

pdf_draft

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Final Model

```
library(magrittr)
library(tidyr)

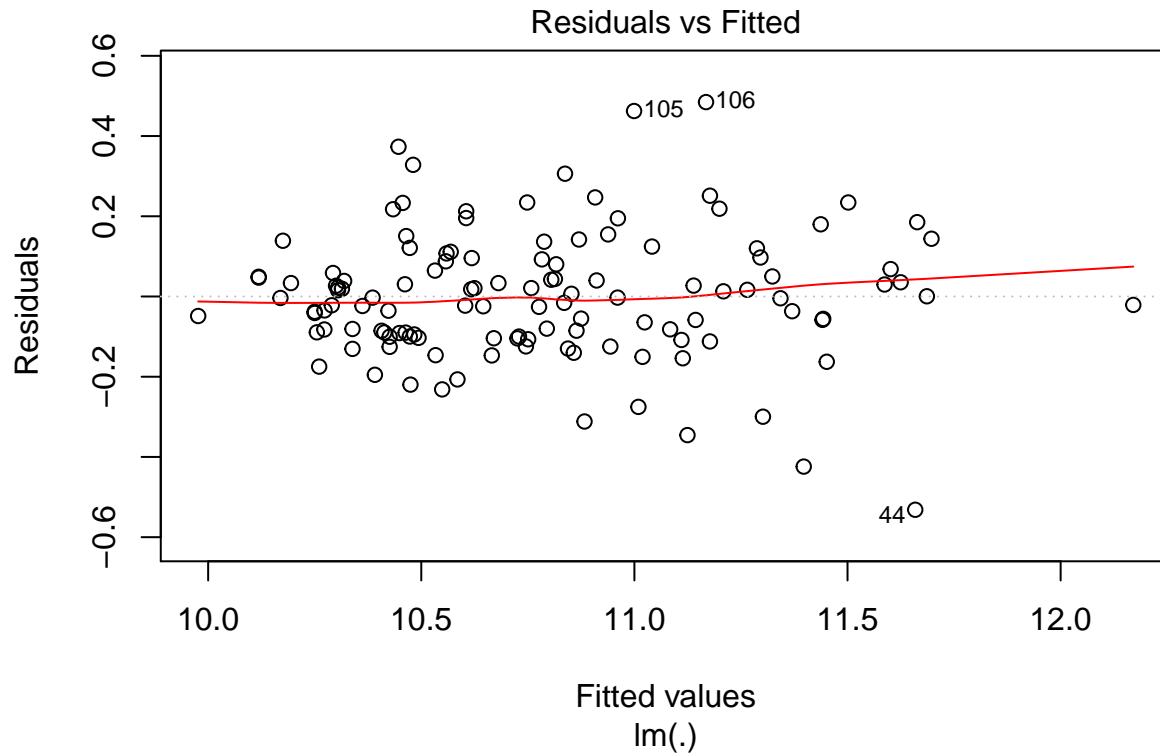
##
## Attaching package: 'tidyr'
## The following object is masked from 'package:magrittr':
##
##      extract
data <- read.csv("Dataset/cleaned_data.csv") %>%
  drop_na
final_model <- (
  log(PriceinUK) ~
    log(Subtitle) +
    poly(Acceleration, 2, raw = T) +
    poly(TopSpeed, 2, raw = T) +
    log(Efficiency) +
    factor(NumberOfSeats)
) %>%
  lm(data)

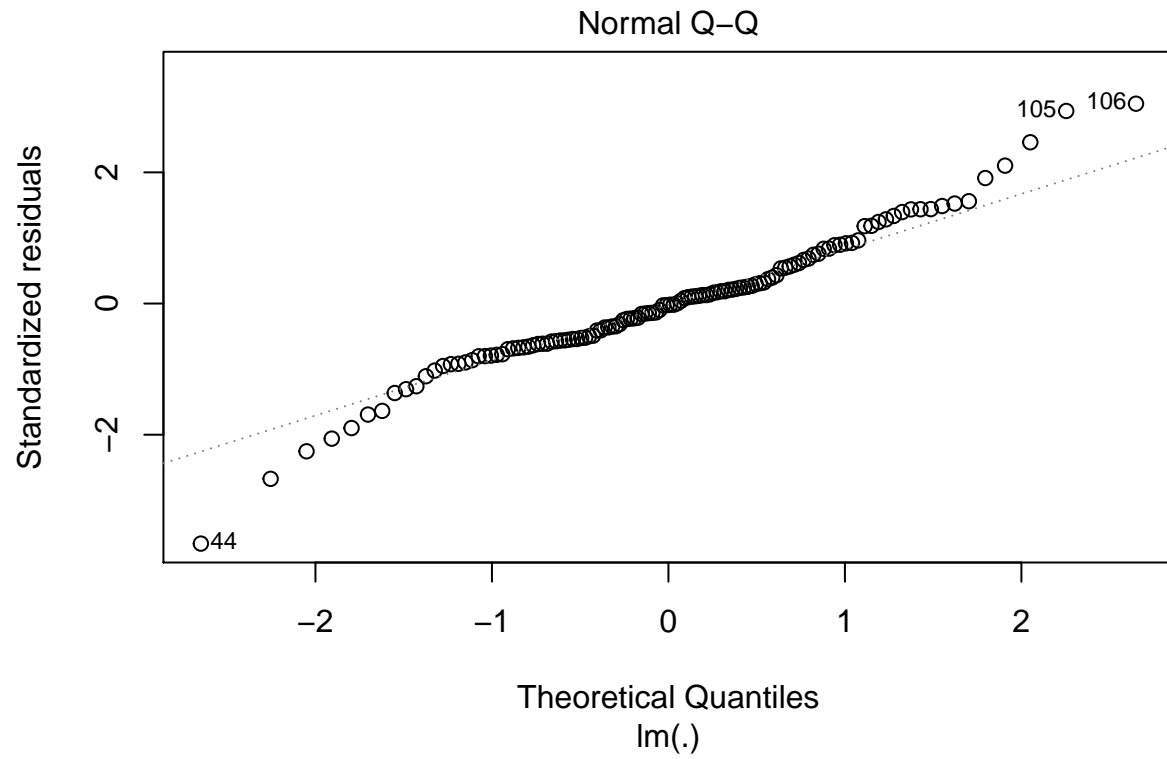
final_model %>%
  summary

##
## Call:
## lm(formula = ., data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.53164 -0.09592 -0.00326  0.08894  0.48461
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    5.139e+00  8.158e-01   6.299 5.67e-09 ***
## log(Subtitle)    3.836e-01  8.049e-02   4.766 5.55e-06 ***
## poly(Acceleration, 2, raw = T)1 -2.248e-01  4.879e-02  -4.608 1.06e-05 ***
## poly(Acceleration, 2, raw = T)2  1.456e-02  2.845e-03   