

CROSS-ENTROPY

Proportion of observations in with region of k class.

$$D = - \sum_{k=1}^K \hat{p}_{mk} \log \hat{p}_{mk}$$

Diagram illustrating the components of the cross-entropy formula:

- K : Total number of classes.
- $k=1$: Index for the summation over classes.
- \hat{p}_{mk} : Estimated proportion of observations in region m for class k . (An arrow points from the text above to this term.)
- \log : Natural logarithm.
- \hat{p}_{mk} : Estimated proportion of observations in region m for class k . (An arrow points from the text above to this term.)
- Region Class: Labels for the variables m and k in the terms \hat{p}_{mk} .

The closer D is to 0 the purer the classes.

$0 \leq -\hat{p}_{mk} \log \hat{p}_{mk}$, so the larger the value the less pure.