

tidydata-cookbook

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Below is background and processing of the original source data and derived calculations:

The experiments have been carried out with a group of 30 volunteers within an age bracket of 19-48 years. Each person performed six activities (WALKING, WALKING_UPSTAIRS, WALKING_DOWNSTAIRS, SITTING, STANDING, LAYING) wearing a smartphone (Samsung Galaxy S II) on the waist. Using its embedded accelerometer and gyroscope, we captured 3-axial linear acceleration and 3-axial angular velocity at a constant rate of 50Hz. The experiments have been video-recorded to label the data manually. The obtained dataset has been randomly partitioned into two sets, where 70% of the volunteers was selected for generating the training data and 30% the test data.

The features selected for this database come from the accelerometer and gyroscope 3-axial raw signals tAcc-XYZ and tGyro-XYZ. These time domain signals (prefix 't' to denote time) were captured at a constant rate of 50 Hz. Then they were filtered using a median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz to remove noise. Similarly, the acceleration signal was then separated into body and gravity acceleration signals (tBodyAcc-XYZ and tGravityAcc-XYZ) using another low pass Butterworth filter with a corner frequency of 0.3 Hz.

Subsequently, the body linear acceleration and angular velocity were derived in time to obtain Jerk signals (tBodyAccJerk-XYZ and tBodyGyroJerk-XYZ). Also the magnitude of these three-dimensional signals were calculated using the Euclidean norm (tBodyAccMag, tGravityAccMag, tBodyAccJerkMag, tBodyGyroMag, tBodyGyroJerkMag).

Finally a Fast Fourier Transform (FFT) was applied to some of these signals producing fBodyAcc-XYZ, fBodyAccJerk-XYZ, fBodyGyro-XYZ, fBodyAccJerkMag, fBodyGyroMag, fBodyGyroJerkMag. (Note the 'f' to indicate frequency domain signals).

These signals were used to estimate variables of the feature vector for each pattern: '-XYZ' is used to denote 3-axial signals in the X, Y and Z directions.

```

BodyAcc-XYZ
tGravityAcc-XYZ
tBodyAccJerk-XYZ
tBodyGyro-XYZ
tBodyGyroJerk-XYZ
tBodyAccMag
tGravityAccMag
tBodyAccJerkMag
tBodyGyroMag
tBodyGyroJerkMag
fBodyAcc-XYZ
fBodyAccJerk-XYZ
fBodyGyro-XYZ
fBodyAccMag
fBodyAccJerkMag
fBodyGyroMag
fBodyGyroJerkMag

```

The set of variables that were estimated from these signals are:

```

Mean Average value
Standard deviation
Median absolute deviation
max: Largest value in array
min: Smallest value in array
Signal magnitude area
energy: Energy measure. Sum of the squares divided by the number of values.
Interquartile range
entropy: Signal entropy
Autoregression coefficients with Burg order equal to 4
correlation coefficient between two signals
maxIndx: index of the frequency component with largest magnitude
meanFreq: Weighted average of the frequency components to obtain a mean frequency
skewness: skewness of the frequency domain signal
kurtosis: kurtosis of the frequency domain signal
bandsEnergy: Energy of a frequency interval within the 64 bins of the FFT of each window.
angle: Angle between two vectors.

```

Additional vectors obtained by averaging the signals in a signal window sample. These are used on the angle() variable:

```

gravityMean
tBodyAccMean
tBodyAccJerkMean
tBodyGyroMean
tBodyGyroJerkMean

```

Below is a sample of the above columns example:

```
## Subjects and Activities  
str(meadata [,1:2])
```

```
## 'data.frame': 180 obs. of 2 variables:  
## $ Subjects : Factor w/ 30 levels "1","2","3","4",...: 1 2 3 4 5 6 7 8 9 10 ...  
## $ Activities: Factor w/ 6 levels "WALKING","WALKING_UPSTAIRS",...: 1 1 1 1 1 1 1 1 1 1 ...
```

```
## Time Body Acceleration Stats  
str(meadata [,3:32])
```

```
## 'data.frame': 180 obs. of 30 variables:  
## $ tBodyAccmeanaverageX : num 0.277 0.276 0.276 0.279 0.278 ...  
## $ tBodyAccmeanaverageY : num -0.0174 -0.0186 -0.0172 -0.0148 -0.0173 ...  
## $ tBodyAccmeanaverageZ : num -0.111 -0.106 -0.113 -0.111 -0.108 ...  
## $ tBodyAccstandarddeviationX : num -0.284 -0.424 -0.36 -0.441 -0.294 ...  
## $ tBodyAccstandarddeviationY : num 0.1145 -0.0781 -0.0699 -0.0788 0.0767 ...  
## $ tBodyAccstandarddeviationZ : num -0.26 -0.425 -0.387 -0.586 -0.457 ...  
## $ tBodyAccmedianabsolutedeviationX: num -0.341 -0.461 -0.409 -0.463 -0.324 ...  
## $ tBodyAccmedianabsolutedeviationY: num 0.0618 -0.1202 -0.0874 -0.0882 0.0213 ...  
## $ tBodyAccmedianabsolutedeviationZ: num -0.25 -0.41 -0.392 -0.578 -0.418 ...  
## $ tBodyAccmaxX : num -0.103 -0.269 -0.055 -0.274 -0.144 ...  
## $ tBodyAccmaxY : num -0.05573 -0.114028 -0.099347 0.000394 0.07367 ...  
## $ tBodyAccmaxZ : num -0.255 -0.376 -0.487 -0.508 -0.499 ...  
## $ tBodyAccminX : num 0.12 0.349 0.318 0.385 0.218 ...  
## $ tBodyAccminY : num -0.0212 0.0516 0.0225 0.1894 0.0634 ...  
## $ tBodyAccminZ : num 0.437 0.528 0.37 0.643 0.541 ...  
## $ tBodyAccsignalmagnitudearea : num -0.126 -0.289 -0.245 -0.329 -0.175 ...  
## $ tBodyAccenergyX : num -0.739 -0.831 -0.79 -0.841 -0.739 ...  
## $ tBodyAccenergyY : num -0.758 -0.833 -0.83 -0.833 -0.773 ...  
## $ tBodyAccenergyZ : num -0.748 -0.847 -0.826 -0.918 -0.862 ...  
## $ tBodyAccinterquartilerangeX : num -0.424 -0.54 -0.52 -0.503 -0.367 ...  
## $ tBodyAccinterquartilerangeY : num -0.299 -0.392 -0.294 -0.269 -0.303 ...  
## $ tBodyAccinterquartilerangeZ : num -0.252 -0.409 -0.422 -0.591 -0.359 ...  
## $ tBodyAccentropyX : num 0.359 0.347 0.249 0.388 0.41 ...  
## $ tBodyAccentropyY : num 0.437 0.385 0.326 0.299 0.308 ...  
## $ tBodyAccentropyZ : num 0.0424 0.152 0.1899 -0.0302 0.1678 ...  
## $ tBodyAccautorregresscoeffX-1 : num -0.335 -0.246 -0.32 -0.336 -0.472 ...  
## $ tBodyAccautorregresscoeffX-2 : num 0.348 0.303 0.268 0.366 0.412 ...  
## $ tBodyAccautorregresscoeffX-3 : num -0.1492 -0.2104 -0.0214 -0.1865 -0.2111 ...  
## $ tBodyAccautorregresscoeffX-4 : num 0.0799 0.1058 -0.027 0.092 0.1365 ...  
## $ tBodyAccautorregresscoeffY-1 : num -0.167 -0.17 -0.135 -0.246 -0.292 ...
```

```
## Time Gravity Acceleration Stats  
str(meadata [,43:82])
```

```

## 'data.frame':   180 obs. of  40 variables:
##   $ tGravityAccmeanaverageX      : num  0.935 0.913 0.937 0.964 0.973 ...
##   $ tGravityAccmeanaverageY      : num -0.2822 -0.3466 -0.262 -0.0859 -0.1004 ...
##   $ tGravityAccmeanaverageZ      : num -0.0681 0.08473 -0.13811 0.12776 0.00248 ...
##   $ tGravityAccstandarddeviationX: num -0.977 -0.973 -0.978 -0.984 -0.979 ...
##   $ tGravityAccstandarddeviationY: num -0.971 -0.972 -0.962 -0.968 -0.962 ...
##   $ tGravityAccstandarddeviationZ: num -0.948 -0.972 -0.952 -0.963 -0.965 ...
##   $ tGravityAccmedianabsolutedeviationX: num -0.977 -0.973 -0.978 -0.984 -0.98 ...
##   $ tGravityAccmedianabsolutedeviationY: num -0.972 -0.972 -0.962 -0.969 -0.962 ...
##   $ tGravityAccmedianabsolutedeviationZ: num -0.95 -0.973 -0.954 -0.963 -0.966 ...
##   $ tGravityAccmaxX              : num  0.869 0.848 0.87 0.895 0.906 ...
##   $ tGravityAccmaxY              : num -0.294 -0.356 -0.271 -0.101 -0.113 ...
##   $ tGravityAccmaxZ              : num -0.06289 0.08191 -0.13377 0.12642 0.00244 ...
##   $ tGravityAccminX              : num  0.947 0.924 0.949 0.978 0.985 ...
##   $ tGravityAccminY              : num -0.2601 -0.323 -0.2419 -0.0673 -0.0829 ...
##   $ tGravityAccminZ              : num -0.07849 0.08048 -0.14717 0.1216 -0.00397 ...
##   $ tGravityAccsignalmagnitudearea: num -0.14176 0.00459 -0.00736 -0.49037 -0.69731 ...
##   $ tGravityAccenergyX           : num  0.826 0.769 0.829 0.901 0.924 ...
##   $ tGravityAccenergyY           : num -0.864 -0.792 -0.885 -0.99 -0.984 ...
##   $ tGravityAccenergyZ           : num -0.986 -0.98 -0.958 -0.97 -0.999 ...
##   $ tGravityAccinterquartilerangeX: num -0.978 -0.974 -0.979 -0.986 -0.981 ...
##   $ tGravityAccinterquartilerangeY: num -0.973 -0.974 -0.963 -0.971 -0.963 ...
##   $ tGravityAccinterquartilerangeZ: num -0.955 -0.976 -0.959 -0.965 -0.97 ...
##   $ tGravityAccentropyX           : num -0.667 -0.421 -0.683 -1 -1 ...
##   $ tGravityAccentropyY           : num -1 -1 -1 -0.996 -0.996 ...
##   $ tGravityAccentropyZ           : num -0.993 -0.433 -1 -0.386 -0.736 ...
##   $ tGravityAccautorregresscoeffX-1: num -0.298 -0.4 -0.307 -0.281 -0.417 ...
##   $ tGravityAccautorregresscoeffX-2: num  0.383 0.465 0.372 0.364 0.488 ...
##   $ tGravityAccautorregresscoeffX-3: num -0.464 -0.529 -0.433 -0.443 -0.555 ...
##   $ tGravityAccautorregresscoeffX-4: num  0.543 0.59 0.49 0.519 0.62 ...
##   $ tGravityAccautorregresscoeffY-1: num  0.0308 0.0621 -0.0238 -0.2272 -0.1631 ...
##   $ tGravityAccautorregresscoeffY-2: num  0.0226 -0.0469 0.034 0.2641 0.2176 ...
##   $ tGravityAccautorregresscoeffY-3: num -0.1473 -0.0392 -0.11 -0.3547 -0.3312 ...
##   $ tGravityAccautorregresscoeffY-4: num  0.296 0.151 0.21 0.464 0.464 ...
##   $ tGravityAccautorregresscoeffZ-1: num -0.251 -0.323 -0.216 -0.524 -0.233 ...
##   $ tGravityAccautorregresscoeffZ-2: num  0.275 0.373 0.253 0.565 0.27 ...
##   $ tGravityAccautorregresscoeffZ-3: num -0.297 -0.422 -0.289 -0.605 -0.304 ...
##   $ tGravityAccautorregresscoeffZ-4: num  0.314 0.466 0.321 0.641 0.335 ...
##   $ tGravityAcccorrelationX-Y     : num  0.3214 0.3296 0.2366 -0.0667 0.1563 ...
##   $ tGravityAcccorrelationX-Z     : num -0.0401 -0.2413 0.1404 -0.2811 -0.1321 ...
##   $ tGravityAcccorrelationY-Z     : num  0.2813 -0.0658 0.1197 0.0565 0.0719 ...

