Board Academic Affairs Standing Committee
Minutes

Wednesday, March 12, 2014
10:30 a.m.
Kathy Rupp Conference Room
Kansas Board of Regents
Topeka, Kansas

The Board Academic Affairs Standing Committee met in the Kathy Rupp Conference Room of the Kansas Board of Regents, Topeka, Kansas, at 10:30 a.m. on Wednesday, February 12, 2014.

Members Present: Robba Moran, Chair
Mildred Edwards
Tim Emert
Helen Van Etten

Board Staff: Gary Alexander, Jean Redeker, Karla Wiscombe, Susan Fish, Jacqueline Johnson, Charmine Chambers, and Blake Flanders

Others Present: Sara Rosen, University of Kansas; Ruth Dyer, Kansas State University; and Rick Muma, Wichita State University

Approve February 12, 2014 Minutes
Regent Edwards moved, and Regent Van Etten seconded the motion, to approve the February 12, 2014 Board Academic Affairs Standing Committee Meeting minutes as written. Motion carried.

Approve February 25, 2014 Minutes
Regent Emert moved, and Regent Edwards seconded the motion, to approve the February 25, 2014 Board Academic Affairs Standing Committee Conference Call minutes as written. Motion carried.

Agenda Planning
Consent Agenda
Act on Requests for Additional Degree Granting Authority for

- **University of South Dakota**
- **South University**
- **Embry-Riddle Aeronautical University**
- **ITT Technical Institute**
- **Grand Canyon University**
- **Graceland University**

Regent Emert moved, and Regent Edwards seconded the motion, to approve placing Act on Request for Additional Degree Granting Authority for: University of South Dakota, South University, Embry-Riddle Aeronautical University, ITT Technical Institute, Grand Canyon University and Graceland University on the March consent agenda of the Kansas Board of Regents. Motion carried.

Discussion Agenda

Act on Requests for New Degree Granting Authority for Concorde Career College

Jacqueline Johnson presented Concorde Career College's request for new degree granting authority. Concorde Career College is accredited by the Accrediting Commission of Career Schools and Colleges (ACCSC), an institutional accrediting agency recognized by the U.S. Department of Education and the Council for Higher Education Accreditation.

Regent Emert moved, and Regent Van Etten seconded the motion, to approve placing Act on Request for New Degree Granting Authority for Concorde Career College on the March consent agenda of the Kansas Board of Regents. Motion carried.

Act on Academic Calendars for Academic Years 2016-2017; 2017-2018; 2018-2019

Gary Alexander presented the proposed Academic Calendars for Academic Years 2016-2017; 2017-2018; 2018-2019. These calendars conform to existing policies and guidelines. The proposed Spring Break dates do not conflict with the Board meeting dates.

Regent Emert moved, and Regent Edwards seconded the motion, to approve placing Act on Academic Calendars for Academic Years 2016-2017; 2017-2018; 2018-2019 on the March discussion agenda of the Kansas Board of Regents. Motion carried.

Act on Request to Increase Kansas GED Testing Fee

This item was removed from this agenda and will be on the April agenda.

Other Business

Discussion Items: Update Regulations

Staff asked BAASC for input regarding amending regulations to reflect that there is a new GED test score required for admission to state universities; to add new high school equivalency credentials for admission to state universities and community colleges; to update regulations to reflect that qualified high school students in tenth grade may concurrently enroll at eligible postsecondary institutions; to amend the list of courses fulfilling precollege curriculum requirements; and to amend KU regulations for compliance with *Fisher v. Texas*.

BAASC had not changes and recommended, by consensus, to send the item to the Governance Committee.

Discussion

BAASC 13-02, Transfer and Articulation: Update – Karla Wiscombe and Gary Alexander

Karla Wiscombe updated BAASC regarding the status of the Transfer and Articulation Council (TAAC). TAAC will meet Thursday, March 13th, and will focus on future transfer courses to be reviewed at its Fall September 12th meeting. Subcommittees are working on improving communication between TAAC and the institutions' faculty and advisors and reviewing issues arising from difficulties with transfer this year for improving quality assurance. Breeze Richardson will meet with TAAC regarding marketing methods.

The new transfer courses with equivalencies and outcomes have been posted to the Kansas Board of Regents website effective summer 2014.

BAASC expressed appreciation for all of the work done on transfer and articulation.

BAASC 13-04, Developmental Education Update – Susan Fish and Gary Alexander
Susan Fish gave BAASC an update of the Developmental Education Working Group. At the February 28th Working Group meeting they discussed the criteria for choosing strategies in instruction and advising, and how to implement and support the pilots of these strategies. The Reading/Writing Subgroup presented its report. The Working Group also discussed possible recommendations for state developmental education policies. The next meeting will be the end of March.

BAASC again expressed its appreciation of the work done by the Developmental Education Working Group.

ACT Report on "The Condition of Stem 2013" – Blake Flanders and Gary Alexander
Gary Alexander provided an overview of the ACT Report on "The Condition of Stem 2013."

- The ACT studies indicate STEM skills are central to the majority of jobs
- The ACT report notes the lack of a consistent definition for STEM programs
- The report cites a number of policy implications
    - Achievement gap with minorities is greater than with other groups
    - Higher education is looking to expand the pool of students
    - There is still a large gap between high school faculty and college faculty regarding the college and career readiness of students
    - Introduction of new standards is received with varying degrees of understanding
    - The level of technology needed to assess students requires additional funding
- ACT reports there is a gap between the need for STEM students and the number of students with measured interest and ability
- To administer the new assessments, classrooms are going to need better computers and updated security technology

Blake Flanders discussed the Kansas Engineering Initiative and resulting issues to meet legislative objectives.

- Enrollment – as per the handout
    - We need more Kansans to express interest if we are to meet the goals with students from Kansas
    - Out of 7,014 enrollments there are approximately 1,017 graduates (See the "Kansas Engineering Programs" handout attached to these minutes.)
    - To obtain the desired number of engineering graduates, it would roughly take 9,300 to 9,500 enrolled in STEM
- High School Students and STEM readiness
    - High School students who do not take the ACT test are typically not college bound nor are they prepared to take STEM programs
    - Many of the students who express interest in STEM are not prepared to go into engineering
- Marketing
    - Early encouragement of STEM courses to K-12 students
    - Early recognition of students in need of help with math and science courses
    - Develop methods to assist students in STEM courses

Other Business
There was no other business.

The meeting adjourned at 11:34 a.m.

Kansas Engineering Programs

"The Condition of STEM 2013 - Kansas" report provides data on graduating high school seniors, and measures the preparedness of those students specifically for postsecondary STEM programs via ACT testing.

- **24,268** of 2013 Kansas graduates (which is an estimated 75% of the graduating class) took the ACT.
- Of those students, a TOTAL of **4,151** of Kansas graduates have an expressed and measured interest in STEM fields.
- Of those students, **1,540** TOTAL students have an expressed interest and **810** TOTAL students have an expressed and measured interest in engineering fields.

2013 postsecondary program enrollment and graduate data from the three Kansas scorecard institutions was compared with high school graduate feedback from the ACT report in the table below.

2013 UNIVERSITY ENGINEERING INITIATIVE SCORECARD								ACT	
University of Kansas		Kansas State University		Wichita State University		Grand Total		2013 High School Graduate Totals	
Enrolled	Graduates	Enrolled	Graduates	Enrolled	Graduates	Enrolled	Graduates	Expressed and Measured interest	Expressed interest only
2,105	338	3,118	471	1,791	208	7,014	1,017	810	1,540

The table above does not account for out-of-state students that will enroll in Kansas schools in engineering programs. In addition, students included in the "Expressed Interest Only" category may improve math/science scores to become better prepared for engineering program curriculum.

Definitions:

- A student with an "expressed" interest planned on a STEM major or occupation following high school.
- A student with "measured" STEM interest had a highest ACT Interest Inventory score in Science, or a highest score in Technology and a second-highest score in Science.

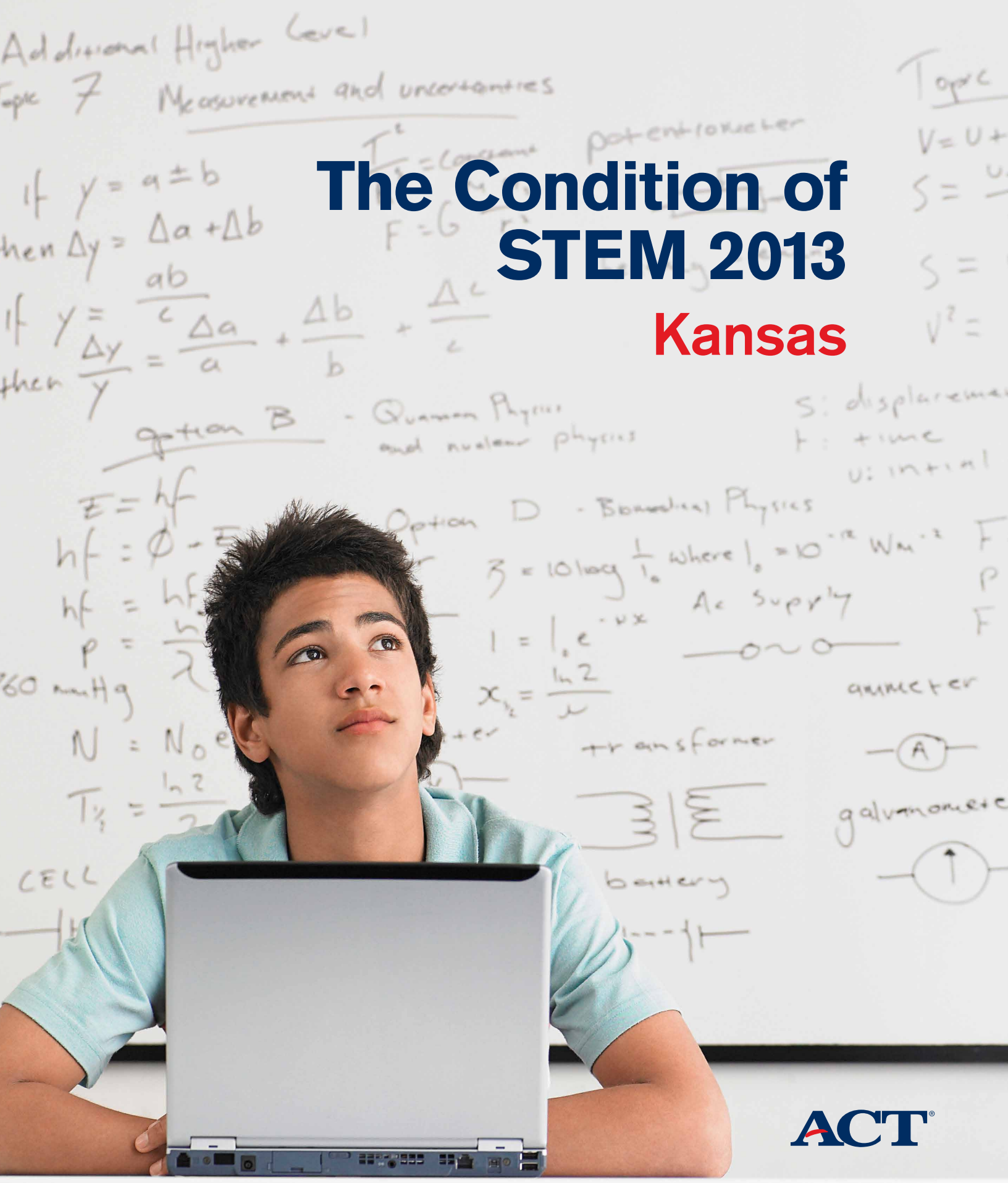
Additional information:
Of the 4,151 Kansas graduates for 2013 with an expressed and measured interest in STEM fields, the percent meeting ACT College Readiness Benchmarks by subject were:

1. 79% = English
2. 60% = Reading
3. 62% = Mathematics
4. 54% = Science
5. 41% = all four subjects

The ACT College Readiness Benchmarks are scores on the ACT subject area tests that represent the level of achievement required for students to have a 50% chance of obtaining a B or higher or about a 75% chance of obtaining a C or higher in corresponding credit-bearing first-year college courses.

