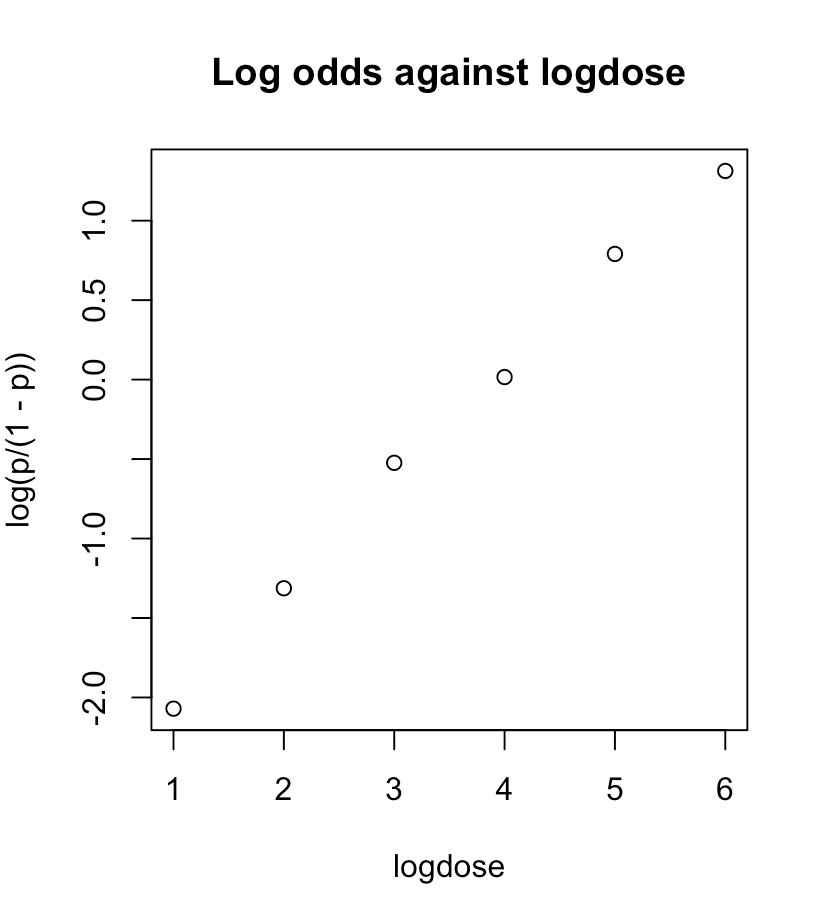
Yunlu Li

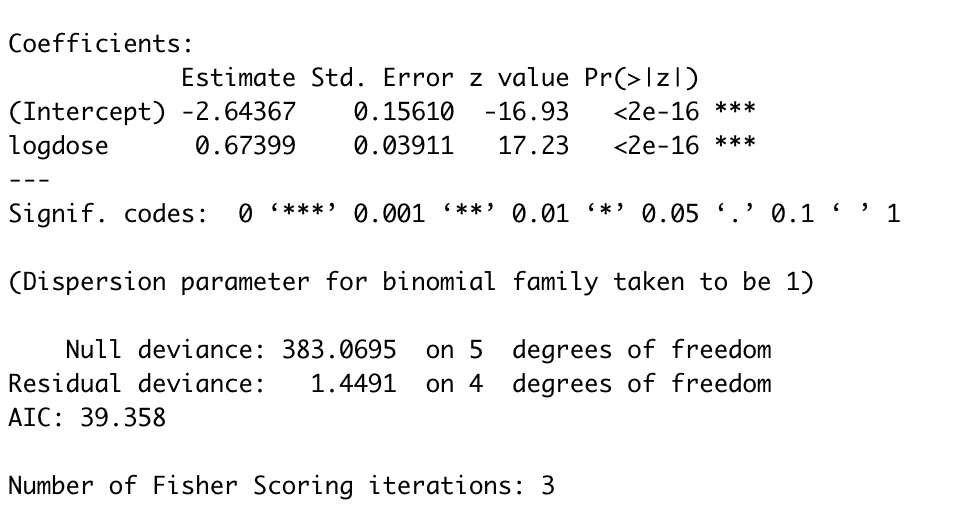
STAT 5120

Homework 9

1. (a) Logistic regression is appropriate because log odds and log dose seem to have linear relationship.



(b)



(c) The estimated log odds of death increases by 0.67399 if log dose level increases by 1.

(d) estimated odds 1

(e)

(f)

(g) 95% CI

By exponentiating the limits of CI, we have (1.81726822823, 2.1183671931).

We are 95% confident that odds of death increases by a multiplicative factor with values between 1.81726822823 and 2.1183671931 if log dose level increases by 1.

(h) H0: Our model is reasonably adequate; Ha: Our model does not fit data well.

Using Pearson’s test, we have X2= 1.451786. The associated p-value is 0.8351462, so we cannot reject the null. We conclude our model is reasonably adequate.

Using deviance goodness, we have G2=1.4491. The associated p-value is 0.8356191, so we cannot reject the null. We conclude our model is reasonably adequate.

2. (a) The estimated log odds of a client ever receiving a flu shot for males is 0.43397 higher than for females, for given age and health awareness.

(b) Z = 0.43397/0.52179 = 0.83169. The p-value is 0.40540 > 0.05, so we cannot reject the null. We conclude that gender is not significant in predicting the probability of getting

a flu shot, for given age and health awareness.

(c) ; at least one of and is non zero.

Test statistics:

The associated p-value is 0.01733548. which is less than 0.05. Thus, we reject the null.

We conclude that we cannot drop both age and gender from the model.