

THE IMPACT OF INTERDISCIPLINARY ENVIRONMENTAL DEGREE PROGRAMS ON GEOGRAPHY DEPARTMENTS IN THE UNITED STATES

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ABSTRACT: *As a holistic discipline, geography is naturally placed to take advantage of the rising popularity of interdisciplinary degree programs. Because of institutional histories, geography departments in the United States play a variety of roles in programs like environmental science and environmental studies. A survey of U.S. geography departments indicates that interdisciplinary environmental degree programs present long-term challenges to geography programs when the relationship between the two becomes competitive. However, where geographers play strong roles in interdisciplinary degree programs, the popularity of these programs can raise the visibility of geography and offer an opportunity for growth.*

Keywords: *Geography, Interdisciplinary, Environmental Science/Studies*

INTRODUCTION

The discipline of geography has a long history of debating its core and its role in the academy (Turner, 2002). Geography has historically been located in a wide variety of departmental arrangements. At some universities geography is considered a social science, while in others it is found with the natural sciences. In many cases, geography does not exist as an independent department, but is often joined with another discipline (e.g. anthropology, geology, etc.). As a holistic discipline, geography attempts to balance its core with its overlap into other fields while still maintaining a strong identity. In recent years the rise of interdisciplinary degree programs presents an additional threat to geography programs. Colleges and universities without geography are devising new programs that look a lot like geography, and others with geography programs are even creating new programs with significant overlap. This paper concentrates on the growing number of environmental science and studies programs in the United States, and attempts to assess their impact on existing geography degrees. While the environmental degrees have a unique core, separate from geography, there is often a good deal of overlap on issues of human/environmental relations. Does the rise of environmental programs signal a growing awareness of environmental issues that is good for the long-term health of geography programs? Or does it signal another attack on the edges of the discipline that is further eroding the standing of geography in academia?

Around the world geography programs have reacted to the increasing popularity of interdisciplinary approaches by changing their names or merging with other programs (Gibson, 2007; Winkler, 2014; Hall et al., 2015). In Britain, the majority of geography units are now part of multidisciplinary departments (Hall et al., 2015). These changes create a variety of implications for autonomy, visibility, and long-term security (Hall et al., 2015). The growth of interdisciplinary programs presents geographers with another opportunity to consider how we define and promote ourselves. In recent decades geography has been defined as a spatial science emphasizing issues of place, space and scale (Rediscovering Geography Committee, 1997). Other themes such as human/environment relations have also been used to define the field and have waxed and waned in prominence over time (Yarnal and Neff, 2004). With a growing public interest in environmental and sustainability issues, opportunities for geography to become more prominent exist. Yet, with many new interdisciplinary environmental programs, there is a question as to the role geography can and will play in human/environmental education. Given its history, geography appears naturally placed to benefit from an influx of students and research funds. However, geography faces competition from other established fields and newly defined programs with similar interests. How the field responds to this challenge will determine whether this competition ultimately hurts geography or strengthens its position.

Unfortunately, geography departments at most U.S. universities are not large enough to satisfy the rising demand for environmental education and research (Bednarz, 2006). Many departments are limited by small number of faculty and many colleges and universities do not have geography programs. Association of American Geographers (AAG) data show that the average number of faculty in programs with geography is approximately 12.5 with 10 or fewer faculty in over 40% of departments (AAG, 2014). As a result human/environment and sustainability curricula are being offered in other ways. For example, the number of liberal arts colleges offering

geography degrees is far below the number that offer interdisciplinary degrees in environmental studies (Bjelland, 2004). The outlook is clear. Demand for environmental education is growing, and if geography does not step in and offer a leadership role, other departments will (Bednarz, 2006).

