Motivation, Preparation and Attitudes of Agricultural and Resource Economics Master's Students[1]

J. Penn[2]
Louisiana State University
Baton Rouge, LA

H.M. Sandberg
University of Florida
Gainesville, FL

Abstract

We conducted a survey of master's students from agricultural and resource economics or affiliated graduate programs at 30 major US universities. The survey elicited the thoughts and opinions of enrolled students on their academic backgrounds, views of their programs, future career goals, and preparation for a master's degree. Master's students have diverse academic backgrounds, reasons for entering and selecting a graduate program, and broad aspirations upon completion. Most emphasize the importance on quantitative skills to prepare for graduate school, and funding and job placement for program selection. In some instances, differences exist between domestic and international master's students.

Introduction

For most Agricultural and Resource Economics (ARE) and associated departments, graduate training is a fundamental function. While publishable research and training the next generation of PhD students are pillars of a modern ARE department, many also run successful master's degree programs. These programs include both the academically oriented thesis-based Master of Science (MS) degree and professionally oriented non-thesis Masters of Agribusiness (MAB). The number of students enrolled in master's programs is often equal to or exceed doctoral enrollment in some departments. However, the study of ARE Master's students is limited and is usually only considered in combination with PhD programs (e.g., Mark et al., 2004; Perry, 2004). Conversely, considerable literature covers doctoral programs, such as ranking, research productivity, and job placement (e.g., Boland and Crespi, 2010; Foltz, 1991; Hilmer and Hilmer, 2007; Perry, 1995; Reed, 2010; and Schrimper, 1985). Penn and Sandberg (2017) specifically looked at the composition and preparation of PhD students in ARE. Conversely, very little attention has been given to the students in ARE MS programs.

The goal of this paper is to report the results from a survey of ARE graduate students throughout the United States. The data allow us to describe current master's students in their 1) academic backgrounds and training; 2) their selection process and reasons for entering a graduate program; and 3) opinions as graduates on their future job prospects as well as comparison to past undergraduate experiences. Where appropriate, we compare the responses of domestic versus international students. We conclude with implications for both graduate programs and prospective master's students.

Methods and Survey Instrument

To better understand the motivation, preparation, and attitudes of enrolled MS students in ARE, we conducted a survey. This survey was completed in conjunction with that one of Penn and Sandberg (2017) where previous literature (e.g., Malaney, 1987; Kallio, 1985; Mark et al., 2004; Perry, 1995) informed the content, structure, and implementation. We contacted ARE departments in the US that offer graduate degrees and a total of thirty schools responded and agreed to include their master's students in the survey. These schools include Colorado State, Cornell, Louisiana State, Michigan State, Mississippi State, New Mexico State, North Dakota State, Oklahoma State, Oregon State, Pennsylvania State, Purdue, Southern Illinois, Texas A&M, Texas Tech, Utah State, Virginia Tech, Washing-

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[2]Corresponding author; jerrod.penn@uky.edu

Table 1. Sample Description

	% of All Students	% of International[a]	% of Domestic
Number of Students	235	79	156
Non-thesis MS, MAB	12.3	6.3	15.4
Thesis MS	87.7	93.7	84.6
Time in MS Program			
Less than 1 year	47.2	49.4	46.2
Between 1 & 2 years	44.7	45.6	44.2
More than 2 years	8.1	5.1	9.6

[a] Includes 13 international students who received their bachelor's degree at a US institution

Table 2. Undergraduate Majors of Master's Students

	All Students n=235	International n=79	Domestic n=156
2+ majors	18.7%	11.4%	22.4%
Agricultural Economics/Agribusiness	35.3	20.3	42.9
Economics	30.2	39.2	25.6
Business/Finance/Accounting	9.4	13.9	7.1
Mathematics/Statistics	4.7	5.1	4.5
Political Science	5.1	1.3	7.1
International Studies	2.6	0	3.8
Agricultural Production/Operations	4.7	6.3	3.8
Soil Science/Agronomy	3	7.6	0.6
Other Agricultural Majors	5.5	2.5	7.1
Environmental/Resource Economics	5.1	1.3	7.1
Language Studies (includes English)	2.1	0	3.2
Other	14.9	12.7	16.0

