

Investigating the Introductory Geoscience Course

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Abstract

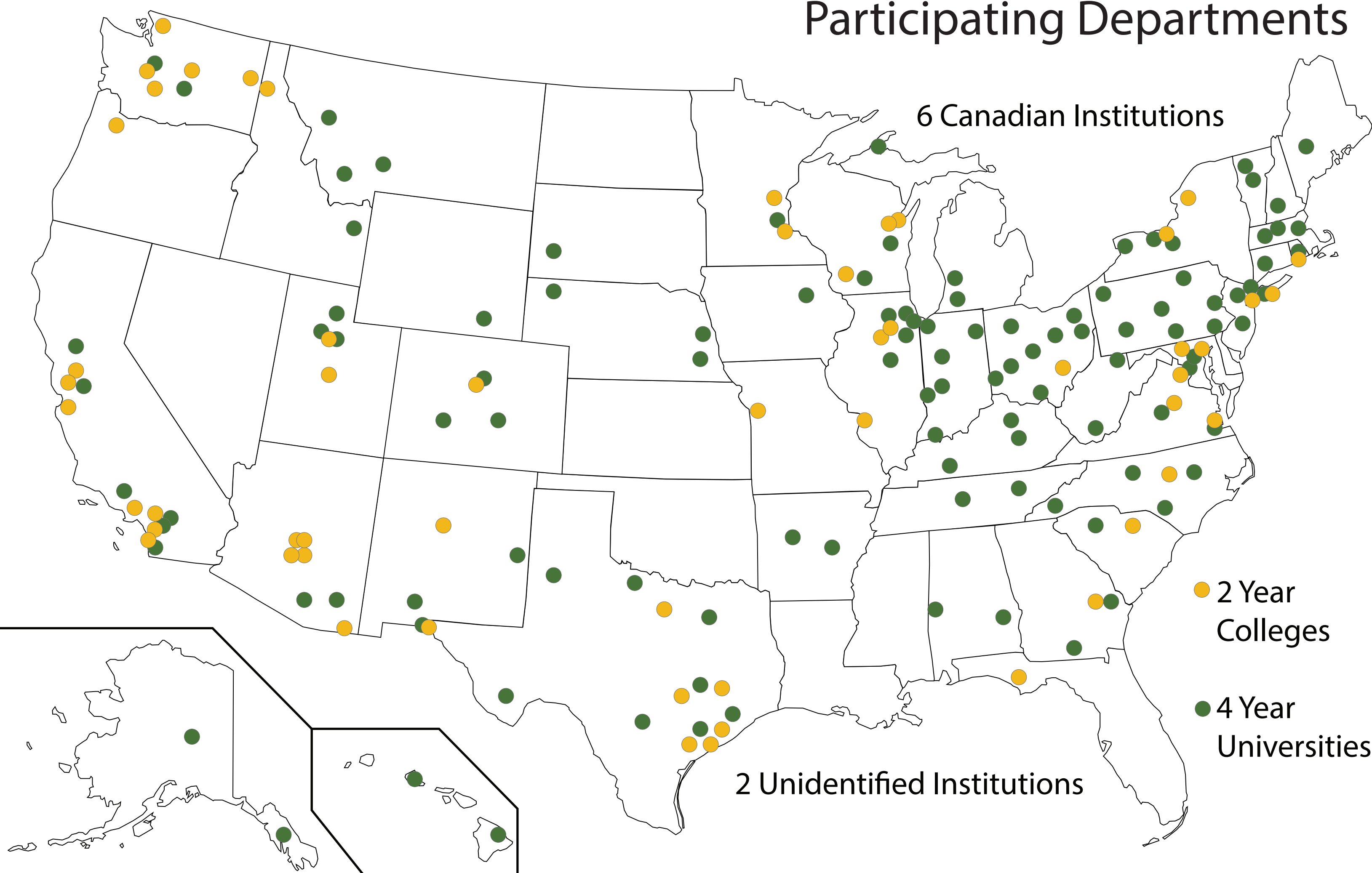
According to the American Geosciences Institute's Exit Survey for 2105 geoscience graduates, 62% of undergraduates choose to major in the geosciences during their first, second, or third years in college, indicating the importance of the introductory geoscience courses as a recruitment tool for future majors. Not only are the introductory courses key for recruitment, often they contain non-science students trying to complete their science credit. Therefore, the geoscience introductory courses may be the last opportunity to teach non-science majors how to think critically and scientifically. Over a decade ago, AGI released a report presenting the enrollments in introductory geoscience courses to establish a baseline understanding of the number of students taking these introductory courses in broad subject categories.

