

**Insights About Nuclear Medicine Technology:
Findings from a 2006 Survey of NMT Education Program Directors**

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Prepared by

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Preface

In the Spring and Summer of 2006 the Center for Health Workforce Studies at the School of Public Health, University at Albany (the Center), under a contract with the Society of Nuclear Medicine (SNM), conducted a survey of Nuclear Medicine Technology Education Program Directors to learn about both their personal careers and the education programs for which they are responsible. This report summarizes the responses to this survey and presents a variety of insights about this important group of individuals and programs.

This report is the third in a series of seven to be produced by this major study of the nuclear medicine workforce. The initial report, prepared in 2005, was based solely on then existing sources of data and information about nuclear medicine. The second focused on Nuclear Medicine Technologists (NMTs) based on a 2005 survey of certified NMTs from across the U.S. Subsequent reports will be prepared on a national survey of Nuclear Medicine Scientists (NMSs) conducted in 2006, a national survey of physicians involved in nuclear medicine planned for 2007, and national surveys of nuclear medicine educators and students conducted in 2007 and 2008. A final report will also be prepared synthesizing the findings and conclusions from the several component reports and presenting a series of recommendations about both the field of nuclear medicine and the several nuclear medicine professions.

The report was prepared by Margaret Langelier and Paul Wing of the Center staff, with assistance from Ajita De. The authors acknowledge the contributions of Joanna Spahr, the project officer from SNM, to both the survey and the report. The contributions of an informal advisory committee are also gratefully acknowledged. Responsibility for the accuracy of the report rests solely with the authors.

The Center was established in 1996 to collect, analyze, and present data about health care workers to inform provider, professional, government, and education organizations; policy makers; and the public. Today, the Center is a national leader in the field of health workforce studies. It supports and improves health workforce planning and access to quality health care through its capacity to collect, track, evaluate, and disseminate information about health care personnel at the national, state, and local levels. Additional information about the Center can be found on its website, <http://chws.albany.edu>.

Questions about this report, the larger study, or the Center can be directed to Ms. Langelier or Dr. Wing at 518-402-0250.

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Executive Summary

Nuclear medicine technology (NMT) education programs are fundamental to the preparation of a competent, consistent, professional NMT workforce. NMT education programs are critical change agents, playing central roles in introducing innovations in the profession through both entry level and continuing education programs. They are also key players in maintaining the skills and professional standing of practicing NMTs. For that reason, understanding the current education programs in NMT is essential to a full understanding of the NMT workforce.

In the fall of 2005, as part of a larger study of the NM workforce, a survey of a random sample of 4,000 actively practicing NMTs was conducted and in August 2005, a summary report on that survey was submitted to the Society of Nuclear Medicine. A companion survey of NMT education program directors was conducted in May 2006. The findings and recommendations based on that survey are detailed in this report.

The Survey of NMT Education Program Directors

The survey of NMT education program directors was conducted in the late spring and summer of 2006. The directors of all 127 accredited and un-accredited programs were surveyed, most using an on-line questionnaire and a few using a paper version. Ultimately, 60 program directors responded for a response rate of 47.2%. A copy of the questionnaire is provided in Appendix A.

Key Issues for NMT Education Programs

The survey responses provide a variety of basic data about education programs as well as data that supplement the findings from the NMT survey conducted eight months earlier. The survey responses also provide unique insights about NMT education programs and the attitudes of the program directors about the future. Data gathered from a survey of graduating students will provide further depth to the study of NMTs when it is completed in mid-2007. There will also be important opportunities for cross-survey analyses.

A number of issues were identified based on the responses to the NMT Education Program Director Survey. These include:

- Lack of a standard in entry-level education for the profession;
- Lack of NMT education programs in many parts of the country;
- Lack of articulation agreements among education programs to support advanced education;
- Lack of continuing education opportunities for active NMTs in many academic programs;
- Difficulty recruiting faculty for NMT education programs;
- Non-competitive faculty salaries;
- Lack of flexible programming for non-traditional NMT students;
- Gaps in educational curricula especially related to new and emerging technologies.

Key Findings

Some of the findings from this survey most relevant to the future of the NMT profession are provided below. The statistics provided are based primarily on the 60 responses to the survey. The findings are organized according to the structure of the survey questionnaire.

Personal Demographics and Characteristics of Program Directors

- NMT program directors had roughly the same gender mix (57% women) as the NMT profession (64% women).
- NMT program directors in younger age groups were more likely to be women.
- NMT program directors were much less racially-ethnically diverse than the U.S. population.
- Nearly three of five (58%) of NMT program directors held Master's degrees. The second most common education level was the Bachelor's degree (28%).
- A high percentage of NMT education program directors (72%) were appointed as full-time faculty members in the sponsoring organizations.
- About two-thirds (65%) of NMT education program directors were not eligible for tenure in their institution. Of the 35% of program directors occupying tenure track positions, about two-thirds were tenured.
- Among the 60 responding program directors, 45 carried the title of NMT Program Director and 7 were Department Chairpersons. Few program directors carried the title of professor (5), and most of those who did worked in four-year colleges/universities and hospital education programs with university affiliations.
- On average, salaries of NMT education program directors (\$63,000) were about 10% lower than those of active NMT professionals (\$70,470).
- Program directors with Doctoral degrees had a mean annual salary of \$72,600 while those with Bachelor's degrees had a mean annual salary of \$58,200. The mean annual salary for program directors with Master's degrees was \$64,000.
- Many current program directors have pursued additional education after becoming program directors. Nearly three of five (58%) of survey respondents indicated their intent to pursue further education in the future, with 40% of those already enrolled in an academic program.
- Departures of education program directors will create demand for replacements to fill their vacant positions. Among all program directors responding to the survey, 16.9% reported plans to retire in the next five years.
- Although many program directors expected to remain in their current position over the next five years, all program directors between 60 and 64 years old expected to retire within that time period, as did 20% of those aged 50 to 59.

About Your NMT Program

- One third (33%) of the programs represented by the survey respondents were located in universities or four year colleges, and 30% were in community/junior colleges. Another 15% of the programs were located in hospitals with university affiliations.

- The largest percentage (40%) of NMT education programs were located in NM Departments in the sponsoring institutions in which they were located.
- More than one-third (36%) of survey respondents indicated that their NMT program was located in a department other than Nuclear Medicine, Radiologic Technology, or Biology. “Other” was described variously as Allied Health Department, Medical Radiation Science Department, Biotechnical and Clinical Laboratory Science Department, etc.
- More than a third (35%) of NMT education programs awarded a bachelor’s degree at the completion of the program. A larger percentage (42%) awarded certificates at program completion, some of which are post-bachelor’s certificates.
- The academic award in community/junior colleges varied. In 53% of community college programs an associate’s degree was awarded. Certificates were awarded in 40% of programs.
- More than three-quarters (76%) of NMT education programs awarded degrees/certificates in nuclear medicine technology. Only 10% awarded degrees/certificates in Radiation Science. About one in eight (12%) awarded degrees in “Other” disciplines including Advanced Medical Imaging Technology, Health Science and Radiologic and Imaging Science.
- Most NMT education programs (82%) were JRCNMT accredited. Among those not JRCNMT accredited, 8% were accredited by regional agencies and JRC accreditation was therefore viewed by those program directors as unnecessary.
- Nearly seven of ten (69%) NMT program directors rated funding for their program as “secure”. An additional 29% rate funding as “somewhat secure”. Programs with 20 or more graduates were rated as secure more often by their program directors (70%) than programs with 5 or fewer graduates in 2006 (60%).
- Most (92.7%) of NMT education programs offered day classes for their students. Only 6% of programs offered evening classes, and 2% of programs offered weekend classes.
- Most (77%) NMT education programs offered no distance learning opportunities. Of the 23% of responding NMT programs with distance learning courses, most (18%) offered less than 25% of their curriculum on-line. Only 1 program offered 100% of coursework on-line, and 2 programs offered more than 75% of coursework on line.
- Only 18% of respondents indicated intent to increase the availability of on-line coursework in their education programs over the next two years.
- Most NMT programs offered both didactic (57 of 60 programs) and clinical (55 of 60 programs) instruction in PET technology. Fewer programs offered CT instruction (31 offered didactic and 23 offered clinical instruction in CT). Although half of the education programs (30) offered didactic instruction in cross sectional anatomy, only 13 offered any clinical instruction in the subject. MRI is not addressed in most NMT programs. Only 10 programs provide didactic instruction in MRI, with only 8 providing clinical instruction.
- A majority of NMT programs (54%) required 120 credit hours or more in classroom/ laboratory instruction for completion of NMT program requirements (39% of programs required more than 120 credit hours and 14% of programs required 120 credits hours of classroom/laboratory instruction). Only 14% of programs required 60 or fewer hours of classroom/laboratory instruction.

- Most programs requiring 120 hours or greater of classroom/laboratory instruction were located in universities or four-year colleges, academic medical centers, or hospitals with university affiliations. More than half (56%) of community/junior colleges required 75 or more hours of classroom/lab instruction for completion suggesting that the NMT education programs in those settings are typically longer than many other associate degree programs.
- The number of credit hours in the professional component of the NMT education program averaged 44.7 hours as reported by responding directors. Programs in academic medical centers (60 hours), universities or four-year colleges (average 46.6 hours), and hospitals with university affiliation (45.2 hours) exceeded the average. Programs in community/junior colleges (39.7) and “Other” settings were below the average (44.7).
- A majority (59%) of NMT education programs required more than 1,200 hours of clinical practicum for completion of the NMT program. Although only 10% of NMT programs required fewer than 1,000 hours of clinical practicum, 22% of community college education programs required fewer than 1,000 hours.
- Among the 60 survey respondents, only 11 program directors (18%) indicated offering continuing education courses to already certified nuclear medicine technologists. The subjects covered in these CE courses varied, and included PET, CT, and MRI Technology, Radiation Safety Instruction, Radiopharmacy, and Cross-Sectional Anatomy. With the advent of the recertification process for NMTCB and implementation of recertification for ARRT, demand for academic programs to provide CE curriculum should increase.

Program Faculty

- NMT education programs are small, generally having 2 or fewer faculty and a program director. Most (42%) NMT programs reported 1 faculty line (other than the program director position) budgeted and filled for their educational program. Twenty-three percent of programs had 2 faculty lines budgeted and filled to staff their NMT programs. Only 8% of programs had 6 or more faculty lines other than the program director budgeted and filled.
- Among faculty other than program directors, the number of tenured faculty is also small. Five program directors indicated there was one other faculty member in their program with tenure. Two program directors had 2 faculty members with tenure, one program had three, and two programs had five, in addition to the program director.
- Among program directors, 23% were tenured. Among other faculty, 20% were tenured.
- The 60 survey respondents indicated having a total of 97 faculty members other than program directors with faculty ranks in their programs. Twenty-five other faculty were Professors, seven were Associate Professors, 12 were Assistant Professors, and 53 were Instructors. When asked to provide the level of education for each faculty member, program directors indicated having 109 faculty in the 60 programs. This suggests that 12 faculty have no faculty ranks.
- Among the 109 faculty members who were not program directors, 34 held doctoral degrees, 29 held master’s degrees, 33 held bachelor’s degrees, 8 had associate degrees, and 5 had certificates. Proportionately, there were more doctoral degrees among program faculty than among program directors (31% of program faculty versus 8% of program directors).

- The estimated number of years of service of full-time faculty (excluding program directors) in NMT education programs was 9.4 years. This varied from 8.0 in community colleges to 11.2 in 'Other' institutions.
- The estimated average age of full-time faculty (excluding program directors) in NMT education programs was 44.3. This varied from 40.7 in community colleges to 11.0 in 'Other' institutions.
- To supplement budgeted faculty lines, a few programs borrowed faculty from other departments within their common institutions. Borrowing faculty occurred mostly in university/four year college settings and in hospital programs with university affiliations.
- On average, the student/faculty ratio for nuclear medicine technology education programs was 3.4 : 1. The lowest student faculty ratios were found in hospital programs with university affiliations (1.5 : 1), and the highest were found in university/four year colleges (5.4 : 1).
- Overall, program directors rated recruitment of faculty for nuclear medicine technology education programs as difficult (3.06 on a scale of 1 [very easy] to 4 [very difficult]).
- Program directors in all settings except academic medical centers ranked recruitment of faculty as difficult. On average, NMT education program directors in academic medical centers ranked recruitment as somewhat difficult to difficult (2.67).
- Among the 12 NMT programs with current vacancies, the main reason cited for difficulty in filling faculty positions was non-competitive salaries. The second most cited reason for difficulty in recruiting was that candidates lack the academic qualifications necessary for employment in an educational program.
- When asked to rank the top three issues facing NMT education programs in the near future, program directors overwhelmingly cited fitting new content into an already crowded curriculum as their main concern, followed by recruitment of qualified faculty, and concerns about the institutional budget. Student recruitment and enrollments ranked low among concerns, suggesting that interest in and demand for education programs remains strong.
- Most NMT education programs (52) had only one graduating class each year. Five programs had two graduating classes, and one program had three.

About NMT Students

- On average, the number of NMT graduates in all settings increased since 2004, although there were declines in some settings from 2005 to 2006. These figures are consistent with long-term trend data from the Federal IPEDS system, presented graphically in Figure 22.
- Enrollment in programs has also increased since 2004. There has been little relative change in the number of enrollments between 2005 and 2006, although in some settings there has been a small decrease in new enrollees.
- Program directors attribute high student demand primarily to the relatively high salaries for nuclear medicine technologists (28%), more student awareness of the NMT profession (27%), and increased market demand for NMTs (22%).

