Stroke_STAT488

Stroke and Survival Analysis

STAT488 Project- 2024 Spring Avery Shoemaker

Packages

```
library(survival)
library(tidyverse)
```

```
## Warning: package 'ggplot2' was built under R version 4.3.2
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.4     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## 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
```

```
library(dplyr)
library(lubridate)
library(ggsurvfit)
```

```
## Warning: package 'ggsurvfit' was built under R version 4.3.2
```

```
library(gtsummary)
```

```
## Warning: package 'gtsummary' was built under R version 4.3.2
```

```
library(tidycmprsk)
```

```
## Warning: package 'tidycmprsk' was built under R version 4.3.2
```

```
##
## Attaching package: 'tidycmprsk'
##
## The following object is masked from 'package:gtsummary':
##
##     trial
```

```r
library(rpart)
```

```
## Warning: package 'rpart' was built under R version 4.3.2
```

```r
library(ranger)
```

```
## Warning: package 'ranger' was built under R version 4.3.2
```

```r
library(ggplot2)
library(ggfortify)
```

```
## Warning: package 'ggfortify' was built under R version 4.3.3
```

Stroke Dataset

This data set has been cleaned so private information is hidden from my use. The variables are as follows: group: time: date and time of the beginning of data point collection at_home: TRUE/ FALSE if the subject is walking at home dis_max: related to max distance from home? home_endpoint: TRUE/ FALSE dur_U: duration upright dur_s: duration stepping end_time: when the activity is completed events: n/a trial:data collected from 60 days or 90 days subj: the subject

```r
stroke_data <- readRDS("C:/Users/avery/Downloads/STAT384/stroke_data.rds")
```

Filtering and Mutating and Other Fun Stuff

I am first going to filter the data for the trial to be 60 days (or 90 days). sd60: stroke data at 60 days sd90: stroke data at 90 days From there I am making a new variable 'status' where the status 0=alive, 1=dead

Because every instance of walking has a ending, all of the data has a status of 1.

'Figure 1'

```r
sd60 <- stroke_data %>% filter(trial == 60)
  sd_60 <- sd60 %>% mutate( status = 1)  %>% filter(dur_s < 1000)

sd90 <- stroke_data %>% filter(trial == 90)
  sd_90 <- sd90 %>% mutate( status = 1)   %>% filter(dur_s < 1000)
```

We are going to build the standard survival object. Time records survival time and status indicates whether death was observed or censored.

Kaplan-Meier Probability and Survival Function

I made a KM survival function where dur_s (duration stepping) is used as the time variable and status is used as status. "basically a compiled version of the serial time and status". The numbers with a '+' means that the data was censored.

Surv Function: takes time and status as its parameters and makes a survival object from it. This is then used to be fit into different plots.

'Figure 2'

```
km90 <- with(sd_90, Surv(dur_s, status))
head(km90,100)
```

```
##   [1] 575.9 536.6 525.2 516.8 497.1 487.9 446.2 444.1 431.8 428.1 368.3 368.3
##  [13] 326.9 292.8 291.6 288.0 283.4 273.6 267.8 258.3 255.1 249.2 248.0 242.4
##  [25] 240.1 229.4 229.2 208.6 203.1 199.0 196.6 195.0 192.5 187.1 183.8 183.0
##  [37] 182.4 182.2 179.4 175.8 174.5 169.9 164.6 164.2 161.1 153.8 152.1 149.3
##  [49] 144.5 142.0 140.0 138.9 138.3 136.9 134.8 134.4 133.6 133.5 132.0 131.4
##  [61] 130.7 127.2 126.1 125.6 122.9 122.8 122.3 121.5 119.7 119.1 115.6 115.5
##  [73] 114.7 114.6 114.4 113.5 112.8 112.5 112.3 111.0 110.9 110.3 110.0 109.3
##  [85] 107.4 107.4 106.3 106.2 105.1 104.9 103.6 102.4 101.9 100.8  99.3  98.2
##  [97]  98.1  97.9  97.0  96.8
```

```
km60 <- with(sd_60, Surv(dur_s, status))
head(km60,100)
```

```
##   [1] 938.6 937.3 859.2 824.2 792.6 720.2 711.6 688.7 642.3 602.2 594.6 588.7
##  [13] 560.9 549.1 548.4 481.5 466.3 452.0 437.3 414.8 409.6 399.7 389.5 368.8
##  [25] 365.7 358.4 350.5 343.0 339.8 338.2 336.3 326.9 323.4 305.7 303.3 296.6
##  [37] 295.7 295.3 292.1 291.5 276.6 256.1 252.7 247.9 244.6 244.4 235.6 230.2
##  [49] 210.9 208.0 204.8 203.1 201.0 195.1 187.4 183.9 179.5 179.0 175.2 169.5
##  [61] 164.5 163.7 159.5 158.8 158.7 157.4 157.0 155.3 146.4 146.0 143.8 143.1
##  [73] 138.1 135.4 134.0 131.9 130.0 129.4 121.6 119.7 118.9 117.4 114.4 108.1
##  [85] 107.8 106.6 104.9 104.2 103.3 101.9  96.2  93.5  92.6  89.5  89.4  88.0
##  [97]  85.3  85.0  84.7  83.9
```

The fit functions show the survival percentage as well as Confidence intervals for times 1, 25, and every 25 seconds after. Confidence intervals: upper and lower for each time t

1 is the constant term.

'Figure 3'

```
km90_fit <- survfit(Surv(dur_s,status) ~ 1, data = sd_90)
summary(km90_fit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ 1, data = sd_90)
##
##  time n.risk n.event survival  std.err lower 95% CI upper 95% CI
##     1   1736       1   0.9994 0.000576       0.9983        1.000
##    25   1238     498   0.7126 0.010862       0.6916        0.734
##    50    888     350   0.5109 0.011998       0.4880        0.535
##    75    670     217   0.3859 0.011684       0.3637        0.410
##   100    509     161   0.2932 0.010926       0.2726        0.315
##   125    398     111   0.2293 0.010089       0.2103        0.250
##   150    325      73   0.1872 0.009362       0.1697        0.206
##   175    277      48   0.1596 0.008789       0.1432        0.178
##   200    236      41   0.1359 0.008226       0.1207        0.153
##   225    194      42   0.1118 0.007562       0.0979        0.128
##   250    161      33   0.0927 0.006962       0.0801        0.107
```

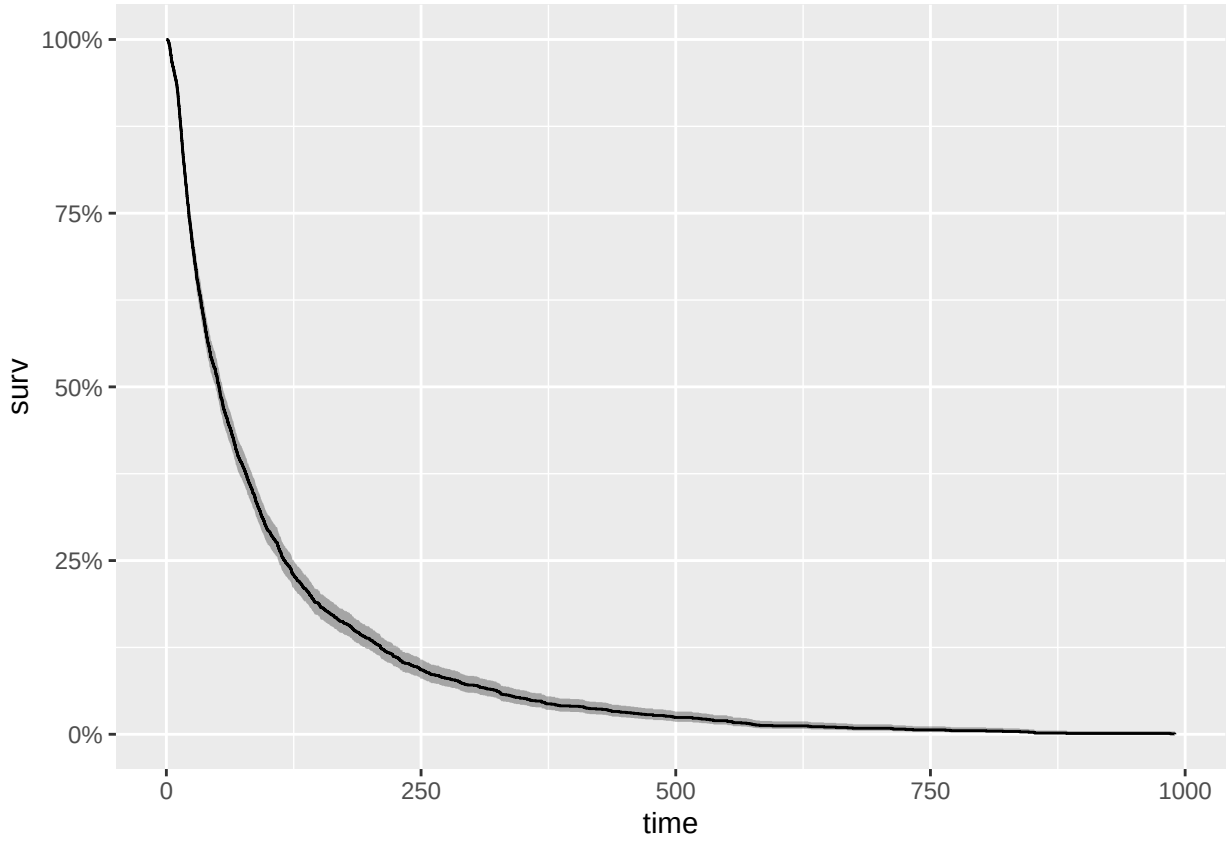
```r
km60_fit <- survfit(Surv(dur_s,status) ~ 1, data = sd_60)
summary(km60_fit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ 1, data = sd_60)
##
##  time n.risk n.event survival  std.err lower 95% CI upper 95% CI
##     1   1570       2    0.999 0.000899        0.997        1.000
##    25   1146     426    0.728 0.011227        0.706        0.750
##    50    856     289    0.544 0.012562        0.520        0.569
##    75    678     177    0.431 0.012491        0.407        0.456
##   100    547     131    0.348 0.012014        0.325        0.372
##   125    455      92    0.289 0.011438        0.268        0.313
##   150    393      62    0.250 0.010921        0.229        0.272
##   175    343      51    0.218 0.010406        0.198        0.239
##   200    296      46    0.188 0.009860        0.170        0.209
##   225    264      33    0.167 0.009414        0.150        0.187
##   250    226      37    0.144 0.008849        0.127        0.162
```

Plotting the Survival Functions

'Figure 4'

```r
autoplot(km90_fit)
```



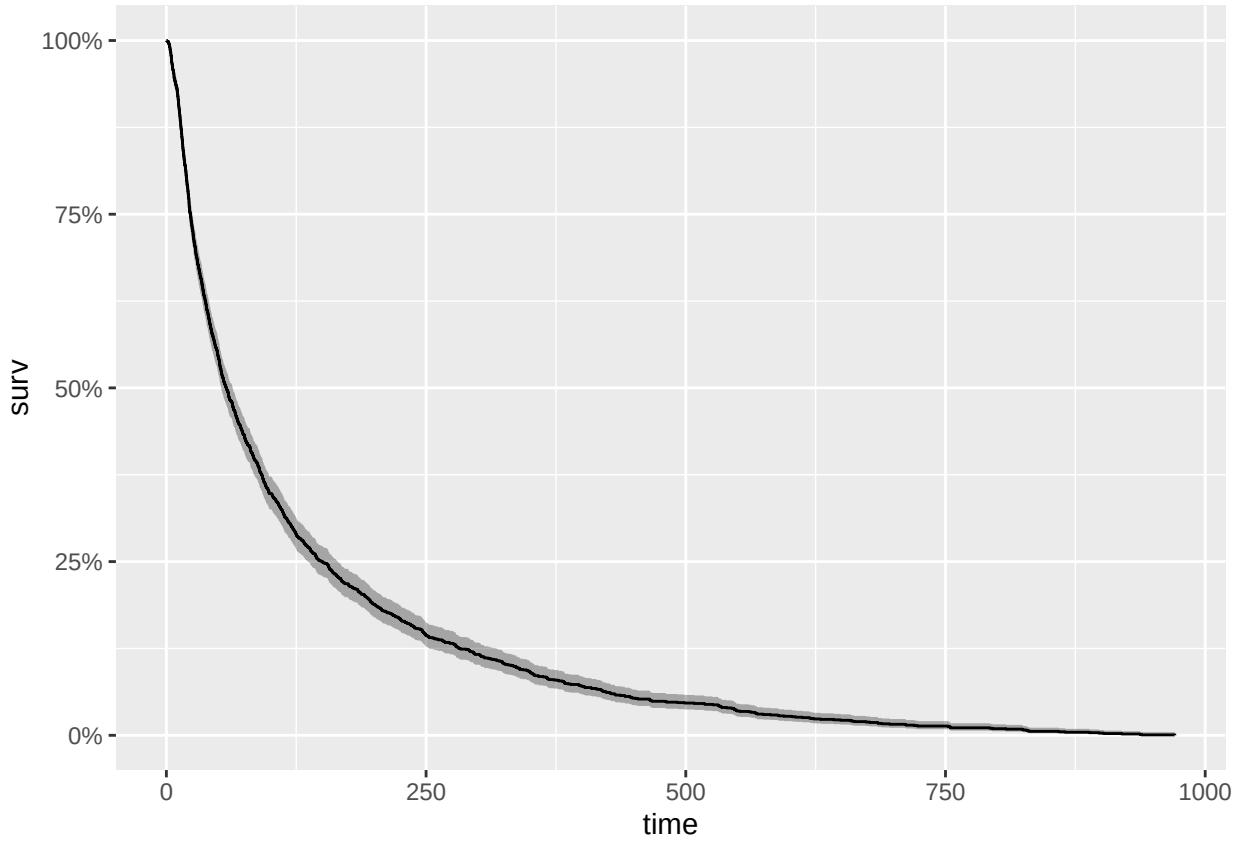
The issue I come across is that there are a few times that are very large (for example 12845.1 seconds). This

is equivalent to 3.56 hours. For that I used the filter function (Filtering and Mutating section) to make the cut off 1000 seconds, which is approximately 16.6 minutes.

We can see in these 2 graphs that both graphs have a similar shape, though 60 days may appear to have a higher survival rate than 90 days.

'Figure 5'

```
autoplot(km60_fit)
```



'Figure 6'

```
alld <- stroke_data %>% mutate(status = 1)

all_fit <- survfit(Surv(dur_s,status) ~ subj + trial , data = alld)
summary(all_fit, times = c(1,25*(1:10)))
```

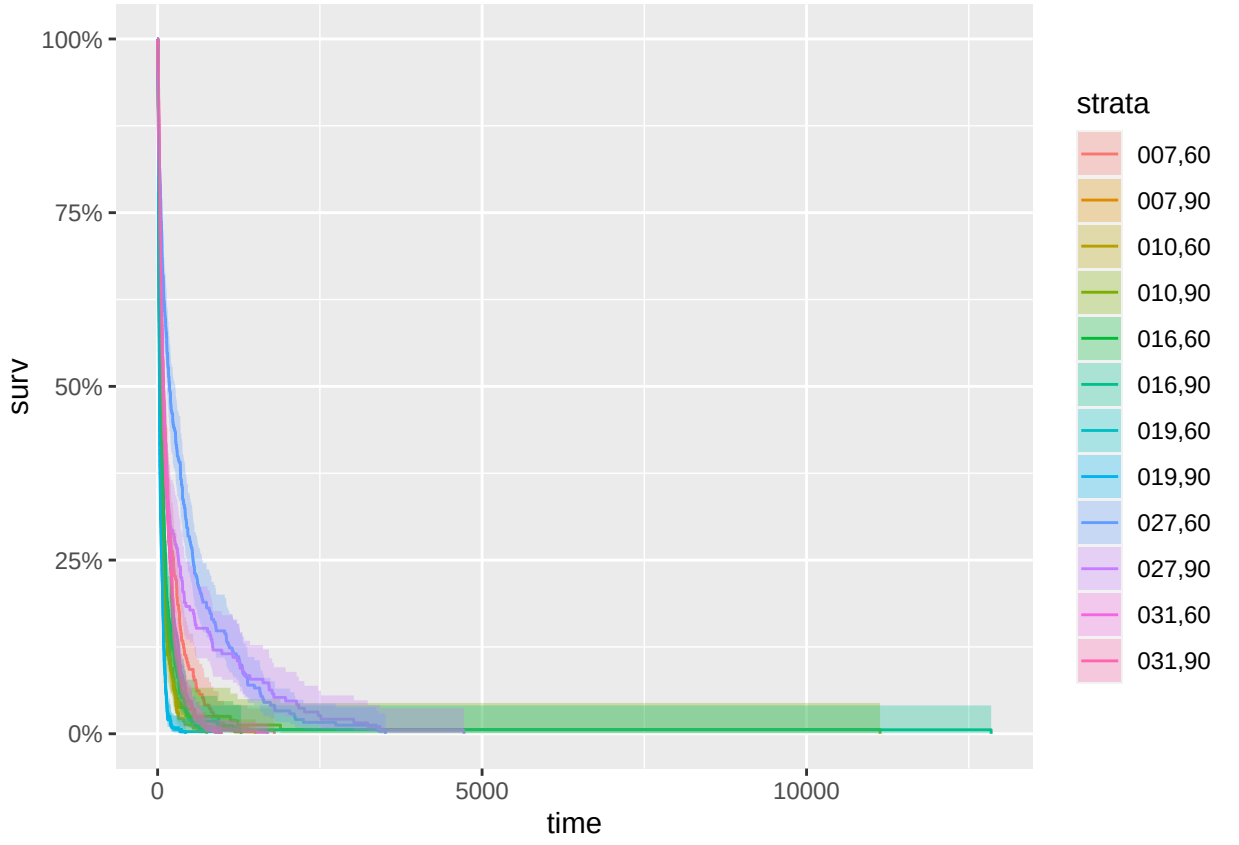
```
## Call: survfit(formula = Surv(dur_s, status) ~ subj + trial, data = alld)
##
##                 subj=007, trial=60
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    194       0    1.000  0.0000        1.000        1.000
##    25    162      33    0.830  0.0270        0.779        0.884
##    50    133      29    0.680  0.0335        0.618        0.749
##    75    106      26    0.546  0.0357        0.481        0.621
##   100     93      13    0.479  0.0359        0.414        0.555
```

```
##   125     81      12    0.418  0.0354        0.354        0.493
##   150     71      10    0.366  0.0346        0.304        0.440
##   175     62       9    0.320  0.0335        0.260        0.392
##   200     56       6    0.289  0.0325        0.231        0.360
##   225     51       5    0.263  0.0316        0.208        0.333
##   250     46       5    0.237  0.0305        0.184        0.305
##
##                subj=007, trial=90
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    344       0   1.0000  0.0000       1.0000        1.000
##    25    263      81   0.7645  0.0229       0.7210        0.811
##    50    183      80   0.5320  0.0269       0.4818        0.587
##    75    127      56   0.3692  0.0260       0.3216        0.424
##   100     97      30   0.2820  0.0243       0.2382        0.334
##   125     67      30   0.1948  0.0214       0.1571        0.241
##   150     50      17   0.1453  0.0190       0.1125        0.188
##   175     43       7   0.1250  0.0178       0.0945        0.165
##   200     32      11   0.0930  0.0157       0.0669        0.129
##   225     30       2   0.0872  0.0152       0.0620        0.123
##   250     24       6   0.0698  0.0137       0.0474        0.103
##
##                subj=010, trial=60
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    230       0   1.0000  0.0000       1.0000        1.000
##    25    142      88   0.6174  0.0320       0.5577        0.684
##    50     96      46   0.4174  0.0325       0.3583        0.486
##    75     67      29   0.2913  0.0300       0.2381        0.356
##   100     47      20   0.2043  0.0266       0.1584        0.264
##   125     37      10   0.1609  0.0242       0.1198        0.216
##   150     31       6   0.1348  0.0225       0.0971        0.187
##   175     29       2   0.1261  0.0219       0.0897        0.177
##   200     22       7   0.0957  0.0194       0.0643        0.142
##   225     19       3   0.0826  0.0182       0.0537        0.127
##   250     16       3   0.0696  0.0168       0.0434        0.112
##
##                subj=010, trial=90
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    159       1   0.9937 0.00627       0.9815        1.000
##    25     94      64   0.5912 0.03899       0.5195        0.673
##    50     67      28   0.4151 0.03908       0.3452        0.499
##    75     47      19   0.2956 0.03619       0.2325        0.376
##   100     34      13   0.2138 0.03252       0.1587        0.288
##   125     26       8   0.1635 0.02933       0.1151        0.232
##   150     20       6   0.1258 0.02630       0.0835        0.189
##   175     17       3   0.1069 0.02451       0.0682        0.168
##   200     15       2   0.0943 0.02318       0.0583        0.153
##   225     15       0   0.0943 0.02318       0.0583        0.153
##   250     10       5   0.0629 0.01925       0.0345        0.115
##
##                subj=016, trial=60
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    169       0    1.000  0.0000       1.0000        1.000
##    25    104      65    0.615  0.0374       0.5462        0.693
##    50     69      35    0.408  0.0378       0.3405        0.490
```

```
##    75     58      11    0.343  0.0365       0.2786        0.423
##   100     49       9    0.290  0.0349       0.2290        0.367
##   125     38      11    0.225  0.0321       0.1700        0.297
##   150     32       6    0.189  0.0301       0.1386        0.259
##   175     28       4    0.166  0.0286       0.1181        0.232
##   200     27       1    0.160  0.0282       0.1131        0.226
##   225     25       2    0.148  0.0273       0.1030        0.212
##   250     21       4    0.124  0.0254       0.0833        0.185
##
##                subj=016, trial=90
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    173       0    1.000  0.0000       1.0000        1.000
##    25    123      50    0.711  0.0345       0.6465        0.782
##    50     89      34    0.514  0.0380       0.4451        0.595
##    75     72      17    0.416  0.0375       0.3488        0.497
##   100     51      21    0.295  0.0347       0.2341        0.371
##   125     40      11    0.231  0.0321       0.1762        0.303
##   150     31       9    0.179  0.0292       0.1303        0.247
##   175     28       3    0.162  0.0280       0.1153        0.227
##   200     24       4    0.139  0.0263       0.0957        0.201
##   225     21       3    0.121  0.0248       0.0813        0.181
##   250     21       0    0.121  0.0248       0.0813        0.181
##
##                subj=019, trial=60
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    313       0  1.00000 0.00000      1.00000       1.0000
##    25    184     130  0.58466 0.02785      0.53254       0.6419
##    50    101      82  0.32268 0.02642      0.27483       0.3789
##    75     66      35  0.21086 0.02306      0.17019       0.2613
##   100     38      28  0.12141 0.01846      0.09012       0.1636
##   125     21      17  0.06709 0.01414      0.04439       0.1014
##   150     10      11  0.03195 0.00994      0.01736       0.0588
##   175      8       2  0.02556 0.00892      0.01290       0.0507
##   200      6       2  0.01917 0.00775      0.00868       0.0423
##   225      3       3  0.00958 0.00551      0.00311       0.0296
##   250      2       1  0.00639 0.00450      0.00161       0.0254
##
##                subj=019, trial=90
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    345       0   1.0000 0.00000      1.00000       1.0000
##    25    183     162   0.5304 0.02687      0.48030       0.5858
##    50    103      80   0.2986 0.02464      0.25396       0.3510
##    75     74      29   0.2145 0.02210      0.17527       0.2625
##   100     36      38   0.1043 0.01646      0.07660       0.1421
##   125     22      14   0.0638 0.01315      0.04256       0.0955
##   150     10      12   0.0290 0.00903      0.01574       0.0534
##   175      7       3   0.0203 0.00759      0.00975       0.0422
##   200      5       2   0.0145 0.00643      0.00607       0.0346
##   225      3       2   0.0087 0.00500      0.00282       0.0268
##   250      3       0   0.0087 0.00500      0.00282       0.0268
##
##                subj=027, trial=60
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    243       0    1.000  0.0000        1.000        1.000
```

```
##    25    204      39    0.840  0.0235        0.795        0.887
##    50    184      20    0.757  0.0275        0.705        0.813
##    75    163      21    0.671  0.0301        0.614        0.733
##   100    151      12    0.621  0.0311        0.563        0.685
##   125    142       9    0.584  0.0316        0.526        0.650
##   150    133       9    0.547  0.0319        0.488        0.614
##   175    125       8    0.514  0.0321        0.455        0.581
##   200    116       9    0.477  0.0320        0.419        0.544
##   225    112       4    0.461  0.0320        0.402        0.528
##   250    107       5    0.440  0.0318        0.382        0.507
##
##                subj=027, trial=90
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    191       0    1.000  0.0000        1.000        1.000
##    25    150      41    0.785  0.0297        0.729        0.846
##    50    119      31    0.623  0.0351        0.558        0.696
##    75    101      18    0.529  0.0361        0.463        0.605
##   100     89      12    0.466  0.0361        0.400        0.542
##   125     74      15    0.387  0.0352        0.324        0.463
##   150     66       8    0.346  0.0344        0.284        0.420
##   175     61       5    0.319  0.0337        0.260        0.393
##   200     57       4    0.298  0.0331        0.240        0.371
##   225     56       1    0.293  0.0329        0.235        0.365
##   250     55       1    0.288  0.0328        0.230        0.360
##
##                subj=031, trial=60
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    465       2    0.996 0.00302        0.990        1.000
##    25    394      71    0.844 0.01680        0.811        0.877
##    50    317      77    0.679 0.02161        0.638        0.722
##    75    262      55    0.561 0.02296        0.518        0.608
##   100    213      49    0.456 0.02305        0.413        0.504
##   125    180      33    0.385 0.02252        0.344        0.432
##   150    160      20    0.343 0.02196        0.302        0.388
##   175    135      26    0.287 0.02093        0.249        0.331
##   200    113      21    0.242 0.01982        0.206        0.284
##   225     98      16    0.208 0.01877        0.174        0.248
##   250     78      19    0.167 0.01726        0.136        0.205
##
##                subj=031, trial=90
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    554       0    1.000  0.0000        1.000        1.000
##    25    455     100    0.819  0.0163        0.788        0.852
##    50    357      97    0.644  0.0203        0.606        0.686
##    75    279      78    0.504  0.0212        0.464        0.547
##   100    232      47    0.419  0.0210        0.380        0.462
##   125    199      33    0.359  0.0204        0.321        0.401
##   150    178      21    0.321  0.0198        0.285        0.363
##   175    151      27    0.273  0.0189        0.238        0.312
##   200    133      18    0.240  0.0181        0.207        0.278
##   225     99      34    0.179  0.0163        0.149        0.214
##   250     78      21    0.141  0.0148        0.115        0.173
```

```
autoplot(all_fit)
```



Does Day Have an Effect?

