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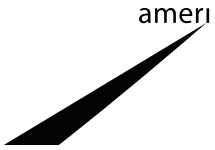
Status of Recent Geoscience Graduates 2015

Carolyn Wilson
American Geosciences Institute
Alexandria, VA 22302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Executive Summary

An Overview of the Demographics of the Participants

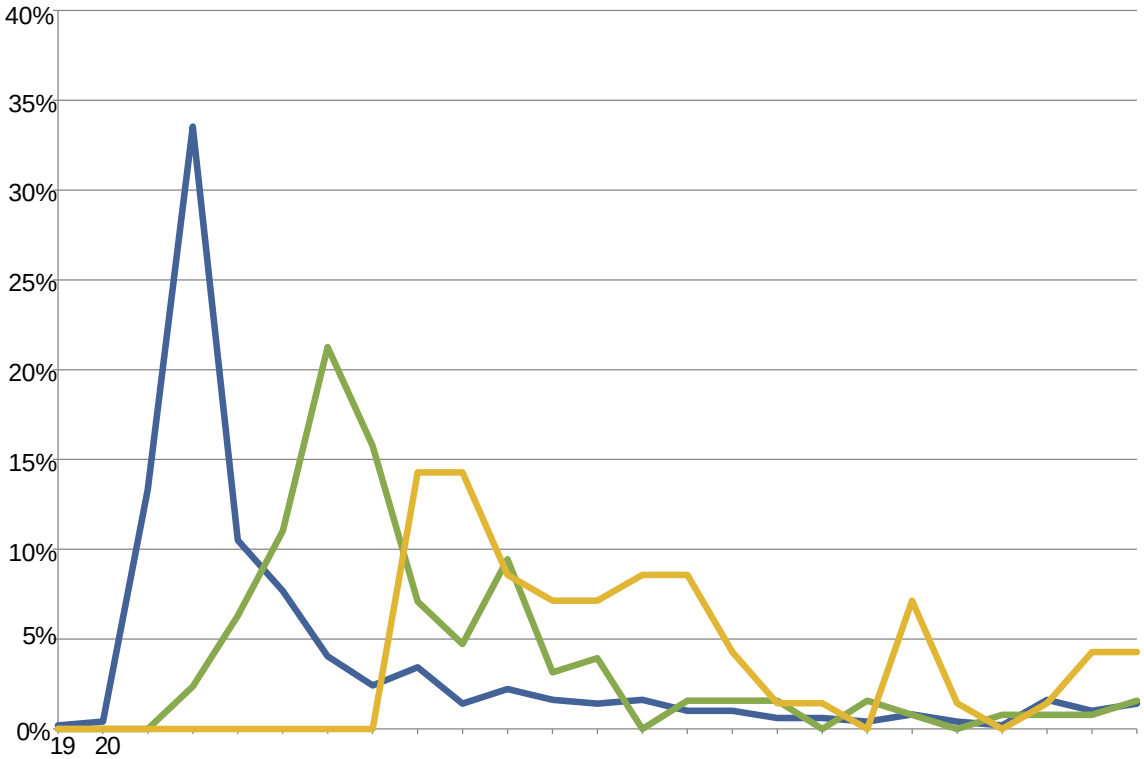
This year, AGI's Geoscience Student Exit Survey was made available to geoscience graduates at all traditional graduation periods (winter, spring, and summer) during the 2014–2015 academic year, to be collectively referenced as "2015". Approximately two months before the end of each semester, an email was sent to all the heads and chairs of geoscience departments across the country asking for their participation in this study. As incentive to participate, AGI gives the departments the data in aggregate for their graduates for their internal assessment purposes. Distribution instructions and the survey link were sent to the identified representatives for each department that agreed to send the survey to their graduates. Departments continue to have the option to customize the survey appropriately for their graduates.

For 2015, AGI asked the American Geophysical Union (AGU), the American Institute of Professional Geologists (AIPG), the Association for the Sciences of Limnology and Oceanography (ASLO), the Geological Society of America (GSA), and the Society of Exploration Geophysicists (SEG) to distribute the survey link to their student membership, which increased the participation dramatically. These societies helped to recruit approximately 38 percent of the recent graduates that participated in the survey this year.

The survey was available to the winter and summer graduates for two months, and the spring graduates had three months to complete the survey. At the close of the survey, 692 graduating students from 210 geoscience schools or departments provided responses. 495 bachelor's graduates, 127 master's graduates, and 70 doctoral graduates. All but two states, Arkansas and Delaware, are represented within this sample of geoscience graduates. This is a slight increase in participation from last year, and using AGI's graduation data from 2014, this sample size was determined as sufficient to statistically represent the total population of geoscience graduates.

The first section of the survey covered student demographics to establish an understanding of the students that graduate in the geosciences. The data remain consistent with the data collected in 2014. However, there is a shift in the gender dynamics again. In 2015, the percentage of female master's graduates over took the percentage of male master's graduates by 10 percent, and the percentage of male doctoral graduates exceeded the percentage of female doctoral graduates by 6 percent. In the previous year, there were only slightly more men than women completing a master's degree, and the women doctoral graduates exceeded the men by 11 percent. As in previous years, students indicating their citizenship as U.S. Citizen or Permanent Resident were asked to indicate their race and ethnicity. The percentage of underrepresented minorities includes African Americans, Hispanic/Latinos, Native Americans/Alaskans, and Native Hawaiians/Pacific Islanders. However, it is important to note that is the per centage of underrepresented minorities is dominated by the Hispanic/Latino population of geoscience graduates. There was a slight increase in the percentage of graduates unwilling to share their citizenship and race and ethnicity in 2015. The age distribution of graduates in 2015 is fairly similar to the age distribution of 2014 graduates.

For the 2015 survey, recent graduates were asked to report the highest education level of their parents or guardians. Concerns have been raised that geoscience programs tend to attract students from middle and upper class families, possibly due to familiarity with the subject area among family or the high cost of the activities associated with the degree. In 2015, 64 percent of bachelor's graduates, 80 percent of master's graduates, and 72 percent of doctoral graduates have at least one parent with a postsecondary degree. This question also indicated that 18 percent of bachelor's graduates, 5 percent of master's graduates, and 10 percent of doctoral graduates were first-generation college students .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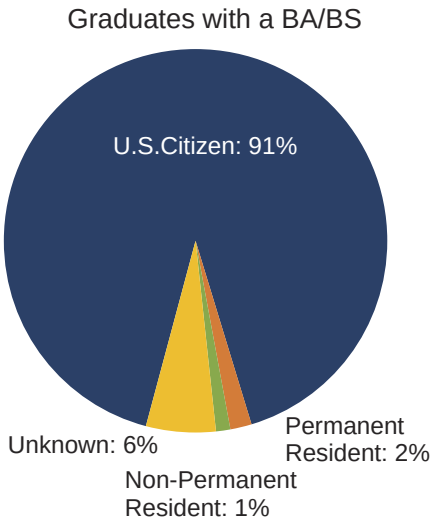

Graduates with a BA/BS
U.S.Citizen: 91%
Unknown: 6%
Non-Permanent Resident: 1%
Permanent Resident: 2%

Highest education level of a parent/guardian of graduates

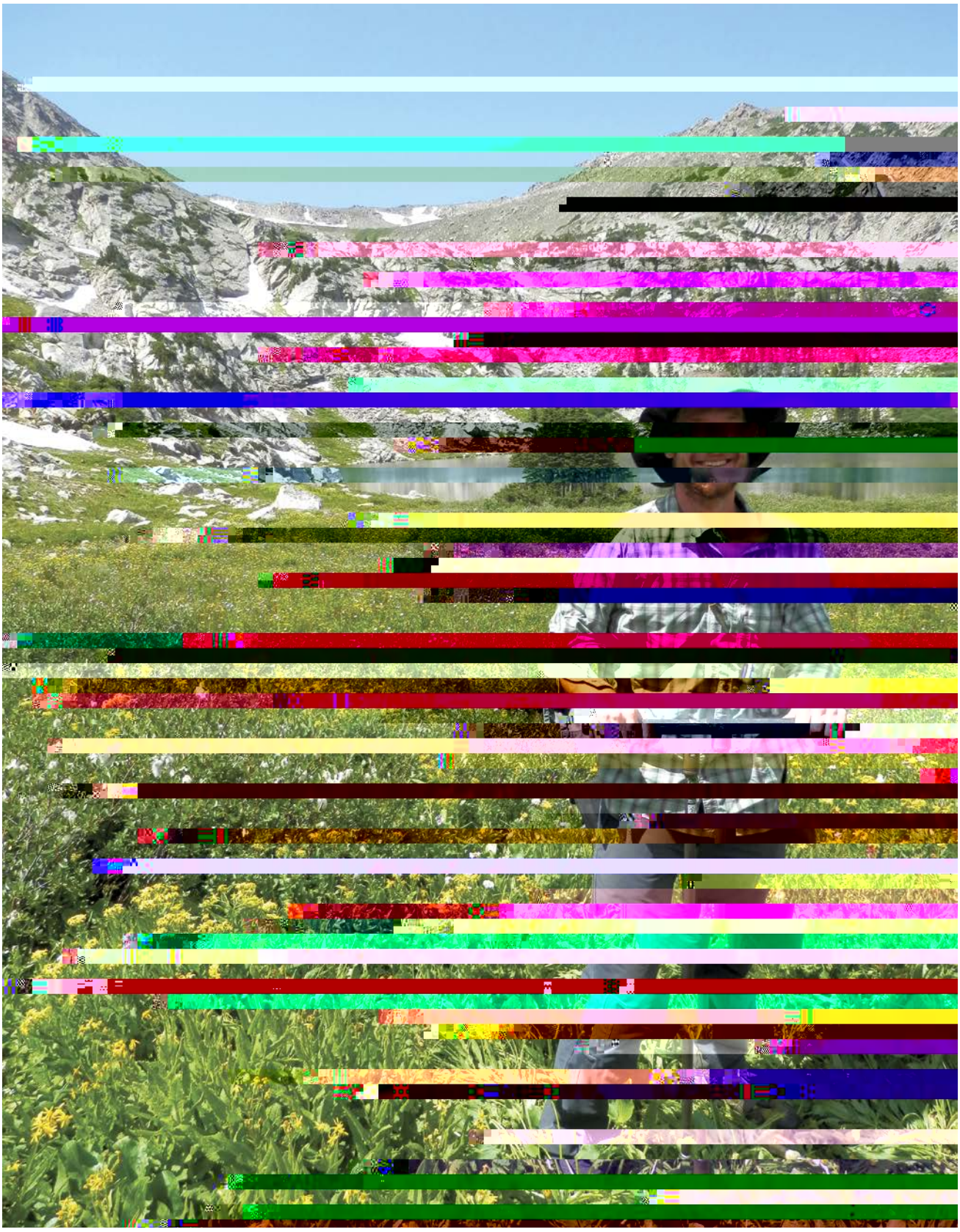
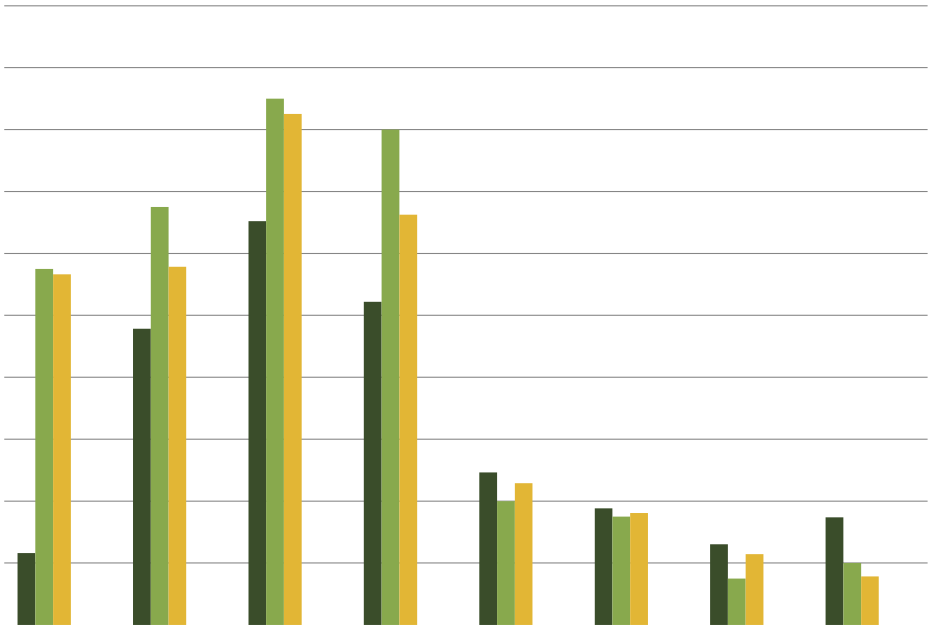
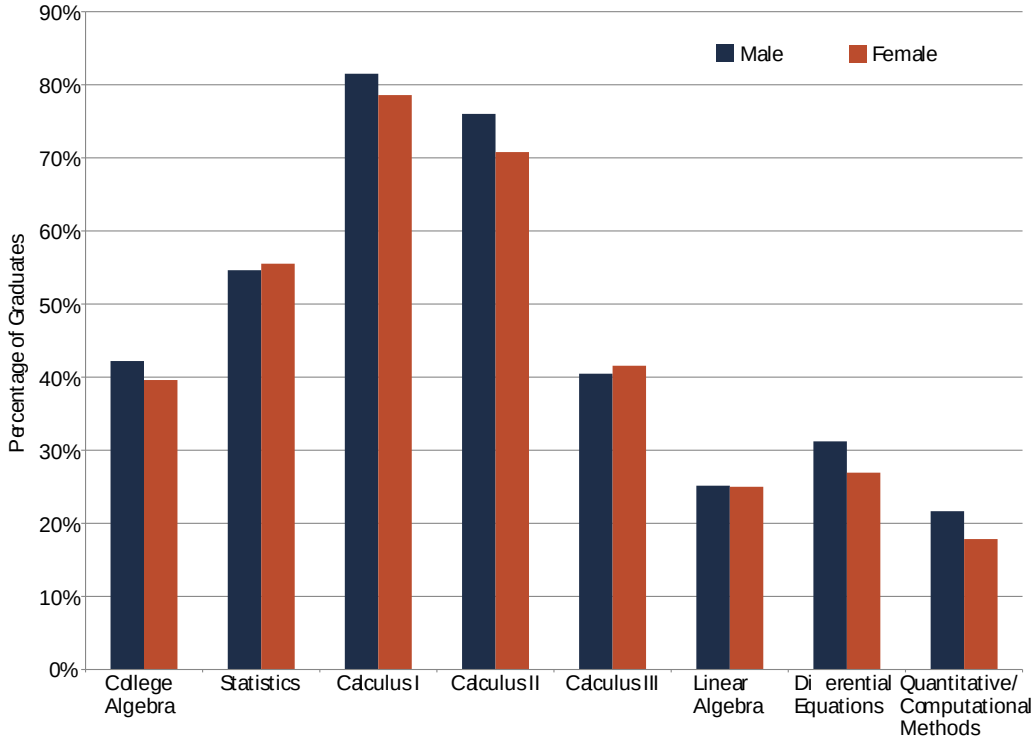


Photo by Dan Scott from AGI's 2015 Life in the Field contest.

