NACME RESEARCH REPORT

2009 GRADUATING SCHOLARS SURVEY

CHANGING LIVES, CHANGING AMERICA

NACME Graduating Scholars Survey Results
Fall 2008 – Summer 2009 Graduates

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<u>**Executive Summary**</u>

A study of the National Action Council for Minorities in Engineering, Inc. (NACME) Scholars who graduated between September 2008 and August 2009 was conducted to determine:

- Scholars' level of satisfaction with instructional and support features of their undergraduate engineering program
- Research and/or internship experiences acquired by the Scholars during their undergraduate degree program
- Post graduation employment positions, locations and relatedness to their degree program
- Graduate education coursework and degree plans

The Minority Engineering Program (MEP) coordinators at each of the 29 NACME partner institutions were critical in garnering a 68 percent response rate (81 total respondents), which is considered exceptional in survey research, providing a strong basis for generalization. Full instructions and the survey are included in Appendix A.

Key findings:

- The NACME Scholarship was the most important funding source cited by students: 84 percent of students indicated that the NACME Scholarship was a "very important" funding source for their undergraduate education among 14 possible sources that were rated
- More than half of the graduating scholars indicated an interest in pursuing a doctoral degree
- Over one-third planned on pursuing a master's degree in engineering within 12 months of graduation
- Students reported 71 internship/co-ops at 56 different companies. These were critical experiences:
  - 54 percent indicated that they "would work for the company based on their internship experience"
  - 55 percent indicated the internship "provided a lot of skills/knowledge applicable to coursework"
  - 28 percent said the internship helped them choose an engineering area
  - 41 percent of females indicated the internships were critical in learning about something they did not want in a career
- Almost all of the students—all but seven—indicated that their post-graduation employment was "somewhat" or "closely related" to their degree field.
- Undergraduate experiences with research and interactions with faculty were critical to students' post-graduation educational planning. Students who had worked with faculty on research, or presented research at conferences were quite likely to express an interest in eventually pursing a Ph.D. in engineering.

Recommendations:
NACME should continue to work closely with the MEP coordinators at its partner schools to continue to reach out to the students. Students were aware of their status as NACME Scholars:

this status should be made prestigious, something that students "advertise" to employers post-graduation, and NACME should work to maintain contact with the students.

Conference participation can be critical to growing the next generation of engineering leaders and educators. Travel funding to attend conferences should be a topic of discussion with the MEP coordinators because schools differed greatly in the support available and the sources of this support.

- At the "very high research activity" and "high research activity" institutions, faculty members or departments may have travel funds. MEP coordinators need to make sure that students are aware of being proactive in seeking these funds and that faculty are also proactive in inviting students to participate and present research
- At the "Sub-Ph.D.-granting" institutions, NACME may need to provide a separate source of funds for student travel to conferences
- Students need to be aware of the importance of participating in professional societies, including the merits of attending conferences

Since research experiences provide a bridge to graduate school, NACME should work with MEP coordinators, allied programs (e.g., Louis Stokes AMP and McNair), and faculty at partner institutions to enable increased participation in research by the NACME Scholars.

<u>Research Methods</u>

The Graduating Scholars Survey was distributed to the MEP coordinators at each of the NACME's partner universities. These dedicated professionals know their students may have already established regular meeting times or some special time to meet with students who were near the completion of their studies, and could more easily locate students. MEP coordinators made sure that the NACME scholars completed the surveys and were sent back to NACME for analysis. Most MEP coordinators were able to return the surveys in a timely manner. Follow-ups were done through the MEP coordinators at first and then directly to the students by NACME Director of Research Elizabeth Rivera to secure surveys from students who had not returned surveys.

Data Collection and Response Rate Computation
A copy of the survey and instructions provided to the MEP coordinators are in Appendix A. The forms included a code number and a post-it with the students' name so that the MEP coordinator could distribute the surveys to students at their campus.

As of November 23, 2009, we received:
- Surveys from 27 of the 29 schools (93 percent return rate).
- 81 total surveys
    - overall rate: 81/120 = 68 percent
- The response rate for the population: 68 percent

Data Notes and Cautions
In general, the rate of return that we had with this survey is great. The MEP coordinators are to be commended for their dedication and care in securing students' responses to the Graduating Scholars Survey. These professionals will be key in helping us to modify the procedures used to implement the survey.

Analysis
Fall 2008 graduating scholar data was collected and coded by CPST staff into the Statistical Package for the Social Sciences (SPSS). Spring/Summer 2009 graduating scholar data was collected and coded by NACME staff into SPSS. In addition to the data from the surveys, we incorporated data about the institutions the students attended from the Carnegie Foundation's spreadsheet, which provides a wealth of institutional information about universities. Most of the items in the survey were "closed-ended," meaning that there was no interpretation necessary to code the data. There were a few "open-ended" items, which required greater care in coding and entering. One of these items asked students to indicate information about internships: employer, satisfaction, etc. We made a spreadsheet of the internship/co-op employers listed by the students. But since there were few employers who were reported by more than a handful of students, we concluded that we would not be able to complete any meaningful analysis looking at differences across these employers.

Finally, there were a few gender differences in our analyses that explored the relationship between gender and the other variables in the dataset. These analyses are presented in the report when gender appeared to have a strong impact upon outcomes.

Results

Who are the NACME Graduating Scholars?
Table 1a provides a demographic overview of the 81 respondents who reported that they were planning to graduate (or had already graduated) between September 2008 and August 2009. Whereas females tend to account for about 20 percent of all engineering graduates in a year nationwide, females accounted for 34.6 percent of the NACME Graduating Scholars. In terms of race/ethnicity, a majority of the students supported by the NACME program were of Latino/a descent, followed by African American students. The average age was 23 and the vast majority of students have never been married and only three students reported that they had children.

Table 1a. Demographic Overview of Respondents

	Number	Percent
Gender		
Female	28	34.6%
Male	53	65.4%
Race/ethnicity		
American Indian /Alaska Native	2	2.5%
African American	25	30.9%
Latino/a	41	50.6%
Multiple responses	4	4.9%
White	9	11.1%
Age		
Minimum	22	
Maximum	37	
Mean	23	
Std. Dev.	2.3	
Graduated from High School		
in United States	65	80.2%
Marital Status		
Married or marriage-like relationship	5	6.2%
Never married	75	92.6%
Number with children	3	3.9%
Adult in home when growing up had attended college.	55	67.9%

Table 1b provides an overview of the institutions included in the NACME Graduating Scholars Study using the 2005 Carnegie Classification scheme and reports the control of each school and whether the institution is a Historically Black College or University (HBCU), a Hispanic Serving Institution (HSI) or a Minority Serving Institution (MSI). The new Carnegie system

departs from previous schemes from the Carnegie Foundation in several ways. Without going into great detail, suffice to say here that the well-known category "Carnegie Research I" has now been split into "Research University-Very High Research Activity" and "Research University-High Research Activity." Table 1c provides a list of the NACME institutions and their 2005 Carnegie classification. Seven NACME schools were in the "very high research activity" category with 27 survey respondents. Another 33 students were at the eight "high research activity" institutions. The remaining 21 respondents were at seven institutions at which the terminal degree is lower than the doctoral degree – in the analyses that follow, these students have been combined into one institutional type category called "Sub Ph.D." or denoted "< Ph.D." in some graphs and charts.

Table 1b. Institutional Characteristics of Universities Attended by NACME Graduating Scholars

	Number	Percent
Carnegie Classification		
Research University, Very High Research Activity	27	33%
Research University, High Research Activity	33	41%
Master's Granting Institutions	15	19%
Baccalaureate Institutions	3	4%
Special Focus, Colleges of Engineering	3	4%
Institutional Control		
Public	72	89%
Private	9	11%
Special Institutions		
HBCU	12	15%
HSI	17	21%
MSI	31	38%

Four of the institutions are private (Kettering, Polytechnic, Rochester Institute of Technology and Tuskegee), while all of the others are public institutions. There are three HBCUs, three HSIs, and seven MSIs[1]. Since only 12 students came from HBCUs, care needs to be exercised in interpreting these results for this type of institution.

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[1]   HBCUs are Historically Black Colleges and Universities; HSIs are Hispanic-Serving Institutions, and MSIs are Minority-Serving Institutions. Only HBCUs have a historical basis within the relevant ethnic community. HSIs and MSIs are defined as such due to having enrollments of students of Hispanic origin or from minority groups of 25 percent or higher.

