Outcomes for PSM Alumni: 2010/11

PSM™
PROFESSIONAL SCIENCE MASTER'S

COUNCIL OF GRADUATE SCHOOLS
cgs

Outcomes for PSM Alumni: 2010/11

Nathan E. Bell
Director, Research and Policy Analysis
Council of Graduate Schools

Jeffrey R. Allum
Research Associate
Council of Graduate Schools

The *2011 Professional Science Master's (PSM) Student Outcomes Survey* was conducted by the Council of Graduate Schools with a grant from the Alfred P. Sloan Foundation. The survey is designed to capture initial hiring outcomes of PSM graduates and follow them for up to five years after graduation. A PDF version of this survey report is available online at www.sciencemasters.com. For more information about the survey or the survey report, please contact:

Council of Graduate Schools
One Dupont Circle NW, Suite 230
Washington, DC 20036-1173
www.cgsnet.org

Jeffrey R. Allum
(202) 223-3791
jallum@cgs.nche.edu

Nathan E. Bell
(202) 223-3791
nbell@cgs.nche.edu

Suggested citation:

Bell, N.E. and Allum, J.R. (2011). *Outcomes for PSM Alumni: 2010/11*. Washington, DC: Council of Graduate Schools.

Copyright © 2011 Council of Graduate Schools, Washington, DC

ALL RIGHTS RESERVED. No part of this work covered by the copyright herein may be reproduced or used in any form by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, web distribution, or information storage and retrieval systems—without the prior written permission of the Council of Graduate Schools, One Dupont Circle, NW, Suite 230, Washington, DC 20036-1173.

Table of Contents

List of Figures and Tables

ACKNOWLEDGMENTS

A number of individuals and organizations deserve acknowledgment for the *2011 Professional Science Master's (PSM) Student Outcomes Survey*. First, the survey was made possible by a grant from the Alfred P. Sloan Foundation, whose initial funding made PSM programs possible, and whose continued support allows us to understand the career outcomes of PSM graduates. In particular, we thank Michael Teitelbaum of the Sloan Foundation for his support of this work.

The development of the questionnaire was enriched by the input and support provided by members of the Council of Graduate Schools' PSM Advisory Board, including Linda Strausbaugh (University of Connecticut), Patricia Bishop (University of Central Florida), Saeed Foroudastan (Middle Tennessee State University), David King (State University of New York at Oswego), and Inge Wefes (University of South Florida). Input was also provided by members of the Board of Directors of the National Professional Science Master's Association (NPSMA), including Dagmar Beck (Rice University), Bogdan Vernescu (Worcester Polytechnic Institute), Susan Stites-Doe (The College at Brockport, State University of New York), Cliff Chancey (University of Northern Iowa), Elizabeth Friedman (Illinois Institute of Technology), and Kevin Sightler (University of Illinois at Urbana-Champaign). In addition, we thank Don Langenberg, Director of Strategic Planning and External Projects at NPSMA, and Sheila Tobias, long-time supporter of the PSM, for their feedback about the survey.

Thank you to all of the graduate deans and PSM program directors who encouraged their graduates to complete the survey. We could not have conducted this survey without their assistance. Thank you also to the NPSMA for conveying the importance of the survey to your members. A special thank you goes to Debra Warren-Hite, NPSMA Coordinator, for her assistance in circulating word about the survey to the NPSMA members.

We also want to thank the members of the CGS PSM team—Carol Lynch, Sally Francis, Leontyne Goodwin, and Josh Mahler—for their advice regarding survey questions and the administration of the survey. In particular, we want to recognize and thank Josh Mahler for designing the report cover.

Finally, and most importantly, a special thank you goes to the PSM graduates who participated in this survey. Your input provided invaluable insight into the career outcomes of graduates of PSM programs, and we appreciate the time you took to tell us about your pre- and post-graduation experiences. We hope to hear about continued success in your careers when we field the survey again next year.

INTRODUCTION

Created in 1997 with support from the Alfred P. Sloan Foundation, Professional Science Master's (PSM) programs are a relatively recent innovation (Council of Graduate Schools, 2010; Kaplan, 2011; Sims, 2006; Teitelbaum & Lynch, 2010). As of August 2011 there were 238 PSM programs at 111 institutions of higher education (Council of Graduate Schools, 2011). Recent estimates suggest that roughly 5,000 PSM degrees have been conferred since their inception (Kaplan, 2011). Despite their growth, however, PSM programs are still new and not yet fully understood (Borbye, 2008). The extent to which data can describe some of the attributes of PSM programs and the outcomes experienced by their graduates may be useful in ensuring their continued growth and success (Kaplan, 2011).

The PSM degree is designed to allow students to pursue advanced training in science, while simultaneously developing workplace skills highly valued by employers. PSM programs prepare graduates for careers in business, government, and non-profit organizations, combining rigorous study in science and/or mathematics with coursework in management, policy, law, or related fields. Along with an emphasis on the development of professional skills such as writing, leadership, and communication, most PSM programs require an experiential component that must include a final project that is developed with an employer. The experiential component typically includes an internship in a business or public sector setting.

In December 2010, the Council of Graduate Schools (CGS) received a grant from the Alfred P. Sloan Foundation to capture initial hiring outcomes of PSM graduates and follow them for up to five years after graduation. The aim of the *2011 Professional Science Master's (PSM) Student Outcomes Survey* was to ascertain career placements and perceived satisfaction with the PSM degree. The survey will be conducted again in 2012 among the 2010/11 and 2011/12 PSM graduates.

Research Design

The design of the *2011 Professional Science Master's (PSM) Student Outcomes Survey* was based upon a review of more than 40 outcomes-related data collection efforts from more than 30 governmental agencies, non-profit organizations, and educational institutions. A draft version of the questionnaire was reviewed by numerous individuals affiliated with the PSM initiative, including members of the Board of Directors of the National Professional Science Master's Association (NPSMA) and members of the Council of Graduate Schools PSM Advisory Board. The final questionnaire, which appears in Appendix A, includes 25 questions.

Eligible survey participants needed to have: (1) earned their degree from a CGS-recognized Professional Science Master's (PSM) program, and; (2) earned their PSM degree during the 2010/11 academic year, between July 1, 2010 and June 30, 2011. The first three questions of the survey were designed to screen out ineligible respondents.

Data Collection

Many institutions interpret privacy protection laws in ways that disallow or discourage them from sharing student and/or graduate contact information with third parties, such as CGS. As a

consequence, PSM program directors were asked to forward survey invitations and reminders to their graduates on behalf of CGS.

In April 2011, the CGS research team e-mailed a survey pre-notification to PSM program directors and graduate deans (or equivalent) who oversee PSM programs, alerting them to the fact that they would be formally asked to invite 2010/11 graduates to participate in the survey later that summer. They were also encouraged to inform students graduating in academic year 2010/11 that they would be receiving a survey in the summer of 2011. The survey was launched on June 22, 2011. Program directors were provided an invitation text, which they were asked to e-mail directly to their 2010/11 graduates. The invitation text included a link to the online survey. Two reminder texts were sent to program directors in July of 2011, and data collection closed on July 29, 2011.

