2015

Alumni perceptions of career and learning outcomes in professional master's degree programs

BOSTON UNIVERSITY

SCHOOL OF EDUCATION

Dissertation

ALUMNI PERCEPTIONS OF CAREER AND LEARNING OUTCOMES

IN PROFESSIONAL MASTER'S DEGREE PROGRAMS

by

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Submitted in partial fulfillment of the

requirements for the degree of

Doctor of Education

2015

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Acknowledgements

First and foremost, I would like to acknowledge my husband Joe, to whom I also dedicate this work. Joe was there when I studied for the GREs and applied, shared my joy when I got accepted, and then sat back and watched me go through all the coursework and projects, all the ups and downs, which sounds exciting, but was probably akin to watching paint dry – nerdy tweed paint. Thank you Joe for always being on Team Kim! You are more than my best friend, more than the love of my life, you, like always, inspire me to be a better person, a smarter, more critical, more politically-minded, more creative, more rational person, and I hope I continue to have the same effect on you. You are also my inspiration for the voice of the jilted student in the sea of higher education stakeholders.

I would like to acknowledge my mother and thank her for her encouragement through the years. No matter the accomplishment I know she is proud of me. I also want to acknowledge my step-father, Chris, who played one of the biggest roles in my education right from the beginning in 1984. Thank you for being a smarty pants who made me look up words in the dictionary and for encouraging me to be an engineer, even if I went another route.

My aunt Sharon was one of few people I knew growing up who, not only got a bachelor's degree, but also got a master's degree. As the women I consider my second mother, as a successful entrepreneur, and as the person with the

strongest work ethic I have ever seen, Sharon has played a big role in the work I have completed for all three of my degrees. She can sense which phone calls are for chatting, and which ones are just for procrastinating. She assures me that even after I am done I will still have nightmares that I have forgotten to do my paper. My late uncle Paul, Sharon's husband, is also to thank for the support they both gave me over the years. I would be amiss to not thank him as well, even though he is no longer with us. He also played a role in my education and gave sound advice in the background through the conduit of his spokesperson, my aunt.

I would like to thank my whole committee. It has been a pleasure working with all of them and they have given me great feedback. They all have an amazing amount of experience in higher education leadership, but through diverse paths – so it was always a relief that I was getting the best feedback, especially when their feedback was the same. My individual thoughts of appreciation for each member of my committee do not do justice to how much thanks I owe them for both this project and for their guidance in other matters as well – they are all extraordinary educators and leaders.

First, for picking up my project at the proposal phase last spring – understanding what it was about, liking it, believing that I could do it, and wanting to help and be involved in it –Scott Solberg. It has been a joy working with you this year as you are always available, efficient with time, positive, and confident. I

have learned a lot from you and I wish I had started learning these things earlier in my degree.

Second, on my committee, and with much affection, I would like to thank my mentor, and second reader, Tanya Zlateva. Tanya hired me in 2007 when I was finishing up my masters and encouraged me to throw myself into a career in higher education. She also let me know that there were other career options I could choose if I wanted, but I stayed. I owe her many thanks for the time she spent being a sounding board on multiple research projects, the corrections, frameworks, and feedback she has gave to my past projects, and the encouragement she has given. Her productivity, theoretical knowledge, writing style, effectiveness, and the way she always has a solution for a tricky problem, are astounding. I am happy to consider her my colleague and mentor.

Lastly, on my committee as third reader, I would like to thank Joe Cronin. I had the great pleasure of taking a few courses with Joe at SED and always being very excited to sit at the feet of a teacher with vast professional and education experience and to benefit from the ways in which he shared that knowledge. My favorite class with Joe was shared governance and that class inspired me to continue in my current career path, reinforced things that I already half-knew from my own work experience and from my other mentors, and influenced my future research agenda. Thank you Joe for the knowledge you share with your students at SED and the ways in which you encourage us all to grow professionally and continue to keep up with current issues in higher education.

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ABSTRACT

As demand for employees with a professional master's degree increases, and accountability to show both learning outcomes/graduate competencies and career outcomes for alumni of these programs increases, it is becoming more important to develop measures of these outcomes. The purpose of this survey-based research study was to develop a measure of self-reported competencies and career outcomes, in order to interpret the perceived value of these programs, determine if some programs meet alumni needs better than others, and to see if there are additional measures to be considered. Results indicate high construct validity, significant differences in human capital outcomes, career development skills, and personal agency between the three large programs at the college study, but no differences in goals to maintain careers, satisfaction, or course evaluation ratings. Validity of these measures could be important for future assessment, program evaluation, and mixed methods studies at the graduate level as it pertains to non-traditional students and professional master's degree programs.

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Definitions

Learning Outcomes – "Knowledge, skills, attitudes, abilities, and habits of mind that students take with them from a learning experience," that often span beyond a course and even beyond the program (Hernon, Dugan, & Schwartz, 2013, p. 5).

Student Outcomes – Other student outcomes mainly in the form of statistics on students that can include retention rates, graduation rates, placement rate into jobs, time to degree statistics, and data on student debt, among many other indicators of how groups of student progress through a degree program and what changes afterward (Hernon et al., 2013).

Career Outcomes – Other human capital outcomes, separate from learning outcomes or intellectual outcomes, including job satisfaction, promotion, and salary increases.

Graduate Attributes – Another term for learning outcomes, popular in Australia and other countries. This term is different in that it encompasses qualities, skills, understandings and dispositions (Hughes & Barrie, 2010). Also sometimes called generic attributes.

Direct Measurements of Outcomes – Observed or actual measurements of learning outcomes by faculty through the direct assessment or evaluation of artifacts (papers, pretest-posttest designs, special exams or embedded questions

on exams, e-portfolios, observations) from a sample of students that span

multiple courses in a program (Rosenthal, 2014).

Indirect Measurements of Outcomes – Perceptual measurements of outcomes

through the use of surveys, interviews, indicators of success, measurements of

engagement and interest after a program, or pursuit of additional knowledge after

a program. Harder to link these outcomes to the program (Rosenthal, 2014).

Professional Master's Programs – Graduate degree programs that target part-

time students with work experience. Should not be confused with the term first-

professional degrees (such as dentistry or veterinary medicine). See below:

Source: Image taken from Education Advisory Board Continuing and Online Education

Forum (2013, slide 19)

Chapter 1. Introduction to the Study

Statement of the Problem

The 2012 *Pathways through Graduate Schools and into Careers* report predicts that, during the next decade, jobs requiring a master's degree will increase by 22%. The report notes that employers expect employees with advanced degrees to have, "…in addition to requisite content knowledge, critical skills, such as professionalism and work ethic, oral and written communication, collaboration and teamwork, and critical thinking and problem-solving (ETS & CGS, 2012, p. ii)." The report addresses the current employee skills gap and collects data on the skills demanded by employers. Many other sources echo this employer demand for workers with certain advanced skill sets including soft skills and attributes such as those mentioned above and additionally leadership skills, emotional intelligence, information literacy, and again, discipline-specific skills (e.g., IT, finance) (Carnevale, 2008; Nevill & Chen, 2007; NCES, 2011; Council of Graduate Schools, 2013). There is an assumption that obtaining a master's degree deepens participants' knowledge of these skill sets (Carnevale, 2008; Glazer-Raymo, 2005; Nevill & Chen, 2007; NCES, 2011; Council of Graduate Schools, 2013). However, at the same time, there is little empirical evidence on both career and learning outcomes and how the master's degree is linked to the use of these skills in the workplace (Conrad et al., 1993; Haworth, 1996; Bilder & Conrad, 1996; Conrad, Duran, & Haworth, 1998).

Carnevale says that, "Most new jobs that require postsecondary

preparation are in offices, education, healthcare, and the high-tech sector—the signature occupations and industries in the 'knowledge economy'" (2008, p. 24). He reports that jobs in these industries are increasing rapidly, while during the last 50 years there has been a major decline in manufacturing jobs, natural resource jobs (farming, fishing, and mining), and low-wage services jobs. As this description suggests, the term knowledge economy is used to delineate the shift from an economy based on manufacturing and other forms of manual work to a reliance on workers who produce ideas and information. He adds that, "a liberal-arts degree topped off with a graduate or professional degree still brings the highest returns in earnings" (p. 29). Graduate education overall, and professional graduate degrees specifically, almost always include an occupational focus (Carnevale, 2008).

What we now collectively call "professional master's degrees" is a new branding of master's degrees in general. These programs are rigorous, academic, credit-bearing programs that blend research and theory with practitioner skill-sets and consist of coursework at a higher level than undergraduate education. What is different is that they are evolving into convenient part-time programs in new fields of study that target the working adult at early and mid-career, and not the student right out of college. Commonly, professional master's degree programs are differentiated from traditional full-time research programs by the fact that they are often part-time, that they have a specific career emphasis, such as business, computer science, communications,

and applied social sciences, and that they are not normally a forerunner to a terminal degree (Glazer-Raymo, 2005; Nevill & Chen, 2007; NCES, 2011). These programs are in demand for students who want social mobility and employers who need workers with these skill sets (Carnevale, 2008). What is the current perception of how these programs are meeting this demand in terms of student outcomes? Until recently, all graduate programs, be they professional programs or traditional research programs, master's level or doctoral level, have not been the target of post-secondary assessment measures, but that is changing for a number of reasons.

Just as accountability has grown in K–12 and undergraduate education, it is now also a requirement of graduate institutions. In particular, professional master's degree programs that prepare students for specific professional occupations are in the process of defining transparent criteria of program outcomes. Recently, increased emphasis on assessment, accountability, and career and learning outcomes from accreditors, state and federal government, and in ranking reports, have hit higher education. While assessment has been a topic of concern for more than thirty years (Baird, 1996), the current push for more accountability is coupled with an increased public concern about the rising cost of higher education. At this time accountability is mostly demanded through accreditors in dialogue with university leadership and faculty, and this accreditor accountability is focused on assessing learning outcomes (Hernon, Dugan, & Schwartz, 2013) and also statistics on job placement rates and professional

exam passage rates (NEASC S Forms, 2013; U.S. News and World Report Best Online Programs Surveys, 2013). While most of the focus has been on reporting for undergraduate programs and assessment through regional and discipline specific accreditation, three recent government actions have foreshadowed the need for increased and diversified types of accountability at all levels, including certificate, undergraduate, master's and doctoral levels.

In 2012 the United States Senate Health, Education, Labor, and Pensions Committee led by Senator Harkin of Iowa, published a report of their investigations into questionable admissions practices, high tuition, and false promises of inflated earnings in the for-profit college industry (i.e., Phoenix, Kaplan, Capella) (HELP, 2012). While this report was targeted at for-profit schools, it has put the spotlight on all public and private schools, online education, and professional programs. At the same time as Senator Harkin's HELP Committee investigation, the Department of Education (DOE) started work on Gainful Employment laws that target programs that promise high earning careers, but often leave students with heavy debt load and high student debt default rates (Field, 2011a & 2011b). In 2014 the major reporting on accountability has been on how the Higher Education Act, which is up for reauthorization, will enforce accountability measures for higher education in ways that may tie into an institution's ability to offer federal financial aid to students (Thomason, 2013). Whether an institution can provide federal loans and grants to students is dependent on meeting certain requirements, and the reauthorization

of the Higher Education Act could include meeting career and learning outcome benchmarks that are yet to be defined.

Importance

The measurement of learning outcomes is important nationally because the assessment of graduate programs has effects on many groups, including future and current graduate students, alumni, employers, institutes of higher education, and society in general. Table 1.1 below summarizes the major stakeholders and what is at stake for each group. For students and alumni we have seen that outcomes matter in terms of measuring whether students are meeting goals, whether they can link career satisfaction and promotion to their degree program in some way, and whether programs have an effect on their social mobility. There is also a lot of stake for employers who have a need to hire professionals or promote current employees as skills gaps make it hard to find qualified employees during the hiring process, in part because of the rapid change in the workplace due to globalization and digitization. Universities could stand to lose their accreditation and therefore their ability to offer students financial aid. This is also a great opportunity for faculty and colleges in general to use the information they gather from outcomes data to update their curriculum and stay relevant in the face of rapid changes to the nature of the workplace and the economy. Societal importance and national importance can be summarized by a discussion of the effect of low college completion rates on national security, and also by the

social good these graduates can contribute to society.

