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Undergraduate Recruitment/Retention Efforts

Common themes across institution type:
Retention was not a major issue.
Recruitment was an issue across institution type.

Some institution specific issues:
Two-year institutions tended to emphasize employment opportunities in recruitment.
Four-year institutions tended to better coordinate efforts with institutional recruitment offices.
Master's institutions commonly cited the importance of relationships with K12 and community colleges.
Doctoral institutions tended to more often hire staff to help with recruitment.

Common themes for recruiting efforts included:
Effective teaching of intro courses, with active recruitment of majors.
Early introduction to field experiences.
Working with the institutional recruitment offices.
'Training' academic advisors about the geosciences.
Support for the undergraduate environment, including study space and student lounges.
Lots of contact, involving faculty, with recruited students.
Revising curricula to have societal relevance.
Building relationships with K12 and community colleges.
Support for student geology clubs.
Raising scholarship money for undergraduates.
Effective departmental websites and publications.

Some less common efforts that seem relevant/promising:
Using junior and senior students to assist in visiting high schools for recruitment.
Using federal funding (e.g., NSF GeoScope and OEDG) to recruit minority students and work with K12 teachers.
Releasing faculty time to focus on recruitment.
Adding honors sections to intro/general education courses to attract best students.
Offering 'hot topic' first year courses (e.g., Sumatra, Katrina) to attract students.
Raising alumni funds to send undergraduates to GSA.
Rewarding faculty successfully recruit new majors.

Representative quotes:
"We give recruitment talks in every introductory class semester";
"Ever-closer work with community college partners in transfer student recruitment"; "If it (recruitment) isn't an issue at all times, it becomes your problem"; "(We) provide departmental resources (student lounge / new computer lab) and support student organizations in the department."

Conclusions

This survey, with 364 respondents and an approximate 40% response rate, reached a broad representation of two-year, four-year, master's and doctoral departments, both public and private. While there is much still to be learned from the recently completed survey, it is clear that there is much agreement across institution type on the measures of successful departments. Individually, well-defined missions, effective curricula, building departmental teamwork, effective recruitment, developing leadership among faculty and students, communicating the importance of the geosciences, and building effective partnerships all received ranking of nearly 4 or better out of a possible 5. When asked to single out the most important measure, three stood out across institution type: effective curricula, recruitment and building partnerships.

Similarly, declining resources were the most common threat across all institution types, although the type of resource (state, federal, private) varied across institution type. Opportunities varied, but interdisciplinary and multidisciplinary research and teaching were common themes.

While we found significant variations between institution types, the degree of common perspective across institution types was striking.

Final results of an analysis of the survey responses will be published in 2006, and will be available at the Science Education Resource Center at http://serc.carleton.edu/departments/survey_results.html

Acknowledgements

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Introduction

We sent a request to just over 900 two-year, four-year, master's, and doctoral geoscience and atmospheric science departments at in the US and Canada to take an online survey. This survey grew out of an earlier survey of 61 geoscience departments drawn primarily from the American Association of Universities and a workshop entitled "Building Strong Geoscience Departments" held in February 2005 at the College of William and Mary. At the workshop 25 participants discussed the state of geoscience departments and developed ideas for strengthening departments. A total of 364 departments completed the online survey for a response rate of approximately 40%.

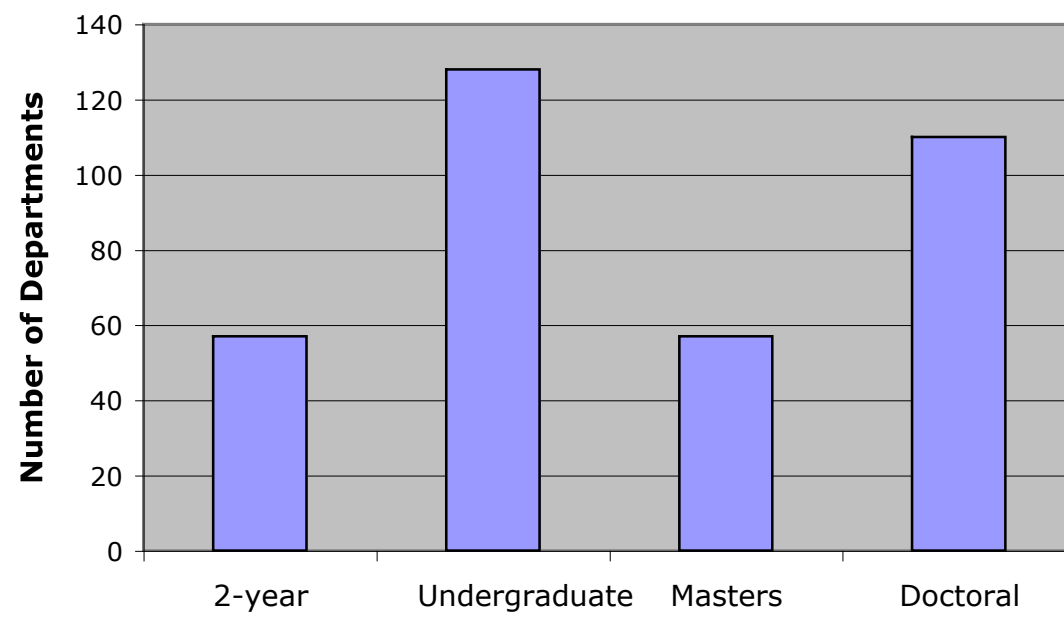
The new survey gathers demographic information, addresses perceived threats and opportunities, has questions on characteristics of strong departments, and addresses effective recruitment efforts for students and faculty, among other questions.

