A Report on "Combining Mixture Components for Clustering" by Baudry et al.

Branden Olson

1

BIC is defined as

$$\text{BIC}(K) = \log p(\mathbf{x}|K, \widehat{\theta_K}) - \frac{\nu_K}{2} \log(n)$$

wherea

$$
\begin{aligned}
\nu_K &= \dim \mathcal{M}_K \\
&= \dim \theta_K \\
&= \dim (p_1, \ldots, p_{K-1}, \mathbf{a}_1, \ldots, \mathbf{a}_K) \\
&= \dim (p_1, \ldots, p_K) + \dim (\mathbf{a}_1, \ldots, \mathbf{a}_K) \\
&= K - 1 + K \dim(\mathbf{a}_1) \\
&= K - 1 + K \left(\dim (\mu_1, \Sigma_1) \right) \\
&= K - 1 + K \left[m + m(m+1)/2 \right]
\end{aligned}
$$

GvHD dataset in `mclust` package.