DON'T STOP IMPROVING

SUPPORTING DATA-DRIVEN CONTINUOUS IMPROVEMENT IN COLLEGE STUDENT OUTCOMES

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INTRODUCTION

Higher education proves a powerful lever of upward mobility for many Americans, but it is by no means a universally reliable path. Forty-two percent of college students do not graduate within six years, 1 million student loan borrowers default on their loans each year, and substantial equity gaps—including by race and income—persist.[1] Schools are increasingly finding ways to improve administrative decision-making and student success through data, experimentation, and evidence, but they face clear and persistent obstacles.

This leads to a key question: how can colleges and universities best drive student success through data and evidence? To begin to answer this question, we conducted focus groups with community college leaders and in-depth interviews with representatives from three schools that are using data and evidence to improve student outcomes: Georgia State University, California State University at Sacramento (Sac State), and Indian River State College (see figure 1).[2]

Each of these colleges reported that data is not a panacea or a magic bullet, but a tool. While data facilitates many of the strategies colleges pursue to improve student success, the most crucial factor in determining improvement is a strong commitment of leadership and financial resources to a culture of continuous improvement. Just buying a software package or initiating a text message campaign that improved outcomes at another college will not work. Successful continuous improvement strategies focus on common goals and developing the culture

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necessary to use available resources and tailor strategies to work toward these goals in each unique campus environment.

We identified three key lessons for colleges and universities:

1. Institutional culture and organization must support continuous improvement.

2. Start with problems, not solutions.

3. Money matters: colleges should devote resources to turning data insights into action.

We also identified three considerations for policymakers:

1. Federal, state, and accreditation agencies should be deliberate in their choice of reporting and funding metrics.

2. The federal and state governments should develop strong student-level data networks.

3. The federal government should implement evidence-based innovation grants for colleges and universities.

FIGURE 1[3]

GEORGIA STATE UNIVERSITY

SCHOOL

Located in Atlanta, Georgia, Georgia State is a public research university serving roughly 25,000 undergraduates. The average annual cost is $14,773, 53 percent of full-time students graduate within six years, and former students typically earn $43,300 10 years after entry. Forty-two percent of students are Black, 25 percent are white, 13 percent are Asian, 10 percent are Latino, 51 percent receive Pell Grants, and 22 percent are part-time.

STRATEGY

Georgia State is considered a national leader in data-driven student success. It has over 10 different strategic initiatives, including those related to predictive analytics, academic support, and financial support.

SUCCESS

In the words of the *New York Times*, Georgia State was "reimagined—amid a moral awakening and a raft of data-driven experimentation—as one of the South's more innovative engines of social mobility."[4] Over the last 15 years, Georgia State has increased graduation rates by 23 percentage points to 55 percent. It is the only national university where Black, Latino, first-generation, and low-income students graduate at rates at or above the rate of the student body overall.

CALIFORNIA STATE UNIVERSITY, SACRAMENTO (SAC STATE)

SCHOOL

Located in Sacramento, California, Sac State is a public university serving roughly 28,000 undergraduates. The average annual cost is $9,266, 47 percent of full-time students graduate within six years, and former students typically earn $48,900 10 years after entry. Thirty percent of students are Latino, 27 percent are white, 21 percent are Asian, 6 percent are Black, 53 percent receive Pell Grants, and 17 percent are part-time.

STRATEGY

Sac State has implemented a number of initiatives centered on improving graduation rates, including its Finish in Four and Through in Two campaigns, predictive analytics, and enhanced advising and course scheduling.

SUCCESS

Sac State nearly doubled its four-year graduation rate, increasing it from 8.5 to 14.7 percent in just three years. The number of freshman taking 15 units their first semester rose from 25 to 73 percent in four years. The school won the AASCU Excellence in Innovation Award.

INDIAN RIVER STATE COLLEGE

SCHOOL

Located in Fort Pierce, Florida, Indian River is a state college serving roughly 14,000 undergraduates. The average annual cost is $2,198, 38 percent of full-time students graduate within three years, and former students typically earn $30,400 10 years after entry. Fifty-three percent of students are white, 22 percent are Latino, 17 percent are Black, 1 percent are Asian, 38 percent receive Pell Grants, and 64 percent are part-time.

STRATEGY

Indian River joined the Achieving the Dream network to learn how to better use data and now integrates data into everyday decision-making. For instance, it tracks and works towards specific leading and lagging indicators.