Preliminary analysis of the survey results indicate that there is much more in common between various institutional types than differences. For example, a significant majority of departments indicate that effective curricula and recruitment are two of the most important measures of successful departments. Recruitment efforts show some variation between institution types, and there are some differences in opportunities and threats. Diminishing resources are a common threat across all institution types.

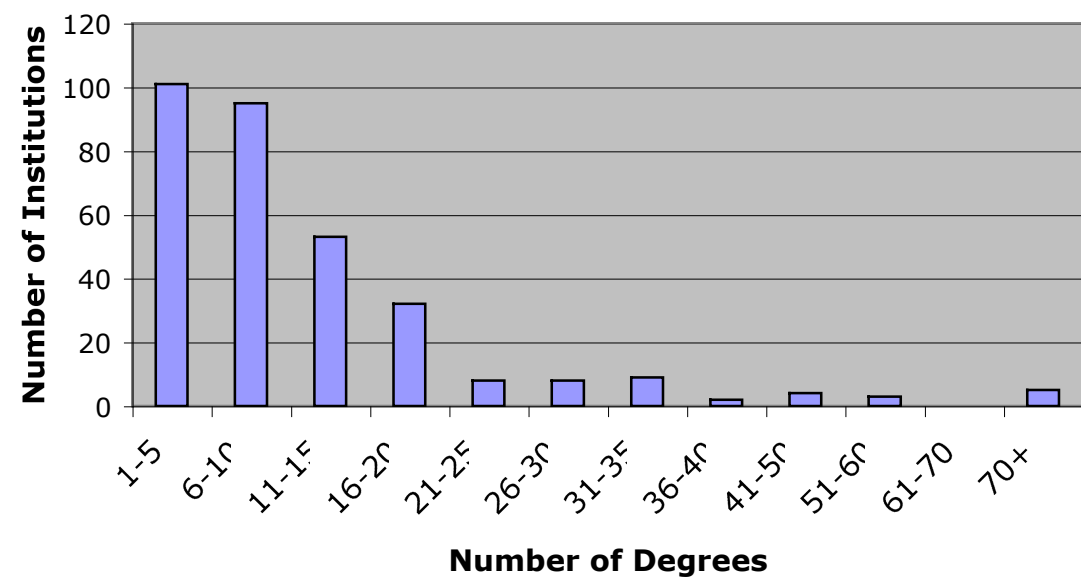
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Demographics

