

MIMIC GROUP

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Comparison of ML Algorithms' Racial Biases in ICU Mortality Prediction using the SOFA score calculated using the MIMIC-IV Dataset

Question: Can we reduce racial bias in ML predictions using different models and preprocessing methods?

Why: Recent studies found that in a simple logistic regression model predicting ICU mortality using SOFA score as the only feature, the model was poorly calibrated for Hispanics and African Americans. Addressing equality in ML applications in healthcare is important!

Dataset: The Medical Information Mart for Intensive Care (MIMIC) dataset is a large freely-available medical dataset that contains deidentified patient health data that was curated for research purposes. Features include age, gender, race, and lab test results necessary for SOFA score calculation. Target label is death of patient.

Models to be used: Knn, decision tree, logistic regression

Methods:

- feature selection and model regularization
 - Ridge regression
 - Lasso regression
 - Elastic net regression
- Tests of Discrimination (area under receiving operating curves) and tests of calibration (standardized mortality ratios) to compare results for racial biases

