

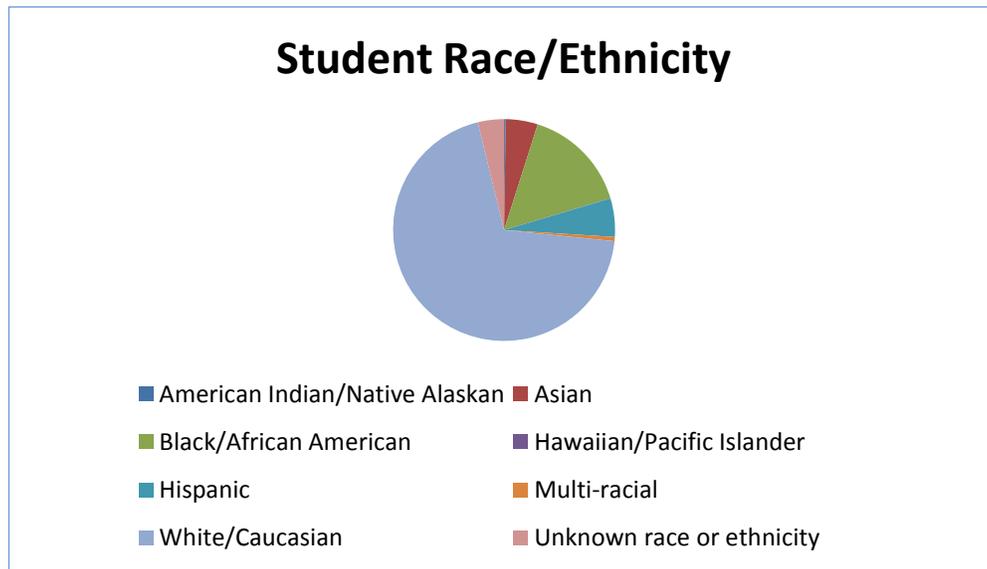
Choose Ohio First

STEMM-related disciplines are critical to the future success of the state of Ohio and the nation. The United States currently ranks 27th among 29 developed countries in awarding STEMM degrees. Choose Ohio First, now in its third academic year during 2010-2011, has truly become the state's premier model for recruiting and retaining talented students in science, technology, engineering, mathematics and medicine (STEMM) and STEMM education fields. The primary objectives of the Choose Ohio First 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.

The Chancellor selected **28 Choose Ohio First programs** for awards in three rounds of competition. All 28 programs are active and operating as of November 2010. The Chancellor made final selections regarding the funded programs based on the recommendations provided by national experts in the STEMM disciplines. The Choose Ohio First programs selected were determined to be innovative and rigorous and to have the most potential for advancing Ohio's position in the world markets including information technology, healthcare, sustainable energy, engineering, teacher education and science. In the 2009-1010 academic year, the Governor and the Chancellor also announced the launch of **the Choose Ohio First Woodrow Wilson Teaching Fellowship Program** designed to educate Ohioans for STEM teaching positions in high-need urban and rural school districts. **Four institutions of higher education and corresponding secondary schools have been identified – the University of Akron and Akron Public Schools; the University of Cincinnati and Cincinnati Public Schools; John Carroll University and Cleveland Metropolitan Schools; and The Ohio State University and Columbus City Schools.** The Choose Ohio First Woodrow Wilson Teaching Fellowship program is supported by Choose Ohio First and **\$2.4 million dollars in support from private foundations.**

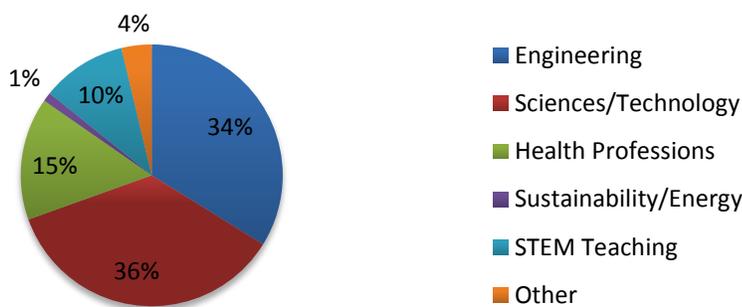
To date, more than **\$13.2 million** has been awarded to over **4000 Choose Ohio First Scholars** attending an Ohio college or university. The institutions where the students are enrolled have contributed an additional **\$19.9 million dollars in cost-shared funds.** Matching funds are used to revise and develop new curriculum in the STEMM disciplines awarded COF funds, supplement student travel to industry conferences and research symposia, and leverage the involvement of businesses in the development of Ohio's future innovators. Factoring in the Woodrow Wilson Teaching Fellowship campuses, **42 public and private campuses** around the state will receive Choose Ohio First funds. The COF scholarship program ensures that an increased number of students enter into the STEMM disciplines and graduate from the most innovative and rigorous programs that the state has to offer. In the degree programs that house Choose Ohio First scholars, undergraduate enrollment in these disciplines **increased from 90,270 total students in 2007 to 105,142 total students in 2009.** The number of students graduating with STEMM degrees continues to increase as well. Choose Ohio First is a major strategy of the Chancellor's Strategic Plan for Higher Education in Ohio to ensure that degree attainment continues to rise.