Competition from other fields could ultimately have serious consequences for the long-term health of geography. Turner (2002) argues that if geography insists on defining itself simply as a spatial science it risks losing valuable status as a unifying discipline to more recently developed interdisciplinary programs such as environmental science. He claims that if geography does not do more to reclaim a human/environment core, it may be overtaken by the growth of these new science programs. While many geography programs claim an expertise in human/environment relations, few offer a dedicated curriculum or specialized classes on integrating the natural and social sciences (Yarnal and Neff, 2004). Small departments may not have a large enough faculty with bridging interests to offer a comprehensive suite of classes (Bednarz, 2006).

On the other hand, it can be argued that the status of geography and geographers in the academy has never been stronger. More geographers are now member of the National Academy of Sciences and the National Council of Learned Societies than ever before (Bierly and Gatrell, 2004). The growth of the human/environment field and the opportunity to interact with other departments on important national and international issues can offer visibility and strengthen the position of geography departments. When Bierly and Gatrell (2004) examined the growth of faculty specialization within U.S. geography departments, they found human-environment areas to be increasing at a rate second only to GIS. Geography is inherently interdisciplinary. It has a long history of wide-ranging subject matter, diverse approaches, and multiple perspectives (Baerwald, 2010). As a holistic discipline geography can act as a bridge between the natural and social sciences. Geographers are often hired to teach at liberal arts colleges to support other areas in order to strengthen interdisciplinary programs (Bjelland, 2004). Whether this role is seen as geo-technical analysts or as broader natural or social scientists is an open question.

What role is geography playing in interdisciplinary human/environment education? Are geography departments becoming leaders in a growth field, or are they in danger of losing relevance to other, newly defined programs? Murphy (2007) has documented significant growth in geography at U.S. institutions in the last two decades. The number of both students and faculty are increasing and new geography programs have been created (though most new degrees are at the graduate-level). He attributes much of this growth to the relevance of geography to today's issues, a growing awareness of geography's value, and the rapid growth of geographical technology (Murphy, 2007). New human/environment interest areas like sustainability are increasingly popular but do not have traditional academic homes. Geography may be seen as a natural center for environmental education and research, and in other countries, geography is often the home for sustainability research and education (Bednarz, 2006). However, while there are increasing opportunities for research in interdisciplinary areas like sustainability where geographers are competitive (Erickson, 2012), very few U.S. universities currently offer specific degrees in these fields. For the few sustainability programs that exist in the U.S., a decreasing percentage even require geography courses (Liu, 2011). Geography's recent growth is encouraging, but as a relatively small discipline, it still faces the possibility of losing its momentum as other disciplines more actively pursue issues of traditional geographic inquiry (Murphy, 2007).

Academic departments will continually evolve as they interact with society (Richardson and Solis, 2004). Around the world there is a "rising tide of support for integrative and multidisciplinary approaches" to modern problems (Richardson and Solis, 2004). As issues such as the human impact on the environment and global environmental change have become more prominent, geography's traditional strengths should become more visible and recognized. Yet, many universities have developed parallel interdisciplinary programs to address the need for integrative analysis in the form of earth system science or sustainability studies (Turner, 2002). This trend is compounded as the traditional natural sciences increasingly recognize the importance of integrating knowledge across fields. Geography must compete in an "increasingly crowded human-environment marketplace" (Yarnal and Neff, 2004). As a fundamentally interdisciplinary discipline with a long history of human-environment research, geography should be on the forefront of this growth. Yet, because of departmental histories, the lack of geography at prominent private and liberal arts institutions (Bjelland, 2004), a poor record of geographic education in high schools, and internal college structures, U.S. departments find themselves in a variety of situations. Some have met the challenge from a position of strength, while others risk being marginalized at best and replaced at worst. Other fields are beginning to use methods and approaches traditionally associated with geography (Baerwald, 2010). Already traditional areas of geographic study now fall under the name environmental science at many institutions (Winkler, 2011). It is critical for geographers to consider the impact of interdisciplinary human/environment programs on their field and to maximize their roles in these programs.

