# BINARY LOGISTIC REGRESSION – EXTRA CONTENT

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# BINARY LOGISTIC REGRESSION IN R

# Logistic Regression Model – R

```
logit.model <- glm(low ~ age + lwt + factor(smoke) +  factor(race),
                   data = bwt, family = binomial(link = "logit"))
summary(logit.model)
```

```
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.5173  -0.9065  -0.5865   1.3035   2.0401
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)        1.564123   1.167005   1.340  0.18015
## age               -0.022478   0.034170  -0.658  0.51065
## lwt               -0.012526   0.006386  -1.961  0.04982 *
## factor(smoke)1     1.054439   0.380000   2.775  0.00552 **
## factor(race)other -0.288409   0.526756  -0.548  0.58402
## factor(race)white -1.231671   0.517152  -2.382  0.01724 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 234.67  on 188  degrees of freedom
## Residual deviance: 214.58  on 183  degrees of freedom
## AIC: 226.58
```

# Logistic Regression Model – R

```
logit.model.r <- glm(low ~ age + lwt + factor(smoke), data = bwt,
                     family = binomial(link = "logit"))

anova(logit.model, logit.model.r, test = 'LRT')
```

```
## Analysis of Deviance Table
##
## Model 1: low ~ age + lwt + factor(smoke) + factor(race)
## Model 2: low ~ age + lwt + factor(smoke)
##   Resid. Df Resid. Dev Df Deviance Pr(>Chi)
## 1       183     214.58
## 2       185     222.88 -2  -8.3021  0.01575 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```