Mujie_Wang_Assignment#1

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prob 1

```
#1(a) read first column as vet.time
vet <- read.csv ("/Users/wangmujie/Desktop/vets.txt", header = FALSE, sep = "")
vet.time <- vet$V1

#1(b) read second column as vet.cns
vet.cns <- vet$V2

#1(c) load library
library(survival)
  #using Surv function, call it vet.surv
vet.surv <- Surv(vet.time,vet.cns)
  #print out the result
print(vet.surv)
```

```
##   [1]  72  411  228  126  118   10   82  110  314  100+  42    8  144   25+
##  [15]  11   30  384    4   54   13  123+  97+ 153   59  117   16  151   22
##  [29]  56   21   18  139   20   31   52  287   18   51  122   27   54    7
##  [43]  63  392   10    8   92   35  117  132   12  162    3   95  177  162
##  [57] 216  553  278   12  260  200  156  182+ 143  105  103  250  100  999
##  [71] 112   87+ 231+ 242  991  111    1  587  389   33   25  357  467  201
##  [85]   1   30   44  283   15   25  103+  21   13   87    2   20    7   24
##  [99]  99    8   99   61   25   95   80   51   29   24   18   83+  31   51
## [113]  90   52   73    8   36   48    7  140  186   84   19   45   80   52
## [127] 164   19   53   15   43  340  133  111  231  378   49
```

```
#1(d) Calculate the mean vet.time
mean(vet.time)
```

```
## [1] 121.6277
```

```
#because it includes censored data, so it is biased

#1(e) Calculate the sum
sum(vet.cns)
```

```
## [1] 128
```

```
sum(vet.cns*vet.time)
```

```
## [1] 15632
```

```
#sum(vet.time) represent the total number of occurance
#sum(vet.cns*vet.time) represent the total time of every event to occur
#when multiply by the result will only be the sum of every event

#1(f) run the function
mean(vet.surv)
```

```
## [1] 61.28102
```

```
#this is mean of data of occurance, without any censored data, so it is unbiased
```

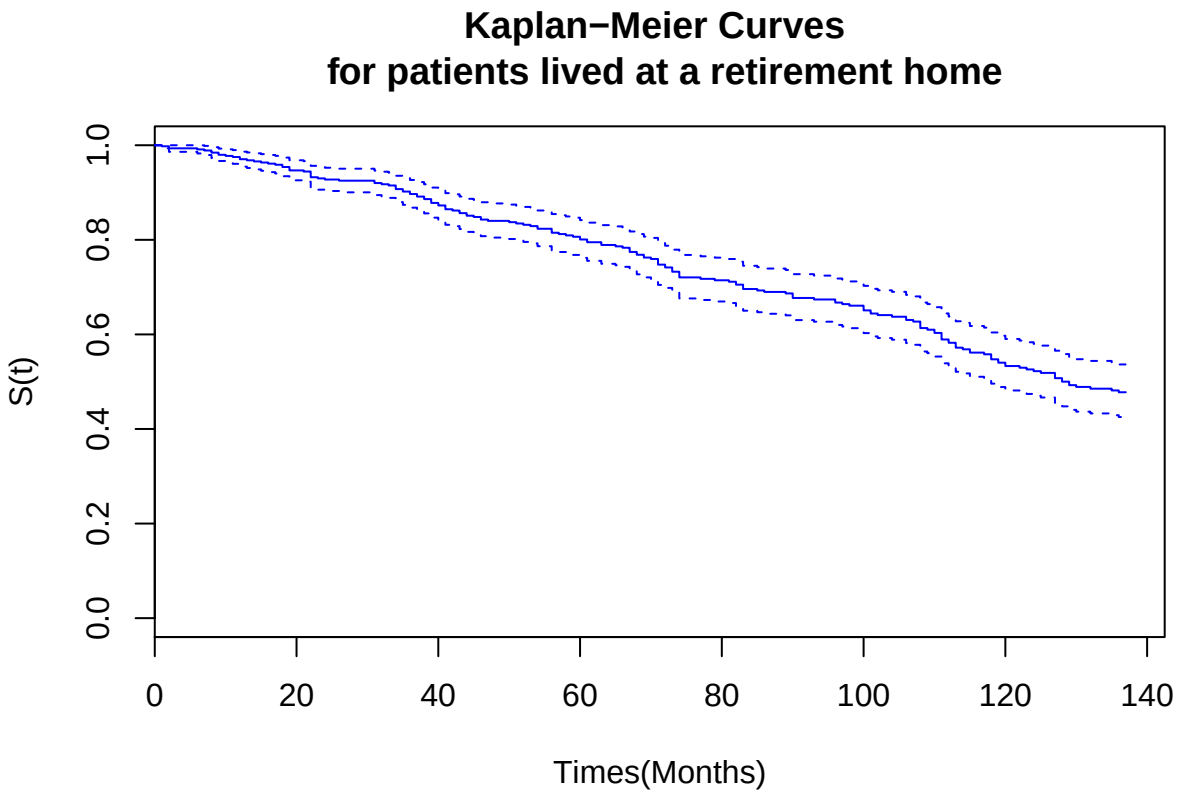
prob 2

```
#2(a) read data and construct object

retire <- read.table("/Users/wangmujie/Desktop/retire.txt", header = TRUE, skip = 2)
ret.surv <- Surv(retire$time,retire$death)

#2(b) function survfit
ret.fit <- survfit(ret.surv ~ 1)

#2(c) plot the result
plot(ret.fit,
     main = "Kaplan-Meier Curves \n for patients lived at a retirement home",
     xlab = "Times(Months)",
     ylab = "S(t)",
     col = "blue")
```




```
#2(d) generate a summary of the survival function
summary(ret.fit)
```

```
## Call: survfit(formula = ret.surv ~ 1)
##
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    458       1    0.998 0.00218        0.994        1.000
```

```
##      2    457       2    0.993 0.00377        0.986        1.000
##      6    440       1    0.991 0.00439        0.983        1.000
##      7    438       1    0.989 0.00492        0.979        0.999
##      8    434       2    0.984 0.00586        0.973        0.996
##      9    427       2    0.980 0.00668        0.967        0.993
##     10    424       1    0.977 0.00705        0.964        0.991
##     11    423       1    0.975 0.00740        0.961        0.990
##     12    420       2    0.970 0.00806        0.955        0.986
##     13    415       1    0.968 0.00838        0.952        0.985
##     