```

```

## Time Body Acceleration Jerk Stats
str(meandata [,83:122])

```

```

## 'data.frame':   180 obs. of  40 variables:
##   $ tBodyAccJerkmeanaverageX      : num  0.074 0.0618 0.0815 0.0784 0.0846 ...
##   $ tBodyAccJerkmeanaverageY      : num  0.02827 0.01825 0.01006 0.00296 -0.01632 ...
##   $ tBodyAccJerkmeanaverageZ      : num  -4.17e-03 7.90e-03 -5.62e-03 -7.68e-04 8.32e-05 ...
##
##   $ tBodyAccJerkstandarddeviationX : num  -0.114 -0.278 -0.269 -0.297 -0.303 ...
##   $ tBodyAccJerkstandarddeviationY : num  0.067 -0.0166 -0.045 -0.2212 -0.091 ...
##   $ tBodyAccJerkstandarddeviationZ : num  -0.503 -0.586 -0.529 -0.751 -0.613 ...
##   $ tBodyAccJerkmedianabsolutedeviationX: num  -0.102 -0.271 -0.285 -0.302 -0.283 ...
##   $ tBodyAccJerkmedianabsolutedeviationY: num  0.0859 -0.0581 -0.0384 -0.2056 -0.0895 ...
##   $ tBodyAccJerkmedianabsolutedeviationZ: num  -0.468 -0.576 -0.534 -0.728 -0.584 ...
##   $ tBodyAccJerkmaxX              : num  -0.291 -0.398 -0.494 -0.37 -0.376 ...
##   $ tBodyAccJerkmaxY              : num  -0.314 -0.275 -0.437 -0.637 -0.508 ...
##   $ tBodyAccJerkmaxZ              : num  -0.672 -0.746 -0.62 -0.844 -0.728 ...
##   $ tBodyAccJerkminX              : num  -0.03 0.2297 0.0847 0.3117 0.293 ...
##   $ tBodyAccJerkminY              : num  0.0992 0.1079 0.0635 0.3013 0.1612 ...
##   $ tBodyAccJerkminZ              : num  0.434 0.504 0.45 0.741 0.603 ...
##   $ tBodyAccJerksignalmagnitudearea: num  -0.126 -0.277 -0.262 -0.387 -0.294 ...
##   $ tBodyAccJerkenergyX           : num  -0.6 -0.732 -0.723 -0.748 -0.745 ...
##   $ tBodyAccJerkenergyY           : num  -0.42 -0.499 -0.531 -0.686 -0.578 ...
##   $ tBodyAccJerkenergyZ           : num  -0.869 -0.908 -0.883 -0.965 -0.916 ...
##   $ tBodyAccJerkinterquartilerangeX: num  -0.0685 -0.2685 -0.3622 -0.3342 -0.2245 ...
##   $ tBodyAccJerkinterquartilerangeY: num  -0.128 -0.32 -0.213 -0.363 -0.3 ...
##   $ tBodyAccJerkinterquartilerangeZ: num  -0.452 -0.612 -0.592 -0.717 -0.585 ...
##   $ tBodyAccJerkentropyX          : num  0.67 0.641 0.76 0.665 0.58 ...
##   $ tBodyAccJerkentropyY          : num  0.635 0.627 0.672 0.681 0.7 ...
##   $ tBodyAccJerkentropyZ          : num  0.559 0.593 0.534 0.358 0.472 ...
##   $ tBodyAccJerkautorregresscoeffX-1: num  -0.317 -0.198 -0.276 -0.313 -0.439 ...
##   $ tBodyAccJerkautorregresscoeffX-2: num  0.294 0.283 0.235 0.342 0.257 ...
##   $ tBodyAccJerkautorregresscoeffX-3: num  0.119 0.1691 0.104 0.0697 0.0499 ...
##   $ tBodyAccJerkautorregresscoeffX-4: num  -0.0221 -0.1407 0.0887 0.0297 -0.0797 ...
##   $ tBodyAccJerkautorregresscoeffY-1: num  -0.276 -0.229 -0.132 -0.337 -0.382 ...
##   $ tBodyAccJerkautorregresscoeffY-2: num  0.184 0.361 0.221 0.204 0.151 ...
##   $ tBodyAccJerkautorregresscoeffY-3: num  0.12 0.2 0.381 0.104 0.158 ...
##   $ tBodyAccJerkautorregresscoeffY-4: num  0.435 0.163 0.255 0.159 0.247 ...
##   $ tBodyAccJerkautorregresscoeffZ-1: num  -0.0837 -0.2018 -0.2648 -0.2415 -0.2222 ...
##   $ tBodyAccJerkautorregresscoeffZ-2: num  0.1861 0.1859 0.2575 0.0757 0.156 ...
##   $ tBodyAccJerkautorregresscoeffZ-3: num  0.1494 0.0306 0.0356 -0.0972 0.1381 ...
##   $ tBodyAccJerkautorregresscoeffZ-4: num  -0.03839 -0.01279 0.16963 -0.02484 0.00262 ...
##   $ tBodyAccJerkcorrelationX-Y     : num  -0.191 -0.279 -0.269 0.35 0.114 ...
##   $ tBodyAccJerkcorrelationX-Z     : num  -0.3621 0.0624 -0.155 0.2515 -0.1746 ...
##   $ tBodyAccJerkcorrelationY-Z     : num  0.491 0.225 0.244 0.296 0.361 ...

```

```

## Time Body Gyroscopic Stats
str(meandata [,123:162])

```

```

## 'data.frame':   180 obs. of  40 variables:
## $ tBodyGyromeanaverageX      : num -0.0418 -0.053 -0.0256 -0.0318 -0.0489 ...
## $ tBodyGyromeanaverageY      : num -0.0695 -0.0482 -0.0779 -0.0727 -0.069 ...
## $ tBodyGyromeanaverageZ      : num 0.0849 0.0828 0.0813 0.0806 0.0815 ...
## $ tBodyGyrostandarddeviationX : num -0.474 -0.562 -0.572 -0.501 -0.491 ...
## $ tBodyGyrostandarddeviationY : num -0.0546 -0.5385 -0.5638 -0.6654 -0.5046 ...
## $ tBodyGyrostandarddeviationZ : num -0.344 -0.481 -0.477 -0.663 -0.319 ...
## $ tBodyGyromedianabsolutedeviationX: num -0.497 -0.55 -0.569 -0.503 -0.476 ...
## $ tBodyGyromedianabsolutedeviationY: num -0.0865 -0.5536 -0.6023 -0.6513 -0.5275 ...
## $ tBodyGyromedianabsolutedeviationZ: num -0.371 -0.504 -0.507 -0.687 -0.407 ...
## $ tBodyGyromaxX               : num -0.468 -0.489 -0.514 -0.501 -0.522 ...
## $ tBodyGyromaxY               : num -0.358 -0.598 -0.592 -0.778 -0.595 ...
## $ tBodyGyromaxZ               : num -0.2717 -0.3964 -0.2931 -0.5271 0.0391 ...
## $ tBodyGyrominX              : num 0.328 0.485 0.498 0.472 0.441 ...
## $ tBodyGyrominY              : num 0.444 0.668 0.669 0.755 0.594 ...
## $ tBodyGyrominZ              : num 0.239 0.349 0.423 0.472 0.247 ...
## $ tBodyGyrosignalmagnitudearea: num -0.156 -0.427 -0.463 -0.499 -0.351 ...
## $ tBodyGyroenergyX           : num -0.863 -0.905 -0.912 -0.868 -0.871 ...
## $ tBodyGyroenergyY           : num -0.554 -0.891 -0.902 -0.944 -0.876 ...
## $ tBodyGyroenergyZ           : num -0.798 -0.873 -0.87 -0.945 -0.782 ...
## $ tBodyGyrointerquartilerangeX: num -0.528 -0.511 -0.555 -0.496 -0.429 ...
## $ tBodyGyrointerquartilerangeY: num -0.158 -0.584 -0.673 -0.623 -0.58 ...
## $ tBodyGyrointerquartilerangeZ: num -0.464 -0.593 -0.611 -0.748 -0.582 ...
## $ tBodyGyroentropyX          : num 0.259 0.143 0.159 0.195 0.174 ...
## $ tBodyGyroentropyY          : num 0.0039 0.0968 0.0692 0.223 0.2222 ...
## $ tBodyGyroentropyZ          : num 0.331 0.322 0.392 0.269 0.279 ...
## $ tBodyGyroautorregresscoeffX-1: num -0.361 -0.407 -0.324 -0.393 -0.424 ...
## $ tBodyGyroautorregresscoeffX-2: num 0.283 0.446 0.329 0.345 0.401 ...
## $ tBodyGyroautorregresscoeffX-3: num 0.26618 -0.18859 0.05835 -0.11203 0.00674 ...
## $ tBodyGyroautorregresscoeffX-4: num -0.2989 -0.0211 -0.2832 0.0926 -0.3006 ...
## $ tBodyGyroautorregresscoeffY-1: num -0.308 -0.276 -0.249 -0.373 -0.328 ...
## $ tBodyGyroautorregresscoeffY-2: num 0.332 0.327 0.228 0.316 0.361 ...
## $ tBodyGyroautorregresscoeffY-3: num -0.2251 -0.2203 0.0887 -0.2169 -0.1136 ...
## $ tBodyGyroautorregresscoeffY-4: num 0.1918 0.1846 0.0314 0.3218 0.1234 ...
## $ tBodyGyroautorregresscoeffZ-1: num -0.1936 -0.2161 -0.2986 -0.0809 -0.1952 ...
## $ tBodyGyroautorregresscoeffZ-2: num 0.223 0.348 0.299 0.196 0.306 ...
## $ tBodyGyroautorregresscoeffZ-3: num -0.172 -0.3559 -0.1165 -0.2014 -0.0908 ...
## $ tBodyGyroautorregresscoeffZ-4: num 0.3125 0.3363 0.0403 0.2908 0.1558 ...
## $ tBodyGyrocorrelationX-Y     : num 0.013 -0.187 0.117 -0.692 -0.24 ...
## $ tBodyGyrocorrelationX-Z     : num -0.06303 0.1059 0.00185 0.06401 0.08935 ...
## $ tBodyGyrocorrelationY-Z     : num 0.1077 -0.0801 -0.1731 0.1494 -0.1013 ...