  The NCES report *Graduate and First-Professional Students* acknowledges that focusing our attention on accountability for master's degree programs is important because, like undergraduate degree attainment, "Graduate study is also essential to sustaining the U.S. economy and generating the advances in fields such as science, technology, medicine, and others that contribute to our nation's global competitiveness and quality of life" (CGS, 2008 as cited in NCES, 2011, p. 1). The Spellings Commission Report (2006) argued that if the United States does not focus on student success and outcomes we will not be competitive globally, by stating that, despite being leaders in postsecondary education, other countries "are now educating more of their citizens to more advanced levels than we are" (p. x). Nationally speaking, an educated workforce is necessary considering changes in mechanization and a decrease in manufacturing jobs, and increases in new technology, new job skills, communications, and global competition. The benefit to society is evident when graduates with soft skills influence not just their workplace, but the environments and communities they are a part of as drivers of "social good" (Hughes &Barrie, 2010).

Table 1.1: Stakeholders and Importance

Group	At Stake
Students	Meet goals, social mobility, rewarding careers
Alumni	Meet employment goals – social mobility and rewarding careers
Employers	Demand for skilled employees in "knowledge economy"
Universities	Are they effective? Assessment for change in curriculum
Nation	Competitive/Secure? – Knowledge Economy and National Well-Being
Society	Need for drivers of "social good" – soft skills (Hughes & Barrie, 2010)

Gaps in the Literature

At this time, most of the evidence for outcomes related to graduate study is limited to MBA programs, such as studies by Kretovics (1999) and Cocciara, Kwesiga, Bell, & Baruch (2010). Other existing outcome data is often limited to self-reported outcomes by alumni, and overall there is lack of direct and indirect assessment measurements for graduate programs and specifically master's level programs (Cocciara et al., 2010; Conrad, Duran, & Haworth, 1998). There are large gaps in the knowledge of how teaching and learning are linked to outcomes (Haworth, 1996; Bilder & Conrad, 1996) and a lack of research that gives voice to students and alumni in the process of defining and measuring learning outcomes and value for programs (Cocciara et al., 2010). However, that student voice is key to finding the relationship between teaching and learning and outcomes (Bilder & Conrad, 1996).

Purpose of the Study

Evidence of outcomes is typically drawn from three sources:

(a) direct measures of students' professional knowledge competencies

(through faculty observation/rubrics);

(b) employers' perceptions of employee competencies;

(c) and students' perceptions of their professional skills and dispositions

(Hernon, et al., 2013; Cocciara et al., 2010; Rosenthal 2014).

We know that graduate "attributes," or qualities, skills, understandings and

dispositions, can be harder to measure than other direct learning outcomes

measured by faculty (Hughes & Barrie, 2010), but that both measurements are

necessary to draw conclusions for assessment purposes, and that measuring

attributes sometimes has to be completed before learning goals are defined and

rubrics and artifacts are collected for direct assessment. After the faculty

assessment processes begin, multiple measurements should feed each other in

a cyclical pattern to revise the assessment plan to "close the loop" (Hernon et al.,

2013; Rosenthal 2014). In many environments this lifecycle form of post-

secondary outcomes assessment is new, so rich data on student experiences

are necessary. Also, little is known about how outcomes are linked to program

learning, and how graduates perceive outcomes in the years that follow

graduation. The purpose of this study, then, is to examine students' perceptions

because indirect or perceptual measurements can help faculty formulate

additional direct or actual/observed measurements gathered from testing, projects, program portfolios, and other deliverables assessed with rubrics. Since there is a lack of research on this topic at this point, descriptive studies are necessary to inform future research.

Research Question

Accordingly, this study seeks to answer the questions: Do graduates of professional master's degree programs perceive their course of study as effective in (a) meeting their personal goals, and (b) developing skills and dispositions demanded in their profession? The following "sub questions" guide the examination:

i. What specific skills or dispositions do graduates attribute to their graduate program?

ii. How are the development of these requisite knowledge and skills related to each other? Do the knowledge and skills ever come from outside the program (e.g. the workplace or other professional learning opportunities)? If so, how does this tie in with skills and dispositions derived from the program?

iii. Did graduates' income derived from their profession increase after program completion? If so, do they attribute the income to degree attainment?

The benefits of an education cannot always be summed up via a simple survey. We need better tools to measure outcomes for graduate students, and that starts with an investigation of the data on perceived existing outcomes and questions that help guide what skills should be assessed and how. Assessment in higher education differs from assessment in K–12 because it is currently being led by the regional accreditors in conversation with universities, it is university defined, and it is evaluated through accreditors in the peer review atmosphere. Since assessment practices are defined within the institution currently, many see the value of assessment for internal review and curriculum change and they have noted that this new exercise is not assessment for assessment's sake, but assessment for change (Hernon et al., 2013). Taking it one step further, assessment can benefit more than just the future curriculum, and therefore the outcomes of future students. When universities work with alumni, the assessment process can help the alumni reflect on their achievements and goals, and it further empowers students as they are reintroduced to the idea of their stake in their lifelong learning activities (Hughes & Barrie, 2010). In the pursuit of answers to the research questions above, the researcher hopes that the process of gathering data on skills and dispositions gained by alumni and their use in the workplace after graduation is simultaneously empowering to the alumni regardless of nature of their experience, or the overall research findings.

Chapter 2. Review of Literature

Graduate Education and Social Mobility

In the United States, a college education is becoming so standard that many students consider going to college as part of their "birthright" (Oloffson, 2009). In 1973 47% of high school graduates went to college, and in 2008 that number was 70%.[1] The Higher Education Research Institute annual CIRP Survey data on what is the highest degree that freshman plan on attaining show that in 1972 38% of respondents planned to stop at the bachelor's degree and 31% planned to stop at the master's. In 2008 only 22% of the freshman planned to stop at the bachelor' degree and 42% planned to stop at the master's degree (Oloffson, 2009). Table 2.1 below outlines the change in college attendance and desired graduate school attendance. The CIRP survey data for 2012 show similar numbers to 2008. The director of The Higher Education Research Institute has said, "Years ago, the bachelor's degree was the key to getting better jobs. Now you really need more than that" (Oloffson, 2009).

Table 2.1: College Goers and the Workforce Then and Now

Year	% of High School Grads that Went to College	Highest Degree that Freshman Planned on Completing	% of Prime Aged Workers with any Post-Sec Education	% of Office Workers with Some Post-Sec Education
1972/1973	47%	38% Bachelors; 31% Masters	28%	38%
2008	70%	22% Bachelors; 42% Masters	59%	69%, 37% with Bachelors

[1] College completion rates, however, are much lower.

Sources: (Oloffson, 2009; Carnevale, 2008)

Carnevale (2008) states that "upskilling," (or the national and global increases in demand for new and additional skills) of occupations in our economy is increasing and highlights not only the importance of going to college in the current economy, but the importance of graduate school as well for higher returns. Increasing access and attainment for master's degrees is important because our workforce demands higher-level *general* competencies and soft skills, and job-related skills in our growing global knowledge economy (Carnevale, 2008). Increased access to master's degree programs is especially important for underrepresented groups and non-traditional students, the very groups to whom professional degrees are being marketed and who need the convenience these programs provide because of work and family responsibilities. In the near future, institutions may have to verify that they are helping students attain the level of the education they want and that the students are not leaving degree programs with debt and without the skills that they need. The goals of individual students may vary, and understanding the goals of the increasing number of students enrolling in professional master's degree programs is no small feat, yet it is something that should be studied for a number of reasons.

Alternatively, employers may use the master's degree as a signal that they are hiring at a higher level, regardless of whether the applicant has the competencies or skills (Matthews, 2014, Gambin et al., 2014). Measuring outcomes to place a value on the degree, or to measure value through human

capital theory may be different than signaling theory which assumes that, at the surface, the degree only tells you a small amount about the graduates motivation to pursue the degree, and not what skills they possess (Matthews, 2014). Recent research has sought to figure out what the effect of "signaling" has on upskilling in the work place, which could add false value to the master's degree, or could decrease the value of the undergraduate degree.

Human Capital

Learning Outcomes. A popular source for undergraduate learning outcomes comes from the Association of American Colleges and Universities (AAC&U) Valid Assessment of Learning in Undergraduate Education (VALUE) 16 Essential Learning Outcomes and corresponding rubrics (AAC&U, n.d.). These outcomes are very similar to outcomes found in the graduate program evaluation literature. In the *Pathways Through Graduate School and Into Careers* joint publication from the Council of Graduate Schools and the Educational Testing Service (2012), they list a number of high-level competencies for graduate degree alumni, including leadership, communication, project management (planning projects and delivering products on time and within a budget regardless of field), problem-solving, creativity, analysis and synthesis of data, and oral presentation skills. The report outlines five groups of critical personal skills in demand from employers, and/or not being met by graduate education, including professionalism and work ethic, oral and written communication, teamwork and collaboration, critical thinking and problem solving, and ethics and social

responsibility. In a literature review on the growing set of skills needed by engineers in a knowledge economy, the authors preformed a comprehensive review of both graduate attributes and generic skills in general, and specifically for engineers, to come up with a list and definitions of over 24 shared skills for engineers and other graduate disciplines (Abdulwahed et al., 2013). A combination of these skills will help inform a general survey of learning outcomes for professional master's degree alumni.

Career Outcomes. Holland's person-environment theory of vocational and educational behavior seeks to group individuals and environments into six areas including realistic, investigative, artistic, social, enterprising, and conventional. In some research literature this theory is used to map how learning outcomes are affected when there is a match or a mismatch between the personality type and the career environment (Pike et al., 2011). Testing for personality type can be tricky to accomplish in an already crowded comprehensive and general alumni survey, but this remains an interesting idea for further research in the right setting.

Other relevant career behavior theorists include Savickas (2005), who is known for his career construction theory, which includes the principles of adaptability. His career construction theory defines career adaptably as "an individual's psychosocial readiness and resources for coping…" with their career development and work changes (Savikas & Porfeli, 2011, p. 357). This work on career development is relevant because it deals with adults and career

behaviors, and specifically of interest is the published and internationally validated Career Adapt-Abilities Scale (CAAS) (Savickas & Porfeli, 2012). This twenty-four question psychometric scale measures a person's career adaptability through four areas of concern, control, curiosity, and confidence. Concern is defined by the researchers as an anticipation of and awareness of the future, in terms of an optimistic outlook and preparedness. Control is defined by acting and being purposeful and goal-oriented. Curiosity is defined as taking the initiative to explore, investigate and reflect. Confidence is defined as coping, self-efficacy and behaviors related to the expectation of achievement. All four subscales contain items that measure attitudes and beliefs, that overall contribute to the career adaptability, that in turn increases the individual's ability to make decisions, and handle work changes (Savikas & Porfeli, 2011).

Career adaptability, since it is a factor that influences career development, could be a significant factor in measuring overall career development and career advancement in terms of career outcomes. When considering all the influences on outcomes, both external and internal, adaptability is interesting to measure as it is internal and both innate and learned in a multitude of environments.

All four CAAS subscales, but especially control, seem to measure personal agency, or the ability of an individual to act on one's predetermined ambitions. Surveying students goals before entry to a program, at entry, or retrospectively plays an important part in developing a picture of the influences that lead to career and learning outcomes. How these goal variables relate to the

CAAS scale and to other indicators of self-reported human capital outcomes or competencies and skills, be they intellectual or social or related directly to career development skills, will be tested in this study.