Due to the continued importance of introductory geoscience courses, AGI released a new survey on introductory geoscience courses in 2015 asks questions related to total enrollments and class sizes, title/subject area of course, the existence of a complementary lab course, the number of faculty teaching introductory courses, and the total number of course hours for a semester.

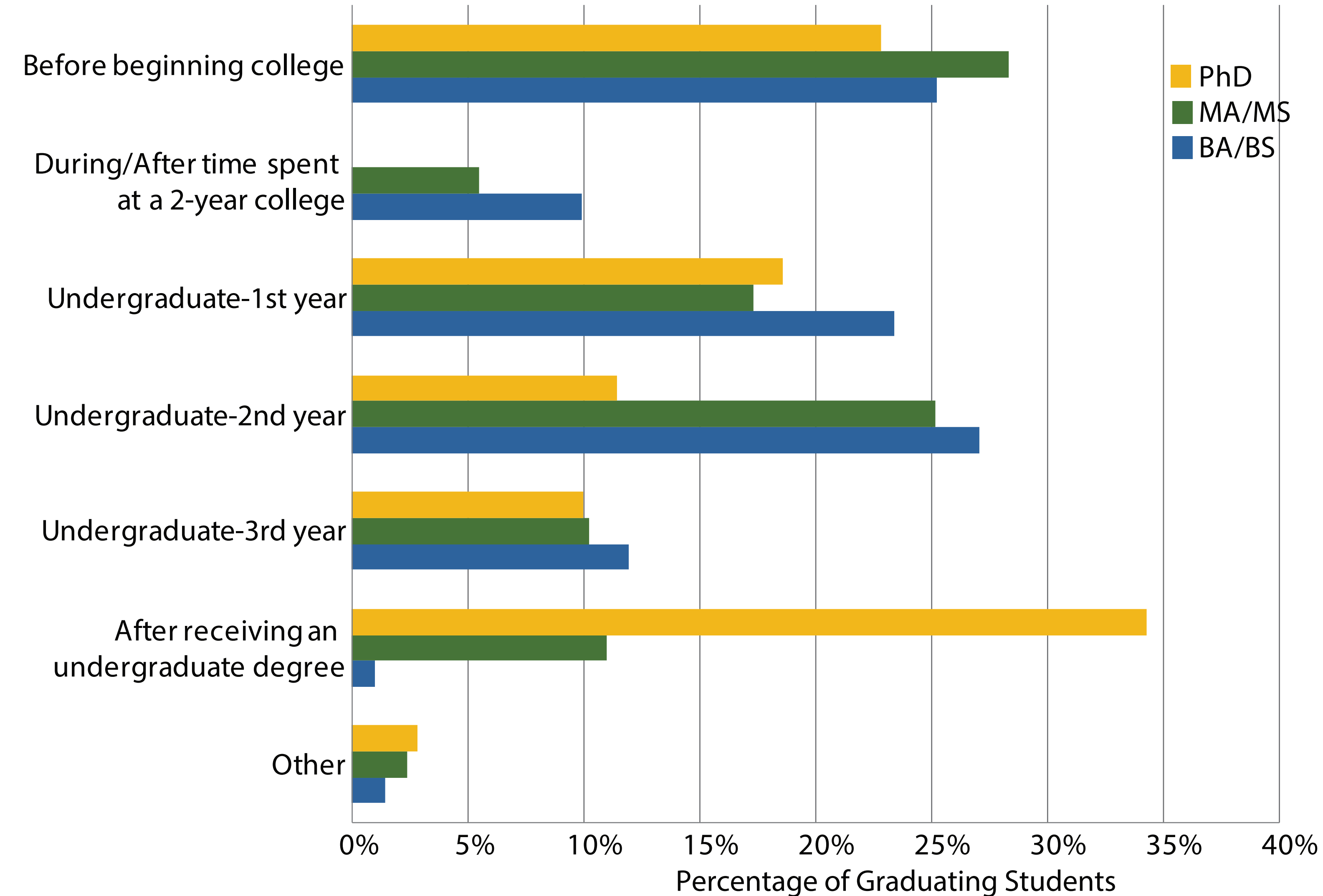
124 geoscience departments at 4-Year Institutions participated, approx. 20% of all geoscience departments at 4-Year Institutions in North America