I will use the Lubridate package here to determine the days that each of the subjects were observed for.

'Figure 7'

```
# Load the lubridate package
library(lubridate)
```

I want to see if there is any effect that day of week has on how the survival curve.

We create variable `dayofweek` which will be Sun-Sat from the `time` variable.

'Figure 8'

```
# Sample POSIXct datetime
SDdate <- stroke_data %>%
  mutate(dayofweek = wday(alld$time, label = TRUE)) %>%
  mutate( status = 1)
```

From there I am able to draw a survival curve that shows the effect of day of week. This is the only co-variate I am using in this graph, but participant could also be added.

Based on the graph, most of the days appear to have a similar shape, but Friday is has a larger survival percentage, which leads us to our next question...

NOTE: xlim creates a limit to the graph without actually removing data (in the instance of Friday, there was a case where time went way beyond the others, so I decided to truncate the data to be more visibly understandable) facet_wrap separates the graphs into each of variable objects (dayofweek would create 7 different graphs based on the day of the week) scale_y_log10 transforms the y axis to represent powers of 10 rather than a linear system

'Figure 9'

```
date_fit <- survfit(Surv(dur_s,status) ~ dayofweek , data = SDdate)
summary(date_fit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ dayofweek, data = SDdate)
##
##                 dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    472       0    1.000  0.0000       1.0000        1.000
##    25    355     117    0.752  0.0199       0.7142        0.792
##    50    268      88    0.566  0.0228       0.5227        0.612
##    75    210      57    0.445  0.0229       0.4023        0.492
##   100    172      38    0.364  0.0222       0.3235        0.411
##   125    139      33    0.294  0.0210       0.2561        0.339
##   150    119      20    0.252  0.0200       0.2158        0.294
##   175     97      22    0.206  0.0186       0.1721        0.245
##   200     85      12    0.180  0.0177       0.1486        0.218
##   225     71      14    0.150  0.0165       0.1214        0.186
##   250     59      12    0.125  0.0152       0.0985        0.159
##
##                 dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    477       0    1.000  0.0000       1.0000        1.000
##    25    359     119    0.751  0.0198       0.7127        0.790
##    50    254     105    0.530  0.0229       0.4874        0.577
##    75    174      79    0.365  0.0220       0.3240        0.411
##   100    129      45    0.270  0.0203       0.2334        0.313
##   125    110      19    0.231  0.0193       0.1957        0.272
##   150     98      12    0.205  0.0185       0.1722        0.245
##   175     87      11    0.182  0.0177       0.1508        0.221
##   200     77      10    0.161  0.0168       0.1316        0.198
##   225     71       7    0.147  0.0162       0.1182        0.182
##   250     60      10    0.126  0.0152       0.0993        0.159
##
##                 dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    528       0    1.000  0.0000        1.000        1.000
##    25    379     149    0.718  0.0196        0.680        0.757
##    50    291      88    0.551  0.0216        0.510        0.595
##    75    240      51    0.455  0.0217        0.414        0.499
##   100    185      55    0.350  0.0208        0.312        0.394
##   125    150      35    0.284  0.0196        0.248        0.325
##   150    128      22    0.242  0.0187        0.208        0.282
##   175    112      16    0.212  0.0178        0.180        0.250
##   200     95      17    0.180  0.0167        0.150        0.216
```

```
##   225     86       9    0.163  0.0161        0.134        0.198
##   250     74      12    0.140  0.0151        0.113        0.173
##
##                dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    482       0    1.000  0.0000       1.0000        1.000
##    25    340     142    0.705  0.0208       0.6658        0.747
##    50    250      90    0.519  0.0228       0.4759        0.565
##    75    197      53    0.409  0.0224       0.3671        0.455
##   100    157      40    0.326  0.0213       0.2865        0.370
##   125    130      27    0.270  0.0202       0.2329        0.312
##   150    108      22    0.224  0.0190       0.1898        0.265
##   175     96      13    0.197  0.0181       0.1646        0.236
##   200     84      11    0.174  0.0173       0.1435        0.212
##   225     65      19    0.135  0.0156       0.1076        0.169
##   250     57       8    0.118  0.0147       0.0927        0.151
##
##                dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    462       2    0.996 0.00304       0.9897        1.000
##    25    310     153    0.666 0.02190       0.6244        0.710
##    50    216      93    0.466 0.02316       0.4223        0.513
##    75    173      43    0.373 0.02245       0.3313        0.420
##   100    138      35    0.297 0.02122       0.2586        0.342
##   125    111      27    0.239 0.01980       0.2034        0.281
##   150     95      16    0.205 0.01873       0.1711        0.245
##   175     82      13    0.177 0.01771       0.1452        0.215
##   200     69      13    0.149 0.01652       0.1196        0.185
##   225     59      10    0.127 0.01547       0.1002        0.161
##   250     52       7    0.112 0.01464       0.0867        0.145
##
##                dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    476       1    0.998  0.0021        0.994        1.000
##    25    359     117    0.752  0.0198        0.714        0.792
##    50    271      87    0.569  0.0227        0.527        0.616
##    75    221      50    0.464  0.0229        0.422        0.511
##   100    187      34    0.393  0.0224        0.351        0.439
##   125    157      30    0.330  0.0215        0.290        0.375
##   150    132      25    0.277  0.0205        0.240        0.321
##   175    125       7    0.263  0.0202        0.226        0.305
##   200    117       8    0.246  0.0197        0.210        0.288
##   225    106      11    0.223  0.0191        0.188        0.263
##   250     93      13    0.195  0.0182        0.163        0.234
##
##                dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    483       0    1.000  0.0000        1.000        1.000
##    25    356     127    0.737  0.0200        0.699        0.777
##    50    268      88    0.555  0.0226        0.512        0.601
##    75    207      61    0.429  0.0225        0.387        0.475
##   100    162      45    0.335  0.0215        0.296        0.380
##   125    130      32    0.269  0.0202        0.232        0.312
##   150    112      18    0.232  0.0192        0.197        0.273
```

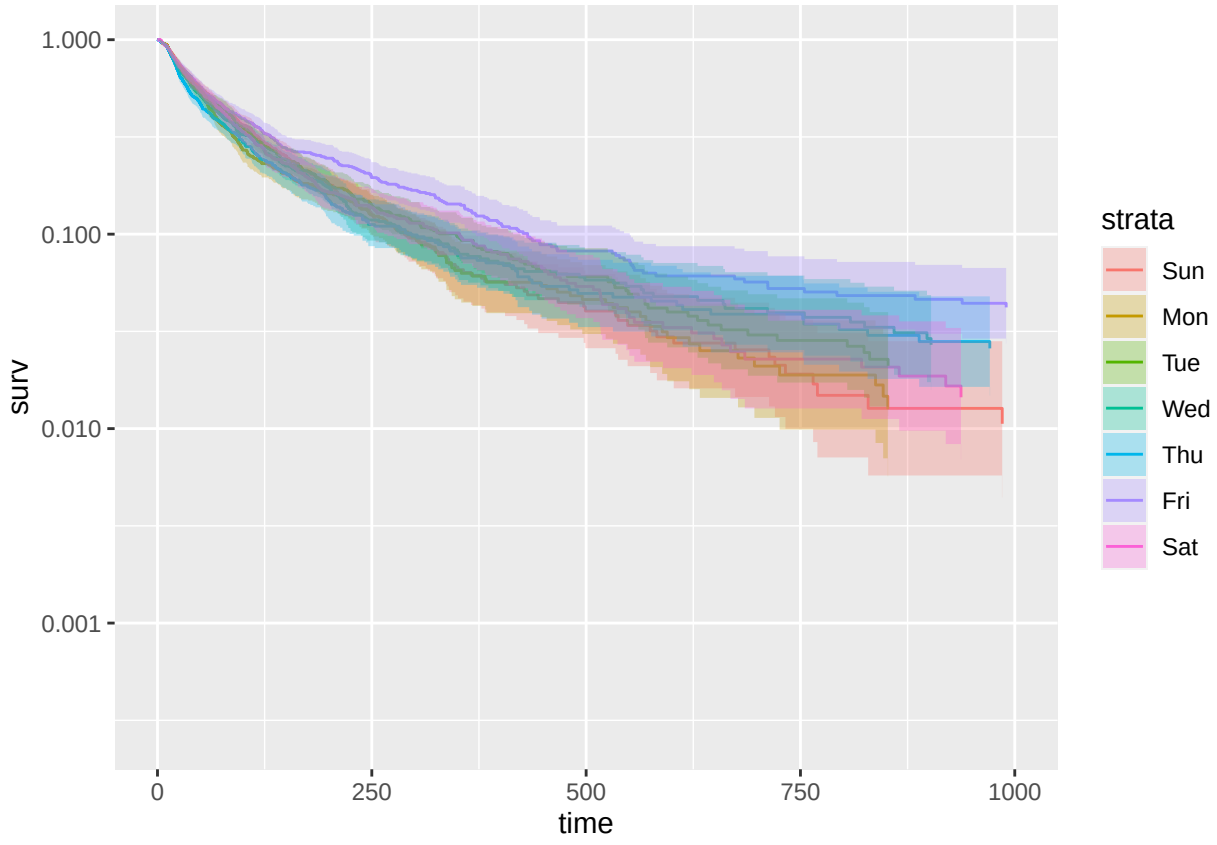
```
##   175      95      17    0.197  0.0181        0.164        0.236
##   200      79      16    0.164  0.0168        0.134        0.200
##   225      74       5    0.153  0.0164        0.124        0.189
##   250      66       8    0.137  0.0156        0.109        0.171
```

```
autoplot(date_fit) +
  xlim(c(0,1000)) +
  # facet_wrap(~strata) +
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.

## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis

## Warning: Removed 74 rows containing missing values (`geom_step()`).
```



Is the pattern for Friday consistent for everybody?

I am first going to break apart the data for each subject as each subject may have been given a tracking device on different days. Then I can break that apart by day to see if there appears to be any differences in days. I am doing this because Friday appears to have a higher survival percentage than the other days, but I want to find out if this is just because one or a few people are causing this effect or if can be generalized.

'Figure 10'

```
date_fit2 <- survfit(Surv(dur_s,status) ~ dayofweek , data = SDdate)
summary(date_fit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ dayofweek, data = SDdate)
##
##                 dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    472       0    1.000  0.0000       1.0000        1.000
##    25    355     117    0.752  0.0199       0.7142        0.792
##    50    268      88    0.566  0.0228       0.5227        0.612
##    75    210      57    0.445  0.0229       0.4023        0.492
##   100    172      38    0.364  0.0222       0.3235        0.411
##   125    139      33    0.294  0.0210       0.2561        0.339
##   150    119      20    0.252  0.0200       0.2158        0.294
##   175     97      22    0.206  0.0186       0.1721        0.245
##   200     85      12    0.180  0.0177       0.1486        0.218
##   225     71      14    0.150  0.0165       0.1214        0.186
##   250     59      12    0.125  0.0152       0.0985        0.159
##
##                 dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    477       0    1.000  0.0000       1.0000        1.000
##    25    359     119    0.751  0.0198       0.7127        0.790
##    50    254     105    0.530  0.0229       0.4874        0.577
##    75    174      79    0.365  0.0220       0.3240        0.411
##   100    129      45    0.270  0.0203       0.2334        0.313
##   125    110      19    0.231  0.0193       0.1957        0.272
##   150     98      12    0.205  0.0185       0.1722        0.245
##   175     87      11    0.182  0.0177       0.1508        0.221
##   200     77      10    0.161  0.0168       0.1316        0.198
##   225     71       7    0.147  0.0162       0.1182        0.182
##   250     60      10    0.126  0.0152       0.0993        0.159
##
##                 dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    528       0    1.000  0.0000        1.000        1.000
##    25    379     149    0.718  0.0196        0.680        0.757
##    50    291      88    0.551  0.0216        0.510        0.595
##    75    240      51    0.455  0.0217        0.414        0.499
##   100    185      55    0.350  0.0208        0.312        0.394
##   125    150      35    0.284  0.0196        0.248        0.325
##   150    128      22    0.242  0.0187        0.208        0.282
##   175    112      16    0.212  0.0178        0.180        0.250
##   200     95      17    0.180  0.0167        0.150        0.216
##   225     86       9    0.163  0.0161        0.134        0.198
##   250     74      12    0.140  0.0151        0.113        0.173
##
##                 dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    482       0    1.000  0.0000       1.0000        1.000
##    25    340     142    0.705  0.0208       0.6658        0.747
##    50    250      90    0.519  0.0228       0.4759        0.565
```

```
##    75    197      53    0.409  0.0224       0.3671        0.455
##   100    157      40    0.326  0.0213       0.2865        0.370
##   125    130      27    0.270  0.0202       0.2329        0.312
##   150    108      22    0.224  0.0190       0.1898        0.265
##   175     96      13    0.197  0.0181       0.1646        0.236
##   200     84      11    0.174  0.0173       0.1435        0.212
##   225     65      19    0.135  0.0156       0.1076        0.169
##   250     57       8    0.118  0.0147       0.0927        0.151
##
##                dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    462       2    0.996 0.00304       0.9897        1.000
##    25    310     153    0.666 0.02190       0.6244        0.710
##    50    216      93    0.466 0.02316       0.4223        0.513
##    75    173      43    0.373 0.02245       0.3313        0.420
##   100    138      35    0.297 0.02122       0.2586        0.342
##   125    111      27    0.239 0.01980       0.2034        0.281
##   150     95      16    0.205 0.01873       0.1711        0.245
##   175     82      13    0.177 0.01771       0.1452        0.215
##   200     69      13    0.149 0.01652       0.1196        0.185
##   225     59      10    0.127 0.01547       0.1002        0.161
##   250     52       7    0.112 0.01464       0.0867        0.145
##
##                dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    476       1    0.998  0.0021        0.994        1.000
##    25    359     117    0.752  0.0198        0.714        0.792
##    50    271      87    0.569  0.0227        0.527        0.616
##    75    221      50    0.464  0.0229        0.422        0.511
##   100    187      34    0.393  0.0224        0.351        0.439
##   125    157      30    0.330  0.0215        0.290        0.375
##   150    132      25    0.277  0.0205        0.240        0.321
##   175    125       7    0.263  0.0202        0.226        0.305
##   200    117       8    0.246  0.0197        0.210        0.288
##   225    106      11    0.223  0.0191        0.188        0.263
##   250     93      13    0.195  0.0182        0.163        0.234
##
##                dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    483       0    1.000  0.0000        1.000        1.000
##    25    356     127    0.737  0.0200        0.699        0.777
##    50    268      88    0.555  0.0226        0.512        0.601
##    75    207      61    0.429  0.0225        0.387        0.475
##   100    162      45    0.335  0.0215        0.296        0.380
##   125    130      32    0.269  0.0202        0.232        0.312
##   150    112      18    0.232  0.0192        0.197        0.273
##   175     95      17    0.197  0.0181        0.164        0.236
##   200     79      16    0.164  0.0168        0.134        0.200
##   225     74       5    0.153  0.0164        0.124        0.189
##   250     66       8    0.137  0.0156        0.109        0.171
```

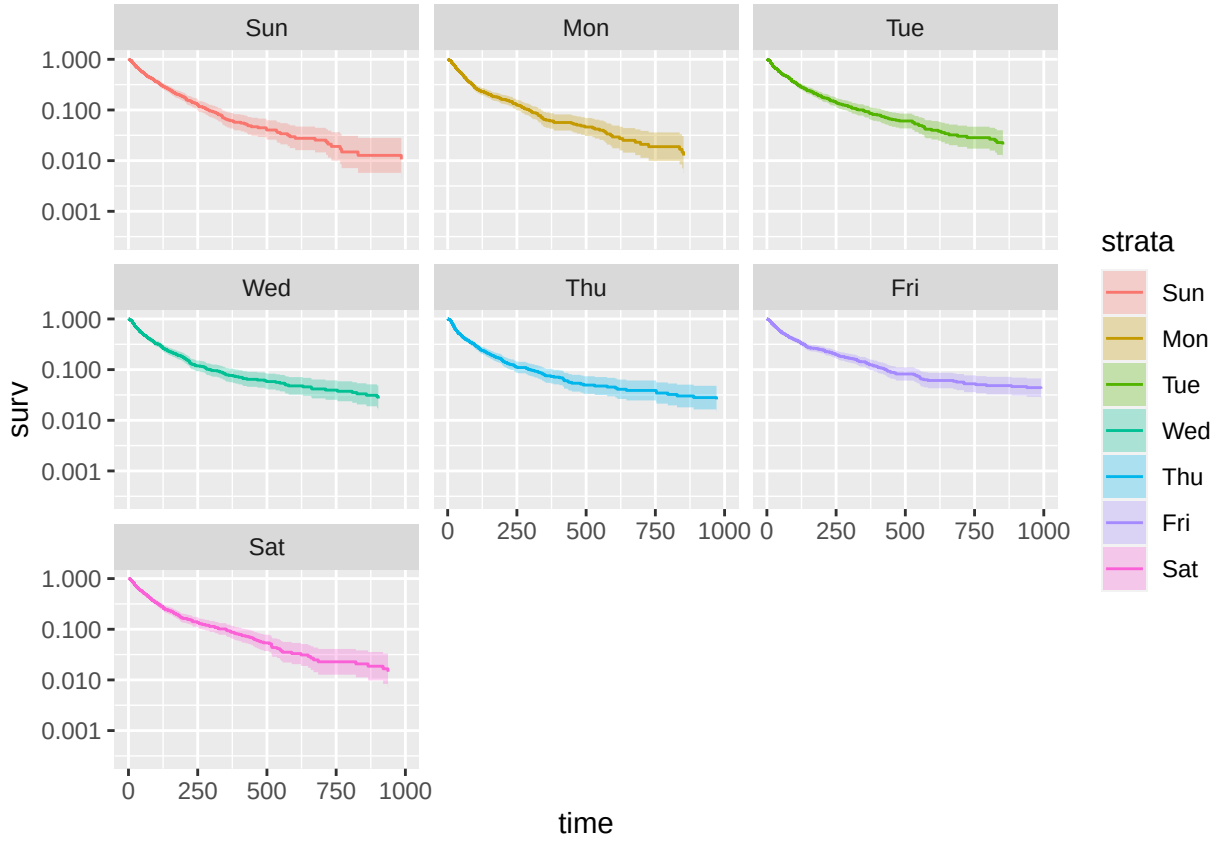
```
autoplot(date_fit2) +
  xlim(c(0,1000)) +
  facet_wrap(~strata) +
```

```
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.
```

```
## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis
```

```
## Warning: Removed 74 rows containing missing values (`geom_step()`).
```



We can see that there does appear to be a slight difference based on day of week, but I am going to dig further to see if there is any difference based on subjects. It is known that the subjects received the tracking device on different days, so I want to explore if that makes a difference.