Table 3. Percent Frequency of Top 3 Reasons for Entering Master's Program

	All Students n=235	International n=79	Domestic n=156
Difficult Job Market	32.8%	25.3%	36.5%
Passion for Research	43.8	62.0	34.6
Encouraged by Advisor	31.9	25.3	35.3
Leads to Better Jobs	88.9	91.1	87.8
ARE's Culture & Environment	54.0	57	52.6
Unsure	18.7	16.5	19.9
Other	23.4	17.7	26.3

ton State, and West Virginia Universities as well as the Universities of Delaware, Florida, Georgia, Idaho, Illinois at Urbana-Champaign, Kentucky, Minnesota-Twin Cities, Missouri-Columbia, Nebraska-Lincoln, Tennessee, and Wyoming. As is customary, reminders were sent out in a timely fashion to maximize the response rate. Data were collected using an online survey instrument via Qualtrics.

The survey began with queries into undergraduate backgrounds (i.e., declared majors and minors) and proceeded with questions regarding preparation for graduate school, motivation for graduate studies, and the selection of potential graduate programs targeted for applications. The survey also queried into the intended area of concentration and post-program goals and aspirations.

At the time of survey collection, an estimated 742 master's students were enrolled at the thirty participating institutions. We received a total of 235 completed responses for a response rate of 31.7%. Table 1 highlights basic information about the composition of the students in the sample.

Approximately 88% of respondents stated being part of a thesis-based master's program, and the remaining 12% of students pursued non-thesis degrees, such as the MAB, with a significantly greater percentage of international students in a thesis-based program. Roughly one-third were international students, including those who completed their undergraduate education at a US institution, constituting one-third of the sample, and the remaining responses came from domestic students.

The composition of the undergraduate majors of the students in the sample appears in Table 2 (due to some students declaring multiple majors, areas of concentration do not sum to 235). Not surprisingly, a majority of master's students majored in agricultural economics/agribusiness and/or economics as undergraduates (65.5%). For domestic students, the largest cohort is agricultural economics or agribusiness majors (43%) followed by economics, while the reverse is true for international students. Lastly, domestic students are twice as likely to have two majors as undergraduates compared to international students. It appears that the US higher education system is more conducive to having more than one major.

Students' undergraduate minors are similarly diverse (not shown), with a large small proportion spread across agricultural disciplines, liberal arts, and business.

Furthermore, survey participants were queried for their motivation for entering graduate school, their recommendations for MS program preparation, and reasons for selecting their program. Respondents were asked to provide and rank the three most important reasons for deciding to begin a master's degree, as seen in Table 3. The expectation that a graduate degree would lead to a better job was ranked in the top three most frequently and had the highest average rank for domestic students. Domestic students also more frequently list their doubt of what to do as a motivation. For international students, research passion and the culture of ARE departments appeared more frequently and ranked higher.

Figure 1 provides respondents' agreement of the importance of various aspects of graduate school preparation.

Graduate admission committees often focus on (and require) strong quantitative skills, and, indeed, students strongly agree with its prominence – respondents placed the highest emphasis on calculus and statistics, followed by writing skills and linear algebra. Domestic and international students generally agree on each category's importance; with domestic students emphasizing calculus more. Auxiliary experiences, such as undergraduate research or statistical software experience, were considered less important.

Figure 1. Student Opinion on the Importance of Various Skills for Success as Master's Student (rank of 1=Not at all important, rank of 5=Extremely Important)