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Table 1c. NACME Institutions' 2005 Carnegie Category

Research University-Very High Research Activity
    Arizona State University at the Tempe Campus
    Georgia Institute of Technology-Main Campus
    North Carolina State University
    University of California-San Diego
    University of Colorado, Boulder
    University of Washington-Seattle Campus
    Virginia Polytechnic Institute and State University

Research University-High Research Activity
    Missouri University of Science and Technology
    New Jersey Institute of Technology
    North Carolina A & T State University (HBCU, MSI)
    Northern Arizona State University
    Polytechnic University of New York University
    University of Central Florida
    University of Houston-University Park (MSI)
    University of Texas at El Paso (HSI, MSI)

Master's Granting Institutions
    California State University-Los Angeles (HSI, MSI)
    California State University-Sacramento (MSI)
    Prairie View A & M University (HBCU, MSI)
    Rochester Institute of Technology
    The City College of New York (HSI, MSI)

Baccalaureate Institutions
    Tuskegee University (HBCU, MSI)

Special Focus – Engineering
    Kettering University

Figure 1. NACME Scholars' Majors by Gender
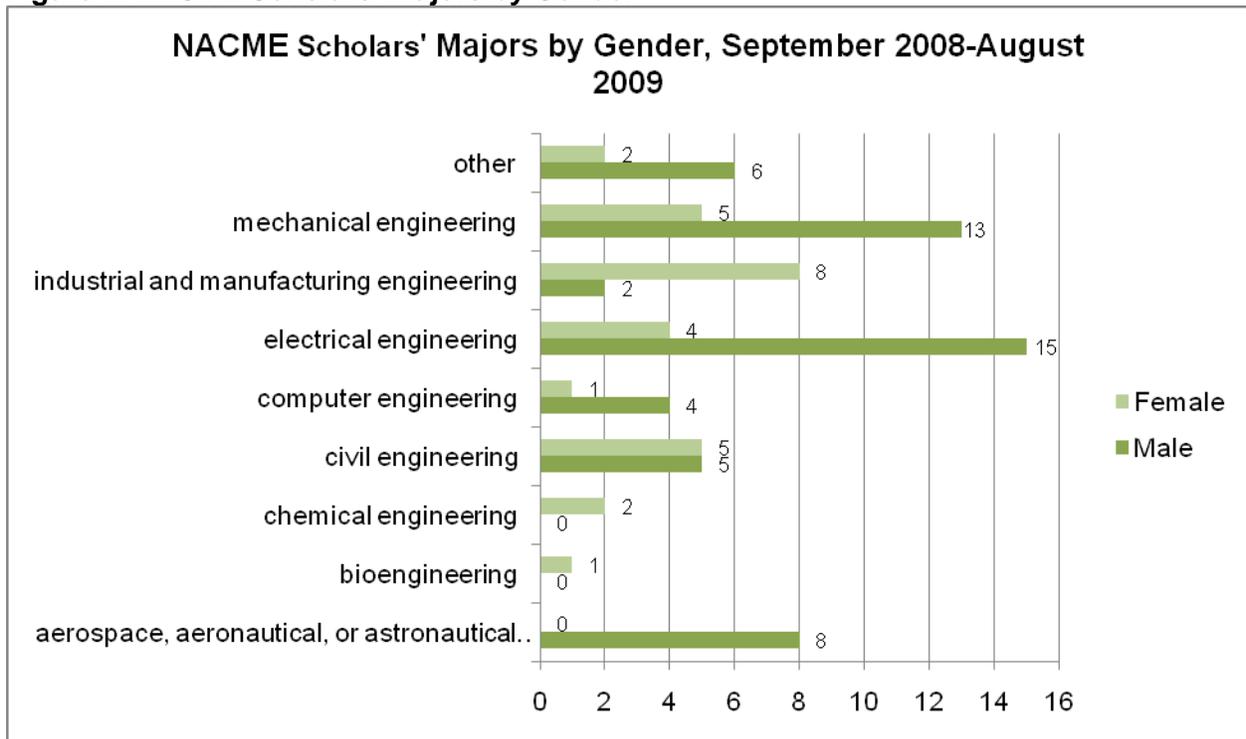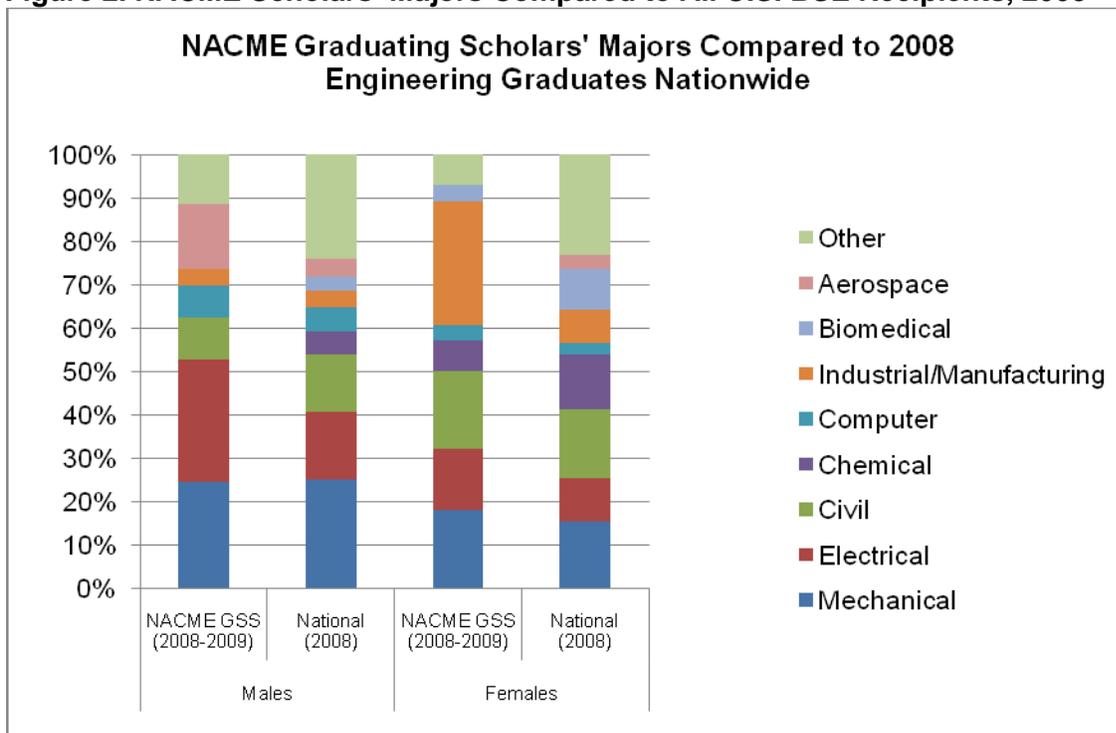

NACME Scholars' Majors by Gender, September 2008-August 2009

Figure 2. NACME Scholars' Majors Compared to All U.S. BSE Recipients, 2008

NACME Graduating Scholars' Majors Compared to 2008 Engineering Graduates Nationwide

Figures 1 and 2 show the major fields for the NACME scholars alone and in comparison to the under-represented minorities who received bachelor's degrees in engineering in 2008. Fields such as chemical and industrial engineering are not as highly represented by the NACME scholars in comparison to the national level. Males are not as well represented in civil engineering among NACME Scholars as they are among nationwide Bachelor of Science in engineering (BSE) recipients. Female NACME Scholars, however, are slightly more highly represented in electrical engineering than females nationwide.

Post-Graduation Plans and the Role of Research Experiences as Undergraduates
Figures 3 and 4 show NACME scholars' interests and plans for post-bachelor's study. NACME scholars expressed an interest in pursuing a doctoral degree at some point: more than half (n=45, 56 percent) of the NACME Scholars indicated this interest. Likewise, when they were asked about their educational plans for the next 12 months, over one-third indicated an interest in pursuing a master's degree in engineering within the next 12 months. A majority did have some sort of post-bachelor's study plans; only 17 scholars (21 percent) indicated that they had no plans for subsequent study. Figure 5 indicates that most of the scholars do plan to work in a job immediately after graduation: this is consistent with the general educational career pattern for engineers. Only 29 of the students planned to immediately enter graduate programs.

Figure 3. NACME Scholars' Interest in Doctoral Study
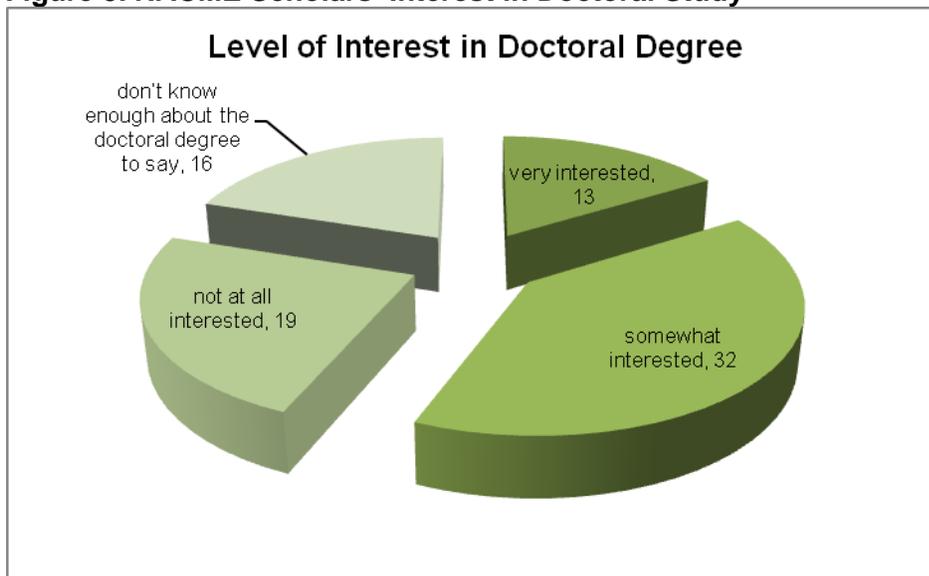
Figure 4. NACME Scholars' Educational Plans for the Next 12 Months

