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& CAREER TRAINING OPTIONS

**AFFORDABLE
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WINNER PURDUE UNIVERSITY

The *Back a Boiler Fund* financial model uses Income Share Agreements and investor mentoring to make college more affordable.



COMPETITION JUDGES

G. L. (Peter) Alcock

Former Vice Chair of the Massachusetts Board of Higher Education; chair of the Academic Affairs Committee, Pine Manor College Board of Trustees

Brian C. Broderick

Partner, Hemenway & Barnes, LLP; Senior Vice President, Hemenway Trust Company; Trustee, Wellesley College; board of directors, Pioneer Institute

Charles D. Chieppo

Principal, Chieppo Strategies LLC; senior fellow at both Governing and Pioneer Institute

Stefano Falconi

Managing Director, Higher Education Practice Leader, Berkeley Research Group, LLC

Bob LePage

Assistant Secretary for Career Education in the MA Executive Office of Education; former V.P. of Foundation and Workforce Training for Springfield Technical Community College; prior E.V.P. of Career Pathways

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Medical Center

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Massachusetts General Hospital

Brian Wheelan
Beacon Health Strategies

RUNNERS UP

Alfond Scholarship Foundation

The *Harold Alfond College Challenge* invests \$500 in the future education of every child born in Maine.

American Institute for Innovative Apprenticeship

The *Expanding Apprenticeships in Massachusetts* proposal provides company training and classroom-based education in numerous industries.

Toyota North American Production Support Center

The *Advanced Manufacturing Career Pathway* provides five semesters of coursework and job experience, resulting in 70-90 percent graduation and 90 percent employment rates.

Wisconsin Bureau of Apprenticeship Standards

The *Youth Apprenticeship* initiative speeds entry into the workforce by aligning credit requirements of youth and adult-registered apprenticeships.

SPECIAL RECOGNITION

Springfield Technical Community College

College Affordability at STCC

MIT

MITx MicroMasters

Duet in Partnership with Southern New Hampshire University

TechMission

City Vision University

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FOREWORD

FOR 27 YEARS, THE BETTER GOVERNMENT Competition has identified winning programs and ideas from around the country that improve both lives and the quality of public services, all while seeking to save taxpayers' money. In 2018, the Competition sets its sights on new approaches to "Making Higher Education and Career Training Options Affordable and Effective."

As always, the Competition eschews feel-good silver bullets, such as "just make college free!" The Institute knows all too well the numerous costs of schemes like these. Instead, in the 2018 Competition's guidelines, which were shared with thousands of institutions, government officials, non-profits and interested citizens, Pioneer sought out proposals or existing programs that improve affordability and college completion, and broaden access to high-quality apprenticeships.

Of the hundreds of worthy entries, an expert panel of judges vetted and selected one winning program and four finalists, which Pioneer staff has supplemented with four solutions worthy of special recognition.

Today, student loan debt stands at \$1.5 trillion, with one in eight Americans holding some form of that debt. With average tuitions rising five times faster than inflation over the past 40 years, generations of middle-class and disadvantaged youth are being priced out of educational opportunities.

Massachusetts considers itself an exceptional state for education, but while our K-12 system enjoys a strong reputation, families in the Commonwealth face the same debt burdens.

Massachusetts' community college completion rate, at 38th in the U.S., is well below the national average of 22 percent.

Most students consider only four- and two-year academic programs. That is, in part, caused by a dearth of other viable choices. Over the past half century, American culture and institutional restrictions too often push young people into college even when that is not their best option. Not only do employers frequently report a "skills mismatch," but also a preference for relevant work experience over a four-year degree, especially in manufacturing and other sectors that require skilled workers. The manufacturing workforce is aging, and it is expected that millions of new manufacturing jobs will be available over the coming decade. Special attention to advancing apprenticeship programs is needed to meet future workforce demands.

AFFORDABILITY, COLLEGE COMPLETION AND APPRENTICESHIPS

The 2018 winner is the first practical application of the Income Share Agreement concept Milton Friedman floated in the 1950s. Purdue University's *Back a Boiler* initiative allows investors, such as alumni, to fund a student's college education in exchange for a small share of the student's future income.

One of the finalists, the Alford Scholarship Foundation's *College Challenge*, makes an investment in the postsecondary education of every

child born in Maine, a practice which leads to better educational attainment and parents saving more for their children's college educations.

Three additional runners up, from the American Institute for Innovative Partnership, the Federation for Advanced Manufacturing Education, and the Wisconsin Bureau of Apprenticeship Standards, outline concepts for statewide apprenticeship programs. They include ideas for funding and standards, an employer-community college partnership wherein employers drive course design concerning professional behavior and manufacturing skills, and policy actions that could both guide young people into apprenticeships and ensure that those positions are affordable to apprentices and employers alike.

The four 2018 special recognition award recipients offer promising approaches to making higher education costs more manageable.

Springfield Technical Community College's partnership with Northeastern University allows a student to earn an A.S. from STCC and a B.S. from Northeastern for a total of \$40,000, increasing access to a four-year degree for hundreds of students in Western Massachusetts.

The MITx MicroMasters program makes Master's degrees more accessible for mid-career professionals from around the world.

Duet, a career support program, is partnering with Southern New Hampshire University to meet the goal of having 70 percent of its students, who are largely of color and qualify for Pell grants, complete an associate's degree within three years and find a career-track job within a year of graduation. City Vision University takes a similar approach but aims to serve individuals who have completed addiction recovery programs.

In defining the Competition guidelines, we benefited from the advice of a dozen local and national experts. We are deeply grateful to the highly respected external panel of judges who evaluated this year's submissions: G.L. (Peter) Alcock, former Vice Chair of the Massachusetts

Board of Higher Education; Brian C. Broderick, Partner at Hemenway & Barnes and Senior Vice President at the Hemenway Trust Company, and Trustee at Wellesley College; Charles D. Chieppo, Principal at Chieppo Strategies, LLC and Senior Fellow at the Governing Institute; Stefano Falconi, Managing Director, Berkeley Research Group, LLC; and Bob LePage, Assistant Secretary for Career Education in the Massachusetts Executive Office of Education.

Once again, as she has for two decades, Shawni Littlehale did an outstanding job leading the extensive effort that culminates in the extraordinary proposals we recognize in this volume. She was ably assisted by Communications Fellow Chase Bosworth, who promoted the Competition on social media. But even with Chase's help, Shawni couldn't have led another successful Better Government Competition without the work of interns Sonja Ajani, Lauren Altobelli, Ben Bassett, Christian Barnard, Khea Chang, Henrik Choy, James DeNeill and Stephanie Garcia.

I am grateful for the collaboration of dozens of state legislators, executive branch officials and media outlets. Their advice and outreach expanded the number and quality of entries we received. Now that the winners have been selected, we will go back to them to share the powerful ideas and programs the Competition has recognized.

Of course, none of this would be possible without our generous donors and the many 2018 Better Government Competition sponsors. With your support, Pioneer will ensure that the solutions to critical higher education and career training challenges that we celebrate in this volume will reach a much wider audience.

Sincerely,



James Stergios, *Executive Director*



WINNER

PURDUE RESEARCH FOUNDATION: BACK A BOILER ISA FUND

MARY-CLAIRE CARTWRIGHT

Vice President, Information Technology;
Program Manager, Back a Boiler
Purdue Research Foundation

CYNTHIA SEQUIN

Assistant Vice President,
Marketing & Communications
Purdue Research Foundation

U.S. STUDENT LOAN DEBT IS \$1.48 trillion and growing. More than 44 million Americans have student debt, and the average monthly payment for a borrower between the ages of 20 and 30 is \$351. *The Wall Street Journal* reported that 71 percent of students who graduated in 2015 did so with an average debt load of slightly more than \$35,000. The average amount owed by Purdue University students after four years is about \$25,000 and 33 percent of Purdue undergraduates use some type of loan to pay for their educations.

