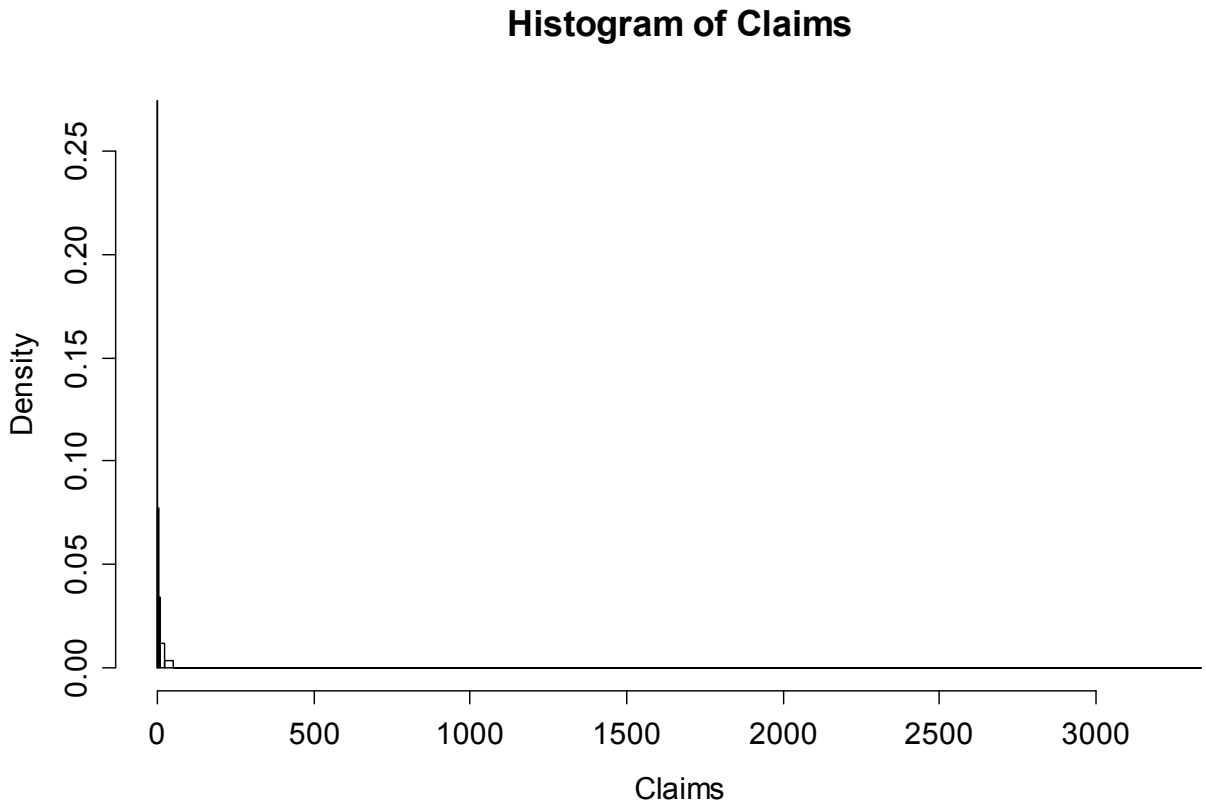
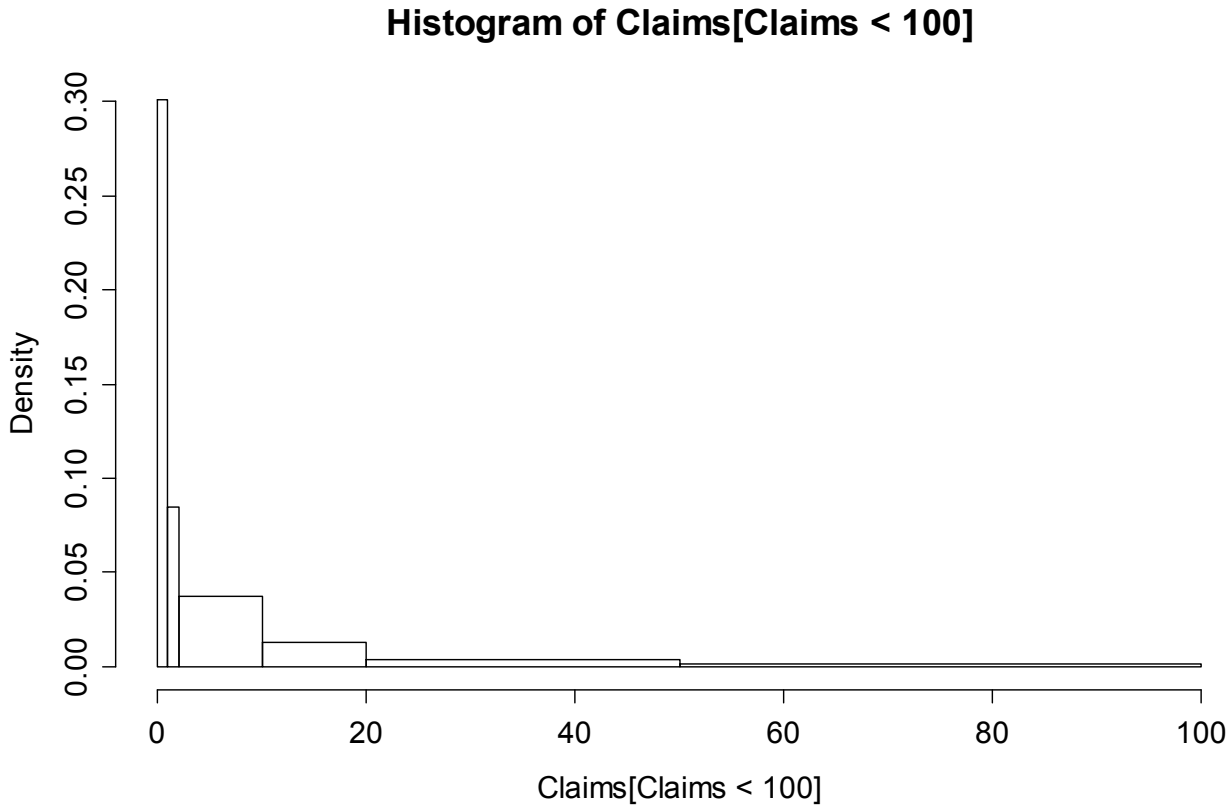
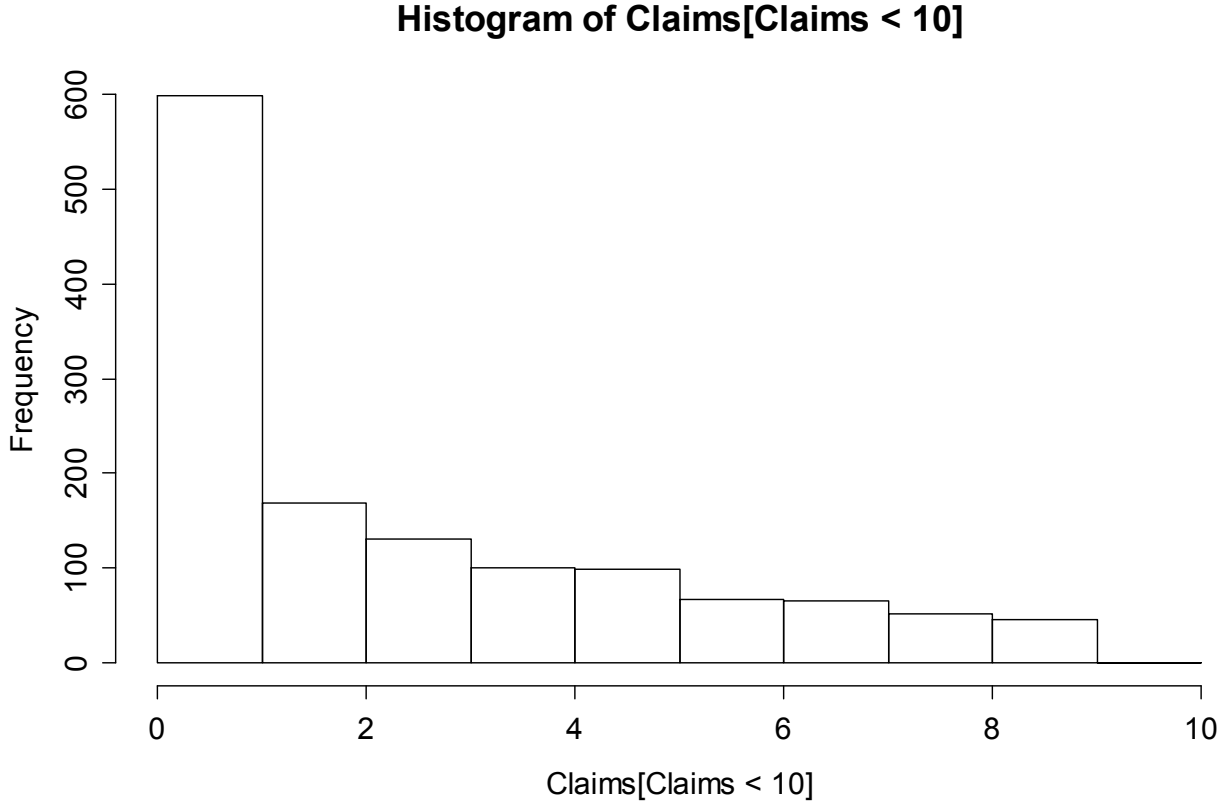
```
hist(Claims,breaks=c(0,1,2,10,20,50,max(Claims)))
```



```
hist(Claims[Claims<100],breaks=c(0,1,2,10,20,50,100))
```




```
hist(Claims[Claims<10],breaks=0:10)
```



```
library("tweedie")

cl.ptwee <- tweedie.profile( Claims ~ 1,p.vec=seq(1.1, 2.1, by=0.1) )
```

link.power=0 (domyślna)

```
cl.ptwee$p.max
```

```
1.818367
```

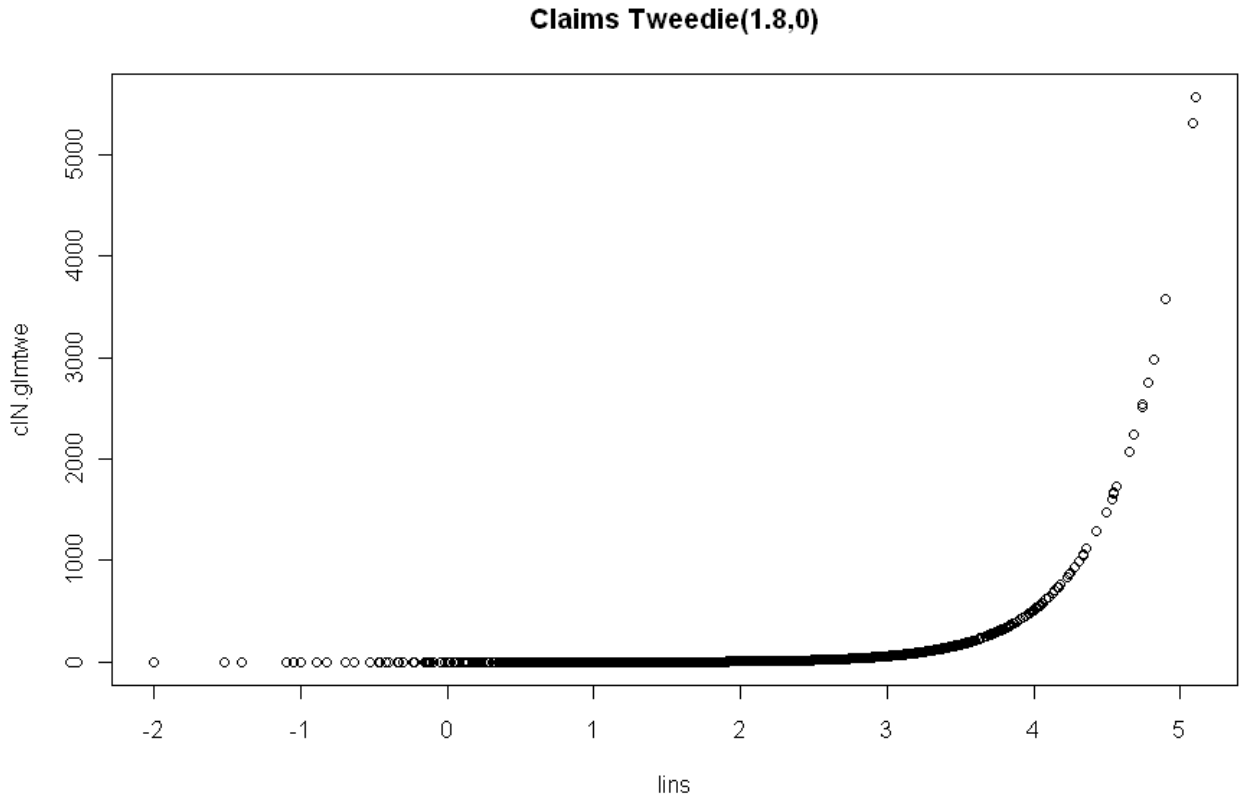
Nie jest to Poissona (p=1). Jest blisko gamma (p=2)

```
library("statmod")
clLins.glmtwe <-glm( Claims~lins, family=tweedie(1.8, link.power=0) )
summary(clLins.glmtwe)
```

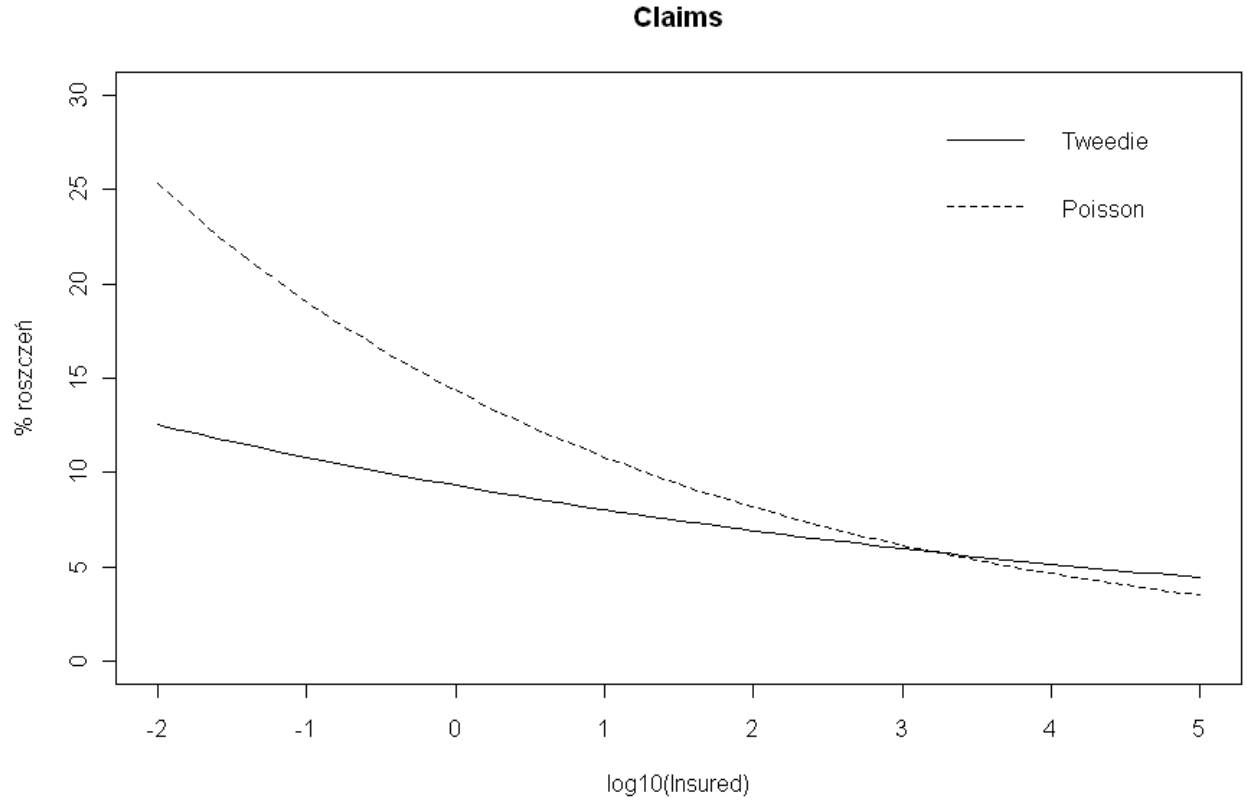
```
Call:
glm(formula = Claims ~ lins, family = tweedie(1.8, link.power = 0))

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.7921  -1.0011  -0.2961   0.3471   4.7381

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -2.37464    0.04768   -49.8   <2e-16 ***
lins         2.15403    0.01859   115.9   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Tweedie family taken to be 1.159058)

    Null deviance: 21682.3  on 2181  degrees of freedom
