



Student Success Predictive Model Review and Analysis

University of Texas San Antonio

- 1** The Origin of SSC's Student Success Predictive Model
 - 2** Overview of Your Institution's Predictive Model Training Process
 - 3** Predictive Model Analysis
 - 4** Confirming Your Institution's Configurations and Launch Timeline
-

What's Behind Declining Grades?

Grades Often Just an Indication of Deeper Issues in a Student's Life

Root Causes Differ for Each Student, But With Similar Outcomes



Interpreting Risk Signals

Three Indicators of Student Risk in the Platform

*Empirical
Calculated
Based on Historic Performance*

*Behavioral
Observed
Based on Current Performance*



1 Predicted Risk Level

Biological Science
College of Arts & Sciences

Low Risk

Search For Majors And Careers

Major Options

Major Name	Risk Level
Sociology College of Arts & Sciences	Low Risk

2 New2BU Responses

Tags

Belong, Stress

Tag (In Any of these)?

Stress

3 Interaction-based Staff Observations

Appointment Details ⓘ

Care Unit

Select Care Unit

Academic Support Programs

Advising

Other

Student Success

Tutoring

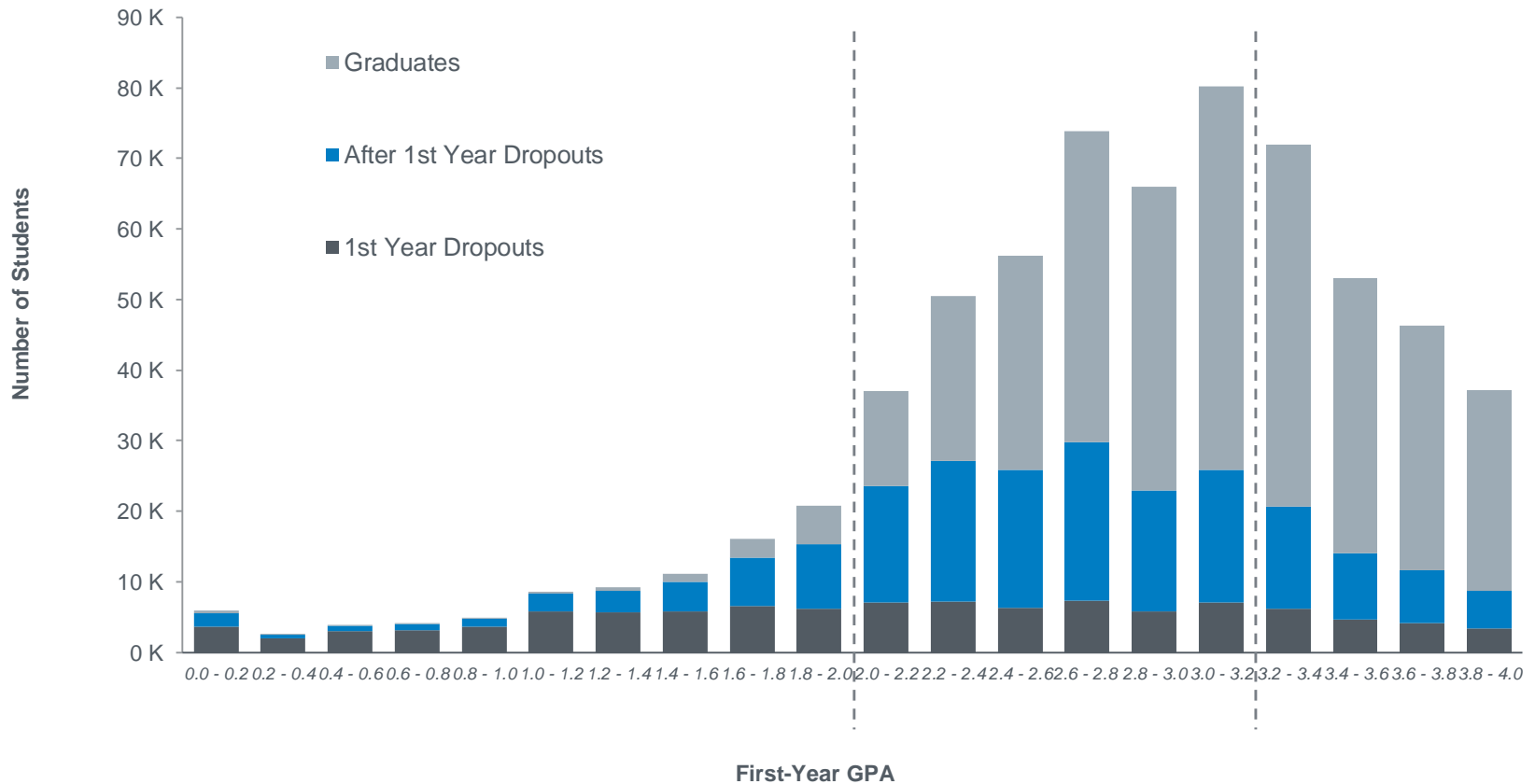
Appointment Summaries For Robert (Bobby) ▾

