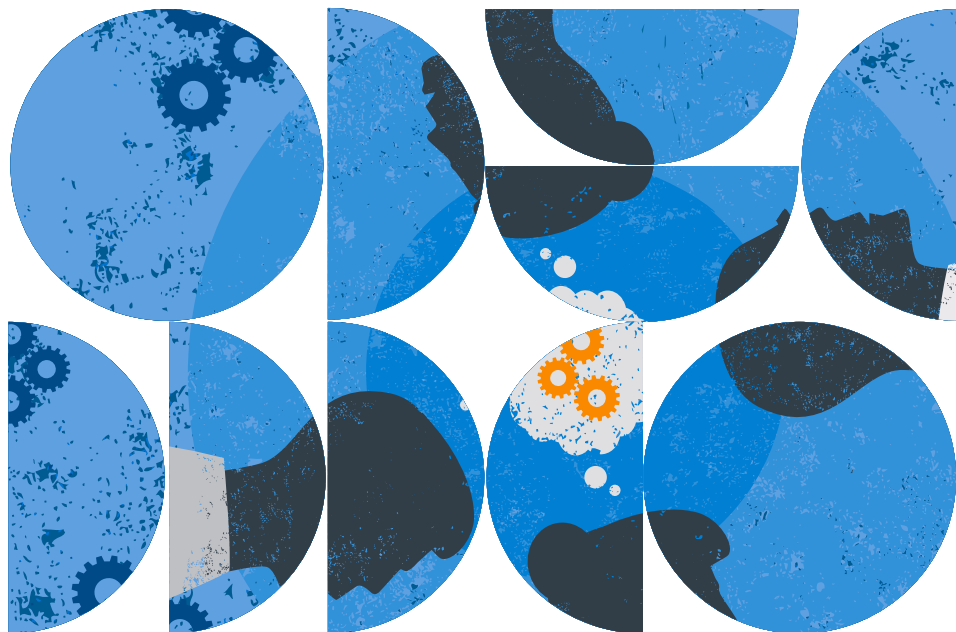




Optimizing IT's Role in Student Success

Rightsizing Support and Promoting Accountability

IT Forum





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Supporting Members in Best Practice Implementation

Resources Available Within Your Membership

Recognizing that ideas seldom speak for themselves, our ambition is to work actively with members of the IT Forum to decide which practices are most relevant for your organization, to accelerate consensus among key constituencies, and to save implementation time.

For additional information about any of the services below—or for an electronic version of this publication—please visit our website (eab.com/itf), email your organization’s dedicated advisor, or email research@eab.com with “IT Forum: Optimizing IT’s Role in Student Success” in the subject line.

Implementation Road Maps and Tools

Tools and templates corresponding to the practices in this study are available in the toolkit at the back of this book. These and additional tools are also available on our website at eab.com.

Recorded and Private-Label Webconference Sessions

Our website includes recordings of webconferences walking through the practices highlighted in this publication. Forum experts are also available to conduct private webconferences with your team.

Unlimited Expert Troubleshooting

Members may contact the consultants who worked on any report to discuss the research, troubleshoot obstacles to implementation, or run deep on unique issues. Our staff conducts hundreds of telephone consultations every year.

Facilitated Onsite Presentations

Our experts regularly visit campuses to lead half-day sessions focused on highlighting key insights for senior leaders or helping internal project teams select the most relevant practices and determine next steps.



All IT Forum resources are available to members in unlimited quantity.

To order additional copies of this book, or to learn about our other services, please visit us at eab.com or contact us at 202-266-6400.

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Founded in 1979 to serve hospitals and health systems, The Advisory Board Company is one of the nation's largest research and consulting firms serving nonprofit, mission-driven organizations. With a staff of over 2,300 employees worldwide, including 1,150 in Washington, D.C., we serve executives at about 3,000 member organizations in more than two dozen countries, publishing 150 major studies every year on progressive management practices.

Our Work in Higher Education: EAB

Encouraged by leaders of academic medical centers that our model and experience serving nonprofit institutions might prove valuable to colleges and universities, The Advisory Board Company launched The Education Advisory Board, our higher education practice, in 2007. We are honored to serve over 1,000 college and university executives through our EAB memberships.



Research and Insights

Academic Affairs Forum

Strategic advice for provosts to elevate performance in teaching, research, and academic governance

Business Affairs Forum

Research and support helping CBOs improve administrative efficiency and lower costs

Student Affairs Forum

Research helping student affairs improve student engagement and perfect the student experience

Community College Executive Forum

Strategic advice for community college leaders on strengthening student success, workforce development, and institutional planning

COE Forum

Research on continuing and online education program growth, revenues, and academic quality

IT Forum

Research for CIOs on leveraging information and technology to further higher education

Enrollment Management Forum

Guidance and support for chief enrollment officers to overcome today's enrollment challenges

Advancement Forum

Research and performance analytics for development officers to elevate fundraising performance



Performance Technologies

University Spend Collaborative

Business intelligence and price benchmarking to help institutions better manage procurement and outside spend

Student Success Collaborative

Predictive modeling and academic milestone tracking to help universities improve completion and time to degree

Student Success Collaborative Navigate

Student support tool for college navigation and career pathing to help colleges improve graduation and employment outcomes

Executive Summary

IT Leaders Can and Must Do More to Support Student Success

Improving student success metrics like persistence, graduation, learning, and career outcomes is core for institutions in all sectors of higher education and consistently tops the priority lists of presidents, provosts, and business leaders. More recently, student success has become of interest and concern to IT leaders, who support technology components of student progress such as early-warning systems, advising platforms, and analytics tools.

While academic and administrative leaders have invested heavily in new support staff, programs, and technology solutions to improve student progress, **IT usually becomes involved only after critical decisions have already been made**, and then IT is asked to install and maintain solutions that other campus units have purchased. This leads to a painful paradox for CIOs and their teams: although they spend an increasing share of their time and resources integrating and implementing disparate systems and tools to support student progress, student outcomes have remained stubbornly stagnant across the last decade.

There are clear benefits to IT investing more strategically in student success—even though student success might not be considered a traditional IT issue because many of the critical decisions that affect student success take place outside the purview of most CIOs (e.g., curricular policy, faculty-to-student ratios, advising structures).

Being a student success follower rather than a leader negatively affects IT's reputation with constituents and subsequent ability to gather support for proactive analytics.

- Students and faculty are coming to campus with higher expectations of their technology experience, and a poor experience in student-facing technologies (e.g., confusing course registration processes) can damage support for IT's other priorities.
- At the same time, IT has invested in business intelligence and analytics staff, many of whom are dedicated to student success, and whose expertise is used to support broken processes and to respond to ad hoc data requests, rather than focusing on analysis that can support larger institutional initiatives.

Smart investments in student success allow IT leaders to further mission-critical goals in student progress and help CIOs find a seat at the table to advance institutional strategy.

- IT has broader insight into unit business processes than any organization on campus, which ideally positions it to help streamline and improve student service delivery, as well as delivery of decision support data.
- The rapidly growing prevalence of technology in higher education is bringing CIOs closer to institutional strategy, but many IT leaders still feel that they are responding to rather than helping guide the university's mission. The best opportunity for CIOs to elevate IT's role on campus is if leaders can engage and invest in institution-wide issues outside of traditional IT responsibilities, which allows them to join strategic discussions with other senior leaders in support of institutional goals like student success.

Executive Summary (cont.)

Structuring a Proactive IT Approach to Student Success

IT leaders need to take a more proactive role in student success efforts, but many struggle to identify the investments that can drive value, reduce the burden of campus requests, and build the foundation for a more strategic IT function. In the pages ahead, we explore how IT and campus partners use data across the student life cycle to guide more efficient and effective decisions. To elevate IT's role in student success efforts, CIOs and their teams must focus on **four priorities**:

1 Embed Faculty Expertise in Risk Thresholds

Institutions investing in early warning advising systems have struggled to achieve adoption because faculty perceive significant effort and little value from these systems. IT must work to **increase adoption and effectiveness of early-warning systems** by supporting a "closed loop" of advising data which shows faculty how their input guides more tailored interventions for individual students and ultimately improves outcomes.

2 Identify and Remove Course Bottlenecks

Students face a host of obstacles as they seek to complete their course requirements. These "bottlenecks" are caused by poor access, course-level outcomes, and academic policies and very few institutions effectively leverage data to reduce impediments. IT must **arm academic managers to identify and remove bottlenecks** by facilitating unit-level analysis, supporting multi-term planning, enabling short-term flexibility, and helping leaders identify and mitigate curricular complexity.

3 Segment Risk-Based Interventions

If institutions want to improve outcomes, they need to better scale interventions for low-risk students so that they can divert in-person resources to high-risk students. IT must **use data-informed interventions to allow self-guidance for low-risk students, facilitate faster support for rising-risk students, and streamline communication with high-risk students**.

4 Provide Assessment Data for Units and Advisors

When student success is everyone's problem on campus, it often becomes no one's responsibility because individuals are rarely held accountable for outcomes. IT can help **promote accountability and support more effective staff efforts** by providing transparency on unit-level outcomes, and by tracking as well as communicating process-level data on advising interactions to leaders.

Understanding Your Current Practice

The following questions are designed to help you evaluate your current practices. Use them to determine which of the strategies presented are more relevant and needed at your institution.

Embed Faculty Expertise in Risk Thresholds	Yes	No
Do faculty at your institution have input into the calibration of student academic risk flags through an early alert system?		
Does your early alert system recognize multiple risk factors identified by faculty and prompt tailored advising interventions?		
Does IT “close the loop” with faculty who flag student risks by providing instructors with information about the advising interactions and follow-up activities performed by students flagged?		

If you answered “No” to any of these questions, please turn to pages 15-24.

Identify and Remove Course Bottlenecks	Yes	No
Does IT or IR at your institution provide instructors and academic managers with self-service tools to explore the root causes of course outcomes?		
Can students at your institution register for multiple terms at the same time (i.e., register for classes more than one term in advance)?		
Do department chairs at your institution have the ability view current course capacity and waitlist queues to manage resources in real time?		
Does IT provide academic managers and faculty with data to audit the complexity of curricular structures and identify bottlenecks?		

If you answered “No” to any of these questions, please turn to pages 25-42.

Segment Risk-Based Interventions	Yes	No
Does IT support holistic, automated behavioral nudges to students that are tied to activities and delivered through mobile devices?		
Does IT help to collect and maintain process-completion metrics used to intervene with students (e.g., timing of institutional application, term-to-term GPA, course load)?		
Does IT facilitate discussions about the volume of messages sent to at-risk students through digital channels?		

If you answered “No” to any of these questions, please turn to pages 43-64.

Provide Assessment Data for Units and Advisors	Yes	No
Can IT provide institutional leadership with frequent, granular data on unit-level progress against student success outcomes?		
Does IT collect cohort-level student success data to evaluate individual advising staff?		
Can IT provide advising leadership with granular process-completion data to evaluate advising staff against measurable, controllable outputs (e.g., number of face-to-face interactions, graduation time audits performed, next-term registrations)?		

If you answered “No” to any of these questions, please turn to pages 65-72.



Optimizing IT's Role in Student Success

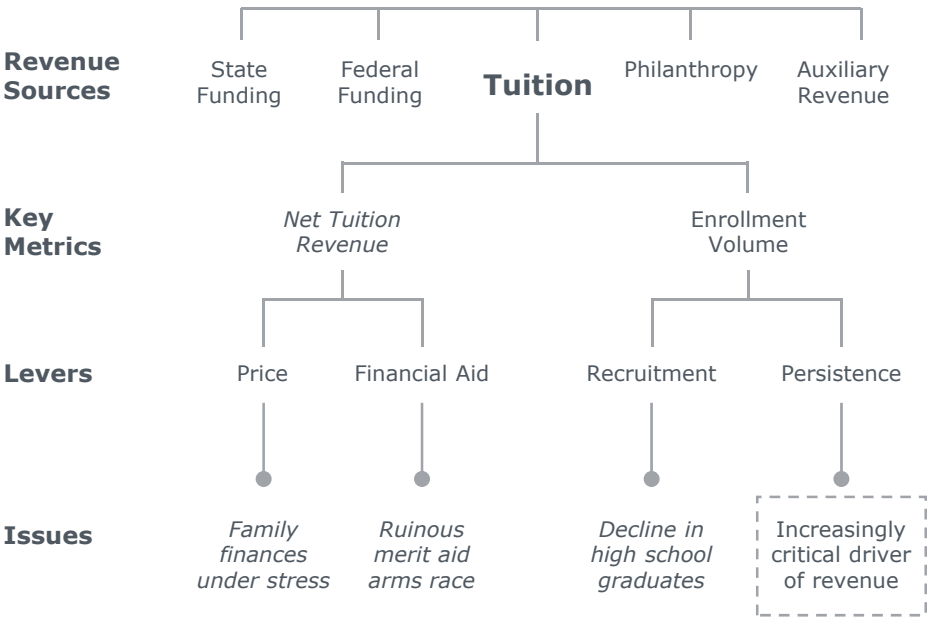
Seizing the Opportunity to Take a Leadership
Role in Student Success Efforts

INTRODUCTION

Higher Ed’s Most Urgent Priority: Student Success

Across higher education in the United States and Canada, the most urgent and prominent priority for policymakers is student success, with significant federal, state, and provincial pressure to produce more postsecondary graduates. At the same time, pressure on traditional revenue sources (e.g., price, financial aid, recruitment) make persistence—the ability to keep a student within the institution for multiple semesters—an increasingly critical pillar of institutional solvency.

Pressure on Traditional Revenues Highlights Persistence



Source: EAB interviews and analysis

Lots of Activity and Investment, to Imperceptible Impact

In response to the student success imperative, institutions have sought to improve student services, restructure academic advising, engage in predictive analytics to surface at-risk students, and implement early warning technologies to enable timely interventions. Across sectors, institutional leaders have made widespread and rapid investments to improve all aspects of student success.

Widespread Implementation of High-Impact Practices



Improving Student Services

- All sectors centralizing financial aid and other student services in central online and physical hubs
- Student services spending per full-time equivalent (FTE) student growing 2 to 4 times as fast as instructional spending per FTE at four-year institutions

Predicting Outcomes



- Increasing adoption of technologies and tools to build retention models based on historical patterns and student demographics
- 64% of higher ed business intelligence (BI) initiatives target student success outcomes



Restructuring Advising

- In 2003, 32% of institutions had centralized advising; in 2011, 45% had centralized advising for at least freshmen
- 82% of institutions now maintain full-time, professional advising staff

Generating Early Warning



- Widespread adoption of learning management system (LMS) generates usable data on classroom interactions
- 74% of public institutions have implemented early warning system to identify and flag student attrition risks

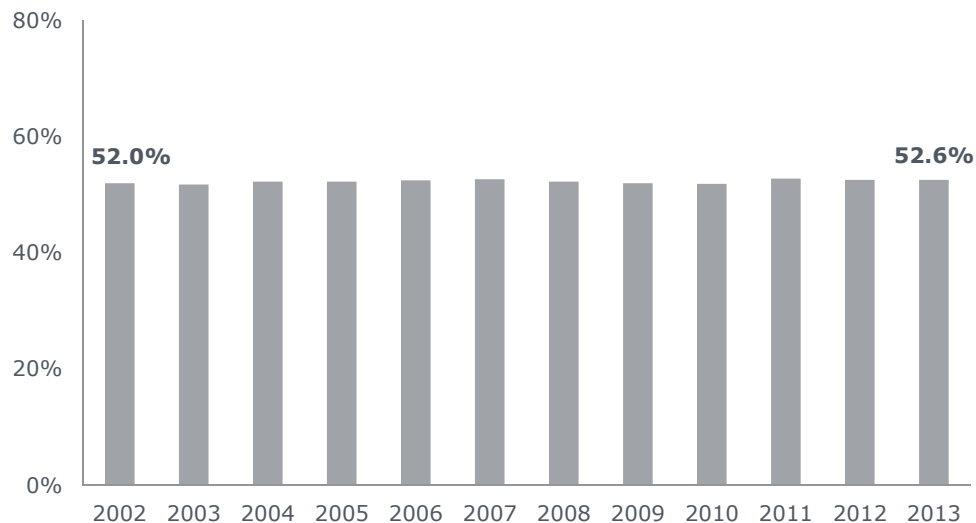
Despite these investments, many argue that there has been little to show for higher education's investment in student success. As the graph at right illustrates, average five-year graduation rates for four-year institutions between 2002 and 2013 rose by less than a percentage point.

Because the causes of student attrition are so diverse, it is challenging to identify the appropriate success strategies for each particular situation. Regardless, every student success initiative is dependent upon IT to collect and deliver granular, process-oriented data to guide the decisions of faculty, academic leaders, and advising staff.

Completions Flat, Despite Significant Investment

Average Five-Year Graduation Rates

Public and Private US Colleges and Universities



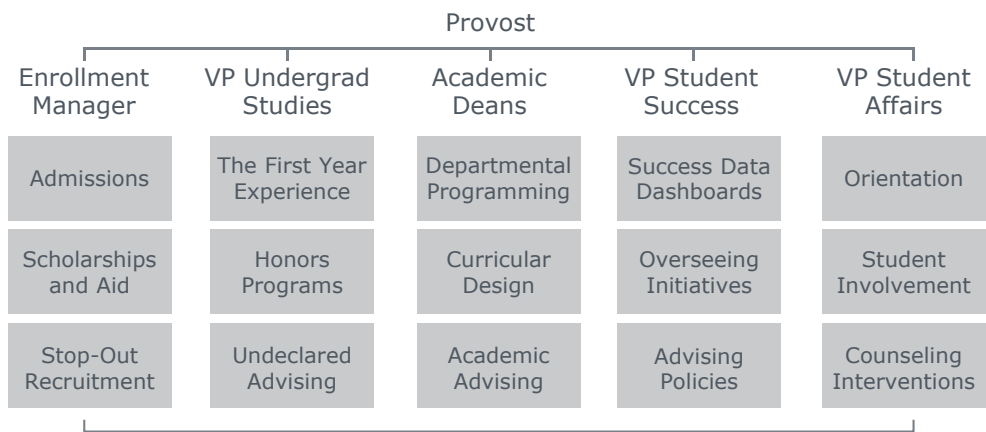
Source: Delta Cost Project, "Trends in College Spending, 2001-2011: A Delta Data Update," 2014; "The Status of Academic Advising: Findings from the ACT Sixth National Survey," NACADA; 2011 NACADA National Survey; Developing and Supporting Analytics Initiatives, EAB; "What Works in Student Retention," Habley W. et al. (2010); EAB interviews and analysis.

IT Is Foundational to Student Success Efforts

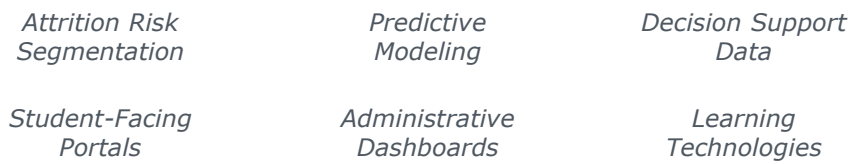
The increasing attention to student success at the institutional level has involved stakeholders across the administrative and academic realm. Many individuals and departments are responsible for aspects of student success, but IT leaders have impact across all units because they support the data collection and storage, advanced analyses, and delivery mechanisms that make planning and intervention possible.

IT can provide data that will allow stakeholders to see how specific processes, interim outcomes, interactions, and behaviors affect long-term outcomes. Most institutions are only beginning to leverage the technologies and systems that record this information. As a result, CIOs have an opportunity to structure, coordinate, and deliver this new data to partners in the academy as well as support offices.

Student Success Governance Built on IT Foundation



Foundational IT-Supported Tools and Technologies



**Process Milestones**

- Registration
- FAFSA completion

**Service Touchpoints**

- Advising interactions
- Tutoring appointments

**Interim Outcomes**

- Term-to-term persistence
- Term GPA change

**Classroom Performance**

- Class attendance
- Assignment grades

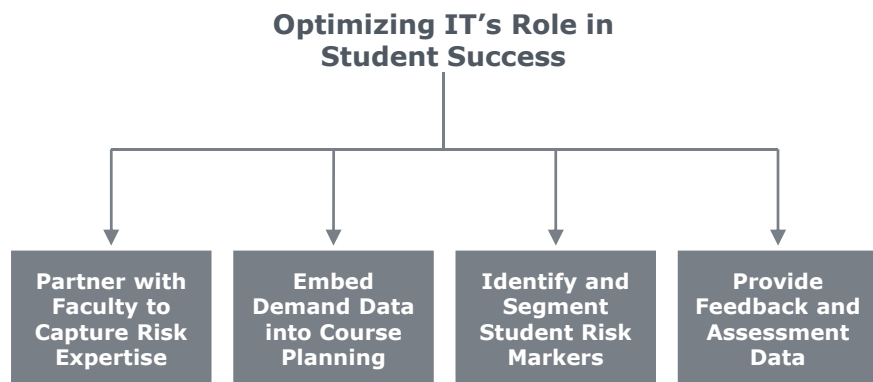
Source: EAB interviews and analysis.

IT's Corner of the Student Success Challenge

To make the best use of IT's resources and skills to improve student success outcomes, IT should focus attention on four critical areas:

- Capture faculty expertise to set appropriate risk thresholds that can guide effective advising interventions;
- Provide academic leaders with just-in-time student demand data to improve the effectiveness of planning and reduce bottlenecks;
- Identify risk-adjusted student segments to scale self-service, expedite interventions, and coordinate resource for high-risk populations, and;
- Collect and provide feedback and assessment data to enable effective management of academic advisors.

Four Critical Areas That Need IT Support



Source: EAB interviews and analysis.

Optimizing IT's Role in Student Success

In the pages ahead, we present strategies to help IT leaders provide their campus with the right information on classroom risks and course bottlenecks, analyze as well as deliver metrics that best predict student risks, and arm campus with data to manage performance. The success of CIOs and their teams in delivering against these imperatives will determine the extent of effective and sustainable change in campus-wide student success initiatives.

Four Priorities That IT Leaders Should Tackle



Embed Faculty Expertise in Risk Thresholds



52%

of faculty never track attendance in the LMS



Which data can drive faculty buy-in for early alert tools?



Identify and Remove Course Bottlenecks



20%

of IR units support capacity and space planning



Which data do academic leaders need to remove student progress barriers?



Segment Risk-Based Interventions



"No university is staffed like an Amazon or a Google, with the data scientists to mine all that information."

CIO, State System



Which metrics should IT focus on to segment student risks?



Provide Assessment Data for Units and Advisors



21%

of institutions with formal advising performance criteria



Which data can IT provide to support accountability for advising staff?

Source: *Inside Higher Ed*, Faculty Attitudes on Technology 2015; Defining Institutional Research: Findings from a National Study of IR Work Tasks, 2016; 2011 NACADA National Survey; EAB interviews and analysis.