Related Research and Findings

In the research literature on outcomes for graduate students there is a scattering of use of published and validated measurements for different skills and attributes in different graduate disciplines, including but not limited to, emotional intelligence, critical thinking, and professionalism. As mentioned above when discussing gaps in the literature, many studies about outcomes in professional master's programs focus on one discipline, mostly including MBA programs, and additionally nursing programs. Generic skills have been measured in past studies using a Learning Skills Profile (LSP) which is a self-report instrument used in previous studies that involves sorting over twelve skills cards into a personal skills envelops (Kretovics, 1999). Kretovics used a cross-sectional modified pretest-posttest design to measure outcomes in relation to skills of incoming MBA students. He used graduates of a different program as a control group, and gave the pretest to entering students (as an additional control group) and the posttest to graduates that were considered equivalent for the purpose of the quasi-experimental design. He found significant increases in the 12 skills measured from the entering students, including goal setting, leadership, quantitative skills, theory, and technology, and a significant increase on 7 skills in comparison to graduates from other programs. He calls for more quasi-

experimental research that compares graduates to entering students using a pretest/posttest design (Kretovics, 1999).

More recent research on MBA students was conducted to test the difference in career outcomes and social capital between male and female students (Cocciara et al., 2010). This study measured alumni perspectives through a survey and compared it to student records to triangulate. The survey looked at student perceptions on salary, satisfaction, and promotions. The researchers found that there was a significant difference in the ways that males and females perceived their career success after graduation in relation to their preparation. The females perceived they faced more discrimination while in the program and this resulted negatively in gains in their promotions and salary increases. This study helped inform a revision of the culture and curriculum of the institution (Cocciara et al., 2010).

To measure critical thinking in a master's degree nursing program, Drennan (2012) also used a cross-sectional cohort study with control groups, but employed a retrospective pretest design to combat the response shift bias of pre/posttest. As an instrument he used the Watson-Glaser Critical Thinking Appraisal tool (WGCTA) after it was adapted by the developer into a United Kingdom edition to fit the population. He found that graduates had higher critical thinking scores than incoming students, but not higher than other benchmarks, and recommended a revision of the curriculum to address the gaps in the acquisition of this skill (Drennan, 2012).

Another study of interest looked at graduate medical students and ways to measure "Entrustable Professional Activities (EPAs)" to meet requirements for competency-based resident education for clinical settings. The EPAs help ensure that the students have learned how to handle responsibility in a clinical setting (Jones et al., 2011). Jaeger (2003) conducted an exploratory study using a pretest-posttest method to measure job competencies and emotional intelligence in graduates of master's level professional programs. Both of these studies are of interest because they focus on a unique professional "soft" skill that could inform the definition of learning goals in other professional master's programs.

Anaya (1999) showed that student reported learning outcomes are valid proxies for direct measurements by comparing statistical analysis of GRE scores and GPAs to similar skills reported by students, thus adding value to indirect measurements. Cocciara et al. (2010) also found similar results by triangulating student records to alumni perspectives. Drennan (2012) noted that self-reported salary, satisfaction, and promotion outcomes could be measured with a retrospective pre/post-test design. While there have been some mixed methods studies to triangulate indirect and direct measurements of outcomes, there is still not enough research on students' perceptions of both career and learning outcomes in professional master's degree programs.

Information literacy, while a major part of the library information science literature, is now being considered more and more in the assessment of learning goals. Adoption of this learning goal has been slow since most information

literacy training is a one-shot seminar embedded in a course and not revisited later in the program (Saunders, 2012). As this learning goal is mainstreamed (i.e., as one of the 16 AAC&U Essential Learning Outcomes and Rubrics) we can expect changes in the curriculum to take advantage of research skills that research librarians can offer in collaboration with faculty. Saunders (2012) has written much in this area and has additionally conducted research on faculty perspectives using surveys that show that there is still a lot of confusion on how to incorporate these skills into existing curricula and that there needs to be more collaboration between librarians and faculty.

A review of the methodologies employed by researchers investigating outcomes of professional master's degree programs shows that most studies survey alumni, but do not interview them (i.e., Jaeger 2003; Cocciara et al., 2010; Wakimoto & Lewis, 2014). Therefore there is also a lack of rich data on the relationships between learning goals and graduate programs, and on student perceptions. The amount of research in the various professional and tradition graduate fields is slender. Of the existing discipline specific studies there are large gaps, and there is no overview of outcomes in graduate education overall. By taking a step back to get a comprehensive look at graduate outcomes, and by collecting data on general graduate competencies in a number of fields at a research site we can gain perspective and get a better idea of how to conduct further research.

As demand for employees with a professional master's degree increases, and accountability to show both learning outcomes/graduate competencies and career outcomes for alumni of these programs increases, it is becoming more important to develop measures of these outcomes for a number of stakeholders. The goal of this study is therefore to better define a measure of these competencies and career outcomes on a broad level with a single population in order to interpret what the current value of these programs are, determine if some programs meet alumni needs better than others, to see how is the measure effective and not effective, and to see if there are additional measures to be considered.

Chapter 3. Design and Methodology

Setting

The setting for this survey-based study is a professional graduate school, serving largely working adults, set within a large private research university in New England. The school offers graduate programs both on-campus, fully online, and in a blended format in the areas of business, computer science, applied social sciences, and a few other smaller niche programs in arts and communications areas. These programs are considered non-traditional in that they serve adults who are working full-time and attending school part-time. Courses are mostly taught by full-time research faculty and part-time faculty, who come from the field and bring industry expertise. These programs are viewed as professional master's programs in that they are considered particularly relevant to working professionals, and they typically do not lead to a full-time doctorate program.

Procedure

An IRB application was submitted to the institution of study in April 2014. After incorporating a few edits, including rewording the informed consent language in the survey directions, the survey received exempt IRB approval in early June 2014, and additional approval to edits made to the survey instrument in early October 2014. The anonymous survey was distributed to the sample in late October 2014.

Qualtrics was used to send the survey using controls that allow for complete anonymity, but tools that still allow the researcher to send follow-up emails. The survey takes between 10–12 minutes to complete. The survey was emailed with a message from the Dean of the College from the Dean's email address to the population of 3,150 in October 2014. Two separate follow-up emails, also from the Dean's email address, were sent to those that did not start, finish, or opt-out, as a reminder to participate in November and December. The survey deadline was extended from the end of November to mid-December 2014, and the survey was officially closed in Qualtrics to all further responses on January 9th, 2015.

Participants

The participants in this study are 555 alumni who responded to an email request to complete a survey about their graduate school experiences and the perceived impact of the program on their career outcomes. The original sample included the complete list of 4009 alumni who had been out of school for at least six months to three years (Table 3.1). The median age of alumni in the full population is 36, most with 1–7 years of work experience on average. Other surveys conducted by the college show that over 90% of graduate students work full-time while attending these programs, and over 30% received tuition assistance from an employer. The alumni survey instrument asks the sample about their work experience and career status both before entry, during the program, and after.

Table 3.1: Alumni Survey Population

Graduation Date	Total Graduates
May 2014	455
January 2014	308
September 2013	289
May 2013	435
January 2013	332
September 2012	327
May 2012	554
January 2012	332
September 2011	283
May 2011	389
January 2011	305
Totals	**4009**

Email lists of alumni who graduated from January 2011 to May 2014 (September 2014 graduates were excluded since they would have only been out of school for two months) were requested from the University's alumni office. The alumni office also reviewed the survey to ensure that the messaging was appropriate and followed their communication procedures. Of the total of 4009 graduates, the alumni office had email addresses for 3,150 or 79%, of which it was assumed that many would be invalid email addresses. It was also required that the email lists from the alumni office were screened to ensure that students who had indicated that they did not wish to be contacted by the University in any way were excluded to maintain compliance with the federal CAN-SPAM Act. An opt-out of all future emails was included in the survey to protect the survey from

being sorted as spam by email provider software and to maintain compliance. The alumni office collected the new opt-outs to update their contact lists.

Of the 3,150 alumni that were considered "emailable," based on the CAN SPAM Act and email contact information on file, by the alumni office at the institution of study, 166 emails were undeliverable, for a total of 2,984 alumni who received the email. Data was collected from a total of 555 alumni, for a 19% response rate. Qualtrics software showed that 528 completed the survey, but data was downloaded for all respondents that started the survey and cleaned by the researcher. Data from these respondents was included by the researcher if it was determined that they had made it more than halfway through the survey, as the questions were front-loaded for the research study, and the trailing questions were for used for marketing purposes and not crucial for the analysis. A breakdown of respondents follows in Table 3.2.

Table 3.2: Response Rate

Graduation Date	Total Grads	"Emailable" as determined by Alumni Office	Received Survey – Valid Email	Responded	Response Rate
2011	977	558	515	85	17%
2012	1213	956	914	157	17%
2013	1056	924	862	160	19%
2014	763	712	693	153	22%
Total	**4009**	**3150**	**2984**	**555**	**19%**

Table 3.3 below shows that the sample is representative of the total population of graduates at this institution in terms of gender, age, enrollment status (full-time or part-time), degree delivery format (online vs. on campus), and citizenship status. Population data was downloaded from the University's Student Information System (SIS). The alumni respondents' average current age (in 2015) was 37.8, which is higher than the SIS data and a previous student survey conducted in 2012. The sample responses in terms of employment status and whether or not they received tuition benefits from an employer are also similar to the previous student survey conducted in 2012. Fifty-one percent of the alumni respondents reported that they received company tuition benefits or some form of tuition support from an employer, while 82% reported that they worked full-time, 9% worked part-time and 9% said they didn't work when they started their program.

Table 3.3: Demographics Data, Population vs. Respondents

Data Item	Population (SIS Data)	Student Survey 2012	Alumni Respondents
Gender- Male:Female	52%, 48%	-	53%, 46%
Average Current Age	36	36	38
Studying Part-Time	93%	81%	-
Studying Online	56%	63%	63%
International Student	18%	14%	12%
Employed During Program	-	88%	91%
Employed FT During Program	-	77%	82%
Employer Tuition Assistance	-	26%	51%

Of the 555 respondents, 53% were male and 46% were female. Race and ethnicity was asked in the IPEDS reporting format, and the two questions were combined and coded accordingly, following IPEDS reporting conventions with the following percentages of respondents: 12% non-residents/international students, 2% race and ethnicity unknown, 5% Hispanics or Latinos of any race, 8% Asian, 7% Black or African American, 0.2% Native Hawaiian or other Pacific Islander, 65% Caucasian, and 2% two or more races. For analysis the race and ethnicity IPEDS data was recoded to exclude the non-resident students (n=67), the Native Hawaiian and other Pacific Islanders (n=1), the two or more races reported (n=10) and the other missing data (n=13), all as missing data, due to the small n.

Programs were grouped in to three main areas of business, math related and computer science, and the applied social sciences. Other smaller niche graduate programs which had n= 13, n=32, n=37, and n=3 (other) were coded as missing data and therefore excluded from any analysis by the degree code, due to their small n (Table 3.4).

Table 3.4: Respondents by Department

Subject Area	Totals
Business	183
Math Related and Computer Science	170
Applied Social Sciences	117
Other 3 Program Totals (with small n)	85

Instrumentation

The web-based survey instrument was designed to get a general idea of students' perceptions of their career and learning outcomes. A published scale was embedded in the survey to measure career adaptability. The other measures were designed by the researcher to fit the specific needs of the research question and population in question, as no published survey was exclusively customized for professional master's degree students in order to provide comprehensive data on a wide range of on career and learning outcomes. This instrument is tailored to collect a large amount of data on alumni perceptions of how their degree has affected professional knowledge, skills and graduate attributes (outcomes), promotions, income, and engagement in other additional educational or professional endeavors. The survey includes sections on further education, employment, including employment status, salary, raises, and promotions, and skills and expertise. A testimonial section with two open-ended questions was included for future qualitative studies.

The survey instrument was designed in Qualtrics by the researcher and a member of the college's marketing and outreach office to collect data on alumni outcomes for research purposes and for the needs of the college. The instrument was developed by determining what data would be needed for assessment for the college, and the questions were designed keeping in mind the career and learning outcome data needed for this research study (Fowler, 1995, 2002).