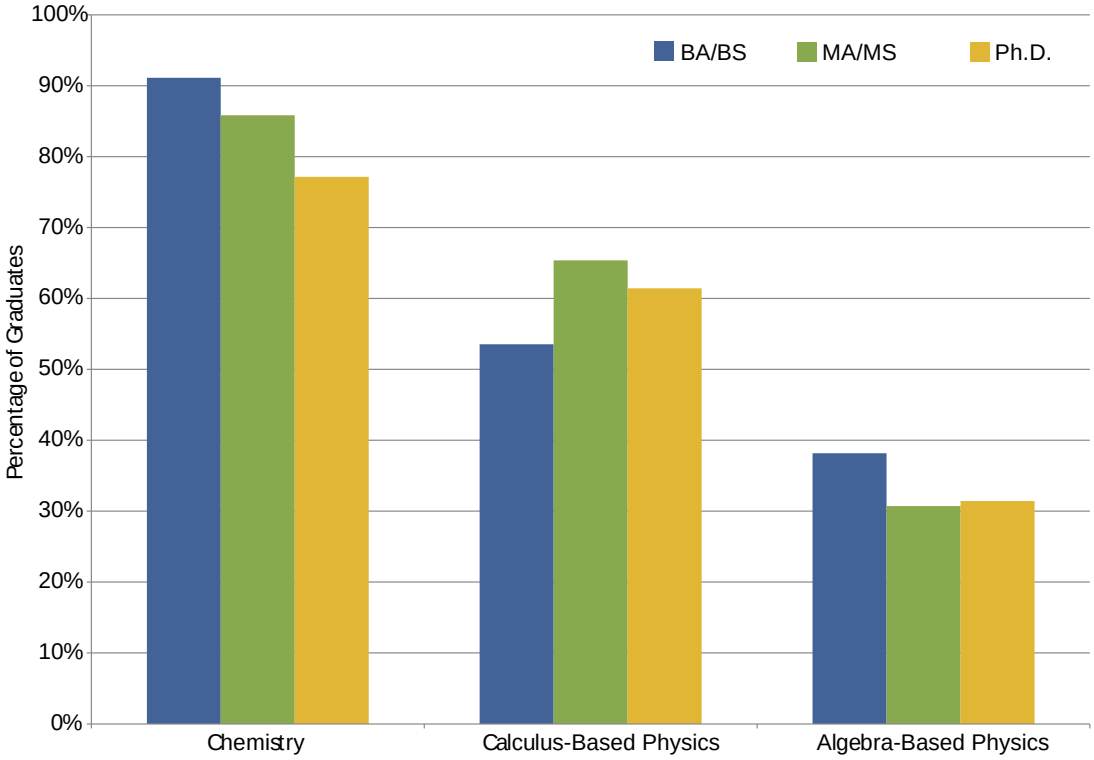
Collecting soil cores to examine the controls on carbon storage in subalpine lake deltas. Location: Rawah Lake # 2, Rawah Wilderness, Colorado, USA.



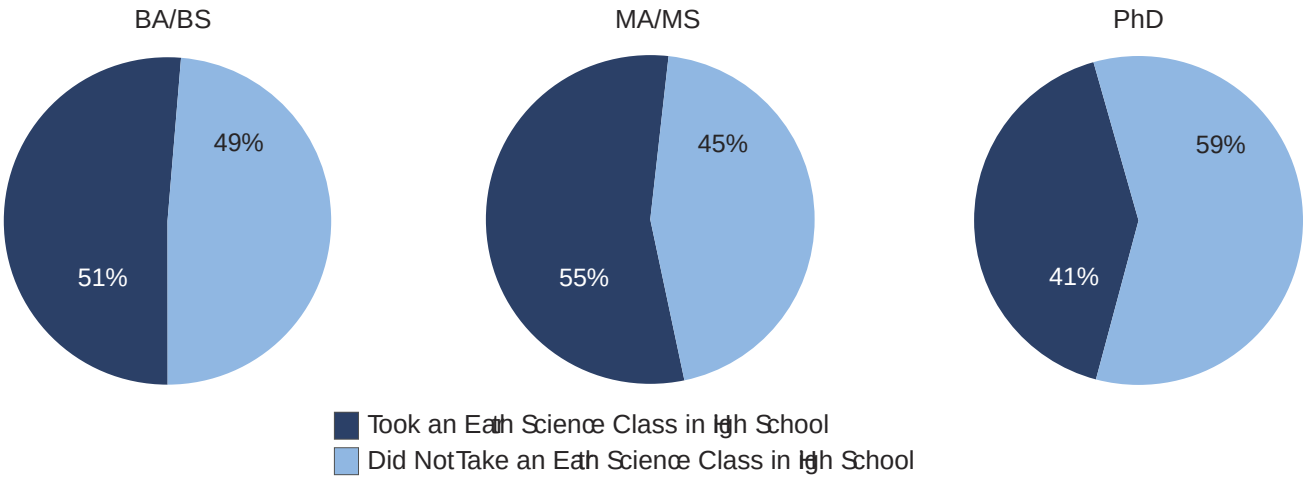
Quantitative skills and knowledge gained while working towards degree by gender



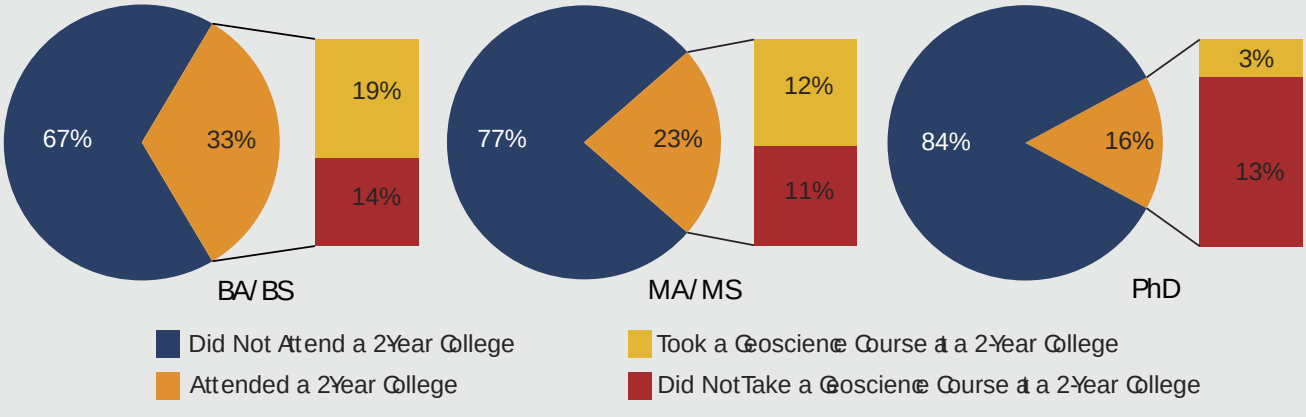
Percentage of graduates taking supplemental science courses



Graduates who took an earth science course in high school



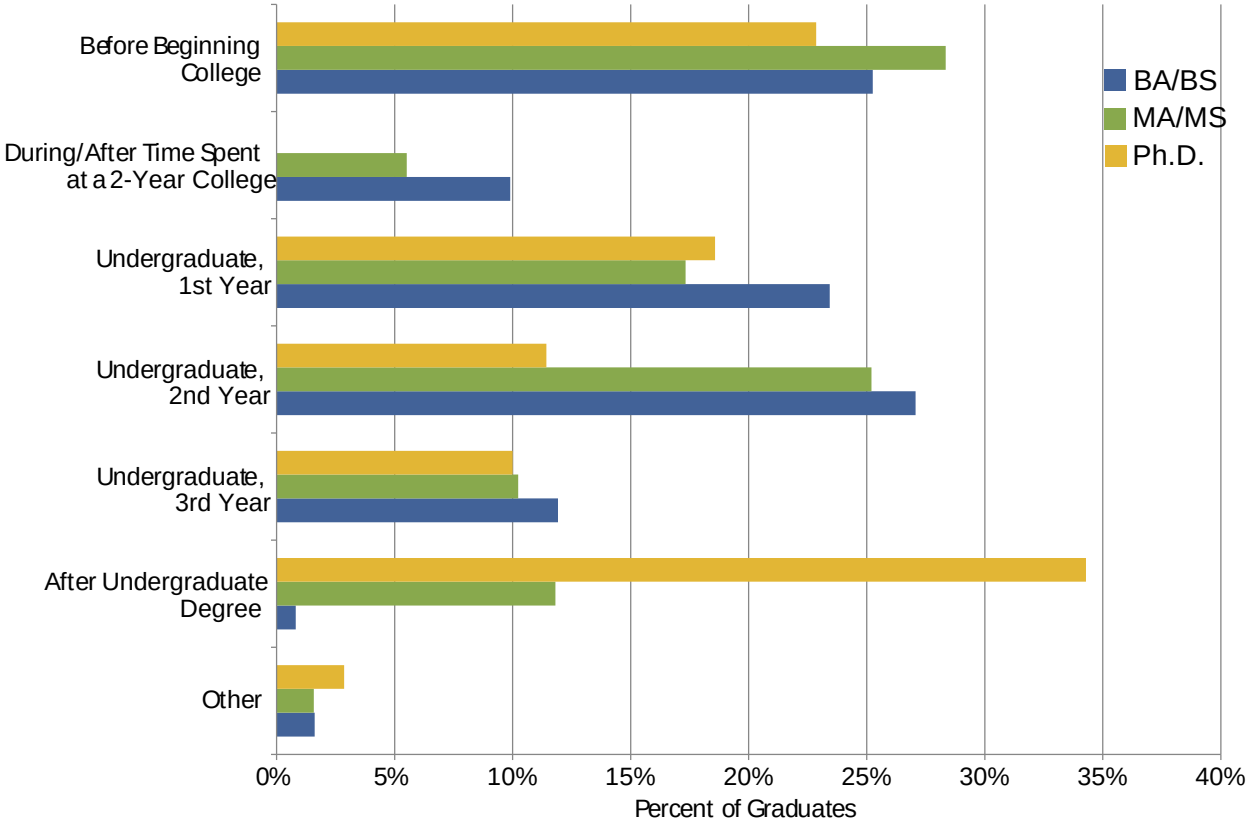
Graduates who attended a two-year college for at least 1 semester and took a geoscience course



Graduates were asked which geoscience field they were getting a degree in, as well as the fields associated with any other postsecondary degrees. The chosen degree fields demonstrate the variety of disciplines related to the geosciences. Geology continues to be the most popular degree among undergraduates with students specializing in different fields more often in graduate school.

In 2015, the majority of graduates at the bachelor's and master's levels chose to major in the geosciences at some point during their undergraduate educations. This trend has also been seen in previous years, which highlights the importance of the undergraduate geoscience courses to recruit majors. Most doctoral graduates in 2015 indicated

When students decide to major in the geosciences



Graduates were asked about their experiences while working towards their degree. In 2015, as in previous years, the majority of bachelor's and doctoral graduates did not hold an internship during their postsecondary education. However, this year did see an increase of 14 percent of master's graduates participating in one or more internships before completing their degree. It is possible that the 2015 master's graduates understood the importance of internships to their professional career after graduation. Two questions were added to the 2015 survey asking how many internship applications were submitted by recent graduates and how they found the internship opportunities. Approximately 26 percent of bachelor's graduates and 11 percent of master's graduates that did not participate in an internship did apply for at least one opportunity. Most of the recent graduates recognize the importance of internships for their professional development, but there may not be enough opportunities available for interested students. The geoscience community

