Power in Numbers 2017
Diving Back into the Murky Middle
What Actually Happens to Our Students?

A True Perspective on Outcomes Demands a New Set of Success Metrics

For Every 100 Students Who Start a Bachelor’s Degree...

- **22** Drop out of college
- **12** Still enrolled after six years
- **3** Earn an associate’s
- **28** Graduate but are underemployed
- **35** Graduate and are working a job requiring a BA by age 27

Source: Shapiro D, et al., “Completing College: A National View of Student Attainment Rates – Fall 2010 Cohort (Signature Report No. 12)” National Student Clearinghouse Research Center (2016); Federal Reserve Bank of NY: [https://www.newyorkfed.org/research/college-labor-market/college-labor-market_underemployment_rates.html](https://www.newyorkfed.org/research/college-labor-market/college-labor-market_underemployment_rates.html); EAB interviews and analysis
Our Study Data

Drawn from EAB’s SSC Research Database

Primary data set

**Full Cohort**
Full set of member institutions found in the SSC data set

197 institutions

6,397,519 unique students

Comparison groups

**Private Benchmark**
Representative group

12 institutions

197,851 unique students

**Public Benchmark**
Representative group

15 institutions

810,031 unique students
The Murky Middle

The Majority of Attrition Actually Happens After the First Year

Student Attrition by First-Year GPA
SSC National Data Set
6.4 million students

- First-Year Departure
- Sophomore+ Departure
- Graduates

First-Year GPA

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Using SSC Data to Predict Sophomore+ Attrition

What Matters Most?

Top 10 Factors Predicting Sophomore+ Attrition

Not in Top 10
- Gender
- Ethnicity
- Family Income
The Variance from Demographics is Better Explained by Other Variables

Top 10 Factors Predicting Sophomore+ Attrition

- Cumulative GPA
- Terms Completed
- High School GPA
- GPA Trend
- F in Prior Term
- Current Attempted Credits
- ACT Composite Score
- F in Prior Two Terms
- First Generation
- SAT Composite Score

Demographics

Not in Top 10
- Gender
- Ethnicity
- Family Income
Using SSC Data to Predict Sophomore+ Attrition

Precollege Academic Data Has Some Predictive Value, but Is It Actionable?

Top 10 Factors Predicting Sophomore+ Attrition

Pre-college academic achievement variables

Not in Top 10
- Gender
- Ethnicity
- Family Income
Using SSC Data to Predict Sophomore+ Attrition

College Academic Performance Offers the Best Opportunity for Intervention

Top 10 Factors Predicting Sophomore+ Attrition

College academic achievement variables

Not in Top 10
- Gender
- Ethnicity
- Family Income
Risk Signal: Downward Trending GPA

Term-Over-Term GPA Decline Remains a Huge Murky Middle Warning Sign
Risk Signal: Downward Trending GPA

The Pattern Holds True Across Institution Type

Grad Rate by GPA %Change

% Graduated

GPA %Change

Cohort
Private
Public
Looking at the Big Picture

Academic Data Can Foreshadow Departure Several Terms in Advance

Sophomore+ Outcomes by GPA Trends
Risk Signal: Recent ‘F’ Grades

Proximate Fs Are Most Concerning, Although “F Toxicity” Can Last for Years
Risk Signal: Recent ‘F’ Grades

F Toxicity Has a Greater Impact on Students Below a 3.0 GPA
Multiple Early Cs Can Predict Future Fs

Students With 3+ Cs in the First-Year Are Twice as Likely to Get a Future F

![Graph showing the relationship between the number of first-year C grades and the F rate. The graph indicates an increasing F rate with an increasing number of C grades.]
Where to Focus Our Efforts?

Target Extra Support to Sophomore+ Students with These Warning Signs

Using SSC to Plan and Scale Efforts

1. IDENTIFY
   - **Dashboards** (in development) will allow users to identify students with academic concerns, including
     - Downward trending GPAs,
     - Total D/F counts, or
     - Missed Success Marker grades

2. TARGET
   - Robust student data in the **Advanced Search** helps to prioritize high-impact populations, including
     - Min and max GPAs
     - Grades in specific courses
     - Missed Success Markers

3. OUTREACH
   - **Appointment Campaigns** proactively outreach to students to prompt them to attend an advising or tutoring appointment

MURKY MIDDLE

Conduct targeted outreach campaigns to sophomore students based on these warning signs:

- Below 3.0 GPA
- Recent Decline in GPA
- Recent F Grades
- Multiple Cs in First Year
Validating “15 to Finish”
What Actually Happens to Our Students?

