.71499997
## 25          2.75999999
## 26          0.50666666
## 27          0.44250000
## 28          1.42999999
## 29                 Inf
## 30          0.77333331
## 31                 Inf
```

```
## 32            0.53625000
## 33            0.11576923
## 34                   Inf
## 35                   Inf
## 36                   Inf
## 37                   Inf
## 38            0.47666666
## 39            0.61000001
## 40            0.75000000
## 41            0.47666666
## 42            0.95333330
## 43            0.78400002
## 44            1.11999997
## 45            0.34999998
## 46                   Inf
## 47            2.50000000
## 48            0.13440000
## 49            0.32428571
## 50            0.49000001
## 51            0.90799999
## 52                   Inf
## 53            0.24666667
## 54            0.53625000
## 55            1.13000000
## 56            0.19272726
## 57            1.60500002
## 58            3.15000010
## 59            3.92000008
## 60                   Inf
## 61            0.47666665
## 62                   Inf
## 63            0.93750000
## 64            1.76999998
## 65            2.53999996
## 66            0.92000000
## 67            0.45400000
## 68            0.27999999
## 69                   Inf
## 70                   Inf
## 71            1.05999994
## 72                   Inf
## 73            1.78999996
## 74            2.14499998
## 75            0.31999999
## 76            0.51599998
## 77                   Inf
## 78            2.21000004
## 79            0.45200000
## 80            0.64200001
## 81            1.04999995
## 82            3.53999996
## 83            0.18888889
## 84            0.36833334
## 85            0.11631579
```

```
## 86          0.92000002
## 87          0.12257143
## 88          0.52500002
## 89          0.22578947
## 90          0.31375000
## 91          4.28999996
## 92                 Inf
## 93          0.47333332
## 94          0.11631579
## 95          0.82799997
## 96          0.21714285
## 97          0.57749999
## 98          0.51714284
## 99          0.93750000
## 100         0.53625000
## 101         0.75000000
## 102                Inf
## 103         0.20000000
## 104         0.79750001
## 105         1.80999994
## 106         1.57500005
## 107         0.53571429
## 108         0.34166666
## 109         0.73666668
## 110         1.67999995
## 111         0.31545455
## 112                Inf
## 113         1.67999995
## 114         0.50799999
## 115         0.53750002
## 116         1.51333332
## 117         0.41999999
## 118                Inf
## 119         0.19272726
## 120         1.73500001
## 121         3.47000003
## 122         0.37333332
## 123         0.21199999
## 124         2.09999990
## 125         4.28999996
## 126         0.21999999
## 127         0.47666666
## 128         1.60500002
## 129                Inf
## 130         0.36199999
## 131         1.25999999
## 132         0.14608695
## 133         1.13499999
## 134         1.07249999
## 135         0.23555554
## 136         0.15400000
## 137         0.25642857
## 138         0.89749998
## 139         2.85999990
```

```
## 140       0.50166667
## 141              Inf
## 142              Inf
## 143              Inf
## 144       1.11999997
## 145       1.00000000
## 146       0.68200002
## 147              Inf
## 148       1.00000000
## 149       1.67999995
## 150       0.51285713
## 151       1.07000005
## 152       0.29916666
## 153       0.23900001
## 154       0.41272727
## 155       1.48000002
## 156       0.44200001
## 157       0.73800001
## 158       1.77999997
## 159       0.25999999
## 160       0.35749999
## 161       0.85999997
## 162       3.75000000
## 163       0.11090909
## 164       0.23333332
## 165       0.19944444
## 166       0.70799999
## 167       0.17874999
## 168       0.31000000
## 169              Inf
## 170       0.52714287
## 171       1.84500003
## 172       4.28999996
## 173       2.51999998
## 174       0.17600000
## 175       1.15999997
## 176       1.84500003
## 177       0.26785714
## 178       0.85799999
## 179       0.75666666
## 180              Inf
## 181              Inf
## 182       0.11631579
## 183       0.56750000
## 184       0.17499999
## 185       0.45200000
## 186       0.30799999
## 187       0.69000000
## 188       0.35750000
## 189              Inf
## 190       0.91500002
## 191              Inf
## 192       0.71499999
## 193              Inf
```

