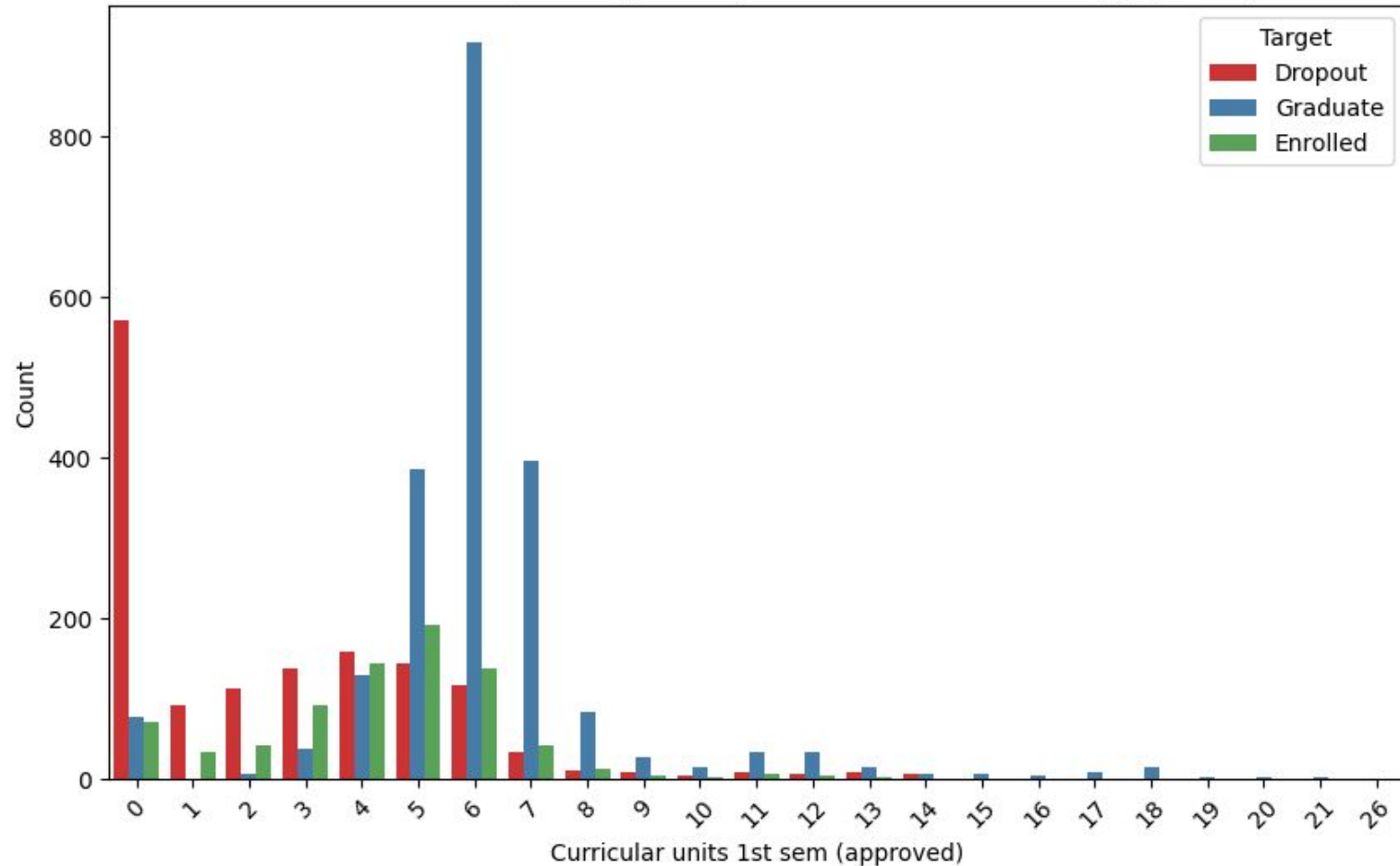# Predicting Student Success

By Evelyn Martinez

Stakeholders

- School administration that wish to support ways to

  help student graduate to help student graduate.
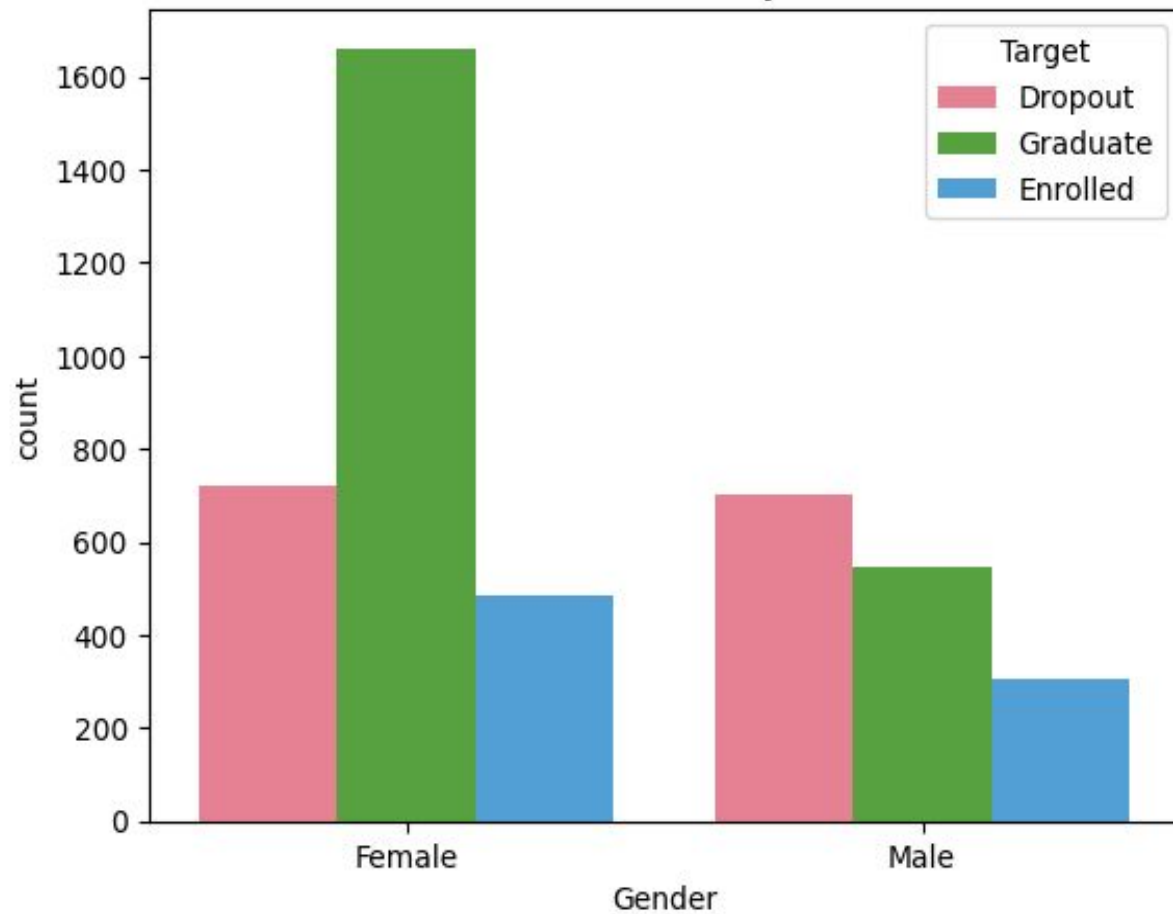
- Students who wish to succeed

The Data

The data is composed of student enrollment –

academic path, demographics, and social-economic

factors.

Distribution of Target Categories by Curricular units 1st sem (approved)

Student Outcomes by Gender

Strengths and limitations

Strengths:

- <u>Accurate Predictions:</u> The model is good at predicting whether a student will successfully graduate, drop out, or is still enrolled. It's accurate about 77% of the time, which is quite reliable.

- <u>Balanced Insights:</u> It considers the different classes of students fairly. It doesn't favor one group over another, which is important when dealing with students in various stages of their education.

- <u>Identifying At-Risk Students:</u> The model is effective at identifying students who might be at risk of dropping out or need extra support. This can help schools intervene and provide assistance where it's most needed.

Limitations:

- <u>Not Perfect:</u> While it's accurate, it's not perfect. Sometimes, it may predict a student will drop out when they won't or vice versa. This can lead to false alarms or missing students who actually need help.

- <u>Interpretability:</u> Understanding exactly why the model makes a particular prediction can be complex. It's a bit like a "black box," which might make it hard to explain to others.

- <u>Class Imbalance:</u> There are more graduate students in the dataset than dropouts or enrolled students. This can slightly skew the model's performance, making it slightly better at predicting graduates than the other two groups.

- The model is good at telling us about students' outcomes, but it's not perfect. It might sometimes make mistakes, especially for students who are still enrolled or at risk of dropping out. However, it's a useful tool for identifying students who might need extra help and support in their education journey.

Recommendation

1. Use Gradient Boosting as the Predictive Tool: After careful analysis, we recommend using the Gradient Boosting model to predict student success. It's like having a smart assistant that can tell us which students might need extra support and attention.

2. Keep an Eye on At-Risk Students: This model is excellent at spotting students who might be at risk of dropping out or who need help to succeed. It's like having an early warning system for students who may face challenges.

3. Remember, It's Not Perfect: While the model is quite accurate, it's not infallible. Sometimes, it might make a mistake, and that's okay. It's just a tool to assist decision-making, not the final say.

4. Regularly Update and Refine: Education is a dynamic field. It's essential to update and refine the model regularly to keep up with changes in student behavior and needs.

5. Combine with Human Insight: The model works best when used alongside the insights of experienced educators. It's like having a partner who can provide valuable context to the predictions.