- “Other” reasons for increased enrollment cited by program directors included the addition of a clinical site, increased availability of instructors, and the attractiveness of the NMT credential.
- Twenty-two of sixty program directors dismissed students in 2005 for poor academic performance. The number of dismissals among programs for poor academic performance was most frequently one student although one program dismissed 8 students and another program dismissed 6. Seven program directors reported dismissing students for poor clinical performance.
- Many NMT education programs have enrollment caps imposed by either their institutions and/or by their accrediting agency.
- Among the 60 survey respondents, 46 indicated an enrollment cap imposed by JRCNMT and 23 indicate an institutionally imposed enrollment cap. Nine programs have enrollment limitations imposed by both their institutions and JRCNMT.
- Respondents overwhelmingly (93%) reported that their admissions policies were competitive. Only 7% of directors indicated that admission was open to any candidate who met minimum qualifications.
- Since the number of applicants to programs exceeded available student slots, 48% of NMT program directors maintained a waiting list for the next available spot. Because demand for admission remains high, most programs can maintain competitive admission standards. Both of these indicators suggest that there is a healthy demand for NMT education among potential students.
- The number of qualified applicants for admission to NMT education programs exceeds available slots for admission for all types of programs. The ratio of applicants to slots is especially high in community/junior colleges and “Other” institutions (including technical colleges). University/four year colleges had the lowest ratio of applicants for admission to available student slots. Since these programs are typically four years in length, these figures suggest a student preference for shorter program durations.
- Many students enter academic institutions before deciding on a concentration in NMT. This suggests the importance of internal marketing to newly enrolled students within an institution to inform them of professional and career opportunities in NMT.
- Many program directors (46% of respondents) indicated that the majority of students enter the institution as freshmen without knowing they want to pursue a nuclear medicine education program. Only 13% of program directors indicated that 76% to 100% of their students entered their institution as freshmen/first year students with the intent of enrolling in the NMT education program. This percentage has not changed dramatically over the past few years, declining slightly for hospitals with university affiliation, and increasing slightly for community colleges and four-year colleges.
- Two-thirds (67%) of programs reported that 100% of graduating students in 2005 had taken a certification examination. Three program directors reported that none of their graduates from 2005 had yet taken a certification examination.

- More than two thirds of program directors (68% of respondents) indicated that 100% of 2005 graduating students in their programs had passed the certification examination the first time. An additional 24% of program directors indicated that between 76% and 99% of their 2005 graduating students passed the exam the first time they took it. This high pass rate suggests that education programs overall are providing appropriate academic preparation for NMT students entering the profession.
- Second career students were reported in nearly all (96.4%) NMT education programs. Only 2 of 56 responding program directors indicated that there were no second career students currently enrolled in the NMT education program. Four respondents indicated that 100% of their students were second career students.
- The median age of students currently enrolled in NMT programs was higher than might be expected for college students. About half (49%) of directors estimated the median age of students currently enrolled in NMT programs at between 26 and 30 years of age. An additional 18.6% estimated the median age at between 31 and 35 years of age. Program directors estimated that the age of students had increased slightly over the past few years.
- Nearly half (49%) of respondents estimated that between 1% and 25% of students enrolling in NMT programs over the past five years already had a bachelor's degree. An additional 30% of current program directors (17) indicated that between 26% and 50% of students over the past five years already had a bachelor's degree.
- Of particular interest is that program directors in university/four year college programs indicate that even in their bachelor's degree programs, students have enrolled despite already having a bachelor's degree. These findings are supported in the NMT workforce survey showing a high percentage of active NMTs with a previously obtained bachelor's degree in another area of study. Taken together, these two findings suggest the need for post bachelor's certificate or entry-level master's programs for the NMT profession.

Program Marketing

- When NMT program directors were asked to identify the most effective marketing strategies for their programs, word of mouth/referral of students was the most often selected primary and secondary strategy. The next most effective primary and secondary strategy was advertisement on websites or use of Internet resources.
- Most NMT programs (68%) reported marketing budgets under \$500 and 26% reported marketing budgets between \$500 and \$1,500. Only 5% of programs had marketing budgets over \$1,500 and those programs were all located in university/four year colleges.

NMT Job Market for Students

- Most NMT program directors reported average to no difficulty for graduating students in finding employment after graduation. On a scale of +2 (very easy) to -2 very difficult, on average program directors indicated a level of difficulty (+0.66) between average and easy. Only 8% of responding program directors reported that finding employment after graduation was either difficult or very difficult for their students. The Pacific and Northeast regions had the best job market scores based on survey responses.
- Hospital medical centers and mobile imaging units were identified by many program directors across institutional settings as having the most job openings. Cardiology specialty

centers were also rated consistently high by program directors in all institutional settings, as were outpatient hospital clinics/centers. The recent NMT workforce survey revealed that over 15% of active NMTs worked in cardiology specialty centers as of 2005.

- Staffing organizations were also consistently selected by program directors as having some NMT positions with little variation across the types of institutions. The availability of employment with staffing organizations may be indicative of some level of shortage in nuclear medicine departments. Staffing organizations are often contracted by health care providers to cover vacancies, vacations, and shortages until positions can be filled.
- Of interest is that program directors in university/four year college programs selected pharmaceutical company, technology company, and consulting company as having jobs more frequently than program directors in other settings.
- Hospitals/medical centers were rated as the employer type that hired the most new NMT graduates in all regions of the country. Outpatient hospital clinics/centers and Cardiology specialty centers were rated second and third, respectively.
- Program directors indicated that most of their graduates found good jobs after graduation. About 7 of 8 (88%) respondents indicated that all or most of their graduates obtained good jobs following graduation. Some program directors (10%) indicated that some graduates had difficulty finding jobs after graduation. Difficulty in the job market was most often cited by program directors from community/junior colleges.
- Finding a job was rated fastest for students in academic medical center (86% of students find jobs within one month of graduation) and “Other” programs (83%). Overall, 94.8% of program directors indicate that new graduates find jobs within 3 months of graduation from their NMT program. Only a small percentage of program directors (5%) indicated that it took 4 months or longer for their graduates to find jobs after graduation.
- Most NMT program directors reported that only a small percentage or no graduates take *non-NMT* jobs immediately after graduation or within five years of graduation. Almost three of five (60%) of program directors indicated that no graduating technologists took jobs outside the profession.
- Many NMT graduates pursue graduate degrees at some point in their careers. Almost two-thirds (66%) of program directors indicate that between 1% and 25% of their graduates in the last five years pursued graduate education in some discipline.

Attitudes

- Opinions varied among NMT program directors about the importance of establishing the bachelor’s degree as the entry-level requirement for NMTs. Overall, 66.1% of program directors felt it is somewhat important, very important, or imperative to move the entry-level academic credential for NMTs to the bachelor’s degree level. Most of the program directors who indicated that it is not important to migrate entry level to the bachelor’s degree were from community colleges.
- There was little disagreement among program directors on the importance of universal licensure to the NMT profession. More than nine of ten (92%) of respondents indicated that it is either important or imperative that NMTs be licensed in all states. Only 3% of program directors ranked licensure for NMTs in all states as unimportant.

- Across all types of sponsoring institutions for NMT education programs, 34% currently offered graduate education in some discipline. As would be expected, sponsoring institutions with graduate education in any discipline were generally those with four-year NMT programs. Among sponsoring university/four year colleges, 63% had existing opportunities for graduate study. Likewise, 44.4% of sponsoring hospitals with university affiliations and 57.1% of sponsoring academic medical centers had existing graduate degree programs in some discipline. These statistics suggest that there might be possibilities for establishing graduate programs in some of these sponsoring institutions, since required infrastructure to support graduate education currently exists.
- There was less consensus among program directors about the importance of creating a curriculum for a Nuclear Medicine Practitioner (NMP) Program, with 24% of respondents indicating that it was not important, 39% indicating that it was somewhat important, 27% indicating that it was very important and 10% indicating it was imperative.

Recommendations

The recommendations presented below flow primarily from the survey responses, including the open-ended comments presented in Appendix B, supplemented by conversations with practitioners and leaders in the NMT profession. The recommendations are based in part on the impressions of the authors that NMT education program directors appear to be somewhat complacent about the future. Major transformations of NM—including all NM professions—seem almost certain over the next five to ten years. If nothing is done to ensure an orderly transition into the future, there is a real risk that individual NMTs, the NMT profession more generally, NMT education programs, and the Society of Nuclear Medicine may lose some of their current ability to lead NMT into the future.

- **Standardize the learning objectives, curricula, and education levels for NMTs in all fifty states.** This is an important element in the professionalization of this health profession. The standardization process should include a single entry level credential for the profession. Current patterns and trends in the health care system suggest that this credential should be a minimum of a bachelor's degree.

There is evidence from within the NMT profession that a bachelor's education is in demand. The survey described in this report revealed that many NMT education program directors have expressed concerns about the difficulty of fitting necessary coursework into the two-year curriculum at many programs. A continual stream of advances in NM technology drives the need to incorporate new competencies (e.g., cross sectional anatomy and imaging) into NMT curriculums. In addition, the demand for supervisory/management education suggested by the high number of NMTs in supervisory roles (33%) all support the need for bachelor's education.

In their responses to the NMT practitioner survey conducted in late 2005, NMTs cited high levels of current education (49.5% currently possess a Bachelor's degree and 7% a Master's degree). Among actively practicing NMTs 31% possessed a bachelor's degree before entering their NMT education program. In addition, many currently active NMTs (29.2%) expect to continue their academic education in the future.

- **Extend the NMT curricula to encompass cross-sectional imaging.** As NM becomes more pervasive in all types of settings, and as fusion hardware becomes commonplace in imaging

centers across the country, employers in all settings will give preference to technologists who can bridge the worlds of nuclear medicine and cross-sectional imaging. Fusion technology represents an important crossroads for the NMT profession. Since fusion technology requires competence in both nuclear medicine and traditional radiologic imaging, there are important opportunities for cross training. Any NMTs not fully competent in both imaging arenas risk being supplanted by other professions who do have these dual competencies.

Maintaining competence with emerging technologies is critical to maintaining relevance to employers. Just as there are concerns in jurisdictions that lack sufficient geographic penetration of NMTs that other professions will substitute for NMTs, there are concerns that other professions will substitute professionals with competencies in the new fusion technologies.

- **Position NMT programs as the preferred place to obtain continuing education on NMT technologies and techniques.** This is an especially timely and increasingly important recommendation as NMTCB and ARRT begin the recertification process. The need for CEUs in CT technology and in cross sectional anatomy noted in the NMT workforce survey supports initiatives among current academic programs to build CE curriculum in those subject areas. Among active NMTs, 23% cited the need for further training in CT, and 44% cited the need for further training in PET/CT. If NMT programs do not offer these programs, other programs will.
- **Establish formal articulation agreements to permit students to complete degrees.** This is a significant issue for the NMT profession, especially in consideration of the stated strategic objective of moving entry-level education to the bachelor's level. Currently, only 35% of NMT education programs award a bachelor's degree. It is especially important that programs in community colleges articulate with other academic institutions to permit their students to complete a bachelor's degree. Four-year colleges and universities have an outstanding opportunity to work with these institutions as feeders into their programs. This will be a win-win situation for those institutions that negotiate articulation agreements with willing partners.

Established education programs have achieved excellence in the core NMT curriculum, as demonstrated by the fact that 78% of currently active NMTs who graduated in the last five years indicated that their education programs had provided adequate training for current practice. It is important now to extend NMT competencies to include fusion, management, and new technologies.

- **Develop programs that meet the needs of non-traditional students.** Most current NMT education programs are traditional educational programs with courses offered during the day. Educators reported in this survey that a significant proportion of their students are older (median age across programs is 26 years to 30 years) and second career students. These types of students often prefer programs in the evening or on-line to give them the opportunity to earn a living and support a family while learning new skills. Many health professional education programs in other disciplines that have sought out these students are currently flourishing by providing a flexible and accommodating learning environment.
- **Even out the geographic penetration of NMTs across the fifty states.** In this report and in the NMT workforce report, dramatic differences in the penetration of both NMTs and NMT education programs have been observed across the U.S. Although the differences in NMT to

population ratio may be explained by a variety of factors, it is extremely important to have a sufficient NMT workforce in all jurisdictions to avoid the necessity of substitution of other professionals for NMTs in locations where the NMT workforce is sparse.

- **Develop more on-line options for NMT education.** Other health professions have shown that on-line didactic education programs with local clinical affiliates are an effective strategy for resolving geographic variations in program availability. Online programs provide opportunities to increase educational efficiencies, share resources and faculty, open programs to non-traditional students, and increase workforce penetration in areas where there are no educational programs. On-line education programs in NMT are not currently widely available, which creates an important opportunity for a number of programs to fill the void.

A narrative question on the survey described in this report addressed on-line content in programs. All these comments are listed at the end of this report and reveal that, while a few programs have embraced the option of on-line education with success, many programs have very little or no distance education available. In fact, many respondents seemed not to appreciate the opportunity that on-line education offers.

On-line education is also a strategy to address the need for faculty resources. On-line programs promote sharing of resources among programs by permitting experts in a particular area to design courses that can be widely disseminated. In addition, although faculty is still required to review coursework and address student issues, it increases the capacity of faculty by permitting them to oversee more students, more efficiently.

On-line education also addresses the needs of many second-career and part-time students who seek alternative methods of education to accommodate work and family schedules. Although on-line education for health professionals presents special challenges, there are many examples of successful programs that create a network of clinical affiliates in a variety of geographic areas to teach and mentor students in clinical rotations.

- **Develop course content that anticipates new NM technologies.** The possible advent of fusion MRI technology is just one example of an opportunity for existing NMT education programs—and even SNM—to take the lead in training NMTs and other imaging professionals in the latest technologies. A quick environmental scan suggests that fusion technology is neither a blip on the screen nor a unique event. There are concerted efforts afoot to blend MRI and Mammography with NM technology. The anticipated move from diagnostic to therapeutic technology will also affect NMT work in the near future.

These and other expected innovations will require adaptation in both the core NMT curriculum and continuing education programs. It will become increasingly difficult for educational programs to prepare technologists adequately when new technologies are introduced for use with short time lines between introduction and full implementation. For this reason, it is important for education programs to be in a proactive position, constantly scanning new developments and potential technologies to understand the knowledge, skills, and competencies that will be required by NMTs and other imaging professionals.