Educational Plans for the Next 12 Months

- pursue an MBA, 9
- other, 5
- do not plan to pursue additional courses or degrees, 17
- pursue some graduate school coursework, 18
- pursue a masters' degree in engineering, 30
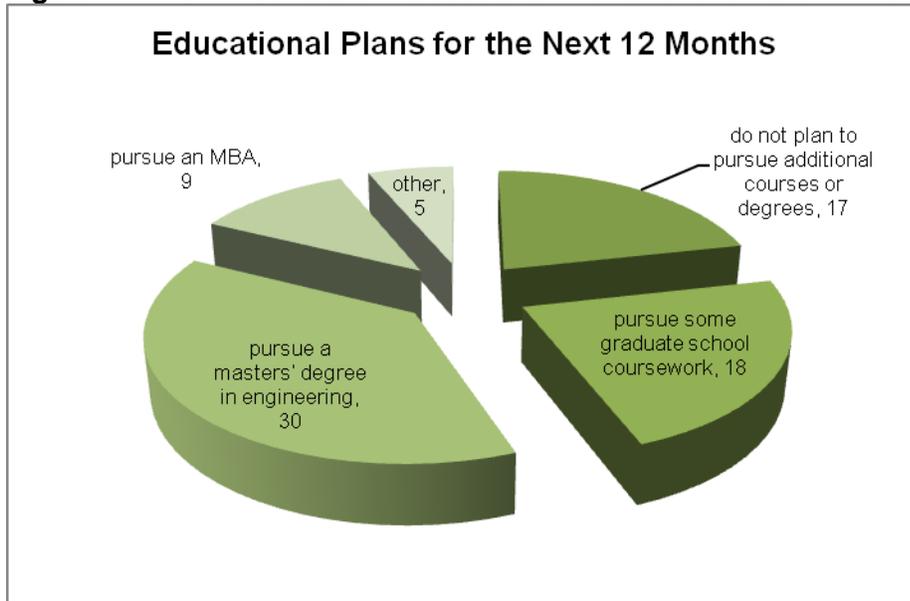
Figure 5. NACME Scholars' Immediate Post-Graduation Plans

Immediate Post-Graduation Plans Frequency

- other, 2
- pursue graduate coursework and-or degree, 29
- actively seeking employment, 27
- have accepted a full-time position, 22
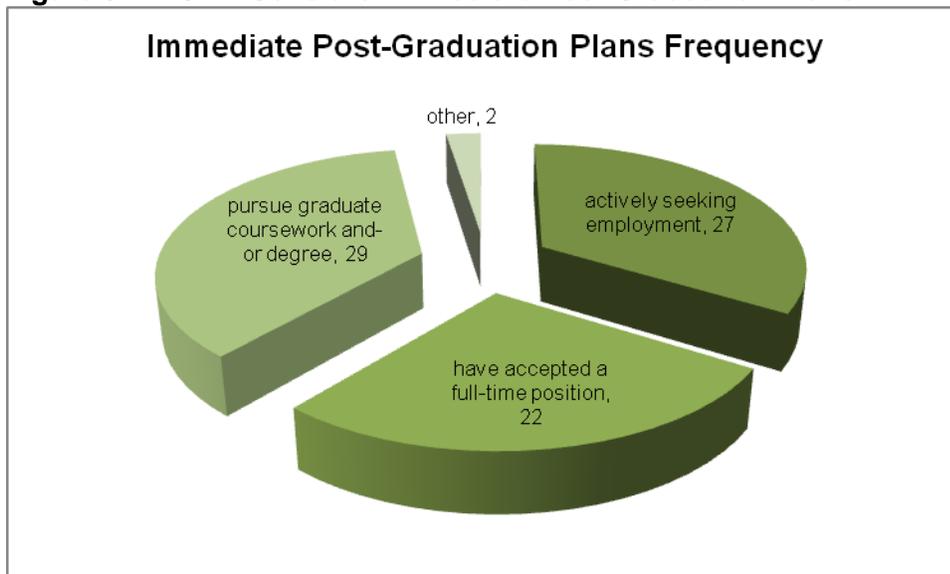
Figure 6. NACME Scholars' Research Experiences by Gender

Undergraduate Research Experiences of NACME Scholars, 2008-2009, by Gender

- Co-authored paper: Female 39.30%, Male 36.70%
- Presented a paper: Female 7.10%, Male 12.20%
- Presented a poster: Female 25%, Male 18.40%
- Attended at least one conference: Female 78.60%, Male 49%
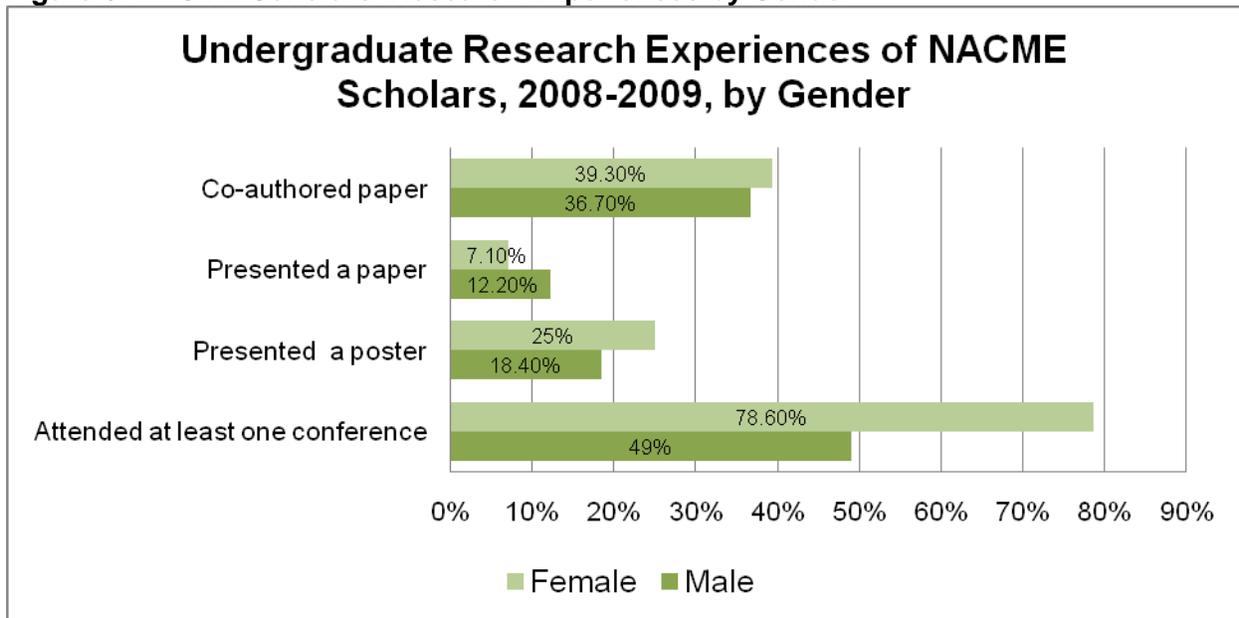
The survey asked the NACME scholars about their undergraduate research experiences. Figure 6 and Table 2 explore some of the ways in which scholars' research experiences were related to gender and then how these experiences and gender, together, appear to impact the post-bachelor's educational expectations. In Figure 6, we see that males and females were almost equally likely to report co-authoring a paper with a professor, and presenting a poster at a conference. Females were more likely than males to have attended at least one conference; however, males were more likely than females to present a paper at a conference. Females (86 percent) were also more likely to have done at least one of these four important research activities than were males (67 percent).

Table 2. How Do Undergraduate Research Experiences Impact Graduate School Plans?

Number and percent of those with selected research experiences who expressed interest in entering an MSE program in the next 12 months or eventually pursuing a doctoral degree						
	Masters in Engineering			**Doctoral Study**		
	Females	**Males**	**Total**	**Females**	**Males**	**Total**
Attended a conference	6	11	17	13	14	27
	25%	50%	37%	54%	64%	59%
Presented a poster at conference	2	3	5	6	6	12
	29%	33%	31%	86%	67%	75%
Presented a paper at conference	1	4	5	2	5	7
	50%	67%	63%	100%	83%	88%
Co-authored a paper with faculty	4	9	13	7	14	21
	36%	50%	45%	64%	78%	72%
n	28	53	81	28	53	81

Table 2 shows the number of students who had engaged in each of these four activities and how this relates to the expression of interest in a doctoral degree or in earning an MSE. In this case, we have coded the number and percent of students who said that they were "very interested" or "somewhat interested" in pursing a doctoral degree at some point in the future and the number and percent of scholars who indicated that they planned to pursue an MSE within the next 12 months out of those who participated in the indicated undergraduate research experiences. All of the females who had presented a paper at a conference indicated a desire to eventually earn a doctoral degree in engineering. Presented a paper at a conference also seems to have made a big impact upon males: 67 percent of those who had attended a conference indicated that they planned to pursue an MSE within 12 months and 83 percent indicated that they planned to pursue doctoral study at some time. More than half of the males who attended a conference, presented a paper or a poster at a conference, or co-authored a paper with a professor indicated that they were interested in pursuing a doctoral degree. These same research activities were less effective in encouraging males than females to pursue an MSE degree. However, more males reported an interest in pursuing an MSE if they co-authored a paper or presented a paper or poster at a conference.

Table 3. Percent Who Reported Each Factor "Greatly Influenced" Their Post-Graduation Plans by Gender

	Females	Males
Compensation package (pay, bonuses, etc.)	36%	34%
Professional Interests	32%	38%
Job Location	29%	19%
Family-related reasons (children, spouse's job, desire to be near relatives)	21%	2%
Working conditions (hours, equipment, working environment)	21%	32%
Promotion opportunities	14%	17%
Worked previously for the employer or similar company in an internship/co-op	7%	15%
n	28	53

Note: Percents do not add to 100 because respondents rated each factor separately.

