Linear Mixed Model with Random Effect Slope

Description

This script will produce, and analyze a linear mixed model with the following components evaluated on the final data:

- a subject-specific, fixed effect intercept
- a subject-specific, fixed effect slope
- a subject-specific, random effect intercept
- a subject-specific, random effect slope

It will first produce a single response-predictor model for seq variables, and then analyze the assumptions made for LMM modeling.

```
## Loading required package: Matrix
```

```
##
## Attaching package: 'lme4'
```

```
## The following object is masked from 'package:nlme':
##
##     lmList
```

```
##
## Attaching package: 'lmerTest'
```

```
## The following object is masked from 'package:lme4':
##
##     lmer
```

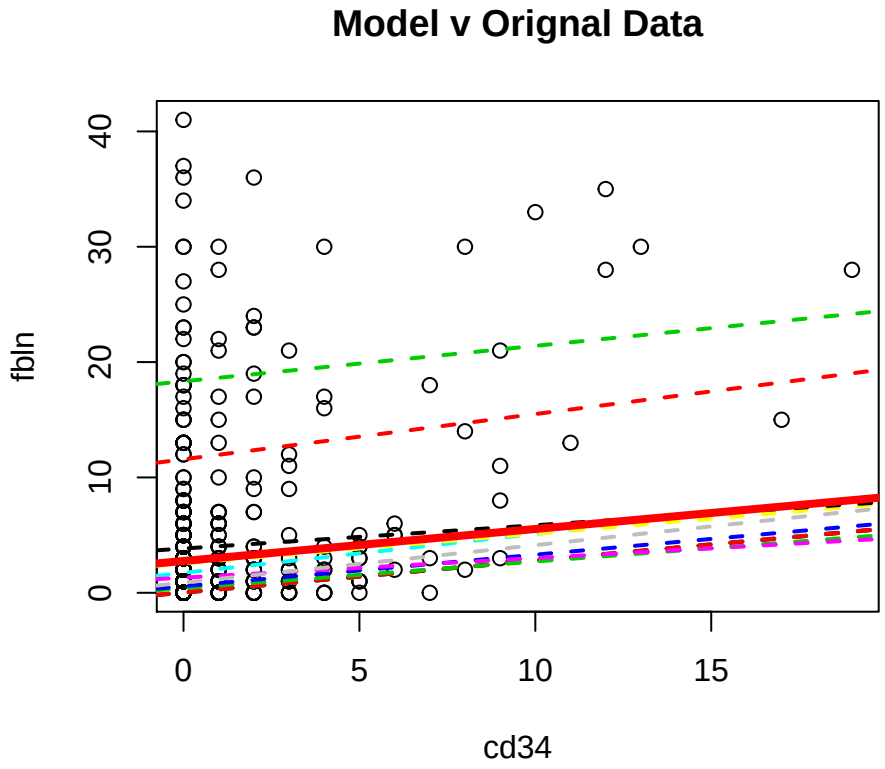
```
## The following object is masked from 'package:stats':
##
##     step
```

Non-Transformed Model

```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: fbln ~ cd34 + (1 | subject.no) + (0 + cd34 | subject.no)
##    Data: dat
##
## REML criterion at convergence: 5477.8
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -6.5863 -0.2056 -0.0079 -0.0032  8.2483
##
## Random effects:
```