'Figure 11'

```
dayfit <- survfit(Surv(dur_s,status) ~ subj + dayofweek , data = SDdate)
summary(dayfit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ subj + dayofweek, data = SDdate)
##
##                  subj=007, dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     98       0    1.000  0.0000       1.0000        1.000
```

```
##    25     82      16    0.837  0.0373       0.7667        0.913
##    50     57      26    0.571  0.0500       0.4814        0.678
##    75     46      10    0.469  0.0504       0.3803        0.579
##   100     37       9    0.378  0.0490       0.2928        0.487
##   125     28       9    0.286  0.0456       0.2089        0.391
##   150     22       6    0.224  0.0421       0.1554        0.324
##   175     19       3    0.194  0.0399       0.1295        0.290
##   200     15       4    0.153  0.0364       0.0961        0.244
##   225     14       1    0.143  0.0353       0.0880        0.232
##   250     14       0    0.143  0.0353       0.0880        0.232
##
##                 subj=007, dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     98       0   1.0000  0.0000       1.0000        1.000
##    25     80      19   0.8061  0.0399       0.7315        0.888
##    50     57      22   0.5816  0.0498       0.4917        0.688
##    75     30      27   0.3061  0.0466       0.2272        0.412
##   100     22       8   0.2245  0.0421       0.1554        0.324
##   125     17       5   0.1735  0.0382       0.1126        0.267
##   150     14       3   0.1429  0.0353       0.0880        0.232
##   175     13       1   0.1327  0.0343       0.0800        0.220
##   200     12       1   0.1224  0.0331       0.0721        0.208
##   225     12       0   0.1224  0.0331       0.0721        0.208
##   250      9       3   0.0918  0.0292       0.0493        0.171
##
##                 subj=007, dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     98       0    1.000  0.0000        1.000        1.000
##    25     78      20    0.796  0.0407        0.720        0.880
##    50     62      16    0.633  0.0487        0.544        0.736
##    75     52      10    0.531  0.0504        0.440        0.639
##   100     46       6    0.469  0.0504        0.380        0.579
##   125     41       5    0.418  0.0498        0.331        0.528
##   150     35       6    0.357  0.0484        0.274        0.466
##   175     30       5    0.306  0.0466        0.227        0.412
##   200     23       7    0.235  0.0428        0.164        0.336
##   225     23       0    0.235  0.0428        0.164        0.336
##   250     20       3    0.204  0.0407        0.138        0.302
##
##                 subj=007, dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     53       0   1.0000  0.0000       1.0000        1.000
##    25     39      14   0.7358  0.0606       0.6262        0.865
##    50     28      11   0.5283  0.0686       0.4096        0.681
##    75     21       7   0.3962  0.0672       0.2842        0.552
##   100     16       5   0.3019  0.0631       0.2005        0.455
##   125     10       6   0.1887  0.0537       0.1080        0.330
##   150      9       1   0.1698  0.0516       0.0936        0.308
##   175      9       0   0.1698  0.0516       0.0936        0.308
##   200      9       0   0.1698  0.0516       0.0936        0.308
##   225      5       4   0.0943  0.0402       0.0410        0.217
##   250      3       2   0.0566  0.0317       0.0189        0.170
##
##                 subj=007, dayofweek=Thu
```

```
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     39       0   1.0000  0.0000       1.0000        1.000
##    25     23      16   0.5897  0.0788       0.4539        0.766
##    50     16       7   0.4103  0.0788       0.2816        0.598
##    75     13       3   0.3333  0.0755       0.2139        0.520
##   100     10       3   0.2564  0.0699       0.1503        0.438
##   125      6       4   0.1538  0.0578       0.0737        0.321
##   150      4       2   0.1026  0.0486       0.0405        0.260
##   175      2       2   0.0513  0.0353       0.0133        0.198
##   200      1       1   0.0256  0.0253       0.0037        0.177
##   225      1       0   0.0256  0.0253       0.0037        0.177
##   250      1       0   0.0256  0.0253       0.0037        0.177
##
##                subj=007, dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     47       0    1.000  0.0000        1.000        1.000
##    25     38       9    0.809  0.0574        0.703        0.929
##    50     29       9    0.617  0.0709        0.493        0.773
##    75     24       5    0.511  0.0729        0.386        0.676
##   100     21       3    0.447  0.0725        0.325        0.614
##   125     19       2    0.404  0.0716        0.286        0.572
##   150     16       3    0.340  0.0691        0.229        0.507
##   175     16       0    0.340  0.0691        0.229        0.507
##   200     14       2    0.298  0.0667        0.192        0.462
##   225     13       1    0.277  0.0652        0.174        0.439
##   250     11       2    0.234  0.0618        0.140        0.393
##
##                subj=007, dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    105       0    1.000  0.0000       1.0000        1.000
##    25     85      20    0.810  0.0383       0.7378        0.888
##    50     67      18    0.638  0.0469       0.5525        0.737
##    75     47      20    0.448  0.0485       0.3619        0.554
##   100     38       9    0.362  0.0469       0.2807        0.467
##   125     27      11    0.257  0.0427       0.1858        0.356
##   150     21       6    0.200  0.0390       0.1364        0.293
##   175     16       5    0.152  0.0351       0.0971        0.239
##   200     14       2    0.133  0.0332       0.0819        0.217
##   225     13       1    0.124  0.0321       0.0744        0.206
##   250     12       1    0.114  0.0310       0.0671        0.195
##
##                subj=010, dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     52       0   1.0000  0.0000       1.0000        1.000
##    25     32      20   0.6154  0.0675       0.4964        0.763
##    50     20      12   0.3846  0.0675       0.2727        0.542
##    75     14       6   0.2692  0.0615       0.1720        0.421
##   100     10       4   0.1923  0.0547       0.1102        0.336
##   125      8       2   0.1538  0.0500       0.0813        0.291
##   150      6       2   0.1154  0.0443       0.0544        0.245
##   175      6       0   0.1154  0.0443       0.0544        0.245
##   200      4       2   0.0769  0.0370       0.0300        0.197
##   225      4       0   0.0769  0.0370       0.0300        0.197
##   250      4       0   0.0769  0.0370       0.0300        0.197
```

```
##
##                 subj=010, dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     46       0   1.0000  0.0000      1.00000        1.000
##    25     25      21   0.5435  0.0734      0.41702        0.708
##    50     16      10   0.3261  0.0691      0.21523        0.494
##    75      9       6   0.1957  0.0585      0.10890        0.352
##   100      5       4   0.1087  0.0459      0.04751        0.249
##   125      4       1   0.0870  0.0415      0.03409        0.222
##   150      4       0   0.0870  0.0415      0.03409        0.222
##   175      3       1   0.0652  0.0364      0.02184        0.195
##   200      3       0   0.0652  0.0364      0.02184        0.195
##   225      3       0   0.0652  0.0364      0.02184        0.195
##   250      1       2   0.0217  0.0215      0.00313        0.151
##
##                 subj=010, dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     45       0   1.0000  0.0000       1.0000        1.000
##    25     31      14   0.6889  0.0690       0.5661        0.838
##    50     22       9   0.4889  0.0745       0.3626        0.659
##    75     17       5   0.3778  0.0723       0.2597        0.550
##   100      7      10   0.1556  0.0540       0.0787        0.307
##   125      4       3   0.0889  0.0424       0.0349        0.227
##   150      3       1   0.0667  0.0372       0.0223        0.199
##   175      3       0   0.0667  0.0372       0.0223        0.199
##   200      1       2   0.0222  0.0220       0.0032        0.154
##   225      1       0   0.0222  0.0220       0.0032        0.154
##   250      1       0   0.0222  0.0220       0.0032        0.154
##
##                 subj=010, dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     40       0    1.000  0.0000      1.00000        1.000
##    25     27      13    0.675  0.0741      0.54440        0.837
##    50     17      10    0.425  0.0782      0.29638        0.609
##    75     11       6    0.275  0.0706      0.16627        0.455
##   100      6       5    0.150  0.0565      0.07173        0.314
##   125      4       2    0.100  0.0474      0.03947        0.253
##   150      3       1    0.075  0.0416      0.02526        0.223
##   175      3       0    0.075  0.0416      0.02526        0.223
##   200      2       1    0.050  0.0345      0.01295        0.193
##   225      1       1    0.025  0.0247      0.00361        0.173
##   250      1       0    0.025  0.0247      0.00361        0.173
##
##                 subj=010, dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     79       0   1.0000  0.0000       1.0000        1.000
##    25     43      36   0.5443  0.0560       0.4449        0.666
##    50     31      12   0.3924  0.0549       0.2982        0.516
##    75     22       9   0.2785  0.0504       0.1953        0.397
##   100     16       6   0.2025  0.0452       0.1308        0.314
##   125     13       3   0.1646  0.0417       0.1001        0.270
##   150     10       3   0.1266  0.0374       0.0709        0.226
##   175      8       2   0.1013  0.0339       0.0525        0.195
##   200      7       1   0.0886  0.0320       0.0437        0.180
```

```
##   225      5       2   0.0633  0.0274       0.0271        0.148
##   250      4       1   0.0506  0.0247       0.0195        0.132
##
##                subj=010, dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     84       1    0.988  0.0118       0.9652        1.000
##    25     50      33    0.595  0.0536       0.4990        0.710
##    50     38      12    0.452  0.0543       0.3575        0.572
##    75     28      10    0.333  0.0514       0.2463        0.451
##   100     26       2    0.310  0.0504       0.2249        0.426
##   125     20       6    0.238  0.0465       0.1624        0.349
##   150     16       4    0.190  0.0428       0.1226        0.296
##   175     15       1    0.179  0.0418       0.1129        0.282
##   200     13       2    0.155  0.0395       0.0939        0.255
##   225     13       0    0.155  0.0395       0.0939        0.255
##   250     10       3    0.119  0.0353       0.0665        0.213
##
##                subj=010, dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     43       0    1.000  0.0000       1.0000        1.000
##    25     28      15    0.651  0.0727       0.5232        0.810
##    50     19       9    0.442  0.0757       0.3158        0.618
##    75     13       6    0.302  0.0700       0.1920        0.476
##   100     11       2    0.256  0.0665       0.1536        0.426
##   125     10       1    0.233  0.0644       0.1351        0.400
##   150      9       1    0.209  0.0620       0.1171        0.374
##   175      8       1    0.186  0.0593       0.0996        0.348
##   200      7       1    0.163  0.0563       0.0827        0.321
##   225      7       0    0.163  0.0563       0.0827        0.321
##   250      5       2    0.116  0.0489       0.0510        0.265
##
##                subj=016, dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     43       0    1.000  0.0000       1.0000        1.000
##    25     28      15    0.651  0.0727       0.5232        0.810
##    50     19       9    0.442  0.0757       0.3158        0.618
##    75     19       0    0.442  0.0757       0.3158        0.618
##   100     16       3    0.372  0.0737       0.2524        0.549
##   125     13       3    0.302  0.0700       0.1920        0.476
##   150     12       1    0.279  0.0684       0.1726        0.451
##   175      9       3    0.209  0.0620       0.1171        0.374
##   200      9       0    0.209  0.0620       0.1171        0.374
##   225      8       1    0.186  0.0593       0.0996        0.348
##   250      8       0    0.186  0.0593       0.0996        0.348
##
##                subj=016, dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     61       0   1.0000  0.0000       1.0000        1.000
##    25     40      21   0.6557  0.0608       0.5467        0.786
##    50     24      16   0.3934  0.0625       0.2881        0.537
##    75     17       7   0.2787  0.0574       0.1861        0.417
##   100     11       6   0.1803  0.0492       0.1056        0.308
##   125     10       1   0.1639  0.0474       0.0930        0.289
##   150      7       3   0.1148  0.0408       0.0572        0.230
```

```
##   175      5       2   0.0820  0.0351       0.0354        0.190
##   200      5       0   0.0820  0.0351       0.0354        0.190
##   225      5       0   0.0820  0.0351       0.0354        0.190
##   250      4       1   0.0656  0.0317       0.0254        0.169
##
##                 subj=016, dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     60       0    1.000  0.0000       1.0000        1.000
##    25     37      23    0.617  0.0628       0.5051        0.753
##    50     27      10    0.450  0.0642       0.3402        0.595
##    75     22       5    0.367  0.0622       0.2629        0.511
##   100     15       7    0.250  0.0559       0.1613        0.388
##   125     12       3    0.200  0.0516       0.1206        0.332
##   150      9       3    0.150  0.0461       0.0821        0.274
##   175      9       0    0.150  0.0461       0.0821        0.274
##   200      8       1    0.133  0.0439       0.0699        0.254
##   225      7       1    0.117  0.0414       0.0582        0.234
##   250      6       1    0.100  0.0387       0.0468        0.214
##
##                 subj=016, dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     43       0    1.000  0.0000       1.0000        1.000
##    25     29      14    0.674  0.0715       0.5479        0.830
##    50     22       7    0.512  0.0762       0.3821        0.685
##    75     15       7    0.349  0.0727       0.2319        0.525
##   100     11       4    0.256  0.0665       0.1536        0.426
##   125      9       2    0.209  0.0620       0.1171        0.374
##   150      7       2    0.163  0.0563       0.0827        0.321
##   175      6       1    0.140  0.0528       0.0664        0.293
##   200      5       1    0.116  0.0489       0.0510        0.265
##   225      4       1    0.093  0.0443       0.0366        0.237
##   250      4       0    0.093  0.0443       0.0366        0.237
##
##                 subj=016, dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     36       0    1.000  0.0000       1.0000        1.000
##    25     23      13    0.639  0.0801       0.4998        0.817
##    50     16       7    0.444  0.0828       0.3085        0.640
##    75     15       1    0.417  0.0822       0.2831        0.613
##   100     13       2    0.361  0.0801       0.2339        0.558
##   125      9       4    0.250  0.0722       0.1420        0.440
##   150      5       4    0.139  0.0576       0.0616        0.313
##   175      5       0    0.139  0.0576       0.0616        0.313
##   200      5       0    0.139  0.0576       0.0616        0.313
##   225      5       0    0.139  0.0576       0.0616        0.313
##   250      5       0    0.139  0.0576       0.0616        0.313
##
##                 subj=016, dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     48       0    1.000  0.0000       1.0000        1.000
##    25     33      15    0.687  0.0669       0.5681        0.832
##    50     24       9    0.500  0.0722       0.3768        0.663
##    75     19       5    0.396  0.0706       0.2791        0.561
##   100     19       0    0.396  0.0706       0.2791        0.561
```

```
##   125     15       4    0.312  0.0669       0.2054        0.475
##   150     13       2    0.271  0.0641       0.1703        0.431
##   175     12       1    0.250  0.0625       0.1532        0.408
##   200     11       1    0.229  0.0607       0.1364        0.385
##   225      9       2    0.187  0.0563       0.1041        0.338
##   250      7       2    0.146  0.0509       0.0735        0.289
##
##                subj=016, dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     51       0    1.000  0.0000        1.000        1.000
##    25     37      14    0.725  0.0625        0.613        0.859
##    50     26      11    0.510  0.0700        0.390        0.667
##    75     23       3    0.451  0.0697        0.333        0.610
##   100     15       8    0.294  0.0638        0.192        0.450
##   125     10       5    0.196  0.0556        0.112        0.342
##   150     10       0    0.196  0.0556        0.112        0.342
##   175     10       0    0.196  0.0556        0.112        0.342
##   200      8       2    0.157  0.0509        0.083        0.296
##   225      8       0    0.157  0.0509        0.083        0.296
##   250      8       0    0.157  0.0509        0.083        0.296
##
##                subj=019, dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     70       0   1.0000  0.0000      1.00000        1.000
##    25     42      28   0.6000  0.0586      0.49554        0.726
##    50     33       9   0.4714  0.0597      0.36786        0.604
##    75     21      12   0.3000  0.0548      0.20976        0.429
##   100     12       9   0.1714  0.0450      0.10243        0.287
##   125      8       4   0.1143  0.0380      0.05953        0.219
##   150      5       3   0.0714  0.0308      0.03069        0.166
##   175      4       1   0.0571  0.0277      0.02206        0.148
##   200      2       2   0.0286  0.0199      0.00729        0.112
##   225      1       1   0.0143  0.0142      0.00204        0.100
##
##                subj=019, dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     83       0   1.0000  0.0000      1.00000       1.0000
##    25     53      30   0.6386  0.0527      0.54313       0.7507
##    50     27      26   0.3253  0.0514      0.23863       0.4434
##    75     15      12   0.1807  0.0422      0.11431       0.2857
##   100      4      11   0.0482  0.0235      0.01853       0.1254
##   125      1       3   0.0120  0.0120      0.00172       0.0845
##
##                subj=019, dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    123       0  1.00000  0.0000      1.00000       1.0000
##    25     69      54  0.56098  0.0447      0.47979       0.6559
##    50     40      29  0.32520  0.0422      0.25211       0.4195
##    75     30      10  0.24390  0.0387      0.17868       0.3329
##   100     13      17  0.10569  0.0277      0.06321       0.1767
##   125      5       8  0.04065  0.0178      0.01723       0.0959
##   150      2       3  0.01626  0.0114      0.00411       0.0643
##   175      1       1  0.00813  0.0081      0.00115       0.0573
##   200      1       0  0.00813  0.0081      0.00115       0.0573
```

```
##
##                 subj=019, dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    129       0  1.00000 0.00000       1.0000       1.0000
##    25     62      67  0.48062 0.04399       0.4017       0.5751
##    50     27      35  0.20930 0.03582       0.1497       0.2927
##    75     17      10  0.13178 0.02978       0.0846       0.2052
##   100      9       8  0.06977 0.02243       0.0372       0.1310
##   125      4       5  0.03101 0.01526       0.0118       0.0814
##   150      1       3  0.00775 0.00772       0.0011       0.0546
##
##                 subj=019, dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     79       0   1.0000  0.0000       1.0000        1.000
##    25     37      42   0.4684  0.0561       0.3703        0.592
##    50     22      15   0.2785  0.0504       0.1953        0.397
##    75     16       6   0.2025  0.0452       0.1308        0.314
##   100      8       8   0.1013  0.0339       0.0525        0.195
##   125      6       2   0.0759  0.0298       0.0352        0.164
##   150      5       1   0.0633  0.0274       0.0271        0.148
##   175      5       0   0.0633  0.0274       0.0271        0.148
##   200      4       1   0.0506  0.0247       0.0195        0.132
##   225      4       0   0.0506  0.0247       0.0195        0.132
##   250      4       0   0.0506  0.0247       0.0195        0.132
##
##                 subj=019, dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     82       0   1.0000  0.0000       1.0000       1.0000
##    25     59      24   0.7073  0.0502       0.6154       0.8130
##    50     30      28   0.3659  0.0532       0.2751       0.4865
##    75     22       8   0.2683  0.0489       0.1877       0.3836
##   100     17       5   0.2073  0.0448       0.1358       0.3165
##   125     10       7   0.1220  0.0361       0.0682       0.2180
##   150      3       7   0.0366  0.0207       0.0120       0.1111
##   175      2       1   0.0244  0.0170       0.0062       0.0959
##   200      2       0   0.0244  0.0170       0.0062       0.0959
##
##                 subj=019, dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     92       0   1.0000  0.0000      1.00000       1.0000
##    25     45      47   0.4891  0.0521      0.39694       0.6027
##    50     25      20   0.2717  0.0464      0.19448       0.3797
##    75     19       6   0.2065  0.0422      0.13836       0.3083
##   100     11       8   0.1196  0.0338      0.06867       0.2082
##   125      9       2   0.0978  0.0310      0.05260       0.1820
##   150      4       5   0.0435  0.0213      0.01667       0.1134
##   175      3       1   0.0326  0.0185      0.01071       0.0992
##   200      2       1   0.0217  0.0152      0.00552       0.0856
##   225      1       1   0.0109  0.0108      0.00155       0.0763
##   250      1       0   0.0109  0.0108      0.00155       0.0763
##
##                 subj=027, dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     51       0    1.000  0.0000        1.000        1.000
```

```
##    25     38      13    0.745  0.0610        0.635        0.875
##    50     31       7    0.608  0.0684        0.488        0.758
##    75     29       2    0.569  0.0694        0.448        0.722
##   100     25       4    0.490  0.0700        0.371        0.649
##   125     18       7    0.353  0.0669        0.243        0.512
##   150     15       3    0.294  0.0638        0.192        0.450
##   175     14       1    0.275  0.0625        0.176        0.429
##   200     13       1    0.255  0.0610        0.159        0.408
##   225     12       1    0.235  0.0594        0.143        0.386
##   250     10       2    0.196  0.0556        0.112        0.342
##
##                subj=027, dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     56       0    1.000  0.0000        1.000        1.000
##    25     48       8    0.857  0.0468        0.770        0.954
##    50     36      12    0.643  0.0640        0.529        0.781
##    75     29       7    0.518  0.0668        0.402        0.667
##   100     26       3    0.464  0.0666        0.350        0.615
##   125     23       3    0.411  0.0657        0.300        0.562
##   150     21       2    0.375  0.0647        0.267        0.526
##   175     21       0    0.375  0.0647        0.267        0.526
##   200     20       1    0.357  0.0640        0.251        0.508
##   225     20       0    0.357  0.0640        0.251        0.508
##   250     18       2    0.321  0.0624        0.220        0.470
##
##                subj=027, dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     67       0    1.000  0.0000        1.000        1.000
##    25     53      14    0.791  0.0497        0.699        0.895
##    50     48       5    0.716  0.0551        0.616        0.833
##    75     42       6    0.627  0.0591        0.521        0.754
##   100     40       2    0.597  0.0599        0.490        0.727
##   125     35       5    0.522  0.0610        0.415        0.657
##   150     32       3    0.478  0.0610        0.372        0.614
##   175     30       2    0.448  0.0608        0.343        0.584
##   200     28       2    0.418  0.0603        0.315        0.554
##   225     27       1    0.403  0.0599        0.301        0.539
##   250     27       0    0.403  0.0599        0.301        0.539
##
##                subj=027, dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     87       0    1.000  0.0000        1.000        1.000
##    25     71      16    0.816  0.0415        0.739        0.902
##    50     61      10    0.701  0.0491        0.611        0.804
##    75     54       7    0.621  0.0520        0.527        0.732
##   100     46       8    0.529  0.0535        0.434        0.645
##   125     44       2    0.506  0.0536        0.411        0.623
##   150     39       5    0.448  0.0533        0.355        0.566
##   175     36       3    0.414  0.0528        0.322        0.531
##   200     32       4    0.368  0.0517        0.279        0.484
##   225     32       0    0.368  0.0517        0.279        0.484
##   250     32       0    0.368  0.0517        0.279        0.484
##
##                subj=027, dayofweek=Thu
```

```
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     54       0    1.000  0.0000        1.000        1.000
##    25     46       8    0.852  0.0483        0.762        0.952
##    50     40       6    0.741  0.0596        0.633        0.867
##    75     33       7    0.611  0.0663        0.494        0.756
##   100     32       1    0.593  0.0669        0.475        0.739
##   125     29       3    0.537  0.0679        0.419        0.688
##   150     29       0    0.537  0.0679        0.419        0.688
##   175     27       2    0.500  0.0680        0.383        0.653
##   200     25       2    0.463  0.0679        0.347        0.617
##   225     24       1    0.444  0.0676        0.330        0.599
##   250     24       0    0.444  0.0676        0.330        0.599
##
##                subj=027, dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     61       0    1.000  0.0000        1.000        1.000
##    25     52       9    0.852  0.0454        0.768        0.946
##    50     45       7    0.738  0.0563        0.635        0.857
##    75     40       5    0.656  0.0608        0.547        0.786
##   100     36       4    0.590  0.0630        0.479        0.727
##   125     36       0    0.590  0.0630        0.479        0.727
##   150     33       3    0.541  0.0638        0.429        0.682
##   175     31       2    0.508  0.0640        0.397        0.650
##   200     30       1    0.492  0.0640        0.381        0.635
##   225     30       0    0.492  0.0640        0.381        0.635
##   250     30       0    0.492  0.0640        0.381        0.635
##
##                subj=027, dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     58       0    1.000  0.0000        1.000        1.000
##    25     46      12    0.793  0.0532        0.695        0.905
##    50     42       4    0.724  0.0587        0.618        0.849
##    75     37       5    0.638  0.0631        0.525        0.774
##   100     35       2    0.603  0.0642        0.490        0.743
##   125     31       4    0.534  0.0655        0.420        0.680
##   150     30       1    0.517  0.0656        0.403        0.663
##   175     27       3    0.466  0.0655        0.353        0.613
##   200     25       2    0.431  0.0650        0.321        0.579
##   225     23       2    0.397  0.0642        0.289        0.545
##   250     21       2    0.362  0.0631        0.257        0.510
##
##                subj=031, dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    158       0    1.000  0.0000       1.0000        1.000
##    25    133      25    0.842  0.0290       0.7867        0.901
##    50    108      25    0.684  0.0370       0.6147        0.760
##    75     81      27    0.513  0.0398       0.4404        0.597
##   100     72       9    0.456  0.0396       0.3843        0.540
##   125     64       8    0.405  0.0391       0.3353        0.489
##   150     59       5    0.373  0.0385       0.3051        0.457
##   175     45      14    0.285  0.0359       0.2225        0.365
##   200     42       3    0.266  0.0351       0.2051        0.344
##   225     32      10    0.203  0.0320       0.1486        0.276
##   250     23       9    0.146  0.0281       0.0998        0.212
```

```
##
##                 subj=031, dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    133       0    1.000  0.0000        1.000        1.000
##    25    113      20    0.850  0.0310        0.791        0.913
##    50     94      19    0.707  0.0395        0.633        0.789
##    75     74      20    0.556  0.0431        0.478        0.648
##   100     61      13    0.459  0.0432        0.381        0.552
##   125     55       6    0.414  0.0427        0.338        0.506
##   150     52       3    0.391  0.0423        0.316        0.483
##   175     45       7    0.338  0.0410        0.267        0.429
##   200     37       8    0.278  0.0389        0.212        0.366
##   225     31       7    0.226  0.0362        0.165        0.309
##   250     28       2    0.211  0.0354        0.151        0.293
##
##                 subj=031, dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    135       0    1.000  0.0000       1.0000        1.000
##    25    111      24    0.822  0.0329       0.7602        0.889
##    50     92      19    0.681  0.0401       0.6073        0.765
##    75     77      15    0.570  0.0426       0.4927        0.660
##   100     64      13    0.474  0.0430       0.3969        0.566
##   125     53      11    0.393  0.0420       0.3183        0.484
##   150     47       6    0.348  0.0410       0.2764        0.439
##   175     39       8    0.289  0.0390       0.2217        0.376
##   200     34       5    0.252  0.0374       0.1883        0.337
##   225     28       6    0.207  0.0349       0.1491        0.288
##   250     20       8    0.148  0.0306       0.0989        0.222
##
##                 subj=031, dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    130       0    1.000  0.0000        1.000        1.000
##    25    112      18    0.862  0.0303        0.804        0.923
##    50     95      17    0.731  0.0389        0.658        0.811
##    75     79      16    0.608  0.0428        0.529        0.698
##   100     69      10    0.531  0.0438        0.452        0.624
##   125     59      10    0.454  0.0437        0.376        0.548
##   150     49      10    0.377  0.0425        0.302        0.470
##   175     42       8    0.315  0.0408        0.245        0.406
##   200     36       5    0.277  0.0392        0.210        0.366
##   225     23      13    0.177  0.0335        0.122        0.256
##   250     17       6    0.131  0.0296        0.084        0.204
##
##                 subj=031, dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    175       2   0.9887 0.00794       0.9733        1.000
##    25    138      38   0.7740 0.03144       0.7148        0.838
##    50     91      46   0.5141 0.03757       0.4455        0.593
##    75     74      17   0.4181 0.03707       0.3514        0.497
##   100     59      15   0.3333 0.03543       0.2706        0.411
##   125     48      11   0.2712 0.03342       0.2130        0.345
##   150     42       6   0.2373 0.03198       0.1822        0.309
##   175     35       7   0.1977 0.02994       0.1470        0.266
##   200     27       8   0.1525 0.02703       0.1078        0.216
```

