

The COMPAS Debate

EDT · UF · 11/18/2021

COMPAS

Recidivism prediction instrument developed by Northpointe, inc.

- Estimates risk of committing a crime within 2 years
- Uses probability of being charged with a new crime as a proxy

TP, TN, FP, FN

True positive (TP): labeled high risk, reoffends

True negative (TN): labeled low risk, doesn't reoffend

False positive (FP): labeled high risk, doesn't reoffend

False negative (FN): labeled low risk, reoffends

FALSE POSITIVE RATE

The probability that a randomly selected defendant who does not reoffend will be labeled "high risk"

$$\text{FPR} = \frac{\text{FP}}{\text{FP} + \text{TN}} = \frac{\text{labeled HR, no recidivism}}{\text{no recidivism}}$$

EQUAL FALSE POSITIVE RATES

The false positive rate for black defendants is similar to the false positive rate for white defendants

EQUAL CALIBRATION

Defendants who receive the same risk score reoffend at similar rates, regardless of race

BASE RATE

The percentage of defendants from the group that reoffend

$$\text{BR} = \frac{\text{TP} + \text{FN}}{\text{TP} + \text{TN} + \text{FP} + \text{FN}} = \frac{\text{defendants that reoffend}}{\text{all defendants}}$$