Currently, many technologists rely on technology or pharmaceutical vendors for their education about innovations. Although this may be appropriate if the training is operational in nature, the NMT profession must also be certain that the scientific foundations of NMTs are adequate to learn and master these new applications. Ideally, teams of educators,

scientists, physicians, technologists, and others can be established to help keep education programs abreast of important technological and clinical breakthroughs.

- **Develop strategies to ensure an adequate supply of NMT program faculty.** NMT education programs must address a number of faculty-related issues. It is essential to identify and recruit competent faculty who can be relied on over time to teach didactic courses and clinical rotations. This means that the NMT profession must address a number of inter-related issues, including:
 - Creating interdisciplinary faculty teams to teach required didactic content;
 - Creating a mix of financial and non-financial incentives to attract NMT faculty;
 - Increasing class sizes to make education programs more efficient;
 - Substituting on-line for face-to-face classes to use existing faculty more effectively; and
 - Finding people at the cutting edge of new technologies.

Strategies in these different areas might be developed and refined in a number of bellwether educational programs, and then disseminated to other programs through professional meetings and publications. This dissemination strategy suggests an important coordination role that might be played by SNM in helping to promote timely changes in educational programs.

- **Stabilize production of new NMTs to avoid boom-bust cycles in the NMT job market.** Currently, education programs in NMT, like those in a number of health professions, appear to be operating in a cyclical pattern of over- and under-production driven by a perceived need to respond quickly to small nuances in the job market for NMTs. These cycles create hardships for all concerned as enrollments rise and fall in response to demand for new professionals.

Ideally, these cyclical swings could be eliminated—or at least smoothed out—by developing accurate estimates of the underlying demand for new NMTs. Education programs could then collectively set target enrollment and graduation levels to achieve a balance between supply and demand. Over time, this would help to reduce dramatic swings in NMT production, creating a more stable environment in which education programs can operate. This is not to suggest that estimating the baseline demand for NMTs would be a simple task, but devoting some resources to this strategic task could have significant payoffs for all stakeholders in the NM industry.

Introduction

Nuclear Medicine Technologists (NMTs) are a critical element in the workforce in the field of nuclear medicine (NM). They play critical roles in the delivery of NM services to patients in a variety of settings and specialties. (See the NMT workforce report posted on-line at www.snm.org for more details.)

Critical to the success of NMTs in their clinical practice are the NMT education programs that provide these professionals with the didactic and clinical education and training that permits them to provide high quality, front-line NM services to patients. Although planners and policy makers engage NMT education program directors in discussions, this is seldom done in a systematic way to gather insights about the current status and future plans and prospects for NMTs in their respective geographic jurisdictions.

This report summarizes the responses to a survey of the directors of all education programs preparing certified NMTs in the U.S. It is part of a larger effort to document the roles and responsibilities of different segments of the NM workforce and to help the various NM professions plan for their future, both individually and collectively.

Nuclear Medicine Technologist Education Program Director Survey

The survey of the program directors of the 127 accredited and non-accredited NMT Education Programs in the U.S. was conducted in late Spring and Summer of 2006. The survey questionnaire contained 88 questions in several categories including: Personal Demographics, Education and Training, and Career Plans; Program Characteristics; Program Faculty; Program Students; Program Marketing; the Job Market for Graduates; and Attitudes About NMT Education. The questionnaire also provided opportunities to respond to narrative questions about changes in NMT students, the impact of distance learning, and other NMT workforce concerns.

Survey Design

The survey instrument, a copy of which is provided in Appendix A of this report, was designed with the advice of an Advisory Committee assembled by the Society of Nuclear Medicine (SNM). The committee helped to design the overall structure of the survey as well as the specific wording of the individual questions. The resulting questionnaire is more detailed than most developed by the Center for education program directors for other professions, and the additional detail provides greater insights about NMT education programs, faculty, and students than are usually available from such surveys.

The Survey Process

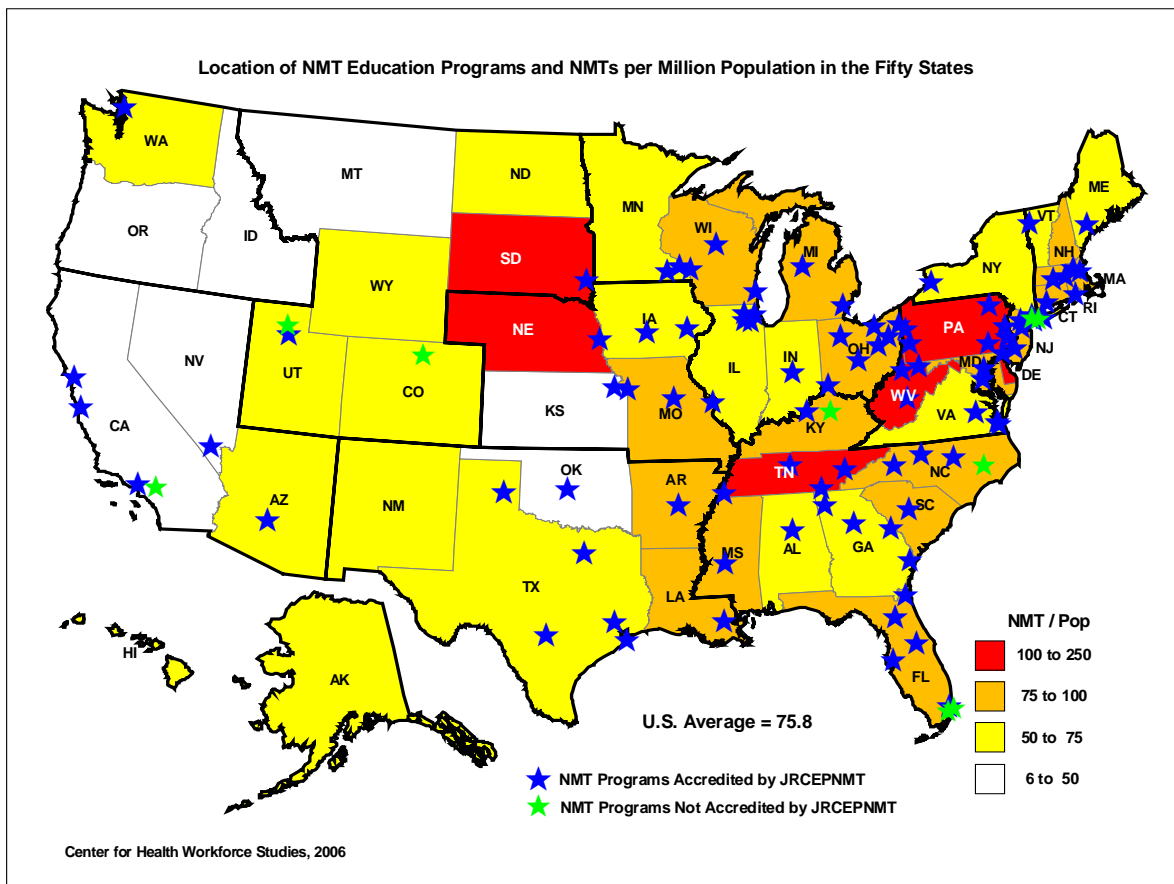
In March of 2006, a letter was sent to all accredited and non-accredited NMT education program directors informing them of the larger nuclear medicine workforce study and explaining the upcoming survey of NMT education program directors. Overall, 127 programs were contacted to request their participation in the education program director survey. The initial letter contained a fax back form containing consent to participate, contact information for the program director, choice of survey media (paper or electronic) and information about graduation dates from the program with an expected number of graduates. The latter information was collected in anticipation of a survey of graduating NMT students, which is scheduled for completion in May of 2007. In May 2006 education program directors received another letter containing an Internet address to access the electronic survey or a paper survey instrument or both. Each program was

provided with a unique identifier to be used on their survey to prevent duplication of responses and to permit subsequent geographic analysis.

Based on the initial request for participation sent to the NMT education program directors in early March 2006, a decision was made to create an on-line survey process that permitted the program directors to respond to the survey questionnaire directly from their computers. A paper version of the questionnaire was also provided to those program directors who requested that option on a fax back form sent to the program directors with the initial letter. The fax provided consent for participation in the survey process (as required by the Center’s IRB), as well as an indication of media preference (paper or electronic survey instrument).

A formal announcement of the survey was sent to the program directors on May 15, 2006, indicating that the questionnaire was available on-line for completion and providing each director with an unique serial number. On the same date, a paper version of the questionnaire with an individual identification number was mailed to those program directors who had requested a hard copy on their fax back form in March. A mailing was also sent to program directors who had not responded to the initial request for participation. This mailing included both an on-line access code (ID number) and a paper version of the survey. In all 127 letters were mailed to program directors of JRC accredited programs and non-accredited programs in the United States and Canada. The locations of the programs are shown in the map in Figure 1.

Figure 1. Locations of Accredited and Unaccredited NMT Education Programs in the Fifty States



The survey process was closed on September 1, 2006 and the responses received as of that date are included in the tabulations presented in this report.

Sample

The sample included all accredited and non-accredited NMT education programs in the United States and Canada. At the time of survey (April and May, 2006), there were 99 accredited programs and 28 identified non-accredited programs. Among NMT programs, 121 were located in the United States, and 6 were located in Canada.

Survey Responses

Of the 127 NMT Education Program Directors included in the original list provided by SNM, 42 responded to the electronic version of the questionnaire, and 18 responded on paper. The total of 60 responses yielded a response rate of 47.2%, which is fairly typical for surveys of this length and complexity conducted by the Center. The survey response rate was probably reduced by inclusion of non-accredited programs, but research staff identified the importance of attempting to obtain insights from those programs. In any case, the survey responses provide a unique window on the NMT program directors and their education programs.

Key Findings

The remainder of this report summarizes the survey responses. The discussion is organized into sections corresponding to the seven sections of the questionnaire: Personal Demographics, About Your NMT Program, Program Faculty, About Your Students, Program Marketing, NMT Job Market for Students, and Attitudes. Except where noted, the tabulations and percentages presented below are for all 60 respondents to the survey.

Personal Demographics

The demographic characteristics of nuclear medicine technology education program directors provide some insights about these professionals that help to create a context in which to understand other aspects of their work. In addition, knowing the age of respondents provides a basis for understanding how the professions may be changing over time.

- Table 1 shows that NMT Education Program Directors had roughly the same gender mix (56.7% women) as the NMT profession (64.4% women). Both percentages were greater than the 51.1% of women in the U.S. general population.

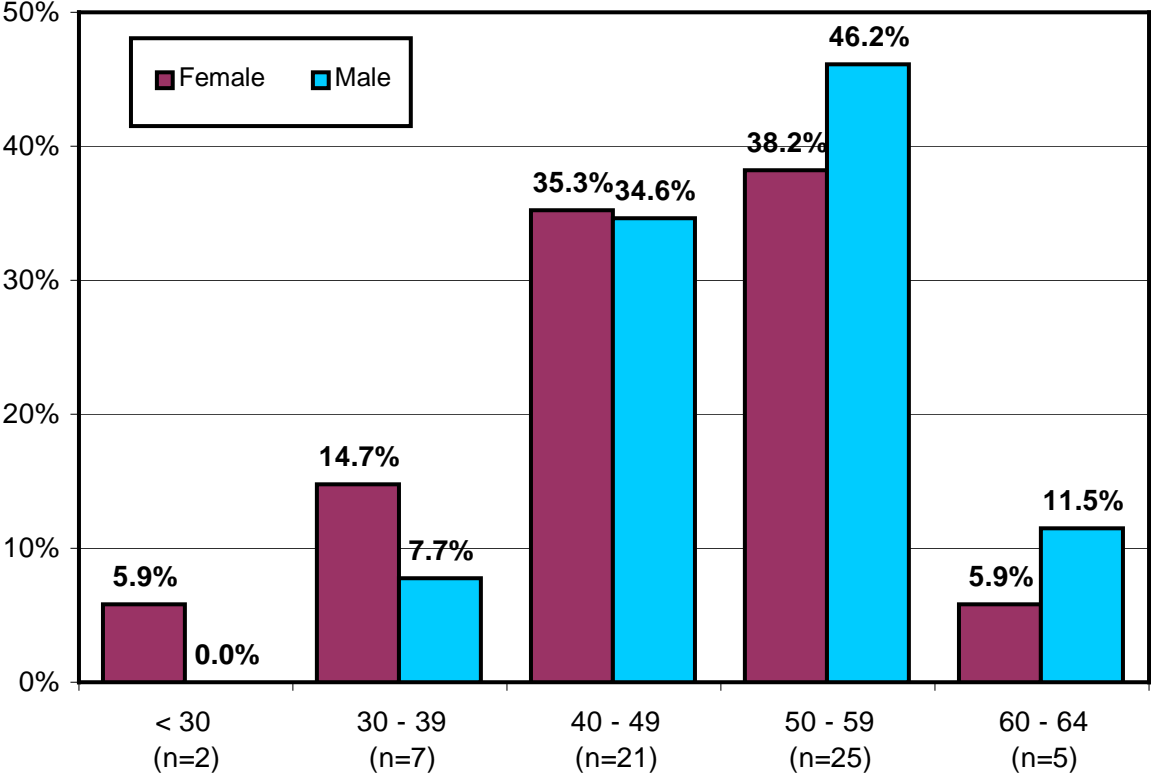
Table 1. Percent Female of NMT Education Program Directors, Active NMTs, and U.S. Population

NMT Program Director, 2006	Active NMTs, 2005	U.S. Population, 2005
56.7%	64.4%	51.1%

Sources: NMT Program Director Survey, Question A.. 1, NMT Workforce Survey, Question A. .1, U.S. Bureau of the Census, American FactFinder, 2005

- Figure 2 contrasts the age distributions of active male and female Program Directors as of 2006, showing that those in younger age groups are more likely to be women.

