Model without price

```{r}

# Fit model without value_price

model.without.price <- glm(online_only ~ limited_edition + exclusive, family = binomial, data = sephora)



sum_model.without.price <- summary(model.without.price)



sum_model.without.price

```



```
Call:
glm(formula = online_only ~ limited_edition + exclusive, family = binomial,
    data = sephora)

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)      -1.14549    0.02917 -39.273   <2e-16 ***
limited_edition1  0.84112    0.07923  10.616   <2e-16 ***
exclusive1       -0.52939    0.06223  -8.507   <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 9791.0  on 8986  degrees of freedom
Residual deviance: 9635.3  on 8984  degrees of freedom
AIC: 9641.3

Number of Fisher Scoring iterations: 4
```

Likelihood ratio test without Log price variable

```{r}

# residual deviance for model without price residual_deviance_without_price <- round(model.without.price$deviance,2) G <- residual_deviance_without_price - residual_deviance_full_model p <- 1-pchisq(G, df = 2)

```

$H_0 : \beta_1 = 0$

H_a : at least one $\beta \neq 0$

$G = 9635.28 - 8649.08 = 986.2$

$p = 0$

The “price” variable is statistic significant because its p-value is close to zero

Percent change of beta

```{r}

#Percent change of beta for limited_edition

beta_change_limited_edition <- round(100 * (model.without.price$coefficients[2]
- model.multiv1$coefficients[2]) / model.multiv1$coefficients[2],2)



#Percent change of beta for exclusive

beta_change_exclusive <- round(100 * (model.without.price$coefficients[3] -
model.multiv1$coefficients[3]) / model.multiv1$coefficients[3],2)

```

$\triangle \hat{\beta}_{limited_edition} = 99.96$

$\triangle \hat{\beta}_{exclusive} = 73.06$

Although price was droped of the model, the value_price predictor is important confounder becouse it have percent changes more 15%.