What were the factors that students said impacted their post-graduation plans? Table 3 indicates that males' and females' general patterns for a range of reasons why they chose their employer were similar in most ways, but differed in a couple of important ways. Both males and females indicated that "compensation package and "professional interests" "greatly influenced" their post-graduation plans, with more than 30 percent of males and females citing these two reasons. However, females said they were "greatly influenced" by both "family-related reasons" (21 percent of females vs. 2 percent of males) and by job location (29 percent of females vs. 19 percent of males). Males, on the other hand, more frequently than females said they were "greatly influenced" by having previous experience at a similar company as a intern/co-op.

Figure 7. Relationship Between Field of Study and Post-Graduation Employment

Do you consider your post-graduation employment related to your field of study?

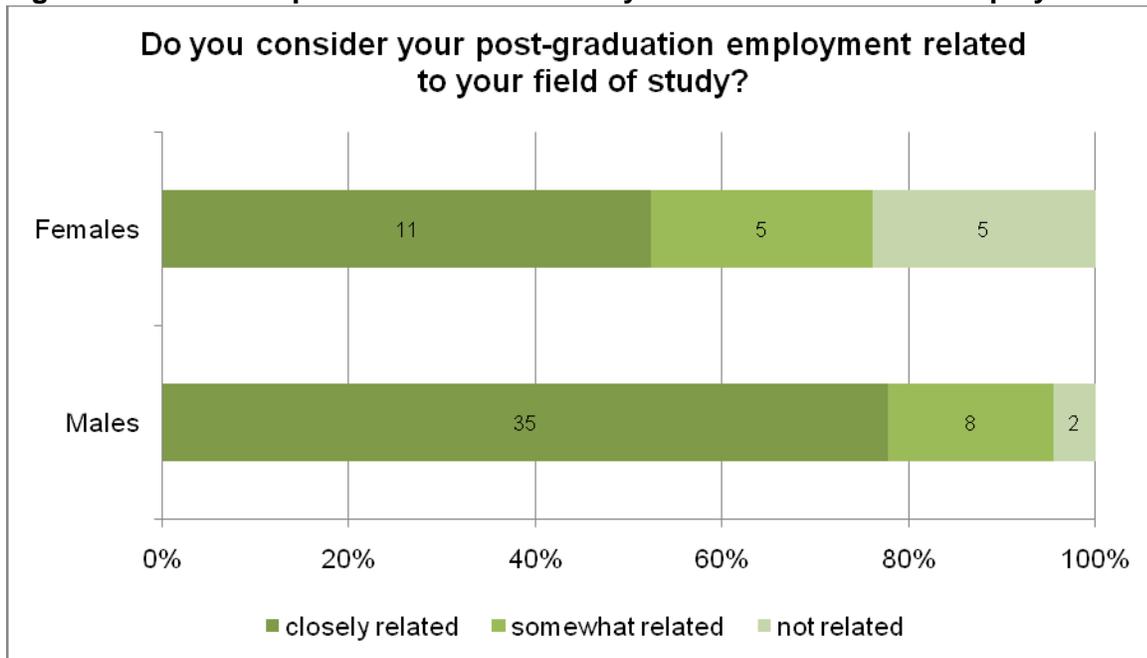|	closely related	somewhat related	not related
Females	11	5	5
Males	35	8	2

Figure 7 shows that the overwhelming majority of graduating scholars will be employed in fields they believe are closely related to their degree: 52 percent of females and 78 percent of males indicated that their post-graduation job was closely related to their major.

Figure 8. The Fundamentals of Engineering Exam

Have you taken the Fundamentals of Engineering Exam or plan to take it within the next 12 months?

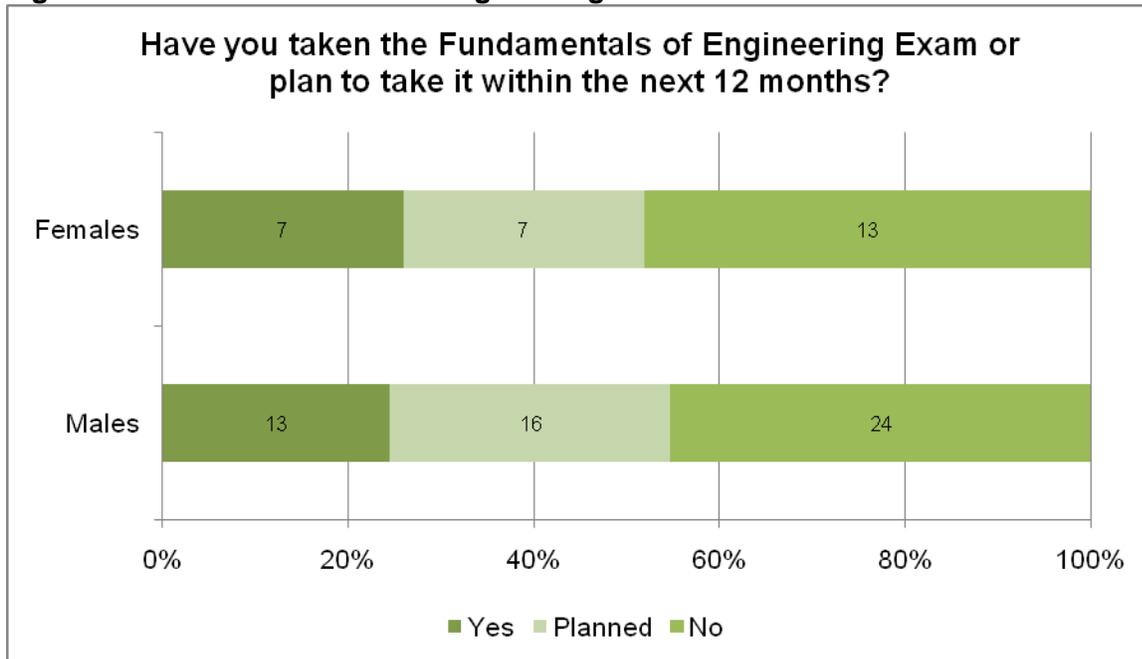|	Yes	Planned	No
Females	7	7	13
Males	13	16	24

Figure 8 shows that males (55 percent) are slightly more likely than females (52 percent) to indicate that they have either taken or plan to take the Fundamentals of Engineering exam, the first exam required to become a licensed professional engineer. The slight difference may be due to the different majors reported for females and males: civil engineers, for example, are generally expected to complete licensure.

Assessing the Quality of the Undergraduate Experience

There were a number of survey items that asked students about their use of various services at their institutions as well as their satisfaction with those services. The vast differences across universities have important implications for such items. That is, whereas an MEP office might be a critical service at a non-minority serving institution, such an office is less important at a HBCU or a HSI. Table 4a reports on the availability of various services, the extent to which students used each type of service and their satisfaction with those services, while Table 4b shows this same information broken out by the type of institution.

Table 4a. Student Services

	Available	Usage	Satisfaction
Academic Advising	94%	70%	56%
Internship/Co-op Opportunities	92%	31%	75%
Research Opportunities	89%	36%	56%
Tutoring	88%	61%	44%
Professional Association Membership	73%	42%	57%
Supplementary Instruction	67%	59%	43%
Mentoring	65%	49%	37%
Peer Mentoring	58%	43%	36%
Travel fund to attend conferences	53%	35%	44%
Two-year transfer assistance	22%	12%	35%

Notes: *Available*: percent of students who reported "yes" program or service was available.

Usage: percent of students saying they used it "sometimes" or "often" among those who said their school had the program or service.

Satisfaction: percent who were "very satisfied" among those who reported using the program or service.

In Table 4b, we look at how students assessed services at different types of institutions. The general patterns just discussed for students, overall, are quite similar regardless of institution type, but there are some key differences too. Research opportunities were not confined to institutions with doctoral degrees (those in the "very high research activity" and "high research activity" categories): students at institutions without doctoral programs were equally likely to indicate these opportunities existed. More importantly, even though such opportunities were abundant at the top institutions—the "very high research activity" institutions—only 47 percent of students took advantage of these opportunities (and gave them moderate scores on satisfaction – 67 percent) with proportionately more students at "lower tier" schools participating in these opportunities with varying levels of satisfaction.

Travel funds to attend conferences differ greatly across the three types of institutions. Students at "high research activity" schools reported the highest availability level (63 percent) in contrast to those at higher tier institutions, where less than half (44 percent) of students indicated that funds were available. Indeed, 50 percent of students at the sub-doctoral-granting institutions indicated travel funds were available. It may often be assumed that faculty at the top research institutions—those ranked by Carnegie as "very high research activity" universities—would have ample travel funds to support students to go to conferences. However, with the availability of postdocs and graduate students in these faculty members' labs, it is possible that these scholars receive travel funding ahead of undergraduate students such as the NACME Scholars.

In several ways, the "high research activity" institutions appear to offer services that are on par with those at the "very high research activity" universities with these services utilized at comparable rates with comparable marks of satisfaction. Though services are also available at those institutions not conferring doctoral degrees, none of the students utilized these services. However, the reason for this can be that students at smaller institutions have an easier time forming study groups and are in less need for formalized services. Discussing these results with MEP coordinators may uncover the important issues for students at each type of institution.

