

EDA HW#7

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EX3

Jackknife estimate is 0.9170373, standard deviation is 0.4406764. CI: -0.02811946 1.86219412

Bootstrap estimate is 1.125376, standard deviation is 0.3808777. CI: 0.307378 1.943373

Fisher's CI using Jackknife estimate as ρ is 0.753707 1.080368.

Fisher's CI using Bootstrap estimate as ρ is 0.9620454 1.2887060.

EX4

CIIs are:

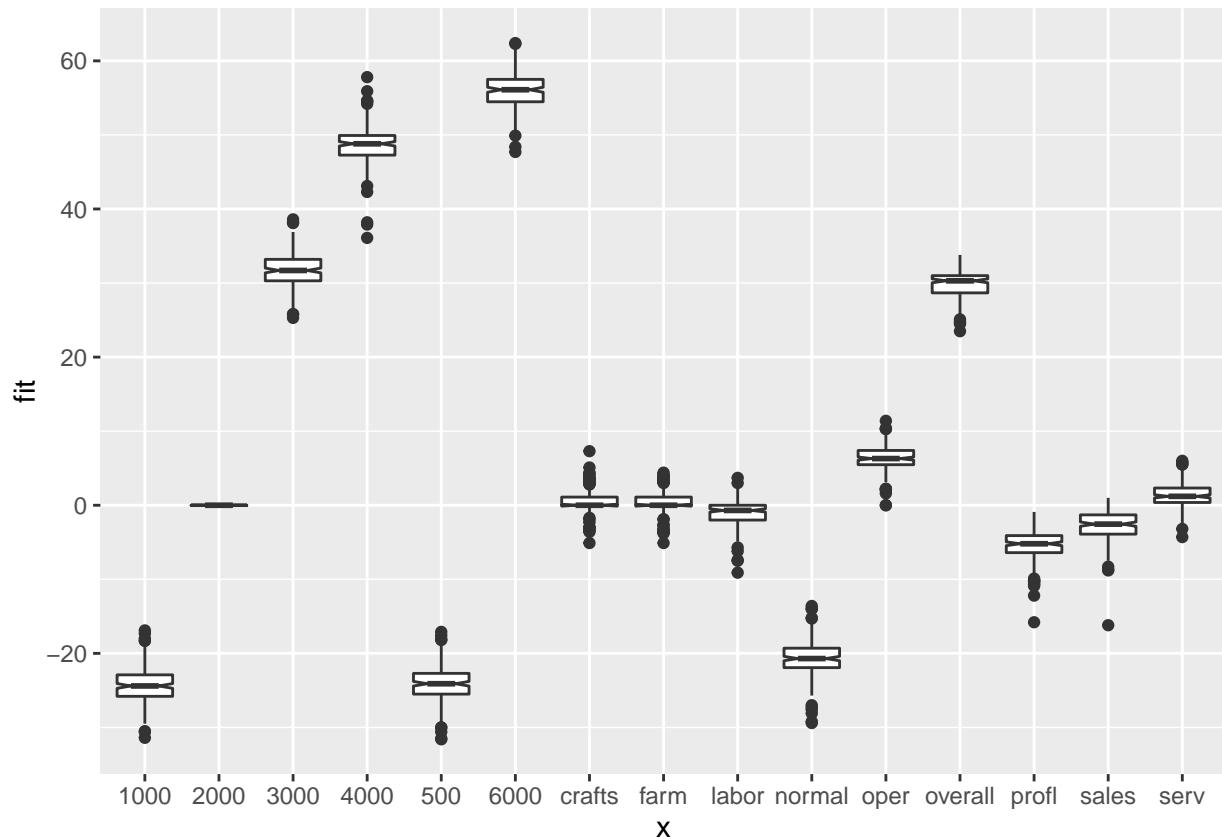
```
##      overall      500      1000 2000      3000      4000      6000      normal
## [1,] 25.14106 -30.6241 -30.43905    0 25.94095 41.62296 49.79242 -27.11587
## [2,] 34.50294 -17.8659 -17.99895    0 37.50505 55.81504 62.18358 -14.15213
##      profl      farm      sales      crafts      oper      serv
## [1,] -11.04112696 -3.200155 -7.905838 -3.206563  1.904262 -2.618427
## [2,]  0.00912696  4.160155  2.571838  4.300563 10.639738  5.500427
##      labor
## [1,] -5.348839
## [2,]  3.146839
```

Notched boxplots of the row & column effects.

```
ggplot.data<-data.frame(fit=as.vector(t(bmat)))
ggplot.data<-cbind(ggplot.data,x=c("overall","500","1000","2000","3000","4000","6000","normal","profl",
ggplot(ggplot.data,aes(x=x,y=fit))+geom_boxplot(notch = TRUE)
```

```
## notch went outside hinges. Try setting notch=FALSE.
```

```
## notch went outside hinges. Try setting notch=FALSE.
```



From boxplots, the effects of 1000, 3000, 4000, 500, 6000, normal, oper, overall are significantly different from 0.

