

# Choose hio First

2012-2013 ANNUAL REPORT

Ohio

Board of Regents  
University System of Ohio





# Contents

<b>Executive Summary</b> .....	<b>5</b>
<b>Programs of Innovation</b> .....	<b>12</b>
<b>Demographic Data</b> .....	<b>13</b>
<b>Program Descriptions</b> .....	<b>15</b>
<b>The Economic Impact of Choose Ohio First</b> .....	<b>37</b>
<b>Choose Ohio First: Keeping the Momentum</b> .....	<b>39</b>

.....





## Executive Summary

Science, Technology, Engineering, Math, and Medicine (STEMM)-related disciplines are critical to the future success of the State of Ohio and the nation. Many employers in Ohio cannot find the STEMM talent they need to stay competitive and grow in the global marketplace. Even during the most recent economic downturn, STEMM skills have remained in high demand – for the STEMM workforce there are 2.3 jobs for every unemployed person; for the non-STEMM workforce there are 3.9 unemployed people for every job. The primary objectives of the Choose Ohio First (COF) scholarship program are to support increased participation and retention of students majoring in STEMM and STEMM education fields and in so doing to advance the economic growth of each region of the state. COF has become the state’s premier model for recruiting and retaining talented students in STEMM and STEMM education fields. The COF scholarship program ensures that an increased number of students enter the STEMM teaching profession and graduate from some of the most innovative programs that the state has to offer.

To date, nearly \$45 million have been awarded to more than 5,500 COF Scholars attending an Ohio college or university. The institutions enrolling the students have contributed an additional \$50 million dollars in cost-share through June 2013. Matching funds are used to revise and develop new curricula in the STEMM disciplines awarded COF funds; supplement student travel

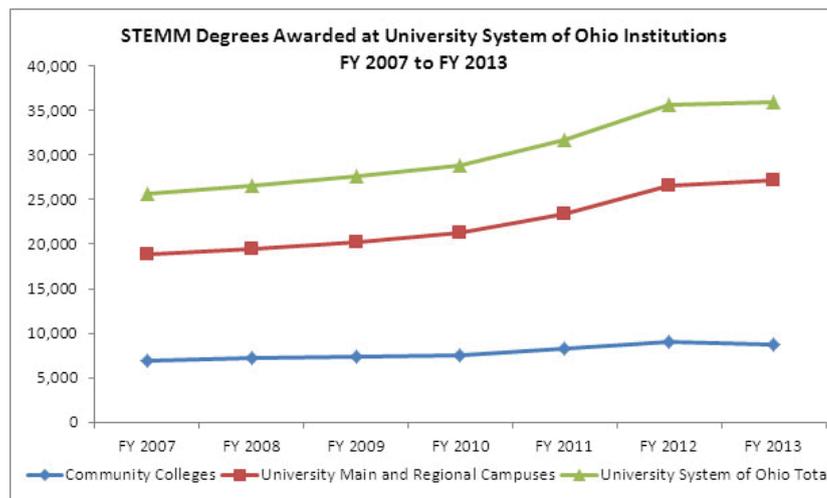
**The total number of STEMM degrees awarded at Ohio’s public colleges and universities increased from 25,635 in FY 2007 to 35,932 in FY 2013.**

to industry conferences and research symposia; and leverage the involvement of businesses in the professional development of Ohio’s future innovators. To date, 49 public and private campuses have received COF funds.



## Choose Ohio First programs are producing results:

- » Growth in STEMM degrees awarded increased from 25,635 total students in FY 2007 to 35,615 total students in FY 2012, representing a 38.9 percent increase – this increase occurred despite a 5.9 percent decrease in overall statewide college enrollment at Ohio’s public institutions.
- » Growth in STEMM degrees has also increased year to year despite a transition from quarters to semesters in 2012.
- » Graduation outcomes for the 2008 cohort of Choose Ohio First Scholars that started at Ohio’s community colleges show that within four years of entering college, 63 percent of Choose Ohio First students earned a certificate or degree, while an additional 29 percent of COF students had not earned their degrees, but were still enrolled. The graduation outcomes for non-COF students show 19 percent of students earning a certificate or degree in the same timeframe.
- » Graduation outcomes for universities show that 72 percent of COF students had earned a certificate or degree in four years versus 44 percent of non-COF students who had graduated or were still enrolled.
- » On average, COF students earned 11 more credits in four years than their non-COF counterparts.





**The Woodrow Wilson Teaching Fellowship institutions**, including John Carroll University, the University of Akron, the University of Cincinnati, The Ohio State University, Ohio University, the University of Toledo, and the University of Dayton are poised to produce highly qualified teachers in mathematics and science, with a potential impact on the lives of thousands of secondary students. The most recent class of Fellows announced included 77 teacher candidates with extensive credentials and experience. Many of the new class of Fellows hold advanced degrees, and some entered the program with 10 or more years of workplace experience with such companies as Lockheed Martin, GE, and Owens Corning. Several newly selected Fellows are also veterans of military service. Two cohorts of Fellows have graduated from the program.

- » 219 Fellows have been named since the program's inception; 111 Fellows have placed in permanent positions and are now teaching in high-need schools around the state.
- » Choose Ohio First supports stipends for Fellows and their ongoing mentoring during their first three years of teaching.
- » The Woodrow Wilson Ohio Teaching Fellowship program has made a direct connection to the workforce needs and academic standards critical to the success of schools.
  - In Dayton, the public school district wanted to enhance the quality of math and science teachers in its secondary classrooms. Recognizing the potential impact several cohorts of Woodrow Wilson Fellows might have on student success, the district sent "intent to hire" letters to every Fellow of the 2012-2013 cohort.
  - The Dayton Public School district strategized to group several Fellows together in each school to enhance professional development opportunities and to maximize the positive impact the Fellows have on their school's academic culture.



**The Woodrow Wilson Teaching Fellowship focuses on three key aspects of the teacher education continuum:**

**1. Program Transformation**

- » Woodrow Wilson Foundation staff facilitates strong collaboration between arts and sciences, education, engineering, and technology faculty in program development and delivery.
- » Woodrow Wilson Foundation staff establishes clear methods of evaluation to monitor program quality.
- » Opportunities are provided for networking with other universities participating in the program.
- » The program assists university partners in establishing deep and ongoing partnerships with local school districts or sets of public schools.

**2. Student Recruitment and Selection**

- » The Woodrow Wilson Foundation provides mechanisms for recruitment of high-potential students, including current college seniors, recent graduates, and career changers.
- » Woodrow Wilson Foundation staff members lead the application review and intake process for each campus of the Fellows, including a daylong interview process.

.....



### 3. Ongoing Mentoring Support

- » The Woodrow Wilson Foundation provides assistance with the placement of graduates in high-need urban and rural schools.
- » The Woodrow Wilson Foundation provides a structured, proven mentoring program for Fellows for three years after graduation.
- » Students gain lifetime access to a network of more than 20,000 Fellows around the world who have participated in Woodrow Wilson Foundation programs and fellowships.