14    412       1    0.966 0.00868        0.949        0.983
##     15    411       1    0.963 0.00897        0.946        0.981
##     16    408       1    0.961 0.00926        0.943        0.979
##     17    406       1    0.959 0.00953        0.940        0.978
##     18    404       2    0.954 0.01006        0.934        0.974
##     19    399       3    0.947 0.01080        0.926        0.968
##     21    393       1    0.944 0.01104        0.923        0.966
##     22    392       5    0.932 0.01214        0.909        0.956
##     23    386       1    0.930 0.01235        0.906        0.954
##     24    384       1    0.928 0.01255        0.903        0.952
##     26    380       1    0.925 0.01275        0.900        0.950
##     31    367       2    0.920 0.01317        0.895        0.946
##     32    362       1    0.917 0.01338        0.892        0.944
##     33    359       1    0.915 0.01358        0.889        0.942
##     34    356       3    0.907 0.01418        0.880        0.935
##     35    351       2    0.902 0.01456        0.874        0.931
##     36    343       2    0.897 0.01494        0.868        0.927
##     37    337       2    0.891 0.01532        0.862        0.922
##     38    333       2    0.886 0.01569        0.856        0.917
##     39    330       3    0.878 0.01622        0.847        0.910
##     40    327       2    0.873 0.01656        0.841        0.906
##     41    324       3    0.865 0.01705        0.832        0.899
##     42    319       1    0.862 0.01721        0.829        0.896
##     43    317       2    0.856 0.01753        0.823        0.892
##     44    315       2    0.851 0.01784        0.817        0.887
##     45    312       1    0.848 0.01799        0.814        0.884
##     46    310       2    0.843 0.01828        0.808        0.879
##     47    307       1    0.840 0.01843        0.805        0.877
##     50    304       1    0.837 0.01857        0.802        0.875
##     51    302       1    0.835 0.01872        0.799        0.872
##     52    301       1    0.832 0.01886        0.796        0.870
##     53    298       1    0.829 0.01900        0.793        0.867
##     54    296       2    0.823 0.01928        0.786        0.862
##     56    294       3    0.815 0.01968        0.777        0.854
##     57    291       1    0.812 0.01981        0.774        0.852
##     58    287       1    0.809 0.01995        0.771        0.849
##     59    283       1    0.806 0.02008        0.768        0.847
##     60    280       2    0.801 0.02035        0.762        0.842
##     61    277       2    0.795 0.02061        0.756        0.836
##     63    273       2    0.789 0.02086        0.749        0.831
##     65    270       1    0.786 0.02099        0.746        0.828
##     66    266       1    0.783 0.02112        0.743        0.826
##     67    265       3    0.774 0.02149        0.733        0.818
##     68    261       2    0.768 0.02173        0.727        0.812
##     69    258       2    0.762 0.02197        0.721        0.807
```

```