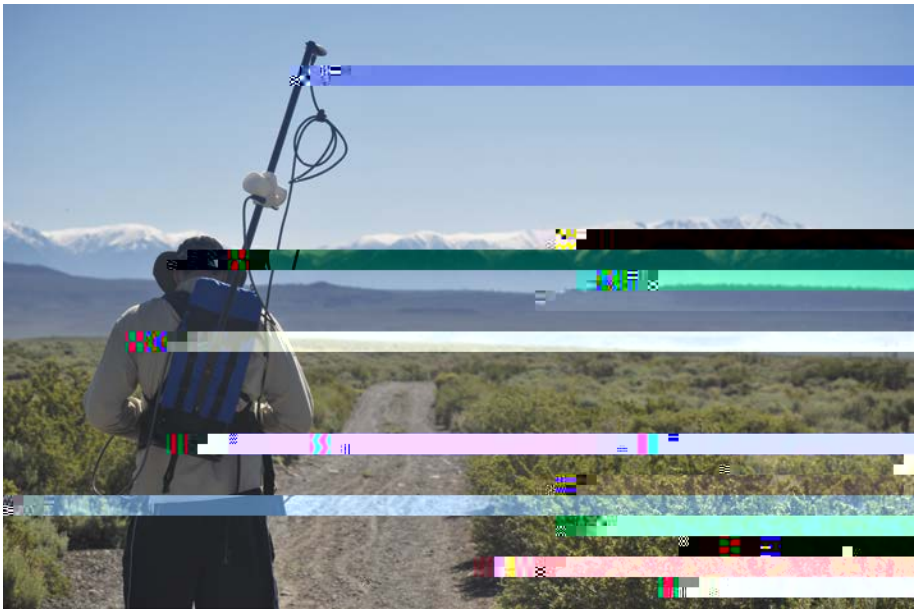
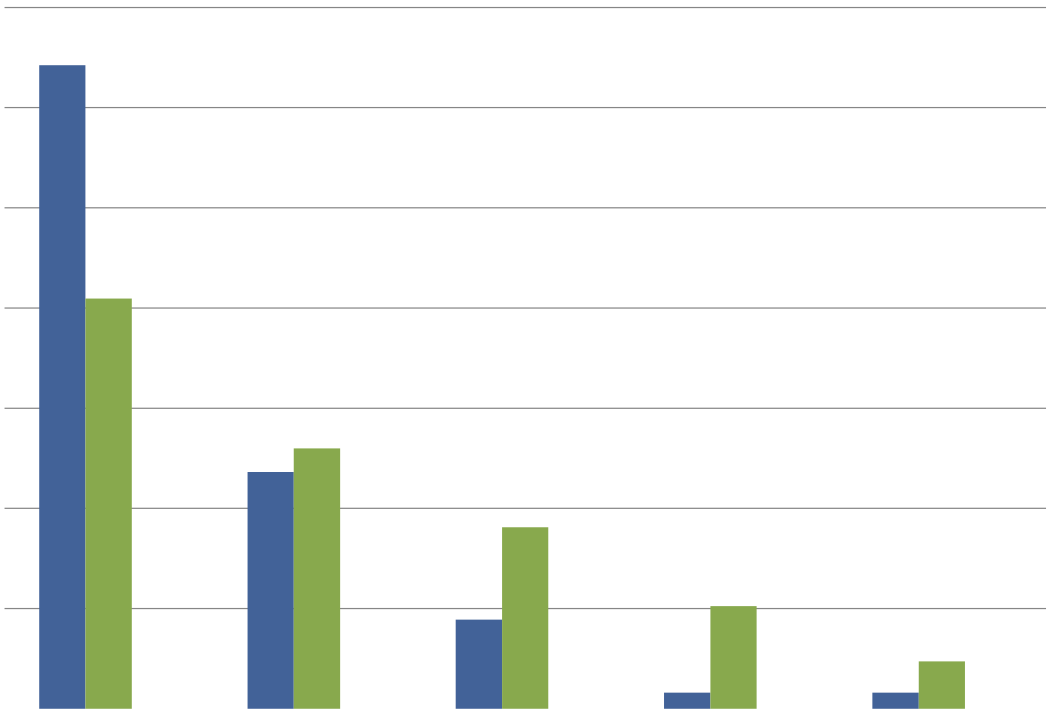
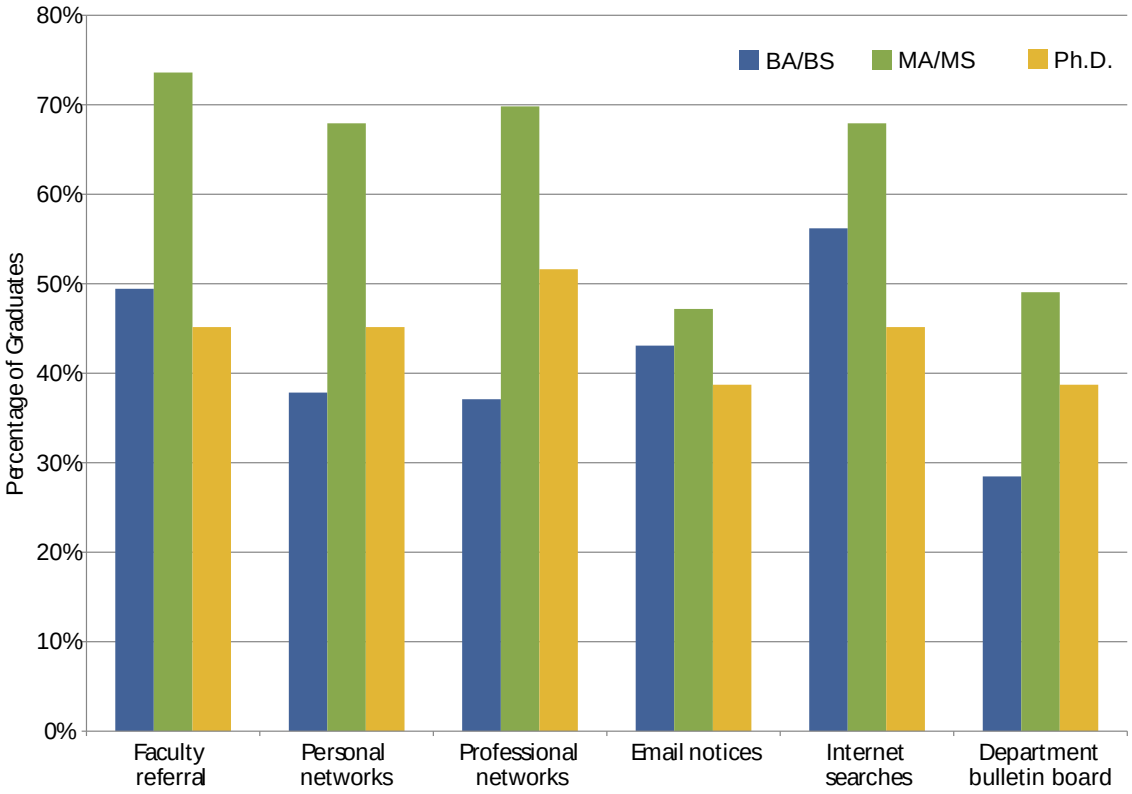


Photo by Rachel Hatch from AGI's 2015 Life in the Field contest.

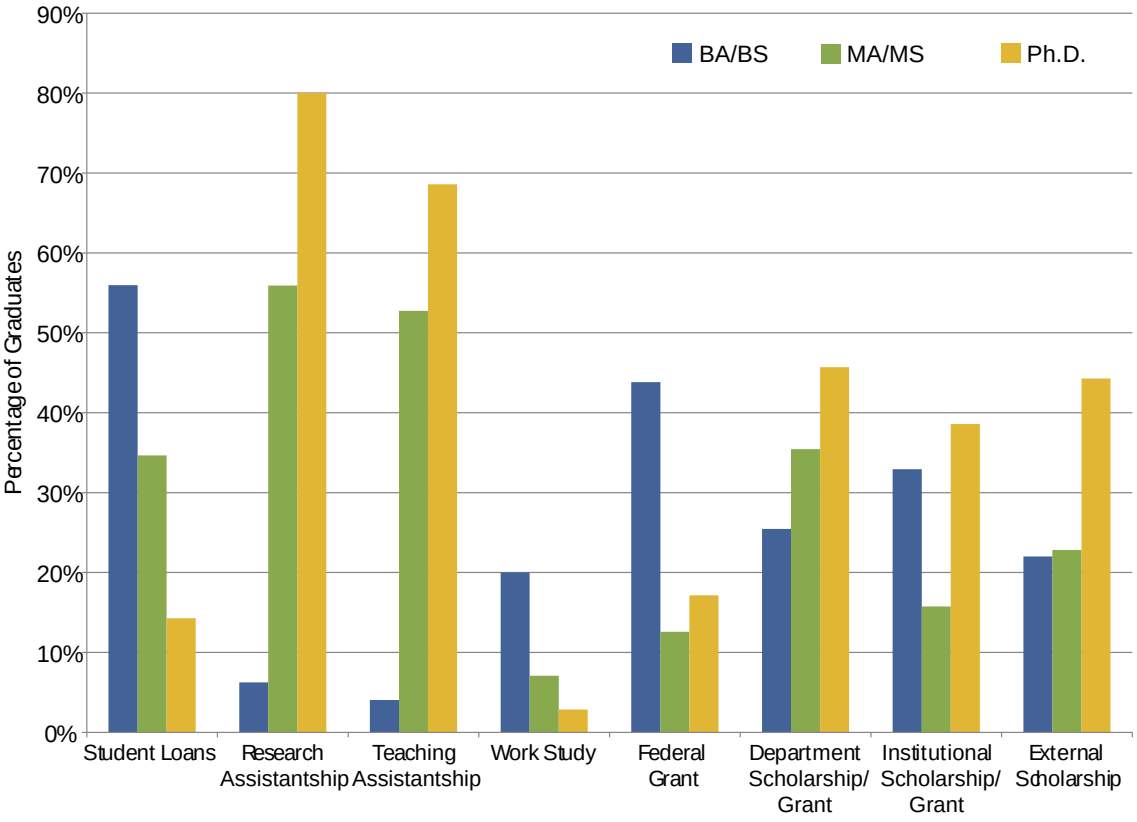
Magnetometer survey at Mammoth Lakes, CA.



Resources used to find internship announcements



Types of financial aid used by graduating students while working towards a degree

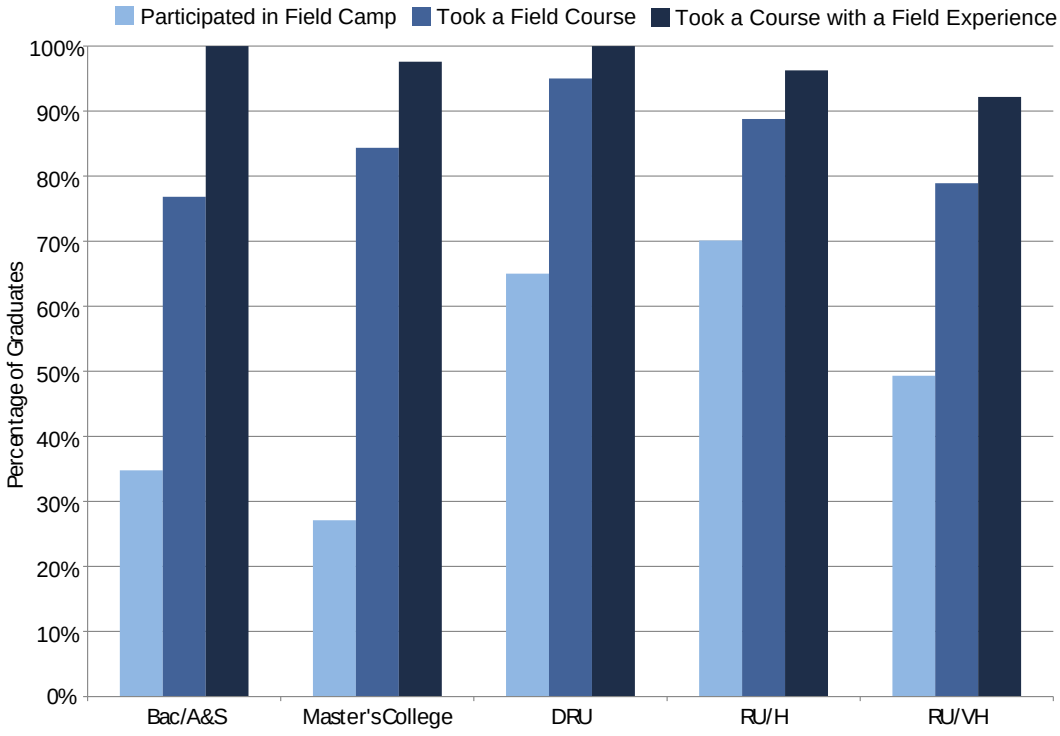


Participation in geoscience clubs

	BA/BS	MA/MS	Ph.D.
Average years to degree completion	4.20	3.29	6.20
Average overall GPA	3.29	3.69	3.86
Average geoscience GPA	3.41	3.73	3.91

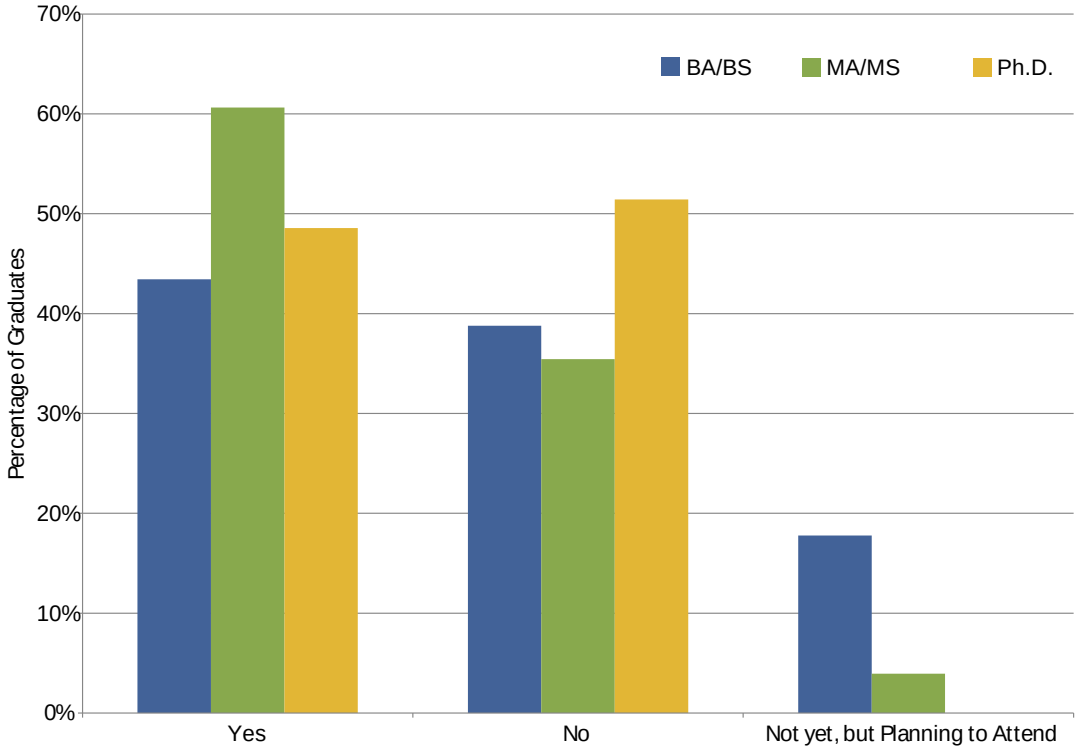
Clear definitions were set to distinguish between