The correlation matrix is:

Warning in cor(bmat): the standard deviation is zero

```
##          overall      500      1000 2000      3000
## overall  1.00000000 -0.640519114 -0.6496131596 NA -0.63457440
## 500      -0.64051911 1.0000000000 0.5123615938 NA 0.48037559
## 1000     -0.64961316 0.512361594 1.0000000000 NA 0.43522648
## 2000      NA          NA          NA      1      NA
## 3000     -0.63457440 0.480375591 0.4352264799 NA 1.00000000
## 4000     -0.65105607 0.467521557 0.5484799847 NA 0.44554635
## 6000     -0.59516835 0.529892498 0.4710739909 NA 0.52398487
## normal  -0.65175230 0.521603106 0.5260199633 NA 0.49059819
## profl    -0.26814288 0.069408766 0.0004178033 NA 0.03600594
## farm      0.02316907 -0.073419721 -0.0975387089 NA -0.05610042
## sales    -0.27581685 0.017508078 0.0568058002 NA 0.06653591
## crafts   -0.20568840 0.001618916 -0.0461827986 NA 0.03104878
## oper     -0.17908544 -0.063738217 -0.0372943635 NA -0.10268787
## serv     -0.07474545 0.057396309 0.0656303344 NA -0.03277095
## labor    -0.01799884 -0.054830116 -0.0323523163 NA -0.08411383
##          4000      6000      normal      profl      farm
## overall -0.651056072 -0.595168346 -0.6517523005 -0.2681428797 0.02316907
## 500      0.467521557 0.529892498 0.5216031058 0.0694087660 -0.07341972
## 1000     0.548479985 0.471073991 0.5260199633 0.0004178033 -0.09753871
## 2000      NA          NA          NA          NA          NA
## 3000     0.445546346 0.523984867 0.4905981871 0.0360059407 -0.05610042
```

## 4000	1.000000000	0.441898739	0.4792167442	-0.0512758505	-0.02865564
## 6000	0.441898739	1.000000000	0.5071005192	-0.0085348979	-0.05841541
## normal	0.479216744	0.507100519	1.0000000000	-0.0007174283	-0.02806263
## profl	-0.051275851	-0.008534898	-0.0007174283	1.0000000000	0.00515527
## farm	-0.028655640	-0.058415410	-0.0280626334	0.0051552700	1.000000000
## sales	0.038698308	-0.079951598	0.0583383573	0.2704507822	0.05579711
## crafts	-0.061010291	0.110506095	0.0923125066	0.2968545597	-0.19830715
## oper	0.049961083	-0.102272991	-0.0293886867	0.2458807446	0.03528633
## serv	0.001978492	-0.029756734	0.0086490780	-0.0025016483	-0.32303632
## labor	0.051381388	-0.134087550	-0.1233119651	0.0565628653	-0.14628688
##	sales	crafts	oper	serv	labor
## overall	-0.275816850	-0.205688402	-0.17908544	-0.074745454	-0.017998842
## 500	0.017508078	0.001618916	-0.06373822	0.057396309	-0.054830116
## 1000	0.056805800	-0.046182799	-0.03729436	0.065630334	-0.032352316
## 2000	NA	NA	NA	NA	NA
## 3000	0.066535912	0.031048779	-0.10268787	-0.032770945	-0.084113832
## 4000	0.038698308	-0.061010291	0.04996108	0.001978492	0.051381388
## 6000	-0.079951598	0.110506095	-0.10227299	-0.029756734	-0.134087550
## normal	0.058338357	0.092312507	-0.02938869	0.008649078	-0.123311965
## profl	0.270450782	0.296854560	0.24588074	-0.002501648	0.056562865
## farm	0.055797114	-0.198307154	0.03528633	-0.323036315	-0.146286877
## sales	1.000000000	0.077820438	0.18251742	0.085511780	0.007268634
## crafts	0.077820438	1.000000000	0.17942907	-0.176159148	-0.102599178
## oper	0.182517419	0.179429071	1.000000000	0.023573219	0.050775567
## serv	0.085511780	-0.176159148	0.02357322	1.000000000	0.007151647
## labor	0.007268634	-0.102599178	0.05077557	0.007151647	1.000000000

From the correlation matrix we can see there is strong relationship in pairs of overall and all frequency effects, pairs of frequencies.