Predicting Online Student Success

By Josh Johnson

Online Learning

- In 2018, 35.3%: some or all classes online,
  And took them 16.6% online-only[1]
- After Covid-19: ????

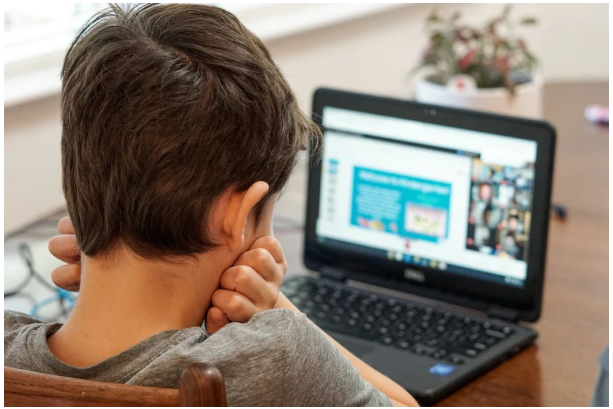


Photo by Thomas Park
www.unsplash.com

Retention

- Online university courses have a 10-20% higher dropout rate than in person
- Other online courses have a drop out rate between 40% and 80%[2]

1. https://nces.ed.gov/fastfacts/display.asp?id=80
2. https://journals.sagepub.com/doi/pdf/10.1177/2158244015621777#:~:text=Online%20courses%20have%20a%2010,Smith%2C%202010).

Can Predictive Modeling Improve Student Success?

Photo by Frank Romero www.unsplash.com

Only if we know who needs it!

The Solution

Identify students in danger of failing.