Student participation in field experiences based on university classification**

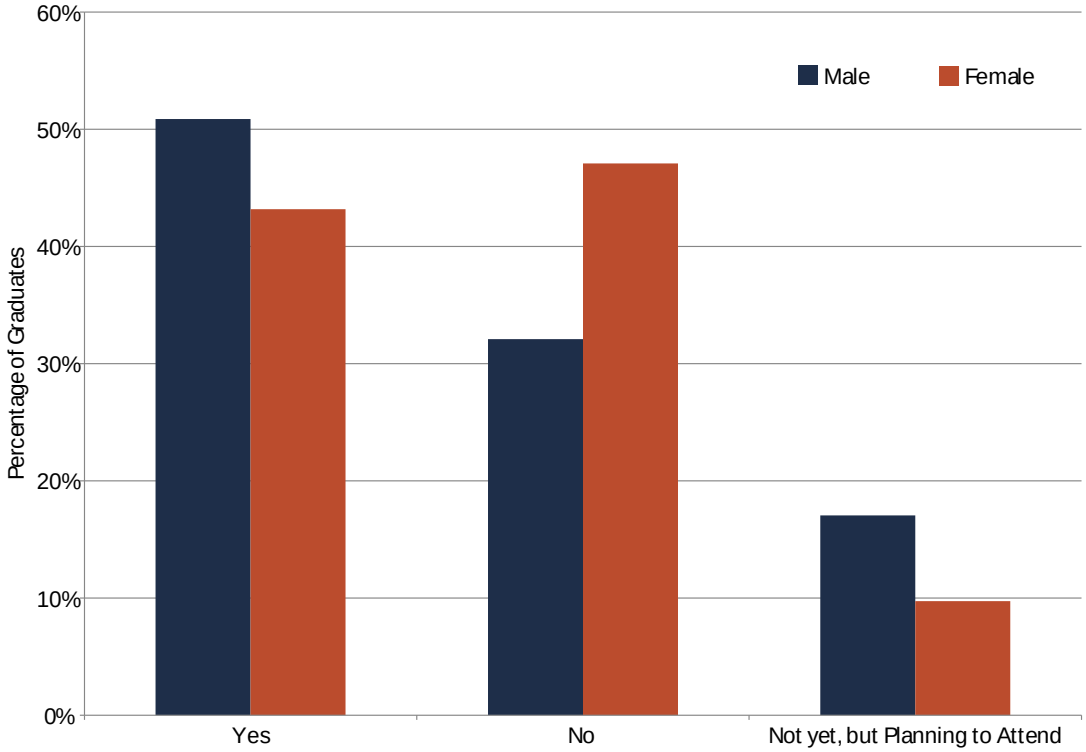


**See Appendix II for definitions of the Carnegie University Classification System

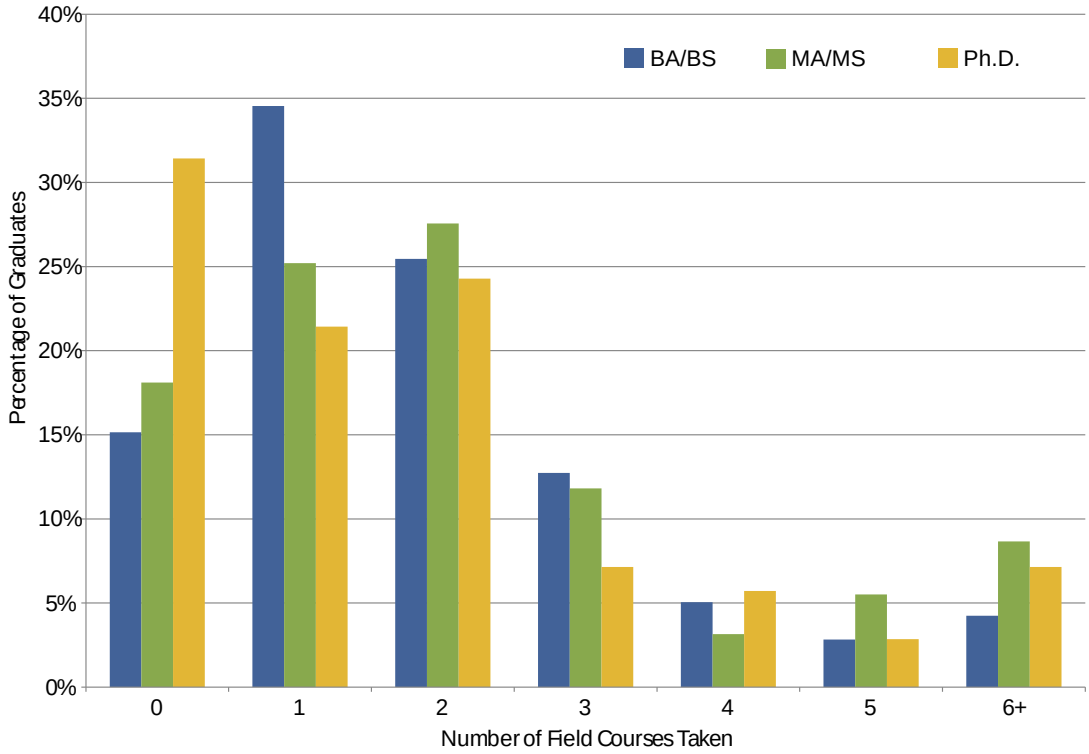
Graduating students who have participated in field camp



Graduating students who have participated in field camp by gender



Number of field courses taken by graduates



Courses taken with field experiences by graduates

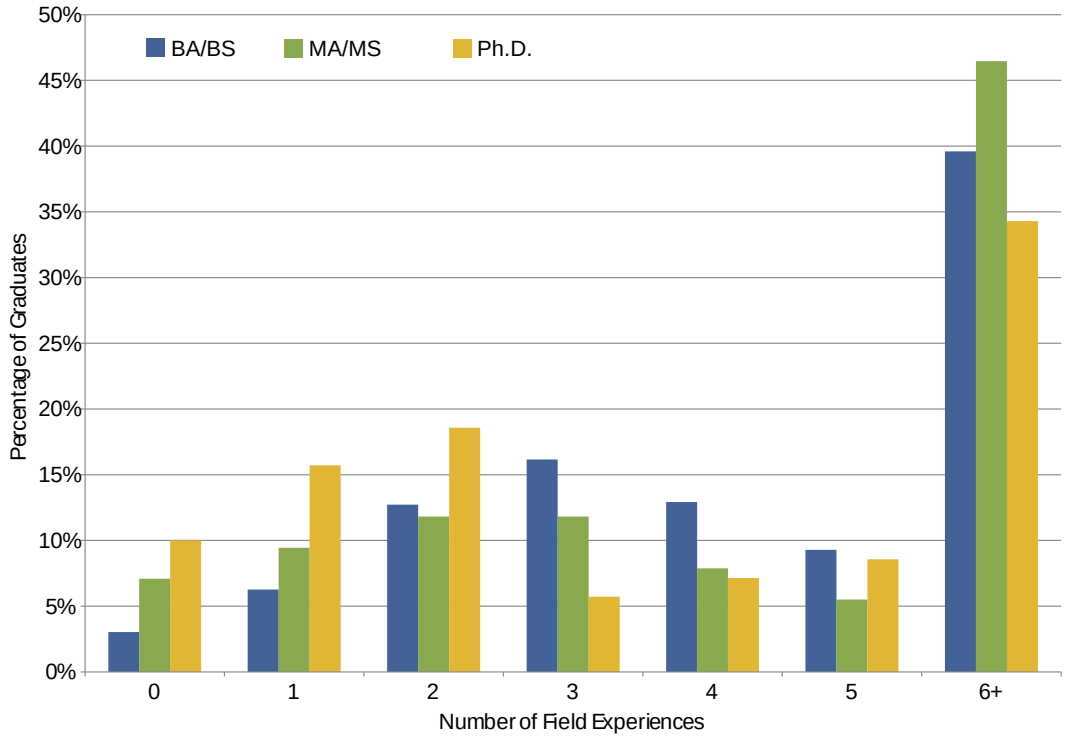
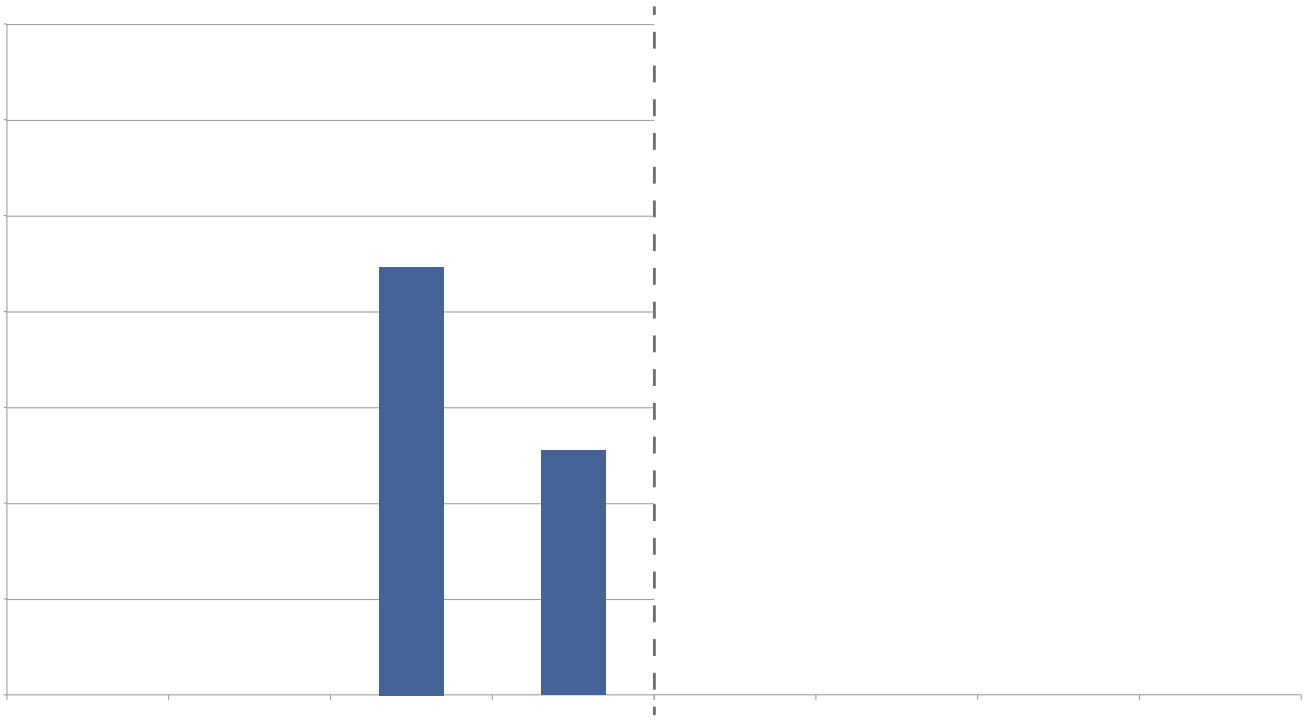
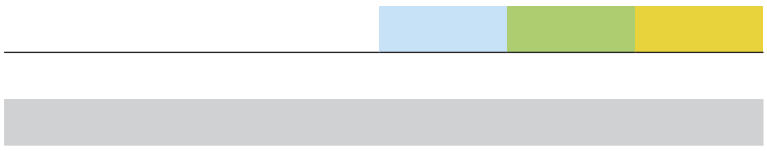
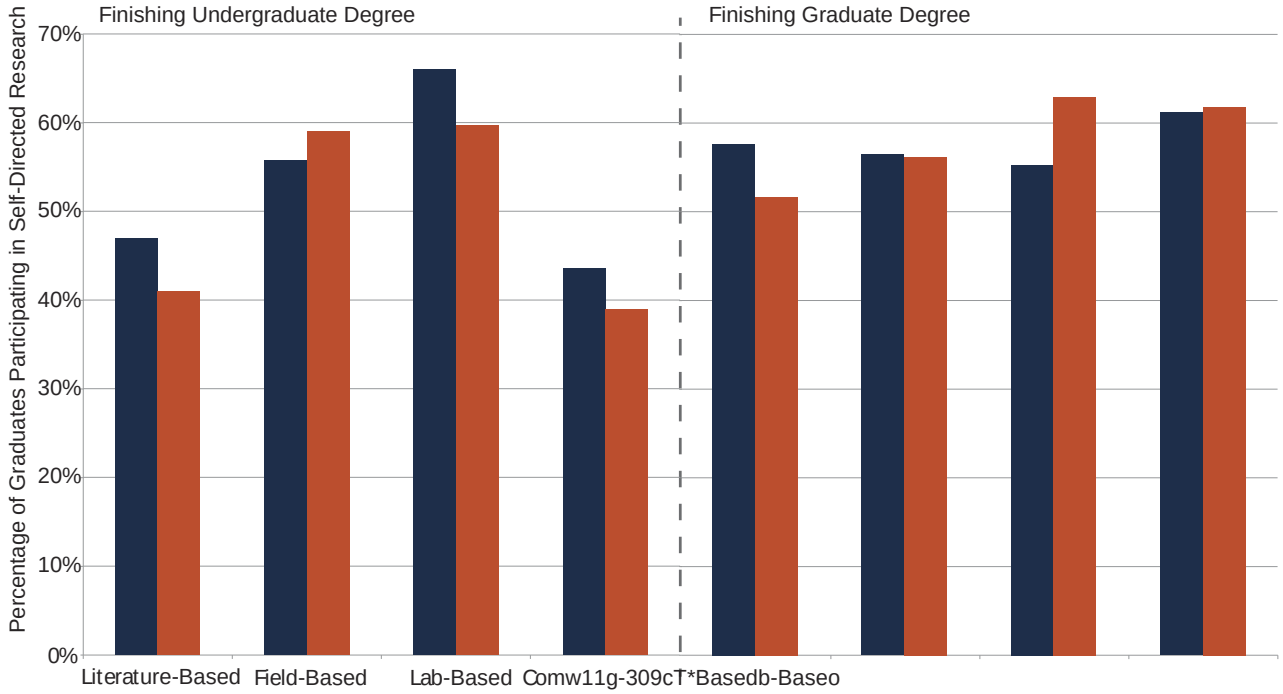


Photo by Hanif Jawid from AGI's 2015 Life in the Field contest.

