Project-3

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Project Deliverable 3 Q3

Outcome Page.total.likes, main predictor Type

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggplot2)
library(GGally)
```

```
## Registered S3 method overwritten by 'GGally':
##   method from
##   +.gg   ggplot2
```

```
library(RNOmni)
library(car)
```

```
## Loading required package: carData

##
## Attaching package: 'car'

## The following object is masked from 'package:dplyr':
##
##     recode
```

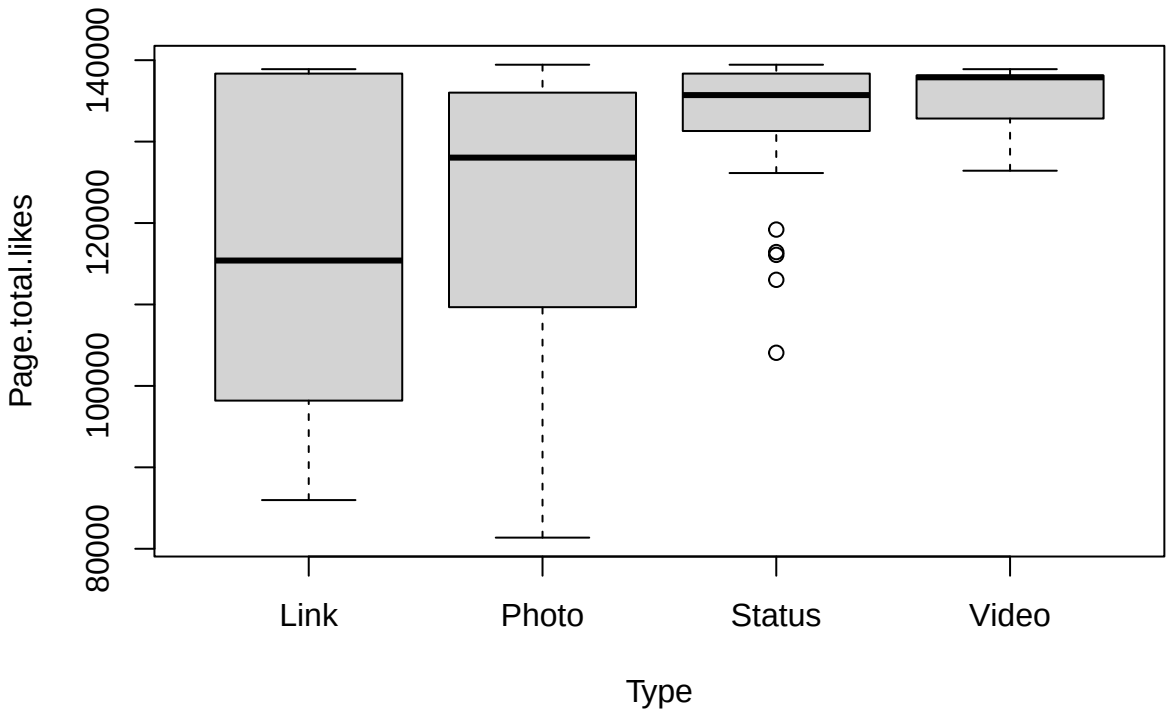
```r
setwd("C:/Users/wdy24/Dropbox/BU_PHD/Coursework/BU MA series/MA575/Lab/Project/Code_dataset")
fb <- read.csv(file="dataset_Facebook(3).csv",header = T,sep = ";")
```

Descriptive analysis

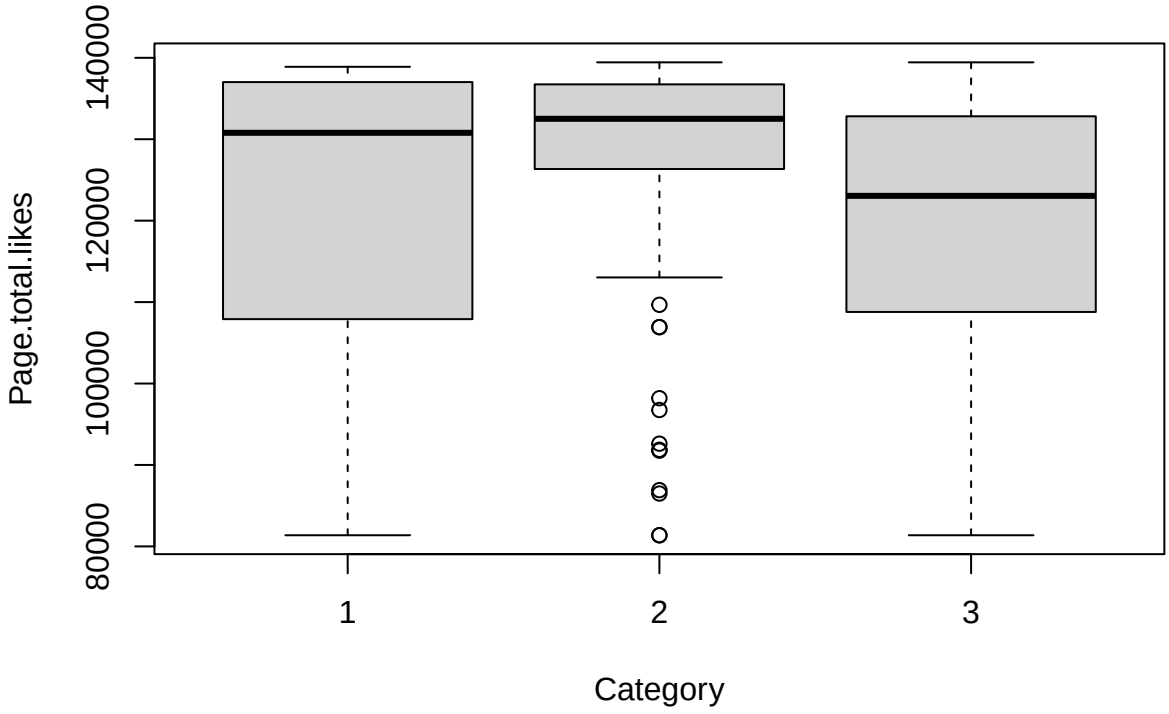
```r
attach(fb)
table(fb$Type, useNA = 'always')
```

```
##
##   Link  Photo Status  Video   <NA>
##     22    426     45      7      0
```

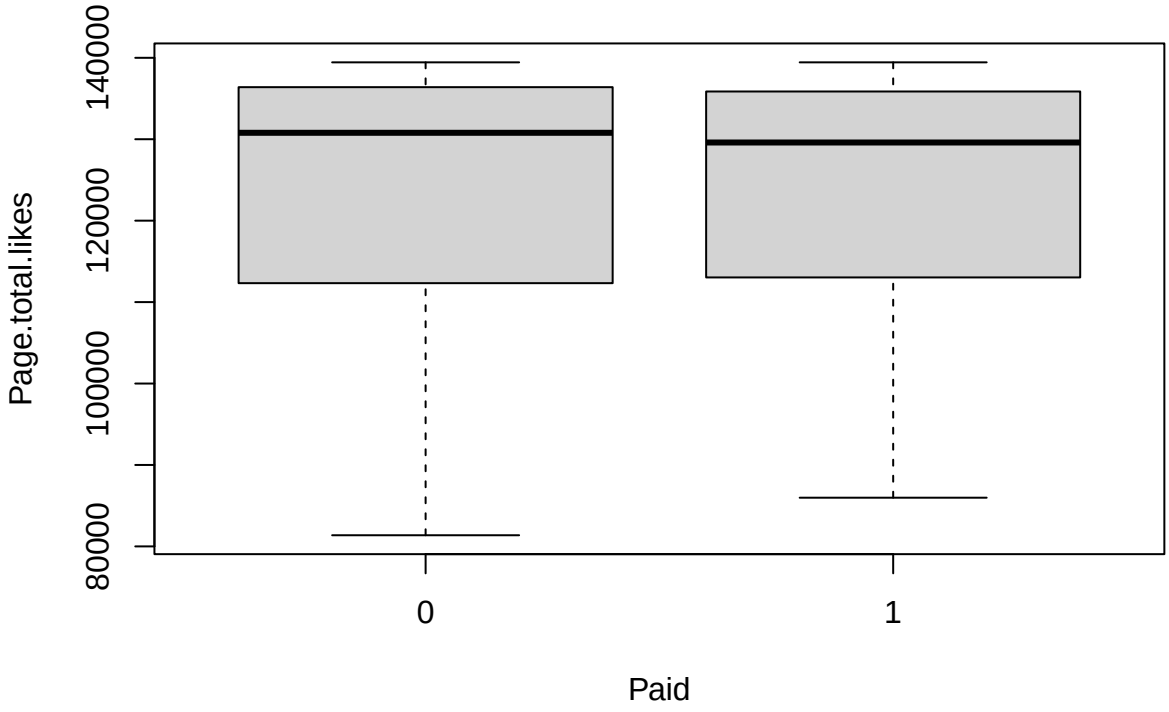
```r
boxplot(Page.total.likes ~ Type)
```



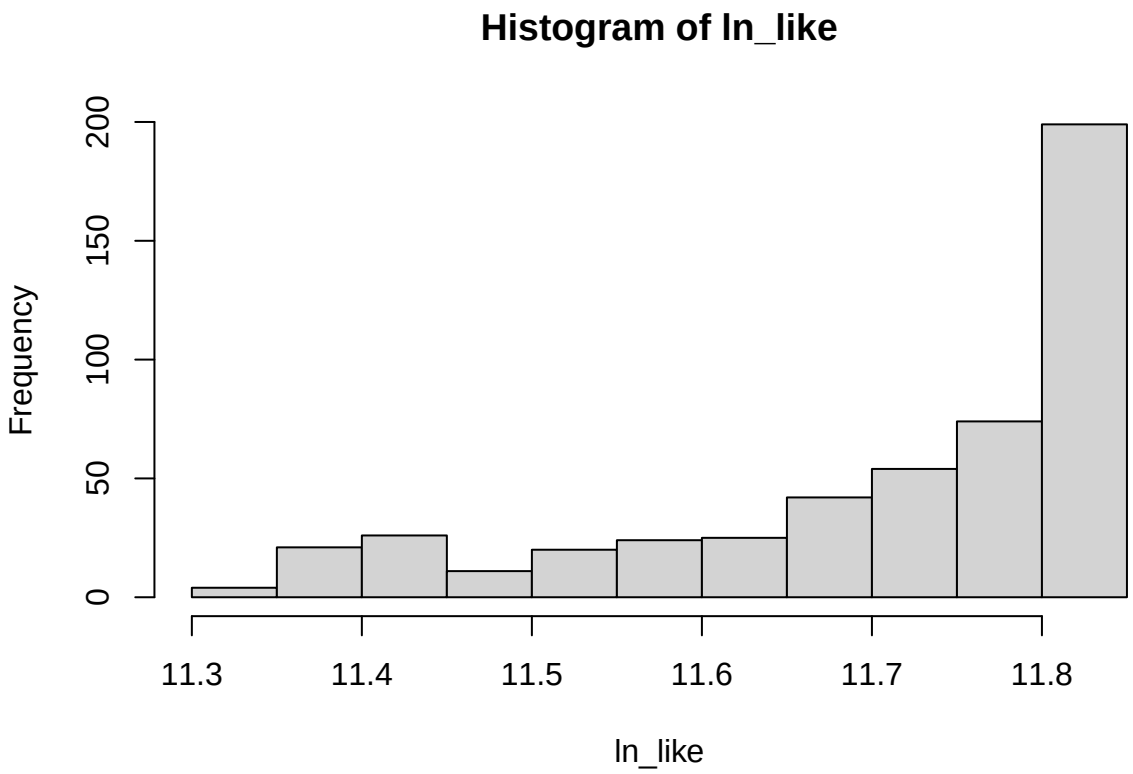

```r
boxplot(Page.total.likes ~ Category)
```



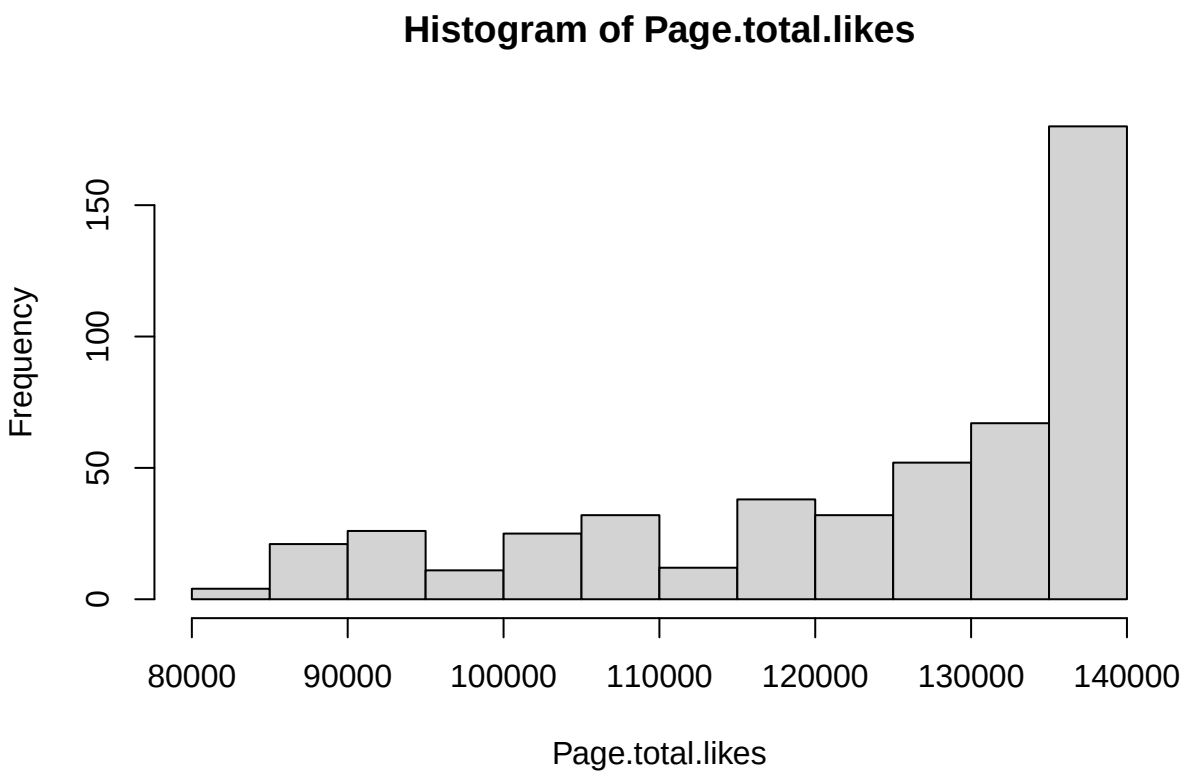

```
boxplot(Page.total.likes ~ Paid)
```




```
ln_like <- log(Page.total.likes)
hist(ln_like)
```




```
hist(Page.total.likes)
```




```
tapply(Page.total.likes,Type, summary)
```

```
## $Link
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   85979   98829  115396  116363  138059  138895
##
## $Photo
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   81370  109670  128032  122354  136013  139441
##
## $Status
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  104070  131300  135713  132647  138353  139441
##
## $Video
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  126424  132835  137893  135015  138111  138895
```

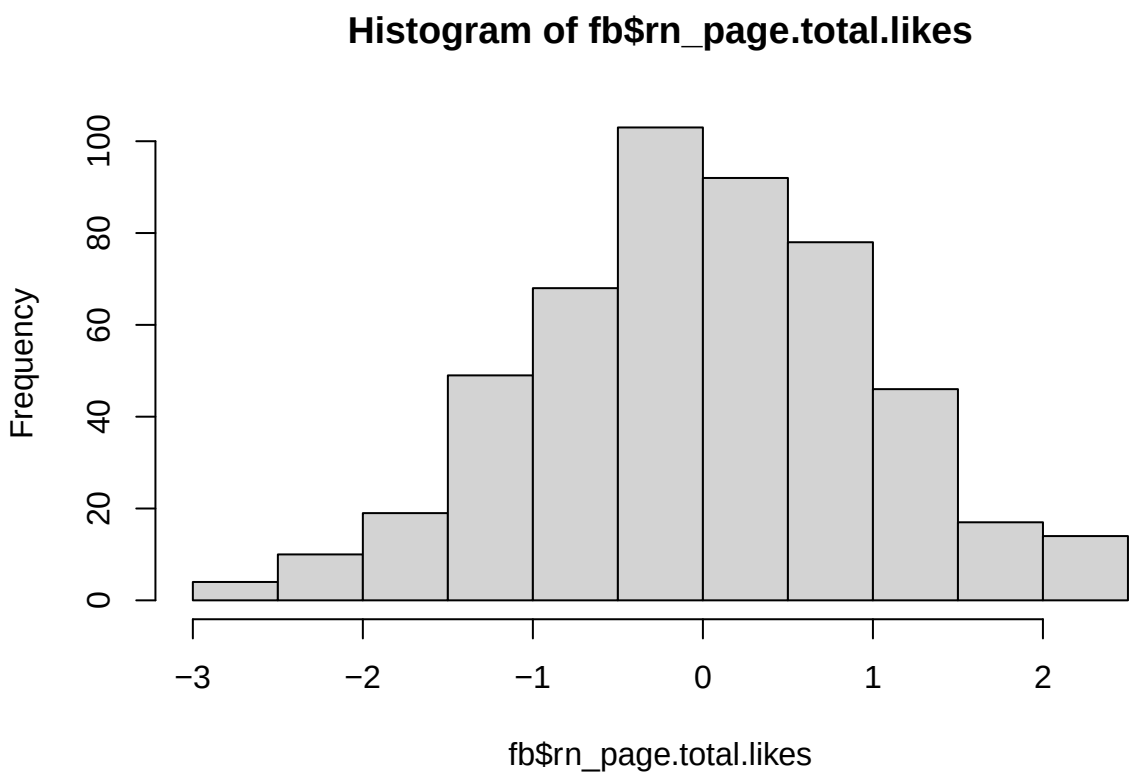
```
fb$rn_page.total.likes <- RankNorm(Page.total.likes,ties.method = "average")
summary(fb$rn_page.total.likes)
```

```
##      Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -2.631705 -0.664782 -0.022550 -0.002038  0.655348  2.190531
```

