Generalized Estimating Equations

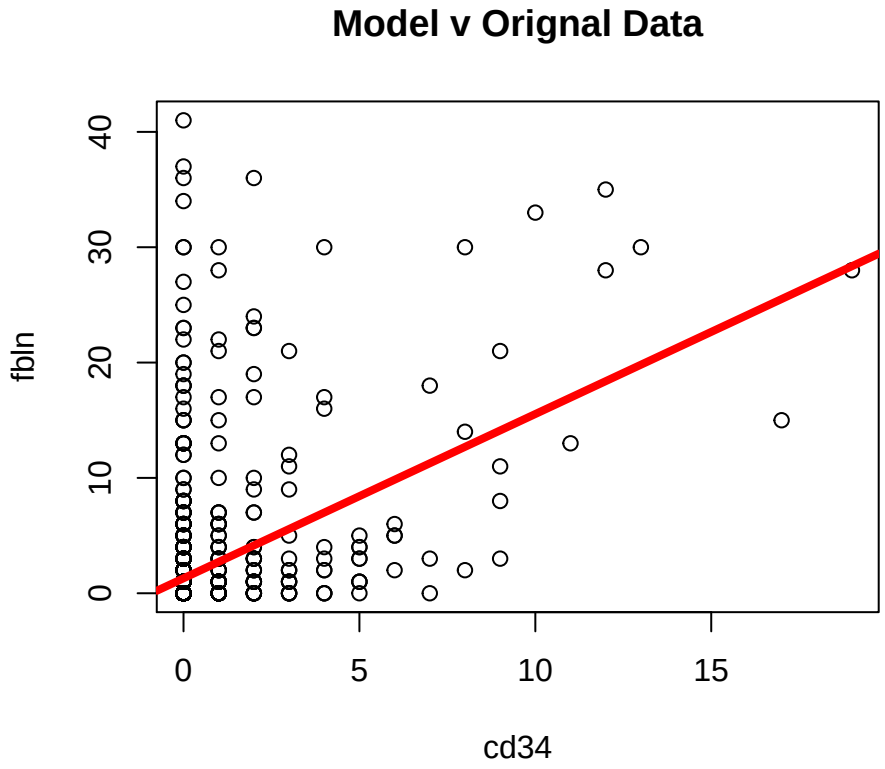
Description

This script will produce, and analyze a linear model fit using General Estimating equations. The script will assume a Poisson distribution with log-link to obtain initial estimates of β.

Non-Transformed Model

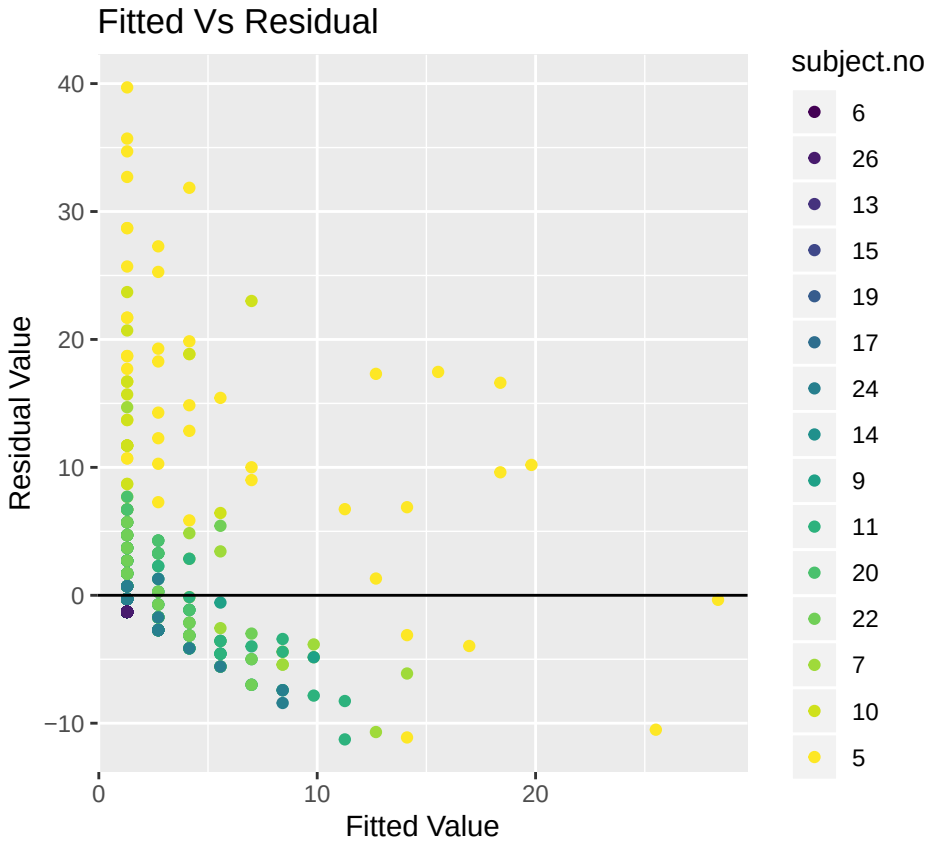
```
##
## Call:
## geeglm(formula = fbln ~ cd34, family = "gaussian", data = dat,
##     id = IDgee, corstr = "independence")
##
##  Coefficients:
##             Estimate Std.err   Wald Pr(>|W|)
## (Intercept)   1.2970  0.7179  3.264   0.0708 .
## cd34          1.4241  0.3339 18.189    2e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Estimated Scale Parameters:
##             Estimate Std.err
## (Intercept)    22.75   15.94
##
## Correlation: Structure = independenceNumber of clusters:   15   Maximum cluster size: 127
```