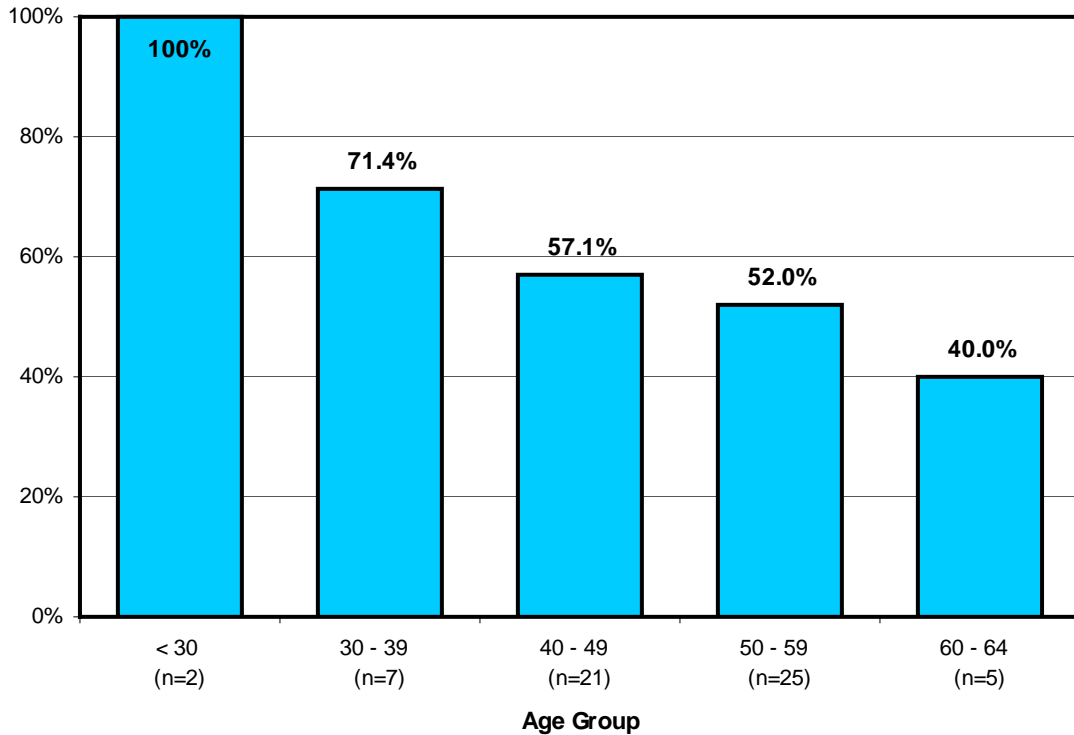
Figure 2. Age Distribution of Active NMT Education Program Directors, by Gender



Source: NMT Program Director Survey, Questions A. 1 and A.3

- Figure 3 shows that NMT education program directors have become progressively more female in younger age groups.

Figure 3. Percentage of NMT Program Directors Who Are Female By Age Group, 2006



Source: NMT Program Director Survey, Questions A..1 and A.3

- NMT Education Program Directors were much less racially-ethnically diverse than the U.S. population in 2005. Non-Hispanic Whites were over represented while Blacks and Hispanics were under-represented (Table 2).

Table 2. Racial Ethnic Composition of Active NMSs, 2006, and U.S. Population, 2005

Racial/Ethnic Group	Percent of NMT Program Directors	Percent of U.S. Population, 2005
Asian/Pacific Islander	3.3%	4.4%
Black/African American (NH)	1.7%	12.1%
AI/AN	1.7%	0.8%
White (NH)	88.3%	74.7%
Hispanic	1.7%	14.5%
Other	3.3%	7.9%

Source: NMT Program Director Survey Question A..4, U.S. Bureau of the Census, American FactFinder, 2005.

Education of NMT Program Directors

- Table 3 shows that 35 of the 60 (58.3%) NMT program directors held Master’s degrees. The second most common education level was the Bachelor’s degree (28.3%).
- Many NMT program directors obtained additional education since becoming a program director. It was especially common for those with Bachelor’s degrees to earn Master’s degrees.
- The small numbers of doctorally educated faculty is a concern in light of requirements of many academic institution for faculty to hold PhDs or other doctorates.

Table 3. Highest Level of Prior and Current Education of NMT Education Program Directors, 2006

Education Level	Highest Level of Education Prior to Becoming a Program Director	Highest Level of Education Currently for Program Directors
Certificate (No degree)	1	1
Associate's degree	5	2
Bachelor's degree	29	17
Master's degree	20	35
Post Master's certificate	0	0
Doctoral degree	4	5
All Degrees	59	60

Source: NMT Program Director Survey Questions A.10 and A.11

- The level of current education of program directors varied by institutional setting. As expected, more program directors with Master’s or Doctoral degrees were found in university/four-year college settings, academic medical centers, and hospital programs with university affiliation (Table 4).

Table 4. Level of Current Education of NMT Program Directors by Type of Institution, 2006

Level of Degree	Type of Academic Institution Sponsoring NMT Program					Total
	Community / Junior College	University/ 4Year College	Academic Medical Center	Hospital w/ Univ Affiliation	Other	
Certificate (no degree)			1			1
Associate's degree	1	1				2
Bachelor's degree	5	1	3	3	5	17
Master's degree	11	14	3	6	1	35
Doctoral degree	1	4				5

Source: NMT Program Director Survey Questions A.10 and B.1

Type of Appointment of Program Director

- A high percentage of NMT education program directors (71.7%) were appointed as full-time faculty members in the sponsoring organizations.
- Table 5 shows that program directors in four-year college or university programs were more likely to be employed full-time on an annual basis than program directors in other educational settings. Almost thirty five percent of full time positions for NMT program directors were found in four-year institutions of learning.
- More than half of NMT education program director appointments (55.6%) in community/junior colleges were 9-month contracts. About one quarter of NMT program director positions in community/junior colleges (23.3%) were nine-month appointments.

Table 5. Type of Appointment of NMT Program Directors by Type of Sponsoring Institution, 2006

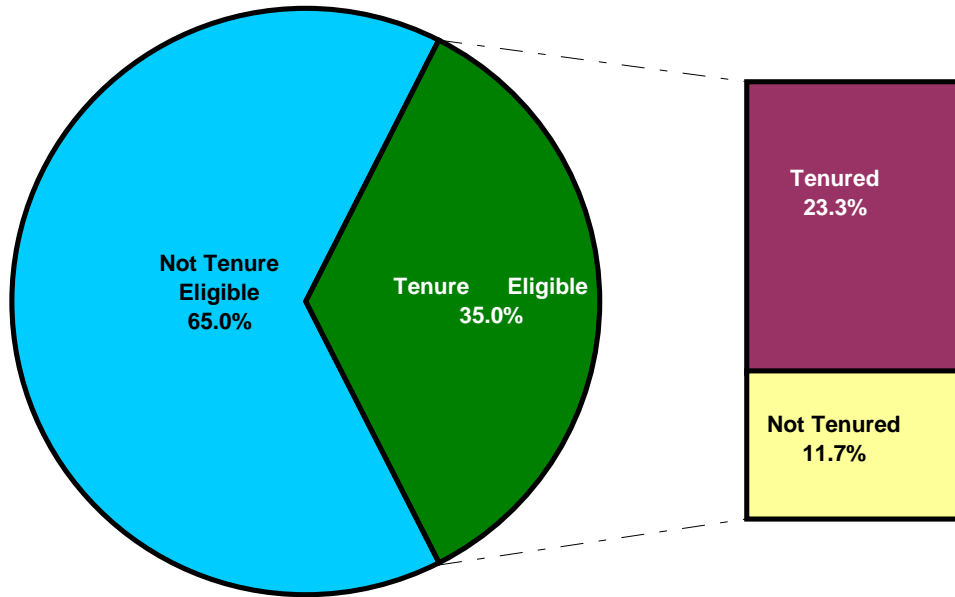
Sponsoring Institution	Full-time 12 Month	Full-time 9 Month	Part-time <35 Hrs/Wk	Other
Community/Junior College	23.3%	55.6%	0%	100%
University or Four-Year College	34.9%	44.4%	20.0%	0%
Academic Medical Center	16.3%	0%	0%	0%
Hospital w/ University Affiliation	16.3%	0%	40.0%	0%
Other	9.3%	0%	40.0%	0%
Total N	43	9	5	3

Source: NMT Program Director Survey Questions A.8 and B.1

Tenure Status

- As can be seen in Figure 4, most (65.0%) NMT education program directors were not eligible for tenure in the colleges/university system where they were located. Among the 35% program directors occupying those tenure track positions, approximately two-thirds were tenured.

Figure 4. Tenure Status of NMT Education Program Directors



Source: NMT Program Director Survey questions A.6 and A.6a

- Methods of qualifying for tenure in the colleges/universities where tenured positions were available varied. Responding program directors reported a number of qualifying activities by the professors/directors seeking tenure, including those described in the Table 6 below.

Table 6. Percentage of NMT Educator Respondents Citing Particular Professional Activity Required to Attain Tenure, 2006.

Professional Activity	Percent
Research	30.0%
Publications In Peer Reviewed Journals	35.0%
Institutional Committee Work	46.7%
Involvement with Professional Organizations	43.3%
Teaching	50.0%
Community Service	38.3%
Other (Including Academic Advising, Student Feedback)	10.0%

Source: NMT Program Director Survey Question A.7

Titles of NMT Program Directors

- Among the sixty responding program directors, 45 carried the title of NMT Program Director and 7 were Department Chairpersons.
- Relatively few program directors carried the title of professor (5) and most of those who did worked in four-year colleges/universities and hospital education programs with university affiliations.
- Table 7 shows that, among NMT program directors working in four-year colleges/universities, 40% carried the title of associate professor and 30% were assistant professors. About one-third of program directors in academic medical centers were associate professors.
- Among program directors employed in community/junior colleges, 47.1% held the title of Instructor, as did 57% of directors working in hospital programs affiliated with a university and 50% of program directors in NMT programs in academic medical centers and "other" settings

Table 7. Faculty Rank of NMT Education Program Directors by Type of Sponsoring Institution, 2006

Sponsoring Institution	Professor	Associate Professor	Assistant Professor	Instructor	Lecturer	Other	Total N
Community/Junior College	5.9%	17.6%	17.6%	47.1%	0.0%	11.8%	17
University or Four-Year College	15.0%	40.0%	30.0%	15.0%	0.0%	0.0%	20
Academic Medical Center	0.0%	33.3%	16.7%	50.0%	0.0%	0.0%	6
Hospital w/ Univ Affiliation	14.3%	0.0%	0.0%	57.1%	14.3%	14.3%	7
Other	0.0%	0.0%	16.7%	50.0%	0.0%	33.3%	6

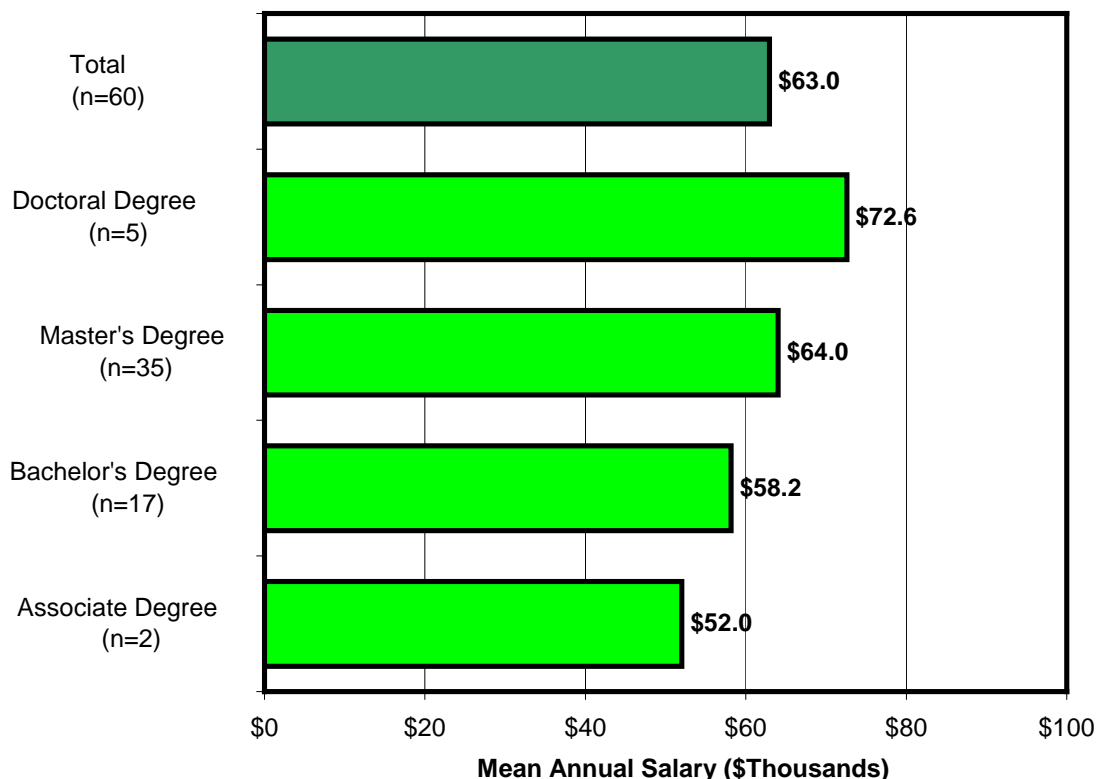
Source: NMT Program Director Survey Questions A. 9 and B. 1.

Salaries of NMT Program Directors

- Salaries of NMT education program directors were lower overall than those for active NMT professionals. In the NMT workforce survey, conducted as part of the overall NM workforce project, NMTs in active practice working 30 or more hours per week report a mean annual salary of \$70,470. This salary disparity is a concern since attracting qualified faculty is difficult when faculty salaries are not competitive with salaries in clinical practice.
- The mean annual salary of responding NMT program directors was \$63,000.
- Figure 5 shows that program directors with Doctoral degrees had a mean annual salary of \$72,600 while those with Bachelor's degrees had a mean annual salary of \$58,200.