As geography increasingly interacts with interdisciplinary environmental programs, its relationship with them can become one of conflict, tolerant ambivalence, cooperation, or reorientation (MacMynowski, 2007). The

goal of this paper is to assess the current status of these relationships in U.S. colleges and universities. What role have geography departments played in the establishment of these new programs? How much influence do geographers have in their development? And ultimately, do interdisciplinary environmental degrees create additional competition for scarce campus resources, or do they act as complementary partners in strengthening the status of geography in the academy?

DATA

According to the National Center for Education Statistics (NCES) there are currently 282 U. S. colleges and universities that offer geography degrees. These numbers are on the same order as the 367 colleges and universities that award bachelor's degrees in environmental science and the 303 schools that offer environmental studies degrees. When one examines the schools which offer geography, 63 (22%) also offer environmental science, 45 (16%) also offer environmental studies, and 42 (15%) offer both. Thus, more than half of the geography programs in the U.S. potentially face competition from at least one other environmental degree program.

In this study I directed the departmental Chairs, or another key individual, from the geography programs that also have either environmental science and/or environmental studies programs on the campus to a brief on-line survey. The purpose of the survey was to assess the degree to which the geographers believed that the environmental programs were helpful to, or competitive to their own programs. Survey requests were sent to 144 programs and 68 were completed for a return rate of 47%. Respondents were fairly evenly divided between programs that offered B.A./B.S. degrees alone (23), those that also offered M.A./M.S. degrees (22), and those that also offered Ph.D. degrees (19). The majority of respondents came from National Universities, as recognized by the U.S. News and World Report, and Regional Colleges and Universities, though there were ten responses from Liberal Arts Colleges. Departments of all sizes were represented in the sample. Responses came from seven departments with less than ten geography majors, and from six departments with more than 150 majors. The median number of majors was between 50 and 75.

RESULTS

The relationship between geography and environmental degree programs varies widely among institutions. Environmental science or environmental studies majors are offered within geography departments at fourteen (21%) of responding programs, implying a great deal of control and cooperation. At the remaining institutions it was equally likely that the environmental degrees were offered through interdisciplinary programs (without a specific home department), or were housed entirely within another department. Geography courses were required in 60% of the environmental degrees, were electives in 32%, but were entirely absent from 8%.

With such a wide range of situations, environmental degrees may both compete with, or complement existing geography programs. Figure 1 shows the range of responses to questions directed at how much the environmental degree programs were perceived to be in competition with geography. Clearly, the majority do recognize a competition for students majoring in these respective departments. Nearly two-thirds of the respondents either agreed or strongly agreed with this statement. With increasing economic stress placed on universities, many smaller departments are being asked to justify themselves by the number of students they graduate each year. The growth of new environmental degrees does pose a genuine threat to geography by diverting environmentally-minded students into a different course of study.

The competition for academic resources was much less clear. While almost 40% of geography programs do feel competition for resources from environmental programs, a slightly larger number disagree. College administrators often tie resources such as faculty lines, staff support, and financial levels to student numbers. One respondent wrote "It is often confusing for students to tease apart differences between environmental science and environmental/physical geography. Each program competes for resources to some degree as well because faculty positions are tied to [enrollment]." So as competition for students increases, so does a sense that the infrastructure of geography departments is potentially affected. On the other hand, there were respondents who acknowledged competition for students, but disagreed that this situation created a competition for resources.

