

Final Project FA

Can Dai

2022-08-11

Problem 1

Choose a technique that we have covered so far in this course, and try applying that technique to your data. You may choose any of a) Model building and Multiple Regression b) PCA c) CFA d) CCA e) CA (correspondence analysis) If you are working as a group, each member of your group should try a different technique, or the same technique with different aspects of the data.

```
##### Common Factor Analysis for Patient Survival Dataset #####  
# Dataset cleaning
```

```
library(dplyr)
```

```
##
```

```
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
```

```
##
```

```
## filter, lag
```

```
## The following objects are masked from 'package:base':
```

```
##
```

```
## intersect, setdiff, setequal, union
```

```
# Factor Analysis on Patient Survival Dataset
```

```
dataset = read.csv(file="dataset.csv", header=TRUE, sep=",")
```

```
dim(dataset)
```

```
## [1] 91713 186
```

```
str(dataset)
```

```
## 'data.frame': 91713 obs. of 186 variables:
```

```
## $ encounter_id : int 66154 114252 119783 79267 92056 33181 82208 120995 80471 4287  
## $ patient_id : int 25312 59342 50777 46918 34377 74489 49526 50129 10577 90749 .  
## $ hospital_id : int 118 81 118 118 33 83 83 33 118 118 ...  
## $ hospital_death : int 0 0 0 0 0 0 0 0 1 0 ...  
## $ age : int 68 77 25 81 19 67 59 70 45 50 ...  
## $ bmi : num 22.7 27.4 31.9 22.6 NA ...
```

```

## $ elective_surgery      : int  0 0 0 1 0 0 0 0 0 0 ...
## $ ethnicity            : chr   "Caucasian" "Caucasian" "Caucasian" "Caucasian" ...
## $ gender               : chr   "M" "F" "F" "F" ...
## $ height               : num   180 160 173 165 188 ...
## $ hospital_admit_source : chr   "Floor" "Floor" "Emergency Department" "Operating Room" ...
## $ icu_admit_source      : chr   "Floor" "Floor" "Accident & Emergency" "Operating Room / Reco
## $ icu_id               : int    92 90 93 92 91 95 95 91 114 114 ...
## $ icu_stay_type        : chr   "admit" "admit" "admit" "admit" ...
## $ icu_type             : chr   "CTICU" "Med-Surg ICU" "Med-Surg ICU" "CTICU" ...
## $ pre_icu_los_days      : num   0.541667 0.927778 0.000694 0.000694 0.073611 ...
## $ readmission_status   : int    0 0 0 0 0 0 0 0 0 0 ...
## $ weight               : num    73.9 70.2 95.3 61.7 NA ...
## $ albumin_apache       : num    2.3 NA NA NA NA NA NA NA 2.7 3.6 ...
## $ apache_2_diagnosis    : int    113 108 122 203 119 301 108 113 116 112 ...
## $ apache_3j_diagnosis   : num    502 203 703 1206 601 ...
## $ apache_post_operative : int    0 0 0 1 0 0 0 0 0 0 ...
## $ arf_apache           : int    0 0 0 0 0 0 0 0 0 0 ...
## $ bilirubin_apache     : num    0.4 NA NA NA NA NA NA NA 0.2 0.4 ...
## $ bun_apache           : num    31 9 NA NA NA 13 18 48 15 10 ...
## $ creatinine_apache    : num    2.51 0.56 NA NA NA 0.71 0.78 2.05 1.16 0.83 ...
## $ fio2_apache          : num    NA 1 NA 0.6 NA NA 1 NA 1 NA ...
## $ gcs_eyes_apache      : int    3 1 3 4 NA 4 4 4 4 4 ...
## $ gcs_motor_apache     : int    6 3 6 6 NA 6 6 6 6 6 ...
## $ gcs_unable_apache    : int    0 0 0 0 NA 0 0 0 0 0 ...
## $ gcs_verbal_apache    : int    4 1 5 5 NA 5 5 5 5 5 ...
## $ glucose_apache       : num    168 145 NA 185 NA 156 197 164 380 134 ...
## $ heart_rate_apache    : int    118 120 102 114 60 113 133 120 82 94 ...
## $ hematocrit_apache    : num    27.4 36.9 NA 25.9 NA 44.2 33.5 22.6 37.9 37.2 ...
## $ intubated_apache     : int    0 0 0 1 0 0 1 0 0 0 ...
## $ map_apache           : int    40 46 68 60 103 130 138 60 66 58 ...
## $ paco2_apache         : num    NA 37 NA 30 NA NA 43 NA 60 NA ...
## $ paco2_for_ph_apache  : num    NA 37 NA 30 NA NA 43 NA 60 NA ...
## $ pao2_apache          : num    NA 51 NA 142 NA NA 370 NA 92 NA ...
## $ ph_apache            : num    NA 7.45 NA 7.39 NA NA 7.42 NA 7.14 NA ...
## $ resprate_apache      : num    36 33 37 4 16 35 53 28 14 46 ...
## $ sodium_apache        : num    134 145 NA NA NA 137 135 140 142 139 ...
## $ temp_apache          : num    39.3 35.1 36.7 34.8 36.7 36.6 35 36.6 36.9 36.3 ...
## $ urineoutput_apache   : num    NA NA NA NA NA NA NA NA NA NA ...
## $ ventilated_apache    : int    0 1 0 1 0 0 1 1 1 0 ...
## $ wbc_apache           : num    14.1 12.7 NA 8 NA 10.9 5.9 12.8 24.7 8.4 ...
## $ d1_diasbp_invasive_max : int    46 NA NA 62 NA NA 107 NA 64 74 ...
## $ d1_diasbp_invasive_min : int    32 NA NA 30 NA NA 65 NA 52 57 ...
## $ d1_diasbp_max        : int    68 95 88 48 99 100 76 84 65 83 ...
## $ d1_diasbp_min        : int    37 31 48 42 57 61 68 46 59 48 ...
## $ d1_diasbp_noninvasive_max : int    68 95 88 48 99 100 76 84 65 83 ...
## $ d1_diasbp_noninvasive_min : int    37 31 48 42 57 61 68 46 59 48 ...
## $ d1_hearttrate_max    : int    119 118 96 116 89 113 112 118 82 96 ...
## $ d1_hearttrate_min    : int    72 72 68 92 60 83 70 86 82 57 ...
## $ d1_mbp_invasive_max  : int    66 NA NA 92 NA NA 138 NA 72 92 ...
## $ d1_mbp_invasive_min  : int    40 NA NA 52 NA NA 84 NA 66 73 ...
## $ d1_mbp_max           : int    89 120 102 84 104 127 117 114 93 101 ...
## $ d1_mbp_min           : int    46 38 68 84 90 80 97 60 71 59 ...
## $ d1_mbp_noninvasive_max : int    89 120 102 84 104 127 117 114 93 101 ...
## $ d1_mbp_noninvasive_min : int    46 38 68 84 90 80 97 60 71 59 ...

```

```
## $ d1_resprate_max      : int 34 32 21 23 18 32 38 28 24 44 ...
## $ d1_resprate_min      : int 10 12 8 7 16 10 16 12 19 14 ...
## $ d1_spo2_max          : int 100 100 98 100 100 97 100 100 97 100 ...
## $ d1_spo2_min          : int 74 70 91 95 96 91 87 92 97 96 ...
## $ d1_sysbp_invasive_max : int 122 NA NA 164 NA NA 191 NA 94 126 ...
## $ d1_sysbp_invasive_min : int 64 NA NA 78 NA NA 116 NA 72 103 ...
## $ d1_sysbp_max         : int 131 159 148 158 147 173 151 147 104 135 ...
## $ d1_sysbp_min         : int 73 67 105 84 120 107 133 71 98 78 ...
## $ d1_sysbp_noninvasive_max : int 131 159 148 158 147 173 151 147 104 135 ...
## $ d1_sysbp_noninvasive_min : num 73 67 105 84 120 107 133 71 98 78 ...
## $ d1_temp_max          : num 39.9 36.3 37 38 37.2 36.8 37.2 38.5 36.9 37.1 ...
## $ d1_temp_min          : num 37.2 35.1 36.7 34.8 36.7 36.6 35 36.6 36.9 36.4 ...
## $ h1_diasbp_invasive_max : int NA NA NA 62 NA NA 107 NA 64 73 ...
## $ h1_diasbp_invasive_min : int NA NA NA 44 NA NA 79 NA 52 62 ...
## $ h1_diasbp_max         : int 68 61 88 62 99 89 107 74 65 83 ...
## $ h1_diasbp_min         : int 63 48 58 44 68 89 79 55 59 61 ...
## $ h1_diasbp_noninvasive_max : int 68 61 88 NA 99 89 NA 74 65 83 ...
## $ h1_diasbp_noninvasive_min : int 63 48 58 NA 68 89 NA 55 59 61 ...
## $ h1_hearttrate_max     : int 119 114 96 100 89 83 79 118 82 96 ...
## $ h1_hearttrate_min     : int 108 100 78 96 76 83 72 114 82 60 ...
## $ h1_mbp_invasive_max   : num NA NA NA 92 NA NA 138 NA 72 92 ...
## $ h1_mbp_invasive_min   : int NA NA NA 71 NA NA 115 NA 66 78 ...
## $ h1_mbp_max            : int 86 85 91 92 104 111 117 88 93 101 ...
## $ h1_mbp_min            : int 85 57 83 71 92 111 117 60 71 77 ...
## $ h1_mbp_noninvasive_max : int 86 85 91 NA 104 111 117 88 93 101 ...
## $ h1_mbp_noninvasive_min : int 85 57 83 NA 92 111 117 60 71 77 ...
## $ h1_resprate_max       : int 26 31 20 12 NA 12 18 28 24 29 ...
## $ h1_resprate_min       : int 18 28 16 11 NA 12 18 26 19 17 ...
## $ h1_spo2_max           : int 100 95 98 100 100 97 100 96 97 100 ...
## $ h1_spo2_min           : int 74 70 91 99 100 97 100 92 97 96 ...
## $ h1_sysbp_invasive_max : int NA NA NA 136 NA NA 191 NA 94 126 ...
## $ h1_sysbp_invasive_min : num NA NA NA 106 NA NA 163 NA 72 106 ...
## $ h1_sysbp_max          : int 131 95 148 136 130 143 191 119 104 135 ...
## $ h1_sysbp_min          : int 115 71 124 106 120 143 163 106 98 103 ...
## $ h1_sysbp_noninvasive_max : int 131 95 148 NA 130 143 NA 119 104 135 ...
## $ h1_sysbp_noninvasive_min : int 115 71 124 NA 120 143 NA 106 98 103 ...
## $ h1_temp_max           : num 39.5 36.3 36.7 35.6 NA 36.7 36.8 38.5 36.9 36.9 ...
## $ h1_temp_min           : num 37.5 36.3 36.7 34.8 NA 36.7 35 38.5 36.9 36.9 ...
## $ d1_albumin_max        : num 2.3 1.6 NA NA NA NA NA NA 2.7 3.6 ...
## [list output truncated]
```

```
#names(dataset)

#Remove ID columns
datasetv1 = dataset[,-c(1,2,3,13)]
#str(datasetv1)

datasetv2 = datasetv1[,which(colMeans(!is.na(datasetv1))>0.5)]
sum(is.na(datasetv2))
```

```
## [1] 563456
```

```

NACheck = lapply(datasetv1, is.na)
NACheckSum = lapply(NACheck, sum)
cbind(NACheckSum)

```

##	NACheckSum
## hospital_death	0
## age	4228
## bmi	3429
## elective_surgery	0
## ethnicity	0
## gender	0
## height	1334
## hospital_admit_source	0
## icu_admit_source	0
## icu_stay_type	0
## icu_type	0
## pre_icu_los_days	0
## readmission_status	0
## weight	2720
## albumin_apache	54379
## apache_2_diagnosis	1662
## apache_3j_diagnosis	1101
## apache_post_operative	0
## arf_apache	715
## bilirubin_apache	58134
## bun_apache	19262
## creatinine_apache	18853
## fio2_apache	70868
## gcs_eyes_apache	1901
## gcs_motor_apache	1901
## gcs_unable_apache	1037
## gcs_verbal_apache	1901
## glucose_apache	11036
## heart_rate_apache	878
## hematocrit_apache	19878
## intubated_apache	715
## map_apache	994
## paco2_apache	70868
## paco2_for_ph_apache	70868
## pao2_apache	70868
## ph_apache	70868
## resprate_apache	1234
## sodium_apache	18600
## temp_apache	4108
## urineoutput_apache	48998
## ventilated_apache	715
## wbc_apache	22012
## d1_diasbp_invasive_max	67984
## d1_diasbp_invasive_min	67984
## d1_diasbp_max	165
## d1_diasbp_min	165
## d1_diasbp_noninvasive_max	1040
## d1_diasbp_noninvasive_min	1040

## d1_heartrate_max	145
## d1_heartrate_min	145
## d1_mbp_invasive_max	67777
## d1_mbp_invasive_min	67777
## d1_mbp_max	220
## d1_mbp_min	220
## d1_mbp_noninvasive_max	1479
## d1_mbp_noninvasive_min	1479
## d1_resprate_max	385
## d1_resprate_min	385
## d1_spo2_max	333
## d1_spo2_min	333
## d1_sysbp_invasive_max	67959
## d1_sysbp_invasive_min	67959
## d1_sysbp_max	159
## d1_sysbp_min	159
## d1_sysbp_noninvasive_max	1027
## d1_sysbp_noninvasive_min	1027
## d1_temp_max	2324
## d1_temp_min	2324
## h1_diasbp_invasive_max	74928
## h1_diasbp_invasive_min	74928
## h1_diasbp_max	3619
## h1_diasbp_min	3619
## h1_diasbp_noninvasive_max	7350
## h1_diasbp_noninvasive_min	7350
## h1_heartrate_max	2790
## h1_heartrate_min	2790
## h1_mbp_invasive_max	74844
## h1_mbp_invasive_min	74844
## h1_mbp_max	4639
## h1_mbp_min	4639
## h1_mbp_noninvasive_max	9084
## h1_mbp_noninvasive_min	9084
## h1_resprate_max	4357
## h1_resprate_min	4357
## h1_spo2_max	4185
## h1_spo2_min	4185
## h1_sysbp_invasive_max	74915
## h1_sysbp_invasive_min	74915
## h1_sysbp_max	3611
## h1_sysbp_min	3611
## h1_sysbp_noninvasive_max	7341
## h1_sysbp_noninvasive_min	7341
## h1_temp_max	21732
## h1_temp_min	21732
## d1_albumin_max	49096
## d1_albumin_min	49096
## d1_bilirubin_max	53673
## d1_bilirubin_min	53673
## d1_bun_max	10514
## d1_bun_min	10514
## d1_calcium_max	13069
## d1_calcium_min	13069

## d1_creatinine_max	10169
## d1_creatinine_min	10169
## d1_glucose_max	5807
## d1_glucose_min	5807
## d1_hco3_max	15071
## d1_hco3_min	15071
## d1_hemaglobin_max	12147
## d1_hemaglobin_min	12147
## d1_hematocrit_max	11654
## d1_hematocrit_min	11654
## d1_inr_max	57941
## d1_inr_min	57941
## d1_lactate_max	68396
## d1_lactate_min	68396
## d1_platelets_max	13444
## d1_platelets_min	13444
## d1_potassium_max	9585
## d1_potassium_min	9585
## d1_sodium_max	10195
## d1_sodium_min	10195
## d1_wbc_max	13174
## d1_wbc_min	13174
## h1_albumin_max	83824
## h1_albumin_min	83824
## h1_bilirubin_max	84619
## h1_bilirubin_min	84619
## h1_bun_max	75091
## h1_bun_min	75091
## h1_calcium_max	75863
## h1_calcium_min	75863
## h1_creatinine_max	74957
## h1_creatinine_min	74957
## h1_glucose_max	52614
## h1_glucose_min	52614
## h1_hco3_max	76094
## h1_hco3_min	76094
## h1_hemaglobin_max	73123
## h1_hemaglobin_min	73123
## h1_hematocrit_max	73420
## h1_hematocrit_min	73420
## h1_inr_max	57941
## h1_inr_min	57941
## h1_lactate_max	84369
## h1_lactate_min	84369
## h1_platelets_max	75673
## h1_platelets_min	75673
## h1_potassium_max	72102
## h1_potassium_min	72102
## h1_sodium_max	72617
## h1_sodium_min	72617
## h1_wbc_max	75953
## h1_wbc_min	75953
## d1_arterial_pco2_max	59271
## d1_arterial_pco2_min	59271

```
## d1_arterial_ph_max      60123
## d1_arterial_ph_min      60123
## d1_arterial_po2_max     59262
## d1_arterial_po2_min     59262
## d1_pao2fio2ratio_max    66008
## d1_pao2fio2ratio_min    66008
## h1_arterial_pco2_max     75959
## h1_arterial_pco2_min     75959
## h1_arterial_ph_max      76424
## h1_arterial_ph_min      76424
## h1_arterial_po2_max     75945
## h1_arterial_po2_min     75945
## h1_pao2fio2ratio_max    80195
## h1_pao2fio2ratio_min    80195
## apache_4a_hospital_death_prob 7947
## apache_4a_icu_death_prob 7947
## aids                    715
## cirrhosis               715
## diabetes_mellitus       715
## hepatic_failure         715
## immunosuppression       715
## leukemia                715
## lymphoma                715
## solid_tumor_with_metastasis 715
## apache_3j_bodysystem    0
## apache_2_bodysystem     0
```

```
NACheckv2 = lapply(datasetv2, is.na)
#NACheckv2
NACheckSumv2 = lapply(NACheckv2, sum)
#NACheckSumv2
cbind(NACheckSumv2)
```

```
##                               NACheckSumv2
## hospital_death                0
## age                          4228
## bmi                          3429
## elective_surgery              0
## ethnicity                     0
## gender                       0
## height                       1334
## hospital_admit_source         0
## icu_admit_source              0
## icu_stay_type                 0
## icu_type                      0
## pre_icu_los_days              0
## readmission_status            0
## weight                       2720
## apache_2_diagnosis            1662
## apache_3j_diagnosis           1101
## apache_post_operative         0
## arf_apache                    715
## bun_apache                   19262
## creatinine_apache            18853
```

## gcs_eyes_apache	1901
## gcs_motor_apache	1901
## gcs_unable_apache	1037
## gcs_verbal_apache	1901
## glucose_apache	11036
## heart_rate_apache	878
## hematocrit_apache	19878
## intubated_apache	715
## map_apache	994
## resprate_apache	1234
## sodium_apache	18600
## temp_apache	4108
## ventilated_apache	715
## wbc_apache	22012
## d1_diasbp_max	165
## d1_diasbp_min	165
## d1_diasbp_noninvasive_max	1040
## d1_diasbp_noninvasive_min	1040
## d1_heartrate_max	145
## d1_heartrate_min	145
## d1_mbp_max	220
## d1_mbp_min	220
## d1_mbp_noninvasive_max	1479
## d1_mbp_noninvasive_min	1479
## d1_resprate_max	385
## d1_resprate_min	385
## d1_spo2_max	333
## d1_spo2_min	333
## d1_sysbp_max	159
## d1_sysbp_min	159
## d1_sysbp_noninvasive_max	1027
## d1_sysbp_noninvasive_min	1027
## d1_temp_max	2324
## d1_temp_min	2324
## h1_diasbp_max	3619
## h1_diasbp_min	3619
## h1_diasbp_noninvasive_max	7350
## h1_diasbp_noninvasive_min	7350
## h1_heartrate_max	2790
## h1_heartrate_min	2790
## h1_mbp_max	4639
## h1_mbp_min	4639
## h1_mbp_noninvasive_max	9084
## h1_mbp_noninvasive_min	9084
## h1_resprate_max	4357
## h1_resprate_min	4357
## h1_spo2_max	4185
## h1_spo2_min	4185
## h1_sysbp_max	3611
## h1_sysbp_min	3611
## h1_sysbp_noninvasive_max	7341
## h1_sysbp_noninvasive_min	7341
## h1_temp_max	21732
## h1_temp_min	21732


```
## d1_bun_max          10514
## d1_bun_min          10514
## d1_calcium_max      13069
## d1_calcium_min      13069
## d1_creatinine_max   10169
## d1_creatinine_min   10169
## d1_glucose_max       5807
## d1_glucose_min       5807
## d1_hco3_max         15071
## d1_hco3_min         15071
## d1_hemaglobin_max   12147
## d1_hemaglobin_min   12147
## d1_hematocrit_max    11654
## d1_hematocrit_min    11654
## d1_platelets_max     13444
## d1_platelets_min     13444
## d1_potassium_max     9585
## d1_potassium_min     9585
## d1_sodium_max        10195
## d1_sodium_min        10195
## d1_wbc_max           13174
## d1_wbc_min           13174
## apache_4a_hospital_death_prob 7947
## apache_4a_icu_death_prob 7947
## aids                 715
## cirrhosis            715
## diabetes_mellitus     715
## hepatic_failure       715
## immunosuppression     715
## leukemia              715
## lymphoma              715
## solid_tumor_with_metastasis 715
## apache_3j_bodysystem 0
## apache_2_bodysystem 0
```

```
#Listwise Deletion for variables with less than 50% of NAs in their rows.
datasetv3 <- na.omit(datasetv2)
#dim(datasetv3)

sum(is.na(datasetv3))
```

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

```
#str(datasetv3)
```

```
datasetv4 <- datasetv3 %>% select(where(~!is.character(.))) %>% glimpse()
```

```
## Rows: 34,776
## Columns: 100
## $ hospital_death      <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ age                 <int> 68, 77, 67, 50, 46, 87, 60, 85, 79, 60, ~
## $ bmi                 <dbl> 22.73000, 27.42000, 27.56000, 25.71000, ~
## $ elective_surgery     <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
```

```

## $ height <dbl> 180.3, 160.0, 190.5, 175.3, 167.6, 180.3~
## $ pre_icu_los_days <dbl> 0.541666667, 0.927777778, 0.000694444, 0~
## $ readmission_status <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ weight <dbl> 73.9, 70.2, 100.0, 79.0, 72.6, 71.4, 104~
## $ apache_2_diagnosis <int> 113, 108, 301, 112, 108, 113, 112, 124, ~
## $ apache_3j_diagnosis <dbl> 502.01, 203.01, 403.01, 107.01, 203.01, ~
## $ apache_post_operative <int> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0~
## $ arf_apache <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ bun_apache <dbl> 31, 9, 13, 10, 15, 13, 12, 12, 15, 14, 2~
## $ creatinine_apache <dbl> 2.51, 0.56, 0.71, 0.83, 1.00, 0.94, 1.30~
## $ gcs_eyes_apache <int> 3, 1, 4, 4, 1, 3, 4, 4, 4, 4, 4, 4, 4~
## $ gcs_motor_apache <int> 6, 3, 6, 6, 4, 6, 6, 6, 6, 6, 6, 6, 6~
## $ gcs_unable_apache <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ gcs_verbal_apache <int> 4, 1, 5, 5, 1, 1, 5, 5, 5, 5, 5, 5, 4~
## $ glucose_apache <dbl> 168, 145, 156, 134, 143, 105, 118, 93, 1~
## $ heart_rate_apache <int> 118, 120, 113, 94, 114, 99, 104, 118, 94~
## $ hematocrit_apache <dbl> 27.4, 36.9, 44.2, 37.2, 44.2, 28.9, 43.2~
## $ intubated_apache <int> 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0~
## $ map_apache <int> 40, 46, 130, 58, 113, 133, 64, 162, 170,~
## $ resprate_apache <dbl> 36, 33, 35, 46, 34, 33, 12, 20, 15, 14, ~
## $ sodium_apache <dbl> 134, 145, 137, 139, 132, 146, 137, 135, ~
## $ temp_apache <dbl> 39.3, 35.1, 36.6, 36.3, 36.4, 36.3, 36.5~
## $ ventilated_apache <int> 0, 1, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 1~
## $ wbc_apache <dbl> 14.1, 12.7, 10.9, 8.4, 9.7, 9.9, 8.3, 6.~
## $ d1_diasbp_max <int> 68, 95, 100, 83, 89, 88, 76, 102, 104, 1~
## $ d1_diasbp_min <int> 37, 31, 61, 48, 61, 65, 54, 64, 68, 31, ~
## $ d1_diasbp_noninvasive_max <int> 68, 95, 100, 83, 89, 88, 76, 102, 104, 1~
## $ d1_diasbp_noninvasive_min <int> 37, 31, 61, 48, 61, 65, 54, 64, 68, 31, ~
## $ d1_heartrate_max <int> 119, 118, 113, 96, 98, 116, 77, 104, 92,~
## $ d1_heartrate_min <int> 72, 72, 83, 57, 64, 74, 54, 68, 72, 53, ~
## $ d1_mbp_max <int> 89, 120, 127, 101, 113, 123, 93, 162, 13~
## $ d1_mbp_min <int> 46, 38, 80, 59, 76, 90, 64, 93, 101, 73,~
## $ d1_mbp_noninvasive_max <int> 89, 120, 127, 101, 113, 123, 93, 162, 13~
## $ d1_mbp_noninvasive_min <int> 46, 38, 80, 59, 76, 90, 64, 93, 101, 73,~
## $ d1_resprate_max <int> 34, 32, 32, 44, 22, 36, 18, 28, 26, 20, ~
## $ d1_resprate_min <int> 10, 12, 10, 14, 9, 16, 12, 19, 10, 14, 1~
## $ d1_spo2_max <int> 100, 100, 97, 100, 100, 100, 99, 99, 99,~
## $ d1_spo2_min <int> 74, 70, 91, 96, 88, 90, 96, 86, 91, 90, ~
## $ d1_sysbp_max <int> 131, 159, 173, 135, 169, 179, 132, 199, ~
## $ d1_sysbp_min <int> 73, 67, 107, 78, 102, 129, 83, 138, 136,~
## $ d1_sysbp_noninvasive_max <int> 131, 159, 173, 135, 169, 179, 132, 199, ~
## $ d1_sysbp_noninvasive_min <dbl> 73, 67, 107, 78, 102, 129, 83, 138, 136,~
## $ d1_temp_max <dbl> 39.9, 36.3, 36.8, 37.1, 37.1, 36.8, 36.7~
## $ d1_temp_min <dbl> 37.2, 35.1, 36.6, 36.4, 36.4, 35.6, 36.5~
## $ h1_diasbp_max <int> 68, 61, 89, 83, 89, 71, 76, 79, 104, 70,~
## $ h1_diasbp_min <int> 63, 48, 89, 61, 63, 65, 61, 70, 80, 52, ~
## $ h1_diasbp_noninvasive_max <int> 68, 61, 89, 83, 89, 71, 76, 79, 104, 70,~
## $ h1_diasbp_noninvasive_min <int> 63, 48, 89, 61, 63, 65, 61, 70, 80, 52, ~
## $ h1_heartrate_max <int> 119, 114, 83, 96, 94, 116, 72, 76, 76, 9~
## $ h1_heartrate_min <int> 108, 100, 83, 60, 80, 92, 54, 68, 72, 53~
## $ h1_mbp_max <int> 86, 85, 111, 101, 104, 102, 93, 111, 124~
## $ h1_mbp_min <int> 85, 57, 111, 77, 88, 90, 87, 101, 108, 8~
## $ h1_mbp_noninvasive_max <int> 86, 85, 111, 101, 104, 102, 93, 111, 124~
## $ h1_mbp_noninvasive_min <int> 85, 57, 111, 77, 88, 90, 87, 101, 108, 8~

```

```
## $ h1_resprate_max <int> 26, 31, 12, 29, 21, 36, 18, 28, 23, 18, ~
## $ h1_resprate_min <int> 18, 28, 12, 17, 9, 28, 18, 19, 14, 18, 1~
## $ h1_spo2_max <int> 100, 95, 97, 100, 99, 99, 99, 98, 99, 10~
## $ h1_spo2_min <int> 74, 70, 97, 96, 95, 90, 97, 93, 95, 95, ~
## $ h1_sysbp_max <int> 131, 95, 143, 135, 169, 159, 127, 165, 1~
## $ h1_sysbp_min <int> 115, 71, 143, 103, 115, 129, 109, 152, 1~
## $ h1_sysbp_noninvasive_max <int> 131, 95, 143, 135, 169, 159, 127, 165, 1~
## $ h1_sysbp_noninvasive_min <int> 115, 71, 143, 103, 115, 129, 109, 152, 1~
## $ h1_temp_max <dbl> 39.5, 36.3, 36.7, 36.9, 36.6, 36.8, 36.6~
## $ h1_temp_min <dbl> 37.5, 36.3, 36.7, 36.9, 36.6, 36.3, 36.5~
## $ d1_bun_max <dbl> 31, 11, 13, 10, 15, 13, 12, 12, 15, 14, ~
## $ d1_bun_min <dbl> 30, 9, 13, 10, 15, 13, 12, 12, 15, 14, 2~
## $ d1_calcium_max <dbl> 8.5, 8.6, 8.8, 8.3, 8.5, 7.7, 8.9, 8.6, ~
## $ d1_calcium_min <dbl> 7.4, 8.0, 8.8, 8.3, 8.5, 7.7, 8.9, 8.6, ~
## $ d1_creatinine_max <dbl> 2.51, 0.71, 0.71, 0.83, 1.00, 0.94, 1.30~
## $ d1_creatinine_min <dbl> 2.23, 0.56, 0.71, 0.83, 1.00, 0.94, 1.30~
## $ d1_glucose_max <int> 168, 145, 156, 134, 143, 144, 118, 100, ~
## $ d1_glucose_min <int> 109, 128, 125, 134, 143, 87, 118, 100, 1~
## $ d1_hco3_max <dbl> 19, 27, 27, 28, 27, 26, 28, 24, 30, 27, ~
## $ d1_hco3_min <dbl> 15, 26, 27, 28, 27, 26, 28, 24, 27, 27, ~
## $ d1_hemaglobin_max <dbl> 8.9, 11.3, 15.6, 12.8, 15.0, 9.7, 15.2, ~
## $ d1_hemaglobin_min <dbl> 8.9, 11.1, 15.6, 12.8, 15.0, 9.7, 15.2, ~
## $ d1_hematocrit_max <dbl> 27.4, 36.9, 44.2, 37.2, 44.2, 28.9, 43.2~
## $ d1_hematocrit_min <dbl> 27.4, 36.1, 44.2, 37.2, 44.2, 28.9, 43.2~
## $ d1_platelets_max <int> 233, 557, 159, 232, 247, 273, 181, 375, ~
## $ d1_platelets_min <dbl> 233.00, 487.00, 159.00, 232.00, 247.00, ~
## $ d1_potassium_max <dbl> 4.0, 4.2, 3.9, 4.1, 4.9, 3.4, 3.7, 4.1, ~
## $ d1_potassium_min <dbl> 3.4, 3.8, 3.7, 3.3, 4.9, 3.3, 3.7, 4.1, ~
## $ d1_sodium_max <dbl> 136, 145, 137, 139, 132, 146, 137, 136, ~
## $ d1_sodium_min <dbl> 134, 145, 137, 139, 132, 146, 137, 136, ~
## $ d1_wbc_max <dbl> 14.1, 23.3, 10.9, 12.8, 9.7, 9.9, 8.3, 8~
## $ d1_wbc_min <dbl> 14.1, 12.7, 10.9, 12.8, 9.7, 9.9, 8.3, 8~
## $ apache_4a_hospital_death_prob <dbl> 0.10, 0.47, 0.05, 0.02, 0.11, 0.31, 0.02~
## $ apache_4a_icu_death_prob <dbl> 0.05, 0.29, 0.02, 0.01, 0.06, 0.14, 0.01~
## $ aids <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ cirrhosis <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ diabetes_mellitus <int> 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ hepatic_failure <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ immunosuppression <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ leukemia <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ lymphoma <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
## $ solid_tumor_with_metastasis <int> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0~
```

```
#str(datasetv4)
```

```
### Remove binary columns except target column (hospital_death)
```

```
datasetv5 <- datasetv4 %>% select(-hospital_death, -elective_surgery, -readmission_status, -apache_post_op,
  -gcs_unable_apache, -intubated_apache, -ventilated_apache, -aids,
  -cirrhosis, -diabetes_mellitus, -hepatic_failure, -immunosuppression, -leukemia, -lymphoma, -solid_tumor_with_metastasis) %>% glimpse()
```

```
## Rows: 34,776
```

```
## Columns: 84
```

```

## $ age <int> 68, 77, 67, 50, 46, 87, 60, 85, 79, 60, ~
## $ bmi <dbl> 22.73000, 27.42000, 27.56000, 25.71000, ~
## $ height <dbl> 180.3, 160.0, 190.5, 175.3, 167.6, 180.3~
## $ pre_icu_los_days <dbl> 0.541666667, 0.927777778, 0.000694444, 0~
## $ weight <dbl> 73.9, 70.2, 100.0, 79.0, 72.6, 71.4, 104~
## $ apache_2_diagnosis <int> 113, 108, 301, 112, 108, 113, 112, 124, ~
## $ apache_3j_diagnosis <dbl> 502.01, 203.01, 403.01, 107.01, 203.01, ~
## $ bun_apache <dbl> 31, 9, 13, 10, 15, 13, 12, 12, 15, 14, 2~
## $ creatinine_apache <dbl> 2.51, 0.56, 0.71, 0.83, 1.00, 0.94, 1.30~
## $ gcs_eyes_apache <int> 3, 1, 4, 4, 1, 3, 4, 4, 4, 4, 4, 4, 4~
## $ gcs_motor_apache <int> 6, 3, 6, 6, 4, 6, 6, 6, 6, 6, 6, 6, 6~
## $ gcs_verbal_apache <int> 4, 1, 5, 5, 1, 1, 5, 5, 5, 5, 5, 4, 5~
## $ glucose_apache <dbl> 168, 145, 156, 134, 143, 105, 118, 93, 1~
## $ heart_rate_apache <int> 118, 120, 113, 94, 114, 99, 104, 118, 94~
## $ hematocrit_apache <dbl> 27.4, 36.9, 44.2, 37.2, 44.2, 28.9, 43.2~
## $ map_apache <int> 40, 46, 130, 58, 113, 133, 64, 162, 170,~
## $ resprate_apache <dbl> 36, 33, 35, 46, 34, 33, 12, 20, 15, 14, ~
## $ sodium_apache <dbl> 134, 145, 137, 139, 132, 146, 137, 135, ~
## $ temp_apache <dbl> 39.3, 35.1, 36.6, 36.3, 36.4, 36.3, 36.5~
## $ wbc_apache <dbl> 14.1, 12.7, 10.9, 8.4, 9.7, 9.9, 8.3, 6.~
## $ d1_diasbp_max <int> 68, 95, 100, 83, 89, 88, 76, 102, 104, 1~
## $ d1_diasbp_min <int> 37, 31, 61, 48, 61, 65, 54, 64, 68, 31, ~
## $ d1_diasbp_noninvasive_max <int> 68, 95, 100, 83, 89, 88, 76, 102, 104, 1~
## $ d1_diasbp_noninvasive_min <int> 37, 31, 61, 48, 61, 65, 54, 64, 68, 31, ~
## $ d1_heartrate_max <int> 119, 118, 113, 96, 98, 116, 77, 104, 92,~
## $ d1_heartrate_min <int> 72, 72, 83, 57, 64, 74, 54, 68, 72, 53, ~
## $ d1_mbp_max <int> 89, 120, 127, 101, 113, 123, 93, 162, 13~
## $ d1_mbp_min <int> 46, 38, 80, 59, 76, 90, 64, 93, 101, 73,~
## $ d1_mbp_noninvasive_max <int> 89, 120, 127, 101, 113, 123, 93, 162, 13~
## $ d1_mbp_noninvasive_min <int> 46, 38, 80, 59, 76, 90, 64, 93, 101, 73,~
## $ d1_resprate_max <int> 34, 32, 32, 44, 22, 36, 18, 28, 26, 20, ~
## $ d1_resprate_min <int> 10, 12, 10, 14, 9, 16, 12, 19, 10, 14, 1~
## $ d1_spo2_max <int> 100, 100, 97, 100, 100, 100, 99, 99, 99,~
## $ d1_spo2_min <int> 74, 70, 91, 96, 88, 90, 96, 86, 91, 90, ~
## $ d1_sysbp_max <int> 131, 159, 173, 135, 169, 179, 132, 199, ~
## $ d1_sysbp_min <int> 73, 67, 107, 78, 102, 129, 83, 138, 136,~
## $ d1_sysbp_noninvasive_max <int> 131, 159, 173, 135, 169, 179, 132, 199, ~
## $ d1_sysbp_noninvasive_min <dbl> 73, 67, 107, 78, 102, 129, 83, 138, 136,~
## $ d1_temp_max <dbl> 39.9, 36.3, 36.8, 37.1, 37.1, 36.8, 36.7~
## $ d1_temp_min <dbl> 37.2, 35.1, 36.6, 36.4, 36.4, 35.6, 36.5~
## $ h1_diasbp_max <int> 68, 61, 89, 83, 89, 71, 76, 79, 104, 70,~
## $ h1_diasbp_min <int> 63, 48, 89, 61, 63, 65, 61, 70, 80, 52, ~
## $ h1_diasbp_noninvasive_max <int> 68, 61, 89, 83, 89, 71, 76, 79, 104, 70,~
## $ h1_diasbp_noninvasive_min <int> 63, 48, 89, 61, 63, 65, 61, 70, 80, 52, ~
## $ h1_heartrate_max <int> 119, 114, 83, 96, 94, 116, 72, 76, 76, 9~
## $ h1_heartrate_min <int> 108, 100, 83, 60, 80, 92, 54, 68, 72, 53~
## $ h1_mbp_max <int> 86, 85, 111, 101, 104, 102, 93, 111, 124~
## $ h1_mbp_min <int> 85, 57, 111, 77, 88, 90, 87, 101, 108, 8~
## $ h1_mbp_noninvasive_max <int> 86, 85, 111, 101, 104, 102, 93, 111, 124~
## $ h1_mbp_noninvasive_min <int> 85, 57, 111, 77, 88, 90, 87, 101, 108, 8~
## $ h1_resprate_max <int> 26, 31, 12, 29, 21, 36, 18, 28, 23, 18, ~
## $ h1_resprate_min <int> 18, 28, 12, 17, 9, 28, 18, 19, 14, 18, 1~
## $ h1_spo2_max <int> 100, 95, 97, 100, 99, 99, 99, 98, 99, 10~
## $ h1_spo2_min <int> 74, 70, 97, 96, 95, 90, 97, 93, 95, 95, ~