The Condition of STEM 2013

Kansas



ACT®

The Condition of STEM 2013

Kansas

ACT has been a leader in measuring college and career readiness trends for years. Each August, we release *The Condition of College & Career Readiness* (**www.act.org/newsroom/data/2013**), our annual report on the progress of the ACT-tested graduating class relative to college readiness. Nationally, 54.3% of the 2013 graduating class took the ACT® college readiness assessment. The continued increase of test takers enhances the breadth and depth of the data pool, providing a comprehensive picture of the current college readiness levels of the graduating class as well as offering a glimpse of the emerging national educational pipeline. It also allows us to review various aspects of the ACT-tested 2013 graduating class. This report reviews the graduating class in the context of STEM (Science, Technology, Engineering, Mathematics)-related fields. ACT is uniquely positioned to deliver this report for two key reasons. First is our commitment to science by the inclusion of subject-level science tests in our assessments. Second is a research-based measure of interests, the ACT Interest Inventory, with which we are able to determine student interest levels in specific STEM fields and, more importantly, readiness in math and science of those interested in STEM careers.

The report breaks the graduating class into four STEM-related cohorts:[1]

1. Students who have an **expressed** and **measured** interest in STEM.
2. Students who have an **expressed** interest only.
3. Students who have a **measured** interest only.
4. Students with no interest in STEM.

Essentially, a student who has an **expressed** interest in STEM is choosing a major or occupation (out of the 294 listed in the Standard Profile Section of the ACT) that corresponds with STEM fields. A **measured** interest utilizes the ACT Interest Inventory, an inventory delivered with the ACT that determines inherent interest in different occupations and majors. The ACT *College Choice Report* (**www.act.org/collegechoice/13-14**) details it is important to align students' expressed and measured interests relative to postsecondary enrollment. In this report, we will primarily review the academic achievement of students in each of these cohorts as measured by the ACT College Readiness Benchmarks.[2] Finally, we will look at academic achievement levels, particularly in math and science, by race/ethnicity, gender, parents' level of education, and educational aspirations.

Refining the Definition of STEM[3]

As ACT began to review how to properly define STEM for this report, we were struck by the inconsistency of definitions across the country. In order to maintain consistency and offer states the opportunity to use this report as a baseline for state-level STEM initiatives, we needed to create areas within the STEM fields. This categorization gives states and their STEM councils the flexibility they need and provides a forum for a national discussion on definitions and categorizations. We hope this report sparks such a discussion. The table on page 26 describes how ACT chose to categorize STEM, based on the occupations and majors listed on the ACT. We determined four key areas:

1. **Science**—Includes majors and occupations in the traditional hard sciences, as well as sciences involving the management of natural resources. Also includes science education.
2. **Computer Science and Mathematics**—Includes majors and occupations in the computer sciences, as well as general and applied mathematics. Also includes mathematics education.
3. **Medical and Health**—Includes majors and occupations in the health sciences and medical technologies.
4. **Engineering and Technology**—Includes majors and occupations in engineering and engineering technologies.

The report will show achievement levels in each of these four areas on a state and national level. Also, by request of STEM councils around the country, we have included the actual number of students interested in specific majors/occupations. We do this so that STEM councils and other state officials can measure the numbers of students in specific major/occupational pipelines. This will assist them in documenting success of STEM initiatives that focus on generating interest in specific STEM fields.

ACT's Commitment to STEM

In spring 2014, ACT will launch ACT Aspire™, an assessment system for grades 3–10. ACT Aspire will offer the same subjects as the ACT: English, reading, math, science, and writing. Based on the ACT College and Career Readiness Standards and aligned to the Common Core State Standards, ACT Aspire will provide an early indicator of statewide college and career readiness. To complement the information in this report, ACT will create a STEM score for students testing within the ACT Aspire system, giving educators a much earlier look at the STEM pipeline in their state. Our hope is to help educators, parents, and STEM councils and organizations around the country broaden STEM opportunities for students at all levels. This is a critical step if the United States is to remain a world leader, and ACT is committed to research and assessment practices that make greater STEM opportunities for students a reality.

Please note that reporting achievement by combinations of student characteristics may give rise to small N *counts. As a result, outcomes in this report should be interpreted with caution.*

Key Findings

from the National *Condition of STEM 2013* Report

1. **Interest in STEM is high.** Almost half (48.3%) of students in the 2013 ACT-tested graduating class have an interest in STEM majors or occupations. While these are encouraging numbers, more must be done to *keep* these students engaged in STEM fields.
   - 23.4% of students had an **expressed** interest only in STEM. Intervention strategies for the students with an expressed interest only allow students to understand what takes place in a specific major or occupation and defines an educational plan for the student.
   - 8.5% of students had a **measured** interest only in STEM. ACT Interest Inventory results suggest an inherent interest in a STEM major or occupation, yet they have not expressed an interest in pursuing a STEM major. A wider net must be cast with the goal of guiding and nurturing students with an expressed and/or measured interest so they can understand how to experience success in STEM fields. More must be done to identify and foster this interest earlier in students' educational experiences.
2. **Achievement levels in math and science are highest when expressed and measured interest match.** ACT's *College Choice Report, Part 1*, released in November 2013, showed the importance an expressed and measured interest match has on students' progression into postsecondary education. We see the same influence on achievement levels in STEM. Across all four STEM areas, student achievement was highest for those with both expressed and measured interest, typically followed by expressed only and ending with measured only. Students interested in Engineering and Technology were most likely to meet the math and science Benchmarks. Overall Benchmark attainment percentages are consistent between expressed and measured interest, except in the area of math, meaning academically the difference between these groups is in math, not science. This raises the question of whether math proficiency dampens student interest or, more importantly, if it impacts whether a student enters any of the STEM fields.
3. **Surprisingly, more female than male students are interested in STEM, although the opposite is true among higher-achieving students.** The overall percent of females interested in STEM majors and occupations is a surprising 46%, of which the largest percentage (24%) are interested in nursing (LPN and BS/RN). Across all four STEM areas, however, males consistently outperformed females in math and science, with the exception of the females interested in Engineering and Technology. Females were more prevalent in the expressed and measured cohort, suggesting they have an inherent interest in STEM fields, which contradicts the low representation of women in the STEM fields.
4. **The academic achievement gap that exists in general for ethnically diverse students is even more pronounced among those interested in the STEM fields.** With the exception of Asian students, 61% of whom were interested in STEM, the number of ethnic minority students (African American, Hispanic, and Native American) interested in STEM fields is low, as are their achievement levels in math and science. Among African American students interested in STEM, the vast majority have an expressed interest only. Among measured interest only students, Hispanic students have a greater representation than other minority groups. A real opportunity exists for a meaningful discussion with these students on what STEM careers entail in terms of educational planning and achievement.
5. **Students interested in STEM have higher educational aspirations, and their parents are more likely to have attended college than those not interested in STEM.** There are significant differences in math and science achievement levels for students interested in attaining an associate's degree or lower versus those aspiring to attain a bachelor's degree or higher. A similar trend occurs in terms of parents' level of education, with significant differences in achievement levels in math and science occurring as parents' level of education increases. ACT's *The Condition of College and Career Readiness 2013: First-Generation Students* report, released in November 2013, also found troubling levels of academic achievement for first-generation students. Those first-generation students who are interested in STEM have only slightly higher achievement levels in both math and science. Essentially, stronger and earlier support structures and interventions related to career and educational planning and academic preparedness are needed to see real differences in these still-troubling numbers.

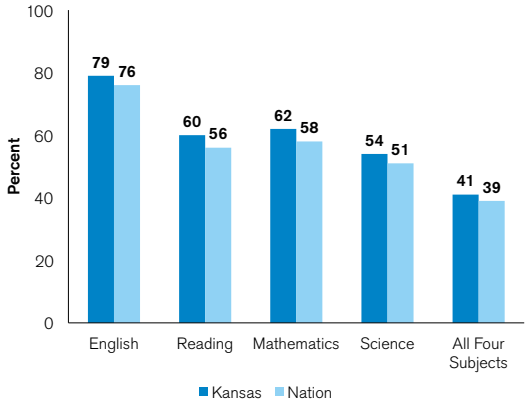
Kansas STEM Report

Attainment of College and Career Readiness

Expressed and Measured Interest

- 24,268 of your graduates, which is an estimated 75% of your graduating class, took the ACT.*
- 4,151 of your graduates have an expressed and measured interest in STEM.

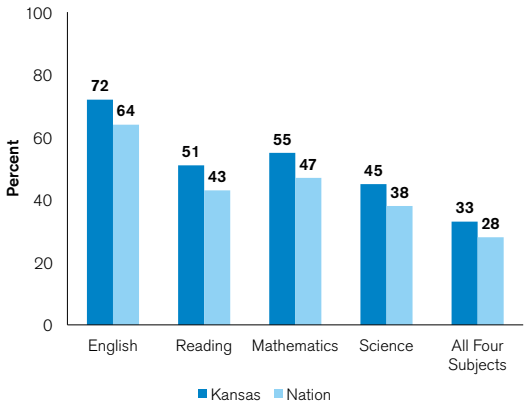
Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Subject



Expressed Interest Only

- 5,492 of your graduates have an expressed interest only in STEM.

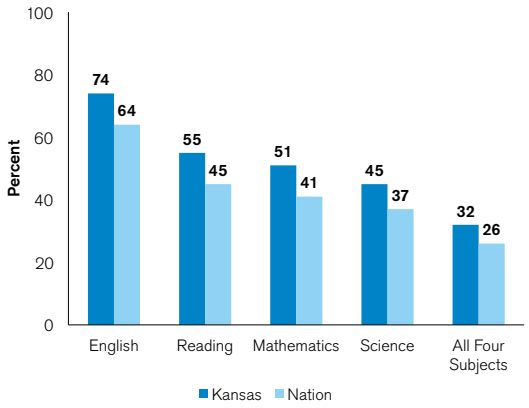
Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Subject



Measured Interest Only

- 2,258 of your graduates have a measured interest only in STEM.

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Subject



No Interest

- 12,367 of your graduates have no interest in STEM.

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Subject

	English	Reading	Mathematics	Science	All Four
Kansas	70%	48%	46%	36%	25%
Nation	61%	41%	38%	31%	22%

* Totals for graduating seniors were obtained from *Knocking at the College Door: Projections of High School Graduates*, 8th edition.

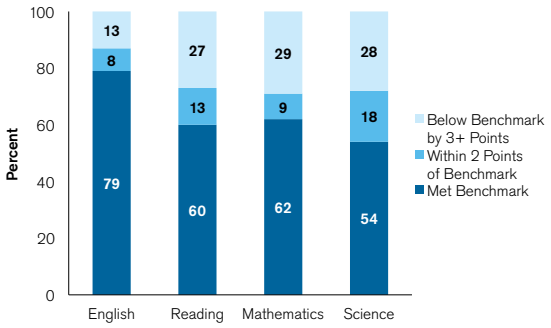
Note: Percents in this report may not sum to 100% due to rounding.