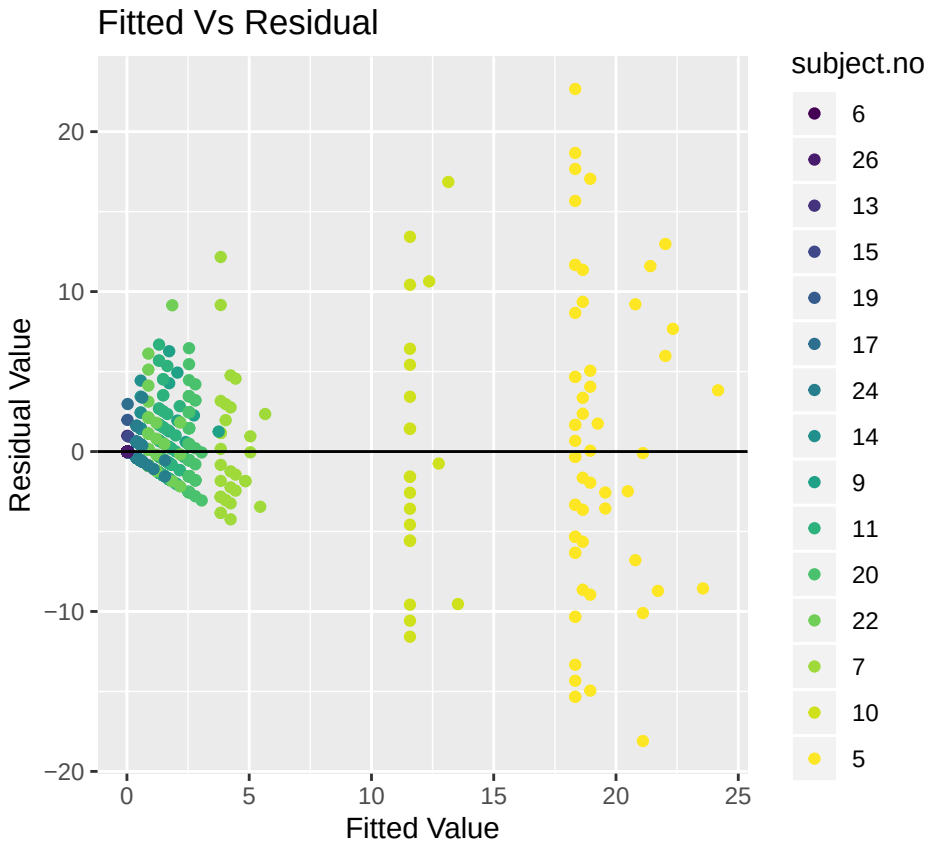
```
##  Groups       Name        Variance Std.Dev.
##  subject.no   (Intercept) 27.53464 5.2473
##  subject.no.1 cd34         0.02232 0.1494
##  Residual                  7.55183 2.7481
## Number of obs: 1110, groups:  subject.no, 15
##
## Fixed effects:
##             Estimate Std. Error       df t value Pr(>|t|)
## (Intercept)  2.75514    1.35885 13.92884   2.028   0.0622 .
## cd34         0.27754    0.09957  1.03771   2.787   0.2119
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr)
## cd34 -0.021
```

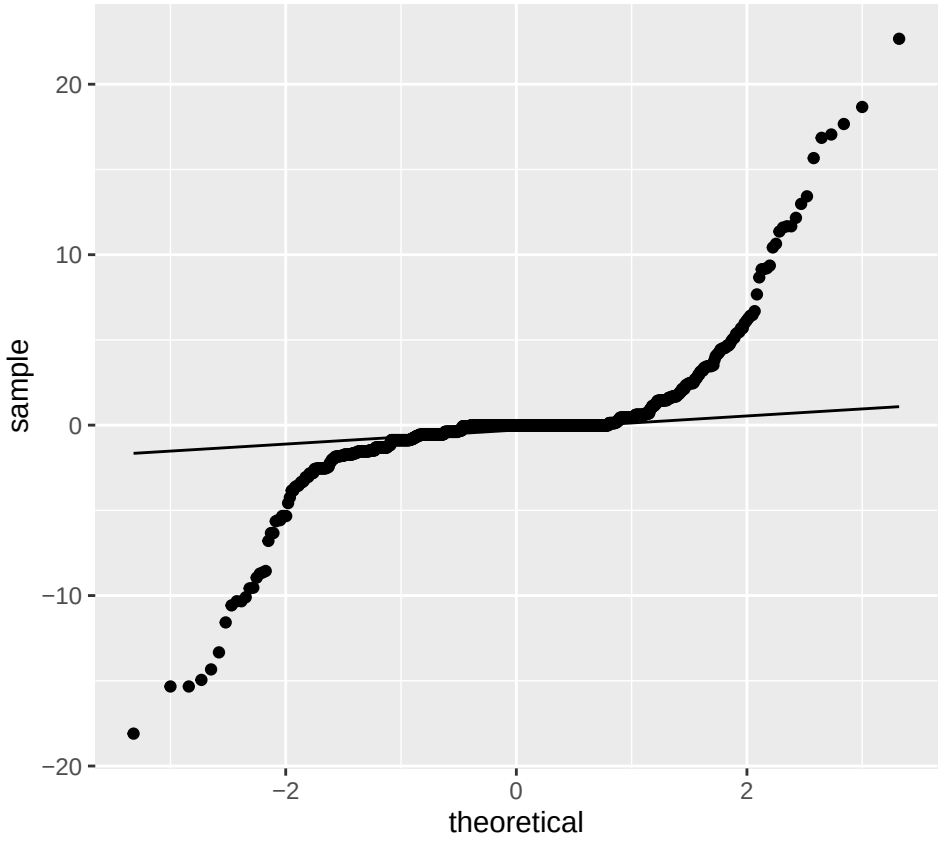
```
## [1] 5487.766
```




```
## (Intercept)
##    2.755141
```

```
##      cd34
## 0.2775386
```



