Model without exclusive

```{r}

# Fit model without exclusive

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



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



sum_model.without.exclusive

```


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

Coefficients:
                 Estimate Std. Error z value Pr(>|z|)
(Intercept)      -1.25805    0.02667 -47.165   <2e-16 ***
limited_edition1  0.70269    0.07685   9.144   <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: 9712.2  on 8985  degrees of freedom
AIC: 9716.2

Number of Fisher Scoring iterations: 4
```

Likelihood ratio test without exclusive

```{r}

# residual deviance for model without exclusive
residual_deviance_without_exclusive <- round(model.without.exclusive$deviance,2)

G <- residual_deviance_without_exclusive - residual_deviance_full_model
```

```r
p <- 1-pchisq(G, df = 1)
```

$H_0 : \beta_1 = 0$

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

$G = 9712.2 - 8649.08 = 1063.12$

$p = 0$

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

Percent change of beta

```{r}
#Percent change of beta for exclusive

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

$\triangle \hat{\beta_{exclusive}} = 67.05$

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