- The most common degree for NMT program directors was a Master's Degree (58% of all program directors). The mean annual salary for program directors with Master's degrees was \$64,000.

Figure 5. Mean Annual Salaries of NMT Education Program Directors, by Highest Degree, 2006



Source: NMT Program Director Survey questions A.10 and A.15

Note: The salary of one respondent with no degree is not reported to protect anonymity.

Future Education

As noted previously in Table 3, many current education program directors have pursued additional education after becoming program directors. Still, 58% of respondents indicated their intent to pursue further education in the future, with 40% of those currently enrolled in an academic program. One third (33.3%) of all program directors intend to earn a doctoral degree.

- Among current NMT education program directors, 35 survey respondents (58%) reported plans to pursue further academic education in the future.
- Table 8 shows that, as expected, among current program directors with Bachelor's degrees, 65% planned to pursue a Master's degree. Among directors with a current Master's degree about 50% expected to pursue a Doctoral degree.
- Although only two of the current NMT program directors responding to the survey indicated an associate degree as their current highest academic credential, both expected to pursue

Bachelor's education. One was currently enrolled in a bachelor's program and the other expected to enroll in the near future.

Table 8. Further Education Plans of NMT Education Program Directors, 2006

Highest Current Degree	Further Education in Future?		If Yes, Further Education Level				Total
	No	Yes	Bachelor's Degree	Master's Degree	Post-Master's	Doctoral Degree	
Certificate No Degree	1	0	0	0	0	0	0
Associate Degree	0	2	2	0	0	0	2
Bachelor's Degree	4	13	0	11	0	2	13
Master's Degree	15	20	0	0	2	18	20
Doctoral Degree	5	0	0	0	0	0	0
Total	25	35	2	11	2	20	35

Source: NMT Program Director Survey Questions A.10 and A.13a

- Forty percent of program directors were currently enrolled in an academic program to further their education (Table 9). More than half (57%) of program directors enrolled in an education program were seeking a Bachelor's degree.

Table 9. Timing of Further Education Planned by NMT Education Program Directors, 2006

Highest Current Degree	Currently Enrolled	In Year or Two	In About Five Years	Total
Associate Degree	1	1		2
Bachelor's Degree	8	4	1	13
Master's Degree	5	12	3	20
Total	14	17	4	35

Source: NMT Program Director Survey Questions A.10 and A.13b

Future Plans

- Retirements and other departures of program directors create demand for replacements to fill their vacant positions. Among all program directors responding to the survey, 16.9% reported plans to retire from their program director positions in the next five years.

- Although many current education program directors expected to remain in their current position over the next five years, all program directors between 60 and 64 years old expected to retire within that time period, as did 20% of those aged 50 to 59 (Table 10). Another 16.9% of program directors expected to retire in the next five years.
- Small percentages of program directors expected to return to clinical practice (1.7%) or seek employment in another field (1.7%).
- Among program directors aged 40 to 49, 10% expected to seek a similar position in another educational program.

Table 10. Career Plans for Next Five Years of NMT Education Program Directors by Age Group, 2006

Career Plans for Next Five Years	Age Group					
	< 30	30 - 39	40 - 49	50 - 59	60 - 64	Total
Remain in Current Position.	100%	85.7%	80.0%	68.0%	0%	69.5%
Seek Similar Position Elsewhere	0%	0%	10.0%	0%	0%	3.4%
Return to Clinical Practice	0%	0%	0%	4.0%	0%	1.7%
Seek Employment in Another Field	0%	0%	0%	4.0%	0%	1.7%
Retire	0%	0%	0%	20.0%	100%	16.9%
Other	0%	14.3%	10.0%	4.0%	0%	6.8%
Total	2	7	20	25	5	59

Source: NMT Program Director Survey question A.16.

- Table 11 shows that, among program directors expecting to seek further education, 76.5% expected to remain in their current program director position for the next five years.
- Interestingly, among program directors that expect to pursue further education, 5.9% expected to retire within the next five years, and another 5.9% expected to seek a similar position in another education program.
- Nearly one in ten (8.8%) of those expecting to pursue further education indicated “other” plans for the coming five years. “Other” included educational/academic administration, an expected move to a position as a dean, and management.

Table 11. Career Plans for Next Five Years of NMT Education Program Directors by Further Education Plans, 2006

Career Plans for Next Five Years	Further Education Planned?		
	No	Yes	Total
Remain in Current Position.	60.0%	76.5%	69.5%
Seek Similar Position Elsewhere	0.0%	5.9%	3.4%
Return to Clinical Practice	4.0%	0.0%	1.7%
Seek Employment in Another Field	0.0%	2.9%	1.7%
Retire	32.0%	5.9%	16.9%
Other	4.0%	8.8%	6.8%
Total	25	34	59

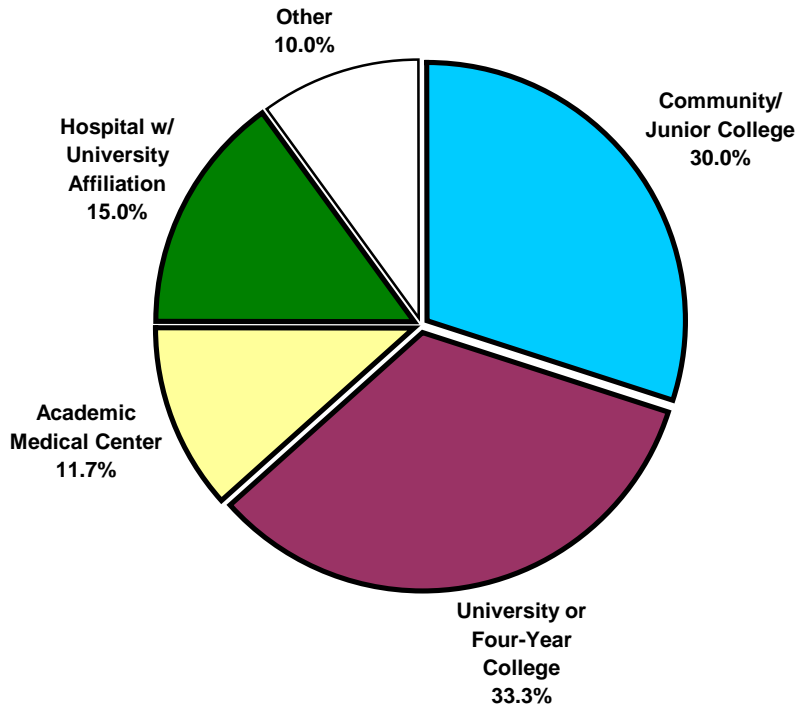
Source: NMT Program Director Survey Questions A..13 and A.16

Sponsoring Institutions of NMT Education Programs

NMT education programs are found in a wide variety of sponsoring institutions including universities, four-year colleges, community and junior colleges, hospitals, and “other” settings including technical colleges and hospitals without university affiliations.

- Figure 6 shows that one third (33.3%) of education programs represented by the survey respondents were located in universities or four year colleges, and 30% were in community/junior colleges.
- Another 15% of NMT education programs were located in hospitals with university affiliations.

Figure 6. Sponsor Institutions of NMT Programs, 2006



Other' includes: Technical College, Hospital Without University Affiliation (3), and Hospital System w/ Training Program.

Source: NMT Program Director Survey Question B.1

- Most NMT education programs in Schools/Colleges of Health Related Professions (52.9%) were found in four-year colleges/universities (Table 12).
- NMT education programs in Schools of Allied Health were most often found in community/junior colleges (68.8% of all programs in Schools of Allied Health).
- As expected, NMT programs housed in Schools of Medicine (11.8%) were all located in university settings.

**Table 12. Percent of NMT Education Programs in Different Schools/Colleges,
by Type of Sponsoring Institution, 2006**

Sponsoring Institution	School/College				
	Health Related Prof	Allied Health	Medicine	Other	Total
Community/Junior College	25.0%	68.8%	0%	6.3%	16
University or 4-Year College	52.9%	29.4%	11.8%	5.9%	17
Academic Medical Center	33.3%	33.3%	0%	33.3%	3
Hospital w/ University Affiliation	33.3%	33.3%	0%	33.3%	3
Other	0%	0%	0%	100%	2
Total	36.6%	43.9%	4.9%	14.6%	41

Note: 'Other' category included: College of Nursing & Health Sciences; Technical College; N/A; School of Health Professions; School of Sciences; and Hospital & University.

Source: NMT Program Director Survey Questions B.1 and B.1a

- The largest percentage of NMT education programs were located in Nuclear Medicine Departments in the sponsoring institutions in which they are located (40%).
- Table 13 shows that more than one-third (35.6%) of program directors responding to the survey indicated the NMT program is located in an "Other" department in the sponsoring institution besides Nuclear Medicine, Radiologic Technology or Biology. "Other" was described variously as Allied Health Department, Medical Radiation Science Department, Biotechnical and Clinical Laboratory Science Department, etc.

**Table 13. Percent of NMT Education Programs in Different Departments,
by Type of Sponsoring Institution, 2006**

Sponsoring Institution	Department				
	NMT	Radiologic Technology	Biology	Other	Total
Community/Junior College	61.1%	11.1%	0%	27.8%	18
University or Four-Year College	21.1%	26.3%	5.3%	47.4%	19
Academic Medical Center	33.3%	33.3%	0%	33.3%	3
Hospital w/ University Affiliation	66.7%	33.3%	0%	0%	3
Other	0%	50.0%	0%	50.0%	2
Total	40%	22.2%	2%	35.6%	45

Note: 'Other' category included: Undergraduate Programs; Analytical & Diagnostic Science; Cardiopulmonary & Diagnostic Science; Med Lab & Rad Science; N/A; Med Lab & Rad Science; Diagnostic/Therapeutic Science; Health Sciences; Health Physics; Physics; Medical Imaging Technology; Biotech & Clinical Lab Sciences; Allied Health (2); and Medical Radiation Sciences.

Source: NMT Program Director Survey Questions B.1 and B.1b

Type of Academic Credential Awarded by NMT Programs

- Based on the survey responses, 35.4% of NMT education programs awarded a bachelor’s degree at the completion of the program. A high percentage (41.7%) awarded certificates at completion, some of which were post-bachelor’s certificates.
- Table 14 shows that, as expected, all university/four year colleges awarded a bachelor’s degree in NMT.
- The academic award in community/junior colleges varied. In 53.3% of community college programs an associate’s degree was awarded. Certificates were awarded in another 40%.
- Programs located in academic medical centers awarded both certificates (50%) and bachelor’s degrees (50%), while most (75%) of those located in hospitals with university affiliations awarded certificates.

Table 14. Percent of NMT Education Programs With Different Types of Awards, by Type of Sponsoring Institution, 2006

Sponsoring Institution	Type of Award				
	Certificate	Associate Degree	Bachelor's Degree	Other	Total
Community/Junior College	40.0%	53.3%	0%	6.7%	15
University or Four-Year College	0%	0%	100%	0%	13
Academic Medical Center	50.0%	0%	50.0%	0%	6
Hospital w/ University Affiliation	75.0%	0%	12.5%	12.5%	8
Other	83.3%	0%	0%	16.7%	6
Total	41.7%	16.7%	35.4%	6.3%	48

Note: 'Other' type of award category included: Associate of Applied Science; Diploma, AART/NMTCB Exam; and Cert, Assoc, Bach.

Source: NMT Program Director Survey Questions B.1 and B.2

Discipline in Which Degree or Certificate is Awarded

- Table 15 shows that more than three-quarters (76%) of NMT education programs awarded degrees/certificates in NMT.
- Another 9.8% awarded degrees/certificates in Radiation Science.
- Among all NMT education programs, about one in eight (12.2%) awarded degrees in “Other” disciplines including Advanced Medical Imaging Technology, Health Science, and Radiologic and Imaging Science.

**Table 15. Percent of NMT Education Programs With Different Award Majors,
by Type of Sponsoring Institution, 2006**

Sponsoring Institution	Major of Award				
	NMT	Radiation Science	Biology or Life Science	Other	Total
Community/Junior College	91.7%	0%	0%	8.3%	12
University or Four-Year College	65.0%	15.0%	5.0%	15.0%	20
Academic Medical Center	100%	0%	0%	0%	4
Hospital w/ University Affiliation	75.0%	25.0%	0%	0%	4
Other	0%	0%	0%	100%	1
Total	76.0%	9.8%	2.4%	12.2%	41

Note: 'Other' major of award category included: Advanced Medical Imaging Technology; Radiologic and Imaging Science; Occupational Technology; Bachelors of Health Science.

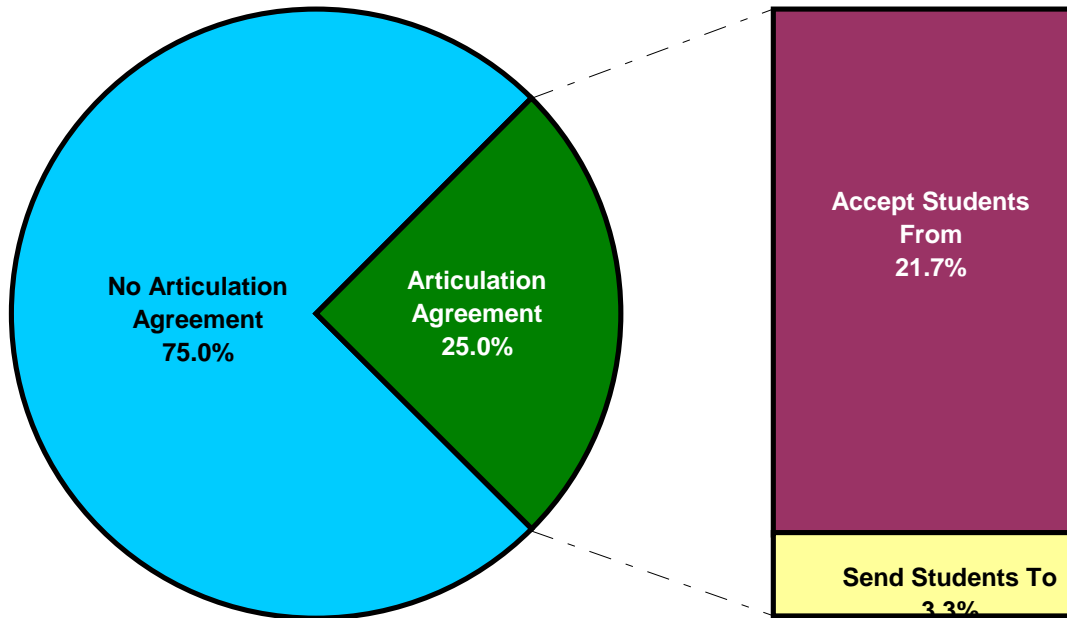
Source: NMT Program Director Survey Questions B1 and B.3

Articulation Agreements

Articulation agreements are formal arrangements among colleges/universities or programs to routinely transfer students for degree completion at other institutions, or to accept students for degree completion from other institutions.