```
## 194        2.14000010
## 195        0.26153847
## 196        0.19133333
## 197               Inf
## 198               Inf
## 199        0.23062500
## 200               Inf
## 201        0.34499999
## 202        0.47800002
## 203        1.96000004
## 204        0.74000001
## 205        1.05999994
## 206        2.11999989
## 207        0.86999997
## 208               Inf
## 209        0.40857141
## 210               Inf
## 211        3.33999991
## 212        0.45249999
## 213        0.44874999
## 214        4.53999996
## 215        3.58999991
## 216        0.47666666
## 217        0.38000000
## 218        0.71499999
## 219        0.92399998
## 220        0.33000000
## 221        0.83666666
## 222        0.95333330
## 223        0.37000000
## 224        1.23000002
## 225        1.73500001
## 226        0.28600000
## 227               Inf
## 228        3.92000008
## 229        0.33333333
## 230        0.57999998
## 231        0.22222222
## 232        0.06222222
## 233               Inf
## 234        1.10000002
## 235        0.21199999
## 236        0.10000000
## 237        1.11999997
## 238        0.17875000
## 239               Inf
## 240        0.85799999
## 241               Inf
## 242        2.82999992
## 243        0.42999999
## 244        0.45000001
## 245        2.14499998
## 246               Inf
## 247        0.71799998
```

```
## 248        0.15933334
## 249        0.62500000
## 250        2.75999999
## 251        0.26153847
## 252        0.61285714
## 253        0.92250001
## 254        0.21999999
## 255        1.42999999
## 256        2.06999993
## 257        1.19500005
## 258        0.25999999
## 259        0.42285715
## 260        0.44874999
## 261        0.36199999
## 262        2.14499998
## 263             Inf
## 264             Inf
## 265        2.14499998
## 266        2.14499998
## 267             Inf
## 268        0.12257143
## 269        0.46399999
## 270        0.33599999
## 271             Inf
## 272        1.23000002
## 273        0.48714287
## 274             Inf
## 275        0.46125001
## 276        0.63499999
## 277        0.44000000
## 278        0.33000000
## 279             Inf
## 280        0.25749999
## 281        0.55999998
## 282             Inf
## 283        0.53571429
## 284        0.35666668
## 285        0.19500000
## 286        1.00000000
## 287        0.50000000
## 288        0.12500000
## 289        0.43499998
## 290        0.35416667
## 291        0.16857142
## 292        0.39000000
## 293        1.04999995
## 294        0.57399998
## 295        1.15666668
## 296        1.77999997
## 297        0.27599999
## 298             Inf
## 299        1.42999999
## 300        0.18099999
## 301        0.15466666
```

```
## 302       0.37285713
## 303       0.04941176
## 304       1.06333335
## 305       0.71799998
## 306              Inf
## 307       0.56666668
## 308       0.56500000
## 309       0.28333334
## 310              Inf
## 311              Inf
## 312       0.28600000
## 313       0.39000000
## 314       0.13833333
## 315       0.12400000
## 316       0.47833331
## 317       0.07454545
## 318       0.32142857
## 319       0.26249999
## 320       0.71499999
## 321       0.58333333
## 322       0.37000000
## 323       0.56250000
## 324       0.21250000
## 325       0.11636363
## 326       0.29000001
## 327       1.96000004
## 328       0.02311688
## 329       0.24285715
## 330       0.43500000
## 331       0.71499999
## 332       0.33333333
## 333       0.15944444
## 334       0.71499999
## 335       1.59500003
## 336       1.22000003
## 337       0.20823529
## 338       4.28999996
## 339       1.53999996
## 340       0.33333333
## 341       1.19666664
## 342       0.53166668
## 343       1.70000005
## 344       0.63999999
## 345       0.43500000
## 346       2.25999999
## 347       0.71799998
## 348       0.28874999
## 349       0.69999999
## 350       0.23000000
## 351       0.79666670
## 352       2.25999999
## 353       0.40857141
## 354       0.34500000
## 355       0.20375000
```