Residual deviance:  4588.7  on 2180  degrees of freedom
AIC: NA
```

R^2=0.7884

```
clN.glmtwe <- predict(clLins.glmtwe,type="response")
plot(clN.glmtwe~lins,main="Claims Tweedie(1.8,0")
```



```
plot(c(-2,5), c(0,30), type = "n", xlab = "log10(Insured)",
     ylab = "% roszczeń",main="Claims")
ll <- seq(-2,5,0.1)
lines(ll, predict(clLins.glmtwe,
                  data.frame(lins=ll),type = "response")/10^(ll-2))
lines(ll, predict(cl.poi2,
                  data.frame(lins=ll),type = "response")/10^(ll-2),lty=2)
legend("topright",legend=c("Tweedie","Poisson"),lty=1:2,bty="n")
```




```
clLins.glmtwe1 <-glm( Claims~lins+Bonus, family=tweedie(1.8, link.power=0) )
summary(clLins.glmtwe1)
```

```
Call:
glm(formula = Claims ~ lins + Bonus, family = tweedie(1.8, link.power = 0))

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.6653  -0.8330  -0.1788   0.3546   5.4506

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) -1.974355   0.052221  -37.81   <2e-16 ***
lins         2.283125   0.019621  116.36   <2e-16 ***
Bonus       -0.177855   0.009283  -19.16   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Tweedie family taken to be 1.116824)

    Null deviance: 21682.3  on 2181  degrees of freedom