The survey generated 320 responses representing graduates from 58 PSM programs from 36 institutions of higher education. Ninety respondents did not meet the sampling frame criteria (i.e., either they did not earn a degree from a program recognized by the Council of Graduate Schools as a PSM program as of June 2011 or they did not earn a PSM degree during the 2010/11 academic year). Another seven responses were incomplete, resulting in 223 usable responses. A response rate was not calculated due to the fact that the population of 2010/11 PSM graduates is not yet known. This information will be collected as part of the *2011 Professional Science Master's Enrollment and Degrees Survey*, to be conducted by CGS in late fall, 2011.

Because the target population is difficult to reach (i.e., they are no longer students) and potentially difficult to motivate (i.e., they may not feel compelled to participate), the CGS research team incorporated a sweepstakes into the research design. Invitees were informed of the sweepstakes in the introductory and reminder e-mail texts. At the conclusion of the survey, respondents were offered the opportunity to win an Apple 16 GB iPad2 (grand prize) or one of three Amazon Kindle 6" WiFis (second prizes). Rules and regulations were posted online, and winners were required to complete an Affidavit and Release Form affirming their compliance to those rules and regulations.

Data Analysis

Data were reviewed, cleaned, and edited using a process outlined by Van den Broeck, Argeseanu, Eeckels, and Herbst (2005). The dataset was screened for instances where data were lacking, in excess, inconsistent, revealed strange patterns, or were otherwise suspect. Anomalies were recorded and diagnosed as being missing, erroneous, or seemingly extreme. Irregularities were treated accordingly.

This report includes descriptive statistics regarding the status of respondents prior to enrolling in the PSM program, their experience in the PSM program, their current employment situation, and their perceived value of the PSM degree. This report also includes an examination of two parallel sets of questions. Responses to questions 6 and 20 were examined to evaluate the extent to which expectations established before the PSM program were met once the student completed their degree. Responses to questions 8 and 21 were used to evaluate differences between students' satisfaction with and perceived value of the PSM degree. (See Appendix A for the survey questionnaire.)

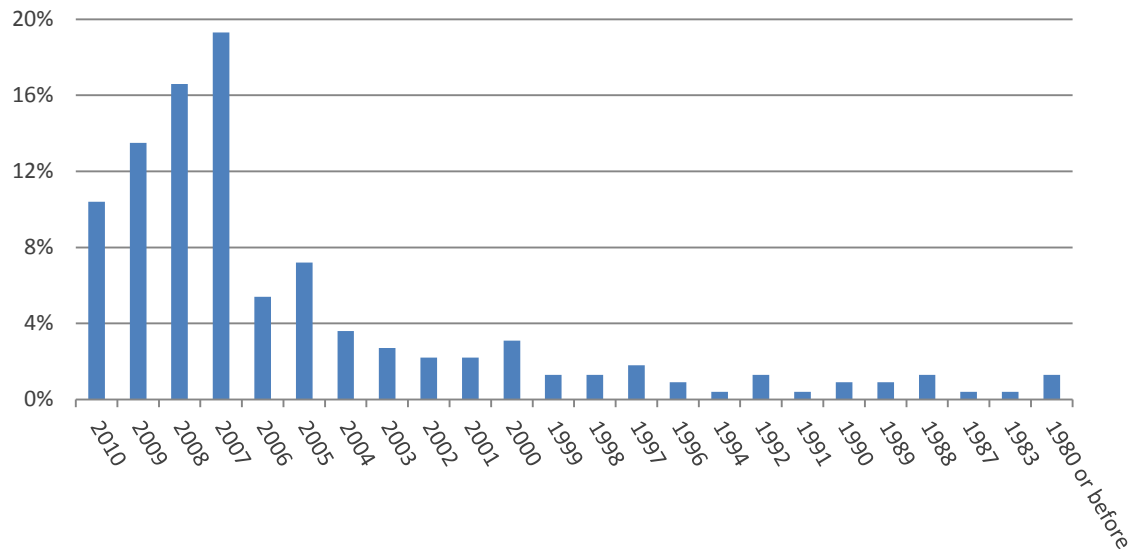
Limitations

This study had some limitations. Since there were only 223 usable responses, most attempts at performing cross-tabulations yielded unreportable findings due to small cell sizes (i.e., small n's). This report also refrains from performing comparisons with a similar earlier effort conducted by the National Professional Science Master's Association (2009). Whereas the NPSMA study surveyed all PSM graduates to date, the CGS study utilized a narrower sampling frame (i.e., 2010/11 graduates from CGS-recognized PSM programs). Moreover, the questionnaires used by CGS and the NPSMA differed significantly.

FINDINGS

A large percentage of PSM graduates responding to the *2011 Professional Science Master's (PSM) Student Outcomes Survey* earned their undergraduate degree within the past four years: 10.4% of survey respondents earned their undergraduate degree in 2010, and 60.2% earned their undergraduate degree between 2007 and 2010 (see Figure 1). Nearly four out of five (79.2%) respondents earned their undergraduate degree between 2003 and 2010.

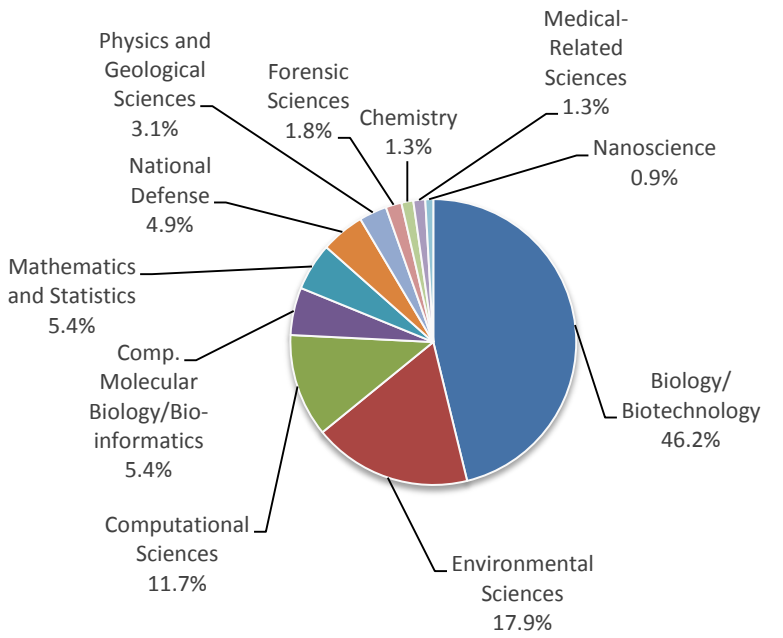
Figure 1.
Respondents by Years Since Undergraduate Degree, 2011



Source: Council of Graduate Schools, 2011

Nearly one-half (46.2%) of survey respondents were enrolled in biology/biotechnology (see Figure 2). More respondents graduated from this field than the next five largest fields combined (environmental sciences, computational sciences, computational molecular biology/bioinformatics, mathematics and statistics, and national defense).

Figure 2.
Distribution of Respondents by Field of Study, 2011



Source: Council of Graduate Schools, 2011

When asked to describe their situation immediately prior to enrolling in the PSM program, the majority (69.1%) of respondents reported that they were working, while smaller percentages reported that they were students (24.7%), not working but seeking work (5.8%), and not working and not seeking work (0.4%).