```

```

## Time Body Gyroscopic Jerk Stats
str(meandata [,163:202])

```

```

## 'data.frame':   180 obs. of  40 variables:
##   $ tBodyGyroJerkmeanaverageX      : num -0.09 -0.0819 -0.0952 -0.1153 -0.0888 ...
##   $ tBodyGyroJerkmeanaverageY      : num -0.0398 -0.0538 -0.0388 -0.0393 -0.045 ...
##   $ tBodyGyroJerkmeanaverageZ      : num -0.0461 -0.0515 -0.0504 -0.0551 -0.0483 ...
##   $ tBodyGyroJerkstandarddeviationX: num -0.207 -0.39 -0.386 -0.492 -0.358 ...
##   $ tBodyGyroJerkstandarddeviationY: num -0.304 -0.634 -0.639 -0.807 -0.571 ...
##   $ tBodyGyroJerkstandarddeviationZ: num -0.404 -0.435 -0.537 -0.64 -0.158 ...
##   $ tBodyGyroJerkmedianabsolutedeviationX: num -0.218 -0.411 -0.377 -0.474 -0.354 ...
##   $ tBodyGyroJerkmedianabsolutedeviationY: num -0.328 -0.656 -0.675 -0.811 -0.587 ...
##   $ tBodyGyroJerkmedianabsolutedeviationZ: num -0.403 -0.451 -0.562 -0.651 -0.218 ...
##   $ tBodyGyroJerkmaxX              : num -0.294 -0.368 -0.462 -0.51 -0.47 ...
##   $ tBodyGyroJerkmaxY              : num -0.429 -0.652 -0.62 -0.848 -0.595 ...
##   $ tBodyGyroJerkmaxZ              : num -0.4094 -0.47 -0.5822 -0.5973 -0.0681 ...
##   $ tBodyGyroJerkminX              : num 0.354 0.421 0.441 0.604 0.456 ...
##   $ tBodyGyroJerkminY              : num 0.422 0.698 0.734 0.866 0.698 ...
##   $ tBodyGyroJerkminZ              : num 0.58 0.581 0.587 0.765 0.409 ...
##   $ tBodyGyroJerkmagnitudearea    : num -0.313 -0.541 -0.567 -0.682 -0.438 ...
##   $ tBodyGyroJerkenergyX          : num -0.682 -0.804 -0.807 -0.867 -0.787 ...
##   $ tBodyGyroJerkenergyY          : num -0.752 -0.926 -0.93 -0.981 -0.904 ...
##   $ tBodyGyroJerkenergyZ          : num -0.818 -0.831 -0.889 -0.932 -0.637 ...
##   $ tBodyGyroJerkinterquartilerangeX: num -0.32 -0.485 -0.389 -0.464 -0.402 ...
##   $ tBodyGyroJerkinterquartilerangeY: num -0.356 -0.677 -0.727 -0.821 -0.606 ...
##   $ tBodyGyroJerkinterquartilerangeZ: num -0.433 -0.507 -0.631 -0.685 -0.383 ...
##   $ tBodyGyroJerkentropyX         : num 0.634 0.59 0.636 0.536 0.642 ...
##   $ tBodyGyroJerkentropyY         : num 0.613 0.607 0.594 0.465 0.586 ...
##   $ tBodyGyroJerkentropyZ         : num 0.607 0.633 0.596 0.483 0.529 ...
##   $ tBodyGyroJerkautorregresscoeffX-1: num -0.244 -0.234 -0.139 -0.247 -0.205 ...
##   $ tBodyGyroJerkautorregresscoeffX-2: num 0.103 0.295 0.221 0.165 0.226 ...
##   $ tBodyGyroJerkautorregresscoeffX-3: num 0.2955 0.1975 0.329 0.0843 0.3623 ...
##   $ tBodyGyroJerkautorregresscoeffX-4: num 0.2515 -0.0955 0.0452 -0.0142 -0.0652 ...
##   $ tBodyGyroJerkautorregresscoeffY-1: num -0.263 -0.217 -0.249 -0.368 -0.323 ...
##   $ tBodyGyroJerkautorregresscoeffY-2: num 0.336 0.274 0.223 0.266 0.307 ...
##   $ tBodyGyroJerkautorregresscoeffY-3: num 0.0692 0.209 0.1613 -0.0794 0.1862 ...
##   $ tBodyGyroJerkautorregresscoeffY-4: num -0.0738 -0.335 0.1924 0.0385 -0.0874 ...
##   $ tBodyGyroJerkautorregresscoeffZ-1: num -0.2125 -0.1704 -0.2213 -0.0739 -0.2512 ...
##   $ tBodyGyroJerkautorregresscoeffZ-2: num 0.225 0.279 0.191 0.264 0.342 ...
##   $ tBodyGyroJerkautorregresscoeffZ-3: num -0.0845 0.1367 0.2083 0.0153 0.0383 ...
##   $ tBodyGyroJerkautorregresscoeffZ-4: num 0.09525 -0.36599 -0.18556 -0.00229 0.21649 ...
##   $ tBodyGyroJerkcorrelationX-Y     : num 0.483 0.338 0.543 -0.335 -0.148 ...
##   $ tBodyGyroJerkcorrelationX-Z     : num -0.33459 0.0649 0.00689 0.45614 0.18321 ...
##   $ tBodyGyroJerkcorrelationY-Z     : num -0.0716 -0.2334 -0.2184 0.0146 -0.1122 ...

```

```

## Time Body Acceleration Magnitude Stats
str(meandata [,203:215])