The web-based survey uses multiple question types, mostly using a five-

point Likert scale to collect data on alumni perceptions. Questions are asked in a

manner to see if alumni attribute skills to the program, and retrospective

questions are asked to place changes in status in context to a baseline before

the program. While the questions mostly ask students to link outcomes only if

they believe they can be attributed to the degree program in some way, many

additional endeavors or attributes, such as the adaptability scale can be

complicated and hard to attribute solely to one source.

    Career and Learning Outcomes Measure. Using guidance from the

existing literature on alumni outcomes and graduate attributes, this measure

seeks to collect general information on a wide-range of attributes and skills

variables that are relevant to professional graduate students in general, including

discipline specific knowledge, oral and written communication,

professionalism/ethics, teamwork/collaboration, problem solving, creative

thinking, leadership, quantitative literacy/analytical thinking, information literacy

(research skills), decision making skills, and business/project management skills

(see Table 3.5). These variables were pulled from the *Pathways Through*

Graduate School and Into Careers report (CGS & ETS, 2012), the Association of

American Colleges and Universities (AAC&U, n.d.), and a published literature

review on skills for engineers in a knowledge economy (Abdulwahed et al., 2013)

into a larger combined list that was then used to develop a model for graduate

career and learning outcomes survey instrument. The variables measured in the

instrument were selected from the larger list based on how easily they could be

measured via this new survey and if they fit the scope of the survey. As an example of how alumni are asked about skills, this 25 item Likert scale table asks the respondent to indicate their level of agreement that on a scale from strongly disagree (1) to strongly agree (5) that, "The education that I received at this college prepared me to....communicate my ideas in writing, analyze problems, make decisions, read and analyze publications and research relevant to my field, work as team with other co-workers, etc."

Table 3.5: General Skills and Attributes, Measured by Survey Highlighted

Discipline Specific Knowledge
Oral and Written Communication
Critical Thinking
Professionalism/Ethics
Teamwork/Collaboration
Problem Solving
Creative Thinking
Leadership
Quantitative Literacy/Analytical Thinking
Information Literacy (Research Skills)
Lifelong Learning Interest
Integrative and Applied Learning
Civic Knowledge and Engagement
Intercultural Knowledge
Theoretical Knowledge
Emotional Intelligence
Decision Making Skills
Business/Project Management Skills

Career Adapt-Abilities Scale (CAAS). The survey also includes the published and internationally validated Career Adapt-Abilities Scale (CAAS) (Savickas & Porfeli, 2012). This 24 question psychometric scale has been validated in field tests in thirteen countries by a team of researchers (Savickas & Porfeli, 2012). The question in the alumni survey that holds the validated instrument is intended to measure the individuals' own resources for career adaptation, in addition to other variables collected. The introductory question of the scale was changed slightly to fit this specific study in order to collect responses that factor in whether or not the program influenced their development of the listed abilities. Changes to the question follow in bold:

> *Different people use different strengths to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities **[as a result of the completing your master's degree]** using the scale below* (Savickas & Porfeli, 2012).

The use of this instrument will hopefully further the understanding of another dimension of alumni career outcomes and career development, namely adaptability and career development in general. If these skills can be attributed to the program it adds significance to further testing of this variable when considering outcomes. Additionally, the adaptability items can also be broken down into the subscale components of concern, control, curiosity, and confidence. These variables, it could be argued are both intrinsic and extrinsic, or

within the identity of the individual and not part of the responsibility of the program while also shaped in some way by the program. This complicated interaction may need further study, but the use of this scale this new way could be a starting point. Also, further analysis on levels of adaptability measured through the four subscales will prove interesting in how the relate to other variables in the full alumni survey.

The CAAS subscales of were summed by taking the mean of the six related questions in the subgroups and computed into four new variables that coincide with Savickas' subscales called, Concern, Control, Curiosity, and Confidence (Savickas & Porfeli, 2012). For the CAAS, the 24 items yielded 2 Factors with eigenvalues greater than 1, however it was decided not to rotate the two-factor solution, but to keep the four subscales determined by Savikas and Porfeli (2012). Internal consistency estimates for reliability for the four-factor solution were generated using Cronbach's alpha and ranged from .92 for Concern to .95 for Confidence.

Reasons to Attend Retrospective Measure. Six items were used to ask alumni about their reasons to attend the graduate program at the point of entry. These items asked alumni to think back to when they made the decision to start the program and to rate their goals, such as to improve income, for personal satisfaction, for a job change, etc. The question stem asks, "Please think back to when you decided to attend graduate school. Please rate the importance of each

of the following in your decision to choose this college," and the answer choices range from unimportant (1) to very important (5).

Achievement of Goals Measure. In an additional section of the survey, questions are asked in a yes/no format about whether the respondent achieved any of the same goals from the reasons to attend measures. The question is phrased, "Which of the following have you achieved as a result of the program," and respondents are prompted to select as many as apply. The answers match to the reason to attend goals in the previous measure so that they can be matched, however one flaw with the instrument is that the Achievement measure is a yes or no measurement and the Reasons to Attend is a Likert scale. Also the Reasons to Attend scale combines two questions into one question at times, such as "To obtain or maintain a certificate," when these should be two separate items. The corresponding Achievement items are "Obtained a Certification," and "Maintained a Certification."

These responses were coded 0 for "no" and 1 for "yes" and all 9 variables were combined into a new variable for the sum of their achievements, therefore titled "Achievement Sum,", which is the average of the sum of all nine possible yes responses (min=1, max=9, mean=3.80, SD = 1.72).

Satisfaction Measure. The last Likert scale block of the survey asks students "How satisfied were you with each of the following at the college?" and contains eleven items that focus on satisfaction on a college level and not a program specific level, such as quality of faculty, advising, and courses, and

accessibility of university facilities and services. Possible responses range from very dissatisfied (1) to very satisfied (5).

Other Variables. Course Evaluation averages for the questions that rate instructors and the course were taken by program from the College's information management system for the years the alumni were students (2009–2014). Course evaluations questions at the college are asked on a 5 point Likert scale from strongly disagree (1) to strongly agree (5), or from poor (1) to superior (5). Sample course questions include, "I found the class intellectually challenging," and "The overall course experience was…" Sample instructor questions include, "The instructor's ability to present material is…" and "I would rate the instructor overall as…"

Both five year course ratings averages and five instructor ratings averages for all three program groupings were added to SPSS for each respondent depending on their program. Scores of 4.381 and 4.189, respectively, were added for math and computer science program alumni. Scores of 4.251 and 4.432 were added for applied social sciences alumni, and scores of 4.245 and 4.067 were added for business alumni.

Before analysis, one negative question (completing the degree program…had no effect on my career) was reverse coded to match the other scale questions that were asked in a positive manner. All Likert scale questions on the instrument were coded in SPSS from negative to positive, 1 to 5, with, for example, strongly disagree (1) and strongly agree (5).

Pilot Testing. In December 2013 the electronic survey (not including the adaptability scale) was pilot tested by sending it to eight alumni (a convenience sample) via Qualtrics. All alumni were then contacted for interviews about the survey instrument, and three alumni also participated in a focus group. Corrections were made to the survey to reflect the feedback of the respondents. The survey has also been edited for readability of questions by removing jargon, using simple language, making sure questions are answerable, making sure all questions are asking only one question, and norming standard factual questions to validated question formats (Fowler, 1993).

As a check on the utility of the survey as the research process progressed, the data collection table below (Table 3.6) was used to help ensure that the questions would collect the data needed to answer the research questions, and to document possible hypotheses related to the research questions before the data collection began. Question validity and reliability was also sought by comparing questions from other schools' alumni surveys that have been in use, and creating a new survey design checklist using three sources: Fowler (1993, 2002), Dillman (2000), and the University of Wisconsin, Madison, Survey Center Checklist.

Table 3.6: Data Collection Table

Questions	Importance	Data Needed	Hypothesis
Did programs meet students' goals?	Little evidence about the relationship between grad program and prof. goals	Students goals compared to their reported outcomes	Yes and no – depends on the goals
Are any of the programs better or worse at meeting student goals?	Value of one degree vs. another	Comparison of program data from survey	Yes and no – depends on students goals and program
Do graduates gain the skills and dispositions they need for their professions?	Little evidence in literature that they do	Questions about skills and dispositions used on Likert scale	Yes – but not sure which ones
Can they attribute it to the program? How attributed to program?	Further understanding will support future assessment	Asking alumni to report outcomes only if they can attribute it to the program	This is a complicated relationship
What else do they gain?	To help inform data collection for future assessment	Analyze additional items	There are more data items we could use for assessment

The survey instrument went through a second round of pilot testing with eight alumni (a convenience sample again with some overlap from the sample from the previous year) in October 2014. This pilot testing included some additional questions and the adaptability scale. Edits were made to the wording and directions using the same process outlined by Fowler (1993, 1995).

Chapter 4. Analysis and Results

Analyses were conducted in three phases. First, principal components analysis was used to establish construct validity for the measures. Second, multivariate analysis of covariance was conducted to evaluate for potential program differences in the derived outcome measures. Finally, regression analyses were conducted to determine which measures were associated with achieving one's career goals and course/instructor ratings.

Principle Components Analysis

Principal components analyses were conducted for three measures: a) learning and professional outcomes attributed to the degree, b) the reasons to attend the program measures, and c) the satisfaction measure. For each analysis, the number of factors to rotate was determined by a combination of evaluating the number of factors with eigenvalues greater than 1 followed by evaluating the discontinuity in variance accounted for between those factors. The "varimax" orthogonal rotation was used to rotate the factors.

Career and Learning Outcomes. The 25 items related to various career and learning outcomes were entered into a principle components analysis. The results yielded 4 factors with eigenvalues greater than 1 and in evaluating the variance discontinuity between those factors it was decided to rotate the three-factor solution, which accounted for 60% of the total variance.

Table 4.1: Career & Learning Outcome Items

	Component		
	1	**2**	**3**
Learning Outcomes			
Increased my work performance in terms of creative thinking	**.761**	.164	.331
Increased my work performance in terms of innovative thinking	**.751**	.186	.325
Influenced my use of professional ethics and standards	**.667**	.187	.308
Analyze problems	**.646**	.425	.145
Have a solid foundation of knowledge within my area of study	**.623**	.279	.310
Read and analyze publications and research relevant to my field	**.622**	.338	.045
Communicate my ideas in writing	**.620**	.461	.054
Make decisions	**.600**	.518	.120
Use technical tools and techniques	**.594**	.255	.222
Have an international perspective	**.470**	.419	.051
Engage in scholarship/research in my field	**.461**	.251	.127
Apply what I learned in my courses to my job	**.458**	.369	.368
Social/Colleague Outcomes			
Develop valuable, long-term contacts	.127	**.765**	.196
Network with my peers	.176	**.741**	.234
Expand my leadership skills	.405	**.712**	.181
Work as a team with other co-workers	.315	**.707**	.164
Expand my managerial skills	.375	**.666**	.169
Give presentations	.280	**.664**	.077
Prepared me for a leadership role	.496	**.501**	.348
Career Outcomes			
Advanced my career	.196	.251	**.826**
Increased my career options	.339	.176	**.755**
Increased my future earning potential	.363	.081	**.748**
Gave me a competitive edge	.391	.181	**.740**
Contributed to my overall job satisfaction	.396	.219	**.703**
Had no effect on career (reverse coded)	-.157	.081	**.695**

a. Rotation converged in 7 iterations.

The three-factor rotation provided the most meaningful solution. For Factor 1,

item loadings ranged from .76 (Increased my work performance in terms of

creative thinking) to .46 (Apply what I learned in my courses to my job). The items collectively address career development in relation to learning outcomes and were therefore titled "Learning Outcomes." For Factor 2, item loadings ranged from .77 (Develop valuable, long-term contacts) to .50 (Prepared me for a leadership role), which addressed career development in terms of peer networking and workplace/peer collaboration outcomes was therefore titled, "Social/Colleague Outcomes." The item loadings for Factor 3 ranged from .82 (Advanced my career) to .70 (Had no effect on career (reverse coded)), which addressed career development solely in terms of career related outcomes, and was therefore titled, "Career Outcomes.