```
## 356        0.35750000
## 357        0.46666666
## 358               Inf
## 359        0.43499998
## 360        1.79999995
## 361        0.20428571
## 362        0.20500000
## 363        0.28874999
## 364        0.21500001
## 365               Inf
## 366        0.40000000
## 367               Inf
## 368        0.87500000
## 369        1.92499995
## 370        1.06250000
## 371        1.15666668
## 372        0.49000001
## 373        0.83666666
## 374        0.11666666
## 375        0.18181818
## 376        0.20000000
## 377        2.14499998
## 378        0.33599999
## 379        4.61999989
## 380        0.16000000
## 381        0.25666666
## 382        0.35899999
## 383        0.71499999
## 384        0.44874999
## 385        0.71499999
## 386        1.06333335
## 387        3.58999991
## 388        0.15578948
## 389        1.28999996
## 390        0.49333334
## 391        0.34923077
## 392        0.45400000
## 393        0.62500000
## 394        0.20999999
## 395        0.57999998
## 396        0.35444445
## 397        1.10500002
## 398        0.25000000
## 399        0.82799997
## 400        1.15499997
## 401        0.12270270
## 402        0.35000001
## 403        0.39000000
## 404        0.65000002
## 405        0.22222222
## 406        2.26999998
## 407        1.28999996
## 408        0.13275862
## 409        0.34100001
```

```
## 410      0.25111111
## 411      2.12500000
## 412      0.59833332
## 413      0.23555554
## 414      0.42285715
## 415             Inf
## 416      0.56500000
## 417      0.50444444
## 418      0.40857141
## 419      2.26999998
## 420      0.29916666
## 421      0.25666666
## 422      0.55666665
## 423      1.75000000
## 424      0.56599998
## 425      0.28636365
## 426      0.39888888
## 427      0.15625000
## 428      0.12058823
## 429             Inf
## 430             Inf
## 431      0.34142859
## 432      1.51333332
## 433      0.57999998
## 434      0.17160000
## 435      0.73800001
## 436      0.47666666
## 437      1.96000004
## 438      0.55200000
## 439      0.46000000
## 440      0.90499997
## 441      0.30642857
## 442      0.23916666
## 443      0.26555557
## 444      0.30642857
## 445      0.44499999
## 446      0.26249999
## 447      0.75000000
## 448      0.45200000
## 449      0.37200000
## 450      0.98000002
## 451      0.43400002
## 452      0.83999997
## 453      2.50999999
## 454      0.17857143
## 455      0.10088889
## 456      0.20375000
## 457      0.46199999
## 458      0.75999999
## 459      0.23181818
## 460      1.17999995
## 461      0.34333332
## 462      0.92399998
## 463      2.31999993
```

```
## 464        0.68333332
## 465        4.28999996
## 466        1.70000005
## 467        0.42900000
## 468        1.79499996
## 469        0.67199998
## 470        0.15769230
## 471        0.11218750
## 472        0.21388888
## 473              Inf
## 474              Inf
## 475        1.15666668
## 476        0.65249997
## 477        0.69000000
## 478        0.47666666
## 479        0.46666666
## 480        0.25666666
## 481        0.16823529
## 482        0.16823529
## 483        0.07333333
## 484        0.28571429
## 485        0.22000000
## 486              Inf
## 487        0.25235294
## 488        0.16000000
## 489        0.25285714
## 490        3.69000006
## 491        0.57399998
## 492              Inf
## 493        1.08500004
## 494        0.32181818
## 495        0.42900000
## 496              Inf
## 497        0.48571430
## 498        0.36199999
## 499        0.17722223
## 500        0.46399999
## 501        0.23894737
## 502        2.14499998
## 503        1.42999995
## 504        1.42999995
## 505              Inf
## 506              Inf
## 507        0.14000000
## 508        0.09882353
## 509        0.19133333
## 510        3.47000003
## 511        0.39428571
## 512        0.16857143
## 513        0.17727273
## 514        0.18894736
## 515        1.06333335
## 516        1.38000000
## 517        0.33000000
```

```
## 518         0.63800001
## 519                Inf
## 520         0.39428571
## 521         0.16454545
## 522         0.83999997
## 523         0.22071428
## 524         0.46875000
## 525         0.45400000
## 526         0.27166667
## 527         1.54499996
## 528         0.92250001
## 529         1.05999994
## 530         0.75333333
## 531         2.14499998
## 532         0.43500000
## 533         0.37000000
## 534         0.51599998
## 535         0.45400000
## 536         0.38499999
## 537         0.33000000
## 538         0.34923077
## 539                Inf
## 540         0.85799999
## 541         0.14192308
## 542                Inf
## 543         0.31545455
## 544         0.12270270
## 545         0.48750001
## 546         0.06434783
## 547         0.08566038
## 548         0.37777779
## 549         0.52499998
## 550         0.53625000
## 551         0.75000000
## 552         1.02499998
## 553         1.25000000
## 554         0.27176470
## 555         0.18000000
## 556                Inf
## 557         0.42900000
## 558         0.29999999
## 559         0.71799998
## 560         0.92000000
## 561         0.25874999
## 562         1.19666664
## 563         0.37833333
## 564                Inf
## 565         0.28600000
## 566         0.59750003
## 567                Inf
## 568         2.26999998
## 569         0.08191489
## 570         0.14095238
## 571         0.41999999
```