Embed Faculty Expertise in Risk Thresholds

Use Data to Show ROI of Faculty Time Spent on Student Success

CHAPTER

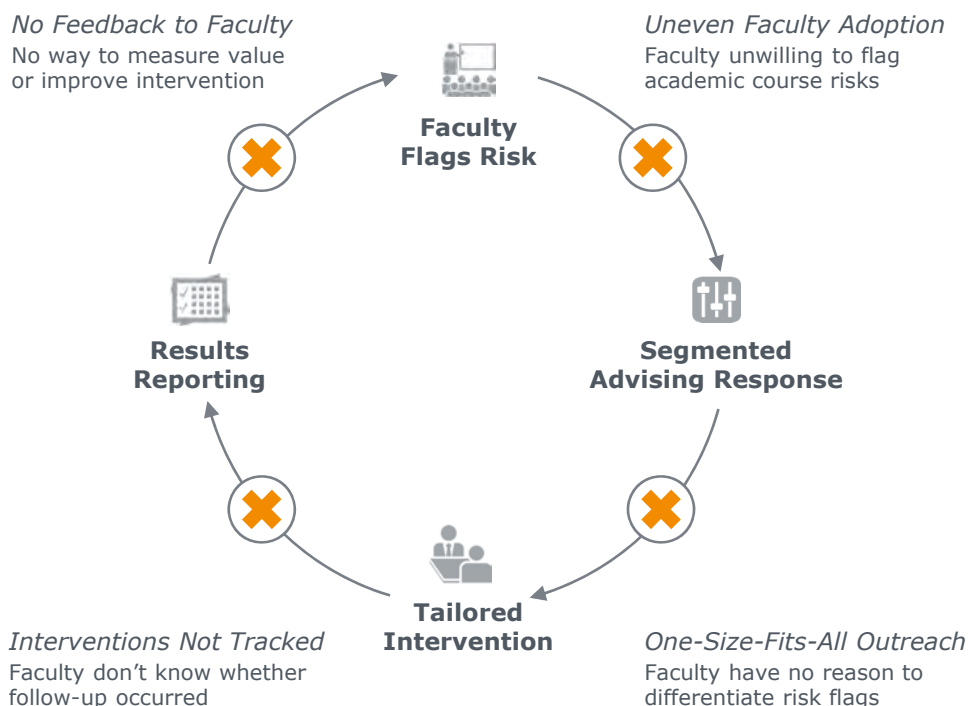
- Practice 1: Faculty-Determined Risk Thresholds
- Practice 2: Segmented Intervention Protocol
- Practice 3: "Closed-Loop" Advising Infrastructure

1

Involving Faculty in Designing Guardrails for Students

In an effective classroom data feedback loop, faculty would calibrate and flag risks only they could identify, given the significant time they spend with students and their discipline expertise. Functional units would then react to the flag with a segmented response and a tailored intervention led by specialists, who would report the results of the intervention to faculty. Faculty would use results to guide outreach to students. In spite of good intentions, common member practice leads to many missed opportunities to keep students on track. In the graphic shown here, we lay out some of the key barriers to creating a “closed loop” of student success data with faculty.

Struggling to Provide ROI for Faculty Actions



Source: *Inside Higher Ed*, Faculty Attitudes on Technology 2013, 2014, 2015, <https://www.insidehighered.com/surveys>; EAB interviews and analysis.

Lots of Technology Investments, but Poor Usage

While more institutions and leaders have come to realize that classroom interactions are a critical source of student success data, faculty adoption has not accompanied investments in new technology. A good example is the use of LMS systems to track attendance—and while the LMS is not the only tool which institutions can use to track course attendance, faculty adoption rates demonstrate a troubling trend. Annual surveys by *Inside Higher Ed* have found that the proportion of faculty using the LMS to track attendance has remained stubbornly fixed at a low rate. In 2015, only 22% of faculty used the LMS in all cases, and 52% of faculty did not use the tool at all.

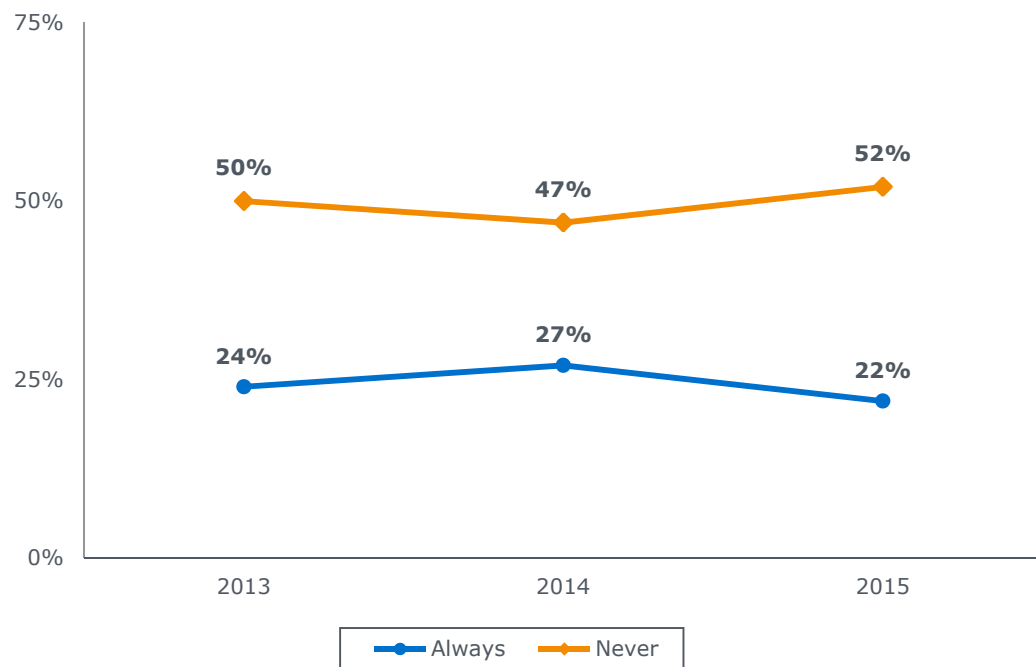
While these trends can be discouraging to those seeking to raise success rates, low adoption may also reflect a failure on the part of central administration to demonstrate the ROI of these tools to faculty, who care deeply about student outcomes but have limited time to devote to new projects.

Top-Down Technology Implementations Falling Short

Percentage of Faculty Tracking Course Attendance Using LMS

Academic Faculty

n=2,175



Faculty Involvement Drives Adoption of Alert Systems

The first barrier to the closed loop is uneven faculty adoption of early alert systems. Many institutions have implemented these systems as a top-down solution, which may not meet the specific needs of different disciplines, courses, and student profiles. While a standardized approach requires less upfront configuration for IT, it also generates far lower adoption among faculty, who are unlikely to spend their scarce extra time on an endeavor that is not matched to the specifications they believe will support student success.

Campus-Wide, Standard Flags Missing the Mark

Typical Practice	<i>Standard early grade deadline</i>	<i>Single grade threshold for institution</i>	<i>Early warning office dictates response</i>
Status Quo Reasoning	Provides campus-wide check on risks; gives all faculty consistent data point	Normalizes variation across disciplines to spot at-risk students across the institution	Gives academic support staff more time to curate resources for struggling students
Courses Underserved	Does not provide information for courses with early or late testing periods	Fails to provide data on courses with steep grading curves or high at-risk percentages	Faculty often have already created or found best-fit resources

Where IT can leverage faculty expertise to improve outcomes

By asking faculty to help calibrate student risk and recommend follow-up resources, IT leaders at WVU are finding that faculty are more likely to participate and are more engaged in improving risk flags. Increasing and improving engagement with faculty has helped to increase the quantity and quality of data gathered about student risks.

Faculty-Determined Thresholds Are More Effective

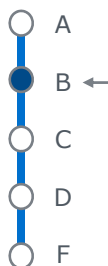


Faculty determine best early assessment point



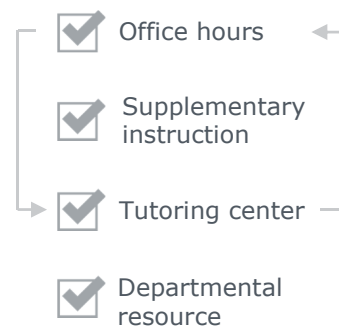
Flexibility for different course types

Faculty determine exam and grade that constitute "on track"



Flexibility for different student backgrounds and course curves

Faculty choose and prioritize student-facing guidance



Gives faculty power to guide students to most relevant resources

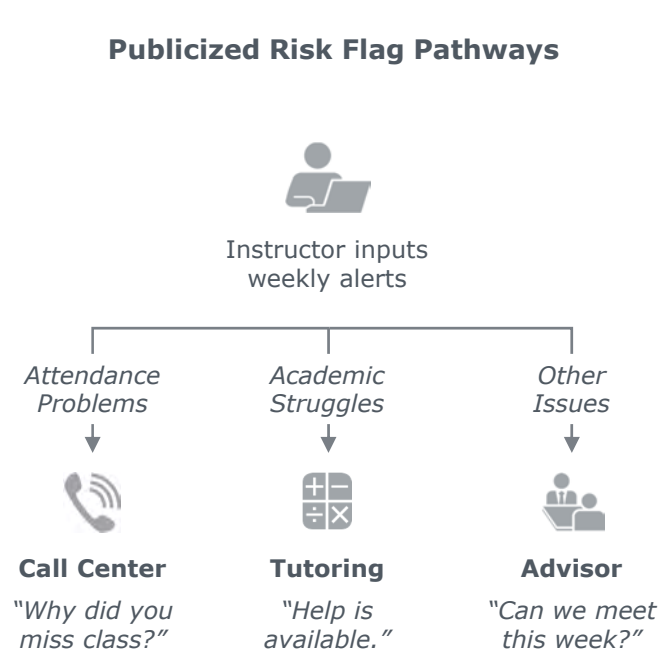
Source: EAB interviews and analysis.

Tailoring Outreach Approach to At-Risk Students

The second barrier to closed-loop accountability is the prevalence of a one-size-fits-all approach to student risks. Frequently, an alert triggered by faculty action or student behaviors will generate the same kind of outreach from the advising office, regardless of the kind of risk or student in question. Faculty thus have no reason to differentiate the reports they create or the risks they calibrate, creating little incentive to use the alert system in the first place.

When the City Colleges of Chicago implemented a new early alert platform in 2012, advising leaders consolidated risk flags into three basic categories: attendance problems, academic struggles, and other issues. These categories link to specific outreach pathways. If a flag indicates an attendance issue, the report goes to a call center, where student employees immediately contact the student to find out why she or he missed class. For tutoring questions, an automated email pushes out the next week's available time slots, and other issues merit more tailored outreach from advising staff.

Three Pathways for Faculty-Flagged Risks



Involving Early Adopters to Engage More Faculty

To teach faculty about the segmentation of interventions, the central advising office relies on faculty peer champions, identified by the highest utilization within each college campus. After identifying high-utilization faculty, advising staff create succinct, simple presentations which faculty use in presentations to other instructors about the value of identifying and flagging at-risk students.

Leveraging Enthusiastic Faculty to Spread the Word

Early Adopters Lead the Charge



Identify Utilization Leaders

The advising team studies historical data on early alerts to identify the faculty members using the tool frequently and consistently across the academic year



Tailor Plan for Communications

Advising staff ask faculty to be champions for early alerts and provide them with simple presentation resources and data to share with others



Faculty Advertise to Faculty

In formal college planning sessions and department-level meetings, faculty champions help other instructors understand the value of flagging at-risk students

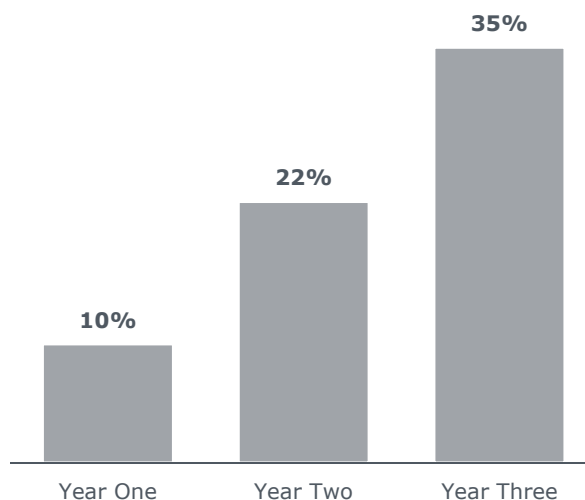


The first implementation of City Colleges of Chicago's early alert system gained only 10% faculty adoption. When success leaders finished consolidating risk flags and asked faculty to evangelize on their behalf, the adoption rate of the system more than tripled, and administrators suggest that they have gained the buy-in of those faculty teaching the largest, highest-attrition courses.

Making Inroads in a Difficult, Distributed Environment

Percentage of Faculty Flagging Course Attendance Risks

Years After Early Alert Implementation



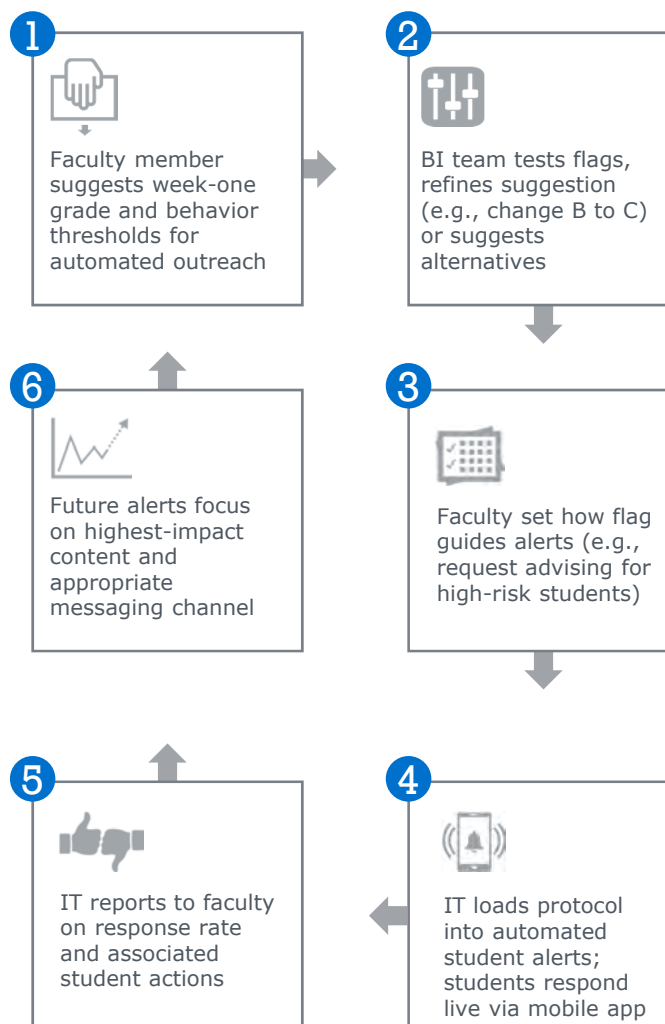
Faculty-IT Collaboration Helps Target Student Outreach

The University of Kentucky has developed an impressive "closed-loop" system for student success data by leveraging collaboration between IT and faculty members. The process begins at Kentucky when the business intelligence (BI) team, under the IT division, works with faculty to set up automated "push" risk flags. The team then tests those flags in real time against historical data and refines the suggestion using actual student records.

Next, the BI team works with professors to task communications to different student risk profiles. For example, a low-risk student who received a single low score may get a single alert, while a high-risk student may receive more urgent, targeted outreach. After the faculty member approves the standards, the IT team loads the protocol into automated student alerts, to which students respond on a mobile app.

Throughout the semester, the BI team updates professors on student responses and actions taken, allowing faculty to refine and focus their approach in real time, and better understand the highest-impact content and messaging channels for the following semester.

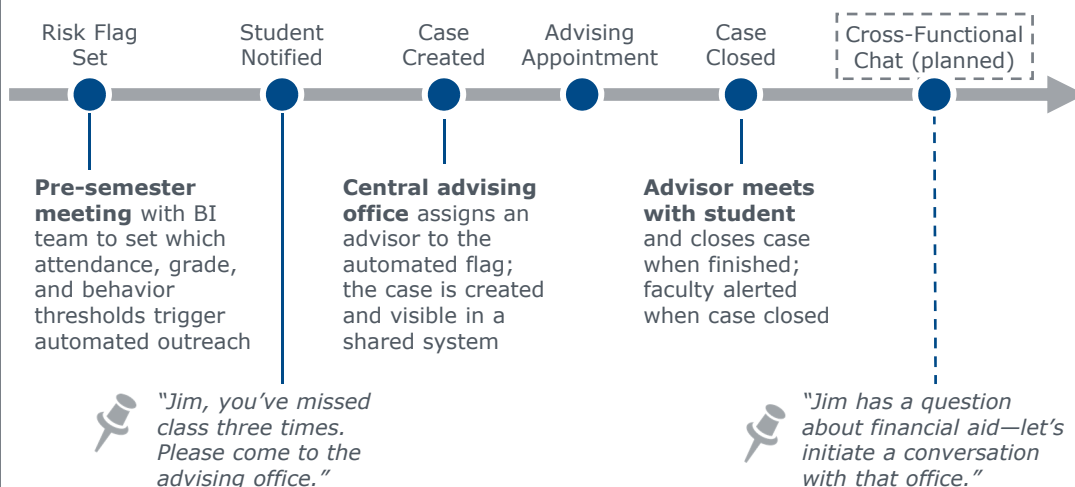
Engaging Faculty Through Historical Data



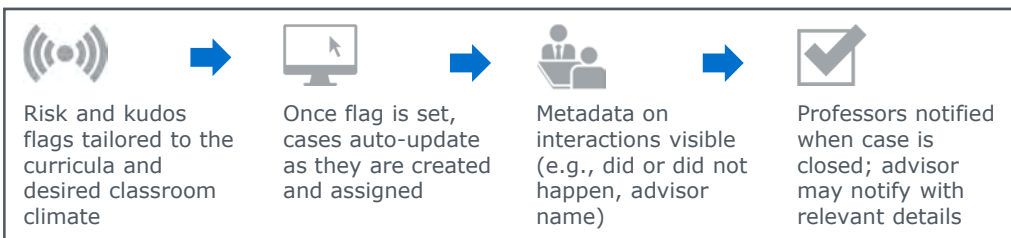
Real-Time Updates to Faculty Who Flag Risks

The BI group combines faculty-determined thresholds and segmented risk responses within a closed-loop environment, which includes faculty in student success. Faculty and advisors now view student success conversations as any other service interaction, with a traditional case tracking mechanism that alerts faculty on progress throughout the intervention process. Faculty help set risk thresholds, view the metadata related to advising interactions, and are notified when cases are closed.

Keeping Faculty Up to Date on Advising Interactions



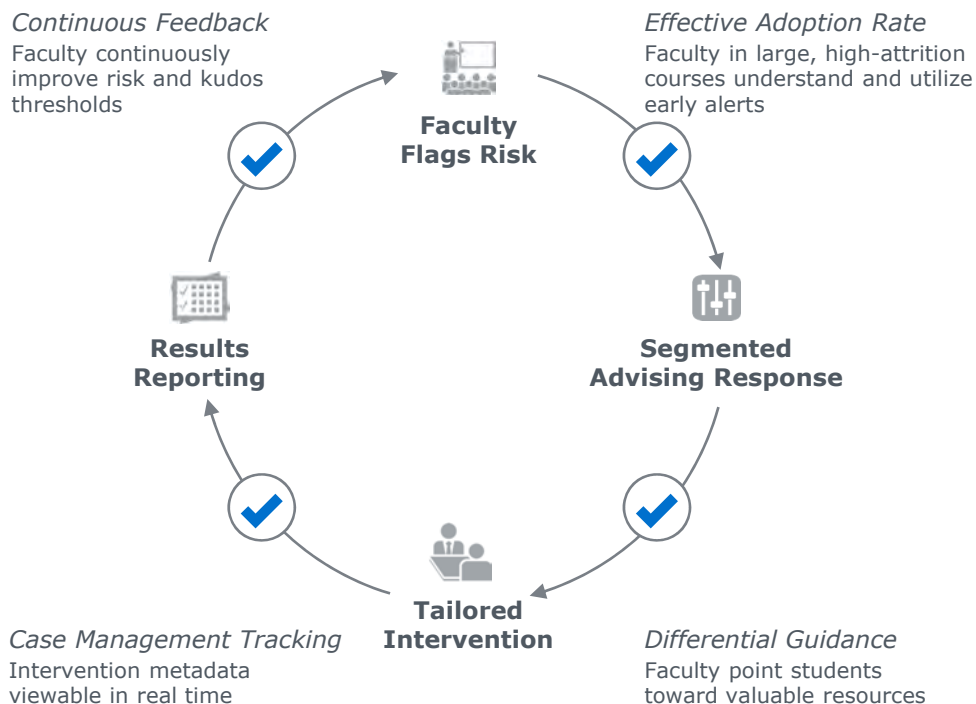
What Do Faculty See?



Capturing Faculty Expertise to Improve Outcomes

In conversations with current and former faculty, reviews of surveys with instructors, and analyses of data from early alert systems, the IT Forum did not find that faculty were hesitant or unwilling to help students through an early alert system. Instead, the Forum found that faculty were skeptical of results and value, and believed that spending their scarce time on teaching and research would better serve their mission. When IT uses its cross-campus perspective and understanding of data to build a closed loop of advising information, faculty members can clearly identify how their students benefit from the early alert system.

Visualizing the Closed-Loop Advising Data Infrastructure



Source: EAB interviews and analysis.



Identify and Remove Course Bottlenecks

Surface Barriers and Enable the Academy to Streamline

CHAPTER

2

- Practice 4: Self-Service DFW Analysis
- Practice 5: Multi-term Registration
- Practice 6: Just-in-Time Course Additions
- Practice 7: Curricular Complexity Audit

Bottleneck Courses Pose Threat to Student Success

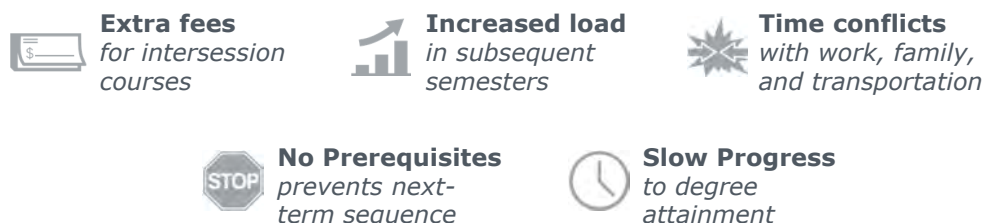
One of the greatest opportunities for IT leaders to support student success efforts is identifying and removing bottlenecks to student progress (i.e., courses that slow down a student's progress through the institution). The costs associated with bottleneck courses can be severe. In a survey by the California State University System, students reported that bottleneck courses led to a host of problems, from higher costs associated with extra courses they had to take between sessions to additional semesters they had to stay in school to finish their degree.

Within the California State University System sample, nearly half of those surveyed took unnecessary credits to reach a courseload that maintained financial aid eligibility, and over three-quarters believed that encountering a bottleneck course increased their time to degree by at least one semester. However, the study uncovered promising news: almost nine of every 10 students surveyed would have been willing to take an online section of the bottleneck course, indicating that efforts to flip the classroom and invest more in digital instruction continue to hold promise.

Tallying Up the Costs of Bottleneck Courses

Student-Reported Consequences of Bottleneck Courses

CA State University System Students Who had Encountered a Bottleneck Course



Spending More



46%

took unnecessary credits to maintain financial aid eligibility

Going Slower



77%

saw time to degree increase by at least one semester

Open to Change



88%

would have taken an online section, if it had been offered

What Causes a Course Bottleneck?

While academic leaders are often aware of student challenges with bottleneck courses, few can articulate which bottleneck factors are most prevalent or important. The Academic Planning and Institutional Research team at the University of Wisconsin-Madison conducted an analysis sizing the impact of three critical factors: course outcomes, access and demand, and academic requirements.

The nature of some academic disciplines requires additional structure and gateway courses. For example, it would be difficult, if not impossible, to reorder the fundamental courses in Mathematics and attempt Differential Equations before completing Calculus. However, “unusual suspects,” such as the English Department, also had several courses that demonstrated bottleneck characteristics, some of which may be inevitable and necessary aspects of the discipline, but others may be avoidable through more effective course management.