The Woodrow Wilson Ohio Teaching Fellowship program is made possible through COF, the Race to the Top initiative and \$2.4 million dollars in support from private foundations.



As part of Ohio HB 198 changes for care in the State of Ohio, the Primary Care Scholarships in Medicine and Nursing initiative was launched as an arm of COF. To address a statewide shortage of primary physicians and advanced practice nurses, the program will offer scholarships to 50 medical students for up to four years of medical school, and 30 nursing students for up to three years of graduate education. The

recipients agree to remain in Ohio after their residency for no fewer than three years and to work in medical practices that accept Medicaid patients. These COF Scholars will impact the lives of thousands of Ohioans they will serve in high-need practices and positively affect the quality of care provided in high-need areas around the state.



The participating medical schools in Primary Care Scholarships in Medicine and Nursing are The Ohio State University, Case Western Reserve University, Northeast Ohio Medical University, the University of Toledo, Wright State University, Ohio University, and the University of Cincinnati. The participating nursing schools are the University of Akron, Kent State University, Ohio University, the University of Toledo, and Wright State University. Under the leadership of Dr. Ted Wymyslo, director of the Department of Health and the Educational Advisory Group established through Ohio HB 198, the program goal is to integrate primary care concepts into the learning of medical and nursing students around the state, while incentivizing students to stay and practice in Ohio.

The partnership has the following goals:

1. Students will demonstrate understanding of the importance of a personal clinician to the health of individual patients and the population as a whole.
2. Students will recognize the importance of patient-centeredness in successful healthcare outcomes.
3. Students will recognize the importance of the team approach to patient care in successful health care outcomes.
4. Students will recognize the importance of integrated, coordinated care in successful health care outcomes.
5. Students will apply the principles and practices of evidence-based population management and public health in an equitable manner to advance the health of the community.
6. Students will recognize the importance of access to care that is high in quality and equitably applied in a way that meets the needs of the patient with respect to time of service and manner of delivery.



7. Students will recognize the importance of continuous quality improvement, using best current evidence to develop and refine best practices for patient care.
8. Students will understand the importance of information systems to the functionality of the patient-centered medical home.
9. Students will demonstrate appropriate leadership skills.
10. Students will advocate for the Patient Centered Medical Home as a means of improving the health of the community.



## Programs of Innovation

11 COF campuses offer innovative approaches to instruction and retention in the STEMM majors eligible for scholarships. Campuses are preparing Ohio's future innovators in high demand fields including, petroleum engineering, geological sciences, health information management, and bioinformatics. Six campuses started offering scholarships in the fall of 2012 – Heidelberg University, Franklin University, Ohio Northern University, Notre Dame College, Washington State Community College, and Zane State College. Summer bridge programming, mentoring opportunities, research projects, co-operative learning offerings and internships are just a few examples of the holistic approach to STEMM education in the new and continuing COF programs around the state.

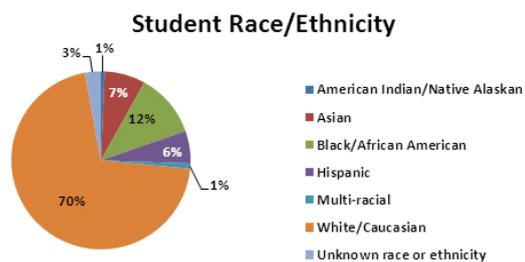
**At Baldwin Wallace, nearly two-thirds of all COF students are first-generation, low-income, or underrepresented minorities; the overall retention rate in STEMM for these students is 93 percent.**

Just as the campuses offering COF scholarships are expanding, so too are the demographic characteristics of the students served. More students from disadvantaged backgrounds are benefitting from COF funds. The number of females in COF exceeds the national average by state of females who participate in STEMM disciplines. Students of a wide range of ages and ethnicities from almost every corner of the state are taking advantage of the opportunity that COF provides. The Ohio Board of Regents will continue to encourage more institutions to apply so that more students at more campuses can benefit from COF funding.

Nearly 45 percent of COF Scholars participate in a cooperative learning opportunity, an internship, or a real-world research project in collaboration with a business/organization or faculty. More than 42 percent of the students who participate in a hands-on learning opportunity are female, which builds on the evidence that interaction and familiarity with applicable knowledge in STEMM fields will help attract and retain a diverse workforce.



## Demographic Data

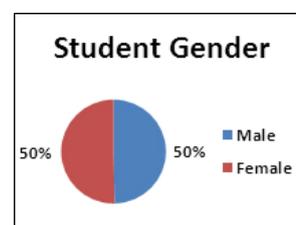


More than 27 percent of COF scholars are from a racial or ethnic minority. Several programs have the sole focus of increasing the number of ethnic minorities in the STEMM fields, including the DO-STEM project at Central State University. More than 12 percent of COF Scholars

are African American and six percent are Hispanic/Latino. While the American Indian population in COF is still relatively low at one percent (n=33), the number of American Indian students has increased by more than 400 percent since the start of COF.

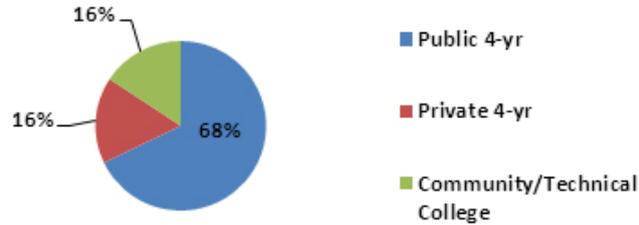
Reporting on student race/ethnicity has improved since the start of COF; the number of students reported to be of unknown race/ethnicity (student declined to report race or ethnicity) has decreased to three percent (n=141) since a high of 211 in the 2008-2009 academic year.

Campuses are collecting more detailed information about the students they serve, including enrollment by gender. Slightly more than 50 percent of COF scholars are female (n=2266). The proportion of females participating in COF slightly exceeds their share of the college-age population in the state (49 percent), and exceeds the average of all females earning STEMM degrees in Ohio (28 percent). Nearly 11 percent of male COF scholars choose non-traditional career fields for males such as nursing and teaching. Twenty-three percent of COF scholars are non-traditional students over the age of 25. Four percent are displaced workers retraining for a new career. A large number of non-traditional students (39 percent) study at Ohio's community and technical colleges (two-year institutions).



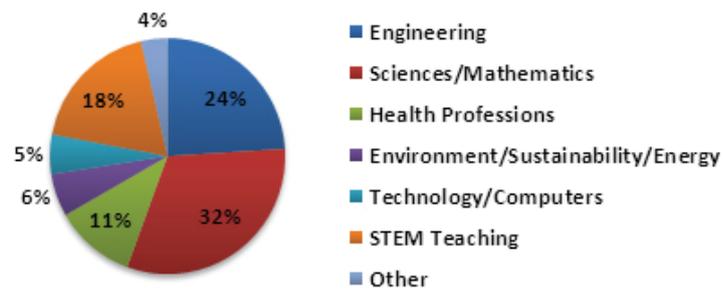


### Campus Locations



Nearly 16 percent of all COF Scholars are enrolled at a community or technical college. Of the students who enrolled at a participating two-year campus, nearly 27 percent (as reported by campuses) moved on to programs at the baccalaureate level in STEMM fields. Nearly 16 percent of COF students participated in programs at a private college or university.