```

```
## 'data.frame': 180 obs. of 13 variables:  
## $ tBodyAccMagmeanaverage : num -0.137 -0.29 -0.255 -0.312 -0.158 ...  
## $ tBodyAccMagstandarddeviation : num -0.22 -0.423 -0.328 -0.528 -0.377 ...  
## $ tBodyAccMagmedianabsolutedeviation: num -0.297 -0.494 -0.438 -0.579 -0.441 ...  
## $ tBodyAccMagmax : num -0.186 -0.295 -0.21 -0.457 -0.296 ...  
## $ tBodyAccMagmin : num -0.723 -0.682 -0.746 -0.659 -0.556 ...  
## $ tBodyAccMagsignalmagnitudearea : num -0.137 -0.29 -0.255 -0.312 -0.158 ...  
## $ tBodyAccMagenergy : num -0.606 -0.742 -0.704 -0.768 -0.644 ...  
## $ tBodyAccMaginterquartilerange : num -0.377 -0.564 -0.576 -0.631 -0.501 ...  
## $ tBodyAccMagentropy : num 0.831 0.731 0.753 0.691 0.764 ...  
## $ tBodyAccMagautorregresscoeff1 : num 0.0888 0.2285 -0.1226 0.0869 -0.1467 ...  
## $ tBodyAccMagautorregresscoeff2 : num -0.13399 -0.15254 0.04383 0.00188 0.12233 ...  
## $ tBodyAccMagautorregresscoeff3 : num 0.08857 -0.11227 0.04301 -0.09359 -0.00774 ...  
## $ tBodyAccMagautorregresscoeff4 : num 0.0818 0.1764 0.0335 -0.0679 -0.1051 ...
```

```
## Time Gravity Acceleration Magnitude Stats  
str(meandata [,116:228])
```

```
## 'data.frame': 180 obs. of 113 variables:  
## $ tBodyAccJerkautorregresscoeffZ-1 : num -0.0837 -0.2018 -0.2648 -0.2415 -0.2222 ...  
## $ tBodyAccJerkautorregresscoeffZ-2 : num 0.1861 0.1859 0.2575 0.0757 0.156 ...  
## $ tBodyAccJerkautorregresscoeffZ-3 : num 0.1494 0.0306 0.0356 -0.0972 0.1381 ...  
## $ tBodyAccJerkautorregresscoeffZ-4 : num -0.03839 -0.01279 0.16963 -0.02484 0.00262 ...  
## $ tBodyAccJerkcorrelationX-Y : num -0.191 -0.279 -0.269 0.35 0.114 ...  
## $ tBodyAccJerkcorrelationX-Z : num -0.3621 0.0624 -0.155 0.2515 -0.1746 ...  
## $ tBodyAccJerkcorrelationY-Z : num 0.491 0.225 0.244 0.296 0.361 ...  
## $ tBodyGyromeanaverageX : num -0.0418 -0.053 -0.0256 -0.0318 -0.0489 ...  
## $ tBodyGyromeanaverageY : num -0.0695 -0.0482 -0.0779 -0.0727 -0.069 ...  
## $ tBodyGyromeanaverageZ : num 0.0849 0.0828 0.0813 0.0806 0.0815 ...  
## $ tBodyGyrostandarddeviationX : num -0.474 -0.562 -0.572 -0.501 -0.491 ...  
## $ tBodyGyrostandarddeviationY : num -0.0546 -0.5385 -0.5638 -0.6654 -0.5046 ...  
## $ tBodyGyrostandarddeviationZ : num -0.344 -0.481 -0.477 -0.663 -0.319 ...  
## $ tBodyGyromedianabsolutedeviationX : num -0.497 -0.55 -0.569 -0.503 -0.476 ...  
## $ tBodyGyromedianabsolutedeviationY : num -0.0865 -0.5536 -0.6023 -0.6513 -0.5275 ...  
## $ tBodyGyromedianabsolutedeviationZ : num -0.371 -0.504 -0.507 -0.687 -0.407 ...  
## $ tBodyGyromaxX : num -0.468 -0.489 -0.514 -0.501 -0.522 ...  
## $ tBodyGyromaxY : num -0.358 -0.598 -0.592 -0.778 -0.595 ...  
## $ tBodyGyromaxZ : num -0.2717 -0.3964 -0.2931 -0.5271 0.0391 ...  
## $ tBodyGyrominX : num 0.328 0.485 0.498 0.472 0.441 ...  
## $ tBodyGyrominY : num 0.444 0.668 0.669 0.755 0.594 ...  
## $ tBodyGyrominZ : num 0.239 0.349 0.423 0.472 0.247 ...  
## $ tBodyGyrosignalmagnitudearea : num -0.156 -0.427 -0.463 -0.499 -0.351 ...  
## $ tBodyGyroenergyX : num -0.863 -0.905 -0.912 -0.868 -0.871 ...  
## $ tBodyGyroenergyY : num -0.554 -0.891 -0.902 -0.944 -0.876 ...  
## $ tBodyGyroenergyZ : num -0.798 -0.873 -0.87 -0.945 -0.782 ...  
## $ tBodyGyrointerquartilerangeX : num -0.528 -0.511 -0.555 -0.496 -0.429 ...  
## $ tBodyGyrointerquartilerangeY : num -0.158 -0.584 -0.673 -0.623 -0.58 ...  
## $ tBodyGyrointerquartilerangeZ : num -0.464 -0.593 -0.611 -0.748 -0.582 ...  
## $ tBodyGyroentropyX : num 0.259 0.143 0.159 0.195 0.174 ...  
## $ tBodyGyroentropyY : num 0.0039 0.0968 0.0692 0.223 0.2222 ...  
## $ tBodyGyroentropyZ : num 0.331 0.322 0.392 0.269 0.279 ...  
## $ tBodyGyroautorregresscoeffX-1 : num -0.361 -0.407 -0.324 -0.393 -0.424 ...  
## $ tBodyGyroautorregresscoeffX-2 : num 0.283 0.446 0.329 0.345 0.401 ...  
## $ tBodyGyroautorregresscoeffX-3 : num 0.26618 -0.18859 0.05835 -0.11203 0.00674 ...  
## $ tBodyGyroautorregresscoeffX-4 : num -0.2989 -0.0211 -0.2832 0.0926 -0.3006 ...  
## $ tBodyGyroautorregresscoeffY-1 : num -0.308 -0.276 -0.249 -0.373 -0.328 ...  
## $ tBodyGyroautorregresscoeffY-2 : num 0.332 0.327 0.228 0.316 0.361 ...  
## $ tBodyGyroautorregresscoeffY-3 : num -0.2251 -0.2203 0.0887 -0.2169 -0.1136 ...  
## $ tBodyGyroautorregresscoeffY-4 : num 0.1918 0.1846 0.0314 0.3218 0.1234 ...  
## $ tBodyGyroautorregresscoeffZ-1 : num -0.1936 -0.2161 -0.2986 -0.0809 -0.1952 ...  
## $ tBodyGyroautorregresscoeffZ-2 : num 0.223 0.348 0.299 0.196 0.306 ...  
## $ tBodyGyroautorregresscoeffZ-3 : num -0.172 -0.3559 -0.1165 -0.2014 -0.0908 ...  
## $ tBodyGyroautorregresscoeffZ-4 : num 0.3125 0.3363 0.0403 0.2908 0.1558 ...  
## $ tBodyGyrocrelationX-Y : num 0.013 -0.187 0.117 -0.692 -0.24 ...  
## $ tBodyGyrocrelationX-Z : num -0.06303 0.1059 0.00185 0.06401 0.08935 ...  
## $ tBodyGyrocrelationY-Z : num 0.1077 -0.0801 -0.1731 0.1494 -0.1013 ...
```

```
## $ tBodyGyroJerkmeanaverageX : num -0.09 -0.0819 -0.0952 -0.1153 -0.0888 ...
## $ tBodyGyroJerkmeanaverageY : num -0.0398 -0.0538 -0.0388 -0.0393 -0.045 ...
## $ tBodyGyroJerkmeanaverageZ : num -0.0461 -0.0515 -0.0504 -0.0551 -0.0483 ...
## $ tBodyGyroJerkstandarddeviationX : num -0.207 -0.39 -0.386 -0.492 -0.358 ...
## $ tBodyGyroJerkstandarddeviationY : num -0.304 -0.634 -0.639 -0.807 -0.571 ...
## $ tBodyGyroJerkstandarddeviationZ : num -0.404 -0.435 -0.537 -0.64 -0.158 ...
## $ tBodyGyroJerkmedianabsolutedeviationX: num -0.218 -0.411 -0.377 -0.474 -0.354 ...
## $ tBodyGyroJerkmedianabsolutedeviationY: num -0.328 -0.656 -0.675 -0.811 -0.587 ...
## $ tBodyGyroJerkmedianabsolutedeviationZ: num -0.403 -0.451 -0.562 -0.651 -0.218 ...
## $ tBodyGyroJerkmaxX : num -0.294 -0.368 -0.462 -0.51 -0.47 ...
## $ tBodyGyroJerkmaxY : num -0.429 -0.652 -0.62 -0.848 -0.595 ...
## $ tBodyGyroJerkmaxZ : num -0.4094 -0.47 -0.5822 -0.5973 -0.0681 ...
## $ tBodyGyroJerkminX : num 0.354 0.421 0.441 0.604 0.456 ...
## $ tBodyGyroJerkminY : num 0.422 0.698 0.734 0.866 0.698 ...
## $ tBodyGyroJerkminZ : num 0.58 0.581 0.587 0.765 0.409 ...
## $ tBodyGyroJerksignalmagnitudearea : num -0.313 -0.541 -0.567 -0.682 -0.438 ...
## $ tBodyGyroJerkenergyX : num -0.682 -0.804 -0.807 -0.867 -0.787 ...
## $ tBodyGyroJerkenergyY : num -0.752 -0.926 -0.93 -0.981 -0.904 ...
## $ tBodyGyroJerkenergyZ : num -0.818 -0.831 -0.889 -0.932 -0.637 ...
## $ tBodyGyroJerkinterquartilerangeX : num -0.32 -0.485 -0.389 -0.464 -0.402 ...
## $ tBodyGyroJerkinterquartilerangeY : num -0.356 -0.677 -0.727 -0.821 -0.606 ...
## $ tBodyGyroJerkinterquartilerangeZ : num -0.433 -0.507 -0.631 -0.685 -0.383 ...
## $ tBodyGyroJerkentropyX : num 0.634 0.59 0.636 0.536 0.642 ...
## $ tBodyGyroJerkentropyY : num 0.613 0.607 0.594 0.465 0.586 ...
## $ tBodyGyroJerkentropyZ : num 0.607 0.633 0.596 0.483 0.529 ...
## $ tBodyGyroJerkautorregresscoeffX-1 : num -0.244 -0.234 -0.139 -0.247 -0.205 ...
## $ tBodyGyroJerkautorregresscoeffX-2 : num 0.103 0.295 0.221 0.165 0.226 ...
## $ tBodyGyroJerkautorregresscoeffX-3 : num 0.2955 0.1975 0.329 0.0843 0.3623 ...
## $ tBodyGyroJerkautorregresscoeffX-4 : num 0.2515 -0.0955 0.0452 -0.0142 -0.0652 ...
## $ tBodyGyroJerkautorregresscoeffY-1 : num -0.263 -0.217 -0.249 -0.368 -0.323 ...
## $ tBodyGyroJerkautorregresscoeffY-2 : num 0.336 0.274 0.223 0.266 0.307 ...
## $ tBodyGyroJerkautorregresscoeffY-3 : num 0.0692 0.209 0.1613 -0.0794 0.1862 ...
## $ tBodyGyroJerkautorregresscoeffY-4 : num -0.0738 -0.335 0.1924 0.0385 -0.0874 ...
## $ tBodyGyroJerkautorregresscoeffZ-1 : num -0.2125 -0.1704 -0.2213 -0.0739 -0.2512 ...
## $ tBodyGyroJerkautorregresscoeffZ-2 : num 0.225 0.279 0.191 0.264 0.342 ...
## $ tBodyGyroJerkautorregresscoeffZ-3 : num -0.0845 0.1367 0.2083 0.0153 0.0383 ...
## $ tBodyGyroJerkautorregresscoeffZ-4 : num 0.09525 -0.36599 -0.18556 -0.00229 0.21649 ...
## $ tBodyGyroJerkcorrelationX-Y : num 0.483 0.338 0.543 -0.335 -0.148 ...
## $ tBodyGyroJerkcorrelationX-Z : num -0.33459 0.0649 0.00689 0.45614 0.18321 ...
## $ tBodyGyroJerkcorrelationY-Z : num -0.0716 -0.2334 -0.2184 0.0146 -0.1122 ...
## $ tBodyAccMagmeanaverage : num -0.137 -0.29 -0.255 -0.312 -0.158 ...
## $ tBodyAccMagstandarddeviation : num -0.22 -0.423 -0.328 -0.528 -0.377 ...
## $ tBodyAccMagmedianabsolutedeviation : num -0.297 -0.494 -0.438 -0.579 -0.441 ...
## $ tBodyAccMagmax : num -0.186 -0.295 -0.21 -0.457 -0.296 ...
## $ tBodyAccMagmin : num -0.723 -0.682 -0.746 -0.659 -0.556 ...
## $ tBodyAccMagsignalmagnitudearea : num -0.137 -0.29 -0.255 -0.312 -0.158 ...
## $ tBodyAccMagenergy : num -0.606 -0.742 -0.704 -0.768 -0.644 ...
## $ tBodyAccMaginterquartilerange : num -0.377 -0.564 -0.576 -0.631 -0.501 ...
```

```
## $ tBodyAccMagentropy : num 0.831 0.731 0.753 0.691 0.764 ...
## $ tBodyAccMagautorregresscoeff1 : num 0.0888 0.2285 -0.1226 0.0869 -0.1467 ...
## $ tBodyAccMagautorregresscoeff2 : num -0.13399 -0.15254 0.04383 0.00188 0.12233 ...
## $ tBodyAccMagautorregresscoeff3 : num 0.08857 -0.11227 0.04301 -0.09359 -0.00774 ...
## [list output truncated]
```

```
## Time Body Acceleration Jerk Magnitude Stats
str(meandata [,229:242])
```

```
## 'data.frame': 180 obs. of 14 variables:
## $ tBodyAccJerkMagmeanaverage : num -0.141 -0.281 -0.28 -0.367 -0.288 ...
## $ tBodyAccJerkMagstandarddeviation : num -0.0745 -0.1642 -0.1399 -0.3169 -0.2822 ...
## $ tBodyAccJerkMagmedianabsolutedeviation: num -0.129 -0.2 -0.19 -0.331 -0.312 ...
## $ tBodyAccJerkMagmax : num -0.104 -0.197 -0.189 -0.404 -0.317 ...
## $ tBodyAccJerkMagmin : num -0.471 -0.644 -0.566 -0.612 -0.611 ...
## $ tBodyAccJerkMagsignalmagnitudearea : num -0.141 -0.281 -0.28 -0.367 -0.288 ...
## $ tBodyAccJerkMagenergy : num -0.595 -0.699 -0.691 -0.778 -0.729 ...
## $ tBodyAccJerkMaginterquartilerange : num -0.281 -0.303 -0.332 -0.433 -0.416 ...
## $ tBodyAccJerkMagentropy : num 0.769 0.729 0.714 0.677 0.71 ...
## $ tBodyAccJerkMagautorregresscoeff1 : num 0.0948 0.2397 -0.1479 -0.0269 -0.1314 ...
## $ tBodyAccJerkMagautorregresscoeff2 : num -0.1045 -0.1668 -0.0699 0.0127 0.169 ...
## $ tBodyAccJerkMagautorregresscoeff3 : num -0.2249 -0.4857 0.1179 -0.0877 -0.1137 ...
## $ tBodyAccJerkMagautorregresscoeff4 : num 0.2042 0.3768 0.1403 0.0651 -0.0136 ...
## $ tBodyGyroMagmeanaverage : num -0.161 -0.447 -0.466 -0.498 -0.356 ...
```

```
## Time Body Gyroscopic Magnitude Stats
str(meandata [,243:254])
```

```
## 'data.frame': 180 obs. of 12 variables:
## $ tBodyGyroMagstandarddeviation : num -0.187 -0.553 -0.562 -0.553 -0.492 ...
## $ tBodyGyroMagmedianabsolutedeviation: num -0.0624 -0.529 -0.5177 -0.4983 -0.4414 ...
## $ tBodyGyroMagmax : num -0.351 -0.544 -0.58 -0.631 -0.533 ...
## $ tBodyGyroMagmin : num -0.558 -0.646 -0.614 -0.69 -0.569 ...
## $ tBodyGyroMagsignalmagnitudearea : num -0.161 -0.447 -0.466 -0.498 -0.356 ...
## $ tBodyGyroMagenergy : num -0.612 -0.841 -0.852 -0.858 -0.786 ...
## $ tBodyGyroMaginterquartilerange : num -0.0447 -0.5694 -0.5518 -0.5234 -0.4658 ...
## $ tBodyGyroMagentropy : num 0.405 0.88 0.901 0.91 0.812 ...
## $ tBodyGyroMagautorregresscoeff1 : num 0.238 0.1538 0.092 0.0439 0.2346 ...
## $ tBodyGyroMagautorregresscoeff2 : num -0.23 -0.1538 -0.0895 -0.162 -0.1974 ...
## $ tBodyGyroMagautorregresscoeff3 : num 0.1657 0.0429 0.0038 0.0742 0.0139 ...
## $ tBodyGyroMagautorregresscoeff4 : num -0.1898 -0.0112 -0.0216 0.1529 -0.0148 ...
```

