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##Stat222, week3
>
> #NC residual plots
>  week3NC = read.table(file="http://rogosateaching.com/stat222/ncLong_data", header = T)
> week3NC$timeInt = week3NC$time -1
> ncUnc = lmer(Y ~ timeInt + ( 1 + timeInt  | ID), data = week3NC)
> summary(ncUnc)
Linear mixed model fit by REML ['lmerMod']
Formula: Y ~ timeInt + (1 + timeInt | ID)   Data: week3NC
REML criterion at convergence: 20677.8
Scaled residuals:
    Min      1Q  Median      3Q     Max
-3.6596 -0.6056 -0.0257  0.5941  3.2018

Random effects:
 Groups   Name        Variance Std.Dev. Corr  ## elements of Cov(alpha_0, alpha_1)
 ID       (Intercept) 326.06   18.057
          timeInt      46.23    6.799   0.65  ## .65 is mle estimate of Cor(alpha_0, alpha_1)
 Residual             403.49   20.087
Number of obs: 2216, groups:  ID, 277

Fixed effects:
            Estimate Std. Error t value
(Intercept)  342.300      1.336  256.27
timeInt       36.448      0.449   81.18

Correlation of Fixed Effects:
        (Intr)
timeInt 0.279          ## .28 is sample value of Cor(alpha_hat_0, alpha_hat_1)

> plot(ncUnc, id = .01)   #see plot

> ncCon2 = lmer(Y ~  Z*timeInt + ( 1 + timeInt  | ID), data = week3NC) # incl Z in level,slope L2
> summary(ncCon2)
Linear mixed model fit by REML ['lmerMod']
Formula: Y ~  Z * timeInt + (1 + timeInt | ID)   Data: week3NC
REML criterion at convergence: 20485.2
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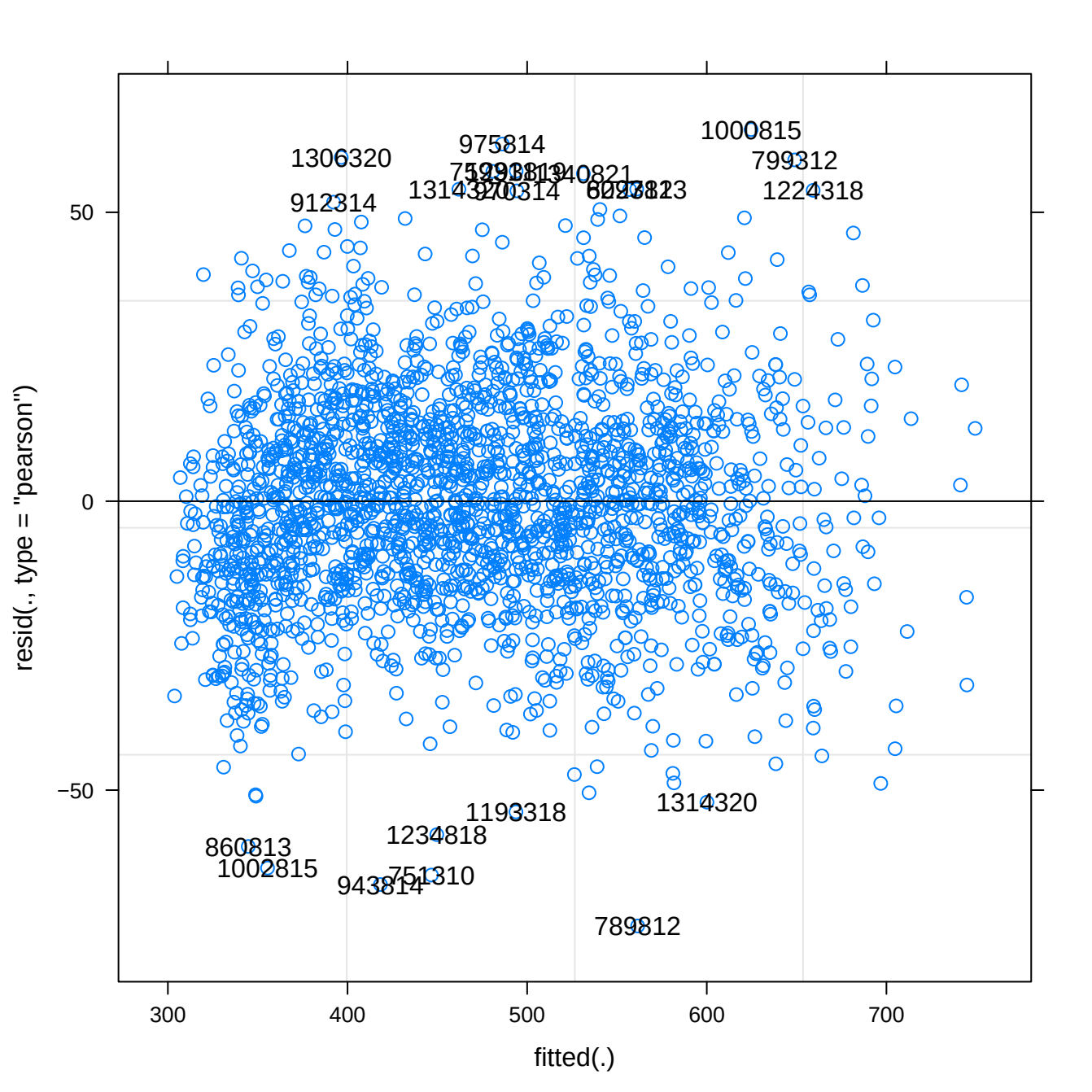
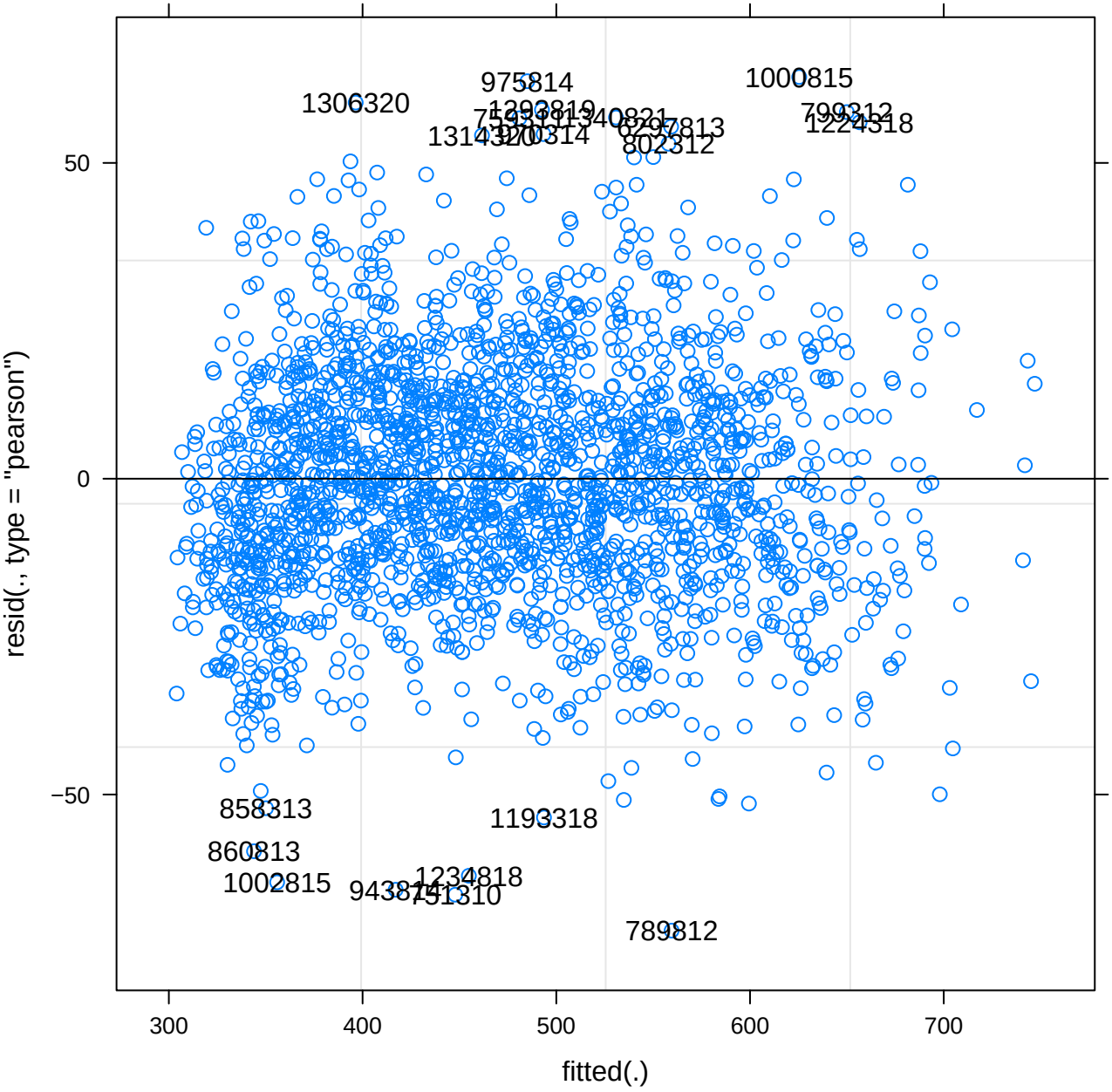
Scaled residuals:
    Min      1Q  Median      3Q     Max
-3.5617 -0.6065 -0.0352  0.5934  3.1665