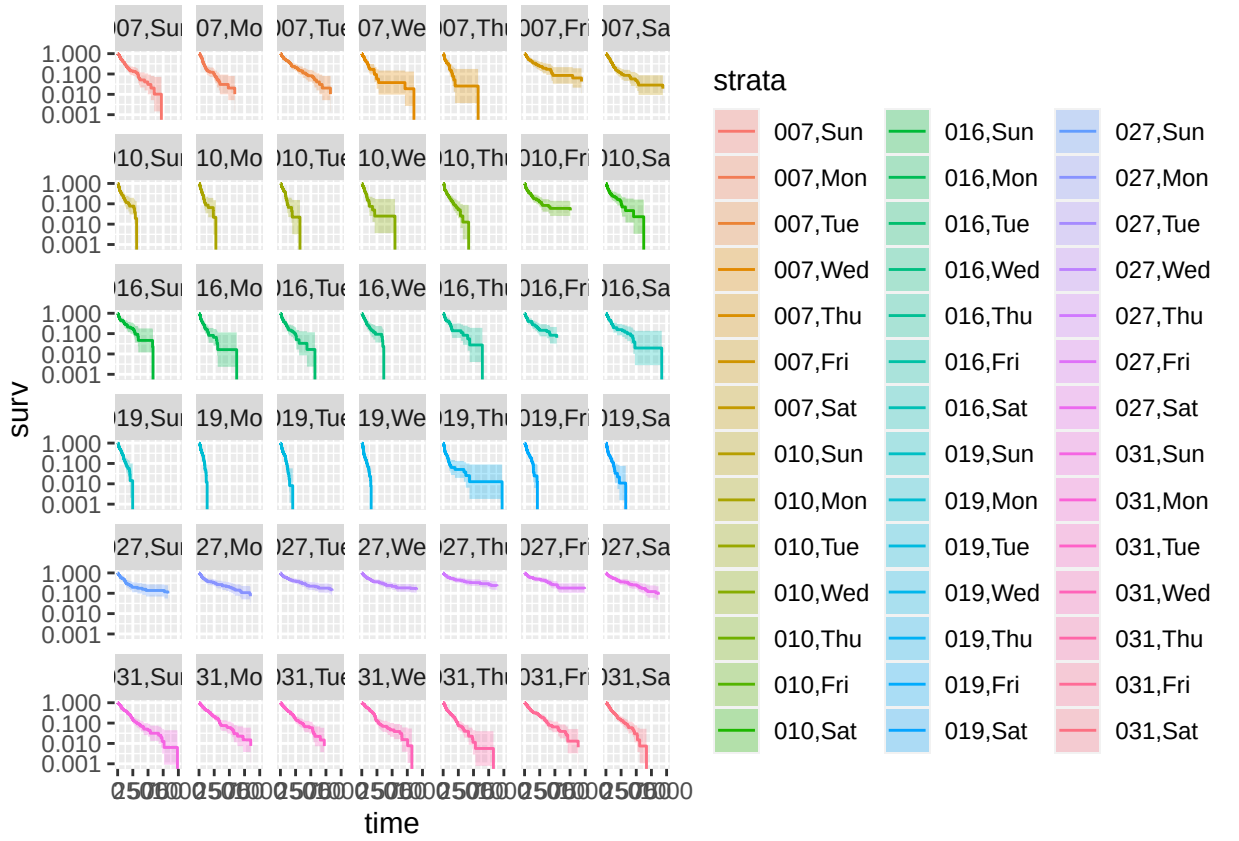
```
##   225     20       7   0.1130 0.02380       0.0748        0.171
##   250     14       6   0.0791 0.02029       0.0478        0.131
##
##                 subj=031, dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    154       0    1.000  0.0000        1.000        1.000
##    25    127      27    0.825  0.0306        0.767        0.887
##    50    105      22    0.682  0.0375        0.612        0.759
##    75     88      17    0.571  0.0399        0.498        0.655
##   100     68      20    0.442  0.0400        0.370        0.527
##   125     57      11    0.370  0.0389        0.301        0.455
##   150     51       6    0.331  0.0379        0.265        0.415
##   175     49       2    0.318  0.0375        0.253        0.401
##   200     47       2    0.305  0.0371        0.240        0.387
##   225     41       6    0.266  0.0356        0.205        0.346
##   250     35       6    0.227  0.0338        0.170        0.304
##
##                 subj=031, dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    134       0    1.000  0.0000       1.0000        1.000
##    25    115      19    0.858  0.0301       0.8011        0.919
##    50     89      26    0.664  0.0408       0.5888        0.749
##    75     68      21    0.507  0.0432       0.4295        0.600
##   100     52      16    0.388  0.0421       0.3137        0.480
##   125     43       9    0.321  0.0403       0.2508        0.411
##   150     38       5    0.284  0.0389       0.2167        0.371
##   175     31       7    0.231  0.0364       0.1699        0.315
##   200     23       8    0.172  0.0326       0.1183        0.249
##   225     22       1    0.164  0.0320       0.1120        0.241
##   250     19       3    0.142  0.0301       0.0935        0.215
```

```
autoplot(dayfit) +
  xlim(c(0,1000)) +
  facet_wrap(~strata) +
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.
```

```
## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis
```

```
## Warning: Removed 74 rows containing missing values (`geom_step()`).
```



This shows the survival curves for each of the subjects and days of the week. It is obvious that subject 027 has a significantly different survival curve from the other subjects. Additionally, we can see that Friday does seem to have a higher survival percentage when compared to the other days. The only subject where this does not apply is 019 and 027, where Friday seems to be similar to the rest of the week.

Is the way this tracks up related to the day of week people get the device?

I am filtering the data down to only see entries for Friday.

'Figure 12'

```
subjwk <- SDdate %>%
  filter(dayofweek == "Fri")
```

Then I am plotting it to see if there are any subjects that appear to be significantly different than the other.

'Figure 13'

```
subj_fit <- survfit(Surv(dur_s,status) ~ subj , data = subjwk)
summary(date_fit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ dayofweek, data = SDdate)
##
##                 dayofweek=Sun
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
```

```
##     1    472       0    1.000  0.0000        1.0000        1.000
##    25    355     117    0.752  0.0199        0.7142        0.792
##    50    268      88    0.566  0.0228        0.5227        0.612
##    75    210      57    0.445  0.0229        0.4023        0.492
##   100    172      38    0.364  0.0222        0.3235        0.411
##   125    139      33    0.294  0.0210        0.2561        0.339
##   150    119      20    0.252  0.0200        0.2158        0.294
##   175     97      22    0.206  0.0186        0.1721        0.245
##   200     85      12    0.180  0.0177        0.1486        0.218
##   225     71      14    0.150  0.0165        0.1214        0.186
##   250     59      12    0.125  0.0152        0.0985        0.159
##
##                dayofweek=Mon
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    477       0    1.000  0.0000        1.0000        1.000
##    25    359     119    0.751  0.0198        0.7127        0.790
##    50    254     105    0.530  0.0229        0.4874        0.577
##    75    174      79    0.365  0.0220        0.3240        0.411
##   100    129      45    0.270  0.0203        0.2334        0.313
##   125    110      19    0.231  0.0193        0.1957        0.272
##   150     98      12    0.205  0.0185        0.1722        0.245
##   175     87      11    0.182  0.0177        0.1508        0.221
##   200     77      10    0.161  0.0168        0.1316        0.198
##   225     71       7    0.147  0.0162        0.1182        0.182
##   250     60      10    0.126  0.0152        0.0993        0.159
##
##                dayofweek=Tue
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    528       0    1.000  0.0000         1.000        1.000
##    25    379     149    0.718  0.0196         0.680        0.757
##    50    291      88    0.551  0.0216         0.510        0.595
##    75    240      51    0.455  0.0217         0.414        0.499
##   100    185      55    0.350  0.0208         0.312        0.394
##   125    150      35    0.284  0.0196         0.248        0.325
##   150    128      22    0.242  0.0187         0.208        0.282
##   175    112      16    0.212  0.0178         0.180        0.250
##   200     95      17    0.180  0.0167         0.150        0.216
##   225     86       9    0.163  0.0161         0.134        0.198
##   250     74      12    0.140  0.0151         0.113        0.173
##
##                dayofweek=Wed
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    482       0    1.000  0.0000        1.0000        1.000
##    25    340     142    0.705  0.0208        0.6658        0.747
##    50    250      90    0.519  0.0228        0.4759        0.565
##    75    197      53    0.409  0.0224        0.3671        0.455
##   100    157      40    0.326  0.0213        0.2865        0.370
##   125    130      27    0.270  0.0202        0.2329        0.312
##   150    108      22    0.224  0.0190        0.1898        0.265
##   175     96      13    0.197  0.0181        0.1646        0.236
##   200     84      11    0.174  0.0173        0.1435        0.212
##   225     65      19    0.135  0.0156        0.1076        0.169
##   250     57       8    0.118  0.0147        0.0927        0.151
##
```

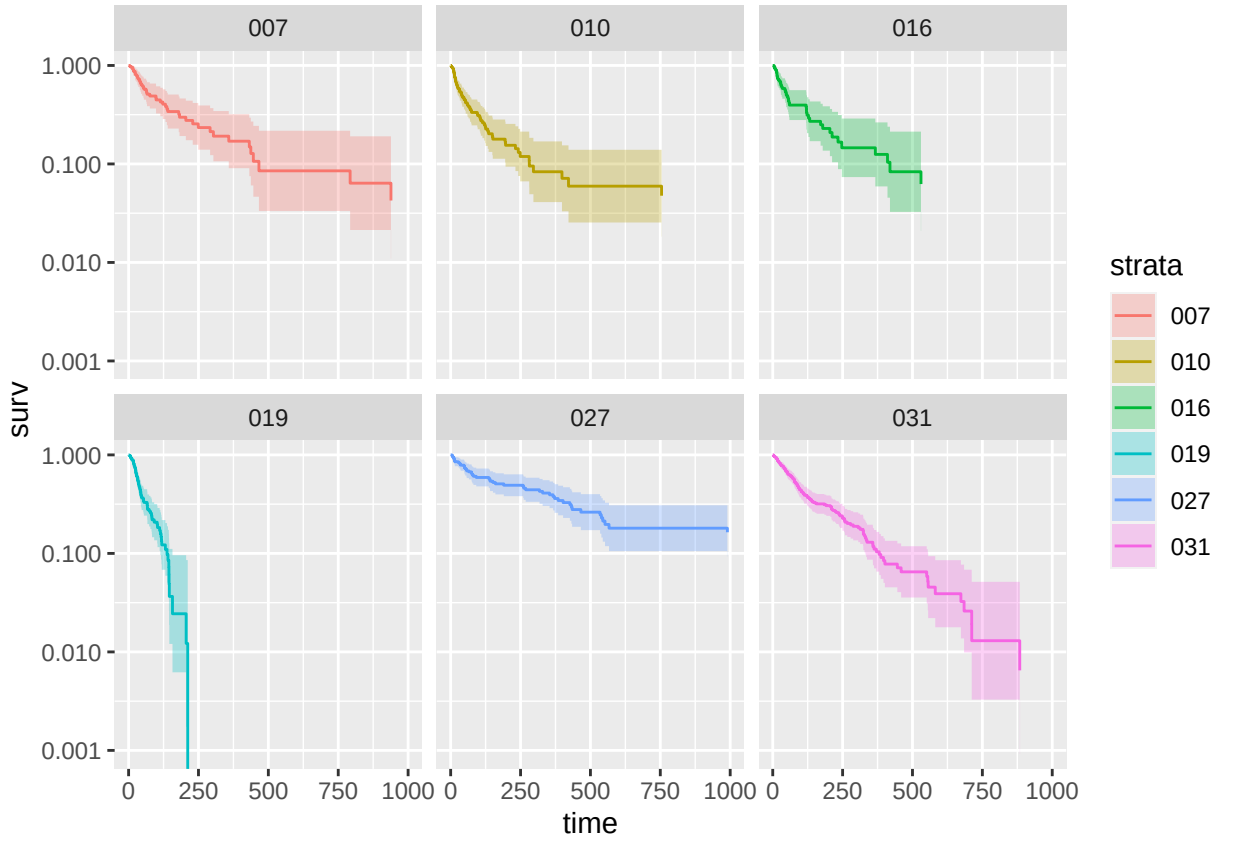
```
##                 dayofweek=Thu
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    462       2    0.996 0.00304       0.9897        1.000
##    25    310     153    0.666 0.02190       0.6244        0.710
##    50    216      93    0.466 0.02316       0.4223        0.513
##    75    173      43    0.373 0.02245       0.3313        0.420
##   100    138      35    0.297 0.02122       0.2586        0.342
##   125    111      27    0.239 0.01980       0.2034        0.281
##   150     95      16    0.205 0.01873       0.1711        0.245
##   175     82      13    0.177 0.01771       0.1452        0.215
##   200     69      13    0.149 0.01652       0.1196        0.185
##   225     59      10    0.127 0.01547       0.1002        0.161
##   250     52       7    0.112 0.01464       0.0867        0.145
##
##                 dayofweek=Fri
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    476       1    0.998  0.0021        0.994        1.000
##    25    359     117    0.752  0.0198        0.714        0.792
##    50    271      87    0.569  0.0227        0.527        0.616
##    75    221      50    0.464  0.0229        0.422        0.511
##   100    187      34    0.393  0.0224        0.351        0.439
##   125    157      30    0.330  0.0215        0.290        0.375
##   150    132      25    0.277  0.0205        0.240        0.321
##   175    125       7    0.263  0.0202        0.226        0.305
##   200    117       8    0.246  0.0197        0.210        0.288
##   225    106      11    0.223  0.0191        0.188        0.263
##   250     93      13    0.195  0.0182        0.163        0.234
##
##                 dayofweek=Sat
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    483       0    1.000  0.0000        1.000        1.000
##    25    356     127    0.737  0.0200        0.699        0.777
##    50    268      88    0.555  0.0226        0.512        0.601
##    75    207      61    0.429  0.0225        0.387        0.475
##   100    162      45    0.335  0.0215        0.296        0.380
##   125    130      32    0.269  0.0202        0.232        0.312
##   150    112      18    0.232  0.0192        0.197        0.273
##   175     95      17    0.197  0.0181        0.164        0.236
##   200     79      16    0.164  0.0168        0.134        0.200
##   225     74       5    0.153  0.0164        0.124        0.189
##   250     66       8    0.137  0.0156        0.109        0.171
```

```
autoplot(subj_fit) +
  xlim(c(0,1000)) +
  facet_wrap(~strata) +
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.

## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis

## Warning: Removed 20 rows containing missing values (`geom_step()`).
```



When looking that the plot, 019 and 031 have curves that look different than the other subjects. So now I want to see what days each of the subjects got the device, then make a plot based off that information. I plan to compare the day '0' of each subject to see if walking time is any different when the subjects first get the device vs later in the study.

First I need to make a new variable that tells what day the subject received the tracking device.This new variable is called 'firsttime' for when the first steps of each subject were taken.

For each subj and trial, I want to find the earliest time. This is how I can determine when the subject received the tracking device.

'Figure 14'

```
SDdate %>%
  summarise(.by=c(subj,trial),firsttime=min(time))
```

```
## # A tibble: 12 x 3
##    subj  trial firsttime
##    <chr> <dbl> <dttm>
##  1 007      60 2021-06-18 10:07:46
##  2 007      90 2021-07-21 09:33:47
##  3 010      60 2021-06-24 11:12:02
##  4 010      90 2021-07-30 09:27:01
##  5 016      60 2021-07-29 11:29:53
##  6 016      90 2021-08-27 15:48:10
##  7 019      60 2021-08-05 12:29:24
##  8 019      90 2021-09-10 10:02:47
```

```
##  9 027      60 2021-09-28 14:27:13
## 10 027      90 2021-11-02 15:12:26
## 11 031      60 2021-10-19 16:59:51
## 12 031      90 2021-11-30 15:59:56
```

From this 'firsttime' variable I need to calculate how far from each subject's 'firsttime' each time was collected. I am doing this by taking the time of recorded activity and subtracting it from the 'firsttime' the subject got the device. Then dividing this number by 86,400 (number of seconds in a day). From here, I am able to round this number to find what day after receiving the device each recorded walking session was.

'result' dataframe shows the 'dayofwear' as how many days after receiving the device each duration was observed.

'Figure 15'

```
result <- SDdate %>%
  mutate(.by=c(subj,trial), firsttime = min(time)) %>%
  mutate( dayofwear = (round((time-firsttime)/86400)))
```

'wearfit' is a survival fit of the survival function. It takes the survival function and 'subj' and 'dayofwear' to regress against. The day of wear is filerted to be less than 7 because some subjects had the device for longer than 7 days. I want to see how the time looks for just a week so that each of the subjects have the device for the same amount of time.