Table 4b. Student Services by Institutional Type

	Very High Research Activity			High Research Activity			High Degree Less Than Ph.D.		
	Available	Usage	Satisfaction	Available	Usage	Satisfaction	Available	Usage	Satisfaction
Academic Advising	96%	56%	70%	88%	79%	39%	100%	75%	65%
Tutoring	85%	19%	44%	87%	59%	50%	95%	53%	50%
Internship/Co-op Opportunities	96%	77%	80%	94%	80%	67%	85%	63%	81%
Research Opportunities	96%	47%	67%	84%	39%	45%	85%	47%	59%
Mentoring	74%	35%	38%	69%	26%	37%	45%	25%	33%
Supplementary Instruction	69%	36%	44%	61%	42%	45%	72%	41%	36%
Professional Association Membership	82%	60%	63%	75%	61%	62%	60%	56%	40%
Peer Mentoring	70%	17%	30%	59%	32%	39%	40%	29%	40%
Travel fund to attend conferences	44%	26%	40%	63%	37%	40%	50%	53%	57%
Two-year transfer assistance	22%	15%	25%	28%	17%	48%	11%	0%	0%

Notes: *Available*: percent of students who reported "yes" program or service was available.

Usage: percent of students saying they used it "sometimes" or "often" among those who said their school had the program or service.

Satisfaction: percent who were "very satisfied" among those who reported using the program or service.

Understanding the extent to which students know of services at their institutions and express a desire for additional services are also important issues for NACME's work with its partners.

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Table 5 indicates for each of these services: the number of students who indicated they "wish" their institution had the service, the number who said that their institution did not have the service but did not need it, and the number and percentage who did not know whether their institution had the service.

Most of the services were available to students. Students who had not transferred from two-year colleges were probably unlikely to know of transfer assistance services, which means that it is not surprising that 63 percent of the students responded they, "don't know" as shown in Table 5. There were three other available services that were unknown to less than 60 percent of students: peer mentoring (a relatively recent innovation in higher education), travel funds to attend conferences, and professional association membership. This is similar to the results of the 2008 graduating scholars, where less than 75 percent of students did not know if peer mentoring or travel funds were available to them.

Table 5. Knowledge of Services' Availability and Need

	Wish We Had	No, Not Needed	Don't Know	
			Number	Percent
Two-year transfer assistance	3	17	40	63%
Travel fund to attend conferences	8	5	24	62%
Peer Mentoring	2	9	22	63%
Professional Association Membership	0	3	18	78%
Mentoring	5	10	13	43%
Supplementary Instruction	3	10	12	39%
Research Opportunities	3	0	6	55%
Internship/Co-op Opportunities	2	1	3	33%
Tutoring	3	4	2	15%
Academic Advising	1	3	1	14%

How did students feel about the advisement and support that they received related to pursuing graduate education? Students were first asked two general questions: "How satisfied are you with the advisement you received related to graduate school opportunities?" and "How satisfied are you with the assistance you received with the graduate school application process?" Responses to each are shown in Figure 9 and Figure 10, respectively. Students were then asked the following question:

> *You may have had access to or have received advice from any number of sources about your post-graduation options. In the table below, we list several of the sources that sometimes provide help to engineering students in identifying opportunities, clarifying goals, etc. Please circle the number that best represents the assistance you received from each of the possible sources.*

The responses to this item, which asked about 10 different possible sources of advice, are shown in Table 6a and 6b.

Figure 9 shows the level of satisfaction with the advice students received about graduate school for all of the respondents and then, separately, for those at each of the different types of institutions. In general, students were satisfied with the advice they received: a majority at each type of institution said that they were "satisfied" or "very satisfied" with graduate school advisement. Such sentiments were universal for the 11 respondents who graduated from one of the three HBCUs.

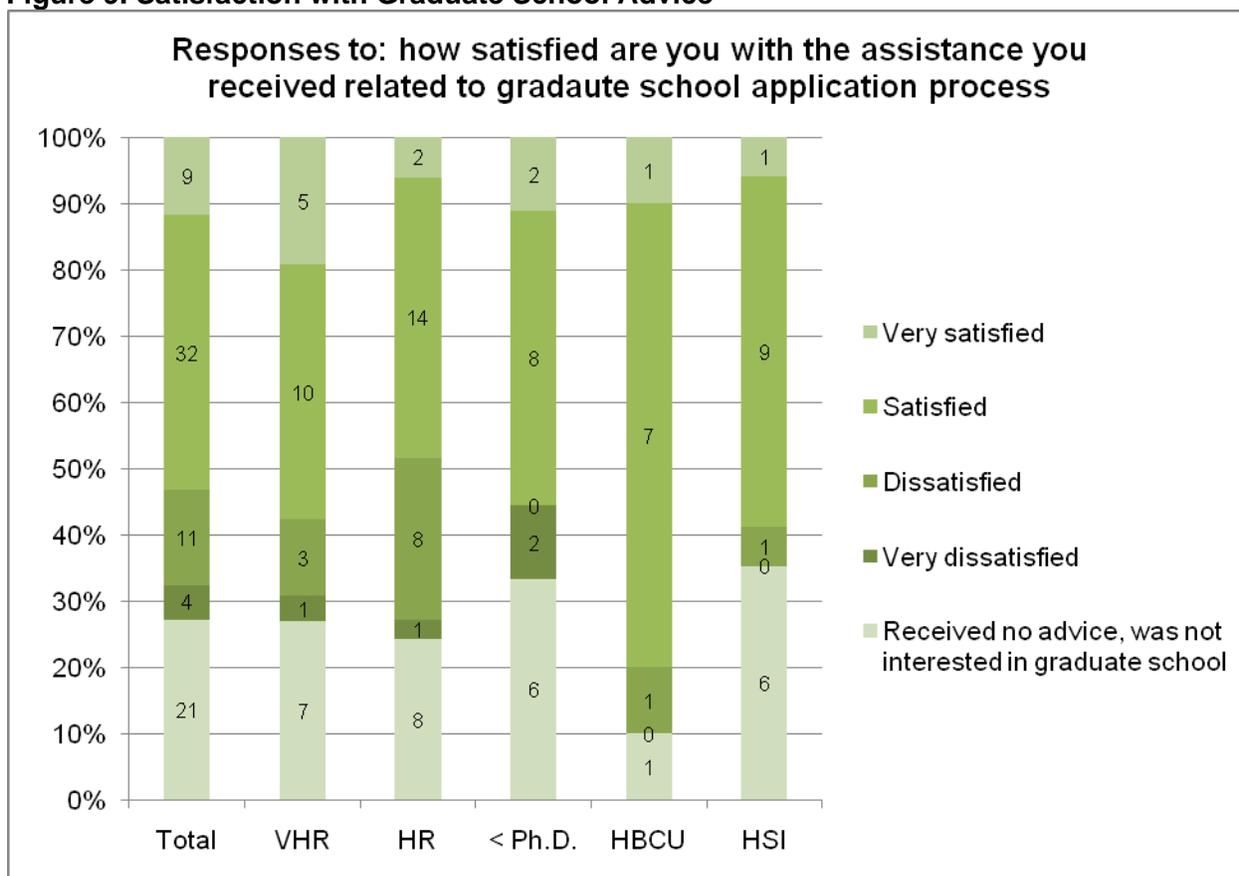**Figure 9. Satisfaction with Graduate School Advice**

Figure 10 reports student answers to the question regarding their level of satisfaction with the assistance they received during the graduate school application process. In the future, it might be helpful to ask students more specific questions to test their knowledge about graduate school—for example, to determine if they were made aware of fellowship or graduate assistantship opportunities—because they may not have been provided full information about the affordability of graduate education. Students expressed high levels of satisfaction with the assistance they received. There were more students—as would be expected—who indicated that this assistance was not needed because they did not plan to pursue graduate studies. Students also expressed a higher level of satisfaction with the general advisement they received

about graduate school (as reflected by the percentage who said they were "very satisfied") than with the assistance with the application process.

Figure 10. Satisfaction with Assistance with Graduate School Application Process

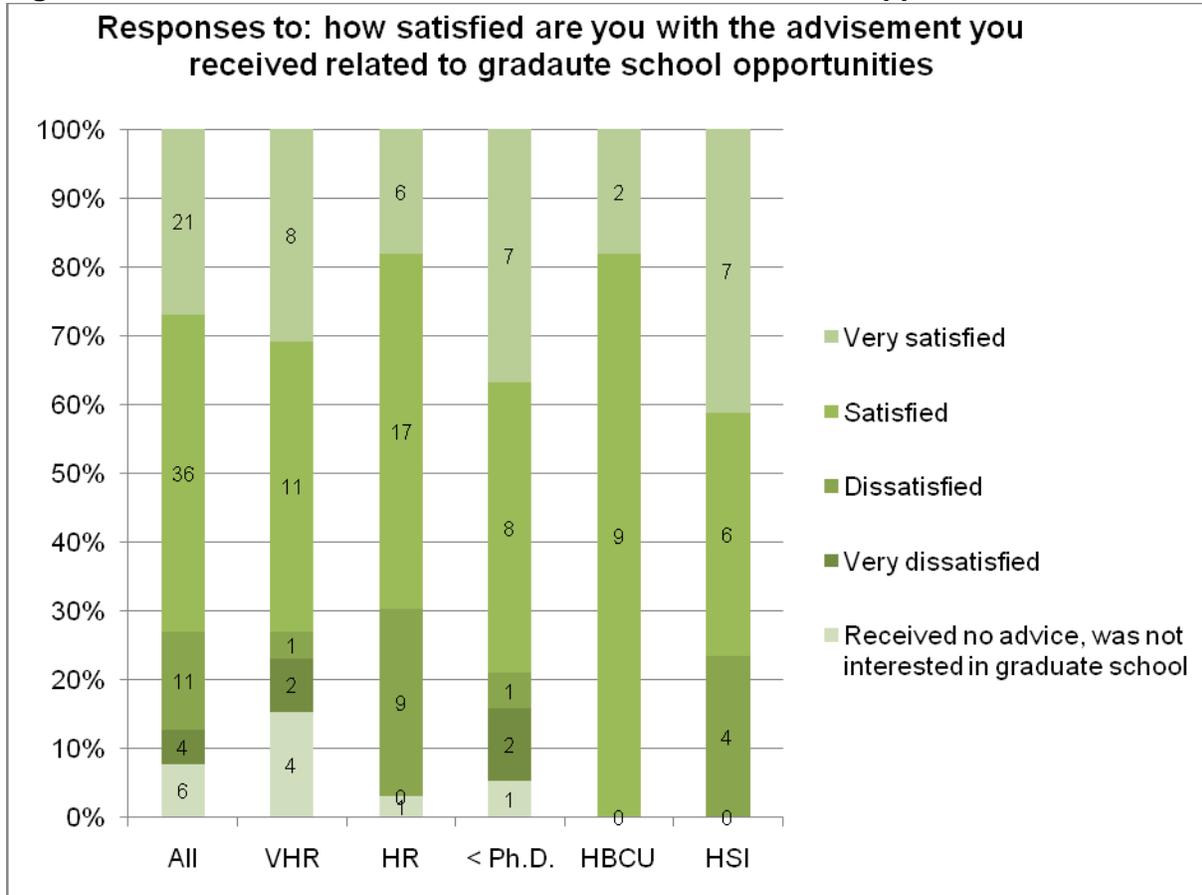Table 6a reports results associated with the sources from which the students received post-graduation advice. Faculty, not surprisingly, are critical in this process. More than half of students indicated that they sought the advice of faculty and received help. Another 35 percent indicated that faculty approached them with advice: a majority of these students then indicated that they welcomed this advice.

