Metric	Equation	Definition
Equalized Odds	$P(\hat{Y} = 1 \mid S = a, Y = y) = P(\hat{Y} = 1 \mid S = b, Y = y)$	Both groups should have equal true positive and false positive rates.
Equal Opportunity	$P(\hat{Y} = 1 \mid S = a, Y = 1) = P(\hat{Y} = 1 \mid S = b, Y = 1)$	Both groups should have equal true positive rates. A relaxed version of equalized odds.
Predictive Equality	$P(\hat{Y} = 1 \mid Y = 0, S = a) = P(\hat{Y} = 1 \mid Y = 0, S = b)$	The rate of false positives (negative events categorized as positives) should be independent of the sensitive feature.
False Negative Rate Parity	$P(\hat{Y} = 0 \mid Y = 1, S = a) = P(\hat{Y} = 0 \mid Y = 1, S = b)$	The rate of false negatives (positive events categorized as negatives) should be independent of the sensitive feature.
Predictive Parity	$P(Y = 1 \mid \hat{Y} = 1, S = a) = P(Y = 1 \mid \hat{Y} = 1, S = b)$	Model precision should be the same for both groups.
Demographic Parity	$P(\hat{Y} = 1 \mid S = a) = P(\hat{Y} = 1 \mid S = b)$	The prediction or decision should be independent of the sensitive feature.

Table 1: Commonly used fairness metrics, adapted from (1, 6). $\hat{Y}$ = Prediction/decision, Y = Observed data, and S = Sensitive feature, in the case of S being a multi-group variable where a comparison with a reference or privileged group is meaningful. $\hat{Y}$ and Y are binary variables.