- Figure 7 shows that three quarters of nuclear medicine technology programs (75%) had no articulation agreement with other colleges/universities or programs.
- Fewer than one quarter of programs (21.7%) accepted students from other programs for degree completion.
- Only 3.3% of nuclear medicine technology programs had agreements with other colleges/universities to transfer students for degree completion elsewhere. This is an important statistic in light of current efforts to migrate entry-level education for nuclear medicine technologists to the Bachelor's level. Universal adoption of this policy would require articulation agreements or some equivalent arrangement for all community college programs.

Figure 7. Articulation Agreements of NMT Education Programs, 2006



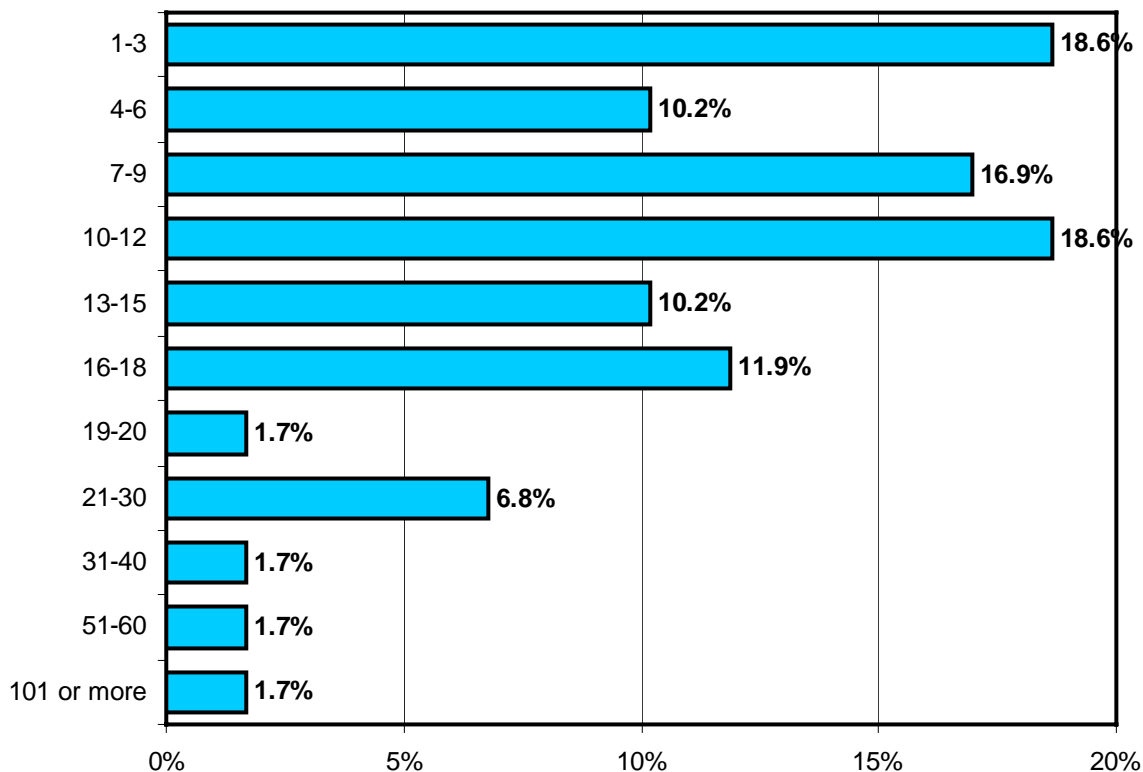
Source: NMT Program Director Survey Questions B.4 and B.4a.

Number of Clinical Affiliates

A critical part of any NMT education program is opportunities for students to gain first-hand clinical experience in the procedures about which they are learning. In general, this requires having clinical affiliates in which students can do clinical rotations.

- Figure 8 shows that a majority of NMT education programs (64.3%) had 12 or fewer clinical affiliates. A small percentage (3.4%) had more than 50 clinical affiliates.
- An analysis of number of clinical affiliations by type of institution showed little difference by type of sponsoring institution in the number of affiliations. A community college, a four-year university/college, and an academic medical center were among the types of educational programs with greater than 50 clinical affiliations.

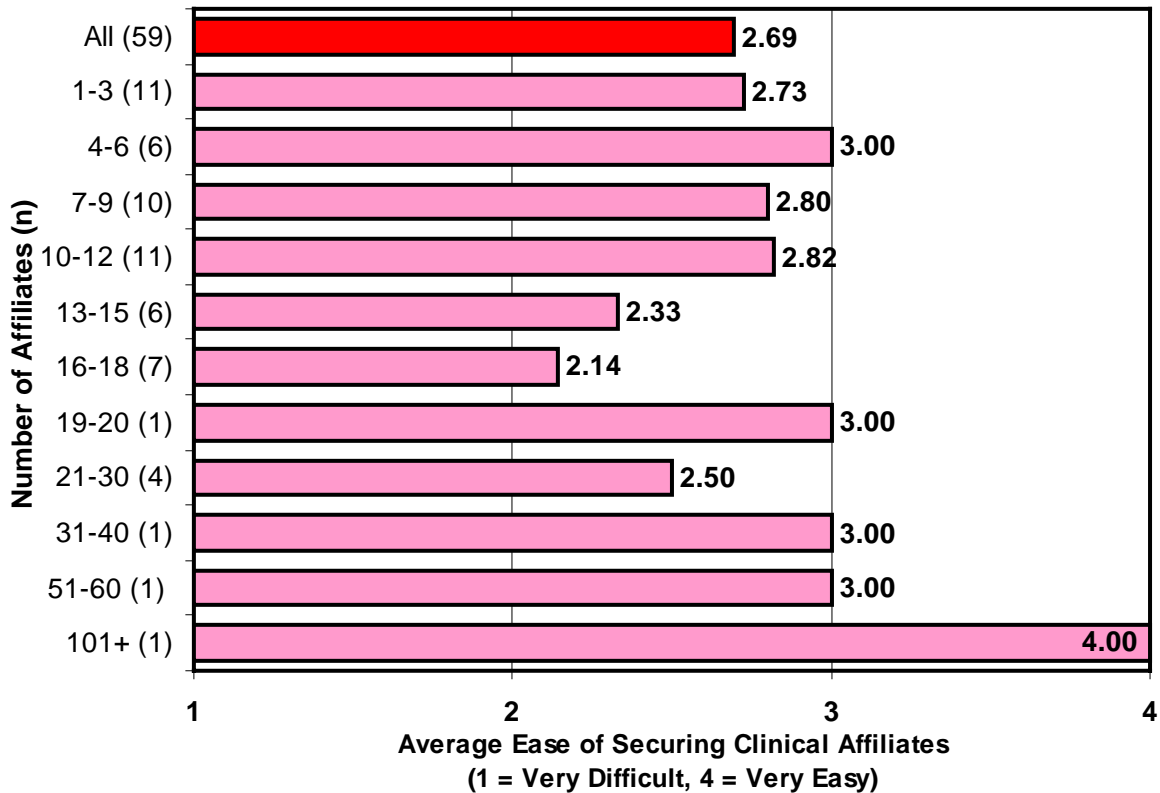
Figure 8. Percent of NMT Education Programs with Different Numbers of Clinical Affiliates, 2006



Source: NMT Program Director Survey Question B.7.

- More than half (57.9%) of programs provided training to clinical instructors in the clinical affiliates working with their students.
- Figure 9 shows that, overall, program directors indicated relative ease in finding clinical affiliates for their educational programs. On a scale of 1 to 4 with 1 being very difficult and 4 being very easy, program directors rated difficulty in finding affiliates at 2.69.
- Although as expected, very large programs indicated little or no difficulty in finding clinical affiliates, some smaller programs also indicated little or no difficulty.

Figure 9. Ease of Securing Clinical Affiliates By Number of Affiliates, 2006



Source: NMT Program Director Survey Questions B.7 and B.8

Accreditation Status of NMT Programs

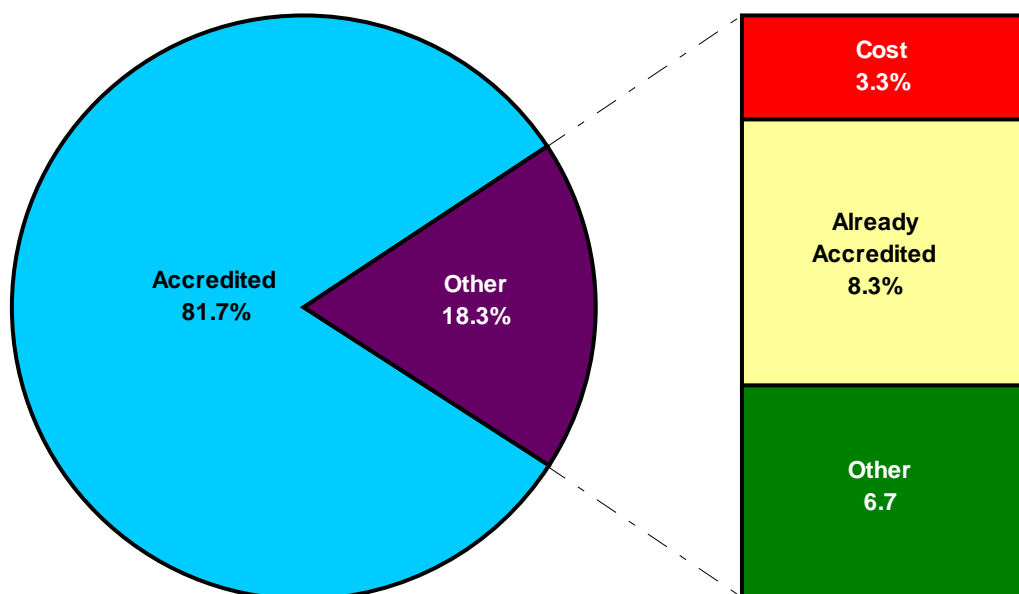
- Figure 10 shows that most NMT education programs (81.7%) were JRCNMT accredited.
- Among those not JRCNMT accredited, 8.3% were accredited by regional agencies and JRC accreditation was therefore not viewed by those program directors as necessary.
- Program directors from non- JRCNMT-accredited programs cited cost (3.3%) as a barrier to accreditation, while 6.7% cited “Other” reasons for lack of JRCNMT accreditation, including accreditation in Canada and currently being in the process of obtaining accreditation.

Security of NMT Program Funding

- Survey respondents generally reported that financing for their programs was secure.
- Table 16 shows that most (69.0%) nuclear medicine technology program directors rated funding for the education program as “secure”. An additional 29.3% rate funding as “somewhat secure”. These figures suggest that nuclear medicine technology education has achieved a degree of institutionalization in their sponsoring colleges/universities/programs.
- Although the differences were not great, the degree of security increased with the size of the program. Programs with 20 or more graduates were rated more often as secure by their program directors (70%) than programs with 5 or fewer graduates in 2006 (60%).

- Among program directors, only those with five or fewer graduates indicated tenuous funding (20% of all program directors with five or fewer graduates in 2006).

Figure 10. JRCNMT Accreditation Status of NMT Education Programs, 2006



Source: NMT Program Director Survey Questions B.5 and B.5a

Table 16. Rating of Security of Funding of NMT Education Program by Number of Graduates, 2006

2005/06 Grads	Security of Continued Funding			Total N
	Secure	Somewhat Secure	Tenuous	
<5	60.0%	20.0%	20.0%	5
5 - 9	75.0%	25.0%	0%	20
10 - 14	62.5%	37.5%	0%	16
15 - 19	71.4%	28.6%	0%	7
20+	70.0%	30.0%	0%	10
All	69.0%	29.3%	1.7%	58

Source: NMT Program Director Survey Questions B.7 and C.2

Time of Day When Courses are Offered

A number of NMT students are second career or part time students. Accommodating the needs of older learners includes having courses offered at times convenient to students who must work while also attending school or with family obligations that prevent them from attending school at traditional times or in traditional ways. Flexible course offerings, including availability on-line, are an important consideration in light of the characteristics of many NMT students.

- Table 17 shows that a large majority (92.7%) of NMT education programs offered day classes for their students.
- Overall only 5.5% of programs offered evening classes, and 1.8% of programs offered weekend classes.
- Hospital programs with university affiliations were the most likely to offer evening classes (11.1%).