Access, Outcomes, and Policies Create Bottlenecks

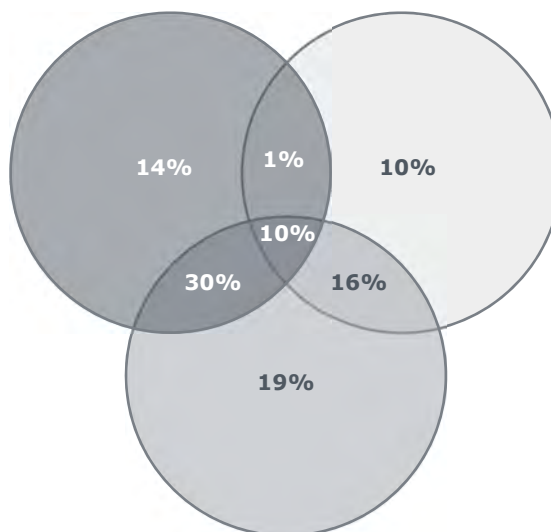
Distribution of Bottleneck Courses by Root Cause Factor

University of Wisconsin-Madison

n=178 courses

Access and Demand

- Larger, lower-division courses where demand exceeds capacity
- Impacted by physical space or pedagogy



Course Outcomes

- High overall or cohort drop/fail/withdrawal (DFW) rate

Academic Requirements

- Required for general education (gateway) or major progress
- Rigid requirements and multi-term course sequences

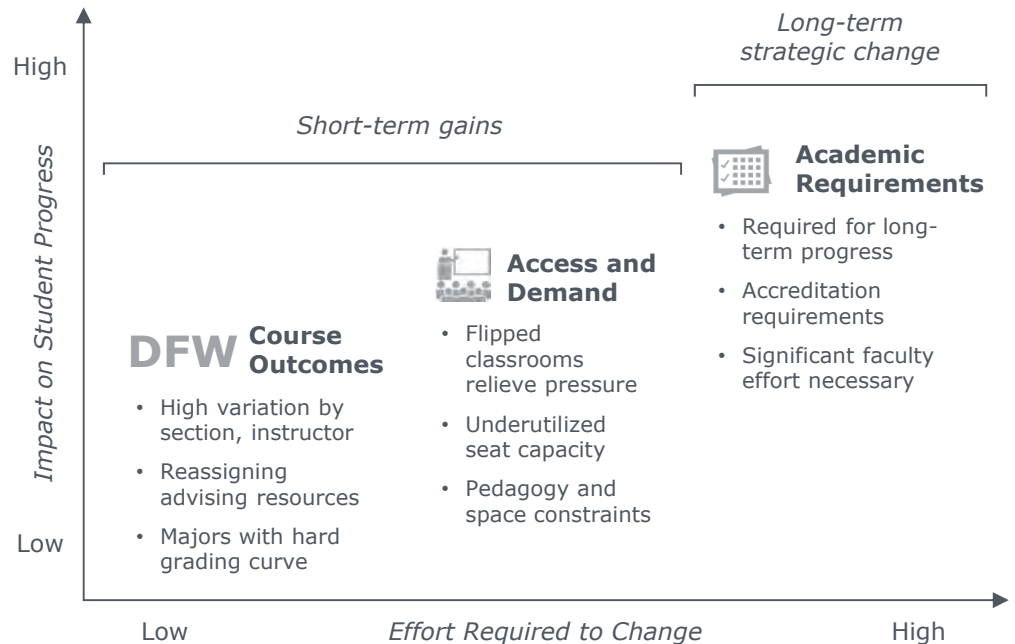
Departments with Frequent Bottleneck Courses

- Mathematics (17 courses)
- Computer Sciences (12)
- Chemistry (8)
- Economics (8)
- English (8)

Examining Each Cause of Course Bottlenecks

The graphic at right maps three root causes of bottlenecks according to the potential impact on student progress and the effort required to change. The following pages elaborate on bottleneck impacts for students and provide practices to help IT leaders identify and remove barriers to student progress.

Comparing Impact and Effort of Bottleneck Reforms



Source: EAB interviews and analysis.

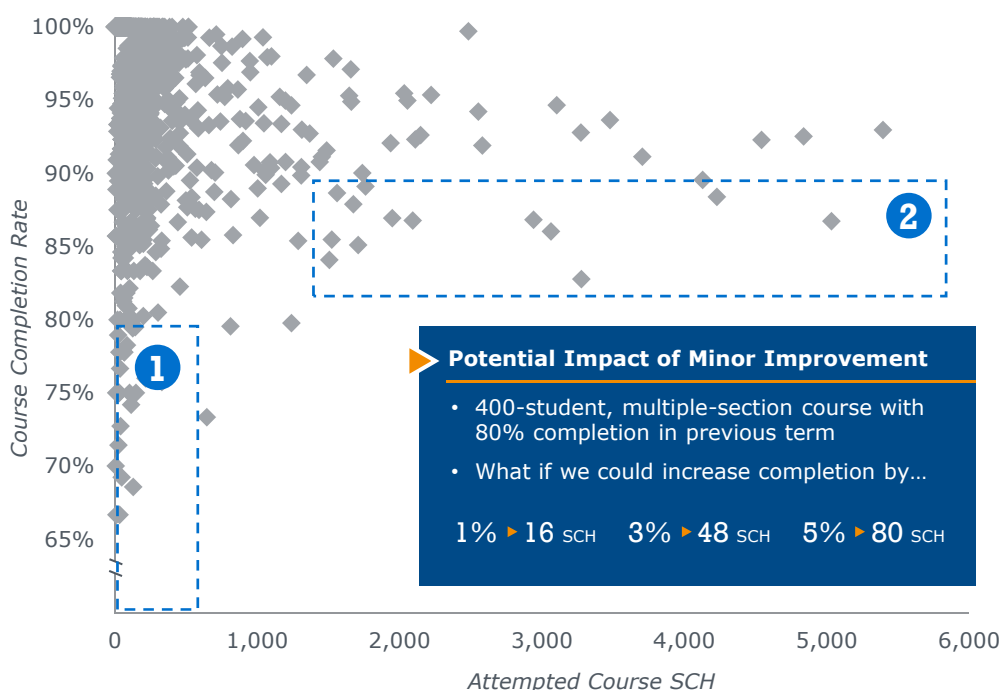
A Closer Look at the Course Outcomes Challenge

The graphic at right plots data on drop-fail-withdrawal (DFW) rates, demonstrating a representative distribution of course-level outcomes. On the x-axis, attempted course student credit hours (SCH) measure the total number of credit hours attempted by students in the course (i.e., students enrolled past the add-drop deadline). On the y-axis, course completion rate takes the percentage of students that earned a final grade in the courses minus those with a failing grade, and divides that by the total number of students attempting the course.

Most courses cluster in the upper left quadrant of the chart (i.e., have a relatively high completion rate and relatively low number of attempted course credits). However, two bands of courses—priorities for additional advising and priorities for course redesign—should generate further analysis, because they represent critical opportunities informed by data that IT can provide for campus partners.

Mapping Completion Rate Against Attempted Credits

Course-Level Course Completion Rate by Attempted Course Student Credit Hours



1

Priorities for Additional Advising

Courses with a completion rate below 80% but relatively small attempted course SCH (i.e., less than 100 students) may benefit from additional advising resources and face-to-face interactions with academic support staff.

2

Priorities for Course Redesign

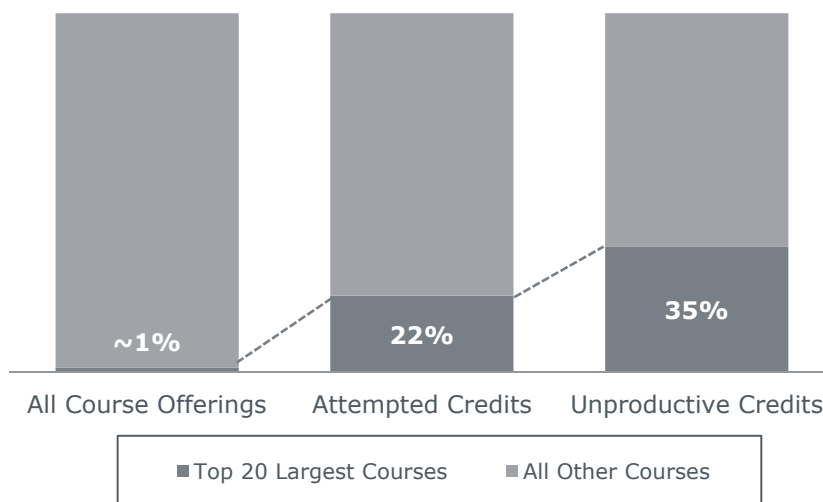
Courses with high attempted course SCH (i.e., at least 400 students) and completion rates below 90% may benefit from course redesign (e.g., “flipping the classroom” through digital lectures, active team-based learning).

Shedding Light on High-Attrition Gateway Courses

EAB research has found that a relatively small share of overall courses offered accounts for a large percentage of attempted credits and “unproductive” credits (i.e., attempted but not completed). In a benchmarking study of 10 institutions, EAB determined that as few as 20 large, gateway courses could represent over one-third of unproductive credits in a given term. Focusing attention and effort on these courses could allow institutions to have a major impact on overall DFW rates.

Over One-Third of Unproductive Credits Concentrated in Relative Handful of Very Large Courses

Share of 20 Largest Courses in All Courses, Attempted Credits, and Unproductive Credits
Fall 2015, Public Research Institution

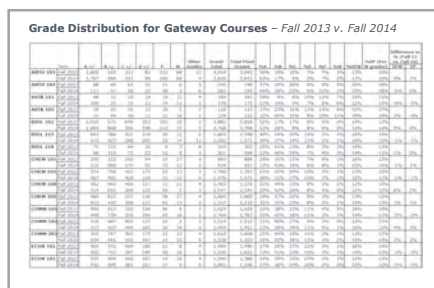


To support faculty teaching these large courses, staff in the Indiana University-Purdue University-Indianapolis Institutional Research and Decision Support office delivered attrition and completions data through an Excel-based book, printed for manual exploration by faculty and support staff.

In 2014 the team migrated the static Excel data to an interactive portal in Tableau, allowing academic leaders and faculty to explore section-level outcomes. To isolate drivers of completion, users select for sections, terms, student grade levels, faculty rank, and student entry type (i.e., transfer or native student).

Leveraging Interactive Visualization to Engage Faculty¹

Static, Excel-Based “Book”



- Annual publication included A+ through DFW rates for all freshman gateway courses
- Additional analyses required manual pull, often took weeks

Interactive Tableau Portal



- Drop-down menus in Tableau portal allow live comparison of disciplines, terms, student levels, PT/FT, transfers, and tenure status
- Easy for IR team to restrict access and add new filters for analysis



1) Data is representative.

Self-Service Data on DFWs Supports Progress

Gateway course coordinators are the primary users of the portal. These individuals support faculty who teach large, high-attrition freshmen courses, and are responsible for sharing course performance data with faculty. These data allows coordinators to facilitate a productive discussion based on real outcomes. Whether investigating unusually high attrition or possible grade inflation, access to live, granular data gives coordinators the power to immediately address any identified attrition risks.

Engaging Faculty with Course Distribution Data



Empowering Gateway Course Coordinators...

100
MINIMUM
COURSE SIZE

Large, High-Attrition, Freshman Courses

At least 100 students (up to 9,000) in all sections; all first-time freshmen.

76
GATEWAY
COURSES

Gateway Courses Targeted for Reforms

40 coordinators assigned up to five courses to manage scheduling, advising, and curriculum development.

29%
DFW RATE
DECREASE

Making Long-Term Progress on DFWs

Since 2004, IUPUI has decreased DFW rates in gateway courses by 29%.

...To Start the Right Conversation with Faculty



Why Are DFW Rates So High in Your Section?

Compare attrition to similar sections, students, faculty types, and modalities.



Is There Grade Inflation?

Call up data on how grades change over time and how sections compare, controlling for student preparation levels.



Let's Work Together on an Effective Solution

Coordinators help "flip" class activities, identify new risk flags, and support advising.

The transition from static data to an interactive dashboard has been popular with gateway coordinators and faculty, who can now quickly and easily isolate the drivers of section-level attrition. IR staff can create the reports faster than before, with less of a risk of human error, and new views take minutes to build through Tableau. Thanks to the portal's popularity with staff and professors in gateway courses, faculty chairs and deans in other units are now seeking the same kind of data for their own courses. Self-service tools are beginning to generate organic demand for better data in the academy.

Self-Service Data a Win-Win-Win



Before: Annual DFW Report Book

Service Improved

Unit staff read excel report, search for outliers
Unit staff are **slow to identify root cause problems**

Work Reduced

3 days to format report
Additional analyses require manual data pulls

Security Upgraded

Data in book or spreadsheet **emailed among staff**
Small values must be manually nulled for privacy



After: Interactive DFW Dashboard

Visual layout quickly calls out courses with high DFW for audit
Live drop-down menus allow **rapid identification of drivers**

1 hour to fill dashboard
Additional drop-down options require minutes of staff time

Tableau portal restricted based on **assigned faculty access rights**
IR adjusts simple filters to control granularity of access

Source: EAB interviews and analysis.

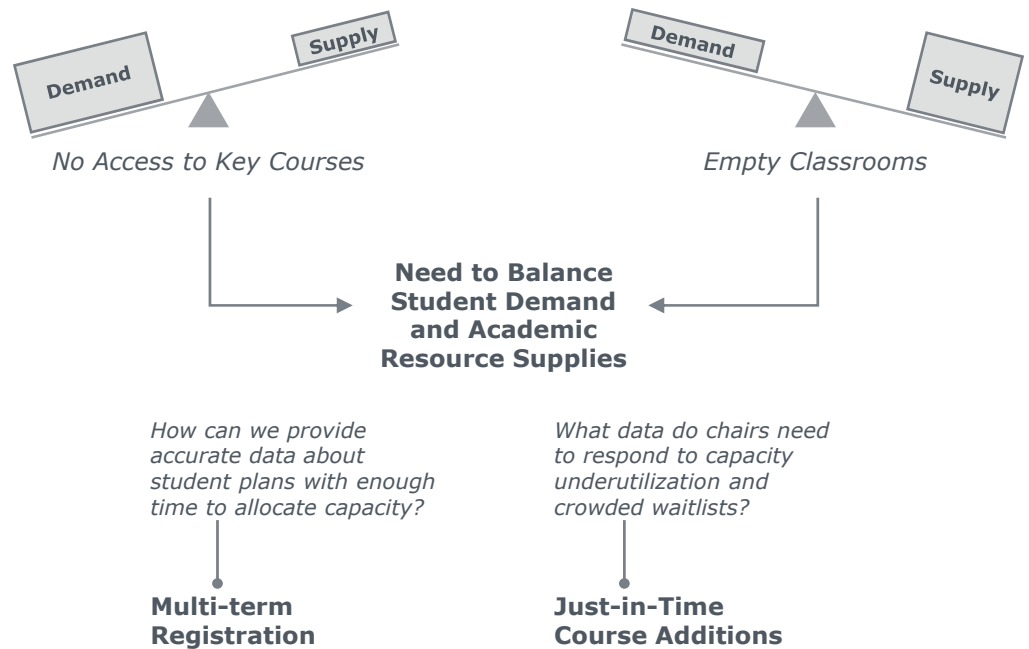
A Closer Look at the Access and Demand Challenge

The lack of transparency in course planning from the student and institutional perspective creates a strange paradox: institutions frequently have classrooms with empty seats at the same time that other courses are so crowded that students are held back multiple semesters.

The IT and data resources that can help leaders improve academic resource allocations must address two critical problems: first, how to provide accurate data about future student demand planning; and second, how to respond quickly to capacity underutilization and overcrowding.

Innovative institutions have begun to address the first problem through multi-term registration, in which students set their schedule for multiple semesters at a time. This practice allows students and faculty to “lock in” long-term plans and simplifies resource allocation efforts. To add sections and adjust capacity in the moment, IT and IR teams provide faculty and chairs with real-time waitlist information.

Imbalance Creates Under- and Over-Utilization



Multi-term Registration Good for Schools and Students

To simplify the registration and planning process for students as well as institutional staff (e.g., faculty, registrar), leaders at Cleveland State University allow undergraduates to sign up for courses up to two terms in advance.

Multi-term Offers Operational and Cognitive Benefits

Standard

Student registers for fall term

Student registers for spring term

Multi-term

Student registers for following two terms at the same time

Key Benefits of Multi-term



Students, faculty able to plan out the entire academic year



Students mentally commit to a full year (retention driver)



Registrar has additional time to map demand to capacity

Engaging Students for the Long Haul

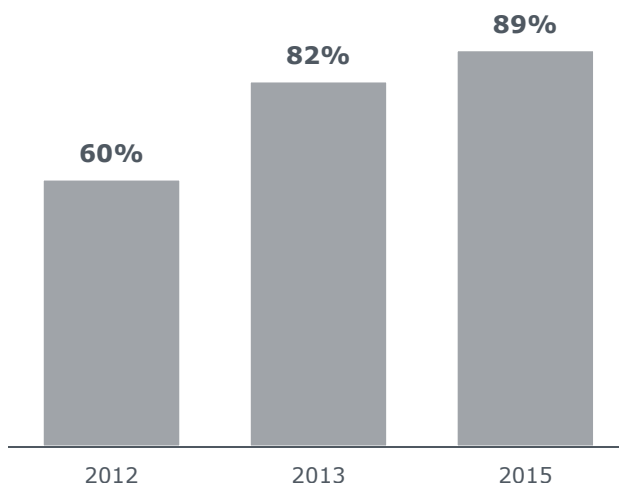
"Instead of students thinking about their education as an isolated series of events, we're encouraging them to look across the entire year. It pushes them to think about their commitment."

Janet Stimple
Associate Director of Enrollment Services, Cleveland State University

Multi-term registration has been very popular with undergraduate students, who report that they appreciate the ability to plan multiple semesters in advance. While planning based on projected enrollments does create some risk (e.g., if those students attrit, there will be empty seats and lost revenue), Cleveland State contacts argue that these risks are far outweighed by the benefits accorded to students and advisors.

Students Enthusiastic About Longer-Term Planning

Percent of Undergraduate Students Participating in Multi-term Registration



Source: Registering Toward Completion, *Inside Higher Ed*, April 2014.
<https://www.insidehighered.com/news/2014/04/11/cleveland-state-aims-boost-completion-through-multiterm-registration>; EAB interviews and analysis.

The Benefits of Multi-term Registration

At most institutions, academic advisors must spend a significant portion of their time with students on simple registration tasks, leaving minimal time for more targeted conversations. At Cleveland State, advisors have found that multi-term registration shrinks the number of students that come in for basic planning advice, freeing up time to focus face-to-face time on interventions with at-risk students.

Flipping the Academic Advisor's 80/20



Traditional Registration-Focused Model



Most mandatory advising conversations focused on completing course registration tasks

Time for tailored, productive conversations only after compliance activities completed

Multi-term Planning Approach



Small number of registration-focused appointments focus on the few students not opting in to multi-term planning

Remaining academic advisor time is redistributed to value-add guidance and support for at-risk students

According to institutions that have implemented multi-term registration, the process is simple to implement from a technical perspective; however, it does require that faculty be willing to agree to longer-term curricula, and does not allow faculty to make mid-year changes. Mandating that faculty agree on class time, size, and location up to one year in advance could require professors to adjust how they structure their work across the academic year.

Simple for Registrars; May Require More Faculty Pre-work

Light Lift for Registrars

“I’m surprised it’s not more widespread, because it’s not technologically a challenge. I think it makes a lot of sense if you can do it. It’s good resource planning.”

*Michael V. Reilly
Executive Director
American Association of
College Registrars*

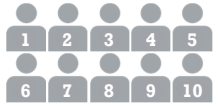
What Faculty Need to Do Differently

- Decide on final curricular paths and course-level syllabi an additional semester in advance
- Agree to hold classes at specific times (though locations may change) and lock in course schedules
- Provide evidence to deans and chairs that changes to schedule are necessary for pedagogical or demand reasons

Data the Academy Needs to Manage Capacity

In theory, the section maximum, section fill rate, and the number of students on the waitlist for a course should be all the academy needs to effectively manage supply and demand. EAB research has shown that the potential opportunity for institutions that focus on these data can be huge: 15% to 25% of classes seat less than 10 students at a typical mid-size public institution; 10% to 15% of sections are statistically unnecessary (e.g., could be collapsed into fewer offerings); and thousands of students are stuck on course waitlists every year. When progressive academic leaders can use data from IT to make better decisions, reform can help improve student outcomes, save the institution space and instructional resources, and free up valuable capacity for targeted growth.

A Big Opportunity—If IT Can Provide the Data

Data Elements	Data Challenges	The Opportunity
Section Maximum  +  +  Physical Capacity Pedagogy Rules Faculty Choice	✖ Recorded at unit level; rarely adjusted once set Can be set to zero for registration workaround	15%-25% of classes seat less than 10 students
Section Fill Rate 	✖ Fluctuates around add-drop period Census date versus actual enrollment	10%-15% of sections statistically unnecessary
Waitlist Count 	✖ Changes rapidly as students decide between courses Hard to prioritize	Thousands of students stuck on course waitlists

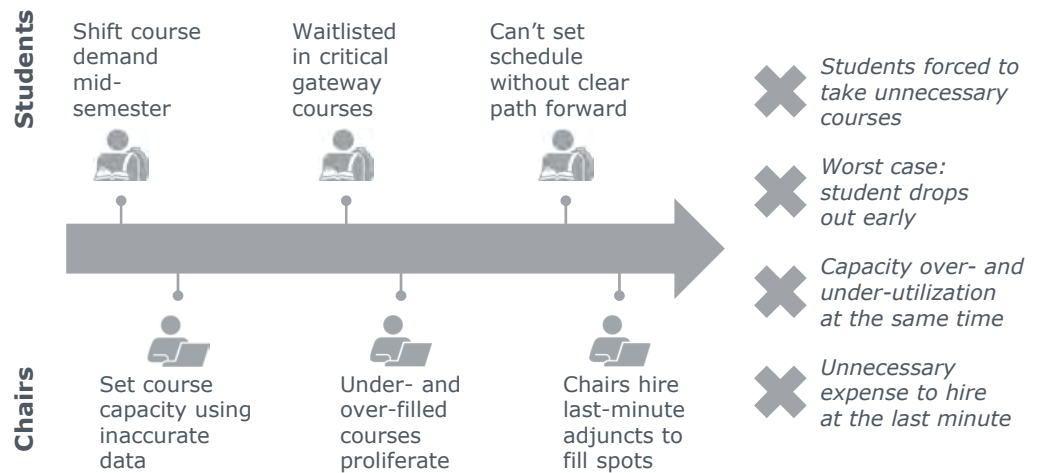
Source: EAB interviews and analysis.

Managing Capacity Red Flags in Real Time

At many institutions, opacity in student demand generates uncertainty for course planning, leading to bottlenecks, attrition, capacity over- and under-utilization, and unnecessary expenses. Even if student planning improves, student demand will never be completely predictable—and academic managers need to be able to manage capacity in real time to allocate resources effectively.

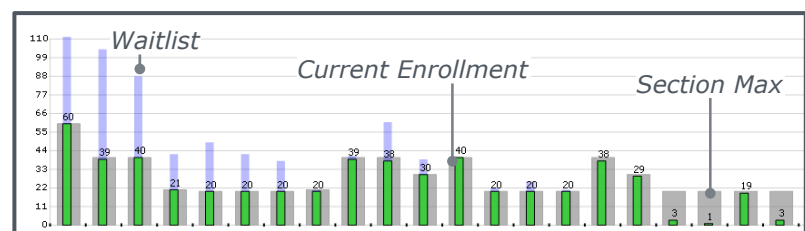
Need Flexibility to Meet Mercurial Student Demands

Inefficient Course Planning Impedes Student Access



One of the pioneer institutions in capacity management is Western Washington University, where the IR team provides department chairs with a real-time waitlist management dashboard. Chairs are shown current enrollment, section maximums, and waitlist numbers at a glance for all course sections in their department. They can then identify opportunities to collapse sections or prioritize section additions where many students are on the waitlist. When spots open, students are automatically admitted from the waitlist, saving significant work and time for faculty who previously release waitlist spots manually.

Managing Capacity Through Real-Time Waitlist Data



Quickly Identify Under-Enrolled Sections

Chairs can easily see where underutilized faculty and room capacity could be redirected to bottleneck sections.

Prioritize Section Addition Candidates at a Glance

Department chairs can use waitlist to isolate courses with urgent capacity needs and plan proactively for new faculty capacity.

