#Summary Statistics

```{r summary statistics}

summary\_losdays2 = hos\_tidy %>%

select(losdays2) %>%

summarize(variable = names(.),

n = n(), mean = mean(losdays2),

sd = sd(losdays2),

minimum = min(losdays2),

maximum = max(losdays2),

median = median(losdays2))

summary\_ageyear = hos\_tidy %>%

select(ageyear) %>%

summarize(variable = names(.), n = n(),

mean = mean(ageyear),

sd = sd(ageyear),

minimum = min(ageyear),

maximum = max(ageyear),

median = median(ageyear))

summary\_evisit = hos\_tidy %>%

select(evisit) %>%

summarize(variable = names(.),

n = n(),

mean = mean(evisit),

sd = sd(evisit),

minimum = min(evisit),

maximum = max(evisit),

median = median(evisit))

summary = rbind(summary\_losdays2, summary\_ageyear, summary\_evisit)

pander(summary)

```

#Data observations & building dummies

```{r observing data}

hos\_tidy %>%

ggplot(aes(x = losdays2)) +

geom\_histogram() +

labs(title = "Figure 1: Length of Stay",

x = "Length of Stay (Days)",

y = "Count")

```

```{r omit na}

fill\_na = function(x) {

if (is.numeric(x)){

mean = mean(x, na.rm = TRUE)

x = replace(x, is.na(x), mean)

} else {x = x}

return(x)

}

hos\_tidy\_omitna = map\_df(hos\_tidy, fill\_na)

```

```{r}

outliersZ <- function(data, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2) {

#compute standard deviation (sample version n = n [not n-1])

stdev <- sqrt(sum((data - mean(data, na.rm = T))^2, na.rm = T) / sum(!is.na(data)))

#compute absolute z values for each value

absZ <- abs(data - mean(data, na.rm = T)) / stdev

#subset data that has absZ greater than the zCutOff and replace them with replace

#can also replace with other values (such as max/mean of data)

data[absZ > zCutOff] <- replace

if (values == TRUE) {

return(round(absZ, digits)) #if values == TRUE, return z score for each value

} else {

return(round(data, digits)) #otherwise, return values with outliers replaced

}

}

hos\_tidy\_omitna$bmi = outliersZ(hos\_tidy\_omitna$bmi, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2)

hos\_tidy\_omitna$temperature = outliersZ(hos\_tidy\_omitna$temperature, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2)

hos\_tidy\_omitna$heartrate = outliersZ(hos\_tidy\_omitna$heartrate, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2)

hos\_tidy\_omitna$respirationrate = outliersZ(hos\_tidy\_omitna$respirationrate, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2)

hos\_tidy\_omitna$bpdiastolic = outliersZ(hos\_tidy\_omitna$bpdiastolic, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2)

hos\_tidy\_omitna$bpsystolic = outliersZ(hos\_tidy\_omitna$bpsystolic, zCutOff = 3.291, replace = NA, values = FALSE, digits = 2)

## 99.9% cut off

```

```{r omit na again}

fill\_na = function(x) {

if (is.numeric(x)){

mean = mean(x, na.rm = TRUE)

x = replace(x, is.na(x), mean)

} else {x = x}

return(x)

}

hos\_tidy\_omitna = map\_df(hos\_tidy\_omitna, fill\_na)

hos\_tidy\_omitna = hos\_tidy\_omitna %>%

filter(!o2sat > 100)

```

### Stepwise selection

```{r Stepwise selection}

hos\_tidy\_omitna = hos\_tidy\_omitna %>%

mutate(log\_losdays2 = log(losdays2)) %>%

na.omit()

mult.fit <- lm(log\_losdays2 ~ is30dayreadmit + ageyear + evisit+ cindex + maritalstatus + insurancetype + race + respirationrate + o2sat + heartrate + bmi + temperature + bpsystolic + bpdiastolic + mews + icu\_flag, data = hos\_tidy\_omitna)

summary(mult.fit)

z = step(mult.fit, direction = 'both')

summary(z)

#mews score based on bp, respiration, heartrate & temp and is a less significant variable than bp, resp $ temp

#the two bp readings are correlated

#of all the dummy variables, only insurancetype was significant