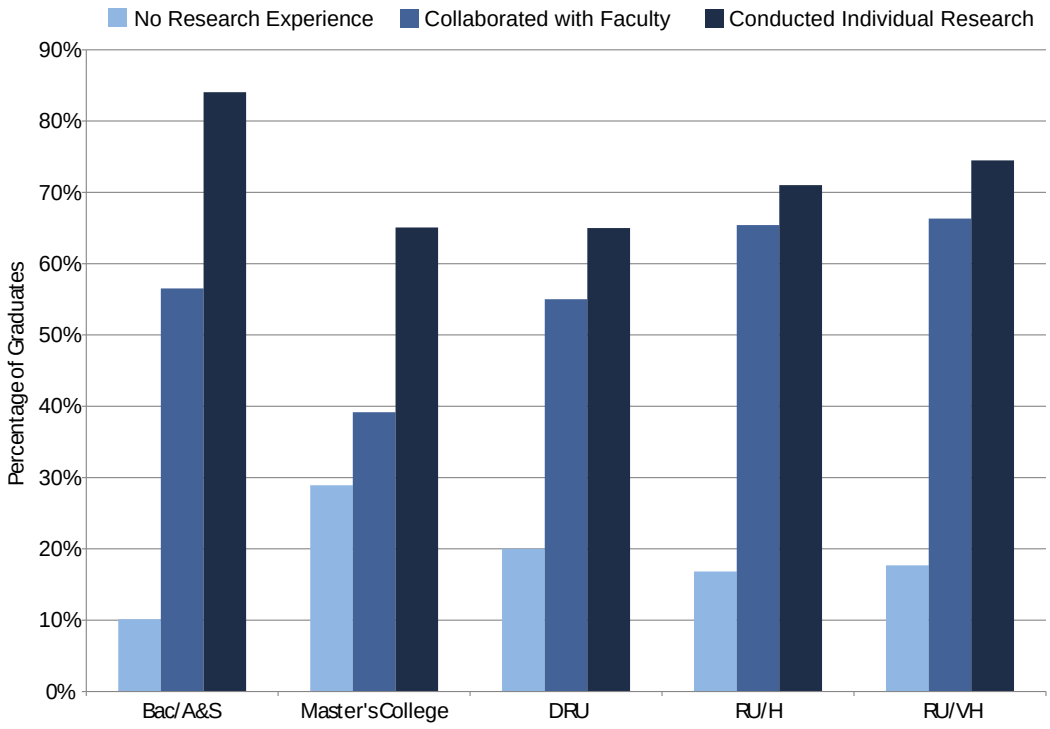
Field data visualization at site office with groups, at location of Parwan province Afghanistan.







Student participation in research based on university classification**



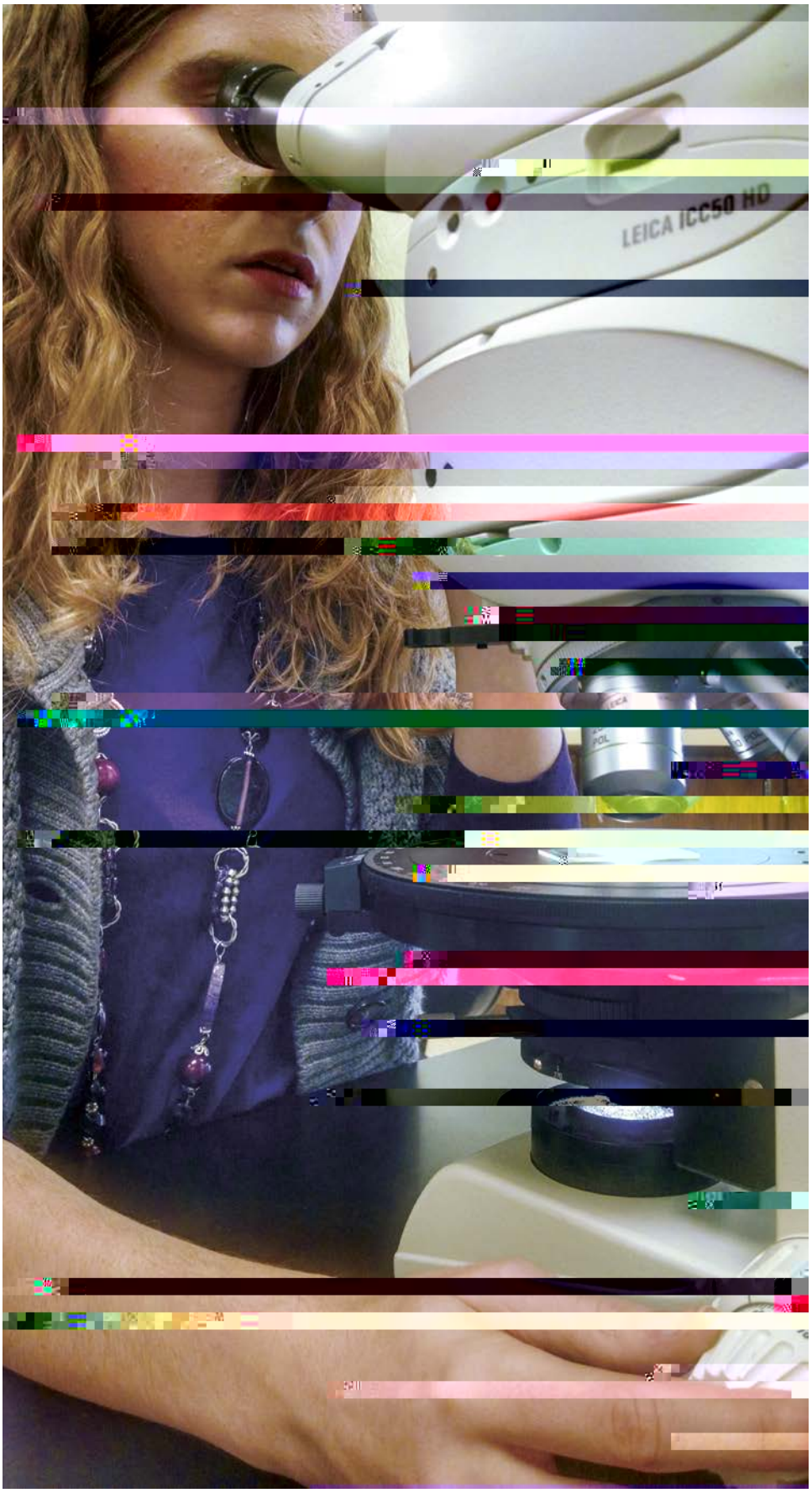
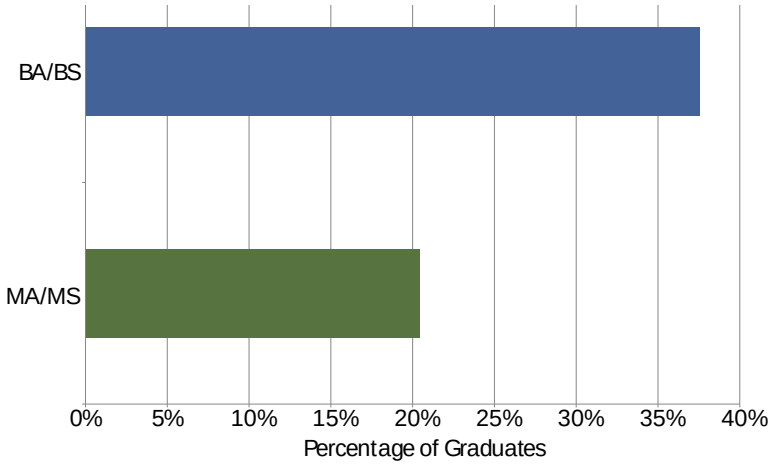


Photo by Hannah Cunningham from AGI's 2015 Life in the Field contest.

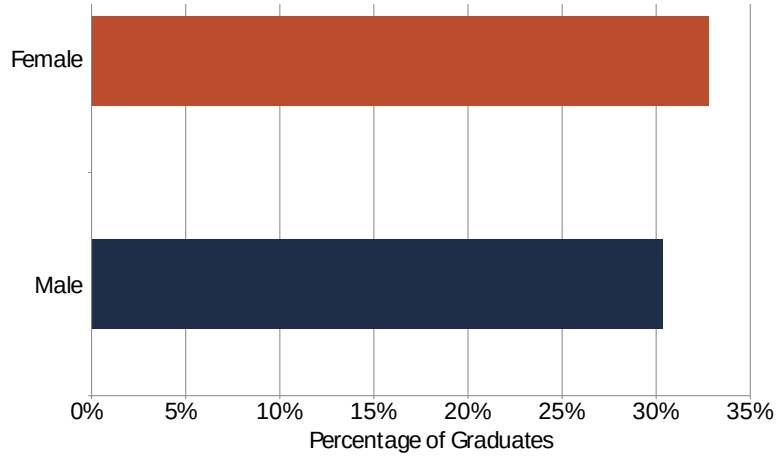
The graduates were asked if they have immediate plans to continue their education. Those indicating plans for a graduate degree after graduation were then asked to share the degree they would pursue and the field of interest for the degree.

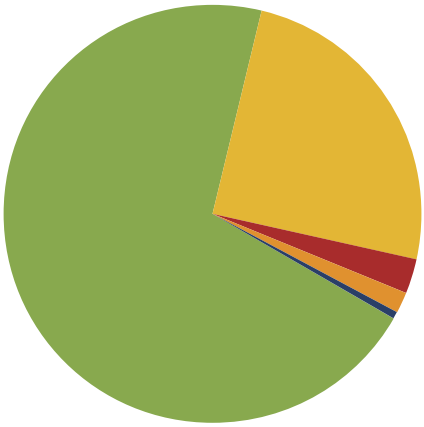
The percentage of bachelor's graduates planning to attend graduates school dropped from 42 percent in 2014 to 38 percent in 2015 the same percentage of bachelor's graduates in 2013. The percentage of master's graduates planning to get another graduate degree also dropped from 26 percent in 2014 to 20 percent in 2015. Recently, departments have expressed concern with their ability to take on more graduate students because they have reached their capacity for students. The drop in percentage of recent graduates planning to attend graduate school may have been in response to [illegible]

Students planning to attend graduate school after graduation



Students planning to attend graduate school after graduation by gender





The graduates were asked if they had accepted or were seeking a job position within the geoscience workforce. If they had accepted a job, they were asked questions about these accepted job positions. Because the graduates take this survey right around graduation, it is not surprising that there are still relatively high percentages of graduates at all degree levels still seeking employment. In 2015, there was a decrease of doctoral graduates that had found a geoscience job at the time of graduation from 70 percent in 2014 to 59 percent in 2015. However, there was an increase in master's graduates that did find a geoscience job from 35 percent in 2014 to 41 percent in 2015.

This was the first year since starting AGI's Geoscience Student Exit Survey that an industry other than the oil and gas industry hired the highest percentage of bachelor's graduates. Approximately 40 percent of bachelor's graduates found a job in the environmental services industry, which was a 15 percent increase from 2014. The percentage of doctoral graduates hired by the oil and gas industry also decreased from 26 percent in 2014 to 15 percent in 2015. However, there was an increase in the percentage of master's graduates that were hired by the oil and gas industry from 59 percent in 2014 to 67 percent in 2015. The top three industries hiring bachelor's degree are environmental services, oil and gas, and the federal government. The top three industries hiring master's graduates are oil and gas, environmental services, and four-year universities. The top three industries hiring doctoral graduates are four-year universities, research institutes, and the oil and gas industry.