```r
sd(fb$rn_page.total.likes)
```

```
## [1] 0.9878953
```

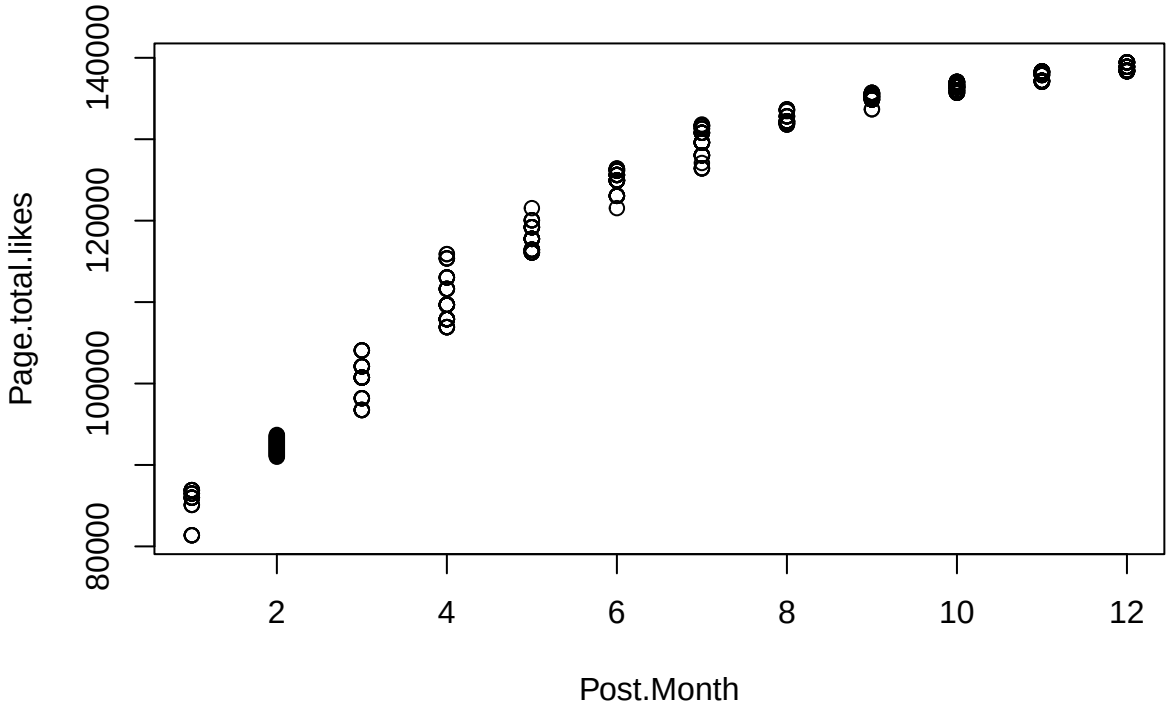
```r
hist(fb$rn_page.total.likes)
```



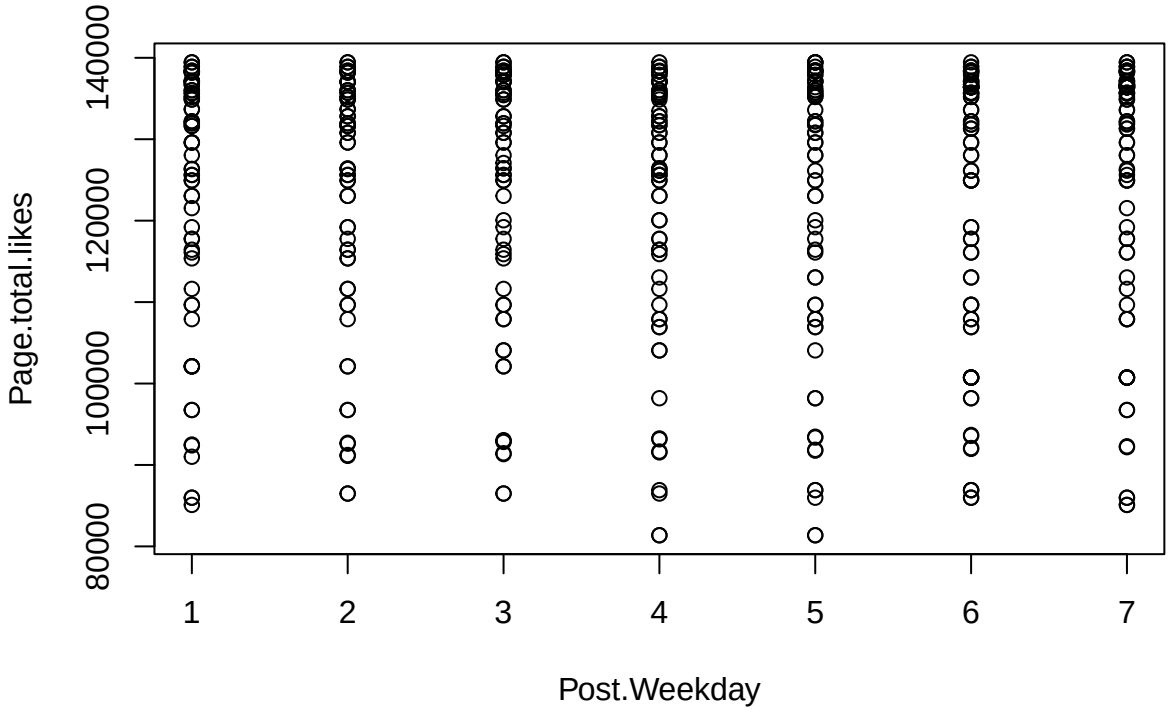

```r
attach(fb)
```

```
## The following objects are masked from fb (pos = 3):
##
##     Category, comment, Lifetime.Engaged.Users,
##     Lifetime.People.who.have.liked.your.Page.and.engaged.with.your.post,
##     Lifetime.Post.Consumers, Lifetime.Post.Consumptions,
##     Lifetime.Post.Impressions.by.people.who.have.liked.your.Page,
##     Lifetime.Post.reach.by.people.who.like.your.Page,
##     Lifetime.Post.Total.Impressions, Lifetime.Post.Total.Reach, like,
##     Page.total.likes, Paid, Post.Hour, Post.Month, Post.Weekday, share,
##     Total.Interactions, Type
```

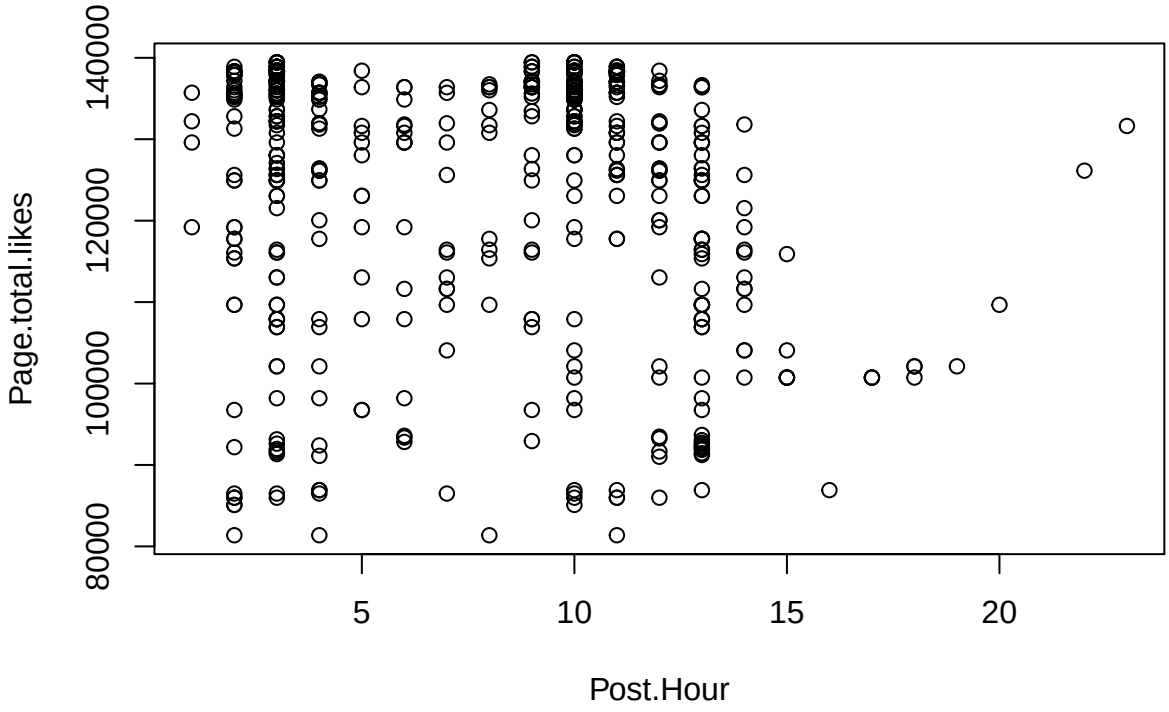
```r
## Page.total.likes highly skewed toward the left - need to transform but first proceed with the MV mod
## Inital variable selection from scatter plot + heatmap
## Type Post.Month Post.Weekday Post.Hour Total.Interactions Lifetime.Post.Consumers

plot(Page.total.likes ~ Post.Month)
```



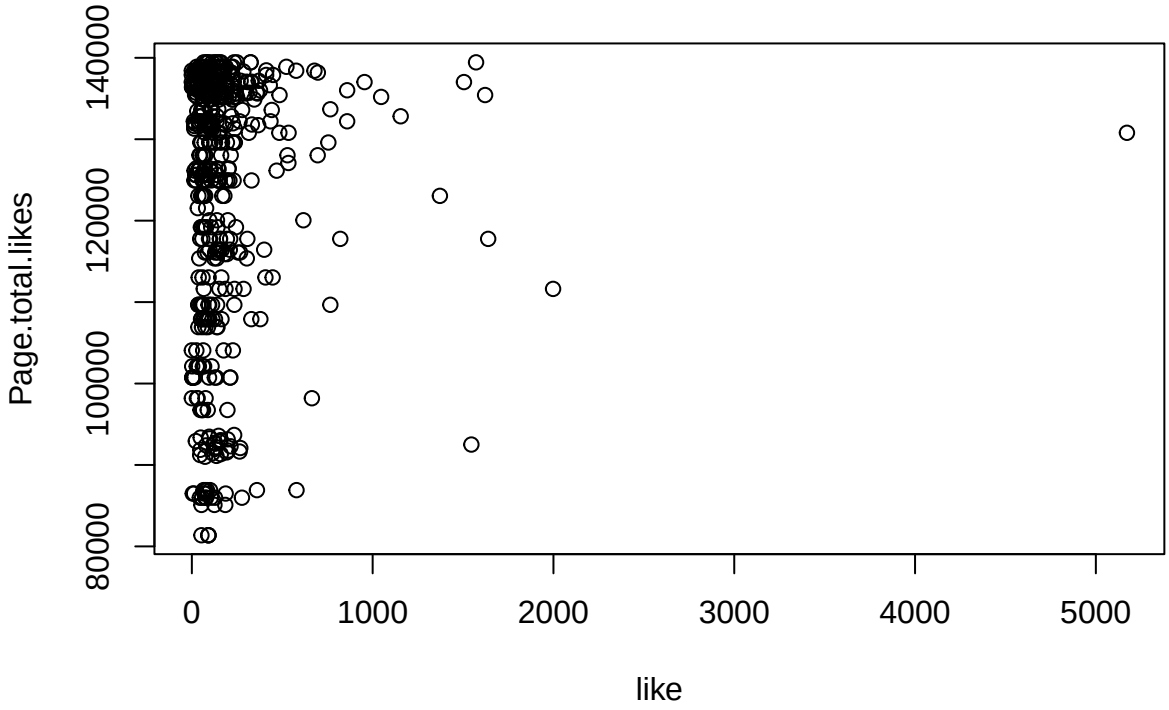

```
plot(Page.total.likes ~ Post.Weekday)
```



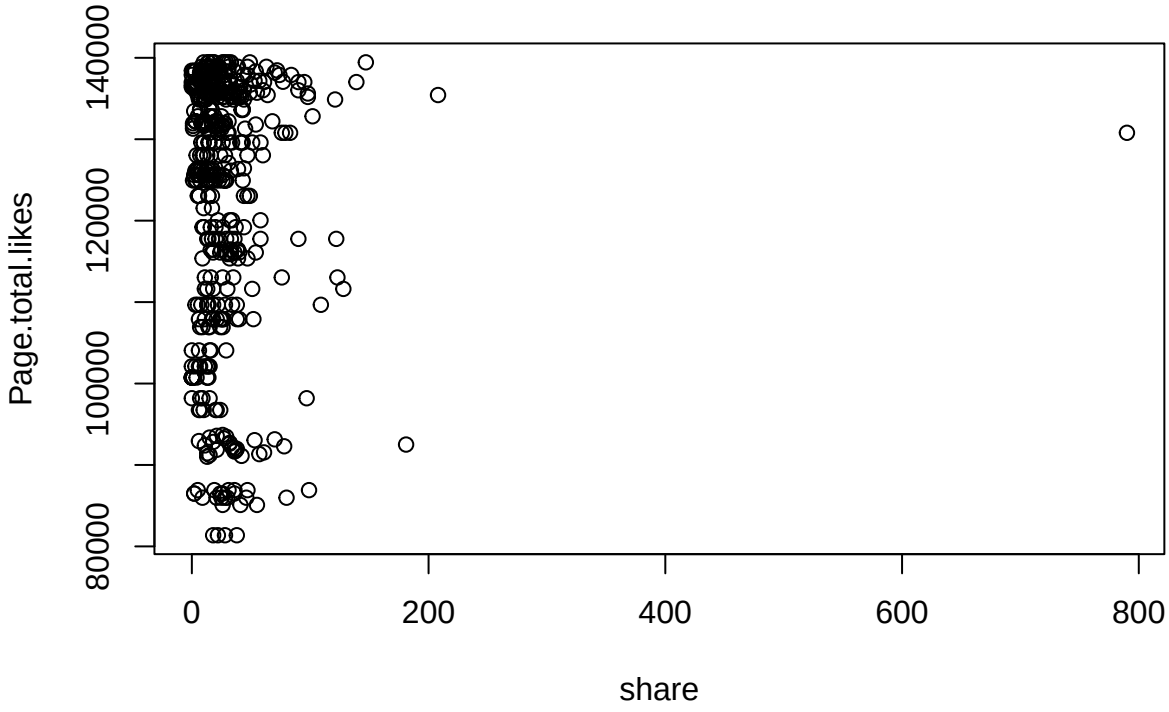

```
plot(Page.total.likes ~ Post.Hour)
```



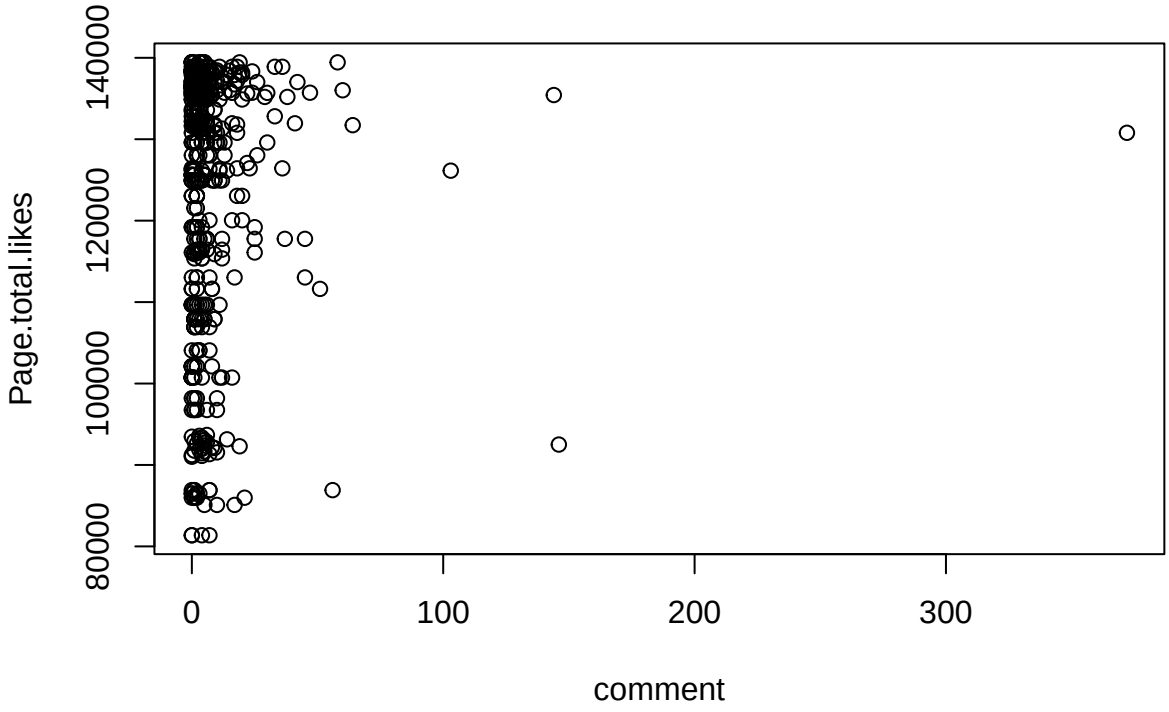

```
plot(Page.total.likes ~ like)
```



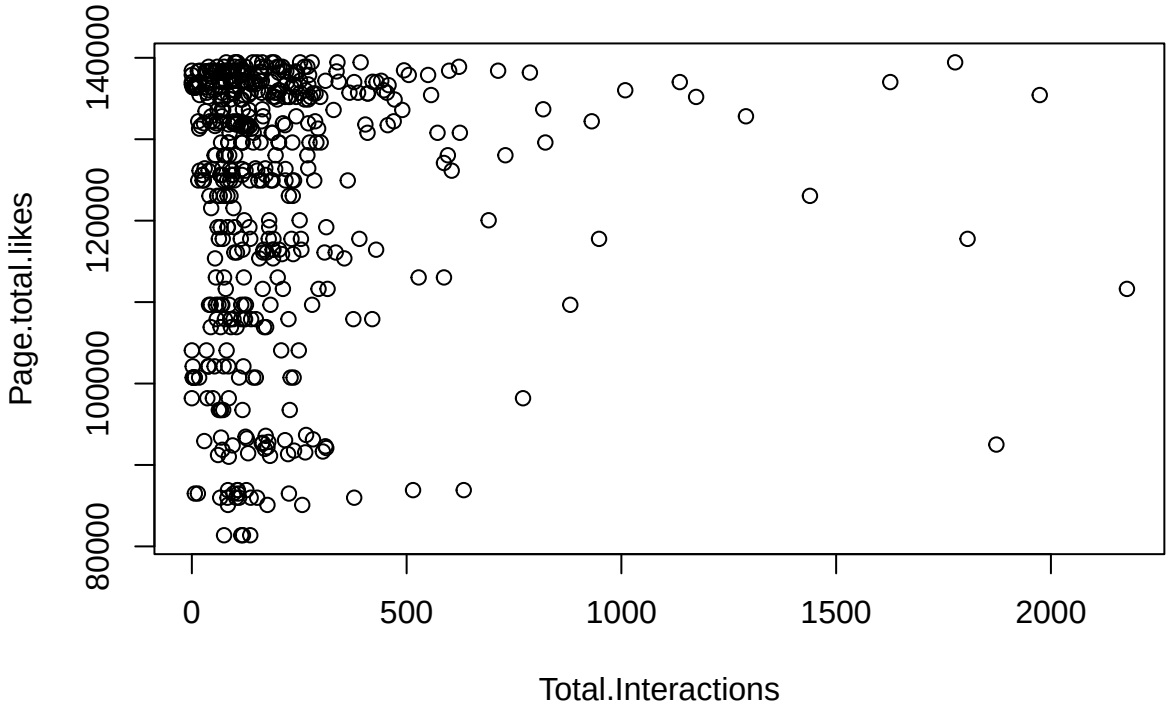

```
plot(Page.total.likes ~ share)
```



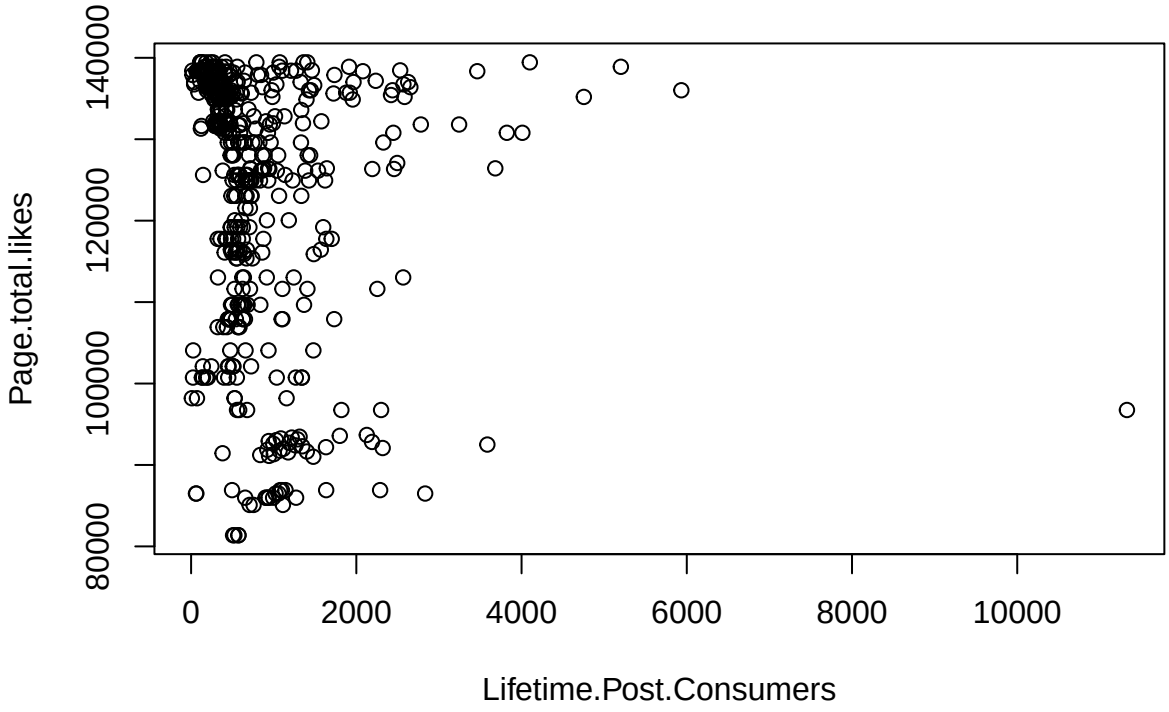

```
plot(Page.total.likes ~ comment)
```




```
plot(Page.total.likes ~ Total.Interactions,subset = Total.Interactions < 6000)
```