```

```
## $ h1_sysbp_max      <int> 131, 95, 143, 135, 169, 159, 127, 165, 1~
## $ h1_sysbp_min      <int> 115, 71, 143, 103, 115, 129, 109, 152, 1~
## $ h1_sysbp_noninvasive_max <int> 131, 95, 143, 135, 169, 159, 127, 165, 1~
## $ h1_sysbp_noninvasive_min <int> 115, 71, 143, 103, 115, 129, 109, 152, 1~
## $ h1_temp_max       <dbl> 39.5, 36.3, 36.7, 36.9, 36.6, 36.8, 36.6~
## $ h1_temp_min       <dbl> 37.5, 36.3, 36.7, 36.9, 36.6, 36.3, 36.5~
## $ d1_bun_max        <dbl> 31, 11, 13, 10, 15, 13, 12, 12, 15, 14, ~
## $ d1_bun_min        <dbl> 30, 9, 13, 10, 15, 13, 12, 12, 15, 14, 2~
## $ d1_calcium_max    <dbl> 8.5, 8.6, 8.8, 8.3, 8.5, 7.7, 8.9, 8.6, ~
## $ d1_calcium_min    <dbl> 7.4, 8.0, 8.8, 8.3, 8.5, 7.7, 8.9, 8.6, ~
## $ d1_creatinine_max <dbl> 2.51, 0.71, 0.71, 0.83, 1.00, 0.94, 1.30~
## $ d1_creatinine_min <dbl> 2.23, 0.56, 0.71, 0.83, 1.00, 0.94, 1.30~
## $ d1_glucose_max    <int> 168, 145, 156, 134, 143, 144, 118, 100, ~
## $ d1_glucose_min    <int> 109, 128, 125, 134, 143, 87, 118, 100, 1~
## $ d1_hco3_max       <dbl> 19, 27, 27, 28, 27, 26, 28, 24, 30, 27, ~
## $ d1_hco3_min       <dbl> 15, 26, 27, 28, 27, 26, 28, 24, 27, 27, ~
## $ d1_hemaglobin_max <dbl> 8.9, 11.3, 15.6, 12.8, 15.0, 9.7, 15.2, ~
## $ d1_hemaglobin_min <dbl> 8.9, 11.1, 15.6, 12.8, 15.0, 9.7, 15.2, ~
## $ d1_hematocrit_max <dbl> 27.4, 36.9, 44.2, 37.2, 44.2, 28.9, 43.2~
## $ d1_hematocrit_min <dbl> 27.4, 36.1, 44.2, 37.2, 44.2, 28.9, 43.2~
## $ d1_platelets_max  <int> 233, 557, 159, 232, 247, 273, 181, 375, ~
## $ d1_platelets_min  <dbl> 233.00, 487.00, 159.00, 232.00, 247.00, ~
## $ d1_potassium_max  <dbl> 4.0, 4.2, 3.9, 4.1, 4.9, 3.4, 3.7, 4.1, ~
## $ d1_potassium_min  <dbl> 3.4, 3.8, 3.7, 3.3, 4.9, 3.3, 3.7, 4.1, ~
## $ d1_sodium_max     <dbl> 136, 145, 137, 139, 132, 146, 137, 136, ~
## $ d1_sodium_min     <dbl> 134, 145, 137, 139, 132, 146, 137, 136, ~
## $ d1_wbc_max        <dbl> 14.1, 23.3, 10.9, 12.8, 9.7, 9.9, 8.3, 8~
## $ d1_wbc_min        <dbl> 14.1, 12.7, 10.9, 12.8, 9.7, 9.9, 8.3, 8~
## $ apache_4a_hospital_death_prob <dbl> 0.10, 0.47, 0.05, 0.02, 0.11, 0.31, 0.02~
## $ apache_4a_icu_death_prob <dbl> 0.05, 0.29, 0.02, 0.01, 0.06, 0.14, 0.01~
```

```
#str(datasetv5)
#dim(datasetv5)
```

```
#### Remove non continuous numerical variables
```

```
datasetv6 <- datasetv5[, -c(6,7,10,11,12)]
str(datasetv6)
```

```
## 'data.frame': 34776 obs. of 79 variables:
## $ age : int 68 77 67 50 46 87 60 85 79 60 ...
## $ bmi : num 22.7 27.4 27.6 25.7 25.8 ...
## $ height : num 180 160 190 175 168 ...
## $ pre_icu_los_days : num 0.541667 0.927778 0.000694 0.060417 0 ...
## $ weight : num 73.9 70.2 100 79 72.6 ...
## $ bun_apache : num 31 9 13 10 15 13 12 12 15 14 ...
## $ creatinine_apache : num 2.51 0.56 0.71 0.83 1 0.94 1.3 0.79 1.45 1.57 ...
## $ glucose_apache : num 168 145 156 134 143 105 118 93 175 149 ...
## $ heart_rate_apache : int 118 120 113 94 114 99 104 118 94 90 ...
## $ hematocrit_apache : num 27.4 36.9 44.2 37.2 44.2 28.9 43.2 26.1 28.7 32.6 ...
## $ map_apache : int 40 46 130 58 113 133 64 162 170 139 ...
## $ resprate_apache : num 36 33 35 46 34 33 12 20 15 14 ...
```

```

## $ sodium_apache      : num 134 145 137 139 132 146 137 135 140 134 ...
## $ temp_apache        : num 39.3 35.1 36.6 36.3 36.4 36.3 36.5 36.7 36.6 36.7 ...
## $ wbc_apache         : num 14.1 12.7 10.9 8.4 9.7 9.9 8.3 6.4 13.5 7.5 ...
## $ d1_diasbp_max      : int 68 95 100 83 89 88 76 102 104 108 ...
## $ d1_diasbp_min      : int 37 31 61 48 61 65 54 64 68 31 ...
## $ d1_diasbp_noninvasive_max : int 68 95 100 83 89 88 76 102 104 108 ...
## $ d1_diasbp_noninvasive_min : int 37 31 61 48 61 65 54 64 68 31 ...
## $ d1_hearttrate_max  : int 119 118 113 96 98 116 77 104 92 95 ...
## $ d1_hearttrate_min  : int 72 72 83 57 64 74 54 68 72 53 ...
## $ d1_mbp_max         : int 89 120 127 101 113 123 93 162 134 139 ...
## $ d1_mbp_min         : int 46 38 80 59 76 90 64 93 101 73 ...
## $ d1_mbp_noninvasive_max : int 89 120 127 101 113 123 93 162 134 139 ...
## $ d1_mbp_noninvasive_min : int 46 38 80 59 76 90 64 93 101 73 ...
## $ d1_resprate_max    : int 34 32 32 44 22 36 18 28 26 20 ...
## $ d1_resprate_min    : int 10 12 10 14 9 16 12 19 10 14 ...
## $ d1_spo2_max        : int 100 100 97 100 100 100 99 99 99 100 ...
## $ d1_spo2_min        : int 74 70 91 96 88 90 96 86 91 90 ...
## $ d1_sysbp_max       : int 131 159 173 135 169 179 132 199 170 171 ...
## $ d1_sysbp_min       : int 73 67 107 78 102 129 83 138 136 85 ...
## $ d1_sysbp_noninvasive_max : int 131 159 173 135 169 179 132 199 170 171 ...
## $ d1_sysbp_noninvasive_min : num 73 67 107 78 102 129 83 138 136 85 ...
## $ d1_temp_max        : num 39.9 36.3 36.8 37.1 37.1 36.8 36.7 37.2 37.6 37.8 ...
## $ d1_temp_min        : num 37.2 35.1 36.6 36.4 36.4 35.6 36.5 36.7 36.6 36.7 ...
## $ h1_diasbp_max      : int 68 61 89 83 89 71 76 79 104 70 ...
## $ h1_diasbp_min      : int 63 48 89 61 63 65 61 70 80 52 ...
## $ h1_diasbp_noninvasive_max : int 68 61 89 83 89 71 76 79 104 70 ...
## $ h1_diasbp_noninvasive_min : int 63 48 89 61 63 65 61 70 80 52 ...
## $ h1_hearttrate_max  : int 119 114 83 96 94 116 72 76 76 95 ...
## $ h1_hearttrate_min  : int 108 100 83 60 80 92 54 68 72 53 ...
## $ h1_mbp_max         : int 86 85 111 101 104 102 93 111 124 86 ...
## $ h1_mbp_min         : int 85 57 111 77 88 90 87 101 108 86 ...
## $ h1_mbp_noninvasive_max : int 86 85 111 101 104 102 93 111 124 86 ...
## $ h1_mbp_noninvasive_min : int 85 57 111 77 88 90 87 101 108 86 ...
## $ h1_resprate_max    : int 26 31 12 29 21 36 18 28 23 18 ...
## $ h1_resprate_min    : int 18 28 12 17 9 28 18 19 14 18 ...
## $ h1_spo2_max        : int 100 95 97 100 99 99 99 98 99 100 ...
## $ h1_spo2_min        : int 74 70 97 96 95 90 97 93 95 95 ...
## $ h1_sysbp_max       : int 131 95 143 135 169 159 127 165 170 123 ...
## $ h1_sysbp_min       : int 115 71 143 103 115 129 109 152 146 85 ...
## $ h1_sysbp_noninvasive_max : int 131 95 143 135 169 159 127 165 170 123 ...
## $ h1_sysbp_noninvasive_min : int 115 71 143 103 115 129 109 152 146 85 ...
## $ h1_temp_max        : num 39.5 36.3 36.7 36.9 36.6 36.8 36.6 36.9 36.6 36.9 ...
## $ h1_temp_min        : num 37.5 36.3 36.7 36.9 36.6 36.3 36.5 36.8 36.6 36.7 ...
## $ d1_bun_max         : num 31 11 13 10 15 13 12 12 15 14 ...
## $ d1_bun_min         : num 30 9 13 10 15 13 12 12 15 14 ...
## $ d1_calcium_max     : num 8.5 8.6 8.8 8.3 8.5 7.7 8.9 8.6 7.2 8.4 ...
## $ d1_calcium_min     : num 7.4 8 8.8 8.3 8.5 7.7 8.9 8.6 7 8.4 ...
## $ d1_creatinine_max  : num 2.51 0.71 0.71 0.83 1 0.94 1.3 0.79 1.45 1.57 ...
## $ d1_creatinine_min  : num 2.23 0.56 0.71 0.83 1 0.94 1.3 0.79 1.16 1.57 ...
## $ d1_glucose_max     : int 168 145 156 134 143 144 118 100 175 149 ...
## $ d1_glucose_min     : int 109 128 125 134 143 87 118 100 172 149 ...
## $ d1_hco3_max        : num 19 27 27 28 27 26 28 24 30 27 ...
## $ d1_hco3_min        : num 15 26 27 28 27 26 28 24 27 27 ...
## $ d1_hemaglobin_max  : num 8.9 11.3 15.6 12.8 15 9.7 15.2 8.7 11.2 10.8 ...

```

```
## $ d1_hemoglobin_min      : num  8.9 11.1 15.6 12.8 15 9.7 15.2 8.7 10.2 10.8 ...
## $ d1_hematocrit_max      : num  27.4 36.9 44.2 37.2 44.2 28.9 43.2 27 32.2 32.6 ...
## $ d1_hematocrit_min      : num  27.4 36.1 44.2 37.2 44.2 28.9 43.2 27 28.7 32.6 ...
## $ d1_platelets_max       : int   233 557 159 232 247 273 181 375 179 185 ...
## $ d1_platelets_min       : num  233 487 159 232 247 273 181 375 150 185 ...
## $ d1_potassium_max       : num   4 4.2 3.9 4.1 4.9 3.4 3.7 4.1 3.5 4.2 ...
## $ d1_potassium_min       : num   3.4 3.8 3.7 3.3 4.9 3.3 3.7 4.1 3.2 3.6 ...
## $ d1_sodium_max          : num  136 145 137 139 132 146 137 136 141 134 ...
## $ d1_sodium_min          : num  134 145 137 139 132 146 137 136 140 134 ...
## $ d1_wbc_max             : num  14.1 23.3 10.9 12.8 9.7 9.9 8.3 8 13.8 7.5 ...
## $ d1_wbc_min             : num  14.1 12.7 10.9 12.8 9.7 9.9 8.3 8 12 7.5 ...
## $ apache_4a_hospital_death_prob: num  0.1 0.47 0.05 0.02 0.11 0.31 0.02 0.03 0.02 0.01 ...
## $ apache_4a_icu_death_prob  : num  0.05 0.29 0.02 0.01 0.06 0.14 0.01 0.01 0.01 0.01 ...
```

```
dim(datasetv6)
```

```
## [1] 34776    79
```

```
head(datasetv6)
```

```
##      age      bmi height pre_icu_los_days weight bun_apache creatinine_apache
## 1    68 22.73000 180.3      0.541666667   73.9         31           2.51
## 2    77 27.42000 160.0      0.927777778   70.2          9           0.56
## 6    67 27.56000 190.5      0.000694444  100.0         13           0.71
## 10   50 25.71000 175.3      0.060416667   79.0         10           0.83
## 18   46 25.84572 167.6      0.000000000   72.6         15           1.00
## 24   87 21.96376 180.3      5.046527778   71.4         13           0.94
##      glucose_apache heart_rate_apache hematocrit_apache map_apache
## 1              168              118              27.4         40
## 2              145              120              36.9         46
## 6              156              113              44.2        130
## 10             134              94              37.2         58
## 18             143              114              44.2        113
## 24             105              99              28.9        133
##      resprate_apache sodium_apache temp_apache wbc_apache d1_diasbp_max
## 1              36              134              39.3        14.1        68
## 2              33              145              35.1        12.7        95
## 6              35              137              36.6        10.9       100
## 10             46              139              36.3         8.4        83
## 18             34              132              36.4         9.7        89
## 24             33              146              36.3         9.9        88
##      d1_diasbp_min d1_diasbp_noninvasive_max d1_diasbp_noninvasive_min
## 1              37              68              37
## 2              31              95              31
## 6              61             100              61
## 10             48              83              48
## 18             61              89              61
## 24             65              88              65
##      d1_heartrate_max d1_heartrate_min d1_mbp_max d1_mbp_min
## 1              119              72              89         46
## 2              118              72             120         38
## 6              113              83             127         80
## 10             96              57             101         59
```

## 18	98	64	113	76	
## 24	116	74	123	90	
##	d1_mbp_noninvasive_max	d1_mbp_noninvasive_min	d1_resprate_max		
## 1	89		46	34	
## 2	120		38	32	
## 6	127		80	32	
## 10	101		59	44	
## 18	113		76	22	
## 24	123		90	36	
##	d1_resprate_min	d1_spo2_max	d1_spo2_min	d1_sysbp_max	d1_sysbp_min
## 1	10	100	74	131	73
## 2	12	100	70	159	67
## 6	10	97	91	173	107
## 10	14	100	96	135	78
## 18	9	100	88	169	102
## 24	16	100	90	179	129
##	d1_sysbp_noninvasive_max	d1_sysbp_noninvasive_min	d1_temp_max	d1_temp_min	
## 1	131		73	39.9	37.2
## 2	159		67	36.3	35.1
## 6	173		107	36.8	36.6
## 10	135		78	37.1	36.4
## 18	169		102	37.1	36.4
## 24	179		129	36.8	35.6
##	h1_diasbp_max	h1_diasbp_min	h1_diasbp_noninvasive_max		
## 1	68	63	68		
## 2	61	48	61		
## 6	89	89	89		
## 10	83	61	83		
## 18	89	63	89		
## 24	71	65	71		
##	h1_diasbp_noninvasive_min	h1_heartrate_max	h1_heartrate_min	h1_mbp_max	
## 1	63	119	108	86	
## 2	48	114	100	85	
## 6	89	83	83	111	
## 10	61	96	60	101	
## 18	63	94	80	104	
## 24	65	116	92	102	
##	h1_mbp_min	h1_mbp_noninvasive_max	h1_mbp_noninvasive_min	h1_resprate_max	
## 1	85	86	85	26	
## 2	57	85	57	31	
## 6	111	111	111	12	
## 10	77	101	77	29	
## 18	88	104	88	21	
## 24	90	102	90	36	
##	h1_resprate_min	h1_spo2_max	h1_spo2_min	h1_sysbp_max	h1_sysbp_min
## 1	18	100	74	131	115
## 2	28	95	70	95	71
## 6	12	97	97	143	143
## 10	17	100	96	135	103
## 18	9	99	95	169	115
## 24	28	99	90	159	129
##	h1_sysbp_noninvasive_max	h1_sysbp_noninvasive_min	h1_temp_max	h1_temp_min	
## 1	131		115	39.5	37.5
## 2	95		71	36.3	36.3


```

## 6          143          143          36.7          36.7
## 10         135          103          36.9          36.9
## 18         169          115          36.6          36.6
## 24         159          129          36.8          36.3
##      d1_bun_max d1_bun_min d1_calcium_max d1_calcium_min d1_creatinine_max
## 1          31          30           8.5           7.4           2.51
## 2          11           9           8.6           8.0           0.71
## 6          13          13           8.8           8.8           0.71
## 10         10          10           8.3           8.3           0.83
## 18         15          15           8.5           8.5           1.00
## 24         13          13           7.7           7.7           0.94
##      d1_creatinine_min d1_glucose_max d1_glucose_min d1_hco3_max d1_hco3_min
## 1          2.23          168          109          19          15
## 2          0.56          145          128          27          26
## 6          0.71          156          125          27          27
## 10         0.83          134          134          28          28
## 18         1.00          143          143          27          27
## 24         0.94          144           87          26          26
##      d1_hemaglobin_max d1_hemaglobin_min d1_hematocrit_max d1_hematocrit_min
## 1          8.9           8.9           27.4           27.4
## 2          11.3          11.1           36.9           36.1
## 6          15.6          15.6           44.2           44.2
## 10         12.8          12.8           37.2           37.2
## 18         15.0          15.0           44.2           44.2
## 24         9.7           9.7           28.9           28.9
##      d1_platelets_max d1_platelets_min d1_potassium_max d1_potassium_min
## 1          233          233           4.0           3.4
## 2          557          487           4.2           3.8
## 6          159          159           3.9           3.7
## 10         232          232           4.1           3.3
## 18         247          247           4.9           4.9
## 24         273          273           3.4           3.3
##      d1_sodium_max d1_sodium_min d1_wbc_max d1_wbc_min
## 1          136          134          14.1          14.1
## 2          145          145          23.3          12.7
## 6          137          137          10.9          10.9
## 10         139          139          12.8          12.8
## 18         132          132           9.7           9.7
## 24         146          146           9.9           9.9
##      apache_4a_hospital_death_prob apache_4a_icu_death_prob
## 1          0.10          0.05
## 2          0.47          0.29
## 6          0.05          0.02
## 10         0.02          0.01
## 18         0.11          0.06
## 24         0.31          0.14

```

```
# Factoribility / Reliability Tests
```

```
#Test KMO Sampling Adequacy
```

```
library(psych)
KMO(datasetv6)
```

```
## Kaiser-Meyer-Olkin factor adequacy
```

```

## Call: KMO(r = datasetv6)
## Overall MSA = 0.81
## MSA for each item =
##          age          bmi
##          0.94          0.36
##          height      pre_icu_los_days
##          0.22          0.96
##          weight      bun_apache
##          0.42          0.85
##          creatinine_apache      glucose_apache
##          0.79          0.61
##          heart_rate_apache      hematocrit_apache
##          0.88          0.94
##          map_apache      resprate_apache
##          1.00          0.81
##          sodium_apache      temp_apache
##          0.69          0.80
##          wbc_apache      d1_diasbp_max
##          0.79          0.73
##          d1_diasbp_min      d1_diasbp_noninvasive_max
##          0.73          0.73
##          d1_diasbp_noninvasive_min      d1_heartrate_max
##          0.73          0.85
##          d1_heartrate_min      d1_mbp_max
##          0.88          0.88
##          d1_mbp_min      d1_mbp_noninvasive_max
##          0.86          0.88
##          d1_mbp_noninvasive_min      d1_resprate_max
##          0.86          0.76
##          d1_resprate_min      d1_spo2_max
##          0.72          0.76
##          d1_spo2_min      d1_sysbp_max
##          0.80          0.78
##          d1_sysbp_min      d1_sysbp_noninvasive_max
##          0.77          0.78
##          d1_sysbp_noninvasive_min      d1_temp_max
##          0.77          0.88
##          d1_temp_min      h1_diasbp_max
##          0.80          0.90
##          h1_diasbp_min      h1_diasbp_noninvasive_max
##          0.90          0.90
##          h1_diasbp_noninvasive_min      h1_heartrate_max
##          0.90          0.82
##          h1_heartrate_min      h1_mbp_max
##          0.81          0.89
##          h1_mbp_min      h1_mbp_noninvasive_max
##          0.87          0.89
##          h1_mbp_noninvasive_min      h1_resprate_max
##          0.87          0.80
##          h1_resprate_min      h1_spo2_max
##          0.75          0.67
##          h1_spo2_min      h1_sysbp_max
##          0.69          0.86
##          h1_sysbp_min      h1_sysbp_noninvasive_max

```

```
##          0.89          0.87
##      h1_sysbp_noninvasive_min      h1_temp_max
##          0.89          0.77
##          h1_temp_min      d1_bun_max
##          0.78          0.86
##          d1_bun_min      d1_calcium_max
##          0.83          0.72
##          d1_calcium_min      d1_creatinine_max
##          0.77          0.80
##          d1_creatinine_min      d1_glucose_max
##          0.85          0.64
##          d1_glucose_min      d1_hco3_max
##          0.79          0.67
##          d1_hco3_min      d1_hemaglobin_max
##          0.73          0.85
##          d1_hemaglobin_min      d1_hematocrit_max
##          0.89          0.84
##          d1_hematocrit_min      d1_platelets_max
##          0.86          0.54
##          d1_platelets_min      d1_potassium_max
##          0.56          0.71
##          d1_potassium_min      d1_sodium_max
##          0.57          0.74
##          d1_sodium_min      d1_wbc_max
##          0.78          0.76
##          d1_wbc_min apache_4a_hospital_death_prob
##          0.83          0.74
##      apache_4a_icu_death_prob
##          0.72
```

```
#Overall MSA = 0.81
```

```
#Test Bartlett's Test of Sphericity => checking for correlation
library(REdaS)
```

```
## Loading required package: grid
```

```
bart_spher(datasetv6)
```

```
## Bartlett's Test of Sphericity
##
## Call: bart_spher(x = datasetv6)
##
##      X2 = 4653944.47
##      df = 3081
## p-value < 2.22e-16
```

```
#p-value < 2.22e-16 (Very Small Number)
```

```
#Test for Reliability Analysis using Cronbach's Alpha => Looking for >0.7 => these data points belong to
alpha(datasetv6,check.keys=TRUE)
```

```
## Number of categories should be increased in order to count frequencies.
```

```
##
## Reliability analysis
## Call: alpha(x = datasetv6, check.keys = TRUE)
##
##      raw_alpha std.alpha G6(smc) average_r S/N      ase mean  sd median_r
##      0.82      0.91      0.98      0.11 9.8 0.0014 241 6.5      0.057
##
##      95% confidence boundaries
##              lower alpha upper
## Feldt      0.82 0.82 0.82
## Duhachek 0.82 0.82 0.82
##
## Reliability if an item is dropped:
##
##      raw_alpha std.alpha G6(smc) average_r S/N
## age-      0.82      0.91      0.98      0.11 9.9
## bmi      0.82      0.91      0.98      0.11 9.9
## height 0.82      0.91      0.98      0.11 9.9
## pre_icu_los_days- 0.82      0.91      0.98      0.11 9.9
## weight 0.82      0.91      0.98      0.11 9.9
## bun_apache- 0.82      0.91      0.98      0.11 9.6
## creatinine_apache- 0.82      0.91      0.98      0.11 9.7
## glucose_apache- 0.84      0.91      0.98      0.11 9.9
## heart_rate_apache- 0.82      0.91      0.98      0.11 9.8
## hematocrit_apache 0.82      0.91      0.98      0.11 9.5
## map_apache 0.81      0.91      0.98      0.11 9.6
## resprate_apache 0.82      0.91      0.98      0.11 10.0
## sodium_apache 0.82      0.91      0.98      0.11 10.0
## temp_apache 0.82      0.91      0.98      0.11 9.9
## wbc_apache- 0.82      0.91      0.98      0.11 9.8
## d1_diasbp_max 0.81      0.91      0.98      0.11 9.6
## d1_diasbp_min 0.82      0.90      0.98      0.11 9.5
## d1_diasbp_noninvasive_max 0.81      0.91      0.98      0.11 9.6
## d1_diasbp_noninvasive_min 0.82      0.90      0.98      0.11 9.5
## d1_heartrate_max- 0.82      0.91      0.98      0.11 9.8
## d1_heartrate_min- 0.82      0.91      0.98      0.11 9.9
## d1_mbp_max 0.81      0.91      0.98      0.11 9.5
## d1_mbp_min 0.81      0.90      0.98      0.11 9.4
## d1_mbp_noninvasive_max 0.81      0.91      0.98      0.11 9.5
## d1_mbp_noninvasive_min 0.81      0.90      0.98      0.11 9.4
## d1_resprate_max- 0.82      0.91      0.98      0.11 10.0
## d1_resprate_min 0.82      0.91      0.98      0.11 9.9
## d1_spo2_max- 0.82      0.91      0.98      0.11 9.9
## d1_spo2_min 0.82      0.91      0.98      0.11 9.8
## d1_sysbp_max 0.81      0.91      0.98      0.11 9.5
## d1_sysbp_min 0.81      0.90      0.98      0.11 9.4
## d1_sysbp_noninvasive_max 0.81      0.91      0.98      0.11 9.5
## d1_sysbp_noninvasive_min 0.81      0.90      0.98      0.11 9.4
## d1_temp_max- 0.82      0.91      0.98      0.11 9.9
## d1_temp_min 0.82      0.91      0.98      0.11 9.8
## h1_diasbp_max 0.81      0.90      0.98      0.11 9.5
## h1_diasbp_min 0.81      0.90      0.98      0.11 9.4
## h1_diasbp_noninvasive_max 0.81      0.90      0.98      0.11 9.5
## h1_diasbp_noninvasive_min 0.81      0.90      0.98      0.11 9.4
## h1_heartrate_max- 0.82      0.91      0.98      0.11 9.9
```

## h1_heartrate_min-	0.82	0.91	0.98	0.11	9.9
## h1_mbp_max	0.81	0.90	0.98	0.11	9.4
## h1_mbp_min	0.81	0.90	0.98	0.11	9.3
## h1_mbp_noninvasive_max	0.81	0.90	0.98	0.11	9.4
## h1_mbp_noninvasive_min	0.81	0.90	0.98	0.11	9.3
## h1_resprate_max	0.82	0.91	0.98	0.11	10.0
## h1_resprate_min	0.82	0.91	0.98	0.11	10.0
## h1_spo2_max-	0.82	0.91	0.98	0.11	10.0
## h1_spo2_min	0.82	0.91	0.98	0.11	9.9
## h1_sysbp_max	0.81	0.90	0.98	0.11	9.4
## h1_sysbp_min	0.81	0.90	0.98	0.11	9.4
## h1_sysbp_noninvasive_max	0.81	0.90	0.98	0.11	9.4
## h1_sysbp_noninvasive_min	0.81	0.90	0.98	0.11	9.4
## h1_temp_max	0.82	0.91	0.98	0.11	9.9
## h1_temp_min	0.82	0.91	0.98	0.11	9.9
## d1_bun_max-	0.82	0.91	0.98	0.11	9.6
## d1_bun_min-	0.82	0.91	0.98	0.11	9.6
## d1_calcium_max	0.82	0.91	0.98	0.11	9.7
## d1_calcium_min	0.82	0.91	0.98	0.11	9.6
## d1_creatinine_max-	0.82	0.91	0.98	0.11	9.7
## d1_creatinine_min-	0.82	0.91	0.98	0.11	9.7
## d1_glucose_max-	0.83	0.91	0.98	0.11	9.9
## d1_glucose_min	0.83	0.91	0.98	0.11	9.9
## d1_hco3_max	0.82	0.91	0.98	0.11	9.7
## d1_hco3_min	0.82	0.91	0.98	0.11	9.7
## d1_hemaglobin_max	0.82	0.91	0.98	0.11	9.6
## d1_hemaglobin_min	0.82	0.91	0.98	0.11	9.5
## d1_hematocrit_max	0.82	0.91	0.98	0.11	9.6
## d1_hematocrit_min	0.82	0.91	0.98	0.11	9.5
## d1_platelets_max	0.83	0.91	0.98	0.11	9.9
## d1_platelets_min	0.83	0.91	0.98	0.11	9.8
## d1_potassium_max-	0.82	0.91	0.98	0.11	9.7
## d1_potassium_min-	0.82	0.91	0.98	0.11	9.9
## d1_sodium_max-	0.82	0.91	0.98	0.11	10.0
## d1_sodium_min	0.82	0.91	0.98	0.11	9.9
## d1_wbc_max-	0.82	0.91	0.98	0.11	9.8
## d1_wbc_min-	0.82	0.91	0.98	0.11	9.8
## apache_4a_hospital_death_prob-	0.82	0.91	0.98	0.11	9.7
## apache_4a_icu_death_prob-	0.82	0.91	0.98	0.11	9.8
##	alpha	se	var.r	med.r	
## age-	0.0014	0.041	0.057		
## bmi	0.0014	0.041	0.059		
## height	0.0014	0.041	0.059		
## pre_icu_los_days-	0.0014	0.041	0.059		
## weight	0.0013	0.041	0.058		
## bun_apache-	0.0014	0.040	0.056		
## creatinine_apache-	0.0014	0.040	0.057		
## glucose_apache-	0.0012	0.040	0.058		
## heart_rate_apache-	0.0014	0.040	0.058		
## hematocrit_apache	0.0014	0.040	0.056		
## map_apache	0.0014	0.040	0.057		
## resprate_apache	0.0014	0.040	0.059		
## sodium_apache	0.0014	0.040	0.059		
## temp_apache	0.0014	0.040	0.058		

## wbc_apache-	0.0014	0.040	0.057
## d1_diasbp_max	0.0014	0.040	0.057
## d1_diasbp_min	0.0014	0.040	0.056
## d1_diasbp_noninvasive_max	0.0014	0.040	0.057
## d1_diasbp_noninvasive_min	0.0014	0.040	0.056
## d1_heartrate_max-	0.0014	0.040	0.058
## d1_heartrate_min-	0.0014	0.040	0.058
## d1_mbp_max	0.0014	0.039	0.057
## d1_mbp_min	0.0014	0.039	0.056
## d1_mbp_noninvasive_max	0.0014	0.039	0.057
## d1_mbp_noninvasive_min	0.0014	0.039	0.056
## d1_resprate_max-	0.0014	0.040	0.058
## d1_resprate_min	0.0014	0.041	0.059
## d1_spo2_max-	0.0014	0.041	0.058
## d1_spo2_min	0.0014	0.041	0.057
## d1_sysbp_max	0.0014	0.039	0.057
## d1_sysbp_min	0.0014	0.040	0.055
## d1_sysbp_noninvasive_max	0.0014	0.039	0.057
## d1_sysbp_noninvasive_min	0.0014	0.040	0.055
## d1_temp_max-	0.0014	0.041	0.058
## d1_temp_min	0.0014	0.041	0.057
## h1_diasbp_max	0.0014	0.039	0.057
## h1_diasbp_min	0.0014	0.039	0.056
## h1_diasbp_noninvasive_max	0.0014	0.039	0.057
## h1_diasbp_noninvasive_min	0.0014	0.039	0.056
## h1_heartrate_max-	0.0014	0.040	0.058
## h1_heartrate_min-	0.0014	0.040	0.058
## h1_mbp_max	0.0014	0.039	0.056
## h1_mbp_min	0.0014	0.039	0.056
## h1_mbp_noninvasive_max	0.0014	0.039	0.056
## h1_mbp_noninvasive_min	0.0014	0.039	0.056
## h1_resprate_max	0.0014	0.040	0.059
## h1_resprate_min	0.0014	0.040	0.059
## h1_spo2_max-	0.0014	0.041	0.059
## h1_spo2_min	0.0014	0.041	0.058
## h1_sysbp_max	0.0014	0.039	0.056
## h1_sysbp_min	0.0014	0.039	0.056
## h1_sysbp_noninvasive_max	0.0014	0.039	0.056
## h1_sysbp_noninvasive_min	0.0014	0.039	0.056
## h1_temp_max	0.0014	0.040	0.059
## h1_temp_min	0.0014	0.040	0.058
## d1_bun_max-	0.0014	0.040	0.056
## d1_bun_min-	0.0014	0.040	0.056
## d1_calcium_max	0.0014	0.041	0.056
## d1_calcium_min	0.0014	0.041	0.055
## d1_creatinine_max-	0.0014	0.040	0.057
## d1_creatinine_min-	0.0014	0.040	0.057
## d1_glucose_max-	0.0012	0.041	0.058
## d1_glucose_min	0.0013	0.041	0.058
## d1_hco3_max	0.0014	0.041	0.056
## d1_hco3_min	0.0014	0.041	0.056
## d1_hemaglobin_max	0.0014	0.040	0.056
## d1_hemaglobin_min	0.0014	0.040	0.056
## d1_hematocrit_max	0.0014	0.040	0.056