### Choose Ohio First Student Majors<sup>1</sup>



Nearly 80 percent of COF Scholars are in majors linked to one of the JobsOhio industry sectors: BioHealth, Energy, Polymers, Aerospace and Aviation, or Information Technology. STEMM teaching students comprise 18 percent of COF Scholars. More than 540 COF Scholars are graduate students, which will help to ensure that the pipeline of STEMM faculty at the postsecondary level and STEMM students entering the professions will not fall short.

<sup>1</sup> Data as reported from Choose Ohio First campuses, August 2012



## Program Descriptions

COF offers programs in numerous majors at campuses that touch every region of the state. There are themes or clusters present in the COF program, and it is easy to identify the main focus of each program.

1. **Several COF programs reach out to K-12 students to ensure early exposure to concepts and subjects central to success in the STEMM disciplines. These programs reach out to middle and high school students, helping them to see value in a STEMM career. Providing them with the tools necessary to succeed is critical to increasing the number of STEMM graduates in Ohio. For example:**

- **Ohio House of Science and Engineering: Success in STEMM through Collaboration COF Scholarships (The Ohio State University (OSU), Muskingum University, University of Cincinnati)**
  - » The program utilizes COF scholars in running science outreach programs in central Ohio. Wonders of our World (W.O.W) serves grades K-5. W.O.W2 serves students grades 6-12.
  - » The project has built a community of more than 200 STEMM scholars from more than 25 majors.
  - » The retention rates for the COF program are notable (88 percent at OSU).
  - » **Of the graduating students at OSU (n=18), all accepted jobs or were accepted into professional school prior to graduating.**
  - » Through the mentoring program, the COF scholars have directly impacted the lives of other students throughout the state. Working with five elementary schools and two high schools, the preliminary feedback from the sites suggest that 90 percent of students who participated in the tutoring/mentoring sessions showed an increased interest in attending college.



- **Integrated Science Training for Northeast Ohio's Future Biomedical and Biotechnology Workforce (Kent State University, Stark State College, Lakeland Community College, Cuyahoga Community College, Lorain County Community College)**

- » The goal of this program is to increase the number of high school students choosing biology, biotechnology, chemistry, or physics as their major; improve retention in the sciences; and establish new pedagogical initiatives.
- » The COF program at Kent State is housed in the STEMM Research and Education Center, designed to increase K-12 pre-college outreach programs and connect academic departments to external constituents.
- » By providing students with an interdisciplinary learning experience and the opportunity to be engaged in living/learning communities, the project will increase the number of underrepresented students in science.
- » A pathway from the community college to a four-year university is made clear to non-traditional students who may be returning to school after a long absence.
- » The students engage with middle and high school classes to encourage interest and proficiency in STEM fields. Efforts include: the development of inquiry-based continuing education experiences for partnering middle schools' teachers (MS-TIK); the donation of equipment to middle school students; and the creation and development

**"The COF experience was very gratifying in three regards: the teaching experience, the planning process of science lessons, and the students' reactions."**

**-Paige  
The Ohio State  
University**

The number of Kent State University female students majoring in biology, biotechnology, chemistry, geology, or physics increased 16.5 percent between fall 2011 and fall 2012.



of innovative education tools, workshops, and laboratory experiences for the secondary classroom.

- » Leveraging COF with a Department of Labor grant from BioOhio, the retention rate for biotechnology science at Lakeland Community College now exceeds 90 percent.

- **The Cincinnati STEMM Hub Partnership (University of Cincinnati)**

- » High school students who enter the program are “Cincy STEMM Fellows,” and are required to attend a minimum of two classes over the summer that may be used for credit toward their future secondary math or science education degree.
- » The University of Cincinnati works collaboratively with Taft Elementary and Hughes STEM High School, enhancing the quality of STEMM instruction and learning environments.
- » The program encourages future teachers to consider teaching in an urban area (particularly Cincinnati), and will eventually serve as a pipeline to the African-American Initiative in Math/Science II (AAIMS II).
- » Introduces an innovative model of STEM teaching preparation, beginning with introducing project-based, real-world STEM learning experiences in K-12 classrooms, offering targeted mentoring during pre-service field and coursework; and examines new STEMM teacher effectiveness when permanent placements are obtained.

**“I realized from the COF program... that hands-on work helps me to learn best. Classes that incorporate discussion really help me to learn more than lectures.”**

**-Choose Ohio First Learning Community Scholar**

At YSU, the six-year graduation rate for the College of STEM is 44.56 percent; the COF Fall 2009 cohort graduation rate is 95.24 percent.



- » The program offers innovative, early college education that includes clinical experiences and internships beginning the junior year of high school.

- **Improving Retention and Learning of STEMM Students through Learning Communities (Hiram College, Kent State University, University of Akron)**

- » The main goal of the program is to encourage Igniting Streams of Learning in Science (ISLS) high school alumni to pursue STEMM majors in college.
- » ISLS offers high school students an opportunity to learn about scientific concepts early in their secondary education. Once on a post-secondary campus, the COF scholars participate in STEMM living/learning communities to support optimal learning and outcomes.
- » The data collected from the COF scholars will evaluate the effectiveness of the learning community pedagogy as a way to enhance STEMM learning.

2. **COF projects offer a mechanism for students to be engaged in a rigorous academic curriculum, while gaining real world experience applicable in a**

**“I have...my summer internship with Chesapeake Energy in Canton, Ohio on the Utica Shale in the natural gas industry. I have learned more than I could have ever dreamed...”**

**-Student  
The Ohio State  
University**

**STEMM field. Offering students flexible class options and diverse teaching and learning methods allows students to be focused in the classroom and simultaneously focused while participating in a cooperative learning opportunity or internship. This early exposure to the real world applicability of a STEMM major reduces the likelihood that graduates will choose employment in another field. For example:**

- **Growing the STEMM Pipeline in the Dayton Region – Becoming an International Center of Excellence for Human Effectiveness/Human Performance (Wright State University, Central**



**State University, Clark State Community College, Edison Community College, Sinclair Community College, Southern State Community College, University of Dayton, Wittenberg University)**

- » This partnership employs a curriculum-sharing model via the creation of the Dayton Area Undergraduate Studies Institute (DAUSI), modeled after the successful Dayton Area Graduate Studies Institute (DAGSI), to provide all COF Scholars, no matter their home institution, easy and affordable access to curricula in targeted STEM areas.
  - » Students are becoming well-rounded STEM scholars through internships and co-ops at Dayton-area employers, including Wright Patterson Air Force Base, General Electric, Booz|Allen|Hamilton, Miami Valley Hospital, and many others.
  - » COF scholars are engaged in professional-level work, including writing for and being involved with National Science Foundation grants, attending and presenting at national conferences, and taking professional level examinations (e.g., the Fundamentals of Engineering test) prior to graduation. Internship, co-op, research, and service learning roles totaled more than 8,600 hours.
- **Choose Ohio First for Engineering Entrepreneurship (COFFEE) Scholarship (University of Toledo, Ohio State University, Stark State College, Lorain County Community College, Owens Community College)**
    - » Led by the University of Toledo, the program equips students with the knowledge and skills necessary to simultaneously work on their engineering or science degrees and learn the entrepreneurial skills





necessary to translate their innovations into economic growth for Ohio.