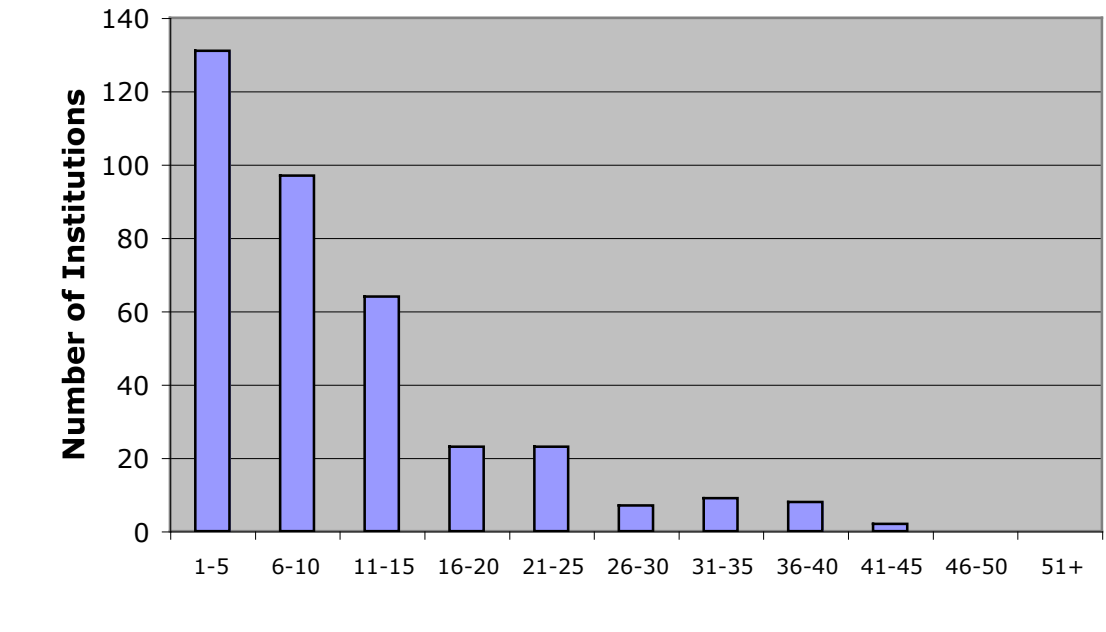
Department description



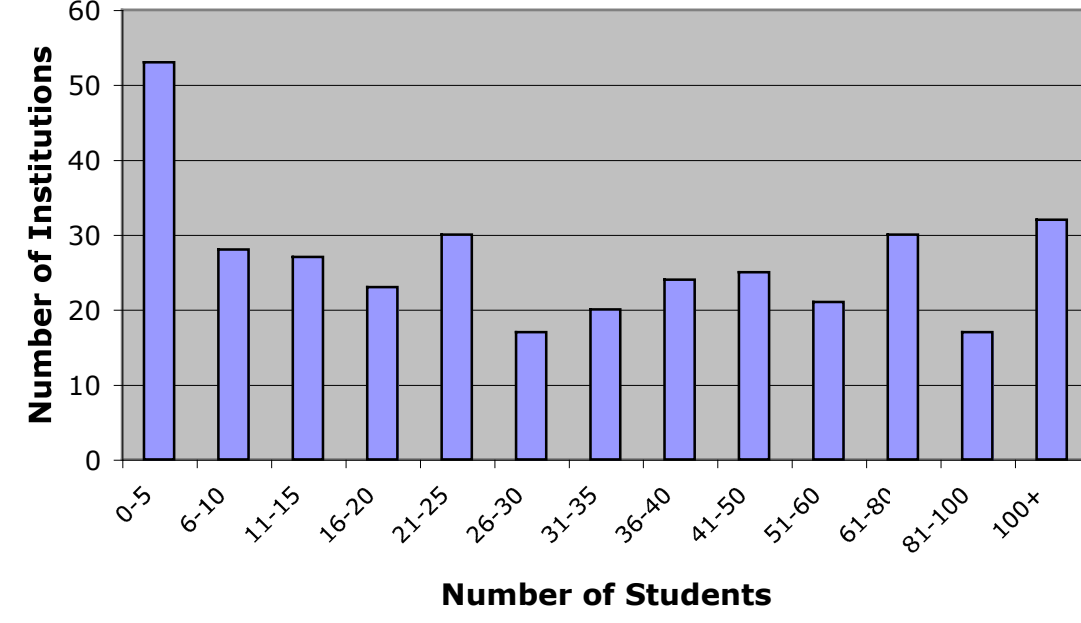
Number of undergraduate degrees per year