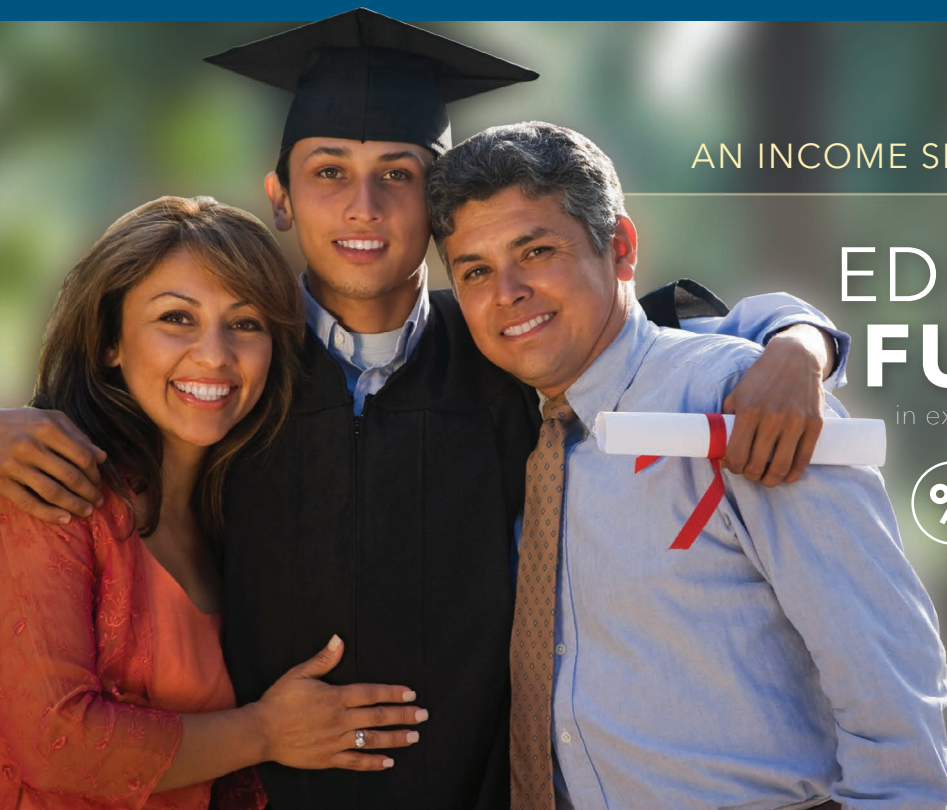
As a land-grant university, Purdue performs better than the national average, but, with a strong sense that the university could and should do better, Purdue's president, Mitch Daniels, charged the Purdue Research Foundation with launching the first large-scale Income Share Agreement program at a U.S. public university. Income Share Agreements, or ISAs, allow investors,

such as alumni, to fund a student's college education in exchange for a small share of the student's future income. President Daniels believed such programs would create additional incentives for organizations to mentor and counsel students without the use of additional tax dollars.

The concept of an income share agreement originated in a 1955 article by Nobel Prize-winning

**U.S. STUDENT LOAN DEBT IS
\$1.48 TRILLION**

**MORE THAN
44 MILLION**
AMERICANS HAVE STUDENT LOAN DEBT



AN INCOME SHARE AGREEMENT

EDUCATION FUNDING

in exchange for an agreed upon

% OF POST-GRADUATION
INCOME
over a defined number
OF YEARS

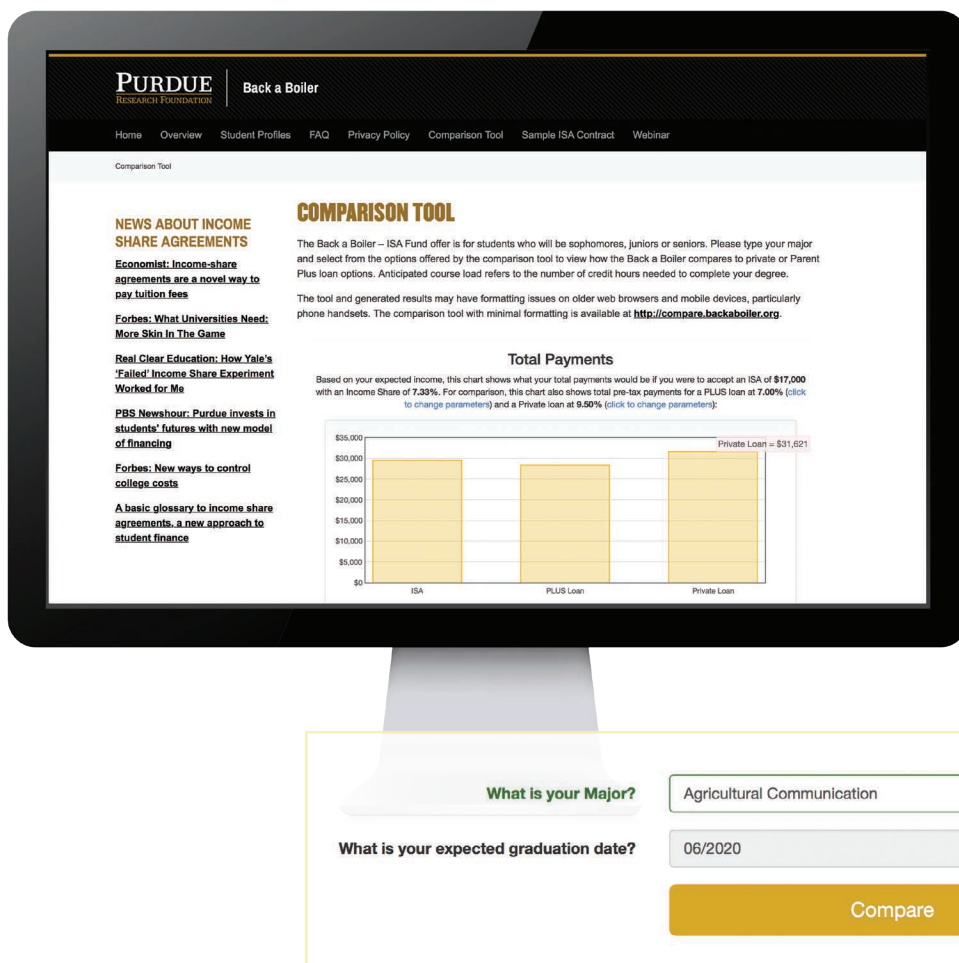
economist Milton Friedman. His article, “The Role of Government in Education,” argued that students’ higher educations should be funded through an “equity investment” called an Income Share Agreement. In general terms, an Income Share Agreement is a contractual agreement in which a student receives education funding in exchange for an agreed upon percentage of post-graduation income over a defined number of years.

In the summer of 2015, the Purdue Back a Boiler Committee was formed. One of its first assignments was choosing a master servicer for the program. The Purdue Research Foundation met with six firms, all of whom were startups in the U.S., and all of whom were interested in partnering with Purdue to build and grow an ISA program at the university. The Committee focused on five criteria when selecting the firm that would service the nascent program: experience with students, a solid operations and leadership team, capital market experience, their proposed investment fund’s capital structure, and the fees they would charge for their services. Purdue Research

Foundation ultimately chose Vemo Education as its primary servicer because of their deep understanding of the student financial aid process, quantitative expertise in modeling the student risk pool, and their legal expertise in the field of income share agreements.

Throughout the fall of 2015, ISA contracts, contract disclosures, and underwriting decisions and design elements were evaluated. The Foundation relied heavily on the time and talents of its own staff and the university’s Division of Financial Aid. The Foundation also made use of industry experts by tapping consultants at the Jain Family Institute and 13th Avenue Funding. During this same time period, legal work began on the master servicer agreement with Vemo Education. Since there is no current legislation around ISAs, outside tax and legal advice was also sought.

