Stor455-Hw9

library(readr)  
library(Stat2Data)

data("Election16")  
head(Election16)

## State Abr Income HS BA Adv Dem.Rep TrumpWin  
## 1 Alabama AL 43623 84.3 23.5 8.7 -17 1  
## 2 Alaska AK 72515 92.1 28.0 10.1 -17 1  
## 3 Arizona AZ 50255 86.0 27.5 10.2 -1 1  
## 4 Arkansas AR 41371 84.8 21.1 7.5 -7 1  
## 5 California CA 61818 81.8 31.4 11.6 16 0  
## 6 Colorado CO 60629 90.7 38.1 14.0 -1 0

1. Run a logistic regression model to predict *TrumpWin* for each state using the per capita *Income* of the state. Print a summary of the model.
2. Find a 95% confidence interval for the odds ratio using the model constructed in question 1. (Explain if you wanna)

Answers

1. Run a logistic regression model to predict *TrumpWin* for each state using the per capita *Income* of the state. Print a summary of the model.

Election\_logitmod = glm(TrumpWin~Income,   
 data = Election16, family = binomial)  
summary(Election\_logitmod)

##   
## Call:  
## glm(formula = TrumpWin ~ Income, family = binomial, data = Election16)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -2.2049 -0.7510 0.4074 0.6566 2.5000   
##   
## Coefficients:  
## Estimate Std. Error z value Pr(>|z|)   
## (Intercept) 1.118e+01 3.076e+00 3.635 0.000277 \*\*\*  
## Income -1.967e-04 5.582e-05 -3.523 0.000426 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1)  
##   
## Null deviance: 67.301 on 49 degrees of freedom  
## Residual deviance: 45.923 on 48 degrees of freedom  
## AIC: 49.923  
##   
## Number of Fisher Scoring iterations: 5

1. Find a 95% confidence interval for the odds ratio using the model constructed in question 1. (Explain if you wanna)

exp(confint.default(Election\_logitmod))

## 2.5 % 97.5 %  
## (Intercept) 173.032045 2.980697e+07  
## Income 0.999694 9.999127e-01

We are 95% confident that for every increase of one dollar, the person’s odds that Trump Wins changes by a factor between 0.999694 and 9.999127e-01.