SUCCESS

Indian River's three-year graduation/transfer rate is 49 percent, compared to 39 percent nationally. Its rate for under-represented minorities is 43 percent compared to 34 percent nationally. It has been named a Top 10 Aspen Prize Finalist multiple times and was named an Aspen Prize Finalist with Distinction in 2017.

KEY LESSONS FOR COLLEGES AND UNIVERSITIES

Colleges and universities can and must be more effective at improving student success, and many are actively working to achieve this goal. Despite substantial resource challenges and an increasingly vulnerable student body with complex needs for financial and academic supports, many colleges and universities are increasingly finding ways to improve administrative decision-making and student success through data, experimentation, and evidence.

While only some institutions have already successfully used data to drive better outcomes, there is widespread recognition of the need to use data to improve. A 2017 survey of institutions found that 91 percent of colleges report that they are investing in descriptive data and analytics in some way, and 89 percent report that they are investing in predictive data and analytics in some way.[5] Many institutions are implementing a wide range of new data-driven tools and strategies to enhance student success. These include early-alert systems that identify at-risk students for possible intervention, stronger student retention tools, course and major recommendation systems that enhance academic advising, and adaptive learning courseware.[6] Indeed, one study of eight institutions that substantially improved student outcomes identifies the "early and ongoing use of data" as a critical element of success, second only to campus leadership.[7]

However, colleges are only scratching the surface of the potential for data to drive better student outcomes. Schools often face substantial resource challenges. They may not have the infrastructure or expertise to securely and accurately collect and analyze data. They may similarly lack the infrastructure and expertise necessary to turn data and analysis into effective action. Schools may require dramatic cultural changes to facilitate data-driven initiative design and implementation. All of these challenges may be most intense at under-resourced schools attended by the most vulnerable students. Moreover, federal and state policy may conscribe data-driven strategies colleges hope to use.[8]

Indeed, it is clear that not all data-driven initiatives are equal, and many do not work. According to recent surveys, the majority of chief academic officers and chief information officers do not believe their data and analysis investments were "very effective."[9] One study of institutions looking to improve completion rates found no correlation between the number of strategies used and evidence of increased completion, suggesting that quality is very different than quantity.[10]

Sometimes data-driven initiatives may even exacerbate existing problems and inequities. A critique of data-driven interventions, such as those enabled by predictive analytics, is that they may lead to discrimination, labeling, and stigmatization. They may do this by incorporating demographic data that reflects prior discrimination and inequity; encouraging disproportionate recruitment, enrollment, and advising; influencing faculty treatment of flagged students; discouraging or alarming flagged students; and steering underprivileged students away from more challenging and/or economically lucrative majors.[11]

Despite this, success stories demonstrate the clear potential of data-driven strategies. So, how can colleges and universities increase their odds of success while avoiding negative unintended consequences? The schools we talked to serve different student bodies, have varying levels of available resources, and are at different stages of implementation success. Yet, our conversations pinpointed several overarching lessons on how to overcome barriers and use data and evidence to improve student outcomes.

1. INSTITUTIONAL CULTURE AND ORGANIZATION MUST SUPPORT CONTINUOUS IMPROVEMENT.

To effectively drive student success, institutions must develop a shared culture of continuous improvement across the school that supports high-quality data collection, reporting, and analysis; fully integrates findings into decision-making; and implements, evaluates, and iterates strategies based on evidence. Building such a culture is challenging, takes sustained investment and focus, and must be constantly maintained and improved upon.

Setting the tone from the top is integral. Other work has highlighted the importance of leading by example. Indeed, representatives of the three schools we focused on indicated that their leadership identified data-driven improvement as a college-wide priority with a clear vision and dedicated support.[12] This vision may be influenced by public policy (see box 1).

College and university leaders can make deliberate structural decisions to drive home their commitment to data-driven continuous improvement. At all three schools we talked with, the individual who leads data-driven student success efforts holds a cabinet-level position, which representatives from each school cited as paramount to their successes. Georgia State and Indian River went one step further by giving their student success leader responsibility over university staff critical to success initiatives, including the offices for admissions, financial aid, TRIO programs, the registrar, student accounts, first-year programs, academic advising, and career services. Such a structure allows for a macro-view

across college activities, can streamline the implementation and iteration of success initiatives, and enables the consistent use of new technologies across student-serving offices. Moreover, it facilitates collaboration and joint problem-solving across college functions that may traditionally be siloed. Both Georgia State and Indian River did note that they keep their institutional research (IR) team independent so as to not bias them, but also embedded data experts in all teams and meetings.

