univariable analysis for limited edition

```{r}

# Encoding limited edition offer marketing as factor sephora$limited_edition = as.factor(sephora$limited_edition)


# Univariable model model.limited_edition <- glm(online_only ~ limited_edition, family = binomial, data = sephora)


 # Statistic summary sum_model.limited_edition <- summary(model.limited_edition)
sum_model.limited_edition

```


```
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
```


Wald test for limited edition

```{r}

# Wald test

wald_limited_edition <- round(sum_model.limited_edition$coefficients[2]/
sum_model.limited_edition$coefficients[2,2],3)
```

```
pvalue_limited_edition <- round(2*(1-pnorm(wald_limited_edition)),4)
```

```

$$H_0 : \beta_1 = 0$$

$$W = \frac{\hat{\beta}_1}{\hat{SE}(\hat{\beta}_1)} = 9.144$$

$$P\_value = 0$$

According to the Wald test, the independent variable "limited_edition" is statistically significant because its p-values is less than the significant level $\alpha$=0.25