57 geoscience departments/programs at 2-Year Colleges participated, approx. 19% of all geoscience departments/programs at 2-Year Colleges in North America

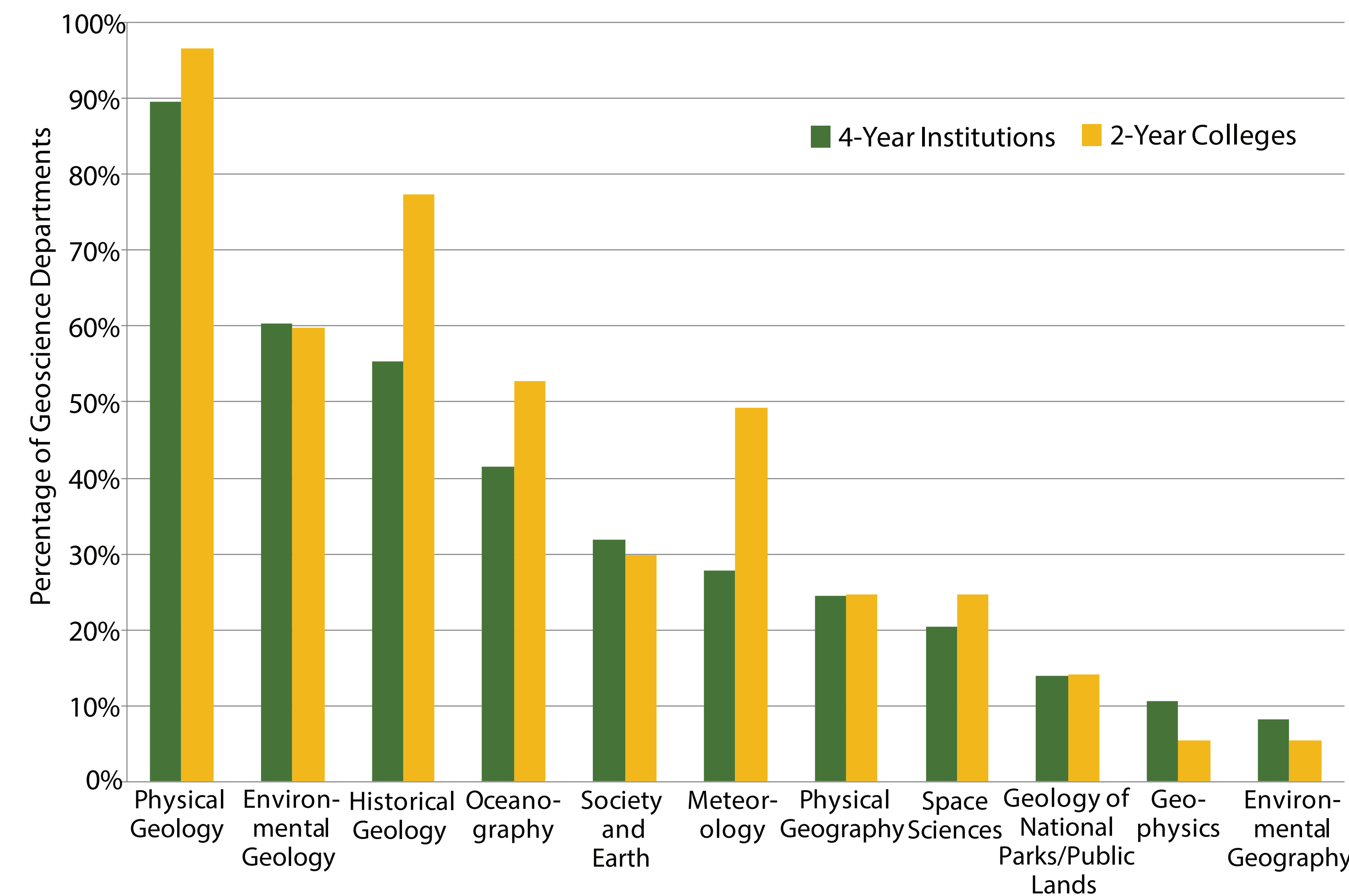
Participating Departments



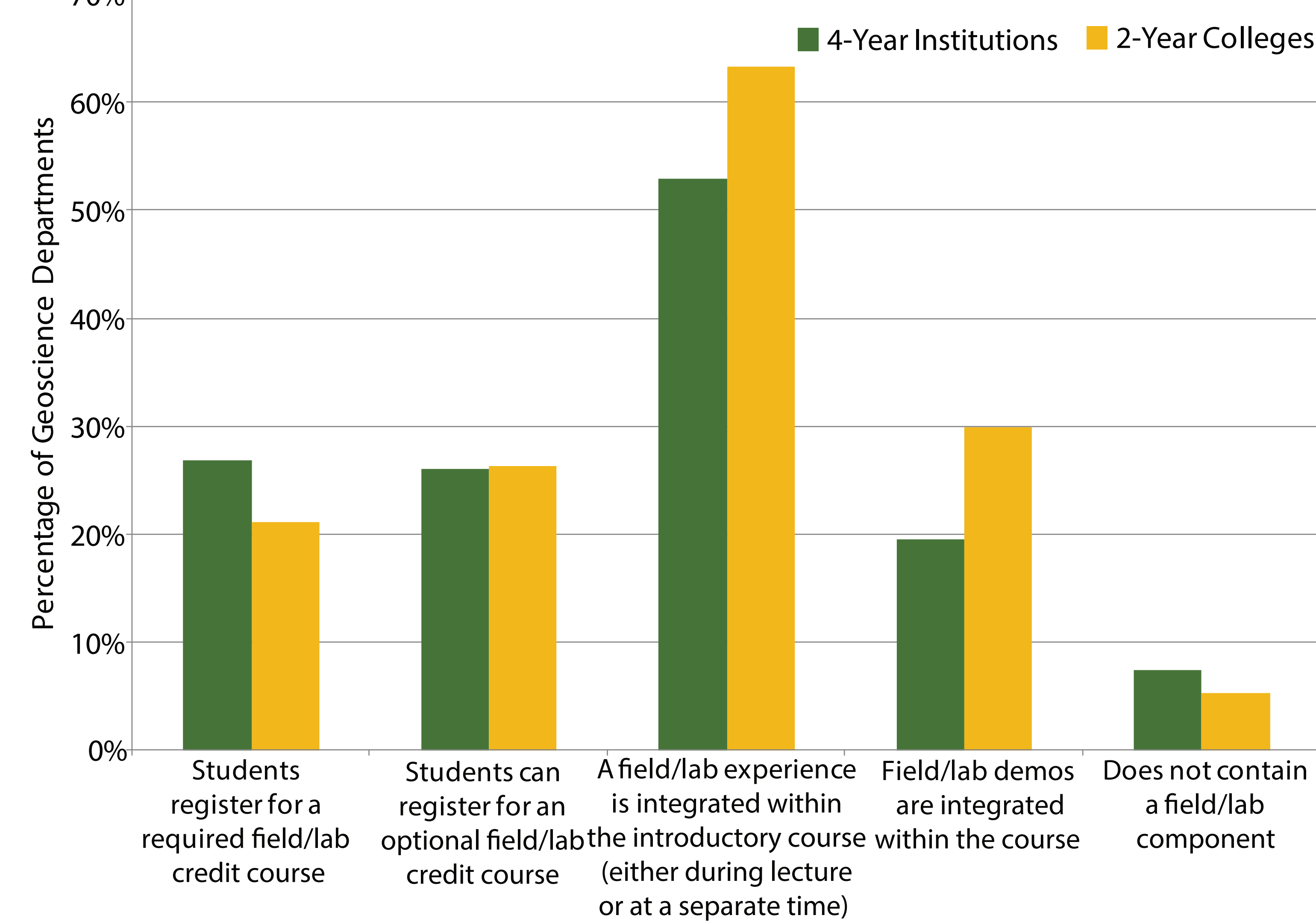
When Students Decide to Major in the Geosciences