```
## 572        0.63800001
## 573        0.24600000
## 574        0.20375000
## 575        1.72000003
## 576        0.51599998
## 577        0.30400000
## 578        0.71499997
## 579        0.30500001
## 580        0.63499999
## 581        0.83999997
## 582        0.14349999
## 583        0.45000001
## 584        0.32999999
## 585        0.25142857
## 586        0.50666666
## 587        0.85799999
## 588        0.42900000
## 589        0.51199999
## 590        0.15655172
## 591        0.37200000
## 592        4.28999996
## 593        0.56000001
## 594        1.13000000
## 595        0.30642857
## 596        0.36900001
## 597              Inf
## 598        0.31900001
## 599        0.90799999
## 600        0.17160000
## 601        2.82999992
## 602        0.62000002
## 603        1.11999997
## 604        0.24357143
## 605        0.95333330
## 606        0.17875000
## 607        0.34500000
## 608              Inf
## 609        0.35750000
## 610        0.18416667
## 611        0.16857143
## 612        1.48000002
## 613        1.05999994
## 614        0.59750003
## 615        0.63800001
## 616        0.24625000
## 617        0.50444444
## 618        0.07083333
## 619              Inf
## 620        0.25529413
## 621        0.15750000
## 622        0.36571428
## 623        0.45400000
## 624              Inf
## 625        0.12296296
```

```
## 626            0.50200000
## 627            0.85999997
## 628            0.22125000
## 629            0.41272727
## 630            0.25235294
## 631            0.86800003
## 632            0.86750001
## 633            0.69400001
## 634            0.50000000
## 635            0.25000000
## 636            0.39200001
## 637            0.20086956
## 638            0.51499999
## 639            0.57999998
## 640            0.20428571
## 641            0.47999999
## 642            0.73800001
## 643            0.25235294
## 644            0.32636363
## 645            0.33000000
## 646            0.45857143
## 647            0.28250000
## 648                   Inf
## 649            0.75333333
## 650            0.93750000
## 651            1.07249999
## 652            0.29000001
## 653            0.28571429
## 654            3.08999991
## 655            1.79499996
## 656            0.39454547
## 657            0.31888888
## 658            1.04999995
## 659            0.10884615
## 660            0.69999997
## 661            1.77999997
## 662                   Inf
## 663            0.25200000
## 664            0.85000002
## 665            1.02999997
## 666            0.33000000
## 667            0.37000000
## 668            0.32636363
## 669            0.08254545
## 670            0.32636363
## 671            1.14000003
## 672            1.07249999
## 673            0.79750001
## 674            0.39000000
## 675            1.53999996
## 676            0.31000000
## 677            0.57749999
## 678            0.09458333
## 679            0.46875000
```

```
## 680              Inf
## 681       0.11000000
## 682       0.10625000
## 683       0.62500000
## 684       0.16444445
## 685       0.94333331
## 686       0.71499999
## 687       0.31900001
## 688              Inf
## 689       1.60500002
## 690       0.51333332
## 691       0.20714286
## 692       0.83499998
## 693       0.19739130
## 694       0.14300000
## 695       0.52714287
## 696       1.28999996
## 697       0.64857142
## 698       0.75666666
## 699       0.47666666
## 700       0.35750000
## 701              Inf
## 702       0.57749999
## 703       0.14645161
## 704       0.61799998
## 705       0.13928572
## 706       1.19666664
## 707       0.52199998
## 708       0.23916666
## 709       0.14300000
## 710       0.17947369
## 711       0.46399999
## 712       0.70666663
## 713       0.12270270
## 714       0.37000000
## 715       0.23916666
## 716       0.57999998
## 717       0.29999999
## 718       0.21727274
## 719       0.32999999
## 720       0.42900000
## 721       0.90799999
## 722       0.22437499
## 723              Inf
## 724       0.59200001
## 725       0.17160000
## 726       0.23833333
## 727       0.42333333
## 728              Inf
## 729       0.28999999
## 730       0.20999999
## 731       0.62500000
## 732       0.65000002
## 733       0.44999999
```

