Linear Mixed Model with Random Effect Intercept

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

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
```

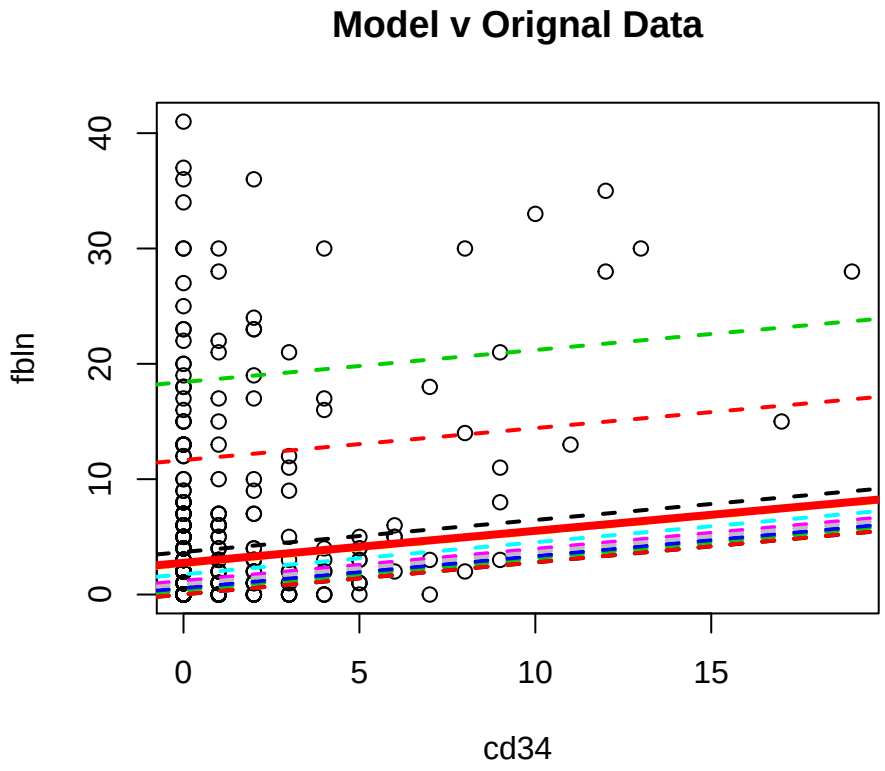
```
## The following object is masked from 'package:stats':
##
##     step
```

Non-Transformed Model

```
## Linear mixed model fit by REML. t-tests use Satterthwaite's method [
## lmerModLmerTest]
## Formula: fbln ~ cd34 + (1 | subject.no)
##    Data: dat
##
## REML criterion at convergence: 5478.1
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -6.5142 -0.2053 -0.0078 -0.0032  8.2056
##
## Random effects:
##  Groups     Name        Variance Std.Dev.
```

```
##  subject.no (Intercept) 27.831   5.276
##  Residual                7.569   2.751
## Number of obs: 1110, groups:  subject.no, 15
##
## Fixed effects:
##              Estimate Std. Error        df t value Pr(>|t|)
## (Intercept) 2.749e+00  1.366e+00 1.396e+01   2.013   0.0639 .
## cd34        2.775e-01  6.117e-02 1.097e+03   4.537 6.34e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr)
## cd34 -0.025
```