Kansas STEM Report

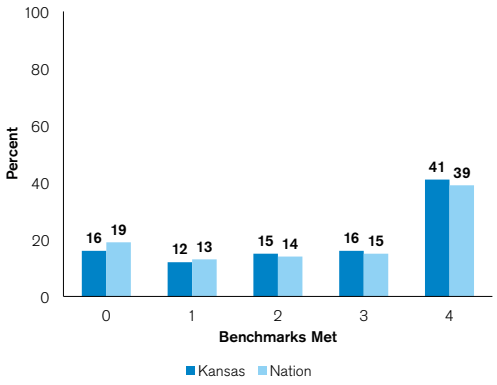
Attainment of College and Career Readiness

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

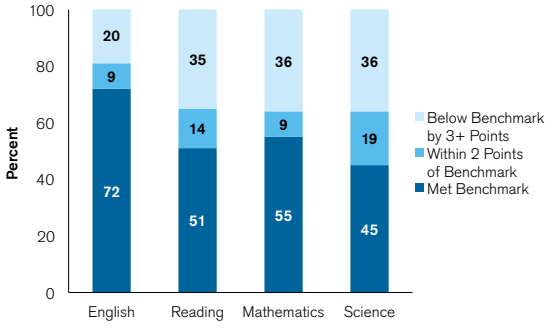


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

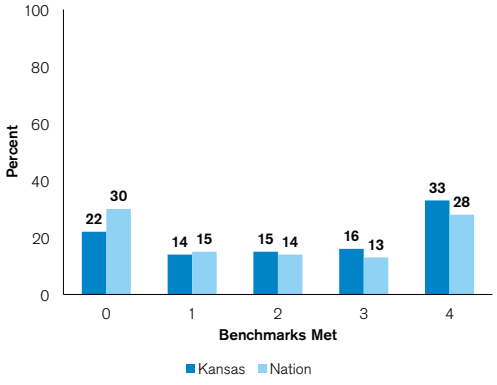


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

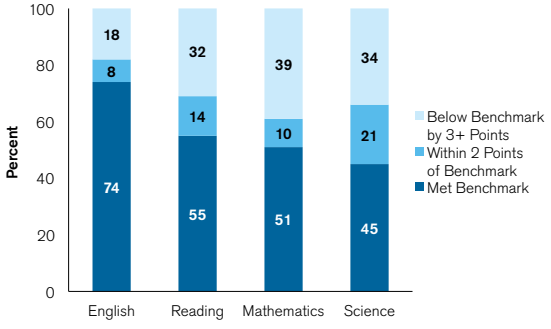


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

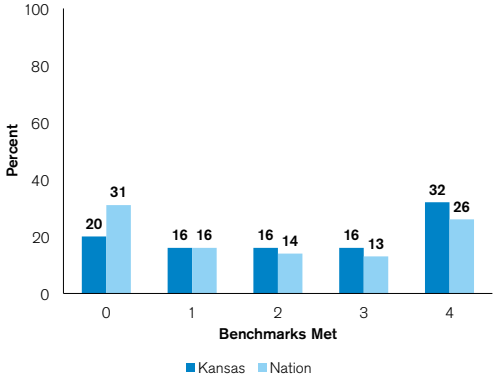


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

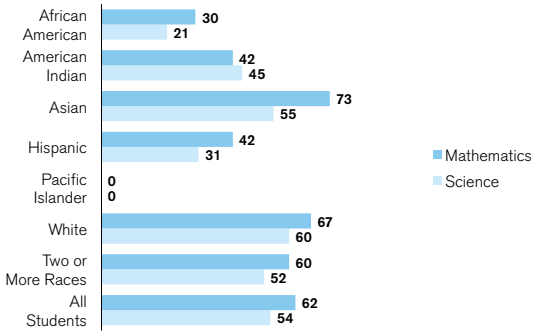


Kansas STEM Report

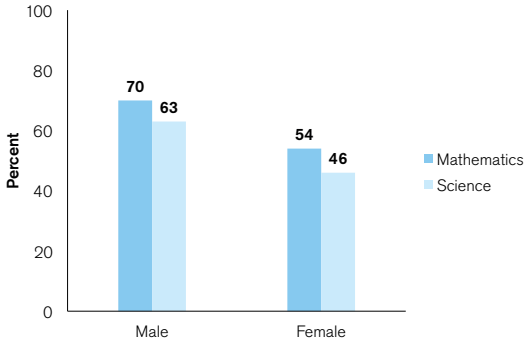
Attainment of College and Career Readiness

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

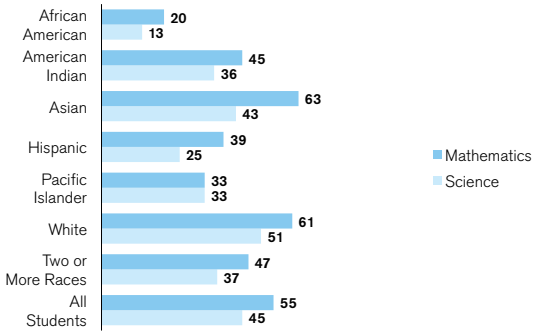


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

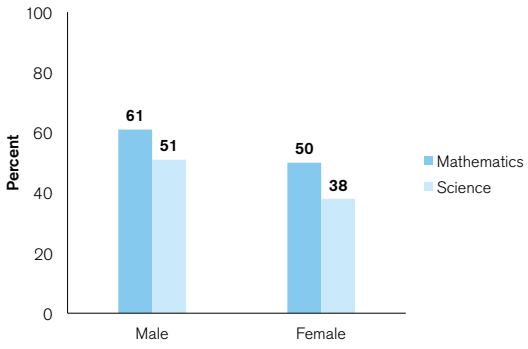


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

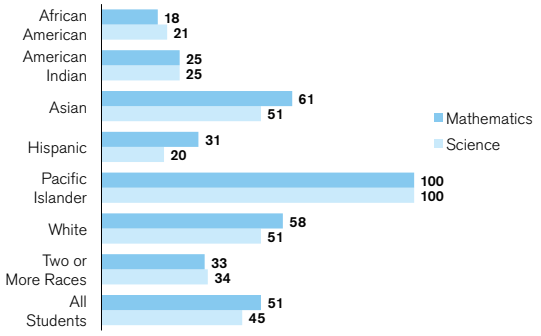


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

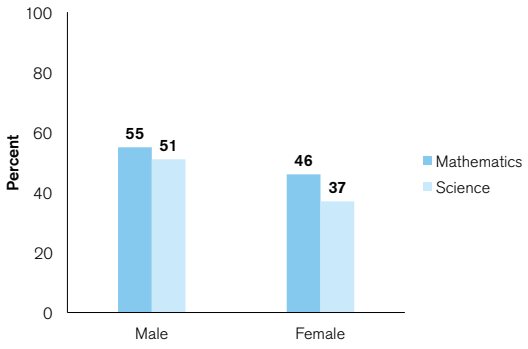


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject



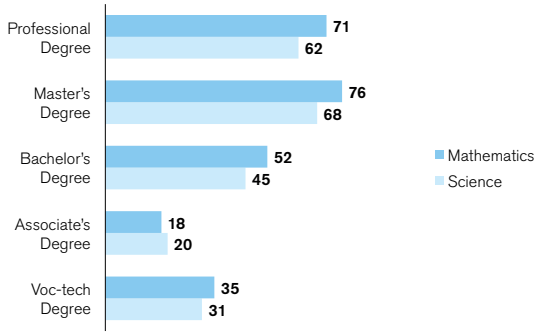
* Race/ethnicity categories changed for the 2010–2011 academic year to reflect updated US Department of Education reporting requirements.

Kansas STEM Report

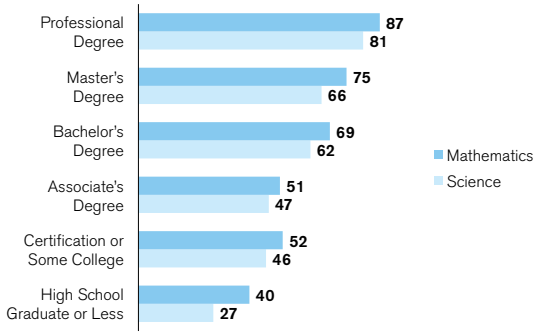
Attainment of College and Career Readiness

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

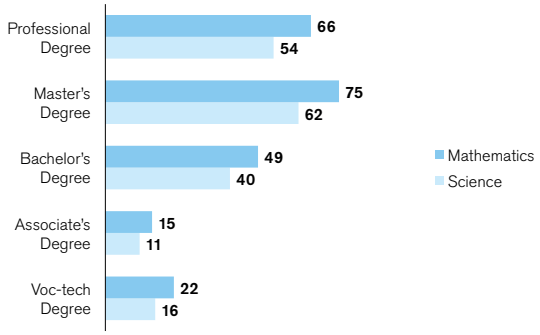


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

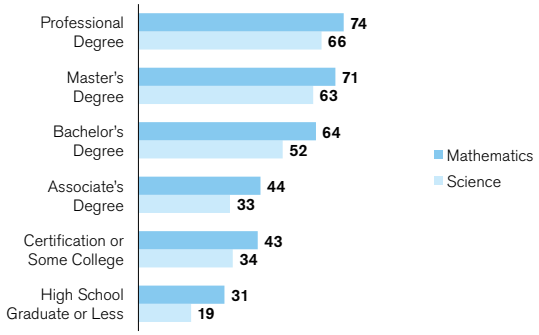


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

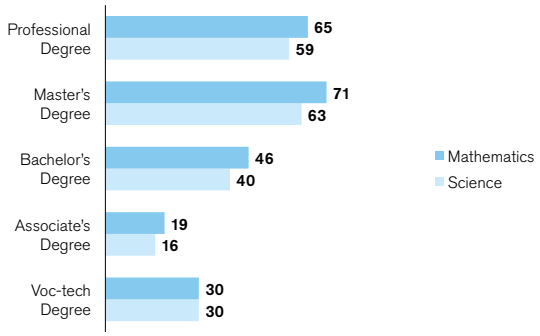


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

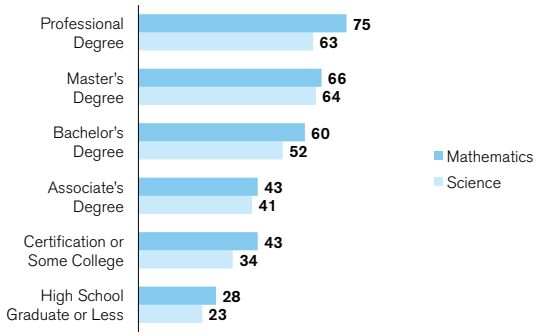


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

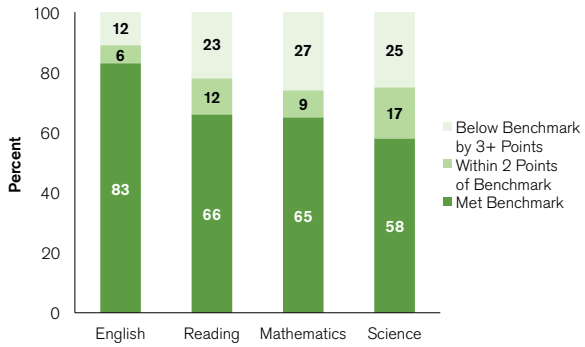


Science

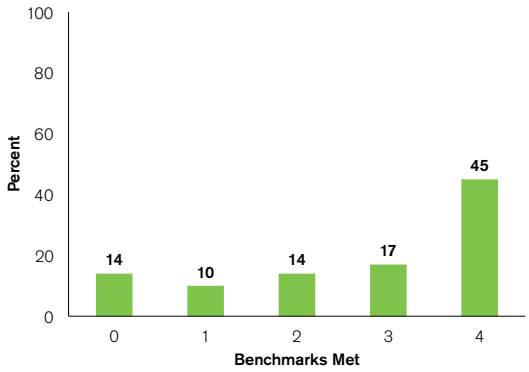
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