In early spring 2016, the Back a Boiler program began an informational campaign to attract students to the program. A website was launched with samples of the legal documents, explanations, and FAQs. The website also has a comparison tool that allows students to evaluate their



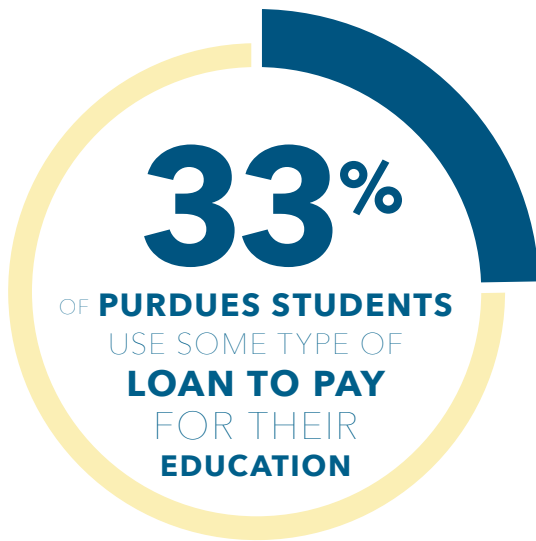
own major and their funding needs. Emails and letters were sent to students who met the criteria for eligibility.

Purdue University and the Purdue Research Foundation felt strongly that having Purdue's own money as part of the program sent an important message. It shows that the university believes in its students and the value of the Purdue degree. It is a way of showing students that if they don't succeed, the university doesn't succeed. To that end, \$4.5 million of the president's discretionary money was invested in the Back a Boiler program.

As the Back a Boiler program was set to launch, Purdue Research Foundation had two additional

nonprofit investors approach it about being part of the program. Each of these investors has an affinity for higher education. They both felt it was important that this pilot be launched to test the viability of Income Share Agreements as a way of funding higher education. Each of these investors contributed \$1 million.

First-year Back a Boiler applicants included undergraduates in the junior and senior classes. This first cohort totaled 182 participants whose financial support began in the fall semester of the 2016–2017 academic year. The program has since expanded to include sophomores and the Summer Academic Session. Payments from the



first cohort have begun to be made and Purdue expects that payment history to help other institutions as they explore ISA programs of their own, as well as aid legislative efforts to determine how an ISA payment differs from conventional private or Parent Plus loans.

Purdue's ISA program has received inquiries from more than two dozen higher-education entities, including the University of Colorado, University of Arizona, University of California, and the University of Utah. Due to this interest, Purdue Research Foundation has partnered with Vemo Education to help colleges and universities design and implement their own income share agreements to provide students with an alternative to traditional private and Parent Plus loans. Any proceeds generated by Purdue Research Foundation from this consulting will go back into the Back a Boiler program to support enrolled students in the form of scholarships or other non-obligatory aid.

Federal legislators in both the House and Senate are exploring legislation around Income Share Agreements. ISA bills have been introduced to provide the legal and tax framework for the growth of innovative private financing options for students to fund their postsecondary educations.¹

As noted, when launched in 2016, the Purdue Back a Boiler program was offered to juniors and seniors. The program's contracts are based on the anticipated future earnings of a graduate. It was felt that students closer to graduation would be less likely to change their declared majors. In the second year, the program was expanded to include sophomores and the academic summer session. As a result, the Back a Boiler program grew by 65 percent in its second year.

To date, there are 478 contracts with students enrolled in Back a Boiler who have received funding totaling \$5.9 million. All Purdue University colleges and more than 100 majors are represented. The top six colleges represented are: Engineering, Polytechnic Institute, Health and Human Sciences, Liberal Arts, Krannert School of Management, and Agriculture.

TO DATE, THERE ARE:

478
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BACK A BOILER

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\$5.9 MIL

In addition, Back a Boiler's first seniors have graduated and have now entered payment mode. Now that participants are in payment mode, the Purdue Research Foundation will be testing the collection policies and procedures it has developed. For the next academic year, the Foundation will be closely evaluating the collection experience, with a specific focus on whether actual results meet modeled expectations.

As the Back a Boiler program enters its third year, the Foundation is completing efforts to raise a second round of funding: \$10 million to cover 2- 3 years of student financing. The launch of Purdue's Back a Boiler-ISA Fund and

other affordability measures have already impacted current practices in higher education debt. Though not all of the decline is due to Back a Boiler, Purdue undergraduate borrowing in 2017 was \$116 million, which is 37 percent lower than it was in 2012, when Purdue student borrowing stood at \$183 million.

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\$183 MIL

37% LOWER

**PURDUE
UNDERGRADUATE
BORROWING**

\$116 MIL

2012

2017

PARTICIPATING STUDENTS ATTEST TO THEIR SATISFACTION BEING A BACKED BOILER:

// Being accepted in the [Back a Boiler] program meant more than words can describe because it shows that Purdue does care about their graduates. Receiving the funding helped me 1) financially: because I was able to budget for things and 2) emotionally: because I was able to look forward to the future.”

- Andrew Hoyler, '17,
Purdue Polytechnic Institute

// I used to feel the looming menace of crippling debt, but I now have peace of mind about paying for school. Back a Boiler is a fantastic way to prevent current and future students, like me, from getting into a crushing amount of debt after graduation.”

- Melissa Gillbanks, '18,
Design Engineer

// When I first heard about the program, I thought it was an amazing system allowing me to pay for my education. I had always wanted to do this, so the program gave me a chance to achieve this goal that I set for myself as a child.”

- Alexis Bridgewater, '18,
College of Liberal Arts

// My dad and I both carefully read about the program and I called and asked more questions. In the end, we both felt very comfortable with it. I'm not accruing debt and it will adjust after I graduate so I won't have to worry about scraping pennies together to pay student debt.”

- Zachary Meyer, '17,
College of Health & Human
Sciences



CONTACT THE AUTHOR **MARY-CLAIRE CARTWRIGHT**

Vice President,
Information Technology,
Purdue Research Foundation

Program Manager, Back a Boiler

C: 765.588.1052

E: mccartwright@prf.org

W: www.purdue.edu/backaboiler



CONTACT THE AUTHOR **CYNTHIA SEQUIN**

Assistant Vice President,
Marketing and Communications,
Purdue Research Foundation

C: 765.588.3340

E: casequin@prf.org

ALFOND SCHOLARSHIP FOUNDATION: HAROLD ALFOND COLLEGE CHALLENGE

COLLEEN J. QUINT

President & CEO, Alfond Scholarship Foundation

LIKE MANY STATES, MAINE'S traditional industries—fishing, farming, and forestry—are in transition. The days when a young man could walk across the stage, receive his high school diploma, and then walk down the street to join his father and grandfather in the local mill are gone.

Maine's fastest growing jobs in the next 20 years will almost all require some kind of post-secondary education: nursing and allied health, teaching, engineering, etc. And while Maine has long boasted a higher-than-average high school graduation rate, its college-going rate has also long been below average.

The Harold Alfond College Challenge, a program of the non-profit Alfond Scholarship Foundation, is the first program in the nation to invest \$500 at birth for the future education of every baby born a resident of the state. The investment is made statewide, automatically, at birth. By the end of 2017, the Foundation had invested more

than \$40 million on behalf of more than 80,000 Maine children.

National research has concluded that children with a college savings account are three times more likely to go to college and four times more likely to graduate—even if the account has only a few hundred dollars in it, and even controlling for differences in family demographics.¹

BY THE END OF 2017,
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MAINE CHILDREN



CHILDREN WITH A COLLEGE SAVINGS ACCOUNT ARE

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4x MORE LIKELY TO GRADUATE

And a social science experiment in Oklahoma using randomized control groups found that after five years those children who had been awarded funds for a college savings account had reached social-emotional development milestones as if they had been in Head Start, and their mothers had higher aspirations for their children and lower levels of maternal depression.²

PROGRAM DEVELOPMENT

Rather than create an entirely new program or potentially duplicate others' efforts, the Alfond Scholarship Foundation wanted to build on what was already in place: Maine's NextGen529 plan, which provides families tax advantages for saving and paying for college.

A public-private partnership, the College Challenge brings together the Alfond Scholarship Foundation, a non-profit organization, the Harold Alfond Foundation, a private family foundation that provides the funding for the program, and the Finance Authority of Maine (FAME), a quasi-governmental agency that administers Maine's NextGen529 program and which helps to administer the College Challenge.