```
## [1] 5486.084
```

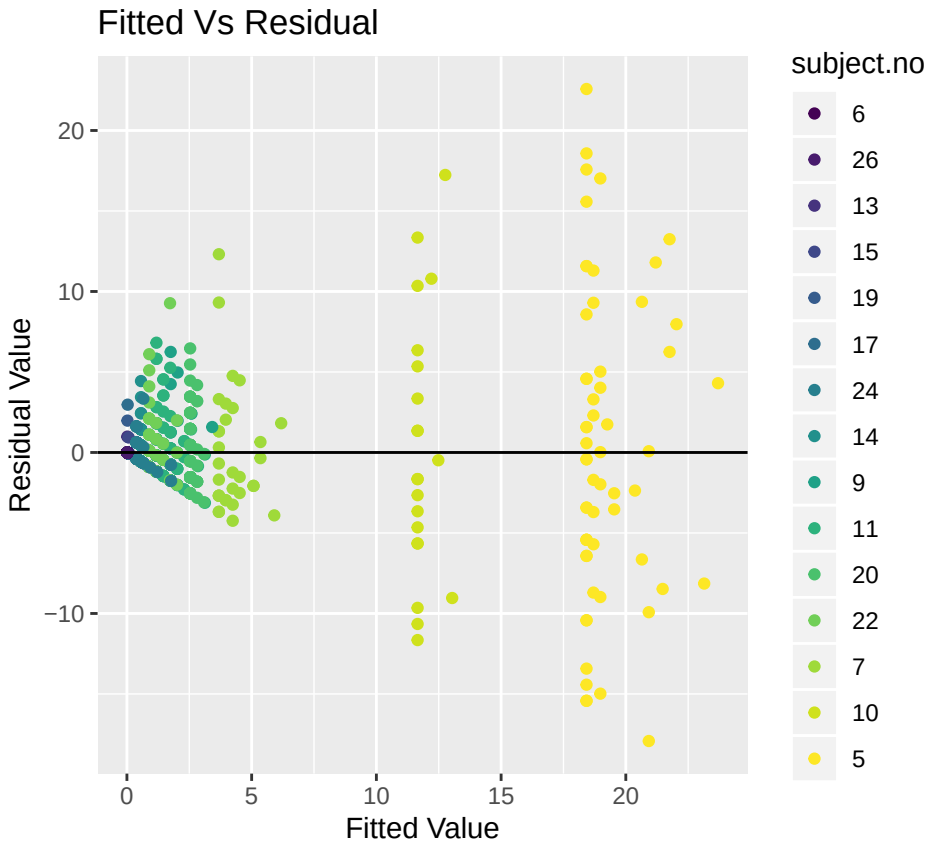


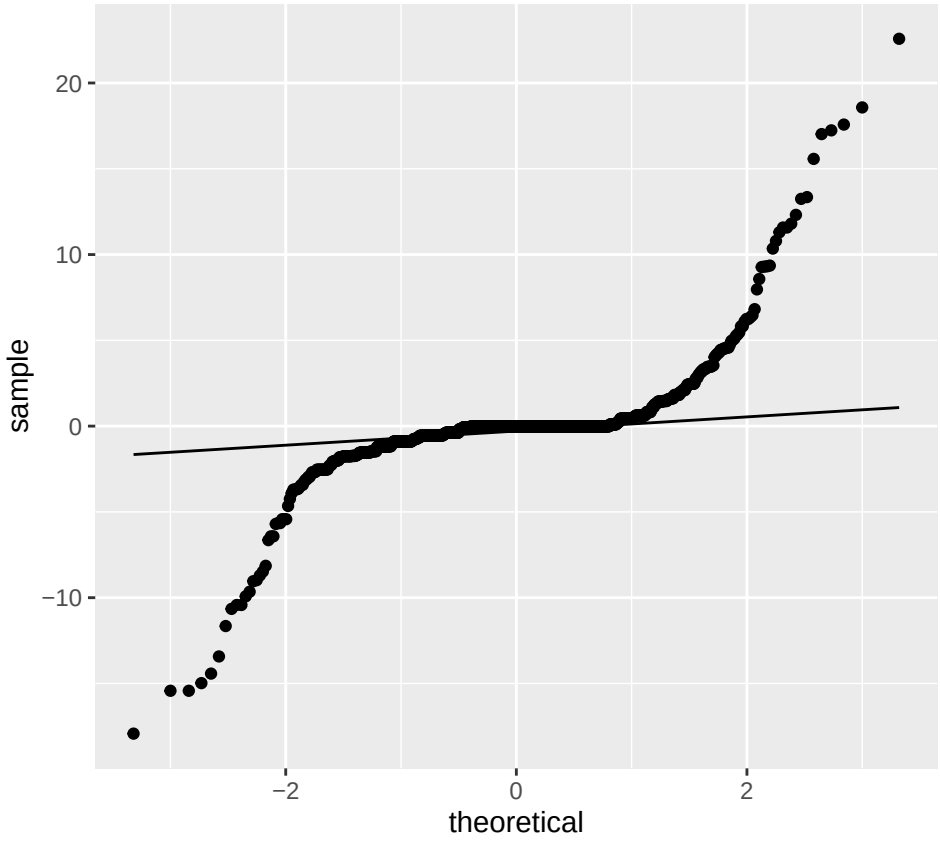