Choose Ohio First Demographic Data



Nearly **27% of Choose Ohio First scholars are from a racial or ethnic minority**. Several programs have the sole focus of increasing the number of ethnic minorities in the STEM fields. Approximately 47% of the scholars are female and nearly **18% are non-traditional students over the age of 25**. While preliminary data suggests that Scholars over the age of 25 are predominately laid-off/displaced workers retraining for a new career, additional questions are being created for the annual student survey to determine previous job areas and identify the new career fields being chosen by the returning workforce.

Choose Ohio First Student Majors¹



¹ Data as reported from Choose Ohio First campuses, July 2010

More than two-thirds of Choose Ohio First Scholars are in an engineering discipline, a physical science, or a technological major. While health professions showed a slight decrease in the number of students entering into majors from last year, STEM teaching increased by nearly 3% over last year. This can be attributed to the increased focus on the importance of highly trained STEM teachers at the state and

national levels. **The Choose Ohio First Woodrow Wilson Teaching Fellowship** at the four current institutions will soon expand to three additional institutions through the support of the Race to the Top federal program. Interviews for the fellows began in October, and show promise. Out of 19,000 inquiries, less than 400 potential fellows were chosen based on major field, past academic success, and a rigorous interview process. **Approximately 20% of the fellow candidates are minority** and all come from a STEM background.

Choose Ohio First Program Descriptions

The Choose Ohio First major subject areas are distributed among the 28 member programs. While the variety of major areas the students are engaged in is key to the success of the program – we want to ensure students are entering into high-demand fields that are critical to the future success of Ohio – it is also important to note the variety that lies with the program offerings.

Several Choose Ohio First programs reach out to secondary students to ensure early exposure to concepts and subjects central to success in the STEMM disciplines. This allows middle and high school students, both affluent and at-risk, to see value in a STEMM career and to provide them with the tools necessary to succeed is critical to increasing the number of STEMM graduates in Ohio. As examples:

- **The “Integrated Science Training for Northeast Ohio’s Future Biomedical & Biotechnology Workforce”** program engages students at the middle school level to ensure that they are ready to enter into and successfully complete a STEM degree program.
 - Partners: Kent State University, Cuyahoga Community College, Lakeland Community College, Stark State College
 - **The institutions work with many middle and high schools to encourage interest and proficiency in STEMM fields.** Efforts include the development of inquiry-based continuing education experiences for partnering middle schools’ teachers (MSTIK); the donation of equipment and assistance to middle school students; the development of innovative education tools, workshops, & laboratory experiences, through which high school students and community organizations can learn about relevant material; and participation in the Upward Bound program.
 - Students in Lakeland’s Biotechnology Science Program are required to participate in an 8-week internship as part of their course of study. A number of KSU & Tri-C’s scholars have also participated in research and internship opportunities, although they are not required to do so.
 - Community organizations, high schools, career centers, employment agencies, etc. are engaged by the partner schools in recruitment and/or placement of COF scholars.

- **The “Student Success in Mathematics”** program engages students early on to ensure preparedness for college curriculum.
 - Partners: Cleveland State University, University of Akron, Case Western Reserve University, Kent State University, Youngstown State University, Cuyahoga Community College
 - This program’s **outreach efforts center around partnerships and dual-enrollment opportunities with partner high schools, in order to ensure that an increased number of entering college freshmen are proficient in mathematics.**

- Students complement their academic studies with internships and undergraduate research opportunities, both at and outside of their respective institutions. These **opportunities are advertised through presentations by university faculty and local business/industry leaders, who currently employ STEMM scholars in internship and/or professional roles**, as well as through corporate tours and career counseling.
- Numerous community engagement alternatives are given to COFSP scholars, including volunteering with programs offered by the Martha Holden Jennings Foundation, the National Inventors' Hall of Fame, the Igniting Streams of Learning Academy, and the Cleveland City Mission.