## d1_hematocrit_min	0.0014	0.040	0.056				
## d1_platelets_max	0.0013	0.041	0.058				
## d1_platelets_min	0.0013	0.041	0.057				
## d1_potassium_max-	0.0014	0.041	0.056				
## d1_potassium_min-	0.0014	0.041	0.059				
## d1_sodium_max-	0.0014	0.040	0.059				
## d1_sodium_min	0.0014	0.040	0.059				
## d1_wbc_max-	0.0014	0.040	0.056				
## d1_wbc_min-	0.0014	0.040	0.057				
## apache_4a_hospital_death_prob-	0.0014	0.041	0.056				
## apache_4a_icu_death_prob-	0.0014	0.041	0.056				
##							
## Item statistics							
##	n	raw.r	std.r	r.cor	r.drop	mean	sd
## age-	34776	0.1173	0.1501	0.125	0.0854	547.4	16.55
## bmi	34776	0.0792	0.1130	0.113	0.0633	29.2	8.25
## height	34776	0.0709	0.1172	0.113	0.0500	169.9	10.75
## pre_icu_los_days-	34776	0.0732	0.1428	0.109	0.0687	609.2	2.32
## weight	34776	0.1077	0.1592	0.160	0.0593	84.4	25.02
## bun_apache-	34776	0.3460	0.4368	0.440	0.3098	584.4	20.70
## creatinine_apache-	34776	0.1880	0.3279	0.331	0.1851	608.5	1.56
## glucose_apache-	34776	0.2977	0.1164	0.113	0.1286	451.9	89.43
## heart_rate_apache-	34776	0.2066	0.1899	0.182	0.1483	508.5	30.79
## hematocrit_apache	34776	0.3666	0.5276	0.531	0.3550	33.2	6.83
## map_apache	34776	0.5031	0.4586	0.440	0.4362	87.3	43.29
## resprate_apache	34776	0.0252	0.0343	0.016	-0.0038	25.2	14.93
## sodium_apache	34776	0.0220	0.0589	0.056	0.0119	138.0	5.18
## temp_apache	34776	0.0743	0.1821	0.173	0.0726	36.4	0.90
## wbc_apache-	34776	0.1351	0.2640	0.265	0.1218	597.9	6.96
## d1_diasbp_max	34776	0.4799	0.4508	0.455	0.4499	90.6	19.47
## d1_diasbp_min	34776	0.5383	0.6172	0.623	0.5205	48.3	12.59
## d1_diasbp_noninvasive_max	34776	0.4802	0.4514	0.456	0.4503	90.6	19.47
## d1_diasbp_noninvasive_min	34776	0.5383	0.6171	0.623	0.5205	48.3	12.59
## d1_heartrate_max-	34776	0.2244	0.2252	0.219	0.1834	504.6	21.92
## d1_heartrate_min-	34776	0.1827	0.1498	0.135	0.1511	539.7	16.67
## d1_mbp_max	34776	0.5736	0.5330	0.537	0.5459	105.6	20.52
## d1_mbp_min	34776	0.6047	0.6667	0.673	0.5864	62.4	14.50
## d1_mbp_noninvasive_max	34776	0.5743	0.5345	0.539	0.5467	105.6	20.45
## d1_mbp_noninvasive_min	34776	0.6051	0.6672	0.674	0.5868	62.3	14.46
## d1_resprate_max-	34776	0.0308	0.0541	0.037	0.0103	580.5	10.58
## d1_resprate_min	34776	0.0156	0.0808	0.058	0.0066	12.4	4.63
## d1_spo2_max-	34776	0.0828	0.1744	0.150	0.0803	510.6	1.30
## d1_spo2_min	34776	0.1525	0.2069	0.185	0.1339	90.0	9.72
## d1_sysbp_max	34776	0.5797	0.5261	0.531	0.5460	150.0	25.06
## d1_sysbp_min	34776	0.6036	0.6499	0.656	0.5790	94.0	19.22
## d1_sysbp_noninvasive_max	34776	0.5802	0.5269	0.532	0.5465	150.0	25.07
## d1_sysbp_noninvasive_min	34776	0.6035	0.6498	0.656	0.5790	94.0	19.22
## d1_temp_max-	34776	0.1219	0.1044	0.082	0.1206	572.6	0.71
## d1_temp_min	34776	0.1202	0.2347	0.226	0.1187	36.2	0.77
## h1_diasbp_max	34776	0.6042	0.5944	0.599	0.5806	76.0	18.51
## h1_diasbp_min	34776	0.6413	0.6900	0.696	0.6223	61.8	16.12
## h1_diasbp_noninvasive_max	34776	0.6023	0.5933	0.598	0.5786	76.0	18.52
## h1_diasbp_noninvasive_min	34776	0.6419	0.6907	0.696	0.6229	61.9	16.14
## h1_heartrate_max-	34776	0.1951	0.1672	0.163	0.1535	516.2	22.02

```
## h1_hearttrate_min- 34776 0.2046 0.1559 0.151 0.1663 525.5 20.30
## h1_mbp_max 34776 0.6923 0.6720 0.678 0.6707 91.1 20.50
## h1_mbp_min 34776 0.7211 0.7492 0.756 0.7030 77.8 18.62
## h1_mbp_noninvasive_max 34776 0.6941 0.6741 0.680 0.6727 91.0 20.45
## h1_mbp_noninvasive_min 34776 0.7211 0.7495 0.757 0.7031 77.8 18.61
## h1_resprate_max 34776 -0.0190 -0.0037 -0.020 -0.0333 22.8 7.36
## h1_resprate_min 34776 -0.0310 0.0294 0.013 -0.0420 17.0 5.68
## h1_spo2_max- 34776 0.0064 0.0721 0.050 0.0010 511.8 2.75
## h1_spo2_min 34776 0.0900 0.1150 0.095 0.0777 95.1 6.37
## h1_sysbp_max 34776 0.6769 0.6417 0.648 0.6463 133.1 27.53
## h1_sysbp_min 34776 0.6913 0.7027 0.709 0.6633 114.4 26.10
## h1_sysbp_noninvasive_max 34776 0.6789 0.6442 0.650 0.6485 133.0 27.51
## h1_sysbp_noninvasive_min 34776 0.6924 0.7035 0.710 0.6645 114.3 26.10
## h1_temp_max 34776 0.0266 0.1331 0.126 0.0251 36.7 0.78
## h1_temp_min 34776 0.0586 0.1751 0.169 0.0571 36.6 0.80
## d1_bun_max- 34776 0.3484 0.4401 0.444 0.3123 584.3 20.71
## d1_bun_min- 34776 0.3245 0.4150 0.418 0.2912 586.3 18.86
## d1_calcium_max 34776 0.2890 0.3708 0.368 0.2877 8.4 0.74
## d1_calcium_min 34776 0.3691 0.4568 0.455 0.3678 8.1 0.79
## d1_creatinine_max- 34776 0.1932 0.3334 0.336 0.1903 608.5 1.56
## d1_creatinine_min- 34776 0.1682 0.3074 0.309 0.1656 608.6 1.36
## d1_glucose_max- 34776 0.3329 0.1611 0.158 0.1733 435.2 85.92
## d1_glucose_min 34776 -0.0015 0.0884 0.065 -0.0735 113.4 37.14
## d1_hco3_max 34776 0.2200 0.3138 0.307 0.2120 24.3 4.33
## d1_hco3_min 34776 0.3023 0.3867 0.383 0.2935 23.0 4.94
## d1_hemaglobin_max 34776 0.2989 0.4614 0.464 0.2950 11.5 2.17
## d1_hemaglobin_min 34776 0.3654 0.5344 0.538 0.3614 10.9 2.37
## d1_hematocrit_max 34776 0.3075 0.4621 0.465 0.2964 34.6 6.23
## d1_hematocrit_min 34776 0.3720 0.5319 0.536 0.3604 33.0 6.84
## d1_platelets_max 34776 0.3819 0.1326 0.132 0.2186 208.1 89.95
## d1_platelets_min 34776 0.4255 0.1935 0.194 0.2700 197.3 88.33
## d1_potassium_max- 34776 0.2082 0.3012 0.292 0.2070 605.7 0.67
## d1_potassium_min- 34776 0.0244 0.1071 0.095 0.0233 606.1 0.58
## d1_sodium_max- 34776 0.0616 0.0323 0.028 0.0523 470.8 4.78
## d1_sodium_min 34776 0.0585 0.0953 0.091 0.0490 137.7 4.90
## d1_wbc_max- 34776 0.1569 0.2885 0.290 0.1438 597.5 6.86
## d1_wbc_min- 34776 0.0940 0.2181 0.217 0.0824 598.7 6.01
## apache_4a_hospital_death_prob- 34776 0.2062 0.3093 0.302 0.2058 609.9 0.22
## apache_4a_icu_death_prob- 34776 0.1896 0.2914 0.284 0.1892 609.9 0.19
```

```
#raw_alpha = 0.8199
```

KMO value is 0.81, the Bartlett's Test of Sphericity indicate that the p-value < 2.22e-16 and the Cronbach's Alpha test indicate that raw_alpha = 0.8199. These values indicate that the data is reliable and stable.

```
# Create a Scree plot to see the number of factors to use
p = prcomp(datasetsv6, center=T, scale=T)
p
```

```
## Standard deviations (1, ..., p=79):
## [1] 3.85700285 2.58820856 2.29613527 2.11529883 2.03678070 1.81199938
## [7] 1.71267914 1.63078851 1.55578442 1.48659439 1.40033533 1.38596644
## [13] 1.33030985 1.28885131 1.22453071 1.19339358 1.18256860 1.15287668
```



```

## [19] 1.11564078 1.04021940 1.03155237 0.97816847 0.96810682 0.95814450
## [25] 0.94824471 0.87192846 0.83152808 0.79357946 0.77371806 0.76336477
## [31] 0.72946787 0.71473243 0.71088407 0.68145476 0.62133899 0.61905698
## [37] 0.59543658 0.57095181 0.56343445 0.55203630 0.51900322 0.45478928
## [43] 0.43188342 0.41915956 0.40749839 0.40040656 0.39094107 0.37217640
## [49] 0.35803201 0.32842948 0.32283478 0.31395236 0.29903881 0.29630550
## [55] 0.26431381 0.25844613 0.24311143 0.23942487 0.22012135 0.17354344
## [61] 0.16208917 0.14943532 0.13842175 0.13365979 0.13125065 0.12475387
## [67] 0.12443484 0.12172162 0.11617989 0.10824395 0.10502468 0.06865192
## [73] 0.06551012 0.06151901 0.05659195 0.04621573 0.03839990 0.02598375
## [79] 0.01735919
##
## Rotation (n x k) = (79 x 79):
##
##          PC1          PC2          PC3
## age      0.033198208 -0.044863844 0.123965549
## bmi      -0.016360930 -0.032581651 0.007403341
## height   -0.025303797 0.006360548 0.015602384
## pre_icu_los_days 0.026328343 -0.026161737 -0.012478976
## weight   -0.027105707 -0.027395493 0.013467726
## bun_apache 0.075916717 -0.246375926 0.166183777
## creatinine_apache 0.044987945 -0.238664192 0.178983851
## glucose_apache 0.002493827 -0.099114329 -0.032499044
## heart_rate_apache 0.016491022 -0.139659425 -0.282393621
## hematocrit_apache -0.118690235 0.115152930 -0.060600494
## map_apache -0.140977590 -0.080012772 0.016870962
## resprate_apache -0.010794222 -0.106595551 -0.130955251
## sodium_apache -0.003836009 0.030937145 0.013892511
## temp_apache -0.019878113 0.033038402 -0.164413015
## wbc_apache 0.041707576 -0.104571105 -0.129581703
## d1_diasbp_max -0.143481253 -0.161558900 -0.021911649
## d1_diasbp_min -0.169538874 0.078621924 -0.020242703
## d1_diasbp_noninvasive_max -0.143599509 -0.161492270 -0.021928426
## d1_diasbp_noninvasive_min -0.169554347 0.078681840 -0.020053156
## d1_heartrate_max 0.022321874 -0.163990384 -0.281299144
## d1_heartrate_min 0.016969149 -0.081457454 -0.238503736
## d1_mbp_max -0.168690259 -0.169252798 0.006450059
## d1_mbp_min -0.183288944 0.068579284 0.018177103
## d1_mbp_noninvasive_max -0.168790303 -0.168391675 0.006461576
## d1_mbp_noninvasive_min -0.183455292 0.069034397 0.017938734
## d1_resprate_max 0.001989081 -0.119725769 -0.115447220
## d1_resprate_min -0.006785282 -0.030133644 -0.108515742
## d1_spo2_max 0.027637208 -0.030726839 0.027155953
## d1_spo2_min -0.036956677 0.097888314 0.039223026
## d1_sysbp_max -0.166347812 -0.148255817 0.064108674
## d1_sysbp_min -0.174674085 0.069008874 0.064913724
## d1_sysbp_noninvasive_max -0.166485188 -0.148231098 0.063895219
## d1_sysbp_noninvasive_min -0.174670365 0.069031196 0.064901094
## d1_temp_max 0.023938496 -0.043031792 -0.183455165
## d1_temp_min -0.028382161 0.059255288 -0.138882827
## h1_diasbp_max -0.187973976 -0.112179597 -0.035813482
## h1_diasbp_min -0.203412564 0.001188629 -0.026837437
## h1_diasbp_noninvasive_max -0.187529599 -0.111243898 -0.036110109
## h1_diasbp_noninvasive_min -0.203870400 0.001324118 -0.026730026
## h1_heartrate_max 0.011491802 -0.150612734 -0.304587965

```

## h1_heartrate_min	0.012441995	-0.127085290	-0.300762163
## h1_mbp_max	-0.210119525	-0.114424859	0.002925149
## h1_mbp_min	-0.221200478	-0.015802085	0.014824682
## h1_mbp_noninvasive_max	-0.210592842	-0.114580700	0.002738894
## h1_mbp_noninvasive_min	-0.221295158	-0.015584055	0.014608750
## h1_resprate_max	-0.002662627	-0.140887996	-0.157005144
## h1_resprate_min	-0.001848588	-0.097780994	-0.155494799
## h1_spo2_max	0.006972380	0.017780373	0.052845482
## h1_spo2_min	-0.020484958	0.074066883	0.048595067
## h1_sysbp_max	-0.198050003	-0.102643787	0.055085382
## h1_sysbp_min	-0.203888717	-0.013192816	0.061515043
## h1_sysbp_noninvasive_max	-0.198617462	-0.103576947	0.054622914
## h1_sysbp_noninvasive_min	-0.204248341	-0.013917782	0.062085828
## h1_temp_max	-0.011394152	-0.002498030	-0.197364728
## h1_temp_min	-0.019140690	0.005155909	-0.191913742
## d1_bun_max	0.076440887	-0.247051791	0.166561251
## d1_bun_min	0.073684769	-0.235624226	0.168560697
## d1_calcium_max	-0.086888578	0.049789577	0.059899874
## d1_calcium_min	-0.097799926	0.086820205	0.059693068
## d1_creatinine_max	0.045885865	-0.239840888	0.177545007
## d1_creatinine_min	0.041812113	-0.230722640	0.181697410
## d1_glucose_max	0.010766521	-0.112131127	-0.023229344
## d1_glucose_min	-0.021795073	-0.021862127	-0.053293894
## d1_hco3_max	-0.056614167	0.099580859	0.021118590
## d1_hco3_min	-0.065434924	0.135112067	0.021682853
## d1_hemaglobin_max	-0.109392146	0.103941867	-0.070803357
## d1_hemaglobin_min	-0.121011621	0.120186023	-0.064325965
## d1_hematocrit_max	-0.108053096	0.098645205	-0.068848588
## d1_hematocrit_min	-0.119187353	0.113981684	-0.063400545
## d1_platelets_max	-0.028622076	-0.011294936	-0.077669853
## d1_platelets_min	-0.039622834	0.005355689	-0.074051269
## d1_potassium_max	0.046956565	-0.127330245	0.088565852
## d1_potassium_min	0.017979100	-0.053833736	0.093347879
## d1_sodium_max	0.007594803	-0.002560149	0.012088001
## d1_sodium_min	-0.010200070	0.041408327	0.014336113
## d1_wbc_max	0.046597605	-0.108129812	-0.128039854
## d1_wbc_min	0.033367864	-0.096084148	-0.130188100
## apache_4a_hospital_death_prob	0.048693869	-0.146253256	0.001809957
## apache_4a_icu_death_prob	0.044806870	-0.134443519	-0.002928874
##	PC4	PC5	PC6
## age	-0.026030039	0.043834064	-0.070913236
## bmi	-0.059737653	-0.105615004	-0.127761806
## height	-0.031980983	-0.099286689	-0.035403080
## pre_icu_los_days	0.054441490	0.023268042	0.024213046
## weight	-0.070533586	-0.141656743	-0.134628361
## bun_apache	0.024801458	-0.179952075	-0.060244021
## creatinine_apache	0.054120753	-0.187389364	-0.077997978
## glucose_apache	-0.079017782	-0.105572523	0.117560897
## heart_rate_apache	0.050646755	-0.001974252	0.063469571
## hematocrit_apache	-0.301902622	-0.170772722	-0.092927003
## map_apache	-0.008230928	0.045151237	0.017631950
## resprate_apache	0.019524862	-0.023883986	-0.032455386
## sodium_apache	-0.044124239	0.150749313	-0.005912584
## temp_apache	0.167100594	-0.065124748	-0.302418647

## wbc_apache	-0.114009974	-0.130294342	0.218844913
## d1_diasbp_max	-0.107020908	0.159468002	-0.088418584
## d1_diasbp_min	0.137983192	-0.137414117	0.137631471
## d1_diasbp_noninvasive_max	-0.107022458	0.159491456	-0.088572077
## d1_diasbp_noninvasive_min	0.138309304	-0.137501373	0.138044466
## d1_heartrate_max	0.011971990	0.037544120	0.050180925
## d1_heartrate_min	0.124532813	-0.086660737	0.061723311
## d1_mbp_max	-0.079088919	0.155499264	-0.082567847
## d1_mbp_min	0.159859262	-0.135896360	0.117626762
## d1_mbp_noninvasive_max	-0.079161571	0.154734977	-0.083205706
## d1_mbp_noninvasive_min	0.160076796	-0.136219235	0.118390839
## d1_resprate_max	-0.017632957	0.037649886	-0.039853258
## d1_resprate_min	0.057480952	-0.108307064	-0.030959854
## d1_spo2_max	0.042568276	0.118277251	0.071096051
## d1_spo2_min	0.094616352	-0.040971310	0.063579810
## d1_sysbp_max	-0.038215914	0.123728676	-0.081570224
## d1_sysbp_min	0.164660356	-0.120472326	0.065613088
## d1_sysbp_noninvasive_max	-0.038338768	0.123629177	-0.082223070
## d1_sysbp_noninvasive_min	0.164740046	-0.120504729	0.065762830
## d1_temp_max	0.092283624	0.026860825	-0.138840283
## d1_temp_min	0.174055454	-0.077942596	-0.300226514
## h1_diasbp_max	-0.057224018	0.097647316	0.014123959
## h1_diasbp_min	0.068040491	-0.063361168	0.103100483
## h1_diasbp_noninvasive_max	-0.056765281	0.097576311	0.014495771
## h1_diasbp_noninvasive_min	0.068469340	-0.062820417	0.104804632
## h1_heartrate_max	0.041989655	0.003070172	0.036601892
## h1_heartrate_min	0.086147570	-0.056897296	0.046751838
## h1_mbp_max	-0.023828547	0.092856724	0.008881359
## h1_mbp_min	0.087671510	-0.049070754	0.078894979
## h1_mbp_noninvasive_max	-0.023788325	0.091863255	0.008329652
## h1_mbp_noninvasive_min	0.088141084	-0.049138918	0.079270700
## h1_resprate_max	-0.013481846	0.004120060	-0.067961104
## h1_resprate_min	0.035562924	-0.090523363	-0.047980161
## h1_spo2_max	0.056028686	0.104642343	0.095420309
## h1_spo2_min	0.095621112	0.001539007	0.087568187
## h1_sysbp_max	0.003131682	0.085993855	-0.030348419
## h1_sysbp_min	0.101266199	-0.038509037	0.024951932
## h1_sysbp_noninvasive_max	0.002433786	0.085503512	-0.032096742
## h1_sysbp_noninvasive_min	0.101391840	-0.038633690	0.024822984
## h1_temp_max	0.154664917	-0.048795834	-0.290727010
## h1_temp_min	0.158284014	-0.069000388	-0.308273724
## d1_bun_max	0.025274940	-0.178749795	-0.059046256
## d1_bun_min	0.030175448	-0.178640811	-0.075491947
## d1_calcium_max	-0.080594967	-0.113704872	-0.095304282
## d1_calcium_min	-0.053045034	-0.112926388	-0.140666231
## d1_creatinine_max	0.052559223	-0.186045021	-0.074537462
## d1_creatinine_min	0.061897655	-0.188034153	-0.087650419
## d1_glucose_max	-0.076380775	-0.098880888	0.120715519
## d1_glucose_min	-0.056597421	-0.102191981	0.019516135
## d1_hco3_max	-0.008311843	0.018115704	-0.147505573
## d1_hco3_min	0.015523269	0.028155326	-0.182860520
## d1_hemaglobin_max	-0.309048114	-0.149136371	-0.040633917
## d1_hemaglobin_min	-0.289243367	-0.170039720	-0.082492066
## d1_hematocrit_max	-0.325913084	-0.152494941	-0.058551318

## d1_hematocrit_min	-0.299327752	-0.172440344	-0.099203625
## d1_platelets_max	-0.038005885	-0.079426970	0.123481887
## d1_platelets_min	-0.032125715	-0.092050415	0.093732989
## d1_potassium_max	-0.058332653	-0.139649348	0.001710551
## d1_potassium_min	-0.023924439	-0.153334520	-0.094076413
## d1_sodium_max	-0.061488334	0.150752555	0.040338913
## d1_sodium_min	-0.038490404	0.150218112	-0.021239368
## d1_wbc_max	-0.112666077	-0.120804921	0.225994831
## d1_wbc_min	-0.110054920	-0.145125321	0.195692882
## apache_4a_hospital_death_prob	-0.111747961	0.046584070	0.101707786
## apache_4a_icu_death_prob	-0.116343327	0.045638563	0.120673652
##	PC7	PC8	PC9
## age	0.092340386	-0.104797152	0.203762827
## bmi	0.053928084	-0.030436006	-0.010980595
## height	-0.093022185	0.074750471	-0.107730394
## pre_icu_los_days	0.036686512	-0.028916208	0.034429268
## weight	0.010560670	0.004954905	-0.056555928
## bun_apache	-0.094783405	-0.061160856	-0.006995016
## creatinine_apache	-0.105283027	0.009715640	-0.097797856
## glucose_apache	0.110350360	-0.010889601	0.087133811
## heart_rate_apache	-0.117689555	0.067670275	-0.028254007
## hematocrit_apache	-0.099968429	0.011040973	-0.033281682
## map_apache	0.011794804	-0.014421800	-0.003075323
## resprate_apache	-0.040483794	-0.034662628	0.311981288
## sodium_apache	-0.305775280	-0.444367612	-0.022467768
## temp_apache	0.076857801	-0.093482755	-0.145179045
## wbc_apache	0.207472242	-0.242142879	-0.141731324
## d1_diasbp_max	0.022537627	0.067530758	-0.105901843
## d1_diasbp_min	-0.133779761	0.020923400	-0.005533705
## d1_diasbp_noninvasive_max	0.022733113	0.067646053	-0.105986426
## d1_diasbp_noninvasive_min	-0.133557612	0.020630156	-0.005510810
## d1_heartrate_max	-0.116233623	0.071121572	-0.034103380
## d1_heartrate_min	-0.097884976	0.048096003	-0.033170505
## d1_mbp_max	0.052509588	0.019081595	-0.035099174
## d1_mbp_min	-0.076526170	-0.031056712	0.051706510
## d1_mbp_noninvasive_max	0.052398790	0.019144148	-0.033891093
## d1_mbp_noninvasive_min	-0.076558321	-0.031148000	0.051183581
## d1_resprate_max	-0.027856548	-0.028058212	0.256459654
## d1_resprate_min	-0.026091947	-0.037586282	0.233681439
## d1_spo2_max	0.017764204	-0.017051145	-0.185459067
## d1_spo2_min	0.007543427	-0.039374710	-0.151129614
## d1_sysbp_max	0.125674072	-0.076779136	0.020910796
## d1_sysbp_min	0.015813141	-0.101192398	0.062041751
## d1_sysbp_noninvasive_max	0.125911875	-0.076602670	0.021009180
## d1_sysbp_noninvasive_min	0.015899311	-0.101459881	0.061984882
## d1_temp_max	0.009157483	-0.063370816	-0.134814430
## d1_temp_min	0.088342589	-0.101071628	-0.135662514
## h1_diasbp_max	-0.036964091	0.088895535	-0.102211555
## h1_diasbp_min	-0.096154243	0.064309588	-0.037353079
## h1_diasbp_noninvasive_max	-0.036889157	0.088224650	-0.102533616
## h1_diasbp_noninvasive_min	-0.096500401	0.065301422	-0.036913959
## h1_heartrate_max	-0.126407867	0.065817604	-0.026380995
## h1_heartrate_min	-0.131964499	0.061518480	-0.014873622
## h1_mbp_max	0.008404123	0.035171138	-0.030452329

## h1_mbp_min	-0.037621073	0.013653958	0.024776734
## h1_mbp_noninvasive_max	0.008014932	0.034954414	-0.029727932
## h1_mbp_noninvasive_min	-0.038134206	0.014178702	0.024950826
## h1_resprate_max	-0.029716568	-0.027987112	0.294710679
## h1_resprate_min	-0.042749326	-0.032842135	0.295413449
## h1_spo2_max	0.018578971	-0.017696012	-0.233119612
## h1_spo2_min	0.006064321	-0.027382595	-0.207419507
## h1_sysbp_max	0.100809977	-0.057027566	0.022240708
## h1_sysbp_min	0.058369267	-0.063604490	0.054101239
## h1_sysbp_noninvasive_max	0.100949455	-0.056527502	0.022521742
## h1_sysbp_noninvasive_min	0.058161487	-0.063664452	0.053986405
## h1_temp_max	0.063776543	-0.096933923	-0.113499018
## h1_temp_min	0.070377063	-0.095482570	-0.108364984
## d1_bun_max	-0.093988216	-0.059760648	-0.009236859
## d1_bun_min	-0.090229672	-0.069683873	0.002777374
## d1_calcium_max	0.070460899	-0.078164527	0.107455675
## d1_calcium_min	0.081530316	-0.092550592	0.118227735
## d1_creatinine_max	-0.104750511	0.011895366	-0.100724937
## d1_creatinine_min	-0.101060383	0.004813066	-0.093462872
## d1_glucose_max	0.099182486	-0.005564960	0.078740030
## d1_glucose_min	0.124714124	-0.017461401	0.103440754
## d1_hco3_max	0.061289637	-0.075579924	0.143363005
## d1_hco3_min	0.067357899	-0.085816832	0.143775589
## d1_hemaglobin_max	-0.117233062	0.049456604	-0.070052118
## d1_hemaglobin_min	-0.093011562	0.041447192	-0.046490284
## d1_hematocrit_max	-0.119578474	0.014075438	-0.051933330
## d1_hematocrit_min	-0.095201630	0.010176485	-0.029892179
## d1_platelets_max	0.275848702	-0.147153467	-0.006296061
## d1_platelets_min	0.275127258	-0.143205636	0.002916247
## d1_potassium_max	0.031471683	0.048573482	-0.067611278
## d1_potassium_min	0.055175079	0.017859984	-0.035622895
## d1_sodium_max	-0.303081075	-0.416382827	-0.040509137
## d1_sodium_min	-0.296630447	-0.434545010	-0.022321614
## d1_wbc_max	0.199583405	-0.237640343	-0.145102948
## d1_wbc_min	0.218122992	-0.244814157	-0.134253580
## apache_4a_hospital_death_prob	-0.066788037	-0.019202510	0.144872632
## apache_4a_icu_death_prob	-0.074167986	-0.011808824	0.130456561
##	PC10	PC11	PC12
## age	-0.0194472452	0.051689572	-0.099695359
## bmi	0.2813875770	-0.151722224	0.243593951
## height	0.0630642085	-0.001689148	0.143211672
## pre_icu_los_days	-0.0183563503	-0.081614096	0.021058025
## weight	0.2884781212	-0.138911165	0.288440087
## bun_apache	-0.0275054430	-0.023948340	-0.052969488
## creatinine_apache	-0.0798766512	-0.006711086	-0.011709886
## glucose_apache	0.4678504282	0.035451398	-0.139500895
## heart_rate_apache	0.0479105380	-0.185271978	-0.028969623
## hematocrit_apache	-0.0384565844	0.066926835	-0.051769654
## map_apache	0.0297895374	0.044753837	0.192684900
## resprate_apache	-0.1205328446	0.145504620	0.094175193
## sodium_apache	0.0555522718	-0.074172985	-0.002131334
## temp_apache	0.0040251325	0.103827483	-0.048840468
## wbc_apache	-0.1057300966	0.088383469	0.093125831
## d1_diasbp_max	-0.0190379221	-0.046427450	0.169592919

## d1_diasbp_min	-0.0108797564	0.010070558	0.208068939
## d1_diasbp_noninvasive_max	-0.0190212160	-0.046583484	0.169315067
## d1_diasbp_noninvasive_min	-0.0107629555	0.010184285	0.207669185
## d1_heartrate_max	0.0419061048	-0.166609597	-0.030006614
## d1_heartrate_min	0.0615620236	-0.167277244	-0.011425533
## d1_mbp_max	-0.0004168504	0.014105461	0.185588558
## d1_mbp_min	0.0152113768	0.055875340	0.204650692
## d1_mbp_noninvasive_max	-0.0009298308	0.014701811	0.186351643
## d1_mbp_noninvasive_min	0.0151996506	0.055964128	0.204748919
## d1_resprate_max	-0.1032028434	0.140277927	0.119030520
## d1_resprate_min	-0.0789103050	0.078117353	-0.055458335
## d1_spo2_max	0.0044704936	0.029749519	-0.099432300
## d1_spo2_min	0.0502009427	0.035559047	-0.123842674
## d1_sysbp_max	0.0842739691	0.076943365	0.050654760
## d1_sysbp_min	0.0787961144	0.072868598	0.101311544
## d1_sysbp_noninvasive_max	0.0839567183	0.076843072	0.050286848
## d1_sysbp_noninvasive_min	0.0787572372	0.073021791	0.100847661
## d1_temp_max	0.0679708367	0.163231478	-0.026737919
## d1_temp_min	-0.0100402987	0.060599092	-0.044268531
## h1_diasbp_max	-0.0704534459	-0.076791237	-0.073649120
## h1_diasbp_min	-0.0607506858	-0.060747188	-0.113858315
## h1_diasbp_noninvasive_max	-0.0708230382	-0.075700976	-0.074316697
## h1_diasbp_noninvasive_min	-0.0605663847	-0.060481882	-0.114331653
## h1_heartrate_max	0.0451892053	-0.179068034	-0.059021590
## h1_heartrate_min	0.0560903987	-0.180092085	-0.079748647
## h1_mbp_max	-0.0451323138	-0.012033709	-0.081269218
## h1_mbp_min	-0.0373471445	-0.005724183	-0.125617229
## h1_mbp_noninvasive_max	-0.0466298665	-0.012420138	-0.081027100
## h1_mbp_noninvasive_min	-0.0375105768	-0.005253621	-0.124647182
## h1_resprate_max	-0.1068627058	0.133137007	0.038982370
## h1_resprate_min	-0.0878859537	0.109715098	-0.065382262
## h1_spo2_max	0.0348339430	0.048330925	-0.109005682
## h1_spo2_min	0.0581949408	0.046475412	-0.152360575
## h1_sysbp_max	0.0417082544	0.044797122	-0.156763385
## h1_sysbp_min	0.0345003475	0.039088732	-0.198114086
## h1_sysbp_noninvasive_max	0.0403713589	0.044354932	-0.157165609
## h1_sysbp_noninvasive_min	0.0344818227	0.039747078	-0.197833171
## h1_temp_max	0.0260441181	0.150310298	-0.053631886
## h1_temp_min	0.0129362942	0.133072583	-0.062059866
## d1_bun_max	-0.0260661405	-0.023722980	-0.051172521
## d1_bun_min	-0.0403330221	-0.031785855	-0.044598879
## d1_calcium_max	-0.0262216754	-0.258837351	-0.143908876
## d1_calcium_min	-0.0586163834	-0.269763185	-0.114388753
## d1_creatinine_max	-0.0774147577	-0.005441493	-0.012277530
## d1_creatinine_min	-0.0894752280	-0.012196597	-0.008521152
## d1_glucose_max	0.4536443067	0.041292894	-0.137482311
## d1_glucose_min	0.3340604453	-0.014460229	-0.050617300
## d1_hco3_max	0.0211675748	-0.307071455	0.028334024
## d1_hco3_min	-0.0311031814	-0.299488653	0.049523670
## d1_hemaglobin_max	-0.0133365790	0.114727944	-0.058120038
## d1_hemaglobin_min	-0.0379367593	0.099380435	-0.062128445
## d1_hematocrit_max	-0.0166036387	0.077083423	-0.052102267
## d1_hematocrit_min	-0.0427882002	0.064754715	-0.054939445
## d1_platelets_max	-0.1854309931	-0.250989665	-0.010413389

## d1_platelets_min	-0.1956626001	-0.251080109	-0.012076670
## d1_potassium_max	0.0349695347	-0.076994574	0.016216780
## d1_potassium_min	-0.0500170829	-0.131793597	0.044758753
## d1_sodium_max	0.0981860389	-0.048344577	-0.017880651
## d1_sodium_min	0.0404766719	-0.078846219	0.007189358
## d1_wbc_max	-0.0982661555	0.089424460	0.091753466
## d1_wbc_min	-0.1221403871	0.082061549	0.088953551
## apache_4a_hospital_death_prob	0.0126263713	0.082296636	-0.089682075
## apache_4a_icu_death_prob	0.0225296834	0.085342808	-0.069930212
##	PC13	PC14	PC15
## age	0.024257828	-0.1462855205	0.1665449008
## bmi	-0.257740935	0.2849569393	-0.1131147168
## height	-0.146513613	0.0856241060	0.0908537763
## pre_icu_los_days	-0.085214816	0.0231766878	0.1562946816
## weight	-0.301593223	0.2981696144	-0.0642934034
## bun_apache	0.054885132	-0.0351364172	0.0135728740
## creatinine_apache	0.032100320	0.0140683737	-0.0322171255
## glucose_apache	0.134996463	-0.0541135485	-0.1124444520
## heart_rate_apache	0.072259712	-0.0460437547	0.0968120875
## hematocrit_apache	0.064148792	-0.0017039733	0.0113082010
## map_apache	0.109765967	-0.0282110425	0.0576437871
## resprate_apache	0.059147969	0.2706396907	-0.0775054148
## sodium_apache	-0.001469445	-0.0198823511	-0.1081667395
## temp_apache	-0.007462706	-0.0502027236	0.0023590937
## wbc_apache	-0.134053875	-0.0056895756	0.0952432236
## d1_diasbp_max	0.179457105	-0.0646811312	-0.0004335502
## d1_diasbp_min	0.071628370	-0.0399074610	0.0709289250
## d1_diasbp_noninvasive_max	0.179506469	-0.0649656128	-0.0005663493
## d1_diasbp_noninvasive_min	0.071310067	-0.0399924907	0.0712547233
## d1_heartrate_max	0.061742634	-0.0390270510	0.0979771654
## d1_heartrate_min	0.082427052	-0.0451250560	0.0391866886
## d1_mbp_max	0.161806298	-0.0280422603	0.0210399016
## d1_mbp_min	0.081424410	-0.0348953000	0.0777403009
## d1_mbp_noninvasive_max	0.161998556	-0.0264836115	0.0210003083
## d1_mbp_noninvasive_min	0.081319427	-0.0353070160	0.0779166985
## d1_resprate_max	0.012049372	0.2931688114	-0.0795677429
## d1_resprate_min	0.112837025	0.0689525884	-0.0771376136
## d1_spo2_max	0.160656885	0.3194689390	0.1426216487
## d1_spo2_min	0.210040592	0.2550547078	0.0393108403
## d1_sysbp_max	0.094745429	-0.0516454616	0.0735170931
## d1_sysbp_min	0.075002603	-0.0738118231	0.0754266996
## d1_sysbp_noninvasive_max	0.094880910	-0.0521373177	0.0730838092
## d1_sysbp_noninvasive_min	0.074961496	-0.0737592129	0.0754487263
## d1_temp_max	-0.081950237	0.0212076812	0.1287165605
## d1_temp_min	0.020663181	-0.0594643890	-0.0293474970
## h1_diasbp_max	-0.123725737	0.0355776333	-0.0809060028
## h1_diasbp_min	-0.132611651	0.0240719493	-0.0525812305
## h1_diasbp_noninvasive_max	-0.124141273	0.0342834434	-0.0814870172
## h1_diasbp_noninvasive_min	-0.133665695	0.0236302606	-0.0519765434
## h1_heartrate_max	0.025115368	-0.0443701685	0.0591234997
## h1_heartrate_min	0.036119582	-0.0531864822	0.0470120790
## h1_mbp_max	-0.128612957	0.0529366409	-0.0631245091
## h1_mbp_min	-0.133675604	0.0359142384	-0.0426830685
## h1_mbp_noninvasive_max	-0.126125930	0.0526719132	-0.0634420504