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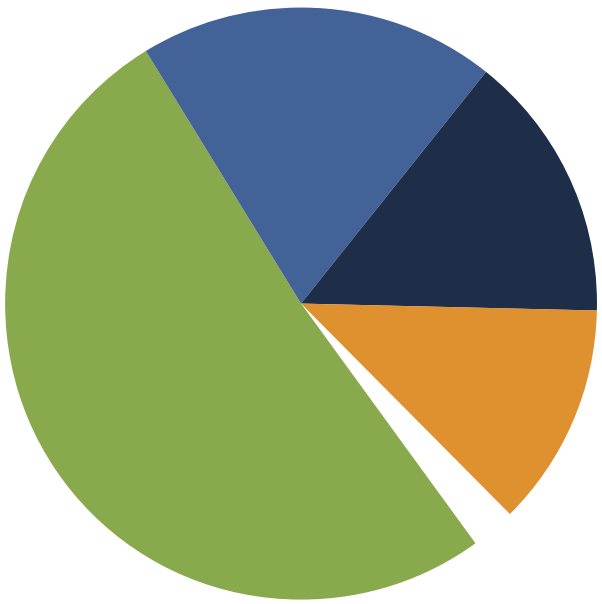
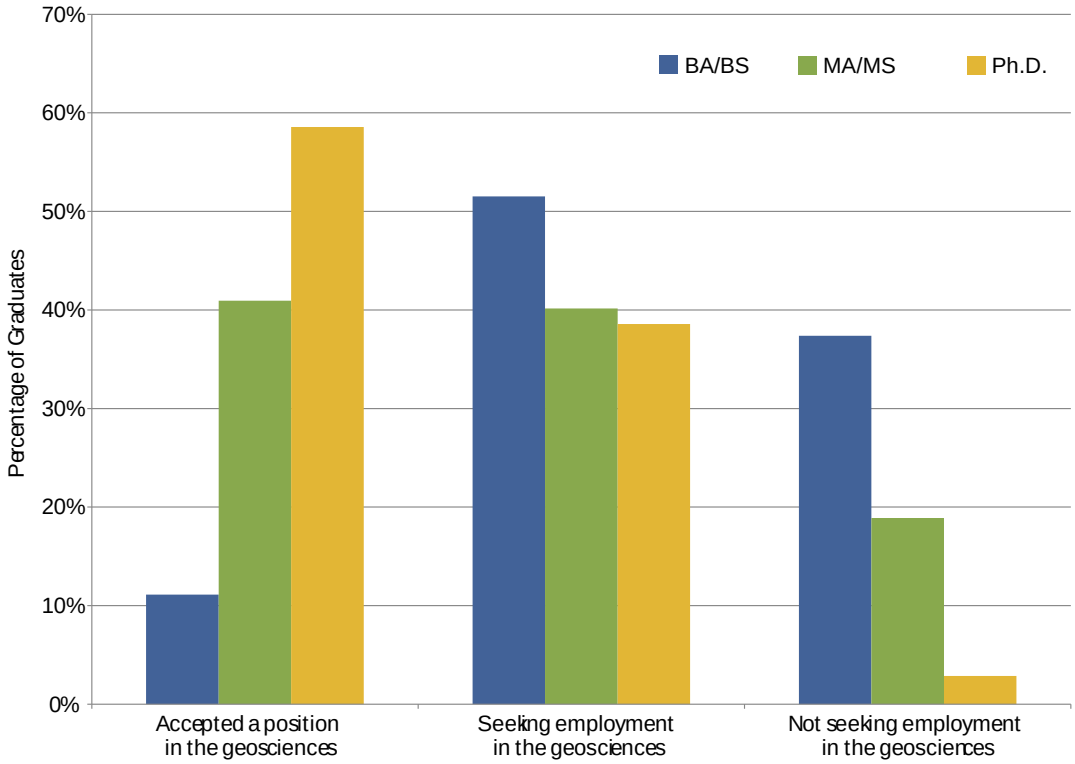
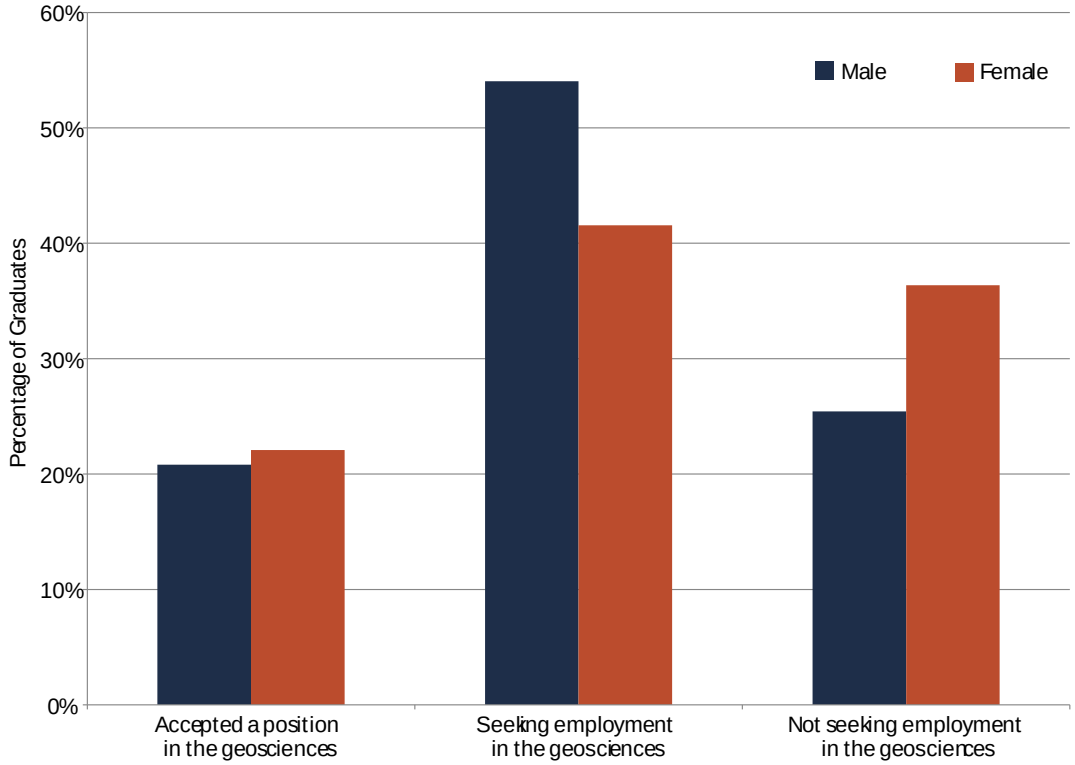
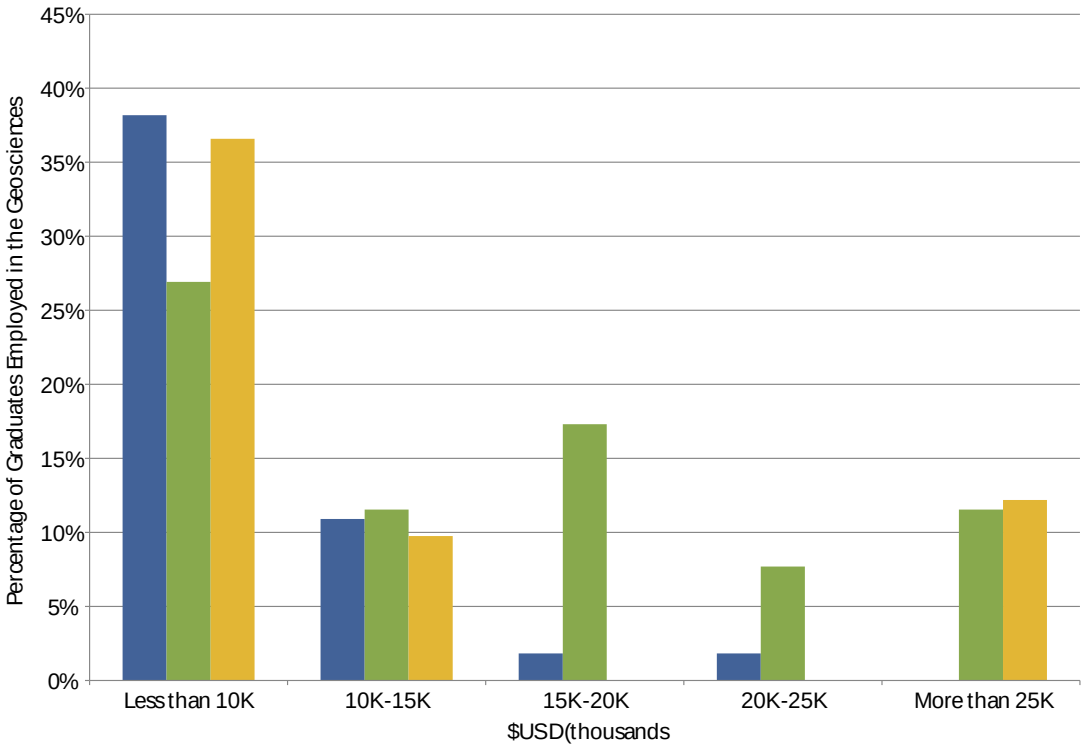


Graduate students seeking or have accepted a position within the geosciences



Graduate students seeking or have accepted a job within the geosciences by gender

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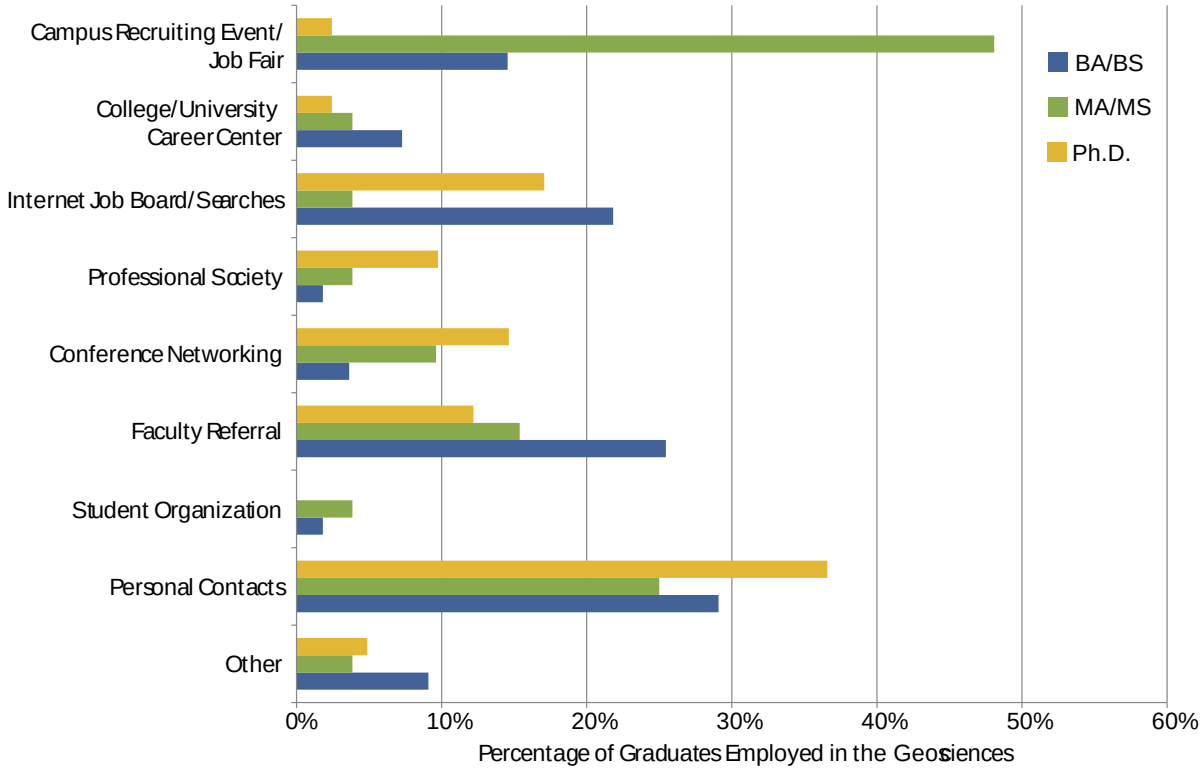
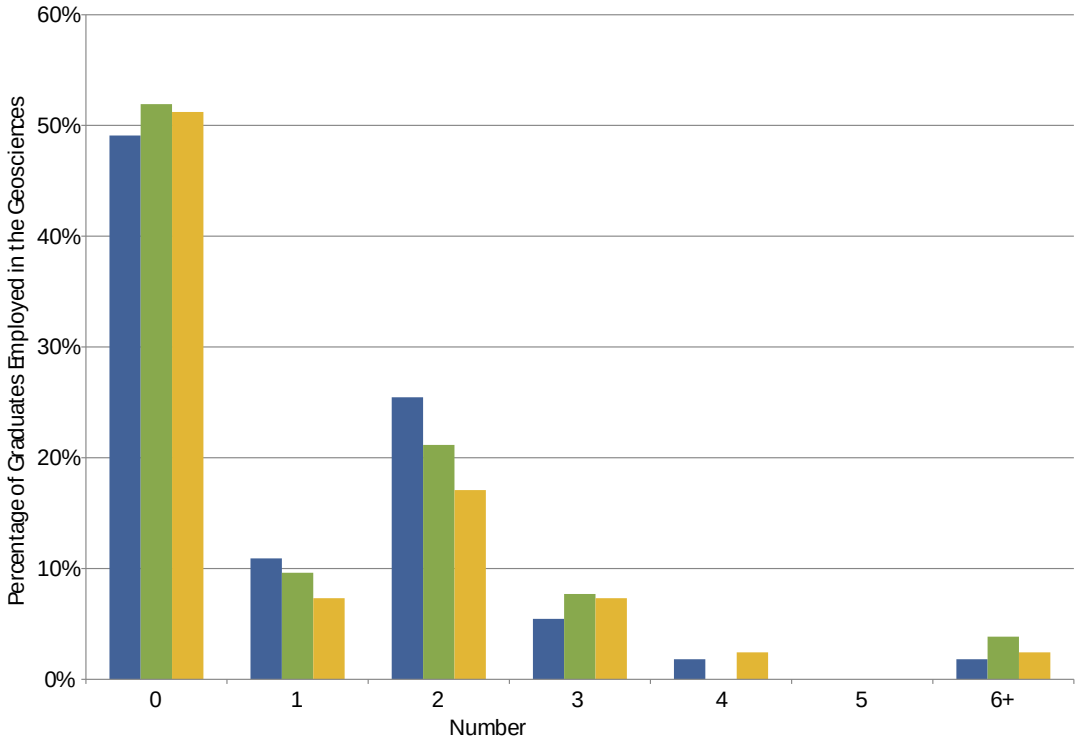
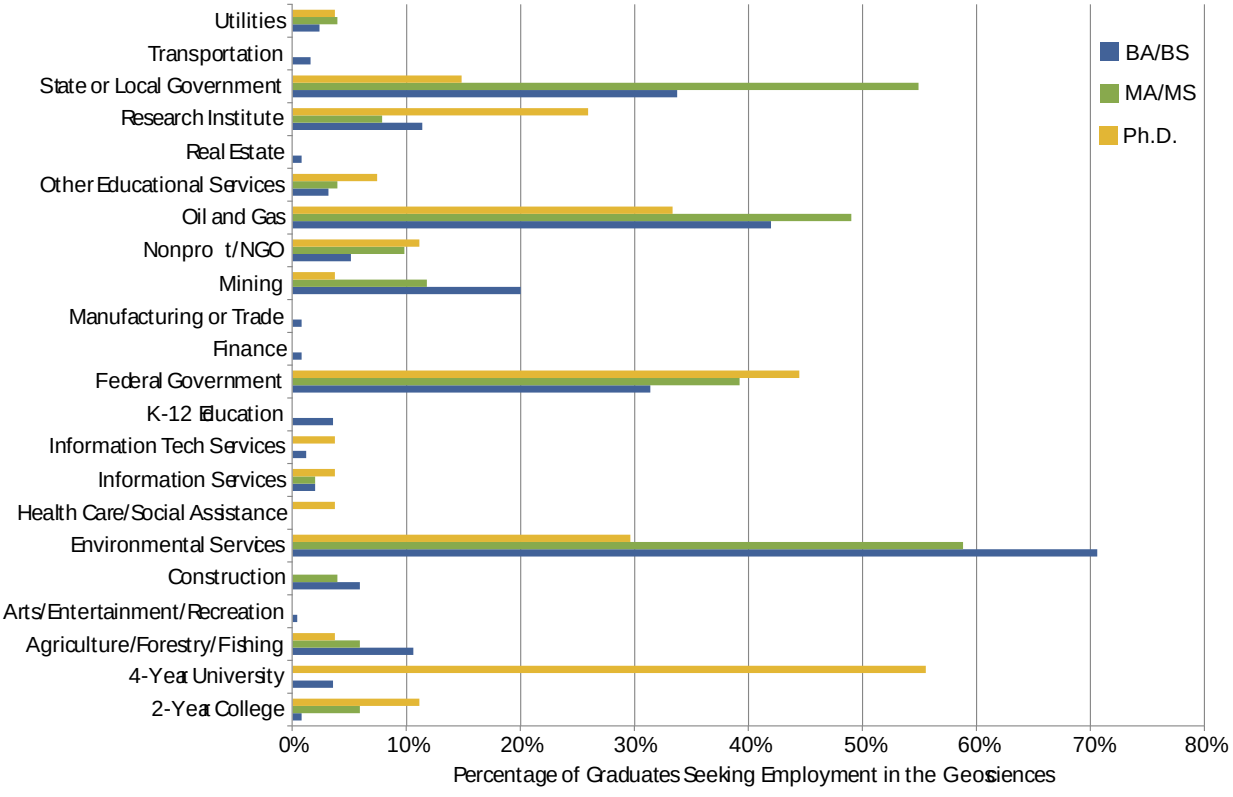
Percentage of Graduates Employed in the Geosciences
Less than 10K
10K-15K
15K-20K
20K-25K
More than 25K
$USD(thousands