- » COFFEE Scholars are selected based on academic ability, financial need, and a diversity approach that is reflective of Ohio's general population. The average GPA for COFFEE scholars was 3.35.
- » All COFFEE scholars participate in a formal co-op or internship program.
- » The investment of Choose Ohio First funding for the Scholars at OSU was exceeded by the earnings the students generated at their co-op/ internship placements.
- » COFFEE Scholar Jason Owens and his company, Resonance Group Ltd., were honored at the annual UT Innovation Enterprises Challenge Business Plan Competition.

• •

**2<sup>nd</sup> annual University of Toledo  
Innovation Enterprises Challenge  
Business Plan Competition**

**Resonance Group, Ltd** (Jason Owens, President) – Produce and market an energy control system that integrates a new RG controller with state-of-the-art pulse motors and power management technologies for improved performance of electric motor-driven products. IP owned by Jason Owens. Honorable Mention Award (\$500 prize).



*Jason Owens, COFFEE Scholar, BSEE and BSCSE grad, December 2012*

**Choose Ohio First Engaged Program in Bioscience and Healthcare (Cleveland State University, Baldwin Wallace University, Case Western Reserve University, Cuyahoga Community College, Hiram College)**

- » Campuses, along with public and private partners, train students along interdisciplinary bio-related and healthcare-related STEM



**“The COF program has helped me identify with a leadership role... my role in society as a functioning, contributing member... as a member of the STEM Leadership Council”**

**-Nick, Biology major  
Baldwin Wallace**

» This program has a strong focus on experiential learning, requiring that students participate in a research experience, entrepreneurial experiences, or a co-op/internship experience with partnering companies.

» A total of 41 percent of scholars participated in an internship or co-op experience.

» All COF scholars presented their research at scientific symposia. COF students are also given opportunities to pitch their ideas to relevant businesses in order to win competitive funding.

- » Since the inception of COF, STEMM majors have increased to 14.7 percent of total enrollment at Baldwin Wallace – up from 11.6 percent prior to the campus’ participation in COF.
- » The program has identified best practices for implementation, including dedicating staff to COF, integrating COF into current campus goals, identifying non-academic barriers to success, utilizing established effective practices, and making COF visible on campus.

- **Science and Math Education in ACTION (Bowling Green State University, University of Findlay, Terra Community College, Northwest State College, Owens Community College)**

- » Bowling Green State University (BGSU) and partners have created an innovative program to increase the number of highly effective science and math teachers in Ohio.
- » BGSU’s program requires that scholars participate in a residential summer bridge program before their

**“This is an excellent opportunity for students to carry out cutting-edge bioinformatics research...research, such as microarray, next gen sequencing is fairly expensive...”**

**-Student  
University of Akron**



freshman year, a group research project in math or science during their freshman year, a business/ industry practicum (partners include BioFit, Conagra, Tec^Edge) during their sophomore year, and a pedagogical research project during their junior and senior years to ensure continued engagement and practical learning experience throughout their undergraduate experience.

- » The fall 2011 cohort of COF scholars is the most advanced yet when compared to other incoming freshmen. At BGSU, the incoming COF Scholars have an average high school weighted grade point average (GPA) of 4.06 compared to a 3.25 high school GPA of other incoming freshmen. The average ACT composite score of Cohort 3 scholars is 27.8, compared to a 22 score for other incoming freshmen.
- » The median GPA for the BGSU COF Scholars was above 3.5.
- **COF for Bioinformatics (Ohio University, University of Akron, Case Western Reserve University, Ohio State University, Shawnee State University, Wittenberg University, Wright State University, University of Toledo, Central State University, Miami University, University of Cincinnati, Bowling Green State University, Clark State University)**
  - » Ohio University and partners enhance the interaction between departments to positively impact the students' educational experience. Faculty is centrally involved in mentoring and meeting with students weekly.
  - » A pipeline program has been established to allow students to earn Bachelor of Science and Master of Science degrees in bioinformatics in 5.5 years.
  - » Students must actively conduct research and present their findings at industry conferences every year. Several students have co-authored research papers and presented at professional conferences.
  - » Students are required to participate

**"I have been very fortunate to experience the hands-on training at the new groundbreaking West Creek Watershed. Thank you for the opportunity."**

**-Jennifer  
Cuyahoga Community  
College,  
future Cleveland State  
University student**



in the Great Lakes Bioinformatics Conference (GLBIO), which promotes computational biology and bioinformatics within the eight U.S. states and two Canadian provinces that comprise the North American region.

- **Building the Nursing Workforce in Northeastern Ohio (Case Western Reserve, Cleveland State University)**

- » Case Western University and Cleveland State University aim to increase the number of doctoral nursing students, or COF Nursing Fellows in the northeastern part of the state.

- **Building Ohio's Sustainable Energy Future (University of Toledo, Bowling Green State University, Owens Community College, Terra Community College, Northwest State Community College)**

- » The University of Toledo and partners aim to increase the number of undergraduates prepared for careers or further graduate training in areas related to renewable energy and the environment.
- » Entering freshmen participate in the Academic Investment in Math and Science (AIMS), which has been shown to increase their academic performance during the first year.
- » Students at community colleges in the region (e.g., Owens, Terra, and Northwest State) have access to coordinated program content and advising activities so they can easily enter baccalaureate degree programs at the partner four-year institutions.
- » The program places emphasis on women and minorities in the selection process, to increase the presence of underrepresented and underprivileged groups prepared for careers in renewable energy and the environment.