## h1_mbp_noninvasive_min	-0.133466141	0.0354631175	-0.0429937064
## h1_resprate_max	0.016678414	0.2386805565	-0.1024984988
## h1_resprate_min	0.060556022	0.1385651232	-0.0974010588
## h1_spo2_max	0.195020701	0.3992045913	0.1400351092
## h1_spo2_min	0.229847204	0.3657712564	0.0931769986
## h1_sysbp_max	-0.108987666	-0.0018137767	-0.0008216903
## h1_sysbp_min	-0.109191258	-0.0188710933	-0.0098074265
## h1_sysbp_noninvasive_max	-0.106564589	-0.0030471811	-0.0017877754
## h1_sysbp_noninvasive_min	-0.107995037	-0.0193761180	-0.0099420847
## h1_temp_max	-0.040809368	-0.0461513774	0.0706061230
## h1_temp_min	-0.029160195	-0.0512588912	0.0466833209
## d1_bun_max	0.053889496	-0.0347254767	0.0136988701
## d1_bun_min	0.044431551	-0.0383402431	0.0210675629
## d1_calcium_max	0.148382575	0.0627354445	0.1539230354
## d1_calcium_min	0.139166781	0.0530807882	0.1448452906
## d1_creatinine_max	0.032878793	0.0146523986	-0.0332974917
## d1_creatinine_min	0.026556134	0.0122336770	-0.0293383989
## d1_glucose_max	0.129310398	-0.0440843346	-0.1113066673
## d1_glucose_min	0.057627911	-0.0532755349	-0.0539688747
## d1_hco3_max	-0.056401354	0.0802841401	0.2678943379
## d1_hco3_min	-0.067828152	0.0681915926	0.2525539697
## d1_hemaglobin_max	0.041728394	-0.0036697218	0.0354643366
## d1_hemaglobin_min	0.078320055	-0.0083280671	0.0139783518
## d1_hematocrit_max	0.040564331	0.0020738984	0.0321858842
## d1_hematocrit_min	0.074304565	-0.0015786558	0.0138099681
## d1_platelets_max	0.140013032	0.0087826468	-0.2133582875
## d1_platelets_min	0.156483581	0.0032395857	-0.2197957457
## d1_potassium_max	-0.034508003	0.0405505267	0.0224501835
## d1_potassium_min	-0.036103999	0.0191944824	0.0235025076
## d1_sodium_max	0.001662538	-0.0121677081	-0.1030290438
## d1_sodium_min	-0.005676398	-0.0199851507	-0.1047679497
## d1_wbc_max	-0.140226286	-0.0033362174	0.0990986640
## d1_wbc_min	-0.115680260	-0.0121968878	0.0834268803
## apache_4a_hospital_death_prob	-0.104462390	0.0009145925	0.4163842005
## apache_4a_icu_death_prob	-0.127092638	0.0087693095	0.4025968430
##	PC16	PC17	PC18
## age	-0.135227328	0.101134919	-0.0896999408
## bmi	0.219601305	0.162215694	-0.0079758121
## height	-0.052404528	-0.088999888	-0.0088650695
## pre_icu_los_days	-0.012256928	-0.008888469	-0.0017945410
## weight	0.177959032	0.110512790	-0.0106012112
## bun_apache	-0.014241962	-0.023670047	-0.1245336517
## creatinine_apache	0.126107589	-0.059133449	-0.0019445807
## glucose_apache	-0.094090848	-0.231297698	-0.0720235515
## heart_rate_apache	0.019586832	0.126773717	0.0735078587
## hematocrit_apache	0.049520387	0.018742603	0.0182558871
## map_apache	-0.003452122	0.029041525	0.0179593043
## resprate_apache	-0.088812755	-0.051667640	0.0448477652
## sodium_apache	-0.037731140	-0.014194486	0.0335022750
## temp_apache	-0.029465221	-0.101063748	0.0275768815
## wbc_apache	-0.128369701	0.073374950	-0.1374540151
## d1_diasbp_max	-0.026356826	0.017517756	-0.1522668786
## d1_diasbp_min	-0.041275501	-0.166015639	0.0017100112
## d1_diasbp_noninvasive_max	-0.026498165	0.017539463	-0.1527167559

## d1_diasbp_noninvasive_min	-0.041431894	-0.166154910	0.0019409135
## d1_heartrate_max	0.012927721	0.097925899	0.1051579197
## d1_heartrate_min	0.022548313	0.178278593	-0.0164717409
## d1_mbp_max	-0.022039121	0.019879835	-0.0693356275
## d1_mbp_min	-0.012077260	-0.088981276	0.0662500539
## d1_mbp_noninvasive_max	-0.022617036	0.020143778	-0.0705264486
## d1_mbp_noninvasive_min	-0.012456242	-0.088743155	0.0663050076
## d1_resprate_max	-0.128847522	-0.131027460	0.1338275831
## d1_resprate_min	0.050021843	0.212021566	-0.1929872271
## d1_spo2_max	-0.032877632	-0.092046456	0.0952567464
## d1_spo2_min	0.029721799	0.123808545	-0.1620699635
## d1_sysbp_max	0.084745364	0.162702152	0.0909642277
## d1_sysbp_min	0.076472520	0.103117601	0.1102428444
## d1_sysbp_noninvasive_max	0.084998381	0.162305913	0.0902603930
## d1_sysbp_noninvasive_min	0.076411659	0.102769064	0.1102676525
## d1_temp_max	0.047225332	-0.073843151	0.1116384772
## d1_temp_min	-0.055961339	-0.084800419	0.0009509657
## h1_diasbp_max	-0.081173912	-0.170861346	-0.0559853747
## h1_diasbp_min	-0.061311879	-0.046751857	-0.1290658678
## h1_diasbp_noninvasive_max	-0.082372782	-0.170535693	-0.0583062185
## h1_diasbp_noninvasive_min	-0.062613778	-0.045187312	-0.1281081546
## h1_heartrate_max	0.011483327	0.077664921	0.0744612072
## h1_heartrate_min	0.025492371	0.152431095	-0.0011764289
## h1_mbp_max	-0.062331954	-0.114510727	0.0143847319
## h1_mbp_min	-0.033507986	0.012793889	-0.0518613344
## h1_mbp_noninvasive_max	-0.062280216	-0.115571725	0.0139508310
## h1_mbp_noninvasive_min	-0.033935915	0.011750686	-0.0516013589
## h1_resprate_max	-0.077232751	-0.075553641	0.0497258973
## h1_resprate_min	0.012487532	0.141526546	-0.1547874770
## h1_spo2_max	-0.036674094	-0.068561087	0.0755322046
## h1_spo2_min	0.015076201	0.133622498	-0.1322736536
## h1_sysbp_max	0.051414262	0.078820791	0.1308173079
## h1_sysbp_min	0.065059309	0.191251047	0.0286576451
## h1_sysbp_noninvasive_max	0.051918639	0.078642877	0.1282979209
## h1_sysbp_noninvasive_min	0.065954852	0.190809427	0.0288970108
## h1_temp_max	0.033444806	-0.152113617	0.0147177492
## h1_temp_min	0.026854694	-0.139758533	-0.0063544019
## d1_bun_max	-0.016026656	-0.022428951	-0.1239909374
## d1_bun_min	-0.027921749	-0.012707454	-0.1333476095
## d1_calcium_max	-0.111784438	0.017960027	0.0828477818
## d1_calcium_min	-0.119799429	0.025579545	0.0512344959
## d1_creatinine_max	0.126719328	-0.058046623	-0.0005046946
## d1_creatinine_min	0.117862596	-0.051037788	-0.0067374917
## d1_glucose_max	-0.081611348	-0.220583881	-0.0590050383
## d1_glucose_min	-0.136154451	-0.131387877	-0.0752790646
## d1_hco3_max	-0.051547703	-0.144556958	-0.2428183046
## d1_hco3_min	-0.062889344	-0.105506487	-0.2272647416
## d1_hemaglobin_max	0.028646252	0.035184124	0.0287514475
## d1_hemaglobin_min	0.056282938	0.016764292	0.0044027359
## d1_hematocrit_max	0.029662957	0.032043524	0.0410304441
## d1_hematocrit_min	0.057510213	0.014288787	0.0155915447
## d1_platelets_max	0.302385576	-0.187950987	0.1622609956
## d1_platelets_min	0.303729917	-0.187135559	0.1471976411
## d1_potassium_max	-0.349802852	0.064077387	0.4004084798

## d1_potassium_min	-0.397937082	0.098807057	0.3857080628
## d1_sodium_max	-0.022098384	-0.032578617	0.0532777513
## d1_sodium_min	-0.036146562	-0.008204704	0.0340636128
## d1_wbc_max	-0.130904267	0.074238067	-0.1271099118
## d1_wbc_min	-0.124259510	0.066187565	-0.1477068561
## apache_4a_hospital_death_prob	0.249896615	-0.178294706	0.0958951578
## apache_4a_icu_death_prob	0.266026622	-0.182758649	0.1119802438
##	PC19	PC20	PC21
## age	0.037816121	-0.1979255047	0.1651174089
## bmi	0.085544577	-0.0516810855	-0.0378896545
## height	0.032240066	0.0461387363	-0.0744913806
## pre_icu_los_days	0.038334100	0.0188269540	0.0759339121
## weight	0.092409641	-0.0272837349	-0.0670851182
## bun_apache	0.009577745	-0.0937000977	0.0309960571
## creatinine_apache	-0.154261471	0.0951549059	-0.0137047435
## glucose_apache	-0.023061232	0.0739342734	0.0056461342
## heart_rate_apache	-0.109301325	0.0163705701	0.0356764576
## hematocrit_apache	-0.053505861	-0.0352942021	0.0868524998
## map_apache	0.019436774	0.0880615972	0.0503745634
## resprate_apache	-0.065730293	0.0624045804	0.0480255875
## sodium_apache	0.054804147	-0.0030888876	0.0187147623
## temp_apache	0.055322022	-0.0039830161	0.0165148180
## wbc_apache	-0.063645751	0.0234615951	-0.0677718316
## d1_diasbp_max	0.183569553	0.0841269892	-0.0069849461
## d1_diasbp_min	0.029035545	-0.0628791416	-0.0313004616
## d1_diasbp_noninvasive_max	0.183205417	0.0833523210	-0.0072005892
## d1_diasbp_noninvasive_min	0.028675908	-0.0624476690	-0.0308707306
## d1_heartrate_max	-0.130317761	0.0348838053	0.0229791279
## d1_heartrate_min	-0.033487719	-0.1119679437	0.0467325749
## d1_mbp_max	0.074888561	0.0964716839	0.0412112613
## d1_mbp_min	-0.039078664	-0.0817424720	-0.0221513191
## d1_mbp_noninvasive_max	0.075167249	0.0951570840	0.0420274196
## d1_mbp_noninvasive_min	-0.038863561	-0.0811794465	-0.0216770125
## d1_resprate_max	-0.184341545	0.1462023128	0.0522720974
## d1_resprate_min	0.234912025	-0.1962936571	-0.0742802555
## d1_spo2_max	-0.111196900	0.1227319801	0.0448259644
## d1_spo2_min	0.145521406	-0.2322275203	0.0555181483
## d1_sysbp_max	-0.092611735	0.0313635126	0.0471888969
## d1_sysbp_min	-0.065556025	-0.0908869002	-0.0424970197
## d1_sysbp_noninvasive_max	-0.092564859	0.0301944034	0.0466572407
## d1_sysbp_noninvasive_min	-0.065726936	-0.0898926637	-0.0419977104
## d1_temp_max	-0.013421511	0.1293264392	-0.0297871661
## d1_temp_min	0.058635664	-0.0396722399	0.0298163434
## h1_diasbp_max	0.034046838	-0.2499267421	-0.1222130543
## h1_diasbp_min	0.144177604	0.2197834417	0.0850730070
## h1_diasbp_noninvasive_max	0.033197195	-0.2518055136	-0.1225188591
## h1_diasbp_noninvasive_min	0.141290171	0.2204663231	0.0842209805
## h1_heartrate_max	-0.113168194	-0.0979743391	-0.0232767134
## h1_heartrate_min	-0.026224904	-0.0141238716	0.0273332078
## h1_mbp_max	-0.053482482	-0.2073726506	-0.0687107383
## h1_mbp_min	0.054151102	0.2044887539	0.1015099126
## h1_mbp_noninvasive_max	-0.052700577	-0.2079271883	-0.0688692866
## h1_mbp_noninvasive_min	0.053840128	0.2041248556	0.1011295215
## h1_resprate_max	-0.078573052	-0.0702854125	-0.0428750515

## h1_resprate_min	0.198605607	0.0207865762	-0.0082456742
## h1_spo2_max	-0.102599926	-0.0698415357	0.0169089161
## h1_spo2_min	0.141080351	-0.0502414324	0.1014512928
## h1_sysbp_max	-0.158757920	-0.1791060652	-0.0442123351
## h1_sysbp_min	-0.009649171	0.1647149849	0.0878443845
## h1_sysbp_noninvasive_max	-0.155901274	-0.1791161010	-0.0445693038
## h1_sysbp_noninvasive_min	-0.008987483	0.1645425455	0.0867117847
## h1_temp_max	0.079820909	0.0215062528	-0.0267145974
## h1_temp_min	0.105052748	0.0298596713	-0.0100861429
## d1_bun_max	0.007494544	-0.0895287888	0.0298828126
## d1_bun_min	0.022635025	-0.1296283726	0.0417812914
## d1_calcium_max	0.040020984	0.1968150423	-0.5240434087
## d1_calcium_min	0.062802819	0.0967048849	-0.4489467844
## d1_creatinine_max	-0.156393405	0.1004745658	-0.0150320309
## d1_creatinine_min	-0.147797157	0.0726158666	-0.0115617101
## d1_glucose_max	-0.036963051	0.1022949718	-0.0052212087
## d1_glucose_min	0.045598560	-0.1349912178	0.0874328014
## d1_hco3_max	-0.244954927	0.0392232115	0.2640579889
## d1_hco3_min	-0.184968771	-0.0509830973	0.2633073528
## d1_hemaglobin_max	-0.074689642	0.0111240867	0.0463364015
## d1_hemaglobin_min	-0.059851836	-0.0325196691	0.0583886254
## d1_hematocrit_max	-0.062817794	-0.0009322839	0.0852670312
## d1_hematocrit_min	-0.048891685	-0.0406237141	0.0918128309
## d1_platelets_max	0.093366435	-0.0057140602	0.1409661681
## d1_platelets_min	0.094409083	-0.0346277436	0.1497770540
## d1_potassium_max	0.186371160	0.0482319368	0.1831305813
## d1_potassium_min	0.265196940	-0.1205681312	0.2498342022
## d1_sodium_max	0.028825281	0.0705353557	-0.0155147909
## d1_sodium_min	0.057074645	-0.0253522191	0.0359256928
## d1_wbc_max	-0.067751054	0.0351160835	-0.0695825149
## d1_wbc_min	-0.055496625	-0.0061381008	-0.0557431267
## apache_4a_hospital_death_prob	0.281688236	-0.0374295997	0.0151788699
## apache_4a_icu_death_prob	0.286800371	-0.0088157981	-0.0004249816
##	PC22	PC23	PC24
## age	-0.030758277	-0.0052170406	0.2266628303
## bmi	-0.315306708	0.1475669082	0.0138934876
## height	0.753620127	-0.4159625355	0.0859692709
## pre_icu_los_days	0.448982711	0.8511902617	0.0404059513
## weight	0.047968232	-0.0505643154	0.0522303775
## bun_apache	-0.025708640	-0.0381207443	0.1125409351
## creatinine_apache	0.005345343	0.0585126156	-0.0944985516
## glucose_apache	0.025258661	0.0254995728	-0.0634723470
## heart_rate_apache	-0.017418936	-0.0252153316	0.0776856691
## hematocrit_apache	-0.010902598	0.0497380044	-0.0007449415
## map_apache	-0.052209772	0.0583052200	0.0394060749
## resprate_apache	-0.056183631	0.0070051600	0.1735146194
## sodium_apache	0.027937694	0.0045729934	-0.0059282223
## temp_apache	-0.021336072	0.0448129119	0.0402275689
## wbc_apache	-0.032645134	-0.0098349224	-0.0210982803
## d1_diasbp_max	0.001997841	0.0092527824	-0.0531188948
## d1_diasbp_min	-0.037083432	0.0226003051	-0.0352621327
## d1_diasbp_noninvasive_max	0.002335115	0.0096318572	-0.0530936714
## d1_diasbp_noninvasive_min	-0.036989370	0.0226618816	-0.0353990857
## d1_heartrate_max	0.006111776	-0.0318419257	0.0856995913

## d1_heartrate_min	-0.038474450	0.0113230751	0.0021542998
## d1_mbp_max	-0.011558625	0.0003385753	0.0444784937
## d1_mbp_min	-0.046655957	0.0162189376	0.0076094334
## d1_mbp_noninvasive_max	-0.011155918	-0.0013534089	0.0440558400
## d1_mbp_noninvasive_min	-0.046797027	0.0167365975	0.0071151563
## d1_resprate_max	-0.030045104	0.0055845099	0.3038016583
## d1_resprate_min	0.092174742	-0.0049759622	-0.4533719169
## d1_spo2_max	-0.035936227	-0.0025033671	-0.3027029009
## d1_spo2_min	0.063818474	-0.0052039698	0.2496710882
## d1_sysbp_max	0.080192819	-0.0398713526	-0.0048831896
## d1_sysbp_min	0.016434869	-0.0108997784	-0.0671734306
## d1_sysbp_noninvasive_max	0.079720821	-0.0404115244	-0.0045908335
## d1_sysbp_noninvasive_min	0.015899531	-0.0108756145	-0.0672649463
## d1_temp_max	-0.008403190	-0.0034638557	-0.1098559934
## d1_temp_min	-0.030910321	0.0422043005	0.0765319022
## h1_diasbp_max	-0.022315814	0.0350272855	-0.0681670689
## h1_diasbp_min	-0.039840701	0.0052440728	0.0208802409
## h1_diasbp_noninvasive_max	-0.023178824	0.0363647216	-0.0684684974
## h1_diasbp_noninvasive_min	-0.038843171	0.0051659984	0.0229198230
## h1_heartrate_max	0.023160232	-0.0261370930	0.0395727016
## h1_heartrate_min	0.003936277	-0.0299461388	0.0315046999
## h1_mbp_max	-0.020187699	0.0223163888	0.0178594686
## h1_mbp_min	-0.040875321	-0.0074960510	0.0719909521
## h1_mbp_noninvasive_max	-0.020812485	0.0230287332	0.0186721249
## h1_mbp_noninvasive_min	-0.041000190	-0.0080506073	0.0737765820
## h1_resprate_max	0.074892741	-0.0128075765	-0.0310129165
## h1_resprate_min	0.118141448	-0.0269470344	-0.3104230444
## h1_spo2_max	-0.046238290	0.0044070974	-0.1255803704
## h1_spo2_min	0.025047876	-0.0153101348	0.2034323413
## h1_sysbp_max	0.064694298	-0.0212659036	-0.0347419426
## h1_sysbp_min	0.027971636	-0.0362903940	0.0129582676
## h1_sysbp_noninvasive_max	0.064293713	-0.0200342754	-0.0348083510
## h1_sysbp_noninvasive_min	0.027687415	-0.0360718119	0.0121687481
## h1_temp_max	-0.022831726	-0.0162570827	-0.0038780287
## h1_temp_min	-0.035254952	-0.0209869243	0.0117683229
## d1_bun_max	-0.025399262	-0.0358595799	0.1093986106
## d1_bun_min	-0.024409022	-0.0365621354	0.1373756438
## d1_calcium_max	-0.032860133	0.0232347775	0.0522271041
## d1_calcium_min	-0.021191396	0.0149258781	0.1053164246
## d1_creatinine_max	0.006123730	0.0598069628	-0.1003520029
## d1_creatinine_min	0.009645719	0.0628263441	-0.0813300313
## d1_glucose_max	0.021466119	0.0317959521	-0.0864446601
## d1_glucose_min	0.037877569	0.0178131782	0.1133985036
## d1_hco3_max	-0.021111002	-0.0875546353	-0.2099900096
## d1_hco3_min	-0.024344664	-0.0773321255	-0.1171451589
## d1_hemaglobin_max	0.014043805	0.0472365831	-0.0037037398
## d1_hemaglobin_min	0.009296134	0.0405005033	0.0170578737
## d1_hematocrit_max	-0.011281336	0.0475854532	-0.0184208670
## d1_hematocrit_min	-0.013638800	0.0426364088	0.0033090354
## d1_platelets_max	0.086073300	-0.0509490666	0.0256886363
## d1_platelets_min	0.084568531	-0.0550493725	0.0432830999
## d1_potassium_max	-0.031490278	-0.0139084847	-0.1956433997
## d1_potassium_min	-0.019389948	-0.0327889906	-0.0688010550
## d1_sodium_max	0.021887772	0.0016324186	-0.0597366012

## d1_sodium_min	0.025639305	-0.0016586173	0.0091786867
## d1_wbc_max	-0.029380309	-0.0096968548	-0.0268963624
## d1_wbc_min	-0.028690927	-0.0171812935	-0.0001216487
## apache_4a_hospital_death_prob	-0.074257344	-0.0398061265	0.0356262845
## apache_4a_icu_death_prob	-0.079641429	-0.0477698866	0.0089197652
##	PC25	PC26	PC27
## age	-0.264488044	0.0006002113	0.2991812718
## bmi	-0.092700621	0.0172854659	-0.0076740177
## height	-0.077783562	-0.0033210055	0.0901126892
## pre_icu_los_days	-0.062085529	0.0555449087	-0.0429274484
## weight	-0.118652399	0.0122530607	0.0358171831
## bun_apache	-0.217921949	0.1909873575	-0.0606308109
## creatinine_apache	0.212183493	-0.1714197107	0.0653163592
## glucose_apache	0.058501908	0.1041468993	-0.0140668355
## heart_rate_apache	-0.021482865	-0.0380039907	0.1152943504
## hematocrit_apache	-0.030409511	-0.0109199335	-0.0070194184
## map_apache	0.008683246	0.0258425826	0.3238038350
## resprate_apache	0.065726393	0.0315769767	0.2331156849
## sodium_apache	0.023376018	-0.0695177326	0.0080246060
## temp_apache	-0.042662212	0.0079096356	0.0899378579
## wbc_apache	0.036954228	-0.0208404887	-0.0243962020
## d1_diasbp_max	-0.016042568	-0.0279307807	-0.1135427883
## d1_diasbp_min	-0.023340059	0.0207813774	0.0113652773
## d1_diasbp_noninvasive_max	-0.016019859	-0.0276880350	-0.1126754103
## d1_diasbp_noninvasive_min	-0.023515466	0.0210818140	0.0117418426
## d1_heartrate_max	-0.034792156	-0.0350040499	0.0396115311
## d1_heartrate_min	0.017193775	0.0581449074	0.1269583267
## d1_mbp_max	0.021273816	0.0039602627	-0.0062117262
## d1_mbp_min	-0.017929532	0.0164045211	-0.0031982035
## d1_mbp_noninvasive_max	0.021927019	0.0033446325	-0.0049987068
## d1_mbp_noninvasive_min	-0.018149775	0.0165250217	-0.0035957203
## d1_resprate_max	0.030951885	0.0242028365	-0.0506213672
## d1_resprate_min	-0.003527514	-0.0042043255	0.3483449787
## d1_spo2_max	-0.450471436	-0.1190217205	-0.0774529466
## d1_spo2_min	0.388689372	0.1165959333	-0.0933910359
## d1_sysbp_max	0.024594348	0.0013507790	-0.0006337689
## d1_sysbp_min	-0.029548871	0.0072935509	-0.1346574590
## d1_sysbp_noninvasive_max	0.024549659	0.0011061443	-0.0001549223
## d1_sysbp_noninvasive_min	-0.030268824	0.0071480981	-0.1353786087
## d1_temp_max	0.072467664	0.2278413962	0.4519799422
## d1_temp_min	-0.061962118	-0.0429031856	0.0042932249
## h1_diasbp_max	0.022624593	0.0270682565	0.0182128430
## h1_diasbp_min	-0.061881507	-0.0333024931	0.0224882756
## h1_diasbp_noninvasive_max	0.023562276	0.0263293764	0.0210073498
## h1_diasbp_noninvasive_min	-0.060401430	-0.0321905876	0.0258006647
## h1_heartrate_max	-0.011500557	-0.0327526232	-0.1402348610
## h1_heartrate_min	-0.008800091	-0.0106940124	-0.1290009095
## h1_mbp_max	0.046603627	0.0440480331	0.0718620930
## h1_mbp_min	-0.043327754	-0.0228182556	0.0419326675
## h1_mbp_noninvasive_max	0.047172285	0.0410961624	0.0681099584
## h1_mbp_noninvasive_min	-0.042944268	-0.0220053376	0.0423544272
## h1_resprate_max	0.005817100	-0.0286545601	-0.3071835686
## h1_resprate_min	-0.015036035	-0.0257011417	-0.1583288505
## h1_spo2_max	-0.253739532	-0.1116935347	0.0767142028

## h1_spo2_min	0.219337890	0.0330138426	0.0112450791
## h1_sysbp_max	0.031122388	0.0211259856	-0.0170844621
## h1_sysbp_min	-0.038080685	-0.0211272471	-0.0685577972
## h1_sysbp_noninvasive_max	0.031169653	0.0184184677	-0.0203125307
## h1_sysbp_noninvasive_min	-0.038649793	-0.0205569743	-0.0676155985
## h1_temp_max	0.019188933	0.0143457417	-0.1406044596
## h1_temp_min	0.004184791	-0.0101781785	-0.1788848694
## d1_bun_max	-0.218324148	0.1956201438	-0.0601691592
## d1_bun_min	-0.243017117	0.1299623268	-0.0572048682
## d1_calcium_max	0.013140367	0.0841805733	0.0449652451
## d1_calcium_min	-0.005471818	-0.1093725807	0.0331049944
## d1_creatinine_max	0.212152712	-0.1591978865	0.0649670019
## d1_creatinine_min	0.201733393	-0.2244670228	0.0649164140
## d1_glucose_max	0.065441059	0.2054679090	-0.0222198130
## d1_glucose_min	-0.031272667	-0.6492497684	0.1164262226
## d1_hco3_max	0.148259211	0.1802992767	-0.0355890574
## d1_hco3_min	0.109446964	-0.0577416307	-0.0207725728
## d1_hemaglobin_max	-0.027310590	0.0749501217	0.0114684974
## d1_hemaglobin_min	-0.034730079	-0.0276223309	-0.0150938394
## d1_hematocrit_max	-0.024931213	0.0694369594	0.0127064402
## d1_hematocrit_min	-0.034891614	-0.0328003863	-0.0095274375
## d1_platelets_max	-0.053492013	0.0826949117	0.0574027922
## d1_platelets_min	-0.059808941	0.0247316681	0.0472916996
## d1_potassium_max	0.143591999	0.2384268126	-0.0233105627
## d1_potassium_min	0.087661399	-0.1564360191	-0.0458948198
## d1_sodium_max	0.037379294	0.1223589135	0.0111701160
## d1_sodium_min	0.021455508	-0.1257179348	0.0030284344
## d1_wbc_max	0.041515921	0.0045033670	-0.0172766147
## d1_wbc_min	0.024431541	-0.0787733591	-0.0316685359
## apache_4a_hospital_death_prob	0.051095908	-0.0582281982	-0.0346823090
## apache_4a_icu_death_prob	0.090495663	-0.0632719011	-0.0482139766
##	PC28	PC29	PC30
## age	-0.1893298113	0.3812447437	-0.5348173236
## bmi	-0.0374321336	0.0324295155	-0.0771329723
## height	0.0711220357	0.0850934655	-0.0029800175
## pre_icu_los_days	-0.0060911221	-0.0423414414	0.0279807904
## weight	-0.0012952196	0.0659106534	-0.0745038644
## bun_apache	-0.0245628013	-0.1492961206	0.1532724892
## creatinine_apache	-0.0002566689	0.0961720957	-0.1089302433
## glucose_apache	0.0651941296	0.0688917426	-0.0394482258
## heart_rate_apache	0.0306539391	-0.0351976894	0.0437268173
## hematocrit_apache	0.0007743967	-0.0038222609	-0.0067890027
## map_apache	-0.1828250632	0.4882777012	0.6325205064
## resprate_apache	0.1918210124	-0.0703345393	0.0786314524
## sodium_apache	0.0033438711	0.0047203533	-0.0052436533
## temp_apache	0.3729754930	0.0147874803	-0.0420506079
## wbc_apache	0.0242236864	0.0144622466	-0.0053648125
## d1_diasbp_max	0.0583008096	-0.0981216594	-0.0851362439
## d1_diasbp_min	-0.0742268990	0.0017819565	-0.1500863040
## d1_diasbp_noninvasive_max	0.0584155357	-0.0972765219	-0.0843265358
## d1_diasbp_noninvasive_min	-0.0746168906	0.0012439233	-0.1504139025
## d1_heartrate_max	-0.0440927985	-0.0505223237	0.0103852665
## d1_heartrate_min	0.2442069250	0.0062817075	-0.0818102455
## d1_mbp_max	0.0279137015	-0.0243787304	-0.0222045860

## d1_mbp_min	-0.0301863672	-0.0007293668	-0.0465797023
## d1_mbp_noninvasive_max	0.0287346355	-0.0239841075	-0.0217128190
## d1_mbp_noninvasive_min	-0.0292222515	-0.0009228381	-0.0474306750
## d1_resprate_max	0.0994730500	-0.0908125082	-0.0675749721
## d1_resprate_min	0.1437014605	-0.0442312238	0.0600199658
## d1_spo2_max	-0.0248806109	0.0392001958	-0.0395410288
## d1_spo2_min	-0.0880407362	-0.0185172663	-0.0320256289
## d1_sysbp_max	-0.0217952191	-0.0429763392	-0.0896050640
## d1_sysbp_min	0.0745380525	-0.0781646696	0.0553028747
## d1_sysbp_noninvasive_max	-0.0206524759	-0.0423618029	-0.0885426329
## d1_sysbp_noninvasive_min	0.0738069626	-0.0786508911	0.0552125117
## d1_temp_max	-0.3462236118	-0.4868023471	-0.1063685741
## d1_temp_min	0.4395837170	0.1277626877	0.0005539962
## h1_diasbp_max	-0.0021466604	-0.0047104003	-0.0116109628
## h1_diasbp_min	-0.0241685124	-0.0073463126	-0.0631736420
## h1_diasbp_noninvasive_max	0.0002512875	-0.0016014569	-0.0122187528
## h1_diasbp_noninvasive_min	-0.0235393814	-0.0058745028	-0.0610658433
## h1_heartrate_max	-0.1026039830	0.1038998774	-0.0033178388
## h1_heartrate_min	-0.0485667032	0.1200939240	-0.0365831533
## h1_mbp_max	0.0075476971	0.0426605955	0.0466967498
## h1_mbp_min	-0.0005711192	0.0062068393	0.0044072786
## h1_mbp_noninvasive_max	0.0092831536	0.0426031202	0.0435868783
## h1_mbp_noninvasive_min	-0.0010900494	0.0061024474	0.0034771048
## h1_resprate_max	-0.1447050552	0.0673320665	-0.0454520543
## h1_resprate_min	-0.1702353906	0.0864478229	-0.0341361673
## h1_spo2_max	0.0822684588	0.0565844238	0.0197886728
## h1_spo2_min	-0.0591869152	0.0108029597	-0.0064872114
## h1_sysbp_max	0.0072038987	-0.0132493915	0.0178762368
## h1_sysbp_min	0.0427637123	-0.0376348578	0.0438603519
## h1_sysbp_noninvasive_max	0.0067488088	-0.0131848598	0.0174303096
## h1_sysbp_noninvasive_min	0.0417616244	-0.0370078192	0.0440278201
## h1_temp_max	-0.3149343519	0.0941588502	0.0520593658
## h1_temp_min	-0.1907759425	0.1541342477	0.0616100313
## d1_bun_max	-0.0221277023	-0.1473254569	0.1500083872
## d1_bun_min	-0.0279769506	-0.1708629268	0.1556790474
## d1_calcium_max	-0.0262031392	0.0298003560	-0.0136121317
## d1_calcium_min	-0.0199666013	-0.0330598613	-0.0018768180
## d1_creatinine_max	0.0009644426	0.0996043651	-0.1104463672
## d1_creatinine_min	-0.0004915109	0.0881808579	-0.1132673935
## d1_glucose_max	0.0947054913	0.1111188784	-0.0761787265
## d1_glucose_min	-0.1535984525	-0.2744133132	0.1489169053
## d1_hco3_max	0.0281304710	0.0019922321	0.0512202332
## d1_hco3_min	-0.0005207740	-0.0669819741	0.0485989314
## d1_hemaglobin_max	-0.0048890741	0.0043275146	0.0014730624
## d1_hemaglobin_min	0.0080773314	-0.0203039817	0.0126152233
## d1_hematocrit_max	-0.0124927762	0.0179242263	-0.0125987719
## d1_hematocrit_min	0.0018728093	-0.0120329038	0.0006823290
## d1_platelets_max	-0.0583668348	0.0100976527	-0.0281953937
## d1_platelets_min	-0.0443021261	-0.0152395043	-0.0231628369
## d1_potassium_max	-0.0106621487	0.0573301243	-0.0250747925
## d1_potassium_min	-0.0107405330	-0.0625038188	0.0311608237
## d1_sodium_max	0.0172037357	0.0414420743	-0.0173719722
## d1_sodium_min	-0.0028382555	-0.0100873606	-0.0055206872
## d1_wbc_max	0.0159147708	0.0252856777	-0.0111633545

