

Estimate of the Variance of the Mantel-Haenszel Estimate of the Log Odds Ratio

(from Robins, Breslow, and Greenland (1986, *Biometrics*))

Define

$$\begin{aligned} S_1 &= \sum_j \frac{n_{00j}n_{11j}}{n_{..j}}, \\ S_2 &= \sum_j \frac{n_{01j}n_{10j}}{n_{..j}}, \\ S_3 &= \sum_j \frac{(n_{00j} + n_{11j})n_{00j}n_{11j}}{n_{..j}^2}, \\ S_4 &= \sum_j \frac{(n_{01j} + n_{10j})n_{01j}n_{10j}}{n_{..j}^2}, \\ S_5 &= \sum_j \frac{(n_{00j} + n_{11j})n_{01j}n_{10j} + (n_{01j} + n_{10j})n_{00j}n_{11j}}{n_{..j}^2}. \end{aligned}$$

Then

$$\text{Var}(\log \hat{\omega}_{MH}) = \frac{S_3}{2S_1^2} + \frac{S_5}{2S_1S_2} + \frac{S_4}{2S_2^2}.$$