Back-End Automation of Waitlist Invitations

System automatically notifies students when spots open, saving hours of faculty time and facilitating student planning.

Source: EAB interviews and analysis.

Real-Time Data Enables Better Demand Forecasting

When Western Washington University's IT team began providing real-time demand data to deans and department chairs, the primary purpose was to prioritize candidates for new sections and adjunct staff hired from a special fund.

As academic leaders have grown accustomed to demand trends and learned to use the data, they have become far more proficient in academic planning, and Western Washington is steadily migrating toward sustainable and accurate course demand planning. Chairs and deans in high-demand departments are more likely to have organic need for these tools and be aware of the necessity for more effective management; however, all departments can benefit from more deliberate academic resource allocation.

Getting Closer to Sustainable Demand Planning



Immediate Benefits of Real-Time Capacity Management

Rapid Course Correction

Chairs can add new sections to a course in under one day

Faculty Time Savings

Faculty no longer manually track section enrollment and capacity

Student Progress

7% reduction in seniors reporting course access as a reason for graduation delay

Long-Term Value of Data Access for Frontline Staff

Proactive Course Planning

Chairs match section supply to historically predicted demand

Better Space Management

Retroactive checks of enrollment vs. physical capacity guide next term

Student Demand Prediction

Setting section maximums to account for frequent academic major switching patterns

A Closer Look at the Academic Requirements Challenge

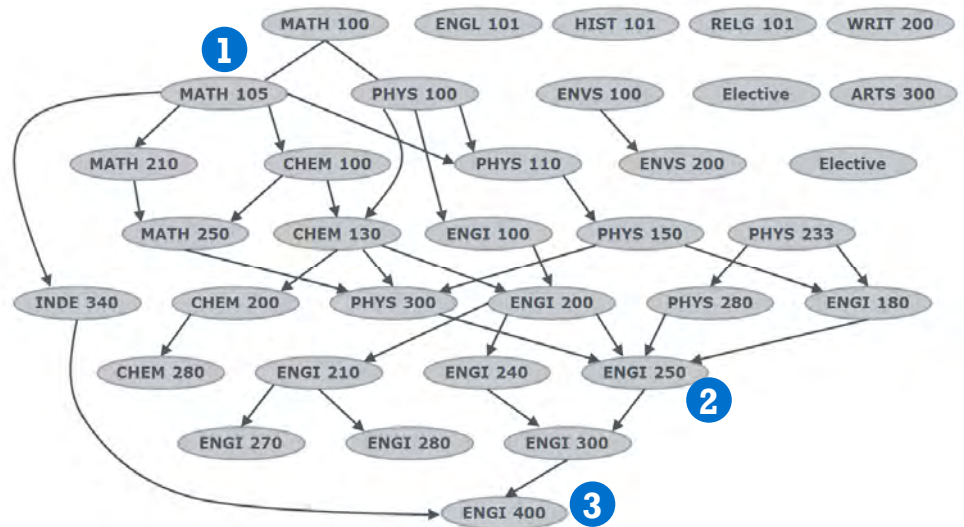
In many analyses of course bottlenecks, academic requirements generate the greatest number of bottleneck courses, but they are relatively difficult to identify.

Requirements are also very difficult to reform, because they may be tied to specific pedagogical necessities, student learning outcome goals, or accreditation requirements.

The representative curricular map at right shows some of the structural elements creating obstacles to student progress: gateway courses delaying forward progress; complex entry requirements holding students back; and long prerequisite pathways requiring many semesters to complete.

Complex Academic Structures Stymie Progress

Representative Partial Curricular Map for an Engineering Degree¹



1

Gateway Course Blocking

Early gateway courses that let students take many other courses are important, because without them, it is difficult to advance in the major

Example: MATH 105

2

Steep Entry Requirements

Courses that have many requirements to entry present a barrier to progress, because students must complete many earlier courses before registering

Example: ENGI 250

3

Long Prerequisite Pathways

Long paths of prerequisites that lead to a course present a risk to student progress; all courses must be taken sequentially, and missing any step adds time to degree attainment

Example: ENGI 400

1) Data is representative.

Source: Abdallah, et al., "Curricular Efficiency: What Role Does It Play in Student Success?" 2014; Abdallah, et al., "The Complexity of University Curricula According to Course Cruciality," 2014; EAB interviews and analysis.

Identifying Curricular Structures That Delay Students

To better understand curricular complexity barriers and their impact on student success, a team of researchers at the University of New Mexico studied degree maps from four institutions, modeling the types of prerequisite pathways and bottleneck courses that impede progress. Two critical elements are used in the New Mexico analysis. The first is **blocking factor**, which denotes the number of courses to which a given course is a prerequisite. The second is **delay factor**, which denotes the longest path on which a given course falls.

The sum of a course's blocking factor and delay factor is its **course importance**, a measure of how crucial that course is in determining a student's progress through the curriculum. Courses that enable many other courses will have a higher course importance score, as will those that are on very long consecutive prerequisite pathways.

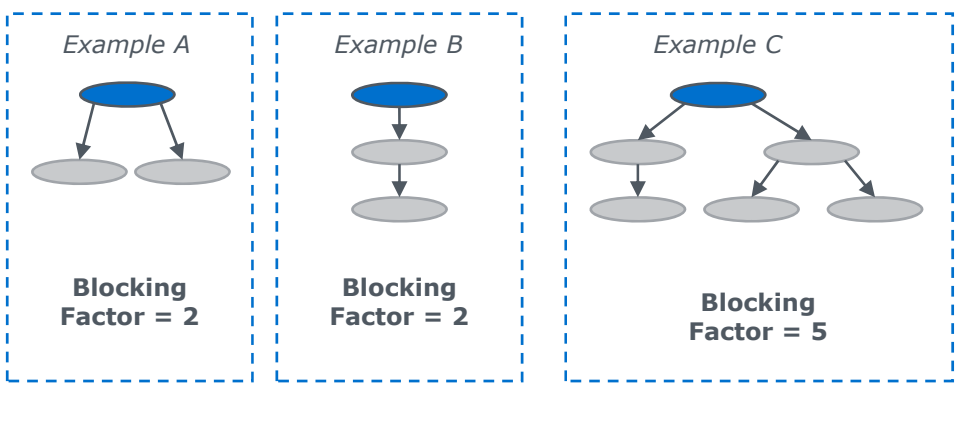
Three Standardized Metrics for Curricular Efficiency



Blocking Factor

Definition: The number of other courses to which a given course is a prerequisite

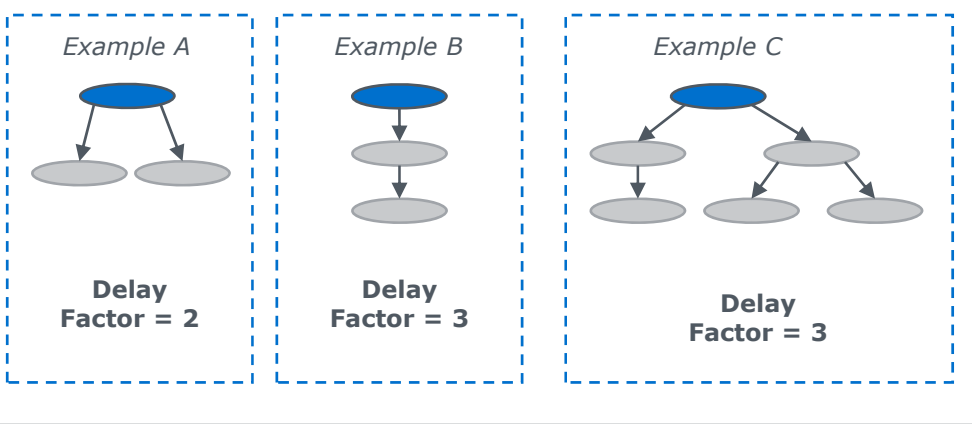
Calculation: Sum all of the courses which can only be taken after completing a course (shown in blue); this sum is the **Blocking Factor** of that course



Delay Factor

Definition: The length (in connections) of the longest path on which a given course falls

Calculation: Sum the connections between courses which are linked to a given course (in blue, below); this sum is the **Delay Factor** of that course



$$\text{Blocking Factor} + \text{Delay Factor} = \text{Course Importance}$$

Source: Abdallah C., et al., "Curricular Efficiency: What Role Does It Play in Student Success?" 2014; Abdallah C., et al., "The Complexity of University Curricula According to Course Cruciality," 2014; EAB interviews and analysis.

Measuring Reductions in Curricular Complexity

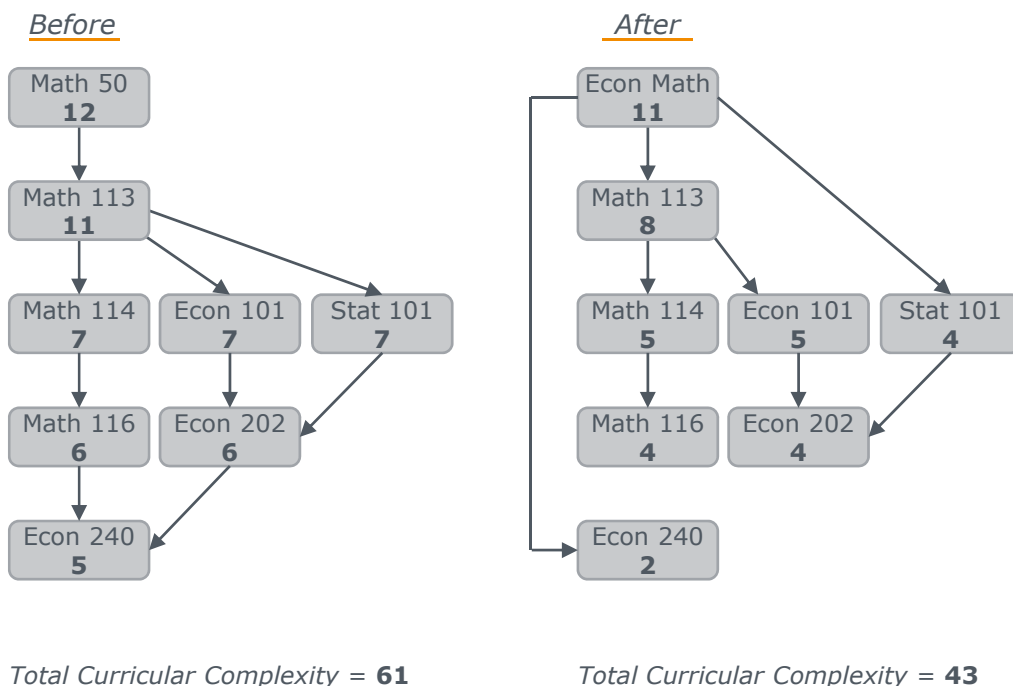
Summing the course importance for each course within a major generates an overall curricular complexity metric, which academic leaders can use to compare the complexity within and across academic disciplines. Based on early analysis, STEM curricula tend to have higher curricular complexity scores than communications or liberal arts degrees—and these scores are also correlated positively with longer student time to degree. In the graphic shown here, two segments of representative curricula are compared and the course importance (sum of blocking and delay factors) is listed below each course name.

In the representative curricula at right, the left column represents a traditional entry for an Economics major, starting with a pre-calculus class that unlocks the rest of the curriculum. On the right, this course, which includes content not necessarily applicable for Economics majors, has been replaced with Economics Math, which focuses closely on the concepts and skills that majors need to know in their field. The overall complexity score was reduced from 61 to 43 (a reduction of 18 points); New Mexico researchers found that at UNM, every 15-point reduction in curricular complexity is associated with a 1% increase in major graduation rate.

Sum Course Importance to Generate the Curricular Complexity Score



Measuring Reductions in Representative Curricular Complexity¹



1) Data is representative.

Source: Abdallah C. et al., "Curricular Efficiency: What Role Does It Play in Student Success?" 2014; Abdallah C. et al., "The Complexity of University Curricula According to Course Cruciality," 2014; EAB interviews and analysis.

Making a Visual Argument for Curricular Efficiency

Only faculty experts can determine the optimal course content and curricular structures that best fit their academic discipline; IT can help academic leaders understand the impact of curricular choices by providing visual data on how curricular complexity in their units compares to other departments, inside and outside the university.

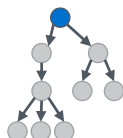
Begin the process by collecting major maps from different programs across campus; related majors will often have similar levels of complexity (e.g., STEM majors tend to be more complex than liberal arts majors). Next, create curricular graphs for each major using a visualization tool or manual exercise, and identify blocking factors, delay factors, and curricular complexity scores across all programs. At the University of New Mexico, researchers found that showing faculty side-by-side visualizations of local degree complexity compared to similar disciplines and peer programs created an undeniable case for streamlining student pathways.

How to Engage Faculty on Curricular Complexity



Obtain Major Map Documentation

Major maps include all courses within a major and describe the prerequisite and grade thresholds for progress through the major. Many departments will maintain updated major maps on their student-facing webpages.



Generate Curricular Graphs for Each Major

A visualization coding tool (e.g., Ruby Graph Library) or manual process can draw the pathways associated with courses and prerequisites. When possible, share the visualization with department or registrar staff to ensure that the graph accurately depicts major progress.



Compile Curricular Efficiency Audits

Identify **blocking factors** and **delay factors** for each course in the major; sum these factors to find the **course importance** for each course. Sum all course importance scores to generate a **curricular complexity** score reflective of the overall major.



Share Audit Details in Visual, Face-to-Face Format

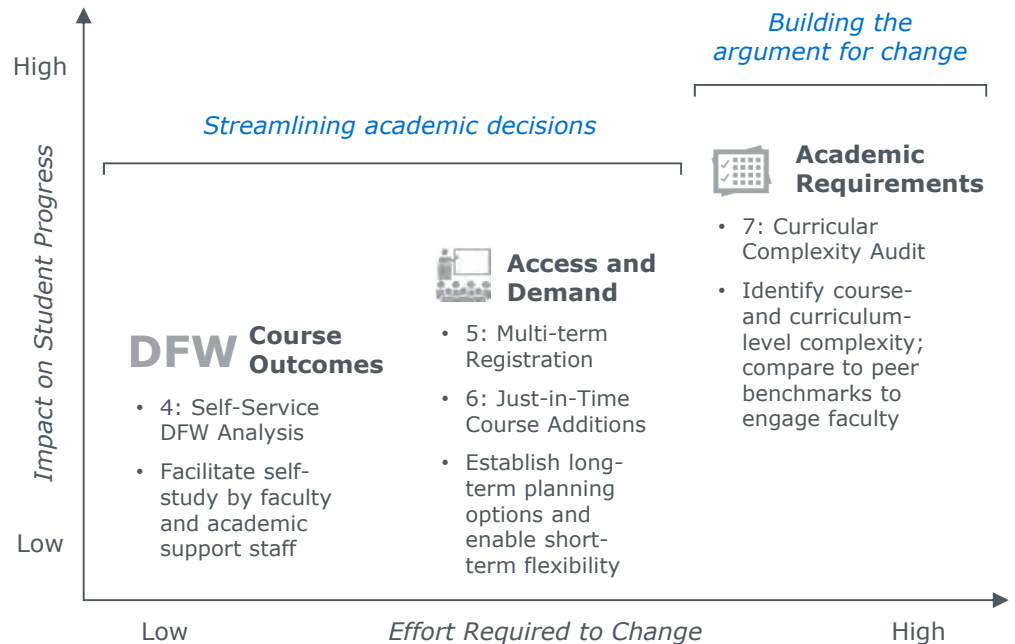
Provide department chairs and deans with both the visual major curricular graphs and curricular efficiency audit data, demonstrating the complexity that students face in navigating their chosen major. Providing a comparison of other major curricular graphs, either from within the institution or from peer and aspirant peer departments in other institutions, is a powerful visual tool.

Coordinating Efforts to Reduce Bottleneck Courses

IT's role is not to force academic leaders to change, but instead to arm them with clear, actionable data about course outcomes, access and demand challenges, and academic requirements.

Self-service DFW analysis helps academic managers reduce bottlenecks associated with course outcomes by delivering granular, section-level outcomes that enable instructors and academic support staff to prioritize reforms. Escaping the paradox of simultaneously underfilled, collapsible sections and overfilled, crowded courses requires IT to help structure the academy for longer-term planning through **multi-term registration** and enable flexibility through **just-in-time course additions**. Reducing curricular complexity will not be easy, but providing academic leaders with **curricular complexity audits** can start the right conversation with faculty and educate instructors about the impact of curricular choices on students.

Arming the Academy Against Bottleneck Courses



Source: EAB interviews and analysis.



Segment Risk-Based Interventions

Leverage Interim Outcomes to Drive Speed and Impact

CHAPTER

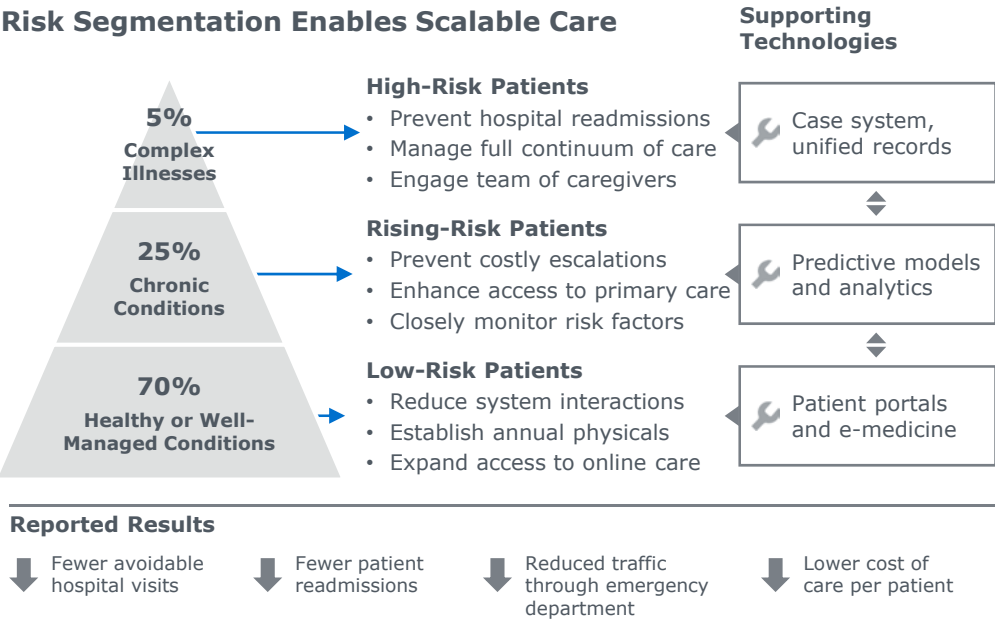
3

- Practice 8: Mobile-Enhanced Portals
- Practice 9: Application Timing
- Practice 10: Term-to-Term GPA
- Practice 11: Underloaded Students
- Practice 12: Credit Over-Accumulation

Imagining Population Health Management in Higher Ed

One of the foundational pieces in health care’s transformation from a fee-for-service to pay-for-performance industry has been maximizing population health (i.e., supporting the entire group of people served by a given hospital or health system). Population Health Management (PHM) is applicable to student success efforts because both health care and higher education need to triage outcomes and interventions based on risk segmentation.

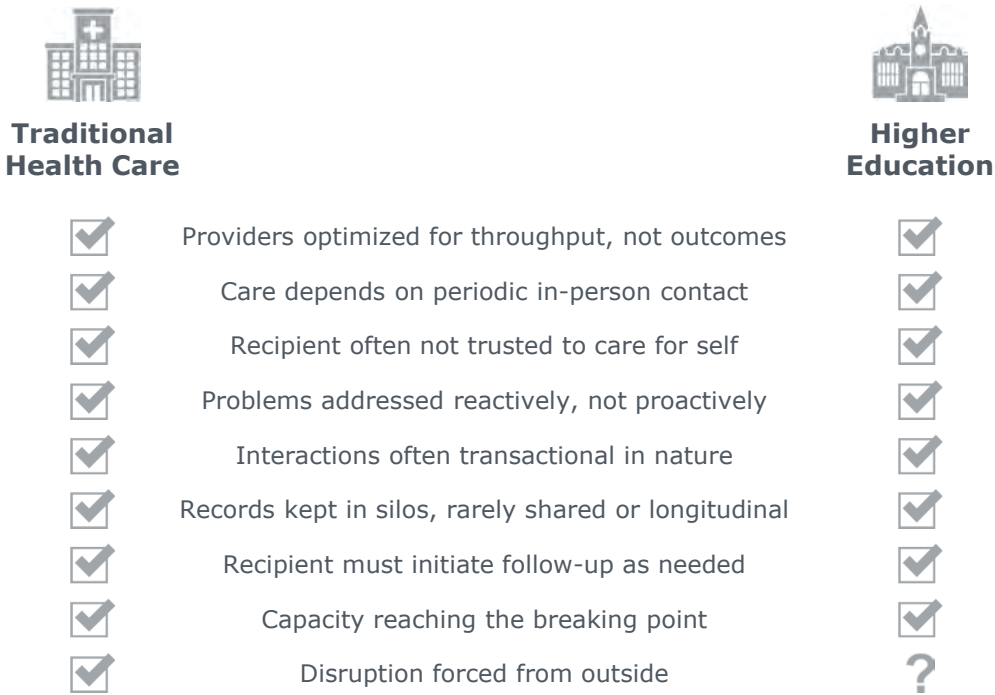
Could Patient Segmentation System Work in Higher Ed?



Many of the factors that make population management a challenge in health care (summarized in the graphic at right) are also present in higher education. While the industries are not perfectly parallel, higher education leaders could learn much from the experience of health care organizations, many of whom have embraced the PHM risk segmentation strategy.

The remainder of this chapter will use a student segmentation framework and highlight best practices that IT should use for each segment.

Two Industries with Similar Care Delivery Challenges



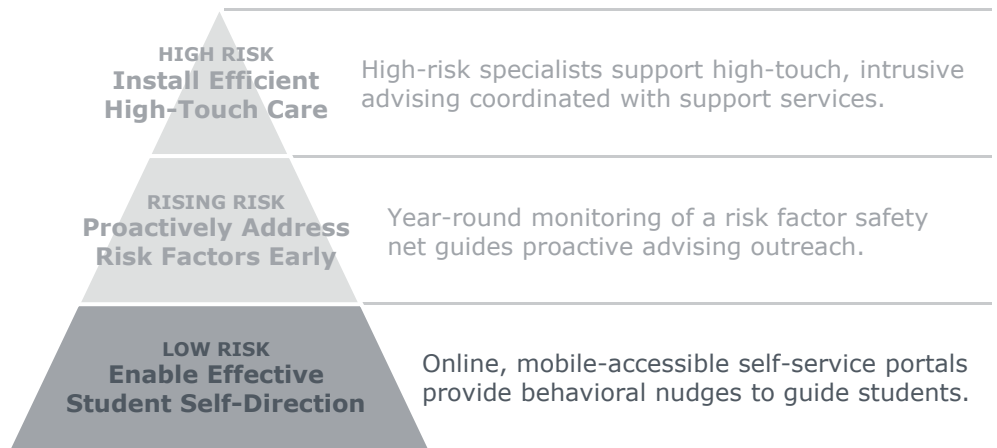
Source: EAB interviews and analysis.

Mapping Population Health in Higher Education

Low-risk students are likely to navigate higher education mostly independently and graduate within four to six years. The challenge in serving these students is scale: Because these students represent a majority on campus, any efforts to provide them with support will involve significant time and resources.

In the PHM model, low-risk patients are moved to digital interactions (e.g., patient portals, e-medicine), which in higher education is analogous to online and mobile-accessible self-service portals. Portals should nudge students toward successful behaviors (e.g., on-time registration) and are most successful when they are responsive to the day-to-day activities in which students participate.