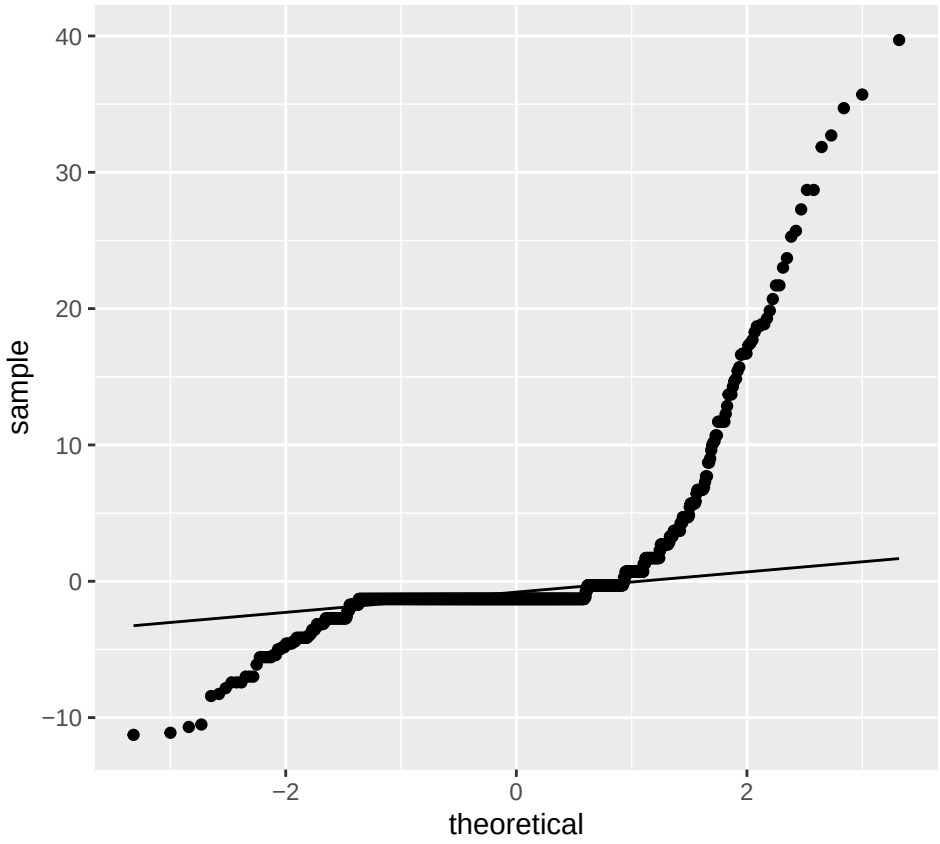
```
## Analysis of 'Wald statistic' Table
## Model: gaussian, link: identity
## Response: fbln
## Terms added sequentially (first to last)
##
##      Df   X2 P(>|Chi|)
## cd34  1 18.2     2e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```