Resources identified by students as useful for finding geoscience jobs

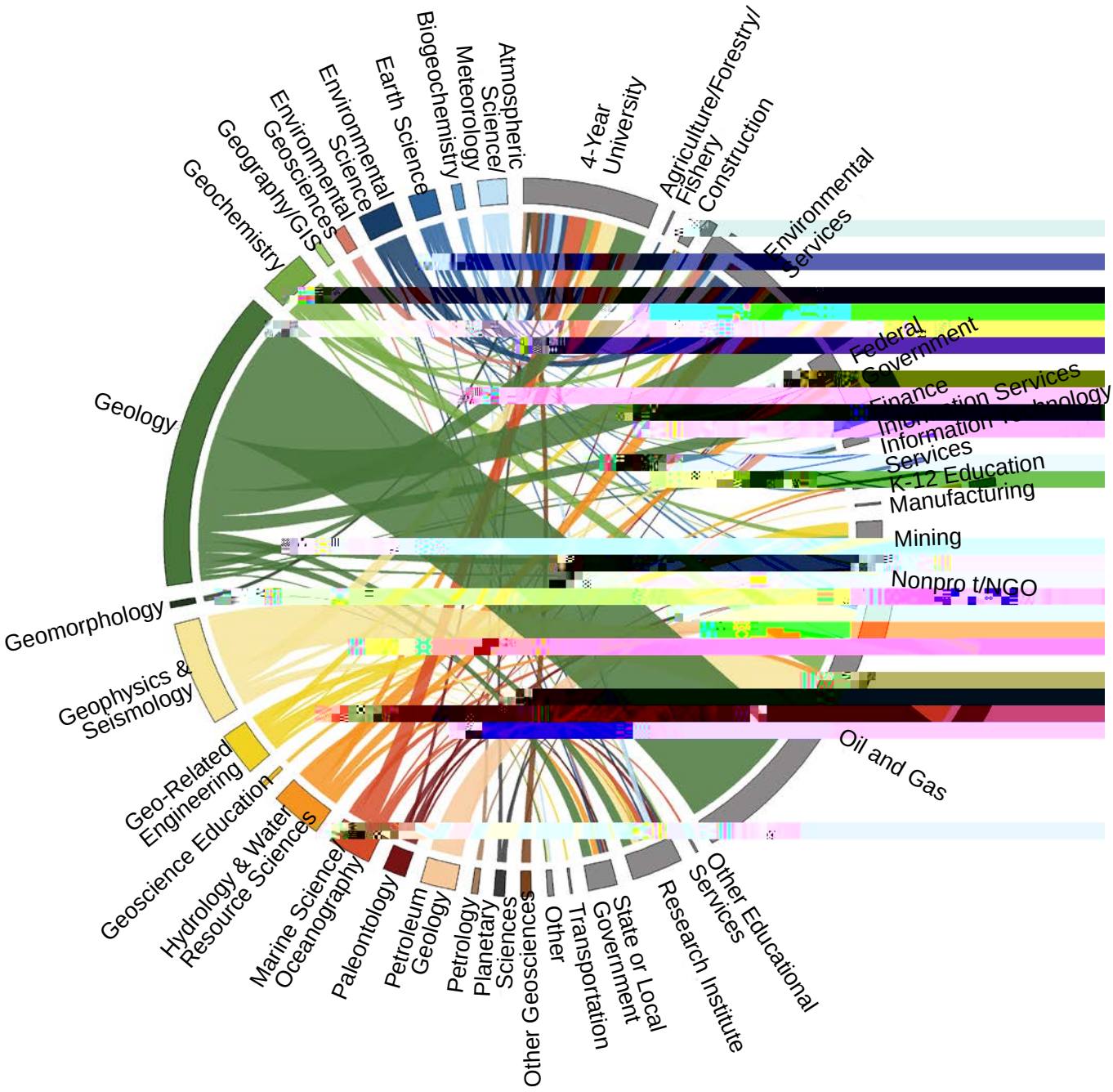




Industries of interest for graduating students seeking a job within the geosciences



Industries of geoscience graduates' first jobs by degree field for the past three years***



***The code for this visualization was modified from Kyzywinski, M. et al. Circos: an Information Aesthetic for Comparative Genomics. Genome Res (2009) 19:1693–1645

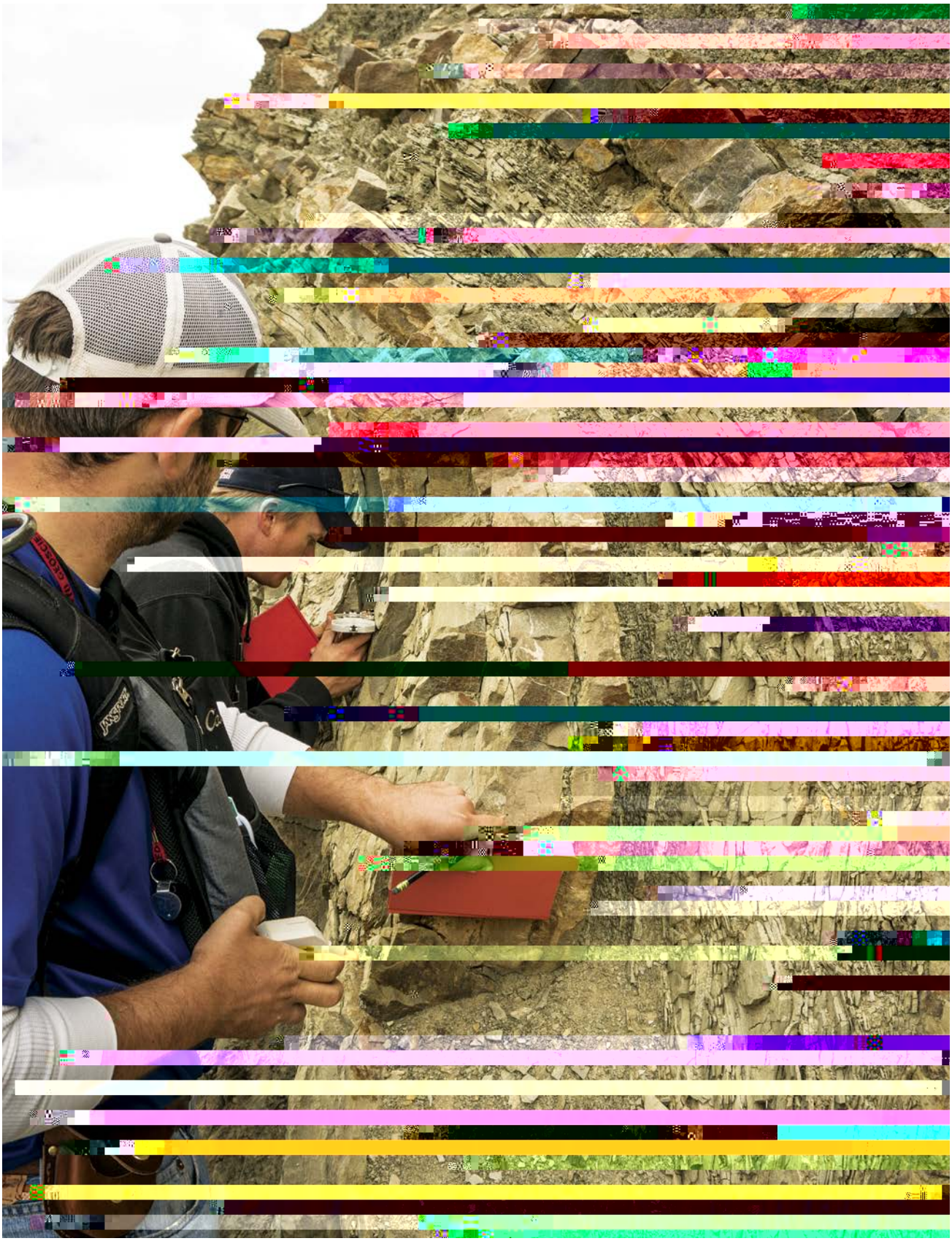
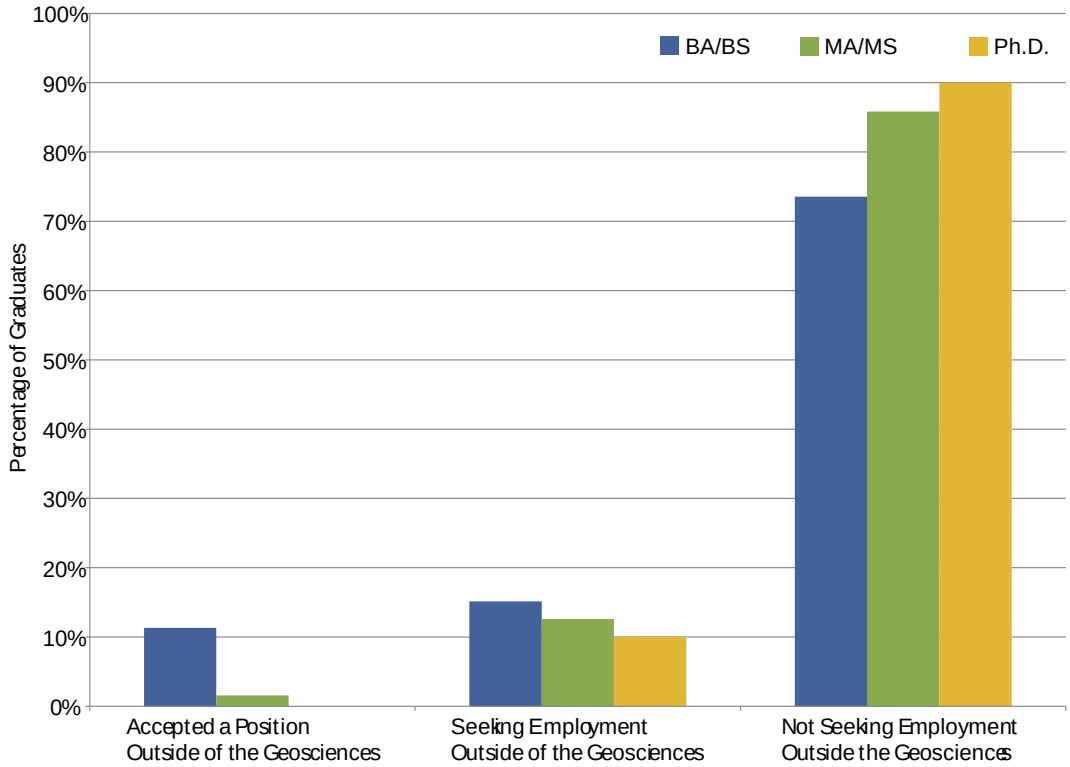


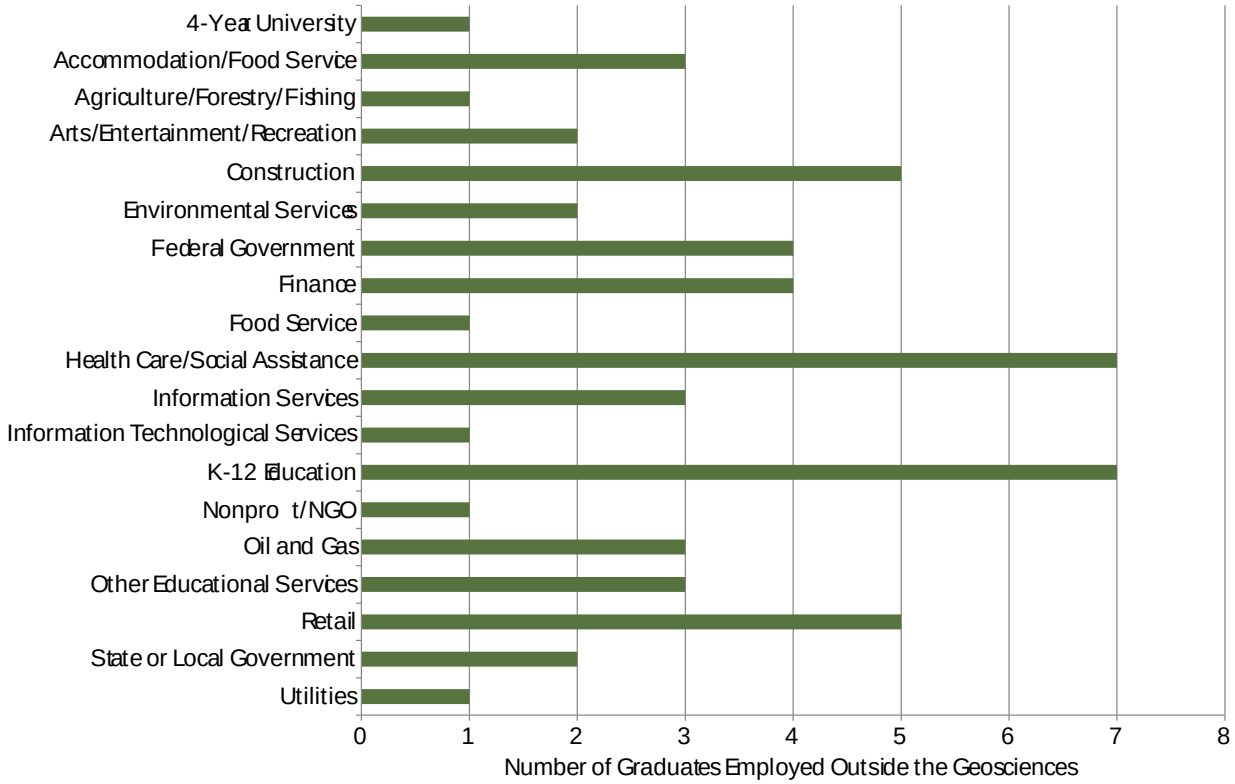
Photo by Hannah Cunningham from AGI's 2015 Life in the Field contest.
Two students measure a plunging fold.