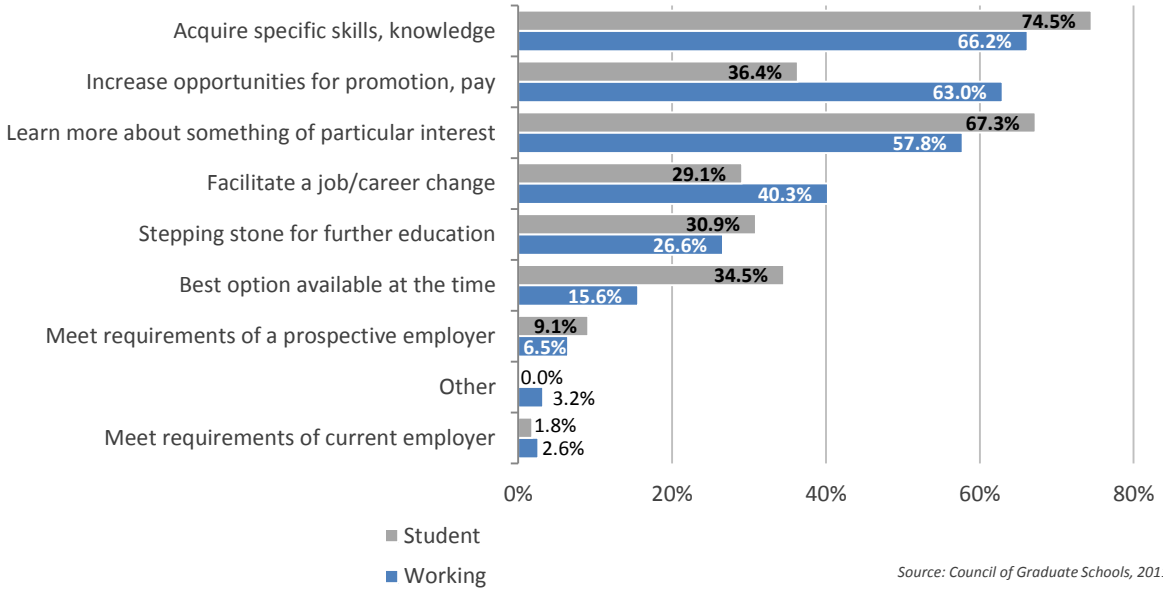
Reasons for Enrolling

Using a list of nine possible reasons for enrolling in a PSM program, respondents were asked to select up to three that best explained their motivations for enrolling. The most frequently cited reasons included: to acquire specific skills and knowledge (68.6%); to learn more about something in which they were particularly interested (59.2%); and to increase opportunities for promotion, advancement, and/or pay (55.2%). Thirty-nine percent of respondents enrolled to facilitate a job/career change, 28.3% enrolled as a stepping stone for more advanced education (e.g., Ph.D.), and 20.6% enrolled because it was the best option at the time. The least frequently cited reasons for enrolling included: to meet the requirements of a prospective employer (7.6%); to meet the requirements of a current employer (2.2%); and other reasons (2.2%).

A comparison of reasons for enrolling by employment status reveals some differences (see Figure 3). Among respondents who were working immediately prior to enrolling in the PSM program, the most frequently cited reasons for enrolling were: to acquire specific skills and knowledge (66.2%); to increase opportunities for promotion, advancement, and/or pay (63.0%); and to learn more about something in which they were particularly interested (57.8%). Two reasons for enrolling tended to be most prominent among respondents who were students immediately prior to

enrolling in the PSM program: to acquire specific skills and knowledge (74.5%) and to learn more about something in which they were particularly interested (67.3%). There were not enough responses from individuals who were not working but seeking work, or not working and not seeking work immediately prior to enrolling in the program, to report their reasons for enrolling.

Figure 3.
Reasons for Enrolling in PSM Programs by Status, 2011

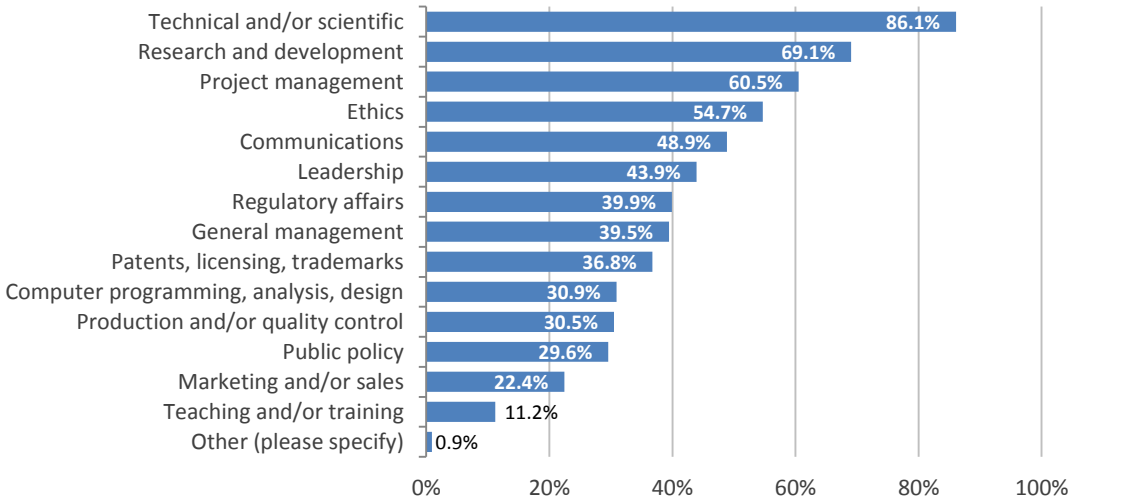


Source: Council of Graduate Schools, 2011

Experience in PSM Programs

Respondents were given a list of 15 topics which are often covered in PSM programs and were asked to select those which were covered in their specific program. As illustrated in Figure 4, the most commonly reported skills included technical and/or scientific (86.1%), research and development (69.1%), project management (60.5%), and ethics (54.7%).

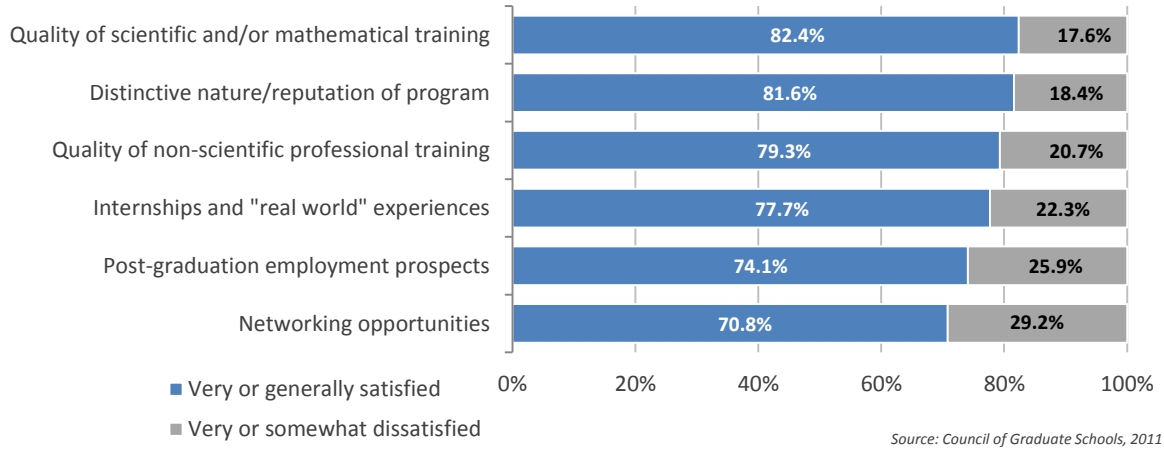
Figure 4.
Topics Covered by PSM Programs of Study, 2011