```
## [1] "E[intercept|b_0=0]:"
```

```
## (Intercept)
##    2.749379
```

```
## [1] "E[slope|b_0=0]:"
```

```
##      cd34
## 0.2775087
```



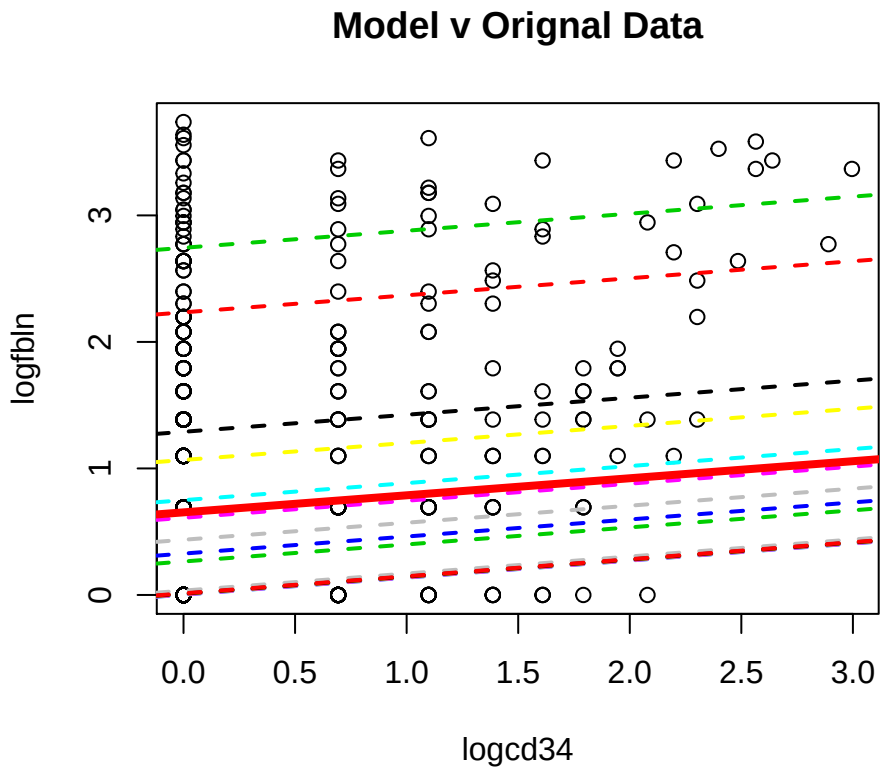


Transformed Model

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

```
## Formula: logfbln ~ logcd34 + (1 | subject.no)
##    Data: logdat
##
## REML criterion at convergence: 1430.1
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -5.0395 -0.5966 -0.0226 -0.0046  4.2007
##
## Random effects:
##  Groups     Name        Variance Std.Dev.
##  subject.no (Intercept) 0.7345   0.8570
##  Residual               0.1965   0.4432
## Number of obs: 1110, groups:  subject.no, 15
##
## Fixed effects:
##              Estimate Std. Error        df t value Pr(>|t|)
## (Intercept) 6.527e-01  2.220e-01 1.395e+01   2.941   0.0108 *
## logcd34     1.348e-01  3.416e-02 1.098e+03   3.947 8.43e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##         (Intr)
## logcd34 -0.033
```

```
## [1] 1438.086
```




```
## [1] "E[intercept|b_0=0]:"
```

```
## (Intercept)
##   0.6527331
```

```
## [1] "E[slope|b_0=0]:"
```

```
##   logcd34
## 0.1348334
```