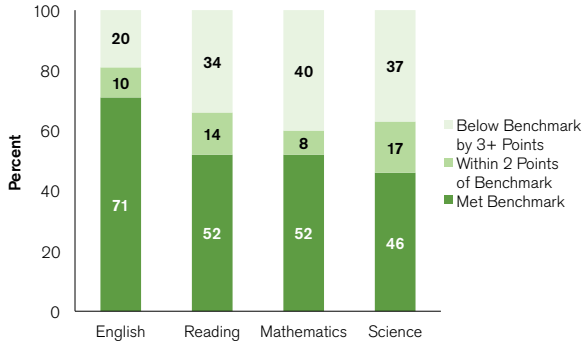


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

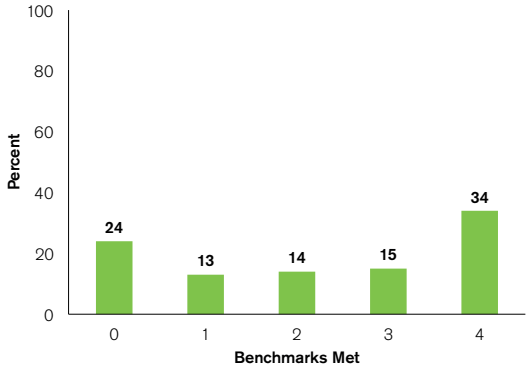


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

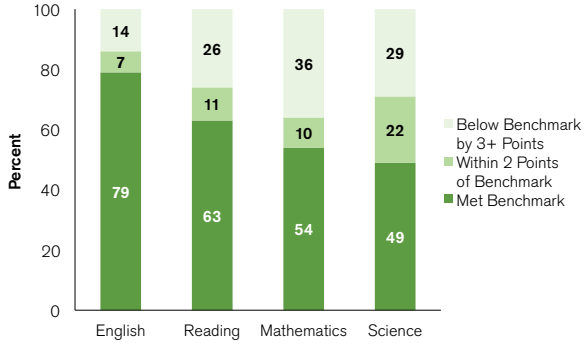


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

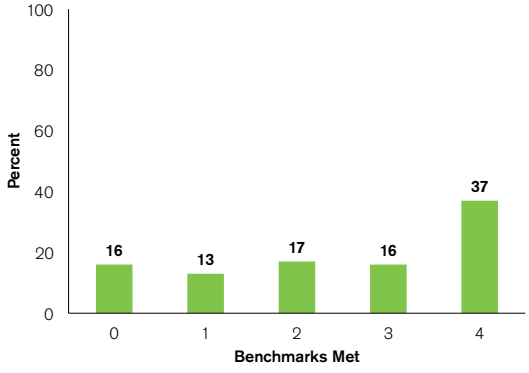


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



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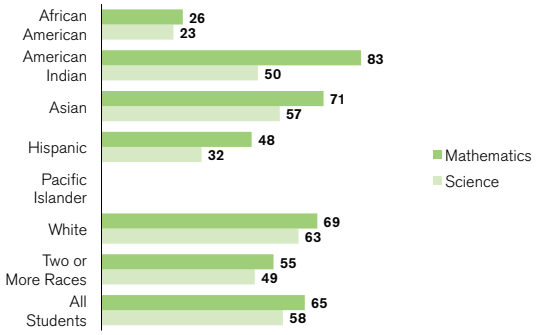
Science

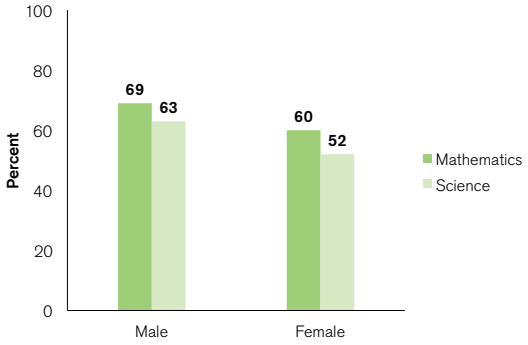
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

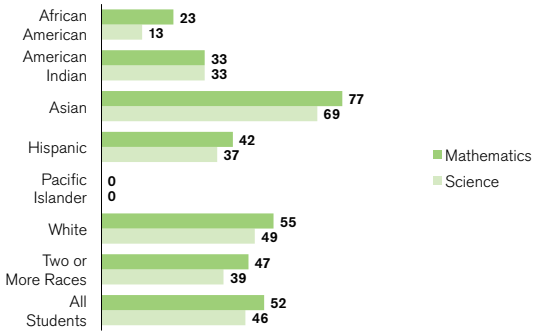


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

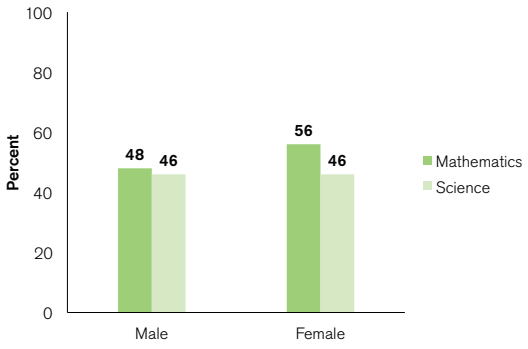


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

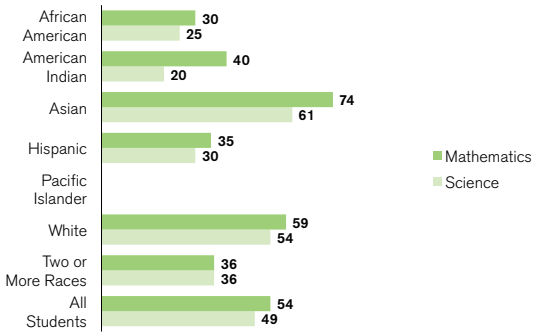


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

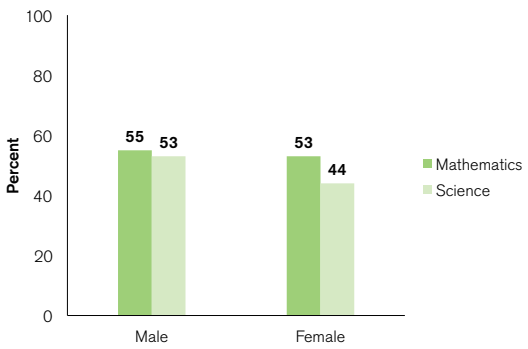


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject



* Race/ethnicity categories changed for the 2010–2011 academic year to reflect updated US Department of Education reporting requirements.
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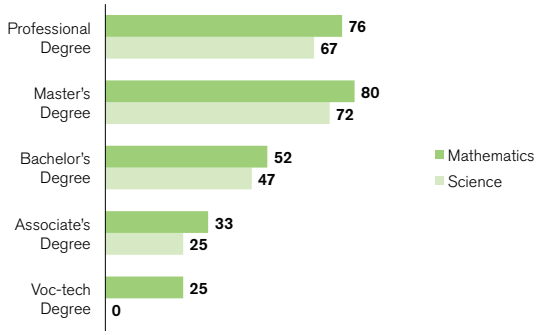
Science

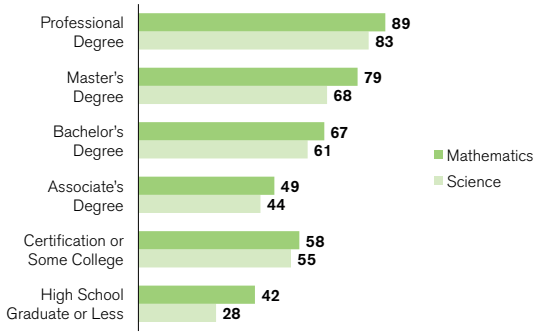
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

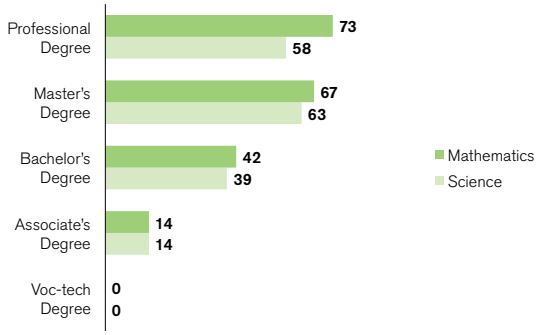


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

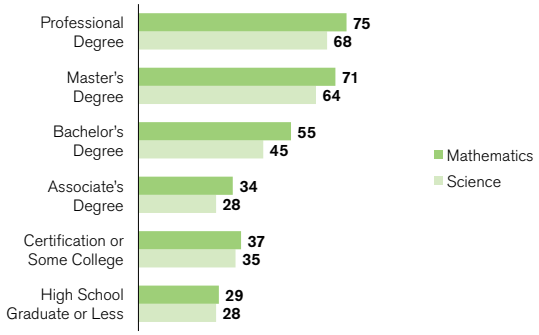


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

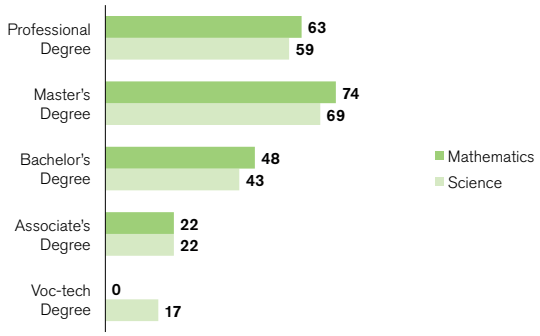


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

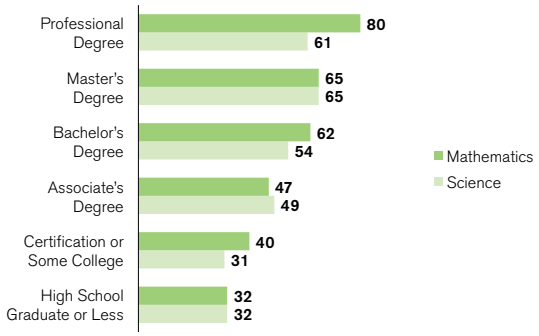


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level



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Science

Majors/Occupations

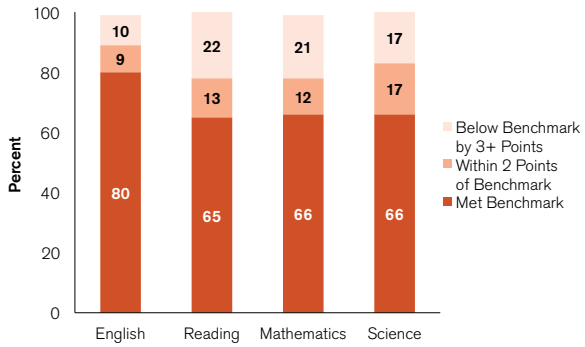
Science Majors/Occupations	Kansas	
	Expressed and Measured Interest	Expressed Interest Only
Agronomy and Crop Science	14	30
Animal Sciences	71	104
Astronomy	35	13
Atmospheric Sciences and Meteorology	33	28
Biochemistry and Biophysics	119	54
Biology, General	164	99
Cell/Cellular Biology	41	21
Chemistry	105	40
Ecology	7	7
Environmental Science	13	11
Food Sciences and Technology	8	26
Forestry	2	9
Genetics	27	19
Geological and Earth Sciences	25	12
Horticulture Science	4	8
Marine/Aquatic Biology	96	52
Microbiology and Immunology	30	13
Natural Resources Conservation, General	12	7
Natural Resources Management	1	4
Physical Sciences, General	41	30
Physics	45	23
Science Education	8	5
Wildlife and Wildlands Management	35	68
Zoology	111	80