Source: Council of Graduate Schools, 2011

Survey respondents indicated high levels of satisfaction with all attributes of their PSM program (see Figure 5). Respondents were satisfied with three attributes in particular: 82.4% of respondents were either "very satisfied" or "generally satisfied" with the quality of scientific and/or mathematical training; 81.6% were either "very satisfied" or "generally satisfied" with the distinctive nature/reputation of the program; and 79.3% were either "very satisfied" or "generally satisfied" with the quality of non-scientific professional training. Two attributes, the quality of scientific and/or mathematical training, and internships and "real world" experiences, received particularly high marks in terms of the number of graduates who were "very satisfied," 37.6% and 35.0%, respectively. The lowest rating was given to the attribute of networking opportunities, where 29.2% of respondents were either "very dissatisfied" or "somewhat dissatisfied."

Figure 5.
Satisfaction with PSM Programs by Attribute, 2011



Source: Council of Graduate Schools, 2011

Mean satisfaction ratings were calculated in order to compare respondents' satisfaction between the various PSM program attributes. For each survey respondent, a numerical rating of 1 to 4 was assigned to each satisfaction item (1 for "very dissatisfied," 2 for "somewhat dissatisfied," 3 for "generally satisfied," and 4 for "very satisfied").

As shown in Table 1, the PSM program attributes with the highest mean satisfaction ratings were: the quality of scientific and/or mathematical training (3.12); the distinctive nature/reputation of the program (3.10); and internships and "real world" experiences (3.05). Mean satisfaction ratings were somewhat lower for: quality of non-scientific professional training (3.00); post-graduation employment prospects (2.93); and networking opportunities (2.92).

Table 1.
Mean Satisfaction Ratings of PSM Program Attributes, 2011

PSM Program Attribute	Mean satisfaction rating (1=lowest, 4=highest)
Quality of scientific and/or mathematical training	3.12
Distinctive nature/reputation of program	3.10
Internships and "real world" experiences	3.05
Quality of non-scientific professional training	3.00
Post-graduation employment prospects	2.93
Networking opportunities	2.92

Current Outcomes

The majority of survey respondents (81.6%) reported that they were working during the week of June 20, 2011, while 5.4% reported that they were students, 12.1% were not working but seeking work, and 0.9% were not working and not seeking work during that same week. Since this survey was implemented roughly one to two months after spring 2011 graduation, and approximately six months after December 2010 graduation, the fact that 81.6% of respondents were employed so soon after graduation is an encouraging finding, especially given the current job market and unemployment rate. Among respondents who were working, 88.4% were working in a job that is closely or somewhat related to their field of study.

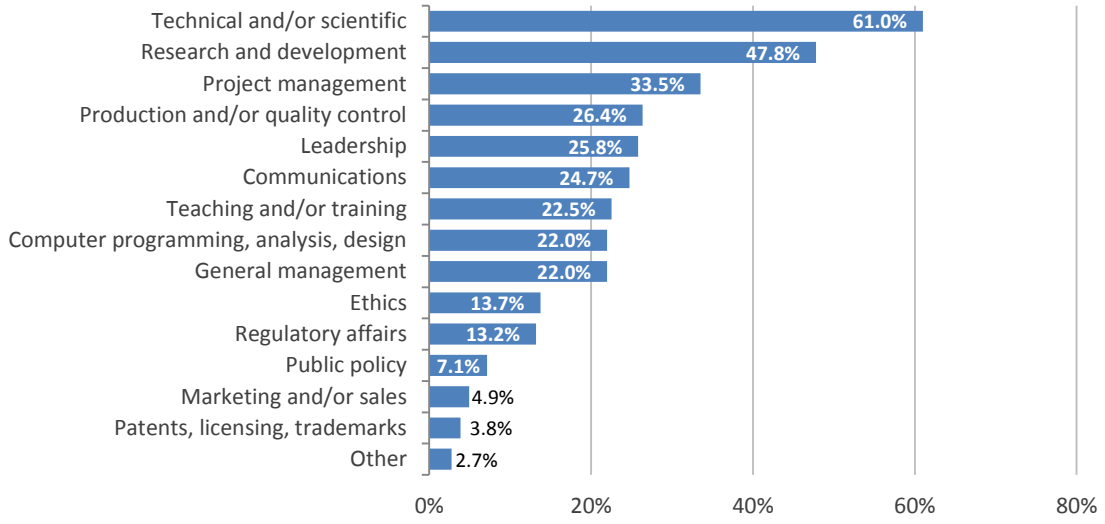
Among respondents who were working in a job that was not related to their field, the most frequently cited reason was that there were no suitable jobs in the preferred field. Other common reasons included the fact that their current job was more convenient, paid more, was more secure, or offered better opportunities for advancement. Specific numbers and percentages were not reportable due to the fact that so few respondents were working in a job that was not related to their field.

Of those respondents who were working during the week of June 20, 2011, 35.8% were working in the same job they had before they began their PSM program, 45.1% were working in a different job than the one they had before they started their PSM program, and 19.1% were not working before they began their PSM program. Among respondents who were working in a new job during the week of June 20, 2011, 38.5% reported that they secured this job because of an internship affiliated with their PSM program.

Of all respondents who were working in the week of June 20, 2011, one-half (50.6%) were working in business and industry, 22.7% were working in government, 16.3% were working in academia, and 7.6% were working in non-profit organizations. A small percentage (2.9%) of respondents were working in other fields, including research and healthcare.

Respondents who were working during the week of June 20, 2011 were given a list of 15 work activities and asked to select all of those that were their primary work activities at their principal employer. Applying technical and/or scientific skills was the most frequently noted primary work activity (61.0%), followed by research and development (47.8%), and project management (33.5%). Most other primary work activities were considerably lower than these three (see Figure 6).