Building on institutional structure, campus leaders can cultivate buy-in on both goals and strategies and mobilize relevant individuals across the college—from top to bottom, department to department, and staff to students. Such actions are in line with expert recommendations to distribute data responsibilities widely and promote transparency.[14]

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All three schools we talked with emphasized that their school has no special team in charge of data-driven success initiatives but rather facilitates cultures where suggestions arise organically from many sources. This is especially true once staff become used to drawing on robust data to perform routine and rapid ad hoc analyses to inform ongoing meetings and discussions. Making key data familiar and immediately accessible can facilitate this work. Indian River has a "war room," often used by groups for meetings, where "they've got the data plastered all over the wall" including sheets on part-time students, their incoming student survey, transfer rates, and equity. Data updates are a regular part of meetings of the board of trustees, cabinet, departmental, faculty, adjunct, and "everywhere there's an audience."

Two-way communication channels can build buy-in with students and staff, while also sourcing additional ideas and ensuring transparency. Sac State is working to disseminate information to students through a public matrix of dashboards. Staff also

solicit information and ideas directly from students on specific topics.

For example, three years ago, Sac State's provost "wrote a letter to each student… and asked them basically to let him know what classes they were unable to get [into]." He received over a thousand responses within a few weeks, helping the college decide to add sections, classes, and 177 new faculty. "This last year again, he wrote the same letter, and [they] didn't have one request from any student for additional classes." The school is now building upon this initiative by implementing structured scheduling for many majors. Describes their representative, "students will have a recommended course of action, and [Sac State] will guarantee them that those courses are available." The school will use predictive analytics to predict future performance based on past grades and will then use these predictions to personalize course recommendations and suggest supplemental academic support. These recommendations will determine what courses the school offers each term. "We are starting with the students' interests and moving forward, rather than starting, [as done] historically, with the administrator's or faculty's interest in setting those schedules."

Such integrated, campus-wide continuous improvement strategies lend themselves particularly well to closing equity gaps. Data that is disaggregated by key demographic variables—such as race, ethnicity, or income—can and should play a key role in diagnosing problems and tracking progress towards closing equity gaps. However, campus leaders emphasized the importance of not focusing on specific demographics when designing solutions. Georgia State's representative specifically attributed their success to "getting out of the mindset of creating a lot of programs that are targeted at specific populations and move towards the process of changing the institution at its core." As representatives discussed, such a process is more difficult but reaps myriad rewards. Broader interventions may reduce stigmatization, may be more cost-effective due to economies of scale, and may be more technically effective as bigger datasets lend themselves to more robust results.

2. START WITH PROBLEMS, NOT SOLUTIONS.

Institutions that have demonstrated success start by identifying a problem and then follow the evidence to possible solutions, rather than starting with—or being sold—solutions to problems. Georgia State's representative described a clear *modus operandi*: "We see some significant problem in the data...and then we [make] an effort to try and see if we can try and remedy that problem. We pilot interventions or some change in processes and we track the data very carefully and we then scale what works." Similarly, Indian River stressed their "nimble" approach. This model of rapid analysis, implementation, evaluation, and iteration is at the heart of a culture of continuous improvement.

For example, 15 years ago, Georgia State's retention and graduation rates were very low. The data revealed that each semester, they were losing about a thousand students who could not cover tuition and fees. When they dug further, they found the largest subgroup was academically qualified seniors who were running out of financial aid eligibility, such as for the Georgia HOPE Scholarship. This led the school to pilot test providing micro-grants to roughly a dozen students to help them cover modest financial shortfalls. The model worked, and Georgia State now issues Panther Retention Grants to over 2,000 students each year. Over 86 percent of the students who receive the grants go on to graduate.[15] As they describe it, officials did not begin with a plan for microgrants. Instead they identified a problem based on data analysis, piloted a solution, tracked and adjusted their solution based on data, ultimately brought their solution to scale, and uncovered other problems to tackle in the process.

Similarly, staff at Indian River regularly analyze and highlight courses with high enrollments but low success rates. The dean and faculty recently "dove deep" into one of these courses, using data analytics to pinpoint and tweak key assignments that students were struggling with. According to their representative, this effort improved the course's success rate by 5 percent.

To facilitate this approach, it is important to avoid being overly prescriptive about the specific strategies colleges use to improve outcomes. The same tactics will have different impacts in different environments. Copying and pasting initiatives that were successful in one environment to another may thus be less effective than setting shared goals and providing the support necessary for colleges to cultivate the cultures and capabilities to identify strategies to meet those goals in each unique environment.