```

### Criterion-based procedures

```{r criterion}

mult.fit <- lm(log\_losdays2 ~ is30dayreadmit + evisit+ cindex + ageyear + maritalstatus + insurancetype + race + respirationrate + o2sat + heartrate + bmi + temperature + bpsystolic + bpdiastolic + mews + icu\_flag, data = hos\_tidy\_omitna)

best <- function(model, ...)

{

subsets <- regsubsets(formula(model), model.frame(model), ...)

subsets <- with(summary(subsets),

cbind(p = as.numeric(rownames(which)), which, rss, rsq, adjr2, cp, bic))

return(subsets)

}

best(mult.fit, nbest = 1)

```

#Final model

```{r}

mult.fit2 <- lm(log\_losdays2 ~ is30dayreadmit + evisit+ cindex + ageyear + respirationrate + heartrate + temperature + bpsystolic, data = hos\_tidy\_omitna)

best(mult.fit2, nbest = 1)

vif(mult.fit2)

```

#Checking outliers

```{r}

# # Simple linear regression

# reg\_hos<-lm(hos\_tidy\_omitna$log\_losdays2~hos\_tidy\_omitna$is30dayreadmit)

stu\_res<-rstandard(mult.fit2)

outliers\_y<-stu\_res[abs(stu\_res)>2.5]

#removing outliers

hos\_tidy\_omitna\_outl <- hos\_tidy\_omitna[c(-6,-232,-277,-368,-411,-514,-535,-557,-562,-604,-629,-704,-772,-824,-838,-852,-879,-982,-996,-1114,-1337,-1395,-1438,-1446, -1471,-1491,-1517,-1552,-1605,-1639,-1682,-1697,-1882,-2002,-2024,-2071,-2153,-2395,-2460,-2525,-2554,-2769,-2786,-2828,-2852, -2926, -3086, -3103, -3104, -3105, -3116, -3131, -3170,-3174,-3232,-3298,-3299,-3318,-3329,-3332, -3405),]

influence.measures(mult.fit2)

```

#Vif

```{r}

library(HH)

vif(mult.fit2)

```

#Building the model without the outliers

```{r}

mult.fit3 <- lm(log\_losdays2 ~ is30dayreadmit + evisit+ cindex + ageyear + respirationrate + heartrate + temperature + bpsystolic, data = hos\_tidy\_omitna\_outl)

best(mult.fit3, nbest = 1)

summary(mult.fit3)

```

#Bootstrap

```{r}

set.seed(1)

boot.fn<-function(data, index){

return(coef(lm(log\_losdays2 ~ is30dayreadmit + evisit+ cindex + ageyear + respirationrate + heartrate + bpsystolic, data = hos\_tidy\_omitna, subset=index)))

}

boot.fn(hos\_tidy\_omitna,1:3502)

set.seed(1)

boot.fn(hos\_tidy\_omitna,sample(3502,3502,replace=T))

boot(hos\_tidy\_omitna\_outl, boot.fn, 1000)

# How does it compare to the original (non-bootstrap) estimates?

summary(mult.fit3)

```

#Residuals

```{r}

par(mfrow=c(2,2))

plot(mult.fit2)

```

Call:

lm(formula = log\_losdays2 ~ is30dayreadmit + ageyear + evisit +

cindex + maritalstatus + insurancetype + race + respirationrate +

o2sat + heartrate + bmi + temperature + bpsystolic + bpdiastolic +

mews + icu\_flag, data = hos\_tidy\_omitna)

Residuals:

Min 1Q Median 3Q Max

-5.2492 -0.4714 -0.0052 0.5167 3.0230

Coefficients:

Estimate Std. Error t value

(Intercept) -4.888158 2.496700 -1.958

is30dayreadmit 0.196713 0.041193 4.775

ageyear 0.010079 0.001191 8.463

evisit 0.060715 0.009555 6.354

cindex 0.036552 0.008294 4.407

maritalstatusDivorced -0.730059 0.832578 -0.877

maritalstatusMarried -0.765179 0.830992 -0.921

maritalstatusSeparated -0.628338 0.839046 -0.749

maritalstatusSingle -0.677865 0.830590 -0.816

maritalstatusWidowed -0.738569 0.831636 -0.888

insurancetypeMedicare -0.136114 0.073990 -1.840

insurancetypePrivate -0.213696 0.069691 -3.066

raceAsian -0.050994 0.064303 -0.793

raceNative Amer/Alaskan -0.052410 0.183781 -0.285

raceNatv Hawaii/Pacf Isl -0.577800 0.416524 -1.387

raceOther/Multiracial -0.066988 0.049392 -1.356

raceWhite -0.099245 0.039212 -2.531

respirationrate 0.061292 0.009190 6.669

o2sat -0.045479 0.009817 -4.633

heartrate 0.007725 0.001340 5.766

bmi -0.005934 0.002679 -2.215

temperature 0.274016 0.057062 4.802

bpsystolic -0.004873 0.001086 -4.489

bpdiastolic -0.003692 0.002000 -1.846

mews 0.004068 0.010642 0.382

icu\_flag 0.085923 0.108020 0.795

Pr(>|t|)

(Intercept) 0.05033 .

is30dayreadmit 1.87e-06 \*\*\*

ageyear < 2e-16 \*\*\*

evisit 2.37e-10 \*\*\*

cindex 1.08e-05 \*\*\*

maritalstatusDivorced 0.38062

maritalstatusMarried 0.35722

maritalstatusSeparated 0.45399

maritalstatusSingle 0.41448

maritalstatusWidowed 0.37455

insurancetypeMedicare 0.06591 .

insurancetypePrivate 0.00218 \*\*

raceAsian 0.42781

raceNative Amer/Alaskan 0.77553

raceNatv Hawaii/Pacf Isl 0.16547

raceOther/Multiracial 0.17511

raceWhite 0.01142 \*

respirationrate 2.98e-11 \*\*\*

o2sat 3.74e-06 \*\*\*

heartrate 8.83e-09 \*\*\*

bmi 0.02680 \*

temperature 1.64e-06 \*\*\*

bpsystolic 7.39e-06 \*\*\*

bpdiastolic 0.06501 .

mews 0.70228

icu\_flag 0.42641

---

Signif. codes:

0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8263 on 3466 degrees of freedom