Framing IT Support for Population Health Management in Student Success: Low-Risk Students

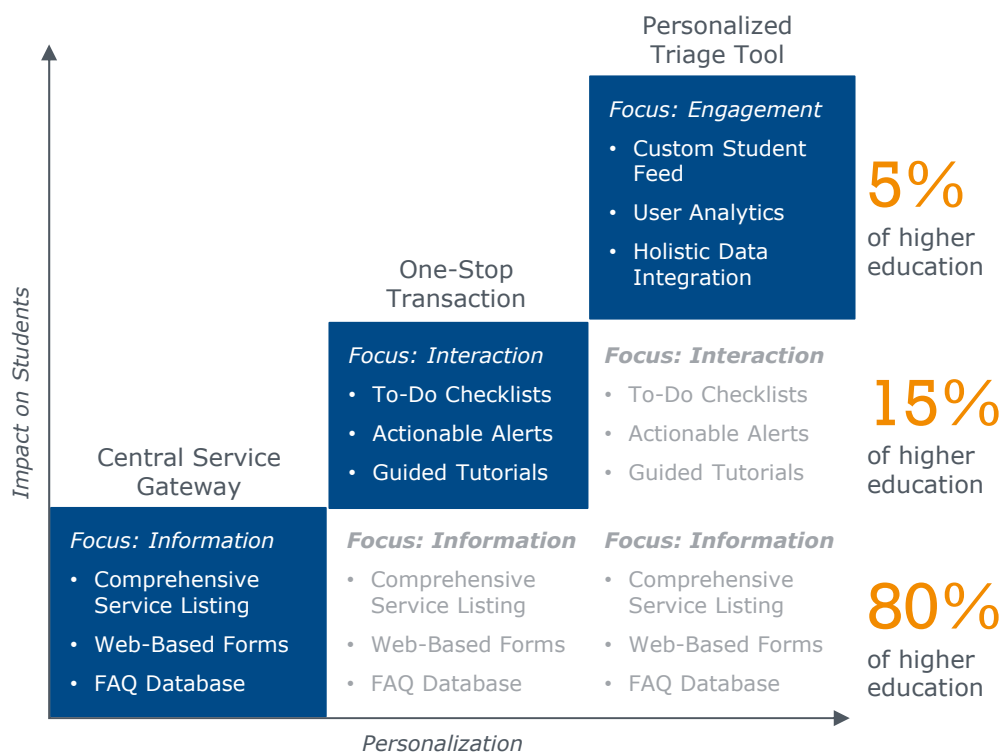


Source: EAB interviews and analysis.

The Importance of Delivering Personalized Self-Service

At most institutions, self-service is composed of a central service gateway, which provides information and answers common questions. Portals are augmented with interaction-focused checklists and tutorials to create one-stop transaction shops. At a very small number of schools, gateways and transactions are combined with personalized student information into a triage tool that encourages successful student behaviors.

The Current State of Student Self-Service



These tools are at their most effective when students can access them through smart phones. IT leaders are frequently at the forefront of efforts to build mobile-friendly student success technologies.

Mobile Access Is Key to Reaching Current Students



Millennial students and smart phones...

85%

Own a smartphone

43x

Times per day check smartphones

>2 hrs

Time per day spent on smartphones

20%

Depend on smartphone for internet access

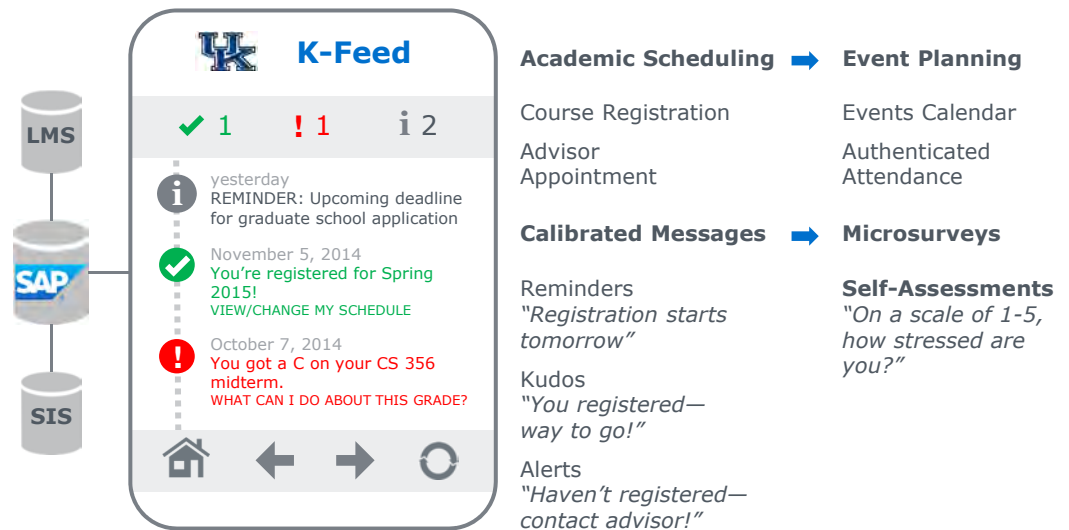
Source: Understanding the Millennials, SDL 2014; Smartphone-Toting Millennials Fuel Demand for Mobile-Optimized Sites, Mitek and Zogby Analytics, June 2014; EAB interviews and analysis.

What Mobile-Friendly Student Engagement Looks Like

One of the most powerful examples of a personalized triage tool is the University of Kentucky's K-Feed, a student-facing mobile app that includes personalized nudges on academic scheduling and automated messages calibrated to events (e.g., course registration deadlines, basketball games) and student behaviors (e.g., completion of the FAFSA).

In its latest iteration, K-Feed also includes a campus-wide events calendar that can authenticate attendance, and is used to send microsurveys (i.e., one-question assessments) that garner thousands of responses.

The Leading Edge of Mobile-Optimized Engagement



Kentucky's IT leaders have led the charge in developing and implementing the K-Feed tool. The foundation of K-Feed's success is IT's integration of 16 campus-wide systems into a single platform. Despite the high initial and ongoing maintenance costs of these systems, leaders at Kentucky have found that real-time access to cross-functional data is generating significant value in faster, more effective decisions, rapid interventions with at-risk students, and a more holistic understanding of student challenges.

IT System Integration at the Core of Development

Loading the SAP HANA In-Memory Database



Just Scratching the Surface

- Campus expenditures
- Sponsored projects
- Card swipe data
- Degree audit
- Instructor workload
- Advising activity
- Tutoring attendance
- Facilities space data

16

Systems integrated through SAP HANA

15K+

Active student and parent app users

30K+

Devices configured for push notifications

100K+

Annual micro-survey responses

Source: EAB interviews and analysis.

The Virtuous Loop of Better Engagement and Better Data

In its first iteration, the central BI unit calibrated and targeted K-Feed messages. However, as the platform has grown in popularity and gained buy-in from departments, the BI team has begun allowing unit IT staff to generate lists of students for messaging. These staff have expertise and firsthand knowledge of student risks and interactions, which allows for more robust analysis, faster production, a streamlined process, and continuous improvement.

Leveraging Unit Expertise in Crafting Communications

From Central Report Writing to Unit List Production



More Robust Analysis

Simplified user interface allows real-time manipulation of hundreds of variables



Faster Production

Matter of minutes for unit to investigate and visualize student trends



Streamlined Process

Reduced iterative back-and-forth between units, central BI team



Continuous Improvement

Units own testing and refinement of student lists and messaging

Central IT enables unit staff to create student lists by leveraging a central tool that holds hundreds of student- and course-related variables. Staff can quickly explore complex analyses and visualize trends to prioritize students for outreach and create a list of students to add into K-Feed; alerts based on that list build into real-time notifications for students.

A One-Stop Shop for Student Data Needs



210

student-related variables



75

course-related variables



- | | |
|-------------------------------------|----------------------|
| • ACT/GPA/grades | • Retention status |
| • Ethnicity/First generation status | • Program enrolled |
| • Credit hours attempted/earned | • Courses enrolled |
| | • Course instructors |



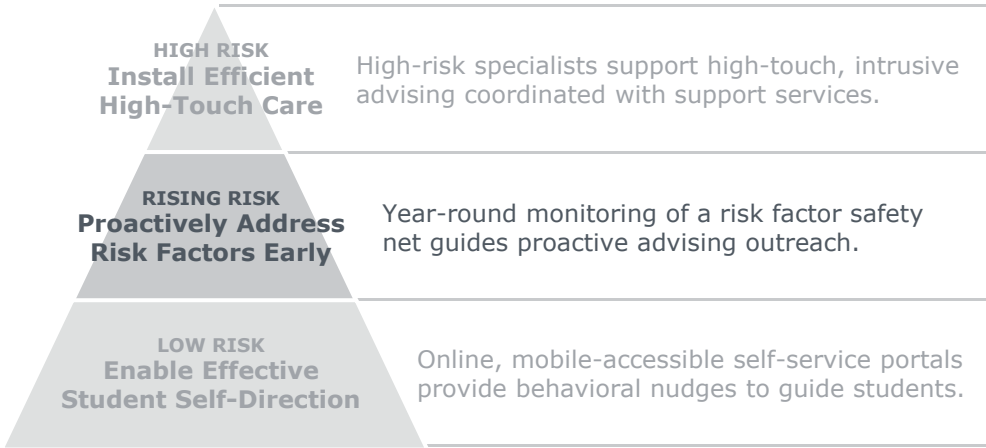
New unit-created lists inform real-time alerts through K-Feed app

Mapping Population Health in Higher Education

Rising-risk students may not demonstrate obvious academic, financial, or social risk factors, but may still fall off of the path to on-time graduation. The challenge in serving these students is speed; campus support services need to identify and intervene with rising-risk students quickly to prevent more serious challenges and minimize the time and resource costs of intervention.

In the health care PHM model, medical teams monitor a broad range of risk factors to prevent dangerous and costly escalations. To serve rising-risk students in higher education, IT leaders must identify and collect metrics that demonstrate attrition risks far in advance of serious academic, financial, or social problems.

Framing IT Support for Population Health Management in Student Success: Rising-Risk Students



Source: EAB interviews and analysis.

When Do Students Drop Out?

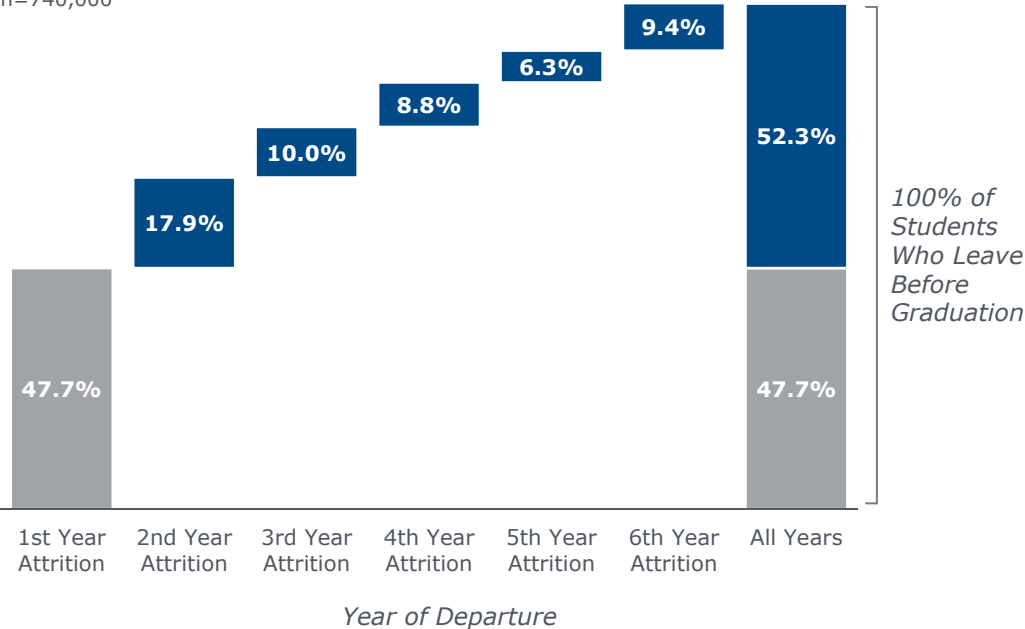
Conventional wisdom in student success is that dropout prevention efforts should be focused on the first year, when new students unfamiliar with higher education are most likely to depart. However, Student Success Collaborative (SSC)¹ research has shown that while 47.7% of students who drop out do so during the first year, the majority of all students who drop out (52.3%) actually leave the institution in subsequent years. These students do not always demonstrate clear attrition risks early on, either in their demographic and academic preparation, or in first-year activities and behaviors.

More Students Drop Out After Freshman Year

Percentage of Students Who Drop Out by Departure Year

SSC National Data Set

n=740,000



1) **SSC Campus:** Student success care coordination platform for administrators and student success specialists based on EAB research and powered by custom analytics and predictive modeling
SSC Guide: Direct-to-student mobile application designed to use nudges and personalized guidance to keep students on path to success

Insight from SSC Research: The “Murky Middle”

EAB’s data analytics teams have identified the kinds of students who are at risk for attrition despite the lack of obvious early warning signs.

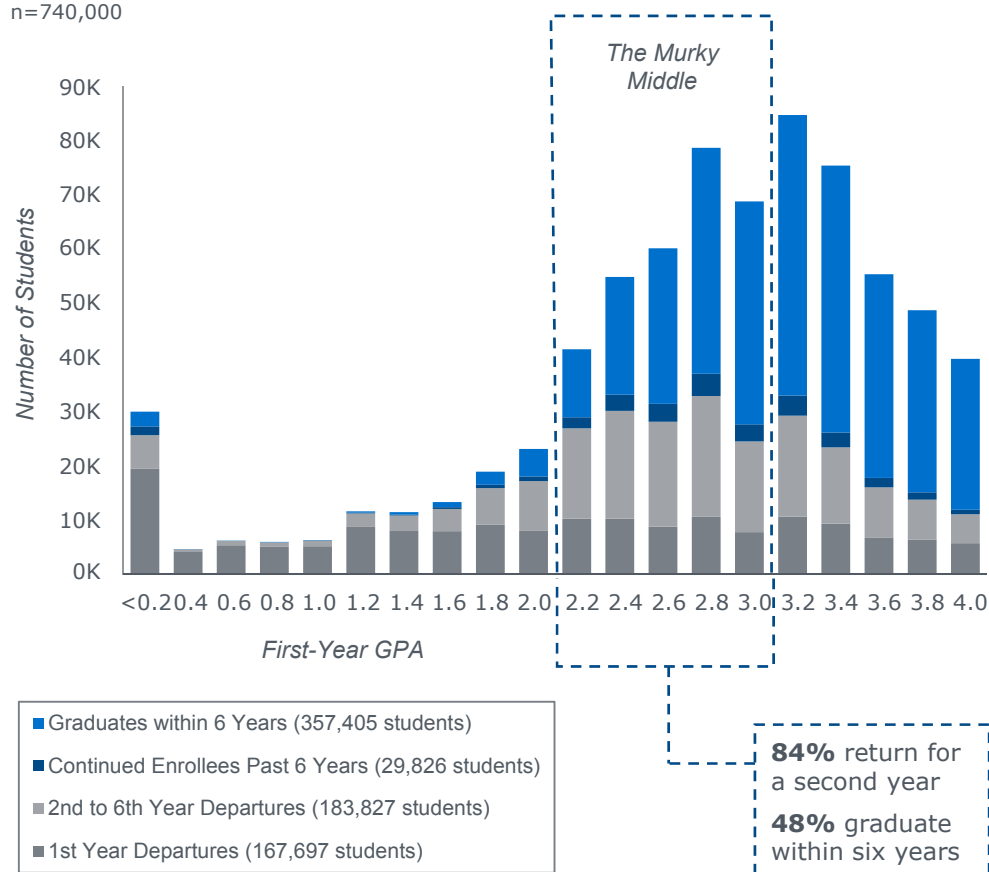
In the graph at right, the academic records of 740,000 students at SSC institutions are organized by their first-year cumulative GPA and likelihood of graduation. Students with low freshman year GPAs (i.e., under 2.0) tend to drop out at a high rate, and those with high GPAs (i.e., above 3.0) tend to graduate. However, students that begin with a GPA between 2.0 and 3.0 usually return for a second year but often fail to graduate within six years. Because of the ambiguity of risk for these students and the difficulty of predicting their outcomes, EAB refers to these students as the “Murky Middle.”

Difficult to Predict Risks for Students in the Middle

Histogram of All Students by First-Year GPA

SSC National Data Set

n=740,000



Source: EAB research and data analysis.

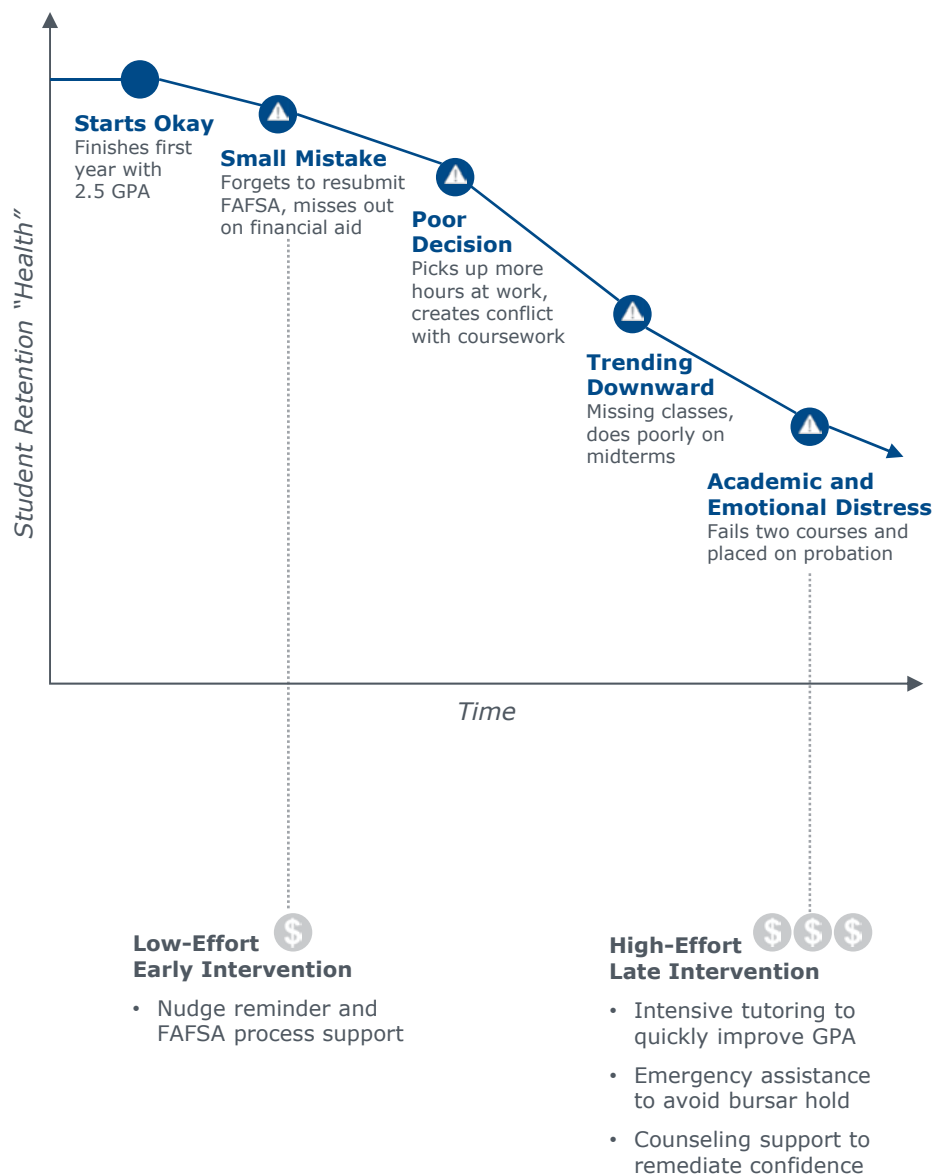
Big Incentive to Catch Rising Risk Early

Why might a student who begins with a safe GPA above 2.0 drop out in later years? EAB research has shown that attrition risk is rarely a static indicator; it accumulates and builds across time. The graphic at right illustrates a representative case of a student who starts college well but makes a series of small deviations from a successful path until a high-effort, late intervention is required to keep him/her in school. A simple nudge reminder early in the process not only would have kept the student on path to graduation, it also would have saved the university significant time and resources managing a late-stage intervention.

The following pages include metrics used by progressive institutions to intervene with rising risk students; please see the appendix for more detailed information on the metrics shared in this chapter, along with other data points and analyses that can help identify students at risk.

Delayed Corrective Action Requires More Support

Attrition Risk Accumulates Across the Life Cycle



Source: EAB research and data analysis.

Application Timing Predicts Future Risks

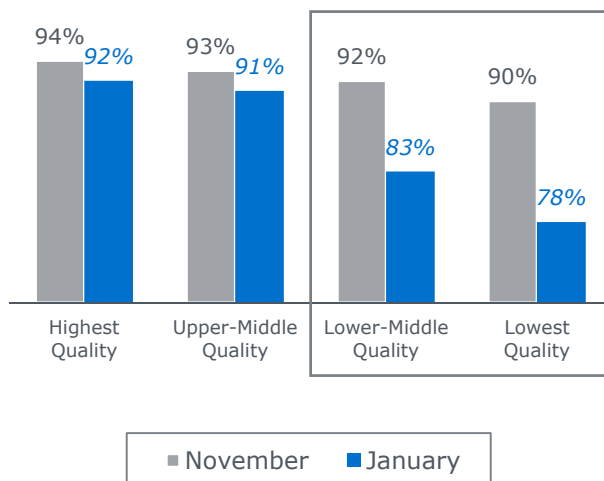
Enrollment management leaders have long understood that when a student applies to an institution is closely related to whether that student will enroll; early applications indicate interest, resources, and a proactive approach. However, these data are also now being used to augment retention models. For example, at the University of Massachusetts-Amherst, students applying later were less likely to retain through freshman year, regardless of academic quartile. Because timing may capture noncognitive aspects of grit or engagement, it can be a very useful addition to retention risk models.

Similarly, data from the Free Application for Federal Student Aid (FAFSA), which demonstrates the financial resources available to students and their families, are a common input to student risk models. New EAB research shows that when a student turns in a FAFSA is also correlated with their chances of success, regardless of financial situation. In a study of a public flagship university, pre-priority deadline submission students were seven percent more likely to graduate within four years than late applicants.

Yield Indicator Doubles as Retention Predictor

Less Prepared Students at Greater Attrition Risk When Applying Late

First-Year Retention by Month of Application and Academic Quality (GPA/SAT), UMass-Amherst, 2009-2011 Entering Cohorts



**UMASS
AMHERST**

What Are We Really Capturing Here?

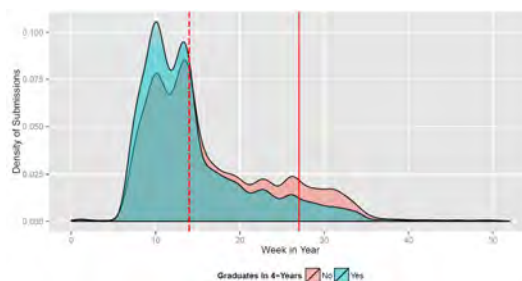
-  Grit/Noncognitive Strengths
-  Engagement with Institution
-  Demographic Variables

... Or **all three?**

FAFSA Timing a Powerful Indicator

Distribution of Graduation Rates by FAFSA Date

Public Flagship University



*Independent exploration by
EAB Data Science Team on
behalf of technology
collaborative members*

The Impact of FAFSA Timing

- Pre-priority deadline submission students are seven percentage points more likely to graduate than those missing federal deadlines.
- Early submission of FAFSA correlated with improved graduation rate when controlling for total aid and academic markers.
- Predictive value of FAFSA timing on persistence decays as student accumulates credits.

Source: Roche J, "The Application Submission Date as an Indicator of Performance and Persistence," *SEM Quarterly* 2:1 (April 2014); EAB interviews and analysis.