'Figure 16'

```
wearfit <- survfit(Surv(dur_s,status) ~ subj + dayofwear ,
                   data = result %>%
                     filter( dayofwear < 7))
summary(wearfit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ subj + dayofwear, data = result %>%
##     filter(dayofwear < 7))
##
##                 subj=007, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     44       0    1.000  0.0000       1.0000        1.000
##    25     30      14    0.682  0.0702       0.5572        0.834
##    50     25       5    0.568  0.0747       0.4392        0.735
##    75     17       8    0.386  0.0734       0.2662        0.561
##   100     15       2    0.341  0.0715       0.2261        0.514
##   125     11       4    0.250  0.0653       0.1499        0.417
##   150     11       0    0.250  0.0653       0.1499        0.417
##   175     11       0    0.250  0.0653       0.1499        0.417
##   200     11       0    0.250  0.0653       0.1499        0.417
##   225      9       2    0.205  0.0608       0.1142        0.366
##   250      8       1    0.182  0.0581       0.0971        0.340
##
##                 subj=007, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     84       0   1.0000  0.0000       1.0000        1.000
##    25     64      20   0.7619  0.0465       0.6761        0.859
##    50     51      13   0.6071  0.0533       0.5112        0.721
##    75     38      13   0.4524  0.0543       0.3575        0.572
```

```
##   100     31       7   0.3690  0.0527       0.2790        0.488
##   125     20      11   0.2381  0.0465       0.1624        0.349
##   150     16       4   0.1905  0.0428       0.1226        0.296
##   175     10       6   0.1190  0.0353       0.0665        0.213
##   200      9       1   0.1071  0.0337       0.0578        0.199
##   225      8       1   0.0952  0.0320       0.0493        0.184
##   250      7       1   0.0833  0.0302       0.0410        0.169
##
##                 subj=007, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     71       0    1.000  0.0000        1.000        1.000
##    25     54      17    0.761  0.0506        0.668        0.867
##    50     41      14    0.563  0.0589        0.459        0.691
##    75     33       7    0.465  0.0592        0.362        0.597
##   100     25       8    0.352  0.0567        0.257        0.483
##   125     22       3    0.310  0.0549        0.219        0.438
##   150     18       4    0.254  0.0516        0.170        0.378
##   175     17       1    0.239  0.0506        0.158        0.362
##   200     13       4    0.183  0.0459        0.112        0.299
##   225     13       0    0.183  0.0459        0.112        0.299
##   250     13       0    0.183  0.0459        0.112        0.299
##
##                 subj=007, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     94       0    1.000  0.0000       1.0000        1.000
##    25     82      13    0.862  0.0356       0.7947        0.934
##    50     63      18    0.670  0.0485       0.5816        0.772
##    75     48      15    0.511  0.0516       0.4190        0.622
##   100     39       9    0.415  0.0508       0.3263        0.527
##   125     28      11    0.298  0.0472       0.2184        0.406
##   150     20       8    0.213  0.0422       0.1442        0.314
##   175     17       3    0.181  0.0397       0.1176        0.278
##   200     15       2    0.160  0.0378       0.1003        0.254
##   225     15       0    0.160  0.0378       0.1003        0.254
##   250     11       4    0.117  0.0332       0.0672        0.204
##
##                 subj=007, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     83       0    1.000  0.0000        1.000        1.000
##    25     71      12    0.855  0.0386        0.783        0.935
##    50     47      24    0.566  0.0544        0.469        0.684
##    75     37      10    0.446  0.0546        0.351        0.567
##   100     35       2    0.422  0.0542        0.328        0.543
##   125     30       5    0.361  0.0527        0.272        0.481
##   150     25       5    0.301  0.0504        0.217        0.418
##   175     22       3    0.265  0.0484        0.185        0.379
##   200     17       5    0.205  0.0443        0.134        0.313
##   225     16       1    0.193  0.0433        0.124        0.299
##   250     15       1    0.181  0.0422        0.114        0.286
##
##                 subj=007, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     82       0   1.0000  0.0000       1.0000        1.000
##    25     65      17   0.7927  0.0448       0.7096        0.885
```

```
##    50     42      23   0.5122  0.0552       0.4147        0.633
##    75     25      17   0.3049  0.0508       0.2199        0.423
##   100     20       5   0.2439  0.0474       0.1666        0.357
##   125     16       4   0.1951  0.0438       0.1257        0.303
##   150     14       2   0.1707  0.0416       0.1060        0.275
##   175     14       0   0.1707  0.0416       0.1060        0.275
##   200     12       2   0.1463  0.0390       0.0868        0.247
##   225      9       3   0.1098  0.0345       0.0593        0.203
##   250      8       1   0.0976  0.0328       0.0505        0.188
##
##                subj=007, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     69       0    1.000  0.0000       1.0000        1.000
##    25     51      18    0.739  0.0529       0.6425        0.850
##    50     41      10    0.594  0.0591       0.4889        0.722
##    75     30      11    0.435  0.0597       0.3322        0.569
##   100     24       6    0.348  0.0573       0.2518        0.480
##   125     20       4    0.290  0.0546       0.2003        0.419
##   150     17       3    0.246  0.0519       0.1631        0.372
##   175     14       3    0.203  0.0484       0.1271        0.324
##   200     11       3    0.159  0.0441       0.0927        0.274
##   225     11       0    0.159  0.0441       0.0927        0.274
##   250      8       3    0.116  0.0385       0.0604        0.222
##
##                subj=010, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     40       0    1.000  0.0000       1.0000        1.000
##    25     30      10    0.750  0.0685       0.6271        0.897
##    50     24       6    0.600  0.0775       0.4659        0.773
##    75     19       5    0.475  0.0790       0.3429        0.658
##   100     14       5    0.350  0.0754       0.2294        0.534
##   125     10       4    0.250  0.0685       0.1462        0.428
##   150      8       2    0.200  0.0632       0.1076        0.372
##   175      6       2    0.150  0.0565       0.0717        0.314
##   200      6       0    0.150  0.0565       0.0717        0.314
##   225      4       2    0.100  0.0474       0.0395        0.253
##   250      2       2    0.050  0.0345       0.0130        0.193
##
##                subj=010, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     61       0    1.000  0.0000       1.0000        1.000
##    25     39      22    0.639  0.0615       0.5295        0.772
##    50     30       9    0.492  0.0640       0.3811        0.635
##    75     19      11    0.311  0.0593       0.2145        0.452
##   100     17       2    0.279  0.0574       0.1861        0.417
##   125     14       3    0.230  0.0538       0.1449        0.363
##   150     12       2    0.197  0.0509       0.1185        0.327
##   175     11       1    0.180  0.0492       0.1056        0.308
##   200     10       1    0.164  0.0474       0.0930        0.289
##   225     10       0    0.164  0.0474       0.0930        0.289
##   250      7       3    0.115  0.0408       0.0572        0.230
##
##                subj=010, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
```

```
##     1     40       0    1.000  0.0000       1.0000        1.000
##    25     22      18    0.550  0.0787       0.4156        0.728
##    50     10      12    0.250  0.0685       0.1462        0.428
##    75      5       5    0.125  0.0523       0.0551        0.284
##   100      5       0    0.125  0.0523       0.0551        0.284
##   125      5       0    0.125  0.0523       0.0551        0.284
##   150      4       1    0.100  0.0474       0.0395        0.253
##   175      4       0    0.100  0.0474       0.0395        0.253
##   200      3       1    0.075  0.0416       0.0253        0.223
##   225      3       0    0.075  0.0416       0.0253        0.223
##   250      3       0    0.075  0.0416       0.0253        0.223
##
##                subj=010, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     58       0   1.0000  0.0000       1.0000        1.000
##    25     30      28   0.5172  0.0656       0.4034        0.663
##    50     23       8   0.3793  0.0637       0.2729        0.527
##    75     17       5   0.2931  0.0598       0.1965        0.437
##   100     11       6   0.1897  0.0515       0.1114        0.323
##   125      9       2   0.1552  0.0475       0.0851        0.283
##   150      7       2   0.1207  0.0428       0.0603        0.242
##   175      6       1   0.1034  0.0400       0.0485        0.221
##   200      4       2   0.0690  0.0333       0.0268        0.178
##   225      4       0   0.0690  0.0333       0.0268        0.178
##   250      3       1   0.0517  0.0291       0.0172        0.156
##
##                subj=010, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     43       0   1.0000  0.0000      1.00000        1.000
##    25     31      12   0.7209  0.0684      0.59859        0.868
##    50     19      12   0.4419  0.0757      0.31579        0.618
##    75     13       6   0.3023  0.0700      0.19199        0.476
##   100      6       7   0.1395  0.0528      0.06643        0.293
##   125      3       3   0.0698  0.0388      0.02342        0.208
##   150      2       1   0.0465  0.0321      0.01202        0.180
##   175      2       0   0.0465  0.0321      0.01202        0.180
##   200      1       1   0.0233  0.0230      0.00335        0.161
##   225      1       0   0.0233  0.0230      0.00335        0.161
##   250      1       0   0.0233  0.0230      0.00335        0.161
##
##                subj=010, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     33       0   1.0000  0.0000       1.0000        1.000
##    25     25       8   0.7576  0.0746       0.6246        0.919
##    50     18       7   0.5455  0.0867       0.3995        0.745
##    75     13       5   0.3939  0.0851       0.2580        0.601
##   100      6       7   0.1818  0.0671       0.0882        0.375
##   125      4       2   0.1212  0.0568       0.0484        0.304
##   150      3       1   0.0909  0.0500       0.0309        0.267
##   175      3       0   0.0909  0.0500       0.0309        0.267
##   200      2       1   0.0606  0.0415       0.0158        0.232
##   225      2       0   0.0606  0.0415       0.0158        0.232
##   250      1       1   0.0303  0.0298       0.0044        0.209
##
```

```
##                 subj=010, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     55       0   1.0000  0.0000      1.00000        1.000
##    25     30      25   0.5455  0.0671      0.42853        0.694
##    50     17      13   0.3091  0.0623      0.20820        0.459
##    75     11       6   0.2000  0.0539      0.11789        0.339
##   100      7       4   0.1273  0.0449      0.06371        0.254
##   125      6       1   0.1091  0.0420      0.05126        0.232
##   150      4       2   0.0727  0.0350      0.02831        0.187
##   175      4       0   0.0727  0.0350      0.02831        0.187
##   200      3       1   0.0545  0.0306      0.01815        0.164
##   225      2       1   0.0364  0.0252      0.00933        0.142
##   250      2       0   0.0364  0.0252      0.00933        0.142
##
##                 subj=016, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     21       0    1.000  0.0000       1.0000        1.000
##    25      9      12    0.429  0.1080       0.2615        0.702
##    50      7       2    0.333  0.1029       0.1821        0.610
##    75      6       1    0.286  0.0986       0.1453        0.562
##   100      6       0    0.286  0.0986       0.1453        0.562
##   125      6       0    0.286  0.0986       0.1453        0.562
##   150      4       2    0.190  0.0857       0.0789        0.460
##   175      4       0    0.190  0.0857       0.0789        0.460
##   200      4       0    0.190  0.0857       0.0789        0.460
##   225      3       1    0.143  0.0764       0.0501        0.407
##   250      3       0    0.143  0.0764       0.0501        0.407
##
##                 subj=016, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     49       0   1.0000  0.0000       1.0000        1.000
##    25     38      11   0.7755  0.0596       0.6671        0.902
##    50     26      12   0.5306  0.0713       0.4078        0.690
##    75     20       6   0.4082  0.0702       0.2913        0.572
##   100     16       4   0.3265  0.0670       0.2184        0.488
##   125     10       6   0.2041  0.0576       0.1174        0.355
##   150      9       1   0.1837  0.0553       0.1018        0.331
##   175      8       1   0.1633  0.0528       0.0866        0.308
##   200      5       3   0.1020  0.0432       0.0445        0.234
##   225      4       1   0.0816  0.0391       0.0319        0.209
##   250      3       1   0.0612  0.0342       0.0205        0.183
##
##                 subj=016, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     52       0    1.000  0.0000        1.000        1.000
##    25     34      18    0.654  0.0660        0.537        0.797
##    50     22      12    0.423  0.0685        0.308        0.581
##    75     21       1    0.404  0.0680        0.290        0.562
##   100     16       5    0.308  0.0640        0.205        0.463
##   125     11       5    0.212  0.0566        0.125        0.358
##   150     11       0    0.212  0.0566        0.125        0.358
##   175     11       0    0.212  0.0566        0.125        0.358
##   200     11       0    0.212  0.0566        0.125        0.358
##   225     10       1    0.192  0.0547        0.110        0.336
```

```
##   250     10       0    0.192  0.0547        0.110        0.336
##
##                subj=016, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     62       0   1.0000  0.0000       1.0000        1.000
##    25     42      20   0.6774  0.0594       0.5705        0.804
##    50     28      14   0.4516  0.0632       0.3433        0.594
##    75     21       7   0.3387  0.0601       0.2392        0.480
##   100     14       7   0.2258  0.0531       0.1424        0.358
##   125     13       1   0.2097  0.0517       0.1293        0.340
##   150     11       2   0.1774  0.0485       0.1038        0.303
##   175      6       5   0.0968  0.0375       0.0452        0.207
##   200      6       0   0.0968  0.0375       0.0452        0.207
##   225      6       0   0.0968  0.0375       0.0452        0.207
##   250      6       0   0.0968  0.0375       0.0452        0.207
##
##                subj=016, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     50       0     1.00  0.0000       1.0000        1.000
##    25     32      18     0.64  0.0679       0.5199        0.788
##    50     19      13     0.38  0.0686       0.2667        0.541
##    75     19       0     0.38  0.0686       0.2667        0.541
##   100     13       6     0.26  0.0620       0.1629        0.415
##   125     11       2     0.22  0.0586       0.1305        0.371
##   150      7       4     0.14  0.0491       0.0704        0.278
##   175      7       0     0.14  0.0491       0.0704        0.278
##   200      6       1     0.12  0.0460       0.0566        0.254
##   225      6       0     0.12  0.0460       0.0566        0.254
##   250      5       1     0.10  0.0424       0.0435        0.230
##
##                subj=016, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     71       0   1.0000  0.0000       1.0000        1.000
##    25     43      28   0.6056  0.0580       0.5020        0.731
##    50     35       8   0.4930  0.0593       0.3894        0.624
##    75     24      11   0.3380  0.0561       0.2441        0.468
##   100     18       6   0.2535  0.0516       0.1701        0.378
##   125     14       4   0.1972  0.0472       0.1233        0.315
##   150     11       3   0.1549  0.0429       0.0900        0.267
##   175     10       1   0.1408  0.0413       0.0793        0.250
##   200      9       1   0.1268  0.0395       0.0688        0.233
##   225      7       2   0.0986  0.0354       0.0488        0.199
##   250      6       1   0.0845  0.0330       0.0393        0.182
##
##                subj=016, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     31       0    1.000  0.0000       1.0000        1.000
##    25     24       7    0.774  0.0751       0.6402        0.936
##    50     16       8    0.516  0.0898       0.3671        0.726
##    75     14       2    0.452  0.0894       0.3064        0.666
##   100     12       2    0.387  0.0875       0.2486        0.603
##   125      8       4    0.258  0.0786       0.1421        0.469
##   150      5       3    0.161  0.0661       0.0723        0.360
##   175      5       0    0.161  0.0661       0.0723        0.360
```

```
##   200      5       0    0.161  0.0661       0.0723        0.360
##   225      5       0    0.161  0.0661       0.0723        0.360
##   250      5       0    0.161  0.0661       0.0723        0.360
##
##                subj=019, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     40       0    1.000  0.0000       1.0000        1.000
##    25     16      24    0.400  0.0775       0.2737        0.585
##    50      7       9    0.175  0.0601       0.0893        0.343
##    75      5       2    0.125  0.0523       0.0551        0.284
##   100      5       0    0.125  0.0523       0.0551        0.284
##   125      4       1    0.100  0.0474       0.0395        0.253
##
##                subj=019, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     96       0   1.0000  0.0000      1.00000       1.0000
##    25     60      37   0.6146  0.0497      0.52455       0.7201
##    50     34      25   0.3542  0.0488      0.27033       0.4640
##    75     26       8   0.2708  0.0454      0.19505       0.3761
##   100     17       9   0.1771  0.0390      0.11505       0.2726
##   125     11       6   0.1146  0.0325      0.06571       0.1998
##   150      6       5   0.0625  0.0247      0.02880       0.1356
##   175      4       2   0.0417  0.0204      0.01596       0.1087
##   200      4       0   0.0417  0.0204      0.01596       0.1087
##   225      1       3   0.0104  0.0104      0.00148       0.0732
##   250      1       0   0.0104  0.0104      0.00148       0.0732
##
##                subj=019, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     75       0   1.0000  0.0000      1.00000        1.000
##    25     43      32   0.5733  0.0571      0.47165        0.697
##    50     22      21   0.2933  0.0526      0.20645        0.417
##    75     15       7   0.2000  0.0462      0.12719        0.314
##   100      9       6   0.1200  0.0375      0.06502        0.221
##   125      5       4   0.0667  0.0288      0.02859        0.155
##   150      2       3   0.0267  0.0186      0.00679        0.105
##   175      2       0   0.0267  0.0186      0.00679        0.105
##
##                subj=019, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     88       0   1.0000  0.0000      1.00000       1.0000
##    25     54      34   0.6136  0.0519      0.51989       0.7243
##    50     39      15   0.4432  0.0530      0.35065       0.5601
##    75     24      15   0.2727  0.0475      0.19389       0.3836
##   100     12      12   0.1364  0.0366      0.08060       0.2307
##   125      7       5   0.0795  0.0288      0.03908       0.1619
##   150      4       3   0.0455  0.0222      0.01745       0.1184
##   175      3       1   0.0341  0.0193      0.01121       0.1037
##   200      2       1   0.0227  0.0159      0.00577       0.0894
##   225      1       1   0.0114  0.0113      0.00162       0.0798
##
##                subj=019, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    108       0  1.00000 0.00000      1.00000       1.0000
```

```
##    25     66      42  0.61111 0.04691      0.52575       0.7103
##    50     35      31  0.32407 0.04504      0.24681       0.4255
##    75     25      10  0.23148 0.04059      0.16416       0.3264
##   100      9      16  0.08333 0.02660      0.04458       0.1558
##   125      5       4  0.04630 0.02022      0.01967       0.1090
##   150      2       3  0.01852 0.01297      0.00469       0.0731
##   175      1       1  0.00926 0.00922      0.00132       0.0651
##   200      1       0  0.00926 0.00922      0.00132       0.0651
##
##                subj=019, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    132       0  1.00000 0.00000      1.00000       1.0000
##    25     64      68  0.48485 0.04350      0.40667       0.5781
##    50     33      31  0.25000 0.03769      0.18604       0.3359
##    75     21      12  0.15909 0.03184      0.10748       0.2355
##   100      8      13  0.06061 0.02077      0.03096       0.1186
##   125      4       4  0.03030 0.01492      0.01154       0.0795
##   150      1       3  0.00758 0.00755      0.00108       0.0534
##
##                subj=019, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     98       0   1.0000  0.0000      1.00000       1.0000
##    25     51      47   0.5204  0.0505      0.43033       0.6293
##    50     26      25   0.2653  0.0446      0.19084       0.3688
##    75     19       7   0.1939  0.0399      0.12948       0.2903
##   100     11       8   0.1122  0.0319      0.06432       0.1959
##   125      5       6   0.0510  0.0222      0.02172       0.1198
##   150      3       2   0.0306  0.0174      0.01005       0.0933
##   175      3       0   0.0306  0.0174      0.01005       0.0933
##   200      2       1   0.0204  0.0143      0.00518       0.0804
##   225      2       0   0.0204  0.0143      0.00518       0.0804
##   250      2       0   0.0204  0.0143      0.00518       0.0804
##
##                subj=027, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     30       0    1.000  0.0000        1.000         1.000
##    25     21       9    0.700  0.0837        0.554         0.885
##    50     19       2    0.633  0.0880        0.482         0.832
##    75     18       1    0.600  0.0894        0.448         0.804
##   100     17       1    0.567  0.0905        0.414         0.775
##   125     15       2    0.500  0.0913        0.350         0.715
##   150     14       1    0.467  0.0911        0.318         0.684
##   175     13       1    0.433  0.0905        0.288         0.652
##   200     13       0    0.433  0.0905        0.288         0.652
##   225     13       0    0.433  0.0905        0.288         0.652
##   250     13       0    0.433  0.0905        0.288         0.652
##
##                subj=027, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     66       0    1.000  0.0000        1.000         1.000
##    25     55      11    0.833  0.0459        0.748         0.928
##    50     48       7    0.727  0.0548        0.627         0.843
##    75     43       5    0.652  0.0587        0.546         0.777
##   100     38       5    0.576  0.0608        0.468         0.708
```

```
##   125     37       1    0.561  0.0611        0.453        0.694
##   150     32       5    0.485  0.0615        0.378        0.622
##   175     29       3    0.439  0.0611        0.335        0.577
##   200     26       3    0.394  0.0601        0.292        0.531
##   225     26       0    0.394  0.0601        0.292        0.531
##   250     26       0    0.394  0.0601        0.292        0.531
##
##                subj=027, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     52       0    1.000  0.0000        1.000        1.000
##    25     45       7    0.865  0.0473        0.777        0.963
##    50     39       6    0.750  0.0600        0.641        0.877
##    75     33       6    0.635  0.0668        0.516        0.780
##   100     32       1    0.615  0.0675        0.496        0.763
##   125     29       3    0.558  0.0689        0.438        0.710
##   150     29       0    0.558  0.0689        0.438        0.710
##   175     27       2    0.519  0.0693        0.400        0.674
##   200     25       2    0.481  0.0693        0.362        0.638
##   225     24       1    0.462  0.0691        0.344        0.619
##   250     24       0    0.462  0.0691        0.344        0.619
##
##                subj=027, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     64       0    1.000  0.0000        1.000        1.000
##    25     54      10    0.844  0.0454        0.759        0.938
##    50     47       7    0.734  0.0552        0.634        0.851
##    75     41       6    0.641  0.0600        0.533        0.770
##   100     36       5    0.562  0.0620        0.453        0.698
##   125     36       0    0.562  0.0620        0.453        0.698
##   150     33       3    0.516  0.0625        0.407        0.654
##   175     31       2    0.484  0.0625        0.376        0.624
##   200     30       1    0.469  0.0624        0.361        0.608
##   225     30       0    0.469  0.0624        0.361        0.608
##   250     30       0    0.469  0.0624        0.361        0.608
##
##                subj=027, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     57       0    1.000  0.0000        1.000        1.000
##    25     44      13    0.772  0.0556        0.670        0.889
##    50     41       3    0.719  0.0595        0.612        0.846
##    75     37       4    0.649  0.0632        0.536        0.786
##   100     36       1    0.632  0.0639        0.518        0.770
##   125     32       4    0.561  0.0657        0.446        0.706
##   150     30       2    0.526  0.0661        0.411        0.673
##   175     27       3    0.474  0.0661        0.360        0.623
##   200     25       2    0.439  0.0657        0.327        0.588
##   225     23       2    0.404  0.0650        0.294        0.553
##   250     21       2    0.368  0.0639        0.262        0.518
##
##                subj=027, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     52       0    1.000  0.0000        1.000        1.000
##    25     40      12    0.769  0.0584        0.663        0.893
##    50     30      10    0.577  0.0685        0.457        0.728
```

```
##    75     28       2    0.538  0.0691        0.419        0.693
##   100     24       4    0.462  0.0691        0.344        0.619
##   125     17       7    0.327  0.0651        0.221        0.483
##   150     15       2    0.288  0.0628        0.188        0.442
##   175     14       1    0.269  0.0615        0.172        0.421
##   200     13       1    0.250  0.0600        0.156        0.400
##   225     12       1    0.231  0.0584        0.140        0.379
##   250     10       2    0.192  0.0547        0.110        0.336
##
##                subj=027, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     53       0    1.000  0.0000        1.000        1.000
##    25     46       7    0.868  0.0465        0.781        0.964
##    50     36      10    0.679  0.0641        0.565        0.817
##    75     29       7    0.547  0.0684        0.428        0.699
##   100     26       3    0.491  0.0687        0.373        0.645
##   125     23       3    0.434  0.0681        0.319        0.590
##   150     21       2    0.396  0.0672        0.284        0.552
##   175     21       0    0.396  0.0672        0.284        0.552
##   200     20       1    0.377  0.0666        0.267        0.533
##   225     20       0    0.377  0.0666        0.267        0.533
##   250     18       2    0.340  0.0651        0.233        0.494
##
##                subj=031, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     64       0    1.000  0.0000        1.000        1.000
##    25     52      12    0.812  0.0488        0.722        0.914
##    50     49       3    0.766  0.0530        0.669        0.877
##    75     46       3    0.719  0.0562        0.617        0.838
##   100     42       4    0.656  0.0594        0.550        0.784
##   125     35       7    0.547  0.0622        0.438        0.684
##   150     33       2    0.516  0.0625        0.407        0.654
##   175     26       7    0.406  0.0614        0.302        0.546
##   200     23       3    0.359  0.0600        0.259        0.498
##   225     19       4    0.297  0.0571        0.204        0.433
##   250     14       5    0.219  0.0517        0.138        0.348
##
##                subj=031, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    118       0    1.000  0.0000       1.0000        1.000
##    25    103      15    0.873  0.0307       0.8148        0.935
##    50     88      15    0.746  0.0401       0.6712        0.829
##    75     74      14    0.627  0.0445       0.5457        0.721
##   100     64      10    0.542  0.0459       0.4595        0.640
##   125     55       9    0.466  0.0459       0.3843        0.565
##   150     47       8    0.398  0.0451       0.3191        0.497
##   175     41       7    0.339  0.0436       0.2635        0.436
##   200     35       5    0.297  0.0420       0.2247        0.392
##   225     22      13    0.186  0.0359       0.1279        0.272
##   250     17       5    0.144  0.0323       0.0928        0.224
##
##                subj=031, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    175       0    1.000  0.0000       1.0000        1.000
```

```
##    25    139      37    0.789  0.0309       0.7303        0.851
##    50     91      47    0.520  0.0378       0.4510        0.600
##    75     72      19    0.411  0.0372       0.3446        0.491
##   100     57      15    0.326  0.0354       0.2632        0.403
##   125     47      10    0.269  0.0335       0.2103        0.343
##   150     42       5    0.240  0.0323       0.1844        0.312
##   175     35       7    0.200  0.0302       0.1487        0.269
##   200     27       8    0.154  0.0273       0.1091        0.218
##   225     20       7    0.114  0.0241       0.0757        0.173
##   250     14       6    0.080  0.0205       0.0484        0.132
##
##                subj=031, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    154       0    1.000  0.0000        1.000        1.000
##    25    127      27    0.825  0.0306        0.767        0.887
##    50    106      21    0.688  0.0373        0.619        0.765
##    75     90      16    0.584  0.0397        0.512        0.668
##   100     68      22    0.442  0.0400        0.370        0.527
##   125     57      11    0.370  0.0389        0.301        0.455
##   150     51       6    0.331  0.0379        0.265        0.415
##   175     49       2    0.318  0.0375        0.253        0.401
##   200     47       2    0.305  0.0371        0.240        0.387
##   225     41       6    0.266  0.0356        0.205        0.346
##   250     35       6    0.227  0.0338        0.170        0.304
##
##                subj=031, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    133       0    1.000  0.0000       1.0000        1.000
##    25    114      19    0.857  0.0303       0.7997        0.919
##    50     88      26    0.662  0.0410       0.5859        0.747
##    75     67      21    0.504  0.0434       0.4256        0.596
##   100     51      16    0.383  0.0422       0.3091        0.476
##   125     43       8    0.323  0.0406       0.2528        0.413
##   150     38       5    0.286  0.0392       0.2184        0.374
##   175     31       7    0.233  0.0367       0.1712        0.317
##   200     23       8    0.173  0.0328       0.1193        0.251
##   225     22       1    0.165  0.0322       0.1129        0.242
##   250     19       3    0.143  0.0303       0.0942        0.217
##
##                subj=031, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    156       0    1.000  0.0000        1.000        1.000
##    25    131      25    0.840  0.0294        0.784        0.899
##    50    106      25    0.679  0.0374        0.610        0.757
##    75     79      27    0.506  0.0400        0.434        0.591
##   100     72       7    0.462  0.0399        0.390        0.547
##   125     64       8    0.410  0.0394        0.340        0.495
##   150     59       5    0.378  0.0388        0.309        0.462
##   175     45      14    0.288  0.0363        0.225        0.369
##   200     42       3    0.269  0.0355        0.208        0.349
##   225     32      10    0.205  0.0323        0.151        0.279
##   250     23       9    0.147  0.0284        0.101        0.215
##
##                subj=031, dayofwear=6
```

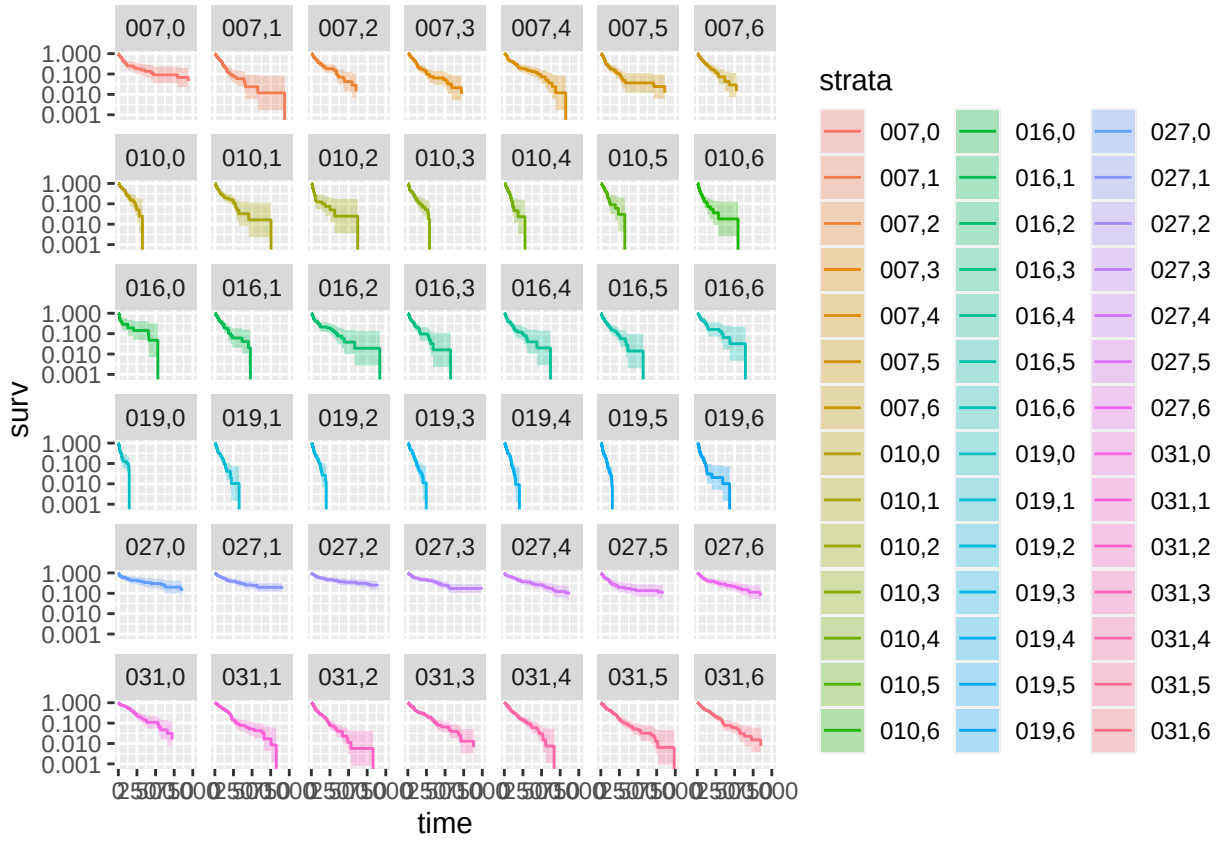
```
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    132       0    1.000  0.0000        1.000        1.000
##    25    112      20    0.848  0.0312        0.789        0.912
##    50     93      19    0.705  0.0397        0.631        0.787
##    75     74      19    0.561  0.0432        0.482        0.652
##   100     61      13    0.462  0.0434        0.384        0.556
##   125     55       6    0.417  0.0429        0.341        0.510
##   150     52       3    0.394  0.0425        0.319        0.487
##   175     45       7    0.341  0.0413        0.269        0.432
##   200     37       8    0.280  0.0391        0.213        0.368
##   225     31       7    0.227  0.0365        0.166        0.311
##   250     28       2    0.212  0.0356        0.153        0.295
```

```
autoplot(wearfit)  +
  xlim(c(0,1000)) +
  facet_wrap(~strata) +
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.

## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis

## Warning: Removed 60 rows containing missing values (`geom_step()`).
```



The graph for each of the subjects for each of the days of wear are displayed above. Previously, it was determined that Friday might have some significant impact on the duration of walking, but with this new display, it is hard to determine what day Friday was.