DATE	Care Unit	SET FILED ON	COURSE	FOLLOW UP
02/06/2018	Academic Support Programs			05/2018
	Advising			
	Other			
12/21/2017	Student Success			11/2017
	Tutoring			

What Our Research Has Confirmed

Large Numbers of Murky Middle Students Leaving After the First Year

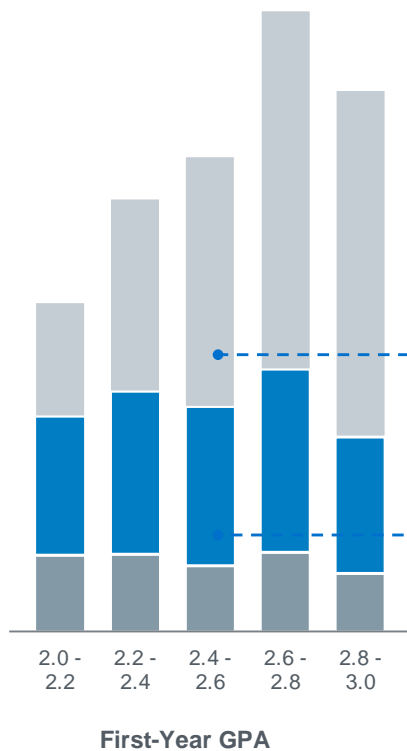
Histogram of All Students by First-Year GPA
SSC National Data Set (650,000 Students)



The Central Dilemma of the Murky Middle

Very Difficult to Differentiate Who Will and Won't Graduate

A Tale of Two Students



Billy

- Biology Major
- 2.5 First-Year GPA
- 30 Earned Credits
- **Eventual Graduate**



Bobby

- Biology Major
- 2.5 First-Year GPA
- 30 Earned Credits
- **Eventual Dropout**

Benefits of Predictive Analytics



Visibility

Uncover Hidden Student Risk

- Show where risk is distributed across institution
- Surface risk that would not otherwise be visible



Early Intervention

Act Early, Avoid Later Problems

- Allow early risk prediction based on pre-enrollment factors
- Show early if students are off track in major



Triage

Prioritize High Risk Students

- See how students in a single list/cohort compare in terms of risk
- Decide which students to target first



Impact

Risk as Indicator of Progress

- See whether students are improving
- Reduce “pools” of risk



Early, General Guidance for Assessment & Intervention

- Supplements but does not replace individual assessment
- Reflects historical trends, not future certainty

“How do I Use a Student’s Risk Prediction?”

Tips from Our SSC Advisors on How to Use Risk Prediction Effectively



How to Use Predicted Risk Effectively

- Use risk levels to strategize which students to monitor more heavily
- Use risk predictions to explore major options and strengthen long-term academic planning conversations
- Explain to students their risk score to create a sense of urgency for resistant students
- Consider predicted difficulty to help students select and prepare for upcoming courses
- Contextualize a student’s risk score by remembering the group against which that student is being compared



...And How Not To

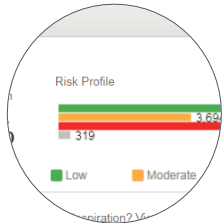
- Don’t only meet with “red” students
- Don’t ignore your intuition and experience in evaluating whether a student might be at risk
- Don’t make all your “red” students switch to a “green” major
- Don’t ignore a student’s passion if it’s in a “red” or “yellow” area
- Don’t assume a student won’t or can’t graduate because they are “red”; “red” is a probability, not a fate

Unlocking Insights

How Will the Student Success Predictive Model Drive Impact on Campus?

Move the Dial Institution-Wide

Support Individual Students



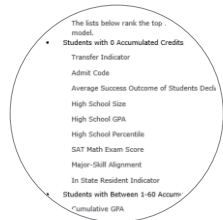
Population Health Analytics

Dive deep into risk distribution trends across colleges, majors, credit thresholds, etc.—the combinations are endless!



