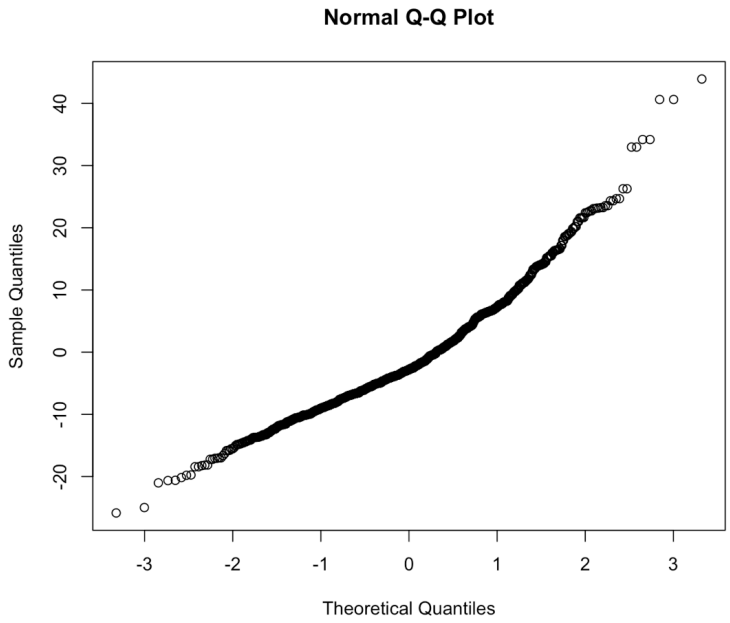
```
> fish1<-read.csv("braun_oscar_centroiddist.csv")
> m1<-gam(data=fish1,dist_from_monthly_centroid_km~covid+s(month),family="quasipoisson")
> qqnorm(residuals(m1))
> summary(m1)

Family: quasipoisson
Link function: log

Formula:
dist_from_monthly_centroid_km ~ covid + s(month)

Parametric coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  5.25397    0.02527 207.874  < 2e-16 ***
covidyes    -0.69578    0.10598  -6.565 7.96e-11 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Approximate significance of smooth terms:
           edf Ref.df     F p-value
s(month) 8.922  8.998 61.48  <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

R-sq.(adj) =  0.395   Deviance explained = 44.9%
GCV = 85.273  Scale est. = 97.493    n = 1122
> ((exp(5.25397-0.69578)-exp(5.25397))/exp(5.25397))*100
[1] -50.13147
```



Distance from centroid shrunk by -50%