```
plot(Page.total.likes ~ Lifetime.Post.Consumers)
```




```
# temp_data <- fb %>% select("Page.total.likes",starts_with("Lifetime"))
# pair1<- ggpairs(temp_data,
#         lower=list(continuous=wrap("cor", alpha=0.5), combo="box"),
#         upper=list(continuous=wrap("points", alpha=0.3, size=0.1)), labeller = label_wrap_gen(5, mult
# pair1<- pair1 + theme(axis.text.x = element_text(angle = 40, hjust = 1, size = 7), axis.text.y = elem
# pair1
```

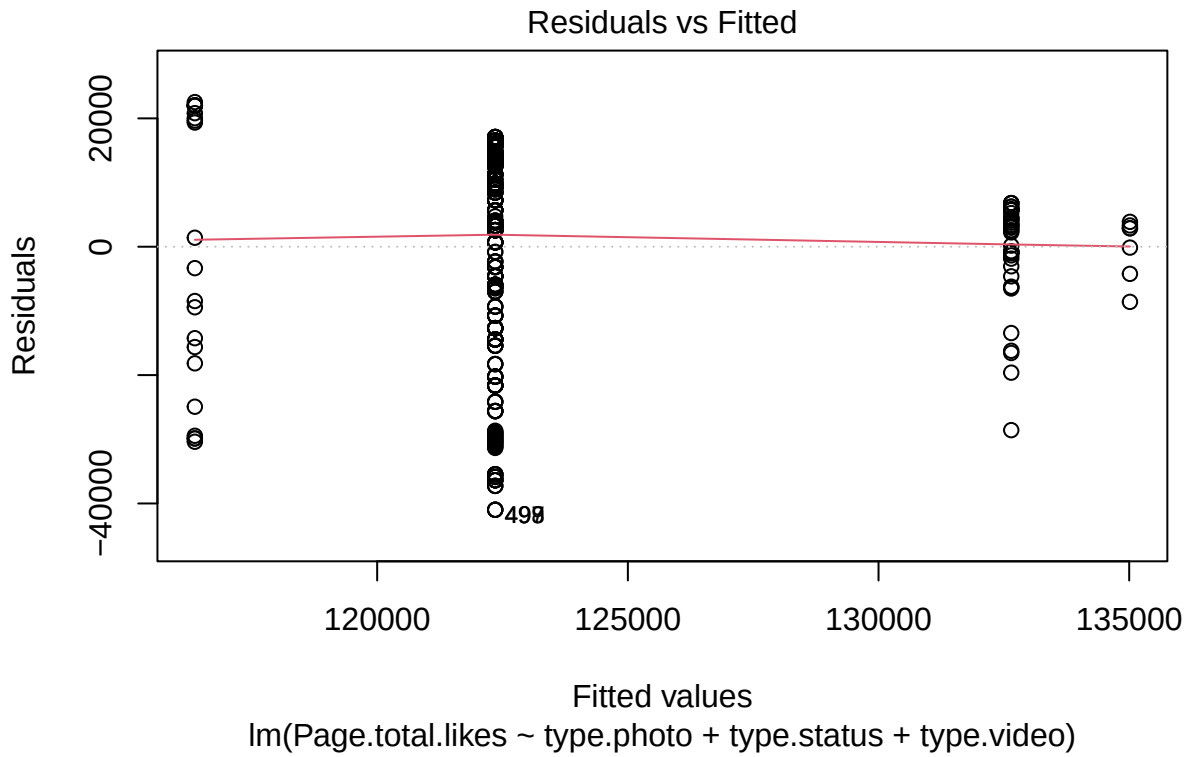
Fit the MV model

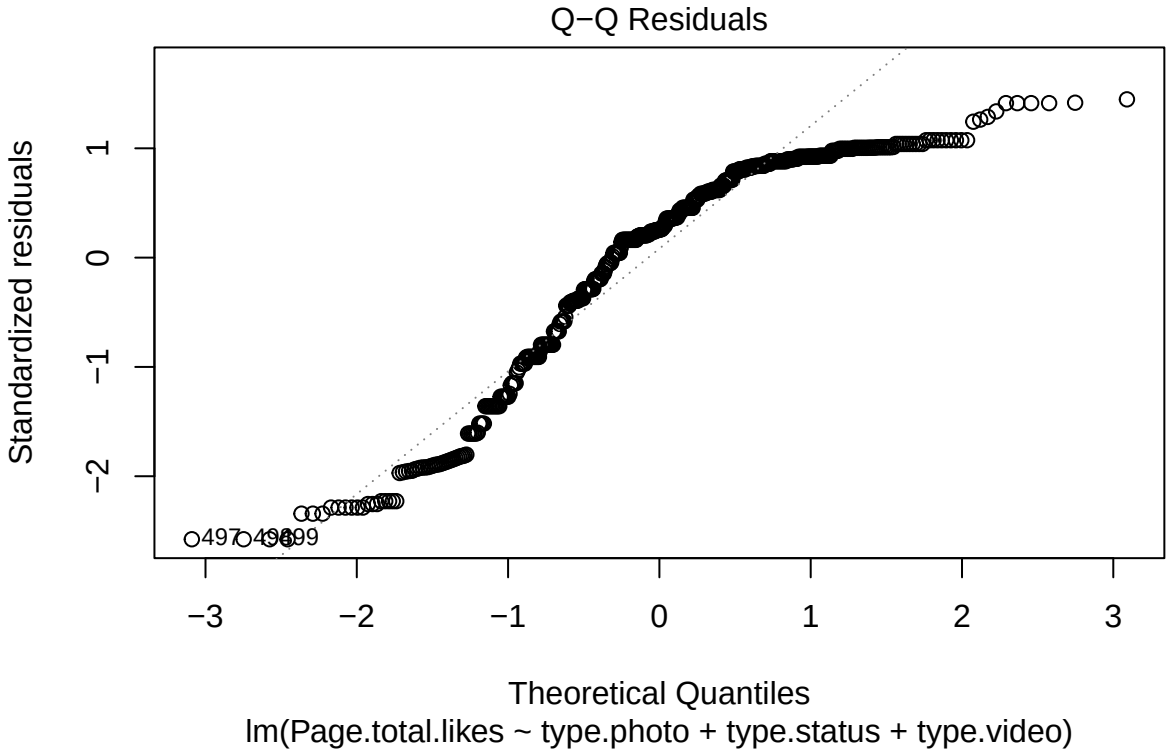
```
## dummy variable for type
fb$type.photo <- ifelse(Type == c("Photo"),1,0)
fb$type.status <- ifelse(Type == c("Status"),1,0)
fb$type.video <- ifelse(Type == c("Video"),1,0)

## simple linear model

m00 <- lm(Page.total.likes~type.photo+type.status+type.video, data=fb)
summary(m00)
```

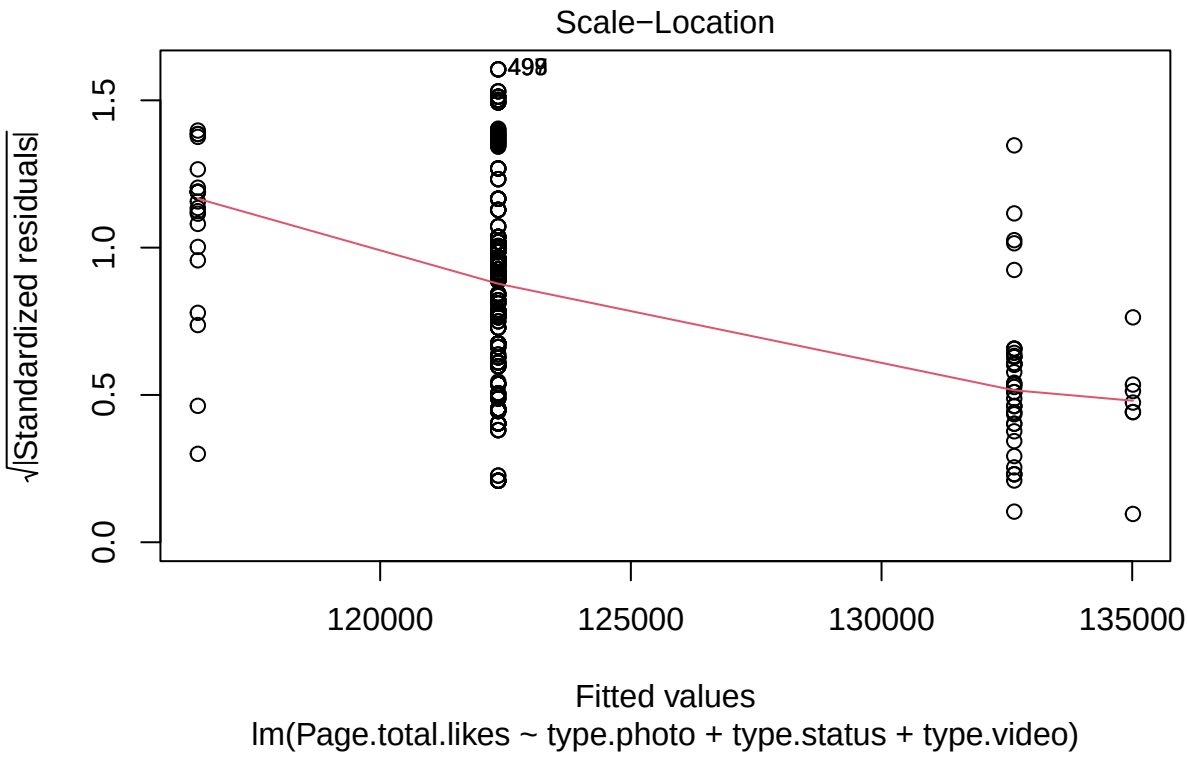
```
##
## Call:
## lm(formula = Page.total.likes ~ type.photo + type.status + type.video,
##     data = fb)
```

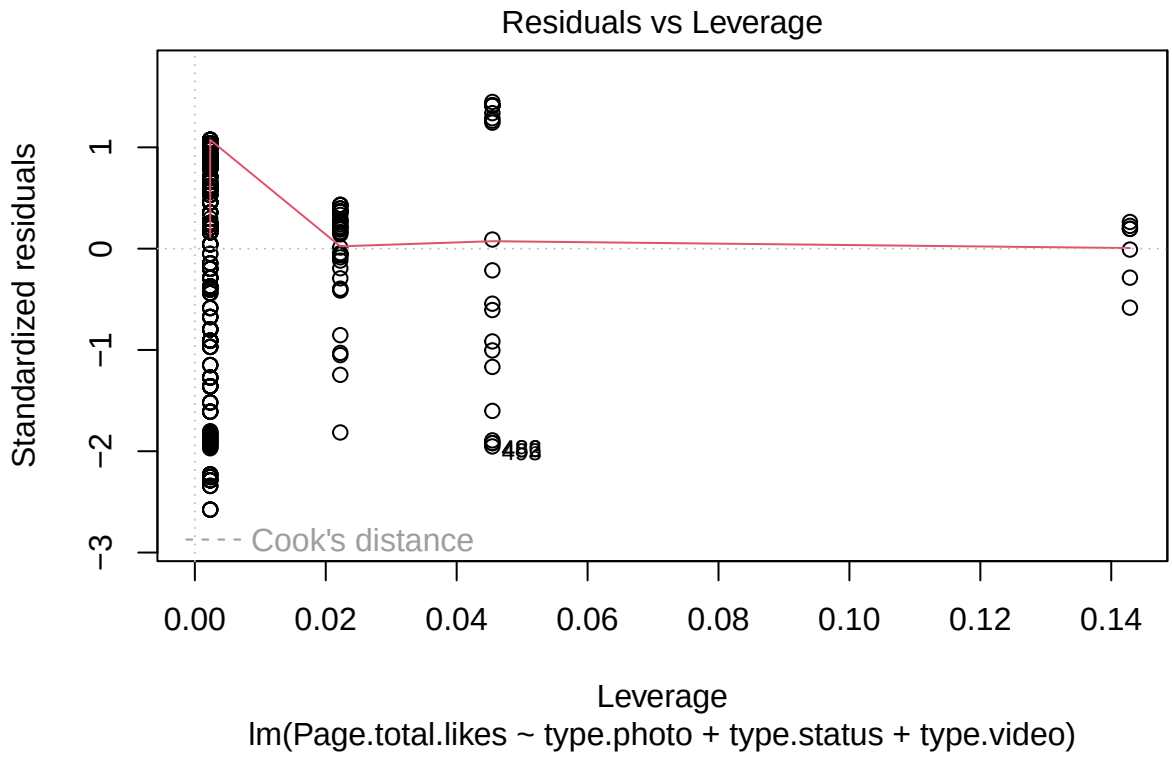
```
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -40984 -10734   4070  13359  22532
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   116363       3396  34.270  < 2e-16 ***
## type.photo      5991       3482   1.721   0.0860 .
## type.status    16284       4143   3.930 9.69e-05 ***
## type.video     18652       6911   2.699   0.0072 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 15930 on 496 degrees of freedom
## Multiple R-squared:  0.04788,    Adjusted R-squared:  0.04212
## F-statistic: 8.314 on 3 and 496 DF,  p-value: 2.102e-05
```

```
plot(m00)
```




Q−Q Residuals
Standardized residuals
−2
−1
0
1
−3
−2
−1
0
1
2
3
497
Theoretical Quantiles
lm(Page.total.likes ~ type.photo + type.status + type.video)

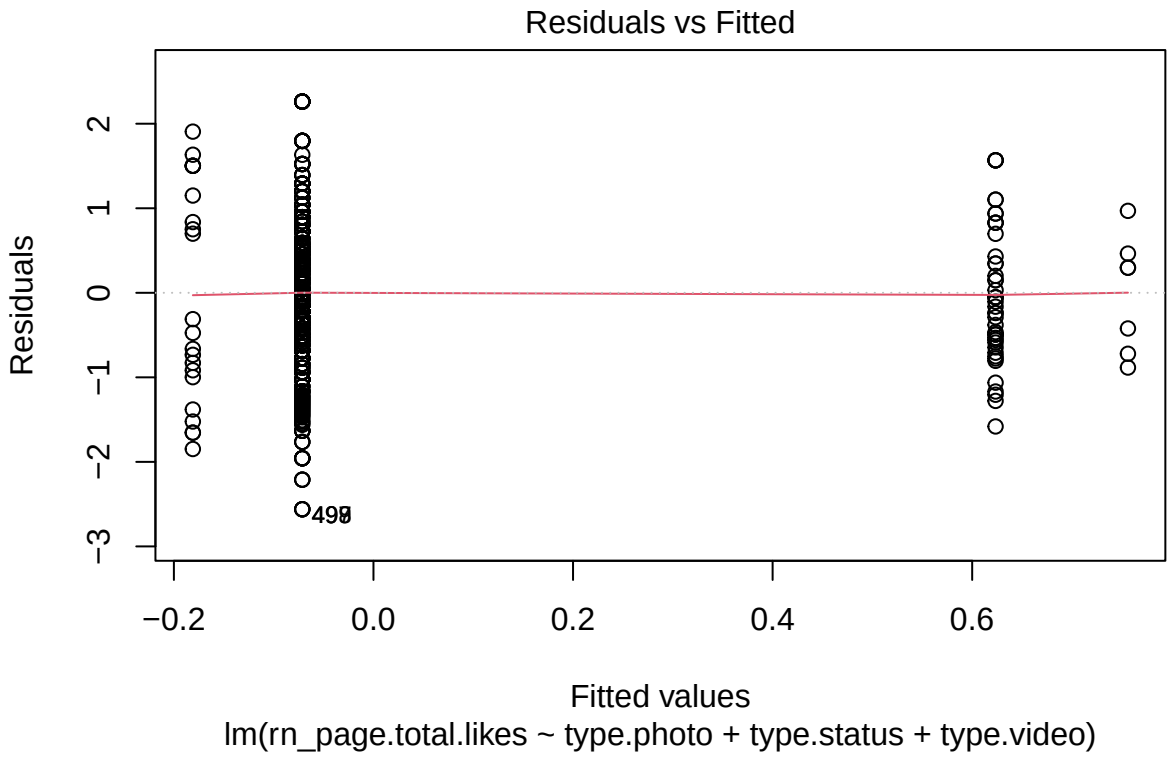

Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
120000
125000
130000
135000
Fitted values
lm(Page.total.likes ~ type.photo + type.status + type.video)

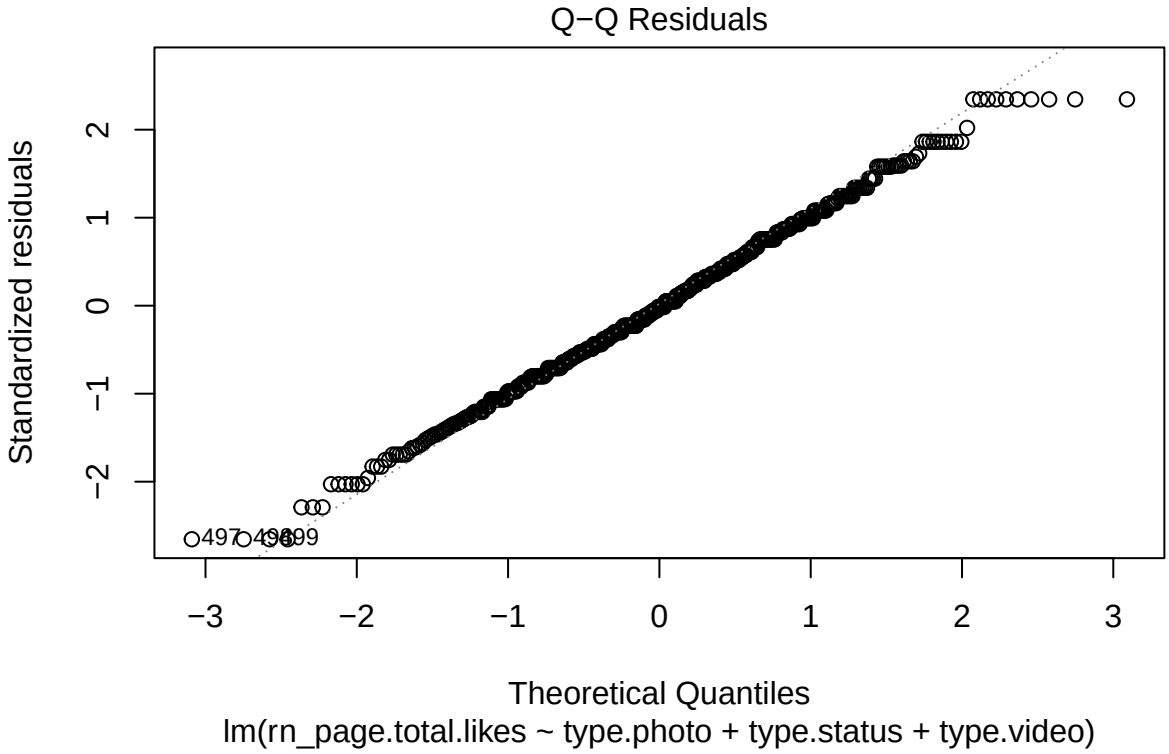


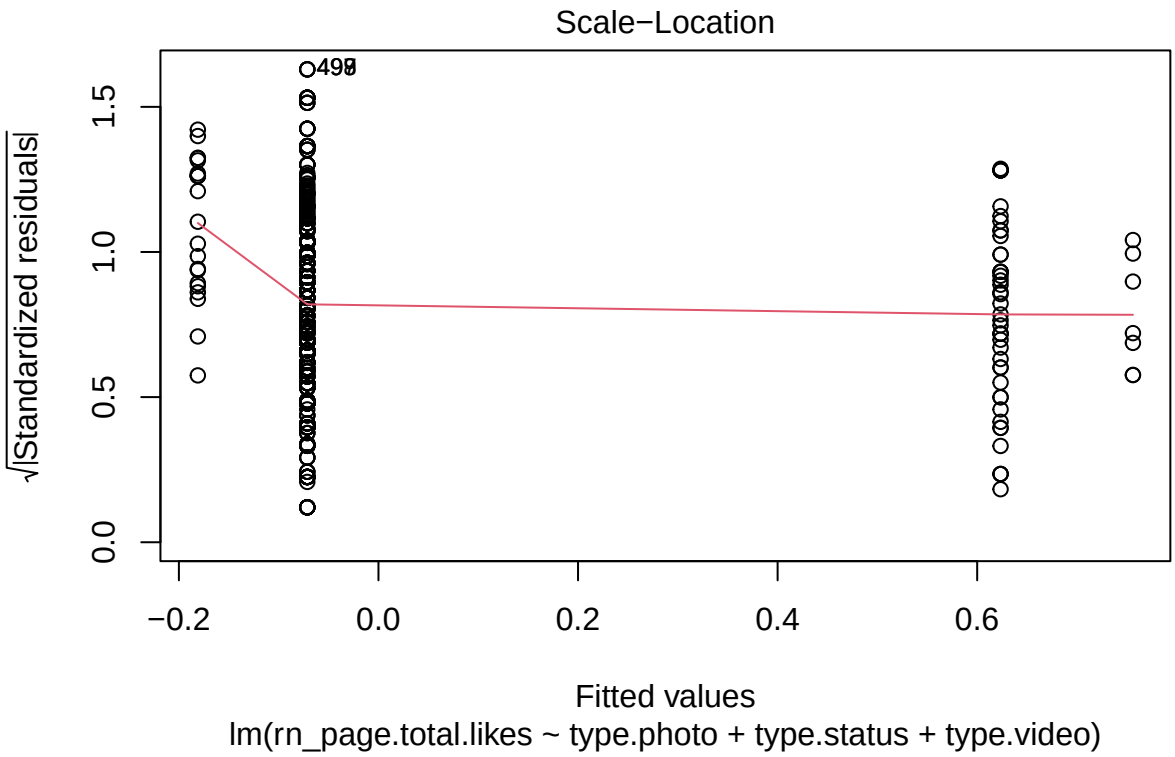