Multiple R-squared: 0.1575, Adjusted R-squared: 0.1514

F-statistic: 25.92 on 25 and 3466 DF, p-value: < 2.2e-16

Start: AIC=-1306.67

log\_losdays2 ~ is30dayreadmit + ageyear + evisit + cindex + maritalstatus +

insurancetype + race + respirationrate + o2sat + heartrate +

bmi + temperature + bpsystolic + bpdiastolic + mews + icu\_flag

Df Sum of Sq RSS AIC

- maritalstatus 5 4.731 2371.2 -1309.7

- race 5 5.465 2371.9 -1308.6

- mews 1 0.100 2366.6 -1308.5

- icu\_flag 1 0.432 2366.9 -1308.0

<none> 2366.5 -1306.7

- bpdiastolic 1 2.326 2368.8 -1305.2

- bmi 1 3.351 2369.8 -1303.7

- insurancetype 2 9.141 2375.6 -1297.2

- cindex 1 13.260 2379.7 -1289.2

- bpsystolic 1 13.759 2380.2 -1288.4

- o2sat 1 14.654 2381.1 -1287.1

- is30dayreadmit 1 15.570 2382.0 -1285.8

- temperature 1 15.745 2382.2 -1285.5

- heartrate 1 22.699 2389.2 -1275.3

- evisit 1 27.567 2394.0 -1268.2

- respirationrate 1 30.367 2396.8 -1264.1

- ageyear 1 48.904 2415.4 -1237.2

Step: AIC=-1309.69

log\_losdays2 ~ is30dayreadmit + ageyear + evisit + cindex + insurancetype +

race + respirationrate + o2sat + heartrate + bmi + temperature +

bpsystolic + bpdiastolic + mews + icu\_flag

Df Sum of Sq RSS AIC

- mews 1 0.182 2371.4 -1311.4

- icu\_flag 1 0.378 2371.6 -1311.1

<none> 2371.2 -1309.7

- race 5 6.970 2378.2 -1309.4

- bpdiastolic 1 2.533 2373.7 -1308.0

+ maritalstatus 5 4.731 2366.5 -1306.7

- bmi 1 3.979 2375.2 -1305.8

- insurancetype 2 10.741 2381.9 -1297.9

- cindex 1 12.984 2384.2 -1292.6

- bpsystolic 1 13.804 2385.0 -1291.4

- temperature 1 15.056 2386.2 -1289.6

- o2sat 1 15.059 2386.2 -1289.6

- is30dayreadmit 1 15.516 2386.7 -1288.9

- heartrate 1 23.006 2394.2 -1278.0

- evisit 1 28.902 2400.1 -1269.4

- respirationrate 1 30.248 2401.4 -1267.4

- ageyear 1 49.384 2420.6 -1239.7

Step: AIC=-1311.42

log\_losdays2 ~ is30dayreadmit + ageyear + evisit + cindex + insurancetype +

race + respirationrate + o2sat + heartrate + bmi + temperature +

bpsystolic + bpdiastolic + icu\_flag

Df Sum of Sq RSS AIC

- icu\_flag 1 0.368 2371.7 -1312.9

<none> 2371.4 -1311.4

- race 5 7.024 2378.4 -1311.1

+ mews 1 0.182 2371.2 -1309.7

- bpdiastolic 1 2.720 2374.1 -1309.4

+ maritalstatus 5 4.814 2366.6 -1308.5

- bmi 1 3.815 2375.2 -1307.8

- insurancetype 2 10.881 2382.2 -1299.4

- cindex 1 12.994 2384.4 -1294.3

- bpsystolic 1 13.747 2385.1 -1293.2

- temperature 1 15.133 2386.5 -1291.2

- o2sat 1 15.222 2386.6 -1291.1

- is30dayreadmit 1 15.466 2386.8 -1290.7

- heartrate 1 25.168 2396.5 -1276.6

- evisit 1 28.956 2400.3 -1271.0

- respirationrate 1 31.445 2402.8 -1267.4

- ageyear 1 63.318 2434.7 -1221.4

Step: AIC=-1312.88

log\_losdays2 ~ is30dayreadmit + ageyear + evisit + cindex + insurancetype +

race + respirationrate + o2sat + heartrate + bmi + temperature +

bpsystolic + bpdiastolic

Df Sum of Sq RSS AIC

<none> 2371.7 -1312.9

- race 5 7.004 2378.8 -1312.6

+ icu\_flag 1 0.368 2371.4 -1311.4

+ mews 1 0.172 2371.6 -1311.1

- bpdiastolic 1 2.838 2374.6 -1310.7

+ maritalstatus 5 4.757 2367.0 -1309.9

- bmi 1 3.780 2375.5 -1309.3

- insurancetype 2 10.729 2382.5 -1301.1

- cindex 1 12.869 2384.6 -1296.0

- bpsystolic 1 13.694 2385.4 -1294.8

- o2sat 1 15.080 2386.8 -1292.8

- temperature 1 15.154 2386.9 -1292.6

- is30dayreadmit 1 15.442 2387.2 -1292.2

- heartrate 1 25.252 2397.0 -1277.9

- evisit 1 28.664 2400.4 -1272.9

- respirationrate 1 31.243 2403.0 -1269.2

- ageyear 1 62.999 2434.7 -1223.3

Call:

lm(formula = log\_losdays2 ~ is30dayreadmit + ageyear + evisit +

cindex + insurancetype + race + respirationrate + o2sat +

heartrate + bmi + temperature + bpsystolic + bpdiastolic,

data = hos\_tidy\_omitna)