From looking at the graphs, there doesn't appear to be any significant difference on the first day of wearing when compared to the rest of the week.

Comparing Day of Wear for each Trial

I am using the same function as above, but filtering it down to trial as 60 days. I am then going to compare the trials (60 vs 90).

'Figure 17'

```
wearfit <- survfit(Surv(dur_s,status) ~ subj + dayofwear  ,
                   data = result %>%
                     filter( dayofwear < 7) %>%
                    filter (trial == 60))

summary(wearfit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ subj + dayofwear, data = result %>%
##     filter(dayofwear < 7) %>% filter(trial == 60))
##
##                 subj=007, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     18       0    1.000   0.000        1.000        1.000
##    25     12       6    0.667   0.111        0.481        0.924
##    50     11       1    0.611   0.115        0.423        0.883
##    75      9       2    0.500   0.118        0.315        0.794
##   100      9       0    0.500   0.118        0.315        0.794
##   125      9       0    0.500   0.118        0.315        0.794
##   150      9       0    0.500   0.118        0.315        0.794
##   175      9       0    0.500   0.118        0.315        0.794
##   200      9       0    0.500   0.118        0.315        0.794
##   225      8       1    0.444   0.117        0.265        0.745
##   250      8       0    0.444   0.117        0.265        0.745
##
##                 subj=007, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     48       0    1.000  0.0000       1.0000        1.000
##    25     38      10    0.792  0.0586       0.6847        0.915
##    50     33       5    0.687  0.0669       0.5681        0.832
##    75     23      10    0.479  0.0721       0.3568        0.644
##   100     19       4    0.396  0.0706       0.2791        0.561
##   125     14       5    0.292  0.0656       0.1877        0.453
##   150     12       2    0.250  0.0625       0.1532        0.408
##   175      8       4    0.167  0.0538       0.0885        0.314
##   200      8       0    0.167  0.0538       0.0885        0.314
##   225      7       1    0.146  0.0509       0.0735        0.289
##   250      6       1    0.125  0.0477       0.0591        0.264
##
##                 subj=007, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
```

```
##     1     41       0    1.000  0.0000        1.000        1.000
##    25     34       7    0.829  0.0588        0.722        0.953
##    50     28       7    0.659  0.0741        0.528        0.821
##    75     23       4    0.561  0.0775        0.428        0.735
##   100     17       6    0.415  0.0769        0.288        0.597
##   125     15       2    0.366  0.0752        0.245        0.547
##   150     13       2    0.317  0.0727        0.202        0.497
##   175     12       1    0.293  0.0711        0.182        0.471
##   200     10       2    0.244  0.0671        0.142        0.418
##   225     10       0    0.244  0.0671        0.142        0.418
##   250     10       0    0.244  0.0671        0.142        0.418
##
##                subj=007, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     39       0    1.000  0.0000       1.0000        1.000
##    25     35       5    0.872  0.0535       0.7729        0.983
##    50     29       5    0.744  0.0699       0.6184        0.894
##    75     21       8    0.538  0.0798       0.4027        0.720
##   100     18       3    0.462  0.0798       0.3288        0.648
##   125     14       4    0.359  0.0768       0.2360        0.546
##   150     11       3    0.282  0.0721       0.1709        0.465
##   175      9       2    0.231  0.0675       0.1301        0.409
##   200      9       0    0.231  0.0675       0.1301        0.409
##   225      9       0    0.231  0.0675       0.1301        0.409
##   250      7       2    0.179  0.0615       0.0918        0.351
##
##                subj=007, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     30       0    1.000  0.0000        1.000        1.000
##    25     27       3    0.900  0.0548        0.799        1.000
##    50     21       6    0.700  0.0837        0.554        0.885
##    75     20       1    0.667  0.0861        0.518        0.859
##   100     20       0    0.667  0.0861        0.518        0.859
##   125     20       0    0.667  0.0861        0.518        0.859
##   150     18       2    0.600  0.0894        0.448        0.804
##   175     16       2    0.533  0.0911        0.382        0.745
##   200     13       3    0.433  0.0905        0.288        0.652
##   225     13       0    0.433  0.0905        0.288        0.652
##   250     12       1    0.400  0.0894        0.258        0.620
##
##                subj=007, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     18       0    1.000  0.0000       1.0000        1.000
##    25     16       2    0.889  0.0741       0.7549        1.000
##    50     11       5    0.611  0.1149       0.4227        0.883
##    75     10       1    0.556  0.1171       0.3675        0.840
##   100     10       0    0.556  0.1171       0.3675        0.840
##   125      9       1    0.500  0.1179       0.3150        0.794
##   150      8       1    0.444  0.1171       0.2652        0.745
##   175      8       0    0.444  0.1171       0.2652        0.745
##   200      7       1    0.389  0.1149       0.2179        0.694
##   225      4       3    0.222  0.0980       0.0936        0.527
##   250      3       1    0.167  0.0878       0.0593        0.468
##
```

```
##                subj=010, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     29       0    1.000  0.0000       1.0000        1.000
##    25     21       8    0.724  0.0830       0.5784        0.907
##    50     18       3    0.621  0.0901       0.4670        0.825
##    75     14       4    0.483  0.0928       0.3312        0.704
##   100      9       5    0.310  0.0859       0.1804        0.534
##   125      7       2    0.241  0.0795       0.1266        0.460
##   150      6       1    0.207  0.0752       0.1015        0.422
##   175      5       1    0.172  0.0701       0.0777        0.383
##   200      5       0    0.172  0.0701       0.0777        0.383
##   225      3       2    0.103  0.0566       0.0354        0.302
##   250      2       1    0.069  0.0471       0.0181        0.263
##
##                subj=010, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     39       0    1.000  0.0000       1.0000        1.000
##    25     23      16    0.590  0.0788       0.4539        0.766
##    50     17       6    0.436  0.0794       0.3050        0.623
##    75     10       7    0.256  0.0699       0.1503        0.438
##   100     10       0    0.256  0.0699       0.1503        0.438
##   125      8       2    0.205  0.0647       0.1106        0.380
##   150      6       2    0.154  0.0578       0.0737        0.321
##   175      6       0    0.154  0.0578       0.0737        0.321
##   200      5       1    0.128  0.0535       0.0566        0.291
##   225      5       0    0.128  0.0535       0.0566        0.291
##   250      4       1    0.103  0.0486       0.0405        0.260
##
##                subj=010, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     21       0   1.0000  0.0000       1.0000        1.000
##    25     11      10   0.5238  0.1090       0.3484        0.788
##    50      6       5   0.2857  0.0986       0.1453        0.562
##    75      4       2   0.1905  0.0857       0.0789        0.460
##   100      4       0   0.1905  0.0857       0.0789        0.460
##   125      4       0   0.1905  0.0857       0.0789        0.460
##   150      3       1   0.1429  0.0764       0.0501        0.407
##   175      3       0   0.1429  0.0764       0.0501        0.407
##   200      2       1   0.0952  0.0641       0.0255        0.356
##   225      2       0   0.0952  0.0641       0.0255        0.356
##   250      2       0   0.0952  0.0641       0.0255        0.356
##
##                subj=010, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     32       0   1.0000  0.0000       1.0000        1.000
##    25     20      12   0.6250  0.0856       0.4779        0.817
##    50     14       6   0.4375  0.0877       0.2954        0.648
##    75     13       1   0.4062  0.0868       0.2672        0.618
##   100      9       4   0.2812  0.0795       0.1616        0.489
##   125      7       2   0.2188  0.0731       0.1137        0.421
##   150      5       2   0.1562  0.0642       0.0698        0.350
##   175      5       0   0.1562  0.0642       0.0698        0.350
##   200      3       2   0.0938  0.0515       0.0319        0.275
##   225      3       0   0.0938  0.0515       0.0319        0.275
```

```
##   250      3       0   0.0938  0.0515       0.0319        0.275
##
##                subj=010, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     20       0     1.00  0.0000       1.0000        1.000
##    25     16       4     0.80  0.0894       0.6426        0.996
##    50      8       8     0.40  0.1095       0.2339        0.684
##    75      4       4     0.20  0.0894       0.0832        0.481
##   100      2       2     0.10  0.0671       0.0269        0.372
##   125      1       1     0.05  0.0487       0.0074        0.338
##   150      1       0     0.05  0.0487       0.0074        0.338
##   175      1       0     0.05  0.0487       0.0074        0.338
##   200      1       0     0.05  0.0487       0.0074        0.338
##   225      1       0     0.05  0.0487       0.0074        0.338
##   250      1       0     0.05  0.0487       0.0074        0.338
##
##                subj=010, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     23       0   1.0000  0.0000      1.00000        1.000
##    25     16       7   0.6957  0.0959      0.53088        0.912
##    50     11       5   0.4783  0.1042      0.31209        0.733
##    75      8       3   0.3478  0.0993      0.19876        0.609
##   100      3       5   0.1304  0.0702      0.04541        0.375
##   125      3       0   0.1304  0.0702      0.04541        0.375
##   150      3       0   0.1304  0.0702      0.04541        0.375
##   175      3       0   0.1304  0.0702      0.04541        0.375
##   200      2       1   0.0870  0.0588      0.02313        0.327
##   225      2       0   0.0870  0.0588      0.02313        0.327
##   250      1       1   0.0435  0.0425      0.00639        0.296
##
##                subj=010, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     29       0   1.0000  0.0000      1.00000        1.000
##    25     19      10   0.6552  0.0883      0.50313        0.853
##    50     11       8   0.3793  0.0901      0.23812        0.604
##    75      7       4   0.2414  0.0795      0.12661        0.460
##   100      4       3   0.1379  0.0640      0.05553        0.343
##   125      3       1   0.1034  0.0566      0.03543        0.302
##   150      3       0   0.1034  0.0566      0.03543        0.302
##   175      3       0   0.1034  0.0566      0.03543        0.302
##   200      2       1   0.0690  0.0471      0.01811        0.263
##   225      1       1   0.0345  0.0339      0.00503        0.237
##   250      1       0   0.0345  0.0339      0.00503        0.237
##
##                subj=016, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     10       0      1.0  0.0000       1.0000        1.000
##    25      3       7      0.3  0.1449       0.1164        0.773
##    50      2       1      0.2  0.1265       0.0579        0.691
##    75      2       0      0.2  0.1265       0.0579        0.691
##   100      2       0      0.2  0.1265       0.0579        0.691
##   125      2       0      0.2  0.1265       0.0579        0.691
##   150      1       1      0.1  0.0949       0.0156        0.642
##   175      1       0      0.1  0.0949       0.0156        0.642
```

```
##   200      1       0      0.1  0.0949       0.0156        0.642
##   225      1       0      0.1  0.0949       0.0156        0.642
##   250      1       0      0.1  0.0949       0.0156        0.642
##
##                subj=016, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     31       0   1.0000  0.0000      1.00000        1.000
##    25     22       9   0.7097  0.0815      0.56660        0.889
##    50     14       8   0.4516  0.0894      0.30641        0.666
##    75     10       4   0.3226  0.0840      0.19368        0.537
##   100     10       0   0.3226  0.0840      0.19368        0.537
##   125      6       4   0.1935  0.0710      0.09435        0.397
##   150      5       1   0.1613  0.0661      0.07227        0.360
##   175      4       1   0.1290  0.0602      0.05170        0.322
##   200      3       1   0.0968  0.0531      0.03301        0.284
##   225      2       1   0.0645  0.0441      0.01689        0.247
##   250      1       1   0.0323  0.0317      0.00469        0.222
##
##                subj=016, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     33       0    1.000  0.0000       1.0000        1.000
##    25     21      12    0.636  0.0837       0.4917        0.824
##    50     14       7    0.424  0.0860       0.2851        0.631
##    75     13       1    0.394  0.0851       0.2580        0.601
##   100      9       4    0.273  0.0775       0.1562        0.476
##   125      6       3    0.182  0.0671       0.0882        0.375
##   150      6       0    0.182  0.0671       0.0882        0.375
##   175      6       0    0.182  0.0671       0.0882        0.375
##   200      6       0    0.182  0.0671       0.0882        0.375
##   225      6       0    0.182  0.0671       0.0882        0.375
##   250      6       0    0.182  0.0671       0.0882        0.375
##
##                subj=016, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     25       0     1.00  0.0000       1.0000        1.000
##    25     16       9     0.64  0.0960       0.4770        0.859
##    50     11       5     0.44  0.0993       0.2827        0.685
##    75     11       0     0.44  0.0993       0.2827        0.685
##   100      9       2     0.36  0.0960       0.2135        0.607
##   125      8       1     0.32  0.0933       0.1807        0.567
##   150      7       1     0.28  0.0898       0.1493        0.525
##   175      4       3     0.16  0.0733       0.0652        0.393
##   200      4       0     0.16  0.0733       0.0652        0.393
##   225      4       0     0.16  0.0733       0.0652        0.393
##   250      4       0     0.16  0.0733       0.0652        0.393
##
##                subj=016, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     25       0     1.00  0.0000       1.0000        1.000
##    25     14      11     0.56  0.0993       0.3956        0.793
##    50      7       7     0.28  0.0898       0.1493        0.525
##    75      7       0     0.28  0.0898       0.1493        0.525
##   100      6       1     0.24  0.0854       0.1195        0.482
##   125      5       1     0.20  0.0800       0.0913        0.438
```

```
##   150      3       2     0.12  0.0650       0.0415        0.347
##   175      3       0     0.12  0.0650       0.0415        0.347
##   200      3       0     0.12  0.0650       0.0415        0.347
##   225      3       0     0.12  0.0650       0.0415        0.347
##   250      2       1     0.08  0.0543       0.0212        0.302
##
##                subj=016, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     35       0   1.0000  0.0000       1.0000        1.000
##    25     20      15   0.5714  0.0836       0.4289        0.761
##    50     15       5   0.4286  0.0836       0.2923        0.628
##    75     10       5   0.2857  0.0764       0.1692        0.482
##   100      8       2   0.2286  0.0710       0.1244        0.420
##   125      6       2   0.1714  0.0637       0.0827        0.355
##   150      5       1   0.1429  0.0591       0.0635        0.322
##   175      5       0   0.1429  0.0591       0.0635        0.322
##   200      5       0   0.1429  0.0591       0.0635        0.322
##   225      4       1   0.1143  0.0538       0.0454        0.287
##   250      3       1   0.0857  0.0473       0.0290        0.253
##
##                subj=016, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1      5       0      1.0   0.000       1.0000             1
##    25      4       1      0.8   0.179       0.5161             1
##    50      2       2      0.4   0.219       0.1367             1
##    75      1       1      0.2   0.179       0.0346             1
##   100      1       0      0.2   0.179       0.0346             1
##   125      1       0      0.2   0.179       0.0346             1
##   150      1       0      0.2   0.179       0.0346             1
##   175      1       0      0.2   0.179       0.0346             1
##   200      1       0      0.2   0.179       0.0346             1
##   225      1       0      0.2   0.179       0.0346             1
##   250      1       0      0.2   0.179       0.0346             1
##
##                subj=019, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     14       0    1.000  0.0000       1.0000        1.000
##    25      2      12    0.143  0.0935       0.0396        0.515
##
##                subj=019, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     49       0   1.0000  0.0000       1.0000        1.000
##    25     39      11   0.7755  0.0596       0.6671        0.902
##    50     21      17   0.4286  0.0707       0.3102        0.592
##    75     15       6   0.3061  0.0658       0.2008        0.467
##   100     11       4   0.2245  0.0596       0.1334        0.378
##   125      6       5   0.1224  0.0468       0.0579        0.259
##   150      3       3   0.0612  0.0342       0.0205        0.183
##   175      2       1   0.0408  0.0283       0.0105        0.159
##   200      2       0   0.0408  0.0283       0.0105        0.159
##
##                subj=019, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     48       0   1.0000  0.0000       1.0000        1.000
```

```
##    25     28      20   0.5833  0.0712       0.4593        0.741
##    50     13      15   0.2708  0.0641       0.1703        0.431
##    75     10       3   0.2083  0.0586       0.1200        0.362
##   100      6       4   0.1250  0.0477       0.0591        0.264
##   125      4       2   0.0833  0.0399       0.0326        0.213
##   150      1       3   0.0208  0.0206       0.0030        0.145
##   175      1       0   0.0208  0.0206       0.0030        0.145
##
##                subj=019, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     41       0   1.0000  0.0000      1.00000        1.000
##    25     25      16   0.6098  0.0762      0.47732        0.779
##    50     22       3   0.5366  0.0779      0.40374        0.713
##    75     15       7   0.3659  0.0752      0.24451        0.547
##   100      9       6   0.2195  0.0646      0.12325        0.391
##   125      7       2   0.1707  0.0588      0.08696        0.335
##   150      4       3   0.0976  0.0463      0.03846        0.248
##   175      3       1   0.0732  0.0407      0.02462        0.217
##   200      2       1   0.0488  0.0336      0.01262        0.188
##   225      1       1   0.0244  0.0241      0.00352        0.169
##
##                subj=019, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     38       0   1.0000  0.0000       1.0000        1.000
##    25     25      13   0.6579  0.0770       0.5231        0.827
##    50     11      14   0.2895  0.0736       0.1759        0.476
##    75      5       6   0.1316  0.0548       0.0581        0.298
##   100      1       4   0.0263  0.0260       0.0038        0.182
##   125      1       0   0.0263  0.0260       0.0038        0.182
##
##                subj=019, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     53       0   1.0000  0.0000       1.0000        1.000
##    25     27      26   0.5094  0.0687       0.3912        0.663
##    50     16      11   0.3019  0.0631       0.2005        0.455
##    75     10       6   0.1887  0.0537       0.1080        0.330
##   100      4       6   0.0755  0.0363       0.0294        0.194
##
##                subj=019, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     49       0   1.0000  0.0000      1.00000        1.000
##    25     25      24   0.5102  0.0714      0.38779        0.671
##    50     10      15   0.2041  0.0576      0.11740        0.355
##    75      6       4   0.1224  0.0468      0.05787        0.259
##   100      4       2   0.0816  0.0391      0.03192        0.209
##   125      1       3   0.0204  0.0202      0.00293        0.142
##
##                subj=027, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     18       0    1.000   0.000        1.000        1.000
##    25     10       8    0.556   0.117        0.368        0.840
##    50     10       0    0.556   0.117        0.368        0.840
##    75     10       0    0.556   0.117        0.368        0.840
##   100      9       1    0.500   0.118        0.315        0.794
```

```
##   125      8       1    0.444   0.117        0.265        0.745
##   150      7       1    0.389   0.115        0.218        0.694
##   175      7       0    0.389   0.115        0.218        0.694
##   200      7       0    0.389   0.115        0.218        0.694
##   225      7       0    0.389   0.115        0.218        0.694
##   250      7       0    0.389   0.115        0.218        0.694
##
##                subj=027, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     44       0    1.000  0.0000        1.000        1.000
##    25     40       4    0.909  0.0433        0.828        0.998
##    50     36       4    0.818  0.0581        0.712        0.940
##    75     31       5    0.705  0.0688        0.582        0.853
##   100     26       5    0.591  0.0741        0.462        0.756
##   125     25       1    0.568  0.0747        0.439        0.735
##   150     22       3    0.500  0.0754        0.372        0.672
##   175     21       1    0.477  0.0753        0.350        0.650
##   200     19       2    0.432  0.0747        0.308        0.606
##   225     19       0    0.432  0.0747        0.308        0.606
##   250     19       0    0.432  0.0747        0.308        0.606
##
##                subj=027, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     32       0    1.000  0.0000        1.000        1.000
##    25     28       4    0.875  0.0585        0.768        0.997
##    50     25       3    0.781  0.0731        0.650        0.938
##    75     23       2    0.719  0.0795        0.579        0.893
##   100     23       0    0.719  0.0795        0.579        0.893
##   125     23       0    0.719  0.0795        0.579        0.893
##   150     23       0    0.719  0.0795        0.579        0.893
##   175     21       2    0.656  0.0840        0.511        0.843
##   200     19       2    0.594  0.0868        0.446        0.791
##   225     19       0    0.594  0.0868        0.446        0.791
##   250     19       0    0.594  0.0868        0.446        0.791
##
##                subj=027, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     28       0    1.000  0.0000        1.000        1.000
##    25     26       2    0.929  0.0487        0.838        1.000
##    50     24       2    0.857  0.0661        0.737        0.997
##    75     22       2    0.786  0.0775        0.648        0.953
##   100     22       0    0.786  0.0775        0.648        0.953
##   125     22       0    0.786  0.0775        0.648        0.953
##   150     20       2    0.714  0.0854        0.565        0.903
##   175     19       1    0.679  0.0883        0.526        0.876
##   200     19       0    0.679  0.0883        0.526        0.876
##   225     19       0    0.679  0.0883        0.526        0.876
##   250     19       0    0.679  0.0883        0.526        0.876
##
##                subj=027, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     37       0    1.000  0.0000        1.000        1.000
##    25     32       5    0.865  0.0562        0.761        0.982
##    50     30       2    0.811  0.0644        0.694        0.947
```

```
##    75     28       2    0.757  0.0705        0.630        0.908
##   100     27       1    0.730  0.0730        0.600        0.888
##   125     25       2    0.676  0.0770        0.540        0.845
##   150     23       2    0.622  0.0797        0.483        0.799
##   175     21       2    0.568  0.0814        0.428        0.752
##   200     19       2    0.514  0.0822        0.375        0.703
##   225     17       2    0.459  0.0819        0.324        0.652
##   250     16       1    0.432  0.0814        0.299        0.626
##
##                subj=027, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     23       0    1.000  0.0000       1.0000        1.000
##    25     17       6    0.739  0.0916       0.5798        0.942
##    50     14       3    0.609  0.1018       0.4386        0.845
##    75     14       0    0.609  0.1018       0.4386        0.845
##   100     12       2    0.522  0.1042       0.3528        0.772
##   125      9       3    0.391  0.1018       0.2350        0.651
##   150      8       1    0.348  0.0993       0.1988        0.609
##   175      7       1    0.304  0.0959       0.1641        0.565
##   200      7       0    0.304  0.0959       0.1641        0.565
##   225      6       1    0.261  0.0916       0.1311        0.519
##   250      4       2    0.174  0.0790       0.0714        0.424
##
##                subj=027, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     26       0    1.000  0.0000        1.000        1.000
##    25     23       3    0.885  0.0627        0.770        1.000
##    50     20       3    0.769  0.0826        0.623        0.949
##    75     16       4    0.615  0.0954        0.454        0.834
##   100     15       1    0.577  0.0969        0.415        0.802
##   125     15       0    0.577  0.0969        0.415        0.802
##   150     15       0    0.577  0.0969        0.415        0.802
##   175     15       0    0.577  0.0969        0.415        0.802
##   200     14       1    0.538  0.0978        0.377        0.769
##   225     14       0    0.538  0.0978        0.377        0.769
##   250     12       2    0.462  0.0978        0.305        0.699
##
##                subj=031, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     39       0    1.000  0.0000        1.000        1.000
##    25     33       6    0.846  0.0578        0.740        0.967
##    50     30       3    0.769  0.0675        0.648        0.914
##    75     28       2    0.718  0.0721        0.590        0.874
##   100     25       3    0.641  0.0768        0.507        0.811
##   125     21       4    0.538  0.0798        0.403        0.720
##   150     19       2    0.487  0.0800        0.353        0.672
##   175     16       3    0.410  0.0788        0.282        0.598
##   200     15       1    0.385  0.0779        0.259        0.572
##   225     13       2    0.333  0.0755        0.214        0.520
##   250      9       4    0.231  0.0675        0.130        0.409
##
##                subj=031, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     57       0    1.000  0.0000        1.000        1.000
```

```
##    25     51       6    0.895  0.0406        0.819        0.978
##    50     45       6    0.789  0.0540        0.690        0.903
##    75     40       5    0.702  0.0606        0.592        0.831
##   100     32       8    0.561  0.0657        0.446        0.706
##   125     29       3    0.509  0.0662        0.394        0.657
##   150     25       4    0.439  0.0657        0.327        0.588
##   175     23       3    0.386  0.0645        0.278        0.535
##   200     18       4    0.316  0.0616        0.215        0.463
##   225     14       4    0.246  0.0570        0.156        0.387
##   250     13       1    0.228  0.0556        0.141        0.368
##
##                subj=031, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     53       0    1.000  0.0000        1.000        1.000
##    25     45       8    0.849  0.0492        0.758        0.951
##    50     36       9    0.679  0.0641        0.565        0.817
##    75     31       5    0.585  0.0677        0.466        0.734
##   100     30       1    0.566  0.0681        0.447        0.717
##   125     24       6    0.453  0.0684        0.337        0.609
##   150     23       1    0.434  0.0681        0.319        0.590
##   175     21       2    0.396  0.0672        0.284        0.552
##   200     16       5    0.302  0.0631        0.200        0.455
##   225     12       4    0.226  0.0575        0.138        0.372
##   250     10       2    0.189  0.0537        0.108        0.330
##
##                subj=031, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     80       0    1.000  0.0000        1.000        1.000
##    25     64      16    0.800  0.0447        0.717        0.893
##    50     53      11    0.663  0.0529        0.567        0.775
##    75     46       7    0.575  0.0553        0.476        0.694
##   100     34      12    0.425  0.0553        0.329        0.548
##   125     27       7    0.337  0.0529        0.248        0.459
##   150     26       1    0.325  0.0524        0.237        0.446
##   175     25       1    0.312  0.0518        0.226        0.433
##   200     23       2    0.287  0.0506        0.204        0.406
##   225     21       2    0.262  0.0492        0.182        0.379
##   250     18       3    0.225  0.0467        0.150        0.338
##
##                subj=031, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     63       0   1.0000  0.0000       1.0000        1.000
##    25     52      11   0.8254  0.0478       0.7368        0.925
##    50     38      14   0.6032  0.0616       0.4937        0.737
##    75     31       7   0.4921  0.0630       0.3829        0.632
##   100     19      12   0.3016  0.0578       0.2071        0.439
##   125     16       3   0.2540  0.0548       0.1663        0.388
##   150     14       2   0.2222  0.0524       0.1400        0.353
##   175      8       6   0.1270  0.0419       0.0665        0.243
##   200      6       2   0.0952  0.0370       0.0445        0.204
##   225      6       0   0.0952  0.0370       0.0445        0.204
##   250      5       1   0.0794  0.0341       0.0342        0.184
##
##                subj=031, dayofwear=5
```