```
## Time Body Gyroscopic Jerk Magnitude Stats
str(meandata [,255:267])
```

```
## 'data.frame': 180 obs. of 13 variables:  
## $ tBodyGyroJerkMagmeanaverage : num -0.299 -0.548 -0.566 -0.681 -0.445 ...  
## $ tBodyGyroJerkMagstandarddeviation : num -0.325 -0.558 -0.567 -0.73 -0.489 ...  
## $ tBodyGyroJerkMagmedianabsolutedeviation: num -0.362 -0.581 -0.587 -0.738 -0.484 ...  
## $ tBodyGyroJerkMagmax : num -0.331 -0.591 -0.605 -0.741 -0.575 ...  
## $ tBodyGyroJerkMagmin : num -0.532 -0.668 -0.734 -0.741 -0.628 ...  
## $ tBodyGyroJerkMagsignalmagnitudearea : num -0.299 -0.548 -0.566 -0.681 -0.445 ...  
## $ tBodyGyroJerkMagenergy : num -0.746 -0.888 -0.899 -0.951 -0.843 ...  
## $ tBodyGyroJerkMaginterquartilerange : num -0.362 -0.601 -0.601 -0.736 -0.45 ...  
## $ tBodyGyroJerkMagentropy : num 0.918 0.853 0.874 0.784 0.915 ...  
## $ tBodyGyroJerkMagautorregresscoeff1 : num 0.284 0.346 0.258 0.348 0.247 ...  
## $ tBodyGyroJerkMagautorregresscoeff2 : num -0.131 -0.347 -0.177 -0.178 -0.158 ...  
## $ tBodyGyroJerkMagautorregresscoeff3 : num -0.116 -0.247 -0.199 -0.204 -0.399 ...  
## $ tBodyGyroJerkMagautorregresscoeff4 : num -0.18747 0.23773 -0.00914 -0.10522 0.18682 ...
```

```
## Frequency Body Acceleration Stats
```

```
str(meandata [,268:346])
```

```
## 'data.frame': 180 obs. of 79 variables:  
##   $ fBodyAccmeanaverageX      : num -0.203 -0.346 -0.317 -0.427 -0.288 ...  
##   $ fBodyAccmeanaverageY      : num 0.08971 -0.0219 -0.0813 -0.1494 0.00946 ...  
##   $ fBodyAccmeanaverageZ      : num -0.332 -0.454 -0.412 -0.631 -0.49 ...  
##   $ fBodyAccstandarddeviationX : num -0.319 -0.458 -0.379 -0.447 -0.298 ...  
##   $ fBodyAccstandarddeviationY : num 0.056 -0.1692 -0.124 -0.1018 0.0426 ...  
##   $ fBodyAccstandarddeviationZ : num -0.28 -0.455 -0.423 -0.594 -0.483 ...  
##   $ fBodyAccmedianabsolutedeviationX: num -0.172 -0.353 -0.286 -0.415 -0.234 ...  
##   $ fBodyAccmedianabsolutedeviationY: num 0.0947 -0.0672 -0.0984 -0.1319 0.064 ...  
##   $ fBodyAccmedianabsolutedeviationZ: num -0.289 -0.418 -0.359 -0.588 -0.442 ...  
##   $ fBodyAccmaxX              : num -0.527 -0.577 -0.479 -0.49 -0.396 ...  
##   $ fBodyAccmaxY              : num -0.306 -0.44 -0.334 -0.266 -0.267 ...  
##   $ fBodyAccmaxZ              : num -0.3 -0.538 -0.559 -0.644 -0.544 ...  
##   $ fBodyAccminX              : num -0.725 -0.731 -0.756 -0.818 -0.698 ...  
##   $ fBodyAccminY              : num -0.723 -0.728 -0.782 -0.785 -0.745 ...  
##   $ fBodyAccminZ              : num -0.824 -0.863 -0.86 -0.911 -0.876 ...  
##   $ fBodyAccsignalmagnitudearea: num -0.0355 -0.1843 -0.1734 -0.3246 -0.1572 ...  
##   $ fBodyAccenergyX           : num -0.739 -0.831 -0.79 -0.841 -0.739 ...  
##   $ fBodyAccenergyY           : num -0.37 -0.566 -0.559 -0.566 -0.411 ...  
##   $ fBodyAccenergyZ           : num -0.717 -0.827 -0.804 -0.908 -0.844 ...  
##   $ fBodyAccinterquartilerangeX: num -0.158 -0.266 -0.248 -0.382 -0.284 ...  
##   $ fBodyAccinterquartilerangeY: num -0.185 -0.138 -0.288 -0.354 -0.252 ...  
##   $ fBodyAccinterquartilerangeZ: num -0.469 -0.556 -0.508 -0.734 -0.548 ...  
##   $ fBodyAccentropyX          : num 0.629 0.57 0.563 0.503 0.536 ...  
##   $ fBodyAccentropyY          : num 0.588 0.579 0.536 0.484 0.527 ...  
##   $ fBodyAccentropyZ          : num 0.439 0.374 0.408 0.193 0.337 ...  
##   $ fBodyAccmaxIndsX          : num -0.743 -0.759 -0.809 -0.742 -0.775 ...  
##   $ fBodyAccmaxIndsY          : num -0.638 -0.757 -0.798 -0.733 -0.669 ...  
##   $ fBodyAccmaxIndsZ          : num -0.92 -0.747 -0.842 -0.771 -0.835 ...  
##   $ fBodyAccmeanaverageFreqX  : num -0.208 -0.146 -0.247 -0.139 -0.322 ...  
##   $ fBodyAccmeanaverageFreqY  : num 0.11309 0.19859 0.17174 0.01235 -0.00204 ...  
##   $ fBodyAccmeanaverageFreqZ  : num 0.0497 0.0689 0.0749 -0.0788 0.0247 ...  
##   $ fBodyAccskewnessX          : num -0.3459 -0.2594 -0.1434 0.0259 -0.0665 ...  
##   $ fBodyAcckurtosisX          : num -0.741 -0.642 -0.514 -0.312 -0.442 ...  
##   $ fBodyAccskewnessY          : num -0.401 -0.505 -0.327 -0.195 -0.339 ...  
##   $ fBodyAcckurtosisY          : num -0.765 -0.808 -0.659 -0.538 -0.705 ...  
##   $ fBodyAccskewnessZ          : num -0.251 -0.454 -0.541 -0.37 -0.386 ...  
##   $ fBodyAcckurtosisZ          : num -0.534 -0.725 -0.802 -0.66 -0.615 ...  
##   $ fBodyAccbandsEnergy1-8     : num -0.793 -0.85 -0.82 -0.871 -0.738 ...  
##   $ fBodyAccbandsEnergy9-16    : num -0.781 -0.909 -0.834 -0.866 -0.818 ...  
##   $ fBodyAccbandsEnergy17-24   : num -0.369 -0.618 -0.568 -0.665 -0.727 ...  
##   $ fBodyAccbandsEnergy25-32   : num -0.668 -0.64 -0.806 -0.744 -0.847 ...  
##   $ fBodyAccbandsEnergy33-40   : num -0.837 -0.864 -0.86 -0.889 -0.871 ...  
##   $ fBodyAccbandsEnergy41-48   : num -0.823 -0.843 -0.847 -0.89 -0.866 ...  
##   $ fBodyAccbandsEnergy49-56   : num -0.878 -0.902 -0.914 -0.938 -0.907 ...  
##   $ fBodyAccbandsEnergy57-64   : num -0.929 -0.938 -0.941 -0.971 -0.903 ...  
##   $ fBodyAccbandsEnergy1-16    : num -0.77 -0.853 -0.808 -0.858 -0.737 ...  
##   $ fBodyAccbandsEnergy17-32   : num -0.359 -0.565 -0.572 -0.636 -0.72 ...
```

```
## $ fBodyAccbandsEnergy33-48 : num -0.832 -0.856 -0.855 -0.889 -0.869 ...
## $ fBodyAccbandsEnergy49-64 : num -0.895 -0.914 -0.923 -0.949 -0.906 ...
## $ fBodyAccbandsEnergy1-24 : num -0.742 -0.837 -0.791 -0.844 -0.736 ...
## $ fBodyAccbandsEnergy25-48 : num -0.682 -0.674 -0.792 -0.764 -0.828 ...
## $ fBodyAccbandsEnergy1-8.1 : num -0.648 -0.712 -0.676 -0.626 -0.592 ...
## $ fBodyAccbandsEnergy9-16.1 : num -0.358 -0.761 -0.815 -0.721 -0.473 ...
## $ fBodyAccbandsEnergy17-24.1 : num -0.58 -0.46 -0.336 -0.8 -0.692 ...
## $ fBodyAccbandsEnergy25-32.1 : num -0.763 -0.493 -0.752 -0.784 -0.832 ...
## $ fBodyAccbandsEnergy33-40.1 : num -0.689 -0.731 -0.75 -0.85 -0.825 ...
## $ fBodyAccbandsEnergy41-48.1 : num -0.668 -0.714 -0.739 -0.814 -0.777 ...
## $ fBodyAccbandsEnergy49-56.1 : num -0.671 -0.774 -0.763 -0.843 -0.766 ...
## $ fBodyAccbandsEnergy57-64.1 : num -0.837 -0.872 -0.902 -0.93 -0.861 ...
## $ fBodyAccbandsEnergy1-16.1 : num -0.4 -0.657 -0.657 -0.57 -0.416 ...
## $ fBodyAccbandsEnergy17-32.1 : num -0.526 -0.332 -0.287 -0.745 -0.654 ...
## $ fBodyAccbandsEnergy33-48.1 : num -0.646 -0.694 -0.717 -0.819 -0.787 ...
## $ fBodyAccbandsEnergy49-64.1 : num -0.731 -0.808 -0.814 -0.875 -0.798 ...
## $ fBodyAccbandsEnergy1-24.1 : num -0.378 -0.591 -0.569 -0.572 -0.412 ...
## $ fBodyAccbandsEnergy25-48.1 : num -0.715 -0.53 -0.728 -0.784 -0.809 ...
## $ fBodyAccbandsEnergy1-8.2 : num -0.738 -0.86 -0.86 -0.914 -0.88 ...
## $ fBodyAccbandsEnergy9-16.2 : num -0.886 -0.878 -0.842 -0.94 -0.889 ...
## $ fBodyAccbandsEnergy17-24.2 : num -0.817 -0.893 -0.832 -0.973 -0.878 ...
## $ fBodyAccbandsEnergy25-32.2 : num -0.915 -0.953 -0.956 -0.979 -0.965 ...
## $ fBodyAccbandsEnergy33-40.2 : num -0.945 -0.96 -0.951 -0.984 -0.971 ...
## $ fBodyAccbandsEnergy41-48.2 : num -0.876 -0.913 -0.928 -0.966 -0.934 ...
## $ fBodyAccbandsEnergy49-56.2 : num -0.866 -0.927 -0.922 -0.967 -0.929 ...
## $ fBodyAccbandsEnergy57-64.2 : num -0.904 -0.939 -0.934 -0.974 -0.951 ...
## $ fBodyAccbandsEnergy1-16.2 : num -0.754 -0.849 -0.837 -0.912 -0.868 ...
## $ fBodyAccbandsEnergy17-32.2 : num -0.853 -0.915 -0.877 -0.975 -0.909 ...
## $ fBodyAccbandsEnergy33-48.2 : num -0.923 -0.945 -0.942 -0.978 -0.96 ...
## $ fBodyAccbandsEnergy49-64.2 : num -0.876 -0.93 -0.925 -0.968 -0.935 ...
## $ fBodyAccbandsEnergy1-24.2 : num -0.725 -0.832 -0.809 -0.909 -0.847 ...
## $ fBodyAccbandsEnergy25-48.2 : num -0.918 -0.951 -0.952 -0.979 -0.964 ...
```

```
## Frequency Body Acceleration Jerk Stats
str(meandata [,347:425])
```

```
## 'data.frame': 180 obs. of 79 variables:  
##   $ fBodyAccJerkmeanaverageX      : num -0.171 -0.305 -0.305 -0.359 -0.345 ...  
##   $ fBodyAccJerkmeanaverageY      : num -0.0352 -0.0788 -0.1405 -0.2796 -0.1811 ...  
##   $ fBodyAccJerkmeanaverageZ      : num -0.469 -0.555 -0.514 -0.729 -0.59 ...  
##   $ fBodyAccJerkstandarddeviationX : num -0.134 -0.314 -0.297 -0.297 -0.321 ...  
##   $ fBodyAccJerkstandarddeviationY : num 0.10674 -0.01533 -0.00561 -0.2099 -0.05452 ...  
##   $ fBodyAccJerkstandarddeviationZ : num -0.535 -0.616 -0.544 -0.772 -0.633 ...  
##   $ fBodyAccJerkmedianabsolutedeviationX: num 0.0187 -0.1759 -0.1525 -0.1933 -0.2014 ...  
##   $ fBodyAccJerkmedianabsolutedeviationY: num 0.0142 -0.0396 -0.0842 -0.2423 -0.117 ...  
##   $ fBodyAccJerkmedianabsolutedeviationZ: num -0.506 -0.589 -0.536 -0.754 -0.614 ...  
##   $ fBodyAccJerkmaxX              : num -0.285 -0.457 -0.447 -0.412 -0.444 ...  
##   $ fBodyAccJerkmaxY              : num 0.00454 -0.17106 -0.1519 -0.35846 -0.20616 ...  
##   $ fBodyAccJerkmaxZ              : num -0.573 -0.64 -0.561 -0.8 -0.657 ...  
##   $ fBodyAccJerkminX              : num -0.738 -0.766 -0.805 -0.822 -0.776 ...  
##   $ fBodyAccJerkminY              : num -0.651 -0.652 -0.72 -0.78 -0.748 ...  
##   $ fBodyAccJerkminZ              : num -0.783 -0.785 -0.809 -0.887 -0.804 ...  
##   $ fBodyAccJerksignalmagnitudearea: num -0.0906 -0.2008 -0.2056 -0.3597 -0.2672 ...  
##   $ fBodyAccJerkenergyX           : num -0.6 -0.732 -0.722 -0.748 -0.745 ...  
##   $ fBodyAccJerkenergyY           : num -0.421 -0.499 -0.531 -0.686 -0.578 ...  
##   $ fBodyAccJerkenergyZ           : num -0.869 -0.908 -0.883 -0.965 -0.916 ...  
##   $ fBodyAccJerkinterquartilerangeX: num -0.106 -0.254 -0.227 -0.318 -0.294 ...  
##   $ fBodyAccJerkinterquartilerangeY: num -0.307 -0.287 -0.374 -0.466 -0.414 ...  
##   $ fBodyAccJerkinterquartilerangeZ: num -0.535 -0.609 -0.588 -0.758 -0.645 ...  
##   $ fBodyAccJerkentropyX          : num 0.629 0.545 0.545 0.483 0.52 ...  
##   $ fBodyAccJerkentropyY          : num 0.655 0.631 0.582 0.497 0.569 ...  
##   $ fBodyAccJerkentropyZ          : num 0.3442 0.2424 0.2903 -0.0256 0.1893 ...  
##   $ fBodyAccJerkmaxIndsX          : num -0.361 -0.222 -0.374 -0.32 -0.416 ...  
##   $ fBodyAccJerkmaxIndsY          : num -0.459 -0.226 -0.268 -0.476 -0.506 ...  
##   $ fBodyAccJerkmaxIndsZ          : num -0.247 -0.221 -0.347 -0.422 -0.268 ...  
##   $ fBodyAccJerkmeanaverageFreqX  : num -0.2093 -0.0727 -0.216 -0.1353 -0.3594 ...  
##   $ fBodyAccJerkmeanaverageFreqY  : num -0.386 -0.264 -0.259 -0.386 -0.534 ...  
##   $ fBodyAccJerkmeanaverageFreqZ  : num -0.186 -0.255 -0.347 -0.326 -0.344 ...  
##   $ fBodyAccJerkskewnessX          : num -0.1447 -0.2405 -0.2422 -0.0787 -0.1756 ...  
##   $ fBodyAccJerkkurtosisX          : num -0.626 -0.699 -0.701 -0.573 -0.645 ...  
##   $ fBodyAccJerkskewnessY          : num -0.108 -0.284 -0.145 -0.261 -0.191 ...  
##   $ fBodyAccJerkkurtosisY          : num -0.615 -0.763 -0.668 -0.761 -0.709 ...  
##   $ fBodyAccJerkskewnessZ          : num -0.342 -0.348 -0.194 -0.443 -0.302 ...  
##   $ fBodyAccJerkkurtosisZ          : num -0.734 -0.733 -0.622 -0.804 -0.71 ...  
##   $ fBodyAccJerkbandsEnergy1-8    : num -0.821 -0.886 -0.882 -0.899 -0.796 ...  
##   $ fBodyAccJerkbandsEnergy9-16   : num -0.755 -0.894 -0.803 -0.83 -0.788 ...  
##   $ fBodyAccJerkbandsEnergy17-24  : num -0.427 -0.63 -0.627 -0.683 -0.745 ...  
##   $ fBodyAccJerkbandsEnergy25-32  : num -0.667 -0.636 -0.809 -0.742 -0.865 ...  
##   $ fBodyAccJerkbandsEnergy33-40  : num -0.851 -0.877 -0.865 -0.888 -0.9 ...  
##   $ fBodyAccJerkbandsEnergy41-48  : num -0.79 -0.817 -0.824 -0.852 -0.876 ...  
##   $ fBodyAccJerkbandsEnergy49-56  : num -0.847 -0.883 -0.902 -0.918 -0.931 ...  
##   $ fBodyAccJerkbandsEnergy57-64  : num -0.967 -0.97 -0.971 -0.973 -0.983 ...  
##   $ fBodyAccJerkbandsEnergy1-16   : num -0.763 -0.881 -0.821 -0.846 -0.773 ...  
##   $ fBodyAccJerkbandsEnergy17-32  : num -0.399 -0.546 -0.62 -0.635 -0.739 ...
```