## d1_wbc_min	0.0339312387	-0.0111539171	0.0007675438
## apache_4a_hospital_death_prob	0.1289776517	0.0287718781	-0.0019779881
## apache_4a_icu_death_prob	0.1471439508	-0.0040074422	0.0471078186
##	PC31	PC32	PC33
## age	-0.0387866387	0.1846975771	3.200695e-02
## bmi	0.0010656934	-0.0337149705	2.304142e-03
## height	0.0150886679	0.0676187402	-2.491114e-02
## pre_icu_los_days	0.0573860150	0.0078340303	-2.653819e-03
## weight	0.0071830577	0.0006484547	-7.996734e-03
## bun_apache	-0.0002203902	-0.0559072426	1.344553e-02
## creatinine_apache	-0.0097574337	0.0472785924	3.703692e-03
## glucose_apache	0.0322442847	0.0254673936	-1.436957e-03
## heart_rate_apache	0.0463347007	-0.0995342813	9.361628e-02
## hematocrit_apache	0.0019175463	0.0254362986	-3.615287e-03
## map_apache	-0.2690382734	0.0389793388	-7.795127e-04
## resprate_apache	0.3669052133	0.0782322503	-1.978233e-01
## sodium_apache	0.0073484286	0.0110188199	-9.353325e-03
## temp_apache	-0.2669587558	-0.1601066798	8.480980e-02
## wbc_apache	0.0086987747	-0.0095241544	-3.790087e-03
## d1_diasbp_max	-0.0127713091	0.1999689846	4.511542e-02
## d1_diasbp_min	0.0068834628	-0.2176469578	8.614590e-03
## d1_diasbp_noninvasive_max	-0.0121254193	0.1995567685	4.498675e-02
## d1_diasbp_noninvasive_min	0.0067379203	-0.2174387550	8.294587e-03
## d1_heartrate_max	0.0633837352	-0.1640736618	1.159525e-01
## d1_heartrate_min	-0.1773711486	0.2861846381	-1.806818e-01
## d1_mbp_max	0.0389126072	0.0118789786	-2.101919e-02
## d1_mbp_min	0.0318301863	-0.0403755919	2.408988e-03
## d1_mbp_noninvasive_max	0.0392205682	0.0122468465	-2.290725e-02
## d1_mbp_noninvasive_min	0.0314187492	-0.0384917251	2.836277e-03
## d1_resprate_max	-0.0407600016	0.1259923928	-2.678679e-02
## d1_resprate_min	0.2780247963	-0.0613075188	-7.847632e-02
## d1_spo2_max	-0.1378160717	-0.0168898916	-5.479659e-01
## d1_spo2_min	-0.1908119382	-0.0613834703	-4.194085e-01
## d1_sysbp_max	0.0593224318	-0.3328639637	-4.378995e-02
## d1_sysbp_min	-0.0287974971	0.3104267167	5.395674e-02
## d1_sysbp_noninvasive_max	0.0598692826	-0.3329682557	-4.361363e-02
## d1_sysbp_noninvasive_min	-0.0290477973	0.3107538299	5.330144e-02
## d1_temp_max	-0.2770494003	0.1428608778	6.206709e-02
## d1_temp_min	-0.1649943612	-0.1695060504	5.980884e-02
## h1_diasbp_max	-0.0229972291	0.0807970744	1.469926e-02
## h1_diasbp_min	-0.0143657964	-0.0716810087	3.448361e-03
## h1_diasbp_noninvasive_max	-0.0227285969	0.0813216648	1.342921e-02
## h1_diasbp_noninvasive_min	-0.0116655409	-0.0686076425	2.523268e-03
## h1_heartrate_max	0.0683405645	-0.0328016368	2.548188e-05
## h1_heartrate_min	0.0241749825	0.0899700345	-6.876392e-02
## h1_mbp_max	0.0128082948	0.0237522217	-3.026411e-02
## h1_mbp_min	0.0264358062	-0.0235718052	-1.771014e-02
## h1_mbp_noninvasive_max	0.0157667187	0.0189399290	-3.027123e-02
## h1_mbp_noninvasive_min	0.0274851219	-0.0221794150	-1.833057e-02
## h1_resprate_max	-0.3458244179	-0.0038367788	1.793962e-01
## h1_resprate_min	-0.2449994677	-0.1323645360	1.597491e-01
## h1_spo2_max	0.1744620050	0.0834748155	4.403716e-01
## h1_spo2_min	0.0892970735	-0.0221951016	3.369405e-01
## h1_sysbp_max	0.0097134667	-0.0679731961	-1.071323e-02

## h1_sysbp_min	-0.0175888834	0.1297881076	2.434205e-02
## h1_sysbp_noninvasive_max	0.0121006645	-0.0702022134	-1.181311e-02
## h1_sysbp_noninvasive_min	-0.0174699728	0.1280924737	2.425724e-02
## h1_temp_max	0.3139481153	0.1183524092	-7.628756e-02
## h1_temp_min	0.2961359960	0.0689882512	-7.479686e-02
## d1_bun_max	0.0008939165	-0.0555658176	1.552102e-02
## d1_bun_min	0.0002021702	-0.0516898147	3.205826e-03
## d1_calcium_max	-0.0181130757	-0.0196053393	4.687378e-03
## d1_calcium_min	-0.0184234768	-0.0023949484	-2.975093e-02
## d1_creatinine_max	-0.0083384159	0.0459074753	4.467171e-03
## d1_creatinine_min	-0.0091474767	0.0535950464	-6.438505e-03
## d1_glucose_max	0.0303809167	0.0255238722	5.444990e-03
## d1_glucose_min	-0.0775650771	-0.0194995340	-1.637843e-02
## d1_hco3_max	-0.0028363660	-0.0012265677	4.141857e-02
## d1_hco3_min	-0.0056180765	0.0138715944	1.092682e-03
## d1_hemaglobin_max	-0.0051850126	-0.0110790688	5.601292e-03
## d1_hemaglobin_min	-0.0014361046	0.0161645633	-5.168113e-03
## d1_hematocrit_max	0.0020223863	0.0064055331	-9.435850e-04
## d1_hematocrit_min	0.0050368282	0.0287124202	-9.239332e-03
## d1_platelets_max	-0.0040856429	0.0143062578	1.975897e-02
## d1_platelets_min	-0.0096441546	0.0232247975	1.237580e-02
## d1_potassium_max	0.0294888356	-0.0136716788	2.299684e-02
## d1_potassium_min	0.0192671096	0.0175817154	-2.487433e-02
## d1_sodium_max	0.0050686681	-0.0024472445	2.100825e-02
## d1_sodium_min	0.0083726633	0.0150223215	-1.816073e-02
## d1_wbc_max	0.0074644510	-0.0121404164	3.859995e-04
## d1_wbc_min	0.0037732929	0.0023953757	-1.493908e-03
## apache_4a_hospital_death_prob	-0.0347599896	0.0013001251	-5.034791e-03
## apache_4a_icu_death_prob	-0.0308027073	-0.0057173382	-7.238403e-03
##	PC34	PC35	PC36
## age	-0.1390108200	-0.0417109449	3.807101e-02
## bmi	-0.0375253208	0.0117829120	1.841264e-02
## height	0.0011177864	0.0115206530	-5.420660e-03
## pre_icu_los_days	0.0109021520	0.0102481132	-7.870542e-04
## weight	-0.0329965273	0.0108206312	1.300150e-02
## bun_apache	0.0227556412	-0.0337450588	1.484039e-03
## creatinine_apache	-0.0341000682	-0.0262161906	1.011792e-02
## glucose_apache	-0.0112481651	0.1939827832	8.332504e-03
## heart_rate_apache	-0.2980897425	0.0795259251	5.484910e-02
## hematocrit_apache	0.0094323009	0.0846748545	-1.306830e-02
## map_apache	0.0239688016	0.0222003387	1.211290e-02
## resprate_apache	-0.0825656542	0.0652663031	-9.704933e-02
## sodium_apache	0.0154234724	0.0420038189	-4.094049e-03
## temp_apache	-0.1041929129	-0.0117195093	2.325063e-03
## wbc_apache	-0.0089318761	-0.0088502997	5.375008e-03
## d1_diasbp_max	-0.0799337618	-0.0395008064	4.625230e-02
## d1_diasbp_min	0.0807669647	-0.0080535470	-3.166571e-02
## d1_diasbp_noninvasive_max	-0.0794506214	-0.0400514833	4.612431e-02
## d1_diasbp_noninvasive_min	0.0804171730	-0.0084185703	-3.245860e-02
## d1_heartrate_max	-0.3372959439	0.0396817746	1.140931e-01
## d1_heartrate_min	0.5966783063	-0.0923101919	-1.726366e-01
## d1_mbp_max	0.0319946486	0.0657050428	1.813708e-02
## d1_mbp_min	-0.0312469690	0.0243609131	-2.018038e-02
## d1_mbp_noninvasive_max	0.0329125047	0.0680772100	2.146449e-02

## d1_mbp_noninvasive_min	-0.0322668552	0.0245340298	-2.276771e-02
## d1_resprate_max	0.0321074692	-0.1703776192	-1.509007e-02
## d1_resprate_min	-0.0508149549	-0.0748051768	1.820287e-01
## d1_spo2_max	-0.1882578779	0.0104468156	-2.144917e-01
## d1_spo2_min	-0.0992688119	-0.0049267795	4.374379e-01
## d1_sysbp_max	0.1745598760	-0.0468349758	-3.375275e-02
## d1_sysbp_min	-0.1833196219	-0.0400856996	7.664720e-03
## d1_sysbp_noninvasive_max	0.1750860658	-0.0456320480	-3.420290e-02
## d1_sysbp_noninvasive_min	-0.1839150174	-0.0395049169	5.843084e-03
## d1_temp_max	0.0106691104	0.1389604121	1.327108e-02
## d1_temp_min	-0.0996853207	-0.0504479991	4.621737e-03
## h1_diasbp_max	-0.0752954423	-0.0524970825	-6.763123e-02
## h1_diasbp_min	0.0510334067	-0.0404650684	8.372308e-02
## h1_diasbp_noninvasive_max	-0.0744265034	-0.0530753628	-7.055884e-02
## h1_diasbp_noninvasive_min	0.0485568502	-0.0391681045	8.232572e-02
## h1_heartrate_max	-0.0517767839	0.0227237431	1.010701e-01
## h1_heartrate_min	0.1440352245	-0.0121721499	-1.035004e-01
## h1_mbp_max	-0.0260556196	0.0481433877	-7.978873e-02
## h1_mbp_min	0.0271535898	0.0361209361	6.889907e-02
## h1_mbp_noninvasive_max	-0.0222661012	0.0482185504	-7.939199e-02
## h1_mbp_noninvasive_min	0.0269516997	0.0371521253	6.897966e-02
## h1_resprate_max	0.0957262406	0.0284231836	2.184403e-01
## h1_resprate_min	-0.0433295788	0.0604765390	-2.388793e-01
## h1_spo2_max	0.2850573246	0.0264486468	4.050588e-01
## h1_spo2_min	-0.0925035978	-0.0283543356	-5.638532e-01
## h1_sysbp_max	0.0405328287	-0.0018502912	-3.006981e-02
## h1_sysbp_min	-0.0423534264	0.0128634129	3.198884e-02
## h1_sysbp_noninvasive_max	0.0431491254	-0.0007247916	-2.785687e-02
## h1_sysbp_noninvasive_min	-0.0402963823	0.0147794314	3.174020e-02
## h1_temp_max	0.0929503860	-0.0415759846	1.818252e-02
## h1_temp_min	0.0555827912	-0.0618115961	-1.107201e-02
## d1_bun_max	0.0210132339	-0.0526845299	7.906205e-05
## d1_bun_min	0.0408842968	0.0735079238	-1.005165e-02
## d1_calcium_max	0.0085256273	-0.1818644482	4.164474e-04
## d1_calcium_min	0.0576566373	0.1866627913	-1.218713e-02
## d1_creatinine_max	-0.0367595076	-0.0467805014	1.034322e-02
## d1_creatinine_min	-0.0205761829	0.0737810717	2.226081e-03
## d1_glucose_max	-0.0121359188	0.2072566888	4.959298e-03
## d1_glucose_min	0.0155672571	-0.3959613676	-2.416579e-02
## d1_hco3_max	-0.0435903648	-0.2017098183	6.410265e-03
## d1_hco3_min	0.0220841619	0.1797654339	-4.766101e-03
## d1_hemaglobin_max	-0.0128720532	-0.1822874477	6.736719e-03
## d1_hemaglobin_min	0.0156981194	0.1160495425	-6.138011e-03
## d1_hematocrit_max	-0.0131204485	-0.1504332975	1.236965e-03
## d1_hematocrit_min	0.0177781645	0.1388514134	-1.192815e-02
## d1_platelets_max	-0.0118522636	-0.1004351800	3.462131e-03
## d1_platelets_min	0.0050498078	0.0490544469	-3.273149e-03
## d1_potassium_max	-0.0588636680	-0.3685406368	3.857006e-02
## d1_potassium_min	0.0506546463	0.3683323534	-2.180076e-02
## d1_sodium_max	-0.0309069844	-0.2123825376	6.761578e-03
## d1_sodium_min	0.0275977280	0.1508931321	-9.304256e-03
## d1_wbc_max	-0.0136845392	-0.0738521484	6.032432e-03
## d1_wbc_min	0.0131992954	0.1389014238	-6.134801e-03
## apache_4a_hospital_death_prob	-0.0003468589	0.0111674957	4.170824e-03

## apache_4a_icu_death_prob	0.0251456134	-0.0057022021	2.292255e-03
##	PC37	PC38	PC39
## age	0.006247999	0.009694475	0.0001060370
## bmi	0.007067267	-0.012703736	0.0032543731
## height	-0.020795838	0.002039424	0.0165060806
## pre_icu_los_days	-0.010386274	0.003860001	0.0098985572
## weight	-0.002771890	-0.010724819	0.0121877277
## bun_apache	-0.002912599	-0.007955354	-0.0005913549
## creatinine_apache	-0.007573504	-0.001722591	0.0021011379
## glucose_apache	0.061580173	0.012784978	0.0067613920
## heart_rate_apache	0.037858922	0.091200219	0.4990220845
## hematocrit_apache	0.020238447	-0.007021040	-0.0076153131
## map_apache	0.167725202	-0.034743965	-0.0488087148
## resprate_apache	-0.280321917	-0.009473170	-0.0443460094
## sodium_apache	0.006706258	-0.002524722	0.0040539212
## temp_apache	-0.058843836	-0.041099682	-0.1713054552
## wbc_apache	-0.006322589	-0.005528651	0.0041441771
## d1_diasbp_max	0.095432554	-0.178491294	0.0116101239
## d1_diasbp_min	0.098548609	-0.247321930	0.0574427816
## d1_diasbp_noninvasive_max	0.095500986	-0.177816693	0.0120312792
## d1_diasbp_noninvasive_min	0.097882639	-0.246446165	0.0564474036
## d1_heartrate_max	0.075237317	0.009734913	0.1511176275
## d1_heartrate_min	-0.002510458	0.050363300	0.3254678586
## d1_mbp_max	-0.242353484	-0.013410537	0.0019742669
## d1_mbp_min	-0.125943696	-0.018129628	-0.0130315448
## d1_mbp_noninvasive_max	-0.245239209	-0.011664087	-0.0001675174
## d1_mbp_noninvasive_min	-0.124449540	-0.016079711	-0.0132480580
## d1_resprate_max	0.465333667	-0.019452652	-0.0616157590
## d1_resprate_min	0.266721870	-0.078647769	-0.1113938273
## d1_spo2_max	0.031967660	-0.023137702	0.0100364752
## d1_spo2_min	-0.050883477	0.025394024	0.0475064891
## d1_sysbp_max	0.112873713	0.290930832	-0.0562603275
## d1_sysbp_min	0.031393070	0.270167301	-0.0601177547
## d1_sysbp_noninvasive_max	0.113054133	0.289760599	-0.0552166943
## d1_sysbp_noninvasive_min	0.031938018	0.269970267	-0.0613133183
## d1_temp_max	-0.036776350	-0.011281552	-0.1344618327
## d1_temp_min	-0.023078832	0.008149804	-0.0117024503
## h1_diasbp_max	0.140889954	0.178356877	-0.0069489563
## h1_diasbp_min	0.137694839	0.174859461	-0.0438363378
## h1_diasbp_noninvasive_max	0.140382749	0.180083955	-0.0121188755
## h1_diasbp_noninvasive_min	0.136094738	0.172964419	-0.0443908595
## h1_heartrate_max	-0.048590709	-0.085162103	-0.4722916026
## h1_heartrate_min	-0.086610019	-0.051657125	-0.4595659870
## h1_mbp_max	-0.192542836	0.039033725	0.0313242401
## h1_mbp_min	-0.117795640	0.053973977	-0.0116194326
## h1_mbp_noninvasive_max	-0.191093193	0.042337686	0.0320871590
## h1_mbp_noninvasive_min	-0.117938922	0.055234199	-0.0128035852
## h1_resprate_max	0.008832293	-0.020765207	0.0816676272
## h1_resprate_min	-0.263046873	0.111309420	0.1353618519
## h1_spo2_max	-0.124568198	0.041727371	-0.0013568919
## h1_spo2_min	0.126143237	-0.050346494	-0.0609777278
## h1_sysbp_max	0.049066667	-0.307200429	0.0514791733
## h1_sysbp_min	0.013581538	-0.247363171	0.0577482923
## h1_sysbp_noninvasive_max	0.050253495	-0.303836876	0.0511188645

## h1_sysbp_noninvasive_min	0.012810211	-0.246438983	0.0563420062
## h1_temp_max	0.054834906	0.022615429	0.1465169409
## h1_temp_min	0.048466714	0.039129231	0.1569821294
## d1_bun_max	-0.007158260	-0.012101764	-0.0035622491
## d1_bun_min	0.026548014	0.002113236	-0.0147767261
## d1_calcium_max	-0.060752506	-0.009110745	0.0101760508
## d1_calcium_min	0.043752119	0.014124796	-0.0072718824
## d1_creatinine_max	-0.013371764	-0.004211198	0.0014030357
## d1_creatinine_min	0.018384453	0.008157152	-0.0105906698
## d1_glucose_max	0.066025063	0.014000077	-0.0039036012
## d1_glucose_min	-0.119418870	-0.034628686	-0.0097414976
## d1_hco3_max	-0.048340947	-0.012329129	-0.0010793749
## d1_hco3_min	0.060348962	0.007615331	-0.0239732401
## d1_hemaglobin_max	-0.059283111	0.011197149	0.0111845943
## d1_hemaglobin_min	0.030457922	-0.005946919	-0.0030452063
## d1_hematocrit_max	-0.050128083	0.011566830	0.0101859084
## d1_hematocrit_min	0.033401429	-0.001797268	-0.0023245566
## d1_platelets_max	-0.028676135	0.001249638	-0.0051132733
## d1_platelets_min	0.011294247	-0.004781241	-0.0089263580
## d1_potassium_max	-0.099988762	-0.035635229	0.0108837945
## d1_potassium_min	0.106080514	0.030843820	-0.0072420841
## d1_sodium_max	-0.063150858	-0.013401620	0.0246925527
## d1_sodium_min	0.039739165	0.004750496	0.0009998691
## d1_wbc_max	-0.023118875	-0.005085891	0.0016894972
## d1_wbc_min	0.040880641	-0.005543108	-0.0049957558
## apache_4a_hospital_death_prob	0.012104149	0.005566398	0.0133558584
## apache_4a_icu_death_prob	-0.002488835	-0.004544006	-0.0241918094
##	PC40	PC41	PC42
## age	-2.679918e-02	-0.0117408051	0.0166183823
## bmi	-7.364953e-04	-0.0027751661	0.0037719395
## height	3.818856e-03	-0.0002786163	-0.0074288756
## pre_icu_los_days	5.753559e-03	-0.0014502117	-0.0006557296
## weight	-1.913233e-03	0.0009921457	-0.0004326557
## bun_apache	-1.421120e-03	-0.0003716053	0.0017669162
## creatinine_apache	-1.223585e-03	-0.0014425601	0.0034869193
## glucose_apache	-3.929371e-03	0.0009992952	-0.0229207844
## heart_rate_apache	-6.361330e-03	-0.0105552652	0.0100218563
## hematocrit_apache	1.568949e-02	0.0046575752	0.0524650600
## map_apache	-9.432201e-02	0.0223812039	-0.0138470923
## resprate_apache	-5.264435e-01	-0.1213664931	0.0340022700
## sodium_apache	4.793993e-03	0.0008234226	-0.0026460101
## temp_apache	-1.415408e-02	-0.0230083981	0.0679808669
## wbc_apache	-1.649938e-03	-0.0013874929	-0.0118063679
## d1_diasbp_max	-1.575354e-01	0.0013526717	-0.1970294336
## d1_diasbp_min	-1.101658e-01	0.0385440945	0.2752470290
## d1_diasbp_noninvasive_max	-1.568569e-01	0.0016014997	-0.1973022903
## d1_diasbp_noninvasive_min	-1.087430e-01	0.0390595011	0.2737658051
## d1_heartrate_max	7.550259e-02	0.0109603511	0.0056699472
## d1_heartrate_min	2.351845e-02	-0.0698109810	-0.0349709519
## d1_mbp_max	2.547200e-01	-0.0120121442	0.2452573728
## d1_mbp_min	1.243341e-01	0.0039504019	-0.4262334246
## d1_mbp_noninvasive_max	2.578552e-01	-0.0113129459	0.2416854156
## d1_mbp_noninvasive_min	1.216238e-01	0.0071537504	-0.4164285809
## d1_resprate_max	3.058025e-01	0.4080382415	-0.0077253314

## d1_resprate_min	3.037174e-01	-0.1272753728	0.0006910741
## d1_spo2_max	5.466249e-02	-0.0936960526	0.0037043621
## d1_spo2_min	-6.664346e-02	0.1417120989	-0.0038330308
## d1_sysbp_max	-9.710520e-02	-0.0249957612	-0.0482681112
## d1_sysbp_min	-2.954163e-02	-0.0195731252	0.1790882394
## d1_sysbp_noninvasive_max	-9.755438e-02	-0.0248058593	-0.0487044762
## d1_sysbp_noninvasive_min	-2.963590e-02	-0.0179808430	0.1777161771
## d1_temp_max	-2.824203e-02	0.0005836462	-0.0202353549
## d1_temp_min	-1.557911e-02	0.0123490489	-0.0751651610
## h1_diasbp_max	-1.456352e-01	0.0288767451	-0.0568732952
## h1_diasbp_min	-1.074671e-01	-0.0583821274	0.1163107752
## h1_diasbp_noninvasive_max	-1.485082e-01	0.0316706644	-0.0633513871
## h1_diasbp_noninvasive_min	-1.015290e-01	-0.0552384180	0.1145919165
## h1_heartrate_max	7.127147e-03	-0.0181837421	0.0038423924
## h1_heartrate_min	-3.423666e-02	0.0899757514	0.0188751105
## h1_mbp_max	2.185058e-01	0.0375395526	0.1293997083
## h1_mbp_min	1.500241e-01	-0.0657911317	-0.2088944867
## h1_mbp_noninvasive_max	2.125127e-01	0.0347199551	0.1258043402
## h1_mbp_noninvasive_min	1.499307e-01	-0.0662958532	-0.2047059879
## h1_resprate_max	1.926294e-02	-0.6115661492	0.0099851996
## h1_resprate_min	-1.138497e-01	0.5000970733	-0.0306561257
## h1_spo2_max	-9.257864e-02	0.2056223394	0.0042240487
## h1_spo2_min	9.912102e-02	-0.2419720104	-0.0051122771
## h1_sysbp_max	-8.172439e-02	0.0331011138	-0.0601049043
## h1_sysbp_min	-4.289751e-02	0.0355617258	0.0789876779
## h1_sysbp_noninvasive_max	-8.399705e-02	0.0300269810	-0.0648169021
## h1_sysbp_noninvasive_min	-3.849910e-02	0.0329694305	0.0758830397
## h1_temp_max	4.446046e-02	-0.0320768324	0.0038294643
## h1_temp_min	1.357253e-02	0.0348100067	-0.0022397710
## d1_bun_max	-1.996113e-04	-0.0008803727	0.0020693629
## d1_bun_min	1.253453e-03	0.0057624236	-0.0042797782
## d1_calcium_max	7.295433e-03	-0.0171503192	-0.0088900992
## d1_calcium_min	2.695374e-03	0.0136172353	0.0074288544
## d1_creatinine_max	-7.712832e-04	-0.0031306023	0.0026448793
## d1_creatinine_min	4.511056e-05	0.0069219060	-0.0076485873
## d1_glucose_max	7.670629e-03	0.0016133743	-0.0113940183
## d1_glucose_min	5.691239e-04	-0.0036432930	0.0280523798
## d1_hco3_max	-2.215605e-03	-0.0042908747	-0.0045688244
## d1_hco3_min	-8.186756e-03	0.0138973957	-0.0053372029
## d1_hemaglobin_max	-8.364558e-03	-0.0076361927	-0.0957315797
## d1_hemaglobin_min	7.919296e-03	0.0049011820	0.0468970442
## d1_hematocrit_max	-5.642992e-03	-0.0069327368	-0.0723401907
## d1_hematocrit_min	1.739265e-02	0.0027511088	0.0629946375
## d1_platelets_max	-3.093211e-03	-0.0023906283	-0.0292039558
## d1_platelets_min	2.773719e-03	0.0015959072	0.0209804181
## d1_potassium_max	2.669191e-03	-0.0171981651	0.0808178385
## d1_potassium_min	1.619902e-05	0.0196110961	-0.0707266107
## d1_sodium_max	3.444447e-03	-0.0202488315	0.0101208951
## d1_sodium_min	-2.705829e-03	0.0128112814	-0.0115808085
## d1_wbc_max	-3.329990e-03	-0.0045196383	-0.0334362673
## d1_wbc_min	1.700498e-03	0.0065462669	0.0490873679
## apache_4a_hospital_death_prob	-2.384996e-03	0.0054832850	0.0151713029
## apache_4a_icu_death_prob	2.377062e-02	-0.0080046934	-0.0198918342
##	PC43	PC44	PC45

## age	-0.0056432336	-5.055274e-03	-0.005771015
## bmi	0.0036228647	1.400975e-03	-0.003807759
## height	-0.0028692299	-1.929831e-02	0.006946493
## pre_icu_los_days	0.0012240393	-9.877205e-03	0.008352452
## weight	-0.0008556552	-4.246291e-03	-0.002782238
## bun_apache	0.0009111012	-3.724023e-04	0.005372630
## creatinine_apache	0.0070552891	7.350483e-03	0.001170498
## glucose_apache	0.0226228600	5.020922e-02	-0.005959655
## heart_rate_apache	-0.0350797389	9.521239e-02	0.205449736
## hematocrit_apache	-0.0758165319	-2.327595e-01	0.021350393
## map_apache	-0.0100469990	-1.092103e-02	-0.010859161
## resprate_apache	-0.0019805716	-1.028234e-02	-0.025247734
## sodium_apache	-0.0143375308	-8.620990e-03	-0.004912809
## temp_apache	-0.6647426681	1.594027e-01	-0.012639867
## wbc_apache	0.0047117120	5.605278e-02	0.002304502
## d1_diasbp_max	-0.0216207237	-2.528611e-02	-0.027462145
## d1_diasbp_min	0.0392644877	4.958166e-02	0.078991189
## d1_diasbp_noninvasive_max	-0.0215957295	-2.524884e-02	-0.027998680
## d1_diasbp_noninvasive_min	0.0414267502	4.955611e-02	0.078847781
## d1_heartrate_max	-0.0330264557	-1.048216e-01	-0.231169179
## d1_heartrate_min	-0.0465884670	-4.238008e-02	-0.103529463
## d1_mbp_max	0.0459645320	5.506615e-02	-0.056198935
## d1_mbp_min	-0.0573324029	-6.476591e-02	0.035984079
## d1_mbp_noninvasive_max	0.0424530421	5.446789e-02	-0.061564784
## d1_mbp_noninvasive_min	-0.0528982989	-6.216812e-02	0.035047489
## d1_resprate_max	-0.0071535015	1.974341e-02	0.006889343
## d1_resprate_min	0.0125206338	2.882471e-02	0.035128565
## d1_spo2_max	0.0051164426	6.256624e-04	-0.001088237
## d1_spo2_min	-0.0145288387	-4.420857e-04	0.012001055
## d1_sysbp_max	-0.0151388497	-2.469301e-02	0.143460367
## d1_sysbp_min	0.0188652291	2.797522e-02	-0.131224743
## d1_sysbp_noninvasive_max	-0.0170356217	-2.500780e-02	0.142521224
## d1_sysbp_noninvasive_min	0.0211538731	2.709967e-02	-0.130712873
## d1_temp_max	0.1713653562	-3.462624e-02	0.022730957
## d1_temp_min	0.6618122806	-1.437869e-01	0.011671276
## h1_diasbp_max	-0.0258791372	-1.886500e-02	0.179604139
## h1_diasbp_min	0.0197378093	1.298057e-02	-0.256292364
## h1_diasbp_noninvasive_max	-0.0289804804	-1.619391e-02	0.195738935
## h1_diasbp_noninvasive_min	0.0227139597	1.282593e-02	-0.246404672
## h1_heartrate_max	0.0478407902	-2.696893e-02	-0.072708416
## h1_heartrate_min	0.0456569138	5.156926e-02	0.193791717
## h1_mbp_max	0.0222357647	1.878678e-02	0.056502529
## h1_mbp_min	-0.0330598461	-5.347427e-02	-0.028585112
## h1_mbp_noninvasive_max	0.0205070848	2.023854e-02	0.067160672
## h1_mbp_noninvasive_min	-0.0320738563	-5.180799e-02	-0.027582355
## h1_resprate_max	0.0327541383	1.633555e-02	0.079398153
## h1_resprate_min	-0.0161167766	-1.319698e-02	-0.097241066
## h1_spo2_max	-0.0122912627	4.967657e-03	0.029757150
## h1_spo2_min	0.0086559034	9.815239e-05	-0.036935319
## h1_sysbp_max	0.0087006700	-4.022705e-04	-0.360764884
## h1_sysbp_min	0.0061796140	2.759754e-02	0.357072805
## h1_sysbp_noninvasive_max	0.0041427795	-1.420164e-03	-0.351392498
## h1_sysbp_noninvasive_min	0.0059583423	2.580636e-02	0.352063082
## h1_temp_max	-0.1206626627	1.645957e-02	-0.064879000

## h1_temp_min	0.0434196411	5.719277e-03	0.036298373
## d1_bun_max	-0.0026392087	-6.648516e-03	0.006453750
## d1_bun_min	0.0009143457	3.061590e-02	-0.011214312
## d1_calcium_max	0.0104491469	5.489030e-02	0.002427965
## d1_calcium_min	-0.0170245455	-5.187362e-02	-0.001777938
## d1_creatinine_max	0.0059112978	5.756412e-04	0.003154126
## d1_creatinine_min	0.0109376805	3.729692e-02	-0.015341945
## d1_glucose_max	-0.0045462978	2.590841e-02	-0.008618504
## d1_glucose_min	-0.0105590527	-4.440591e-02	0.014424643
## d1_hco3_max	-0.0019221967	-5.761256e-02	0.021364443
## d1_hco3_min	-0.0031886646	8.455122e-02	-0.020883846
## d1_hemaglobin_max	0.1075237780	4.554428e-01	-0.036353853
## d1_hemaglobin_min	-0.0376202323	-2.660210e-01	0.018736750
## d1_hematocrit_max	0.0764245537	3.541192e-01	-0.018399481
## d1_hematocrit_min	-0.0604424962	-2.971474e-01	0.021995074
## d1_platelets_max	0.0208384120	1.534975e-01	-0.010355266
## d1_platelets_min	-0.0160848740	-1.044258e-01	0.005381396
## d1_potassium_max	-0.0711171401	-3.368293e-01	0.019342218
## d1_potassium_min	0.0565330244	2.994166e-01	-0.016027790
## d1_sodium_max	-0.0092120964	-3.389475e-02	0.005090456
## d1_sodium_min	0.0086080261	2.068619e-02	0.004693874
## d1_wbc_max	0.0200590626	1.494308e-01	-0.007297844
## d1_wbc_min	-0.0329982197	-2.325451e-01	0.008322166
## apache_4a_hospital_death_prob	0.0409535653	-5.238217e-02	-0.065191034
## apache_4a_icu_death_prob	-0.0125794507	4.141118e-02	0.065268142
##	PC46	PC47	PC48
## age	-0.0172013397	-6.619518e-02	1.268998e-02
## bmi	0.0032005508	2.123837e-03	7.703071e-03
## height	-0.0020663559	1.110280e-03	-5.688114e-04
## pre_icu_los_days	-0.0052440631	-6.947068e-03	6.031147e-03
## weight	0.0053105979	1.791515e-03	4.640262e-03
## bun_apache	-0.0063427151	-7.743566e-03	2.253172e-02
## creatinine_apache	0.0015732108	-4.681526e-03	2.622472e-02
## glucose_apache	0.0038839071	2.934225e-03	-3.358384e-02
## heart_rate_apache	-0.5416704124	1.487339e-01	1.546017e-02
## hematocrit_apache	-0.0200166534	-1.929823e-02	8.533134e-02
## map_apache	0.0160233789	-1.528240e-03	-5.530131e-03
## resprate_apache	0.0484058527	-2.228782e-02	2.675815e-03
## sodium_apache	0.0046163218	4.246573e-03	-3.524671e-02
## temp_apache	0.0015311764	3.579363e-02	9.584749e-03
## wbc_apache	0.0073995687	5.289093e-04	2.536507e-03
## d1_diasbp_max	-0.0213814734	4.544184e-03	-1.008720e-02
## d1_diasbp_min	0.0420474271	-1.605998e-02	4.563726e-03
## d1_diasbp_noninvasive_max	-0.0227945856	2.230625e-03	-9.410830e-03
## d1_diasbp_noninvasive_min	0.0420373500	-1.612492e-02	3.378938e-03
## d1_heartrate_max	0.6004138387	-1.990928e-01	-2.427226e-02
## d1_heartrate_min	0.1694906979	-5.533082e-02	-1.372401e-02
## d1_mbp_max	-0.0228151516	4.045519e-03	1.221646e-02
## d1_mbp_min	-0.0093987143	2.296632e-02	-3.323390e-03
## d1_mbp_noninvasive_max	-0.0276021113	5.107047e-04	1.294125e-02
## d1_mbp_noninvasive_min	-0.0087031973	2.278854e-02	-2.959810e-03
## d1_resprate_max	-0.0593781181	1.651638e-02	3.730315e-03
## d1_resprate_min	-0.0140882211	1.888420e-02	5.249720e-06
## d1_spo2_max	-0.0064456732	-7.250501e-03	-1.164265e-03