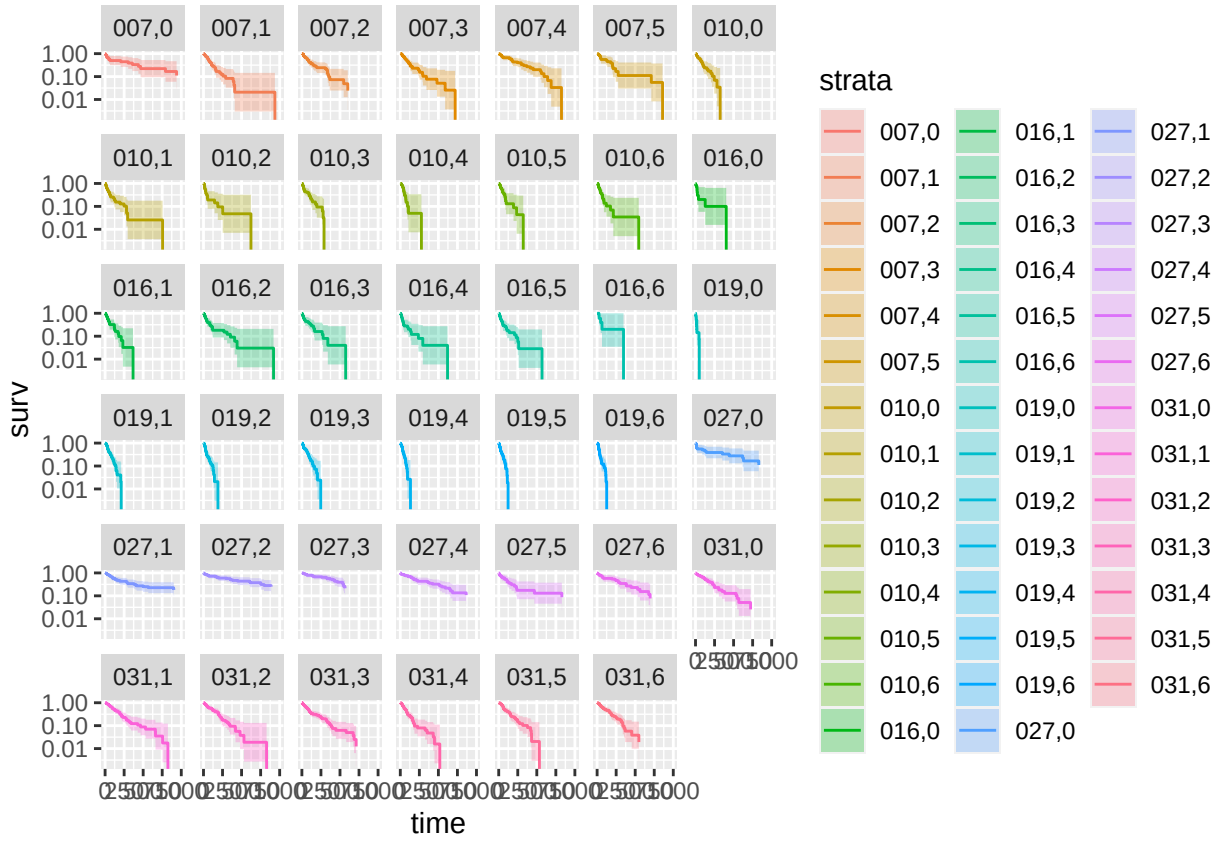
```
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     49       0    1.000  0.0000        1.000        1.000
##    25     44       5    0.898  0.0432        0.817        0.987
##    50     37       7    0.755  0.0614        0.644        0.886
##    75     24      13    0.490  0.0714        0.368        0.652
##   100     22       2    0.449  0.0711        0.329        0.612
##   125     20       2    0.408  0.0702        0.291        0.572
##   150     17       3    0.347  0.0680        0.236        0.509
##   175     12       5    0.245  0.0614        0.150        0.400
##   200     12       0    0.245  0.0614        0.150        0.400
##   225     10       2    0.204  0.0576        0.117        0.355
##   250      7       3    0.143  0.0500        0.072        0.284
##
##                subj=031, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     52       0    1.000  0.0000        1.000        1.000
##    25     48       4    0.923  0.0370        0.853        0.998
##    50     37      11    0.712  0.0628        0.598        0.846
##    75     32       5    0.615  0.0675        0.496        0.763
##   100     27       5    0.519  0.0693        0.400        0.674
##   125     25       2    0.481  0.0693        0.362        0.638
##   150     24       1    0.462  0.0691        0.344        0.619
##   175     19       5    0.365  0.0668        0.255        0.523
##   200     14       5    0.269  0.0615        0.172        0.421
##   225     14       1    0.250  0.0600        0.156        0.400
##   250     12       1    0.231  0.0584        0.140        0.379
```

```
autoplot(wearfit)  +
  xlim(c(0,1000)) +
  facet_wrap(~strata) +
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.
```

```
## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis
```

```
## Warning: Removed 38 rows containing missing values (`geom_step()`).
```



We can see the plots for each of the subjects at the 60 day mark. Subject 007 only had the device for 6 days which makes reading this chart a little more difficult, but we can still see that day 0 may have an impact on time for subjects 007, 027, and 031.

I am going to now look at 90 days to see if there is much difference between the two.

'Figure 18'

```
wearfit <- survfit(Surv(dur_s,status) ~ subj + dayofwear  ,
                   data = result %>%
                     filter( dayofwear < 7) %>%
                    filter (trial == 90))

summary(wearfit, times = c(1,25*(1:10)))
```

```
## Call: survfit(formula = Surv(dur_s, status) ~ subj + dayofwear, data = result %>%
##     filter(dayofwear < 7) %>% filter(trial == 90))
##
##                 subj=007, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     26       0   1.0000  0.0000      1.00000        1.000
##    25     18       8   0.6923  0.0905      0.53581        0.895
##    50     14       4   0.5385  0.0978      0.37723        0.769
##    75      8       6   0.3077  0.0905      0.17287        0.548
##   100      6       2   0.2308  0.0826      0.11439        0.466
##   125      2       4   0.0769  0.0523      0.02031        0.291
##   150      2       0   0.0769  0.0523      0.02031        0.291
```

```
##   175      2       0   0.0769  0.0523      0.02031        0.291
##   200      2       0   0.0769  0.0523      0.02031        0.291
##   225      1       1   0.0385  0.0377      0.00563        0.263
##
##                subj=007, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     36       0   1.0000  0.0000      1.00000        1.000
##    25     26      10   0.7222  0.0747      0.58978        0.884
##    50     18       8   0.5000  0.0833      0.36066        0.693
##    75     15       3   0.4167  0.0822      0.28309        0.613
##   100     12       3   0.3333  0.0786      0.21001        0.529
##   125      6       6   0.1667  0.0621      0.08028        0.346
##   150      4       2   0.1111  0.0524      0.04411        0.280
##   175      2       2   0.0556  0.0382      0.01445        0.214
##   200      1       1   0.0278  0.0274      0.00402        0.192
##   225      1       0   0.0278  0.0274      0.00402        0.192
##   250      1       0   0.0278  0.0274      0.00402        0.192
##
##                subj=007, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     30       0    1.000  0.0000       1.0000        1.000
##    25     20      10    0.667  0.0861       0.5176        0.859
##    50     13       7    0.433  0.0905       0.2878        0.652
##    75     10       3    0.333  0.0861       0.2010        0.553
##   100      8       2    0.267  0.0807       0.1473        0.483
##   125      7       1    0.233  0.0772       0.1220        0.446
##   150      5       2    0.167  0.0680       0.0749        0.371
##   175      5       0    0.167  0.0680       0.0749        0.371
##   200      3       2    0.100  0.0548       0.0342        0.293
##   225      3       0    0.100  0.0548       0.0342        0.293
##   250      3       0    0.100  0.0548       0.0342        0.293
##
##                subj=007, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     55       0   1.0000  0.0000       1.0000        1.000
##    25     47       8   0.8545  0.0475       0.7663        0.953
##    50     34      13   0.6182  0.0655       0.5022        0.761
##    75     27       7   0.4909  0.0674       0.3751        0.643
##   100     21       6   0.3818  0.0655       0.2728        0.534
##   125     14       7   0.2545  0.0587       0.1619        0.400
##   150      9       5   0.1636  0.0499       0.0900        0.297
##   175      8       1   0.1455  0.0475       0.0767        0.276
##   200      6       2   0.1091  0.0420       0.0513        0.232
##   225      6       0   0.1091  0.0420       0.0513        0.232
##   250      4       2   0.0727  0.0350       0.0283        0.187
##
##                subj=007, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     53       0   1.0000  0.0000       1.0000        1.000
##    25     44       9   0.8302  0.0516       0.7350        0.938
##    50     26      18   0.4906  0.0687       0.3729        0.645
##    75     17       9   0.3208  0.0641       0.2168        0.475
##   100     15       2   0.2830  0.0619       0.1844        0.434
##   125     10       5   0.1887  0.0537       0.1080        0.330
```

```
##   150      7       3   0.1321  0.0465       0.0662        0.263
##   175      6       1   0.1132  0.0435       0.0533        0.241
##   200      4       2   0.0755  0.0363       0.0294        0.194
##   225      3       1   0.0566  0.0317       0.0189        0.170
##   250      3       0   0.0566  0.0317       0.0189        0.170
##
##                subj=007, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     64       0   1.0000  0.0000       1.0000        1.000
##    25     49      15   0.7656  0.0530       0.6686        0.877
##    50     31      18   0.4844  0.0625       0.3762        0.624
##    75     15      16   0.2344  0.0530       0.1505        0.365
##   100     10       5   0.1562  0.0454       0.0884        0.276
##   125      7       3   0.1094  0.0390       0.0544        0.220
##   150      6       1   0.0938  0.0364       0.0438        0.201
##   175      6       0   0.0938  0.0364       0.0438        0.201
##   200      5       1   0.0781  0.0335       0.0337        0.181
##   225      5       0   0.0781  0.0335       0.0337        0.181
##   250      5       0   0.0781  0.0335       0.0337        0.181
##
##                subj=007, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     69       0    1.000  0.0000       1.0000        1.000
##    25     51      18    0.739  0.0529       0.6425        0.850
##    50     41      10    0.594  0.0591       0.4889        0.722
##    75     30      11    0.435  0.0597       0.3322        0.569
##   100     24       6    0.348  0.0573       0.2518        0.480
##   125     20       4    0.290  0.0546       0.2003        0.419
##   150     17       3    0.246  0.0519       0.1631        0.372
##   175     14       3    0.203  0.0484       0.1271        0.324
##   200     11       3    0.159  0.0441       0.0927        0.274
##   225     11       0    0.159  0.0441       0.0927        0.274
##   250      8       3    0.116  0.0385       0.0604        0.222
##
##                subj=010, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     11       0   1.0000  0.0000       1.0000        1.000
##    25      9       2   0.8182  0.1163       0.6192        1.000
##    50      6       3   0.5455  0.1501       0.3180        0.936
##    75      5       1   0.4545  0.1501       0.2379        0.868
##   100      5       0   0.4545  0.1501       0.2379        0.868
##   125      3       2   0.2727  0.1343       0.1039        0.716
##   150      2       1   0.1818  0.1163       0.0519        0.637
##   175      1       1   0.0909  0.0867       0.0140        0.589
##   200      1       0   0.0909  0.0867       0.0140        0.589
##   225      1       0   0.0909  0.0867       0.0140        0.589
##
##                subj=010, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     22       0    1.000  0.0000       1.0000        1.000
##    25     16       6    0.727  0.0950       0.5631        0.939
##    50     13       3    0.591  0.1048       0.4174        0.837
##    75      9       4    0.409  0.1048       0.2476        0.676
##   100      7       2    0.318  0.0993       0.1726        0.587
```

```
##   125      6       1    0.273  0.0950       0.1378        0.540
##   150      6       0    0.273  0.0950       0.1378        0.540
##   175      5       1    0.227  0.0893       0.1052        0.491
##   200      5       0    0.227  0.0893       0.1052        0.491
##   225      5       0    0.227  0.0893       0.1052        0.491
##   250      3       2    0.136  0.0732       0.0476        0.390
##
##                subj=010, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     19       0   1.0000  0.0000      1.00000        1.000
##    25     11       8   0.5789  0.1133      0.39455        0.850
##    50      4       7   0.2105  0.0935      0.08814        0.503
##    75      1       3   0.0526  0.0512      0.00781        0.355
##   100      1       0   0.0526  0.0512      0.00781        0.355
##   125      1       0   0.0526  0.0512      0.00781        0.355
##   150      1       0   0.0526  0.0512      0.00781        0.355
##   175      1       0   0.0526  0.0512      0.00781        0.355
##   200      1       0   0.0526  0.0512      0.00781        0.355
##   225      1       0   0.0526  0.0512      0.00781        0.355
##   250      1       0   0.0526  0.0512      0.00781        0.355
##
##                subj=010, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     26       0   1.0000  0.0000      1.00000        1.000
##    25     10      16   0.3846  0.0954      0.23652        0.625
##    50      9       2   0.3077  0.0905      0.17287        0.548
##    75      4       4   0.1538  0.0708      0.06246        0.379
##   100      2       2   0.0769  0.0523      0.02031        0.291
##   125      2       0   0.0769  0.0523      0.02031        0.291
##   150      2       0   0.0769  0.0523      0.02031        0.291
##   175      1       1   0.0385  0.0377      0.00563        0.263
##   200      1       0   0.0385  0.0377      0.00563        0.263
##   225      1       0   0.0385  0.0377      0.00563        0.263
##
##                subj=010, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     23       0   1.0000  0.0000      1.00000        1.000
##    25     15       8   0.6522  0.0993      0.48389        0.879
##    50     11       4   0.4783  0.1042      0.31209        0.733
##    75      9       2   0.3913  0.1018      0.23504        0.651
##   100      4       5   0.1739  0.0790      0.07137        0.424
##   125      2       2   0.0870  0.0588      0.02313        0.327
##   150      1       1   0.0435  0.0425      0.00639        0.296
##   175      1       0   0.0435  0.0425      0.00639        0.296
##
##                subj=010, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     10       0      1.0  0.0000       1.0000        1.000
##    25      9       1      0.9  0.0949       0.7320        1.000
##    50      7       2      0.7  0.1449       0.4665        1.000
##    75      5       2      0.5  0.1581       0.2690        0.929
##   100      3       2      0.3  0.1449       0.1164        0.773
##   125      1       2      0.1  0.0949       0.0156        0.642
##
```

```
##                subj=010, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     26       0   1.0000  0.0000      1.00000        1.000
##    25     11      15   0.4231  0.0969      0.27007        0.663
##    50      6       5   0.2308  0.0826      0.11439        0.466
##    75      4       2   0.1538  0.0708      0.06246        0.379
##   100      3       1   0.1154  0.0627      0.03980        0.334
##   125      3       0   0.1154  0.0627      0.03980        0.334
##   150      1       2   0.0385  0.0377      0.00563        0.263
##   175      1       0   0.0385  0.0377      0.00563        0.263
##   200      1       0   0.0385  0.0377      0.00563        0.263
##   225      1       0   0.0385  0.0377      0.00563        0.263
##   250      1       0   0.0385  0.0377      0.00563        0.263
##
##                subj=016, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     11       0    1.000   0.000       1.0000        1.000
##    25      6       5    0.545   0.150       0.3180        0.936
##    50      5       1    0.455   0.150       0.2379        0.868
##    75      4       1    0.364   0.145       0.1664        0.795
##   100      4       0    0.364   0.145       0.1664        0.795
##   125      4       0    0.364   0.145       0.1664        0.795
##   150      3       1    0.273   0.134       0.1039        0.716
##   175      3       0    0.273   0.134       0.1039        0.716
##   200      3       0    0.273   0.134       0.1039        0.716
##   225      2       1    0.182   0.116       0.0519        0.637
##   250      2       0    0.182   0.116       0.0519        0.637
##
##                subj=016, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     18       0    1.000  0.0000       1.0000        1.000
##    25     16       2    0.889  0.0741       0.7549        1.000
##    50     12       4    0.667  0.1111       0.4809        0.924
##    75     10       2    0.556  0.1171       0.3675        0.840
##   100      6       4    0.333  0.1111       0.1734        0.641
##   125      4       2    0.222  0.0980       0.0936        0.527
##   150      4       0    0.222  0.0980       0.0936        0.527
##   175      4       0    0.222  0.0980       0.0936        0.527
##   200      2       2    0.111  0.0741       0.0301        0.410
##   225      2       0    0.111  0.0741       0.0301        0.410
##   250      2       0    0.111  0.0741       0.0301        0.410
##
##                subj=016, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     19       0    1.000  0.0000       1.0000        1.000
##    25     13       6    0.684  0.1066       0.5041        0.929
##    50      8       5    0.421  0.1133       0.2485        0.713
##    75      8       0    0.421  0.1133       0.2485        0.713
##   100      7       1    0.368  0.1107       0.2045        0.664
##   125      5       2    0.263  0.1010       0.1240        0.558
##   150      5       0    0.263  0.1010       0.1240        0.558
##   175      5       0    0.263  0.1010       0.1240        0.558
##   200      5       0    0.263  0.1010       0.1240        0.558
##   225      4       1    0.211  0.0935       0.0881        0.503
```

```
##   250      4       0    0.211  0.0935       0.0881        0.503
##
##                subj=016, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     37       0   1.0000  0.0000       1.0000        1.000
##    25     26      11   0.7027  0.0751       0.5698        0.867
##    50     17       9   0.4595  0.0819       0.3239        0.652
##    75     10       7   0.2703  0.0730       0.1592        0.459
##   100      5       5   0.1351  0.0562       0.0598        0.305
##   125      5       0   0.1351  0.0562       0.0598        0.305
##   150      4       1   0.1081  0.0510       0.0428        0.273
##   175      2       2   0.0541  0.0372       0.0140        0.208
##   200      2       0   0.0541  0.0372       0.0140        0.208
##   225      2       0   0.0541  0.0372       0.0140        0.208
##   250      2       0   0.0541  0.0372       0.0140        0.208
##
##                subj=016, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     25       0     1.00  0.0000       1.0000        1.000
##    25     18       7     0.72  0.0898       0.5639        0.919
##    50     12       6     0.48  0.0999       0.3192        0.722
##    75     12       0     0.48  0.0999       0.3192        0.722
##   100      7       5     0.28  0.0898       0.1493        0.525
##   125      6       1     0.24  0.0854       0.1195        0.482
##   150      4       2     0.16  0.0733       0.0652        0.393
##   175      4       0     0.16  0.0733       0.0652        0.393
##   200      3       1     0.12  0.0650       0.0415        0.347
##   225      3       0     0.12  0.0650       0.0415        0.347
##   250      3       0     0.12  0.0650       0.0415        0.347
##
##                subj=016, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     36       0   1.0000  0.0000       1.0000        1.000
##    25     23      13   0.6389  0.0801       0.4998        0.817
##    50     20       3   0.5556  0.0828       0.4148        0.744
##    75     14       6   0.3889  0.0812       0.2582        0.586
##   100     10       4   0.2778  0.0747       0.1640        0.470
##   125      8       2   0.2222  0.0693       0.1206        0.409
##   150      6       2   0.1667  0.0621       0.0803        0.346
##   175      5       1   0.1389  0.0576       0.0616        0.313
##   200      4       1   0.1111  0.0524       0.0441        0.280
##   225      3       1   0.0833  0.0461       0.0282        0.246
##   250      3       0   0.0833  0.0461       0.0282        0.246
##
##                subj=016, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     26       0    1.000  0.0000       1.0000        1.000
##    25     20       6    0.769  0.0826       0.6232        0.949
##    50     14       6    0.538  0.0978       0.3772        0.769
##    75     13       1    0.500  0.0981       0.3404        0.734
##   100     11       2    0.423  0.0969       0.2701        0.663
##   125      7       4    0.269  0.0870       0.1429        0.507
##   150      4       3    0.154  0.0708       0.0625        0.379
##   175      4       0    0.154  0.0708       0.0625        0.379
```

```
##   200      4       0    0.154  0.0708       0.0625        0.379
##   225      4       0    0.154  0.0708       0.0625        0.379
##   250      4       0    0.154  0.0708       0.0625        0.379
##
##                subj=019, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     26       0    1.000  0.0000       1.0000        1.000
##    25     14      12    0.538  0.0978       0.3772        0.769
##    50      7       7    0.269  0.0870       0.1429        0.507
##    75      5       2    0.192  0.0773       0.0875        0.423
##   100      5       0    0.192  0.0773       0.0875        0.423
##   125      4       1    0.154  0.0708       0.0625        0.379
##
##                subj=019, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     47       0   1.0000  0.0000      1.00000        1.000
##    25     21      26   0.4468  0.0725      0.32506        0.614
##    50     13       8   0.2766  0.0652      0.17420        0.439
##    75     11       2   0.2340  0.0618      0.13953        0.393
##   100      6       5   0.1277  0.0487      0.06046        0.270
##   125      5       1   0.1064  0.0450      0.04645        0.244
##   150      3       2   0.0638  0.0357      0.02136        0.191
##   175      2       1   0.0426  0.0294      0.01096        0.165
##   200      2       0   0.0426  0.0294      0.01096        0.165
##   225      1       1   0.0213  0.0210      0.00306        0.148
##   250      1       0   0.0213  0.0210      0.00306        0.148
##
##                subj=019, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     27       0    1.000  0.0000      1.00000        1.000
##    25     15      12    0.556  0.0956      0.39647        0.778
##    50      9       6    0.333  0.0907      0.19553        0.568
##    75      5       4    0.185  0.0748      0.08394        0.409
##   100      3       2    0.111  0.0605      0.03823        0.323
##   125      1       2    0.037  0.0363      0.00541        0.253
##   150      1       0    0.037  0.0363      0.00541        0.253
##   175      1       0    0.037  0.0363      0.00541        0.253
##
##                subj=019, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     47       0   1.0000  0.0000       1.0000        1.000
##    25     29      18   0.6170  0.0709       0.4926        0.773
##    50     17      12   0.3617  0.0701       0.2474        0.529
##    75      9       8   0.1915  0.0574       0.1064        0.345
##   100      3       6   0.0638  0.0357       0.0214        0.191
##
##                subj=019, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     70       0   1.0000  0.0000      1.00000        1.000
##    25     41      29   0.5857  0.0589      0.48097        0.713
##    50     24      17   0.3429  0.0567      0.24789        0.474
##    75     20       4   0.2857  0.0540      0.19727        0.414
##   100      8      12   0.1143  0.0380      0.05953        0.219
##   125      4       4   0.0571  0.0277      0.02206        0.148
```

```
##   150      2       2   0.0286  0.0199      0.00729        0.112
##   175      1       1   0.0143  0.0142      0.00204        0.100
##   200      1       0   0.0143  0.0142      0.00204        0.100
##
##                subj=019, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     79       0   1.0000  0.0000      1.00000       1.0000
##    25     37      42   0.4684  0.0561      0.37029       0.5924
##    50     17      20   0.2152  0.0462      0.14123       0.3279
##    75     11       6   0.1392  0.0390      0.08047       0.2409
##   100      4       7   0.0506  0.0247      0.01949       0.1316
##   125      4       0   0.0506  0.0247      0.01949       0.1316
##   150      1       3   0.0127  0.0126      0.00181       0.0888
##
##                subj=019, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     49       0   1.0000  0.0000       1.0000        1.000
##    25     26      23   0.5306  0.0713       0.4078        0.690
##    50     16      10   0.3265  0.0670       0.2184        0.488
##    75     13       3   0.2653  0.0631       0.1665        0.423
##   100      7       6   0.1429  0.0500       0.0720        0.284
##   125      4       3   0.0816  0.0391       0.0319        0.209
##   150      3       1   0.0612  0.0342       0.0205        0.183
##   175      3       0   0.0612  0.0342       0.0205        0.183
##   200      2       1   0.0408  0.0283       0.0105        0.159
##   225      2       0   0.0408  0.0283       0.0105        0.159
##   250      2       0   0.0408  0.0283       0.0105        0.159
##
##                subj=027, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     12       0    1.000  0.0000        1.000        1.000
##    25     11       1    0.917  0.0798        0.773        1.000
##    50      9       2    0.750  0.1250        0.541        1.000
##    75      8       1    0.667  0.1361        0.447        0.995
##   100      8       0    0.667  0.1361        0.447        0.995
##   125      7       1    0.583  0.1423        0.362        0.941
##   150      7       0    0.583  0.1423        0.362        0.941
##   175      6       1    0.500  0.1443        0.284        0.880
##   200      6       0    0.500  0.1443        0.284        0.880
##   225      6       0    0.500  0.1443        0.284        0.880
##   250      6       0    0.500  0.1443        0.284        0.880
##
##                subj=027, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     22       0    1.000  0.0000        1.000        1.000
##    25     15       7    0.682  0.0993        0.513        0.907
##    50     12       3    0.545  0.1062        0.372        0.799
##    75     12       0    0.545  0.1062        0.372        0.799
##   100     12       0    0.545  0.1062        0.372        0.799
##   125     12       0    0.545  0.1062        0.372        0.799
##   150     10       2    0.455  0.1062        0.288        0.718
##   175      8       2    0.364  0.1026        0.209        0.632
##   200      7       1    0.318  0.0993        0.173        0.587
##   225      7       0    0.318  0.0993        0.173        0.587
```

```
##   250      7       0    0.318  0.0993        0.173        0.587
##
##                subj=027, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     20       0     1.00  0.0000        1.000        1.000
##    25     17       3     0.85  0.0798        0.707        1.000
##    50     14       3     0.70  0.1025        0.525        0.933
##    75     10       4     0.50  0.1118        0.323        0.775
##   100      9       1     0.45  0.1112        0.277        0.731
##   125      6       3     0.30  0.1025        0.154        0.586
##   150      6       0     0.30  0.1025        0.154        0.586
##   175      6       0     0.30  0.1025        0.154        0.586
##   200      6       0     0.30  0.1025        0.154        0.586
##   225      5       1     0.25  0.0968        0.117        0.534
##   250      5       0     0.25  0.0968        0.117        0.534
##
##                subj=027, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     36       0    1.000  0.0000        1.000        1.000
##    25     28       8    0.778  0.0693        0.653        0.926
##    50     23       5    0.639  0.0801        0.500        0.817
##    75     19       4    0.528  0.0832        0.387        0.719
##   100     14       5    0.389  0.0812        0.258        0.586
##   125     14       0    0.389  0.0812        0.258        0.586
##   150     13       1    0.361  0.0801        0.234        0.558
##   175     12       1    0.333  0.0786        0.210        0.529
##   200     11       1    0.306  0.0768        0.187        0.500
##   225     11       0    0.306  0.0768        0.187        0.500
##   250     11       0    0.306  0.0768        0.187        0.500
##
##                subj=027, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     20       0     1.00  0.0000        1.000        1.000
##    25     12       8     0.60  0.1095        0.420        0.858
##    50     11       1     0.55  0.1112        0.370        0.818
##    75      9       2     0.45  0.1112        0.277        0.731
##   100      9       0     0.45  0.1112        0.277        0.731
##   125      7       2     0.35  0.1067        0.193        0.636
##   150      7       0     0.35  0.1067        0.193        0.636
##   175      6       1     0.30  0.1025        0.154        0.586
##   200      6       0     0.30  0.1025        0.154        0.586
##   225      6       0     0.30  0.1025        0.154        0.586
##   250      5       1     0.25  0.0968        0.117        0.534
##
##                subj=027, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     29       0    1.000  0.0000        1.000        1.000
##    25     23       6    0.793  0.0752        0.659        0.955
##    50     16       7    0.552  0.0923        0.397        0.766
##    75     14       2    0.483  0.0928        0.331        0.704
##   100     12       2    0.414  0.0915        0.268        0.638
##   125      8       4    0.276  0.0830        0.153        0.497
##   150      7       1    0.241  0.0795        0.127        0.460
##   175      7       0    0.241  0.0795        0.127        0.460
```

```
##   200      6       1    0.207  0.0752        0.101        0.422
##   225      6       0    0.207  0.0752        0.101        0.422
##   250      6       0    0.207  0.0752        0.101        0.422
##
##                subj=027, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     27       0    1.000  0.0000        1.000        1.000
##    25     23       4    0.852  0.0684        0.728        0.997
##    50     16       7    0.593  0.0946        0.433        0.810
##    75     13       3    0.481  0.0962        0.326        0.712
##   100     11       2    0.407  0.0946        0.259        0.642
##   125      8       3    0.296  0.0879        0.166        0.530
##   150      6       2    0.222  0.0800        0.110        0.450
##   175      6       0    0.222  0.0800        0.110        0.450
##   200      6       0    0.222  0.0800        0.110        0.450
##   225      6       0    0.222  0.0800        0.110        0.450
##   250      6       0    0.222  0.0800        0.110        0.450
##
##                subj=031, dayofwear=0
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     25       0     1.00  0.0000       1.0000        1.000
##    25     19       6     0.76  0.0854       0.6097        0.947
##    50     19       0     0.76  0.0854       0.6097        0.947
##    75     18       1     0.72  0.0898       0.5639        0.919
##   100     17       1     0.68  0.0933       0.5197        0.890
##   125     14       3     0.56  0.0993       0.3956        0.793
##   150     14       0     0.56  0.0993       0.3956        0.793
##   175     10       4     0.40  0.0980       0.2475        0.646
##   200      8       2     0.32  0.0933       0.1807        0.567
##   225      6       2     0.24  0.0854       0.1195        0.482
##   250      5       1     0.20  0.0800       0.0913        0.438
##
##                subj=031, dayofwear=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     61       0   1.0000  0.0000       1.0000        1.000
##    25     52       9   0.8525  0.0454       0.7679        0.946
##    50     43       9   0.7049  0.0584       0.5993        0.829
##    75     34       9   0.5574  0.0636       0.4457        0.697
##   100     32       2   0.5246  0.0639       0.4131        0.666
##   125     26       6   0.4262  0.0633       0.3186        0.570
##   150     22       4   0.3607  0.0615       0.2582        0.504
##   175     18       4   0.2951  0.0584       0.2002        0.435
##   200     17       1   0.2787  0.0574       0.1861        0.417
##   225      8       9   0.1311  0.0432       0.0687        0.250
##   250      4       4   0.0656  0.0317       0.0254        0.169
##
##                subj=031, dayofwear=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    122       0   1.0000  0.0000       1.0000        1.000
##    25     94      29   0.7623  0.0385       0.6904        0.842
##    50     55      38   0.4508  0.0450       0.3706        0.548
##    75     41      14   0.3361  0.0428       0.2619        0.431
##   100     27      14   0.2213  0.0376       0.1587        0.309
##   125     23       4   0.1885  0.0354       0.1305        0.272
```

```
##   150     19       4   0.1557  0.0328       0.1030        0.235
##   175     14       5   0.1148  0.0289       0.0701        0.188
##   200     11       3   0.0902  0.0259       0.0513        0.158
##   225      8       3   0.0656  0.0224       0.0336        0.128
##   250      4       4   0.0328  0.0161       0.0125        0.086
##
##                subj=031, dayofwear=3
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     74       0    1.000  0.0000        1.000        1.000
##    25     63      11    0.851  0.0414        0.774        0.936
##    50     53      10    0.716  0.0524        0.621        0.827
##    75     44       9    0.595  0.0571        0.493        0.718
##   100     34      10    0.459  0.0579        0.359        0.588
##   125     30       4    0.405  0.0571        0.308        0.534
##   150     25       5    0.338  0.0550        0.246        0.465
##   175     24       1    0.324  0.0544        0.233        0.451
##   200     24       0    0.324  0.0544        0.233        0.451
##   225     20       4    0.270  0.0516        0.186        0.393
##   250     17       3    0.230  0.0489        0.151        0.349
##
##                subj=031, dayofwear=4
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     70       0    1.000  0.0000        1.000        1.000
##    25     62       8    0.886  0.0380        0.814        0.963
##    50     50      12    0.714  0.0540        0.616        0.828
##    75     36      14    0.514  0.0597        0.410        0.646
##   100     32       4    0.457  0.0595        0.354        0.590
##   125     27       5    0.386  0.0582        0.287        0.518
##   150     24       3    0.343  0.0567        0.248        0.474
##   175     23       1    0.329  0.0561        0.235        0.459
##   200     17       6    0.243  0.0513        0.161        0.367
##   225     16       1    0.229  0.0502        0.149        0.352
##   250     14       2    0.200  0.0478        0.125        0.320
##
##                subj=031, dayofwear=5
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1    107       0    1.000  0.0000       1.0000        1.000
##    25     87      20    0.813  0.0377       0.7425        0.890
##    50     69      18    0.645  0.0463       0.5603        0.742
##    75     55      14    0.514  0.0483       0.4275        0.618
##   100     50       5    0.467  0.0482       0.3817        0.572
##   125     44       6    0.411  0.0476       0.3278        0.516
##   150     42       2    0.393  0.0472       0.3101        0.497
##   175     33       9    0.308  0.0446       0.2322        0.410
##   200     30       3    0.280  0.0434       0.2070        0.380
##   225     22       8    0.206  0.0391       0.1417        0.298
##   250     16       6    0.150  0.0345       0.0952        0.235
##
##                subj=031, dayofwear=6
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     1     80       0    1.000  0.0000        1.000        1.000
##    25     64      16    0.800  0.0447        0.717        0.893
##    50     56       8    0.700  0.0512        0.606        0.808
##    75     42      14    0.525  0.0558        0.426        0.647
```