Residual deviance:  4155.3  on 2179  degrees of freedom
AIC: NA

Number of Fisher Scoring iterations: 5
```

```
mot.sgm <- split(motor,fzone)[[1]]
mot.sgm <- subset(mot.sgm,!fmake %in% c("9"))
```

```
clLins.glmtwe2 <- glm( Claims~log10(Insured)+Bonus+fmake+fkilo,
                       family=tweedie(1.8, link.power=0),data=mot.sgm )
summary(clLins.glmtwe2)
```

```
Call:
glm(formula = Claims ~ log10(Insured) + Bonus + fmake + fkilo,
    family = tweedie(1.8, link.power = 0), data = mot.sgm)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.6041  -0.4085  -0.0100   0.3157   1.5570

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    -1.86469    0.20457  -9.115  < 2e-16 ***
log10(Insured)  2.39382    0.07923  30.214  < 2e-16 ***
Bonus          -0.22513    0.01871 -12.031  < 2e-16 ***
fmake2          0.28392    0.11051   2.569 0.010737 *
fmake3          0.02682    0.11262   0.238 0.811989
fmake4         -0.50497    0.11818  -4.273 2.69e-05 ***
fmake5          0.16342    0.11617   1.407 0.160690
fmake6         -0.36541    0.10729  -3.406 0.000761 ***
fmake7         -0.07411    0.12404  -0.597 0.550703
fmake8          0.28859    0.14325   2.015 0.044960 *