Residuals:

Min 1Q Median 3Q Max

-5.2819 -0.4752 0.0056 0.5207 3.0898

Coefficients:

Estimate Std. Error t value

(Intercept) -5.2741231 2.3708254 -2.225

is30dayreadmit 0.1957711 0.0411700 4.755

ageyear 0.0095016 0.0009893 9.605

evisit 0.0616639 0.0095180 6.479

cindex 0.0359674 0.0082855 4.341

insurancetypeMedicare -0.1460357 0.0737172 -1.981

insurancetypePrivate -0.2291588 0.0691867 -3.312

raceAsian -0.0810869 0.0631966 -1.283

raceNative Amer/Alaskan -0.0693492 0.1836285 -0.378

raceNatv Hawaii/Pacf Isl -0.5911412 0.4161765 -1.420

raceOther/Multiracial -0.0800224 0.0490563 -1.631

raceWhite -0.1144810 0.0387544 -2.954

respirationrate 0.0615550 0.0091005 6.764

o2sat -0.0460064 0.0097904 -4.699

heartrate 0.0079393 0.0013056 6.081

bmi -0.0062070 0.0026384 -2.353

temperature 0.2683080 0.0569575 4.711

bpsystolic -0.0048532 0.0010838 -4.478

bpdiastolic -0.0040358 0.0019796 -2.039

Pr(>|t|)

(Intercept) 0.026173 \*

is30dayreadmit 2.06e-06 \*\*\*

ageyear < 2e-16 \*\*\*

evisit 1.06e-10 \*\*\*

cindex 1.46e-05 \*\*\*

insurancetypeMedicare 0.047667 \*

insurancetypePrivate 0.000935 \*\*\*

raceAsian 0.199546

raceNative Amer/Alaskan 0.705706

raceNatv Hawaii/Pacf Isl 0.155578

raceOther/Multiracial 0.102931

raceWhite 0.003158 \*\*

respirationrate 1.57e-11 \*\*\*

o2sat 2.71e-06 \*\*\*

heartrate 1.33e-09 \*\*\*

bmi 0.018701 \*

temperature 2.57e-06 \*\*\*

bpsystolic 7.78e-06 \*\*\*

bpdiastolic 0.041558 \*

---

Signif. codes:

0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.8264 on 3473 degrees of freedom