Table 6a. Advice Related to Post-Graduation Options

	I sought out help and received it	I was approached and was glad to receive the advice	I was approached but not interested in the advice	I learned about the service too late	I was not interested in help with post-graduation planning	Not applicable /Not available
Faculty member(s) in my department	39%	35%	5%	5%	6%	9%
Department Head(s)	17%	21%	5%	9%	9%	37%
Dean(s)	7%	14%	4%	4%	9%	62%
Career Services Center on Campus	29%	24%	9%	8%	7%	23%
Office (MEP)	12%	21%	7%	7%	8%	45%
Females in Engineering Program Office (WIE)	1%	7%	0%	5%	12%	75%
Professional Society	18%	27%	12%	5%	8%	29%
Employer	29%	28%	7%	1%	4%	32%
Ethnic Programs Office on Campus	7%	14%	6%	4%	8%	61%
Family Member(s)	35%	27%	3%	0%	11%	25%

While students were less likely to turn to department heads and deans, it is important to note that these key academic administrators did, reach out to the students. One in four students was approached by their department head with some welcomed advice while 14 percent were approached by their dean. Employers were also critical; with 29 percent of students seeking advice and another 28 percent having advice offered. The career services center on campus was also critical with 29 percent of students seeking advice while 24 percent were approached by the career services center. Finally, family members were also important post-graduation advisors. Thirty-five percent of students asked family members and another 27 percent were offered advice by family members.

In Table 6b, we look at the advice students received from faculty at different types of institutions. At the "very high research activity" institutions, 44 percent of students sought out help and received it, while 30 percent were approached with advice by the faculty. Students at the "high research activity" institutions were approached by the faculty at the same rate. In contrast, students at HBCUs were twice as likely to be approached by the faculty. Those who were at HSIs or institutions that did not award doctoral degrees were also more likely to report that the faculty had approached them with welcomed advice about graduate school than were students at research universities.

Table 6b. Faculty Advice Related to Post-Graduation Options by Institution Type

	All	VHR	HR	<Ph.D.	HBCU	HIS
I sought out help and received it	39%	44%	39%	29%	25%	47%
I was approached and was glad to receive the advice	35%	30%	33%	43%	67%	41%
I was approached but not interested in the advice	5%	7%	3%	5%	0%	0%
I learned about the service too late	5%	0%	12%	0%	0%	0%
I was not interested in help with post-graduation planning	6%	7%	6%	5%	0%	6%
Not applicable or not available	9%	11%	6%	10%	0%	6%

Table 7 indicates the relative importance of various sources of funding for the NACME Scholars. Scholars were asked to rate the relative importance of 14 different possible sources of funding for their undergraduate programs. NACME funding was the top source, rated as "very important" by 68 (84 percent) of the graduating scholars. The next most important source of funding were other fellowships or scholarships (70 percent) followed by federal and state grants (63 percent).

Importantly, there was near-universal sentiment on the part of these scholars that the NACME funding was "very important" to them in their education.

Recent research has indicated, for example, that Latinos/as are particularly averse to loans as a means of financing higher education, to some extent due to predatory lending practices in those communities. In addition, there have been recent anecdotal accounts that more students are relying upon personal credit cards to fund their education, a potentially financially dangerous practice. Compared to other loan sources, NACME scholars were not as likely to report credit cards as a "very important" source of funds.

Table 7. Number and Percent Reporting that Each Source was "Very Important" to Funding Their Education

	Percent	Number
NACME scholarship	84%	68
Fellowship or scholarships other than NACME	70%	57
Federal or state grant (e.g., Pell grants, Lottery Scholarships, etc.)	63%	51
Student loans from the school you attended, the federal or state government repayable after you leave school	47%	38
Earnings from internships/co-ops or other non-work-study employment	47%	38
Financial support from parents, spouse, relatives, not to be repaid	42%	34
Work-study	21%	17
Tuition Waivers	17%	14
Financial assistance from your employer	14%	11
Loans from banks that are not specifically student loans	7%	6
Loans from parents or other relatives (to be repaid)	6%	5
Credit Cards	2%	2
GI Bill benefits	1%	1
Armed forces reserves or ROTC funds	0%	0
	n	81

Internship and Co-op Experiences

The students reported on 71 internship and co-op experiences at 56 different companies. The companies for which the most students reported internships are shown in Table 8. Hewlett Packard had employed three of the 81 Graduating Fellows at some point, while Brookhaven National Laboratory, Intel, Lockheed Martin, Raytheon and Southern California Edison had each employed 2. With the exception of the companies shown here, companies employed only one of the Graduating Scholars (the complete list of companies is in the Appendix B).

Table 8. Student Internship Employers

Top Internship Companies		
Rank	Company Name	Number
1	Hewlett Packard	3
2	Brookhaven National Laboratory	2
	Intel Corporation	2
	Lockheed Martin	2
	Raytheon	2
	Southern California Edison	2

Students were asked three separate questions as a way to assess their internship experiences. These experiences were generally paid – very few students reported unpaid experiences – and as shown in Table 9, more than half of both male and female students indicated that the

experience provided them with "a lot" of skills/knowledge applicable to their engineering coursework. In addition, just over 50 percent of both females and males indicated that they would work for the company with which they had the internship: an important indicator that these experiences probably had a positive impact on students. That is, if students had negative experiences at these companies, then we would expect that students would be unlikely to indicate that they would return to work for these employers.

Table 9. Assessment of Internship/Co-op Experiences

Internship Impacts	Females		Males		Total	
	n	%	n	%	n	%
Internship experience provided "a lot" of skills/knowledge applicable to your coursework	24	50%	38	59%	62	55%
Would work for the company based on my internship experience	15	33%	44	69%	59	54%
How did internships/co-ops assist in the formulation of career options or choices?						
Engineering area	5	29%	6	26%	11	28%
Graduate school encouragement/motivation	6	35%	5	22%	11	28%
Avoidance: learned about something I did NOT want	7	41%	2	9%	9	23%
Industry focus	4	24%	4	17%	8	20%
Hands-on experience encouragement/motivation	3	18%	3	13%	6	15%
Advantage in looking for/getting jobs	3	18%	2	9%	5	13%
Career path/career focus	2	12%	1	4%	3	8%
Helping society	1	6%	2	9%	3	8%
Professional conduct/personal skills	3	18%	0	0%	3	8%
Mentoring	0	0%	2	9%	2	5%
Cultural preference for workplace	1	6%	0	0%	1	3%
Self confidence and motivation	0	0%	0	0%	0	0%
n	**28**		**53**		**81**	

Table 9 also shows the range of answers that students provided to one of the only "open-ended" items on the survey: "Did any of these internships or co-ops assist you in your formulation of career options or choices? If so, briefly say how." Because some students had multiple internships, it is impossible to "match" these responses to specific experiences. Nor would it be useful to do so, since very few students would have worked for the same employer. Also there are too many other variables that could impact the internship experience of a student with an employer.

The data here shows that more than a fourth of both females and males said that their internships helped them firm up their interest in a specific engineering area (discipline) or subfield within the discipline. For females, internship experiences were a critical way for them to lean about something that they did not want in a particular career and, importantly, a way of deciding if they will go to graduate school. It is important to note that internships were more likely to assist in the formulation of career options of females than males.

Conclusions and Recommendations

The MEP coordinators at each of the 29 NACME partner institutions were critical in garnering a 68 percent response rate, which is considered exceptional in survey research, providing a strong basis for generalization. MEP coordinators were provided with modest funds—$50-$100—to provide an incentive to students to complete the survey. This strategy should be used in the future and NACME staff, in general, should make better use of the closer connection between the MEP coordinators and the students.