It is also critical that institutions have a robust central database in order to effectively identify problems such as those highlighted above. The schools we talked with use a range of software and populate their databases with everything from administrative to survey data. Data accuracy, privacy, and integration can get complicated when schools work with one or more vendors, and the process of selecting vendors is itself important and complicated.[16] As a positive sign, however, none of the schools we talked with indicated broad concerns with the quality of and infrastructure for their own data, which is in line with larger surveys that have found that the vast majority of schools believe their data is accurate and respects privacy.[17] On the other hand, although federal and state data can complement such institutional data in key ways, its current quality and coverage leaves much to be desired (see box 2).

> [O]nly 40 percent of college representatives agree that they "are able to implement the results of student success analytic studies effectively."

POLICY CONSIDERATION 2. THE FEDERAL AND STATE GOVERNMENTS SHOULD DEVELOP STRONG STUDENT-LEVEL DATA NETWORKS.

While the institutions we spoke with can do a lot with data from their enrolled students, they are currently not able to effectively collect data on post-college employment outcomes. The only way institutions can directly collect these data elements is through alumni surveys, which are costly, burdensome, hard to verify, and sometimes biased. Secure federal and state student-level data networks can calculate such elements more efficiently and accurately, providing institutions key insights into student success and complementing other institutional data efforts. Congress should authorize the creation of a secure federal student-level data network with strong privacy protocols, as proposed in the bipartisan College Transparency Act.[18] Meanwhile, states should further develop, improve, and allow colleges to use their own state longitudinal data systems.[19]

Colleges reported that more challenging than collecting data was being able to effectively analyze and act on it—in other words, identifying the problems and turning them into solutions. The representative from Indian River explained that they "had always collected a lot of data" but understanding and effectively using this data has been an evolutionary process. Larger surveys have found that only 40 percent of college representatives agree that they "are able to implement the results of student success analytic studies effectively."[20]

Apart from the aforementioned organizational and cultural changes that facilitate effective data-driven action, schools can develop regular processes for educating staff on how to use data. To improve data literacy, Indian River recently initiated a "diving into data" series where their IR staff present insights on various issues. The series is open to all faculty, staff, and administrative employees, around 50 of whom choose to attend each session. IR staff are explicitly asked to finish their data presentations with a slide on next steps, which helps facilitate action. Such tactics also normalize problem- and solution-finding, which may alleviate individuals' innate defense mechanisms against admitting a problem exists, a

challenge cited by various representatives.

As the representative from Sac State put it: "you're writing about our experiment here. I don't have the final act yet." Indeed, institutions should never start with the final act; instead, they must remain flexible and open to trial, error, and adjustment

3. MONEY MATTERS: COLLEGES SHOULD DEVOTE RE-SOURCES TO TURNING DATA INSIGHTS INTO ACTION.

While data can help colleges and universities identify the most promising methods to improve student success, it is not sufficient on its own. Schools must dedicate funding to turning data insights into action in order to most effectively help more students succeed.

Despite the attention paid to data itself, the schools we talked with reported that the bulk of spending on successful data-driven initiatives went toward the student-related interventions that are identified and guided through data. Georgia State's representative offered the following general rule of thumb for success: 10 percent analyzing data, 90 percent using data effectively by translating it into substantive action.

This is not a hard and fast rule. Some initiatives may be high tech and low touch, such as an artificial intelligence chatbot used by Georgia State to reduce "summer melt," the loss of students during the summer between high school and college. In its first year, the chatbot answered more than 200,000 questions asked by incoming freshmen; within two years, it helped reduce summer melt by 37 percent according to representatives (figure 2).[21] Other initiatives may be low tech and high touch, such as Indian River and Georgia State's decisions to build a more robust advising model, complete with new advisors.
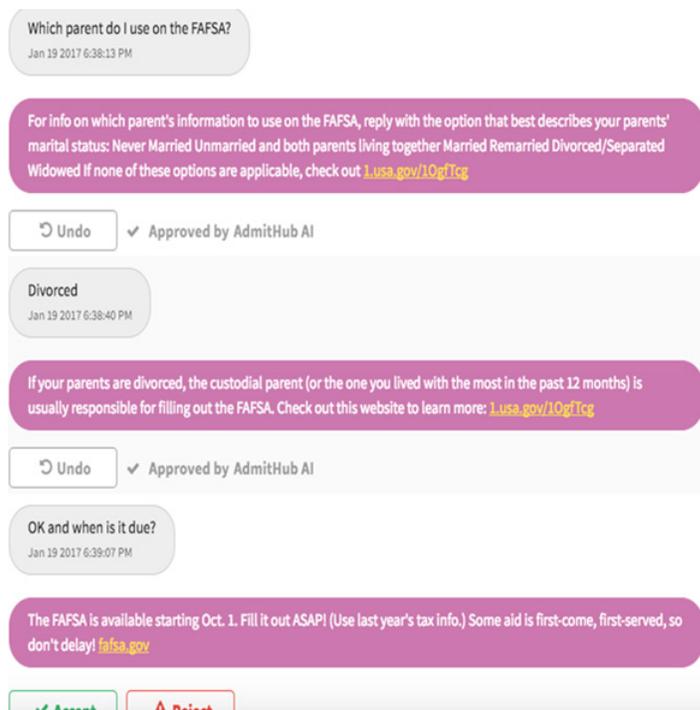
Overall, however, it is clear that data-driven student success initiatives require investing in far more than just data. For instance, Georgia State's representative noted that most institutions do not invest enough in two types of personnel: data analysts and academic advisors. Indeed, institutions broadly report data capacity constraints, and a 2011 survey found that the median ratio of advisees to advisors was 296:1 overall and 441:1 at community colleges.[22]