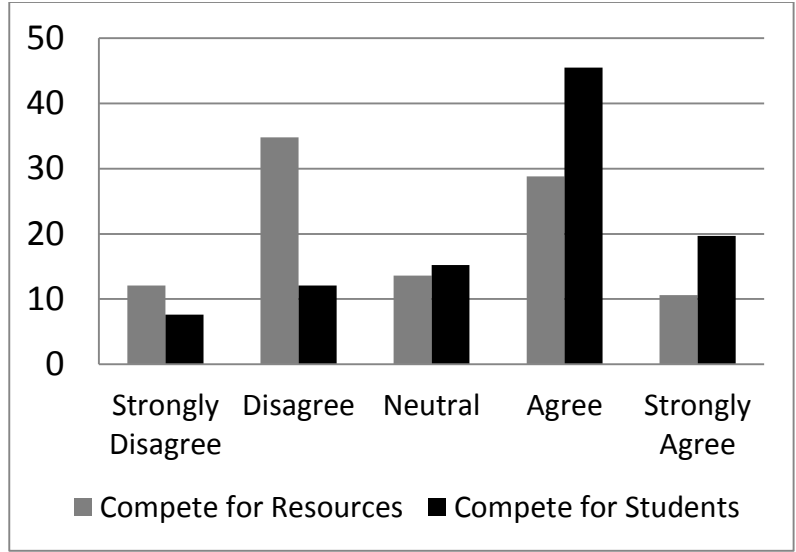


Figure 1. Level of agreement that environmental degrees compete with geography for students and resources (percent of respondents; n=66).

Environmental degree programs may not only be in competition with geography. There are many ways in which the two degrees are supportive of one another. Figure 2 shows the response of geography chairs to four questions regarding the degree to which environmental degrees help the geography major. The vast majority agree in all cases that the environmental degrees attract students to geography classes, help supplement the geography curriculum, attract double-majors to geography, and enhance the visibility of geography. “Geography gets a lot of students through the environmental studies program and many combine environmental studies with the geography major to create what we call a joint major”, noted one respondent. While another stated, “Environmental science has a higher profile than geography, and to a certain extent geography owes its continued existence to environmental science.”

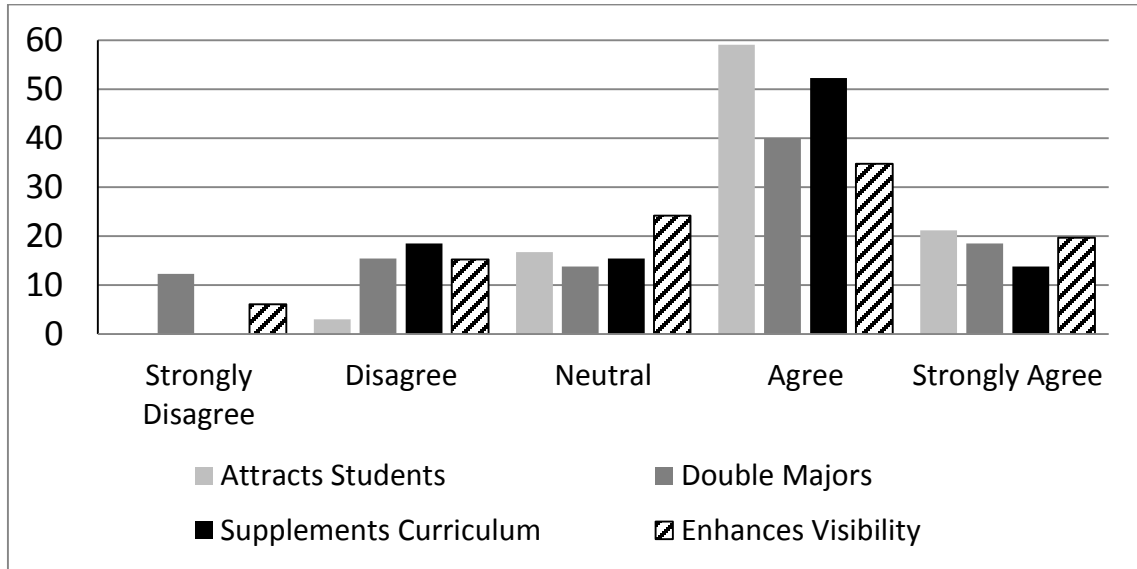


Figure 2. Level of agreement that environmental degrees support geography by attracting students to geography classes, increasing the number of double-majors, supplementing the curriculum, or increasing the visibility of geography (percent of respondents; n=66).

