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timvigers

Homework 2

Tim Vigers

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1. Model 1 equation estimates

Strike 1

$$ln(\text{odds}_{\text{strike 1}}) = ln(\frac{619}{1797}) = -1.066 = \hat{\beta_0}$$

Strike 2

$$ln(\text{odds}_{\text{strike 2}}) = ln(\frac{355}{416}) = -0.159 = \hat{\beta_0} + \hat{\beta_1}$$

$$\hat{\beta_1} = -0.159 - \hat{\beta_0} = -0.159 - (-1.066) = 0.907$$

Strike 3

$$ln(\text{odds}_{\text{strike 3}}) = ln(\frac{162}{569}) = -1.256 = \hat{\beta_0} + \hat{\beta_2}$$

$$\hat{\beta_2} = -1.256 - \hat{\beta_0} = -1.256 - (-1.066) = -0.190$$

Model 1

logit P (misconduct violation) $= \hat{\beta_0} + \hat{\beta_1} * \text{strikes 2} + \hat{\beta_2} * \text{strikes 3} = -1.066 + 0.907 * \text{strikes 2}$

2. Log-likelihood for Model 1

strikes	y	n	sum
1	619	1797	2416
2	355	416	771
3	162	569	731