As an illustrative example, Georgia State's representative explained that "launching [Georgia State's predictive analytics early-alert system] gets all the attention...but it would do absolutely no good if all those thousands of alerts were going off every week, and we didn't have a structure to take those alerts, have somebody trained to receive the alerts, and then relay to the students something they could do to mitigate whatever problem was found." There's substantial press coverage of Georgia State's predictive analytics system but far less coverage of the $2 million their representative reports they spend annually on the 42 advisors hired to turn their predictive analytics system into student success.

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Initiatives that result in clear dividends for a college can build institutional support and a case for additional funds. For example, officials of Georgia State estimate that for every 1 percent increase in retention, the school experienced a $3.2 million increase in revenue through additional tuition and fees.[23] Given this large return on investment, leadership agreed to provide 10 percent of the revenue from effective student success initiatives to fund additional efforts. As student success initiatives improve outcomes and generate new revenues, they also build trust and commitment. Through such pathways, lower cost interventions may provide an initial—if often less impactful—starting point that helps build institutional support for additional interventions.

Federal, state, and other grants can also provide important resources to support building data-driven initiative capacity and implementing specific strategies, but pursuing these funding streams takes commitment. One of the schools we talked with applies for almost 100 grants each year. These may include those from the U.S. Department of Education; from other governmental agencies and departments, such as the U.S. Department of Labor and U.S. Department of Agriculture; and from additional sources, such as national and private foundations. Policymakers could make this funding more widely available to more colleges—while also directly encouraging and supporting continuous improvement strategies—by creating new sources of federal funding such as an evidence-based grant program (see box 3).

POLICY CONSIDERATION 3: THE FEDERAL GOVERNMENT SHOULD IMPLEMENT EVIDENCE-BASED INNOVATION GRANTS FOR COLLEGES AND UNIVERSITIES.

Additional federal support could be awarded to colleges to establish processes for data-driven improvement in student outcomes. A similar concept already exists in federal law: the 2015 Every Student Succeeds Act defined evidence-based K-12 interventions that "promote continuous improvement and can support better outcomes for students."[24] Congress should authorize a grant program for higher education institutions pursuing a strategy that "(I) demonstrates a rationale based on high-quality research findings or positive evaluation that such activity, strategy, or intervention is likely to improve student outcomes or other relevant outcomes; and (II) includes ongoing efforts to examine the effects of such activity, strategy, or intervention."[25] Instead of prescribing the replication of specific interventions, such a grant program would support colleges and universities in defining their own goals, developing and implementing potential solutions, and making necessary institutional changes. By supporting colleges as they establish a system to use data to improve, the federal funds would build an infrastructure that colleges could use to continue to improve over time.

CONCLUSION

Data and evidence can be a key tool for colleges and universities looking to improve student outcomes. However, it is clear that more important than adopting a particular software solution is the commitment—both conceptually and of resources—to a culture of continuous improvement that uses data to implement, evaluate, and iterate strategies. Improving student success and closing equity gaps is challenging. There are no quick, easy, or inexpensive solutions. But the colleges and administrators that we talked to have demonstrated that it can be done. Colleges and universities are already doing a lot with very little—imagine what more they could do with additional support, resources, and flexibility to drive improvement efforts.

ACKNOWLEDGEMENTS

ENDNOTES

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