Major Subject Areas of Introductory Geoscience Courses



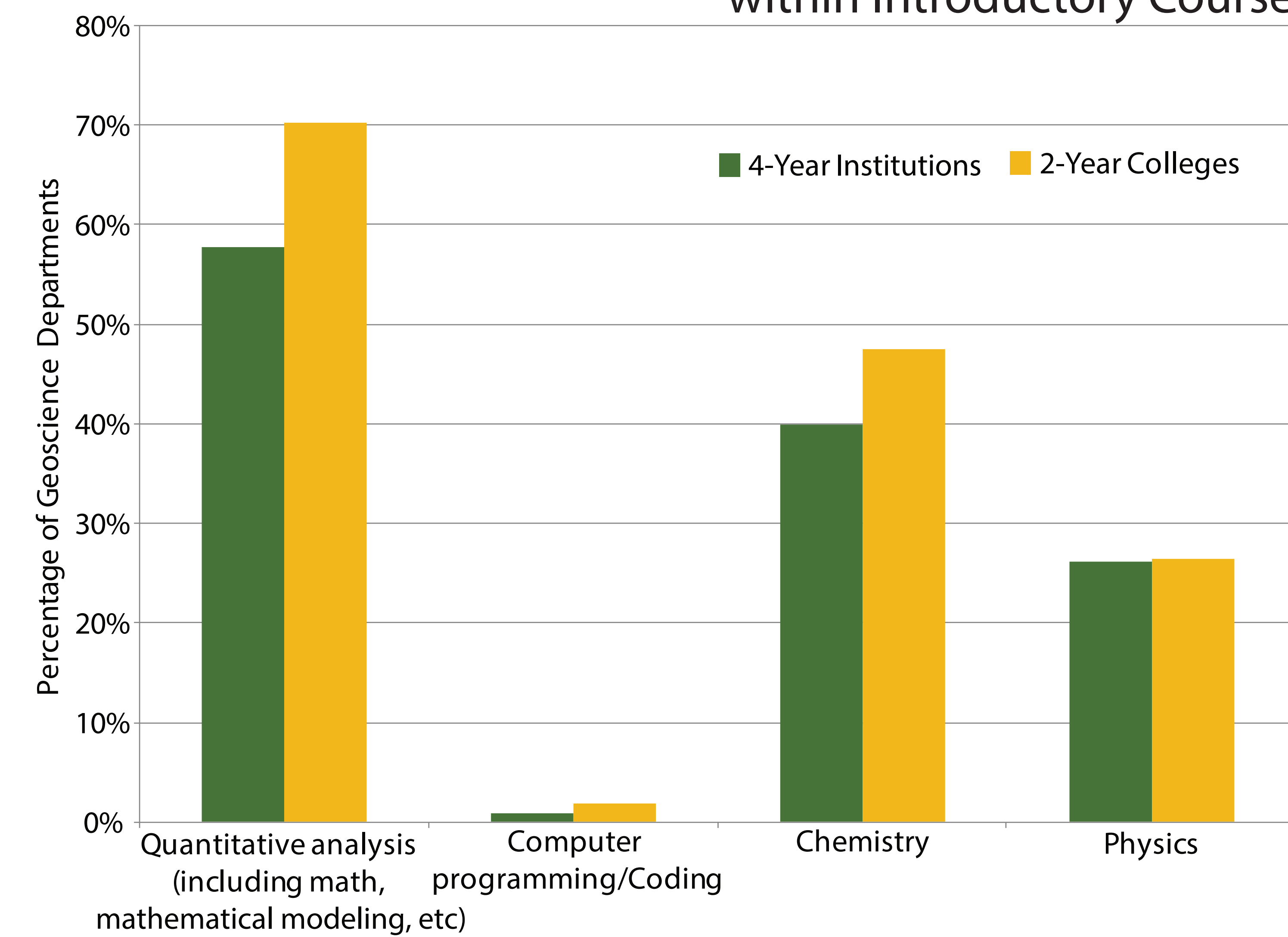
Integration of Field/Lab Components within Introductory Courses