```
## simple linear model - rank normalized
m0 <- lm(rn_page.total.likes~type.photo+type.status+type.video, data=fb)
summary(m0)
```

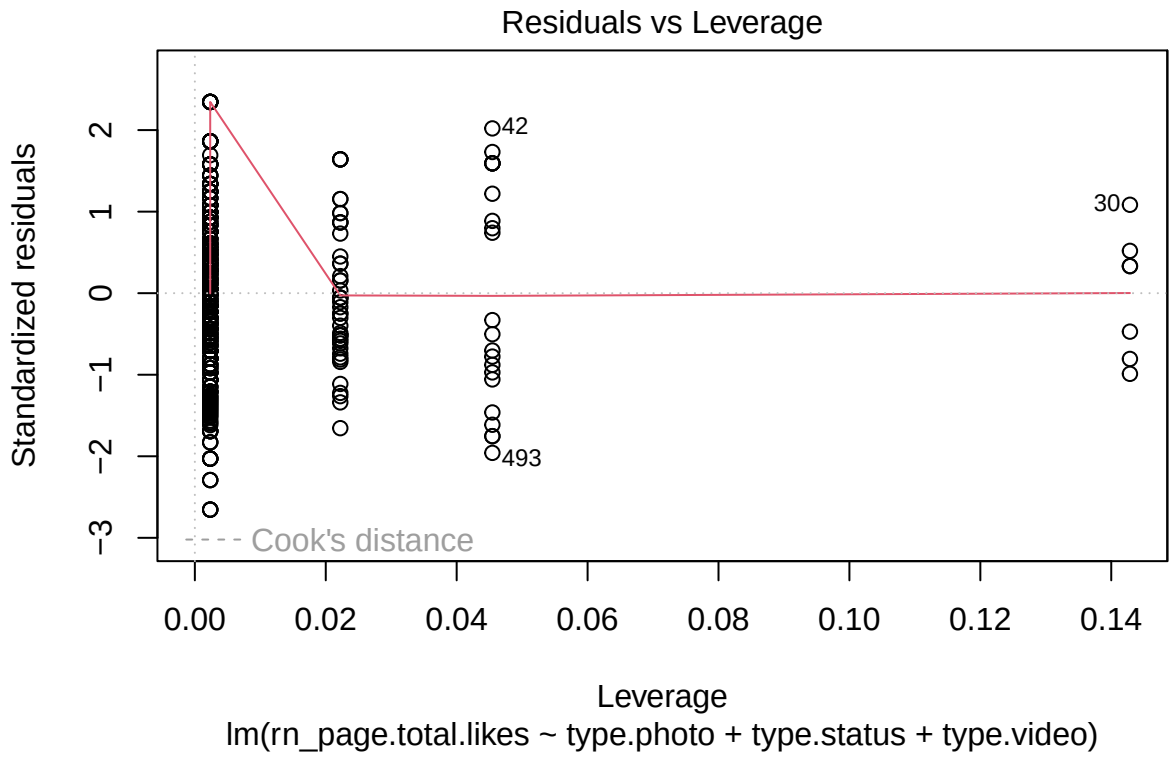
```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video, data = fb)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.56038 -0.68363 -0.01396  0.72667  2.26186
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.1810     0.2059  -0.879  0.37977
## type.photo    0.1097     0.2111   0.519  0.60368
## type.status   0.8045     0.2512   3.202  0.00145 **
## type.video    0.9371     0.4191   2.236  0.02579 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9658 on 496 degrees of freedom
## Multiple R-squared:  0.05006,    Adjusted R-squared:  0.04432
## F-statistic: 8.713 on 3 and 496 DF,  p-value: 1.214e-05
```

```r
plot(m0)
```


Residuals vs Fitted
Residuals
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video)
−3
−2
−1
0
1
2
−0.2
0.0
0.2
0.4
0.6


Q−Q Residuals
Standardized residuals
−2
−1
0
1
2
−3
−2
−1
0
1
2
3
497
Theoretical Quantiles
lm(rn_page.total.likes ~ type.photo + type.status + type.video)


Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
−0.2
0.0
0.2
0.4
0.6
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video)

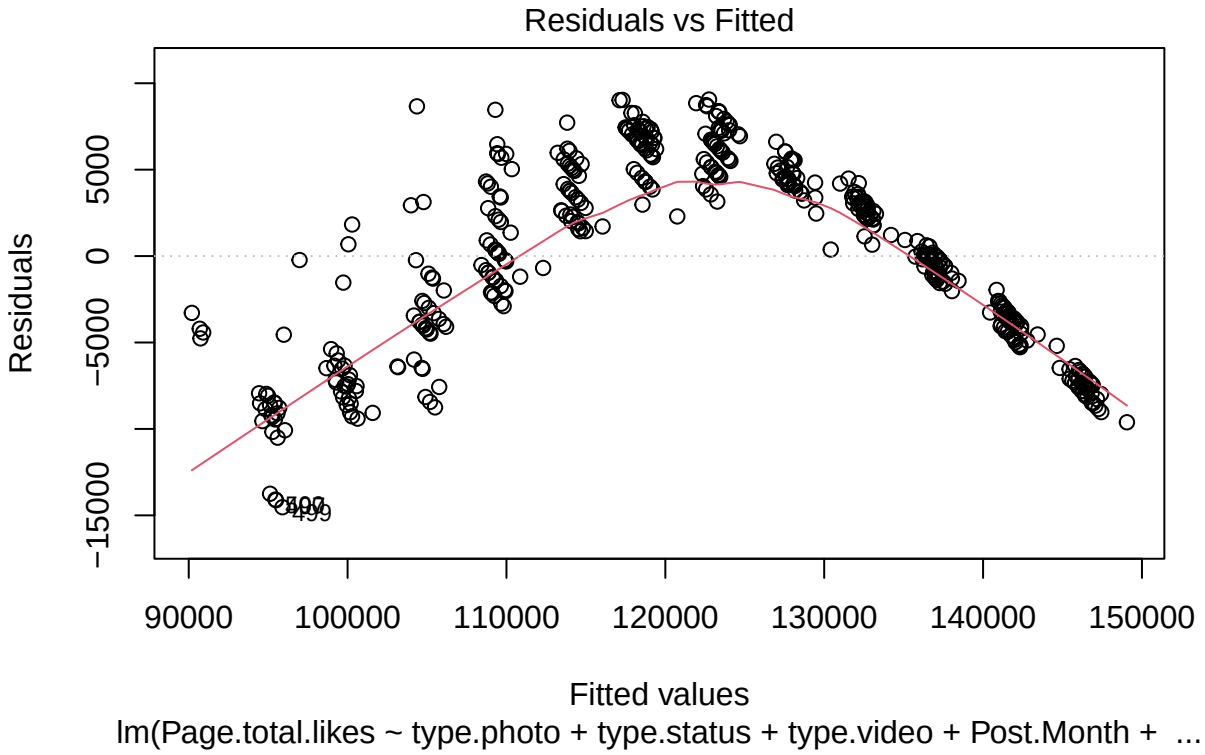


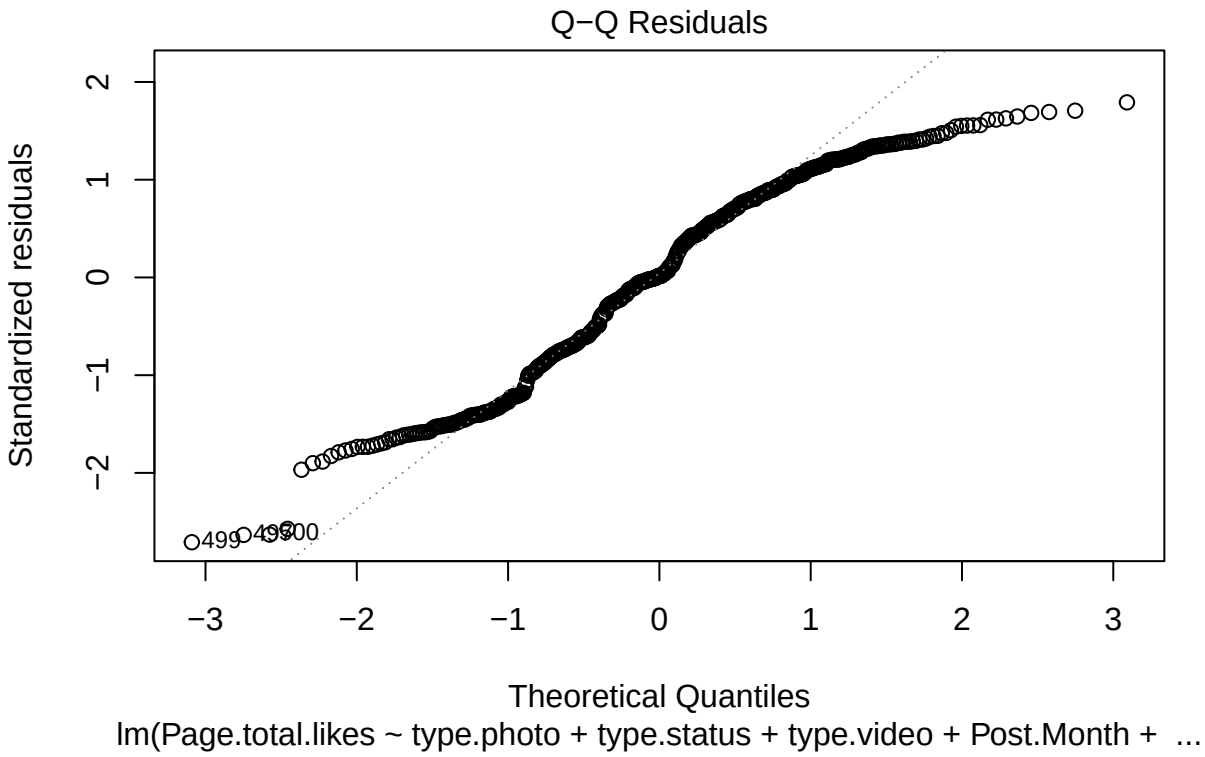

```
## first model - initial try
m1 <- lm(Page.total.likes~type.photo+type.status+type.video+Post.Month+Post.Weekday+Post.Hour+Total.Int
summary(m1)
```

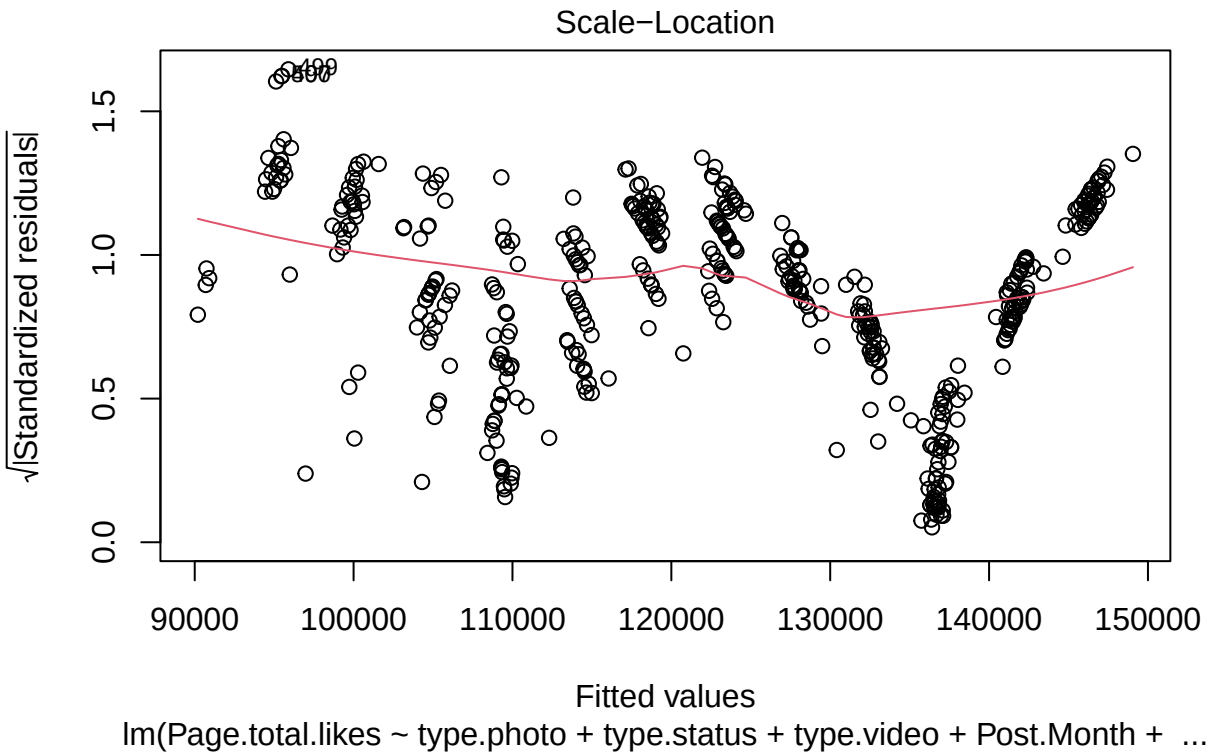
```
##
## Call:
## lm(formula = Page.total.likes ~ type.photo + type.status + type.video +
##     Post.Month + Post.Weekday + Post.Hour + Total.Interactions +
##     Lifetime.Post.Consumers, data = fb)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -14529.3  -4098.5     80.7   4538.7   9056.2
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)             86547.0321  1428.6112  60.581  < 2e-16 ***
## type.photo               4933.9233  1193.8861   4.133 4.22e-05 ***
## type.status              5933.8613  1542.7534   3.846 0.000136 ***
## type.video               5323.9892  2408.4439   2.211 0.027527 *
## Post.Month               4586.8315    79.5925  57.629  < 2e-16 ***
## Post.Weekday             -164.8681   119.7304  -1.377 0.169142
## Post.Hour                  64.6117    56.6151   1.141 0.254324
## Total.Interactions          1.5845     0.6965   2.275 0.023330 *
## Lifetime.Post.Consumers    -0.7583     0.3454  -2.195 0.028615 *
## ---
```

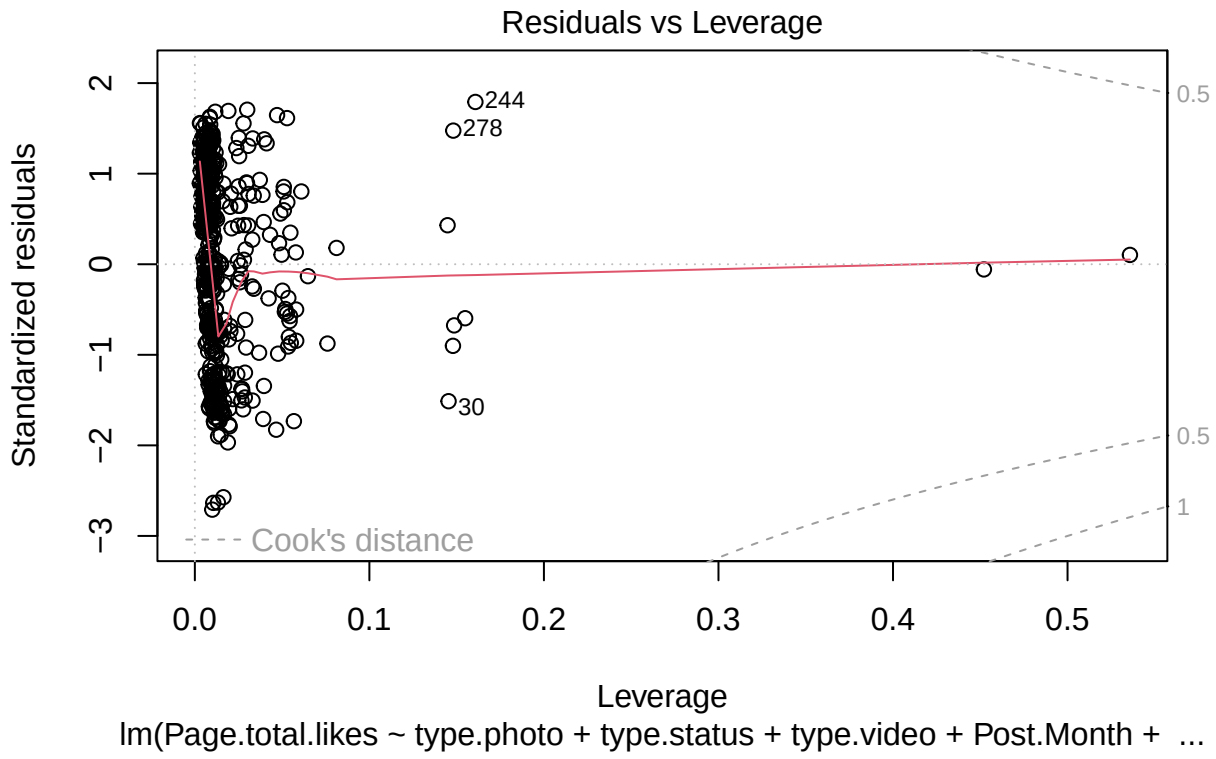
```
## Signif. codes:  0 ’***’ 0.001 ’**’ 0.01 ’*’ 0.05 ’.’ 0.1 ’ ’ 1
##
## Residual standard error: 5389 on 491 degrees of freedom
## Multiple R-squared:  0.8921, Adjusted R-squared:  0.8903
## F-statistic: 507.3 on 8 and 491 DF,  p-value: < 2.2e-16
```

```
plot(m1)
```




Q−Q Residuals
Standardized residuals
2
1
0
−1
−2
−3
−2
−1
0
1
2
3
Theoretical Quantiles
lm(Page.total.likes ~ type.photo + type.status + type.video + Post.Month + ...


Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
90000
100000
110000
120000
130000
140000
150000
Fitted values
lm(Page.total.likes ~ type.photo + type.status + type.video + Post.Month + ...

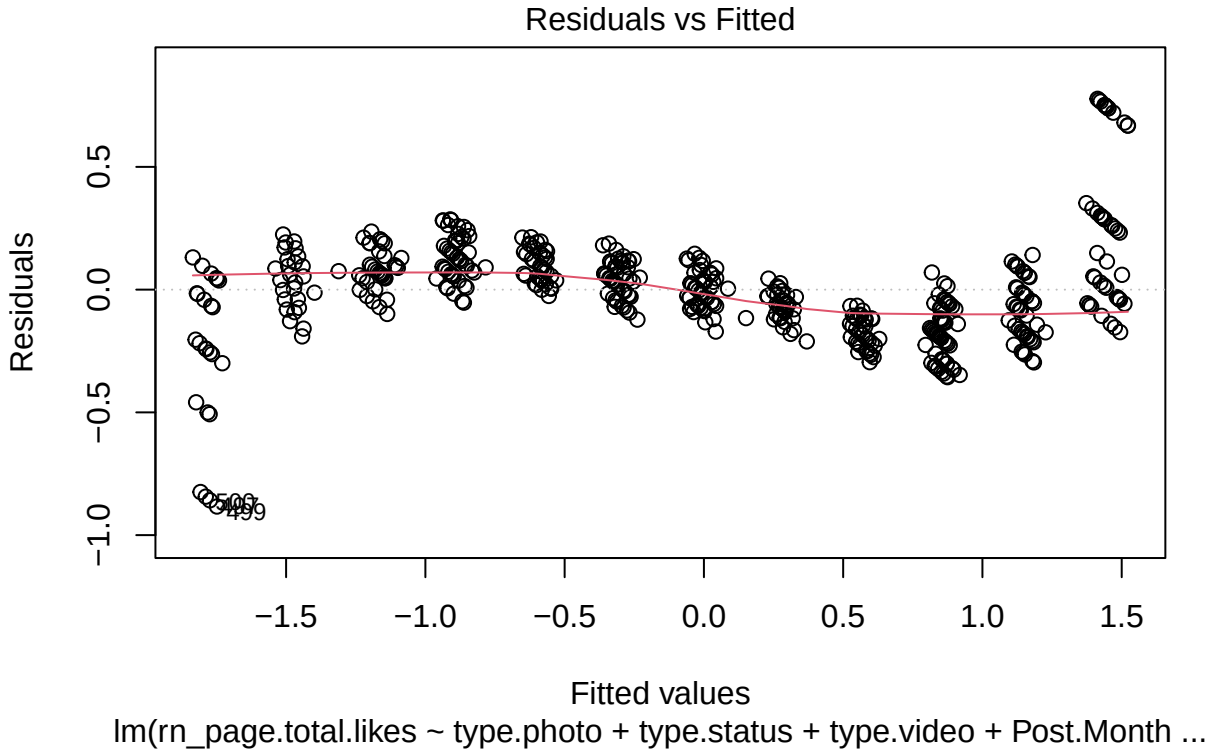


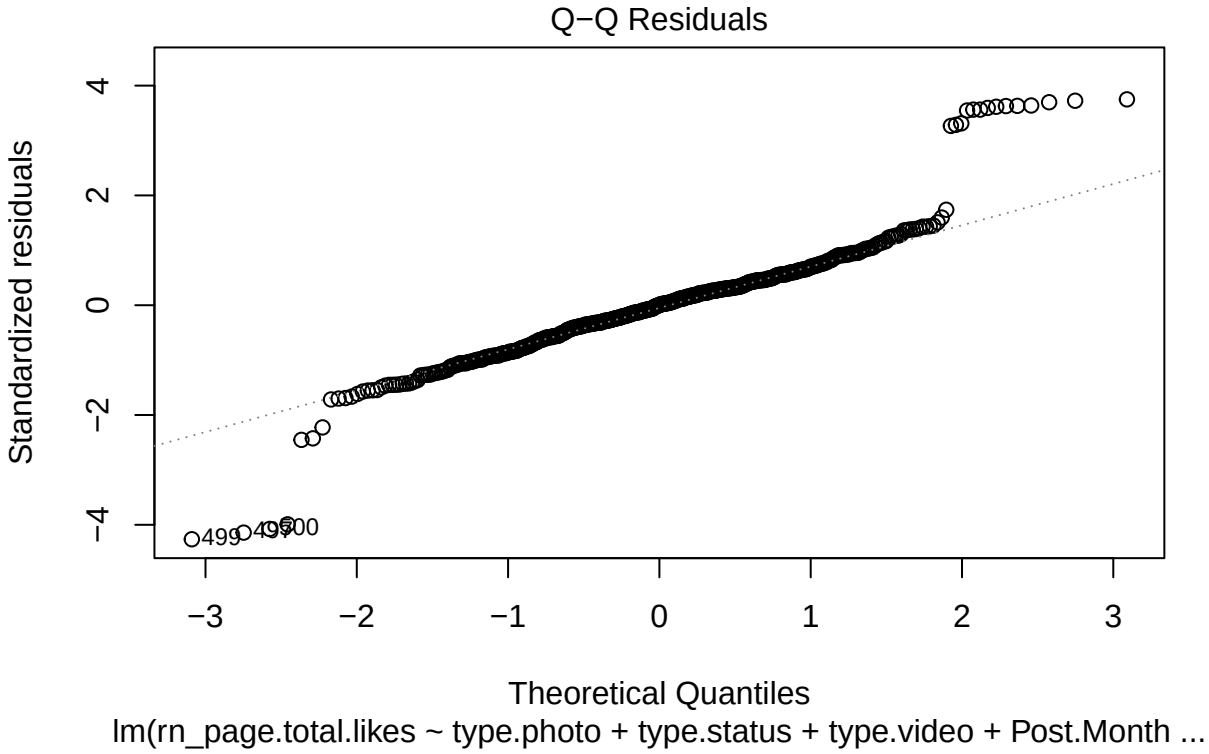