```
## $ fBodyAccJerkbandsEnergy33-48 : num -0.814 -0.842 -0.837 -0.864 -0.882 ...
## $ fBodyAccJerkbandsEnergy49-64 : num -0.844 -0.879 -0.898 -0.915 -0.929 ...
## $ fBodyAccJerkbandsEnergy1-24 : num -0.59 -0.763 -0.713 -0.755 -0.721 ...
## $ fBodyAccJerkbandsEnergy25-48 : num -0.629 -0.626 -0.749 -0.718 -0.821 ...
## $ fBodyAccJerkbandsEnergy1-8.1 : num -0.701 -0.752 -0.748 -0.63 -0.603 ...
## $ fBodyAccJerkbandsEnergy9-16.1 : num -0.397 -0.773 -0.815 -0.753 -0.584 ...
## $ fBodyAccJerkbandsEnergy17-24.1 : num -0.516 -0.315 -0.205 -0.752 -0.648 ...
## $ fBodyAccJerkbandsEnergy25-32.1 : num -0.776 -0.527 -0.753 -0.793 -0.85 ...
## $ fBodyAccJerkbandsEnergy33-40.1 : num -0.751 -0.779 -0.794 -0.879 -0.877 ...
## $ fBodyAccJerkbandsEnergy41-48.1 : num -0.662 -0.711 -0.721 -0.807 -0.785 ...
## $ fBodyAccJerkbandsEnergy49-56.1 : num -0.747 -0.832 -0.794 -0.874 -0.843 ...
## $ fBodyAccJerkbandsEnergy57-64.1 : num -0.92 -0.908 -0.91 -0.951 -0.961 ...
## $ fBodyAccJerkbandsEnergy1-16.1 : num -0.383 -0.735 -0.773 -0.689 -0.529 ...
## $ fBodyAccJerkbandsEnergy17-32.1 : num -0.542 -0.277 -0.303 -0.721 -0.673 ...
## $ fBodyAccJerkbandsEnergy33-48.1 : num -0.653 -0.697 -0.713 -0.819 -0.808 ...
## $ fBodyAccJerkbandsEnergy49-64.1 : num -0.769 -0.842 -0.808 -0.884 -0.858 ...
## $ fBodyAccJerkbandsEnergy1-24.1 : num -0.338 -0.506 -0.485 -0.665 -0.502 ...
## $ fBodyAccJerkbandsEnergy25-48.1 : num -0.726 -0.586 -0.734 -0.8 -0.832 ...
## $ fBodyAccJerkbandsEnergy1-8.2 : num -0.874 -0.892 -0.894 -0.925 -0.913 ...
## $ fBodyAccJerkbandsEnergy9-16.2 : num -0.881 -0.875 -0.81 -0.943 -0.887 ...
## $ fBodyAccJerkbandsEnergy17-24.2 : num -0.824 -0.891 -0.846 -0.974 -0.883 ...
## $ fBodyAccJerkbandsEnergy25-32.2 : num -0.918 -0.956 -0.959 -0.981 -0.969 ...
## $ fBodyAccJerkbandsEnergy33-40.2 : num -0.952 -0.966 -0.959 -0.986 -0.975 ...
## $ fBodyAccJerkbandsEnergy41-48.2 : num -0.887 -0.919 -0.936 -0.969 -0.939 ...
## $ fBodyAccJerkbandsEnergy49-56.2 : num -0.844 -0.92 -0.911 -0.962 -0.915 ...
## $ fBodyAccJerkbandsEnergy57-64.2 : num -0.95 -0.95 -0.953 -0.99 -0.968 ...
## $ fBodyAccJerkbandsEnergy1-16.2 : num -0.853 -0.854 -0.8 -0.925 -0.872 ...
## $ fBodyAccJerkbandsEnergy17-32.2 : num -0.87 -0.923 -0.901 -0.977 -0.925 ...
## $ fBodyAccJerkbandsEnergy33-48.2 : num -0.929 -0.949 -0.949 -0.98 -0.963 ...
## $ fBodyAccJerkbandsEnergy49-64.2 : num -0.846 -0.919 -0.91 -0.963 -0.915 ...
## $ fBodyAccJerkbandsEnergy1-24.2 : num -0.814 -0.861 -0.806 -0.949 -0.863 ...
## $ fBodyAccJerkbandsEnergy25-48.2 : num -0.923 -0.953 -0.955 -0.98 -0.967 ...
```

```
## Frequency Body Gyroscopic Stats
str(meandata [,426:504])
```

```
## 'data.frame': 180 obs. of 79 variables:  
##   $ fBodyGyromeanaverageX : num -0.339 -0.43 -0.438 -0.373 -0.373 ...  
##   $ fBodyGyromeanaverageY : num -0.103 -0.555 -0.562 -0.688 -0.514 ...  
##   $ fBodyGyromeanaverageZ : num -0.256 -0.397 -0.418 -0.601 -0.213 ...  
##   $ fBodyGyrostandarddeviationX : num -0.517 -0.604 -0.615 -0.543 -0.529 ...  
##   $ fBodyGyrostandarddeviationY : num -0.0335 -0.533 -0.5689 -0.6547 -0.5027 ...  
##   $ fBodyGyrostandarddeviationZ : num -0.437 -0.56 -0.546 -0.716 -0.42 ...  
##   $ fBodyGyromedianabsolutedeviationX: num -0.368 -0.481 -0.49 -0.416 -0.416 ...  
##   $ fBodyGyromedianabsolutedeviationY: num -0.145 -0.573 -0.572 -0.682 -0.515 ...  
##   $ fBodyGyromedianabsolutedeviationZ: num -0.292 -0.434 -0.419 -0.641 -0.234 ...  
##   $ fBodyGyromaxX : num -0.551 -0.607 -0.595 -0.592 -0.504 ...  
##   $ fBodyGyromaxY : num -0.242 -0.628 -0.703 -0.758 -0.645 ...  
##   $ fBodyGyromaxZ : num -0.617 -0.7 -0.708 -0.781 -0.628 ...  
##   $ fBodyGyrominX : num -0.888 -0.89 -0.918 -0.873 -0.873 ...  
##   $ fBodyGyrominY : num -0.693 -0.871 -0.86 -0.886 -0.891 ...  
##   $ fBodyGyrominZ : num -0.806 -0.856 -0.848 -0.907 -0.823 ...  
##   $ fBodyGyrosignalmagnitudearea : num -0.168 -0.442 -0.453 -0.532 -0.358 ...  
##   $ fBodyGyroenergyX : num -0.859 -0.902 -0.907 -0.867 -0.867 ...  
##   $ fBodyGyroenergyY : num -0.549 -0.891 -0.901 -0.943 -0.874 ...  
##   $ fBodyGyroenergyZ : num -0.782 -0.862 -0.86 -0.941 -0.764 ...  
##   $ fBodyGyrointerquartilerangeX : num -0.336 -0.381 -0.341 -0.418 -0.339 ...  
##   $ fBodyGyrointerquartilerangeY : num -0.243 -0.61 -0.599 -0.765 -0.551 ...  
##   $ fBodyGyrointerquartilerangeZ : num -0.357 -0.403 -0.448 -0.593 -0.242 ...  
##   $ fBodyGyroentropyX : num 0.556 0.529 0.553 0.537 0.545 ...  
##   $ fBodyGyroentropyY : num 0.719 0.519 0.508 0.346 0.553 ...  
##   $ fBodyGyroentropyZ : num 0.541 0.476 0.415 0.36 0.563 ...  
##   $ fBodyGyromaxIndsX : num -0.372 -0.921 -0.936 -0.89 -0.911 ...  
##   $ fBodyGyromaxIndsY : num -0.779 -0.74 -0.473 -0.794 -0.628 ...  
##   $ fBodyGyromaxIndsZ : num -0.6341 -0.6259 -0.7491 -0.7264 -0.0579 ...  
##   $ fBodyGyromeanaverageFreqX : num 0.01478 0.00728 0.03376 -0.12715 -0.04586 ...  
##   $ fBodyGyromeanaverageFreqY : num -0.0658 -0.0427 -0.038 -0.2747 -0.0192 ...  
##   $ fBodyGyromeanaverageFreqZ : num 0.000773 0.139752 -0.044508 0.149852 0.167458 ...  
##   $ fBodyGyroskewnessX : num -0.286 -0.239 -0.22 -0.307 -0.113 ...  
##   $ fBodyGyrokurtosisX : num -0.626 -0.547 -0.508 -0.664 -0.412 ...  
##   $ fBodyGyroskewnessY : num -0.221 -0.274 -0.438 -0.333 -0.395 ...  
##   $ fBodyGyrokurtosisY : num -0.626 -0.657 -0.808 -0.747 -0.768 ...  
##   $ fBodyGyroskewnessZ : num -0.382 -0.404 -0.402 -0.301 -0.47 ...  
##   $ fBodyGyrokurtosisZ : num -0.716 -0.736 -0.75 -0.595 -0.789 ...  
##   $ fBodyGyrobandsEnergy1-8 : num -0.952 -0.934 -0.941 -0.884 -0.901 ...  
##   $ fBodyGyrobandsEnergy9-16 : num -0.456 -0.871 -0.872 -0.886 -0.883 ...  
##   $ fBodyGyrobandsEnergy17-24 : num -0.698 -0.771 -0.691 -0.881 -0.613 ...  
##   $ fBodyGyrobandsEnergy25-32 : num -0.943 -0.802 -0.896 -0.915 -0.903 ...  
##   $ fBodyGyrobandsEnergy33-40 : num -0.931 -0.942 -0.943 -0.92 -0.941 ...  
##   $ fBodyGyrobandsEnergy41-48 : num -0.906 -0.941 -0.939 -0.913 -0.932 ...  
##   $ fBodyGyrobandsEnergy49-56 : num -0.931 -0.951 -0.955 -0.932 -0.944 ...  
##   $ fBodyGyrobandsEnergy57-64 : num -0.965 -0.974 -0.983 -0.947 -0.966 ...  
##   $ fBodyGyrobandsEnergy1-16 : num -0.875 -0.919 -0.926 -0.874 -0.889 ...  
##   $ fBodyGyrobandsEnergy17-32 : num -0.734 -0.735 -0.709 -0.87 -0.649 ...
```

```
## $ fBodyGyrobandsEnergy33-48 : num -0.914 -0.936 -0.936 -0.909 -0.931 ...
## $ fBodyGyrobandsEnergy49-64 : num -0.946 -0.961 -0.967 -0.939 -0.954 ...
## $ fBodyGyrobandsEnergy1-24 : num -0.861 -0.908 -0.91 -0.87 -0.87 ...
## $ fBodyGyrobandsEnergy25-48 : num -0.934 -0.839 -0.907 -0.912 -0.91 ...
## $ fBodyGyrobandsEnergy1-8.1 : num -0.459 -0.882 -0.934 -0.926 -0.916 ...
## $ fBodyGyrobandsEnergy9-16.1 : num -0.932 -0.979 -0.931 -0.982 -0.93 ...
## $ fBodyGyrobandsEnergy17-24.1 : num -0.807 -0.951 -0.952 -0.991 -0.919 ...
## $ fBodyGyrobandsEnergy25-32.1 : num -0.847 -0.94 -0.98 -0.99 -0.97 ...
## $ fBodyGyrobandsEnergy33-40.1 : num -0.916 -0.983 -0.983 -0.991 -0.985 ...
## $ fBodyGyrobandsEnergy41-48.1 : num -0.833 -0.955 -0.956 -0.986 -0.957 ...
## $ fBodyGyrobandsEnergy49-56.1 : num -0.808 -0.945 -0.946 -0.979 -0.952 ...
## $ fBodyGyrobandsEnergy57-64.1 : num -0.894 -0.979 -0.977 -0.983 -0.98 ...
## $ fBodyGyrobandsEnergy1-16.1 : num -0.591 -0.907 -0.911 -0.939 -0.897 ...
## $ fBodyGyrobandsEnergy17-32.1 : num -0.773 -0.936 -0.949 -0.989 -0.915 ...
## $ fBodyGyrobandsEnergy33-48.1 : num -0.898 -0.977 -0.978 -0.99 -0.979 ...
## $ fBodyGyrobandsEnergy49-64.1 : num -0.819 -0.953 -0.952 -0.978 -0.957 ...
## $ fBodyGyrobandsEnergy1-24.1 : num -0.528 -0.89 -0.894 -0.939 -0.866 ...
## $ fBodyGyrobandsEnergy25-48.1 : num -0.851 -0.947 -0.978 -0.989 -0.97 ...
## $ fBodyGyrobandsEnergy1-8.2 : num -0.845 -0.908 -0.895 -0.962 -0.944 ...
## $ fBodyGyrobandsEnergy9-16.2 : num -0.859 -0.952 -0.95 -0.965 -0.68 ...
## $ fBodyGyrobandsEnergy17-24.2 : num -0.878 -0.819 -0.851 -0.948 -0.498 ...
## $ fBodyGyrobandsEnergy25-32.2 : num -0.924 -0.866 -0.97 -0.942 -0.902 ...
## $ fBodyGyrobandsEnergy33-40.2 : num -0.911 -0.961 -0.968 -0.972 -0.931 ...
## $ fBodyGyrobandsEnergy41-48.2 : num -0.902 -0.941 -0.947 -0.966 -0.911 ...
## $ fBodyGyrobandsEnergy49-56.2 : num -0.894 -0.904 -0.938 -0.966 -0.893 ...
## $ fBodyGyrobandsEnergy57-64.2 : num -0.942 -0.962 -0.96 -0.987 -0.953 ...
## $ fBodyGyrobandsEnergy1-16.2 : num -0.805 -0.897 -0.883 -0.952 -0.84 ...
## $ fBodyGyrobandsEnergy17-32.2 : num -0.847 -0.763 -0.844 -0.922 -0.474 ...
## $ fBodyGyrobandsEnergy33-48.2 : num -0.908 -0.956 -0.963 -0.97 -0.925 ...
## $ fBodyGyrobandsEnergy49-64.2 : num -0.914 -0.929 -0.948 -0.975 -0.919 ...
## $ fBodyGyrobandsEnergy1-24.2 : num -0.79 -0.873 -0.864 -0.946 -0.773 ...
## $ fBodyGyrobandsEnergy25-48.2 : num -0.919 -0.894 -0.968 -0.951 -0.909 ...
```

```
## Frequency Body Acceleration Magnitude Stats
str(meandata [,505:517])
```

```
## 'data.frame': 180 obs. of 13 variables:
## $ fBodyAccMagmeanaverage : num -0.129 -0.324 -0.29 -0.451 -0.305 ...
## $ fBodyAccMagstandarddeviation : num -0.398 -0.577 -0.456 -0.651 -0.52 ...
## $ fBodyAccMagmedianabsolutedeviation: num -0.241 -0.48 -0.338 -0.557 -0.365 ...
## $ fBodyAccMagmax : num -0.626 -0.702 -0.639 -0.759 -0.707 ...
## $ fBodyAccMagmin : num -0.746 -0.77 -0.844 -0.827 -0.82 ...
## $ fBodyAccMagsignalmagnitudearea : num -0.129 -0.324 -0.29 -0.451 -0.305 ...
## $ fBodyAccMagenergy : num -0.689 -0.828 -0.767 -0.884 -0.799 ...
## $ fBodyAccMaginterquartilerange : num -0.415 -0.549 -0.504 -0.599 -0.446 ...
## $ fBodyAccMagentropy : num 0.544 0.408 0.449 0.316 0.45 ...
## $ fBodyAccMagmaxInds : num -0.744 -0.591 -0.62 -0.617 -0.51 ...
## $ fBodyAccMagmeanaverageFreq : num 0.191 0.393 0.113 0.382 0.15 ...
## $ fBodyAccMagskewness : num -0.549 -0.497 -0.468 -0.532 -0.603 ...
## $ fBodyAccMagkurtosis : num -0.835 -0.765 -0.776 -0.79 -0.852 ...
```