Table 17. Time of Day Courses Are Offered by NMT Education Programs by Type of Sponsoring Institution, 2006

Sponsoring Institution	Time of Day Courses Offered			
	Day	Evening	Weekends	Total
Community/Junior College	87.5%	6.3%	6.3%	16
University or Four-Year College	94.7%	5.3%	0%	19
Academic Medical Center	100%	0%	0%	6
Hospital w/ University Affiliation	88.9%	11.1%	0%	9
Other	100%	0%	0%	5
Total	92.7%	5.5%	1.8%	55

Source: NMT Program Director Survey Questions B.1 and B.9

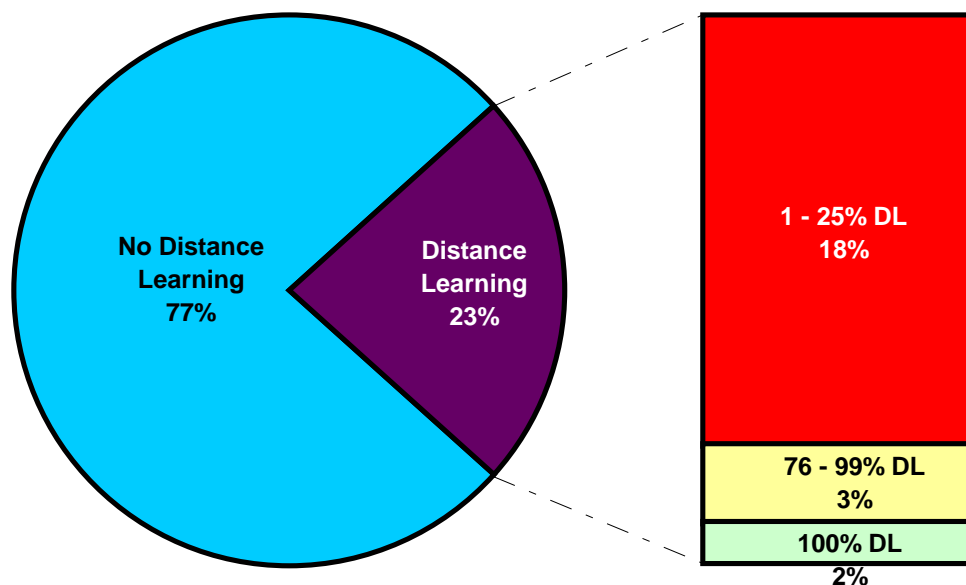
Distance Learning in Nuclear Medicine Technology Education Programs

Distance learning is a potentially important way of increasing professional penetration in a number of geographic areas lacking both NMT professionals and educational programs. Distance learning is also an effective way to address the education needs of adult/2nd career learners who constitute a significant portion of current NMT students.

- Figure 11 shows that most (77%) NMT education programs offered no distance learning opportunities.
- Of the 23% of programs offering distance learning courses, most (18%) offered less than 25% of the curriculum on-line. Only one program offered 100% of coursework on-line and two offered more than 75% of coursework on line.

- Programs in community/junior colleges and university/four-year colleges were most likely to offer distance learning. 75% of programs offering distance learning are located in college/university settings.
- The NMT education program director survey included a narrative question about the use of distance learning. Responses to that question are included in Appendix B of this report.

Figure 11. Distance Learning Use in NMT Education Programs, 2006



Source: NMT Program Director Survey Questions B.10 and B.10a.

- Table 18 shows that 18.3% of program directors indicated an intent to increase the availability of on-line coursework in their education programs over the next two years. Among the top reasons for expansion of on-line offerings were institutional directives, cost savings, and student demand.

Specialty Areas of Study in NMT Education Programs

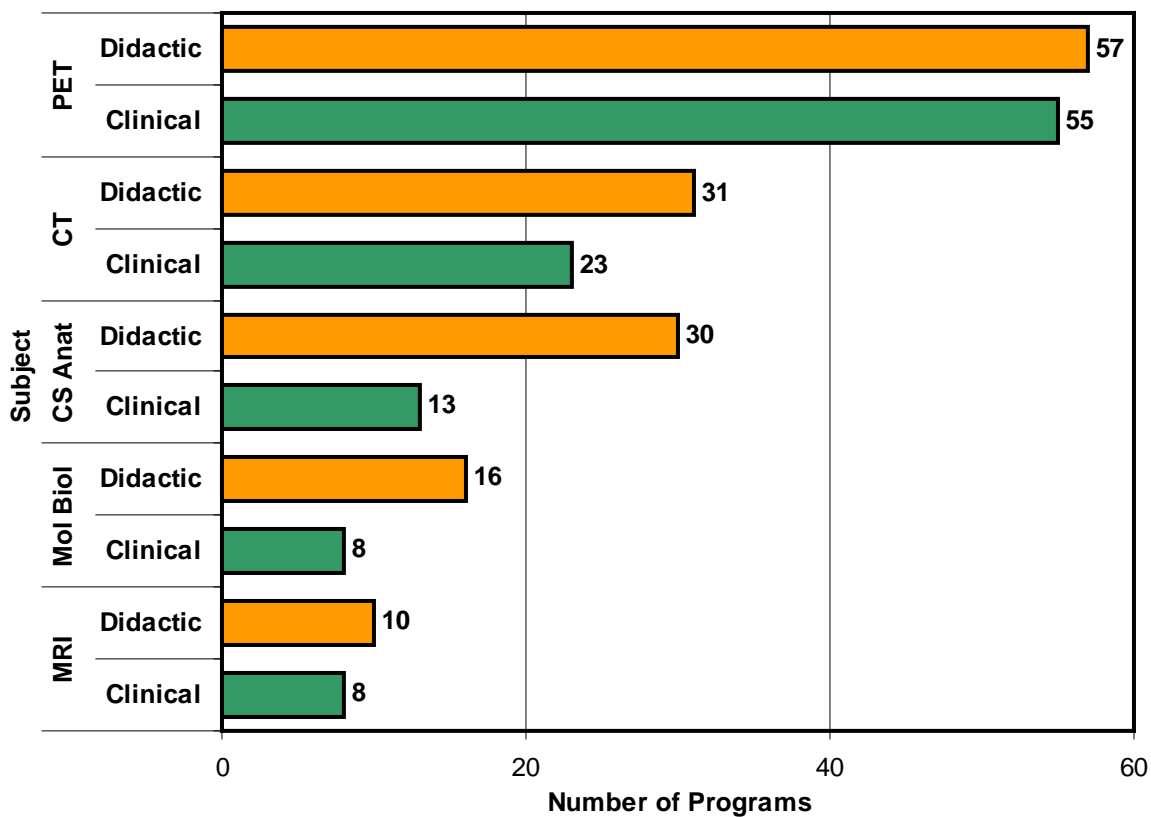
- Figure 12 shows that most nuclear medicine technology programs offered both didactic (57 of 60 programs) and clinical (55 of 60 programs) instruction in PET technology.
- Fewer programs offered CT instruction (31 offered didactic instruction and 23 offer clinical instruction).
- Although half of the education programs (30) offered clinical instruction in cross sectional anatomy, only 13 offered any clinical instruction in the subject.
- MRI is not addressed in most nuclear medicine education programs. Only 10 programs provided didactic instruction in MRI, with only 8 providing clinical instruction in the subject.

Table 18. Ranking of Reasons for Plans to Increase On-Line Courses Over Next Two Years, 2006

Reason	# Respondents Ranking:		Composite Score
	1st	2nd	
Part of Institution-Wide Strategy	4	2	10
Students Are Demanding On-Line Courses	2	5	9
Cost Savings	3	1	7
Other	2	1	5
To Compete w/ Other On-Line Programs	0	0	0
N	11	9	n/a

Source: NMT Program Director Survey Questions B.10b and B.10c.

Figure 12. Number of NMT Programs Offering Instruction in Selected Subjects, 2006



Source: NMT Program Director Survey Question B. 11.

Instructional Areas

- Table 19 shows that, when asked to describe particular instructional strengths within their programs, one third of program directors (20) indicated that their program was strong in cardiology education.
- A quarter of program directors (15) indicated strength in oncology instruction.
- Smaller numbers of program directors cited strength in instruction on instrumentation (13 of 60 directors), fusion technology (8 of 60) and neurology (5 of 60).
- Setting did not appear to affect the presence of special strengths in curriculum.

Table 19. Number of NMT Education Programs Claiming Unusual Strength in Selected Areas of Imaging, 2006

Sponsoring Institution	Instrumentation	Oncology	Cardiology	Fusion Technology	Neurology	Other
Community/Junior College	4	2	4	3	1	1
University or Four-Year College	4	5	6	2	3	1
Academic Medical Center	3	2	3	0	0	1
Hospital w/ University Affiliation	0	4	5	2	0	1
Other	2	2	2	1	1	1
Total	13	15	20	8	5	5

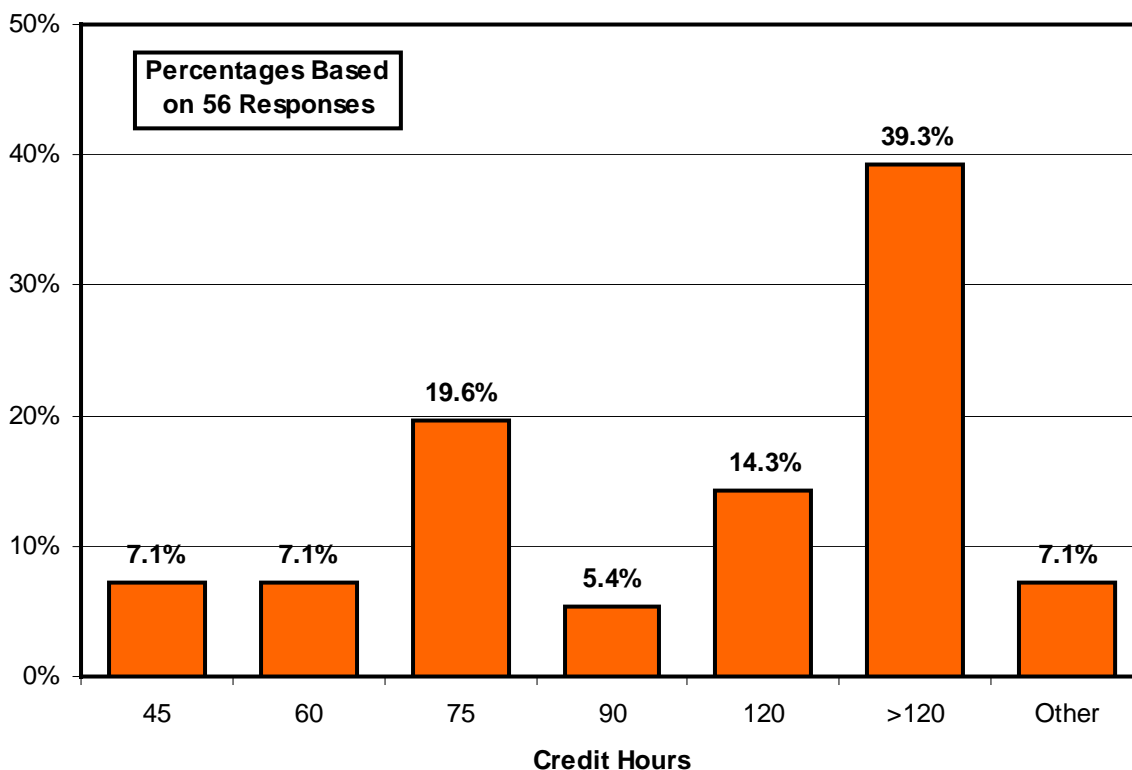
Note: Number totals greater than 60 because directors were given the option of choosing more than one strength,.

Source: NMT Program Director Survey Questions B.1, B.12, and B.12a.

Number of Credit Hours of Classroom/Laboratory Instruction Required by Programs

- Figure 13 shows that the majority of NMT programs (53.6%) required 120 credit hours or more in classroom/laboratory instruction for completion of NMT program requirements.
- More than a third (39.3%) of programs required greater than 120 credit hours of classroom/laboratory instruction to meet the total academic requirements of the education program. An additional 14.3% of programs required 120 credits hours.
- Only 14.2% of programs required 60 or fewer hours of classroom/laboratory instruction for completion of academic requirements.

Figure 13. Percentages of NMT Education Programs Requiring Selected Credit Hours of Classroom/Laboratory Instruction, 2006



Source: NMT Program Director Survey question B. 14

- As expected, most programs requiring 120 hours or greater of classroom/laboratory instruction were located in universities or four-year colleges, in academic medical centers, or in hospitals with university affiliations (Table 20). However, one community college required 120 hours of classroom/laboratory credit for completion of the NMT education program.
- More than half (55.5%) of community/junior colleges required 75 or more hours of classroom/lab instruction for completion, suggesting that the NMT education programs in those settings were longer than “normal” associate degree programs (60 hours).

Credit Hours Required for Professional Component of the NMT Program

- Figure 14 shows that the professional component of NMT programs was about 45 credit hours across programs in all settings.
- Overall, the number of credit hours in the professional component of the NMT education program averaged 44.7 hours as indicated by responding directors.
- On average, programs in academic medical centers (60 hours), in universities or four-year colleges (average 46.6 hours), and in hospitals with university affiliation (45.2 hours) exceeded the average.