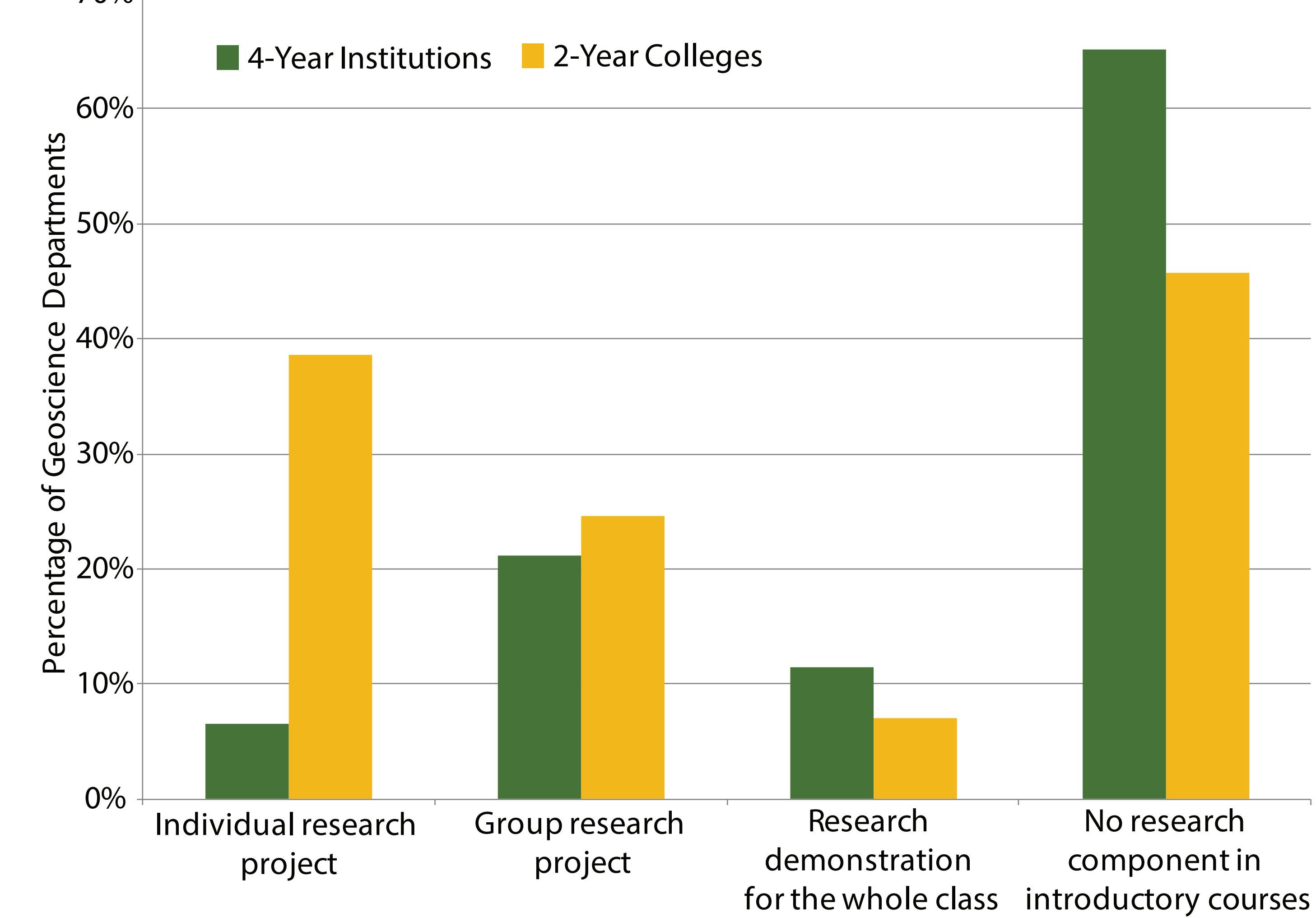
Comparison of the Size and Abundance of the Introductory Courses Between Different Categories of Institutions