For the first five years of the Harold Alfond College Challenge (2008–2012) families were

required to open a NextGen529 account in order to receive the \$500 from the Foundation. Nearly 25,000 families—about 40 percent of all who were eligible—did so during that period.

In 2014, the program announced that it was moving to a “universal” model in which all Maine resident babies would now automatically be awarded the grant. This was done retroactively to include all babies born Maine residents in 2013.

While there was some concern about eliminating the requirement that families have “skin in the game” by asking them to take the step of opening their own accounts, the Alfond Scholarship Foundation ultimately decided it was more important for babies to actually *have* the Alfond Grant rather than simply have the opportunity to have the grant. And, as it has turned out, families have stepped up to make their own investments in their children's future educations—contributing another \$52 million to accounts they have opened.³ When investments from the Foundation are combined with family contributions and with matching grants earned through FAME, more than \$98 million has been invested for the future educations of 80,000 Maine children.

Families receive frequent communication from the program, including a statement each quarter that shows the current value of the

FAMILIES HAVE STEPPED UP TO
make their own investments
IN THEIR CHILDREN'S FUTURE EDUCATIONS

\$52 MILLION
TO ACCOUNTS THEY HAVE OPENED.³

original \$500 grant and provides tips for parents across four content areas (Literacy, Financial Literacy, Science & Math, and Health & Wellness). To encourage families to open and invest in their own NextGen529 plans, the College Challenge includes coupons for future contributions in the quarterly statements that go to those with their own account, and information on how to open accounts for those who have not yet done so. The Alfond Scholarship Foundation partners with family-serving organizations such as Head Start to share information about the Alfond Grant and to encourage families to open their own accounts, and has partnered with other funders to provide additional deposits for these families when they did so. The Foundation also partners with businesses across the state to encourage payroll deduction to a college savings account for their employees.

The Harold Alfond College Challenge was the first program in the nation to award a \$500 grant towards a child's future education statewide at birth. As the organization that administers the College Challenge, the Alfond Scholarship Foundation is recognized as a leader in the field of Children's Savings Accounts (CSAs) and

is frequently called upon to offer insights and advice to nascent programs across the country. There are now dozens in place and many more in exploration. These programs were inspired by, informed by, and even modeled on the Harold Alfond College Challenge.

The growth of the field is also leading to interesting policy questions. Some Community Foundations—which historically have managed and awarded scholarships to high school students based on donor-advised funds—are beginning to explore whether there are opportunities to make earlier investments in the kinds of students their donors wish to support. These earlier investments could lead to higher aspirations and stronger educational outcomes. Likewise, there is some conversation nationally about whether programs such as Pell Grants should be awarded, or at least committed, earlier in a student's life. And there is even some exploration of what it could mean to create a national program that invests money at birth for the future education of every American citizen.

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3. Because the Alfond Grants are invested in a 529 account owned by ASF, families must open their own accounts to make their own contributions.



CONTACT THE AUTHOR **COLLEEN J. QUINT**

President & CEO,
Alfond Scholarship Foundation
482 Congress Street, Suite 303
Portland, ME 04101

O: 207. 347.8638 **C:** 207. 754.1356

E: cquint@alfondscholarshipfoundation.org
www.alfondscholarshipfoundation.org

W: www.500ForBaby.org
www.MyAlfondGrant.org

AMERICAN INSTITUTE FOR INNOVATIVE APPRENTICESHIP: EXPANDING APPRENTICESHIPS IN MASSACHUSETTS

DR. ROBERT I. LERMAN

Institute Fellow, Urban Institute

Founder, American Institute for Innovative Apprenticeship

THE AMERICAN INSTITUTE FOR INNOVATIVE Apprenticeship (AIIA) proposes building a statewide apprenticeship system for preparing young people in Massachusetts for careers.

There's been a great deal of debate about how best to address stagnant wages and create jobs for American workers without bachelor's degrees. Blame has been placed on everything from immigration to outsourcing to an uncompetitive tax and regulatory environment. Another culprit is our lack of an apprenticeship system.

Massachusetts has a well-deserved reputation for academic achievement, but this has not translated into high rates of two-year college completion or reduced wage inequality. Massachusetts ranks 38th in two-year college-completion and 37th in household income inequality.

Massachusetts spends substantial amounts preparing young people for careers through

an almost entirely school-based approach. Yet employers in many occupations report a skills mismatch. Shortfalls are less the result of too few college graduates and more that of jobs requiring occupational skills. In hiring for hard-to-fill jobs, firms prefer relevant work experience over a four-year degree.¹

Human capital programs generally use an "academic" only approach, depriving young people of opportunities to learn by doing, and they, in turn, become disengaged. Of U.S. students starting a two-year community college program in 2012, only 22 percent graduated within 3 years.²

Apprenticeship counters these trends by combining academic with work-based learning. Apprentices are employees who have formal agreements with employers that specify the competencies apprentices will develop. Apprenticeships help workers master not only relevant



Blame has been placed on everything
FROM IMMIGRATION TO OUTSOURCING...

ANOTHER
CULPRIT IS OUR

LACK OF AN **APPRENTICESHIP SYSTEM**

occupational skills but other work-related skills, such as communication, problem-solving, resource allocation, understanding workplace culture, and dealing with supervisors and diverse co-workers. Apprentices are more likely than other students to perform well in class because workplace mentors support them, apprentices see the relevance of classroom concepts, and because poor grades can force apprentices to withdraw from their apprenticeship.

Apprenticeships can enhance youth development³ and even mental health.⁴ Youth see themselves judged by the established standards of a discipline. They take pride in their capabilities and being part of a community of practice. Moreover, they do not forego earning during their education, and long-term earnings exceed the gains from graduating community college or participating in government-sponsored training programs.^{5,6}

In turn, employers can feel comfortable upgrading jobs, knowing that their apprenticeship programs will provide an adequate supply of well-trained workers. Firms save on recruitment and training, avoiding excessive costs when the demand for skilled workers cannot be met quickly.

Unfortunately, the U.S. has lagged in creating apprenticeships. Apprentices constitute about 2.5–3.0 percent of the labor force in other countries, or about 10 times the U.S. rate. What Britain spends annually on apprenticeship would mean a budget of \$9 billion per year in the United States, adjusting for the larger American labor force. Conversely, U.S. spending on apprenticeships has averaged about \$30 million per year.

Building an apprenticeship system will involve several steps, including branding apprenticeship as a high quality, career-focused learning option;

ensuring credible occupational standards, while still making it as simple as possible for companies to implement apprenticeship programs; and increasing the incentives and expertise of intermediaries to sell apprenticeships to employers.

Developing a Brand: Massachusetts can create a distinctive brand, as South Carolina accomplished with “Apprenticeship Carolina.” The system we propose could advertise to the public, focusing initially on firms and subsequently to potential apprentices.

Incorporating Industry-Recognized Apprenticeships and Registered Apprenticeships in the New Massachusetts Apprenticeship Program: For many reasons, some employers choose to operate apprenticeships outside the Registered Apprenticeship (RA) program. RA programs are concentrated in the construction industry. While incorporating existing RA programs, a new Massachusetts program could be branded to signal inclusion of other high quality apprenticeships. To simplify the process of implementing apprenticeships, the program could accept broad, competence-based standards emerging from work by AIIA, Urban Institute and other organizing bodies. Instead of having each firm or small groups of firms gain approval for their own occupational standards, the new program could accept standards already vetted by the U.S. Department of Labor.

Establishing Programs to Support Selling and Organizing Apprenticeships: Selling an apprenticeship program to employers typically requires face-to-face encounters. Even employers con-

vinced by an advertisement must have a place to call to learn about how to implement an apprenticeship in their company. Massachusetts should establish incentives for intermediaries (private or public) to sell to and organize apprenticeships for employers. The incentives should be structured so that intermediaries ensure apprentices undertake the appropriate training and work-based learning experiences and achieve high completion rates. Funding should go only to those intermediaries that stimulate apprenticeships that follow official occupational frameworks.