Figure 6.
Primnary Work Activities Performed in the Workplace, 2011



Source: Council of Graduate Schools, 2011
Represents only respondents who were working during the week of June 20, 2011

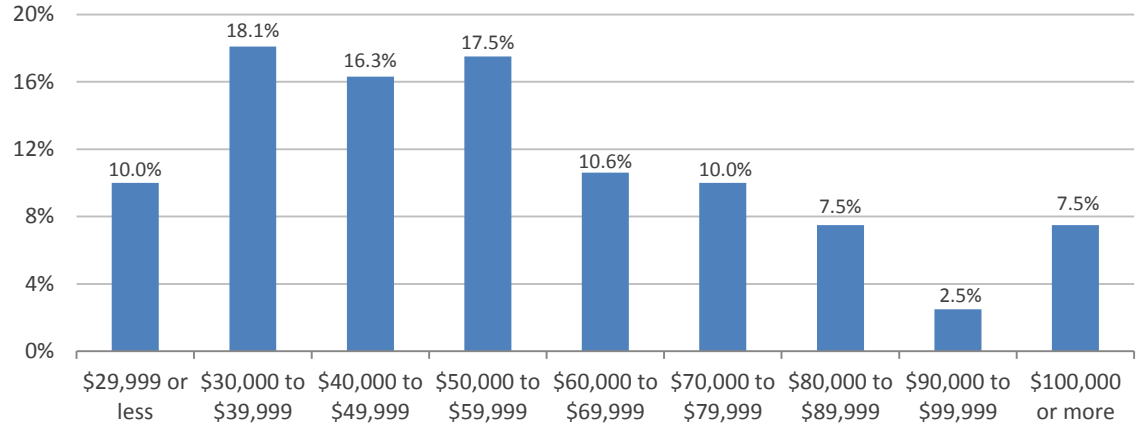
The majority (94.2%) of respondents working during the week of June 20, 2011 were employed full-time, and a minority (5.8%) were working part-time. Respondents who were working during this time period were given an opportunity to share their job title in an open-ended question. A total of 153 different job titles were provided, ranging from biologist to forensic scientist; from staff engineer to account manager. The job titles were too varied to report.

Salaries

Respondents who were working during the week of June 20, 2011 were given nine salary ranges and asked to select the one range that best represented their base annual salary for their principal job as of June 20, 2011. It is important to note that many factors that influence salary levels (e.g., prior work experience, years of work experience, field of bachelor's degree, additional qualifications, geographic location, etc.) were not captured by this survey. Therefore, these salary findings should be interpreted and utilized with caution.

More than one-half (55.6%) of respondents who worked full-time during the week of June 20, 2011 reported earning more than $50,000 annually. More than one-half (51.9%) of respondents who worked full-time during this period earned between $30,000 and $59,999 annually. Some 17.5% of respondents reported earning $80,000 or more annually as of the week of June 20, 2011. Too few respondents worked part-time to report their salary ranges.

Figure 7.
Salary Distribution Among PSM Graduates Working Full-Time, 2011



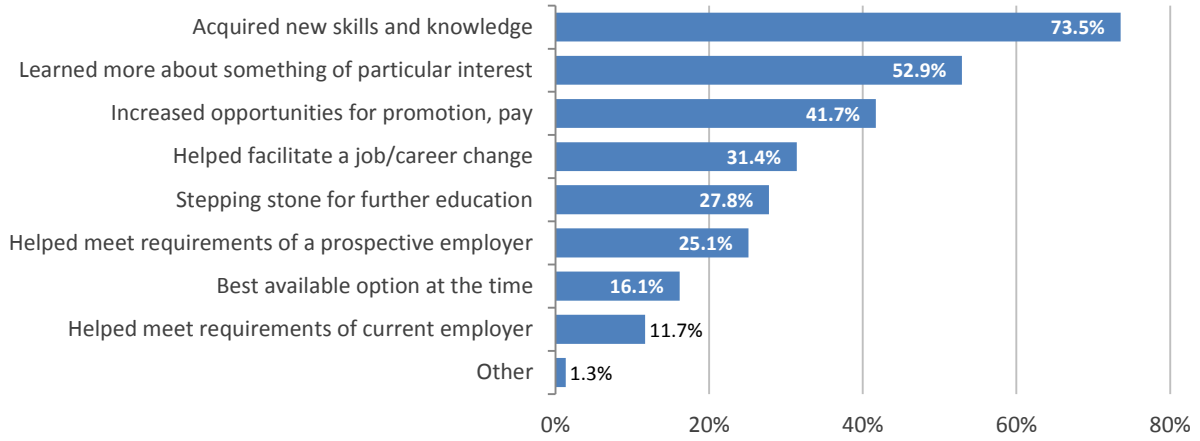
Source: Council of Graduate Schools, 2011
Represents only respondents who were working during the week of June 20, 2011

Cross-tabulations of salary data with employment sector revealed some variations. Salaries among respondents who were working in business and industry during the week of June 20, 2011 were most likely to be between $40,000 and $69,999 per year. Respondents working in academia during this same time period were more likely to be earning between $30,000 and $39,999 per year. Government salaries appear to be more evenly distributed across all salary ranges, from $29,999 or less to $100,000 or more. Salary ranges among respondents in non-profit and other employment sectors were not reported due to small cell counts.

Value and Benefits of a PSM Degree

Respondents, regardless of their employment status as of June 20, 2011, were given a list of nine possible benefits of having earned a PSM and were asked to select up to three that resonated with them the most. As shown in Figure 8, the most commonly cited benefits were that they acquired specific skills and knowledge (73.5%), learned more about something of particular interest (52.9%), and increased opportunities for promotion, advancement, and pay (41.7%).

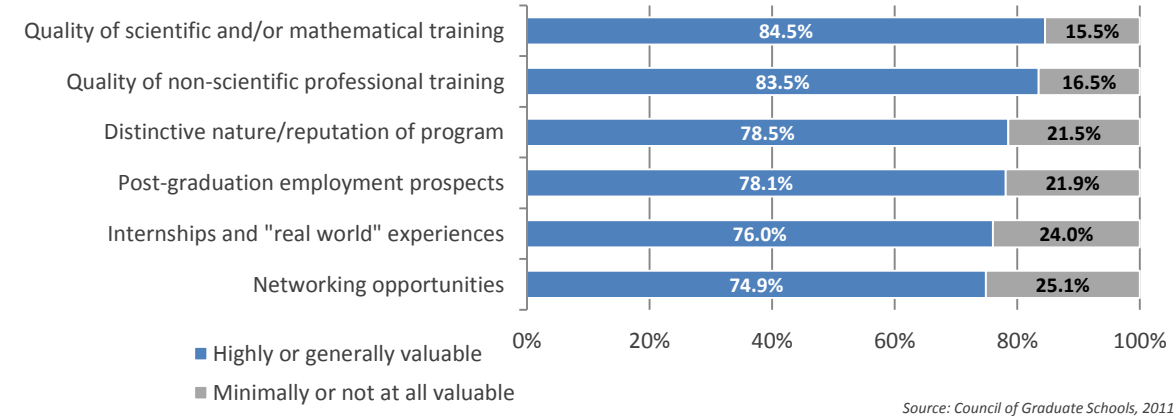
Figure 8.
Benefits of Having Earned a PSM Degree, 2011



Source: Council of Graduate Schools, 2011

Respondents generally found value in all attributes of their PSM program (see Figure 9). Aspects of PSM programs that were deemed of highest value were quality of scientific and/or mathematical training, which 84.5% of respondents felt was either "very valuable" or "generally valuable," and quality of non-scientific professional training, which 83.5% of respondents felt was either "very valuable" or "generally valuable".

Figure 9.
Value of PSM Attributes, 2011



Source: Council of Graduate Schools, 2011

Mean value ratings were calculated to evaluate the overall value of various PSM program attributes, and to facilitate comparison with mean satisfaction ratings discussed earlier in this report. A numerical rating of 1 to 4 was assigned to each value item (1 for "not at all valuable," 2 for "minimally valuable," 3 for "generally valuable," and 4 for "highly valuable").