Key findings:
- The NACME Scholarship was the most important funding source cited by students: 84 percent of students indicated that the NACME Scholarship was a "very important" funding source for their undergraduate education among 14 possible sources that were rated
- More than half of the graduating scholars indicated an interest in pursuing a doctoral degree
- Over one-third planned on pursuing a master's degree in engineering within 12 months of graduation
- Students reported 71 internship/co-ops at 56 different companies. These were critical experiences:
  - 54 percent indicated that they "would work for the company based on their internship experience"
  - 55 percent indicated the internship "provided a lot of skills/knowledge applicable to coursework"
  - 28 percent said the internship helped them choose an engineering area
  - 41 percent of females indicated the internships were critical in learning about something they did not want in a career
- Almost all of the students—all but seven—indicated that their post-graduation employment was "somewhat" or "closely related" to their degree field
- Undergraduate experiences with research and interactions with faculty were critical to student post-graduation educational planning. Students who had worked with faculty on research, or presented research at conferences were quite likely to express an interest in eventually pursing a Ph.D. in engineering.

Recommendations

NACME should continue to work closely with the MEP program coordinators at its partner schools to continue to connect with the students. Students were aware of their status as NACME Scholars: this status should be made prestigious, something that students "advertise" to employers post-graduation, and NACME should work to maintain contact with the students.

Conference participation can be critical to growing the next generation of engineering leaders and educators. Travel funding to attend conferences should be a topic for discussion with the MEP coordinators because schools differed greatly in the support available and the sources of this support.
- At the "very high research activity" and "high research activity" institutions, faculty members or departments may have travel funds. MEP coordinators need to make sure

that students are proactive in seeking these funds and that faculty are proactive in inviting students to participate and present research outcomes

- At the "Sub-Ph.D.-granting" institutions, NACME may need to provide a separate source of funds for student travel to conferences.
- Students need to be aware of the importance of participating in professional societies, including the merits of attending conferences.

Since research experiences provide a bridge to graduate school, NACME should work with MEP coordinators, allied programs (e.g., Louis Stokes AMP and McNair), and faculty at partner institutions to enable increased participation in research by the NACME Scholars.

APPENDIX A: NACME Graduating Scholars Survey and MEP Coordinators' Instructions

Fall 2008- Summer 2009 NACME Graduating Scholar Survey

Thank you, in advance, for your participation in the NACME Scholar Graduate Survey. We are glad to have provided you with scholarship support during your bachelor's degree program. As a NACME Scholar, your input is important to us to improve the program to help other students earn their bachelor's degrees in engineering. This information will be kept confidential. Only summary information will be presented so that it will be impossible for anyone to know your identity in the final report.

Information about Your Degree Program and Experiences with Internships, Co-Ops, and Research

1. **What is the primary field of your engineering degree?** *(Please circle one number.)*
   - (1) Aerospace, aeronautical, or astronautical engineering
   - (2) Bioengineering
   - (3) Chemical engineering
   - (4) Civil engineering
   - (5) Computer engineering
   - (6) Electrical engineering
   - (7) Environmental engineering
   - (8) Industrial and manufacturing engineering
   - (9) Materials engineering, including ceramic and textiles
   - (10) Mechanical engineering
   - (11) Other (please specify) _____

2. **Did you have a minor?**   (1) Yes   (2) No
   If YES, please specify the field: _____

3. **When do you expect to graduate?** MONTH: _____ YEAR: _____

4. **During your undergraduate program how many times did you do each of the following:**

Present a poster at a conference   [   ]   Attend a conference w/o making a poster or paper presentation [   ]

Present a research paper at a conference [   ]   Co-author a paper with a professor   [   ]

5. **To what extent was each of the following services/programs available to you? How much did you use each type of service/program? How satisfied were you with these? Please circle the appropriate numbers in the next table to indicate your answers.**

Please circle the number that comes closest to your opinion.	Availability?				Your usage				Your satisfaction		
	Don't Know	Yes	No, not needed	No, wish it were	Never	Seldom	Sometimes	Often	Unsatisfied	Somewhat satisfied	Very Satisfied
Academic advising	DK	Y	N	W	1	2	3	4	1	2	3
Supplementary instruction	DK	Y	N	W	1	2	3	4	1	2	3
Tutoring	DK	Y	N	W	1	2	3	4	1	2	3
Mentoring	DK	Y	N	W	1	2	3	4	1	2	3
Programs to assist with transfer from a 2-year college	DK	Y	N	W	1	2	3	4	1	2	3
Peer mentoring programs	DK	Y	N	W	1	2	3	4	1	2	3
Research opportunities	DK	Y	N	W	1	2	3	4	1	2	3
Internship or co-op opportunities	DK	Y	N	W	1	2	3	4	1	2	3
Professional association membership	DK	Y	N	W	1	2	3	4	1	2	3
Travel funds to attend conferences	DK	Y	N	W	1	2	3	4	1	2	3

6. Employers have been telling us that internships and co-op opportunities are becoming a more important way for them to recruit new engineers. We have also heard that these experiences may provide you with skills important in college. Please indicate the number of formal _internships_ _and/or semesters or quarters of co-op_ experiences you completed during your undergraduate degree program.

Number of **internships**: _____   **Co-ops**:   ___ semesters (count summer as 1 semester)

                                                      OR

                                                      ___ quarters (count each 3-month period as a quarter)

7. *Please tell us a little about your internship and/or co-op experiences, write in the employer and length of the internship or co-op and then circle the response in each area that best describes your experience:*

Internship/Co-Op Employer	Length	Paid?		Would you work for the company based on your internship experience?			To what extent did the experience provide skills/knowledge applicable to your coursework?			
		Yes	No	Yes	No	Maybe	None	Little	Some	A lot
		Y	N	Y	N	M	0	1	2	3
		Y	N	Y	N	M	0	1	2	3
		Y	N	Y	N	M	0	1	2	3

8. Did any of these internships or co-ops assist you in your formulation of career options or choices? If so, please briefly say how.

Post-Degree Plans

9. How satisfied are you with the advisement you received related to graduate school opportunities?
        (1) Very dissatisfied
        (2) Dissatisfied
        (3) Satisfied
        (4) Very satisfied
        (5) Received no advice, was not interested in graduate school.

10. How satisfied are you with the assistance you received with the graduate school application process?
        (1) Very dissatisfied
        (2) Dissatisfied
        (3) Satisfied
        (4) Very satisfied
        (5) Received no advice, was not interested in graduate school.

11. You may have had access to or have received advice from any number of sources about your post-graduation options. In the table below, we list several of the sources that sometimes provide help to engineering students in identifying opportunities, clarifying goals, etc. Please circle the number that best represents the assistance you received from each of the possible sources.

	I sought out help and received it	I was approached and was glad to receive the advice	I was approached but not interested in the advice	I learned about the service too late	I was not interested in help with post-graduation planning	Not applicable or not available.
Faculty member(s) in my department	5	4	3	2	1	0
Department head(s)	5	4	3	2	1	0
Dean(s)	5	4	3	2	1	0
Career services center on campus	5	4	3	2	1	0
Minority engineering program office (MEP)	5	4	3	2	1	0
Females in engineering program office (WIE)	5	4	3	2	1	0
Professional society	5	4	3	2	1	0
An employer (internship, co-op)	5	4	3	2	1	0
Ethnic programs office on campus	5	4	3	2	1	0
Family member(s)	5	4	3	2	1	0
Other, please specify:	5	4	3	2	1	0

12. **What are your immediate plans after completion of your undergraduate engineering degree?** *(Please circle only one response.)*

> (1) Actively seeking employment
> (2) Have accepted a full-time position
> (3) Have accepted a part-time position
> (4) Pursue graduate coursework and/or degree
> (5) Taking time-off
> (6) Other (please specify): _____

13. **Do you consider your post-graduation employment related to your field of study?** *(Please circle only one response.)*

> (1) Closely related
> (2) Somewhat related
> (3) Not related

14. What is the name of your employer? _____

15. **To what extent did each of these factors influence your decision about your immediate post-graduation plans?** *(Please circle the one number that best describes the influence of each factor.)*

	Greatly	Somewhat	Not at all
Compensation package (pay, bonuses, etc.)	3	2	1
Promotion opportunities	3	2	1
Working conditions (e.g., hours, equipment, working environment)	3	2	1
Job location	3	2	1
Professional interests	3	2	1
Family-related reasons (e.g., children, spouse's job, desire to be near relatives)	3	2	1
Job in field of study not available	3	2	1
Worked previously for the employer in an internship/co-op	3	2	1
Worked at a similar company as an intern/co-op	3	2	1
Some other reason, specify: _____	3	2	1

16. Which of the <u>two</u> factors in question #15 were the <u>most</u> important reasons?

> <u>Most</u> important reason: _____

> <u>Second most</u> important reason: _____

Educational Plans

17. **Please indicate your upcoming educational plans during the next 12 months.** *(Please circle the number next to the answer that best characterizes your plans.)*

        (1) Do not plan to pursue additional courses or degrees
        (2) Pursue some graduate school coursework
        (3) Pursue a master's degree in engineering
        (4) Pursue an MBA
        (5) Pursue some other degree (please specify): _____

18. **To what extent are you interested in pursuing a doctoral degree in engineering at some point in the future?** *(Please circle the number next to the answer that best characterizes your interest.)*

        (1)   Very interested
        (2)   Somewhat interested
        (3)   Not at all interested
        (4)   Don't know enough about doctoral degree to say.

19. Have you taken the Fundamentals of Engineering exam (also known as Part A of the Professional Engineering Exam)?
        (1)   Yes
        (2)   No
             if not, do you plan to take this exam within the next 12 months? ___ Yes   ___ No

20. Please indicate how important each of the following funding sources were to the funding of your undergraduate education.