The decision was made to keep the item that asked if the alumni applied knowledge from the program in their job in the learning outcomes factor, even though the differences between the three factor loadings from 1 to 3 was .458, .369, .368, due to a natural fit with the other items in factor one. A similar decision was made for the item that asked if they thought the program had prepared them for a leadership role based on rotations on the three components of .496, .501, .348 to keep it in factor two, Social/Colleague Outcomes, due to the fit with the other items in that factor variable. Internal consistency estimates for reliability were generated using Cronbach's alpha and ranged from .91 for Learning Outcomes to .88 for Career Outcomes.

Reasons to Attend Program. The 6 items comprising student's reasons to attend the graduate program were next entered into a principal components

analysis. The 6 items yielded 2 Factors with eigenvalues greater than 1 and in

evaluating the variance discontinuity between those factors it was decided to

rotate the two-factor solution, which accounted for 56% of the total variance.

Table 4.2: Reasons to Attend/Goal Items

	Component	
	1	**2**
Attended for future job		
Attended to improve income potential	**.806**	.057
Attended to facilitate a career or job change	**.768**	-.066
Attended to qualify for a new job in a similar field	**.623**	.391
Deleted Item		
Attended for personal satisfaction	.410	.157
Attended to maintain job		
Attended to obtain or maintain certification	.027	**.842**
Attended to improve performance or meet requirements for an existing job	.178	**.822**

Note: Rotation converged in 3 iterations.

The two-factor rotation provided a meaningful solution. For Factor 1, item

loadings ranged from .81 (Attended to improve income potential) to .62 (Attended

to qualify for a new job in a similar field). The items collectively address goals

related to changing careers or jobs and increasing future income potential and

were therefore titled "Attended for future job." For Factor 2, item loadings were

.84 (Attended to obtain or maintain certification) and .42 (Attended to improve

performance or meet requirements for an existing job). The items collectively

address maintaining performance levels in a current job, or maintain a current

professional certificate and were therefore titled "Attended to maintain job." One

item related to personal satisfaction was left out of either factor as it's factor one loading was .41 and it did not fit well in factor one. Internal consistency estimates for reliability were generated using Cronbach's alpha and were at .63 for both factors.

Satisfaction. The 11 items yielded 2 Factors with eigenvalues greater than 1 and in evaluating the variance discontinuity between those factors it was decided to rotate the two-factor solution, which accounted for 64% of the total variance.

Table 4.3: Satisfaction Items

	Component	
	1	**2**
Satisfied with Academic Quality		
Satisfied with Quality of courses	**.871**	.206
Satisfied with Quality of faculty	**.857**	.221
Satisfied with Quality of the overall academic institution	**.845**	.178
Satisfied with Quality of the admissions process	**.660**	.356
Satisfied with Availability of faculty	**.640**	.438
Satisfied with Support Services/Peer Networking		
Satisfied with Networking opportunities and events	.149	**.810**
Satisfied with Accessibility of University facilities and services	.175	**.742**
Satisfied with Peer camaraderie	.213	**.714**
Satisfied with Quality of advising and support for the Financial Assistance process	.391	**.641**
Satisfied with Quality of admin support services (registration, payments, general info)	.489	**.582**
Satisfied with Quality of the academic advising	.540	**.581**

Note: Rotation converged in 3 iterations.

The two-factor rotation provided a meaningful solution. For Factor 1, item loadings ranged from .87 (Satisfied with Quality of courses) to .64 (Satisfied with Availability of faculty). The items collectively address satisfaction with the academic quality and were therefore titled "Satisfied with Academic Quality." For Factor 2, item loadings ranged from .81 (Satisfied with Networking opportunities and events) to .58 (Satisfied with Quality of the academic advising). The items collectively address satisfaction with support services and peer networking opportunities (financial aid assistance, peer camaraderie, advising, support services) and were therefore titled "Satisfied with Support Services/Peer Networking." One item that asked about satisfaction with the quality of the academic advising loaded .54 and .58 on each factor, respectively. While this item does related to both academics and support services, it was included as a part of support services because academic advising is considered a service function. Internal consistency estimates for reliability for each factor were generated using Cronbach's alpha and were .85 and .89, respectively.

Descriptive Statistics for All Measures. Correlations, means and standard deviations for all 11 new computed variables are below (Table 4.4).

Table 4.4: 11 Factors - Correlations, Means, and Standard Deviations

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Learning Outcomes	-										
2. Social Outcomes	.768	-									
3. Career Outcomes	.596	.512	-								
4. Concern	.478	.388	.394	-							
5. Control	.441	.402	.311	.772	-						
6. Curiosity	.502	.447	.382	.763	.839	-					
7. Confidence	.496	.423	.374	.760	.860	.860	-				
8. Attended for Future	.181	.172	.215	.344	.235	.227	.254	-			
9. Attended to Maintain	.225	.216	.169	.381	.366	.338	.385	.281	-		
10. Satisfaction Academic	.543	.442	.414	.400	.388	.393	.413	.250	.201	-	
11. Satisfaction Support	.406	.452	.364	.364	.369	.365	.355	.211	.242	.686	-
Means	3.95	3.70	3.92	3.23	3.27	3.43	3.49	4.16	3.11	4.19	3.72
SD	.643	.783	.803	.934	1.047	9.72	1.019	.826	1.243	.689	.735

Note: n ranges from 555 to 538 due to missing data

Second-Order Factor Analysis. The eight derived subscales and the four CAAS subscales were analyzed in a new second order principal component analysis. The purpose of this analysis was to further reduce the subscales into groups that may address common latent constructs and thereby reduce chances for any multicollinearity effects. After assessing for discontinuity of variance between factors, it was decided to rotate both the 3-factor solution, which

accounted for 68% of the total variance, and the 5-factor solution, which

accounted for 82% of the total variance.

Table 4.5: Second Order Factor Analysis

	Component				
	1	**2**	**3**	**4**	**5**
CAAS Career Development					
Control	**.908**	.151	.161	.050	.118
Confidence	**.894**	.205	.149	.095	.129
Curiosity	**.891**	.234	.133	.111	.070
Concern	**.818**	.149	.198	.189	.164
Human Capital Outcomes					
Colleague/Social Outcomes	.227	**.812**	.259	.040	.134
Learning Outcomes	.308	**.804**	.262	.117	.074
Career Outcomes	.189	**.622**	.173	.561	-.077
Satisfaction					
Satisfied with Support Services	.190	.248	**.831**	.040	.082
Satisfied Academic Quality	.234	.300	**.818**	.085	.005
Agency					
Achievement Sum	.125	.207	-.036	**.864**	.040
Attended for Future Job	.155	-.216	.378	**.566**	.394
Career Maintaining Goals					
Attended for Maintain Job	.246	.142	.043	.077	**.912**
Note: Rotation converged in 8 iterations.					

The five-factor extraction proved the most meaningful. For Factor 1 the

item loadings ranged from .91 (Control) to .82 (Concern). These four CAAS

subscales were grouped back together into what measures career development

and career adaptability as gained by the program and was therefore titled,

"CAAS Career Development". For Factor 2, item loadings ranged from .81

(Colleague/Social Outcomes) to .62 (Career Outcomes). The items collectively

addressed learning outcomes, career outcomes and networking/workplace peer

collaboration outcomes and were therefore titled, "Human Capital Outcomes."

For Factor 3, item loadings were .83 (Satisfied with Support Services) and .82

(Satisfied Academic Quality). These two items were titled "Satisfaction." For

Factor 4, item loadings were .86 (Achievement Sum) and .57 (Attended for

Future Job). The items were titled "Agency," since these items address both the

desire to advance in a new job and the successful achievement of those goals.

Factor 5 held only one factor at .91 (Attended for Maintain Job), the factor

measuring if they attended to maintain their current job or professional

certifications, here forward, titled simply "Career Maintaining Goals." Means and

standard deviations for the subscales are presented in Table 4.6.

Table 4.6: Second Order Factors: Correlations, Means, Standard Deviations

	1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**
1. CAAS Career Development	-						
2. Human Capital Outcomes	.519	-					
3. Satisfaction	.447	.547	-				
4. Agency	.324	.399	.254	-			
5. Career Maintaining Goals	.397	.234	.242	.289	-		
6. Course Rating	-.059	-.118	**-.039**	-.092	-.078	-	
7. Instructor Rating	**-.053**	-.112	**-.035**	-.087	-.075	.998	-
Means	3.36	3.85	3.96	3.98	3.11	4.16	4.34
SD	.920	.642	.653	1.055	1.243	.076	.079

Note: n ranges from 555 to 538 due to missing data

Differences between Programs, Gender, and Race

Using the results of the second-order principal component analysis, five

new computed variables were generated from the 5-factor solution. To achieve

this, each of the 12 subscales was standardized and then a mean of the

standardized values was generated by summing each of the subscales

associated with each Factor. The variables were standardized in order to

compare their results with other factors that were measured with different scales

(e.g., 0 or 1). Table 4.7 summarizes the size, means and standard deviations.

Table 4.7: Means and Standard Deviations for Ethnicity and Gender

		IPEDS Race & Ethnicity				Gender	
		Hispanics/ Latinos of any race n=25	Asian n=42	Black or African American n=37	White n=360	Male n=296	Female n=253
CAAS Career Development	Mean	3.69	3.57	3.55	3.27	3.43	3.34
	SD	1.06	.92	.86	.93		
Human Capital Outcomes	Mean	3.72	3.84	4.00	3.84	3.88	3.82
	SD	.81	.69	.61	.64		
Satisfaction	Mean	3.93	4.07	4.26	3.95	3.98	3.96
	SD	1.00	.65	.60	.63		
Agency	Mean	4.21	4.18	3.86	3.96	3.96	3.99
	SD	1.06	1.09	1.07	1.05		
Career Maintaining	Mean	3.78	3.54	3.44	2.91	3.12	3.15
	SD	1.19	1.28	1.03	1.25		

note: Means and SD for values before variable standardized

A 2 (Gender) X 4 (Race/Ethnicity) multivariate analysis of variance

(MANOVA) was used to evaluate for differences among the seven dependent

variables. The Wilks' Lambda test indicated that the Gender was significant at (F

[3, 369] = 2.09, p < .05), and Race/Ethnicity was significant at (F [3, 369] = 2.84,

p < .05). Between subject tests indicated significant effects for Race/Ethnicity for

Career Development (CAAS) (F [3, 369] = 3.40, p < .05) and attending graduate

school with the goal of maintaining one's career (F [3, 369] = 6.29, p < .00), but no significant effects between Gender and the seven variables.

Post-hoc analyses using Bonferroni correction indicated that students from Hispanic/Latino (m = .54) and Asian-American (m = .35) backgrounds were more likely than Caucasians (m = -.16) to report that they attended to maintain their job (MD [3, 369] = .70, p<.05; MD [3, 369] = .51, p<.05, respectively).

A 1 X 3 (Programs) multivariate analysis of variance (MANOVA) using a Bonferroni correction was used to test for differences between academic programs on the multiple dependent variables, which included the five second order standardized variables and the two course evaluation variables. The Wilks' Lambda test indicated that Programs were not significant at (F [2, 455] = 9.13, p = .24). Between subject tests did indicate significant effects for Human Capital Outcomes (F [2, 455] = 4.55, p < .05) by program.

Post-hoc analyses using Bonferroni correction (table 4.8) indicated significant differences in the CAAS Career Development responses with computer science and math related program graduates attributing more career development as a result of participating in their program (m = .10, MD [4, 455] = .24, p<.05). Computer science and math related program graduates as well as business graduates reported higher amounts of human capital outcomes as a result of program participation than applied social science graduates (m = .40, MD [4, 455] = .26, p<.05; m = .09, MD [4, 455] = .31, p<.05, respectively). Business graduates also reported higher agency than applied social science

graduates at (m = .05, MD [4, 455] = .20, p<.05). There were no significant

differences between the programs in terms of satisfaction, attending to maintain

their career, and ratings on course evaluations for overall course rating and

overall instructor ratings.

