Classifier Evaluation Metrics: Accuracy, Error Rate, Sensitivity and Specificity

A\P	C	¬C	
C	**TP**	**FN**	**P**
¬C	**FP**	**TN**	**N**
	P'	**N'**	**All**

- **Classifier accuracy,** or recognition rate
  - Percentage of test set tuples that are correctly classified

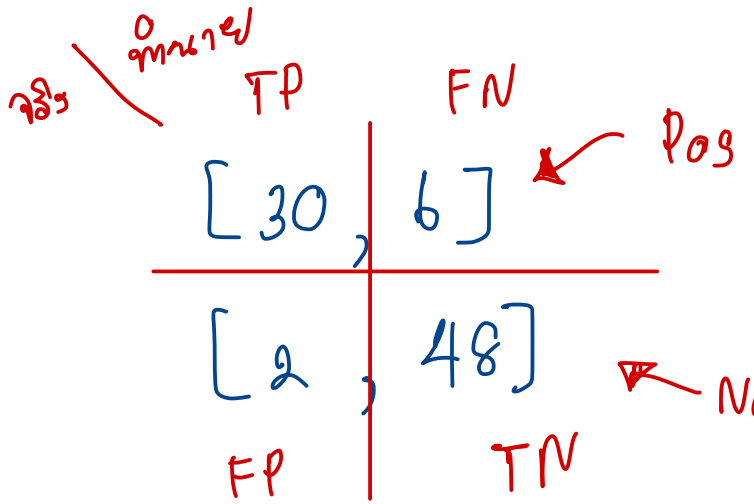
  Accuracy = (TP + TN)/All
- **Error rate:** *1 – accuracy*, or

  Error rate = (FP + FN)/All

- **Class imbalance problem**
  - One class may be *rare*
    - E.g., fraud, or HIV-positive
  - Significant *majority of the negative class* and minority of the positive class
  - Measures handle the class imbalance problem
    - **Sensitivity** (recall): True positive recognition rate
      - **Sensitivity = TP/P**
    - **Specificity**: True negative recognition rate
      - **Specificity = TN/N**

Pos ที่แท้จริง / Pos ทั้งหมด

Neg ที่แท้จริง / Neg ทั้งหมด



Sensitivity = TP/P

$= \frac{30}{30+6} = 0.83$

Specificity = TN/N

$= \frac{48}{2+48} = 0.96$

	precision	recall	f1-score	support
เป็น Pos ← 0	0.94	0.83	0.88	36
เป็น Pos ← 1	0.89	0.96	0.92	50
accuracy			0.91	86
macro avg	0.91	0.90	0.90	86
weighted avg	0.91	0.91	0.91	86

30/30+2 · 30/30+6 · 48/48+6 · 48/48+2 · ค่าเฉลี่ย P, R · $\frac{0.83+0.96}{2}$ · $\frac{48+30}{86}$ · $\frac{(0.83\times36)+(0.96\times50)}{36+50}$