	Very important	Somewhat important	A little important	Not important or not applicable
Financial support from parents, spouse, relatives, not to be repaid	4	3	2	1
Student loans from the school you attended, the federal or state government repayable after you leave school.	4	3	2	1
Loans from banks that are not specifically student loans.	4	3	2	1
Loans from parents or other relatives (to be repaid).	4	3	2	1
Financial assistance from your employer.	4	3	2	1
Tuition waivers.	4	3	2	1
Fellowships or scholarships other than NACME (do not count "Lottery Scholarships" here).	4	3	2	1
NACME scholarship.	4	3	2	1
Work-study.	4	3	2	1
Federal or state grants (e.g., Pell grants, Lottery Scholarships, etc.)	4	3	2	1
Earnings from internships/co-ops or other non-work-study employment.	4	3	2	1
GI Bill benefits.	4	3	2	1
Armed forces reserves or ROTC funds.	4	3	2	1
Credit cards	4	3	2	1
Other, please specify: _____	4	3	2	1

Background - Please tell us about yourself.

21. In what year were you born? _____

22. Where did you graduate from high school? _____
                                                      (city or town / state)

23. Are you Hispanic or Latino?

      No   skip to Q24

      Yes

          If Yes, please indicate which category best describes your Hispanic origin or descent? [mark only one]

              (1) Mexican or Chicano/a

              (2) Puerto Rican

              (3) Cuban

              (4) Other Hispanic – Specify: _____

24. What is your racial background? [mark one or more]
      (1) American Indian or Alaska Native
      (2) Native Hawaiian or other Pacific Islander
      (3) Asian American
      (4) Black or African American
      (5) White American

25. What is your current marital status?
      (1) Married or in a marriage-like relationship
      (2) Divorced/separated
      (3) Widowed
      (4) Never married

26. How many children do you have? *(Write in number)* _____

27. Did any of the adult(s) you grew up with attend college?
      (1) No
      (2) Yes

            If yes, which adult(s)? _____
                                  Please specify relationships, not names.

28. How would you characterize your current level of knowledge about the National Action Council for Minorities in Engineering?
      (1) Yes, I am aware of NACME's activities.
      (2) I have heard the name, but am not familiar with NACME's efforts.
      (3) No, I am not aware of NACME.

29. Did you transfer from a community college? If so, specify.
      (1) No   (2) Yes, _____

THANK YOU!

Administration Instructions: Graduating Scholars Survey

The following instructions are fairly detailed. We suspect that some of you probably have already done surveys of this type but this may be something new for some of you. In any event, following the instructions will help us ensure a fairly uniform administration procedure, which is important in doing surveys. Again, any feedback on these instructions or the procedure will be welcomed as we refine this process.

Important: when you receive your packet, please check the materials. Each student you reported to us as graduating in the given semester (fall or spring/summer) will have a survey with a post-it and their name on the post-it. This is so that we can match the survey with other information about the student that we already have. It is also an important tracking mechanism so that we are sure who has and has not completed the survey.

Students' statuses with respect to graduation can change in the course of a semester for a range of reasons. We would like students to complete this survey during their last semester on campus so that we can have the most complete information about the student. Therefore, if you learn that a student is to complete their program of study in a later semester, then please do not request the student to complete the survey and return it with an appropriate note to that effect. Students completing their studies in the summer should be asked to complete the exit survey in the spring (prior to their graduation) administration.

In the event that you have students who are going to graduate earlier than originally planned, please contact NACME for further instructions.

STEP 1:   Gather the students
> The number of surveys that each college/university will administer greatly varies, so you might have a way that you already contact students and have them visit with you. If you have more than 2-3 students to round up, we suggest that you arrange a brief "pizza party" or entice them with whatever food is preferable at your campus. The enclosed check should cover a snack or light lunch. Select a time and day that you know students are often available, such as a lunch-hour slot. Invite them to participate and indicate that you will ask that they complete a short "exit survey" from NACME that ought to take about 20-25 minutes. This might be a time when you can also have a final opportunity to see the students and wish them well, etc.
>
> Alternative to "pizza party" format: send an email to the students and ask that they stop by your office sometime within the next couple of weeks (or you might give them a few times to choose from) so that they can complete the survey. Use the funds provided by NACME to purchase some other incentive to get them to come by and make sure you refer to this incentive in your email to them. If you go with this method, you will need to send a reminder email to them 2-3 days after the 1st one.

STEP 2:   Request updated contact information
> As the students arrive, let them get some refreshments and ask that they provide you with updated contact information using the form that we have sent. This will also give you a chance to have a "check" on who's there and who's not. Again, we have provided this on white paper so that it's easy for you to make a copy for your own records and then send one back to us with the surveys.

STEP 3: **Introduce the survey, explain confidentiality, and describe completion procedures**

(Note: students are likely to start writing the instant you give them the survey. Don't let this keep you from telling them the above information, though, because they need to know why there's the post-it and number and that they can ask questions and such. Adapt to the non-pizza party format as appropriate.)

> *I would like to thank you for coming today and for your participation in the NACME Graduating Scholar Survey. The National Action Council for Minorities in Engineering has provided _____*
> *(college & university name)*
> *with funds so that we were able to make available scholarships for students. As NACME Scholars, your input is important to us to improve the program to help other students earn their bachelor's degrees in engineering.*
>
> *This information will be kept <u>confidential</u>. As I handed you the surveys, you'll notice that your name is on a post-it on the front and there is a number in the lower right-hand corner. This is for tracking purposes only – I don't have a list of names and numbers . . . only the people at the organization NACME has contracted with has that list so that they can keep track of who has and hasn't answered. If there are students that did not come here today, they can send them a survey to complete later. When you hand in your survey, simply take off the post-it.*
>
> *When you are done with this survey, you'll hand it in to me and I will send it to them to enter and analyze the data. A final report will have only summary information so that it will be impossible for anyone to know your identity in the final report. The report will be posted to the web at NACME's websites, which is included in the other information I have given to you.*
>
> <u>*Does anyone have any questions?*</u> *[ANSWER QUESTIONS]*
> *Let's go ahead and get started. The questions should be fairly self-explanatory but if you have any questions as you are going along, please don't hesitate to ask. There are eight pages but it probably won't take you more than 20 minutes or so to finish the survey. When you are done, take off the post-it with your name on it, place your completed survey in the envelope and seal the envelope. We'll then send these along to NACME. Also, before you leave, you can help yourself to more refreshments—and you can keep the pencil and the brochures about NACME..*

STEP 4: **Administer the survey**

For the most part, once you have given them the instructions, they'll just start writing. Heck, they probably started that BEFORE you gave the instructions! What will be really helpful, though, is if you use the white copy of the enclosed survey to jot down notes where the students had questions, did not understand what was being asked or if you have ideas about how to change the survey while the students are working on it. We put

this on white paper (as opposed to the color for the students) so that you could make a copy of your notes for your own records prior to sending this in with the surveys.

STEP 5:   Collect the surveys

As indicated in the students' instructions, we have provided an envelope so that each student can place the completed survey in that and seal it up. There's not a lot of sensitive information, but this way, they can feel a little more secure about handing this to someone at their own university. This way, too, if you decide to give students who don't show up for the administration or if you are just having them stop in to complete the survey over a couple weeks' time, you will be able to keep the surveys secure at your own location during this time and before you send them in to NACME.

Make sure that each student receives a copy of the brochures/handouts that are included. These are "debriefing" instructions for them. Last year a large percentage (70%) of the survey respondents said that they were interested in mentoring another student but we have not followed up on that yet. With these additional materials, we have a way of getting some information about how these students can help future students right away even before we get back in touch with them later.

STEP 6:   Mid-administration Report to NACME (11/30 and 4/20)

In the fall, you will receive the surveys so that you can administer them between November 15 and December 15. We understand that this is always an insanely busy time of year at academic institutions complicated further by the Thanksgiving Holiday.

In the spring/summer administration, you will receive the survey packets around the end of March so that you can administer the surveys sometime in April.

In both cases, we will start pestering you around the midpoint time to check on the status of the surveys, including your plans to administer them. This past year there were some difficulties with FedEx. It is important that NACME receive these surveys in a timely manner (less critical in December than in the Spring) so that we can do the data analysis for reporting at the end of the academic year.

STEP 7:   Send it back to NACME

A FedEx envelope with our account number will be provided so that you can send the surveys back to NACME. You can keep any of the other materials that we sent out with the surveys (extra pencils, brochures, etc.). If you have extra surveys, though, please send those back. The other things you need to include in this mailing back to us are the (1) updated contact information sheet; (2) your copy of the survey with notes/questions, etc.; (3) these instructions or any other materials that you have made notes on that you think we need to see. As we indicated, above, this is new process, so we are interested in hearing your feedback.

Appendix B. Internship Employers Reported by NACME Graduating Scholars

Alcoa
Agilent Technologies
Arctic Research Supercomputing Center at University of Alaska
AT&T Global Network Operations
Bank of America
BD Diagnostics
Benningfield Group
Berger/ABAM
Berliss
Boeing
Brookhaven National Laboratory
Caltrans
CanAm Engineering and Geomatics
Centex Construction
City of Chandler
City of Sacramento Department of Utilities
Consolidated Edison of New York
Cornell University REU
Delphi Steering
Duke Energy
ELMECO
General Electric
General Motors
Georgia Power
Georgia Tech Research Institute
Graduate Aerospace Laboratories - California Institute of Technology
Hamilton Sundstrand Power Systems
Hewlett Packard
Horrath Associates
iLevel by Weyerhaeuser
Infinite Energy, Inc.
Intel Corporation
JPL/NASA
KPFF
Lockheed Martin
Massachusetts Institute of Technology
Mernimac Industries
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