Table 4.8: Differences between Programs

Pairwise Comparisons							
Dependent Variable			Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
						Lower Bound	Upper Bound
CAAS Career Development	Computer Science & Math Related	Applied Social Sciences	.241[*]	.114	.036	.016	.466
		Business	.039	.100	.695	-.158	.236
	Applied Social Sciences	Computer Science & Math Related	-.241[*]	.114	.036	-.466	-.016
		Business	-.201	.113	.075	-.423	.021
	Business	Computer Science & Math Related	-.039	.100	.695	-.236	.158
		Applied Social Sciences	.201	.113	.075	-.021	.423
Human Capital Outcomes	Computer Science & Math Related	Applied Social Sciences	.257[*]	.107	.017	.046	.468
		Business	-.052	.094	.583	-.237	.133
	Applied Social Sciences	Computer Science & Math Related	-.257[*]	.107	.017	-.468	-.046
		Business	-.309[*]	.106	.004	-.517	-.101
	Business	Computer Science & Math Related	.052	.094	.583	-.133	.237
		Applied Social Sciences	.309[*]	.106	.004	.101	.517
Satisfaction	Computer Science & Math Related	Applied Social Sciences	.185	.116	.111	-.043	.413
		Business	.043	.102	.669	-.156	.243
	Applied Social Sciences	Computer Science & Math Related	-.185	.116	.111	-.413	.043
		Business	-.142	.114	.216	-.367	.083

	Business	Computer Science & Math Related	-.043	.102	.669	-.243	.156
		Applied Social Sciences	.142	.114	.216	-.083	.367
Agency	Computer Science & Math Related	Applied Social Sciences	.167	.099	.094	-.029	.362
		Business	-.031	.087	.723	-.202	.140
	Applied Social Sciences	Computer Science & Math Related	-.167	.099	.094	-.362	.029
		Business	**-.198***	.098	**.044**	-.390	-.005
	Business	Computer Science & Math Related	.031	.087	.723	-.140	.202
		Applied Social Sciences	**.198***	.098	**.044**	.005	.390
Career Maintaining	Computer Science & Math Related	Applied Social Sciences	.146	.124	.238	-.097	.389
		Business	-.073	.108	.499	-.286	.140
	Applied Social Sciences	Computer Science & Math Related	-.146	.124	.238	-.389	.097
		Business	-.219	.122	.073	-.459	.020
	Business	Computer Science & Math Related	.073	.108	.499	-.140	.286
		Applied Social Sciences	.219	.122	.073	-.020	.459
Course Ratings	Computer Science & Math Related	Applied Social Sciences	-.062	0.000		-.062	-.062
		Business	.122	0.000		.122	.122
	Applied Social Sciences	Computer Science & Math Related	.062	0.000		.062	.062
		Business	.184	0.000		.184	.184
	Business	Computer Science & Math Related	-.122	0.000		-.122	-.122
		Applied Social Sciences	-.184	0.000		-.184	-.184
Instructor Ratings	Computer Science & Math Related	Applied Social Sciences	-.051	0.000		-.051	-.051
		Business	.136	0.000		.136	.136
	Applied Social Sciences	Computer Science & Math Related	.051	0.000		.051	.051
		Business	.187	0.000		.187	.187
	Business	Computer Science & Math Related	-.136	0.000		-.136	-.136

		Applied Social Sciences	-.187	0.000		-.187	-.187

Based on estimated marginal means
*. The mean difference is significant at the .05 level.
b. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Factors Predicting Successful Experiences in Graduate Programs

Next a stepwise regression was used to assess whether the CAAS Career

Development, Human Capital Outcomes, Satisfaction, and Career Maintaining

Goals variables were associated with Agency.

Table 4.9: Stepwise Regression with Agency as Dependent Variable

Coefficients[a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.018	.035		-.506	.613
CAAS Career Development	.324	.038	.374	8.586	.000
2 (Constant)	-.014	.034		-.420	.675
CAAS Career Development	.212	.043	.245	4.891	.000
Human Capital Outcomes	.223	.046	.243	4.848	.000
3 (Constant)	-.015	.034		-.445	.656
CAAS Career Development	.149	.045	.172	3.273	.001
Human Capital Outcomes	.214	.045	.232	4.709	.000
Career Maintaining Goals	.151	.037	.188	4.083	.000
a. Dependent Variable: Agency					

Results indicated that a combination Human Capital (β = .21, t (3, 455) = 4.71,

p< .05), CAAS (β = .15, t (3, 455) = 3.27, p< .05), and Career Maintaining Goals

(β = .15, t (3, 455) = 4.08, p< .05), accounted for 21% of variance in Agency (F

(3, 455) = 40.35, p < .00). This indicates that students who reported that they

entered with a goal to change into a more desirable career combined with the achievement of that goal, was predicted by a combination of perceiving the program as increasing their employability, career and learning skills, their career development skills, and having entered with a desire to maintain one's employability within their current career.

An additional step-wise regression analysis was conducted to determine which combination of factors were associated with student's experience of the quality of their courses, using CAAS Career Development, Human Capital Outcomes, Satisfaction, and Career Maintaining Goals variables in block one of the stepwise regression, and Course Rating and Instructor Rating in block two with Agency again as the dependent variable. Course Rating and Instructor Rating did not add any additional variance to the model beyond the other factors, which still account for 21% of variance in Agency ($F_{(3, 455)} = 40.35$, $p < .00$).

Chapter 5. Discussion – Conclusions and Recommendations

In our current knowledge economy, the demand for employees with a professional master's degree is increasing, while there is a growing skills gap in many professions (ETS & CGS, 2012, Carnevale, 2008; Nevill & Chen, 2007; NCES, 2011; Council of Graduate Schools, 2013). As the need for stakeholders, including institutes of higher education, to demonstrate both graduate competencies and career outcomes for alumni of these programs increases, it is becoming more important to develop measurements of these outcomes. Previous measures have focused on direct measures of learning outcomes for undergraduates in the forms of testing, but direct and indirect measures of the effectiveness of professional master's degrees are lacking.

The purpose of this survey-based research study of a total of 555 alumni of professional master's degree programs was to develop a measure of self-reported competencies and career outcomes, in order to determine a) if some programs meet alumni needs better than others, b) how is the measure effective and not effective, and c) if there are additional measures to be considered. This study can also be used to inform other direct measures of learning outcomes throughout the duration of a program and to aid in the design of other experiments that take into account the interactions of external influences. External influences could include, for example, determining the effects of the work, home, and school environmental factors at play for students who work full-

time in the industry while studying part-time. This study was designed to ask alumni about the career and learning outcomes that they felt they could attribute to their programs, and not other external factors, or intrinsic characteristics that they may already possess.

Statistical analyses showed internal reliability of the instrument items when combined into five main factor variables through principal component analysis, and used for further analysis. The principal component analysis was used to determine construct validity of the instrument and to identify second order factors to better explain the variance of the data. Second order factor variables included CAAS Career Development, Human Capital Outcomes, Satisfaction, Agency, and Career Maintaining Goals. The convergence of these items suggests the importance of separate blocks of items addressing these themes and a possible reduction of items in future alumni outcomes instruments.

Further analysis using a multivariate analysis of variance (MANOVA) of the second order factors showed no differences between gender and the variables, and some differences between race and ethnicity and levels of Career Maintaining Goals. Some significant differences were found between three of the five factors when compared between the three main programs. Step-wise linear regression also showed that there was some associations between the five factors that explained certain amounts of the variance, discussed below in more detail. An analysis of the descriptive statistics shows positive responses overall.

Discussion of the Results

Differences between Programs, CAAS Career Development. The 1 x 3 multivariate analysis of variance (MANOVA) using a Bonferroni correction (table 4.11) showed that there was a significant difference in the CAAS Career Development responses with computer science and math related program graduates attributing more career development as a result of participating in their program. The CAAS Career Development variable is a modified version of the Career Adapt-Ability Scale (CAAS, Savickas & Porfeli, 2012) in that alumni are asked to rate items if they can attribute them to the program. In this respect it becomes a measure of the career development cultivated as a result of the program in terms of the subscales concern, control, curiosity and confidence for their career. The reason for the significantly higher reporting of career development attributed to completing the program by the computer science and math related program graduates could be due to differences in curriculum in terms of projects that are applicable to work situations or to the fact that many students are either career changers and naturally develop these skills, or that students work full-time in the industry and get a chance to reinforce these skills, both at higher rates than the other two programs. In depth qualitative information about why computer science and math alumni felt they developed these skills would be insightful.

Differences between Programs, Human Capital Outcomes. The multivariate analysis of variance (MANOVA) also showed that computer science

and math related program graduates as well as business graduates reported

higher amounts of human capital outcomes as a result of program participation

than the applied social science graduates. The human capital outcomes included

the combination of the career, learning, and social/peer/networking outcome

items. There could be a number of reasons why applied social sciences alumni

are less likely to report human capital outcomes as highly as the business and

computer science and math programs, but this result is close to the hypothesized

expectations since these programs have a higher mix of the humanities and soft

skills that are more difficult to measure than the professional and hard skills that

may be more prevalent in the other two programs. However, the measure does

include a combination of both skill sets. It would be more important to understand

if students had expectations of gaining these all these skills upon entry to the

program, compared to the self-reported achievement, which is more in line with

the Agency variable.

Differences between Programs, Agency. The multivariate analysis of

variance (MANOVA) also showed that business graduates reported higher

agency than applied social science graduates. There were no significant

differences between the computer science and math program alumni and the

other programs. Again, we see that, in terms of professional master's degree

programs, the applied social science alumni are less likely to view their outcomes

as positivity as the alumni in the other programs. In terms of agency, it is

interpreted as perceiving the program as increasing their employability in

combination with having entered with a desire to increase their employability in their current field or a new field. This combination of entering with these goals and achieving them, results in the personal agency of the alumni. Applied social sciences alumni were less likely to report this agency, from which we can conclude, with the other significant factors, that there is less value in the program to applied social science alumni in terms of career development, human capital, and agency, which accounts for the students goals upon entering the program and the achievement of those goals. Therefore a hypothesis that these results are less significant since they do not match with student reasons for pursuing a degree can be ruled out.

Predicting Successful Experiences in Graduate Programs. The stepwise regression was used to assess whether the CAAS Career Development, Human Capital Outcomes, Satisfaction, and Career Maintaining Goals variables were associated with Agency. A combination of Human Capital, CAAS Career Development, and Career Maintaining Goals (motivation to attend to maintain one's career) accounted for 21% of variance in Agency. The results indicated that students who reported having entered with a goal to change into a more desirable career combined with the achievement of that goal, was predicted by a combination of perceiving the program as increasing their career and learning outcomes, employability and career development skills, and having entered with a desire to maintain one's employability within their current career. Alumni achieving high Agency, or those most able to act on their goals, is

predicted by their human capital outcomes, their goals to maintain their career, and the career development skills they achieve while in the program. Even though there were differences in Career Maintaining Goals by race and ethnicity, these goals upon entry do help predict Agency in the end. These results, while applicable to this site should be further tested in larger studies in order to further examine the associations of these variables in order to create predicative model the includes the interactions of these and other factors.

Professional Successes Attributed to Program. Table 5.1 shows some descriptive statistics for the career outcomes for the total sample and by the three major programs.

Table 5.1: Some Frequencies for Career Outcomes

Item	Total n=555 to 323 for sub Q	Business n=183	Math Related and Computer Science n=170	Applied Social Sciences n=117
Employed at Graduation	85%	85%	85%	85%
Currently Employed	94%	92%	97%	91%
Job Title Change – Promotion or Change Profession	55%	58%	56%	43%
Satisfied with Job Change (if Change)	90%	88%	94%	86%
Salary Increase Since Graduation	59%	63%	60%	48%
Reported Salary Increase of $5,000 or More	82%	88%	84%	68%
Believed Salary Increase is Result of Degree	72%	70%	82%	60%

The percent of alumni employed at the time of graduation (85%) was lower than expected for the sample, given that other surveys of current students show that

88% of students are employed during the program. Current alumni employment, as reported by the respondents, is much higher at 94% for the whole sample and at its highest for computer science and math program alumni at 97%, showing that employment increases after the graduates have been out of the program for at least six months to a year. Only 91% of the applied social sciences alumni reported being currently employed at the time of the survey. It should be noted for interpretation, stakeholder reporting (accreditation, and other types of external assessment), and for the development of future measures, that reasons for underemployment can sometimes be positive if the underemployment is by choice for family reasons, for self-employment reasons, for those seeking additional education full-time, for retirement, or other reasons. The addition of a question that gauges the respondents' attitudes toward their current state of employment or other statuses could be helpful.

