Confusion Matrix

Classification Problems (Binary classification)

Logistic Regression

Predicted Values	Positive ($y=1$)	Negative ($y=0$)
Positive ($\hat{y}=1$) ✓	True Positive (TP)	false Positive (FP) ↓↓
Negative ($\hat{y}=0$)	false Negative (FN) ↓↓	True Negative (TN)

Actual values

Healthcare

✓ $$\text{Accuracy} = \frac{TP + TN}{TP + FP + FN + TN}$$

↳ Data Imbalanced (0 → 1000, 1 → 200)

✓ $$\text{Recall} = \frac{TP}{TP + FN}$$ (Actual Positive)

✓ $$\text{Specificity} = \frac{TN}{TN + FP}$$ (Actual Negatives)

✓ $$\text{Precision} = \frac{TP}{TP + FP}$$ (Predicted Positive)

Diabetic Prediction / Healthcare

↑ Recall = $\frac{TP}{\downarrow TP + FN}$

↓

Important evaluation metric

↑ Precision = $\frac{TP}{\downarrow TP + FP}$

Spam classification

Recall

Precision — correct result

f1 - score = $\frac{2 * Precision * Recall}{Precision + Recall}$