## d1_spo2_min	0.0048605544	-9.843499e-03	1.282204e-02
## d1_sysbp_max	0.0383674395	1.158419e-03	-3.570779e-03
## d1_sysbp_min	-0.0284173942	-8.856460e-03	-1.219088e-03
## d1_sysbp_noninvasive_max	0.0374258807	1.951924e-05	-1.944197e-04
## d1_sysbp_noninvasive_min	-0.0271059241	-9.079959e-03	-1.523067e-03
## d1_temp_max	-0.0291973341	1.197405e-02	1.223559e-02
## d1_temp_min	-0.0116350567	-4.571575e-02	-2.374945e-02
## h1_diasbp_max	0.0827401577	-1.123316e-02	8.584342e-04
## h1_diasbp_min	-0.1050355626	3.354501e-03	1.733262e-02
## h1_diasbp_noninvasive_max	0.0846710375	-1.432942e-02	-7.311819e-04
## h1_diasbp_noninvasive_min	-0.1000540978	4.885642e-03	1.142572e-02
## h1_heartrate_max	0.0386228705	-1.074614e-02	-9.198466e-03
## h1_heartrate_min	-0.2305794250	8.619009e-02	2.541164e-02
## h1_mbp_max	0.0249188046	2.251143e-03	-1.427357e-02
## h1_mbp_min	-0.0021048488	1.594142e-03	-2.202409e-03
## h1_mbp_noninvasive_max	0.0260742512	1.144229e-03	-1.020636e-02
## h1_mbp_noninvasive_min	-0.0039227898	6.183995e-04	-3.699181e-04
## h1_resprate_max	-0.0098402565	1.158590e-02	-5.337789e-03
## h1_resprate_min	0.0318817968	-3.337186e-02	-1.451649e-02
## h1_spo2_max	-0.0033467442	-9.181944e-04	4.966127e-03
## h1_spo2_min	0.0003523873	-1.708784e-03	-1.187945e-02
## h1_sysbp_max	-0.1706171142	1.040053e-02	1.714919e-02
## h1_sysbp_min	0.1702108234	-8.500077e-03	-1.544360e-02
## h1_sysbp_noninvasive_max	-0.1683856785	1.015977e-02	2.087131e-02
## h1_sysbp_noninvasive_min	0.1675522056	-8.860748e-03	-1.561961e-02
## h1_temp_max	0.0054042824	-5.728342e-02	-8.729778e-03
## h1_temp_min	0.0268356855	4.149698e-02	6.578296e-03
## d1_bun_max	-0.0064420571	-1.699522e-02	3.331498e-02
## d1_bun_min	-0.0008603606	6.652934e-03	-8.923244e-02
## d1_calcium_max	0.0186252517	-1.547907e-02	1.708201e-01
## d1_calcium_min	-0.0166857501	1.180195e-02	-1.887278e-01
## d1_creatinine_max	0.0033531816	-7.708342e-03	4.189773e-02
## d1_creatinine_min	0.0085693014	1.083330e-02	-6.635528e-02
## d1_glucose_max	0.0164620255	-6.908042e-03	-1.710903e-02
## d1_glucose_min	-0.0060758307	5.944611e-03	2.699426e-02
## d1_hco3_max	-0.0091618157	-5.577344e-02	4.827675e-01
## d1_hco3_min	0.0221451742	5.865434e-02	-5.383000e-01
## d1_hemaglobin_max	0.0634690409	3.236297e-02	-1.612573e-01
## d1_hemaglobin_min	-0.0472911556	-1.358326e-02	5.852138e-02
## d1_hematocrit_max	0.0465664345	1.656400e-02	-9.088185e-02
## d1_hematocrit_min	-0.0476628475	-1.769950e-02	9.315376e-02
## d1_platelets_max	0.0254030660	4.145035e-03	-1.902261e-02
## d1_platelets_min	-0.0235075570	-4.529661e-03	-2.755502e-03
## d1_potassium_max	-0.0760973080	5.080846e-02	-3.786483e-01
## d1_potassium_min	0.0665851800	-4.229115e-02	3.699539e-01
## d1_sodium_max	0.0053188769	-2.579589e-03	1.629864e-01
## d1_sodium_min	-0.0117017624	4.902066e-03	-1.197230e-01
## d1_wbc_max	0.0270296592	2.389499e-03	-2.610890e-04
## d1_wbc_min	-0.0325239705	2.495964e-03	9.242597e-03
## apache_4a_hospital_death_prob	0.1808353653	6.752323e-01	7.402174e-02
## apache_4a_icu_death_prob	-0.1813227666	-6.628938e-01	-7.563617e-02
##	PC49	PC50	PC51
## age	0.0105891755	3.878955e-04	-0.0072356431
## bmi	-0.0041425728	4.801146e-04	0.0022656305

## height	0.0019849247	5.590447e-03	-0.0007422869
## pre_icu_los_days	0.0104622746	-1.363904e-05	-0.0021111741
## weight	-0.0015982402	1.979584e-04	-0.0028664009
## bun_apache	0.0026722749	-2.149720e-03	0.0098594566
## creatinine_apache	0.0024480427	-1.261377e-03	0.0028332662
## glucose_apache	0.0110009920	-1.831400e-02	0.0164769279
## heart_rate_apache	-0.0330839613	-1.278474e-02	-0.0142613613
## hematocrit_apache	0.0085008122	1.523384e-02	-0.0299564835
## map_apache	-0.0004858022	-1.497175e-02	-0.0035641204
## resprate_apache	-0.0077987424	8.012612e-03	0.0013200089
## sodium_apache	-0.0030369121	1.726757e-03	-0.0090017460
## temp_apache	0.0330871372	-6.702379e-03	0.0117093803
## wbc_apache	0.0105964038	-9.935547e-03	0.0198230236
## d1_diasbp_max	-0.0020040568	-1.485959e-01	-0.0350124273
## d1_diasbp_min	-0.0201199870	-1.796402e-01	-0.0455116818
## d1_diasbp_noninvasive_max	-0.0022026691	-1.492489e-01	-0.0345831055
## d1_diasbp_noninvasive_min	-0.0218718539	-1.788223e-01	-0.0441732291
## d1_heartrate_max	0.0533675626	3.033406e-02	0.0175596716
## d1_heartrate_min	0.0054873670	6.148142e-04	0.0103774594
## d1_mbp_max	0.0051708876	1.855070e-01	0.0424421911
## d1_mbp_min	0.0288338355	2.769531e-01	0.0681865992
## d1_mbp_noninvasive_max	0.0037990106	2.019231e-01	0.0470746447
## d1_mbp_noninvasive_min	0.0300200709	2.724112e-01	0.0669976888
## d1_resprate_max	-0.0141710869	-9.076018e-03	-0.0055388532
## d1_resprate_min	0.0092177542	7.264957e-03	0.0027652529
## d1_spo2_max	-0.0027043706	2.749367e-03	0.0020122145
## d1_spo2_min	0.0005465865	-1.391782e-03	-0.0098478401
## d1_sysbp_max	-0.0132949680	-5.176479e-02	-0.0128433775
## d1_sysbp_min	0.0014935606	-1.150529e-01	-0.0274046968
## d1_sysbp_noninvasive_max	-0.0125330283	-5.344465e-02	-0.0135804103
## d1_sysbp_noninvasive_min	-0.0001087912	-1.142662e-01	-0.0261325971
## d1_temp_max	0.0599124764	-8.981458e-03	0.0078692805
## d1_temp_min	-0.1422579626	1.311767e-02	-0.0083272607
## h1_diasbp_max	-0.0229806899	1.012927e-01	0.0164437896
## h1_diasbp_min	0.0372449557	2.654618e-01	0.0783886381
## h1_diasbp_noninvasive_max	-0.0256446646	9.790278e-02	0.0131292493
## h1_diasbp_noninvasive_min	0.0356439854	2.470345e-01	0.0668911259
## h1_heartrate_max	-0.0495650263	-5.527218e-02	0.0017617887
## h1_heartrate_min	0.0276553542	3.115472e-02	-0.0241813308
## h1_mbp_max	0.0106670605	-1.249878e-01	-0.0176812127
## h1_mbp_min	-0.0350342653	-4.024815e-01	-0.1123115448
## h1_mbp_noninvasive_max	0.0158158383	-1.106539e-01	-0.0104503245
## h1_mbp_noninvasive_min	-0.0338616054	-3.974971e-01	-0.1140726326
## h1_resprate_max	0.0363880047	1.592356e-02	0.0065488367
## h1_resprate_min	-0.0403557822	-1.866878e-02	-0.0070704961
## h1_spo2_max	0.0084882527	2.688272e-04	-0.0008469906
## h1_spo2_min	0.0002237920	-2.876904e-03	0.0062079024
## h1_sysbp_max	0.0339550721	3.506613e-02	0.0003315251
## h1_sysbp_min	-0.0260603487	1.711963e-01	0.0498327971
## h1_sysbp_noninvasive_max	0.0356037824	3.620349e-02	0.0029528457
## h1_sysbp_noninvasive_min	-0.0267013758	1.634182e-01	0.0484801769
## h1_temp_max	-0.6621729315	4.417419e-02	0.0166343992
## h1_temp_min	0.7111063677	-4.729136e-02	-0.0214773062
## d1_bun_max	-0.0004479362	-3.020528e-03	0.0094423364

## d1_bun_min	-0.0034448738	-8.528195e-06	-0.0064959349
## d1_calcium_max	-0.0034874071	5.563949e-02	-0.1343434238
## d1_calcium_min	0.0027379035	-6.369677e-02	0.1612940849
## d1_creatinine_max	-0.0002424660	1.788923e-03	-0.0027733285
## d1_creatinine_min	-0.0063392417	6.536943e-03	-0.0162659169
## d1_glucose_max	-0.0124673334	1.232816e-02	0.0066673334
## d1_glucose_min	0.0029274854	4.982302e-03	-0.0186816971
## d1_hco3_max	-0.0068188491	-8.903880e-02	0.2989497728
## d1_hco3_min	0.0049262019	1.014302e-01	-0.3475794864
## d1_hemaglobin_max	-0.0132095890	-2.983926e-02	0.0576737442
## d1_hemaglobin_min	-0.0023964086	2.671225e-02	-0.0564427470
## d1_hematocrit_max	-0.0089166847	-2.632567e-02	0.0637443439
## d1_hematocrit_min	0.0085321343	1.210093e-02	-0.0428204319
## d1_platelets_max	0.0008040561	-5.709976e-03	0.0185251430
## d1_platelets_min	-0.0039324196	3.984608e-03	-0.0160953115
## d1_potassium_max	0.0057076433	-2.179405e-02	0.1301358431
## d1_potassium_min	-0.0090626247	2.224572e-02	-0.1328178667
## d1_sodium_max	-0.0050599266	1.333448e-01	-0.5582921542
## d1_sodium_min	0.0136448737	-1.294271e-01	0.5589990220
## d1_wbc_max	-0.0074754186	-1.352212e-02	0.0399526146
## d1_wbc_min	-0.0020522220	2.129079e-02	-0.0601713758
## apache_4a_hospital_death_prob	-0.0577062767	-9.955507e-03	0.0158725009
## apache_4a_icu_death_prob	0.0449280579	6.088232e-03	-0.0087340471
##	PC52	PC53	PC54
## age	-8.341910e-03	-5.365599e-03	-0.0044608183
## bmi	1.775027e-04	-3.914885e-03	-0.0078922460
## height	-2.761211e-03	6.500986e-03	0.0066388006
## pre_icu_los_days	-1.811527e-03	5.067707e-03	0.0003744762
## weight	2.202514e-03	-1.034990e-03	0.0035299267
## bun_apache	-1.061912e-03	4.854531e-03	0.0268536965
## creatinine_apache	-1.609279e-04	2.782205e-04	0.0092284784
## glucose_apache	-3.442144e-02	-5.288395e-02	-0.0341425417
## heart_rate_apache	-5.847425e-02	-7.093290e-02	0.0426573121
## hematocrit_apache	1.324571e-02	3.825333e-02	0.0856200051
## map_apache	8.464509e-03	-1.329626e-05	-0.0045464578
## resprate_apache	3.212832e-03	-6.737524e-03	0.0037625782
## sodium_apache	1.586099e-03	-1.055479e-02	-0.0951634805
## temp_apache	-1.237687e-03	-4.923378e-03	0.0017952261
## wbc_apache	4.661127e-03	-5.341901e-03	0.0302024911
## d1_diasbp_max	1.738634e-01	-8.544304e-02	0.0414701100
## d1_diasbp_min	-3.508001e-02	2.792553e-02	-0.0050057753
## d1_diasbp_noninvasive_max	1.763075e-01	-8.553632e-02	0.0406826584
## d1_diasbp_noninvasive_min	-3.497683e-02	2.861133e-02	-0.0074296209
## d1_heartrate_max	1.595148e-01	2.248586e-01	-0.1149635384
## d1_heartrate_min	-6.589635e-02	-9.523590e-02	0.0463478990
## d1_mbp_max	-2.390145e-01	1.031581e-01	-0.0501749451
## d1_mbp_min	5.000039e-02	-3.949133e-02	0.0079085869
## d1_mbp_noninvasive_max	-2.353173e-01	1.147493e-01	-0.0546584854
## d1_mbp_noninvasive_min	4.782379e-02	-3.841410e-02	0.0052536005
## d1_resprate_max	-1.999799e-02	-2.139007e-02	0.0101403994
## d1_resprate_min	1.398355e-02	1.347932e-02	-0.0077329806
## d1_spo2_max	-7.045678e-03	-8.401684e-03	0.0024506575
## d1_spo2_min	1.144994e-02	2.320356e-02	-0.0034763603
## d1_sysbp_max	6.172395e-02	-4.854141e-02	0.0230849159

## d1_sysbp_min	-5.149340e-03	2.586430e-02	-0.0011766166
## d1_sysbp_noninvasive_max	6.586704e-02	-4.775672e-02	0.0243863203
## d1_sysbp_noninvasive_min	-5.530225e-03	2.817092e-02	-0.0034452088
## d1_temp_max	-5.084399e-03	-9.567809e-03	0.0055126781
## d1_temp_min	6.068854e-03	2.189724e-02	0.0026784550
## h1_diasbp_max	-2.688692e-01	1.397147e-01	-0.0583089202
## h1_diasbp_min	1.425302e-01	-1.007175e-01	0.0310684813
## h1_diasbp_noninvasive_max	-2.824213e-01	1.440910e-01	-0.0586827352
## h1_diasbp_noninvasive_min	1.396211e-01	-9.386845e-02	0.0290068671
## h1_heartrate_max	-3.425149e-01	-5.343207e-01	0.2523540861
## h1_heartrate_min	3.030607e-01	4.698251e-01	-0.2266452394
## h1_mbp_max	3.784239e-01	-1.851096e-01	0.0736996259
## h1_mbp_min	-1.773442e-01	1.298070e-01	-0.0330533832
## h1_mbp_noninvasive_max	3.780760e-01	-1.849750e-01	0.0772546080
## h1_mbp_noninvasive_min	-1.821086e-01	1.268963e-01	-0.0330035044
## h1_resprate_max	5.097443e-02	5.283346e-02	-0.0316224691
## h1_resprate_min	-4.820931e-02	-4.853063e-02	0.0260849454
## h1_spo2_max	2.233656e-02	2.087517e-02	-0.0089712187
## h1_spo2_min	-2.925352e-02	-3.078066e-02	0.0133499140
## h1_sysbp_max	-6.100539e-02	1.009169e-01	-0.0450517959
## h1_sysbp_min	-1.212010e-02	-7.906964e-02	0.0195798669
## h1_sysbp_noninvasive_max	-6.319309e-02	1.008494e-01	-0.0397885144
## h1_sysbp_noninvasive_min	-1.370939e-02	-7.899881e-02	0.0253589434
## h1_temp_max	5.972599e-02	2.390689e-02	-0.0152708932
## h1_temp_min	-5.736028e-02	-3.184043e-02	0.0091258214
## d1_bun_max	3.722381e-03	1.170445e-02	0.0299078383
## d1_bun_min	-2.872933e-03	-1.686345e-02	-0.0394579659
## d1_calcium_max	1.559849e-02	2.233611e-01	0.5133244304
## d1_calcium_min	-1.602213e-02	-2.417115e-01	-0.5516487085
## d1_creatinine_max	-8.467398e-04	8.502489e-03	0.0204041833
## d1_creatinine_min	-1.220512e-03	-1.506087e-02	-0.0461141552
## d1_glucose_max	3.163762e-02	5.772310e-02	0.0475356542
## d1_glucose_min	2.762360e-03	5.575557e-03	0.0046386780
## d1_hco3_max	-2.977426e-03	-7.376192e-02	-0.1662745236
## d1_hco3_min	1.162549e-02	8.356656e-02	0.1897601391
## d1_hemaglobin_max	-1.405649e-02	-5.423841e-02	-0.1494152177
## d1_hemaglobin_min	-2.960089e-03	-1.483476e-03	0.0188830287
## d1_hematocrit_max	-4.831914e-03	-8.572910e-03	-0.0352455176
## d1_hematocrit_min	5.264380e-03	2.625925e-02	0.0823116716
## d1_platelets_max	1.413777e-03	7.708426e-03	0.0194120603
## d1_platelets_min	5.665006e-04	-9.595208e-03	-0.0272715354
## d1_potassium_max	-9.670604e-03	8.323296e-03	-0.0222469389
## d1_potassium_min	9.510319e-03	-1.037559e-02	0.0186370855
## d1_sodium_max	-1.205520e-03	-1.413318e-01	-0.2064745374
## d1_sodium_min	7.613736e-05	1.512137e-01	0.2967430229
## d1_wbc_max	-6.706326e-03	8.986387e-03	0.0443978899
## d1_wbc_min	1.261580e-03	-5.219970e-04	-0.0686077314
## apache_4a_hospital_death_prob	-1.092118e-04	5.573538e-03	-0.0016487744
## apache_4a_icu_death_prob	-1.037806e-03	-8.581697e-03	-0.0003780238
##	PC55	PC56	PC57
## age	-2.135131e-02	0.0092988327	9.940225e-03
## bmi	-2.226428e-02	0.0029715612	7.573887e-03
## height	1.378407e-02	-0.0006364811	-4.510936e-04
## pre_icu_los_days	-4.031244e-03	0.0057476350	1.813537e-03

## weight	-6.633516e-03	0.0043390611	-7.679891e-03
## bun_apache	-2.339692e-02	0.0525886644	1.035673e-01
## creatinine_apache	-2.431072e-02	0.0461489085	9.353357e-02
## glucose_apache	3.450664e-02	0.6282600414	-3.166616e-01
## heart_rate_apache	6.330090e-03	-0.0241977080	-4.019727e-03
## hematocrit_apache	4.211998e-01	-0.0395466865	-8.606450e-02
## map_apache	-2.254010e-03	-0.0029762882	1.499693e-03
## resprate_apache	-2.771746e-03	-0.0025681101	2.784924e-03
## sodium_apache	1.412360e-01	-0.3454116543	-5.401951e-01
## temp_apache	-1.954924e-02	0.0174510634	-3.565702e-03
## wbc_apache	2.613184e-01	0.0693240180	1.597743e-01
## d1_diasbp_max	-1.397423e-03	-0.0043884958	-2.993252e-03
## d1_diasbp_min	2.011763e-04	-0.0041059270	-8.082274e-04
## d1_diasbp_noninvasive_max	-1.928591e-03	-0.0045861450	-4.009946e-03
## d1_diasbp_noninvasive_min	1.837941e-03	-0.0019228950	-9.159857e-04
## d1_heartrate_max	-6.910964e-04	0.0289612589	2.775950e-03
## d1_heartrate_min	-5.064747e-03	0.0003355272	1.259571e-03
## d1_mbp_max	7.340609e-03	0.0032148500	4.879595e-03
## d1_mbp_min	-2.058711e-03	0.0014676862	-2.718626e-03
## d1_mbp_noninvasive_max	2.092082e-03	0.0030540020	5.405307e-03
## d1_mbp_noninvasive_min	5.790784e-05	0.0036876729	-2.178704e-03
## d1_resprate_max	-8.375557e-04	0.0041941355	-2.034285e-03
## d1_resprate_min	-5.479911e-03	0.0030648785	4.645396e-03
## d1_spo2_max	-4.521172e-03	0.0001120782	-2.079274e-03
## d1_spo2_min	3.490174e-03	-0.0029147438	-2.841731e-03
## d1_sysbp_max	7.069197e-04	0.0016027253	-4.716464e-03
## d1_sysbp_min	1.407612e-03	-0.0025689950	1.372263e-03
## d1_sysbp_noninvasive_max	-1.030155e-03	-0.0014166282	-6.415307e-03
## d1_sysbp_noninvasive_min	4.031745e-03	0.0002240207	1.414913e-03
## d1_temp_max	9.738360e-03	-0.0059091650	-7.079635e-03
## d1_temp_min	3.521503e-02	-0.0036806077	2.289483e-03
## h1_diasbp_max	4.424877e-03	0.0030667174	5.775331e-03
## h1_diasbp_min	-1.408777e-03	0.0024094263	-3.590541e-03
## h1_diasbp_noninvasive_max	3.628923e-03	-0.0052987268	7.700664e-03
## h1_diasbp_noninvasive_min	8.553036e-03	0.0022759988	-1.816750e-03
## h1_heartrate_max	-1.261173e-02	-0.0476843679	-3.586193e-03
## h1_heartrate_min	7.514346e-03	0.0467652459	7.576975e-03
## h1_mbp_max	-9.588226e-03	0.0003308008	-6.406914e-03
## h1_mbp_min	1.386965e-03	-0.0038986427	8.367312e-03
## h1_mbp_noninvasive_max	-1.040918e-02	0.0055463447	-1.154090e-02
## h1_mbp_noninvasive_min	-4.211778e-04	-0.0040583517	8.752627e-03
## h1_resprate_max	3.349268e-03	0.0047464306	8.080894e-05
## h1_resprate_min	-2.400771e-03	-0.0015059053	2.174408e-03
## h1_spo2_max	5.508451e-03	0.0006274713	-1.353376e-03
## h1_spo2_min	4.381438e-03	-0.0017950020	-1.558098e-03
## h1_sysbp_max	7.706375e-03	0.0029237114	5.319905e-03
## h1_sysbp_min	-3.668783e-03	-0.0009983304	-4.149030e-03
## h1_sysbp_noninvasive_max	1.172892e-02	0.0038778142	2.715955e-03
## h1_sysbp_noninvasive_min	-2.076407e-03	-0.0071115596	-7.467582e-03
## h1_temp_max	-1.220103e-03	0.0137344320	3.022622e-03
## h1_temp_min	-1.077275e-02	-0.0266984315	1.885381e-03
## d1_bun_max	1.857547e-03	0.0077183936	6.856223e-02
## d1_bun_min	3.799425e-02	-0.0602464114	-1.637543e-01
## d1_calcium_max	-9.973628e-02	-0.0050988841	-1.552088e-01

## d1_calcium_min	1.076039e-01	0.0057615584	1.690691e-01
## d1_creatinine_max	-1.196128e-02	0.0239764271	8.025066e-02
## d1_creatinine_min	2.494665e-02	-0.0606747147	-1.769424e-01
## d1_glucose_max	-2.568816e-02	-0.6136247223	2.934468e-01
## d1_glucose_min	-3.307873e-05	-0.0636447363	4.774677e-02
## d1_hco3_max	-4.506533e-02	-0.0284949044	-5.829674e-02
## d1_hco3_min	1.280880e-02	0.0310874783	7.191459e-02
## d1_hemaglobin_max	-3.850062e-01	-0.0349134105	1.042542e-02
## d1_hemaglobin_min	-2.731499e-01	0.0550486908	2.171629e-01
## d1_hematocrit_max	1.181670e-01	-0.0289505941	-1.581624e-01
## d1_hematocrit_min	1.350203e-01	0.0460717095	2.821158e-02
## d1_platelets_max	1.250127e-01	0.0031082993	4.531557e-02
## d1_platelets_min	-1.428777e-01	-0.0077179309	-3.887524e-02
## d1_potassium_max	-3.206542e-03	0.0034759850	-3.621798e-02
## d1_potassium_min	-2.700144e-02	0.0024600262	4.259261e-02
## d1_sodium_max	-4.889065e-02	0.1749753393	2.901644e-01
## d1_sodium_min	-1.408044e-01	0.1811201455	2.795937e-01
## d1_wbc_max	2.912388e-01	0.0084412855	1.241139e-01
## d1_wbc_min	-5.499340e-01	-0.0767155474	-2.789989e-01
## apache_4a_hospital_death_prob	2.755968e-03	-0.0001497140	5.072558e-03
## apache_4a_icu_death_prob	-8.303250e-03	-0.0033147393	-6.826502e-03
##	PC58	PC59	PC60
## age	1.741496e-02	-5.409976e-03	-0.0072449504
## bmi	2.256334e-02	-1.986699e-03	-0.0197800954
## height	-8.745359e-03	-5.501628e-03	-0.0005752830
## pre_icu_los_days	-2.950813e-03	-4.703398e-03	0.0044500307
## weight	1.929928e-04	-4.963848e-05	0.0142094657
## bun_apache	1.484351e-02	-2.380180e-01	0.0803181491
## creatinine_apache	1.685564e-02	-2.652140e-01	0.0208487261
## glucose_apache	8.658026e-02	-3.679852e-02	-0.0269677432
## heart_rate_apache	-1.998192e-03	1.731393e-03	-0.0108892805
## hematocrit_apache	-2.837672e-01	-5.458598e-02	-0.6382849117
## map_apache	-3.121199e-03	1.417163e-03	-0.0014834839
## resprate_apache	2.781211e-03	1.636299e-03	-0.0033434228
## sodium_apache	3.901031e-01	-2.230540e-01	0.0351188728
## temp_apache	4.419436e-03	8.335544e-04	0.0141180546
## wbc_apache	1.875532e-01	5.903378e-02	-0.0487410866
## d1_diasbp_max	-9.469574e-05	2.676522e-03	0.0008599588
## d1_diasbp_min	1.498597e-04	4.043301e-03	0.0019492693
## d1_diasbp_noninvasive_max	1.256217e-04	2.191004e-03	-0.0020321908
## d1_diasbp_noninvasive_min	-5.633837e-04	2.779350e-03	0.0037478192
## d1_heartrate_max	5.883393e-03	4.699389e-03	0.0082952453
## d1_heartrate_min	5.359197e-03	1.338870e-03	-0.0020775323
## d1_mbp_max	-3.494257e-03	8.616738e-04	0.0091465460
## d1_mbp_min	-3.503448e-03	-3.137258e-03	0.0008781206
## d1_mbp_noninvasive_max	5.700898e-03	9.821778e-04	-0.0124823115
## d1_mbp_noninvasive_min	-5.070426e-03	-3.809126e-03	0.0041180164
## d1_resprate_max	3.073928e-03	1.789294e-04	0.0009236456
## d1_resprate_min	2.775369e-04	-1.474440e-04	-0.0014055418
## d1_spo2_max	1.017559e-03	-4.536909e-03	-0.0046961880
## d1_spo2_min	-9.867060e-03	4.510645e-03	0.0011236854
## d1_sysbp_max	1.103849e-03	-4.662483e-04	0.0004704665
## d1_sysbp_min	1.947583e-03	-2.878454e-03	-0.0018616246
## d1_sysbp_noninvasive_max	4.743507e-04	-4.922820e-04	-0.0027402186

## d1_sysbp_noninvasive_min	2.044896e-03	-1.559269e-03	0.0020631176
## d1_temp_max	1.930076e-03	-2.202666e-03	-0.0020671132
## d1_temp_min	-6.170477e-03	-1.223428e-03	-0.0063732871
## h1_diasbp_max	-3.185257e-03	3.618638e-04	0.0018534508
## h1_diasbp_min	-1.607983e-03	-6.603505e-03	0.0044572692
## h1_diasbp_noninvasive_max	5.382850e-03	1.042150e-03	0.0012448567
## h1_diasbp_noninvasive_min	6.850177e-04	-9.787507e-04	-0.0047830595
## h1_heartrate_max	-9.610869e-03	-9.122369e-03	-0.0039649963
## h1_heartrate_min	9.764868e-03	3.303681e-03	-0.0011216784
## h1_mbp_max	3.267499e-03	-1.663178e-03	-0.0071089024
## h1_mbp_min	-3.741761e-03	-1.365135e-03	-0.0015014953
## h1_mbp_noninvasive_max	6.662152e-03	-1.683186e-03	0.0087121425
## h1_mbp_noninvasive_min	-1.199074e-03	2.373078e-03	-0.0008282788
## h1_resprate_max	2.987689e-05	3.969700e-03	-0.0013492908
## h1_resprate_min	1.606485e-03	-2.260715e-03	-0.0003175332
## h1_spo2_max	-3.123841e-03	1.058365e-04	-0.0003573520
## h1_spo2_min	-2.225706e-03	-7.591213e-04	0.0027475918
## h1_sysbp_max	-5.795956e-03	-1.882743e-03	-0.0041803047
## h1_sysbp_min	-1.098673e-03	-6.733483e-04	0.0031499681
## h1_sysbp_noninvasive_max	-1.227466e-03	-4.974357e-03	0.0059146670
## h1_sysbp_noninvasive_min	-1.150337e-03	8.261730e-03	0.0025500339
## h1_temp_max	-1.951090e-03	-1.404834e-03	-0.0030444716
## h1_temp_min	-1.756521e-03	7.237620e-03	-0.0023642113
## d1_bun_max	2.436397e-02	-2.730570e-01	-0.0769791820
## d1_bun_min	-3.363210e-02	5.031027e-01	-0.0047580531
## d1_calcium_max	3.535175e-02	6.368274e-02	-0.0097844359
## d1_calcium_min	-4.439055e-02	-7.091703e-02	0.0130502754
## d1_creatinine_max	2.236890e-02	-2.798437e-01	-0.0309567230
## d1_creatinine_min	-3.841775e-02	5.541736e-01	0.0072174051
## d1_glucose_max	-7.871651e-02	2.899545e-02	0.0232295984
## d1_glucose_min	-1.838601e-02	1.123723e-02	0.0037901832
## d1_hco3_max	1.771127e-02	8.881271e-02	-0.0059664366
## d1_hco3_min	1.414547e-02	-8.817648e-02	-0.0093203525
## d1_hemaglobin_max	1.573014e-01	1.180581e-02	-0.3662031954
## d1_hemaglobin_min	5.641496e-01	1.377482e-01	0.0781313622
## d1_hematocrit_max	-3.730265e-01	-8.356269e-02	0.4652911375
## d1_hematocrit_min	-4.403647e-02	1.626197e-04	0.4549713581
## d1_platelets_max	5.990115e-02	2.151809e-02	0.0133091080
## d1_platelets_min	-3.640346e-02	-8.472753e-03	-0.0278672191
## d1_potassium_max	2.734549e-02	4.139756e-02	0.0024752077
## d1_potassium_min	1.025652e-02	-3.374721e-02	-0.0167826091
## d1_sodium_max	-1.932239e-01	1.462843e-01	-0.0133317584
## d1_sodium_min	-1.690478e-01	9.241339e-02	-0.0404380833
## d1_wbc_max	1.665873e-01	5.177704e-02	0.0681006057
## d1_wbc_min	-3.535427e-01	-1.178448e-01	-0.0170534172
## apache_4a_hospital_death_prob	4.817177e-03	-6.981920e-03	-0.0045423892
## apache_4a_icu_death_prob	-8.854818e-04	4.947194e-03	-0.0061133722
##	PC61	PC62	PC63
## age	0.0019651620	7.745687e-04	0.0003032537
## bmi	-0.0030666276	-7.891261e-03	0.0016610455
## height	0.0023040010	-3.624732e-03	0.0010747377
## pre_icu_los_days	0.0015627599	2.599202e-04	0.0008279381
## weight	0.0017557971	6.360949e-03	-0.0015441015
## bun_apache	0.0554513435	7.766478e-04	-0.0377725954

## creatinine_apache	0.0250456252	1.552057e-03	-0.0150019437
## glucose_apache	-0.0252095495	1.029671e-04	0.0054926090
## heart_rate_apache	-0.0065794233	5.222239e-04	-0.0015982533
## hematocrit_apache	-0.0783442879	1.196585e-03	-0.0907132845
## map_apache	0.0023304708	-2.583250e-06	0.0016743453
## resprate_apache	-0.0016029853	1.724086e-03	0.0001416459
## sodium_apache	0.0307348161	3.167257e-03	0.0019969026
## temp_apache	0.0012023706	5.882240e-04	-0.0009396791
## wbc_apache	0.6768502181	-1.699361e-02	-0.2028497139
## d1_diasbp_max	-0.0026139521	2.650877e-02	-0.0034268900
## d1_diasbp_min	-0.0010774391	9.652842e-03	0.0029463505
## d1_diasbp_noninvasive_max	-0.0033040337	-2.945336e-02	0.0052920882
## d1_diasbp_noninvasive_min	0.0001556498	-8.106072e-03	-0.0045378138
## d1_heartrate_max	0.0040503041	-3.081522e-03	0.0021819952
## d1_heartrate_min	-0.0001478414	-3.110264e-04	-0.0027424128
## d1_mbp_max	0.0071939848	8.043087e-02	-0.0485158171
## d1_mbp_min	-0.0029232292	1.842486e-03	0.0105474854
## d1_mbp_noninvasive_max	-0.0055682950	-8.105738e-02	0.0454276208
## d1_mbp_noninvasive_min	0.0037121145	9.492685e-04	-0.0100189312
## d1_resprate_max	0.0017810010	7.443335e-05	0.0005028496
## d1_resprate_min	-0.0022207898	1.422429e-03	-0.0007993671
## d1_spo2_max	-0.0005675306	-1.038700e-03	-0.0012201348
## d1_spo2_min	-0.0015726915	1.959317e-04	0.0004343635
## d1_sysbp_max	0.0012853103	2.429164e-02	-0.0069867553
## d1_sysbp_min	-0.0019310015	1.709928e-03	0.0038217992
## d1_sysbp_noninvasive_max	-0.0012057777	-1.878176e-02	0.0074580443
## d1_sysbp_noninvasive_min	-0.0002153105	-5.975136e-03	-0.0046591789
## d1_temp_max	0.0008328217	-1.917868e-03	-0.0023434736
## d1_temp_min	-0.0045830101	8.325902e-05	-0.0017903049
## h1_diasbp_max	0.0114732288	4.071590e-01	-0.0273828152
## h1_diasbp_min	0.0104014363	3.881693e-01	0.0457650422
## h1_diasbp_noninvasive_max	-0.0022062847	-3.955126e-01	0.0315112513
## h1_diasbp_noninvasive_min	-0.0110706584	-4.015849e-01	-0.0430004547
## h1_heartrate_max	0.0024602419	5.215070e-04	-0.0033055331
## h1_heartrate_min	0.0006345745	3.421858e-03	0.0029728864
## h1_mbp_max	-0.0025810506	3.051412e-01	-0.0328151163
## h1_mbp_min	0.0066388766	1.734221e-01	-0.0029386805
## h1_mbp_noninvasive_max	-0.0072764388	-3.094534e-01	0.0335035248
## h1_mbp_noninvasive_min	-0.0056180745	-1.643469e-01	-0.0040007401
## h1_resprate_max	-0.0018790364	-1.331404e-03	-0.0010709270
## h1_resprate_min	0.0002519750	-1.401945e-03	0.0007041026
## h1_spo2_max	0.0013244596	1.847980e-04	0.0005421099
## h1_spo2_min	0.0025326722	-1.991340e-04	-0.0008660639
## h1_sysbp_max	0.0004340494	1.388162e-01	-0.0143286073
## h1_sysbp_min	0.0028790657	1.778740e-01	0.0056349011
## h1_sysbp_noninvasive_max	0.0013842445	-1.487191e-01	0.0128639520
## h1_sysbp_noninvasive_min	-0.0029455686	-1.723229e-01	-0.0021920881
## h1_temp_max	0.0072812487	-1.595674e-03	-0.0019331591
## h1_temp_min	-0.0053448712	1.551823e-03	0.0032310429
## d1_bun_max	-0.0503543100	-5.926068e-03	0.0419837240
## d1_bun_min	-0.0107070543	3.817684e-03	-0.0037377781
## d1_calcium_max	0.0342395391	2.257426e-03	0.0147408567
## d1_calcium_min	-0.0371362489	-1.825129e-03	-0.0160337321
## d1_creatinine_max	-0.0325802184	-8.703816e-04	0.0046923888

