Assignment 4: Logistic Regression for Parole Reform

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Scenario

The Governor of Georgia wants to replace subjective parole decisions with a consistent, data-driven policy. You've been hired to develop a logistic regression model to predict the risk of recidivism — and recommend a cutoff value that will be adopted statewide.

Sensitivity vs. Specificity

- Sensitivity: Sensitivity represents the proportion of actual positive cases that the model correctly identifies as positive. A high sensitivity indicates the model has a low rate of false negatives, meaning it more accurately identifies individuals who belong to the positive case. In this specific scenario, sensitivity measures the percentage of recidivists that are correctly predicted as recidivists.In other words, the model detects well on individuals who are likely to re-offend.
- Specificity: Specificity measures the proportion of actual negative cases that the model correctly predicts as negative. A high specificity indicates the model has a low rate of false positives, meaning identifies individuals who do not belong to the positive case. In this specific scenario, specificity measures the percentage of non-recidivists that are correctly predicted as non-recidivists. In other words, the model detects well on individuals who are unlikely to re-offend.

In my opinion, sensitivity should be prioritized over specificity in this scenario. In parole reform, the primary goal is to reduce recidivism and ensure that individuals released from prison do not pose a threat to public safety. Prioritizing sensitivity means that we take extra caution by keeping those who are likely to re-offend in custody, even if it detains some individuals who might not actually commit another crime. The government could then offer compensation to those later proven innocent after the jury and trial.