In order to further analyze the variability of responses within categories, opinions were sorted by a variety of characterization variables including size of the program, highest degree offered, type of college/university, etc. For the most part, none of these variables significantly separated opinions on the role of environmental programs. Only one characteristic appeared to trigger a strong divergence of opinions: Do geographers play a lead role in the environmental degree programs? Table 1 shows that, overall, 57.5% either agreed or strongly agreed that geographers play a strong role. This result is encouraging in that geographers are in positions of influence at the majority of schools. However, one-third of the schools disagreed or strongly disagreed indicating that this influence is lacking in a number of places. Furthermore, when broken down by where the environmental programs are housed, a chi-square test showed that responses differed significantly ($\alpha=0.01$). The data show that geographers play key roles in the environmental programs when the two degrees are housed in the same department, and even when the environmental programs are interdisciplinary degrees. However, when the environmental programs are housed in separate, autonomous departments, nearly two-thirds of the respondents disagree that geographers play a strong role (Table 1).

Table 1. Level of agreement that geographers play a strong role in the environmental programs at their institution (n=66). Responses are sorted according to where the environmental programs are housed.

	Within Geography Dept.	Interdisciplinary Program	Dept. other than Geography	Overall
Strongly Agreed	64.3%	46.2%	3.8%	33.3%
Agreed	21.4%	23.1%	26.9%	24.2%
Neutral	7.1%	11.5%	7.7%	9.1%
Disagreed	0%	19.2%	34.6%	21.1%
Strongly Disagreed	7.1%	0%	26.9%	12.1%

The role that geographers play in the environmental programs is key to the relationship between the degrees. Almost 20% of the geography programs without strong roles in the environmental degrees strongly agreed that those degrees are competing with geography for campus resources (Figure 3). Nearly 30% strongly agreed that the degree programs competed for students. The rate of strong agreement at schools with strong roles by geographers was significantly different ($\alpha=0.02$) and well below half of these values. Clearly, there are a number of geography programs with real competitive concerns and the majority of these are coming from places where environmental degree programs are housed in other departments with little role for geographers. One chair noted that “we have a very complex relationship with our environmental science department. They have ‘stolen’ some of our courses in the past”. Another noted that the environmental studies degree, run through the biology and geology departments, attempted to reduce geography to GIS skills, and nearly replaced the department. Others told stories of geography being subsumed into environmental programs and reduced to academic minor status.

Similar patterns emerge when one considers the ways in which environmental degree programs can support geography programs. Chi-square tests indicated significantly different response patterns ($\alpha=0.01$) between the two types of situations. Nearly three times as many programs in which geographers play a strong role in the environmental degrees strongly agreed that the environmental degrees attract students to geography classes than those where they do not (Figure 4). Twice as many agree or strongly agree that having the environmental degrees encourages more students to minor or double-major in geography when geographers play a strong role in the environmental degrees. Five times as many respondents agreed that the environmental programs helped enhance the geography curriculum and also helped raise the visibility of geography when geographers were in strong positions of influence. One chair hypothesized that geography programs face the problem of not being “an obvious pipeline into professional degrees or a well-known major to incoming freshmen.” The implication is that better-known environmental programs may be used as first contact points to introduce students to the field of geography. Another chair noted that they “have started promoting environmental science and geography side by side at events for prospective students, many of whom have heard about environmental science but not geography.”

Environmental degree programs can compete with geography for students and for valuable campus resources. However, if geographers are involved in the environmental degrees and play a strong role in their design, the relationship between the fields can be very productive. Geography becomes more visible and attracts more students into its courses. Once students are exposed to the discipline, many recognize its utility and return for more courses, a double-major, or even switch into the field. Ties between geography and interdisciplinary environmental programs can be used to challenge and strengthen the position of geography if managed carefully.