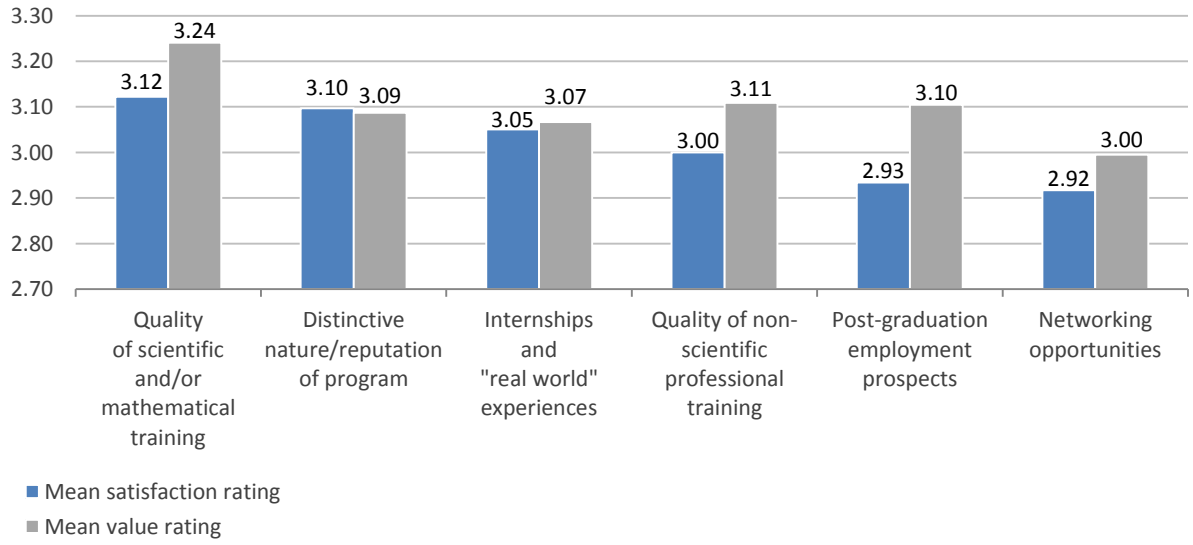
As shown in Table 2, mean value ratings ranged from a high of 3.24 to a low of 3.00. The attribute most highly valued by all respondents was scientific and/or mathematical training (3.24), followed by non-scientific professional training (3.11), and post-graduation employment prospects (3.10).

Table 2.
Mean Value Ratings of PSM Program Attributes, 2011

PSM Program Attribute	Mean value rating (1=lowest, 4=highest)
Quality of scientific and/or mathematical training	3.24
Quality of non-scientific professional training	3.11
Post-graduation employment prospects	3.10
Distinctive nature/reputation of program	3.09
Internships and "real world" experiences	3.07
Networking opportunities	3.00

A comparison of mean value ratings and mean satisfaction ratings reveals that mean value ratings for the PSM program attributes were generally equal to or higher than the mean satisfaction ratings for these same attributes. In other words, respondents generally rated the value of these attributes of their master's experience slightly higher than their satisfaction with these aspects of their master's program (see Figure 10). Mean value ratings of four PSM program attributes in particular were higher than mean satisfaction ratings: employment prospects, scientific and mathematical training, non-scientific professional training, and networking.

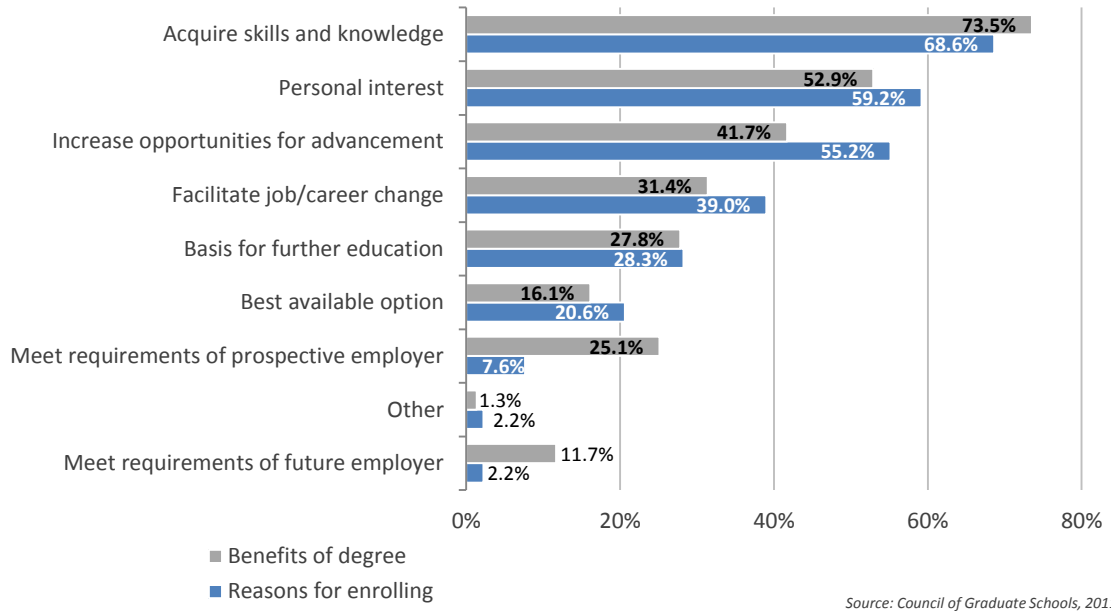
Figure 10.
Mean Satisfaction and Value Ratings for PSM Program Attributes, 2011



As discussed earlier in this report, respondents were given lists of nine reasons for enrolling in the PSM program and nine benefits to having earned their degree. In each case, respondents were asked to select up to three reasons or benefits that most closely represented their opinion. The nine

reasons and benefits were identical in order to facilitate a comparison between the two. Respondents were most likely to have enrolled in their PSM program to acquire specific skills and knowledge (68.6%). They were also most likely to state that the acquisition of specific skills and knowledge was the primary benefit of their PSM degree (73.5%). As shown in Figure 11, there is general continuity in the reasons why students enrolled in their PSM program of study and the benefits of actually earning a PSM degree, with one notable exception. Meeting the requirements of current and prospective employers were not major reasons for enrolling in a PSM program, but respondents were more much more likely to indicate that these were benefits of actually having earned a PSM degree.

Figure 11.
Reasons for Enrolling and Benefits of Degree Comparison, 2011



Source: Council of Graduate Schools, 2011

SUMMARY AND CONCLUSIONS

The *2011 Professional Science Master's (PSM) Student Outcomes Survey* generated 223 usable responses. The majority (60.2%) of respondents earned their undergraduate degree between 2007 and 2010. Nearly one-half (46.2%) of survey respondents were enrolled in biology/biotechnology, more than the next five largest fields combined. Most (69.1%) respondents were working immediately prior to enrolling in a master's program. The most frequently cited reasons for enrolling in a PSM program included: to acquire specific skills and knowledge (68.6%); to learn more about something in which they were particularly interested (59.2%); and to increase opportunities for promotion, advancement, and/or pay (55.2%). Respondents reported that the three most common topics covered by PSM programs were technical and/or scientific, research and development, project management, and ethics.