A True Perspective on Outcomes Demands a New Set of Success Metrics

For Every **100 Students** Who Start a Bachelor’s Degree...

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“15 to Finish” Works

But Seems to Have an Upper Limit on Impact

FT/FT Students Taking 15+ Credits per Term
State Flagship University

15 to Finish launched

Probable can’t take 15+

Opportunity for gains

Already taking 15+

Our Study Data

Drawn from EAB’s SSC Research Database

**Full Cohort**

Full set of member institutions found in the SSC data set

- **132** institutions
- **1,213,062** unique full-time freshmen

Starting between summer 2011 and spring 2016

**Pell Recipients**

- **6** institutions
- **18,102** students

**Caveat**

Our analysis is limited in that we do not have access to robust data on non-academic aspects of students’ lives (e.g. hours worked per week).

While our results show in general that taking 15+ credits doesn’t harm outcomes, some students will have obligations that prevent them from taking 15+ credits in a semester.

All students should work with their advisor to set an academic plan that makes the most sense for their circumstances.
Distribution of First Year Credit Attempts

44% of Full Time Students Take 12-14 Credits

Student Counts: Average Credits Per Term During Freshmen Year

- 44% of total
- 56% of total

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Early Choices Appear to Be Habit Forming

Students Who Start Off Taking More Credits Will Continue to Do So
Better Outcomes Correlated with 15+ Credits

Stating the Obvious: Four-Year Graduation Correlated with More Credits
Controlling for Academic Preparedness

Correlation Holds True Across All Levels of Preparedness

Four Year Grad Rate vs. Average Credits Per Term by High School GPA

High School GPA
- 3.5 - 4.0
- 3.0 - 3.5
- 2.5 - 3.0
- 2.0 - 2.5

Four Year Grad Rate (%)
0 25 50 75 100

Average Credits Per Term
12 13 14 15 16 17
Better Outcomes Correlated with 15+ Credits

Students Taking More Credits Tend to Persist to Next Term at Higher Rates
Controlling for Academic Preparedness

Correlation Holds True Across All Levels of Preparedness
Better Outcomes Correlated with 15+ Credits

Students Taking More Credits Tend to Have Higher First-Year GPAs
Correlation of Credits and GPA Holds True Across All Levels of Preparedness

Controlling for Academic Preparedness
Controlling for Income

Pell Students Persist at Higher Rates When Taking More Credits
Controlling for Income

Pell Students Have Slightly Higher GPAs When Taking More Credits
Where to Focus Our Efforts?

Target First Year Students Taking Less Than 15 Credits

Using SSC to Plan and Scale Efforts

1 IDENTIFY
   Dashboards (in development) allow users to identify students with progress concerns, including
   • 12-14 credit attempts

2 TARGET
   Robust student data in the Advanced Search helps to prioritize high-impact populations, including
   • Min and max credits attempted

3 OUTREACH
   Appointment Campaigns prompt students to attend an advising appointment where they can discuss if taking additional credits makes sense for their circumstances
Update on the Student Success Predictive Model (SSPM)
Predictor Weight Changes Over Time

Top 10 predictors new to the Risk Model Report (Sample Institution, N=1)

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<thead>
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_pre-enrollment and Demographic Variables Become Less Important_

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Credits and Credits Earned Become More Important

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### Grades Are Consistently the More Important Factor for Current Students

**Incoming Students**

1. Credits Attempted Current Term
2. Average Success Rate in Major
3. HS Percentile
4. Readmitted Indicator
5. HS Size
6. Transfer Indicator
7. Age at First Term
8. Math Placement Exam
9. English Placement Exam
10. Science Placement Exam

**Students with Under 60 Credits**

1. GPA
2. GPA Compared to Same Major
3. Average Success Rate in Major
4. Overall Grade Variance
5. HS Percentile
6. Average Credit Attempts / Term
7. First Term Transfer Credits
8. Trend in Term GPA
9. Credits Attempted Current Term
10. Proportion of Transfer Credits