Random effects:
 Groups   Name        Variance Std.Dev. Corr
 ID       (Intercept) 194.73   13.955
          timeInt      24.63    4.963   0.38
 Residual             403.49   20.087
Number of obs: 2216, groups:  ID, 277

Fixed effects:
             Estimate Std. Error t value
(Intercept) 254.32454    8.83286  28.793
timeInt       0.84389    2.71313   0.311
Z             0.82948    0.08258  10.045
timeInt:Z     0.33569    0.02537  13.235

Correlation of Fixed Effects:
          (Intr) timInt Z
timeInt   -0.066
Z         -0.992  0.066
timeInt:Z  0.066 -0.992 -0.066
> confint(ncCon2)
Computing profile confidence intervals ...
                  2.5 %      97.5 %
.sig01       11.6988560  16.1328515
.sig02        0.1691589   0.6087485
.sig03        4.3873745   5.5462211
.sigma       19.4229852  20.7896705
(Intercept) 237.0150973 271.6339817
timeInt      -4.4729277   6.1607130
Z             0.6676501   0.9913026
timeInt:Z     0.2859872   0.3854013
> plot(ncCon2, id = .01)   # see plot 2
```


1000815
975814
1306320
799312
1224318
912314
1314320
1193318
1234818
860813
1002815
751310
943814
789812
50
0
−50
300
400
500
600
700
resid(., type = "pearson")
fitted(.)



resid(., type = "pearson")
fitted(.)
50
0
−50
300
400
500
600
700
1306320
975814
1000815
799312
1224318
802312
858313
860813
1002815
1193318
1234818
789812