Choose Ohio First projects offer a mechanism for students to be engaged in a rigorous academic curriculum, while gaining real world experience applicable in a STEMM field. Offering students flexible class options and diversified learning streams allows students to be focused in the classroom and focused while participating in a cooperative learning opportunity or internship. This early exposure to the real world applicability of their major reduces the likelihood that graduates will choose employment in another field. For instance:

- **The "Growing the STEMM Pipeline in the Dayton Region – Becoming an International Center of Excellence for Human Effectiveness/Human Performance"** program in the Dayton area has become a catalyst in the region for sharing rigorous coursework, while offering high quality experiences to scholars across the collaborative.
 - Partners: Wright State University, University of Dayton, Central State University, Wittenberg University, Sinclair Community College, Edison Community College, Clark State Community College, Southern State Community College
 - **Employs a curriculum-sharing model** via the creation of the Dayton Area Undergraduate Studies Institute (DAUSI), modeled after the very successful Dayton Area Graduate Studies Institute (DAGSI), **to provide all Choose Ohio First Scholars**, no matter their home institution, with **easy and affordable access to curricula** in targeted STEMM areas.
 - Students are becoming well-rounded STEM scholars through internships and co-ops at various Dayton-area businesses, including WPAFB, Reynolds and Reynolds, 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.
- **The "Choose Ohio First for Engineering Entrepreneurship (COFFEE) Scholarship"** equips students with the education 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.
 - Partners: University of Toledo, The Ohio State University, Stark State College of Technology, Lorain County Community College, Owens Community College
 - **All COFFEE scholars participate in a formal co-op or internship program.**

- The four-year partners involved actively recruit students from the two-year campuses in the collaboration.
- Students are recruited through a rigorous application process that emphasizes academic ability, financial need, and diversity – the scholars participate in a robust program consisting of an innovative approach to engineering education, an entrepreneurship minor, and co-op, internships, and mentoring from successful entrepreneurs.
- **The “Choose Ohio First Engaged Program in Bioscience and Healthcare”** program is really working with the business community to ensure their students have a direct link to the workforce.
 - Partners: Cleveland State University, Baldwin-Wallace College, Case Western Reserve University, Cuyahoga Community College, Hiram College
 - This program has **a strong focus on experiential learning**, requiring that students participate in research, varied entrepreneurship activities/ training, and **co-ops/internships with partnering companies such as Jumpstart, BioEnterprise, & the Cleveland Clinic Foundation.**
 - Business and Entrepreneurship courses at partner institutions help to ensure that students are academically, as well as practically, prepared to participate in the local STEM business community, both during college and after graduation. Moreover, partner institutions have established a credit transfer system for these courses, allowing scholars to take part in the business courses most strongly related to their career goals.
- **The “Science and Math Education in ACTION”** program is preparing future STEM teachers, starting at the undergraduate level.
 - Partners: Bowling Green State University, University of Findlay, Terra Community College, Owens Community College, Northwest State Community College
 - BGSU’s program requires that scholars participate in a bridge program before their freshman year, a group research project during their freshman year, a business/ industry practicum (partners include BioFit, DayMark, Sysco, etc.) during their sophomore year , **and a pedagogical research project during their junior/ senior years**, to ensure continued engagement and practical learning experience throughout their undergraduate career.
 - BW scholars are required to participate in experiences with PK-12 teachers during their freshman year, in order to gain early practical experience in the field.

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 Choose Ohio First. Programs offer the financial assistance necessary for challenged students to enroll and remain in postsecondary education, while ensuring students are engaged in a rigorous curriculum that prepares them for employment in the Knowledge Economy.