Unlike most government-supported human capital programs, a significant share of the overall costs will be borne by the employer in the form of wages for apprentices and the costs of work-based training (mostly lost time of the trainers in the firm).

Cost to government will come from the incentive payments. Gross costs will depend on the number of new apprentices that complete the apprenticeship program. However, net costs will be lower since savings will emerge as more students pursue apprenticeships instead of more expensive state-subsidized, school-based career-focused programs.

Government funds spent on other career training programs could be used to support apprenticeships. State and local entities typically administer federal programs and have considerable leverage over how the money is used. For example, Trade Adjustment Assistance provides extended unemployment insurance to those displaced by trade. Funding is commonly available to pay for training costs. Massachusetts could allocate its funds under TAA to apprenticeships.

USDOL's Workforce Innovation and Opportunity Act (WIOA) programs are already mandated to work with apprenticeship programs.

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CONTACT THE AUTHOR

DR. ROBERT I. LERMAN

Institute Fellow, Urban Institute

Founder, American Institute for Innovative Apprenticeship

2100 M Street, NW
Washington, DC 20037

P: 202.261.5676

E: blerman@urban.org

W: www.innovativeapprenticeship.org

FEDERATION FOR ADVANCED MANUFACTURING EDUCATION:

ADVANCED MANUFACTURING CAREER PATHWAYS PROGRAM

STACEY HUGHES

Chairperson, Kentucky FAME

U.S. MANUFACTURING IS IN CRISIS. There are too few skilled workers to fill the number of openings in American factories. When factories are short of skilled workers they produce less, produce at higher cost, or both. The negative effects ripple out beyond the factory walls. U.S. manufacturers generally pay higher than average wages, spur additional business investment in direct support of operations (other factories or producers making parts and materials in the supply chain), spur additional business investment in support of its workers' quality of life (grocery stores, health-care, utility services, and more), and pay taxes. When American factories produce less, at higher cost, everyone hurts.

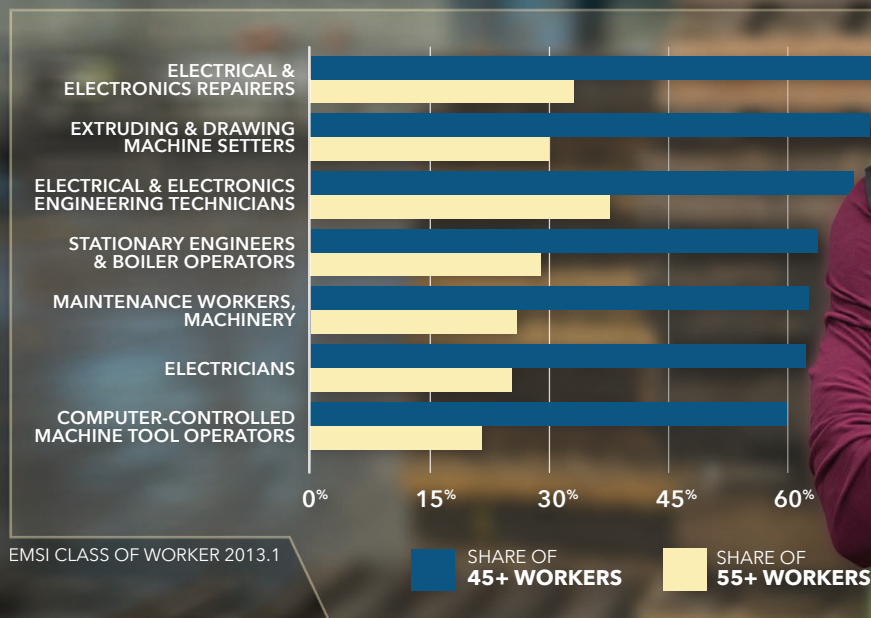
In 2011 Deloitte Inc. conducted a study of workforce needs for manufacturing. One of its conclusions was that 600,000 job openings were then unfilled. In 2015 Deloitte refreshed the study and found that by 2025 the projected number of

unfilled jobs would grow to 2,000,000. Some estimates put the average age of American skilled workers in their 50's. Because of a lack of interest in skilled technical work in recent years there's no one to replace them.¹

Not only does the United States not produce enough skilled technical workers to replace the generation that is retiring, the graduates it does produce are not job-ready, at least as they are perceived by employers.² And while American companies pay to train and develop unprepared graduates, suffering lower productivity as a result, manufacturers in other countries, such as Germany, where apprentice programs thrive, gain a competitive advantage for talent. In response, some employers joined together to form the **Federation for Advanced Manufacturing Education (FAME)** and create the **Advanced Manufacturing Career Pathways Program (AMCP)**. Participating employers partner with community colleges to ensure that students

SKILLED TRADES GROUP 1:

THE OLDEST OCCUPATIONS



receive an education that focuses on professional behaviors and core manufacturing exercises, in addition to the technical education they would receive in another program. Students attend class two days a week, and work for their sponsoring employer three days a week for five consecutive semesters (including a summer term).

HOW IT WORKS:

Knowing how many students they need to fill job openings, employers lead the recruitment effort. Special partnerships in the K-12 pathway enhance STEM interest, and \$3.4M has been invested in recent years to strengthen this interest and to grow diversity. Employers evaluate applications for FAME's Advanced Manufacturing Technician program (AMT), conduct interviews, offer to sponsor selectees, and direct them to apply to an AMT College Partner. The employer group has chosen all courses in the program, including general education courses, so that graduates are maximally prepared for work. There are

17 professional behaviors addressed, including Attendance, Initiative, Diligence, Interpersonal Relationships, Teamwork, Communication, Organization, Time Management, and Social Media Ethics. The Manufacturing Core Exercises are Safety Culture, Visual Workplace Organization/5S, Lean Manufacturing, Problem Solving (also a soft skill), and Machine Reliability. Each lasts a semester and involves a structured four phase sequence in which students learn, then do extensive hands-on projects, and then report back on their activities.

Partner colleges establish a special manufacturing emulation area and this becomes the home training area for AMT students. They manage and sustain this area as they would an actual manufacturing operation. It contextualizes learning.

Performance standards are high. Students must earn a 'C' or better in all classes, must attend both college and work diligently, and receive satisfactory work evaluations. Wages from sponsoring employers—enough to cover college costs, including room and board—function as a

BY 2025, THERE WILL BE
2 MILLION
UNFILLED JOBS IN
FACTORIES
ACROSS THE U.S.

“working scholarship.” As a result, students graduate the program with no college debt.

To encourage continued learning, and to do so in a way that benefits both the student-employee and employer, there are two extensions beyond the AMT program. Advanced Manufacturing Business (AMB) allows students to apply 60 credit hours from the AMT program for a manufacturing-oriented bachelor’s degree in business with the AMB university partner (Northwood University). Beyond the bachelor’s degree are two aligned master’s degrees (Organizational Leadership and an MBA). Those who work at companies with tuition reimbursement benefits can potentially complete these additional degrees at no cost. FAME is also currently piloting an Advanced Manufacturing Engineer pathway.

The original program was started at 8 locations. Since then it has expanded to include 23 community colleges, 4 universities, and 305 employers in 10 states (KY, WV, IN, MS, TX, TN, AL, MO, LA, AR). One state (KY) has adopted the program as a statewide effort, created an incorporated non-profit (KYFAME) with a state board

of directors, and established a named degree track (AMT). Another state is currently studying FAME and AMT for a statewide roll-out. The program originally focused on auto manufacturing (piloted by Toyota), but has expanded to other sectors, including food processing, aerospace, public utilities, a major grocery chain, and more, all of which need technicians for automation. The U.S. Chamber of Commerce has issued a grant to study the program for its applicability for construction, healthcare, transportation, additional aerospace, and information technology.