**"I am grateful for receiving the scholarship...I always loved math and science... so I am very happy I have the opportunity to pass my love of these subjects on to the coming generations."**

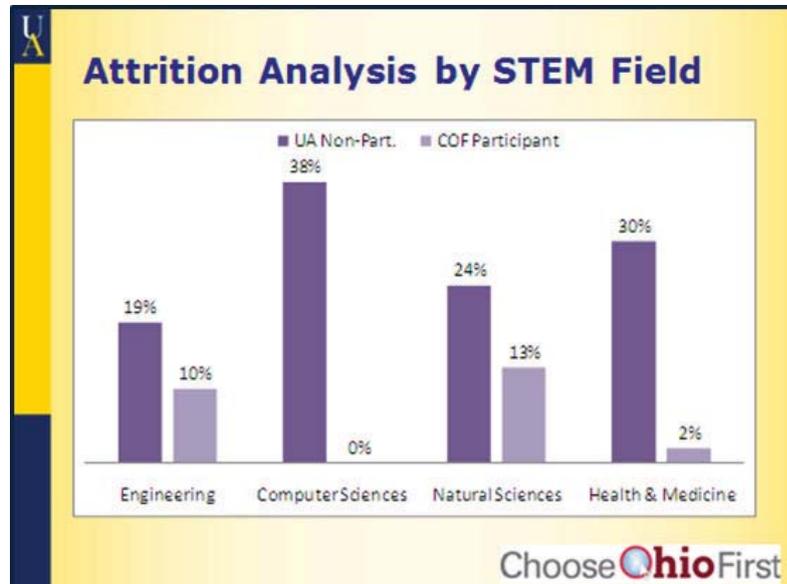
**-Student  
University of Cincinnati  
University student**



- » **Students have completed internships at Xunlight, Solargystics, First Solar, and other companies, working on real-world environmental issues.**
  - **Strengthening the STEMM Pipeline through Student Preparation, Awareness, Teacher Education, and Building Partnerships with K-12 (University of Cincinnati, Cincinnati State Technical and Community College)**
    - » The University of Cincinnati is dedicated to significantly increasing the higher education participation and success of students entering STEMM through the Tech-Prep Consortium pathway.
    - » The innovative academic supports aim to increase the participation and preparation of students entering PK-8 STEMM teaching careers, create highly qualified mathematics and science teachers for grades PK-8, prepare teachers to be expert mentors and coaches in STEMM education, and increase the retention of math and science teachers in Ohio.
    - » **Resources are provided that expand access to STEMM majors, STEMM co-op and internships placements, innovative academic support programs, and an ambitious advising and mentoring structure.**
    - » Three graduating scholars have accepted STEMM teaching positions in Ohio.
  - 3. **Non-traditional students and those underrepresented in higher education, including low-income or first generation students, are given the opportunity to excel as a result of COF. Programs offer the financial assistance necessary for at-risk students to enroll and persist to completion of postsecondary education credentials, while ensuring students are engaged in a rigorous curriculum that prepares them for employment. For example:**
    - **The “Innovation Alliance: STEMM Undergraduate Engagement in an Engineering Environment” (University of Akron (UA), Baldwin Wallace University, Stark State College, Lorain County Community College)**
-



- » **The institutional cost-share is funding used for administration, advising, facility upgrades, and other important needs of COF. UA provides an annual operations budget of \$200,000 for COF**
- » To date, the Alliance has served 2,273 unduplicated students through COF.
- » The project served 55% first-generation/low-income students, 21 percent minority students, and 11 percent non-traditional or veteran students.
- » At UA, the graduation rate is currently 74 percent over a four-year period, which is more than 30 percent higher than the six-year graduation rate of the university's overall student population.
- » Baldwin Wallace University has experienced **a net increase in STEMM disciplines from 11.6 percent of the student body to 14.3 percent** since the inception of COF.
- » At Baldwin Wallace, the four-year graduation rate for COF students is 80 percent, versus 50 percent of other STEMM students. Of the remaining students, 13 percent remain enrolled but have not yet graduated.
- » **UA has shown that failure to persist from one year to the next is minimized when the student is a COF participant. In some cases, attrition is zero when the student is a COF Scholar. In other cases, attrition is less than half of the non-COF population.**



- **Diversifying Ohio in STEMM (DO-STEMM) (Central State University, Sinclair Community College, Cuyahoga Community College, Miami University, University of Cincinnati, Kent State University, Youngstown State University, Clark State University)**
  - » Program places significant emphasis on recruitment of minority scholars, particularly African Americans, who comprise the vast majority of this program’s student base (88 percent).
  - » **The 2012-2013 graduation rate for COF scholars at Central State University was 100 percent versus the non-COF STEM graduation rate of 87.2 percent (students in the same disciplines as COF).**
  - » The program retained or graduated 97 percent of COF scholarship recipients. The average persistence/graduation rate over all program years is 85 percent.
  - » Undergraduate scholars are required to participate in graduate school visits and professional workshops as a condition of their scholarships. Similarly, Sinclair Community College scholars engage in regular meetings.
- **“Diversifying Yield and Retention in Engineering, Mathematics, and Science” (University of Cincinnati)**



- » The University of Cincinnati's (UC) program was used to leverage a \$2 million NSF Type 1 STEM Talent Expansion Program (STEP) grant.
  - » The significant retention efforts begin with a recommended seven-week bridge program for socioeconomically disadvantaged and first-generation scholars and/or a more targeted virtual program for those whose math placement test scores were low (ALEKS). ALL summer bridge students enroll in Supplemental Cooperative Learning Courses in calculus, chemistry, and physics.
  - » **All scholars are expected to participate in six quarters of co-op work, expanding on the strengths of UC's well-established co-op program. The development of a Corporate Mentoring Program increases the STEMM internships available for COF scholars and has resulted in a mentoring practice model that can be used throughout the state.**
  - » o All scholars are required to participate in 10 hours per quarter of volunteer service, aimed at strengthening ties to the community and gaining greater social/cultural understanding.
  - » The program has identified best practices that may aid other programs in attracting, retaining, and graduating STEMM scholars, including 1) monitoring academic progress at regular intervals; 2) offering first-year and sophomore learning communities (could be living/learning); 3) mandatory bridge programming; and 4) scheduling individual meetings with a program coordinator as intervention and support.
- **Creating Affordable and Effective Educational Pathways in Information Technology (Wilmington College, Cincinnati State Technical and Community College, University of Toledo)**
    - » Wilmington College and partners are working to create seamless pathways between public and private campuses, and two-year and four-year institutions, in order to dramatically increase the number of low-income and first-generation students that enter into information technology.
-

