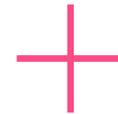# STAY IN SCHOOL, KIDS (but do they?)

Student's Dropout & Academic Success Rates

By: Alessi Llamas, Manci Phimphachanvongsoth, Chelsea Deeb, Gracie Murray, Aiden Brennan

INTRODUCTION

This project looks at variables that could influence student outcomes. These factors help us understand what may contribute to a student's success in school.

Variables examined

⇨ First and second semester performances
⇨ Student admission grades
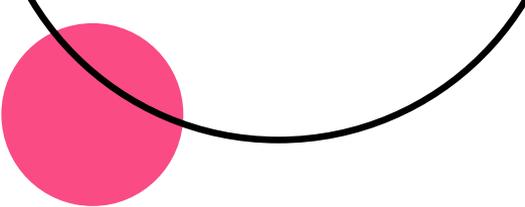⇨ Debt
⇨ Tuition Payment
⇨ Scholarship Holder

OVERVIEW

⇨ The dataset examines academic success and dropout rates

⇨ Founded in Portugal by SATDAP, applicable in public schools

⇨ Originally, applied in higher education

⇨ Recently, it's been considered applying it to determine success in the workforce post-grad

ETHICAL PROBLEMS

⇨ The dataset makes predictions about who will and won't be successful

⇨ Bias and equality problems with the data

⇨ Machine learning model: it has been proven that biases arise when using AI to apply data (hospital eg. where minority patients were assumed to require less care)

⇨ Disregards systemic hindrances towards minorities

⇨ If applied to the job market then it can contribute to an economic divide between communities
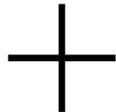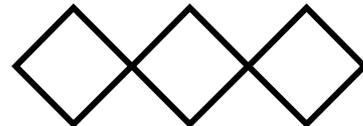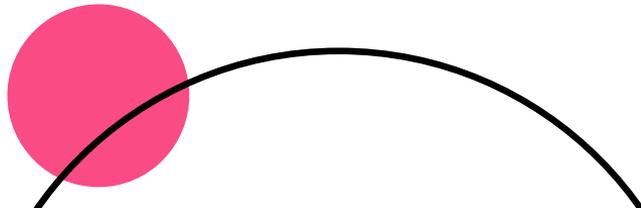
KEY THINGS IN THIS DATA SET
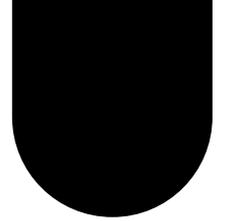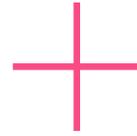
WHEN

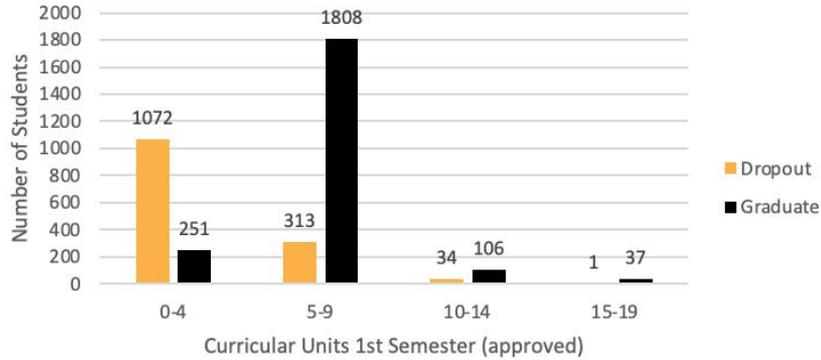Data is from students enrolled from 2008/2009 to 2018/2019

HOW MANY

37 variables

AMOUNT

4,424 participants

First Semester Academic Performance vs Student Graduation Outcomes

Number of Students vs Curricular Units 1st Semester (approved)

- 0-4: Dropout 1072, Graduate 251
- 5-9: Dropout 313, Graduate 1808
- 10-14: Dropout 34, Graduate 106
- 15-19: Dropout 1, Graduate 37

Second Semester Academic Performance vs Student Graduation Outcomes

Number of Students vs Curricular Units 2nd Semester (approved)