GPA Trends Foreshadow Departure

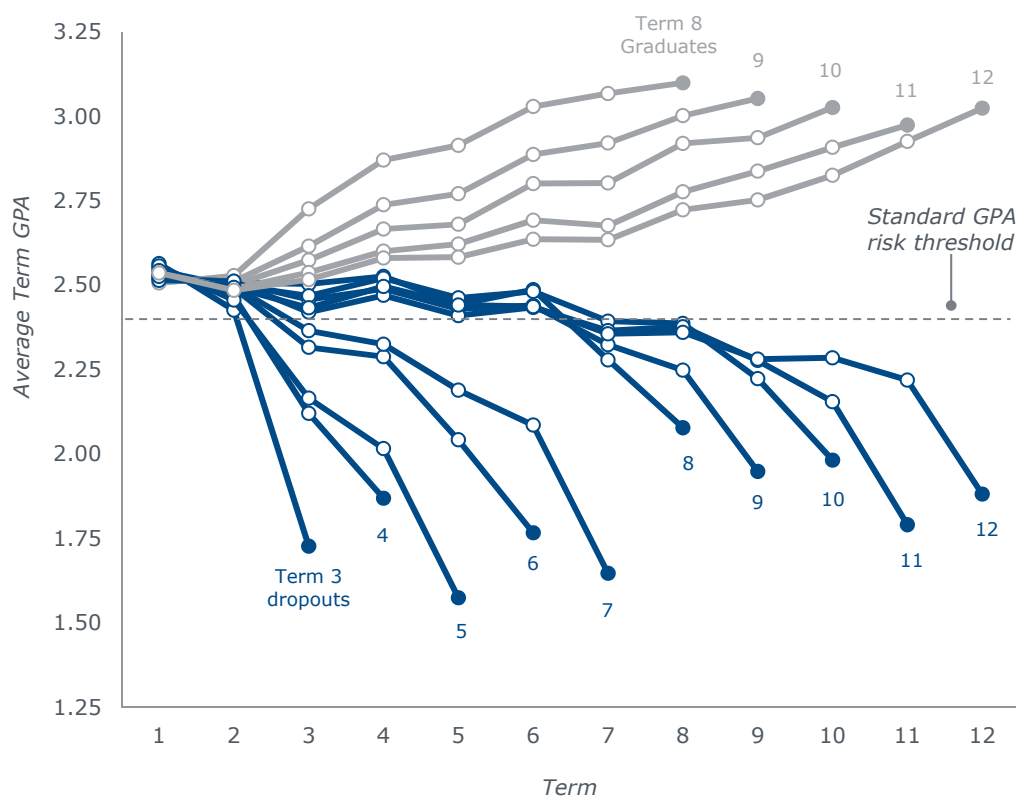
GPA is a critical component of all retention and graduation risk models, and has long been the most commonly used indicator to gauge student progress. However, one aspect of GPA that is often overlooked in higher education is the way GPA changes over time. In the graph at right, graduates and dropouts within terms are grouped by their average GPA in each term. Historical data shows that most students start in a similar GPA bracket (i.e., between 2.25 and 2.75), and that students dropping out in early terms show rapid declines in GPA—but students that drop out in later terms also demonstrate steadily declining GPAs.

The declining GPA trends of these late-term departing students are unlikely to trigger action on most campuses, where students are only considered at risk if they pass below a specific barrier (2.0–2.25 is the most common risk threshold). Measuring the term-to-term trend within a student's GPA, and adding trend data to existing risk models, can help IT units gain additional clarity into student progress using pre-existing, standardized, high-quality data points.

Students with Declining GPAs Far More Likely to Leave

Term GPA Trends by Dropout Cohort Over Six Years

SSC National Data Set
n=740,000



Source: EAB interviews and data analysis.

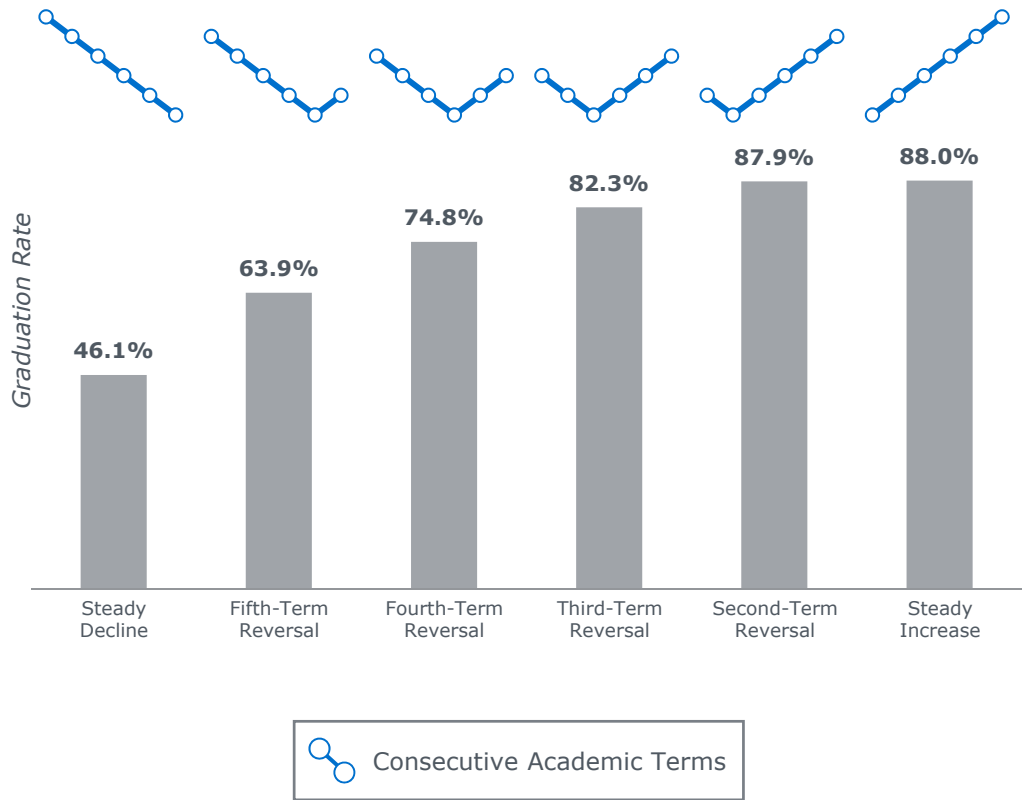
Early Intervention Is Critical

When term-to-term GPA trends for students are compared directly to outcomes for those students, it is clear why GPA trends can be such a valuable addition to risk monitoring. The gradation rate difference between students with a steadily declining and steadily rising GPA is 42 percentage points. Students who improve throughout their first six terms are nearly twice as likely to graduate as those consistently declining during the same period.

These data clearly show the importance of an early intervention with struggling students: reversing a downward GPA trend even one semester earlier is associated with large gains in historical graduation rate. For example, improving GPA in the third term, instead of the fifth term, is associated with an increase in graduation rates from 64% to 82%—equivalent to an additional 600 graduates each year at a 15,000-student university.

Outcomes Improve If Downward Trend Is Reversed

Term GPA Trends Versus Graduation Outcomes
Students Who Complete at Least Six Terms



Source: EAB interviews and data analysis.

Twelve Credits Isn't Enough

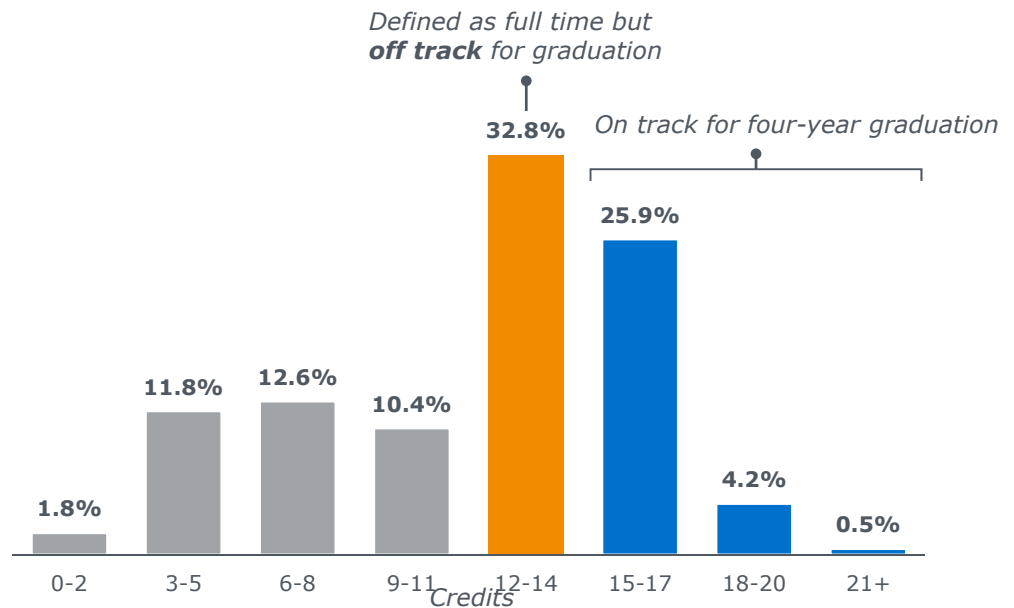
While a full-time course load is usually defined as 12 credits in a semester, graduating within four years at most institutions requires taking at least 15 credits per semester. In the graph at right, researchers from Complete College America identified fall course loads for students at over 300 institutions, and found that a majority were not taking enough credits to graduate within four years. The largest concentration of students was between 12 and 15 credits, high enough to qualify for most financial aid, but not high enough to stay on track.

Not Earning Enough Credits to Graduate on Time

Percentage of Undergraduates by Fall Term Course Load

Fall 2012

n=329 Institutions



Source: How Full-Time are "Full-Time" Students, Complete College America, October 2013; EAB interviews and analysis.

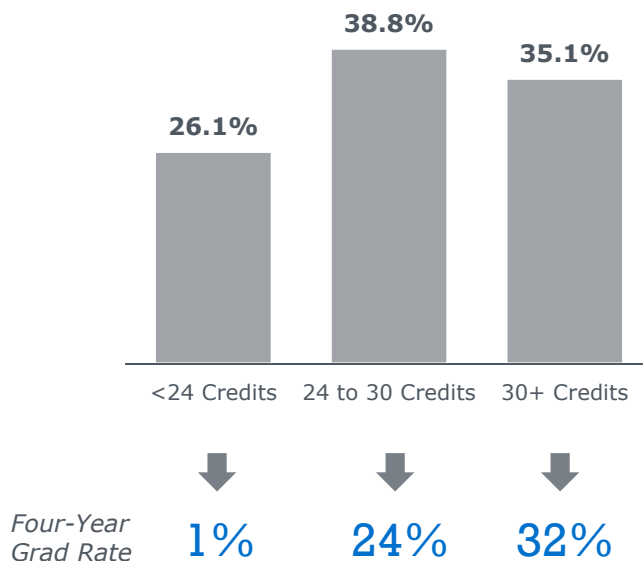
Fifteen-Credit Load Key to Success

When researchers in the Academic Affairs division at the University of Hawai'i examined graduation rates for recent classes and separated students, they identified a powerful data point: only 1% of students completing less than 24 credits in their first year graduated within four years, compared to 32% of students completing at least 30 credits in the same time period.

Students with 15 Credits Achieving at Higher Levels

Percentage of Students by Credits Completed in First Academic Year

University of Hawai'i at Manoa, Fall 2007 Cohort



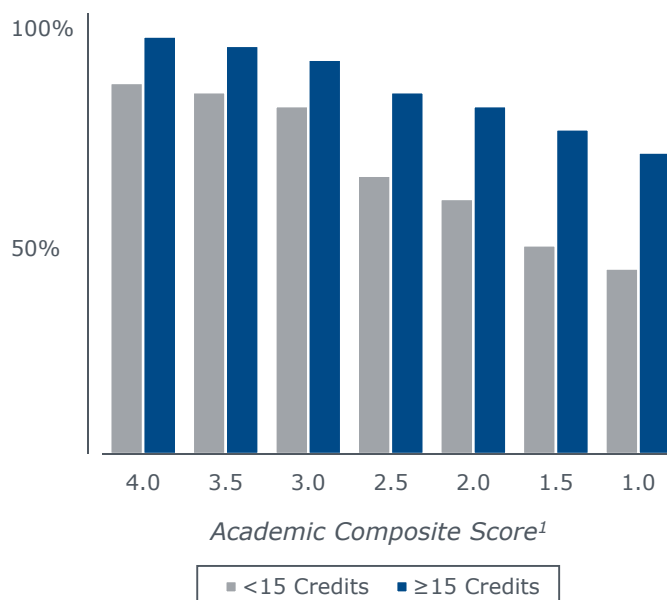
To test the hypothesis that better-prepared students simply take more courses, Hawai'i's team used high school GPA and entry exams to generate an academic composite score and tested the impact of taking a full load.

At all levels of academic preparation, taking more credits was associated with improved student success outcomes. The graph at right shows the share of students completing at least 80% of their freshman courses separated by academic entry score. Across the preparation spectrum, more credits are associated with higher course completion rates.

Full-Credit Impact Holds Across Preparation Levels

Percentage of Students with Completion Ratio Above 80% by Academic Score

University of Hawai'i Four-Year Campuses, Fall 2009-2011



1) Academic Composite Score: SAT, ACT, HS GPA, HS Rank, Early Admit Status, Summer Credits.

Source: "15 to Finish: The University of Hawai'i Story," Complete College America, April 29, 2014; Update on HGI and 15 to Finish, CCAO-CSSAO Joint Meeting, May 21, 2014; EAB interviews and analysis.

Educate Students, Parents, and Staff About Credit Loads

The University of Hawai'i's Academic Affairs office tailored messaging about their findings to match audiences across campus and the state to launch an initiative called *15 to Finish*. Now, orientation sessions with students focus on higher graduation rates and reduced costs. Advisors and faculty receive information about lowering costs to existing reports and meetings. Policymakers and the general public were directed to a website that stressed that the state would save money by graduation more students faster.

Getting the Word Out with Constituents

Media Blitz Targets Messaging to Key Constituents



Students and Parents



Increased graduation rate, lower cost



New student orientation sessions



Advisors and Faculty



Lower cost of support services



Data analysis meetings, reports



General Public



Lower cost to state and taxpayers



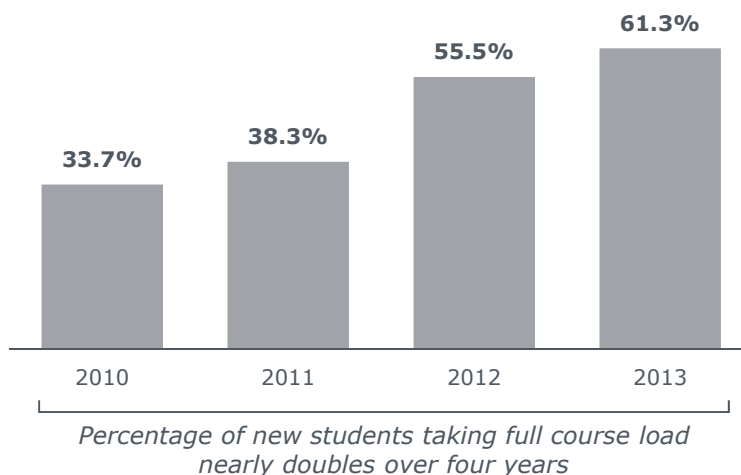
Public website, printed handouts

Since the launch of *15 to Finish*, the University of Hawai'i has nearly doubled the percentage of students taking a full course load in their freshman year, and early analysis of persistence and graduation rate data indicate that the comprehensive push for on-path registration is driving more success across the entire University of Hawai'i system.

In the past five years, 16 states have joined the *15 to Finish* campaign nationwide, educating students and stakeholders at dozens of institutions about the importance of taking a full course load.

Doubling the Percentage of Students on Path to Graduate

Percentage of New Freshmen Attempting 15 or More Fall Credits *University of Hawai'i at Manoa, Fall Semesters*



Source: 15 to Finish: The University of Hawai'i Story. Complete College America, April 29, 2014; Update on HGI and 15 to Finish, CCAO-CSSAO Joint Meeting, May 21, 2014; EAB interviews and analysis.

The Cost of Excess Credits

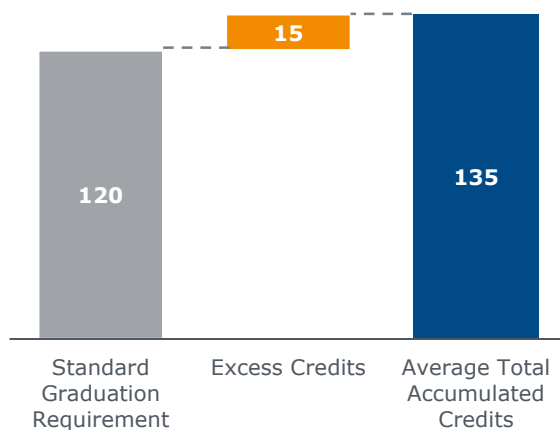
The reverse of students taking too few courses are those taking too many—and nationally, many students take more credits than they need to graduate. Complete College America estimates that the national cost of excess credits is close to \$19 billion, and the opportunity cost for students of each additional year in college is estimated to exceed \$68,000.

Policymakers have taken note. In Florida, Texas, and other states, the legislature has imposed caps on the number of credits that are eligible for financial aid dollars at public institutions.

Students Taking Unnecessary Courses, at Great Cost

National Average of Excess Accumulated Credits

State Flagship Universities, Complete College America and National Governors Association Common Data Set, 2013 Reporting Period



\$19B

estimated total annual cost of excess credits taken by students at all public two- and four-year public institutions (\$7.7B in tuition, \$11.5B in public investment)

\$68K+

average estimated real and opportunity cost of each additional year in college to students

To help students complete their degrees without excess credits, many institutions have implemented “last mile” initiatives that guide seniors and recent stop-outs to final degree requirements. These initiatives can take many forms; those described at right represent some of the most innovative and effective models identified through EAB research.

Higher Ed’s Common Solution: “Last Mile” Initiatives



1 Graduation Audits



- CSU Long Beach’s Destination Graduation program proactively audits senior transcripts
- Advisors negotiate substitutions, waivers with departments

2 Customized Degrees



- Multidisciplinary Studies degree approved in 2011 helps military, transfer, and undecided upperclassmen complete on time
- Honors students also enrolling to gain flexibility



3 Streamlined Readmission



- Back to Bama program targets stop-outs gone for 2+ terms
- First course offered free, plus simple scholarship form
- 600+ awards since 2008, average amount of \$1,000

4 Nontraditional Outreach



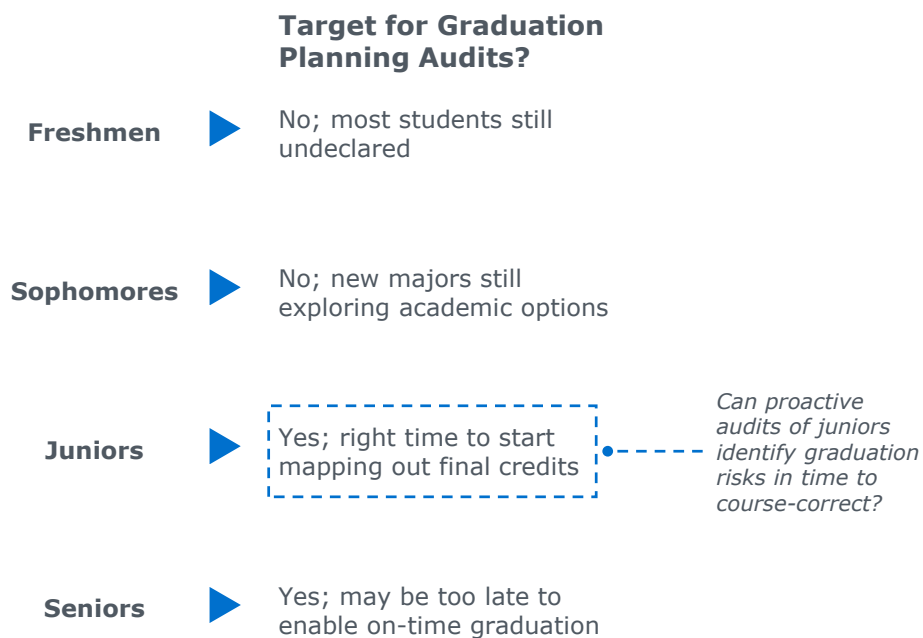
- Graduation Project contracts with credit agency to obtain addresses
- Alternative methods: social media messaging (Portland State U), DMV (U of Alabama)

Source: “Four-Year Myth,” Complete College America, 2014; EAB interviews and analysis.

Helping Juniors Plan for Graduation

One problem with last mile initiatives is that they intervene with students who are likely very close to graduation, allowing very little time to course-correct. The vast majority of these initiatives focus on seniors, but institutions have found that current juniors may be an untapped source of impact.

Finding the Sweet Spot for Graduation Audits



At California State University Fullerton, advisors suspected that upper-division students often lacked a graduation plan. Their concerns were confirmed in a survey of juniors, which indicated that more than half of students who had completed 75 to 84 credits did not have an anticipated graduation date. Many students simply had missed deadlines, while others had recently changed majors and were still learning about requirements.

Align Final Semesters to Graduation Requirements



45%

of targeted students (75-84 credits) reported having an anticipated graduation date

What Prevents Graduation Planning?



Students miss first possible application deadline



Graduation applications deferred due to minor missing requirements

Source: EAB interviews and analysis.

Early Graduation Interventions Pay Off

In response to the survey findings, advisors held 160 hour-long workshops scheduled across the fall to explain graduation processes, reviewed remaining requirements, and provide resources for students to explore post-graduation options. Of the over 2,000 students with junior year credits, 98% attended a session, and student reaction was very positive. At the end of the fall, 68% had a confirmed graduation plan for their senior spring semester.

Students Appreciate Proactive Guidance

Mandatory Graduation Advising Workshops

2,110

Students targeted with between 75-84 units

9

Specialists run 160 workshops

98%

Attendance rate

- *Graduation application process and deadlines*
- *Review degree audit and graduation requirements*
- *Exploration of career paths and graduate school*

Positive Reaction from Students

94%

Of students would recommend this workshop to a friend

87%

Said now confident in creating a plan to complete remaining requirements

68%

Now anticipate graduating at some point in 2016

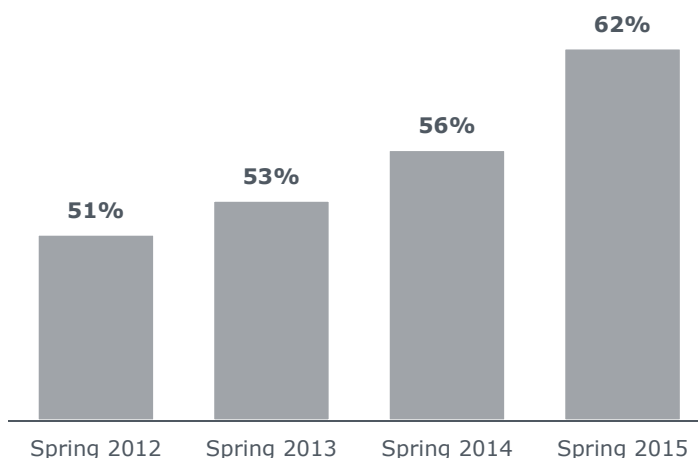
Fullerton's progress on six-year graduation rates over the last four years has been impressive, suggesting that actively targeting off-track upperclassmen before senior year is a powerful lever on student outcomes. Between spring of 2012 and spring of 2015, the six-year graduation rate at CSU Fullerton increased from 51% to 62% of full-time, first-time freshman.