Full-time equivalent (FTE) faculty

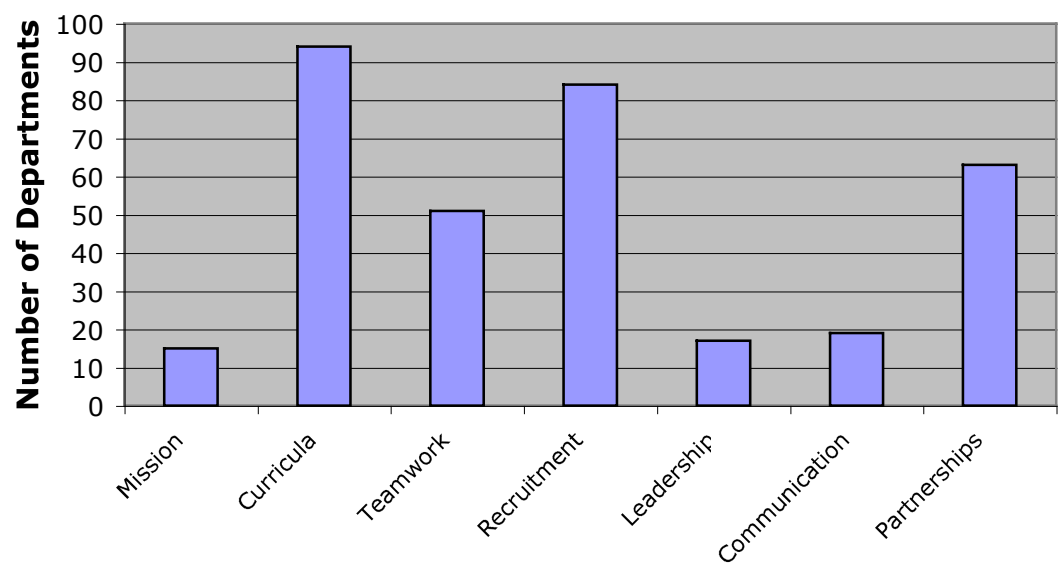


Number of undergraduate majors

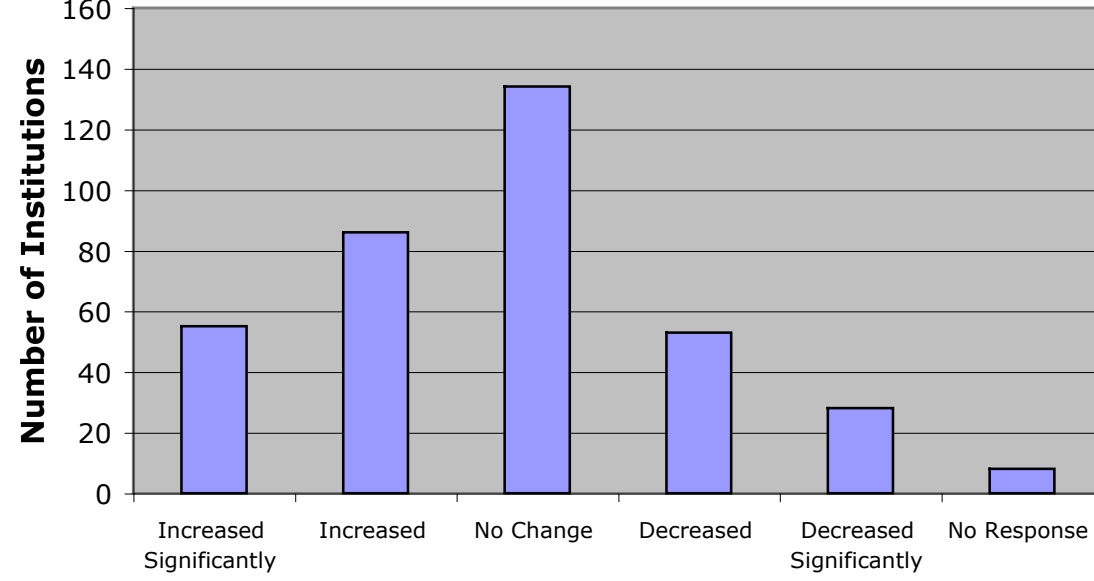


Averages Across All Institution types

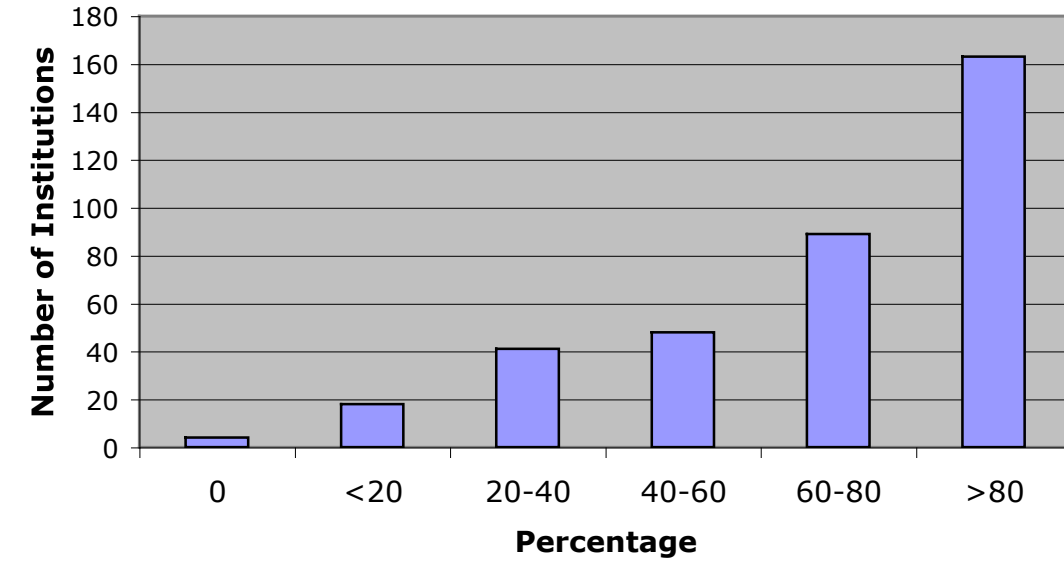
Most important factor in departmental success