Computer Science and Mathematics

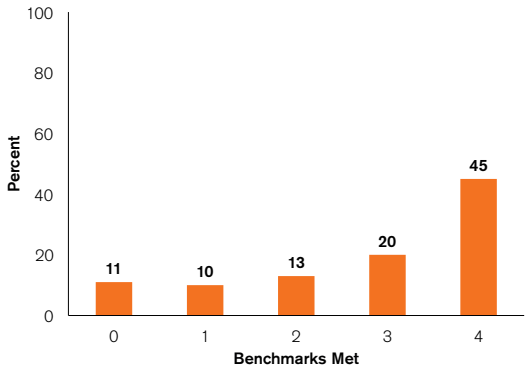
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

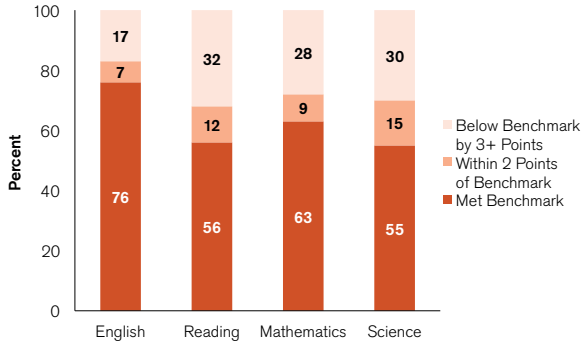


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

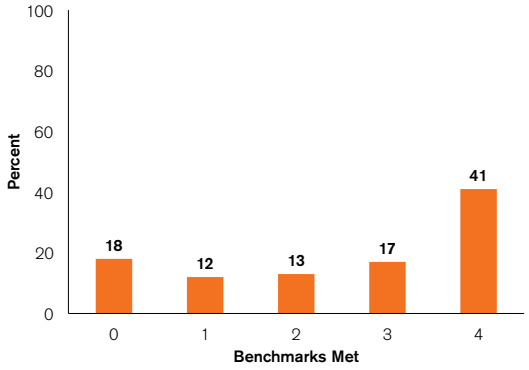


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

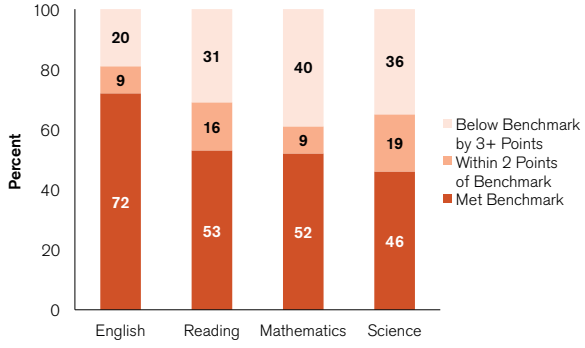


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

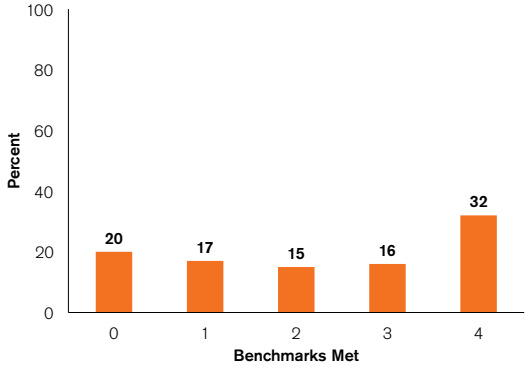


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



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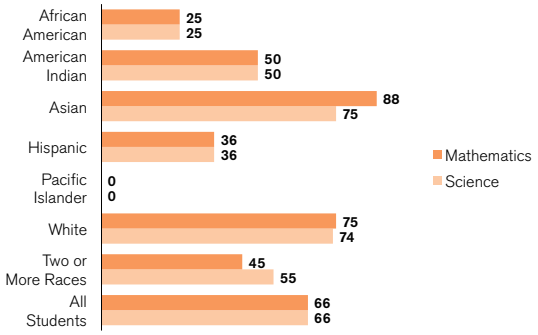
Computer Science and Mathematics

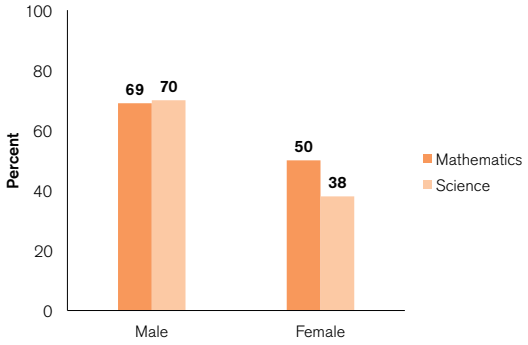
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

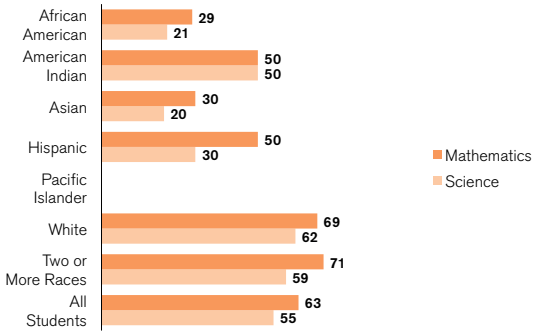


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

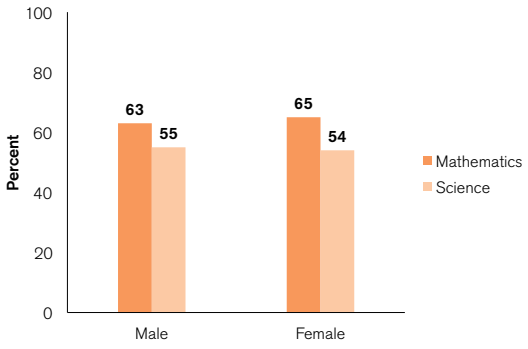


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

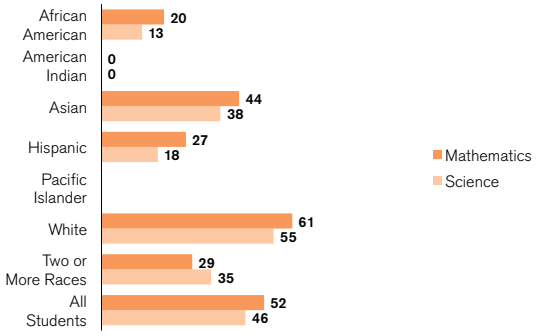


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

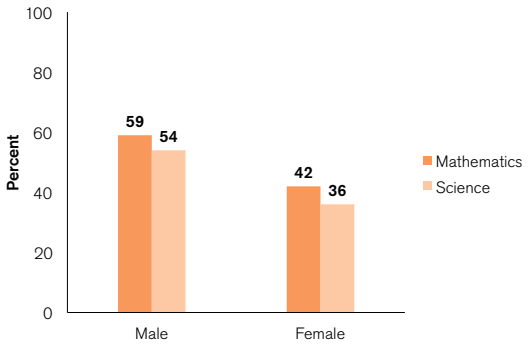


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject



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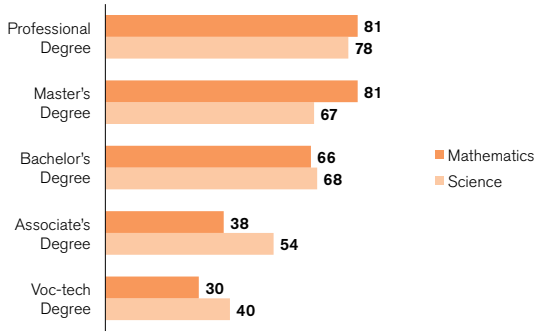
Computer Science and Mathematics

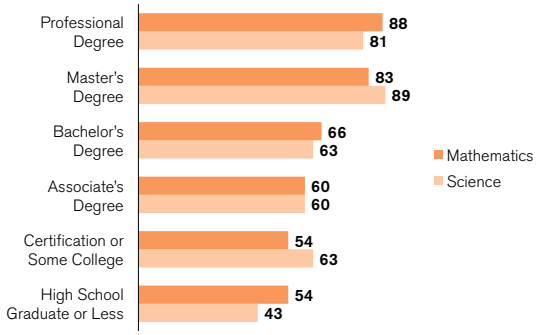
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

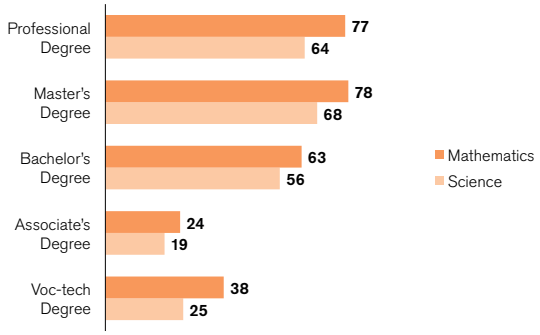


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

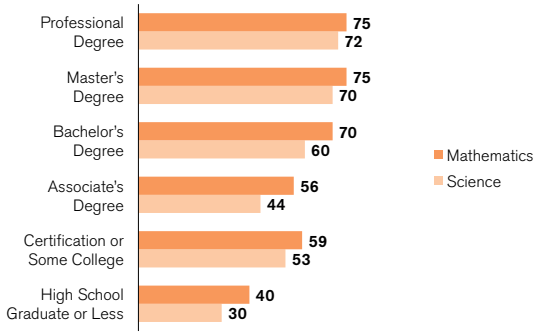


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

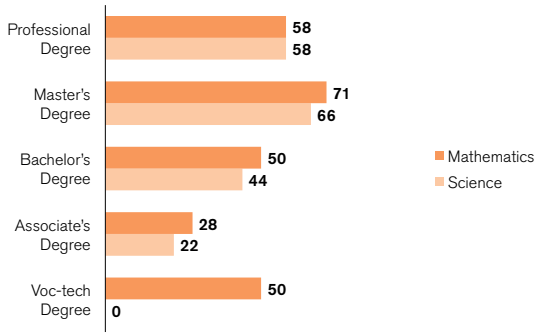


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level



Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject



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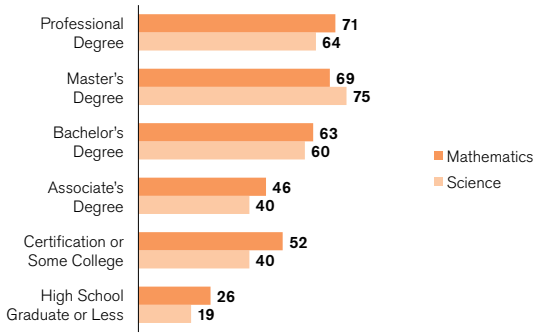

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Computer Science and Mathematics

Majors/Occupations

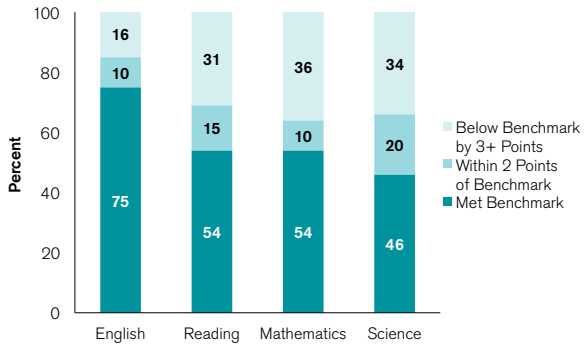
Computer Science and Mathematics Majors/Occupations	Kansas	
	Expressed and Measured Interest	Expressed Interest Only
Actuarial Science	3	6
Applied Mathematics	5	17
Business/Management Quantitative Methods, General	5	48
Computer and Information Sciences, General	20	43
Computer Network/Telecommunications	19	32
Computer Science and Programming	88	144
Computer Software and Media Application	32	70
Computer System Administration	6	11
Data Management Technology	3	0
Information Science	2	8
Management Information Systems	1	16
Mathematics Education	2	69
Mathematics, General	8	25
Statistics	2	10
Webpage Design	6	30