- **The “Innovation Alliance: STEM Undergraduate Engagement in an Engineering Environment”** program strives to ensure equitable access to the STEM disciplines for all.
 - Partners: The University of Akron, Baldwin Wallace College, Stark State College, Lorain County Community College
 - Partner institutions have established a system whereby **institutional cost-share dollars are used for administration, advising, facility upgrades, and other important needs of the COFSP.**
 - COF staff members make presentations at school and community events, college fairs, etc. to improve potential students’ knowledge of STEMM fields and encourage students to attend college. Potential scholars at UA are even given greater consideration if they are socioeconomically disadvantaged, veterans, or transfer students from out-of-state. Because of this and other outreach factors, **this program has a particularly high concentration of first-generation student scholars (72% at UA and 59% at BW).**
 - COF scholars participate in orientation, local/regional STEMM events, & local co-op and internship opportunities, throughout their tenure. Moreover, they are able to communicate with local business leaders through various means. This encourages engagement in and commitment to the program and local STEMM community

- **The “Diversifying Ohio in STEM (DO-STEM)”** program highlights the need for a diverse workforce in the critical areas of STEM.
 - Partners: Central State University, Sinclair Community College, Cuyahoga Community College, Miami University, University of Cincinnati, Kent State University, Youngstown State University, Clark State Community College, Wright State University, Cincinnati State Technical and Community College
 - This program **places significant emphasis on recruitment of minority scholars, particularly African Americans, who comprise the vast majority of this program’s student base.**
 - CSU undergraduate scholars are required to participate in both graduate school visits and professional workshops as a condition of their scholarship. Similarly, Sinclair Community College scholars engage in regular meetings, which keep them apprised of the Ohio job market and university opportunities.
 - While this program’s scholars are not required to participate in an internship, a number have done so, both in and out of the state. **Employers include ZIN Technologies, Avetec, Wright Patterson Air Force Base, and NASA.** Scholars are also given the opportunity to work at national research laboratories through National Science Foundation and National Nuclear Security Administration grants.

- **The “Keeping Students in the STEM Pipeline by Increasing the Yield of Talented Students and Reinforcing the Baccalaureate Experience to Improve Retention”** aims to increase success by improving the college experience.
 - Partner: University of Cincinnati
 - This program’s **significant retention efforts begin with a recommended 7-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).** The bridge program is multi-faceted and includes classes, study groups,

meetings to discuss student progress, trips to local businesses (General Electric, Toyota, Procter & Gamble), and exit testing/ interviews. All COF scholars who participate in the bridge program are also required to participate in supplemental retention programs, which include Supplemental Cooperative Learning Courses and peer-mentoring, and are eligible for corporate mentoring provided through GE.

- **All scholars are expected to participate in six quarters of co-op work**, which is coordinated by the university. This requirement and the accompanying course help to ensure that graduating scholars are well-equipped to succeed in Ohio's job market.
- **Scholars are also given the opportunity to participate in a 2-quarter or summer research project with a faculty mentor, which is funded through NSF.** During this period, the students both actively participate in research and attend seminars and workshops geared towards expanding their research knowledge base and skills.
- 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.**

Nearly 23% of the Choose Ohio First students spent the 2008-2009 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. Choose Ohio First's presence 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 an example:

- The "URG Choose Ohio First STEM Scholarship Program" has the unique distinction of being primarily housed on a campus that pairs a private 4-year and a public 2-year institution.
 - Partners: University of Rio Grande, Rio Grande Community College, Hocking College, Ohio University
 - The RGCC Scholars in Nursing, Fine Woodworking, and Power Plant Management programs have **completed internships with local companies, including Holzer, Adena, and American Electric Power.**
 - Four 2009 COF graduates were accepted to graduate or medical School!
- **The "Future Scientists of Ohio"** program ensures that students who enter into the pipeline at a 2-year campus have a direct connection to the 4-year campus.
 - Partners: The Ohio State University, Columbus State Community College
 - **All students in this program begin at Columbus State, including a bridge program that prepares returning students for the rigor they will soon encounter.**
 - Ohio State offers shared courses to students and research experiences are offered on campus for Columbus State's students.
 - **Program was used as leverage to receive a NSF grant.**

Nearly 13% 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 the 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:

- **The “Building the Nursing Workforce in Northeastern Ohio”** program partners an outstanding private institution with a USO campus. The result is a collaboration that truly addresses a particular workforce need of the region.
 - Partners: Case Western Reserve University, Cleveland State University
 - **This program consists almost totally of graduate programs in nursing**, students for which are recruited from the partner institutions’ BSN and accelerated degree programs.
 - The aim is to increase not only the number of qualified candidates for nursing positions but also **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.