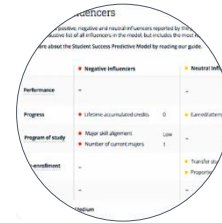
Advanced Search

Find lists of current students with certain predicted risk levels to target for appointment campaigns or watch lists



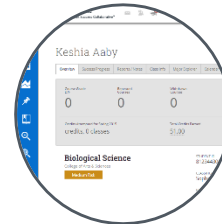
Top Predictors

Identify the data points identified most predictive of success for students as they progress through your institution



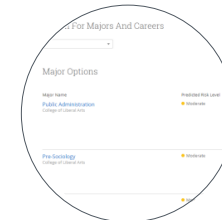
Predictive Influencers

Unpack the predicted risk level to learn more about key factors impacting a student's success at your institution



Smart Student Profile

Learn more about student performance outside of academic metrics



Major Explorer

Help advise students about other program options to optimize their likelihood to succeed



Employ **targeted outreach campaigns** to monitor and track risk at the institution-level



Better understand individual student risk and better **inform one-on-one student conversations**

1

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Confirming Your Institution's Configurations and Launch Timeline

Behind the Scenes

What Does the Model Training Process Look Like?

Data Collection

▶ Historical Data Extraction and Validation

- Institutional student data is collected
- Coverage is evaluated for all data points available for inclusion in the SSPM

Timeframe: Fall 2006-Spring 2012

Population: Bachelor degree-seeking students with at least one institutional registered term

Configuration

▶ Major and Grade Mapping

Inactive or outdated major or grade records are coded to align with the current-day equivalents.

▶ Outcome Selection

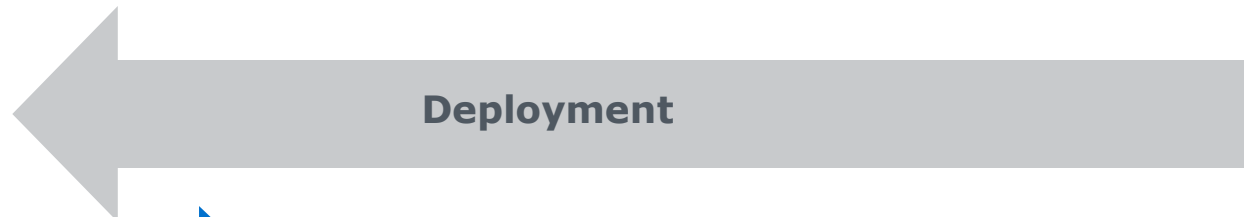
Your SSPM is configured to evaluate likelihood to persist to the year.

Deployment

▶ Model Fitting and Review

The model (a combination of several penalized logistic regression models applied to different subgroups of students) is trained using the historical data.

▶ Accuracy and Distribution Analysis



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Top Predictors by Credit Range

Identifying Best Predictors for Specific Student Subgroups

Students with 0 Accumulated Credits

ZCRM Exam Score
Credits Attempted Current Term
Legacy Indicator
Admit Code
Transfer Indicator
First Generation Indicator
International Indicator
SAT/ACT Verbal Score Percentile

Students with Between 1-60 Accumulated Credits

ZCRM Exam Score
Legacy Indicator
Cumulative GPA
Admit Code
Average Success Outcome of Students Declared in Same Major
Estimated Skills

Students with Between 61-120 Accumulated Credits Students with More Than 120 Accumulated Credits