Institution Category	# of Class Sections per Semester	# of Faculty Teaching per Semester	# of Students Enrolled per Semester
2-Year Colleges	Avg: 11 Ranging from 1-50	Avg: 5 Ranging from 1-20	Avg: 29 Ranging from 12-120
Baccalaureate Institutions	Avg: 3 Ranging from 1-9	Avg: 3 Ranging from 1-5	Avg: 33 Ranging from 5-65
Master's Institutions	Avg: 6 Ranging from 1-23	Avg: 4 Ranging from 2-11	Avg: 49 Ranging from 12-150
Doctoral Institutions	Avg: 5 Ranging from 1-16	Avg: 4 Ranging from 1-11	Avg: 128 Ranging from 20-600
Canadian Institutions	Avg: 2 Ranging from 1-4	Avg: 2 Ranging from 1-4	Avg: 137 Ranging from 30-270

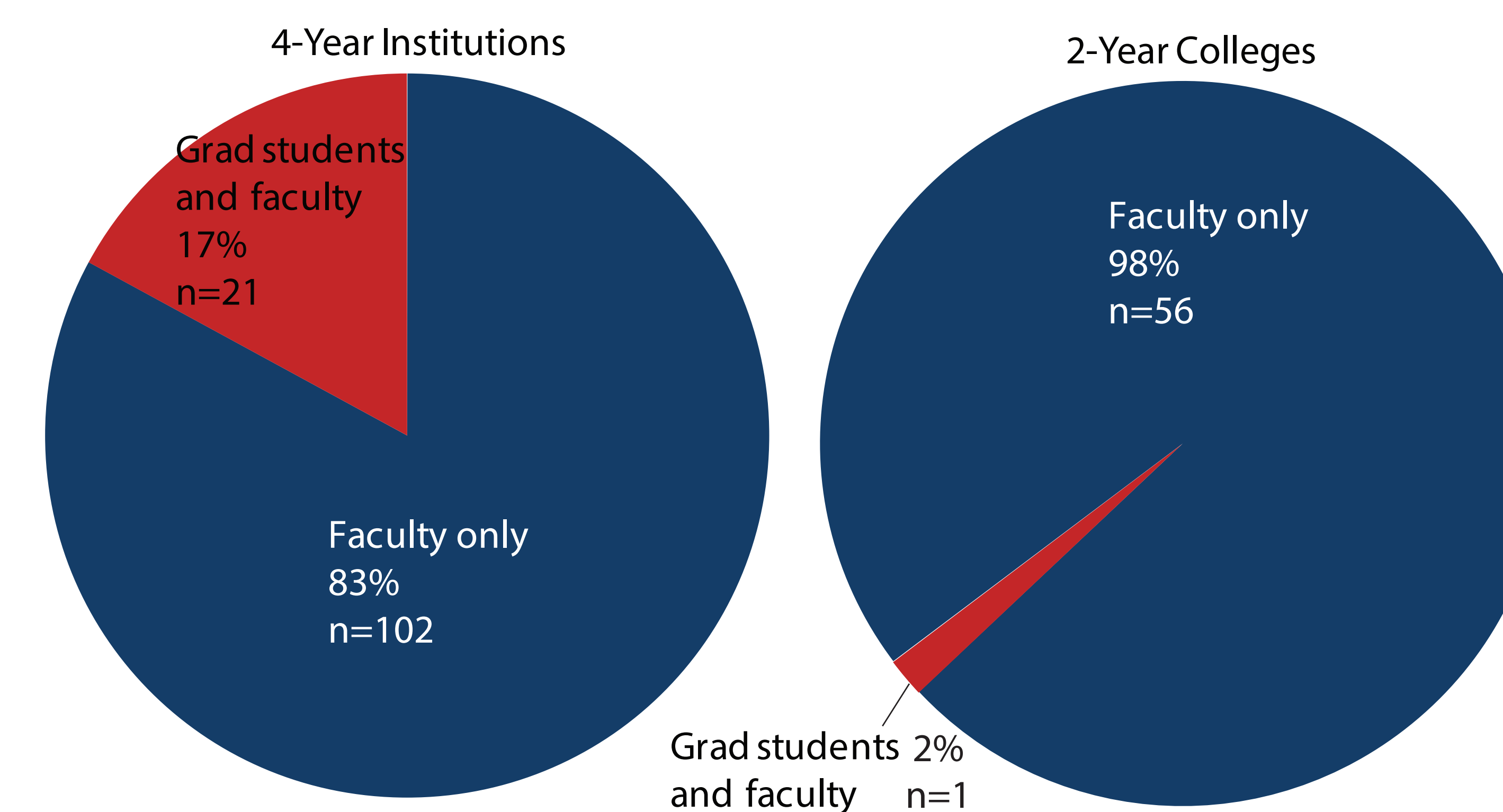
Integration of Math, Chemistry, and Physics within Introductory Courses



Integration of Research Components within Introductory Courses



Who are Teaching the Introductory Courses?



Educational Methods Integrated to Engage and Teach Introductory Students

Teaching/Learning Methods	
4-Year Institutions	2-Year Colleges
Flipped Classroom	Flipped Classroom
Group Based Work	Active Learning
Online Courses	Hybrid Instruction
Online Course Management Systems	Online Courses
Active Learning	Integrate/SERC Modules
