TMA4315 GLM.Module 3: Quiz

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The logit link for binary regression is

A: $\eta = \mathbf{x}^T \beta$

B: $\eta = \ln(\frac{\pi}{1-\pi})$

C: $\pi = \exp \beta$

D: $\pi = \frac{\eta}{\mathbf{x}^T \beta}$

The odds is 2, what is $P(Y = 1)$?

A: $\frac{1}{2}$

B: $\frac{2}{3}$

C: $\frac{3}{4}$

D: $\frac{4}{5}$

What is correct for interpreting β in logistic regression:

Model with $\eta = \beta_0 + \beta_1 x$. If we increase x by one unit to $x + 1$ then

A: $P(Y = 1|(x + 1)) = P(Y = 1|x) \cdot \beta_1$

B: $P(Y = 1|(x + 1)) = P(Y = 1|x) \cdot \exp(\beta_1)$

C: $\frac{P(Y=1|(x+1))}{P(Y=0|(x+1))} = \exp(\beta_1) \cdot \frac{P(Y=1|x)}{P(Y=0|x)}$

D: $\frac{P(Y=1|(x+1))}{P(Y=0|(x+1))} = \beta_1 \frac{P(Y=1|x)}{P(Y=0|x)}$

How to find parameter estimates for logistic regression

A: Solve $s(\hat{\beta}) = 0$

B: Invert the expected Fisher information matrix

C: Invert the observed Fisher information matrix

D: $\hat{\beta} = (\mathbf{X}^T\mathbf{X})^{-1}\mathbf{Y}$

What is the asymptotic distribution of the MLE $\hat{\beta}$? Here:
p=number of parameters in model, G=number of covariate patterns,
$F(\beta)$ expected Fisher information matrix.

A: Normal with covariance matrix $F(\hat{\beta})$

B: Normal with covariance matrix $F^{-1}(\hat{\beta})$

C: Chisquare with degrees of freedom p

D: Chisquare with degrees of freedom $G - p$

If we use the deviance to evaluate a candidate model, which model do we compare to?

A: The null model

B: The model where one parameter is removed

C: The model where one parameter is added

D: The saturated model

I want to compare a small model to a larger model. How can I calculate the statistic for the the likelihood ratio test based on the deviances for small and large?

A: small\$deviance $-$ large\$deviance

B: $-2\ln($small\$deviance $-$ large\$deviance$)$

C: $\frac{\text{small\$deviance}}{\text{large\$deviance}}$

D: $-2\ln\left(\frac{\text{small\$deviance}}{\text{large\$deviance}}\right)$

Data set on contraceptive use in Fiji: How many covariate patterns in the data?

A: 4

B: 8

C: 16

D: 24

Answers

BBCABDAC