As of the week of June 20, 2011, the majority of respondents (81.6%) were working, 5.4% were students, 12.1% were not working but seeking work, and 0.9% were not working and not seeking work. More than one-third (38.5%) of respondents who were working in a new job during the week of June 20, 2011 secured this job because of an internship affiliated with their PSM program. More than one-half of employed respondents were working in business/industry, 22.7% were working in government, 16.3% were working in academia, and 7.6% were working in non-profit organizations. The majority (94.2%) of working respondents were employed full-time.

More than one-half (55.6%) of respondents who worked full-time during the week of June 20, 2011 reported earning more than $50,000 annually. More than one-half (51.9%) of respondents who worked full-time during this period earned between $30,000 and $59,999 annually. Some 17.5% of respondents reported earning $80,000 or more annually.

Overall, respondents were generally satisfied with their PSM program of study and reported the highest levels of satisfaction with the quality of their scientific and/or mathematical training, the distinctive nature of the program, and the quality of their non-scientific professional training. Respondents generally found value in all attributes of their PSM program, particularly the quality of their scientific and/or mathematical training and the quality of their non-scientific professional training.

The findings of the survey indicate that graduates of PSM programs are securing the jobs for which they are being prepared. Overall, survey respondents were highly likely to be employed (even though the survey was conducted soon after graduation for many respondents) and to be working in a job related to their field of study. The vast majority of employed respondents were working in business, government, or the non-profit sector, which are the sectors for which PSM programs prepare their graduates. Furthermore, newly-minted PSM alumni are earning salaries that reflect their unique training. Perhaps most importantly, PSM alumni are satisfied with their PSM programs, and see even greater value in, their PSM experience. This was especially true concerning the quality of their scientific and/or mathematical training, one of the cornerstones of PSM programs.

The *2011 Professional Science Master's (PSM) Student Outcomes Survey* is just the first step in a process designed to track outcomes for PSM alumni. In 2012, CGS will field the survey again and will capture the initial employment outcomes of the PSM graduating class of 2011/12. In addition, the 2012 survey will follow up with the 2010/11 graduates to gather data on how their careers have progressed during their first year post-degree. These findings will be presented in the 2012 survey report, along with a comparison of the initial employment outcomes of the 2010/11 and 2011/12 PSM graduates.

REFERENCES

Borbye, L. (2008, February). PSM program assessment from all perspectives. Communicator, 41(1), 4-8. Retrieved from http://www.cgsnet.org/portals/0/pdf/comm_2008_01.pdf

Council of Graduate Schools (2011). PSM program statistics. Retrieved August 4, 2011 from http://www.sciencemasters.com/

Council of Graduate Schools. (2010, December). Professional science master's project enters new phase [Press Release]. Retrieved from http://www.cgsnet.org/portals/0/pdf/N_pr_2011SloanAward.pdf

Kaplan, K. (2011, January 27). The other path: The professional science master's degree is growing in popularity but is losing its initial funding. Can it survive? Nature, 469, 569. Retrieved from http://www.nature.com/naturejobs/2011/110127/pdf/nj7331-569a.pdf

National Professional Science Master's Association. (2009). *2009 PSM alumni employment survey report*. Worcester, MA: Author.

Sims, L. B. (2006). Professional master's education: A CGS guide to establishing programs. Washington, D.C.: Council of Graduate Schools.

Teitelbaum, M. S., & Lynch, C. B. (2010, August 15). Needed: Support for professional science master's degrees. The Chronicle of Higher Education. Retrieved from http://chronicle.com/article/Needed-Support-for/123906/

Van den Broeck, J., Argeseanu C. S., Eeckels, R., & Herbst, K. (2005). Data cleaning: Detecting, diagnosing, and editing data abnormalities. PLoS Med, 2(10), e267. Accessed March 14, 2011 from doi:10.1371/journal.pmed.0020267

APPENDIX A

2011 Professional Science Master's (PSM)
Student Outcomes Survey Questionnaire

WELCOME!

Welcome to the 2011 Professional Science Master's Student Outcomes Survey, and congratulations on earning your master's degree!

This survey should take less than 10 minutes to complete, and will ask questions regarding your motivations for enrolling, satisfaction with the program, and initial employment outcomes. All information that you provide will be treated as confidential. Your responses will be compiled with those from graduates from around the country, and reported only in ways that do not identify you personally. Your individual response will not be shared with your university or master's program.

As our way of saying "thanks," you can enter to win an Apple 16 GB iPad2 (the grand prize) or one of three Amazon Kindle 6" Wi-Fis (second prizes). Sweepstakes rules and regulations can be found at **[LINK].** Completed surveys and online sweepstakes entries must be submitted by Friday, July 29, 2011, 11:59 p.m. Eastern Daylight Time. If you have any questions about the survey, please contact Jeff Allum at jallum@cgs.nche.edu or 202-461-3878. Again, congratulations on earning your degree!

Q1. Have you earned or are you about to earn a master's degree?

[ANSWER REQUIRED]

Yes **[GO TO Q2]**
No **[GO TO DISQUALIFICATION PAGE]**

Q2. From which of the following academic institutions and master's programs did you graduate?

[ANSWER REQUIRED]

[DROP DOWN MENU OF 261 INSTITUTION/PRGORAMS]
Air Force Institute of Technology (Combating Weapons of Mass Destruction)
American University (Applied Computing)
American University (Biotechnology)
etc…
etc…
etc…
Worcester Polytechnic (Industrial Mathematics)
None of these **[GO TO DISQUALIFICATION PAGE]**

Q3. Did you (or will you) graduate between July 1, 2010 and June 30, 2011?

[ANSWER REQUIRED]

Yes **[GO TO Q4]**
No **[GO TO DISQUALIFICATION PAGE]**

Q4. In what year did you earn your undergraduate degree?

[DROP DOWN MENU 2010, 2009, 2008 … 1980 or before]

REASONS FOR ENROLLING

Q5. Think back to the time period immediately before you enrolled in this master's program. Which one of the following best describes your situation then?

I was working
I was both working and a student
I was a student
I was caring for family full-time
I was not working, but seeking work
Other *(please specify)* _____

Q6. What were the THREE main reasons why you chose to enroll in this master's program?

[RANDOMIZE RESPONSE CATEGORIES]

[ALLOW NO MORE THAN 3 SELECTIONS]

To acquire specific skills and knowledge
To increase opportunities for promotion, advancement, and/or pay
To meet requirements of my current employer
To meet requirements of a prospective employer
To learn more about something in which I am particularly interested
It was the best option available at the time
To facilitate a job/career change
To use as a stepping stone for further education (e.g., Ph.D.)
Other *(please specify)* _____

SATISFACTION WITH THE MASTER'S PROGRAM

Q7. Which of the following topics were covered by your master's program? *(Select all that apply.)*

[RANDOMIZE RESPONSE CATEGORIES]

General management
Project management
Ethics
Computer programming, analysis, design
Regulatory affairs
Leadership
Technical and/or scientific
Public policy
Marketing and/or sales
Patents, licensing, trademarks
Communications
Production and/or quality control
Research and development
Teaching and/or training
Other *(please specify)* _____

Q8. How satisfied are you with each of the following attributes of this master's program?

