TMA4315: Compulsory exercise 2 Logistic regression and Poisson regression

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Part 1: Logistic regression

a)

We let y_i be the number of successfull ascents, and n_i be the total number of attempts (success + fail) of the i'th mountain. We then do binary regression with the logit link to model the probability of success. This gives

1. Model for response: $Y_i \sim \text{Bin}(n_i, \pi_i), \quad \text{for } i = 1, \ldots, 113$
2. Linear predictor: $\eta_i = \mathbf{x}_i^T \beta$
3. Link function: $\eta_i = \ln(\frac{\pi_i}{1-\pi_i})$

where x_i is a p dimensional column vector of covariates for observation i, and β is the vector of regression parameters.