```
## 734          0.34500000
## 735          0.51285713
## 736          0.21250000
## 737          0.40428570
## 738          0.63000000
## 739                 Inf
## 740          0.30545454
## 741          0.20428571
## 742          0.09428571
## 743          0.35374999
## 744          0.15375000
## 745          0.18833333
## 746          0.40999999
## 747          0.22578947
## 748          0.47333332
## 749          0.11812500
## 750          0.14192308
## 751          0.13454546
## 752          1.86000001
## 753          0.37666667
## 754          0.28600000
## 755          0.78750002
## 756                 Inf
## 757          1.51333332
## 758          0.22100000
## 759                 Inf
## 760          0.72399998
## 761                 Inf
## 762          0.46199999
## 763          0.52199998
## 764          1.11999997
## 765          0.30750000
## 766          0.24785714
## 767          0.31250000
## 768          0.25666666
## 769          0.25642857
## 770          1.67999995
## 771          0.11289474
## 772          0.29500000
## 773          1.28999996
## 774          0.50666666
## 775          0.43375000
## 776          0.32999999
## 777          0.14160000
## 778          0.52499998
## 779          0.17250000
## 780          0.61799998
## 781          0.95333330
## 782          0.85799999
## 783          0.40666668
## 784          0.56599998
## 785          0.28375000
## 786          0.19500000
## 787          0.61285714
```

```
## 788       0.39333333
## 789       0.42000000
## 790       0.46666666
## 791       0.72333336
## 792       1.25500000
## 793       2.14499998
## 794              Inf
## 795       0.08191489
## 796       0.90799999
## 797       0.68000002
## 798       0.16238096
## 799       0.05192983
## 800       0.70799999
## 801       0.86000001
## 802       0.19066666
## 803       0.06878788
## 804       0.16000000
## 805       0.12400000
## 806       0.86750001
## 807       0.48714287
## 808       0.18099999
## 809       0.15769230
## 810       0.25666666
## 811       0.75333333
## 812       0.03957447
## 813       1.07249999
## 814       1.76999998
## 815       0.14300000
## 816       0.23090909
## 817       0.32692308
## 818       0.25000000
## 819       0.29500000
## 820       0.39875001
## 821       0.21619047
## 822       0.07333333
## 823       0.18428571
## 824       0.31999999
## 825       0.22928572
## 826       0.47833331
## 827       0.30363636
## 828       0.39375001
## 829       0.28999999
## 830       0.22578947
## 831       0.52714287
## 832       0.12142857
## 833       1.53999996
## 834       0.47199998
## 835       0.14655172
## 836       0.85799999
## 837       0.45571429
## 838       1.06333335
## 839       0.11130435
## 840       0.25142857
## 841       0.10320000
```

```
## 842          0.85250002
## 843          0.39888888
## 844          0.44499999
## 845          1.25000000
## 846          0.23062500
## 847          0.72399998
## 848          0.37625000
## 849          0.42999999
## 850          0.19133333
## 851          0.14125000
## 852          0.28846154
## 853          0.25666666
## 854          0.63000002
## 855          0.11666667
## 856          0.72333336
## 857          0.35416667
## 858          0.30545454
## 859          0.25642857
## 860          0.10320000
## 861          0.17095238
## 862          0.74000001
## 863          0.34923077
## 864          0.14300000
## 865          0.23916666
## 866          0.30266666
## 867          3.84999990
## 868          0.62500000
## 869                 Inf
## 870          0.11916666
## 871                 Inf
## 872          0.08566038
## 873          0.62500000
## 874          0.16894737
## 875          0.16000000
## 876          0.42999999
## 877          1.20666663
## 878          0.57749999
## 879          0.05833333
## 880          0.04894737
## 881          0.48222224
## 882          0.17875000
## 883          0.22818182
## 884          0.22769231
## 885          0.23833333
## 886          0.24285715
## 887          0.37833333
## 888          0.24062499
## 889          0.35000001
## 890          0.30266666
## 891          0.57833334
## 892          4.28999996
## 893          0.49250001
## 894          0.55333332
## 895          3.58999991
```