**Students with 61-120 Credits**

1. GPA Compared to Same Major
2. GPA
3. Overall Grade Variance
4. Average Success Rate in Major
5. Number of Completed Terms
6. Credits Attempted Current Term
7. Ratio of Earned to Attempted Credits
8. Average Credit Attempts / Term
9. Trend in Term GPA
10. Proportion of Transfer Credits

**Students with Over 120 Credits**

1. GPA
2. Overall Grade Variance
3. Ratio of Earned to Attempted Credits
4. Average Credit Attempts / Term
5. Trend in Term GPA
6. Proportion of Transfer Credits
7. Number of D/F Grades Earned Previous Term
8. Credits Attempted Current Term
9. Average Success Rate in Major
10. Number of Completed Terms
Model Accuracy Has Been Improving

Already Better Than Human Intuition (GPA Model) and Still Getting Better

Comparing SSPM “Lift” Vs. Other Models
Sample Institution, 80% Grad Rate
SSPM Precision Improves Across the Lifecycle

Meaningfully Better Than Human Intuition (GPA) for Juniors and Seniors
How Can Members Use the Predictive Model?

Discussion

Advanced Search Filter

Targeted Campaigns

Advisee Assignments

Pop Health Strategies
Long-Distance Major Switching
Our Study Data

Drawn from EAB’s SSC Research Database

**Full Cohort**

Full set of member institutions found in the SSC data set

108 institutions

670,000 major switching outcomes occurring 2005 - 2011

**What is a “Long-Distance” Switch?**

- Each major has a six-digit CIP code, with related majors sharing the same first two digits.
- Our analysis examined switches across 2-digit CIP code stems, capturing long-distance major switches
- Examples:
  - Psychology to Engineering IS considered a long-distance switch
  - Developmental Psychology to Lab Psychology IS NOT considered a long-distance switch
Lower Graduation Rates Correlated with Switches

Early Switchers Fare Better Than Later Switchers
Low GPA Students Seem to Benefit from Switch

Could Be a Self-Selective Effect Resulting from a Positive Decision to Stay
Longer Time to Degree Correlated with Switches

Early Switchers Fare Better Than Later Switchers
# Huge Variation in Outcomes Based on Pairings

## Representative Examples

<table>
<thead>
<tr>
<th>Source Major</th>
<th>Target Major</th>
<th>Switchers</th>
<th>Stayers</th>
<th>Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Sciences</td>
<td>Communication and Journalism</td>
<td>79%</td>
<td>74%</td>
<td>+5%</td>
</tr>
<tr>
<td>Agriculture and Agriculture Operations</td>
<td>Biological and Biomedical Sciences</td>
<td>70%</td>
<td>66%</td>
<td>+4%</td>
</tr>
<tr>
<td>Health Professions</td>
<td>Agriculture and Agriculture Operations</td>
<td>74%</td>
<td>70%</td>
<td>+4%</td>
</tr>
<tr>
<td>Homeland Security</td>
<td>Liberal Arts and Humanities</td>
<td>49%</td>
<td>71%</td>
<td>-21%</td>
</tr>
<tr>
<td>Biological and Biomedical Sciences</td>
<td>Computer and Information Sciences</td>
<td>46%</td>
<td>70%</td>
<td>-25%</td>
</tr>
<tr>
<td>Visual and Performing Arts</td>
<td>Computer and Information Sciences</td>
<td>45%</td>
<td>72%</td>
<td>-27%</td>
</tr>
</tbody>
</table>
Switching Isn’t Always Bad

Outcomes Are Highly Variable Across Schools and Pairs of Majors
Where to Focus Our Efforts?

Target Students Making “Long Distance” Major Switches

Using SSC to Plan and Scale Efforts

1. IDENTIFY
   Use Major Change Analysis Report in Institution Reports to examine and surface poor outcomes associated with common major switches, with a special focus on:
   - Graduation rates in next choice major
   - Time to degree overall and since change
   Start by examining with your highest enrollment majors and their most common switch destinations

2. COLLABORATE AND REDESIGN
   Meet with representatives from both academic units to discuss the root causes of student struggles with the switches, as well as what can be done about them

MAJOR SWITCHING

Conduct an institution-wide review of outcomes associated with common major switches