- **The “Pharmacy Scholarships”** program enhances a pipeline between a public and private institution to fill a crucial need.
 - Partners: Ursuline College, University of Toledo
 - Students enter into the pre-pharmacy program at Ursuline with the understanding that they will be admitted into the pharmacy program at the University of Toledo after their second year.
 - The recruitment activities focus on students who are from underrepresented backgrounds. **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 offers graduate students an opportunity to excel in STEMM fields. Graduate students comprise approximately 11% of the total number of Choose Ohio First students, an assurance that individuals seeking to obtain advanced degrees in subjects like engineering, science, mathematics, etc., are able to receive financial assistance from this program as well. As examples:

- **The “Improving STEM Teacher Preparation: A Long Term Investment (D-STEM)”** program offers scholarships to students interested in pursuing graduate degrees in STEM disciplines.
 - Partners: Miami University, Cleveland State University, University of Toledo, Cincinnati State Technical and Community College, Cuyahoga Community College, Owens Community College
 - 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 STEMM experience.
 - Scholars include individuals from minority populations, and will meet Ohio’s future workforce needs of individuals who are prepared to teach the STEMM graduates of the

- future at the college level. Current students provide tutoring support at the secondary level and **are engaged in activities that cultivate teachers for urban environments.**
- The project also provides scholarships to existing STEM teachers who are interested in a Master's degree and/or endorsements in their subject areas.

Moving Beyond the Challenges

The Choose Ohio First Scholarship program administration overcame several challenges during the second year. The delay in the dispersal of funds and the subsequent ability of campuses to award scholarships that occurred in the first year was mitigated by creating award agreements earlier, gaining campus buy-in on procedures and requirements, and ensuring that programs were adhering to the stated goals and objectives set forth in the approved proposals.

Another challenge arose in the difficulty of marketing the unique and varied Choose Ohio First programs implemented around the state. Despite the shared overall goal of increasing the number of STEMM graduates in Ohio, sharing the innovations in each program would result in 28 different project descriptions. The Ohio Board of Regents has moved to resolve this issue, as there is currently a student-centered COF website under creation. The website is currently under construction and will contain content from the 42 Choose Ohio First campuses, including student videos, text, and other information. The website concept was well received by student focus groups, gathered to brainstorm ideas and ensure the direction of the website was acceptable.

COF 2.0 and Beyond

In the 2009-10 academic year, the Choose Ohio First Scholarship Program saw tremendous growth. Over 2600 Scholars had been awarded, and all 28 Choose Ohio First programs were up and running. The 2009-2010 year also saw the addition of the Choose Ohio First Woodrow Wilson Teaching Fellowship program. Four campuses have already been selected for hosting the Fellows, and an additional 3 campuses will join in the 2010-2011 year through the Race to the Top initiative, with the hopes of producing 450 highly qualified STEM teachers for the state. **The Choose Ohio First Woodrow Wilson STEM Teaching Fellows Program has begun to recruit high-potential individuals with backgrounds in science, technology, engineering, and mathematics into graduate programs that will prepare them to serve as teachers for Ohio's high need urban and rural school districts.** The Fellows will be asked to make a three year teaching commitment in Ohio in exchange for graduate level teacher preparation in the STEM fields. Four institutions in Ohio will be chosen to transform their programs of teacher preparation into the strong collaborative and innovative programs necessary to produce these high-quality teachers.

The data from the Choose Ohio First campuses has also become more robust and meaningful. A comprehensive evaluation is being conducted with Choose Ohio First Scholars, with data available soon after the New Year. Both quantitative and qualitative measures will be included in the evaluation and will provide insight into student satisfaction with the Choose Ohio First Scholarship program from a statewide perspective. As we move quickly toward the fourth year of the program and, thus, the first "official" graduating class of Choose Ohio First Scholars will also be able to begin collecting data on the degree attainment of graduates and the retention Choose Ohio First Scholars in the Ohio workforce.

"I now understand not only the significance of alternative energies such as fuel cell technology, solar cells, and wind turbines, but also how they work." -COFFEE COF Scholar, The Ohio State University

Choose Ohio First is also beginning to move toward an understanding of how the program might work best, in addition to understanding the significance and need for such a program. The **Choose Ohio First Programs of Innovation** was launched with the hopes of encouraging campuses to submit their best STEM degree programs for review in order to be eligible to award Choose Ohio First Scholarships. The Programs of Innovation will allow current campuses to expand their Choose Ohio First offerings, and allow other campuses the opportunity to offer COF scholarships for the first time.

Choose Ohio First has encouraged the institutions that house the Scholars to be innovative and forward-thinking in their efforts to develop models of recruiting and retaining high quality students in the STEMM disciplines. The Choose Ohio First Scholarship allows students who have the access to preparation and the ability to excel, the opportunity focus on their studies and not on the limitation of financial resources.