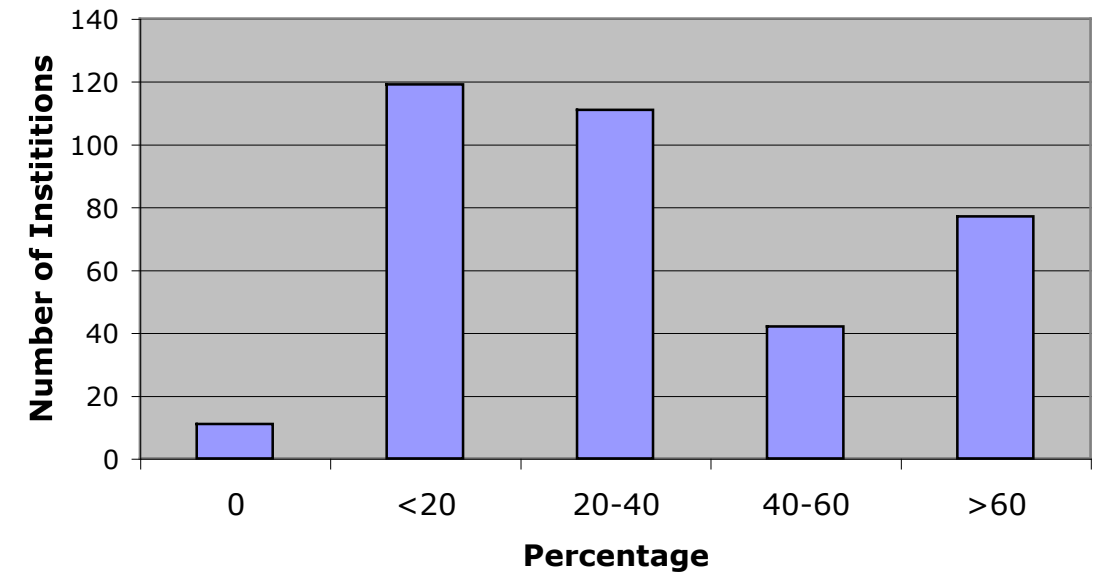
Variation in undergraduate majors over the last 5 years



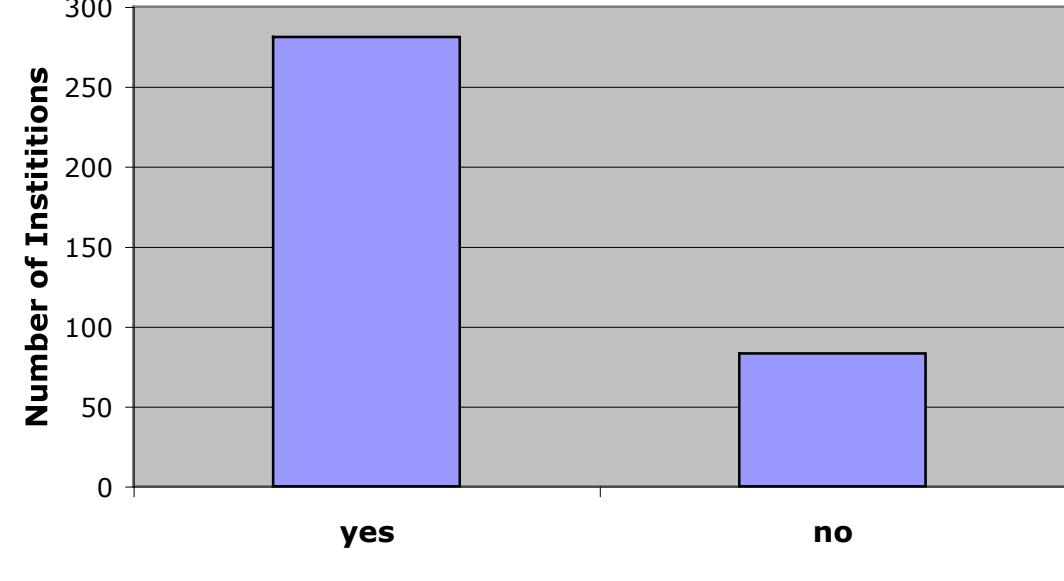
Percentage of undergraduate courses taught for non-majors



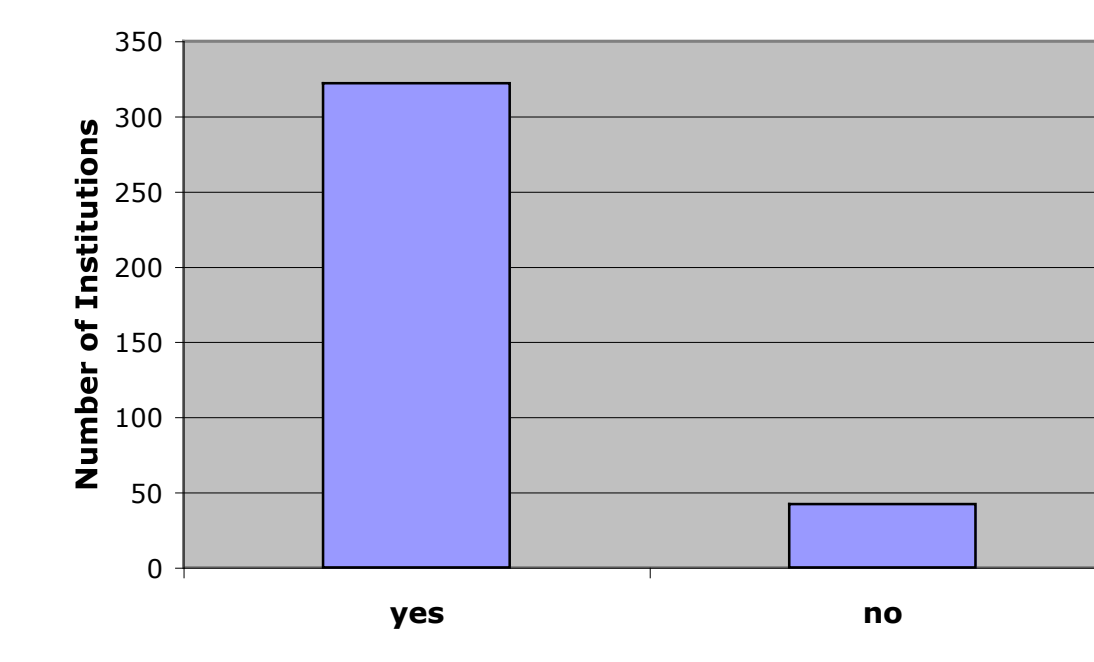
Percentage of undergraduate courses designed for non-majors