Frequency Body Acceleration Jerk Magnitude Stats
`str(meandata [,518:530])`

```
## 'data.frame': 180 obs. of 13 variables:
## $ fBodyAccJerkMagmeanaverage : num -0.0571 -0.1691 -0.1868 -0.3186 -0.2695 ...
## $ fBodyAccJerkMagstandarddeviation : num -0.1035 -0.1641 -0.0899 -0.3205 -0.3057 ...
## $ fBodyAccJerkMagmedianabsolutedeviation: num -0.0427 -0.1348 -0.0917 -0.3112 -0.2434 ...
## $ fBodyAccJerkMagmax : num -0.229 -0.259 -0.157 -0.337 -0.407 ...
## $ fBodyAccJerkMagmin : num -0.518 -0.559 -0.653 -0.627 -0.626 ...
## $ fBodyAccJerkMagsignalmagnitudearea : num -0.0571 -0.1691 -0.1868 -0.3186 -0.2695 ...
## $ fBodyAccJerkMagenergy : num -0.559 -0.638 -0.618 -0.759 -0.734 ...
## $ fBodyAccJerkMaginterquartilerange : num -0.222 -0.294 -0.329 -0.433 -0.38 ...
## $ fBodyAccJerkMagentropy : num 0.478 0.396 0.396 0.268 0.347 ...
## $ fBodyAccJerkMagmaxInds : num -0.891 -0.884 -0.906 -0.873 -0.887 ...
## $ fBodyAccJerkMagmeanaverageFreq : num 0.09382 0.2075 -0.11716 0.11149 -0.00497 ...
## $ fBodyAccJerkMagskewness : num -0.10442 -0.00255 0.14722 0.1263 -0.13327 ...
## $ fBodyAccJerkMagkurtosis : num -0.478 -0.369 -0.186 -0.168 -0.485 ...
```