- Halfway though the course
- In time for interventions to be successful

The Data

Online University: Years 2012/2013 - 2013/2014

- 24743 registrations
- 22424 unique students
- 7 course modules
- 22 cohorts

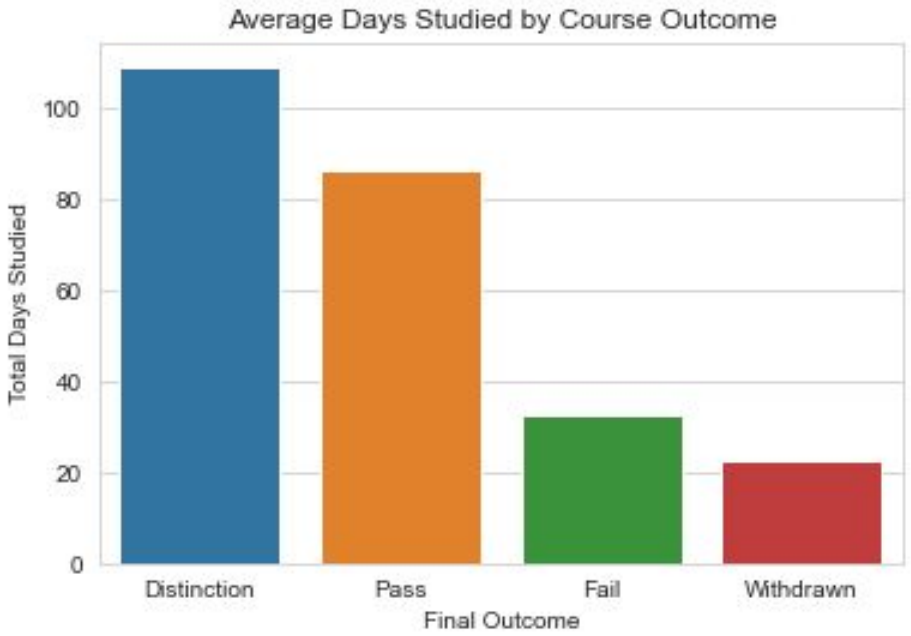
10,655,280 Student VLE interactions

Features to Model

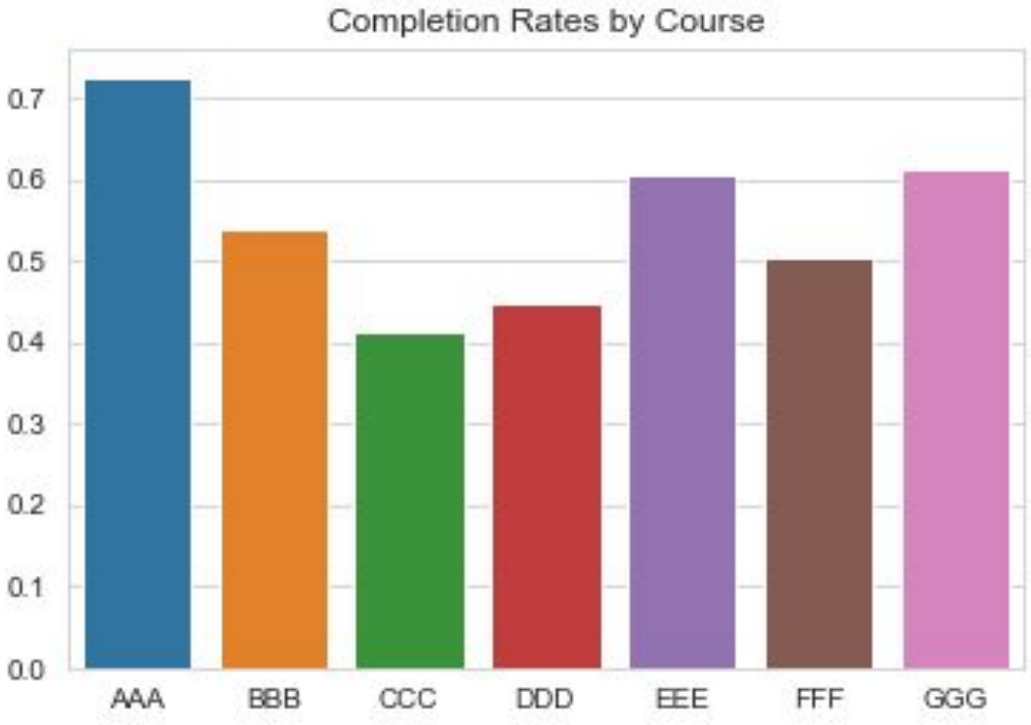
Image by Steinar Engeland, courtesy of Unsplash.com

1. Average assessment scores
2. Number of assessments completed
3. Number of days studied
4. Number of activities engaged
5. Total number of clicks
6. Times repeated the course

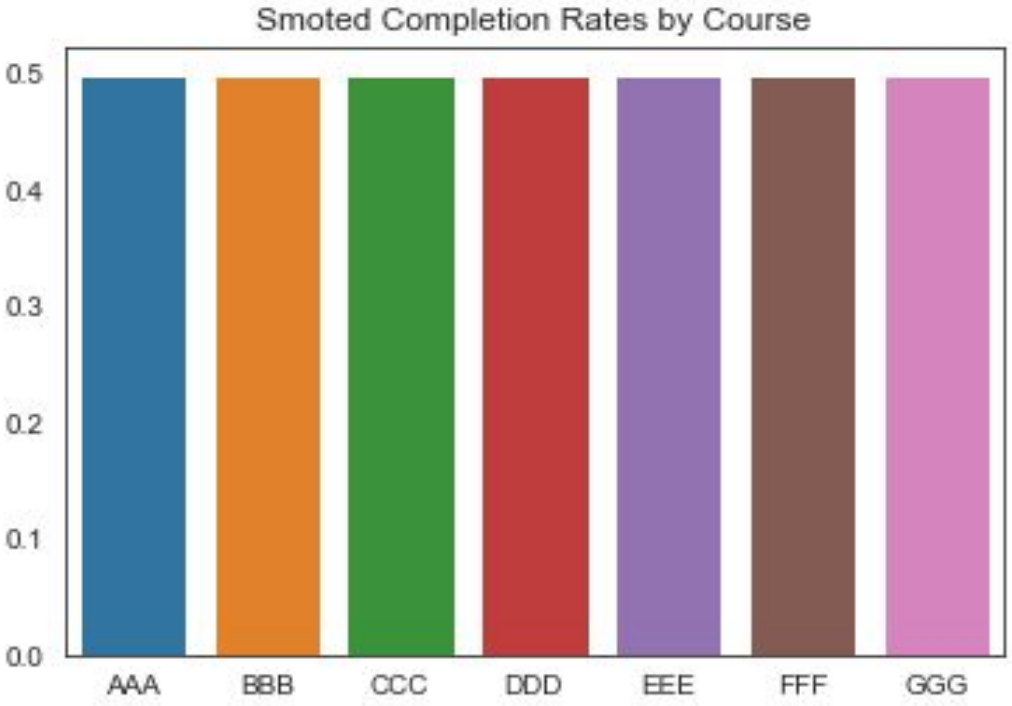
More Days Studying Correlates to Success



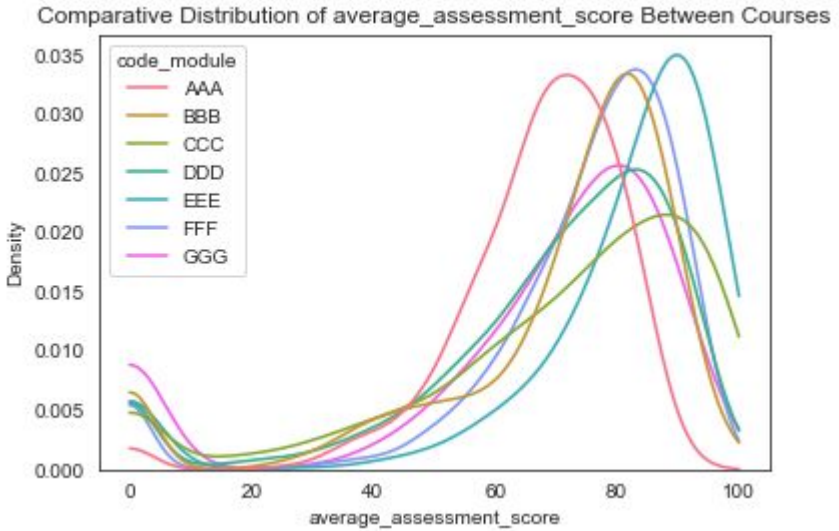
Some Courses are Harder Than Others.