Aggressive Investment Yields Impressive Returns



Six-Year Graduation Rate

California State University-Fullerton, FTFT Freshmen



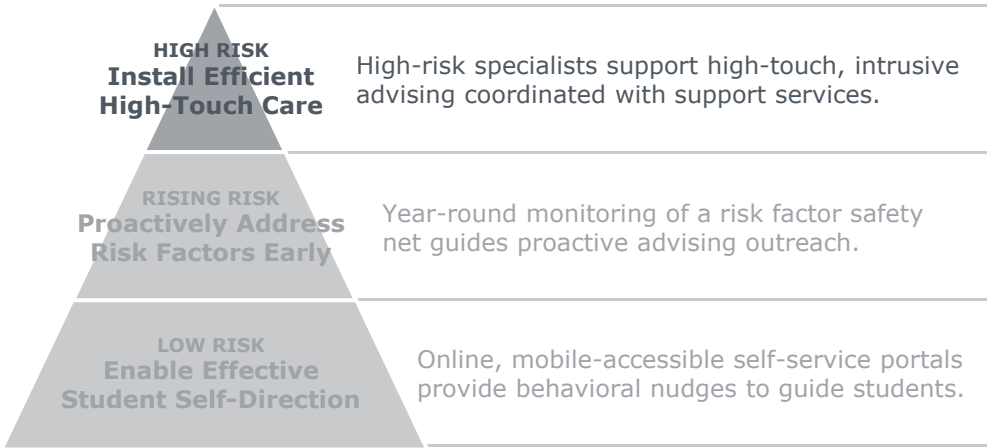
Source: EAB interviews and analysis.

Mapping Population Health in Higher Education

High-risk students demonstrate clear risks in their academic preparation, demographic characteristics, or social behaviors once on campus. The challenge in working with these students is that effective interactions require face-to-face, labor-intensive work from professional and faculty advisors.

In health care, high-risk patients are treated by doctors and nurses but supported by a team of non-physician support staff to prevent readmissions. In higher education, the number of units supporting students has proliferated rapidly, and IT's best role in facilitating effective interventions is helping to coordinate the digital messaging that high-risk students receive.

Framing IT Support for Population Health Management in Student Success: High-Risk Students

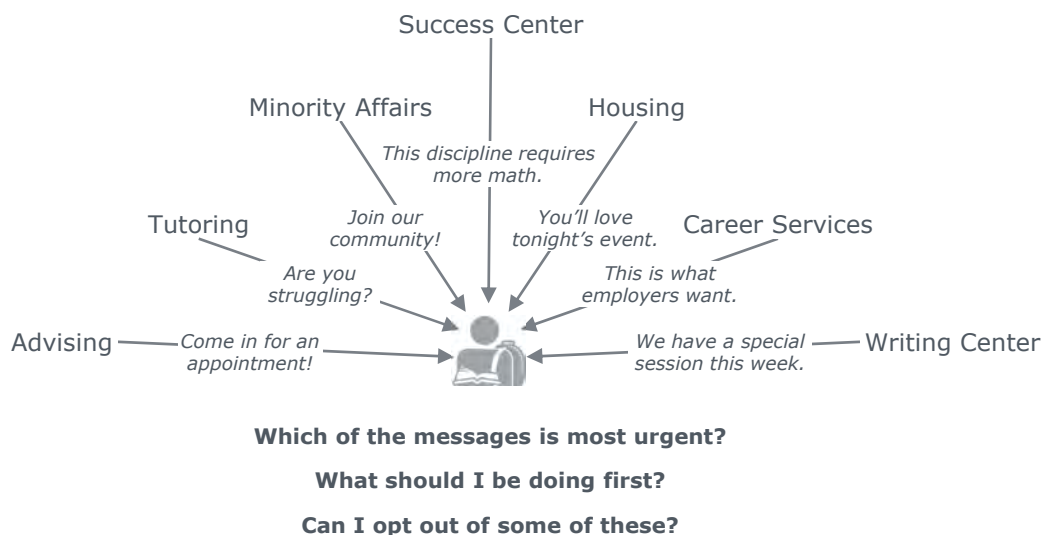


Source: EAB interviews and analysis.

Too Much Communication Overwhelms At-Risk Students

As national awareness of student success as a campus challenge has grown, the number of offices and individuals that support students on campus has grown as well. New offices and roles have developed organically, and are rarely coordinated effectively, leading to student confusion when offices share information that is duplicative or contradictory.

Uncoordinated Approach Can Confuse At-Risk Students



At Michigan State University, the CIO convened campus partners to isolate areas where student-facing communications were uncoordinated, finding that dozens of portals, registration holds, and email messages were confusing students. Stakeholders found that the visual demonstration of digital communication was very helpful in understanding why over-contact can be damaging for at-risk students. IT leaders should leverage their view of information flows across campus to identify problem areas and educate campus stakeholders about the need for coordination.

A Bird's-Eye View of Student Over-Contact

Creating a Low-Tech Visualization of Student Confusion

IT convenes representatives from 12 divisions to discuss over-contact of at-risk students

Participants post sticky notes for all messaging tied to specific student risk behaviors

Live discussion and correction of duplicative and contradictory student messages



Image Credit: Michigan State University, 2016.

What MSU Discovered

50
Online portals for students to navigate

90+
Different types of registration holds

100+
Email messages during the summer

Coordinating Interventions Through Success Coaches

In the delivery of high-risk student advising, IT does not play a central role; face-to-face guidance from a human being is still the foundation of effective advising for struggling students. The most effective model for these interactions is specialized success coaches, who are tasked with helping high-risk students navigate a broad set of decisions. The benefit of consolidating high-risk students under these coaches are two-fold. First, students receive communications through a single individual, which lowers the chance of duplicative or contradictory messaging. Second, coaches manage the most complex and challenging cases, allowing the majority of advising staff to scale the guidance they provide to low- and rising-risk students.

When IT leaders scale support to low-risk students through automated, mobile self service, and fast-cycle interventions to rising-risk Murky Middle students, the resources and staff time saved flow to face-to-face advising for high-risk students. IT supports success coaches by isolating students most at risk through data analysis, and identifying the digital communications that can be consolidated through the coach to better serve struggling students.

Send High-Risk Messaging Through a Single Conduit

Student Success Coaches



High-Risk Caseloads

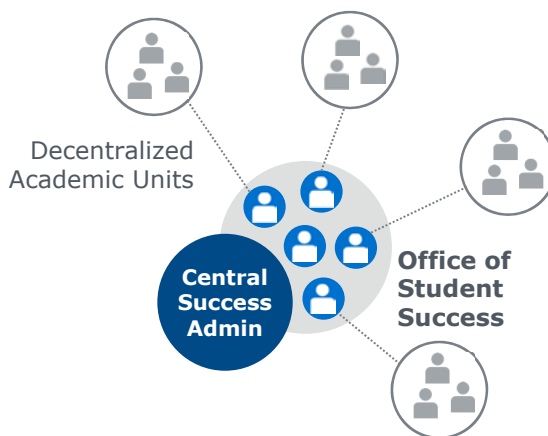
- Incoming undecided
- Entering a program of study
- Working to meet admissions criteria
- Not making satisfactory progress in program
- Nearing completion but needing additional support to complete in less than six years

Broad Portfolio of Responsibilities

- ✓ Academic advising
- ✓ Developmental advising
- ✓ Academic skills coaching
- ✓ Adjustment and engagement coaching
- ✓ Financial planning

Overall Advising Infrastructure

Success Coaches Centralized, but Some Shared with Undergraduate Colleges





Provide Assessment Data for Units and Advisors

Public Goals Tracking and Process Management

CHAPTER

4

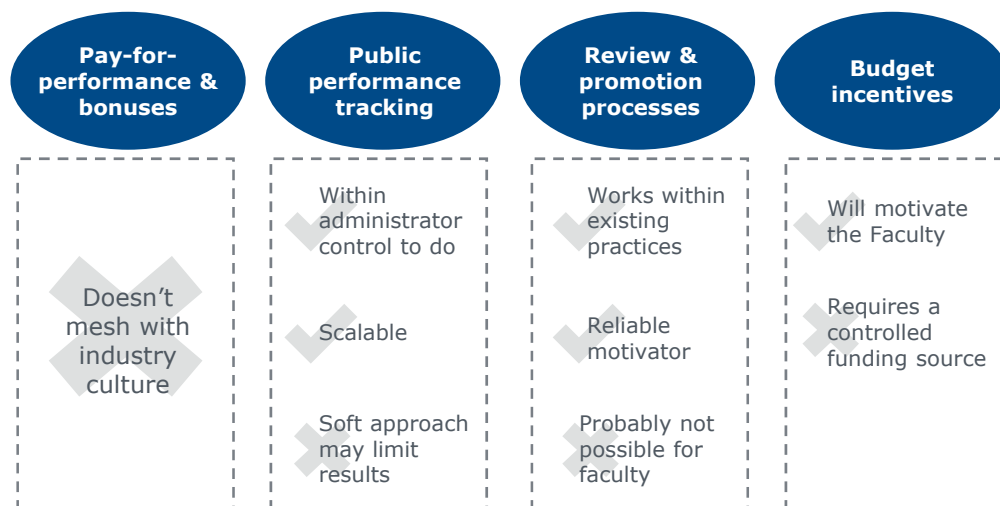
- Practice 13: Public Unit-Level Goals Tracking
- Practice 14: Outcomes-Based Promotion Criteria
- Practice 15: Process Metric Performance Management

Struggling to Create Accountability for Student Success

If performance-based incentives are theoretically possible in the higher education environment, they remain the exception rather than the rule. Part of the challenge is data. Interactions may be tracked in unit-level advising CRM systems, and central IT staff may or may not be aware of all available data sources. Connecting these disparate sources of information with centrally validated data on student progress (e.g., retention, graduation) and learning outcomes should be a top priority for IT units seeking to coordinate student success efforts.

The National Academic Advising Association has found that less than one-third of institutions used data on actual student outcomes to assess advisors, and only one in every five institutions used data on advisor job performance to assess effectiveness. IT leaders have a significant opportunity to enhance student outcomes by helping administrative and advising staff more accountable to performance.

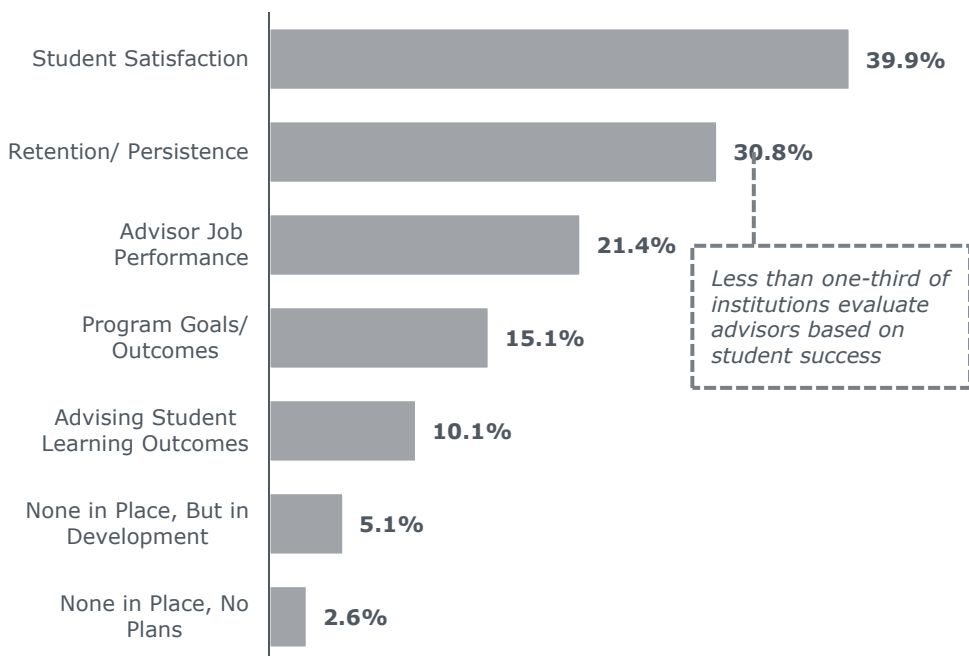
What Are Appropriate Performance Measures for Advisors?



For Which of the Following Efforts Has Your Institution Utilized Data to Assess the Effectiveness of Advising?

NACADA 2011 National Survey

n=770 Institutions



Source: 2011 NACADA National Survey; EAB interviews and analysis.

Motivation Through Transparency

One example of accountability in action comes from Middle Tennessee State University. Each week during the spring term registration period, the Vice Provost for Student Success sends out an email to staff across campus, detailing unit-level success against next-term retention goals. The email is delivered to a wide distribution list, including cabinet members (e.g., president, provost) and line staff in administrative units. The note tracks overall progress and provides unit-level gains and calls out specific units and individuals for kudos.

With institutional leaders watching closely, these individual callouts are powerful motivators for line staff, who would rarely be recognized for their contributions in front of such an elevated audience. The notes harness the Hawthorne Effect (no one wants to look bad in front of their colleagues) and simultaneously provides instant rewards for demonstrated progress.

Key Elements of Weekly Retention Projection Emails



- 1 Institution-Wide Distribution List**
 - President
 - Provost
 - Vice Provost
 - Deans
 - Associate Deans
 - Advising managers
 - Advisors
 - Other leaders
- 2 Actionable Data on Progress to Goal**
For example, percentage of students registered compared to prior years, broken down by college
- 3 Initiative Updates and Kudos**
For example, upcoming student orientation events, submissions to course redesign initiative, acknowledgement of advisor contributions

Email Visibility Encourages and Rewards Weekly Progress

Delivered to campus leadership, academic managers, and service directors

Specific units and individuals called out for kudos

From: Student Success Office
To: President, Provost, Chief Financial Officer, Vice Provost for Student Affairs, Vice President for Admissions
Subject: 11-11 Update on Enrollment Progress

Dear colleagues,

As of yesterday evening (November 12), 25,000 students have registered for next term; **we are 95% of the way toward our goal!**

To hit undergraduate enrollment equal to spring of last year, we need to enroll **1,316 more undergraduates**. To achieve 5% growth over last year's total, we need to enroll **2,631 students**.

I want to call out the College of A&S and **Director Joe Bloggs** for their work in registering 105% of last year's total; **great work Joe and team!**

Please see the attached document for a college and **department-level breakdown of enrollment by total undergraduates, freshmen only, sophomores only, and transfers only**. As always, if you have questions...

Update on campus-wide progress and distance to goals

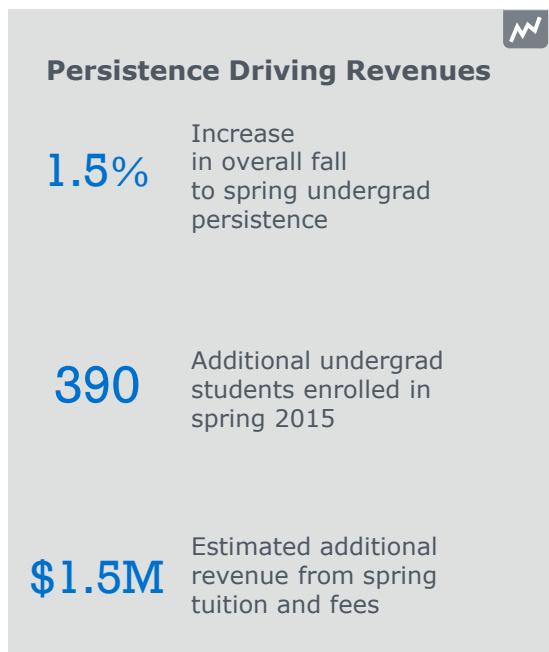
Unit-level progress by detailed sub-metrics

Visibility into Unit Outcomes Can Have a Big Payoff

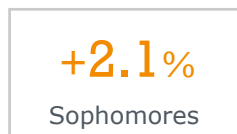
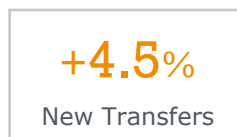
Elevating the visibility of regular progress has helped Middle Tennessee State make progress on key student success outcomes. Between 2014 and 2015, the fall-to-spring retention rate increased 1.5%. This increase represented 390 additional students who enrolled during that semester, translating to an estimated additional \$1.5 million in tuition and fees during the same period.

What is most striking about Middle Tennessee's success is that progress is not specific to a single group or unit; retention is up campuswide, including a 2.2% increase in retention for first-time, full-time freshmen, a 2.1% increase in retention for sophomores, and a 4.5% increase in retention for new transfer students.

Seeing Impressive Results in Retention Across Units



Retention up Across Key Subgroups



Source: EAB interviews and analysis.

Standardizing Advisor Outcomes Measures

At Mercy College, efforts to routinize advisor assessment have focused on collecting student success outcomes data to evaluate the impact of individual advisors and reward strong performers. Advisors are assessed annually against standard metrics (e.g., persistence and earned credits of students advised) that are core to the institution's student success goals.

Tracking Performance on Concrete Objectives



Sample Review Metrics

<i>Student Success</i>	• Persistence by cohort • Total earned credits • Student GPAs • At-risk student performance • Term registration • Stop-outs gained
<i>Faculty Engagement</i>	• Early alert interventions • Students attended tutoring
<i>College Affordability</i>	• Financial aid status • FAFSA forms completed

IT provides cohort-level outcomes data, integrating SIS and advising CRM systems

While the program is in its early stages, leaders at Mercy College suggest that standardized assessment of advisors using student outcomes has already been beneficial in creating and nurturing advising talent. Higher quality candidates are applying to become advisors, existing staff are more engaged, and anecdotal feedback from students suggests that the promotion process is already leading to stronger performance and better advising.

Data-Informed Promotion Strengthens Advising Talent



Advising interactions now tracked and evaluated for potential promotion

- 1 Promise of upward career mobility attracts better-quality candidates
- 2 Lower staff turnover and greater employee engagement
- 3 Metric-based evaluation and promotion process incentivizes high performance

Outcomes Incentives Don't Always Work

Tying incentives to specific goals that the institution cares about is an attractive option, but other industries have found efforts to promote quality don't always generate their intended effects. In 2015, ProPublica (a nonprofit investigative newsroom based in New York City) released a scorecard for surgeons based on publicly available data about surgical outcomes of eight elective procedures.

The scorecard follows similar efforts, all of which tried to use quality incentives to stem the tide of patients readmitted with expensive and dangerous complications after routine procedures. However, using outcomes to judge practitioners generates some predictable problems. It is difficult to comprehensively risk-adjust outcomes; very few consumers actually use quality data in care decisions; and some providers will seek to improve outcomes by avoiding risk altogether, making it difficult for some higher-risk patients to receive the treatment they need.

Well-Meaning Outcomes-Based Initiatives Can Backfire

Renewed Efforts to Provide Public Transparency on Surgical Outcomes

ProPublica's 2015 Surgeon Scorecard



Tracking **8** elective procedures



Rating **16K+** surgeons nationwide



To help prevent **60K+** Medicare patients readmitted with complications, 2009-2013

But Quality Scorecards Rarely Live Up to the Hype



Difficult, if not impossible, to collect and analyze all necessary data on pre-existing patient risks, specific post-operative conditions



Only 6% of patients report using quality information in any health care decisions



63% of surgeons less likely or much less likely to take a critically ill cardiac patient; scorecards induced cherry-picking

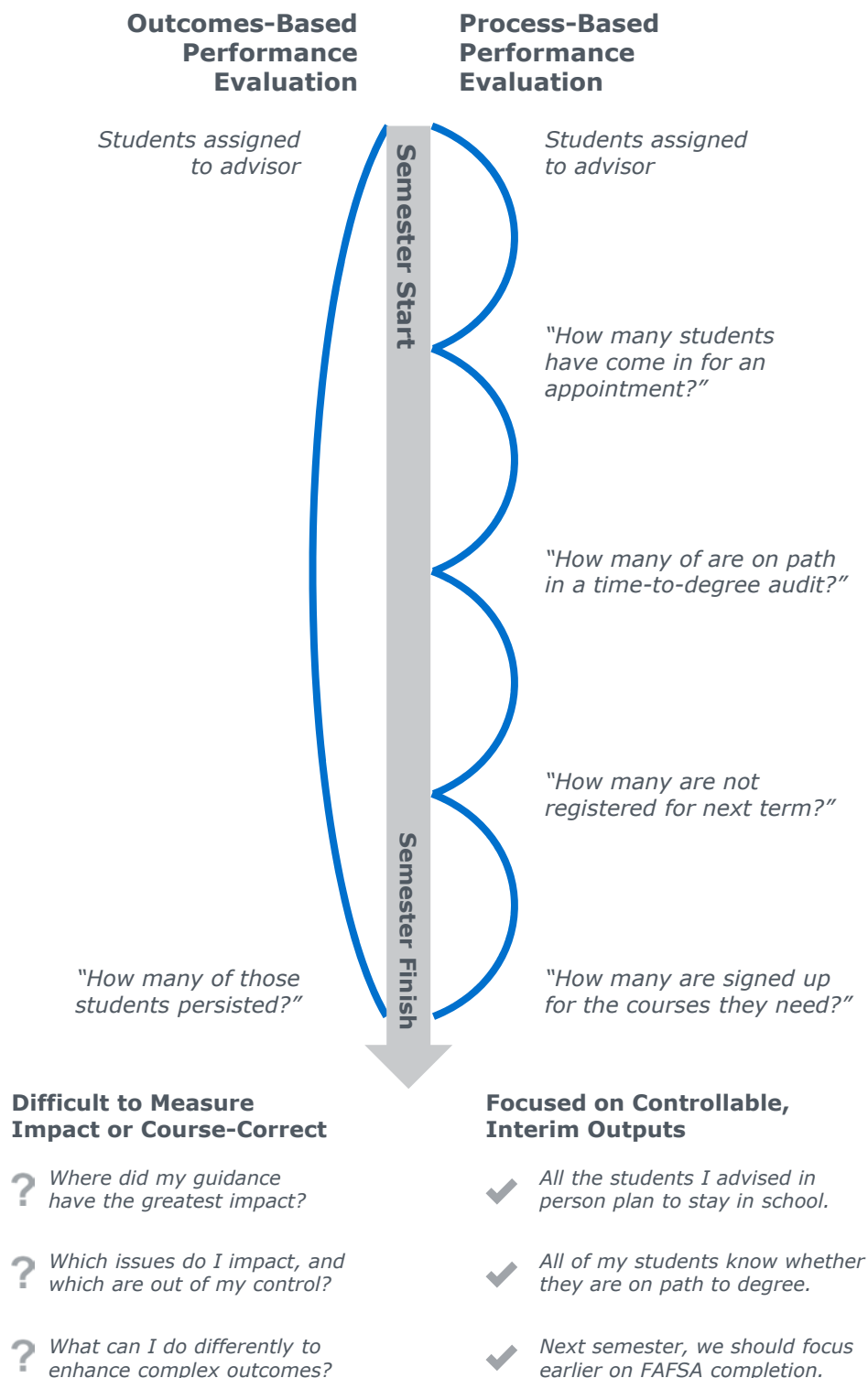
Source: Wei S, Pierce O, and Allen M, "Surgeon Scorecard," ProPublica, Updated July 2015; Schneider and Epstein, Influence of Cardiac-Surgery Performance Reports on Referral Practices and Access to Care—A Survey of Cardiovascular Specialists, 1996; Rau J, "Few Consumers Are Using Quality, Price Information to Make Health Decisions," April 2015; EAB interviews and analysis.

Management by Process Metric

What can the challenges of outcomes-based performance criteria tell us about improving assessment in higher education? It is difficult to risk-adjust students that work with an advisor to ensure fair evaluation, and impossible to argue that an advisor's actions are solely responsible for outcomes like persistence, attrition, or graduation, which flow from hundreds of interactions and choices. Students don't choose advisors based on quality, and few institutions rigorously define what good advising is in a way that students can understand or apply.

However, advisors do control some levers (e.g., their appointments with students, audits of requirements, advisees completing specific tasks) that impact student success. Evaluating advisors against these shorter-term process completion milestones enables staff to track progress continuously and facilitates redirection and intervention before minor problems become major attrition risks.

Short-Cycle Assessment to Enable Progress



Source: EAB interviews and analysis.