```
## model diagnostics are way off... will need to: 1) transform the outcome
##                                                2) add in a squared term
##                                                3) check collinearity
##                                                4) create one time variable instead of 3

## M2 Rank normalize the outcome
m2 <- lm(rn_page.total.likes~type.photo+type.status+type.video+Post.Month+Post.Weekday+Post.Hour+Total.
summary(m2)
```

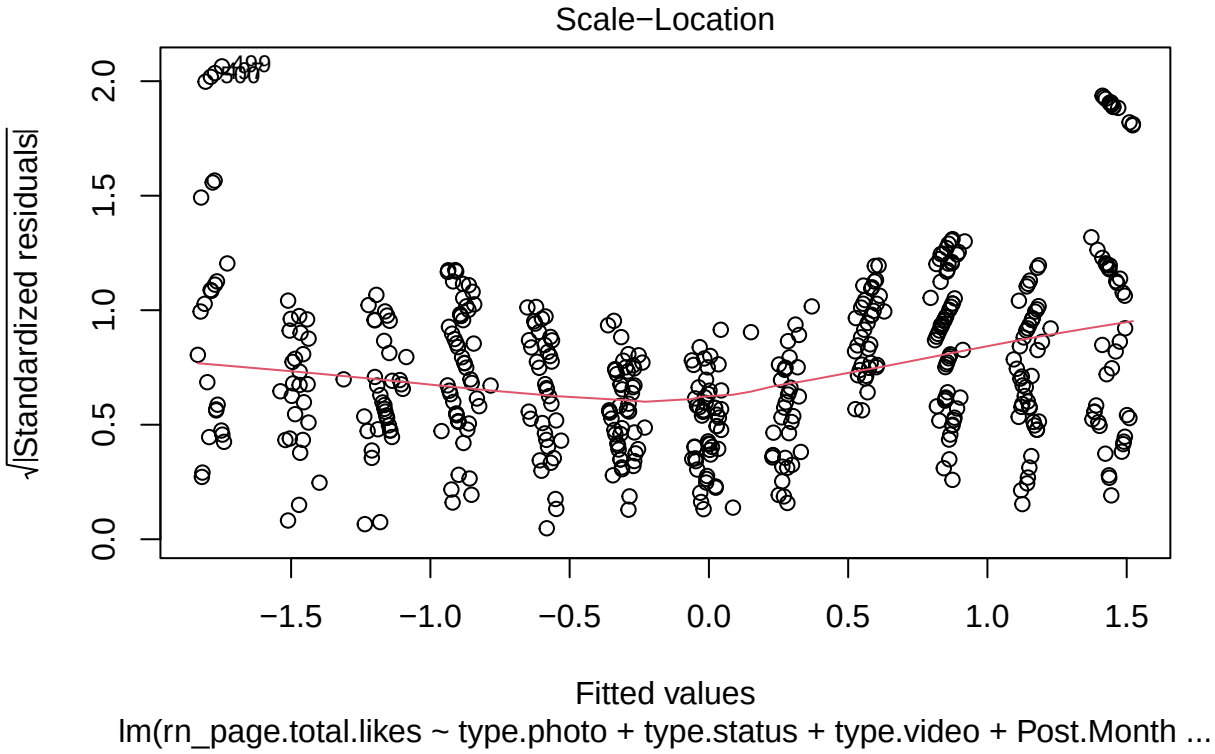
```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video + Post.Month + Post.Weekday + Post.Hour + Total.Interactions +
##     Lifetime.Post.Consumers, data = fb)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.88342 -0.11577  0.00034  0.09434  0.77723
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -2.108e+00  5.521e-02 -38.181  < 2e-16 ***
## type.photo                3.303e-02  4.614e-02   0.716  0.47443
## type.status               8.938e-02  5.962e-02   1.499  0.13448
## type.video                5.294e-02  9.307e-02   0.569  0.56971
```

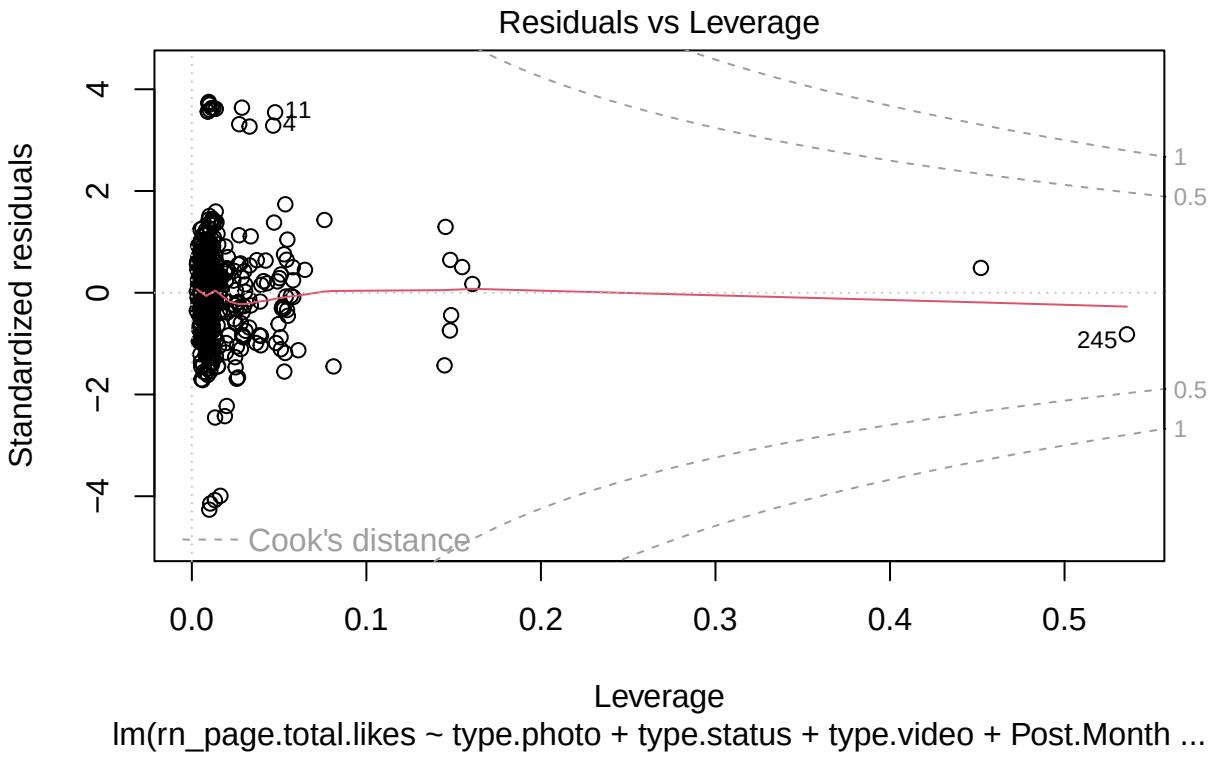
```
## Post.Month               2.917e-01  3.076e-03  94.839  < 2e-16 ***
## Post.Weekday            -6.655e-03  4.627e-03  -1.438  0.15098
## Post.Hour                5.730e-03  2.188e-03   2.619  0.00909 **
## Total.Interactions       3.462e-05  2.691e-05   1.286  0.19888
## Lifetime.Post.Consumers -1.098e-05  1.335e-05  -0.822  0.41133
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2083 on 491 degrees of freedom
## Multiple R-squared:  0.9563, Adjusted R-squared:  0.9556
## F-statistic:  1342 on 8 and 491 DF,  p-value: < 2.2e-16
```

```
plot(m2)
```

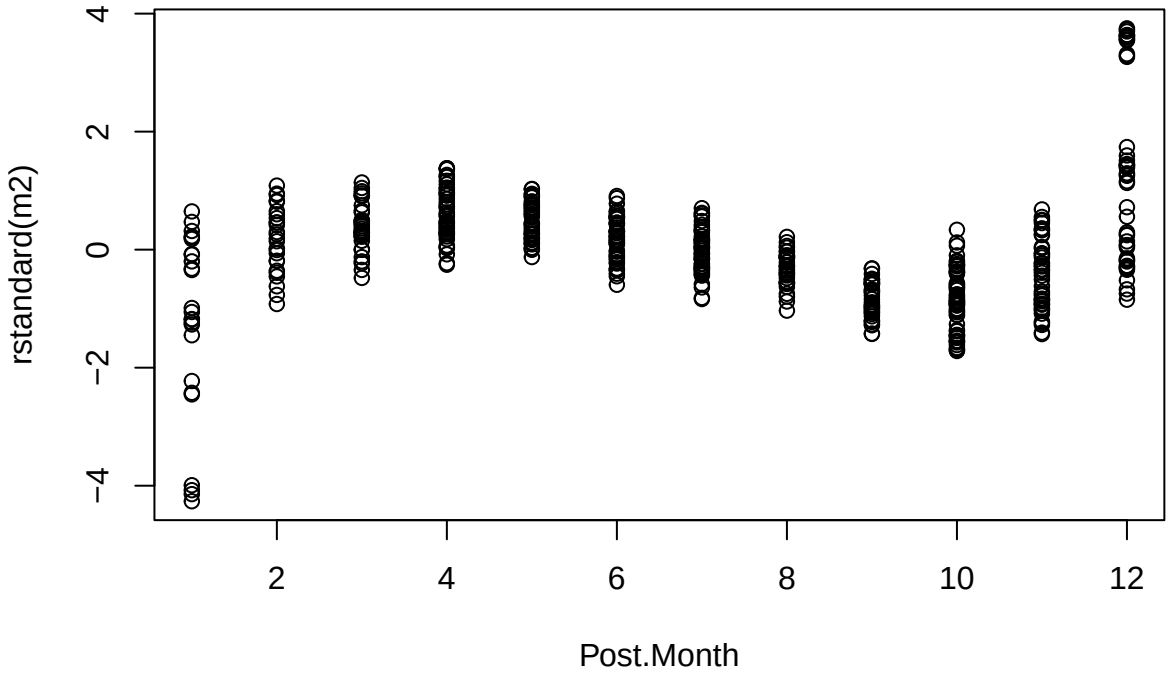



Q−Q Residuals
Standardized residuals
4
2
0
−2
−4
−3
−2
−1
0
1
2
3
Theoretical Quantiles
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Post.Month ...

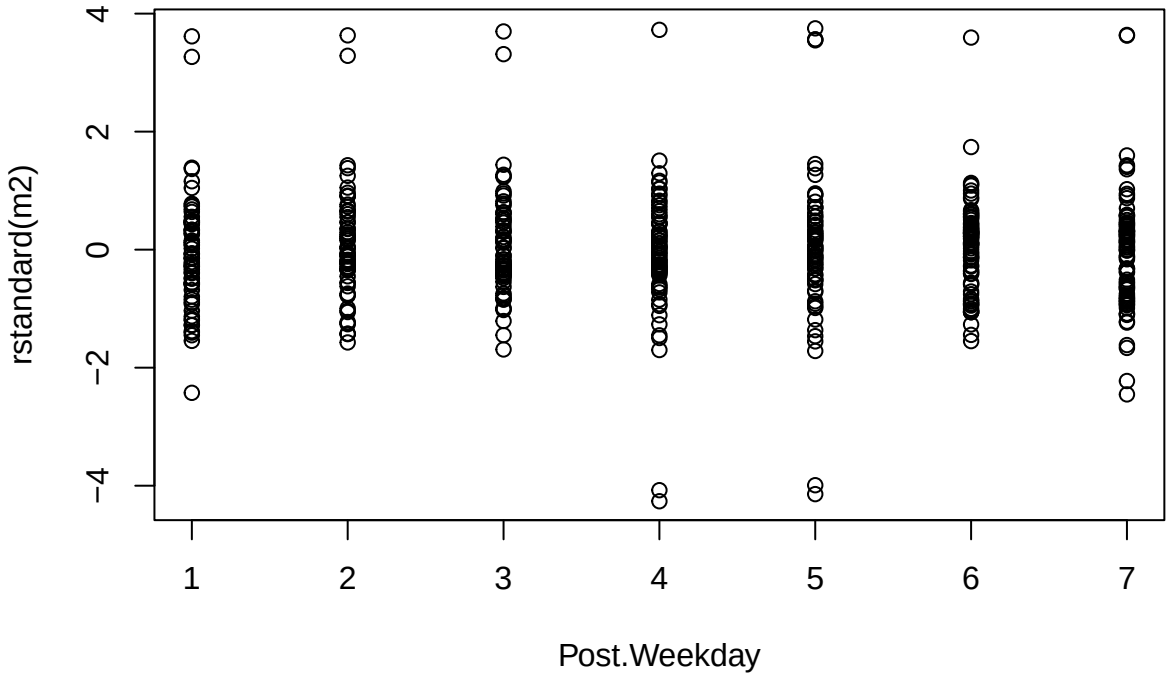

Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Post.Month ...



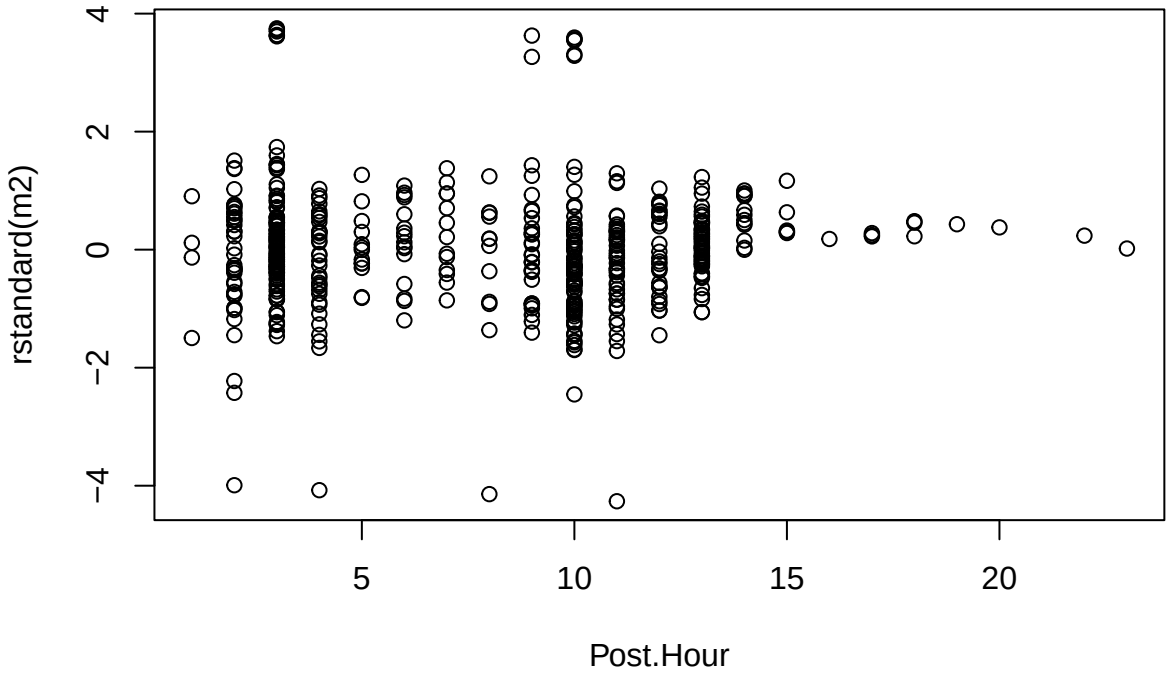

```
plot(rstandard(m2)~Post.Month)
```



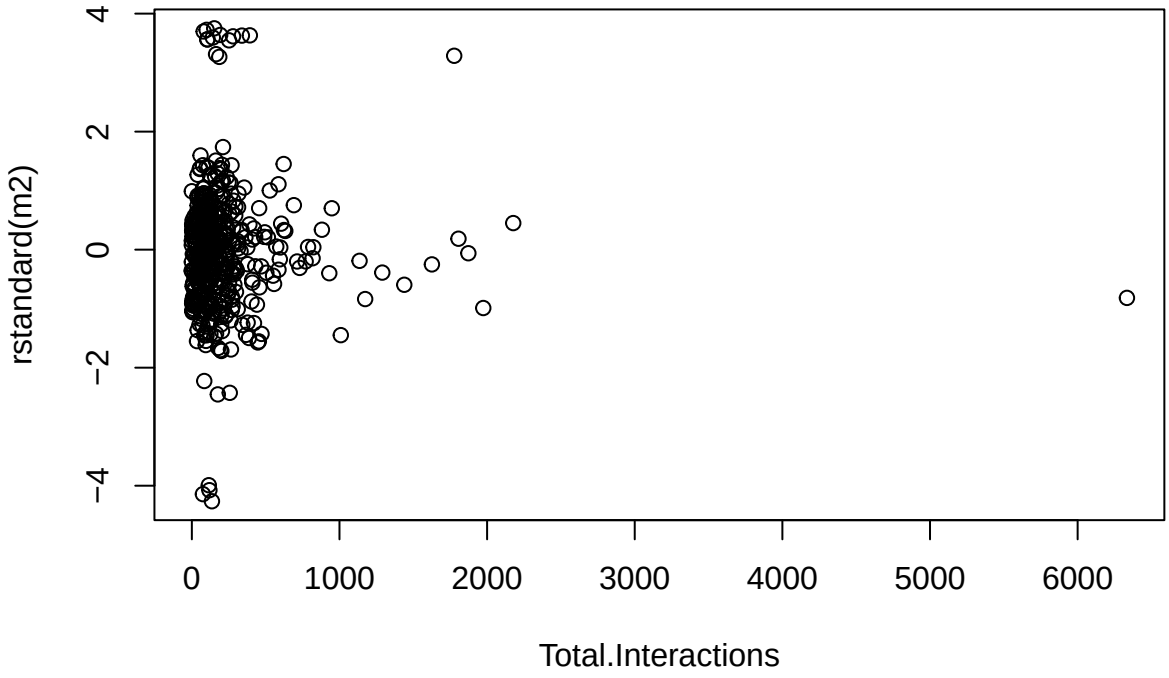