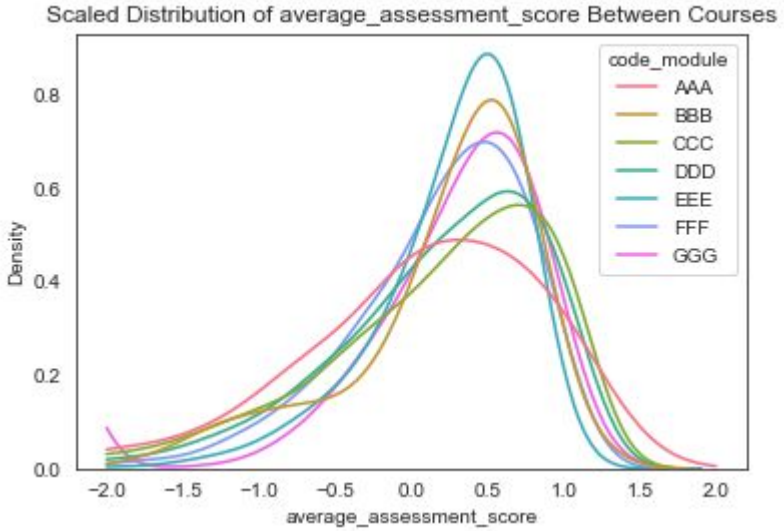


...But My Model Shouldn't Know That.



Distribution of Assessment Scores by Course

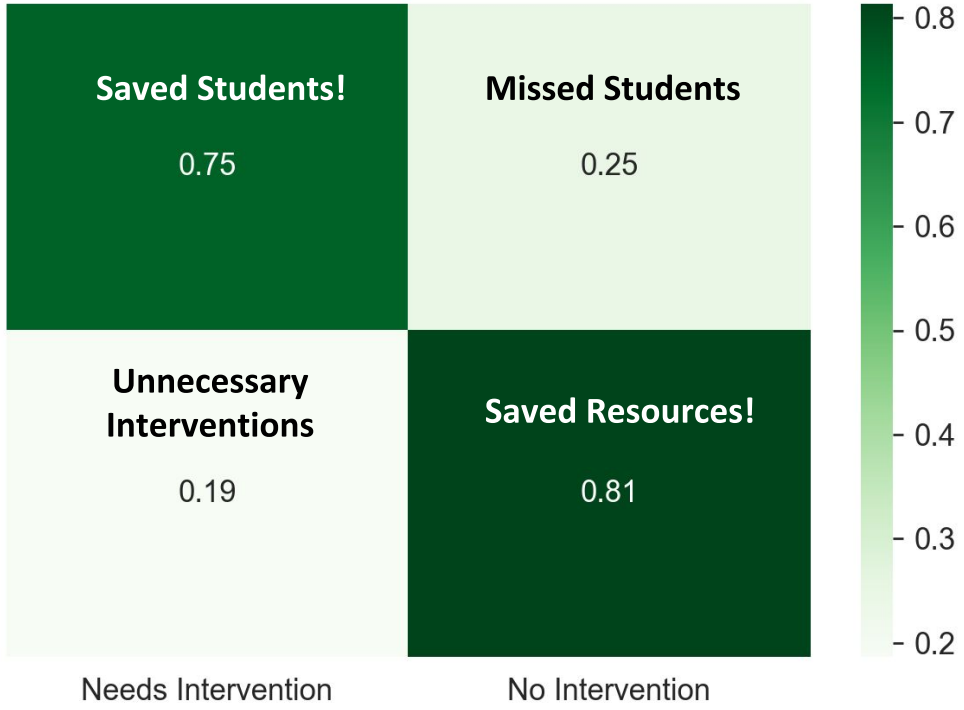




XGBoost Accuracy After the First Half of Courses: 79%

Needs Intervention:
75% Accuracy

No Intervention Needed:
81% Accuracy



Next Steps:

- Try more model types to improve accuracy
- Try different prediction windows
- Evaluate model results to find insights to help more students succeed
    - For instance, will doing fewer activities but over more days still help you succeed compared to doing more on fewer days?
- Apply model to larger and more diverse datasets.
- Deploy model in a live scenario.

Contact

Josh Johnson

LinkedIn: https://www.linkedin.com/in/josh-johnson-049a2619/

Github: https://github.com/Caellwyn

Email: caellwyn@gmail.com