##    70    256       1    0.760 0.02208        0.717        0.804
##    71    254       4    0.748 0.02253        0.705        0.793
##    72    250       2    0.742 0.02274        0.698        0.788
##    73    247       3    0.733 0.02305        0.689        0.779
##    74    244       4    0.721 0.02344        0.676        0.768
##    77    237       1    0.718 0.02354        0.673        0.765
##    79    235       1    0.714 0.02364        0.670        0.762
##    81    232       1    0.711 0.02374        0.666        0.759
##    82    231       2    0.705 0.02393        0.660        0.754
##    83    229       3    0.696 0.02420        0.650        0.745
##    85    226       1    0.693 0.02429        0.647        0.742
##    86    224       1    0.690 0.02438        0.644        0.739
##    89    218       1    0.687 0.02447        0.640        0.736
##    90    215       3    0.677 0.02475        0.630        0.727
##    93    210       1    0.674 0.02484        0.627        0.724
##    96    206       2    0.667 0.02502        0.620        0.718
##    97    204       1    0.664 0.02511        0.617        0.715
##    98    203       1    0.661 0.02520        0.613        0.712
##   100    199       3    0.651 0.02547        0.603        0.703
##   101    195       2    0.644 0.02564        0.596        0.696
##   102    193       1    0.641 0.02572        0.592        0.693
##   104    189       1    0.637 0.02581        0.589        0.690
##   106    186       2    0.631 0.02598        0.582        0.684
##   107    184       1    0.627 0.02607        0.578        0.680
##   108    183       4    0.613 0.02638        0.564        0.667
##   109    179       1    0.610 0.02646        0.560        0.664
##   110    178       2    0.603 0.02660        0.553        0.658
##   111    174       4    0.589 0.02688        0.539        0.644
##   112    170       2    0.582 0.02700        0.532        0.638
##   113    168       3    0.572 0.02718        0.521        0.628
##   114    165       1    0.568 0.02724        0.518        0.624
##   115    164       2    0.562 0.02734        0.510        0.618
##   117    159       1    0.558 0.02740        0.507        0.614
##   118    157       3    0.547 0.02756        0.496        0.604
##   119    154       2    0.540 0.02765        0.489        0.597
##   120    152       2    0.533 0.02774        0.481        0.590
##   122    149       1    0.530 0.02779        0.478        0.587
##   123    147       1    0.526 0.02783        0.474        0.583
##   124    143       1    0.522 0.02788        0.470        0.580
##   125    142       1    0.519 0.02792        0.467        0.576
##   127    140       3    0.507 0.02805        0.455        0.566
##   128    137       2    0.500 0.02813        0.448        0.558
##   129    135       2    0.493 0.02819        0.440        0.551
##   130    133       1    0.489 0.02822        0.437        0.548
##   132    132       1    0.485 0.02825        0.433        0.544
##   135    129       1    0.481 0.02828        0.429        0.540
##   136    126       1    0.478 0.02832        0.425        0.537
```

```
#in the past 50 months, the probability of sample surviving
#is between 80.2% and 87.5%
```