## d1_creatinine_min	0.0081181993	8.773523e-04	0.0075899007
## d1_glucose_max	0.0220811048	9.486350e-04	-0.0033370157
## d1_glucose_min	0.0029692299	-5.020606e-04	0.0004750019
## d1_hco3_max	0.0108741453	-1.888609e-03	-0.0011910332
## d1_hco3_min	-0.0151466985	1.472797e-03	-0.0015825711
## d1_hemaglobin_max	0.0816314387	3.349560e-04	0.2980752791
## d1_hemaglobin_min	-0.1449179310	3.791614e-03	-0.3581059106
## d1_hematocrit_max	0.0539761334	-3.576144e-03	-0.2860244341
## d1_hematocrit_min	0.0727642200	-9.773745e-04	0.4350539002
## d1_platelets_max	-0.2866846570	-9.418968e-03	-0.3781166899
## d1_platelets_min	0.2911716474	8.488081e-03	0.3860689642
## d1_potassium_max	0.0067649069	-1.822254e-03	0.0032711753
## d1_potassium_min	-0.0059287764	6.062848e-04	-0.0023036540
## d1_sodium_max	-0.0109706166	-1.610038e-03	0.0059910275
## d1_sodium_min	-0.0203347752	-1.791190e-03	-0.0074676414
## d1_wbc_max	-0.5491011684	2.518285e-02	0.3620699488
## d1_wbc_min	-0.1320224756	-6.707474e-03	-0.1482114886
## apache_4a_hospital_death_prob	0.0014768859	-2.264916e-03	0.0004138987
## apache_4a_icu_death_prob	-0.0012269217	1.379260e-03	0.0003115515
##	PC64	PC65	PC66
## age	4.717322e-04	1.029932e-03	8.267329e-05
## bmi	4.728445e-02	-2.426698e-02	8.385151e-02
## height	2.201306e-02	-1.009308e-02	4.261621e-02
## pre_icu_los_days	-4.500850e-04	-1.678006e-03	-8.174791e-04
## weight	-5.062531e-02	2.453787e-02	-9.075773e-02
## bun_apache	1.359077e-02	4.953048e-02	3.822719e-02
## creatinine_apache	2.743104e-03	8.683089e-03	1.150433e-02
## glucose_apache	8.235572e-04	-4.530046e-03	2.252208e-04
## heart_rate_apache	-1.281764e-03	2.188303e-03	-6.626692e-04
## hematocrit_apache	-4.179700e-03	-7.663525e-02	1.431199e-02
## map_apache	-1.299225e-03	-1.589317e-03	6.571037e-04
## resprate_apache	1.544614e-03	5.021630e-04	-7.837210e-04
## sodium_apache	2.980449e-03	1.584324e-02	8.518333e-04
## temp_apache	4.218031e-03	-1.911780e-03	-1.677681e-03
## wbc_apache	-3.263314e-02	1.016480e-01	-2.414540e-03
## d1_diasbp_max	4.295103e-02	2.018402e-03	3.461637e-02
## d1_diasbp_min	-2.934817e-02	-2.479376e-04	-2.423869e-03
## d1_diasbp_noninvasive_max	-4.637257e-02	-1.009964e-03	-3.517978e-02
## d1_diasbp_noninvasive_min	2.013113e-02	-6.935429e-05	-1.419314e-03
## d1_heartrate_max	-5.996378e-04	-4.644693e-03	4.099731e-03
## d1_heartrate_min	-2.786943e-05	-4.492875e-05	-8.451720e-04
## d1_mbp_max	4.758170e-01	1.781150e-02	4.803914e-01
## d1_mbp_min	-6.042527e-02	-4.064328e-04	-4.786690e-02
## d1_mbp_noninvasive_max	-4.709716e-01	-1.903603e-02	-4.769143e-01
## d1_mbp_noninvasive_min	7.395875e-02	5.909747e-03	4.912279e-02
## d1_resprate_max	-2.008968e-03	-3.643161e-04	1.524950e-03
## d1_resprate_min	1.067783e-03	-2.299055e-03	1.662312e-03
## d1_spo2_max	-5.850625e-04	-4.824788e-04	-2.048313e-04
## d1_spo2_min	1.618836e-03	2.985482e-03	1.078995e-03
## d1_sysbp_max	6.027090e-02	2.118226e-03	4.311566e-02
## d1_sysbp_min	-3.484992e-02	-7.626198e-04	-6.915568e-03
## d1_sysbp_noninvasive_max	-5.843649e-02	-1.993410e-03	-4.861119e-02
## d1_sysbp_noninvasive_min	2.860870e-02	-2.265475e-03	9.653388e-03
## d1_temp_max	-2.768469e-03	3.860787e-04	1.172799e-03

## d1_temp_min	-2.286365e-03	5.863910e-03	1.492418e-04
## h1_diasbp_max	1.796535e-01	3.128304e-02	-3.299212e-01
## h1_diasbp_min	-3.982434e-01	-3.215859e-02	3.351759e-01
## h1_diasbp_noninvasive_max	-1.743198e-01	-2.731909e-02	3.222445e-01
## h1_diasbp_noninvasive_min	4.111998e-01	2.998263e-02	-3.347149e-01
## h1_heartrate_max	-4.079304e-03	2.377322e-03	-5.298009e-03
## h1_heartrate_min	3.343306e-03	-9.137936e-05	3.700011e-03
## h1_mbp_max	1.898740e-01	2.434928e-02	-1.520197e-01
## h1_mbp_min	-7.257445e-02	-6.090243e-03	2.497362e-02
## h1_mbp_noninvasive_max	-1.977320e-01	-2.930408e-02	1.566301e-01
## h1_mbp_noninvasive_min	5.734892e-02	2.817483e-03	-2.151451e-02
## h1_resprate_max	2.088745e-03	2.191524e-04	-5.755494e-04
## h1_resprate_min	6.688008e-04	-1.181938e-03	-7.132505e-04
## h1_spo2_max	1.679461e-03	-1.907747e-03	3.110149e-04
## h1_spo2_min	-1.857378e-03	5.075576e-05	-1.021368e-03
## h1_sysbp_max	9.299205e-02	1.038795e-02	-7.038956e-02
## h1_sysbp_min	-8.364744e-02	-8.808390e-03	7.124286e-02
## h1_sysbp_noninvasive_max	-9.145452e-02	-8.491871e-03	7.694703e-02
## h1_sysbp_noninvasive_min	8.491121e-02	1.347709e-02	-7.719099e-02
## h1_temp_max	9.392488e-04	2.614753e-03	1.742051e-03
## h1_temp_min	2.255358e-04	-8.310807e-03	-2.583396e-03
## d1_bun_max	-2.371655e-03	-4.344146e-02	-4.107234e-02
## d1_bun_min	-1.061176e-02	-7.314702e-03	2.200113e-03
## d1_calcium_max	4.089465e-03	-8.091284e-03	1.490778e-04
## d1_calcium_min	-4.670667e-03	6.501471e-03	-3.821523e-04
## d1_creatinine_max	-8.163997e-03	-2.965280e-02	-1.259077e-02
## d1_creatinine_min	5.323471e-03	1.959009e-02	4.415800e-04
## d1_glucose_max	-1.188543e-03	3.466824e-03	-2.434465e-04
## d1_glucose_min	9.767887e-04	5.955059e-04	-3.200456e-04
## d1_hco3_max	2.584585e-03	3.044633e-03	-7.330723e-04
## d1_hco3_min	-1.698594e-03	-2.923765e-03	1.872900e-03
## d1_hemaglobin_max	2.045111e-02	2.425518e-01	9.812694e-03
## d1_hemaglobin_min	-1.691299e-02	-2.805833e-01	-5.264581e-03
## d1_hematocrit_max	-1.318703e-02	-3.450680e-01	-1.884986e-02
## d1_hematocrit_min	1.381022e-02	4.730399e-01	9.545399e-04
## d1_platelets_max	-7.430360e-02	4.545939e-01	2.370363e-02
## d1_platelets_min	7.677571e-02	-4.675159e-01	-2.455232e-02
## d1_potassium_max	-1.394330e-03	4.821257e-03	1.719705e-03
## d1_potassium_min	1.687644e-03	-4.035895e-03	-6.796932e-04
## d1_sodium_max	-3.293126e-03	-1.058824e-02	-1.335639e-04
## d1_sodium_min	9.842437e-04	-5.193944e-03	-1.468176e-03
## d1_wbc_max	5.616561e-02	-2.251659e-01	-5.583439e-03
## d1_wbc_min	-2.156560e-02	1.154333e-01	7.092998e-03
## apache_4a_hospital_death_prob	-2.208982e-03	-5.624306e-03	-6.754702e-04
## apache_4a_icu_death_prob	2.921401e-03	9.855583e-04	1.628194e-04
##	PC67	PC68	PC69
## age	1.264677e-03	4.362765e-04	1.828185e-03
## bmi	6.210966e-01	-1.268938e-01	-1.133288e-02
## height	3.026761e-01	-6.284212e-02	-4.805403e-03
## pre_icu_los_days	3.308291e-05	1.073181e-03	-1.403547e-04
## weight	-6.767212e-01	1.397585e-01	1.269832e-02
## bun_apache	1.304642e-01	6.455097e-01	2.848430e-02
## creatinine_apache	3.755089e-02	1.964868e-01	-5.652186e-03
## glucose_apache	2.804477e-04	-8.568552e-03	-3.412185e-03

## heart_rate_apache	-1.268669e-03	-9.772388e-04	-5.808367e-04
## hematocrit_apache	6.658339e-03	9.401785e-02	9.933060e-03
## map_apache	-9.086926e-04	-1.296919e-03	2.566612e-03
## resprate_apache	1.170963e-03	-1.239845e-04	1.175679e-04
## sodium_apache	6.679539e-03	2.701838e-02	9.553533e-04
## temp_apache	2.091916e-03	-1.137872e-03	2.071516e-04
## wbc_apache	-8.924096e-03	-6.999532e-02	-2.222270e-03
## d1_diasbp_max	-5.852208e-03	-6.318584e-04	1.046811e-02
## d1_diasbp_min	3.101856e-03	7.875770e-04	9.100406e-03
## d1_diasbp_noninvasive_max	1.107919e-02	4.162727e-03	-1.230140e-02
## d1_diasbp_noninvasive_min	-1.269121e-03	-5.973181e-04	-7.705215e-03
## d1_heartrate_max	3.328621e-04	2.164281e-04	-1.757460e-04
## d1_heartrate_min	2.397611e-03	-3.351381e-04	-5.950394e-04
## d1_mbp_max	-1.034362e-01	-2.378083e-02	8.648948e-02
## d1_mbp_min	1.102022e-02	4.046562e-03	2.290848e-03
## d1_mbp_noninvasive_max	9.898779e-02	2.368195e-02	-8.725013e-02
## d1_mbp_noninvasive_min	-1.384239e-02	-3.894571e-03	-7.584657e-03
## d1_resprate_max	1.631992e-03	-4.397858e-05	1.855718e-03
## d1_resprate_min	-1.028851e-03	7.301481e-04	4.743315e-04
## d1_spo2_max	-1.763380e-03	2.177728e-03	3.569843e-04
## d1_spo2_min	-8.755508e-04	-2.191182e-03	-7.340057e-05
## d1_sysbp_max	-1.001533e-02	-2.561846e-03	3.906249e-03
## d1_sysbp_min	4.633358e-03	1.293585e-03	2.231635e-03
## d1_sysbp_noninvasive_max	1.381759e-02	2.911824e-03	-8.399608e-03
## d1_sysbp_noninvasive_min	-2.957166e-03	-1.759246e-03	3.163110e-04
## d1_temp_max	3.970976e-05	-1.009190e-03	1.653468e-03
## d1_temp_min	-1.854420e-04	2.152720e-03	1.048227e-03
## h1_diasbp_max	4.130167e-02	-1.195841e-02	4.162650e-01
## h1_diasbp_min	-1.375663e-02	-1.022972e-02	1.171564e-01
## h1_diasbp_noninvasive_max	-4.295996e-02	1.081148e-02	-4.119928e-01
## h1_diasbp_noninvasive_min	1.107638e-02	9.913777e-03	-1.284374e-01
## h1_heartrate_max	2.027943e-04	-5.648442e-04	-7.583580e-04
## h1_heartrate_min	-2.411729e-03	2.736566e-03	2.820704e-03
## h1_mbp_max	6.595227e-03	1.945361e-02	-4.193410e-01
## h1_mbp_min	2.897607e-03	-1.061679e-03	-9.647259e-02
## h1_mbp_noninvasive_max	-4.928872e-03	-1.937400e-02	4.188800e-01
## h1_mbp_noninvasive_min	-2.913648e-03	1.307968e-03	1.060450e-01
## h1_resprate_max	-2.619900e-03	-8.145220e-04	-4.170550e-03
## h1_resprate_min	1.369909e-03	-1.367822e-03	8.518427e-04
## h1_spo2_max	-2.159603e-04	9.639098e-04	-4.006152e-04
## h1_spo2_min	-1.133592e-05	3.435647e-04	-1.338245e-04
## h1_sysbp_max	2.300880e-03	3.851602e-03	-1.658392e-01
## h1_sysbp_min	-6.764734e-03	-8.381954e-03	-3.008292e-01
## h1_sysbp_noninvasive_max	-2.174129e-03	-4.371728e-03	1.654038e-01
## h1_sysbp_noninvasive_min	7.911000e-03	8.535345e-03	3.017983e-01
## h1_temp_max	-9.042855e-04	5.911458e-04	3.871004e-04
## h1_temp_min	1.159511e-04	-9.496202e-04	-3.307868e-03
## d1_bun_max	-1.350558e-01	-6.662089e-01	-6.130633e-03
## d1_bun_min	1.908806e-03	1.805455e-02	-2.386439e-02
## d1_calcium_max	5.294521e-03	9.873561e-03	-3.502391e-03
## d1_calcium_min	-6.006944e-03	-1.096927e-02	1.998993e-03
## d1_creatinine_max	-3.776586e-02	-1.562658e-01	-1.376432e-02
## d1_creatinine_min	7.306972e-04	-3.979063e-02	1.849226e-02
## d1_glucose_max	-5.577807e-04	6.747944e-03	3.157193e-03

## d1_glucose_min	3.639678e-03	1.058797e-03	3.989826e-04
## d1_hco3_max	-4.730130e-04	8.462406e-03	-1.464704e-03
## d1_hco3_min	-4.632984e-04	-8.145780e-03	3.536693e-03
## d1_hemaglobin_max	-1.627405e-04	2.874370e-02	3.920116e-03
## d1_hemaglobin_min	-1.808379e-02	-7.673275e-03	4.629601e-03
## d1_hematocrit_max	9.043439e-04	-4.546622e-02	-4.104296e-03
## d1_hematocrit_min	1.173840e-02	-7.129778e-02	-1.457161e-02
## d1_platelets_max	1.310206e-02	-3.504681e-02	1.762593e-03
## d1_platelets_min	-1.354485e-02	3.560486e-02	-3.210015e-03
## d1_potassium_max	1.707100e-03	5.751698e-03	9.676704e-04
## d1_potassium_min	-2.073787e-03	-3.769148e-03	-9.675418e-04
## d1_sodium_max	-2.558980e-03	-1.027318e-02	2.013343e-03
## d1_sodium_min	-6.151991e-03	-1.742991e-02	-2.510116e-03
## d1_wbc_max	3.544815e-03	7.957485e-02	3.296888e-03
## d1_wbc_min	5.772680e-03	-6.805160e-03	7.110609e-04
## apache_4a_hospital_death_prob	-1.631867e-03	-4.108705e-03	-1.170313e-03
## apache_4a_icu_death_prob	-1.089198e-04	3.021437e-03	1.493842e-04
##	PC70	PC71	PC72
## age	3.016295e-03	3.630729e-04	-5.688966e-04
## bmi	-3.137346e-03	-1.997886e-03	5.632621e-04
## height	-2.671112e-03	-1.278392e-03	3.023099e-04
## pre_icu_los_days	-1.206763e-05	-3.651962e-04	-1.105036e-04
## weight	6.439908e-03	2.542824e-03	-2.470948e-04
## bun_apache	3.298034e-01	6.996649e-03	6.532034e-03
## creatinine_apache	-2.591716e-01	4.388450e-03	-1.507944e-02
## glucose_apache	-1.588710e-03	-3.745974e-03	-2.096700e-03
## heart_rate_apache	8.698767e-04	-7.529354e-04	8.432229e-04
## hematocrit_apache	1.770083e-02	3.558348e-03	1.493216e-03
## map_apache	1.257956e-04	1.486206e-03	6.596681e-04
## resprate_apache	1.120066e-03	-1.838307e-03	-6.706639e-04
## sodium_apache	7.015057e-03	1.645363e-03	8.963794e-04
## temp_apache	7.737077e-04	4.357021e-04	1.694547e-03
## wbc_apache	-1.280523e-02	-1.249851e-03	-2.920921e-03
## d1_diasbp_max	-3.495053e-03	9.437471e-04	-6.880088e-02
## d1_diasbp_min	2.951208e-03	1.454106e-02	-2.679665e-01
## d1_diasbp_noninvasive_max	1.853424e-03	-9.934975e-05	7.247617e-02
## d1_diasbp_noninvasive_min	-1.599849e-03	-1.507125e-02	2.656843e-01
## d1_heartrate_max	-8.733795e-04	-2.025351e-03	-3.557055e-04
## d1_heartrate_min	9.306727e-04	5.030147e-04	5.721344e-04
## d1_mbp_max	-8.238526e-03	3.480923e-02	-8.842959e-02
## d1_mbp_min	-5.535464e-04	2.199142e-02	-5.320102e-01
## d1_mbp_noninvasive_max	9.849814e-03	-3.432574e-02	8.403673e-02
## d1_mbp_noninvasive_min	-2.598043e-03	-2.387376e-02	5.363135e-01
## d1_resprate_max	1.206055e-04	-3.507608e-04	-1.068628e-03
## d1_resprate_min	1.226232e-03	1.173577e-03	1.251187e-03
## d1_spo2_max	-1.966660e-05	7.489858e-04	-7.164227e-04
## d1_spo2_min	-2.459314e-03	-6.087293e-04	3.649007e-04
## d1_sysbp_max	-3.184571e-03	-8.915131e-05	6.735608e-02
## d1_sysbp_min	7.996903e-04	1.928621e-02	-2.776404e-01
## d1_sysbp_noninvasive_max	4.406308e-03	-1.617718e-03	-6.566003e-02
## d1_sysbp_noninvasive_min	-1.197533e-03	-1.689903e-02	2.730790e-01
## d1_temp_max	1.495294e-03	1.573925e-03	-1.036338e-03
## d1_temp_min	-1.506711e-03	4.638963e-05	-1.695564e-03
## h1_diasbp_max	-1.380645e-02	1.460733e-01	1.988970e-02

## h1_diasbp_min	-2.789727e-03	-1.822953e-01	5.623661e-02
## h1_diasbp_noninvasive_max	1.333016e-02	-1.491007e-01	-2.203025e-02
## h1_diasbp_noninvasive_min	2.044522e-03	1.807403e-01	-5.985777e-02
## h1_heartrate_max	9.738094e-04	2.986410e-03	1.204198e-03
## h1_heartrate_min	-2.192850e-03	-1.925515e-03	-1.951951e-03
## h1_mbp_max	5.309901e-03	-3.333279e-01	2.261483e-03
## h1_mbp_min	6.582346e-03	4.781404e-02	-2.019146e-01
## h1_mbp_noninvasive_max	-4.070039e-03	3.338734e-01	-3.163307e-04
## h1_mbp_noninvasive_min	-5.588739e-03	-4.028142e-02	2.058382e-01
## h1_resprate_max	2.323125e-04	-7.204921e-04	1.693772e-03
## h1_resprate_min	-1.642039e-03	8.724232e-04	-1.130139e-03
## h1_spo2_max	-1.103922e-03	-6.033775e-04	3.167016e-04
## h1_spo2_min	5.299808e-04	5.456186e-04	-2.310891e-04
## h1_sysbp_max	6.309960e-03	3.019108e-02	9.825451e-03
## h1_sysbp_min	2.766930e-02	5.688985e-01	7.061521e-02
## h1_sysbp_noninvasive_max	-7.490273e-03	-2.660599e-02	-9.712354e-03
## h1_sysbp_noninvasive_min	-3.042733e-02	-5.767462e-01	-7.097089e-02
## h1_temp_max	-1.289235e-03	1.324956e-03	3.075844e-04
## h1_temp_min	6.150668e-04	-1.723452e-03	2.585254e-04
## d1_bun_max	2.765281e-01	-2.604960e-02	-6.071243e-03
## d1_bun_min	-5.906862e-01	1.942818e-02	8.298240e-05
## d1_calcium_max	-1.213061e-02	1.576706e-03	1.942182e-03
## d1_calcium_min	9.756959e-03	-1.852547e-03	-1.338688e-03
## d1_creatinine_max	-3.064847e-01	8.922725e-03	1.415954e-02
## d1_creatinine_min	5.478626e-01	-1.300548e-02	9.335649e-04
## d1_glucose_max	-6.468793e-03	4.521054e-03	1.563161e-03
## d1_glucose_min	4.814434e-03	-2.751715e-04	5.207894e-04
## d1_hco3_max	-8.429384e-03	1.595313e-04	-6.158836e-04
## d1_hco3_min	1.197323e-02	-9.193265e-04	5.677166e-04
## d1_hemaglobin_max	-5.085489e-03	5.045354e-03	1.802852e-03
## d1_hemaglobin_min	9.279540e-03	-3.141477e-03	-1.518341e-03
## d1_hematocrit_max	4.833906e-03	-7.654620e-03	-3.487515e-03
## d1_hematocrit_min	-2.391391e-02	2.189984e-03	1.527968e-03
## d1_platelets_max	-3.690773e-03	3.157053e-03	-1.566426e-04
## d1_platelets_min	3.906271e-03	-2.951526e-03	2.430671e-05
## d1_potassium_max	-1.817747e-03	4.362144e-04	3.494612e-04
## d1_potassium_min	3.083288e-03	-8.639759e-04	-6.663601e-04
## d1_sodium_max	-6.747591e-03	-1.084105e-03	-8.647376e-04
## d1_sodium_min	3.434243e-04	-3.637695e-04	1.325061e-04
## d1_wbc_max	1.146797e-02	-2.934160e-04	1.842783e-03
## d1_wbc_min	1.794339e-03	1.268687e-03	6.164602e-04
## apache_4a_hospital_death_prob	1.274142e-03	-7.175532e-04	2.974589e-04
## apache_4a_icu_death_prob	6.658268e-04	7.711602e-04	-1.210320e-04
##	PC73	PC74	PC75
## age	-1.194366e-03	-8.546875e-04	-6.054981e-04
## bmi	-1.760102e-03	7.791277e-04	7.766970e-04
## height	-7.739766e-04	-1.367945e-04	1.457768e-04
## pre_icu_los_days	3.927570e-04	6.297984e-04	3.417544e-04
## weight	1.660343e-03	-1.517990e-03	-1.083473e-03
## bun_apache	-1.927562e-01	-1.095462e-03	1.551526e-03
## creatinine_apache	6.885164e-01	8.400097e-03	-1.250460e-02
## glucose_apache	-3.259537e-03	7.166183e-04	6.428217e-04
## heart_rate_apache	-4.948743e-04	-2.350950e-04	-1.204140e-03
## hematocrit_apache	9.294486e-03	1.341909e-04	3.982574e-04

## map_apache	-2.897047e-04	-3.733934e-05	1.360368e-04
## resprate_apache	-1.525937e-04	-4.480544e-04	-9.014541e-04
## sodium_apache	2.380621e-03	1.852748e-03	9.353044e-05
## temp_apache	-9.170001e-04	5.654778e-04	-8.437026e-04
## wbc_apache	-1.275824e-02	4.552829e-03	4.098219e-03
## d1_diasbp_max	-4.430222e-03	6.385325e-02	-6.231978e-03
## d1_diasbp_min	-5.384979e-03	3.583701e-02	1.923942e-01
## d1_diasbp_noninvasive_max	4.343536e-03	-6.008166e-02	7.203973e-03
## d1_diasbp_noninvasive_min	4.493484e-03	-3.609450e-02	-1.927807e-01
## d1_heartrate_max	6.409106e-04	2.538882e-04	1.654579e-03
## d1_heartrate_min	3.392882e-04	-6.666560e-05	-1.323553e-04
## d1_mbp_max	-3.434698e-03	-2.260197e-02	1.226379e-02
## d1_mbp_min	-8.105617e-03	5.556661e-02	4.303003e-02
## d1_mbp_noninvasive_max	4.187713e-03	1.958002e-02	-1.513081e-02
## d1_mbp_noninvasive_min	8.840814e-03	-5.639007e-02	-4.201973e-02
## d1_resprate_max	-1.101518e-03	-1.128422e-03	1.289076e-04
## d1_resprate_min	7.516758e-04	1.010729e-03	1.864660e-04
## d1_spo2_max	1.327741e-03	-2.932623e-04	7.930806e-04
## d1_spo2_min	7.044778e-05	6.485163e-04	-6.507682e-04
## d1_sysbp_max	6.119148e-04	6.842839e-02	-9.993659e-02
## d1_sysbp_min	-4.538838e-03	3.163967e-02	1.872636e-01
## d1_sysbp_noninvasive_max	2.374234e-04	-6.487979e-02	1.013361e-01
## d1_sysbp_noninvasive_min	3.267899e-03	-3.339065e-02	-1.882066e-01
## d1_temp_max	-6.445218e-05	-1.608013e-03	7.259705e-05
## d1_temp_min	6.227888e-04	-9.789508e-04	1.595347e-03
## h1_diasbp_max	3.525845e-03	-4.708418e-02	3.129533e-02
## h1_diasbp_min	9.922874e-04	6.921615e-02	8.086064e-02
## h1_diasbp_noninvasive_max	-1.922204e-03	4.891654e-02	-3.188192e-02
## h1_diasbp_noninvasive_min	-2.563288e-03	-7.264877e-02	-8.399000e-02
## h1_heartrate_max	5.608203e-04	-1.275809e-04	-2.281227e-03
## h1_heartrate_min	3.121838e-04	2.557975e-04	1.833920e-03
## h1_mbp_max	-6.978975e-04	-1.672775e-01	1.563667e-01
## h1_mbp_min	-1.315330e-02	-2.103237e-01	-5.786588e-01
## h1_mbp_noninvasive_max	-1.628241e-03	1.673715e-01	-1.562340e-01
## h1_mbp_noninvasive_min	1.395248e-02	2.147249e-01	5.828187e-01
## h1_resprate_max	-3.668441e-04	7.938845e-04	-4.689527e-04
## h1_resprate_min	5.984679e-05	5.202379e-05	9.179934e-04
## h1_spo2_max	1.837469e-04	-1.240516e-05	2.507792e-04
## h1_spo2_min	-7.970905e-05	-6.377335e-04	4.422160e-04
## h1_sysbp_max	-9.973975e-03	6.290237e-01	-1.542408e-01
## h1_sysbp_min	1.032983e-02	-7.976420e-02	1.476048e-01
## h1_sysbp_noninvasive_max	1.010624e-02	-6.337844e-01	1.549751e-01
## h1_sysbp_noninvasive_min	-9.584800e-03	8.127008e-02	-1.482906e-01
## h1_temp_max	3.586030e-04	8.102717e-04	1.383604e-04
## h1_temp_min	-5.722500e-04	1.248759e-03	-1.187085e-03
## d1_bun_max	1.813831e-01	2.816740e-03	-2.696143e-03
## d1_bun_min	9.917042e-03	-7.757252e-04	9.142487e-04
## d1_calcium_max	8.982946e-03	8.881330e-04	-3.826640e-04
## d1_calcium_min	-1.072061e-02	-1.991094e-04	6.772130e-04
## d1_creatinine_max	-6.734034e-01	-6.155225e-03	1.301801e-02
## d1_creatinine_min	-1.689125e-02	-2.200528e-03	-1.931872e-05
## d1_glucose_max	4.155876e-03	-7.413003e-04	-5.220273e-04
## d1_glucose_min	-1.107807e-03	4.774446e-04	1.545077e-05
## d1_hco3_max	4.589040e-03	-8.489282e-05	-3.296307e-04

## d1_hco3_min	-5.885690e-03	-4.138665e-04	7.159916e-04
## d1_hemaglobin_max	-3.888672e-03	-4.413727e-03	-2.597182e-03
## d1_hemaglobin_min	4.188930e-03	5.707096e-04	1.909313e-04
## d1_hematocrit_max	8.914340e-05	2.597865e-03	4.674460e-03
## d1_hematocrit_min	-8.047994e-03	1.981124e-03	-2.613902e-03
## d1_platelets_max	3.846354e-03	1.569456e-03	-1.208109e-03
## d1_platelets_min	-3.195189e-03	-1.647467e-03	1.051402e-03
## d1_potassium_max	3.960960e-03	-9.306748e-04	1.198411e-03
## d1_potassium_min	-3.660987e-03	4.027165e-04	-1.021607e-03
## d1_sodium_max	3.241428e-03	-2.509802e-03	-1.372831e-03
## d1_sodium_min	-6.600916e-03	-1.252914e-04	1.469614e-03
## d1_wbc_max	1.377376e-02	-2.974319e-03	-2.403968e-03
## d1_wbc_min	-6.056696e-04	-1.767092e-03	-1.168218e-03
## apache_4a_hospital_death_prob	-1.356081e-04	4.743940e-04	6.352958e-04
## apache_4a_icu_death_prob	-1.282898e-03	-5.220413e-04	-2.920373e-04
##	PC76	PC77	PC78
## age	-4.604804e-05	-3.159483e-05	-2.907896e-04
## bmi	-9.502852e-04	1.549930e-04	3.310448e-04
## height	-5.019611e-04	1.003094e-04	-1.136099e-04
## pre_icu_los_days	1.332330e-04	-1.366371e-04	-5.599604e-04
## weight	1.191597e-03	-3.613625e-04	-3.547468e-04
## bun_apache	-2.108216e-03	-4.070978e-04	3.375207e-04
## creatinine_apache	2.984816e-03	3.583225e-03	-2.663211e-03
## glucose_apache	9.606507e-04	4.395047e-04	-2.169811e-04
## heart_rate_apache	-6.819857e-04	-3.047397e-04	-5.167694e-04
## hematocrit_apache	-1.659963e-03	-2.586073e-04	-1.684257e-04
## map_apache	-8.119375e-04	1.187735e-04	-3.764089e-05
## resprate_apache	-2.279221e-04	-4.275740e-04	4.410460e-04
## sodium_apache	-3.179702e-04	4.601404e-05	-5.227481e-06
## temp_apache	-4.316200e-04	-4.301765e-04	3.018166e-04
## wbc_apache	-1.204321e-04	-2.402957e-03	-6.292483e-04
## d1_diasbp_max	-3.692845e-01	2.378158e-01	-4.378122e-01
## d1_diasbp_min	8.559561e-02	3.565421e-01	-1.790283e-01
## d1_diasbp_noninvasive_max	3.676270e-01	-2.373444e-01	4.387630e-01
## d1_diasbp_noninvasive_min	-8.814474e-02	-3.599975e-01	1.795101e-01
## d1_heartrate_max	-2.255622e-04	1.439900e-04	4.722408e-04
## d1_heartrate_min	-6.634530e-04	-2.588512e-04	-2.213253e-04
## d1_mbp_max	7.913479e-02	-6.029602e-02	6.970660e-03
## d1_mbp_min	-1.818804e-01	-4.068751e-01	2.356414e-03
## d1_mbp_noninvasive_max	-7.628509e-02	5.919089e-02	-7.549118e-03
## d1_mbp_noninvasive_min	1.859919e-01	4.122537e-01	-2.394531e-03
## d1_resprate_max	1.425299e-04	4.832650e-05	1.112120e-04
## d1_resprate_min	-7.009318e-05	2.447376e-04	-5.188408e-04
## d1_spo2_max	5.318567e-04	3.155019e-04	2.723850e-04
## d1_spo2_min	6.256275e-04	-9.670038e-05	-2.454461e-04
## d1_sysbp_max	-5.207517e-01	1.413018e-01	3.740396e-01
## d1_sysbp_min	1.328056e-01	3.156571e-01	3.677404e-01
## d1_sysbp_noninvasive_max	5.210018e-01	-1.411505e-01	-3.747159e-01
## d1_sysbp_noninvasive_min	-1.344429e-01	-3.187860e-01	-3.682360e-01
## d1_temp_max	6.565520e-04	3.070601e-04	-7.415474e-05
## d1_temp_min	-2.539544e-04	2.767383e-04	-1.073962e-05
## h1_diasbp_max	7.250646e-03	-1.014450e-02	6.841189e-03
## h1_diasbp_min	-7.482587e-03	-3.461217e-02	1.946561e-03
## h1_diasbp_noninvasive_max	-4.419830e-03	9.555592e-03	-6.407523e-03

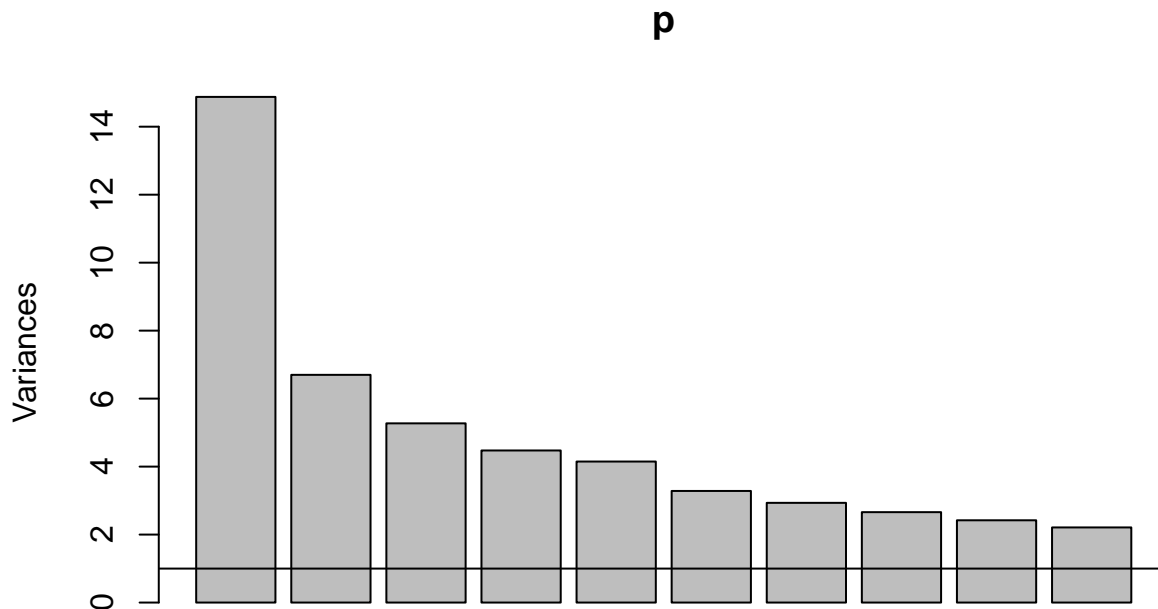
## h1_diasbp_noninvasive_min	7.966866e-03	3.497609e-02	-2.606155e-03
## h1_heartrate_max	1.014374e-03	1.772614e-05	-6.207843e-04
## h1_heartrate_min	8.806720e-05	1.690619e-04	6.412997e-04
## h1_mbp_max	-4.081160e-02	-2.820493e-02	4.476407e-03
## h1_mbp_min	1.011409e-01	1.409177e-01	1.664443e-03
## h1_mbp_noninvasive_max	3.646010e-02	2.876136e-02	-5.159450e-03
## h1_mbp_noninvasive_min	-1.015890e-01	-1.411679e-01	-1.628864e-03
## h1_resprate_max	9.377369e-04	2.670506e-04	-2.089115e-04
## h1_resprate_min	-2.243539e-04	-5.782698e-04	3.358270e-04
## h1_spo2_max	-2.151280e-04	-4.179351e-04	-1.903069e-04
## h1_spo2_min	-3.052529e-04	6.354868e-05	3.507511e-05
## h1_sysbp_max	1.171064e-01	-1.742599e-03	-3.657397e-03
## h1_sysbp_min	-4.174793e-02	-3.538399e-02	-5.288308e-03
## h1_sysbp_noninvasive_max	-1.187361e-01	2.496988e-03	4.021998e-03
## h1_sysbp_noninvasive_min	4.404361e-02	3.553353e-02	6.114420e-03
## h1_temp_max	5.516805e-04	1.475314e-03	-9.493394e-05
## h1_temp_min	-7.312847e-04	-9.921359e-04	1.815955e-04
## d1_bun_max	-6.227559e-04	8.585251e-04	1.250153e-04
## d1_bun_min	2.542095e-03	4.604114e-04	-1.797800e-04
## d1_calcium_max	-6.671701e-04	-1.290287e-04	4.148447e-04
## d1_calcium_min	6.070278e-04	3.010377e-04	-4.672340e-04
## d1_creatinine_max	1.429819e-04	-3.828570e-03	1.302061e-03
## d1_creatinine_min	-2.839307e-03	-1.235514e-04	1.219275e-03
## d1_glucose_max	-1.056307e-03	-3.894371e-04	4.139561e-04
## d1_glucose_min	6.165598e-05	2.206348e-04	-1.227666e-04
## d1_hco3_max	-8.790283e-04	6.838689e-04	8.437416e-05
## d1_hco3_min	9.389771e-04	-6.063817e-04	-1.449322e-04
## d1_hemaglobin_max	-8.616435e-04	-2.827011e-04	-1.281957e-03
## d1_hemaglobin_min	1.721645e-03	1.227624e-05	6.169700e-04
## d1_hematocrit_max	7.051826e-04	-1.697932e-05	3.786237e-04
## d1_hematocrit_min	8.918108e-06	2.669968e-04	6.106629e-04
## d1_platelets_max	-4.501992e-04	-1.014519e-03	-9.896038e-04
## d1_platelets_min	5.066386e-04	1.325258e-03	1.068139e-03
## d1_potassium_max	1.069808e-03	-3.581465e-05	-9.103718e-04
## d1_potassium_min	-5.112295e-04	-4.201245e-04	6.553454e-04
## d1_sodium_max	1.438339e-04	-2.885646e-05	-2.042424e-04
## d1_sodium_min	4.238773e-04	-1.195232e-04	1.792701e-04
## d1_wbc_max	2.025117e-03	2.221672e-03	8.747683e-04
## d1_wbc_min	-1.989313e-03	-1.291785e-04	-1.556655e-04
## apache_4a_hospital_death_prob	7.093763e-04	-5.521873e-04	6.880609e-04
## apache_4a_icu_death_prob	-5.835402e-04	4.057457e-04	-3.814224e-04
##	PC79		
## age	-4.651834e-05		
## bmi	-6.518110e-05		
## height	-1.915487e-04		
## pre_icu_los_days	1.523240e-04		
## weight	1.423731e-04		
## bun_apache	3.180754e-04		
## creatinine_apache	-2.850525e-04		
## glucose_apache	2.973522e-04		
## heart_rate_apache	-2.541228e-04		
## hematocrit_apache	-5.171710e-05		
## map_apache	3.359918e-04		
## resprate_apache	-3.181429e-05		