Table 5.1 also provides a starting point for assessing the value of a professional master's degree in economic terms of return on investment. Of the almost 60% of alumni who said that their salary had increased since graduation (not including inflationary raises), over 82% said that their salary increased by $5,000 or more and 32% had increases of $10,000 or more. Of those reporting a salary increase, 72% felt that the increase was a result of completing their master's degree at the college, but again this question may be flawed in that it does not allow the respondent to gauge how much of each environmental factor, including the master's degree, work experience, and other knowledge or skills,

influenced their career outcomes. These career and income results could be addressed in future studies in focus groups, or by comparing them to the career outcomes for alumni at other institutions in order to determine how the outcomes match with expectations in ways possibility different from the interpretations of the statistical inferences from the combined second order factors below.

  Skills and Dispositions Attributed to Programs. Basic descriptive statistics, including frequencies and means show that overall there was a high achievement of all thirteen learning outcomes (Figure 5.1), including management skills, leadership, written communication, problem solving, decision making skills, oral communication, information literacy (research skills), teamwork/collaboration, discipline specific knowledge, intercultural knowledge, creative thinking, innovative thinking, and professionalism and ethics, with a range by the three program areas of 3.48 (computer science and math programs achievement of management skills and applied social sciences achievement of intercultural knowledge) to 4.40 (computer science and math programs achievement of discipline specific knowledge).

Figure 5.1: Learning Outcome Means by Program

	Management Skills	Leadership	Written Communication	Problem Solving	Decision Making	Oral Communication	Information Literacy	Teamwork	Discipline Specific Knowledge	Intercultural Knowledge	Creative Thinking	Innovative Thinking	Professionalism/Ethics
CS & Math Related n=170	3.48	3.56	3.88	4.24	4.02	3.74	4.02	3.91	4.40	3.55	3.97	3.96	3.73
App. Social Sciences n=117	3.38	3.51	4.16	4.08	3.87	3.75	4.34	3.51	4.24	3.48	3.85	3.84	3.60
Business n=183	4.01	4.00	4.09	4.17	4.07	3.81	4.31	4.01	4.19	4.00	3.99	4.02	3.73

Predominantly, alumni reported higher outcomes for skills that related directly to their degree than their peers in the other programs. For example, business alumni reported higher achievement of management skills from completing the program, computer science and math alumni reported higher problem solving skills, and applied social science alumni reported higher written communication skills, as would be expected.

Overall, business alumni tended to report higher achievement of these 13 learning outcomes than the other two programs, which could be that the business degree curriculum focuses more heavily on the achievement of these specific concrete skills with a practical application, for example through the use of case studies to reinforce program learning. Additionally, another possibility is that the other two professional disciplines instruct students entering a range of careers and focus jointly on abstract or theoretical applications with case studies and concrete applications of the discipline specific knowledge. General results, along with statistically significant differences discussed below, will be shared with the faculty of the programs for college program evaluation and for further feedback and discussion of the results to inform and curricular changes in order to close the assessment loop and to inform future research studies.

Limitations

There were several limitations on this study, most importantly that it was primarily a descriptive study that focused on only one site. This was intentional in order to compile more information on outcome measurements. All survey

research runs the risk of sampling error due to the fact that respondents may have different motivations to respond to the survey, which could skew the results so that higher proportions of respondents who want to share either very positive or very negative experiences outweigh a mix of all respondents with an assortment of views. In this study demographic information about the respondents was compared to information on file in the Universities' student information system, and it was determined that the sample was representative. However respondent bias is still a limitation, especially given a response rate of 19%.

Another limitation is that the factors analyzed in the study do not account for all the variance, nor does the study include all the potential environmental variables outside of the program that effect alumni outcomes, in part because a full systems theory approach was not used due to survey size constraints and an intentional generalized approach to answer higher level, broad research questions. This study intentionally focused on the self-reported human capital outcomes, be they intellectual, social, developmental, or economic as a starting point for future studies to study other self-reported or observed extrinsic interactions.

Lastly, the fact that the instrument surveys alumni about their perceptions of their outcomes, and does not measure outcomes directly with an experimental design is also a limitation, but again this is intentional to help inform future experimental designs and to reinforce the results of other direct measurement

studies. The results of the study should be interpreted keeping in mind that all results are alumni perceptions and therefore biased, and also in that some questions are asked retrospectively and therefore, a limitation on the results is the fallibility of the human memory.

Recommendations for Further Study

While this study was designed to ask alumni about effects that they felt they could attribute to their programs, further studies should ask in parallel about the effects from other environmental factors at play, such as previous degrees, professional certifications, and learning on the job, in addition to the effect of the program and the ways that these variables influence each other using a path analysis approach. Also the effect of "signaling" by employers and society, as it possibly contributes to upskilling, could serve as point of entry into future studies and should be considered further. This study can also be used to inform the design of other similar studies, experimental studies set up to measure direct outcomes, and studies comparing more than one site. Since the alumni of the niche program response rates were too low to be included in parts of the analysis, in order to draw additional conclusions about the aggregated and disaggregated effect of all professional master's programs on the recipients of these degrees, future studies could track outcomes of these unique programs at sites that will yield higher response rates.

Potential changes to the instrument for future research include modifying the yes/no scale for the achievement items and making sure that the

corresponding goals upon entry items match and ask only one question. Future studies at the college may include variations on the general survey instrument to tailor it specific learning outcomes of the program for program evaluation, learning outcome assessment, and reporting and reviews for professional accreditations of the programs.

Future studies could also be qualitative or employ mixed methods in order to gather detail rich data on the perceptions of alumni. A follow up study with interviews and focus groups with the applied social sciences alumni could help aid in the understanding of the goals and achievement in these programs in order to give these alumni a voice in their perception of outcomes, to interpret the results of this study, and to make sure they are being asked the right questions. Qualitative responses could reinforce the hard data, or also open up new avenues for exploration in the formation of a model for understanding the path to various career and learning outcomes, the understanding of how to continuously measure the outcomes to close the assessment loop, and the overall understanding of the role and the value of the professional master's degree program on the recipients, the economy, and society. Concurrently, studies are being conducted from the employer perspective and study designs could compare perspectives of educators, alumni, and employers.

Significance and Conclusion

Since this study looks at only one school setting, there is no external validity, but there is internal validity that could be useful for further studies. This study is of

value as it provides a "contextual understanding" of this site, but this contextual understanding may be used outside of the site since it describes a process that others are seeking to understand (Maxwell, 2005, p. 80). Others may find value in the instrument used, and the recommendations above include future considerations for the improvement of the instrument. Furthermore, conclusions from all data and the disaggregated data of the three larger programs, are of value to the limited body of research on professional master's degree programs. Lastly, surveying students about outcomes could affect their outcomes positively and affect society positivity, as it involves the alumni in the process of assessment and is a valuable tool for reflection and engaging alumni in consideration of their quest for lifelong learning (Hughes & Barrie, 2010), and possibly cyclically influencing their personal agency and self-efficacy.

Appendix A: Career Adapt-Abilities Scale

1) Internationally Validated Career Adapt-Abilities Scale (Savickas & Porfeli, 2012)

Different people use different strength to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities using the scale below.

5 = Strongest
4 = Very Strong
3 = Strong
2 = Somewhat strong
1 = Not strong

STRENGTHS	5	4	3	2	1
Thinking about what my future will be like	___	___	___	___	___
Realizing that today's choices shape my future	___	___	___	___	___
Preparing for the future	___	___	___	___	___
Becoming aware of the educational and vocational choices that I must make	___	___	___	___	___
Planning how to achieve my goals	___	___	___	___	___
Concerned about my career	___	___	___	___	___
Keeping upbeat	___	___	___	___	___
Making decisions by myself	___	___	___	___	___
Taking responsibility for my actions	___	___	___	___	___
Sticking up for my beliefs	___	___	___	___	___
Counting on myself	___	___	___	___	___
Doing what's right for me	___	___	___	___	___
Exploring my surroundings	___	___	___	___	___
Looking for opportunities to grow as a person	___	___	___	___	___
Investigating options before making a choice	___	___	___	___	___
Observing different ways of doing things	___	___	___	___	___
Probing deeply into questions I have	___	___	___	___	___
Becoming curious about new opportunities	___	___	___	___	___
Performing tasks efficiently	___	___	___	___	___
Taking care to do things well	___	___	___	___	___
Learning new skills	___	___	___	___	___
Working up to my ability	___	___	___	___	___
Overcoming obstacles	___	___	___	___	___
Solving problems	___	___	___	___	___

2) Change in Question for Alumni Instrument

*Different people use different strengths to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you have developed each of the following abilities **as a result of the completing your master's degree** using the scale below.*

Appendix B: Complete Survey Instrument

Dear Alumni/Alumnae,

I am writing to ask for your help in the completion of our new Alumni Career Survey. We are seeking feedback on our programs and it would be very helpful to gather information about your general academic and professional status since graduation, especially as your professional success is a measure of the work we do here at <the college>.

Your success is the ultimate goal of what we do and your opinions will inform how we evolve the design of our programs. We constantly evaluate the curriculum of our programs and seek to enhance them in order to give our students the most up-to-date professional knowledge and to develop new programs in emerging fields. Participation in this survey is a critical help for evaluation and further planning.

We are conscious of your time and have designed a survey that should not take more than 12 minutes to complete. All information you provide will be treated as anonymous and confidential. Your responses will be complied with those from other <the college> graduates and reported only in ways that do not identify you personally. Compiled results may be used for statistical analysis, recruiting and marketing purposes, internal program review, and external reporting for rankings and accreditation. Data may also be used for research purposes. You may obtain further information about your rights as a survey research participant by calling the <the university> Institutional Review Board office at <phone>.

We are very grateful for your participation. I ask you to complete the survey by Monday, November 24th, 11:59 p.m., Eastern Daylight Time. If you have any questions about the survey please contact <email>.

Best regards,

Dean <the college>

BACKGROUND

Q1 From which graduate (master's) degree program(s) at <the college> did you graduate?

Q2 In what format did you take all or the majority of your courses?

❍ Online
❍ On Campus
❍ Blended
❍ Equally Online and On Campus

Q3 What year did you graduate from <the college>? If you have more than one graduation date from a master's degree program, please list the most recent year.

Q4 What year were you born?

Q5 In what way do you identify your gender?

Q6 Are you a U.S. Citizen or Permanent Resident?

❍ Yes
❍ No

Q7 If you are within the U.S. border, what is your zip code?

Q8 If outside of U.S., please specify which country:

Q9 Do you consider yourself to be Hispanic or Latino?

❍ Yes
❍ No
❍ Prefer not to say

Q10 Select one or more of the following races to describe yourself:

❑ American Indian or Alaska Native
❑ Asian
❑ Black or African American
❑ Native Hawaiian or Other Pacific Islander
❑ White
❑ Prefer not to say

Q11 What is your marital status?

○ Single, never married
○ Married
○ Living with a partner
○ Divorced or separated
○ Widowed
○ Prefer not to answer

EDUCATION

Q12 Think back to the end of your master's degree program at <the college>. To the best of your recollection, what was your final program GPA?

○ Under 3.00
○ 3.00 to 3.25
○ 3.25 to 3.50
○ 3.50 to 3.75
○ 3.75 to 4.00

Q13 Did you hold a master's degree or a second bachelor's degree before enrolling at <the college>?

