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Paper: Career goals, pathways, and competencies of geography graduate students in the United States

Part 1: Abstract

This study examines the motivations and career goals of geography graduate students and the extent they are prepared in transferable skills. Women and students specializing in geographic information science and technology are primarily motivated by careers opportunities in the private sector, whereas doctoral students express a preference for academic career paths and their goals are more influenced by faculty and departmental prestige. Students in master's programs and those specializing in physical geography are more likely to seek positions with government employers. Master's and doctoral programs are providing opportunities for students to develop competency in a wide-range of transferable skills. However, there are many organizational and business-oriented skills that employers value but which are not commonly taught in graduate curricula in geography programs.

Part 2: Paper

Context

The need for research into geographic competencies is evidenced in studies from the U.S. and the U.K. that have addressed the issue of "employability" in geography and geographic information science, a term describing the readiness of an individual to obtain and then maintain employment (Rooney *et al.*, 2006; Donert, 2007; Estaville, 2010; Wikle, 2010). Surveys of employers who hire geography students indicate that management and communication skills are more valued than specialized geographic knowledge (Solem, Cheung, & Schlemper, 2008), but less is known about the extent to which such transferable skills are being developed in geography graduate programs. Another objective of the present study was therefore to gauge the amount of preparation students are receiving in transferable skills. The survey items related to these skills are based on a competency model for professional geographers developed by the AAG's EDGE project (Solem, Cheung, & Schlemper, 2008) as the conceptual basis for coding and categorizing the transferable skills developed by geography graduate programs.

Methodology

We focused on two interrelated questions:

1. What are the motivations and career goals of students pursuing graduate study in geography, and what types of positions do they tend to obtain upon graduation?
2. To what extent are graduate students gaining preparation in transferable skills expected of professionals inside and outside of the academy?

Two surveys, one intended for graduate students and one for faculty, were developed to acquire the primary data for this research. With regard to these questions, we proceeded to determine whether meaningful comparisons could be made when findings were considered based on students' background variables, including gender, race, geography specialty, and citizenship. These variables were found to produce significant differences based on previous research on geography graduate students' perceptions of their academic environments (Solem, Lee, Schlemper, 2009). We also sought to observe differences by type of graduate program on a larger scale as found in previous qualitative research (Monk, Foote, & Schlemper, forthcoming).

The main statistical analyses were as follows: Means and standard deviations were first calculated to determine the average scores for each survey item among student and faculty populations. T-tests and ANOVA were then conducted to assess for significant differences between groups (i.e., gender, race, citizenship, geography specialty, and degree program). Statistical significance was set at $p < 0.05$ to test the null hypothesis of equal variances (Bryman & Cramer, 1990, p. 151; 2001, p. 159). Exploratory factor analysis was used as a data reduction technique. Factor analysis is a statistical technique that looks for patterns among response items. Items related to geography graduate students' motivations and career goals were analyzed using principal component analysis with a varimax rotation. An examination of the correlation matrix also ensured that there was no multicollinearity between the factors. Eighteen constructs emerged from the factor analysis. Finally, in order to identify predictor variables associated with particular career paths, logistic regression analyses were conducted.

Results

Although faculty careers rank highest when graduate students' preferences are viewed in the aggregate, their career goals differ when analyzed according to type of degree program. Seeking an additional degree was the most common post-graduation goal for students enrolled in master's programs at all institutions; however, a slightly larger proportion of students combined ranked obtaining a job in the federal government or a nonprofit organization as their first choice of career. The top career choices of doctoral students, meanwhile, were all related to finding academic positions, with research universities being the number one employer of choice.

To determine the extent to which the career goals of current graduate students align with actual career placements, we asked faculty to indicate the most common career positions obtained by their master's and doctoral advisees. Students in departments awarding master's degrees only

were most commonly placed in state and local government jobs, followed by jobs in private business and enrolling in a doctoral program. In contrast, master's advisees of faculty in PhD-granting departments most often enrolled in a doctoral program after graduation, followed by positions in federal and state or local government. Academic positions in research universities and master's comprehensive universities were the most common career paths of doctoral advisees, with federal positions ranking third.

Finally, we found graduate students in all types of programs received the most extensive skill preparation in writing, critical thinking, and research planning and design. Among the skills that received a mean score of at least 2.0 (scale 1-3), master's students in PhD-granting departments appear to receive slightly more preparation in ethical practice and time management than do their counterparts in master's-only departments. Doctoral students, meanwhile, tend to offer more comprehensive professional training than both groups of masters students in the following areas: publishing, grant proposals, professional and organizational culture, and self-awareness.

There are many similarities across graduate programs in terms of skill areas that are relatively underdeveloped. Graduate students in all types of programs receive the least amount of preparation in fiscal management, entrepreneurial skills, and foreign languages. They also tend not to acquire much experience in developing interpersonal skills such as coaching and advising, supervising, and relationship building, as well as organizational skills such as project management, visioning, and adaptability.

Conclusion

Moving forward, geography departments would benefit from increased awareness on the range of workforce needs and the varied interests among current and prospective students. This information can help with identifying what areas of the program are successfully preparing these students for their futures, and what areas may be in need of improvement or change. Discussions of this nature will inevitably bring to the forefront multiple perspectives rooted in different visions of the purpose of graduate education. Given the diversity of interests among graduate students and the many career opportunities for individuals equipped with advanced knowledge and skills, there is room for geography departments to maintain traditional strengths in developing researchers while introducing a range of preparation strategies that broaden the appeal of and participation in their programs in the current global knowledge economy.

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