Multiple R-squared: 0.1556, Adjusted R-squared: 0.1512

F-statistic: 35.56 on 18 and 3473 DF, p-value: < 2.2e-16

p (Intercept) is30dayreadmit evisit cindex ageyear

1 1 1 0 0 0 1

2 2 1 0 0 0 1

3 3 1 0 1 0 1

4 4 1 0 1 0 1

5 5 1 0 1 0 1

6 6 1 0 1 1 1

7 7 1 0 1 1 1

8 8 1 1 1 1 1

maritalstatusDivorced maritalstatusMarried

1 0 0

2 0 0

3 0 0

4 0 0

5 0 0

6 0 0

7 0 0

8 0 0

maritalstatusSeparated maritalstatusSingle

1 0 0

2 0 0

3 0 0

4 0 0

5 0 0

6 0 0

7 0 0

8 0 0

maritalstatusWidowed insurancetypeMedicare

1 0 0

2 0 0

3 0 0

4 0 0

5 0 0

6 0 0

7 0 0

8 0 0

insurancetypePrivate raceAsian raceNative Amer/Alaskan

1 0 0 0

2 0 0 0

3 0 0 0

4 0 0 0

5 0 0 0

6 0 0 0

7 0 0 0

8 0 0 0

raceNatv Hawaii/Pacf Isl raceOther/Multiracial raceWhite

1 0 0 0

2 0 0 0

3 0 0 0

4 0 0 0

5 0 0 0

6 0 0 0

7 0 0 0

8 0 0 0

respirationrate o2sat heartrate bmi temperature bpsystolic

1 0 0 0 0 0 0

2 0 0 1 0 0 0

3 0 0 1 0 0 0

4 1 0 1 0 0 0

5 1 0 1 0 0 1

6 1 0 1 0 0 1

7 1 0 1 0 1 1

8 1 0 1 0 1 1

bpdiastolic mews icu\_flag rss rsq adjr2

1 0 0 0 2674.621 0.04779225 0.04751942

2 0 0 0 2595.472 0.07597056 0.07544088

3 0 0 0 2529.839 0.09933683 0.09856217

4 0 0 0 2486.568 0.11474195 0.11372645

5 0 0 0 2454.091 0.12630449 0.12505134

6 0 0 0 2438.264 0.13193903 0.13044452

7 0 0 0 2421.084 0.13805534 0.13632354

8 0 0 0 2406.007 0.14342286 0.14145542

cp bic

1 429.34287 -154.6939

2 315.41849 -251.4329

3 221.29066 -332.7138

4 159.91463 -384.8002

5 114.34681 -422.5522

6 93.16656 -436.9871

7 70.00429 -453.5204

8 49.92254 -467.1756

p (Intercept) is30dayreadmit evisit cindex ageyear

1 1 1 0 0 0 1

2 2 1 0 0 0 1

3 3 1 0 1 0 1

4 4 1 0 1 0 1

5 5 1 0 1 0 1

6 6 1 0 1 1 1

7 7 1 0 1 1 1

8 8 1 1 1 1 1

respirationrate heartrate temperature bpsystolic rss

1 0 0 0 0 2674.621

2 0 1 0 0 2595.472

3 0 1 0 0 2529.839

4 1 1 0 0 2486.568

5 1 1 0 1 2454.091

6 1 1 0 1 2438.264

7 1 1 1 1 2421.084

8 1 1 1 1 2406.007

rsq adjr2 cp bic

1 0.04779225 0.04751942 383.85162 -154.6939

2 0.07597056 0.07544088 271.27345 -251.4329

3 0.09933683 0.09856217 178.26193 -332.7138

4 0.11474195 0.11372645 117.62188 -384.8002

5 0.12630449 0.12505134 72.60645 -422.5522

6 0.13193903 0.13044452 51.69539 -436.9871

7 0.13805534 0.13632354 28.82532 -453.5204

8 0.14342286 0.14145542 9.00000 -467.1756

is30dayreadmit evisit cindex

1.120197 1.135400 1.121484

ageyear respirationrate heartrate

1.195420 1.065370 1.128208

temperature bpsystolic

1.070028 1.090651

VIF:

is30dayreadmit evisit cindex

1.120197 1.135400 1.121484

ageyear respirationrate heartrate

1.195420 1.065370 1.128208

temperature bpsystolic

1.070028 1.090651

p (Intercept) is30dayreadmit evisit cindex ageyear

1 1 1 0 0 0 1

2 2 1 0 0 0 1

3 3 1 0 1 0 1

4 4 1 0 1 0 1

5 5 1 0 1 0 1

6 6 1 1 1 0 1

7 7 1 1 1 1 1

8 8 1 1 1 1 1

respirationrate heartrate temperature bpsystolic rss

1 0 0 0 0 2086.612

2 1 0 0 0 2004.630

3 1 0 0 0 1943.558

4 1 1 0 0 1900.277

5 1 1 0 1 1867.504

6 1 1 0 1 1854.524

7 1 1 0 1 1843.026

8 1 1 1 1 1832.625

rsq adjr2 cp bic

1 0.05719624 0.05692129 469.26209 -185.7948

2 0.09423869 0.09371024 318.17925 -315.1767

3 0.12183319 0.12106445 206.14127 -413.1887

4 0.14138887 0.14038641 127.32481 -482.3157

5 0.15619686 0.15496503 68.12886 -533.8639

6 0.16206197 0.16059362 45.89048 -549.6548

7 0.16725702 0.16555406 26.42128 -562.8518

8 0.17195651 0.17002070 9.00000 -574.1286

Call:

lm(formula = log\_losdays2 ~ is30dayreadmit + evisit + cindex +

ageyear + respirationrate + heartrate + temperature + bpsystolic,

data = hos\_tidy\_omitna\_outl)