Medical and Health

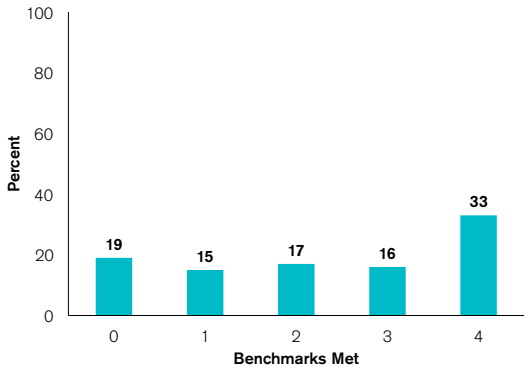
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

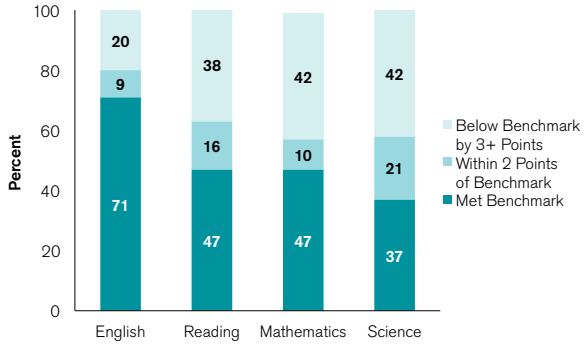


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



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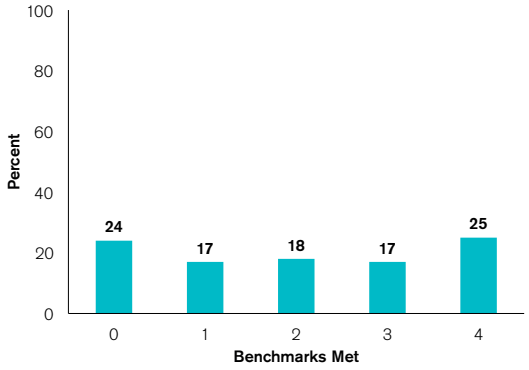
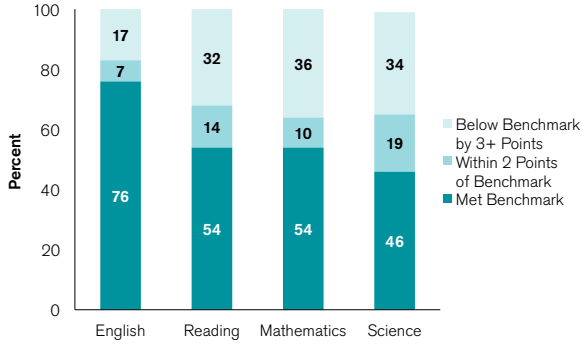
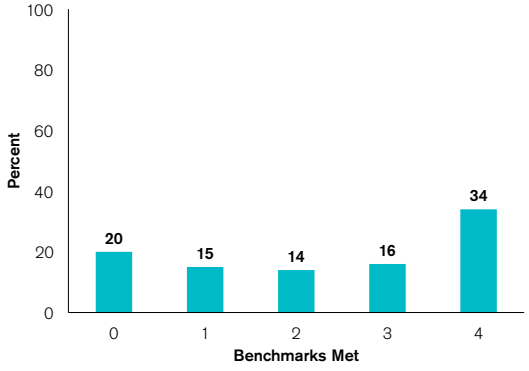


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



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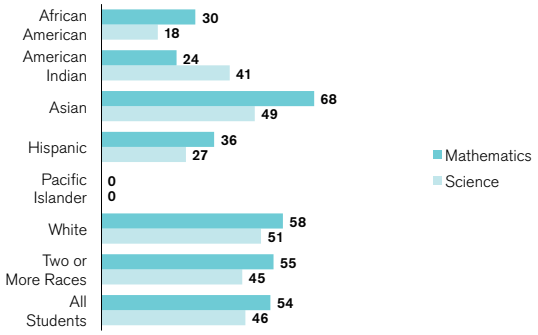
Medical and Health

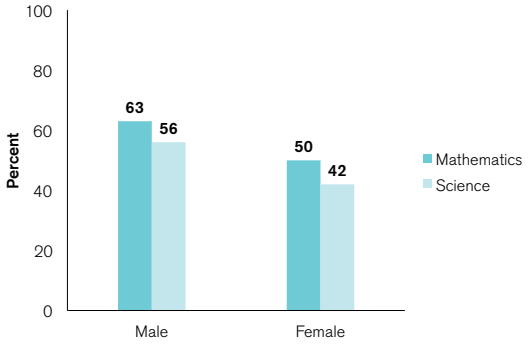
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

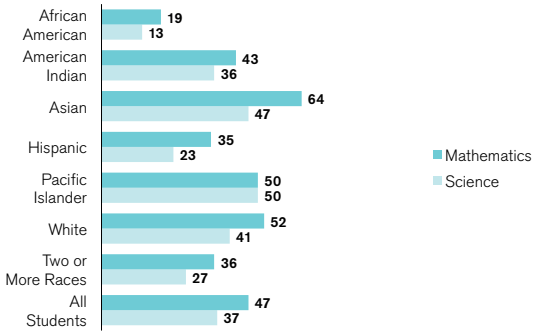


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

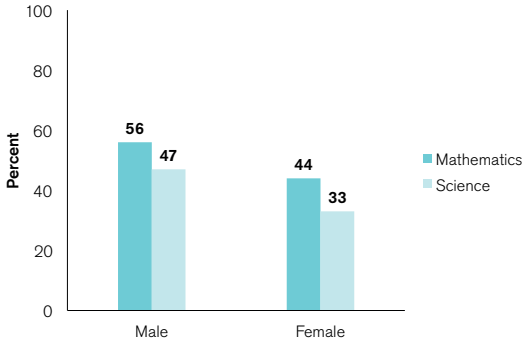


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

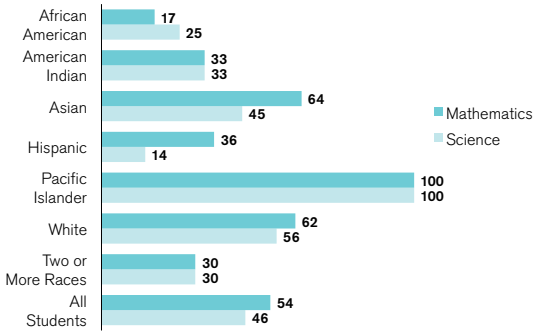


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

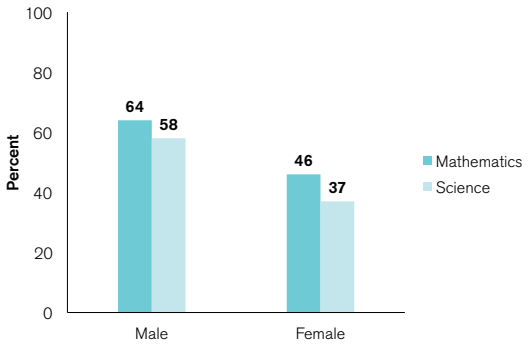


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject



* Race/ethnicity categories changed for the 2010–2011 academic year to reflect updated US Department of Education reporting requirements.
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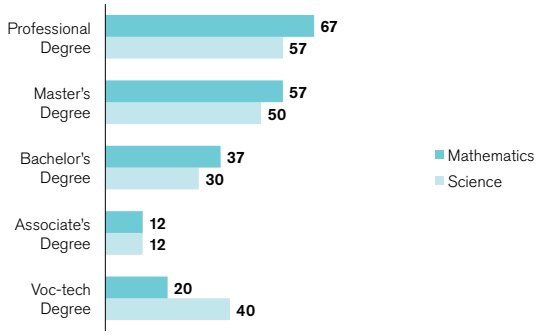
Medical and Health

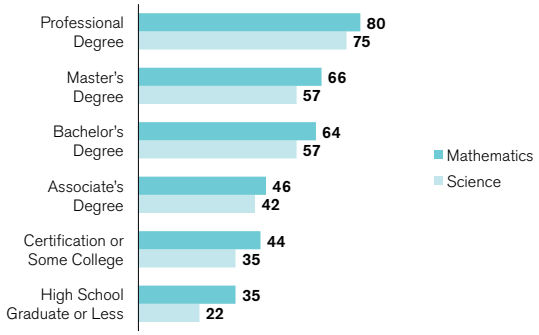
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

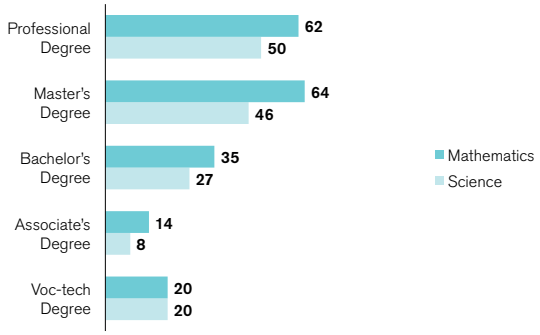


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

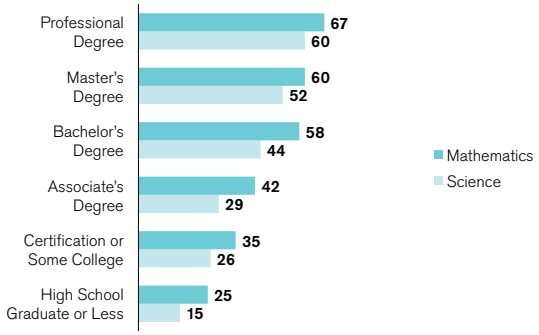


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

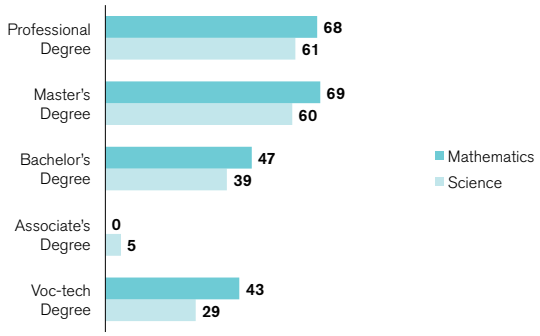


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

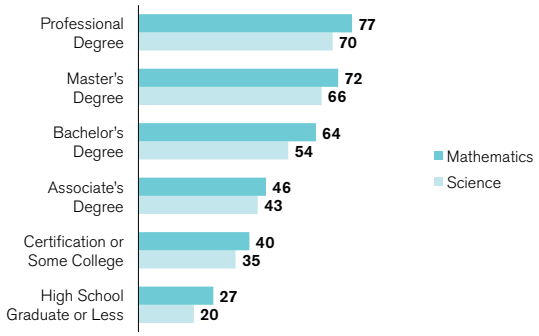


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level



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Medical and Health

Majors/Occupations

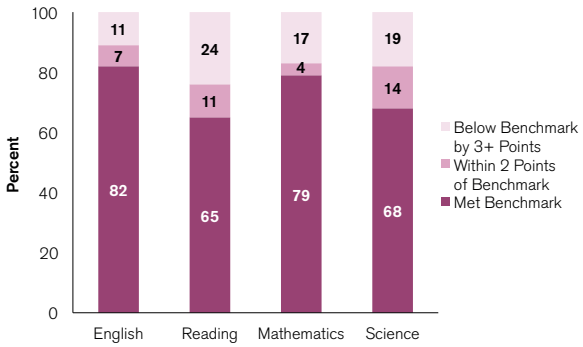
Medical and Health Majors/Occupations	Kansas	
	Expressed and Measured Interest	Expressed Interest Only
Athletic Training	127	277
Chiropractic (Pre-Chiropractic)	29	36
Dentistry (Pre-Dentistry)	101	130
Emergency Medical Technology	39	42
Food and Nutrition	8	31
Health/Medical Technology, General	54	66
Medical Laboratory Technology	26	10
Medical Radiologic Technology	79	118
Medicine (Pre-Medicine)	609	488
Nuclear Medicine Technology	5	4
Nursing, Practical/Vocational (LPN)	42	91
Nursing, Registered (BS/RN)	417	649
Optometry (Pre-Optometry)	25	35
Osteopathic Medicine	2	1
Pharmacy (Pre-Pharmacy)	162	180
Physical Therapy (Pre-Physical Therapy)	122	271
Physician Assisting	39	32
Respiratory Therapy Technology	2	6
Surgical Technology	37	34
Veterinarian Assisting/Technology	15	20
Veterinary Medicine (Pre-Vet)	152	139