[RANDOMIZE RESPONSE CATEGORIES]	Very satisfied	Generally satisfied	Somewhat dissatisfied	Very dissatisfied	N/A
The distinctive nature/reputation of the program					
The quality of scientific and/or mathematical training					
The quality of non-scientific professional training (e.g., business, law, communications, etc.)					
Internship(s) and "real world" practical experiences					
Networking opportunities					
Post-graduation employment prospects					

YOUR CURRENT SITUATION

Q9. Which one of the following best describes your current situation?

[ANSWER REQUIRED]

I am working **[GO TO Q10]**
I am both working and a student **[GO TO Q10]**
I am a student **[GO TO Q11]**
I am caring for family full-time **[GO TO Q20]**
I am not working, but seeking work **[GO TO Q20]**
Other *(please specify)* _____ **[GO TO Q20]**

Q10. *(for workers)* Is the work you are doing now closely related to your master's degree?

[ANSWER REQUIRED]

Yes, it is closely related **[GO TO Q13]**
Yes, it is somewhat related **[GO TO Q13]**
No, it is not at all related **[GO TO Q12]**

Q11. *(for students)* Is your program of study closely related to your master's degree?

[ANSWER REQUIRED]

Yes, it is closely related **[GO TO Q20]**
Yes, it is somewhat related **[GO TO Q20]**
No, it is not at all related **[GO TO Q20]**

Q12. Why are you working in this job, as opposed to a job more closely related to your master's degree? *(Select all that apply.)*

[RANDOMIZE RESPONSE CATEGORIES]

This job is more interesting
This job is more local/convenient
This job is more secure
This job pays more
This job offers better opportunities for advancement
This job is more suitable to my skills and interests
There are no suitable jobs in my preferred field
I prefer a job not related to my master's degree
Other *(please specify)* _____

Q13. Is your current job the same job you had when you began your master's degree?

[ANSWER REQUIRED]

Yes **[GO TO Q15]**
No **[GO TO Q14]**
I was not working immediately prior to starting my master's degree **[GO TO Q15]**

Q14. *(for respondents with a new job)* Did you get this job because of an internship affiliated with your master's program?

Yes
No

EMPLOYMENT INFORMATION

Q15. Which one of the following best describes the SECTOR of your principal employer during the week of June 20, 2011? *(By principal employer, we mean the one employer that constitutes the majority of your time. If you have more than one employer, consider the employer who compensates you the most as your principal employer.)*

[RANDOMIZE RESPONSE CATEGORIES]

Business/industry (including self-employed)
Start-up business/enterprise
Government
Academia
Non-profit
Other *(please specify)* _____

Q16. What was the title of the principal job you held during the week of June 20, 2011?

[ESSAY]

Q17. Is your employment full-time or part-time?

Full-time (35 or more paid hours per week)
Part-time (less than 35 paid hours per week)

Q18. What primary work activities do you perform at your principal employer? *(Select all that apply.)*

[RANDOMIZE RESPONSE CATEGORIES]

General management
Project management
Ethics
Computer programming, analysis, design
Regulatory affairs
Leadership
Technical and/or scientific
Public policy
Marketing and/or sales
Patents, licensing, trademarks
Communications
Production and/or quality control
Research and development
Teaching and/or training
Other *(please specify)* _____

Q19. What was your base ANNUAL salary for your principal job as of June 20, 2011? *(Exclude bonuses, overtime, benefits, or secondary compensation.)*

$29,999 or less
$30,000 to $39,999
$40,000 to $49,999
$50,000 to $59,999
$60,000 to $69,999
$70,000 to $79,999
$80,000 to $89,999
$90,000 to $99,999
$100,000 or more

VALUE OF YOUR MASTER'S DEGREE

Q20. What are the THREE main benefits of having earned a Professional Science Master's degree?

[RANDOMIZE RESPONSE CATEGORIES]

[ALLOW NO MORE THAN 3 SELECTIONS]

I have acquired new skills and knowledge
It increased opportunities for promotion, advancement, and/or pay
It helped me meet the requirements of my current employer
It will help me meet the requirements of a prospective employer
I learned more about something in which I am particularly interested
It was the best available option at the time
It helped me to facilitate a job/career change
It will be a stepping stone for further education (e.g., Ph.D.)
Other *(please specify)* _____

Q21. Rate the following six attributes of your master's experience in terms of how valuable they are to you NOW.

[RANDOMIZE RESPONSE CATEGORIES]	Highly valuable	Generally valuable	Minimally valuable	Not at all valuable	N/A
The distinction of having earned a Professional Science Master's (PSM) degree					
The quality of scientific and/or mathematical training					
The quality of professional training (e.g., business, law, communications, etc.)					
Internship(s) and "real world" practical experiences					
Networking					
Post-graduation employment prospects					

2012 SURVEY

Q22. The Council of Graduate Schools would like to conduct this survey again in 2012 to understand changes over time among Professional Science Master's (PSM) graduates. Would you be willing to participate in the 2012 survey? By agreeing, you are not obligated to participate; you will simply be invited (although your participation would be greatly appreciated.)

[ANSWER REQUIRED]

Yes **[GO TO Q23]**
No **[GO TO Q24]**

Q23. *(if yes)* Please provide your name and permanent e-mail address below to be invited to the 2012 PSM Student Outcomes Survey.

Name _____ **[ESSAY] [GO TO Q24]**
E-mail _____ **[ESSAY] [GO TO Q24]**
Re-enter e-mail _____ **[ESSAY] [GO TO Q24]**

SWEEPSTAKES

Q24. As our way of saying "thanks" for your participation, the Council of Graduate Schools would like to offer you the chance to win an Apple 16 GB iPad2 (the grand prize) or one of three Kindle 6" Wi-Fis. Would you like to enter this sweepstakes?

[ANSWER REQUIRED]

Yes **[GO TO Q25]**
No **[GO TO THANK YOU]**

Q25. *(if yes)* Sweepstakes rules and regulations can be found here **[LINK]**. Please review these rules and regulations and, if you are eligible and wish to enter, provide your name and e-mail address below. Even if you provided your name and e-mail address in the previous question to participate in the 2012 survey, you must re-enter this information to participate in the sweepstakes. This step ensures the confidentiality of your responses, separating it from the survey data.

Name _____ **[ESSAY] [GO TO THANK YOU]**
E-mail _____ **[ESSAY] [GO TO THANK YOU]**
Re-enter e-mail _____ **[ESSAY] [GO TO THANK YOU]**

DISQUALIFICATION PAGE **[FOR NON-ELIGIBLE INVITEES, SCREENED BY Q1, Q2, AND Q3]**

Thank you for agreeing to participate. Unfortunately, we are only seeking survey responses from individuals who graduated during the 2010/11 academic year with a master's degree from a select list of institutions and programs.

THANK YOU! **[FOR ALL SURVEY RESPONDENTS NOT DIRECTED TO THE DISQUALIFICATION PAGE]**

Thank you for participating in this survey. A summary report of the findings will be available at www.sciencemasters.com later this summer.

****** END OF QUESTIONNAIRE ******

Council of Graduate Schools
One Dupont Circle NW
Suite 230
Washington, DC 20036-1173

Phone: (202) 223-3791
http://www.cgsnet.org

August 2011