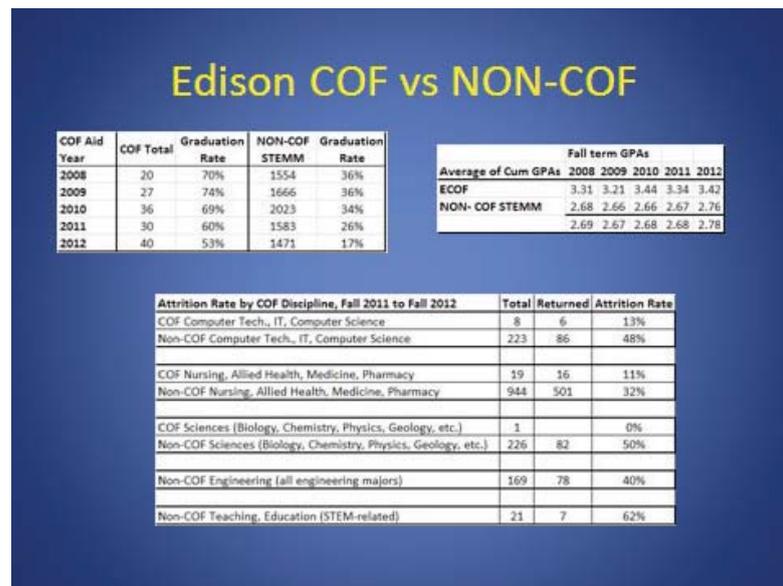


- **STEMM Degrees and Careers for Ohioans with Disabilities, including Veterans: COF Scholarships in Support of the NSF-Funded Regional Alliance in Disability (OSAA) (Wright State University, The Ohio State University, Sinclair Community College, Columbus State Community College)**
    - » Ohio's population of persons with disabilities is a largely untapped resource for meeting the demand of STEMM professionals for the state.
    - » **This partnership leveraged the COF dollars to obtain OSAA National Science Foundation funding.**
    - » **Students with disabilities are recruited into STEMM majors and transitioned through the use of STEMM academies, learning communities, mentoring, and residential experiences on campus to develop independent living skills.**
    - » Ability Advising allows the institution to meet the needs of the student through review of academic progress, arranging technological accommodations, and tutoring assistance. Ability Advising also fosters tailored opportunities for STEMM co-op and internship experiences.
  
  - **Choose Appalachian Teaching (CAT) (Ohio University, Marietta College, Muskingum University, Shawnee State University, University of Rio Grande)**
    - » The program led by Ohio University aims to strengthen the regional capacity of rural southern and eastern Ohio (Appalachia) by providing scholarships, particularly for first-generation students, to pursue undergraduate degrees.
    - » The CAT program combines its annual research symposium with student research from the Noyce Scholarship program and the Woodrow Wilson Teaching Fellowship.
    - » A Freshman Learning Community has been established to support CAT scholars. Webinars and videoconferencing have also been used to connect students from the various partner campuses to help close the distance gaps present in rural Ohio.
-



4. Nearly 13 percent of the COF students spent the 2011-2012 academic year at a community or technical college. Displaced workers often have to make tough choices about their education and the feasibility of entering careers that require additional training. The presence of COF on a community college campus increases the likelihood that laid-off workers will return to school to either enhance their skills for employment in their current industry or be trained for a different career field altogether. As examples:

- Edison Community College’s COF Scholars have consistently shown higher graduation rates, retention rates, and GPAs than their non-COF STEM peers.



- The “URG COF STEM Scholarship Program” (University of Rio Grande, Rio Grande Community College, Hocking College, Ohio University)
  - » The University of Rio Grande, Rio Grande Community College, Hocking College, and Ohio University show a median GPA of 3.53 for students in the program.
  - » The RGCC Scholars in Nursing and Power Plant Management programs have completed internships with local companies, including



Holzer Clinic, Health System, Adena Ventures, and American Electric Power.

- » The Ohio University Heritage College of Osteopathic Medicine awarded eight scholars who are on their way to offering high-quality care in Ohio.

- **“Future Scientists of Ohio” (The Ohio State University, Columbus State Community College)**

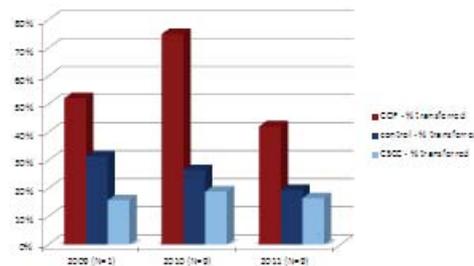
- » The aim of this program is to support non-traditional and low-income students in STEMM by providing them a pathway to higher education from a two-year to a four-year campus.
- » FSO data from Columbus State are particularly compelling – graduation rates of COF students are far higher than other CSCC students.
- » Approximately 27 percent of the students are from underrepresented groups. And 50 percent are first-generation students pursuing STEMM degrees.
- » All students in this program begin at Columbus State Community College, including a bridge program that prepares returning students for the rigor they will soon encounter. The collaboration has also implemented a mandatory mentoring program to better address the needs of the unique population. Ohio State offers shared courses to students, and research experiences are offered on site for Columbus State’s students.
- » **Ohio State offers shared courses to students, and research experiences are offered on-site for Columbus State’s students.**
- » The COF program was used as leverage for a STEP NSF grant.
- » Four students participated in the Wright-Patterson Air Force Research Lab summer internship.
- » Despite their unique challenges, two scholars completed their bachelor’s degrees (after transferring community college credit) within the three years the program has been in existence. One scholar was accepted to the OSU School of Pharmacy and the other was accepted to Ohio University’s Medical School.



- » **The transfer rates of COF students from Columbus State into Ohio State is higher than for the average Columbus State student:**



**FSO-COF Success Data: Transfer Rates**  
(comparison of A.S. majors; COF vs. control vs. CSCC)



"Control" group consists of non-COF students who were incoming freshman, declared A.S. major upon entrance to the college, and tested into college-level math and english

"CSCC" group consists of non-COF students who were incoming freshman and declared A.S. major upon entrance to college

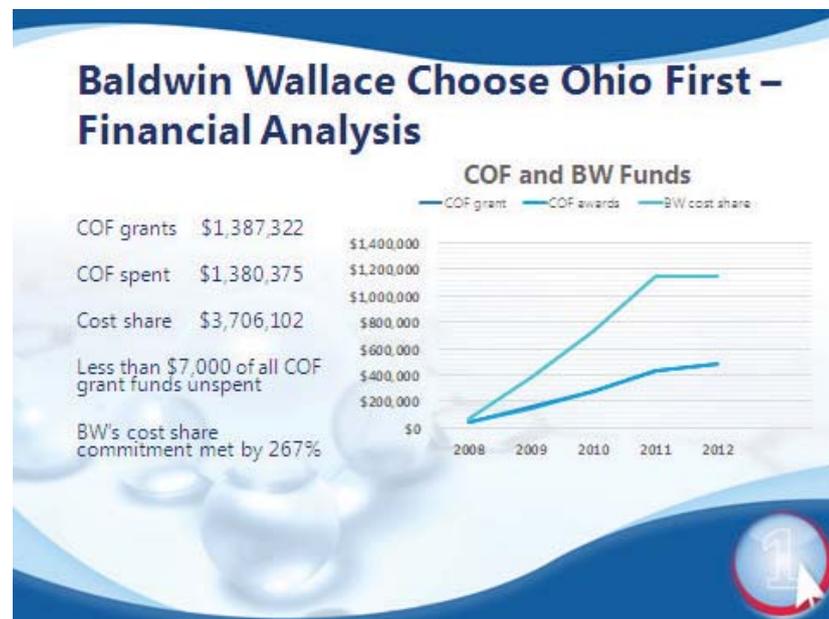
- **Enhancing the Success of Future Health Professionals through Synergistic Cross-Collegiate Programming (University of Cincinnati, Cincinnati State Technical and Community College, Sinclair Community College)**
  - » The University of Cincinnati, primarily through its regional campuses and collaborations with two community colleges, is engaging with an increased number of students with a high academic caliber from diverse and economically disadvantaged backgrounds. First-generation scholars who meet all other requirements are given priority status.
  - » The average GPA is 3.65 for the rising junior COF scholars. The average cumulative GPA for retained freshmen at University of Cincinnati is 3.67. In addition to maintaining high academic standards, students must also attend workshops, seminars, and presentations.
  - » o Students participate in clinical experiences at medical and rehabilitation facilities. ALL students are required to complete presentations as a part of the program.