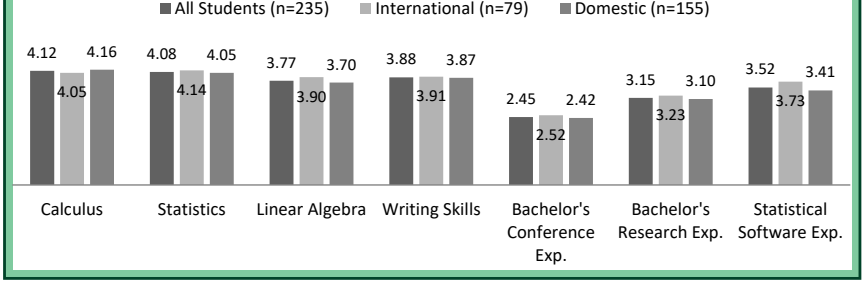
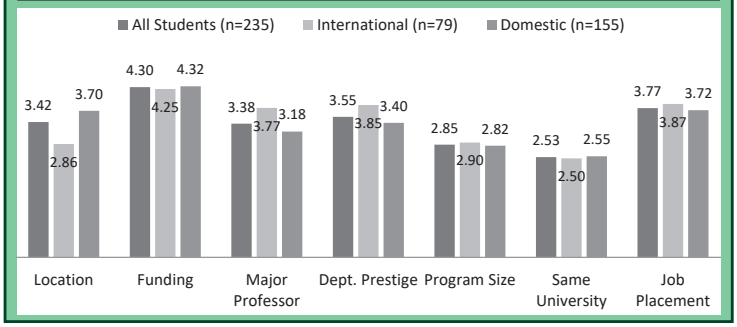


Figure 2. Student Opinion of Importance for School Selection Criteria (rank of 1=Not at all important; rank of 5=Extremely Important)



Once a student has decided to pursue graduate training in ARE, he or she must decide where to apply. Student opinions on electing a graduate program is available in Figure 2.

Funding is clearly the most important criterion followed by prospective job placement. For domestic students, location is as important as job placement, with department prestige ranked fourth. International students emphasize rank more, with school prestige and major professor in third and fourth, respectively. Both cohorts placed less weight on graduate program size and the convenience of staying at the same location as their undergraduate education as decision criteria.

Table 4 details the number of applications submitted by students, any university visits, and if additional coursework was required before their program commenced. A typical student in our sample submitted an average of 3.39 applications. The average number of applications sent by international students is over twice as many as domestic students. Almost 4 out of 10 students only submitted one application. Over 80% of US students had in-person interaction with the department before selecting the program. Students overwhelmingly agreed that courses recommended or required by graduate committees for admittance were helpful.

The final objective aims to measure perceptions of the current master's program relative to past educational experiences, and future employment goals. Table 5 provides an assessment of differences between being a master's student versus an undergraduate. The strongest agreement among students is that master's programs means being closer to professors, followed closely by being more challenging, and more departmental involvement ranked third. The ability of an MS degree to secure employment more quickly or a higher starting salary were ranked lower.

Students indicated and ranked the top three ideal placements after receiving their degree, with frequency of appearance and average ranking of each category appearing in Table 6. Based on the frequency of appearance in the top 3, domestic students are most favorable to industry and government, followed by nongovernmental (NGO) work. For international students, top 3 appearances are closer for industry, NGO, and agricultural economics PhD, but the average ranking tends to favor industry, followed by a PhD program, followed by NGO work. Lastly, few individuals in both groups appear to be considering other non-PhD graduate programs after graduation.

As the last part of student perception and employment goals, students were asked to allocate 100 points to categories based on their contribution to successfully get a job after graduation. Figure 3 displays the result.

Suggested areas consisted of coursework and grades, presentations and publications, networking, and major professor, receiving over 90% of point allocations. While much of their time may focus on class, students put less than a quarter of points towards coursework and grades. Domestic students tend to emphasize networking (37.2%) and discount presentations and publications (19.1%), whereas international students treated both categories almost equally (27.1% and 29.5%). Small allocations, 8.1% for domestic and

Figure 3. Percentage Point Allocation of Importance of Various Factors to Obtain a Job

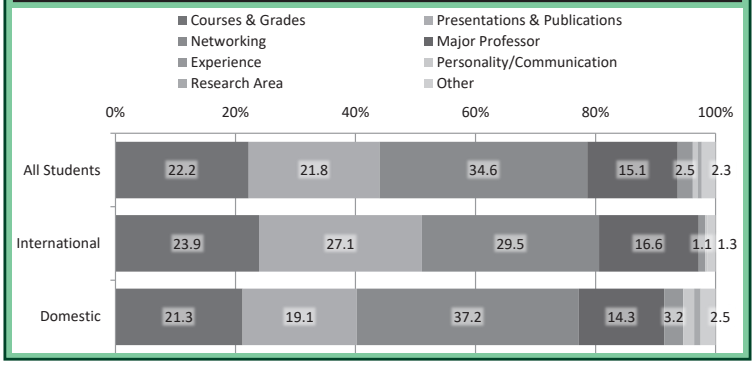


Table 4. Number of Applications Submitted, School Visits and Supplemental Coursework