fkilo15         0.13965    0.08260   1.691 0.092094 .
fkilo20         0.15553    0.08606   1.807 0.071854 .
fkilo25         0.29812    0.10441   2.855 0.004638 **
fkilo25+        0.44313    0.11122   3.984 8.74e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Tweedie family taken to be 0.3394561)

    Null deviance: 1080.76  on 279  degrees of freedom
Residual deviance:  261.32  on 266  degrees of freedom
AIC: NA

Number of Fisher Scoring iterations: 5
```

Nie można step bo nie ma AIC

```
mot.sgm <- subset(mot.sgm,!fmake %in% c("3"))
mot.sgm <- subset(mot.sgm,!fmake %in% c("7"))
clLins.glmtwe2 <- glm( Claims~log10(Insured)+Bonus+fmake+fkilo,
                       family=tweedie(1.8, link.power=0),data=mot.sgm )
summary(clLins.glmtwe2)
```

```
Call:
glm(formula = Claims ~ log10(Insured) + Bonus + fmake + fkilo,
    family = tweedie(1.8, link.power = 0), data = mot.sgm)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-3.4252  -0.3870  -0.0110   0.3143   1.1971

Coefficients:
               Estimate Std. Error t value Pr(>|t|)
(Intercept)    -2.05544    0.22592  -9.098  < 2e-16 ***
log10(Insured)  2.46083    0.08582  28.675  < 2e-16 ***