Residuals:

Min 1Q Median 3Q Max

-2.06553 -0.48008 -0.01071 0.48973 2.07328

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -9.0154133 1.8724423 -4.815 1.54e-06 \*\*\*

is30dayreadmit 0.1780516 0.0367395 4.846 1.31e-06 \*\*\*

evisit 0.0628519 0.0083950 7.487 8.92e-14 \*\*\*

cindex 0.0355451 0.0073419 4.841 1.35e-06 \*\*\*

ageyear 0.0111868 0.0007404 15.110 < 2e-16 \*\*\*

respirationrate 0.0740320 0.0080736 9.170 < 2e-16 \*\*\*

heartrate 0.0075854 0.0011249 6.743 1.81e-11 \*\*\*

temperature 0.2246407 0.0509741 4.407 1.08e-05 \*\*\*

bpsystolic -0.0060337 0.0007883 -7.654 2.51e-14 \*\*\*

---

Signif. codes:

0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.7318 on 3422 degrees of freedom

Multiple R-squared: 0.172, Adjusted R-squared: 0.17

F-statistic: 88.83 on 8 and 3422 DF, p-value: < 2.2e-16

(Intercept) is30dayreadmit evisit

-0.738508641 0.188456546 0.064187025

cindex ageyear respirationrate

0.038194252 0.010796930 0.067375237

heartrate bpsystolic

0.008608145 -0.005900322

(Intercept) is30dayreadmit evisit

-0.368752111 0.242421093 0.046860241

cindex ageyear respirationrate

0.041236413 0.010307535 0.050406024

heartrate bpsystolic

0.009415852 -0.006363918

ORDINARY NONPARAMETRIC BOOTSTRAP

Call:

boot(data = hos\_tidy\_omitna\_outl, statistic = boot.fn, R = 1000)

Bootstrap Statistics :

original bias std. error

t1\* -0.710000796 -9.835933e-03 0.2132228126

t2\* 0.185211932 1.006271e-03 0.0427600973

t3\* 0.064135159 -7.584452e-05 0.0093488573

t4\* 0.037917675 -3.914958e-04 0.0080029882

t5\* 0.010753159 2.836843e-05 0.0008603273

t6\* 0.067212995 3.834707e-04 0.0100110939

t7\* 0.008556634 2.402885e-05 0.0013364630

t8\* -0.006026629 -6.261026e-07 0.0009597580

Call:

lm(formula = log\_losdays2 ~ is30dayreadmit + evisit + cindex +

ageyear + respirationrate + heartrate + temperature + bpsystolic,

data = hos\_tidy\_omitna\_outl)

Residuals:

Min 1Q Median 3Q Max

-2.06553 -0.48008 -0.01071 0.48973 2.07328

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -9.0154133 1.8724423 -4.815 1.54e-06 \*\*\*

is30dayreadmit 0.1780516 0.0367395 4.846 1.31e-06 \*\*\*

evisit 0.0628519 0.0083950 7.487 8.92e-14 \*\*\*

cindex 0.0355451 0.0073419 4.841 1.35e-06 \*\*\*

ageyear 0.0111868 0.0007404 15.110 < 2e-16 \*\*\*

respirationrate 0.0740320 0.0080736 9.170 < 2e-16 \*\*\*

heartrate 0.0075854 0.0011249 6.743 1.81e-11 \*\*\*

temperature 0.2246407 0.0509741 4.407 1.08e-05 \*\*\*

bpsystolic -0.0060337 0.0007883 -7.654 2.51e-14 \*\*\*

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Signif. codes:

0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.7318 on 3422 degrees of freedom

Multiple R-squared: 0.172, Adjusted R-squared: 0.17

F-statistic: 88.83 on 8 and 3422 DF, p-value: < 2.2e-16