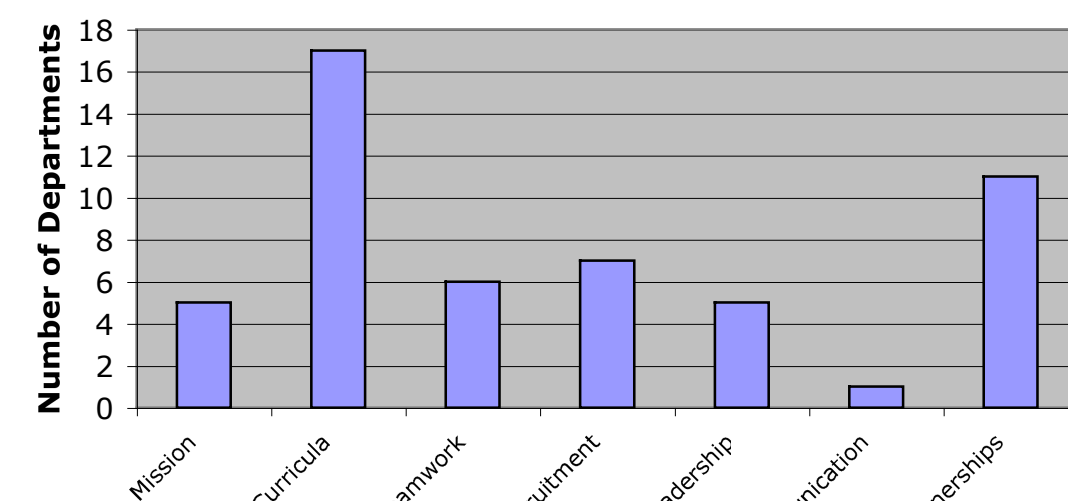
Is undergraduate recruitment/retention an issue?



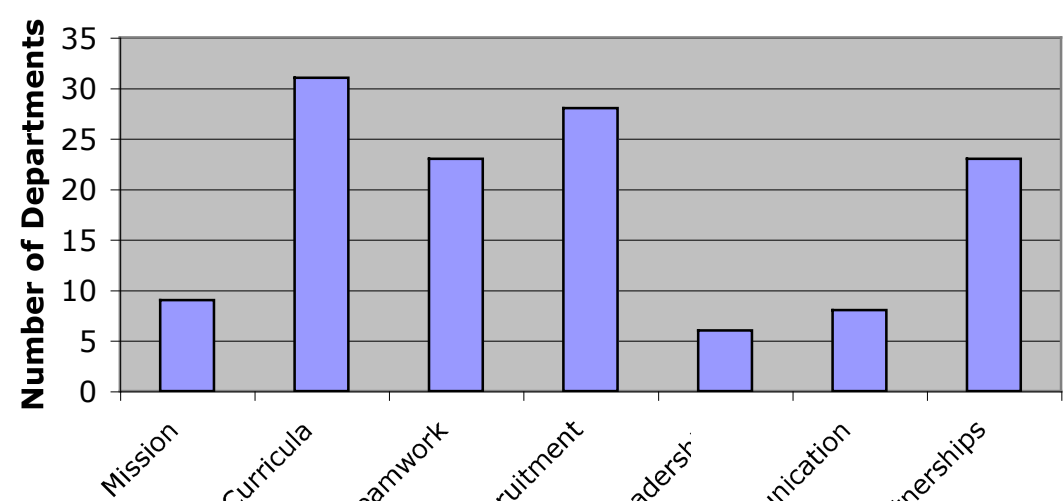
Are planning efforts important?