○ Yes
○ No

Please select the degree type(s) that you earned before enrolling at <the college>:

❑ Second Bachelor's degree
❑ Undergraduate Certificate
❑ Master's Degree
❑ Graduate Certificate
❑ Doctoral Degree
❑ Other

Q15 Since completing the program at <the college>, have you begun or completed any additional degrees (undergraduate or graduate) or accredited certificate programs?
Please select all that apply:

❑ Second Bachelor's degree
❑ Undergraduate certificate
❑ Second Master's degree
❑ Graduate certificate
❑ Doctoral degree
❑ None
❑ Other

If you selected other, please explain:

EMPLOYMENT

Q17 Think back to the time when you were enrolled in your graduate degree program at <the college>. Did you work while attending <the college>? Please choose the work status you held during the majority of your time at <the college>:

❍ I worked on a full-time basis
❍ I worked on a part-time basis
❍ I didn't work at all

Q18 Think back to the first semester when you started your graduate degree program. What was your job title when you started attending <the college>?

Q19 Please indicate your level of agreement with the following statements. The education I received at <the college> prepared me to...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
communicate my ideas in writing	○	○	○	○	○
analyze problems	○	○	○	○	○
make decisions	○	○	○	○	○
give presentations	○	○	○	○	○
read and analyze publications and research relevant to my field	○	○	○	○	○
apply what I learned in my courses to my job	○	○	○	○	○
work as a team with other co-workers	○	○	○	○	○
network with my peers	○	○	○	○	○
develop valuable, long-term contacts	○	○	○	○	○
expand my managerial skills	○	○	○	○	○
expand my leadership skills	○	○	○	○	○
have a solid foundation of knowledge within my area of study	○	○	○	○	○
have an international perspective	○	○	○	○	○
use technical tools and techniques	○	○	○	○	○
engage in scholarship/research in my field	○	○	○	○	○

Q20 Please indicate your level of agreement that completing the graduate degree program at <the college>...

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
prepared me for a leadership role	○	○	○	○	○
advanced my career	○	○	○	○	○
had no effect on my career	○	○	○	○	○
increased my career options	○	○	○	○	○
increased my future earning potential	○	○	○	○	○
contributed to my overall job satisfaction	○	○	○	○	○
gave me a competitive edge	○	○	○	○	○
influenced my use of professional ethics and standards	○	○	○	○	○
increased my work performance in terms of creative thinking	○	○	○	○	○
increased my work performance in terms of innovative thinking	○	○	○	○	○

Q21 Did you receive any company sponsored benefits (such as tuition reimbursement) to pay for your education?

○ Yes, full company sponsorship
○ Yes, partial company sponsorship
○ No

Q22 Think back to your employment situation at the time when you graduated from your graduate program at <the college>. What was your employment status at graduation?

- ❑ Employed, with a company/organization
- ❑ Employed, self-employed
- ❑ Seeking employment
- ❑ Starting a new business
- ❑ Seeking additional education
- ❑ Postponing job search
- ❑ Other

Q23 Think back to 6 months after your graduation from <the college>. What was your employment status at 6 months after graduation?

- ❑ Employed, with a company/organization
- ❑ Employed, self-employed
- ❑ Seeking employment
- ❑ Starting a new business
- ❑ Seeking additional education
- ❑ Postponing job search
- ❑ Other

Q24 What is your current employment status?

- ❑ Employed, with a company/organization
- ❑ Employed, self-employed
- ❑ Seeking employment
- ❑ Starting a new business
- ❑ Seeking additional education
- ❑ Postponing job search
- ❑ Other

Q25 Between when you started the program and up until now, did your job title change?
Please select one:

❍ Yes, I was promoted
❍ Yes, I changed jobs within my organization without a promotion
❍ Yes, I changed organizations and obtained a more senior position
❍ Yes, I changed organizations and have a similar position
❍ Yes, I changed my profession entirely
❍ Yes, I am not currently employed
❍ No
❍ Other

Q26 Answer If Has your job title changed since completing this program?... Other Is Selected
Please specify:

Q27 Answer If Has your job title changed since completing this program?... Yes, I was promoted Is Selected Or Has your job title changed since completing this program?... Yes, I changed jobs within my organization without a promotion Is Selected Or Has your job title changed since completing this program?... Yes, I changed organizations and obtained a more senior position Is Selected Or Has your job title changed since completing this program?... Yes, I changed organizations and have a similar position Is Selected Or Has your job title changed since completing this program?... Yes, I changed my profession entirely Is Selected Or Has your job title changed since completing this program?... Yes, I am not currently employed Is Selected Or Has your job title changed since completing this program?... Other Is Selected
Are you satisfied with the job change?

❍ Yes
❍ No

SALARY

Q28 What was your annual income as total individual gross income (income before taxes) when you enrolled at <the college>?

❍ Less than $25,000
❍ $25,001 – $50,000
❍ $50,001 – $75,000
❍ $75,001 – $100,000
❍ $100,001 – $125,001
❍ $125,001 – $150,000
❍ $150,001 or above
❍ Prefer not to answer
❍ Was not employed at the time

Q29 What is your current annual income as total individual gross income (income before taxes)?

❍ Less than $25,000
❍ $25,001 – $50,000
❍ $50,001 – $75,000
❍ $75,001 – $100,000
❍ $100,001 – $125,000
❍ $125,001 – $150,000
❍ $150,001 or above
❍ Prefer not to answer
❍ Not currently employed

Q30 Other than typical inflationary raises, has your annual salary increased since completing this program?

❍ Yes
❍ No

In your best estimate, by approximately how much has your annual salary increased in dollar amounts since completing the program?

❍ 0 to $1,000
❍ $1,000 to $5,000
❍ $5,000 to $10,000
❍ $10,000 or more

Do you believe that your salary has increased as a result of completing <the college> program?

❍ Yes
❍ No

SKILLS & EXPERTISE

Q33 Different people use different strengths to build their careers. No one is good at everything, each of us emphasizes some strengths more than others. Please rate how strongly you feel you have developed each of the following abilities as a result of completing your master's degree program at <the college> using the scale below.

Strengths	Not Strong	Somewhat Strong	Strong	Very Strong	Strongest
Thinking about what my future will be like	❍	❍	❍	❍	❍
Realizing that today's choices shape my future	❍	❍	❍	❍	❍
Preparing for the future	❍	❍	❍	❍	❍
Becoming aware of the educational and vocational choices that I must make	❍	❍	❍	❍	❍
Planning how to achieve my goals	❍	❍	❍	❍	❍
Concerned about my career	❍	❍	❍	❍	❍
Keeping upbeat	❍	❍	❍	❍	❍
Making decisions by myself	❍	❍	❍	❍	❍
Taking responsibility for my actions	❍	❍	❍	❍	❍
Sticking up for my beliefs	❍	❍	❍	❍	❍
Counting on myself	❍	❍	❍	❍	❍
Doing what's right for me	❍	❍	❍	❍	❍
Exploring my surroundings	❍	❍	❍	❍	❍
Looking for opportunities to grow	❍	❍	❍	❍	❍
Investigating options before making a choice	❍	❍	❍	❍	❍

Observing different ways of doing things	○	○	○	○	○
Probing deeply into questions that I have	○	○	○	○	○
Becoming curious about new opportunities	○	○	○	○	○
Performing tasks efficiently	○	○	○	○	○
Taking care to do things well	○	○	○	○	○
Learning new skills	○	○	○	○	○
Working up to my ability	○	○	○	○	○
Overcoming obstacles	○	○	○	○	○
Solving Problems	○	○	○	○	○

Q34 I currently apply what I learned in the program to my job:

❍ Daily or Frequently
❍ Sometimes
❍ Never
❍ Not currently employed

Q35 Did you have any professional certifications or credentials before entering the program? For example: Actuary Exams, Project Management Professional (PMP), Computer Science related certifications, etc.

❍ Yes
❍ No

Q36 Answer If Did you have any professional accreditation/credentials b... Yes Is Selected
Please specify:

Q37 Have you earned any professional certifications or credentials since graduating from the program? For example: Actuary Exams, Project Management Professional (PMP), Computer Science related certifications, etc.

❍ Yes
❍ No

Q38 Answer If Have you earned any professional accreditation/credentials since graduating from the program?&; For example: Actuary Exams, Project Management Professional (PMP), Computer Science related certif... Yes Is Selected
Please specify:

Q39 Are you currently affiliated with or are a member of any professional organizations or associations?

❍ Yes
❍ No

Q40 Answer If Are you currently affiliated with or are a member of any ... Yes Is Selected
Please specify:

TESTIMONIAL

Q41 I would recommend <the university> to a friend, relative, or colleague.

❍ Yes
❍ No

Q42 Please think back to when you decided to attend graduate school at <the college>. Please rate the importance of each of the following in your decision to choose <the college>:

	Unimportant	Of Little Importance	Moderately Important	Important	Very Important
To obtain or maintain certification	❍	❍	❍	❍	❍
To improve performance or meet requirements for an existing job	❍	❍	❍	❍	❍
To qualify for a new job in a similar field	❍	❍	❍	❍	❍
For personal satisfaction	❍	❍	❍	❍	❍
To improve income potential	❍	❍	❍	❍	❍
To facilitate a career or job change	❍	❍	❍	❍	❍

Q43 Which of the following have you achieved as a result of the program (check all that apply):

- ❑ Obtained a certification
- ❑ Maintained a certification
- ❑ Improved job performance
- ❑ Met current job requirements
- ❑ Qualified for a new job in similar field
- ❑ Gained personal satisfaction
- ❑ Improved income potential
- ❑ Changed job
- ❑ Changed career

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Curriculum Vitae

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Education

Doctor of Education   May 2015
Educational Leadership & Policy Studies
Boston University, School of Education

Masters of Liberal Arts   September 2008
Gastronomy
Boston University, Metropolitan College

Bachelor of Arts   December 2003
English, minor Global Studies, Magna cum Laude
University of Minnesota, Twin Cities
Studied abroad at the University of Hyderabad, Hyderabad, India   2002

Professional Positions

Director of Graduate Operations   July 2011 – Present
Boston University Metropolitan College, Office of the Dean

Academic Programs Analyst   May 2008 – July 2011
Boston University Metropolitan College, Office of the Dean

Staff Coordinator   August 2007 – May 2008
Boston University Metropolitan College, Office of the Dean

Graduate Assistant   February 2006 – June 2007
Boston University Metropolitan College
Office of Student and Corporate Outreach

Teaching Experience/Volunteer Work

Instructor   September 2010 – June 2011
Elizabeth Bishop Wine Resource Center
Wine Studies Level One, MET ML 651, Fall 10, Spring 11, Summer 11
Boston University

Teaching Assistant   January 2010 – May 2010
Teaching Assistant for MET ML 715 *Experiencing Food through the Senses*

Boston University, MLA in Gastronomy

Volunteer Nutrition Teacher   August 2006 – January 2007
Share Our Strength, Operation Frontline
Boston, MA

Volunteer Classroom Assistant   January 2003 – May 2003
Aurora Bilingual Charter School, Preschool Volunteer
Minneapolis, MN

Awards & Scholarships

2002 Waller Scholarship, University of Minnesota
2001 Judy Burton Scholarship, University of Minnesota
2000 Gopher State Scholarship, University of Minnesota
2000 East Troy High School Alumni Scholarship

Academic Presentations

"Wine and Journalistic Ethics." *Joint Conference of the Association for the Study of Food in Society and the Agriculture, Food, and Human Values Society*. State College, PA. May 30, 2009.

"Soy Chicken Nuggets: Choosing the Aesthetic over the Ascetic Vegetarian Diet." *Joint Conference of the Association for the Study of Food in Society and the Agriculture, Food, and Human Values Society*. Boston, MA. June 8, 2006.

Certifications

2008 Society of Wine Educators, Certified Specialist of Wine (CSW)
2007 Boston University Wine Studies Certificate, Completed Levels I–IV
2006 Boston University Wine Servers Certificate

Accomplishments

2014 Completed the Newburyport Green Stride Half-Marathon
2011 Completed the Newburyport Green Stride Half-Marathon
2008 Completed Master's Thesis, *Ethics Uncorked: Wine Writing and Journalistic Ethics*
2003 Completed 16 credits of Culinary School, Art Institutes, Minneapolis, MN