As for performance, 70–90 percent of participating students graduate on time, depending on the location. These figures are multiple times higher than the American community college average even though the program is more rigorous. 90 percent of graduates go on to full-time employment with their original sponsoring employer. Graduates can expect to earn between \$50,000 and \$75,000 in their first year of full-time employment. And virtually all students graduate college debt free.

A non-profit FAME national organization is being studied, which would manage all programs across the U.S., including start-up and long-term support and would ensure the sustainability of each site.

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CONTACT THE AUTHOR
STACEY HUGHES

Chairperson,
Kentucky FAME

Toyota Motor North America, NAPSC
1001 Cherry Blossom Way, PSC/NA-K
Georgetown, KY 40324

C: 859.749.7553; 502.889.6356

W: www.fame-usa.com; www.kyfame.com

WISCONSIN BUREAU OF APPRENTICESHIP STANDARDS: YOUTH APPRENTICESHIPS

KAREN P. MORGAN

Director, Wisconsin Bureau of Apprenticeship Standards

WHILE POSTSECONDARY EDUCATION costs are rising faster than inflation, registered apprenticeship remains an underused tool for guiding people into occupations. Registered apprentices gain valuable postsecondary education without incurring student debt. Apprenticeship sponsors often help cover the cost of related instruction, and apprentices earn a living wage during their training on the job.

There is a growing shortage of skilled tradespeople in occupations traditionally covered by apprenticeship because workers in apprenticeship occupations are older than the general working population. Nationally, according to a recent survey, 70 percent of construction firms report labor shortages.¹ In Wisconsin, new apprentices have a mean age of 28 years. And many employers in a number of different fields report a skills gap, with applicants unprepared for complicated or specialized tasks.

As a nation, we can address labor shortages and close the skills gap by encouraging earlier

entry into apprenticeships, allowing employers to benefit from the labor of younger workers sooner. Additionally, a concerted effort to increase the participation of marginalized populations, such as women, people of color, and the disabled, in apprenticeships will grow the total workforce. Early entry and broad participation in apprenticeships can be facilitated through youth apprenticeship programs for high school students, and a bridge program from those programs and certified pre-apprenticeship programs into registered apprenticeships.

Registered Apprentices
GAIN VALUABLE
POSTSECONDARY EDUCATION
WITHOUT INCURRING
STUDENT DEBT



MORE THAN **80%** OF STUDENTS who complete the program RECEIVE AN OFFER OF **EMPLOYMENT**

Wisconsin's Youth Apprenticeship model represents one way of guiding appropriate candidates into apprenticeship experiences while saving both employees and employers on post-secondary education costs.

Wisconsin's Bureau of Apprenticeship Standards partners with industry, labor, Workforce Development Boards, and other stakeholders to create a high school apprenticeship pathway, Youth Apprenticeship. The Youth Apprenticeship program, in partnership with the schools and a local consortium, enrolls high school juniors and seniors in career clusters and pairs them with a suitable employer. The bureau has set a curriculum for each of these career areas. Each has a standard set of competencies that the student achieves under the supervision of a mentor. The student gets on-the-job training and related instruction in their chosen career area, as well as high school credit.

The Bureau of Apprenticeship Standards also created the Bridge program, which formalized the process by which a successful youth apprentice gets credit for the training and related

instruction they've received when they move into a registered apprenticeship in a related field. Individual paths created from Youth Apprenticeship career clusters to Registered Apprenticeship occupations are known as "crosswalks." Creating a crosswalk requires the bureau to identify competencies within a Youth Apprenticeship career area and map them to Registered Apprenticeship training competencies for a related occupation.

This creates an incentive for students to take advantage of their youth apprenticeship upon graduating from high school and to enter a registered apprenticeship; they will save money on postsecondary education expenses and start

WISCONSIN CURRENTLY
BOASTS
OVER **4K**
YOUTH APPRENTICES

earning a living wage sooner. Employers benefit from cost savings as the Youth Apprenticeship credit apprentices have earned can be applied to a Registered Apprenticeship, thus reducing the expense to employers, who usually shoulder all or a portion of the cost of related instruction. Employers also gain the opportunity to screen prospective apprentices during their youth apprenticeship.

The Bureau of Apprenticeship Standards funds youth apprenticeships through a mix of general purpose revenue out of the state budget, U.S. Department of Labor grants, and funds provided to the local Youth Apprenticeship consortia. The local consortia receive from the state up to \$900 per student enrolled in a youth apprenticeship and commit to establishing a minimum number of youth apprenticeships in the geographic area they supervise. Each consortium matches a minimum of 50 percent of the state funding it receives. The consortia administer the apprenticeships, while the bureau is responsible for program administration, approving occupations, developing curricula for career areas, and conducting outreach to increase participation.

Wisconsin currently boasts over 4,000 youth apprentices. About 85 percent of enrolled youth apprentices successfully complete the program, receiving a state-issued certificate. More than 80 percent of these youth apprentices receive an offer of employment, either from the employer with whom they completed the youth apprenticeship, or from another employer.

Once the Bridge program is fully implemented, the bureau expects to see increased enrollment in registered apprenticeships and a reduction in the mean starting age of newly registered

apprentices. This will help address critical labor shortages in the construction trades and help meet employer need for skilled labor in high growth fields.

Currently, there are 10 approved crosswalks from youth apprenticeships to registered apprenticeships in the construction trades and certain manufacturing occupations. An 11th crosswalk for the Masonry and Concrete Finisher trade is under development.

The Bureau of Apprenticeship Standards also continues to work on new apprenticeable occupations that will bridge from already existing youth apprenticeship career areas. There are a growing number of fields in which employers indicate a desire to adopt an apprenticeship model for at least some of their training needs where youth apprenticeship exists. These fields include information technology, healthcare, advanced manufacturing, biotech, and financial services. To expand registered apprenticeships in these fields, the bureau is further leveraging Department of Labor grants. The bureau will design crosswalks from youth apprenticeships in these fields to registered apprenticeships once registered apprenticeships are in place. These crosswalks have the potential to steer youth apprentices into high growth fields in which they've already demonstrated a clear interest: around 50 percent of Wisconsin's youth apprentices are in career areas that correspond to these new fields, including about 1 in 6 in healthcare and 1 in 5 in manufacturing.

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CONTACT THE AUTHOR **KAREN P. MORGAN**

Director, Wisconsin Bureau
of Apprenticeship Standards;
Wisconsin Department
of Workforce Development

201 E. Washington Ave E.100
Madison, Wisconsin 53703

C: 608.266.3133

E: karen.morgan@dwd.wisconsin.gov

W: www.dwd.wisconsin.gov/youthapprenticeship

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE:

COLLEGE AFFORDABILITY AT STCC

DR. ADRIENNE Y. SMITH

Dean of the School of Engineering Technologies and Mathematics,
Springfield Technical Community College

THE AVERAGE COST OF COLLEGE HAS, after adjusting for inflation, risen 75 percent in two decades.¹ As a result, students are incurring larger amounts of debt — an average of \$25,550 when graduating from public colleges and universities and \$32,300 from private ones²—even as they struggle to find jobs upon graduating. How do we make education more affordable? And how do we ensure Massachusetts has the skilled workers it needs in growing high-tech fields?

Springfield Technical Community College and Northeastern University have agreed on a two-year course of study at STCC, after which graduates of the new Associate of Science in Mechanical Engineering Technology (MET) can apply the 60 credits they've earned to the 120 required for Northeastern's Bachelor of Science in Advanced Manufacturing Systems (BS-AVMS).

The BS-AVMS program is specifically designed for students who have graduated from STCC with a MET degree. The curriculum is organized around projects that provide hands-on

learning experiences. There is less emphasis on theory and more on application. And, because they can pursue their BS-AVMS through Northeastern's College of Professional Studies, whose programs are designed for working professionals, MET graduates can work full-time while earning their degree. Moreover, tuition is lower than on the main campus. An estimated \$40,000 will earn a student both the A.S. degree from STCC (\$10,000) and the B.S. degree from Northeastern (\$30,000).

THE AVERAGE COST
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AFTER ADJUSTING
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IN TWO DECADES.