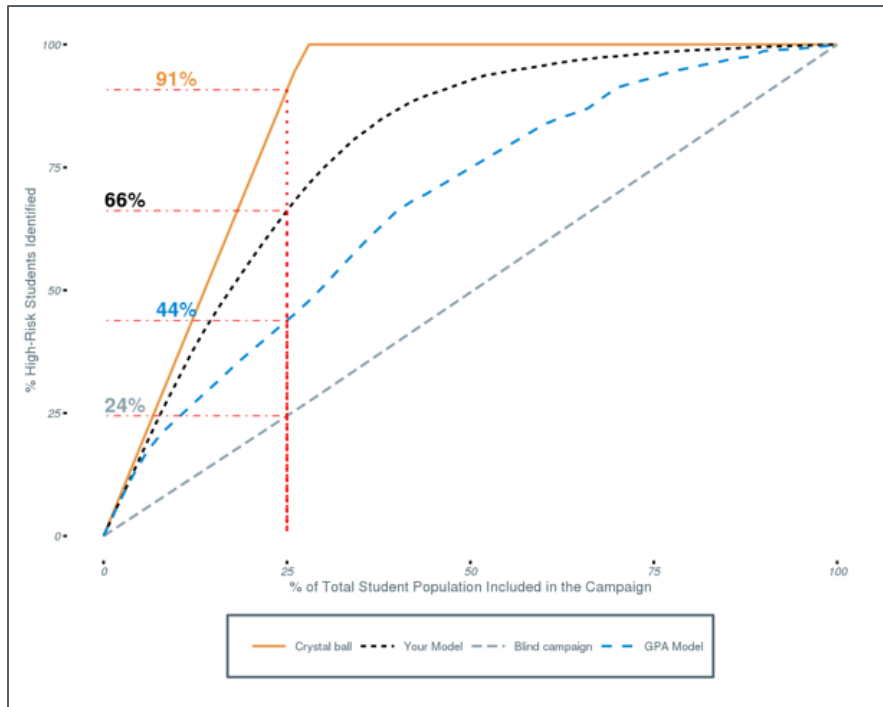
Number of Completed Terms
Legacy Indicator
Proportion of Transfer Credits
ZCRM Exam Score
Average Success Outcome of Students Declared in Same Major
First Generation Indicator

Proportion of Transfer Credits
Total Number of D/F Grades Earned
Average Success Outcome of Students Declared in Same Major
Number of Completed Terms
Cumulative GPA
Legacy Indicator

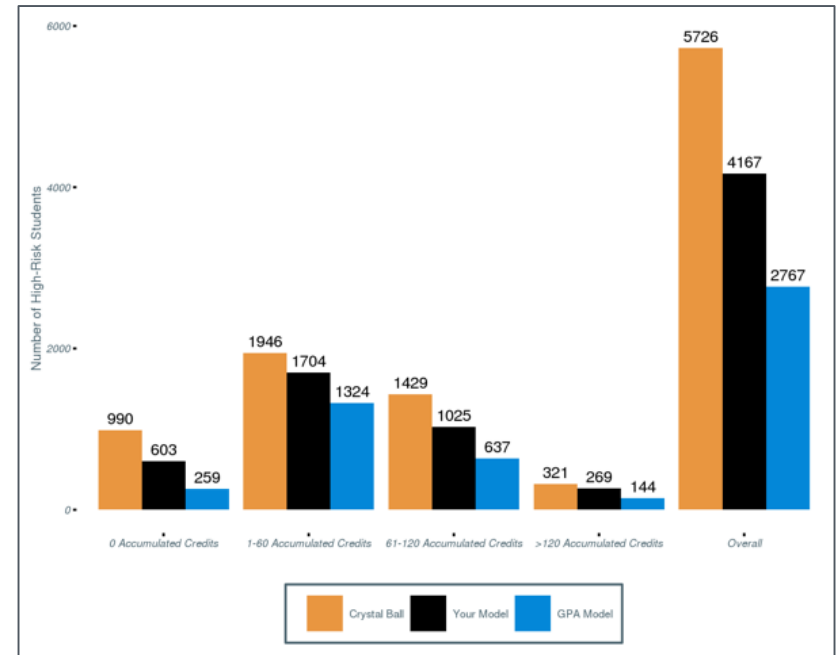
Evaluating Model Performance: Identifying Risk

Comparing Flagged High-Risk Students and Eventual Dropouts

What **percentage** of actual high-risk historical students (those that did not achieve the measured success outcome) were identified by the model?



How does this identification rate translate to **actual student counts**?



Want to see more accuracy measures? Ask your Dedicated Consultant for a copy of the **Student Success Predictive Model Report**.

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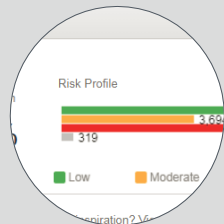
Launch Date: **December 17th**

Deploying Your SSPM in the Live Campus Site

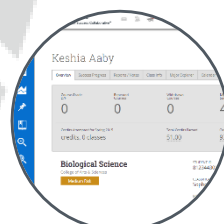
Reminder: Launching the Student Success Predictive Model in your live site will allow your institution to take advantage of all the platform features tied to Predictive Analytics...



Advanced Search



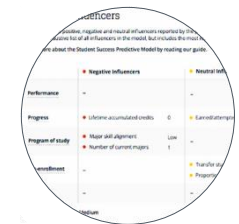
Population Health Dashboard



Smart Student Profile



Major Explorer



Unpacking Risk

...to catalyze impact on both an **institutional** and **individual student** level



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