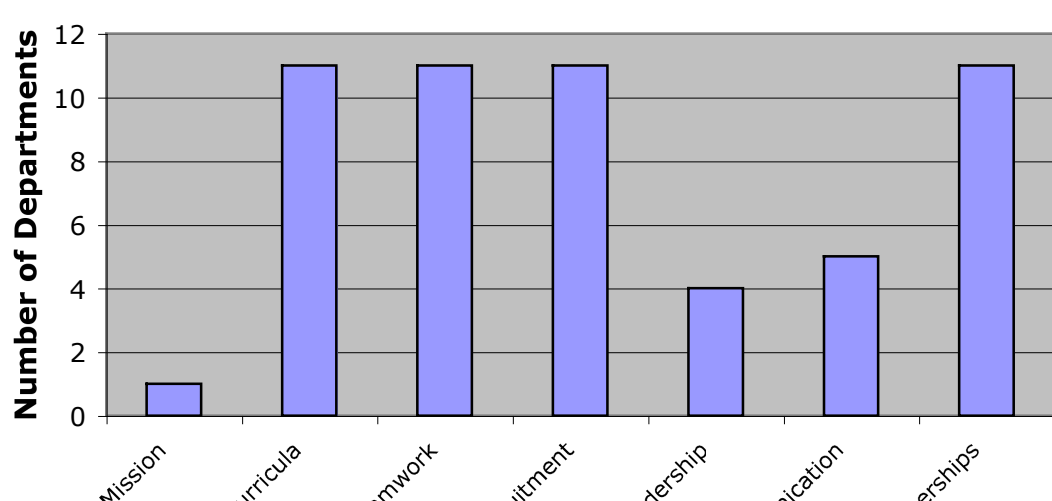
2-Year Programs



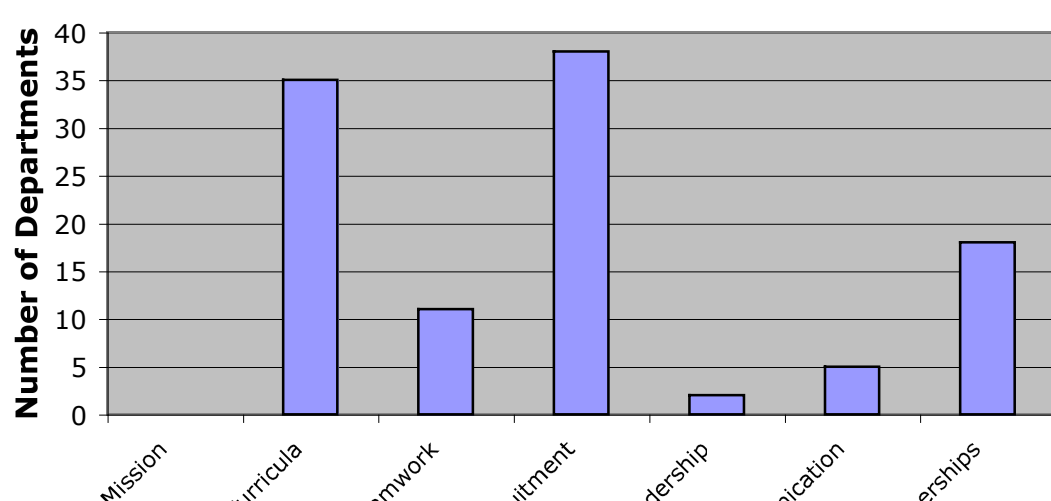
Undergraduate Programs



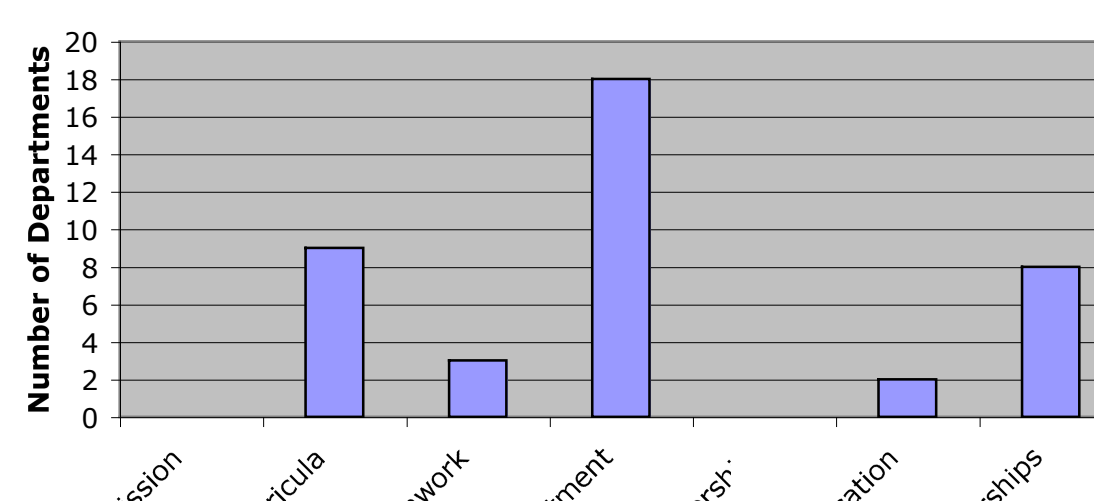
Masters Programs



Doctoral Programs



Doctoral Programs >20 FTEs



Comments

Most Important Factor in Departmental Success

- At 4-year and master's institutions curricula, teamwork, recruitment and partnerships were considered important for success.
- At PhD granting institutions recruitment was the most important followed by curricula and partnerships.
- At 2-year institutions curricula was the most important factor for success.