Inquiry Based Learning	Inquiry Based Learning
Discussion Based Lecture	Group Based Work
Peer to Peer Learning/Teaching	Online Course Management Systems
Hybrid Instruction	Student Centered Teaching
Real Life Case Studies	Motivation
Think PairShare	Metacognition
Concept Mapping	Gallery Walk
	Jigsaws
	Journaling
	Peer to Peer Learning/Teaching
	Exam Wrappers
	Think Pair Share
Introduced Technology	
4-Year Institutions	2-Year Colleges
Real Time Polling (ex. Clickers)	Real Time Polling (ex. Clickers)
Google Earth	GPS/GIS
Online Texts/eBooks	Google Earth
Real Time Data	Open Source Material
iPads	SmartBoards
GIS	Gigapans
3D Geowall	ePortfolios
Google Chat	
Mobile Games	
Interactive Tutorials	
Lecture Capture	
Integrated Field/Lab/Research	
4-Year Institutions	2-Year Colleges
Field Trips/Activities	Simulated Field Experiences
Field-Based Learning	Group Research Projects
Online Lab Instruction	Large Dataset Analysis
Individual Research Projects	Individual Research Projects
Small Group Research Projects	
Extended Field Trip	
Visualization Labs	

For More Information about AGI's Workforce Program

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