- » A study conducted with a random sample of COF and non-COF students in the College of Allied Health Sciences showed:
  - Average COF GPA = 3.40
  - Average non-COF GPA = 3.13
  - Average retention for COF group = 93 percent
  - Average retention for non-COF group = 90 percent

5. **Nearly 16 percent of COF scholars are housed at Ohio's private colleges and universities. Partnership and collaboration among the University System of Ohio's public colleges and universities and private institutions around the state have resulted in more students being served, and more efficient use of Ohio's fiscal and human resources. For instance:**

- **#08.33 – “Building the Nursing Workforce in Northeastern Ohio”** (Case Western Reserve University, Cleveland State University)
  - » Baldwin Wallace far exceeded the anticipated cost-share commitment to Choose Ohio First.





- **“Building the Nursing Workforce in Northeastern Ohio” (Case Western Reserve University, Cleveland State University)**
    - » Case Western Reserve University and Cleveland State University are addressing a particular workforce need of their region within the state.
    - » This program consists entirely of graduate programs in nursing, for which students are recruited from the partner institutions’ BSN and accelerated degree programs.
    - » The aim is to increase the number of qualified candidates for nursing positions while also increasing the future number of individuals qualified to teach such in such degree programs.
    - » COF scholars must engage in a research project in conjunction with senior researchers and are also encouraged to attend local and regional events related to the field of nursing.
  
  - **Program of Innovation (Marietta College)**
    - » The program offers approximately \$204,000 in scholarship dollars matched by approximately \$1,116,966 in institutional commitment.
    - » All of the graduating COF Scholars in 2013 received job offers prior to graduation. Fifteen graduating physician assistant students secured jobs with an average pay of \$75,000. Eleven petroleum engineering graduates had full-time, permanent jobs upon graduation with an average salary of \$90,000.
    - » Retention rate is excellent – 99% fall to fall rate for COF Scholars.
  
  - **COF Pharmacy Scholarships (Ursuline College, University of Toledo)**
    - » Students enter the pre-pharmacy program at Ursuline College with the understanding that they will be admitted into the Bachelor of Science for Pharmacy Sciences (BSPS) at the University of Toledo after their second year.
-



- » Pharmacy Camps are held for rising high school seniors to encourage them to enroll in the program.
- » **Nearly 51 percent of the students at Ursuline College are first-generation, underrepresented students.**
- » The recruitment activities focus on students from underrepresented backgrounds, including first generation students and those from high schools in Continuous Improvement, Academic Watch, or Emergency status as determined by the Ohio Department of Education. The retention activities include mentoring, entrance into professional organizations, and programs targeted toward the background of the student (first-generation connections, cultural awareness, etc.).

**“Choose Ohio First... help[ed] me further my education with financial support. But it has also provided personal support... to help students improve...”**

**-Terrell**

**Spring 2012 Bachelor  
of Science Graduate in  
Physics**

- **Northeast Ohio Biosciences Pathway Initiative (Ashland University, The Ohio State University, North Central State College, Lakeland Community College)**
    - » Ashland University and its partners prepare bioscience workers who will sustain regional economic development in agricultural bioscience and research/testing/medical laboratories (RTML).
    - » Ashland University boasts a high retention rate of 83 percent, even with a large number of first-generation students (46 percent).
    - » The COF program strengthened a transfer agreement with the bioscience program at North Central State College.
    - » By the end of the first year, COF students are expected to have a GPA of 3.0 or better. By the end of their second or third year, the expectation is a 3.25 GPA or higher.
    - » The program at Ashland University has substantially increased the number of incoming students with a declared major in the bioscience areas.
-



6. COF offers graduate students an opportunity to excel in STEM fields. Graduate students comprise approximately 14 percent of the total number of COF students, an assurance that individuals seeking to obtain advanced degrees in subjects such as engineering, science, and mathematics are able to receive financial assistance from this program as well. As examples:

- **“Improving STEM Teacher Preparation: A Long Term Investment (D-STEMM)” (Miami University, Cleveland State University, University of Toledo, Cincinnati State Technical and Community College, Cuyahoga Community College, Owens Community College)**
  - » This partnership improves the STEM teaching force by increasing the number of highly qualified new teachers through a high-caliber education, diversifying the STEM teaching pool, and decreasing the attrition rate of STEM teachers through their induction period.
  - » Current students provide tutoring support at the secondary level and are engaged in activities that cultivate teachers for urban environments.
  - » Students pursuing graduate degrees in environmental science and chemistry are preparing to pursue careers in research and ultimately the professoriate. Scholars are involved with learning communities that provide enrichment opportunities, enhanced academic support, and access to innovative courses designed specifically to enhance the STEM experience.
  - » The University of Toledo program centers on a rigorous, field-based program and was a key element of the Woodrow Wilson Teaching Fellowships awarded to the campus.
  - » The project also provides scholarships to existing STEM teachers who are interested in a master’s degree and/or endorsements in their subject areas.

**“I hope that others may continue to benefit from these scholarships and that they help the state maintain a body of dedicated professionals teaching science.”**

**- Elizabeth  
The Ohio State University**



- **Master’s Degrees as Conduits to Recruiting, Retaining, and Upgrading the Ohio STEMM Workforce (University of Cincinnati)**
    - » The University of Cincinnati program is designed to attract students into a master’s degree program and ultimately medical school, with the goal of retaining more Ohioans with advanced degrees.
    - » With a goal to recruit more underrepresented and economically disadvantaged students into the field of medical physics, the program has established partnerships to identify eligible undergraduates through the active engagement of minority alumnae.
  
  - **Engineering Across the Pipeline (Cleveland State University, Baldwin Wallace University, Ursuline College)**
    - » The goal for the program is to increase the number of students entering the engineering profession at the graduate level through the use of an accelerated “4+1” model.
    - » Each COF student’s experience is customized, with one-on-one interactions to identify opportunities and connections, incorporate activities, and tailor events toward specific majors.
    - » The number of students pursuing STEMM (in the target disciplines) at the partner campuses has increased from an average of 11.6 percent to 14.7 percent since COF’s inception.
    - » Course enrollments and grades are reviewed mid-semester and at the end of each semester to identify opportunities for additional supports that will increase student success.
  
