Calibration methods

DPA 204 / Laboratory note 7 / Dr. Soraya Kestrel-Ahmadi

Compare forecast probabilities with observed outcomes. For this exercise, y is 1 when the event occurs and 0 otherwise; p is the forecast probability. The data below are a classroom example.

1. Mean squared forecast error

$$B = \frac{1}{N} \sum_{i=1}^{N} (p_i - y_i)^2 \tag{1}$$

Example: p = (0.2, 0.6, 0.9), y = (0, 1, 1). The three squared errors are 0.04, 0.16, and 0.01; therefore B = 0.07.

2. A continuous decay model

$$A(T) = \int_0^T e^{-\lambda t}\, dt = \frac{1 - e^{-\lambda T}}{\lambda} \qquad \lambda > 0 \tag{2}$$

3. Transition matrix

$$P = \begin{bmatrix} 0.8 & 0.2 \\ 0.1 & 0.9 \end{bmatrix}$$

Rows: current state (quiet, active). Columns: next state (quiet, active). Each row sums to 1. Matrix entries are probabilities, not percentages.