Bonus          -0.23285    0.01989 -11.705  < 2e-16 ***
fmake2          0.32338    0.10790   2.997 0.003075 **
fmake4         -0.46781    0.11596  -4.034 7.82e-05 ***
fmake5          0.20101    0.11435   1.758 0.080315 .
fmake6         -0.33818    0.10385  -3.257 0.001327 **
fmake8          0.36685    0.14444   2.540 0.011861 *
fkilo15         0.19032    0.08976   2.120 0.035231 *
fkilo20         0.19040    0.09529   1.998 0.047075 *
fkilo25         0.40729    0.11766   3.462 0.000658 ***
fkilo25+        0.48078    0.12586   3.820 0.000179 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for Tweedie family taken to be 0.3113219)

    Null deviance: 869.60  on 209  degrees of freedom
Residual deviance: 195.04  on 198  degrees of freedom
AIC: NA

Number of Fisher Scoring iterations: 6
```

```
exp(clLins.glmtwe2$coef)
```

```
(Intercept) log10(Insured)           Bonus          fmake2          fmake4
     0.1280361     11.7145819      0.7922693      1.3817936      0.6263743
         fmake5          fmake6          fmake8         fkilo15         fkilo20
     1.2226369      0.7130666      1.4431829      1.2096309      1.2097332
        fkilo25        fkilo25+
     1.5027450      1.6173309
```