## sodium_apache	-1.179915e-04
## temp_apache	-3.421169e-04
## wbc_apache	4.461186e-04
## d1_diasbp_max	3.203058e-01
## d1_diasbp_min	-4.702985e-01
## d1_diasbp_noninvasive_max	-3.202147e-01
## d1_diasbp_noninvasive_min	4.706356e-01
## d1_heartrate_max	3.112532e-04
## d1_heartrate_min	-1.189375e-04
## d1_mbp_max	-3.249973e-03
## d1_mbp_min	-1.765530e-02
## d1_mbp_noninvasive_max	3.054607e-03
## d1_mbp_noninvasive_min	1.728104e-02
## d1_resprate_max	2.151159e-04
## d1_resprate_min	-1.420957e-04
## d1_spo2_max	2.610563e-04
## d1_spo2_min	-1.860284e-05
## d1_sysbp_max	-2.078014e-01
## d1_sysbp_min	3.638554e-01
## d1_sysbp_noninvasive_max	2.079855e-01
## d1_sysbp_noninvasive_min	-3.641195e-01
## d1_temp_max	-1.789541e-04
## d1_temp_min	9.167241e-05
## h1_diasbp_max	-8.203901e-04
## h1_diasbp_min	2.473048e-03
## h1_diasbp_noninvasive_max	1.361929e-03
## h1_diasbp_noninvasive_min	-2.632161e-03
## h1_heartrate_max	-9.033220e-05
## h1_heartrate_min	2.056864e-04
## h1_mbp_max	-2.876780e-03
## h1_mbp_min	-6.559511e-03
## h1_mbp_noninvasive_max	2.322898e-03
## h1_mbp_noninvasive_min	6.483187e-03
## h1_resprate_max	-1.545297e-04
## h1_resprate_min	1.953431e-04
## h1_spo2_max	-5.788354e-05
## h1_spo2_min	3.486802e-05
## h1_sysbp_max	-3.058681e-03
## h1_sysbp_min	1.924293e-03
## h1_sysbp_noninvasive_max	2.973918e-03
## h1_sysbp_noninvasive_min	-1.697972e-03
## h1_temp_max	1.530888e-04
## h1_temp_min	1.482493e-04
## d1_bun_max	2.459648e-04
## d1_bun_min	-4.571042e-04
## d1_calcium_max	-4.239969e-05
## d1_calcium_min	5.772443e-05
## d1_creatinine_max	-1.081246e-03
## d1_creatinine_min	1.281290e-03
## d1_glucose_max	-2.797980e-04
## d1_glucose_min	-3.042597e-05
## d1_hco3_max	4.383453e-05
## d1_hco3_min	-1.027601e-04
## d1_hemaglobin_max	-3.659371e-04


```
## d1_hemaglobin_min      6.683829e-04
## d1_hematocrit_max      2.161551e-05
## d1_hematocrit_min     -3.087662e-05
## d1_platelets_max      -1.206477e-04
## d1_platelets_min       5.098354e-05
## d1_potassium_max       8.530294e-05
## d1_potassium_min     -1.463081e-04
## d1_sodium_max          4.501846e-05
## d1_sodium_min          1.353243e-04
## d1_wbc_max             6.352900e-05
## d1_wbc_min            -5.738415e-04
## apache_4a_hospital_death_prob -4.276919e-04
## apache_4a_icu_death_prob  1.639153e-04
```

#Check Scree Plot

```
plot(p)
abline(1, 0)
```



```
summary(p)
```

Importance of components:

```
##          PC1    PC2    PC3    PC4    PC5    PC6    PC7
## Standard deviation  3.8570 2.5882 2.29614 2.11530 2.03678 1.81200 1.71268
## Proportion of Variance 0.1883 0.0848 0.06674 0.05664 0.05251 0.04156 0.03713
## Cumulative Proportion 0.1883 0.2731 0.33984 0.39648 0.44899 0.49055 0.52768
##          PC8    PC9    PC10   PC11   PC12   PC13   PC14
## Standard deviation  1.63079 1.55578 1.48659 1.40034 1.38597 1.3303 1.28885
## Proportion of Variance 0.03366 0.03064 0.02797 0.02482 0.02432 0.0224 0.02103
## Cumulative Proportion 0.56135 0.59199 0.61996 0.64478 0.66910 0.6915 0.71253
##          PC15   PC16   PC17   PC18   PC19   PC20   PC21
## Standard deviation  1.22453 1.19339 1.1826 1.15288 1.11564 1.0402 1.03155
## Proportion of Variance 0.01898 0.01803 0.0177 0.01682 0.01576 0.0137 0.01347
## Cumulative Proportion 0.73151 0.74954 0.7672 0.78406 0.79982 0.8135 0.82698
```

```
##          PC22    PC23    PC24    PC25    PC26    PC27    PC28
## Standard deviation 0.97817 0.96811 0.95814 0.94824 0.87193 0.83153 0.79358
## Proportion of Variance 0.01211 0.01186 0.01162 0.01138 0.00962 0.00875 0.00797
## Cumulative Proportion 0.83910 0.85096 0.86258 0.87396 0.88359 0.89234 0.90031
##          PC29    PC30    PC31    PC32    PC33    PC34    PC35
## Standard deviation 0.77372 0.76336 0.72947 0.71473 0.7109 0.68145 0.62134
## Proportion of Variance 0.00758 0.00738 0.00674 0.00647 0.0064 0.00588 0.00489
## Cumulative Proportion 0.90789 0.91526 0.92200 0.92847 0.9349 0.94074 0.94563
##          PC36    PC37    PC38    PC39    PC40    PC41    PC42
## Standard deviation 0.61906 0.59544 0.57095 0.56343 0.55204 0.51900 0.45479
## Proportion of Variance 0.00485 0.00449 0.00413 0.00402 0.00386 0.00341 0.00262
## Cumulative Proportion 0.95048 0.95497 0.95909 0.96311 0.96697 0.97038 0.97300
##          PC43    PC44    PC45    PC46    PC47    PC48    PC49
## Standard deviation 0.43188 0.41916 0.4075 0.40041 0.39094 0.37218 0.35803
## Proportion of Variance 0.00236 0.00222 0.0021 0.00203 0.00193 0.00175 0.00162
## Cumulative Proportion 0.97536 0.97758 0.9797 0.98171 0.98365 0.98540 0.98702
##          PC50    PC51    PC52    PC53    PC54    PC55    PC56
## Standard deviation 0.32843 0.32283 0.31395 0.29904 0.29631 0.26431 0.25845
## Proportion of Variance 0.00137 0.00132 0.00125 0.00113 0.00111 0.00088 0.00085
## Cumulative Proportion 0.98839 0.98971 0.99096 0.99209 0.99320 0.99408 0.99493
##          PC57    PC58    PC59    PC60    PC61    PC62    PC63
## Standard deviation 0.24311 0.23942 0.22012 0.17354 0.16209 0.14944 0.13842
## Proportion of Variance 0.00075 0.00073 0.00061 0.00038 0.00033 0.00028 0.00024
## Cumulative Proportion 0.99568 0.99640 0.99702 0.99740 0.99773 0.99801 0.99826
##          PC64    PC65    PC66    PC67    PC68    PC69    PC70
## Standard deviation 0.13366 0.13125 0.1248 0.1244 0.12172 0.11618 0.10824
## Proportion of Variance 0.00023 0.00022 0.0002 0.0002 0.00019 0.00017 0.00015
## Cumulative Proportion 0.99848 0.99870 0.9989 0.9991 0.99928 0.99945 0.99960
##          PC71    PC72    PC73    PC74    PC75    PC76    PC77
## Standard deviation 0.10502 0.06865 0.06551 0.06152 0.05659 0.04622 0.03840
## Proportion of Variance 0.00014 0.00006 0.00005 0.00005 0.00004 0.00003 0.00002
## Cumulative Proportion 0.99974 0.99980 0.99985 0.99990 0.99994 0.99997 0.99999
##          PC78    PC79
## Standard deviation 0.02598 0.01736
## Proportion of Variance 0.00001 0.00000
## Cumulative Proportion 1.00000 1.00000
```

```
#options(max.print = 10000)
#print(p)
table(p$sdev>1)
```

```
##
## FALSE TRUE
##    58    21
```

Using the scree plot above, I have decided to use the knee method to determine the number of factors to use for the FA analysis. As a result, I decided to use 5 factors since there is an elbow between 5-6 factors.

```
library(psych)
#Conducting Factor Analysis
fit = psych::fa(datasetv6, rotate="varimax", nfactors=5, scores=TRUE)
print(fit$loadings, cutoff=.4, sort=T)
```

```

##
## Loadings:
##
## MR1 MR5 MR2 MR4 MR3
## map_apache 0.533
## d1_diasbp_max 0.767
## d1_diasbp_noninvasive_max 0.768
## d1_mbp_max 0.858
## d1_mbp_noninvasive_max 0.856
## d1_sysbp_max 0.791
## d1_sysbp_noninvasive_max 0.792
## h1_diasbp_max 0.772
## h1_diasbp_noninvasive_max 0.769
## h1_mbp_max 0.846
## h1_mbp_min 0.612 0.606
## h1_mbp_noninvasive_max 0.847
## h1_mbp_noninvasive_min 0.612 0.607
## h1_sysbp_max 0.790
## h1_sysbp_noninvasive_max 0.793
## d1_diasbp_min 0.721
## d1_diasbp_noninvasive_min 0.721
## d1_mbp_min 0.785
## d1_mbp_noninvasive_min 0.786
## d1_sysbp_min 0.756
## d1_sysbp_noninvasive_min 0.757
## h1_diasbp_min 0.520 0.556
## h1_diasbp_noninvasive_min 0.521 0.558
## h1_sysbp_min 0.573 0.578
## h1_sysbp_noninvasive_min 0.575 0.578
## bun_apache 0.864
## creatinine_apache 0.849
## d1_bun_max 0.864
## d1_bun_min 0.838
## d1_creatinine_max 0.848
## d1_creatinine_min 0.833
## hematocrit_apache 0.917
## d1_hemaglobin_max 0.874
## d1_hemaglobin_min 0.900
## d1_hematocrit_max 0.909
## d1_hematocrit_min 0.916
## heart_rate_apache 0.724
## d1_heartrate_max 0.716
## d1_heartrate_min 0.633
## h1_heartrate_max 0.787
## h1_heartrate_min 0.802
## age
## bmi
## height
## pre_icu_los_days
## weight
## glucose_apache
## resprate_apache
## sodium_apache
## temp_apache
## wbc_apache

```

```

## d1_resprate_max
## d1_resprate_min
## d1_spo2_max
## d1_spo2_min
## d1_temp_max
## d1_temp_min
## h1_resprate_max
## h1_resprate_min 0.408
## h1_spo2_max
## h1_spo2_min
## h1_temp_max 0.424
## h1_temp_min 0.415
## d1_calcium_max
## d1_calcium_min
## d1_glucose_max
## d1_glucose_min
## d1_hco3_max
## d1_hco3_min
## d1_platelets_max
## d1_platelets_min
## d1_potassium_max 0.429
## d1_potassium_min
## d1_sodium_max
## d1_sodium_min
## d1_wbc_max
## d1_wbc_min
## apache_4a_hospital_death_prob
## apache_4a_icu_death_prob
##
##          MR1   MR5   MR2   MR4   MR3
## SS loadings 10.830 7.162 5.410 5.284 4.778
## Proportion Var 0.137 0.091 0.068 0.067 0.060
## Cumulative Var 0.137 0.228 0.296 0.363 0.424

```

```
summary(fit)
```

```

##
## Factor analysis with Call: psych::fa(r = datasetv6, nfactors = 5, rotate = "varimax", scores = TRUE)
##
## Test of the hypothesis that 5 factors are sufficient.
## The degrees of freedom for the model is 2696 and the objective function was 89.84
## The number of observations was 34776 with Chi Square = 3121409 with prob < 0
##
## The root mean square of the residuals (RMSA) is 0.08
## The df corrected root mean square of the residuals is 0.08
##
## Tucker Lewis Index of factoring reliability = 0.234
## RMSEA index = 0.182 and the 10 % confidence intervals are 0.182 NA
## BIC = 3093218

```

The cumulative variance is 0.424. The root mean square of the residuals (RMSA) is 0.08. In addition, FA was able to create 5 distinct factors out of the variables.

The plots below show the variable loadings for each respecting factor who are bigger than 0.4:

```
library(dplyr)
library(ggplot2)
```

```
##
## Attaching package: 'ggplot2'
```

```
## The following objects are masked from 'package:psych':
##
##      %+%, alpha
```

```
fa_factors <- as.data.frame(unclass(fit$loadings))
fa_factor1_loading <- as.data.frame(fit$loadings[,1])
fa_factor1_loading_big_point4 <- fa_factor1_loading %>% filter_at(vars(1:1), any_vars(abs(.) >0.4))

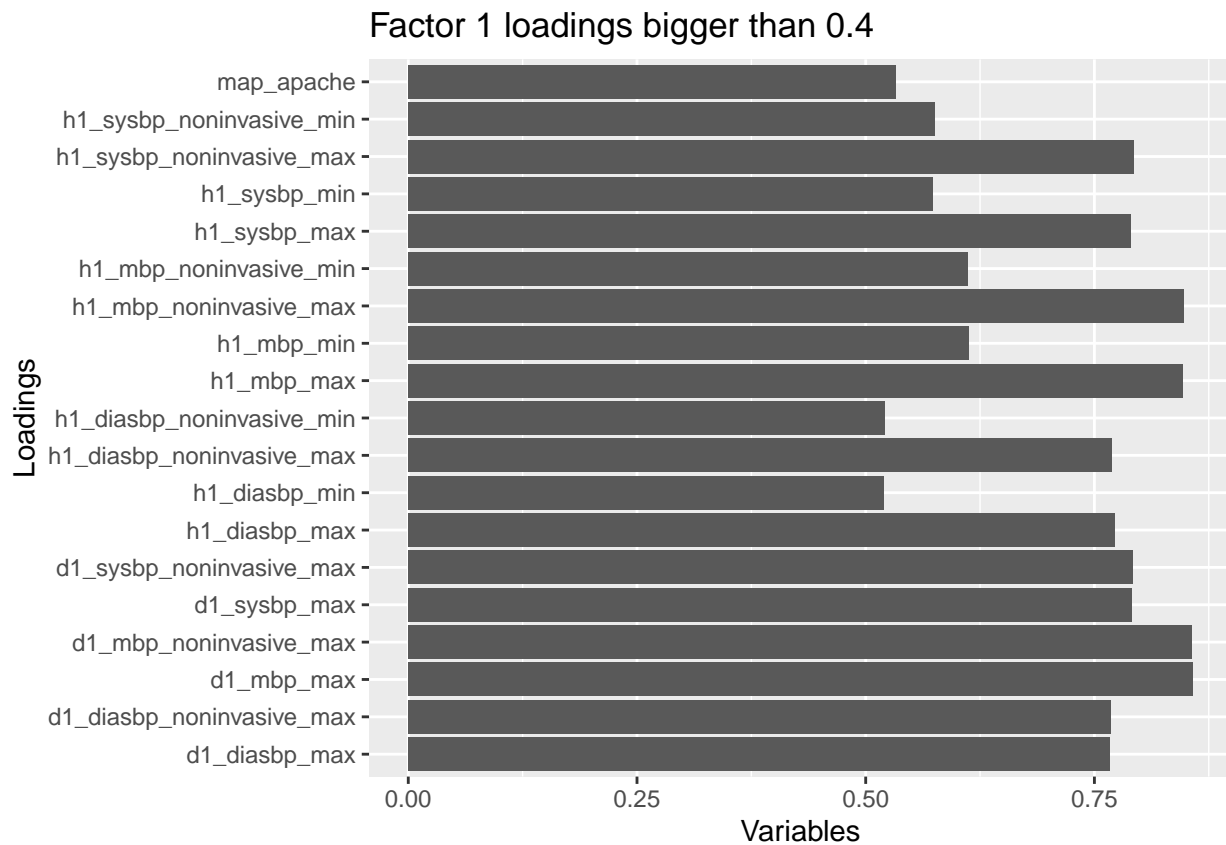
fa_factor5_loading <- as.data.frame(fit$loadings[,2])
fa_factor5_loading_big_point4 <- fa_factor5_loading %>% filter_at(vars(1:1), any_vars(abs(.) >0.4))

fa_factor2_loading <- as.data.frame(fit$loadings[,3])
fa_factor2_loading_big_point4 <- fa_factor2_loading %>% filter_at(vars(1:1), any_vars(abs(.) >0.4))

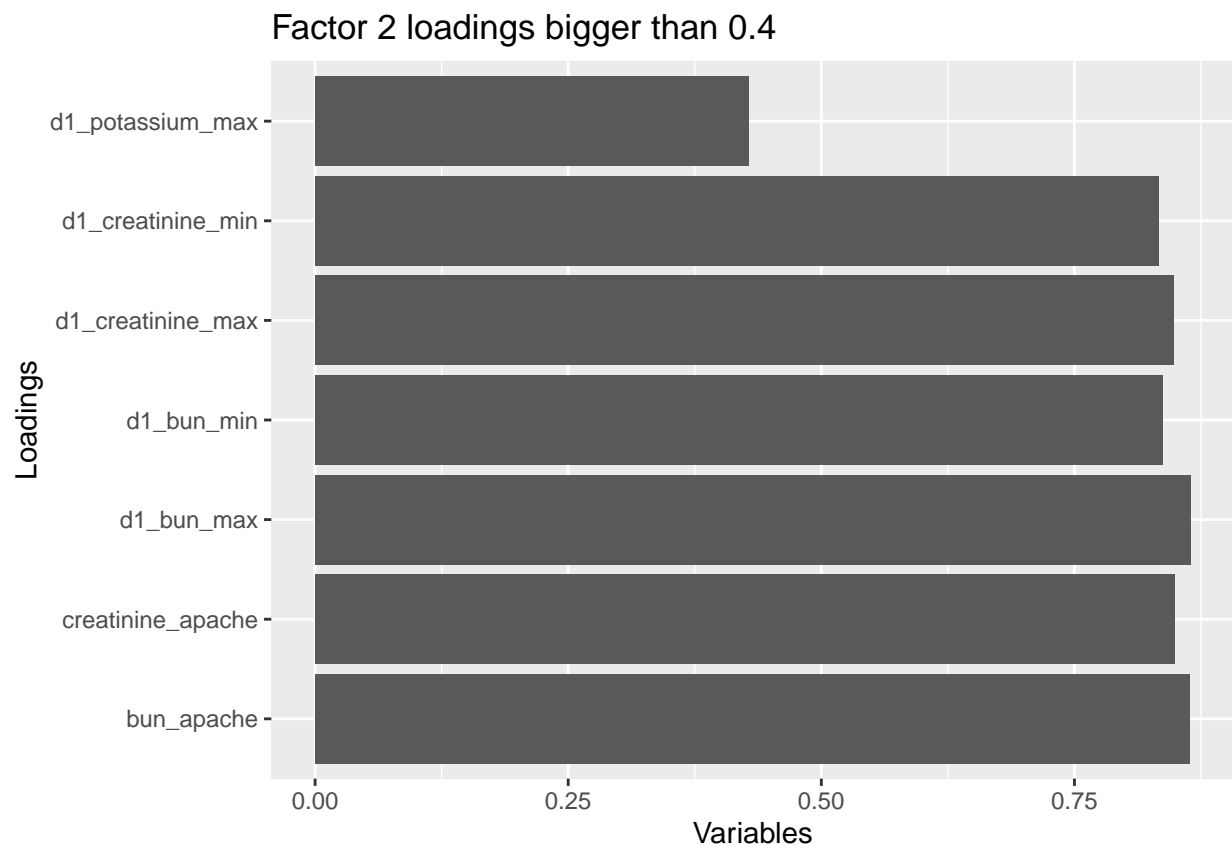
fa_factor4_loading <- as.data.frame(fit$loadings[,4])
fa_factor4_loading_big_point4 <- fa_factor4_loading %>% filter_at(vars(1:1), any_vars(abs(.) >0.4))

fa_factor3_loading <- as.data.frame(fit$loadings[,5])
fa_factor3_loading_big_point4 <- fa_factor3_loading %>% filter_at(vars(1:1), any_vars(abs(.) >0.4))

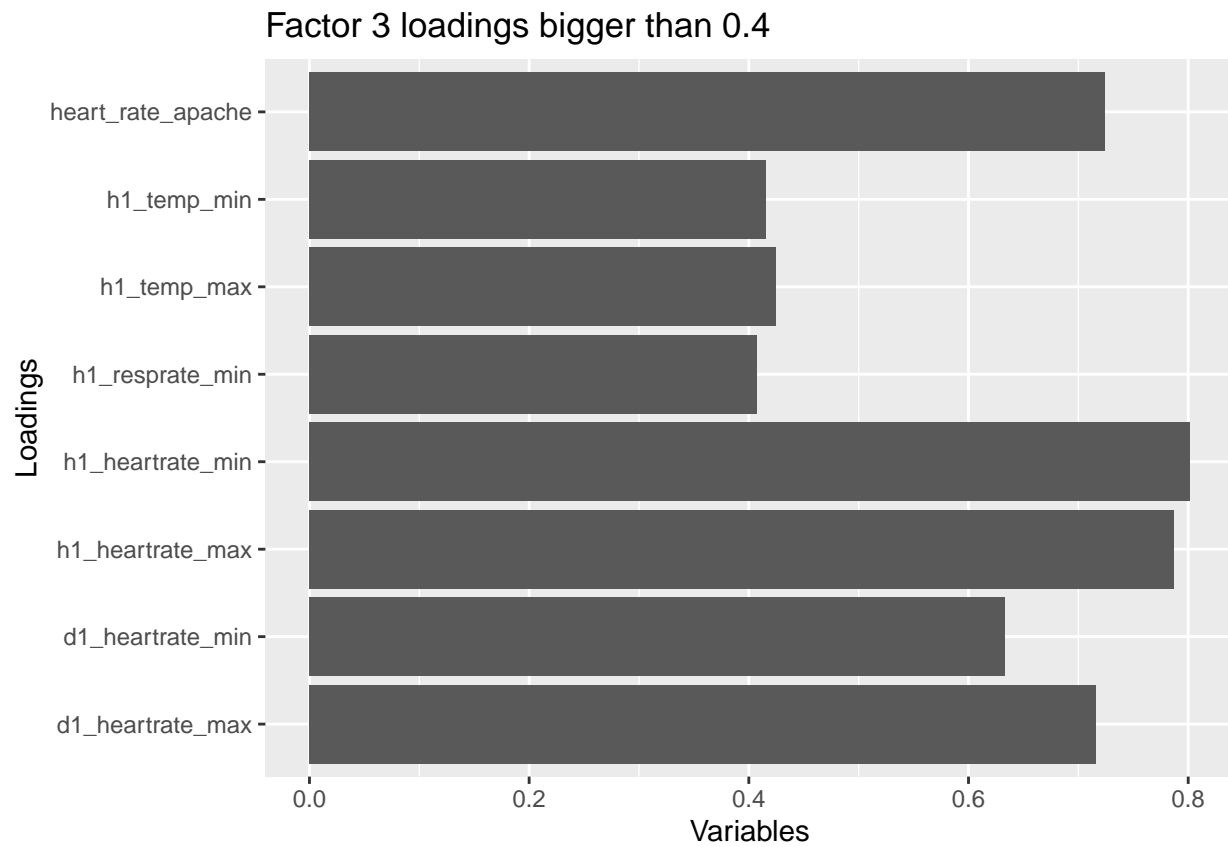
#horizontal bar plot Factor 1
ggplot(fa_factor1_loading_big_point4, aes(x=rownames(fa_factor1_loading_big_point4), y=fa_factor1_loading))
  geom_bar(stat = "identity") + coord_flip() + ggtitle("Factor 1 loadings bigger than 0.4") +
  xlab("Loadings") + ylab("Variables")
```



```
#horizontal bar plot Factor 2
ggplot(fa_factor2_loading_big_point4, aes(x=rownames(fa_factor2_loading_big_point4), y=fa_factor2_loading_big_point4$y)) +
  geom_bar(stat = "identity") + coord_flip() + ggtitle("Factor 2 loadings bigger than 0.4") +
  xlab("Loadings") + ylab("Variables")
```

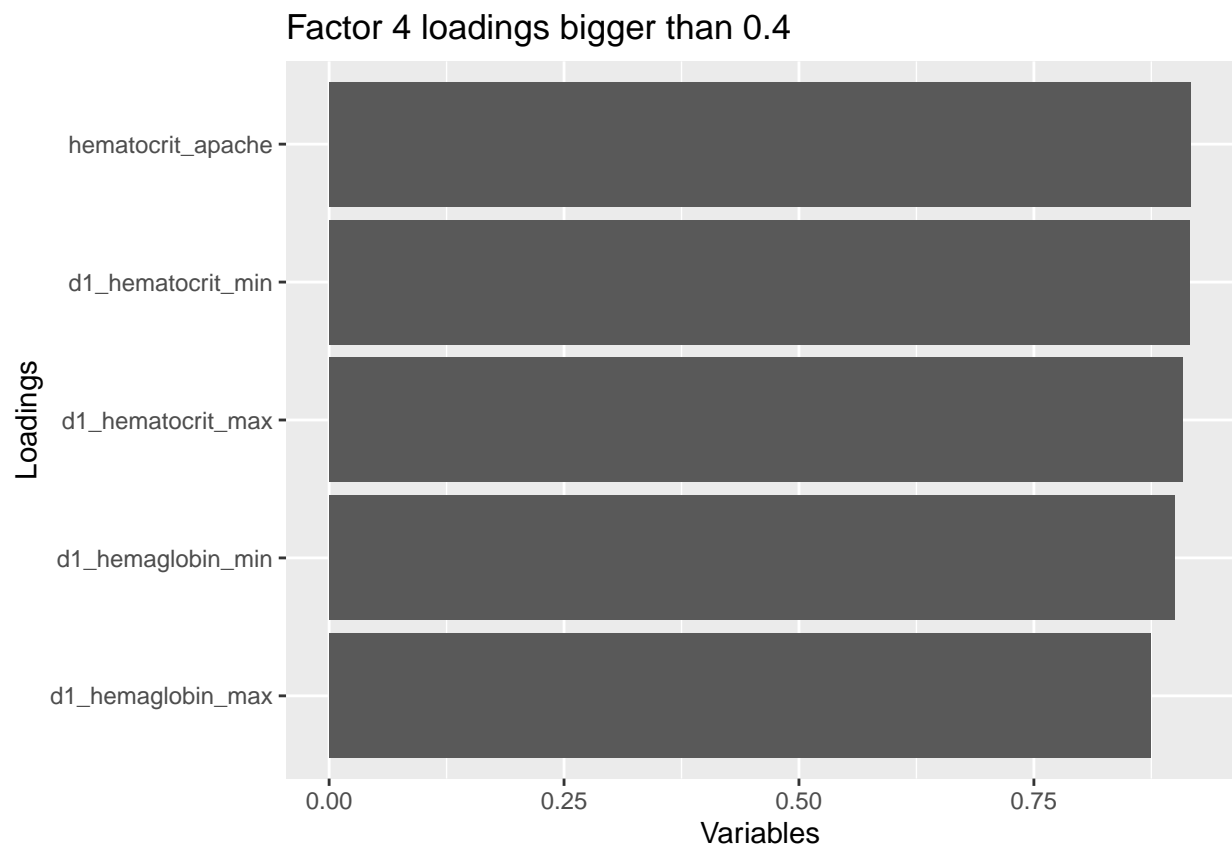


```
#horizontal bar plot Factor 3
ggplot(fa_factor3_loading_big_point4, aes(x=rownames(fa_factor3_loading_big_point4), y=fa_factor3_loading_big_point4$y)) +
  geom_bar(stat = "identity") + coord_flip() + ggtitle("Factor 3 loadings bigger than 0.4") +
  xlab("Loadings") + ylab("Variables")
```

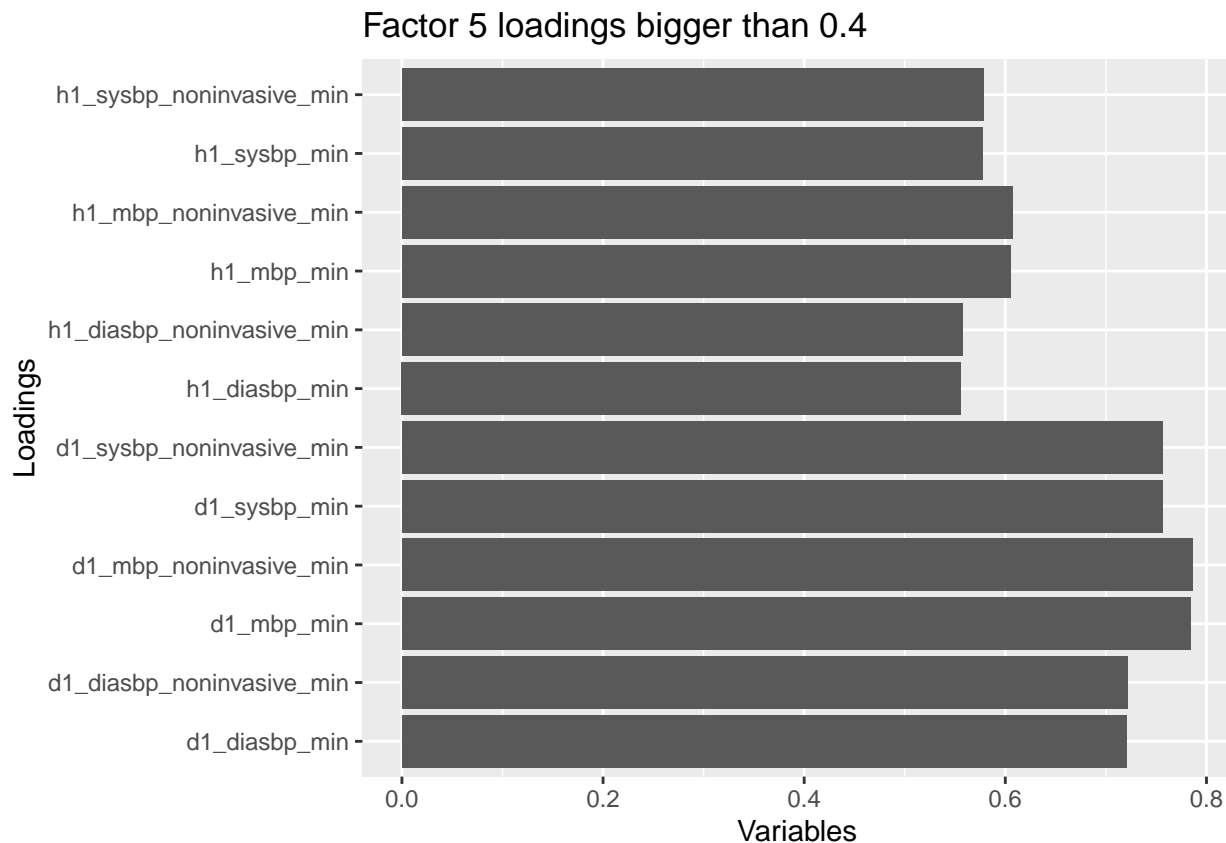


#horizontal bar plot Factor 4

```
ggplot(fa_factor4_loading_big_point4, aes(x=rownames(fa_factor4_loading_big_point4), y=fa_factor4_loading_big_point4)) +
  geom_bar(stat = "identity") + coord_flip() + ggtitle("Factor 4 loadings bigger than 0.4") +
  xlab("Loadings") + ylab("Variables")
```

```
#horizontal bar plot Factor 5
ggplot(fa_factor5_loading_big_point4, aes(x=rownames(fa_factor5_loading_big_point4), y=fa_factor5_loading_big_point4)) +
  geom_bar(stat = "identity") + coord_flip() + ggtitle("Factor 5 loadings bigger than 0.4") +
  xlab("Loadings") + ylab("Variables")
```



Looking at the plots, we can describe the variables accordingly:

Factor 1: Loadings show that this factor is about a patient's highest blood pressure during their unit stay (during their first hour or during their first 24 hours).

Factor 2: Loading shows that this factor is about a patients blood urea nitrogen, creatinine, potassium concentrations.

Factor 3: Loadings indicate that this factor is about a patients heartrate, resperatition and temperature during their first hour or first 24 hours of the stay. These variables are vitals.

Factor 4: Loadings indicate that this factor is about a patients red blood cells proportion and hemaglobin levels during their first 24 hours of stay.

Factor 5: Factor five is loadings are almost the opposite of Factor 1 and is about a patient's lowest blood pressure during their unit stay (during their first hour or during their first 24 hours).

```
# #SAMPLE PLOTS (control+shift+c)
# plot(fit$loadings[,1],
#       fit$loadings[,2],
#       xlim = c(-0.2, 1),
#       ylim = c(-0.5, 1),
#       xlab = "Factor 1",
#       ylab = "Factor 2",
#       main = "Factor 1 vs Factor 2")
# text(fit$loadings[,1]-0.02,
#       fit$loadings[,2]+0.03,
#       colnames(datasetv6),
#       col="blue")
# abline(h = 0, v = 0)
```

```
#  
#  
# #SAMPLE  
# library(ggrepel)  
# ggplot(fa_factors, aes(MR1, MR2, label = rownames(fa_factors))) +  
#   geom_text_repel() +  
#   geom_point(color = 'red') +  
#   theme_classic(base_size = 10)
```