```
plot(rstandard(m2)~Post.Weekday)
```




```
plot(rstandard(m2)~Post.Hour)
```




```
plot(rstandard(m2)~Total.Interactions)
```

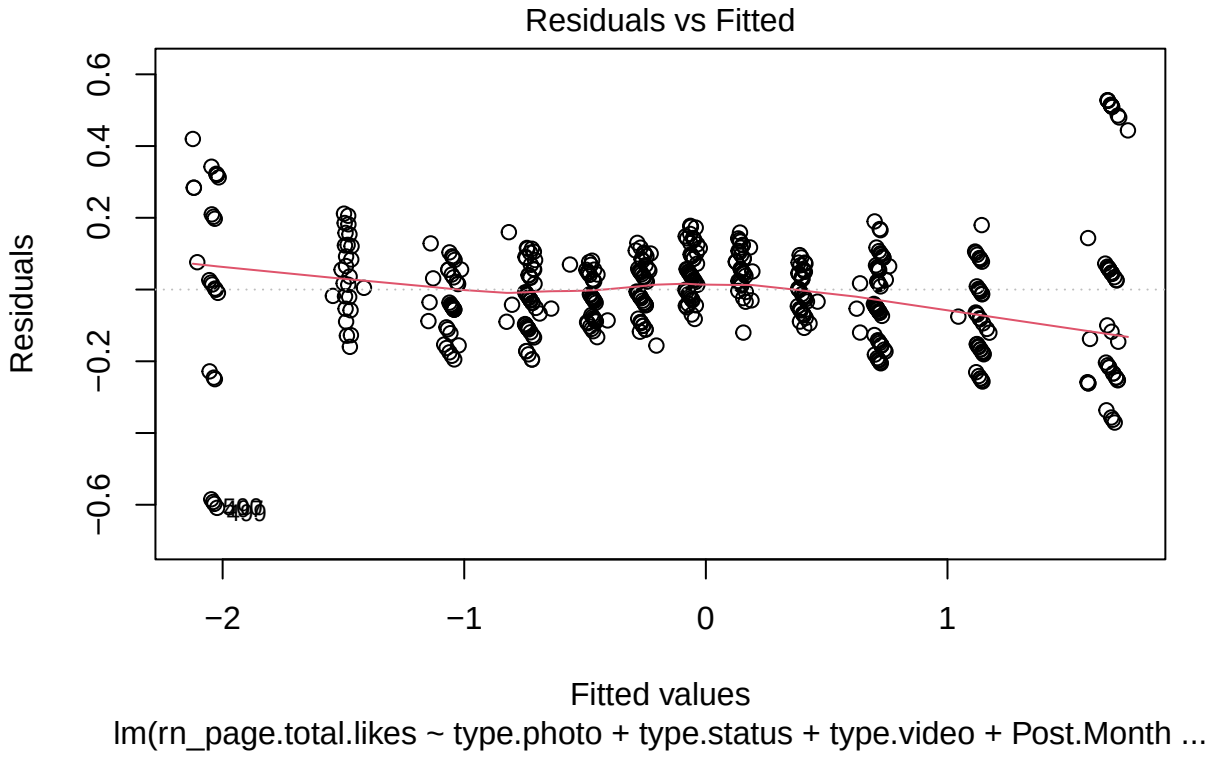


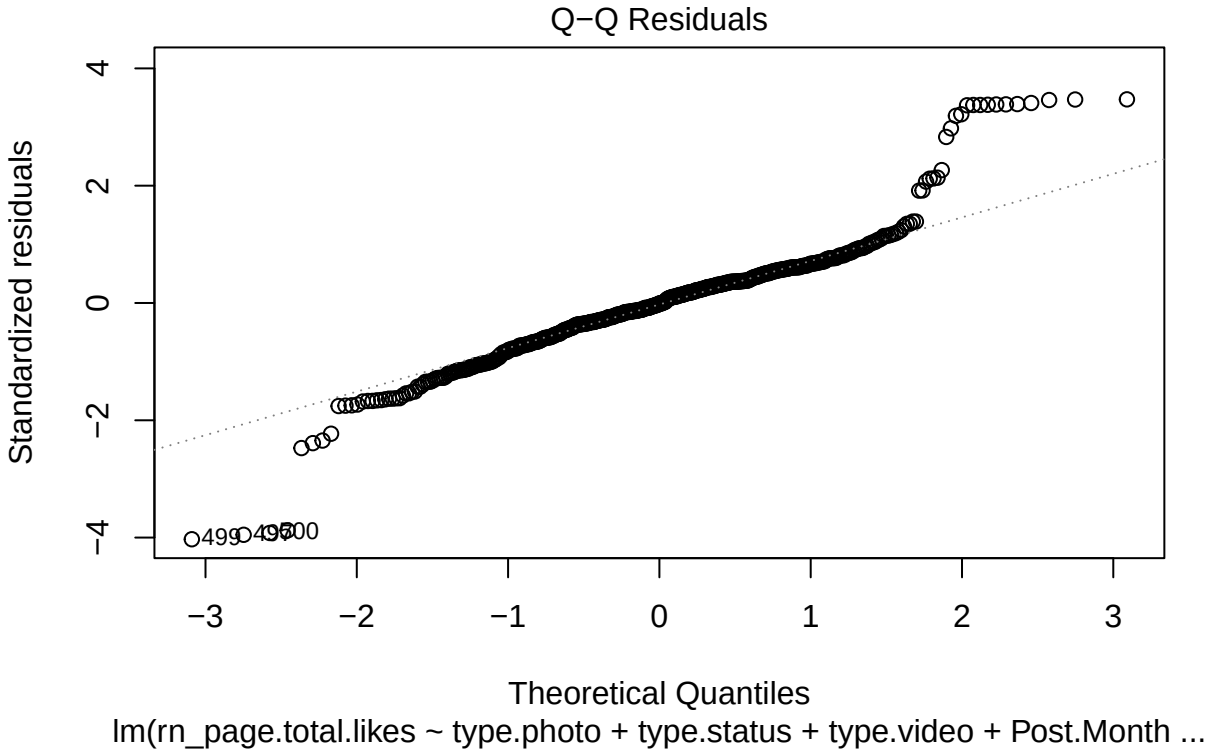

```
## better but still not good - quadratic trend with post.month- try adding a cubic term and a sqaured t
m3 <- lm(rn_page.total.likes~type.photo+type.status+type.video+Post.Month+I(Post.Month^2)+I(Post.Month^3
summary(m3)
```

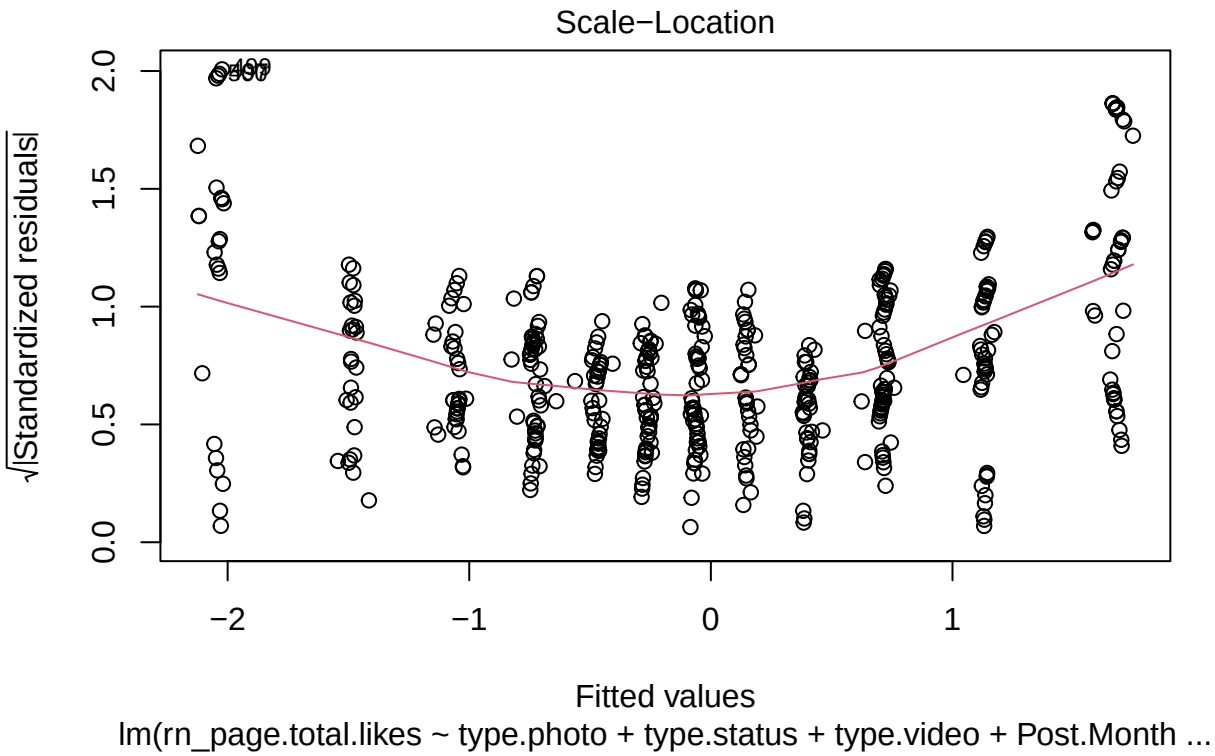
```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video + Post.Month + I(Post.Month^2) + I(Post.Month^3) +
##     Post.Weekday + Post.Hour + Total.Interactions + Lifetime.Post.Consumers,
##     data = fb)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.60865 -0.08043 -0.00148  0.07222  0.52785
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -2.823e+00  5.851e-02 -48.255   <2e-16 ***
## type.photo                7.899e-02  3.468e-02   2.277   0.0232 *
## type.status               1.105e-01  4.451e-02   2.483   0.0134 *
## type.video                1.011e-01  6.891e-02   1.467   0.1430
## Post.Month                7.906e-01  2.750e-02  28.748   <2e-16 ***
## I(Post.Month^2)          -9.099e-02  4.624e-03 -19.677   <2e-16 ***
## I(Post.Month^3)           4.642e-03  2.294e-04  20.233   <2e-16 ***
## Post.Weekday             -2.288e-03  3.422e-03  -0.669   0.5041
## Post.Hour                 2.303e-03  1.624e-03   1.418   0.1569
```

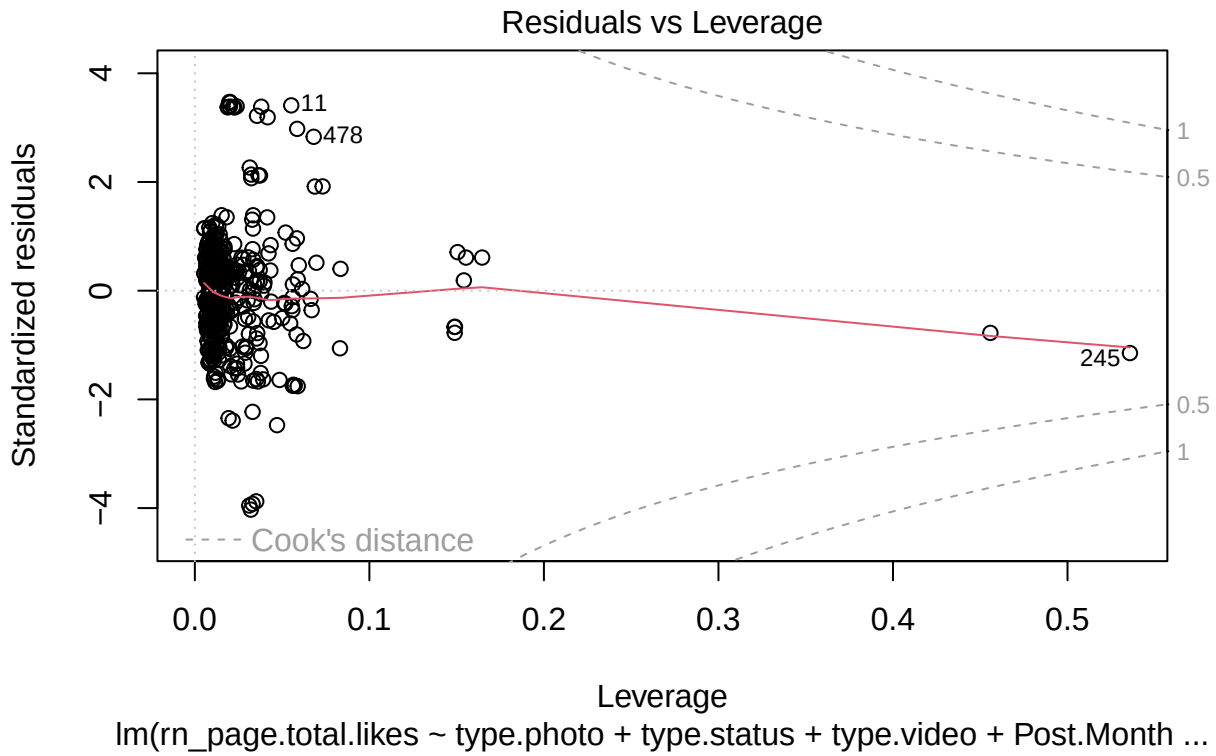
```
## Total.Interactions       4.104e-05  1.990e-05   2.062   0.0397 *
## Lifetime.Post.Consumers -8.286e-06  9.868e-06  -0.840   0.4015
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1536 on 489 degrees of freedom
## Multiple R-squared:  0.9763, Adjusted R-squared:  0.9758
## F-statistic:  2016 on 10 and 489 DF,  p-value: < 2.2e-16
```

```
plot(m3)
```




Q−Q Residuals
Standardized residuals
4
2
0
−2
−4
−3
−2
−1
0
1
2
3
Theoretical Quantiles
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Post.Month ...


Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
2.0
−2
−1
0
1
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Post.Month ...

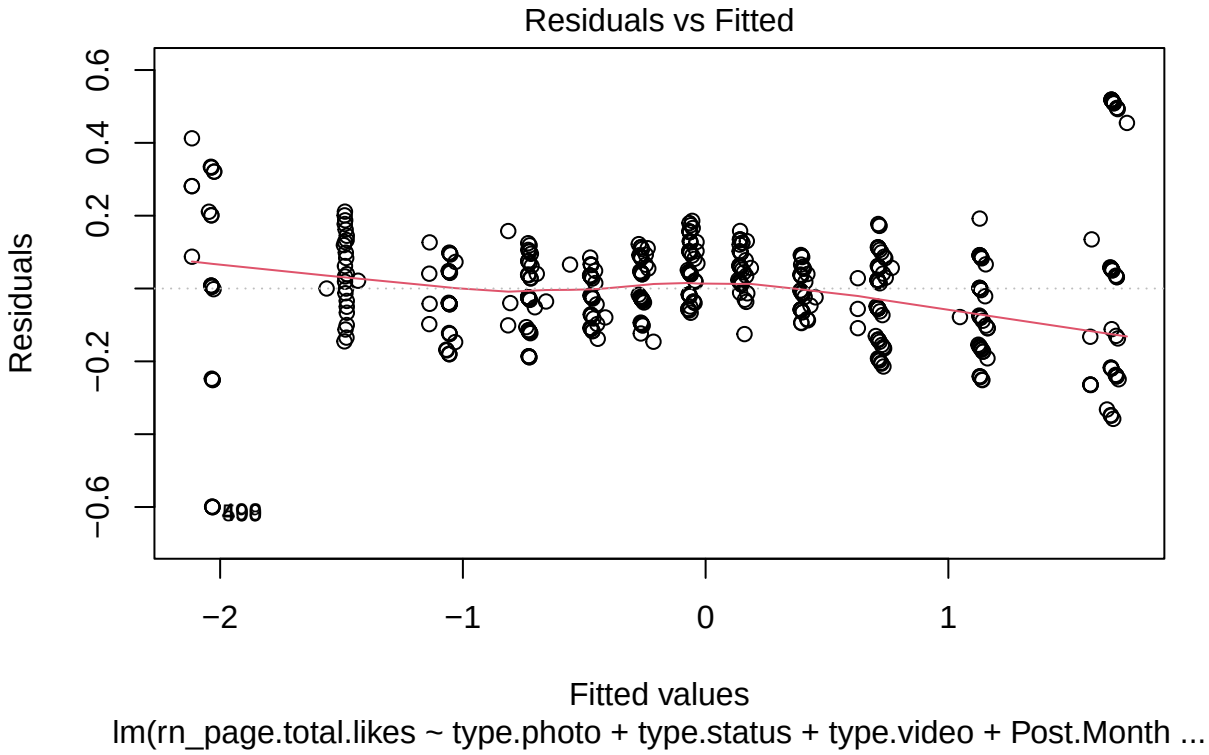


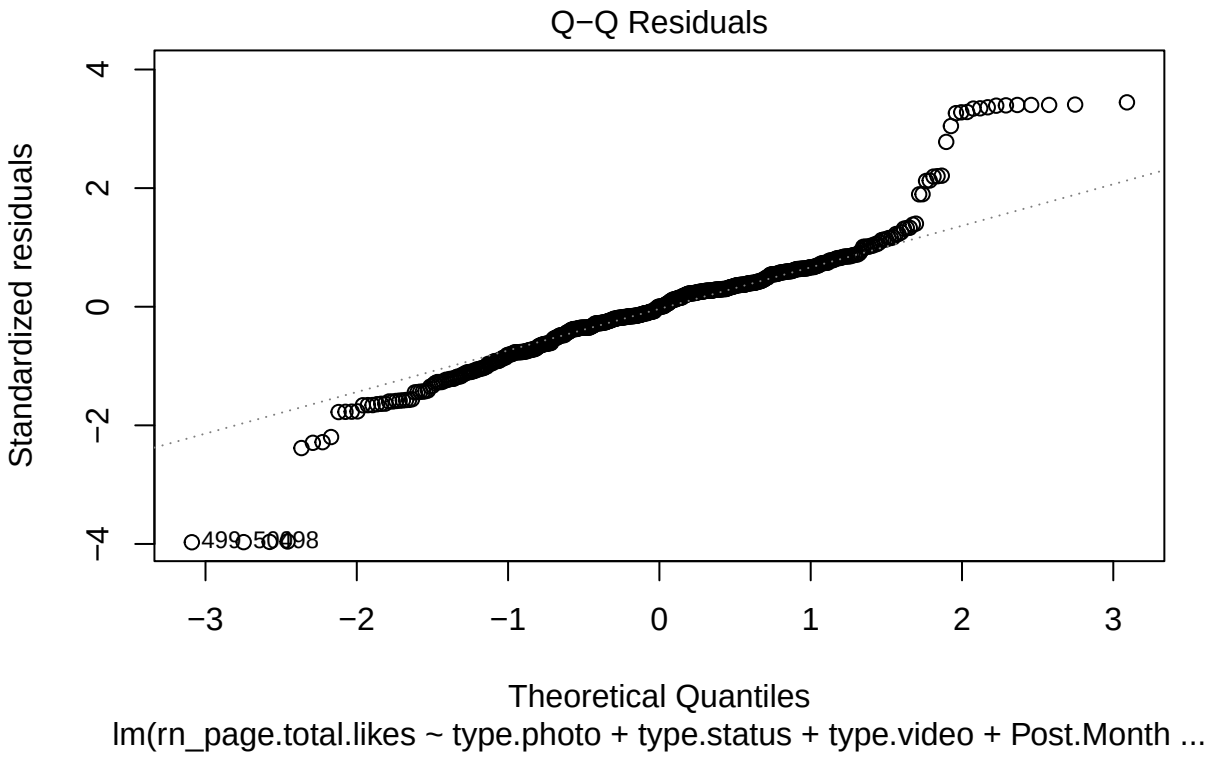