- 0-4: Dropout 1168, Graduate 256
- 5-9: Dropout 228, Graduate 1826
- 10-14: Dropout 23, Graduate 112
- 15-20: Dropout 2, Graduate 15
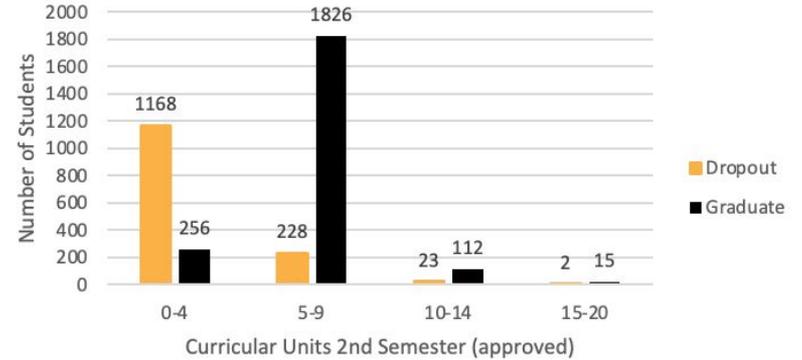
Admission Grade vs Student Graduation Outcomes

Number of Students vs Admission Grade

- 95-110: Dropout 201, Graduate 132
- 110-125: Dropout 548, Graduate 765
- 125-140: Dropout 430, Graduate 868
- 140-155: Dropout 187, Graduate 327
- 155-170: Dropout 45, Graduate 99
- 170-185: Dropout 9, Graduate 17
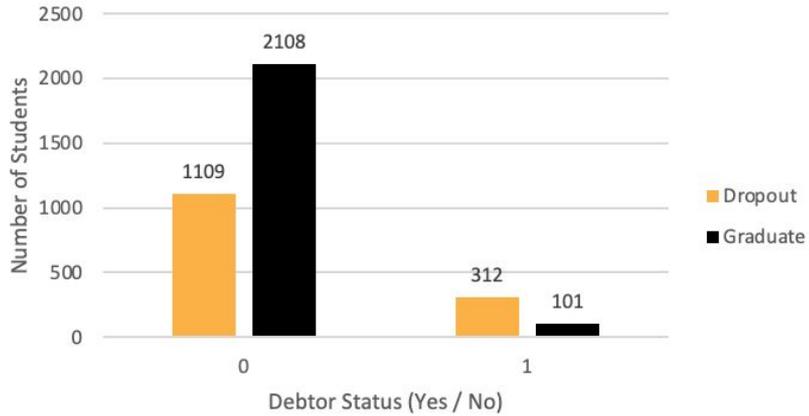- 185-200: Dropout 1, Graduate 1
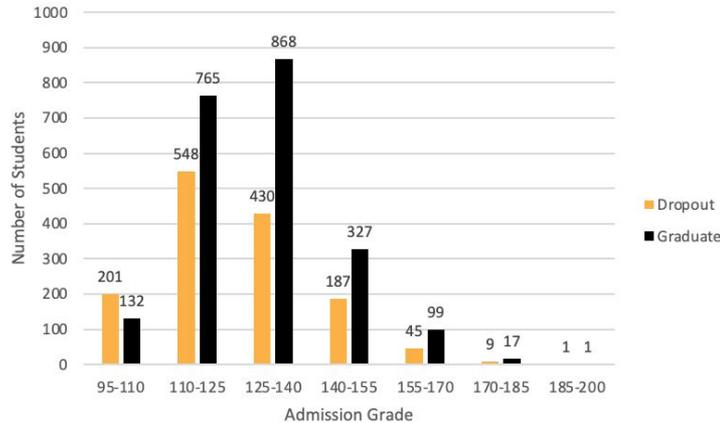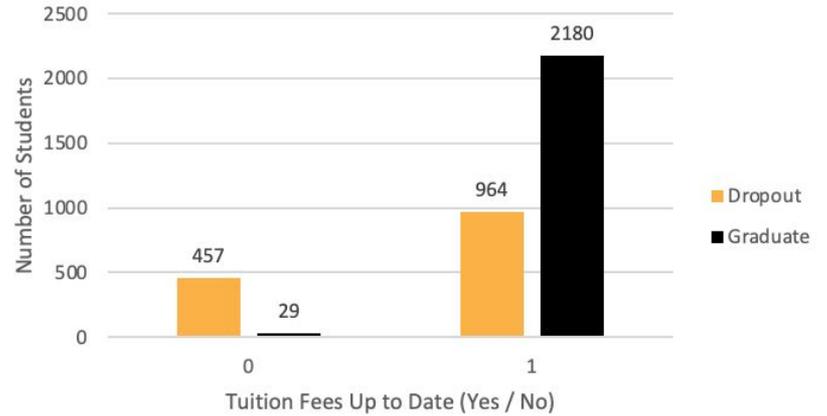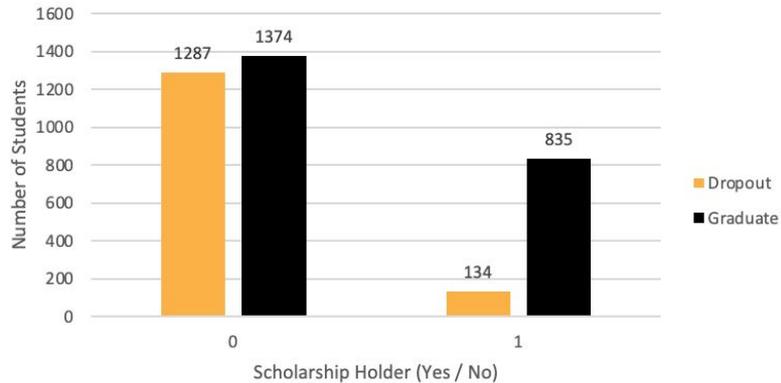
DROPOUT
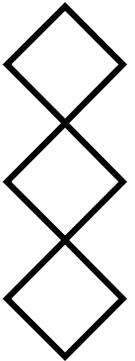
GRADUATE

