Predicting Student Success

Sample Analysis: Using Past Performance to Predict Student Success in a Math Course

Prepared by: Joel Artifex, PhD

Prepared for: Smart City Higher Ed. Institution

Date: January 12, 2022

I- Executive Summary

A logistic regression analysis was conducted to examine whether the number of past course failures predicts whether a student passes math class, while accounting for gender. The data were collected through school records and student questionnaires (Cortez & Silva, 2008).

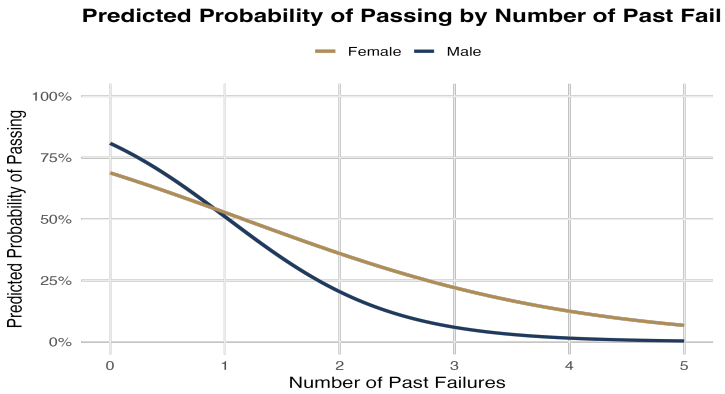
The results indicate that past course failures strongly reduce a student's probability of passing, and this effect is significantly worse for male students. Male students with no past failures start with a higher probability of passing than female students, but their probability drops much faster as failures increase, eventually falling below female students' probability by the third failure.

II- Methodology

A logistic regression model was used to estimate how past failures predict the probability of passing math, accounting for gender and allowing the effect of failures to differ between male and female students.

III- Result and Interpretation

Past Failures	Passing Probability	
	Female	Male
0	69%	81%
1	53%	51%
2	36%	20%
3	22%	6%



Higher number of past failures is associated with lower probability of passing, overall. With no past failures, males show a higher probability of passing than female, 81% versus 69%. However, each additional failure is associated with a steeper decline in predicted probability for male than for female. By 3 failures, male's chances of passing are 6% compared to 22% for females.

IV- Recommendation

Early academic support should prioritize male students who have already experienced a course failure, since their predicted probability of passing declines more steeply with each additional failure than female students.