75%



BY 2025, THERE WILL BE AN ESTIMATED

3.4 MILLION MANUFACTURING JOBS CREATED NATIONALLY.

Manufacturing is the third largest industry in Western Massachusetts. As of the first quarter of 2017, there are 22,483 people employed in the industry in Greater Springfield.³ According to a 2015 study, an estimated 3.4 million manufacturing jobs will be created nationally over the next decade. In fact, the Hampden Workforce Development Area Pioneer Valley Region WIOA Local Plan Fiscal Year 2018⁴ states that the fields in which there are more job openings than skilled employees available are healthcare, manufacturing, and IT. Industries range from aerospace and defense to medical; and from large employers, such as Pratt & Whitney and Smith & Wesson, to shops of fewer than 10 employees.

The average age of an STCC student is 26. Almost half attend on a part-time basis. Their lives and schedules make it difficult for them to participate in the Commonwealth Commitment Mass Transfer program, which allows full-time community college students who continue on to a 4-year public university to accrue tuition credits. STCC's partnership with Northeastern offers students flexibility because the courses taken are all

offered at night. Perhaps more importantly, STCC MET graduates can earn between \$40,000 and \$50,000 upon graduating with an A.S. degree, and increase their earnings to \$70,000-\$90,000 upon completion of their bachelor's.

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CONTACT THE AUTHOR

DR. ADRIENNE Y. SMITH

Dean, School of
Engineering and Mathematics,
Springfield Technical Community College

1 Armory Square, Suite 1, P.O. Box 9000
Springfield, Massachusetts 01102

P: 413.755.4561

E: aysmith@stcc.edu

W: www.stcc.edu

SPECIAL RECOGNITION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY:

MITx MICROMASTERS

KRISHNA RAJAGOPAL

Dean for Digital Learning, Professor of Physics,
Massachusetts Institute of Technology

TRACY TAN

Director, MicroMasters,
Massachusetts Institute of Technology

IN FALL 2015, THE MASSACHUSETTS INSTITUTE of Technology (MIT) announced creation of a new academic credential, the MITx MicroMasters. A MicroMasters program is a suite of master's-level online courses that lets a cohort of learners in a particular professional domain in workplaces around the world advance their careers and perhaps accelerate their completion of a Master's degree at MIT or elsewhere.

The holder of an MITx MicroMasters credential completes roughly the equivalent of a semester

of study for a full-time master's student. If recipients of the MITx MicroMasters credential seek to complete graduate degrees within their domains, MIT grants them credit upon their acceptance for the online work that makes up their MicroMasters, typically allowing them to complete a Master's degree with one less semester spent at MIT and away from their job.

To date, more than 1,000 learners have completed the full five-course credential in Supply Chain Management. 40 recipients have gone on

MORE
THAN **1,000**
LEARNERS



HAVE COMPLETED
THE FULL FIVE-COURSE
SUPPLY CHAIN MANAGEMENT
MICROMASTERS



A SUITE OF MASTER'S-LEVEL ONLINE COURSES THAT

ADVANCE CAREERS & ACCELERATE

COMPLETION OF

MASTER'S DEGREES

AT MIT OR ELSEWHERE.

to enroll in the full-time master's program and MIT has since launched two additional MicroMasters: in Data, Economics, and Development Policy, and Principles of Manufacturing.

The MITx MicroMasters teaching team makes sure the online version of a course reflects the rigor of the campus version, and takes a number of steps to ensure the academic honesty of online learners. Furthermore, earning the MicroMasters credential requires taking one or more proctored exams.

The MicroMasters programs provide MIT an inverted admissions process for their on-campus master's degrees by allowing learners, anywhere in the world, to demonstrate their abilities in MIT-caliber courses. Traditionally, 75 percent of students in MIT's Supply Chain Management master's program are from the United States. The blended master's program welcomed students

from 25 countries. These students had an average 6 years working experience in the field and 60 percent already have a first master's degree. It is unlikely that MIT would have found, or been found by, these learners if not for the MicroMasters program.

With the MITx MicroMasters credentialing, learners have multiple options for continuing graduate studies. They can apply to the blended master's at MIT, or use pathways built by MIT with other academic institutions, in the U.S. and around the world, that are admitting MicroMasters recipients into accelerated master's programs. For example, the master's degree program in Professional Studies at Rochester Institute of Technology allows learners with an MITx MicroMasters credential in Supply Chain Management to apply at any time during the year. Upon acceptance, they are awarded 12 credit hours of the 33 required for completion of the RIT degree.



CONTACT THE AUTHOR
KRISHNA RAJAGOPAL

Dean for Digital Learning,
Professor of Physics,
Massachusetts Institute of Technology

E: krishna@mit.edu

W: www.micromasters.mit.edu



CONTACT THE AUTHOR
TRACY TAN

Director, MicroMasters,
Massachusetts Institute
of Technology

E: tracytan@mit.edu

DUET IN PARTNERSHIP WITH SOUTHERN NEW HAMPSHIRE UNIVERSITY

LIZ MARINO

Chief of Growth & Strategy, Duet

DUET, THROUGH A PARTNERSHIP with Southern New Hampshire University (SNHU), helps students in Greater Boston earn college degrees and obtain career-track jobs. They do this by pairing SNHU's accredited, online, competency-based curriculum with individual coaching, as students earn associate and bachelor's degrees affordably, flexibly, and with a focus on career advancement.

Duet recruits students from Greater Boston through word of mouth and referral partnerships with more than 50 organizations and schools, and supports them in enrolling in SNHU's College for America degree program.

SNHU's project-based curriculum enables students to demonstrate mastery of competencies to earn their degrees. Students submit work to reviewers at SNHU and either receive certification that they have "mastered" the competency or they receive a "not yet" with specific feedback. Students resubmit their work until they achieve mastery of every competency.

Each Duet student is paired with a coach, a full-time staff member, whom they meet with at Duet's study space to help them stay motivated and on-track as they work to earn their degrees.

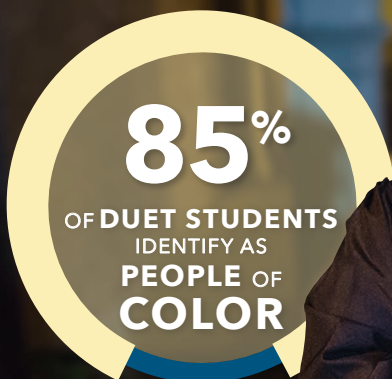
Duet's coaching leverages SNHU's curriculum design to help students overcome structural

**DUET HAS
TWO GOALS:**

70%

① STUDENTS EARN
A DEGREE IN
↓ **UNDER
3 YRS**

② GRADUATES SECURE
A CAREER-TRACK
JOB WITHIN A
YEAR
OF GRADUATION



barriers they face in traditional college environments. SNHU's flexibility allows students to complete academic assignments on their own schedules, so they can work or attend to other responsibilities in their lives. Because the program is self-paced, students can complete their degrees more quickly than they would in a traditional college program. They can also take short breaks when needed and pick up where they left off.

In addition to an academic coach, each student receives a Duet employment coach who works with them individually to provide career coaching and support while they complete their degrees and to help them leverage their degrees once they graduate. Full-time career coaches provide personalized and practical career guidance and job search support while students are enrolled and for up to 2 years after they graduate. Duet partners with employers in Greater Boston, including the Boys and Girls Clubs, Brigham and Women's Hospital, and Wellington Management.

85 percent of Duet's students identify as people of color, 65 percent qualify for a Pell grant,

and 77 percent have enrolled in 1 or more colleges before enrolling in Duet. Students range in age from 18 to 55; the average age is 24.

Duet has two goals: 70 percent of its students earn a degree in under 3 years, and 70 percent of its graduates secure a career-track job within a year of graduation. Early results are promising: Duet currently has 258 students enrolled in associate and bachelor's degree programs in such fields as Business, Healthcare Management and Communications.

Of Duet's 84 associate degree graduates, average time to earn their degrees was 18 months. 28 percent of the students who enrolled in Duet's associate's degree program have unenrolled or paused before earning a degree.