Percent of Teaching by Temporary Faculty

- At PhD granting institutions less than 20% of the teaching is done with temporary faculty.
- At 4-year and master's institutions the number of classes taught by temporary faculty is higher in some cases as much as 40%.
- As expected the 2-year institutions rely heavily on temporary faculty.

Variation in Undergraduate Majors Over the Last 5 Years

- 141 institutions reported increased or increased significantly in their undergraduate enrollment over the last 5 years
- The institutions with PhD programs and greater than 20 FTE reported the biggest relative increase.
- 135 institutions reported no change in number of undergraduate majors over the last 5 years.

Do You Fear Losing Faculty to Other Departments?

- Two-year, 4-year and master's institutions generally were not in fear of losing faculty to other departments.
- The departments with greater than 20 faculty at PhD granting institutions were most concerned about losing faculty.

Opportunities Over the Next 3-5 Years

- Growth in GIS technology
- Training K-12 teachers
- Expanded and diverse course offerings including on line courses
- "GIS technology has opened more opportunities for applications in a wider variety of subjects. Thus making it a useful tool for use in other subject areas and attracting additional students."
- Hire new faculty
- Expand into multidisciplinary environmental programs
- Increase research opportunities for faculty and undergraduates
- "Become major players in revised Environmental studies program"
- "Increasing external funding of RUI and REU proposals in effect expanding the role our faculty play in undergraduate education beyond the classroom setting"

- Growth in GIS, environmental science, natural hazards and climate
- Partnerships with industry due to the upswing in the energy sector
- Increase in the number of majors
- "The plethora of recent natural disasters and associated energy issues are going to precondition incoming students to be aware of earth sciences and environmental issues"

- Expand in areas of geobiology, biogeochemistry, climate and environmental sciences
- Increased research especially multidisciplinary research
- Increase fund raising and partnerships with industry and alumni
- "Large interdisciplinary research team projects that draw upon the range of expertise that we have."
- "The largest opportunity is potential for non-profit fund raising from foundations and individuals."

Overall, all types of institutions reported opportunities in multidisciplinary science and building new partnerships on campus, with other institutions, and with industry. Many institutions saw opportunities to expand into environmental studies, GIS technology, climate, and natural disasters. Some PhD granting institutions also mentioned opportunities in biogeochemistry, geobiology, geodynamics and geophysics. The 4-year, master's and PhD granting institutions reported opportunities to partner with industry especially given the upswing in the energy sector. Private fund raising and outreach to alumni was also reported as an opportunity. There were numerous comments about the opportunities the geoscience community has as a result of the recent natural disasters that have occurred over the last year. This has increased the public awareness of the Earth sciences and should lead to more interest.

Threats Over the Next 3-5 Years

- Declining resources
- Declining enrollments and poor student preparation
- Lack of qualified part-time or adjunct faculty
- "Campus advising tends to diminish the validity of geoscience career opportunities to students thereby steering some of the better prepared students away from this discipline"
- "Low enrollments in the sciences because of under prepared incoming students."
- Declining and low enrollments
- Lack of support by the administration
- Declining resources
 - Inability to replace faculty as they retire
 - Low faculty salaries
- "Shift in student enrollments to less rigorous environmental studies curricula or "soft science" courses developed in other departments."
- "Geology is not part of the administration's perception of science in the new millennia. It is neither biotechnology or nanotechnology."
- "A national backlash against the geosciences over 'hot button' topics including evolution and global climate change."

- Declining and low enrollments
- Declining resources at all levels
 - Inability to replace faculty
 - Low faculty salaries
 - Loss of funding for field trips and field based education
- "Loss of positions as senior faculty retire and limited budgets that do not permit upgrading of infrastructure."
- "Insufficient time to educate administrators as to the importance of our departmental mission."
- "The public perception that geology is a sunset industry."

- Declining external research funding (Federal funding especially NSF)
- Declining resources at all levels
 - Inability to fill faculty vacancies
 - Inadequate faculty salaries (compression)
 - Inadequate operation budgets, staff support and space
- "Reduction in government funding for scientific research particularly in the National Science Foundation budget."
- "Salary compression and the social damage it causes"
- "Ever diminishing financial resources from state funding and tuition. One result of the diminished funding is that faculty salaries have not kept pace with those at peer institutions."

By far the major threat for all types of institutions was declining resources and budget cuts at all levels. This included the loss of faculty FTEs by not being able to replace retiring faculty, low salaries, inadequate staff support, and space. For the 2-year, 4-year and master's granting institutions low enrollments were a common concern. For the PhD granting institutions the decline in federal research dollars was reported as a major threat and beyond the control of the department or faculty. In addition, salary compression and the high cost of housing relative to the salaries were also concerns. There were numerous comments about the perception of geosciences as an outdated science hurting geoscience departments with university and college administrators.