

Binary Classification

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Defining true/false positives

In general, Positive = identified and negative = rejected. Therefore:

TN True negative = correctly rejected

FP False positive = incorrectly identified

FN False negative = incorrectly rejected

TP True positive = correctly identified

Medical testing example

- True positive = Sick people correctly diagnosed as sick
- False positive= Healthy people incorrectly identified as sick
- True negative = Healthy people correctly identified as healthy
- False negative = Sick people incorrectly identified as healthy.

Definitions

Accuracy Rate

The accuracy rate calculates the proportion of observations being allocated to the **correct** group by the predictive model. It is calculated as follows:

$$\frac{\text{Number of Correct Classifications}}{\text{Total Number of Classifications}} \\ = \frac{TP + TN}{TP + FP + TN + FN}$$

Misclassification Rate

The misclassification rate calculates the proportion of observations being allocated to the **incorrect** group by the predictive model. It is calculated as follows:

$$\frac{\text{Number of Incorrect Classifications}}{\text{Total Number of Classifications}} \\ = \frac{FP + FN}{TP + FP + TN + FN}$$