Very few students are seeking or have secured jobs outside of the geosciences. Due to this, the data about these graduates that either accepted or are seeking a job outside of the geosciences show the number of graduates regardless of degree level. Most of the graduates that have accepted a job position outside of the geosciences chose these positions because they wanted to pursue other interests, wanted a geoscience job but had trouble getting hired, and/or needed to

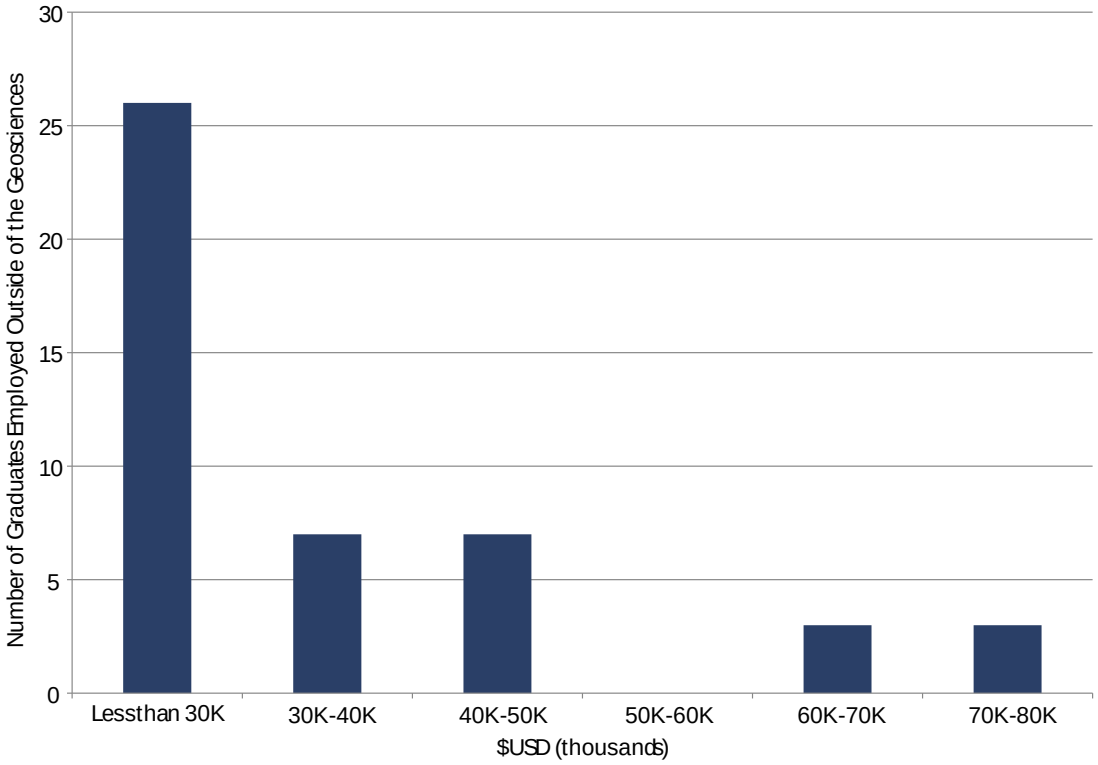
Graduating students seeking or have accepted a job position outside the geosciences

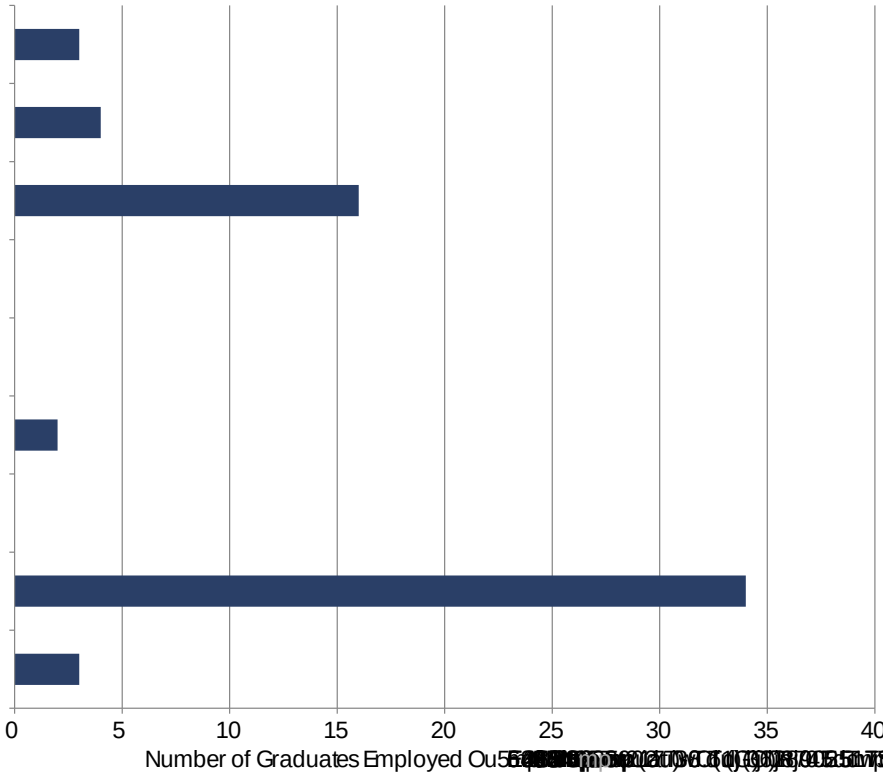


Industries where graduating students have accepted a job outside the geosciences



Starting salaries for graduating students that accepted a job outside the geosciences

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40
Number of Graduates Employed Ou

Photo by Tiffany Rivera from AGI's 2015 Life in the Field contest.

Students teaching in the field on a stormy day at Craters of the Moon National Monument, Idaho.

California State Polytechnic University, Department of Geological Sciences

California State University-Bakersfield, Department of Geology

California State University-East Bay, Department of Earth and Environmental Sciences

California State University-Fullerton, Department of Geological Sciences

California State University-Long Beach, Department of Geology

California State University-Northridge, Department of Geological Sciences

Calvin College, Department of Geology, Geography, and Environmental Studies

Carleton College, Department of Geology

Central Washington University, Department of Geological Sciences

Clemson University, Department of Environmental Engineering and Earth Sciences

Colby College, Department of Geology

College of William and Mary, Department of Geology

Colorado School of Mines, Department of Civil and Environmental Engineering

Colorado School of Mines, Department of Geology and Geological Engineering

Colorado School of Mines, Department of Geophysics

Colorado State University, Department of Geosciences

Columbia University, Lamont-Doherty Earth Observatory

Cornell College, Department of Geology

Cornell University, Department of Earth and Atmospheric Sciences

Duke University, Nicholas School of the Environment

Earlham College, Department of Geology

East Tennessee State University, Department of Geosciences

Eastern Washington University, Department of Geology

Fort Lewis College, Department of Geosciences

Franklin and Marshall College, Department of Earth and Environment

Georgia Institute of Tech Mines,

Georgia Institute of Tech Mines,

Ohio State University, Department of Geography

Ohio State University, School of Earth Sciences

Oklahoma State University, Department of Geology

Olivet Nazarene University, Department of Geological Sciences

Oregon State University, College of Earth, Ocean, and Atmospheric Sciences

Pacific Lutheran University, Department of Geoscience

Pennsylvania State University, Department of Geosciences

Pomona College, Department of Geology

Purdue University, Department of Earth and Atmospheric Sciences

Radford University, Department of Geology

Rutgers University, Department of Earth and Planetary Sciences

Sam Houston State University, Department of Geography and Geology

San Diego State University, Department of Geological Sciences

Skidmore College, Department of Geosciences

Slippery Rock University, Department of Geography, Geology, and the Environment

Sonoma State University, Department of Geology

South Dakota School of Mines and Technology, Department of Geology and Geological Engineering

Southern Utah University, Department of Geology

St. Lawrence University, Department
-8.3 (e)-5.2 (o)6.7 (log)-5.3 (ic)-3.3 (a)-5.Gm9.2 (er)-29.2 (y R)-3.3 (o)-9.2 (c)5.7 (k U)42.7 (ni)6.7 (v)7.8 (er)5.7 (si)11.7 (t)-3.2 (y
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University of Minnesota, Department of Civil, Environmental, and Geo Engineering

University of Minnesota, Department of Soil, Water and Climate

University of Minnesota, Department of Earth Sciences

University of Minnesota, Department of Forest Resources

University of Missouri, Department of Geological Sciences

University of Montana, Department of Geosciences

University of Nebraska-Lincoln, Department of Earth and Atmospheric Sciences

University of Nebraska-Omaha, Department of Geography/ Geology

University of Nevada-Reno, Mackay School of Earth Science and Engineering

University of New Hampshire, Institute for the Study of Earth, Oceans, and Space

University of New Mexico, Department of Earth and Planetary Sciences

University of North Carolina at Chapel Hill, Department of Geosciences

University of North Carolina at Wilmington, Department of Geography and Geology

University of North Dakota, School of Geology and Geological Engineering

University of North Georgia, Institute for Environmental and Spatial Analysis

University of Northern Iowa, Department of Earth Science

University of Oklahoma, School of Geology and Geophysics

University of Pennsylvania, Department of Earth and Environmental Science

University of Pittsburgh, Department of Geology and Planetary Sciences

University of Rhode Island, Department of Geosciences

University of Southern Indiana, Department of Geology

University of St. Thomas, Department of Geology

University of Tennessee at Chattanooga, Department of Geology

University of Tennessee at Martin, Department of Agriculture and Applied Sciences

University of Texas at Arlington, Department of Earth and Environmental Sciences

University of Texas at Austin, Jackson School of Geosciences

University of Texas at Dallas, Department of Geosciences

University of Texas at El Paso, Department of Geological Sciences

University of Tulsa, Department of Geosciences

University of Utah, College of Mines and Earth Sciences

University of Virginia, Department of Environmental Sciences

University of Washington, Department of Earth and Space Sciences

University of Washington, Department of Oceanography

University of Wisconsin-Green Bay, Department of Natural and Applied Sciences

University of Wisconsin-Green Bay, Environmental Science & Policy Program

University of Wisconsin-Eau Claire, Department of Geology

University of Wisconsin-Madison, Department of Geology and Geophysics

University of Wisconsin-River Falls, Department of Geology

University of Wisconsin-Stevens Point, Department of Geography and Geology

University of Wyoming, Department of Geology and Geophysics

Utah State University, Department of Geology

Valdosta State University, Department of Physics, Astronomy, and Geosciences

Vanderbilt University, Department of Earth and Environmental Sciences

Virginia Polytechnic Institute and State University, Department of Geosciences

Washington University in St. Louis, Department of Earth and Planetary Sciences

Wayne State University, Department of Geology

Weber State University, Department of Geosciences

Wesleyan University, Department of Earth and Environmental Sciences

West Chester University, Department of Geology and Astronomy

West Virginia University, Department of Geology and Geography

Western Kentucky University, Department of Geography and Geology

Western Michigan University, Department of Geosciences

Western State Colorado University, Department of Geology

Western Washington University, Department of Geology

Wheaton College, Department of Geology and Environmental Science

Wilkes University, Department of Environmental Engineering and Earth Sciences

Williams College, Department of Geosciences

Wittenberg University, Department of Geology

Wright State University, Department of Earth and Environmental Sciences

Appendix II

Carnegie Classifications of Institutions of Higher Learning (http://carnegieclassifications.iu.edu//resources/links.php)

This classification system was used for some of the analysis of the spring 2015 results of AGI's Geoscience Student Exit Survey. The following are the definitions for the classification system and the participating institutions belonging to each category as defined and categorized by the Carnegie Foundation for the Advancement of Teaching.

Baccalaureate Colleges—Arts & Sciences (Bac/A&S)

Baccalaureate Colleges—Diverse Fields (Bac/Diverse)

Includes institutions where baccalaureate degrees represent at least 10 percent of all undergraduate degrees and where fewer than 50 master's degrees or 20 doctoral degrees were awarded during the update year. Excludes Special Focus Institutions and Tribal Colleges.

Among Institutions where bachelor's degrees represented at least half of all undergraduate degrees, those with at least half of bachelor's degree majors in arts and science fields were included in the "Arts & Sciences" group, while the remaining institutions were included in the "Diverse Fields" group.

Exit Survey Departments (Bac/A&S):

Amherst College
Bates11.9 (n)7.9 (g I)15.9 ar18.7 (t)5.77]TJ 0 -1(Fie).9 (0e)2.1 (c)5.1.7 (r)11.8 (t)-6. c Ilege7]TJ 0 -1(Fie).9 (0e)2.o9 (n87.7 (

California State Polytechnic University
California State University-Bakersfield
California State University-East Bay
California State University-Fullerton
California State University-Long Beach
California State University-Northridge
Eastern Washington University
Grand Valley State University
Indiana University-Purdue University
Millersville University
Montclair State University
Morehead State University
Northeastern Illinois University
Norwich University
Olivet Nazarene University
Radford University
Slippery Rock University
Sonoma State University
Southern Utah University
SUNY New Paltz
SUNY Oswego
SUNY Potsdam
Tarleton State University
Tennessee Tech University
University of North Carolina at Wilmington
University of North Georgia
University of Northern Iowa
University of Southern Indiana
University of Tennessee at Chattanooga
Valdosta State University
West Chester University
Western Kentucky University
Western Washington University
Wilkes University

Exit Survey Deparrny

Univeг6.3eo (7 (t)-u3 (n K)23l3 (e3T* [(T)97ii)6.7 (v))11.7 (r)7.8 (g)-5.3 (i)-3.2 (a)]TJ T* [(U)42.7 (ni)6.7

Uny

University of Hawaii-Manoa
University of Houston
University of Illinois at Chicago
University of Illinois
University of Iowa
University of Kansas
University of Kentucky
University of Maryland
University of Massachusetts
University of Michigan
University of Minnesota
University of Nebraska-Lincoln
University of New Mexico
University of North Carolina at Chapel Hill
University of Oklahoma
University of Pennsylvania
University of Pittsburgh
University of Texas at Austin
University of Utah
University of Virginia
University of Washington
University of Wisconsin-Madison
Vanderbilt University
Virginia Polytechnic Institute and State University
Washington University in St. Louis
Wayne State University
University of Texas at El Paso
University of Wyoming
Utah State University
West Vir (a)8.7 (1 e9 :5i9tR0l (em0n (mi U)42.7 (ni)6.8 (v)3 (a) (s

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Exit Survey Departments (RU/H):

Baylor University
Boston College
Bowling Green State University
Brigham Young University
Clemson University
College of William and Mary
Colorado School of Mines
Miami University of Ohio
Michigan Technological University
Northern Arizona University
Northern Illinois University
Oklahoma State University
Portland State University
San Diego State University
Temple University
Texas Tech University
University of Alabama
University of Alaska-Fairbanks
University of Denver
University of Louisiana at Lafayette
University of Maryland-Baltimore County
University of Memphis
University of Missouri
University of Montana
University of Nevada-Reno
University of New Hampshire
University of North Dakota
University of Rhode Island
University of Texas at Arlington
University of Texas at Dallas