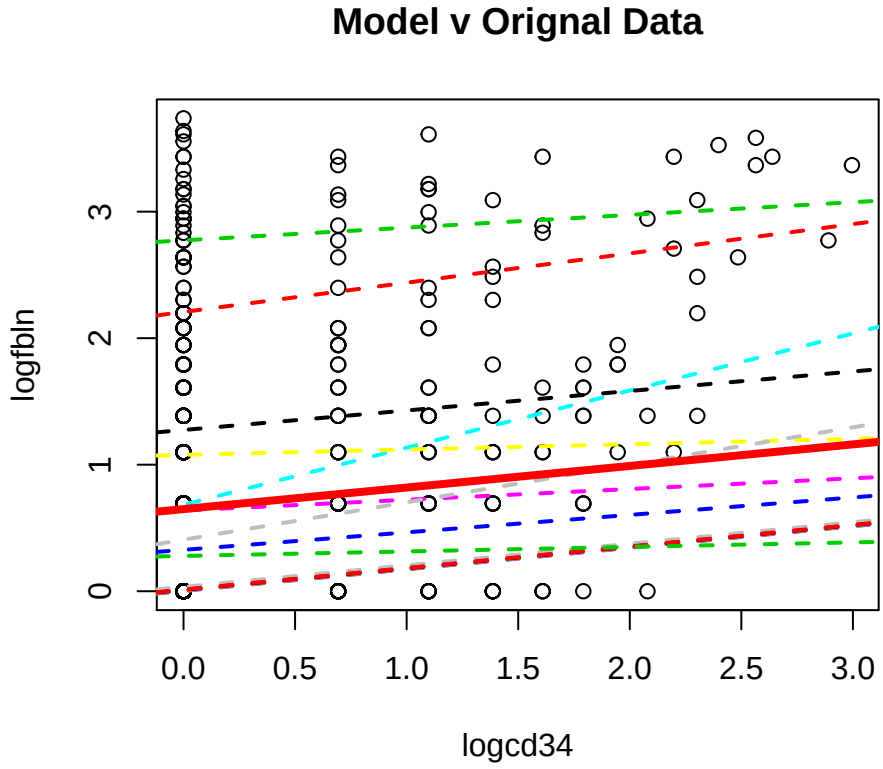


Transformed Model

```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
```

```
## Formula:
## logfbln ~ 1 + logcd34 + (1 | subject.no) + (0 + logcd34 | subject.no)
##    Data: logdat
##
## REML criterion at convergence: 1426.1
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -5.0088 -0.6330 -0.0226  0.0108  3.7954
##
## Random effects:
##  Groups       Name        Variance Std.Dev.
##  subject.no   (Intercept) 0.7368   0.8584
##  subject.no.1 logcd34     0.0298   0.1726
##  Residual                 0.1942   0.4407
## Number of obs: 1110, groups:  subject.no, 15
##
## Fixed effects:
##             Estimate Std. Error       df t value Pr(>|t|)
## (Intercept)  0.64915    0.22231 13.93334   2.920   0.0112 *
## logcd34      0.17047    0.07289  4.98528   2.339   0.0666 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##         (Intr)
## logcd34 -0.017
```

```
## [1] 1436.145
```




```
## (Intercept)
##    0.649147
```

```
##   logcd34
## 0.1704721
```