Frequency Body Gyroscopic Magitude Stats
`str(meandata [,531:543])`

```
## 'data.frame': 180 obs. of 13 variables:
## $ fBodyGyroMagmeanaverage : num -0.199 -0.531 -0.57 -0.609 -0.484 ...
## $ fBodyGyroMagstandarddeviation : num -0.321 -0.652 -0.633 -0.594 -0.59 ...
## $ fBodyGyroMagmedianabsolutedeviation: num -0.279 -0.586 -0.591 -0.592 -0.535 ...
## $ fBodyGyroMagmax : num -0.339 -0.718 -0.657 -0.631 -0.639 ...
## $ fBodyGyroMagmin : num -0.679 -0.815 -0.834 -0.862 -0.803 ...
## $ fBodyGyroMagsignalmagnitudearea : num -0.199 -0.531 -0.57 -0.609 -0.484 ...
## $ fBodyGyroMagenergy : num -0.666 -0.897 -0.901 -0.88 -0.868 ...
## $ fBodyGyroMaginterquartilerange : num -0.287 -0.539 -0.565 -0.675 -0.51 ...
## $ fBodyGyroMagentropy : num 0.683 0.504 0.457 0.373 0.53 ...
## $ fBodyGyroMagmaxInds : num -0.826 -0.531 -0.836 -0.718 -0.793 ...
## $ fBodyGyroMagmeanaverageFreq : num 0.2688 0.3053 0.1809 0.0697 0.2506 ...
## $ fBodyGyroMagskewness : num -0.247 -0.572 -0.346 -0.238 -0.452 ...
## $ fBodyGyroMagkurtosis : num -0.541 -0.816 -0.621 -0.586 -0.722 ...
```

```
## Frequency Body Gyroscopic Jerk Magitude Stats
str(meandata [,544:556])
```

```
## 'data.frame': 180 obs. of 13 variables:
## $ fBodyGyroJerkMagmeanaverage : num -0.319 -0.583 -0.608 -0.724 -0.548 ...
## $ fBodyGyroJerkMagstandarddeviation : num -0.382 -0.558 -0.549 -0.758 -0.456 ...
## $ fBodyGyroJerkMagmedianabsolutedeviation: num -0.329 -0.549 -0.574 -0.734 -0.491 ...
## $ fBodyGyroJerkMagmax : num -0.394 -0.565 -0.525 -0.753 -0.418 ...
## $ fBodyGyroJerkMagmin : num -0.593 -0.798 -0.784 -0.839 -0.735 ...
## $ fBodyGyroJerkMagsignalmagnitudearea : num -0.319 -0.583 -0.608 -0.724 -0.548 ...
## $ fBodyGyroJerkMagenergy : num -0.767 -0.892 -0.903 -0.962 -0.865 ...
## $ fBodyGyroJerkMaginterquartilerange : num -0.299 -0.569 -0.61 -0.702 -0.576 ...
## $ fBodyGyroJerkMagentropy : num 0.574 0.363 0.315 0.179 0.372 ...
## $ fBodyGyroJerkMagmaxInds : num -0.892 -0.885 -0.904 -0.873 -0.889 ...
## $ fBodyGyroJerkMagmeanaverageFreq : num 0.1907 0.1263 0.0458 0.2654 0.0527 ...
## $ fBodyGyroJerkMagskewness : num -0.1349 -0.0288 0.2796 -0.1356 0.2866 ...
## $ fBodyGyroJerkMagkurtosis : num -0.46566 -0.36936 0.00635 -0.42037 -0.01191 ...
```

```
## Angular Stats
str(meandata [,557:563])
```

```
## 'data.frame': 180 obs. of 7 variables:
## $ angletBodyAccMean-gravity : num 0.0605 -0.0301 0.0528 -0.012 -0.0323 ...
## $ angletBodyAccJerkMean-gravityMean : num -0.00793 0.053401 -0.076302 0.000921 -0.011722 ...
## $ angletBodyGyroMean-gravityMean : num 0.0131 0.0216 0.0968 0.0178 0.0237 ...
## $ angletBodyGyroJerkMean-gravityMean: num -0.0187 -0.0858 -0.0367 0.0554 -0.0349 ...
## $ angleX-gravityMean : num -0.729 -0.662 -0.723 -0.865 -0.917 ...
## $ angleY-gravityMean : num 0.277 0.321 0.262 0.143 0.152 ...
## $ angleZ-gravityMean : num 0.0689 -0.0369 0.1174 -0.0675 0.02 ...
```