5.117 1.26e-06 ***
## poly(TopSpeed, 2, raw = T)1     1.280e-02  2.711e-03   4.722 6.66e-06 ***
## poly(TopSpeed, 2, raw = T)2    -1.852e-05  5.013e-06  -3.695 0.000338 ***
## log(Efficiency)    6.144e-01  1.454e-01   4.225 4.81e-05 ***
## factor(NumberOfSeats)5    -1.197e-01  4.577e-02  -2.615 0.010118 *
## factor(NumberOfSeats)7    -2.726e-01  7.175e-02  -3.799 0.000234 ***
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1646 on 115 degrees of freedom
## Multiple R-squared:  0.881, Adjusted R-squared:  0.8727
## F-statistic: 106.4 on 8 and 115 DF,  p-value: < 2.2e-16
```

```
final_model %>%
  plot(which = 1:2)
```





This has equation

$$\begin{aligned}
 \ln \text{PriceinUK} = & \beta_0 \\
 & + \beta_1 \ln \text{Subtitle} \\
 & + \beta_2 \text{Acceleration} + \beta_3 \text{Acceleration}^2 \\
 & + \beta_4 \text{TopSpeed} + \beta_5 \text{TopSpeed}^2 \\
 & + \beta_6 \ln \text{Efficiency} \\
 & + \beta_7 (\text{NumberofSeats} == 5) + \beta_8 (\text{NumberofSeats} == 7) \\
 & + \epsilon
 \end{aligned}$$