Duet currently has four bachelor's degree graduates and 35 students enrolled in its bachelor's degree program in such fields as Management, Healthcare Management, and Communications. 26 percent of the students who enrolled in Duet's bachelor's degree program have unenrolled or paused before earning a degree.



CONTACT THE AUTHOR
LIZ MARINO

Chief of Growth & Strategy,
Duet

P: 617.935.1684

E: liz.marino@duet.org

W: www.duet.org

TECHMISSION:

CITY VISION UNIVERSITY

ANDREW SEARS

President, City Vision University

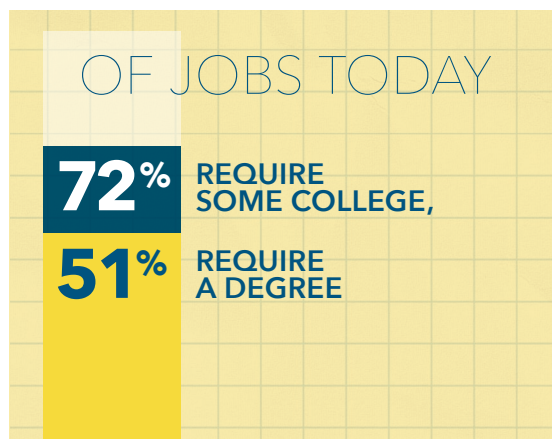
EACH YEAR MILLIONS OF INDIVIDUALS participate in nonprofit programs for, among other reasons, addiction recovery or housing assistance. Once an individual has completed a program and established sobriety or found housing, the challenge remains for that person to find a job that will help maintain the new home or sobriety. While today 72 percent of all jobs require some college and 51 percent require a degree, the average cost of tuition has outpaced inflation by 500 percent since 1980, which is why, though 77 percent of those in the top socioeconomic quartile in the United States received a bachelor's degree between 1970 and 2013, only 9 percent in the lowest income quartile did.¹ City Vision bridges the gap between low-income individuals who complete social service programs and those jobs.

City Vision has provided hundreds of individuals that have completed addiction recovery programs with the education they need to get a job. The program offers certificates, and associate and bachelor's degrees in Addiction Studies, Nonprofit Management, Business, and Christian Leadership and Missions. City Vision has graduates that serve as leaders of rescue missions and other nonprofits serving the poor.

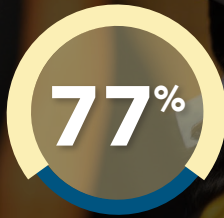
CITY VISION EMPLOYS THREE KEY STRATEGIES:

1. MOOCS

In 2017, more than 81 million students globally took free Massive Open Online Courses (MOOCs) being offered by the Massachusetts Institute of Technology, Harvard, and other universities. While most MOOCs do not provide college credit, City Vision has integrated MOOCs into all of its courses and degree paths. This reduces costs while exposing students to lectures from the top faculty in the world.



BETWEEN 1970 & 2013



OF THE
TOP
SOCIOECONOMIC
QUARTILE



OF THE
LOWEST
SOCIOECONOMIC
QUARTILE

EARNED A BACHELOR'S DEGREE

2. COMBINING ONLINE EDUCATION WITH INTERNSHIPS

3. LAUNCHING MICROCAMPUSES WITH NON-PROFIT PARTNERS

Just as MOOCs provide online learning at a fraction of the cost of traditional education, microcampuses enable local blended-learning programs at a fraction of the cost of a traditional college extension campus. Most major MOOCs have microcampuses: Coursera's Learning Hubs, edX's U.Lab, and Khan Lab School, for example. City Vision has similar microcampus partners who provide internship opportunities, local coaching of online students, and local instruction in their own courses for credit transfer.

City Vision's list price for tuition is \$7,000/year, but provides up to a 50 percent discount to its non-profit partners. About 80 percent of students who apply for federal aid are eligible for Pell Grants

(indicating low-income status). For students who fully matriculate, 50–60 percent graduate. Of those who graduate, 90 percent are either placed in a job or continue onto graduate education. Last year, City Vision served 226 students.

City Vision hopes to serve as an R&D hub for the nonprofit sector on how to educate staff. Some of its community partners have a 20 percent success rate in their recovery programs, while others have an 80 percent success rate. City Vision believes it can improve the sector's overall effectiveness by disseminating best practices needed to get more organizations to the 80 percent success rate. In the midst of an opioid epidemic, what is needed is an army of former addicts trained as addiction counselors to counsel other addicts.

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1. The Pell Institute for the Study of Opportunity in Higher Education (2015, January) Indicators of Higher Education Equity in the United States 45-Year Trend Report, <http://www.pellinsitute.org>



CONTACT THE AUTHOR **ANDREW SEARS**

President,
City Vision University

48 Pleasant Street
Dorchester, Massachusetts 02125

P: 617.282.9798

E: andrew@cityvision.edu

W: www.cityvision.edu

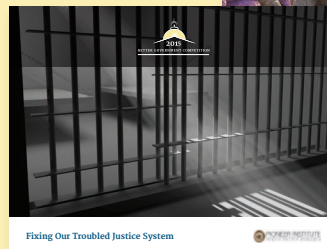
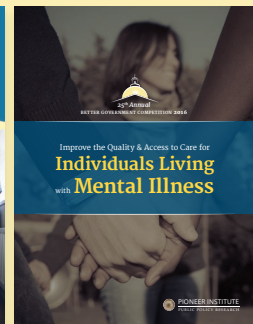


2018 BETTER GOVERNMENT COMPETITION

PIONEER INSTITUTE'S BETTER GOVERNMENT COMPETITION, founded in 1991, is an annual citizens' idea contest that seeks out and rewards the most innovative public policy proposals. The Competition grand prize winner receives \$10,000; four runners-up receive \$1,000 each, and other proposals receive special recognition. Recent winners have included proposals on pension reform, virtual schooling, job training, housing, and many other pressing topics.

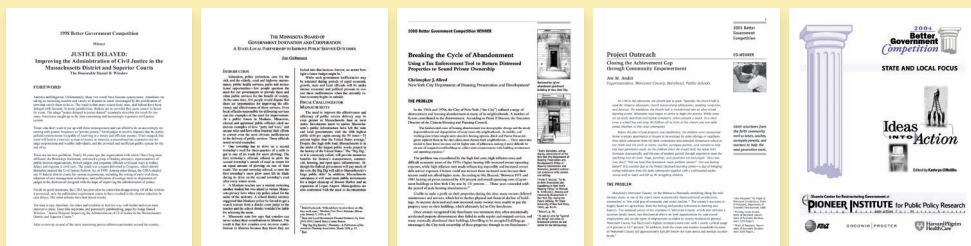
HISTORY

- 2017 Aging in America
- 2016 Improving Care for Individuals Living with Mental Illness
- 2015 Fixing Our Troubled Justice System
- 2014 Leveraging Technology to Improve Government
- 2013 Revving Up the Great American Job Engine
- 2012 Restoring Federalism





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| 2011 | 20 th Anniversary - Budget Busters | 2000 | Ideas Into Action |
| 2010 | Governing in a Time of Crisis | 1999 | A Wise & Frugal Government |
| 2009 | Health Care Reform | 1998 | Streamlining Government |
| 2008 | Sustaining School Reform | 1997 | Bringing Competition to State & Local Government |
| 2007 | Improving Government at the State and Municipal Levels | 1996 | Public Safety & Fight Against Crime |
| 2006 | 15 th Anniversary - Better Government Competition | 1995 | Local Solutions to Public Problems |
| 2005 | Streamlining Government | 1994 | Welfare in Massachusetts |
| 2004 | State & Local Focus | 1993 | Improving Policies & Programs Affecting Children |
| 2003 | Innovative Ideas on Key Public Issues | 1992 | Improving Environmental Policies & Programs |
| 2001 | Law Enforcement, Education, Housing, Family Preservation | 1991 | Restructuring/Privateizing State Operations |



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