

## Confusion Matrix Metric Cheat Sheet

Suppose we are using a set of  $m$  features,  $X$ , to predict an outcome  $y \in \{0, 1\}$ . The confusion matrix for any algorithm we use to make a set of prediction,  $\hat{y}$  is given by:

		Predicted Class	
		0	1
Actual Class	0	TN	FP
	1	FN	TP

We can use the confusion matrix to make a number of classification performance metrics including, but not limited to:

Metric(s)	Formula
Accuracy	$\frac{TP+TN}{TN+FP+FN+TP}$
Total Error Rate	$\frac{FP+FN}{TN+FP+FN+TP}$
True Positive Rate, Recall, Sensitivity	$\frac{TP}{TP+FN}$
True Negative Rate, Specificity, Selectivity	$\frac{TN}{TN+FP}$
False Positive Rate, Type I Error Rate	$\frac{FP}{TN+FP}$
False Negative Rate, Type II Error Rate	$\frac{FN}{TP+FN}$
Precision	$\frac{TP}{TP+FP}$