SICKO Coefficient Explained

The SICKO Coefficient (S_c) is used assess the true value of infection in *C. elegans* by accounting for animals that have died prior to the experiment with and without infection.

Variables

$$D_W = \text{Number of worms that } \textbf{Died} \text{ during } \textbf{Washing}$$

$$D_{TO} = \textbf{Total} \text{ number of worms that } \textbf{Died} \text{ while } \textbf{Observed}$$

$$D_{TIO} = \textbf{Total} \text{ number of worms that } \textbf{Died} \text{ and were } \textbf{Infected} \text{ while } \textbf{Observed}$$

$$T_{IO} = \textbf{Total} \text{ number of worms that were } \textbf{Infected} \text{ while } \textbf{Observed}$$

$$T_{AW} = \textbf{Total} \text{ number of worms that are } \textbf{Alive} \text{ after } \textbf{Washing}$$

$$T_{NC} = \textbf{Total} \text{ number of worms in condition } \textbf{Not Censored}$$

$$N = \text{ Specified day } \textbf{N} \text{ of experiment}$$

$$D_{IOi} = \text{ Worms that } \textbf{Died} \text{ and were } \textbf{Infected} \text{ while } \textbf{Observed} \text{ on Day } \textbf{(i)}$$

Calculated Variables

$D_{IO}(N)$ = Cumulative sum of worms that **Died** and were **Infected** while **Observed** up to Day **(N)**

$$D_{IO}(N) = \sum_{i=1}^{N} D_{IOi}$$

D_{IW} = **Projected** number of worms that **Died** during **Washing** due to **Infection**

$$D_{IW} = \left(\frac{D_{TIO}}{D_{TO}} \right) D_W$$

P_I = **Projected** number of **Infected** Worms

$$P_I = D_{IW} + \left(\frac{T_{IO}}{T_{NC}} \right) T_{AW}$$

SICKO Coefficent of Day (N)

$$S_c(N) = \left(\frac{1}{\sqrt{1 - \dfrac{P_I}{T_{AW} + D_W}}} \right) \left(\frac{P_I}{P_I - (D_{IW} + D_{IO}(N))} \right)$$

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