Debtor vs Student Graduation Outcomes

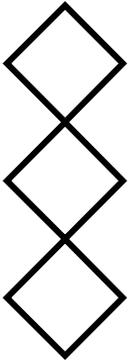Tuition Payment Status vs Student Sucess

Scholarship Holder vs Student Graduation Outcomes

KEY

1- Yes

0- No

BIGGEST RISK FACTORS

01 Parents with lower education level

02 Financial circumstances (unable to make consistent tuition payments, not a recipient of a scholarship)
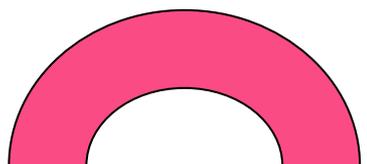
03 Age (older)

04 Lower grade average in first semester

05 Gender (male)

SUCCESS PREDICTORS

01 Parents with higher education level

02 Financial circumstances (scholarship recipient, up-to-date with tuition)
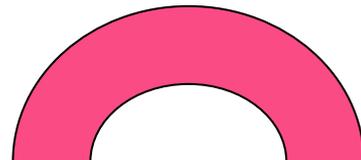
03 Age (18 - 20)

04 Higher grade average in first semester

05 Gender (female)

DENOTATIVE DESCRIPTIONS

⇨ Each row represents one student

⇨ Each column represents a variable

⇨ Many of the columns use numbers instead of words

⇨ The dataset puts people into set categories, and those categories can affect how they are described or understood.

CONNOTATIVE DESCRIPTIONS

⇨ Ambiguity and issues within the qualitative cells (as well as missing context)
- ○ Variables include most finances like scholarship money and debt
- ○ Gender
- ○ Success

⇨ Used by the school to make other decisions *about* students
- ○ Where to allocate scholarship funds
- ○ Push certain class times for students that may not be predisposed as successful
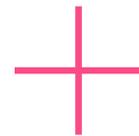
DECONSTRUCTIVE DESCRIPTIONS

What are different factors that could affect the data that is not included?

⇨ **Financial need**
- ○ Without the inclusion of scholarships

⇨ **Time spent engaging with coursework**
- ○ Are they doing ungraded assignments?

⇨ **Attendance**
- ○ Are they going to class?

⇨ **Overall health/mental health**
- ○ Are they *able* to go/stay in class?

CONCLUSION

Overall, the dataset shows that several factors are connected to whether students graduate or drop out. Early academic performance, especially the number of courses passed in the first and second semesters, appears to be one of the strongest predictors of student success. Financial factors, such as tuition payment status and scholarships, also play an important role, suggesting that economic stability can influence whether students stay in school. Background factors like parental education and admission grades may also impact outcomes. However, while datasets like this help identify patterns, they also raise ethical concerns because predictive models can reinforce bias or overlook systemic barriers. Because of this, data should be used carefully to support students and improve resources rather than limit their opportunities.

THANK YOU!!