```
## (Intercept)
##       1.297
```

```
##  cd34
## 1.424
```



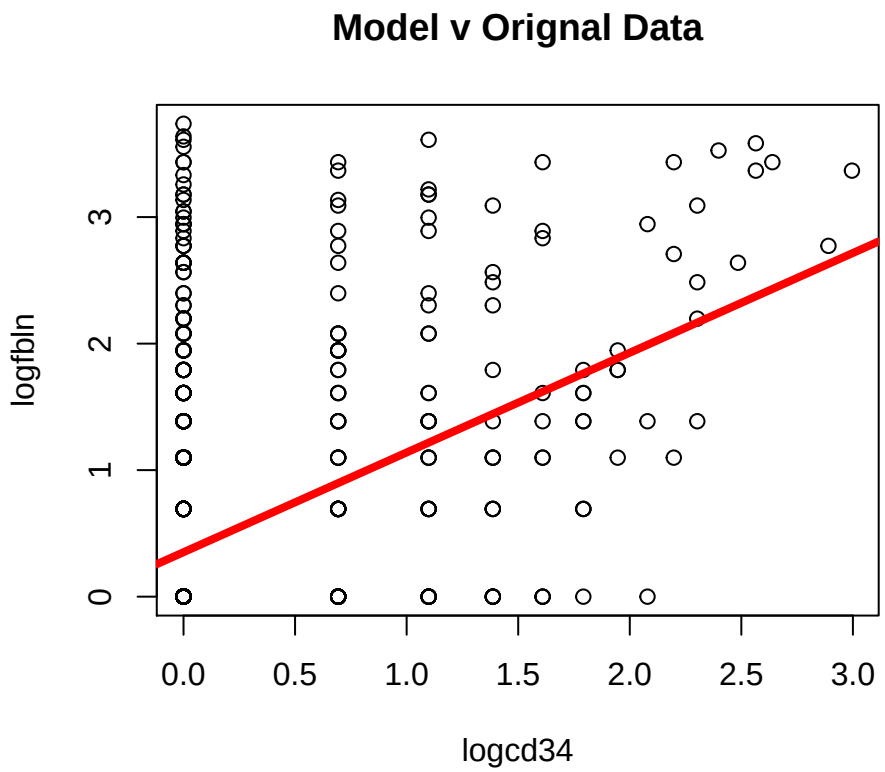


Transformed Model