```
## 896          0.42333333
## 897          0.17050000
## 898                 Inf
## 899          0.35000001
## 900          0.30799999
## 901          0.10809524
## 902          0.41000001
## 903          0.22842106
## 904          0.22578947
## 905          0.13296296
## 906          0.19421053
## 907          0.22818182
## 908          0.12869565
## 909          0.03957447
## 910          0.19944444
## 911          0.40857141
## 912          0.12257143
## 913          0.37200000
## 914          0.08285714
## 915          0.04428571
```

```r
shipdata<-read_csv(file="C:/Users/ushad/Downloads/ShipAccidents.csv")
```

```
## Rows: 40 Columns: 6
## -- Column specification -------------------------------------------------------
## Delimiter: ","
## chr (3): type, construction, operation
## dbl (3): rownames, service, incidents
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```r
shipdata
```

```
## # A tibble: 40 x 6
##     rownames type  construction operation service incidents
##        <dbl> <chr> <chr>        <chr>       <dbl>     <dbl>
## 1         1 A     1960-64      1960-74       127         0
## 2         2 A     1960-64      1975-79        63         0
## 3         3 A     1965-69      1960-74      1095         3
## 4         4 A     1965-69      1975-79      1095         4
## 5         5 A     1970-74      1960-74      1512         6
## 6         6 A     1970-74      1975-79      3353        18
## 7         7 A     1975-79      1960-74         0         0
## 8         8 A     1975-79      1975-79      2244        11
## 9         9 B     1960-64      1960-74     44882        39
## 10       10 B     1960-64      1975-79     17176        29
## # i 30 more rows
```

```r
shipdata %>% select(-incidents) %>% arrange(desc(type)) %>% arrange(construction)
```

```
## # A tibble: 40 x 5
```

```
##    rownames type   construction operation service
##       <dbl> <chr> <chr>        <chr>        <dbl>
## 1        34 E      1960-64      1975-79          0
## 2        25 D      1960-64      1960-74        251
## 3        26 D      1960-64      1975-79        105
## 4        17 C      1960-64      1960-74       1179
## 5        18 C      1960-64      1975-79        552
## 6         9 B      1960-64      1960-74      44882
## 7        10 B      1960-64      1975-79      17176
## 8         1 A      1960-64      1960-74        127
## 9         2 A      1960-64      1975-79         63
## 10       35 E      1965-69      1960-74        789
## # i 30 more rows
```

```r
#it first arranged wrt to construction, then type
modifiedshipdata <- shipdata %>% select(-incidents) %>% arrange(construction)  %>% arrange(desc(type))
modifiedshipdata
```

```
## # A tibble: 40 x 5
##    rownames type   construction operation service
##       <dbl> <chr> <chr>        <chr>        <dbl>
## 1        34 E      1960-64      1975-79          0
## 2        35 E      1965-69      1960-74        789
## 3        36 E      1965-69      1975-79        437
## 4        37 E      1970-74      1960-74       1157
## 5        38 E      1970-74      1975-79       2161
## 6        33 E      1975-79      1975-79         45
## 7        39 E      1975-79      1960-74          0
## 8        40 E      1975-79      1975-79        542
## 9        25 D      1960-64      1960-74        251
## 10       26 D      1960-64      1975-79        105
## # i 30 more rows
```

```r
#another way of adding columns
shipdata %>% add_column(newcol = shipdata$service - shipdata$incidents, newcol2='0')
```

```
## # A tibble: 40 x 8
##    rownames type   construction operation service incidents newcol newcol2
##       <dbl> <chr> <chr>        <chr>        <dbl>     <dbl>  <dbl> <chr>
## 1         1 A      1960-64      1960-74        127         0    127 0
## 2         2 A      1960-64      1975-79         63         0     63 0
## 3         3 A      1965-69      1960-74       1095         3   1092 0
## 4         4 A      1965-69      1975-79       1095         4   1091 0
## 5         5 A      1970-74      1960-74       1512         6   1506 0
## 6         6 A      1970-74      1975-79       3353        18   3335 0
## 7         7 A      1975-79      1960-74          0         0      0 0
## 8         8 A      1975-79      1975-79       2244        11   2233 0
## 9         9 B      1960-64      1960-74      44882        39  44843 0
## 10       10 B      1960-64      1975-79      17176        29  17147 0
## # i 30 more rows
```

```r
#i think mutate has some functions like cummean() #associated with itself which add_column does not, wh
```

```r
#tinytex::install_tinytex()
```