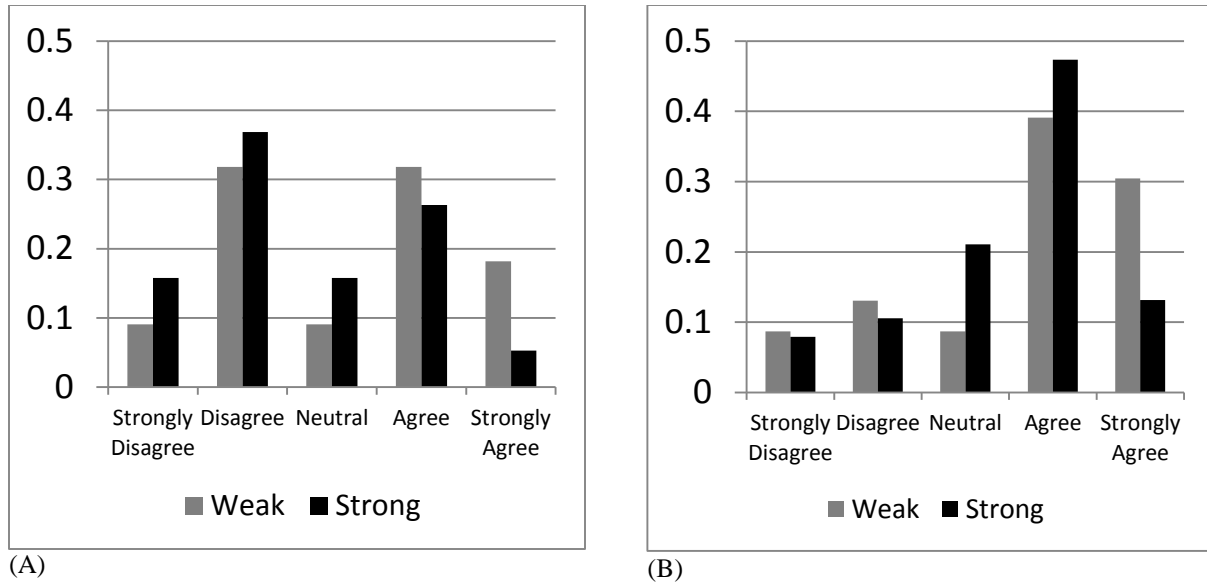


Figure 3. Level of agreement that environmental degrees compete with geography for a) students and b) resources sorted by the role geographers play in the environmental degrees (percent of respondents; n=66).

CONCLUSIONS

As a holistic discipline, geography has a long history of addressing questions beyond its traditional core. It can achieve new insights by interacting with other disciplines (Baerwald, 2010). Emerging interdisciplinary fields like sustainability and environmental science/studies offer both opportunities and challenges for geographers. Geography's historical strengths in spatial, regional, and integrative analysis are key to understanding complex human/environmental problems. So, naturally geography can act as a home for these interdisciplinary degrees. However, institutional histories have not always allowed geographers to play leading roles, or even to be present at the outset of these programs. If geographers do not contribute, others will reinvent geographic strengths under different names (Manning, 1990).

Where geography has been absent, or where other departments have initiated new environmental programs, the new degrees present potential problems for geographers. In the present economic times, higher education faces scrutiny world-wide. Increasing costs are forcing students take on larger debts. Consequently degree programs that do not offer direct employment opportunities or a professional skillset will be disadvantaged (Erickson, 2012). Students often perceive degrees like environmental science to be more practical and useful than geography. Geography risks losing these students and the institutional support and resources they bring.

The relationship between geography and interdisciplinary degrees does not necessarily need to be competitive though. Data from this study demonstrate that geographers at many colleges and universities are playing leading roles in the development of environmental programs. Geography departments of all sizes, and at all levels of institutions, believe that they are stronger because of the environmental degrees. Some attribute their survival and growth to them. For those institutions where interdisciplinary programs are in place, geographers should continue to work to maintain or strengthen positions of influence. As other interdisciplinary programs are proposed, geographers should cooperate and seek a leading role in their implementation so that competition can be minimized and stronger ties can ultimately strengthen the field.