	All Students n=235	International n=79	Domestic n=156
Average number of applications	3.39	5.10	2.50
% Students with only 1 application	39.1%	21.5%	48.1%
% Visited selected graduate program or already student	61.3	21.5	81.4
% Visited selected graduate program	36.6	11.4	49.4
% Student at the Same School	24.7	10.1	32.1
% Additional Coursework Required	21.8	13.9	25.8
(If so, % useful?)	(94)	(100)	(92.3)

Table 5. Level of agreement for the statement, "Compared to being an undergraduate, being a Master's student..."

	All Students n=235	International n=79	Domestic n=156
Takes more time	4.07	3.85	4.18
Closer to professors	4.35	4.43	4.31
Help secure a job more quickly	3.67	3.62	3.70
Better starting position or salary	4.03	3.94	4.08
More involved in department	4.13	4.05	4.17
More challenging	4.29	4.24	4.32

Rank of 1= Strongly Disagree; rank of 5=Strongly Agree

Table 6. Most Frequent and Average Rank of Top 3 Post-Graduation Opportunities

	All Students n=235	International n=79	Domestic n=156
ARE PhD	46.4%	65.8%	36.5%
Other graduate program	27.7	32.9	25
Government	65.1	53.2	71.2
Industry	76.2	67.1	80.8
NGO	62.1	68.4	59
Other	10.2	5.1	12.8

2.9% for international, were listed for other areas that included experience, personality, communication or interviewing skills, research area, and other factors.

So, what did we learn from this survey? First, the evidence suggests support for stressing placement and outcomes of recent graduates when recruiting prospective students. The most important selection criterion relates to financial viability either as a graduate student (ranked first) or upon graduation (ranked second). Less weight was placed on department or professor prestige but is more important to international students. Second, international students are more likely to list a PhD in ARE as a post-graduation goal than are domestic students. Internationals also listed passion for research more frequently and ranked it higher than domestics (similar to Kinnucan, 2012). In addition, they seem to anticipate the time commitment necessary for being a successful master's student.

From a recruiting standpoint, promoting ARE graduate programs campus-wide rather than just ARE undergraduates seems appropriate. In our sample, fewer than half of domestic MS students were Agricultural Economics or Agribusiness students as undergraduates. For internal recruiting, advertising early and often stresses the importance of certain coursework to students if they want to be well-prepared for graduate school. Similarly, early identification of ARE undergraduates to be involved in departmental high-impact learning activities make them aware of research and graduate school opportunities. This assists them in deciding if they want to go to graduate school as well as making them more competitive for much sought-after funding.

ARE departments should especially stress to their undergraduates that the master's program emphasizes quantitative methods. All students agree with the importance of quantitative skills, followed closely by writing skills. Students who were required to take additional coursework agreed it was useful in their master's program. This will reduce the risk of struggling when they enter the program. Students agree the master's degree is different in terms of department and professor interaction, level of difficulty and time required.

Summary

Our survey provides a snapshot of the current students in ARE MS programs and their attitudes. From the results, chairs and program coordinators can gain a series of insights. It appears that funding and job placement are universally important factors when students are selecting graduate programs. Conversely, the goals of domestic and international students are quite different, with the latter nearly twice as likely to consider a PhD program. Some of the MS results also coincide with previous on opinions of students in ARE PhD programs (Penn and Sandberg, 2017), in which program acclaim is also secondary to funding and job prospects and agreement on the importance of quantitative and writing skills towards program success. Some may appreciate these similarities as indicative that MS students have appropriate experience and preparation to continue into PhD programs. Thus, the evidence from our survey suggests that as a discipline our master's students are well prepared for further studies on the Doctoral level.

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