```
## not good - remove non-sig variables
m4 <- lm(rn_page.total.likes~type.photo+type.status+type.video+Post.Month+I(Post.Month^2)+I(Post.Month^3
summary(m4)
```

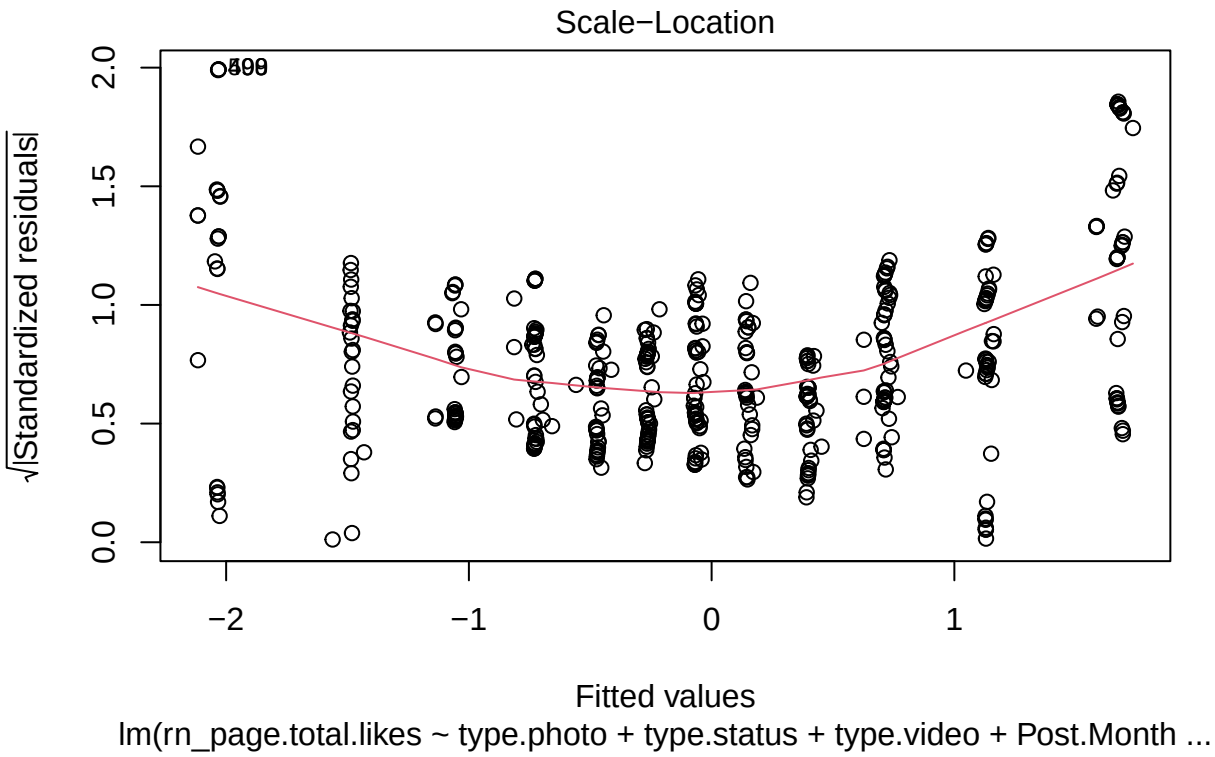
```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video + Post.Month + I(Post.Month^2) + I(Post.Month^3) +
##     Total.Interactions + Lifetime.Post.Consumers, data = fb)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.60059 -0.07755 -0.00001  0.06588  0.51893
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -2.825e+00  5.542e-02 -50.975   <2e-16 ***
## type.photo                8.441e-02  3.449e-02   2.447   0.0147 *
## type.status               1.143e-01  4.435e-02   2.577   0.0103 *
## type.video                1.110e-01  6.862e-02   1.618   0.1064
## Post.Month                7.957e-01  2.730e-02  29.143   <2e-16 ***
## I(Post.Month^2)          -9.191e-02  4.586e-03 -20.042   <2e-16 ***
## I(Post.Month^3)           4.685e-03  2.277e-04  20.576   <2e-16 ***
## Total.Interactions        4.112e-05  1.987e-05   2.070   0.0390 *
## Lifetime.Post.Consumers -8.275e-06  9.866e-06  -0.839   0.4020
## ---
```

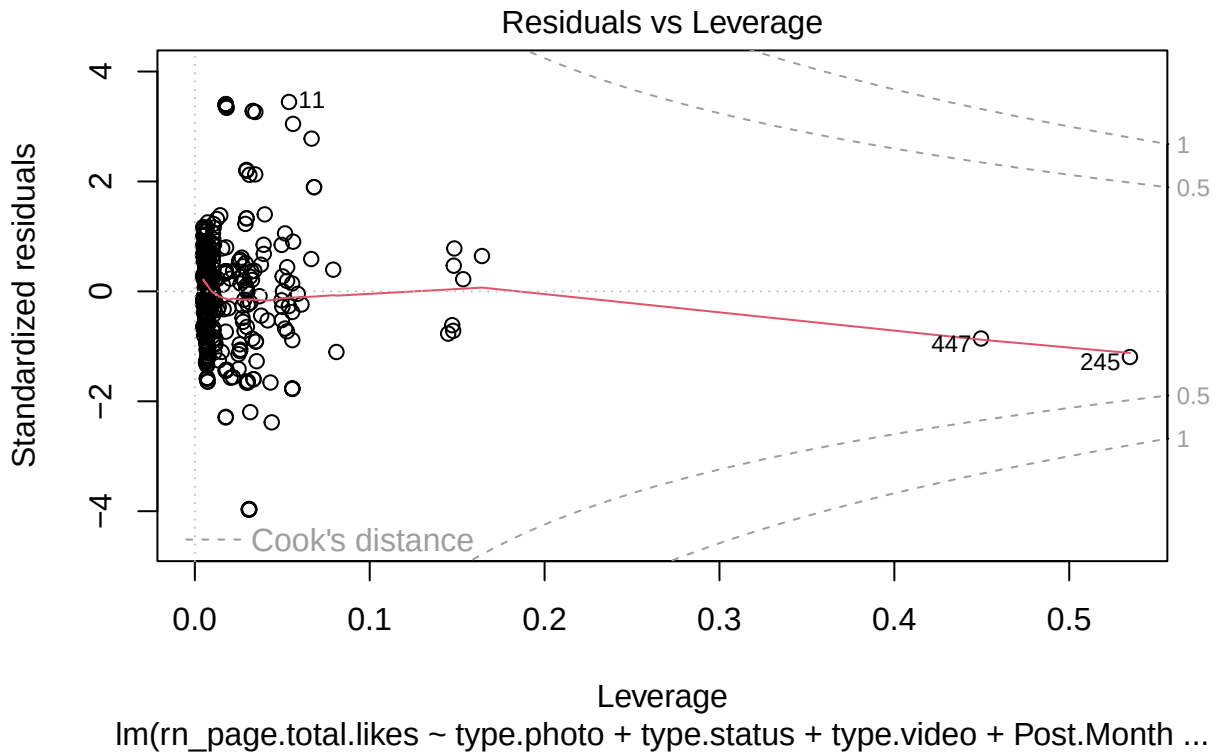
```
## Signif. codes:  0 ’***’ 0.001 ’**’ 0.01 ’*’ 0.05 ’.’ 0.1 ’ ’ 1
##
## Residual standard error: 0.1536 on 491 degrees of freedom
## Multiple R-squared:  0.9762, Adjusted R-squared:  0.9758
## F-statistic:  2518 on 8 and 491 DF,  p-value: < 2.2e-16
```

```
plot(m4)
```




Q−Q Residuals
Standardized residuals
4
2
0
−2
−4
−3
−2
−1
0
1
2
3
Theoretical Quantiles
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Post.Month ...


Scale−Location
√|Standardized residuals|
0.0
0.5
1.0
1.5
2.0
−2
−1
0
1
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Post.Month ...

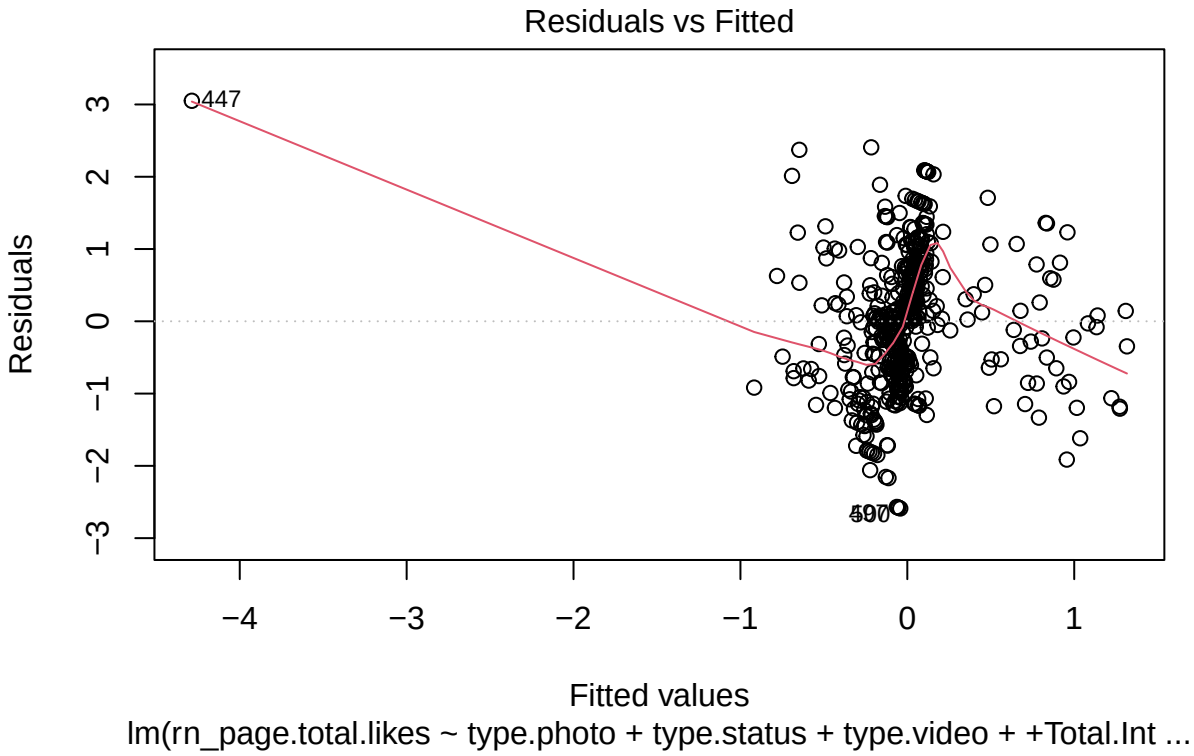


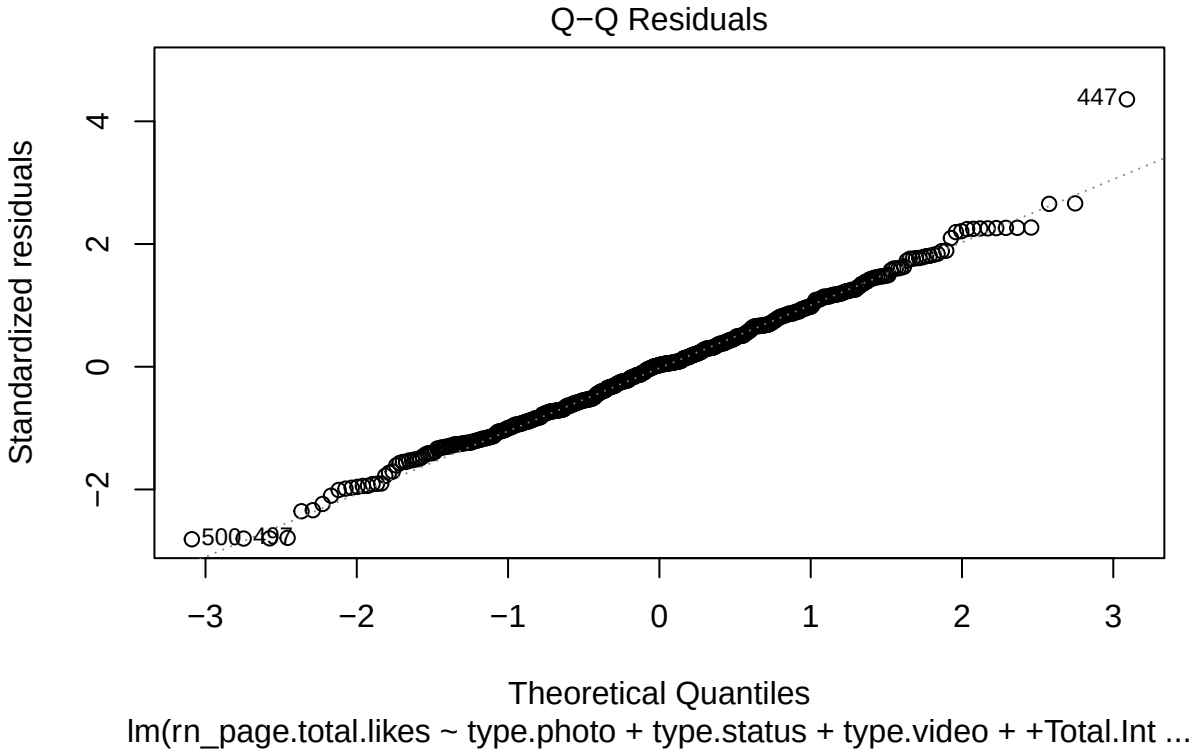

```
## still not meeting all assumptions - remove post.hour since it's not a linear association with page t
m5 <- lm(rn_page.total.likes~type.photo+type.status+type.video++Total.Interactions+Lifetime.Post.Consume
summary(m5)
```

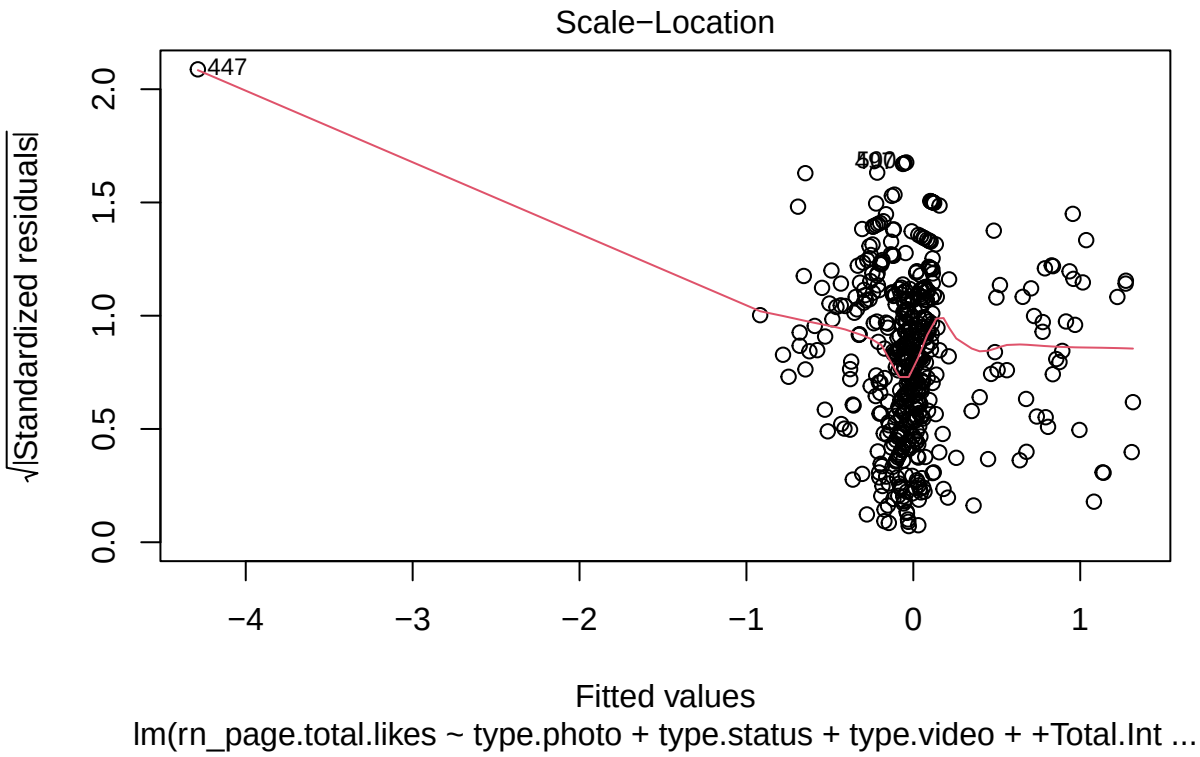
```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video + +Total.Interactions + Lifetime.Post.Consumers,
##     data = fb)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.58932 -0.65049  0.02413  0.61369  3.05087
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -9.873e-02  1.973e-01  -0.501 0.616914
## type.photo                2.190e-01  2.028e-01   1.080 0.280689
## type.status               1.413e+00  2.558e-01   5.525 5.34e-08 ***
## type.video                1.371e+00  4.058e-01   3.379 0.000786 ***
## Total.Interactions        3.800e-04  1.179e-04   3.224 0.001346 **
## Lifetime.Post.Consumers -3.967e-04  5.633e-05  -7.043 6.36e-12 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

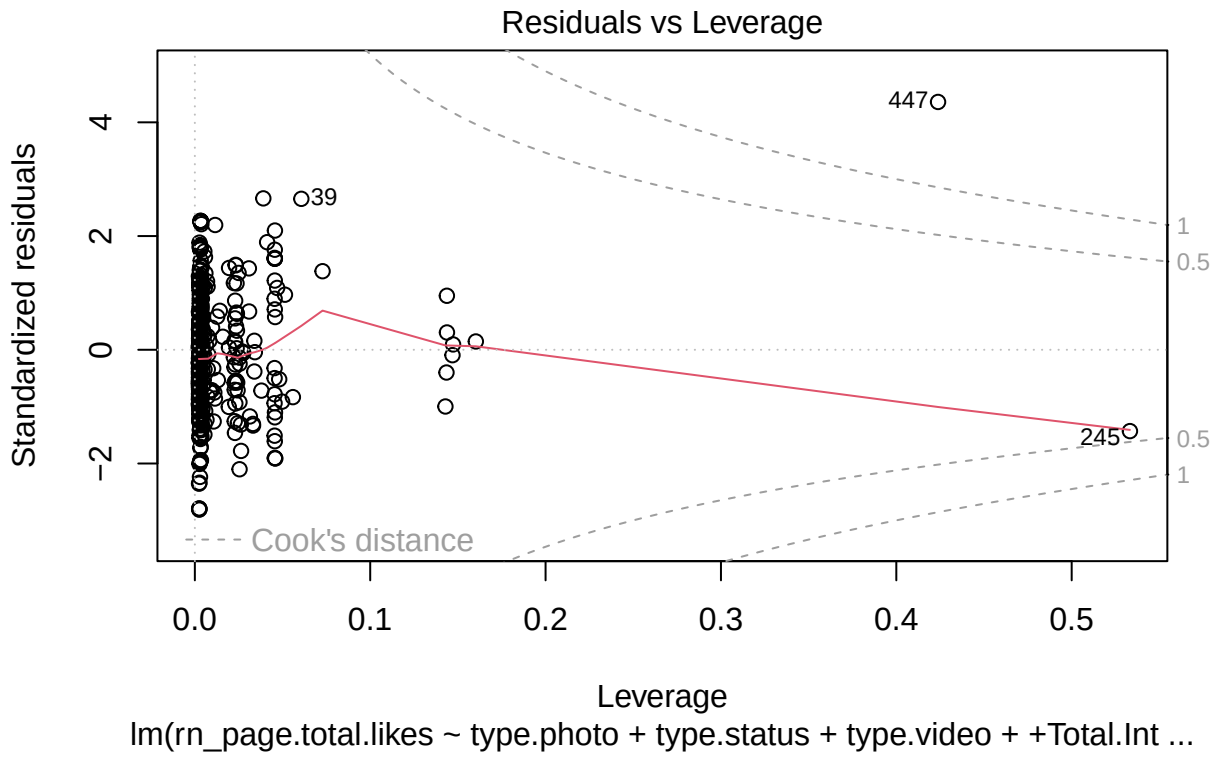
```
## Residual standard error: 0.9222 on 494 degrees of freedom
## Multiple R-squared:  0.1373, Adjusted R-squared:  0.1285
## F-statistic: 15.72 on 5 and 494 DF,  p-value: 2.264e-14
```

```
plot(m5)
```




Q−Q Residuals
Standardized residuals
Theoretical Quantiles
lm(rn_page.total.likes ~ type.photo + type.status + type.video + +Total.Int ...
447
500
497
−3
−2
−1
0
1
2
3
−2
0
2
4


Scale−Location
447
500
√|Standardized residuals|
0.0
0.5
1.0
1.5
2.0
−4
−3
−2
−1
0
1
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video + +Total.Int ...