```
##
## Call:
## geeglm(formula = logfbln ~ logcd34, family = "gaussian", data = logdat,
##     id = IDgee, corstr = "independence")
##
##  Coefficients:
##             Estimate Std.err  Wald Pr(>|W|)
## (Intercept)    0.351   0.125  7.85  0.00509 **
## logcd34        0.788   0.220 12.81  0.00034 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Estimated Scale Parameters:
##             Estimate Std.err
## (Intercept)    0.586   0.226
##
## Correlation: Structure = independenceNumber of clusters:   15   Maximum cluster size: 127
```

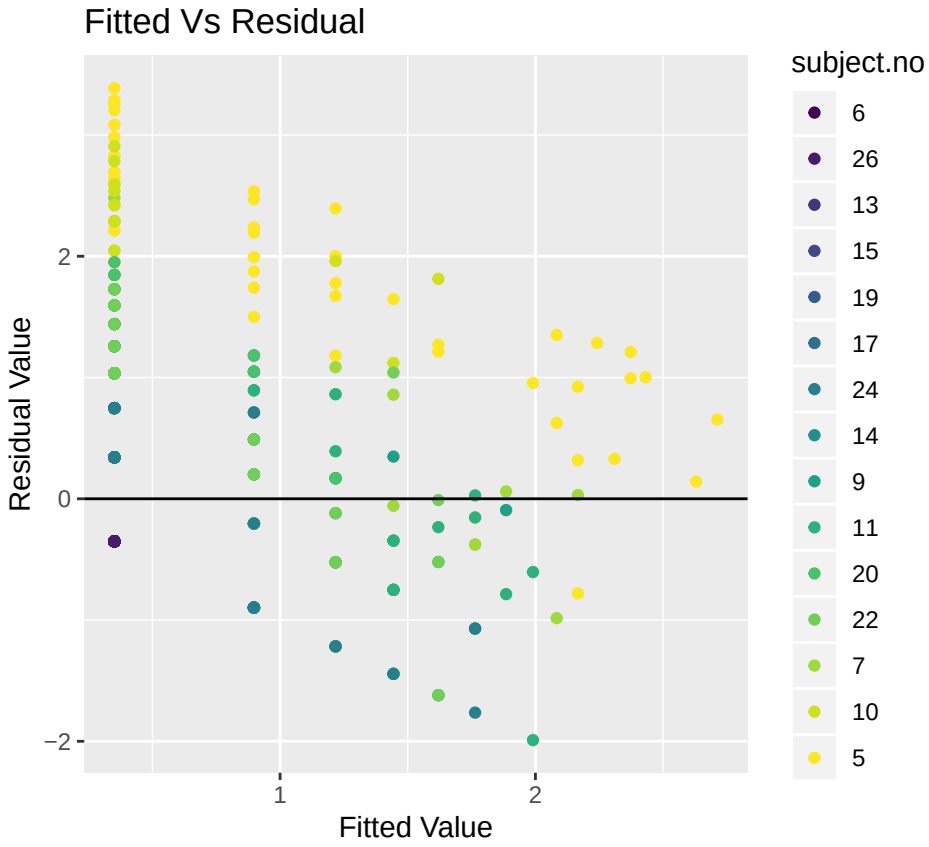
```
## Analysis of 'Wald statistic' Table
## Model: gaussian, link: identity
## Response: logfbln
## Terms added sequentially (first to last)
##
##         Df   X2 P(>|Chi|)
## logcd34  1 12.8   0.00034 ***
## ---
```

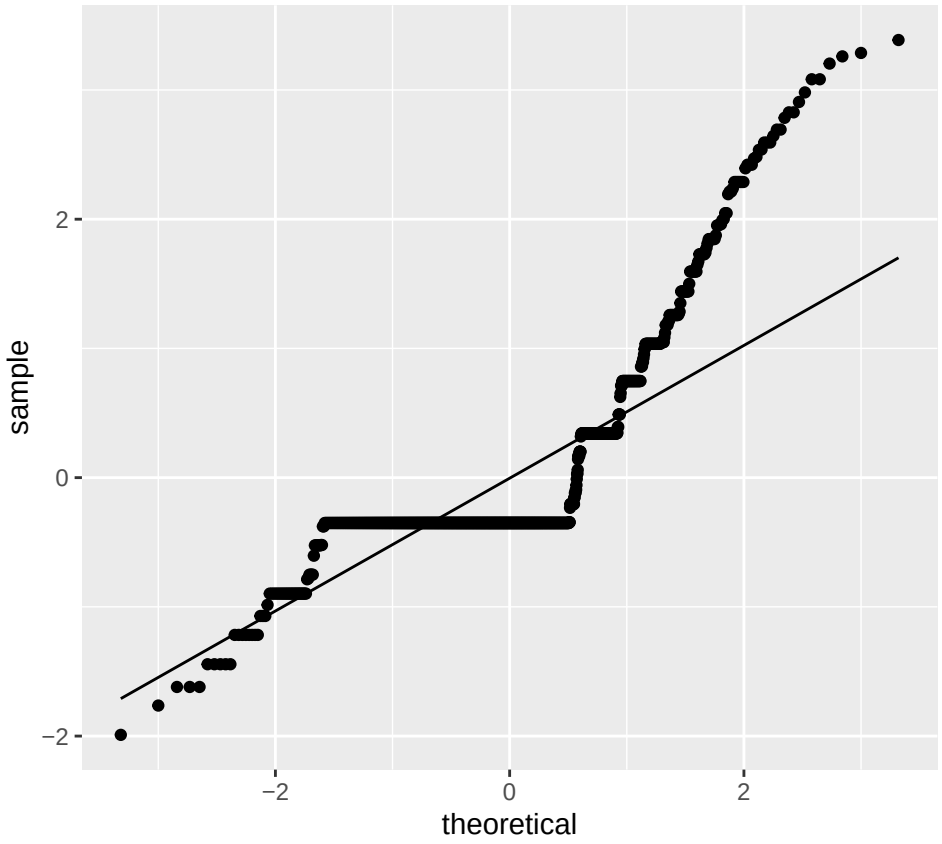
```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```




```
## (Intercept)
##       0.351
```

```
## logcd34
##   0.788
```




sample
2
0
−2
−2
0
2
theoretical