Engineering and Technology

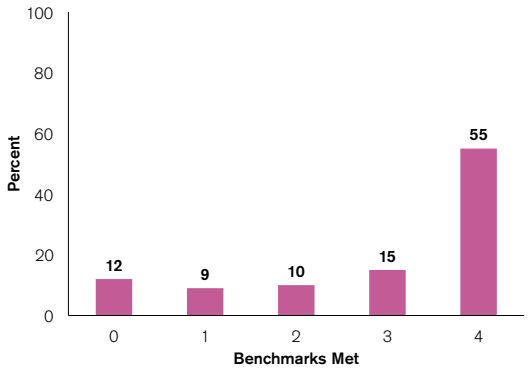
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

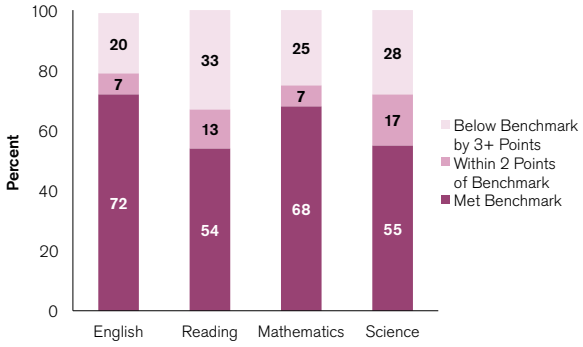


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

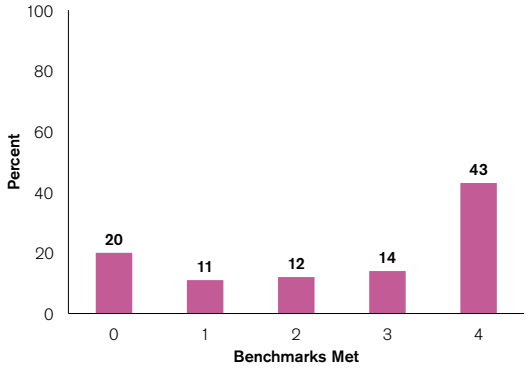


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject

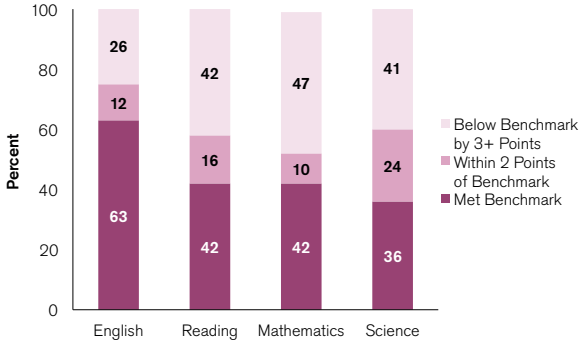


Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained

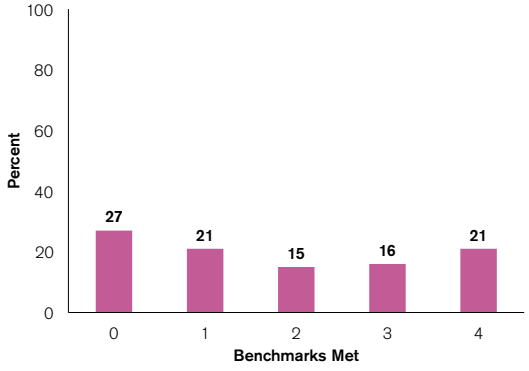


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates by ACT College Readiness Benchmark Attainment and Subject



Percent of 2013 ACT-Tested High School Graduates by Number of ACT College Readiness Benchmarks Attained



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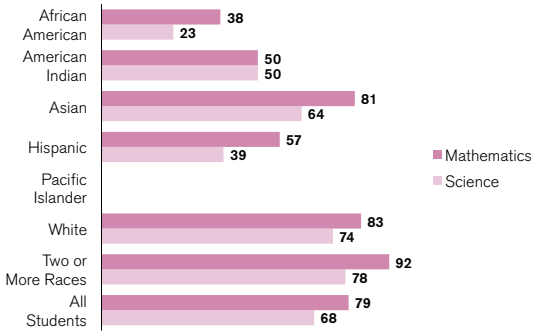
Engineering and Technology

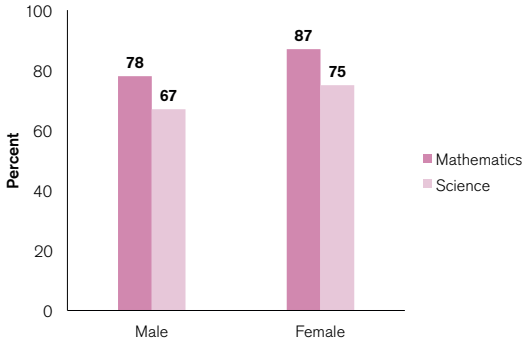
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

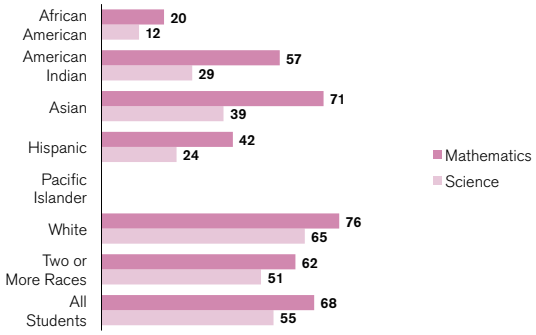


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

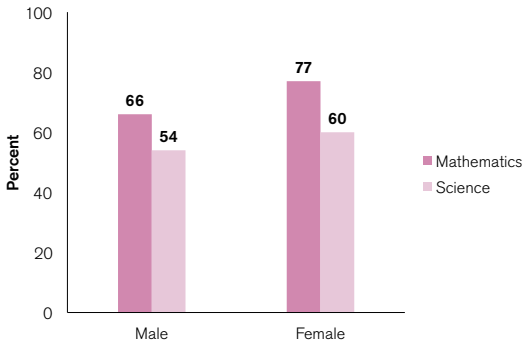


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*

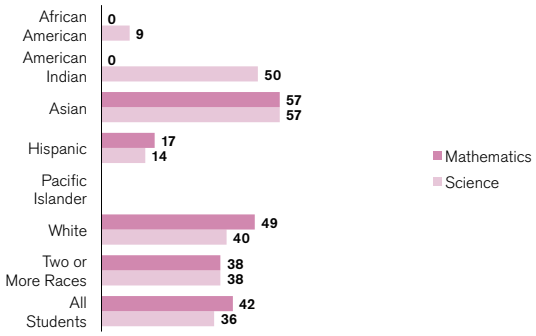


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject

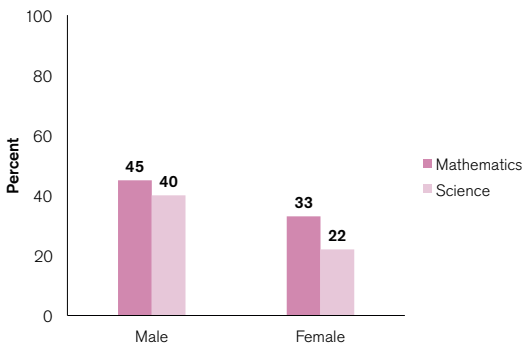


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Race/Ethnicity and Subject*



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Gender and Subject



* Race/ethnicity categories changed for the 2010–2011 academic year to reflect updated US Department of Education reporting requirements.
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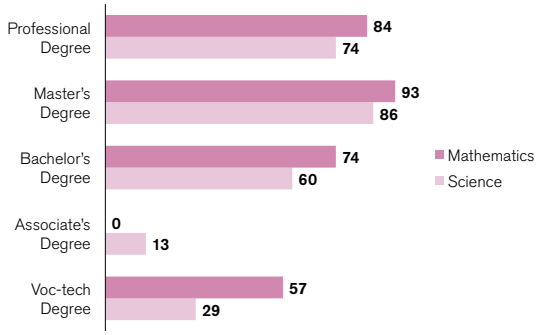
Engineering and Technology

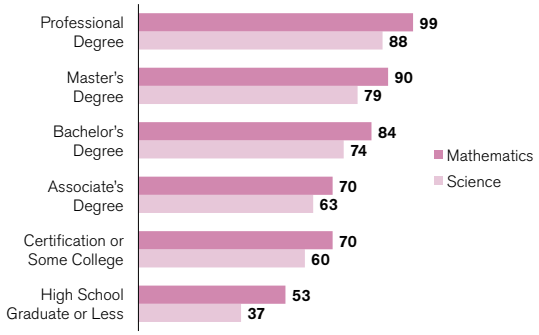
Majors/Occupations

Expressed and Measured Interest

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

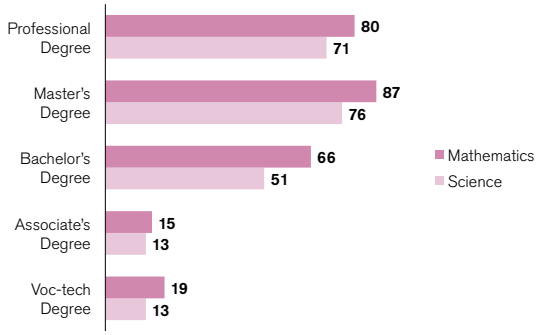


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

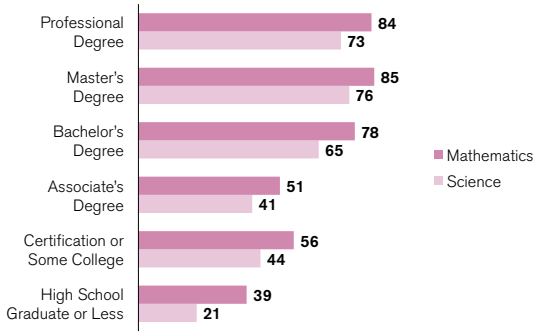


Expressed Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject

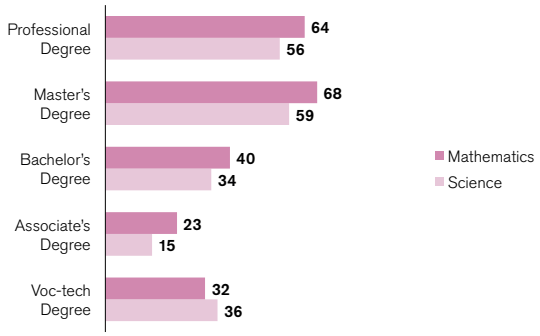


Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level

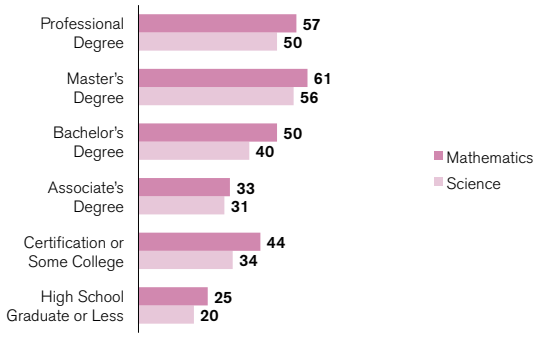


Measured Interest Only

Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Educational Aspirations and Subject