Using Process Metrics to Guide Management

At Georgia State University, leaders have embraced the concept of process-based performance management for advising staff and implemented structured check-ins based on granular process completion. Twice a month, advisors review the metrics at right with advising managers. Once a month, managers update the director on progress. Once a term, the director reviews overall activities with the institutional leadership team. Standardizing around progress has increased the scale of operations and clarified which individuals do outstanding work. Georgia State's team recorded 45,000 in-person student visits in the first year of the program and promoted eight advisors.

Process Completion Data for Advisor Management



Advised In Person

Percentage of Assigned Students

How many students assigned to the advisor have attended an in-person advising session?



Time-to-Degree Audit

Cumulative Running Tally

How many students have had a degree audit to project individual student time to degree?



Course Needs Audit

Cumulative Running Tally

How many students have been contacted before registration with courses needed to stay on track?



Unregistered Students

Countdown

How many eligible students have not yet registered for any courses in the next term?



Appendix

Toolkit and Resources for Student Success

-
- Tool 1: Priority Analyses for Student Success
 - Tool 2: Student Success Population Health One-Pager

Using the Appendix Resources

In the following pages, the IT Forum has provided resources that CIOs can use to help implement best practices on campus.

Please reach out to your dedicated advisor or a member of the IT Forum team if you are interested in learning more about other tactics in this report, or to speak about implementing these practices in your own campus environment.

More implementation resources can also be found at eab.com.

Templates and Tools

Tool 1: Priority Analyses for Student Success

Compendium of foundational student success analyses that IT leaders should provide to campus stakeholders, including analysis details, advice for intervention, and data delivery (pages 75-85)

Refining Academic Resource Planning	1: Prioritize High-DFW Rate Courses	76
	2: Respond to Section Capacity Red Flags	77
	3: Map Term-to-Term Retention	78
Tracking Process Completion	4: Identify the Impact of Application Timing	79
	5: Measure Advising Process Completion	80
	6: Isolate Late Major Declaration	81
Managing for Interim Outcomes	7: Encourage a Full Credit Load	82
	8: Prevent Credit Over-Accumulation	83
	9: Track Term-to-Term GPA	84
	10: Track Course Attendance	85

Tool 2: Student Success Population Health One-Pager

One-pager to explain the PHM model to campus stakeholders and provide clear visual description of how segmentation based on risks factors supports student success (page 86)

Priority Analyses for Student Success

Foundational Metrics to Enable Campus Partners in Student Success Initiatives

The proliferation of measurement analytics tools built to support student success efforts can be very valuable for institutional outcomes, but can also generate significant confusion and noise for IT departments that need to manage overlapping systems and platforms. While advanced and predictive analytics are valuable, the IT Forum has found that standardizing approaches to foundational metrics and hardwiring access to basic student success data remains a challenge for many members. In “Priority Analyses for Student Success,” the Forum provides detailed advice about how to collect, analyze, and use these key metrics to enable campus partners.

Elements Included for Priority Analyses

- **Summary of Analysis:** Explains why the analysis is important and the role it plays in supporting improved student progress
- **How to Generate the Analysis:** Describes how to calculate metrics involved in the analysis and defines terms
- **Details for Analysis**
 - **Sub-metrics:** More detailed ways that institutions have used the analysis to guide success efforts
 - **Measure By:** Most impactful categories to measure with the analysis on campus
 - **Data Quality Issues:** Potential challenges associated with how the data elements are collected and stored
- **Details for Intervention**
 - **Intervention:** How academic and advising leaders use the results of analysis
 - **Intervention Owners:** Most common individuals and roles on campus responsible for implementing the analysis
 - **Delivery Method:** The medium which IT should use to communicate the analysis metrics and results with campus stakeholders

1: Prioritize High DFW Rate Courses

Summary of Analysis

IT should help academic leaders focus on high drop-fail-withdrawal (DFW) rate courses to minimize the number of unproductive credits (i.e., attempted but not completed) and to optimize the deployment of scarce teaching and advising resources toward courses that can offer the greatest return in student success for faculty time investment. Identify large courses (e.g., more than 100 students) with relatively low completion rates where minor improvements in course-level progress can have outsized impact in credit completion.

How to Generate the Analysis

For a given term in a given year, for each course taught, what is the ratio of attempted minus earned student credit hours to attempted student credit hours?

- Earned Credits: Students earning a final passing grade in the course
- Attempted Credits: Students registered in the course after the add-drop deadline
- DFW Rate: Attempted Credits minus Earned Credits, divided by Attempted Credits
- Courses, Not Sections: This will help isolate very large courses with multiple sections

$$\frac{(\text{Attempted Credits} - \text{Earned Credits})}{\text{Attempted Credits}} = \text{DFW Rate}$$

Details for Analysis		
<i>Sub-metrics</i> • DFW rate by course and section • %A-F in high-enrollment courses • Total unproductive credits in high-enrollment courses	<i>Measure by</i> • College • Department • Course • Section • Faculty Member	<i>Data Quality Issues</i> Inconsistent coding and definitions of D and F grades across colleges

Details for Intervention		
<i>Intervention</i> Course redesign, provision of academic advising resources, flipped classrooms	<i>Intervention Owners</i> • College Deans • Department Chairs • Academic Support Staff	<i>Delivery Method</i> Self-service dashboard view for live comparison of DFW rates and potential drivers of grade distribution variance

2: Respond to Section Capacity Red Flags

Summary of Analysis

Because few institutions embed student demand data into course planning processes, many schools simultaneously have courses that are underfilled and overfilled, meaning that students lack access to critical courses even while instructors and space could theoretically be reallocated to high-demand courses. Provide deans and chairs with real-time data about how current course enrollment compares to maximum enrollment to let academic managers quickly identify under-enrolled sections and prioritize section addition candidates.

How to Generate the Analysis

What is the ratio of students registered in a course section to the maximum section cap set by faculty?

- Section Fill Rate: Enrolled students divided by section maximum
- Target Section Fill Rate: Practitioners recommend aiming for a fill rate between 70%-85%
- Overfilled: Section Fill Rate at or above 85%
- Underfilled: Section Fill Rate at or below 70%

Currently Enrolled
Students

Section Maximum

Section
Fill Rate

Details for Analysis

Sub-metrics	Measure by	Data Quality Issues
• Average section fill • Number and percentage of sections under 25% fill rate, over 85% fill rate, and over 100% fill rate	• College • Department • Course • Section	False section maximums set to expedite faculty review of applying students Space maximums rarely recorded uniformly

Details for Intervention

Intervention	Intervention Owners	Delivery Method
New sections created to relieve pressure on over-filled courses, under-filled sections collapsed to re-allocate resources	• Provost • College Deans • Department Chairs	Live-updating dashboard for faculty and department chairs on capacity

Source: EAB interviews and analysis.

3: Map Term-to-Term Retention

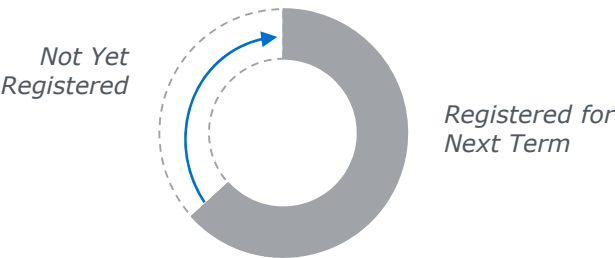
Summary of Analysis

Overall student retention figures are driven by unit-level progress in registering current students for the following term, but few institutions share unit-level data to help academic managers and staff manage against enrollment goals. IT leaders should help units understand and manage retention of local students by providing regular updates on unit-level progress to register students in the next semester. If possible, these updates should be weekly during peak registration periods, and delivered to campus in a transparent, clear format that rewards high performers for their successes.

How to Generate the Analysis

How many students eligible to register for the next term are not yet registered?

- Unit-Level Term-to-Term Retention: Percentage of students currently enrolled that are also registered for the following academic term, pulled at the department and college level



Details for Analysis

<i>Sub-metrics</i>	<i>Measure by</i>	<i>Data Quality Issues</i>
• Number and percentage registered for next term • Number and percentage retained with no progress	• College • Department • Major	Different application dates may exist between colleges, affecting accuracy of lists

Details for Intervention

<i>Intervention</i>	<i>Intervention Owners</i>	<i>Delivery Method</i>
Targeted outreach to un-enrolled students through local campaigns	• College Deans • Department Chairs • Admissions and Enrollment	Weekly list sent to all deans and chairs on course registrations

Source: EAB interviews and analysis.

4: Identify the Impact of Application Timing

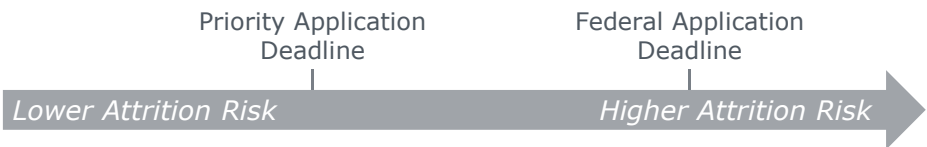
Summary of Analysis

Virtually all institutions leverage content of financial aid and institutional applications from students to inform risk models and prioritize outreach to students, but few use the timing of those applications (i.e., the date on which a student submitted materials) as an additional way to identify attrition risks. In many institutional studies, students applying later and especially applying at or after federal deadlines are at much higher risk of attrition than students applying earlier; practitioners suspect that application timing demonstrates important non-cognitive factors (e.g., engagement with the institution, grit).

How to Generate the Analysis

Which students are applying in time periods demonstrated to have higher attrition risks, and what is the measurable impact of that timing on their retention and graduation?

- Priority Deadline: Date established by institution to encourage early applications for admission and financial aid
- Federal Deadline: Final date that federal officials will accept financial aid application
- Application Timing: Distance (in days) from the date of application for admission or financial aid and Early Decision, Priority, and Federal Deadlines



Details for Analysis

<i>Sub-metrics</i>	<i>Measure by</i>	<i>Data Quality Issues</i>
• Number and percentage completing before priority and federal deadlines • Retention and graduation outcomes by timing cohort	• College • Department • Major	Aid and grant codes may differ across colleges, complicating cross-institutional analysis

Details for Intervention

<i>Intervention</i>	<i>Intervention Owners</i>	<i>Delivery Method</i>
Targeted outreach and education to students identified as applying in highest-risk (latest) times	• Admissions and Enrollment • Financial Aid Office	Live-updating list of students applying for FAFSA admission in risky times

Source: EAB interviews and analysis.

5: Measure Advising Process Completion

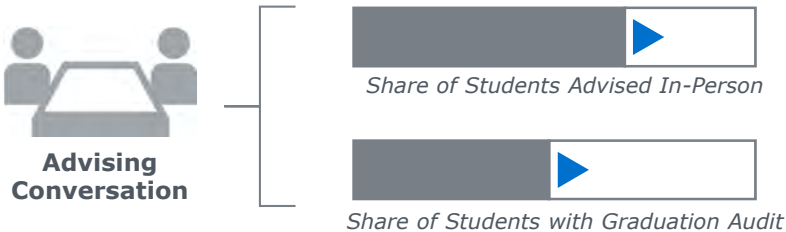
Summary of Analysis

Academic advising can play a critical role in helping a struggling student get back on path to graduation and long-term success, but at many institutions, advising processes are not centrally monitored or managed. As a result, it is difficult if not impossible to know which advisors, and which interventions, are making the most positive difference for students. IT should support the collection and delivery of advising process completion data (i.e., record when students interact with advisors) to enable more effective management and leverage of advising appointments to help at-risk students.

How to Generate the Analysis

How many students are completing advising appointments and receiving support from academic advisors?

- Face-to-Face Appointment: When a student sits down for a conversation with a faculty or professional advisor
- Course Needs Audit: Advisor checks what courses a student needs to take to stay on path to graduation
- Graduation or Time-to-Degree Audit: Advisor checks if current schedule will lead to on-time graduation
- Appointment Reason: Trigger for appointment (e.g., regular scheduling conversation, behavioral issues)



Details for Analysis

Sub-metrics	Measure by	Data Quality Issues
• Number of appointments scheduled and attended by reason (e.g., tutoring needed) • Number and percentage advised in person	• College • Department • Major • Advisor	College-specific advising systems may not connect with advising CRM; low compliance with attendance tracking among advisors

Details for Intervention

Intervention	Intervention Owners	Delivery Method
Continuous assessment of per-advisor progress in reaching students; cohort- and college-level reviews every semester	• Advising management (e.g., VP for Student Success)	Advisor-level weekly updates to advising management

Source: EAB interviews and analysis.

6: Isolate Late Major Declaration

Summary of Analysis

While a student may change his or her major multiple times throughout undergraduate education, EAB research has demonstrated that student major switches often follow predictable patterns; some majors tend to remain relatively static (e.g., Nursing), while others may be net “donors” of students (e.g., Computer Science, Biology) or net “acceptors” of students (e.g., Marketing, Business). IT should identify students who change their majors late to help prioritize outreach from advisors, and analyze major-major pathways to allow for advising based on the most frequent major clusters.

How to Generate the Analysis

How many students are declaring their majors late in their academic careers? What are common major pathways?

- Late Major Declaration: Students declaring first major or changing major after sophomore year (for first-time, full-time students seeking a bachelor’s degree) or after two semesters in the institution (for transfer students and those seeking an associate’s degree or certificate)
- Major Cluster: Common major-to-major pathway for students that begin in one academic area and move to another; these clusters or “meta-majors” should have coordinated advising and administrative process to streamline predictable major switches

Major Declaration Periods by Academic Term



Details for Analysis

Sub-metrics	Measure by	Data Quality Issues
• Percentage of declared majors at sophomore status • Percentage of declared majors after two semesters (associates and transfers)	• College • Department • Major	Transfer major articulation can take months to complete in system; “First” major may not be consistently coded across departments

Details for Intervention

Intervention	Intervention Owners	Delivery Method
Major cluster advising based on most common major-to-major pathways	• Academic advisors (faculty and/or professional)	Identification of common major-to-major pathways for advising restructure

Source: EAB interviews and analysis.

7: Encourage a Full Credit Load

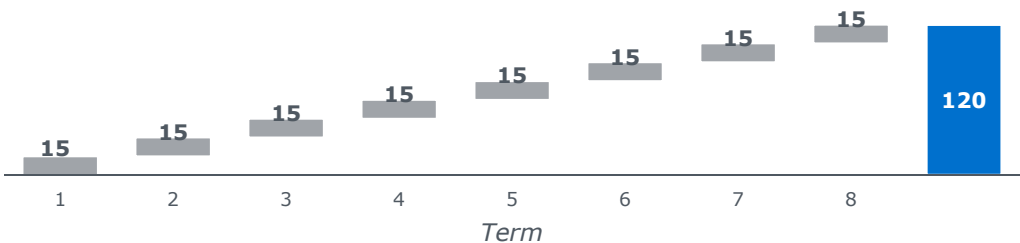
Summary of Analysis

Across levels of student academic preparation, researchers have found that taking 15 credits per semester rather than 12 improves retention and time to degree. To help encourage more students to enroll with 15 credits per semester, IT leaders should lead historical analysis of credit completion ratios, retention, graduation, and time to degree by credits attempted, separating out low and high academic cohorts.

How to Generate the Analysis

How many students are taking too few credits per semester (i.e., less than 15 per semester on average) to graduate within four years?

- Attempted Credits: Current attempted credits per student per term
- On-Track to Degree: Having enough current credits and enrolled at adequate credit velocity to complete major requirements within four years



Details for Analysis

Sub-metrics

- Percentage enrolled with less than 12, 12-15, and 15+ credits per semester
- Percentage of students on track to graduate in four years

Measure by

- College
- Department
- Major

Data Quality Issues

Credit-bearing course value can differ across colleges and departments (e.g., lab, independent study vs. full course)

Details for Intervention

Intervention

Unit-level campaigns to hit threshold credits for degree progress

Intervention Owners

- Provost
- College Deans
- Department Chairs

Delivery Method

Data analysis of full-credit impact by student cohort and academic preparation level

8: Prevent Credit Over-Accumulation

Summary of Analysis

Because students frequently change majors, transfer, and suffer setbacks during their academic journey, many will graduate with more credits than are mandated by their degree; these students could have graduated sooner, saving themselves in tuition dollars and the institution in capacity. Not all students that graduate with extra credits are in a bad situation—some may simply wish to explore more academic options—but IT should help campus partners give all students a clear choice by reaching out to students that have between two-thirds and three-quarters of final requirements complete to ensure that final semesters will align to degree.

How to Generate the Analysis

Which students in junior year are at risk of not completing in their senior year, and are likely to accumulate more credits than they need before leaving the institution?

- Required Credits: Total credits mandated by major
- Completed Credits: Number of credits that student has completed to-date
- Credit Over-Accumulation: When Completed Credits exceeds major Required Credits



Average Undergraduate Final Credits

Details for Analysis

Sub-metrics	Measure by	Data Quality Issues
• Major-required completion credits • Number of credits completed	• College • Department • Major	Major requirements incomplete, decay with organizational/coding changes

Details for Intervention

Intervention	Intervention Owners	Delivery Method
Reach out for graduation audit when student has earned between two-thirds and three-quarters of required major credits	• Academic advisors (faculty and/or professional)	Identify over-credit students (and recent stop-outs close to graduation) for personalized outreach

Source: EAB interviews and analysis.

9: Track Term-to-Term GPA

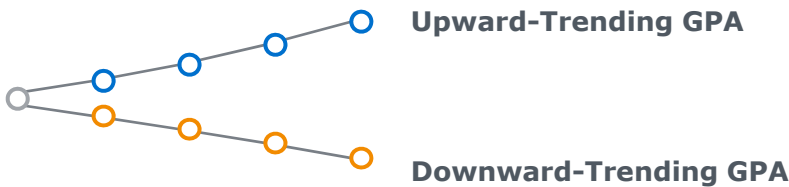
Summary of Analysis

Cumulative grade point average (GPA) is the most commonly used indicator of academic health, and is usually the main input for earl-alert technologies and advising priorities. However, analysis of current GPA is greatly enhanced by also studying the trend of GPA over time, because students that have declining GPAs drop out at much higher frequency than those with ascending GPAs. Identifying and intervening with declining-GPA students will allow student success teams to reach and support at-risk students in time to course-correct and before challenges become too severe.

How to Generate the Analysis

Are students’ GPAs going up or down term to term?

- Cumulative GPA: Total number of grade points earned divided by total number of credit hours attempted
- Major GPA: Grade points earned divided by total number of credit hours attempted for courses within the student’s first major
- GPA Trend: Current-term GPA compared to past-term GPA



Details for Analysis

<i>Sub-metrics</i>	<i>Measure by</i>	<i>Data Quality Issues</i>
• Term-over-term trend in major and cumulative GPA • Number of students with downward-trending GPAs	• College • Department • Individual Student	"Curved" majors may generate false-positive GPA trends in students on track to graduate

Details for Intervention

<i>Intervention</i>	<i>Intervention Owners</i>	<i>Delivery Method</i>
Direct outreach from advisors to students with higher demonstrated attrition risks	• Academic advisors (faculty and/or professional)	Visual of GPA trend to inform advising conversation between students, advisors

Source: EAB interviews and analysis.

10: Track Course Attendance

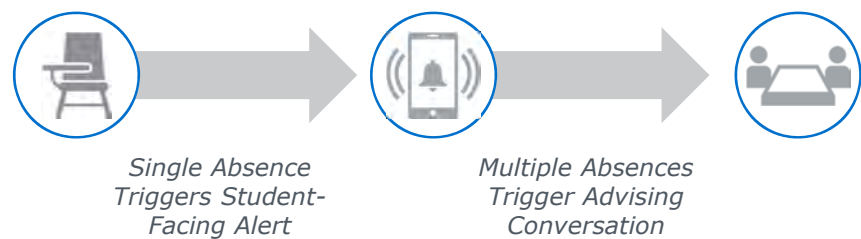
Summary of Analysis

Many institution-level analyses have identified that course attendance is highly predictive of critical student success metrics like GPA, retention, and graduation; students that go to class tend to do better, across academic preparation levels. Rather than attempt to achieve complete adoption of attendance-tracking software, IT leaders should focus efforts and faculty on the largest, highest-attrition courses, where the implementation of a single tracking tool could impact hundreds of students. Absences should trigger automatic outreach to missing students; multiple absences should trigger mandatory advising conversations.

How to Generate the Analysis

How many students are not attending class, and how many have multiple absences?

- Course Attendance: Binary flag either generated by faculty action (i.e., taking attendance) or automatically triggered through a technology tool



Details for Analysis		
<i>Sub-metrics</i> • Number of courses not attended • Average missed courses • Number and percentage of faculty that record attendance	<i>Measure by</i> • College • Department • Major • Course • Section	<i>Data Quality Issues</i> Strongest in larger gateway courses with mandatory digital inputs; manual faculty tracking difficult to incen and sustain

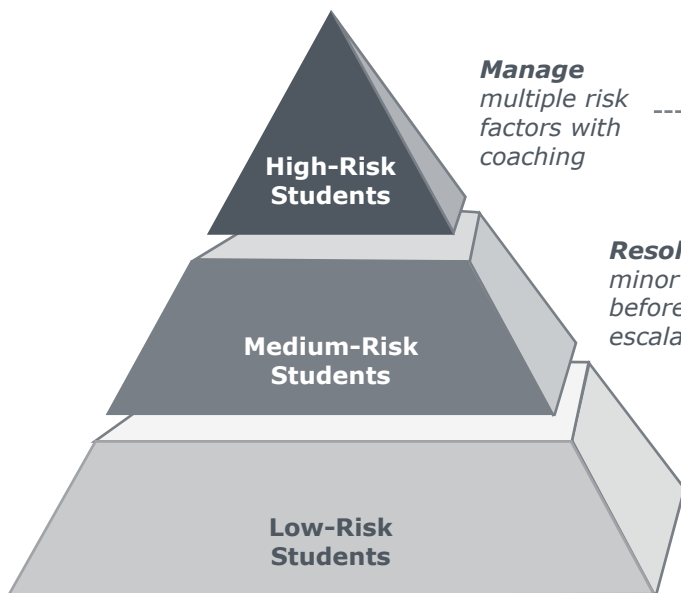
Details for Intervention		
<i>Intervention</i> Direct outreach from automated system and/or advising staff to students crossing missed course thresholds	<i>Intervention Owners</i> • Academic advisors (faculty and/or professional)	<i>Delivery Method</i> Automatic outreach to students missing class; multiple absences trigger advising conversation

Student Success Population Health One-Pager

Quick Education for Campus Stakeholders

Population Health Management The New Blueprint for Student Success

How Should We Support Different Risk Segments?



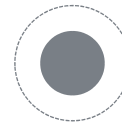
Manage
multiple risk
factors with
coaching

Resolve
minor issues
before they
escalate

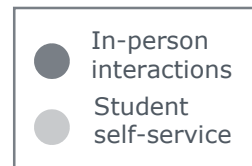
Prevent
problems
before they
happen

How Are We Deploying Our Support Efforts?

Typical Practice



Population Health Management



A critical element in modern health care is maximizing population health (i.e., the entire group of people served by a given hospital). Population Health Management (PHM) is also applicable to student success efforts because both health care and higher education need to triage outcomes and interventions based on segments of risk.

IT's role in enabling effective student success population health management is different at each stage of identified attrition risk:

- **Low-Risk Students:** Provide self-service portals to allow students to access academic resources and complete administrative processes
- **Medium-Risk Students:** Fast-cycle identification of interim outcomes and speed interventions to prevent small challenges from becoming major problems mandating complex, resource-intensive interventions
- **High-Risk Students:** Coordinate digital messaging and identify duplicative or contradictory messages that can confuse students receiving outreach from multiple campus support units



Advisors to Our Work

APPENDIX

Advisors to Our Work

The IT Forum is grateful to the individuals and organizations that shared their insights, analysis, and time with us. We would especially like to recognize the following individuals for being particularly generous with their time and expertise.

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