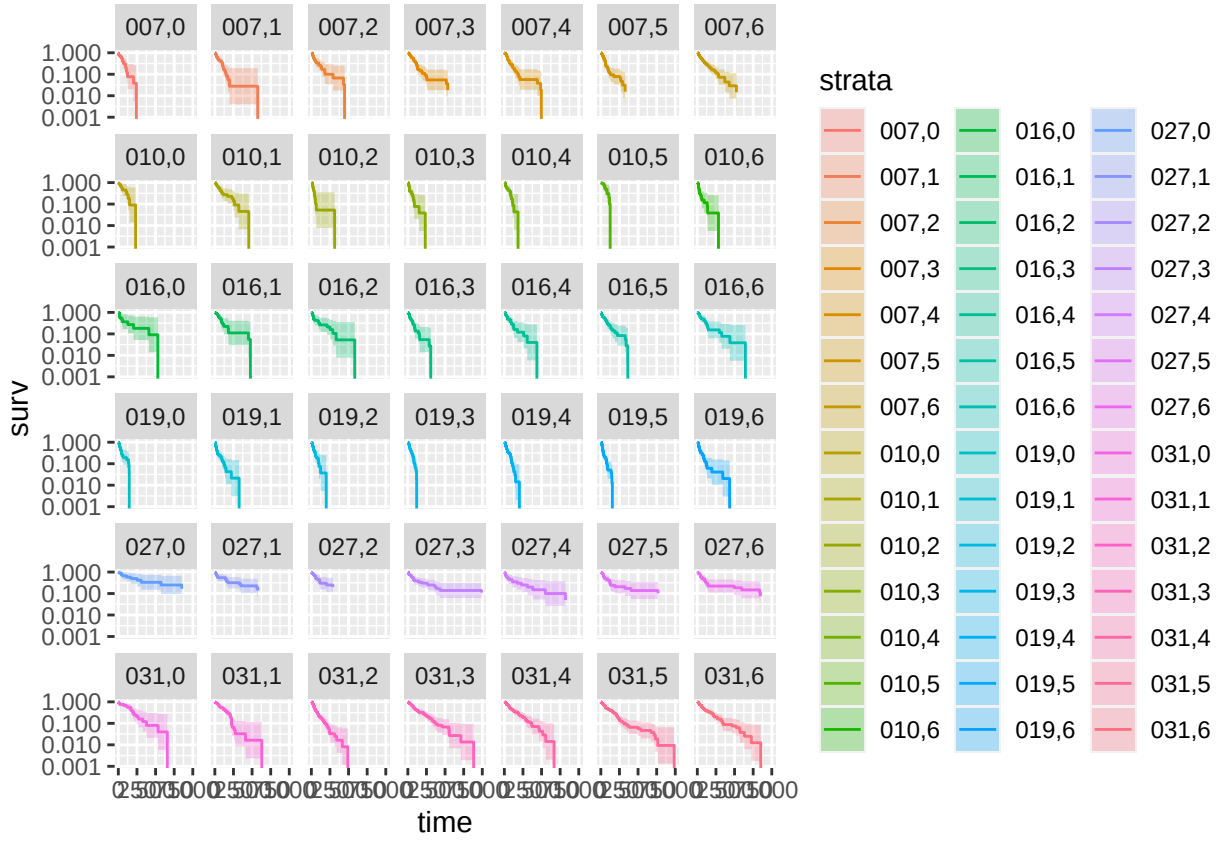
```
##    100      34       8    0.425  0.0553        0.329        0.548
##    125      30       4    0.375  0.0541        0.283        0.498
##    150      28       2    0.350  0.0533        0.260        0.472
##    175      26       2    0.325  0.0524        0.237        0.446
##    200      23       3    0.287  0.0506        0.204        0.406
##    225      17       6    0.212  0.0457        0.139        0.324
##    250      16       1    0.200  0.0447        0.129        0.310
```

```
autoplot(wearfit)  +
  xlim(c(0,1000)) +
  facet_wrap(~strata) +
  scale_y_log10()
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.
```

```
## Warning: Transformation introduced infinite values in continuous y-axis
## Transformation introduced infinite values in continuous y-axis
```

```
## Warning: Removed 22 rows containing missing values (`geom_step()`).
```



Results and Findings

Abstract

It is well known that strokes impact the ability of patients to walk as well as the duration. In this data set, 6 subjects listed as 007, 010, 016, 019, 027, and 031, were tracked at to time points (60 and 90 days after stroke). The day and time of each walk was collected resulting in 3382 unique entries. Each of these entries track the location of each walk (at home: True/False) as well as if their walk ended at home. This means that the subject could have started their walk at their home but walked to their car, convince store, neighbors house, etc. and vice versa. The distance of each walk was also recorded along with the duration of the subject being upright (dur_u) and duration actually stepping (dur_s). The end time of each walk was also recorded allowing for the calculation of finding time upright. To insure anonymity, the majority of the information about the patients were excluded. However, the data set had enough information for analysis on the walking patterns of these subjects.

Process

When looking at the stroke data-set, I wanted to look for the duration of walking based on different variables. Throughout the study, I used various packages but mostly tidyverse, ggplot2, survival, and lubridate. Initially, I found the survival curves for each of trials (60 and 90), then I broke that down even more to subject and trial. The task after looking at that was to then find when each subject received the tracking device to then compare and determine if the number of days after receiving the device made an impact on how long the subjects were walking. Each of the plots in the analysis above can be altered to include more of the co-variates or less depending on what information is requested. I go into further detail in the 'Analysis' portion.

Analysis

When looking at Figure 1, I am filtering the initial stroke data into trial. From there I am making a new variable called 'status' to make a survival function. In this case I am declaring that status = 1 because all of the times have an end point. Because every walk will have a start and an end, there is no need to censor and thus every data point is 1. I did the same for 90 days. This data frame gave me two outputs 'sd60' and 'sd90' which essentially is the same as the original except broken into trial and included the variable status. These data frames became useful when making the survival function in upcoming code chunks.

Figure 2 used the data frames found in Figure 1. Each of the data frames were fit into a Survival Function within the survival package. These Kaplan-Meier survival functions basically compile and combine the parameters of time and status. The main purpose of this code chunk is to be used for plotting a survival plot. The first plot I chose to create with this is the fit function. A fit function shows the survival percentage as well as confidence intervals for times 1, 25, and then every 25 seconds afterwards. In the code chunk Figure 3, I am using the survfit function that takes the Surv function and regresses it against the constant 1. Summary just shows the result of this function before I decide to visualize it. Figure 4 and 5 show these survfit functions for each of the trials. These curves show the generalization for all 6 subjects, which does not account for each of the individual's variability. However, we can see that in general, trial 60 had a higher survival curve than 90 days. I found this to be interesting and wondered if the variability within the subjects caused this.

To break this information down based on subject and trial, I had to begin by creating a new data frame which I called 'alld'. This frame contained everything as the original data frame, but with the addition of status=1. Similar to the process above, I created a survival function that took duration of stepping and status as its parameters and regressed it against subject and trial. This function was then plotted to display the curves of each of the subjects and their trial. From looking at the graph, it is obvious that there were a few subjects who walked significantly more than others, most notable is subject 016. So I know that each of

the subjects are different, but another question that was brought up was if day has an effect on the duration of walking.

In figure 7, I am loading the 'lubridate' package to analyze the time variable and manipulate day and time. Figure 8 shows the creation of the data frame 'SDdate' that takes the original data and mutates it so that we can see what day of the week each event was taken. Label= TRUE lists the days as 'Fri', 'Sat', etc. I can then use this data frame to make another survival curve based on day of week in Figure 9. When initially looking at the graph, I noticed that there were a few cases where the time of stepping was significantly larger than the majority. This was making the model harder to read, and thus I excluded any times that were larger than 1000 seconds (which is approximately 16.7 minutes). In addition to this, I used a log scale because I wanted to respond to the skewness and for legibility as the log scale provides percentages of survival. Overall, the log scale made the models more easier to understand especially when comparing multiple plots. The model shows these estimates well, but it is still hard to decipher differences between each of the days.

To answer the question if there is a pattern for Friday, I use a similar process as the code chunk in Figure 9, but I include a facet_wrap function which allows me to break the plots into subplots based on a variable, in this case 'strata'. When breaking the data into just the days (Figure 10), there does seem to be a difference based on the day of week, but I cannot determine if this is the only reason for this shape. There could be other reasons such as what day each subject got the tracking device. Some subjects could possibly walk more when they first get their tracking device, and eventually lose interest in the study and walk less by the end of the trial. I wanted to look further into this and eventually compare the days each of the subjects received their device with each other to control for differences in day of week.

Figure 11 is essentially the same as Figure 10, except the I included the subject into the survfit function and broke the model based on strata. This eventually made a model of 42 graphs, one for each day of week for each of the subjects. When looking at these models, I can make observations for each of the subjects as well as the general group. To begin, subject 007 appeared to be decently consistent with their walking throughout the week, but had a higher survival rate on Friday and Saturday. Subject 010 was also consistent with their walking until Friday when they similarly had a higher survival rate on Friday. Subject 016 looks different on Friday, but this is where I cut off the data because it exceeded 1000 seconds. This further pushes the idea that subjects walk more on Friday. Interestingly, subject 019 had a higher survival rate on Thursday instead of Friday. No observations seemed to be out of the ordinary for subjects 027 and 031. Because of the weird pattern that showed up in the majority of these subjects, I decided to dig into when each of the subjects received the tracking device.

From here onward, I am looking into if the duration of walking tracks up with what day of the week people get the device. In figure 12, I am filtering down the entire original data set to see the duration of Friday only. Then in figure 13, I am making a new survival function using this filtered data. When looking at the plot created by these figures, it appears that 019 and 031 have curves that look different than the other subjects. The next task is then find day '0' for all the subjects. I use lubridate here to find the first time each subject and trial tracked any walking. This is noted in Figure 14 and the new variable is called 'firsttime'. This variable is useful because I need to compare each of the events with their 'firsttime' to get the day of wear. In figure 15, I am making a new data frame called 'result' where I am taking the mutated data with the new 'firsttime' variable and creating another new variable called 'dayofwear'.. Result data frame shows the 'dayofwear' as how many days after receiving the device each duration of stepping was observed. Because the result was produced in seconds after the initial wear, I had to divide by 86,400 which is the number of seconds in a day. This means that each day number is represented in 24 hours after the 'firsttime' rather than calendar day.

When looking at the model outputted by this code chunk, it is difficult to determine what day of the week is what. There appears to be no correlation between how many days the subject was wearing the device and the duration of their walks. For subjects 007, 016, 027, and 031 the plots may suggest that the patient walked less and less as the study went on. However, the plots are not strong enough to make this determination. Overall, there does not appear to be any significant difference on the first day of wear when compared to the rest of the week.

I am breaking this model down further to compare the day of wear for each of the trials. I use the same

function from 16 as figure 17 but am adding the filter for 60 days. Figure 18 is the same as 17, but filtered for trial=90. Just from looking at the plots it appears that the subjects may have been walking less at the 90 day mark. However, subjects 027 and 031 also appear to have increased their walking times. This was interesting and although I did not have much time left to explore this, I created enough models to draw some kinds of conclusions.

Conclusion

When looking at the questions aroused throughout the study, each answer to each possible scenario brought up another question. Each of the code chunks in this study can be manipulated to answer additional questions brought up throughout the process. Overall, the patterns found in the study should not be generalized because the size of the data was not very large. Because keeping anonymity was so significant in the data, without knowing more about these stroke patients, not many conclusions could be drawn. Nevertheless, these models and their code are suitable for use for other imaging.