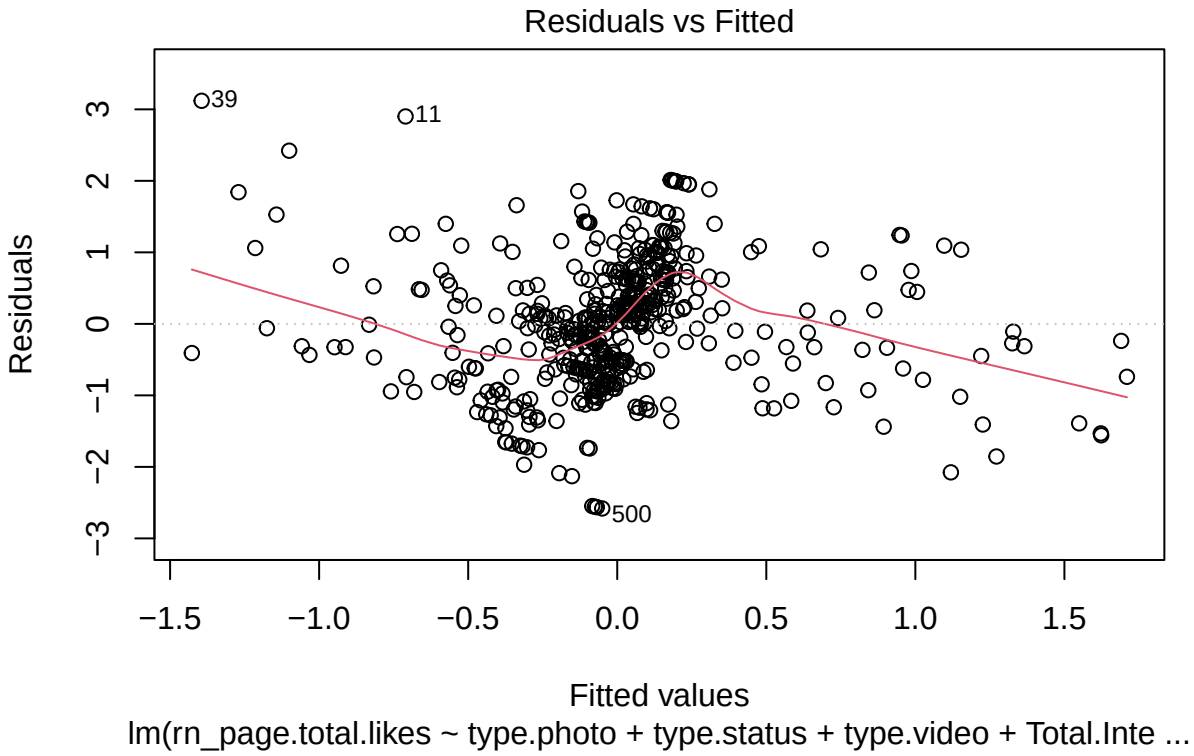


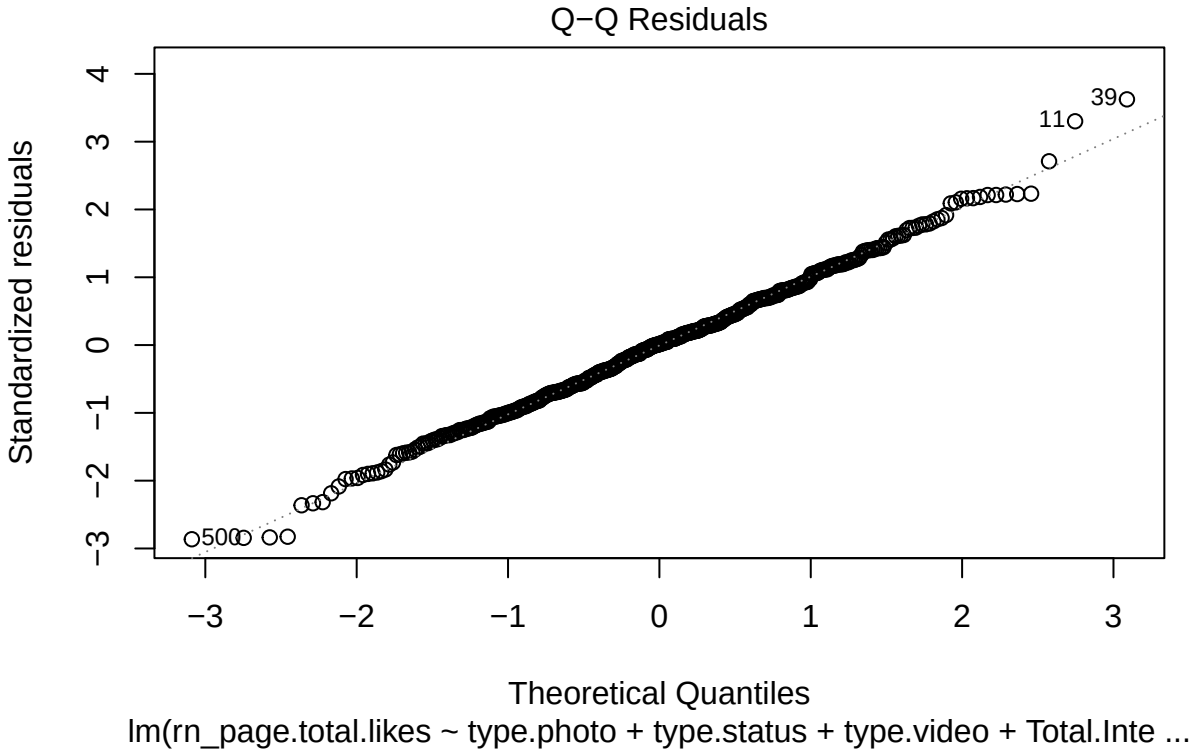

```
## significant better but spotted a bad outlier #447 - remove and fit again
fb2 <- fb[-c(447,245),]
m6 <- lm(rn_page.total.likes~type.photo+type.status+type.video+Total.Interactions+Lifetime.Post.Consume
summary(m6)
```

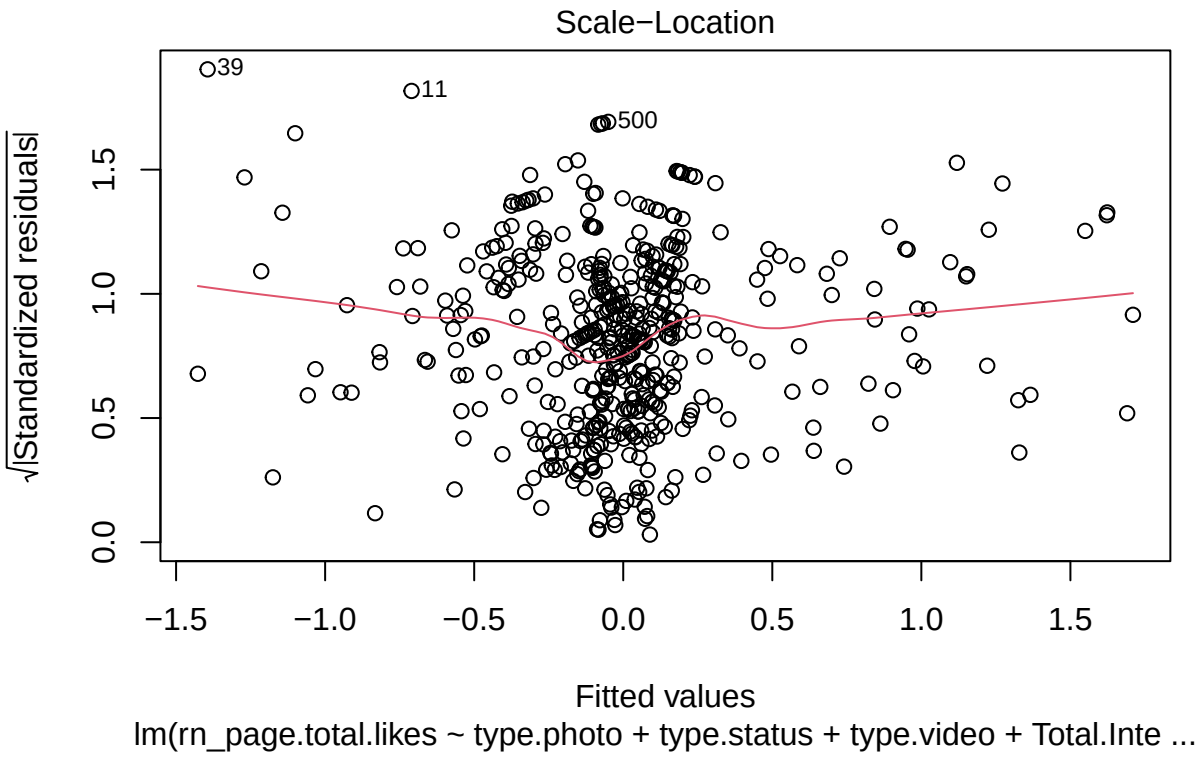
```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video + Total.Interactions + Lifetime.Post.Consumers,
##     data = fb2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.58144 -0.62227  0.01378  0.60747  3.11957
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -6.638e-02  1.935e-01  -0.343    0.732
## type.photo                2.534e-01  1.989e-01   1.274    0.203
## type.status               1.752e+00  2.609e-01   6.714 5.23e-11 ***
## type.video                1.591e+00  4.008e-01   3.969 8.28e-05 ***
## Total.Interactions        7.934e-04  1.735e-04   4.574 6.07e-06 ***
## Lifetime.Post.Consumers -6.330e-04  7.375e-05  -8.584  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
```

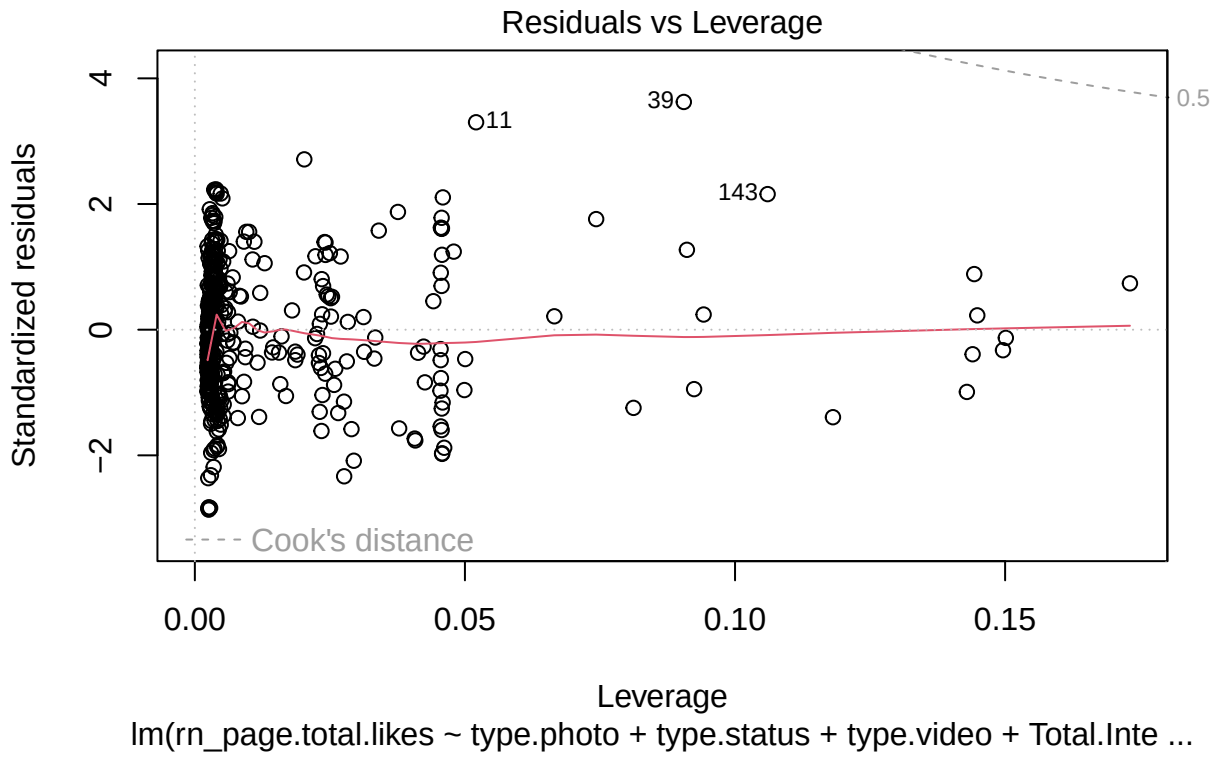
```
## Residual standard error: 0.9026 on 492 degrees of freedom
## Multiple R-squared:  0.1744, Adjusted R-squared:  0.166
## F-statistic: 20.79 on 5 and 492 DF,  p-value: < 2.2e-16
```

```
plot(m6)
```




Q−Q Residuals
Standardized residuals
Theoretical Quantiles
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Total.Inte ...
39
11
500
−3
−2
−1
0
1
2
3
4


Scale−Location
39
11
500
√|Standardized residuals|
0.0
0.5
1.0
1.5
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5
Fitted values
lm(rn_page.total.likes ~ type.photo + type.status + type.video + Total.Inte ...




```
## model comparison using F test
anova(m0,m5)
```

```
## Analysis of Variance Table
##
## Model 1: rn_page.total.likes ~ type.photo + type.status + type.video
## Model 2: rn_page.total.likes ~ type.photo + type.status + type.video +
##     +Total.Interactions + Lifetime.Post.Consumers
##   Res.Df    RSS Df Sum of Sq      F    Pr(>F)
## 1    496 462.61
## 2    494 420.15  2    42.461 24.962 4.706e-11 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
## check collinearity

vif(m6)
```

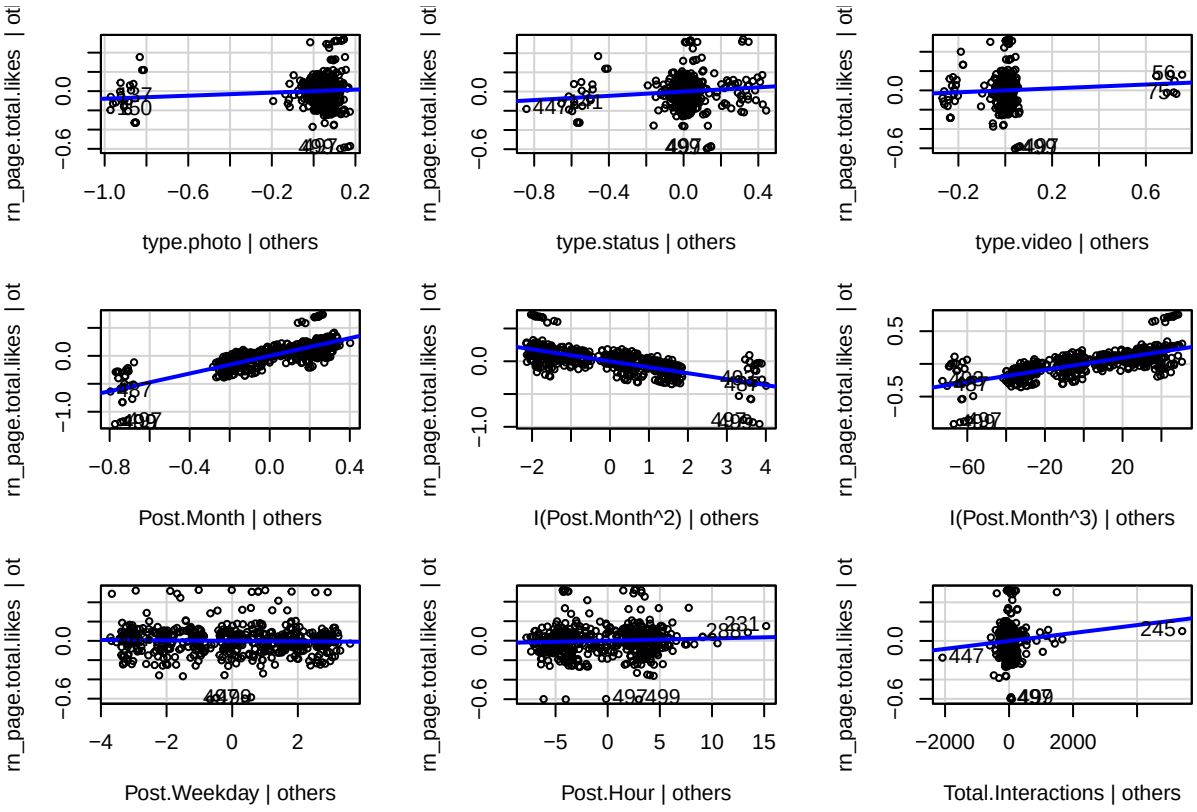
```
##              type.photo             type.status             type.video
##                3.060808                3.420518                1.360975
##      Total.Interactions Lifetime.Post.Consumers
##                1.277676                1.783045
```

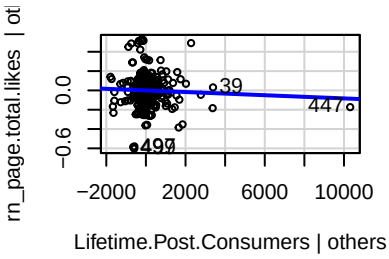
```r
## final model

summary(m6)
```

```
##
## Call:
## lm(formula = rn_page.total.likes ~ type.photo + type.status +
##     type.video + Total.Interactions + Lifetime.Post.Consumers,
##     data = fb2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.58144 -0.62227  0.01378  0.60747  3.11957
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              -6.638e-02  1.935e-01  -0.343    0.732
## type.photo                2.534e-01  1.989e-01   1.274    0.203
## type.status               1.752e+00  2.609e-01   6.714 5.23e-11 ***
## type.video                1.591e+00  4.008e-01   3.969 8.28e-05 ***
## Total.Interactions        7.934e-04  1.735e-04   4.574 6.07e-06 ***
## Lifetime.Post.Consumers -6.330e-04  7.375e-05  -8.584  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9026 on 492 degrees of freedom
## Multiple R-squared:  0.1744, Adjusted R-squared:  0.166
## F-statistic: 20.79 on 5 and 492 DF,  p-value: < 2.2e-16
```

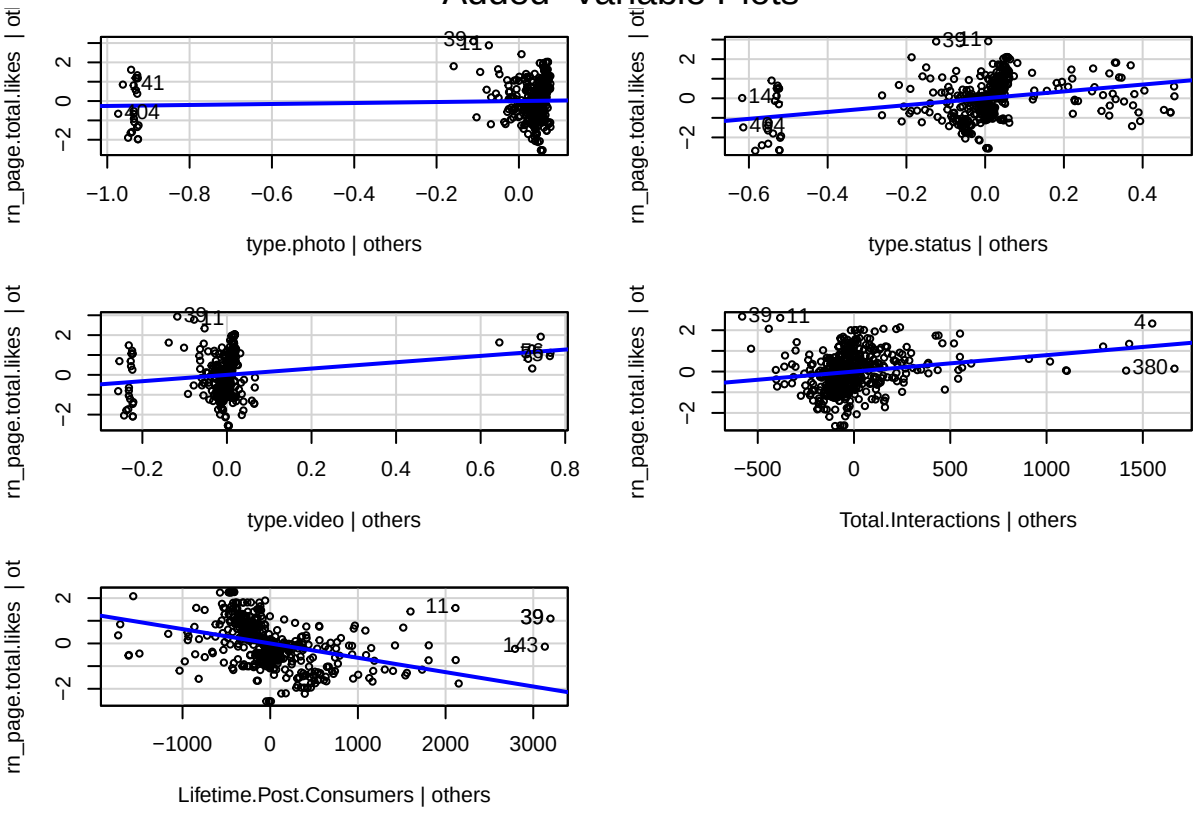
Visualization

```r
## m3
avPlots(m3)
```


rn_page.total.likes | ot
type.photo | others
type.status | others
type.video | others
Post.Month | others
I(Post.Month^2) | others
I(Post.Month^3) | others
Post.Weekday | others
Post.Hour | others
Total.Interactions | others




```
## m6
avPlots(m6)
```


Added−Variable Plots
rn_page.total.likes | ot
type.photo | others
type.status | others
type.video | others
Total.Interactions | others
Lifetime.Post.Consumers | others