  - **Coming Out of the Pipeline: The UC Interdisciplinary Pathway to STEMM Professionals (University of Cincinnati)**
    - » The University of Cincinnati (UC) has an overarching goal of generating an experiential pathway to a STEMM career focusing on students in the mid- to late-collegiate undergraduate years as well as in graduate education.
    - » By providing co-op opportunities, students are given direct employment experience in STEMM fields at Ohio companies that donate \$10 million each year in support of UC STEMM students, including the COF scholars.
    - » million each year in support of UC STEMM students, including the COF scholars.
-



- » Educational collaborations between STEMM and non-STEMM (e.g., business, design) sectors give students enhanced value in the workplace. From an early stage of their education, students learn the connections between designers, engineers, and medical professionals for medical device innovation projects.

## The Economic Impact of Choose Ohio First

A 2011 analysis of the COF program by Tripp Umbach found that the program is having a positive effect on the state's economy. The analysis conservatively estimates that receipt of COF funds led to the support of 477 jobs and more than \$59 million in economic output within the state. Economic output includes the institutional expenditures made for COF Scholars, the personal spending of staff and students of the program, labor income from the co-op/internship opportunities, innovations and entrepreneurship opportunities led by COF scholars, and other local economic activity. By the same conservative estimates, it was found that, by 2016, COF programs will lead to the support of 843 jobs, more than \$110 million in economic output around the state, and \$4.5 million in state and local tax revenue. These are conservative estimates based on annual impacts and do not take into consideration cumulative effect. Moderate and aggressive estimates trend much higher.

Several evaluations led by external entities support the continuation and expansion of offering COF scholarships. In a study conducted by The Strategy Team, Ltd. for the Ohio Board of Regents at the end of 2010, students positively credited COF with strengthening the existing levels of STEMM interest in the scholars and with attracting the attention of scholars who may not have seriously considered STEMM. The scholarship also appeared to have a greater influence on the students' choices of institutions and academic major declarations. This is good news for Ohio employers.

Tripp Umbach's COF study included several interviews with business leaders; out of the 25 leaders interviewed, a majority (n=16) would prefer to hire graduates from Ohio colleges and universities. However, they are unable to find the science, technology, engineering, mathematics, and medical talent necessary

---



to remain competitive. According to a report by the National Science Foundation in 2003, Ohio was in the bottom quartile for the percentage of science and engineering degrees conferred. Ohio's economic prosperity hinges on the development of talent in STEMM. Nine out of the 25 employers interviewed indicated they would employ talented candidates regardless of whether they are in-state or out-of-state. However, it is important to note that employers, no matter the preference to hire from within Ohio, view COF potentially as a key factor in helping meet workforce demands locally.

**An Abbreviated List of Business Partners Connecting COF to Industry:**

Abbott Nutrition	Brush Wellman	NASA
Accenture	Chantest	Neo Proteomics, Inc.
Acusport	Cleveland Clinic	Ricerca Biosciences
Affymetrix	Clinical Tissue Eng. Center	Steris
Alkermes	Conagra	Sysco
Athersys	Cooper Automotive	Tec^Edge
Audio-Technica	FC Stone	WordPress
Avetec	Hanger Prosthetics	Wright Patterson Air
BioFit	Hoxworth Blood Center	Force Base
BioInVision, Inc.	Image IQ	
Blue Water Satellite	IYA Technologies	



## Choose Ohio First: Keeping the Momentum

The COF Scholarship Program aims to continue the positive momentum of past years. When possible, opportunities for the growth and expansion of the program on campuses are highly encouraged. Numerous inquiries about COF continue to come in at the state level, and campuses report that the substantial progress in marketing COF using social media and other online materials has resulted in increasing numbers of applications for the scholarship each year. At the 2012 COF Scholar Showcase, Secretary of State Jon Husted, founder of Choose Ohio First, presented each scholar with a personalized commendation. With such visibility, the requirements and expectations for COF students have become more rigorous, but the intention of the program to increase access to high-achieving first-generation, low-income, and underrepresented students has remained. The average GPA of a COF Scholar in the 2012-2013 academic year was 3.39, up from the 2011-2012 academic year average of 3.077. Persistence from year to year in COF also has increased. With a national study from the United States Department of Education's National Center for Education Statistics reporting that half of all bachelor's degree candidates in STEM leave the field before completing their degree, Choose Ohio First programs have extremely high comparable retention rates, with some programs boasting 100 percent retention.

There were approximately 717 Choose Ohio First graduates in the 2012-2013 academic year. Of this number, 183 plan to enter graduate school. More than six hundred (n=629) COF graduates are staying in the state to contribute to the Ohio workforce. Only 35 students reported accepting out-of-state employment or graduate school offers. Although these data are self-reported only by the campuses at this time, the Ohio Board of Regents will use a newly formed database to periodically survey program graduates directly and monitor their employment through connections with workforce data at the state level.

The data from the COF campuses have progressively become more robust and meaningful. As we move toward more years of graduating classes of COF scholars, the data are clearly showing that the funding has a positive impact on student retention and completion. Moving forward, in collaboration with the Governor's Office of Workforce Transformation, the Ohio Board of Regents will

---



also be able to offer data on the degree attainment of graduates and the retention of COF scholars in the Ohio workforce. Connecting directly to workforce need and demand is also a goal of Choose Ohio First moving forward.

The Ohio Board of Regents is in a continuous improvement mode with COF to build on its success and enhance the scope and depth of its positive effects on Ohio's economy and educated workforce in the future. As the COF scholarships are available on more campuses and in more disciplines, an increasing number of students will have to the opportunity to apply for a COF award and pursue their academic and career goals in STEMM fields.

### **Student Testimonials**

"I am an ex-military member (Navy Hydraulic Technician, Honorable Discharge), and a single mother with four children. I have always loved science, math, and people...I have one year of college left, and my outlook for the future is so bright, I can hardly wait. COF STEMM and the University of Akron have made my dreams come true." – Heather, University of Akron

"The Choose Ohio First STEMM program has given me the opportunity to learn and see what other students like myself can contribute to society. This summer, I will be working (again) at First Energy. Through this job, I have been able to get more hands-on experiences with security policies, best practices, as well as project integration." – Aric, Baldwin Wallace University

"With a degree in engineering education, my goal to make a dent in K-12 engineering and student readiness for college-level math can be more achievable. I also have a passion to contribute to the field beyond being an educator. One of the more involved undertakings is the development of a math textbook, specifically aimed at encouraging students to pursue STEMM majors." – David, Ohio Northern University

"The Choose Ohio First Scholarship Program is the best scholarship program here at Youngstown State University. The scholarship has given me the resources to take the extra courses I need to finish my major on time. It is an amazing program and I am very proud to be involved." – Kevin, Youngstown State University

.....



“I have had the opportunity to participate in research at Ashland for the past two summers, which has been instrumental to my growth as a student and an independent thinker. Overall, this scholarship has been beneficial in numerous ways.” – Anna, Ashland University

“I want to thank you for the opportunity to be in this scholarship program. Through Choose Ohio First, I have had many amazing opportunities.” – Dawn, Columbus State Community College (Student Speaker at COF Showcase)

.....



---

 **OhioHigherEd.org**

Ohio Board of Regents | 25 South Front Street | Columbus, OH 43215-3414 | 614.466.6000