Percent of 2013 ACT-Tested High School Graduates Meeting ACT College Readiness Benchmarks by Highest Parental Education Level



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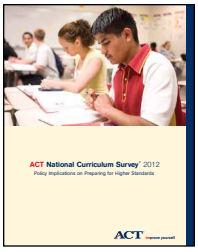
Engineering and Technology

Majors/Occupations

Engineering and Technology Majors/Occupations	Kansas	
	Expressed and Measured Interest	Expressed Interest Only
Aeronautical/Aerospace Engineering Technology	19	20
Aerospace/Aeronautical Engineering	105	127
Agricultural/Bioengineering	10	18
Architectural Drafting/CAD Technology	7	42
Architectural Engineering	28	114
Architectural Engineering Technology	8	12
Architecture, General	32	139
Automotive Engineering Technology	6	28
Biomedical Engineering	44	30
Chemical Engineering	101	67
Civil Engineering	23	113
Civil Engineering Technology	2	4
Computer Engineering	45	80
Computer Engineering Technology	17	39
Construction Engineering/Management	17	66
Construction/Building Technology	3	14
Drafting/CAD Technology, General	7	8
Electrical, Electronic, and Communication Engineering	49	79
Electrical/Electronics Engineering Technology	11	21
Electromechanical/Biomedical Engineering Technology	2	1
Engineering (Pre-Engineering), General	68	115
Engineering Technology, General	7	25
Environmental Control Technologies	1	4
Environmental Health Engineering	10	18
Industrial Engineering	9	33
Industrial Production Technologies	0	2
Mechanical Drafting/CAD Technology	7	15
Mechanical Engineering	124	271
Mechanical Engineering Technology	12	17
Military Technologies	6	4
Nuclear Engineering	27	13
Quality Control and Safety Technologies	2	0
Surveying Technology	1	1

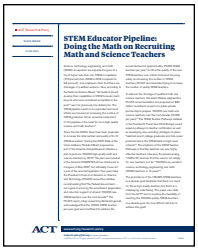
ACT STEM Research

As a nonprofit educational research organization, ACT is committed to producing research that focuses on key issues in education and workforce development. Our goal is to serve as a data resource. We strive to provide policymakers with the information they need to inform education and workforce development policy and to give educators the tools they need to lead more students toward college and career success. What follows are some of ACT's recent and most groundbreaking research studies related to STEM. To review these studies, go to **www.act.org/research/summary**.



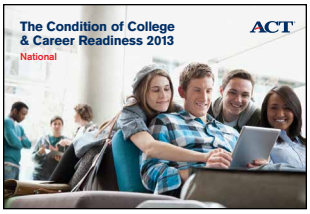
ACT National Curriculum Survey®

The ACT National Curriculum Survey is a nationwide survey of educational practices and expectations. Conducted every three to five years by ACT, the survey collects data about what entering college students should know and be able to do to be ready for college-level coursework in English, math, reading, and science. The survey can be found at **www.act.org/research-policy/national-curriculum-survey**.



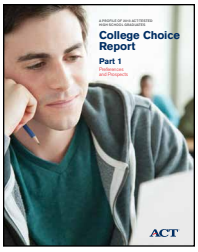
STEM Educator Pipeline: Doing the Math on Recruiting Math and Science Teachers

This report uses data from the ACT college readiness assessment to examine the feasibility of producing 100,000 high-quality math and science teachers in the next decade and finds that there is an insufficient number of graduates interested in and capable of math and science teaching to meet the 100,000 high-quality teacher goal. The report can be found at **www.act.org/research/policymakers/reports/stempipeline.html**.



The Condition of College & Career Readiness

Using ACT scores and the ACT College Readiness Benchmarks, *The Condition of College & Career Readiness 2013* provides a series of graphics highlighting the college and career readiness of the ACT-tested high school class of 2013. This report is updated annually, and the 2013 report can be found at **www.act.org/newsroom/data/2013**.



College Choice Report, Part 1: Preferences and Prospects

The *College Choice Report* provides enrollment managers and other college administrators with information about student patterns during the college choice process of the 2013 high school graduates who took the ACT. The focus of this year's report is students' selection of a college major or program of study. The report can be found at **www.act.org/collegechoice/13-14**.

STEM Resources

ACT has connected with state STEM councils across the country to identify valuable STEM-related resources. These are the top resources suggested by STEM experts.

STEM Premier™

STEM Premier is a virtual platform that connects STEM students with higher education and the workforce. Students can showcase their skills, get ranked and rated, receive guidance, and find STEM scholarships while colleges, technical schools, and corporations can identify, track, and recruit STEM Premier talent.

www.stempremier.com

National Science Foundation

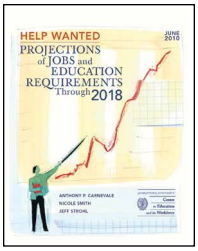
The National Science Foundation is an independent federal agency created by Congress in 1950 to promote the progress of science; to advance national health, prosperity, and welfare; and to secure national defense.

www.nsf.gov

STEMconnector®

STEMconnector is the one-stop shop for keeping up with trends in STEM education. Its website features profiles of all 50 states and more than 6,000 organizations and an informative blog. STEMconnector sends a free daily newsletter, the STEMdaily®, to more than 12,000 thought leaders.

www.stemconnector.org



Projections of Jobs and Education Requirements Through 2018

This report from the Georgetown University Center on Education and the Workforce connects education and training to careers.

www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/fullreport.pdf

USA Science and Engineering Festival

The USA Science and Engineering Festival attracts thousands of K–12 students, parents, teachers, and STEM professionals in the largest national celebration of STEM. The third annual conference will be held April 24–27, 2014, in Washington, DC.

www.usasciencefestival.org

USNews.com

USNews.com has comprehensive coverage on STEM trends in education and careers. Its national leadership conference, US News STEM Solutions, is where employers and educators meet to effect change, take action, and make an impact.

www.usnews.com/news/stem-solutions

ACT-Defined STEM Majors and Occupations by Area

Science Majors/Occupations
Agronomy and Crop Science
Animal Sciences
Astronomy
Atmospheric Sciences and Meteorology
Biochemistry and Biophysics
Biology, General
Cell/Cellular Biology
Chemistry
Ecology
Environmental Science
Food Sciences and Technology
Forestry
Genetics
Geological and Earth Sciences
Horticulture Science
Marine/Aquatic Biology
Microbiology and Immunology
Natural Resources Conservation, General
Natural Resources Management
Physical Sciences, General
Physics
Science Education
Wildlife and Wildlands Management
Zoology
Computer Science and Mathematics Majors/Occupations
Actuarial Science
Applied Mathematics
Business/Management Quantitative Methods, General
Computer and Information Sciences, General
Computer Network/Telecommunications
Computer Science and Programming
Computer Software and Media Application
Computer System Administration
Data Management Technology
Information Science
Management Information Systems
Mathematics Education
Mathematics, General
Statistics
Webpage Design
Medical and Health Majors/Occupations
Athletic Training
Chiropractic (Pre-Chiropractic)
Dentistry (Pre-Dentistry)
Emergency Medical Technology
Food and Nutrition
Health/Medical Technology, General
Medical Laboratory Technology
Medical Radiologic Technology
Medicine (Pre-Medicine)
Nuclear Medicine Technology
Nursing, Practical/Vocational (LPN)
Nursing, Registered (BS/RN)
Optometry (Pre-Optometry)
Osteopathic Medicine
Pharmacy (Pre-Pharmacy)
Physical Therapy (Pre-Physical Therapy)
Physician Assisting
Respiratory Therapy Technology
Surgical Technology
Veterinarian Assisting/Technology
Veterinary Medicine (Pre-Vet)
Engineering and Technology Majors/Occupations
Aeronautical/Aerospace Engineering Technology
Aerospace/Aeronautical Engineering
Agricultural/Bioengineering
Architectural Drafting/CAD Technology
Architectural Engineering
Architectural Engineering Technology
Architecture, General
Automotive Engineering Technology
Biomedical Engineering
Chemical Engineering
Civil Engineering
Civil Engineering Technology
Computer Engineering
Computer Engineering Technology
Construction Engineering/Management
Construction/Building Technology
Drafting/CAD Technology, General
Electrical, Electronic, and Communication Engineering
Electrical/Electronics Engineering Technology
Electromechanical/Biomedical Engineering Technology
Engineering (Pre-Engineering), General
Engineering Technology, General
Environmental Control Technologies
Environmental Health Engineering
Industrial Engineering
Industrial Production Technologies
Mechanical Drafting/CAD Technology
Mechanical Engineering
Mechanical Engineering Technology
Military Technologies
Nuclear Engineering
Quality Control and Safety Technologies
Surveying Technology

Kansas STEM Report

Endnotes

1. Students were assigned to one of four STEM cohorts: Expressed and Measured, Expressed Only, Measured Only, or No STEM Interest. These cohorts were based on the pairing of Expressed and Measured STEM interest types, where:
   - Students with expressed STEM interest planned on a STEM major or occupation following high school.
   - Students with measured STEM interest had a highest ACT Interest Inventory score in Science or had a highest ACT Interest Inventory score in Technology and a second-highest score in Science.

   Within each STEM cohort, students were also assigned to one of four STEM areas: Science, Computer Science and Mathematics, Medical and Health, or Engineering and Technology. STEM areas for students in the Expressed and Measured Interest cohort and the Expressed Interest Only cohort were based on the STEM area of students' planned major. If planned major was not STEM, then the STEM area of their planned occupation was used. For students in the Measured Interest Only cohort, STEM area was based on a crosswalk between ACT Interest Inventory score profile and planned major. The crosswalk was created from a national sample of undergraduate students with a declared major and a grade point average of at least 2.0. (For more information about the crosswalk, go to **www.act.org/emtrends/12/interestmajor.html**.) By definition, students in the No STEM Interest cohort could not be assigned a STEM area.

2. The ACT College Readiness Benchmarks are scores on the ACT subject area tests that represent the level of achievement required for students to have a 50% chance of obtaining a B or higher or about a 75% chance of obtaining a C or higher in corresponding credit-bearing first-year college courses. Based on a nationally stratified sample, the Benchmarks are median course placement values for these institutions and represent a typical set of expectations. The ACT College Readiness Benchmarks are:

College Course	Subject Area Test	ACT College Readiness Benchmark
English Composition	English	18
Social Sciences	Reading	22
College Algebra	Mathematics	22
Biology	Science	23

3. When individuals register for the ACT, they are asked to choose a college major they plan to enter as well as an occupational choice from a list of 294 major and occupational titles. Of these 294 titles, 93 have been identified as STEM related. Assignment of ACT titles to STEM titles was conducted by an expert panel of ACT staff members with knowledge of labor market trends and postsecondary academic programs. Panel decisions were informed by three sources of information: (1) STEM-designated occupations from the US Bureau of Labor Statistics (BLS), (2) STEM-designated degree programs from US Immigration and Customs Enforcement (ICE), and (3) ACT Interest Inventory score profiles for students planning to enter the major/occupation. ACT titles were assigned to STEM when both the corresponding BLS and ICE titles were included in STEM or when the corresponding BLS title was included in STEM and the profile of measured interests of students planning to enter this occupation peaked on the Science and Technology scale. These two guidelines accounted for 89 of the 93 ACT titles assigned to STEM. The remaining four titles were assigned to STEM based on the judged intensiveness of their math and science coursework (major) or work tasks (occupation). ACT titles in the Social Sciences were excluded from this STEM list because many STEM taxonomies do not include majors and occupations in this field.

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This report can be found at
www.act.org/stemcondition

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