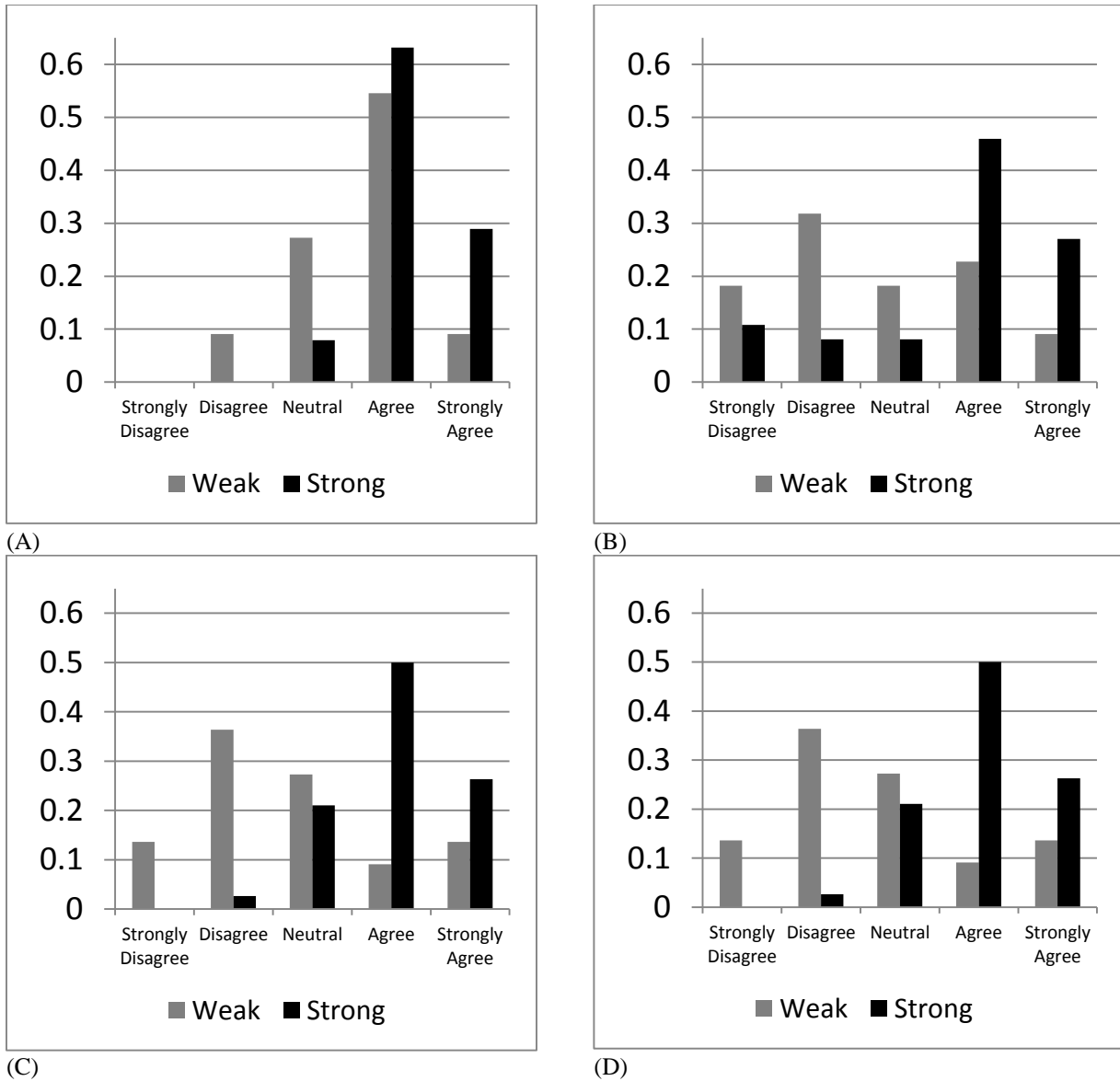


Figure 4. Level of agreement that environmental degrees support geography by a) attracting students to geography classes, b) increasing the number of double-majors, c) supplementing the curriculum, or d) increasing the visibility of geography sorted by the role geographers play in the environmental degrees (percent of respondents; n=66).

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