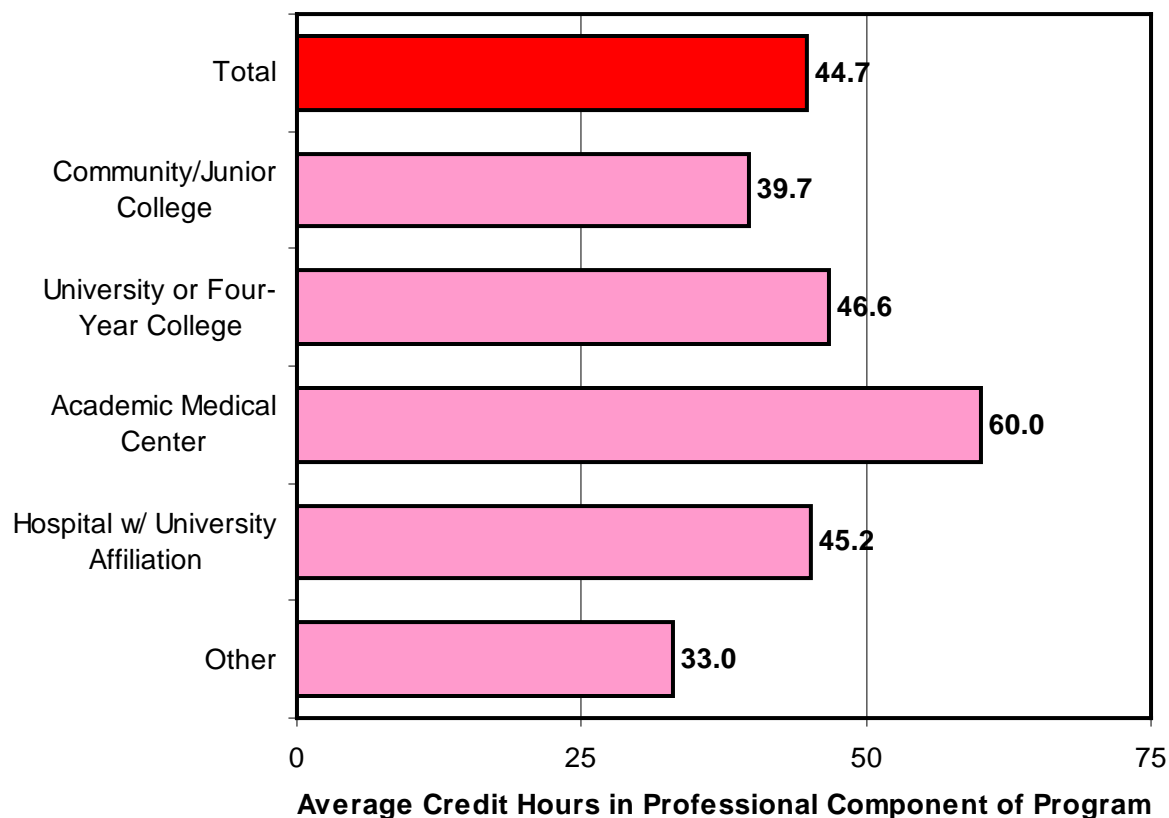
- Programs in community/junior colleges (39.7) and in “Other” settings were below the average (44.7) in their requirements for the professional component of the NMT education program.

Table 20. Required Credit Hours of Classroom/Lab Instruction in NMT Education Programs By Type of Sponsoring Institution

Sponsoring Institution	Required Credit Hours of Classroom/Lab Instruction							
	45	60	75	90	120	> 120	Other	Total
Community/Junior College	2	3	9	0	1	0	3	18
University or Four-Year College	0	0	2	2	5	10	0	19
Academic Medical Center	1	0	0	0	0	5	0	6
Hospital w/ University Affiliation	0	0	0	1	1	6	0	8
Other	1	1	0	0	1	1	1	5
Total	4	4	11	3	8	22	4	56

Source: NMT Program Director Survey Questions B. 1 and B. 14.

Figure 14. Average Number of Credit Hours in the Professional Component of NMT Education Programs for Different types of Sponsoring Institutions



Source: NMT Program Director Survey Questions B.1 and B.14a.

Hours Required in Clinical Practicum by NMT Programs

- Table 21 shows that a majority of NMT education programs (59.3%) required more than 1,200 hours of clinical practicum for completion of the NMT program.
- Differences in overall length of academic programs were reflected in the requirements for clinical practicum for students in NMT educational programs. Although overall only 10.2% of NMT education programs required fewer than 1,000 hours of clinical practicum, 22.2% of community college education programs required fewer than 1,000 hours of clinical internship. This may be attributed to their shorter program length.
- Among all NMT education programs, 54.2% required between 1,000 and 1,400 hours of clinical practicum. Only 8.5% of programs required more than 1,801 hours of clinical practicum.

Table 21. Percentages of NMT Education Programs Requiring Different Hours of Clinical Practicum, By Type of Sponsoring Institution

Sponsoring Institution	Less than 1000	1000 to 1200	1201 to 1400	1401 to 1600	1601 to 1800	1801 to 2000	Total
Community/Junior College	22.2%	27.8%	22.2%	16.7%	5.6%	5.6%	18
University or Four-Year College	5.3%	36.8%	31.6%	5.3%	15.8%	5.3%	19
Academic Medical Center	14.3%	0%	14.3%	57.1%	14.3%	0%	7
Hospital w/ University Affiliation	0%	33.3%	11.1%	11.1%	11.1%	33.3%	9
Other	0%	50.0%	33.3%	16.7%	0%	0%	6
Total	10.2%	30.5%	23.7%	16.9%	10.2%	8.5%	59

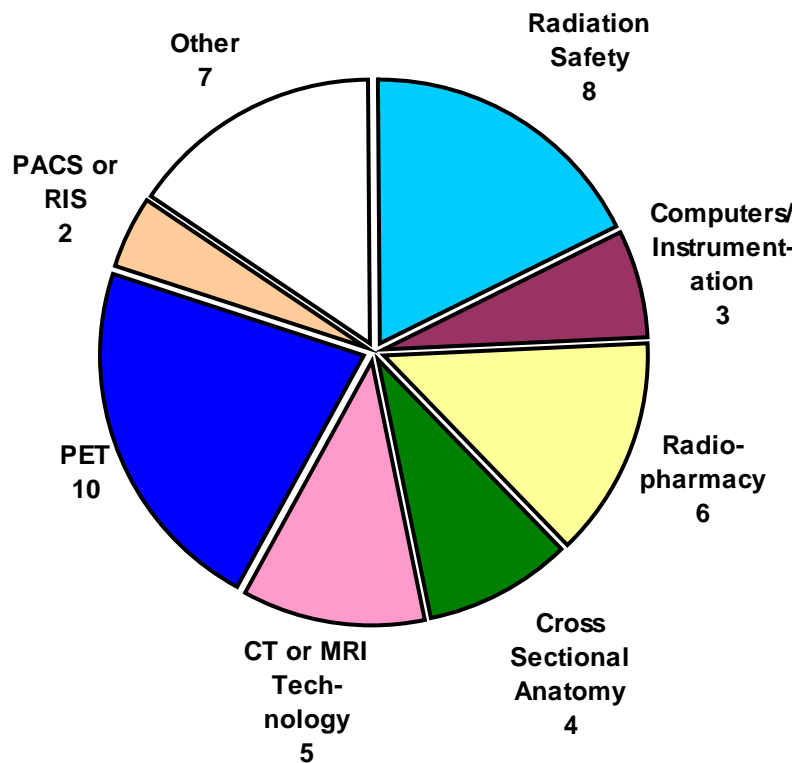
Source: NMT Program Director Survey Questions B.1 and B.15.

Continuing Education (CE) Offered by NMT Academic Programs

- Generally, NMT education programs did not offer continuing education programs to the NMT community in their service areas.
- Figure 15 shows that, among the 60 education programs whose directors responded to the survey, only 11 program directors (18.3%) indicated offering continuing education courses to already certified NMTs.
- The subjects covered in these CE courses varied, and included PET, CT, and MRI Technology, Radiation Safety Instruction, Radiopharmacy, and Cross-Sectional Anatomy.

- With the advent of the recertification process for NMTCB and implementation of recertification for ARRT, demand for academic programs to provide CE curriculum should increase. Areas of particular demand are likely to be CT and MRI imaging and cross sectional anatomy as noted in the NMT workforce survey conducted part of the larger national study of the NM workforce.

Figure 15. Number of NMT Education Programs Offering Continuing Education in Selected Subjects (N=11 Programs)



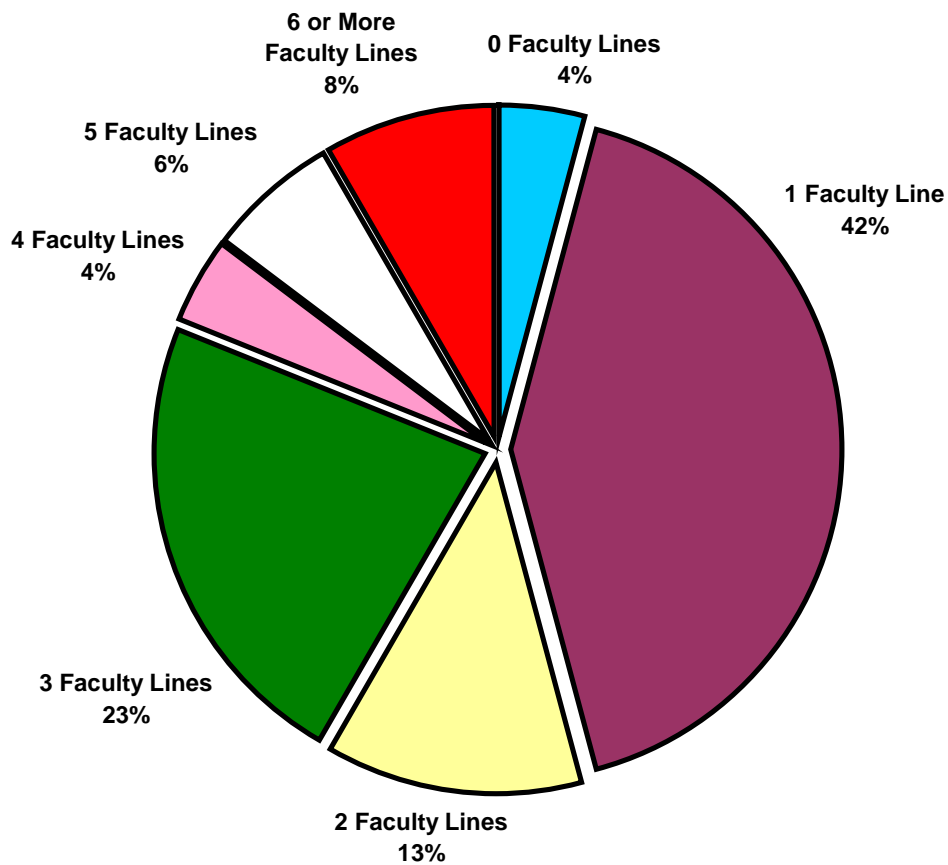
Note: # of subjects is greater than # of programs offering CE because some program directors selected multiple subjects.

Source: NMT Program Director Survey questions B.13 and B.13

Program Faculty

- Figure 16 shows that most (42%) NMT programs reported 1 faculty line (other than the program director position) budgeted and filled for their educational program. Twenty-three percent of programs had 2 faculty lines budgeted and filled to staff their NMT programs. Eight percent of programs had 6 or more faculty lines other than the program director budgeted and filled for the NMT program.
- Overall, programs were small, with 59% of programs having two or fewer faculty (other than the program director).

Figure 16. Percent of NMT Programs by Numbers of Budgeted and Filled Faculty Lines, 2006



Source: NMT Program Director Survey Questions C.1

Faculty Characteristics

- Among faculty other than program directors, the number of tenured faculty was small. Five program directors indicated there was one other faculty member in their program with tenure. Two program directors reported 2 faculty members with tenure, one program reported three, and two reported five.
- Among program directors, 23.3% were tenured. Among other faculty, 20.2% were tenured.
- Table 22 shows that the 60 survey respondents reported having a total of 97 faculty members other than program directors with faculty ranks in their programs. Twenty-five other faculty were Professors, seven were Associate Professors, 12 were Assistant Professors, and 53 were Instructors.
- When asked to provide level of education for each faculty member, program directors indicated having 109 faculty in the 60 programs. This suggests that 12 faculty had no faculty ranks.

- The proportion of program directors and other faculty varied by faculty rank. More other faculty were full professors than were responding program directors. However, program directors held the rank of associate professor more frequently than other faculty.

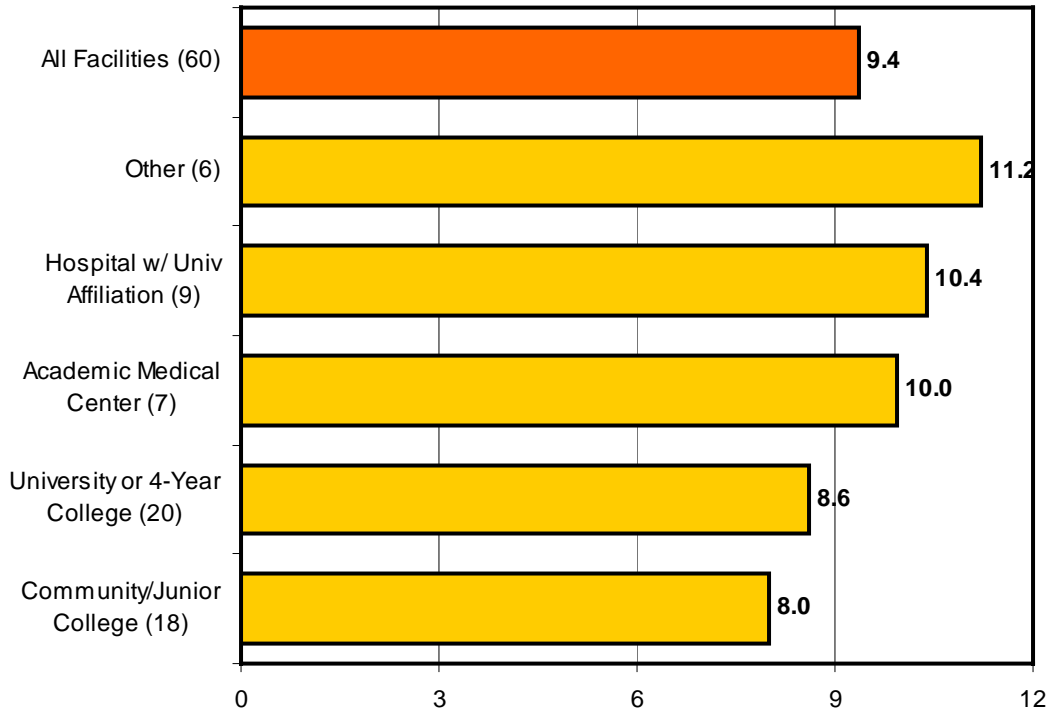
Table 22. Faculty Ranks of Program Directors and Other Faculty, 2006

Faculty Rank	Program Directors	Other Faculty	Number of Other Faculty
Professor	8.3%	22.9%	25
Associate Professor	21.7%	6.4%	7
Assistant Professor	18.3%	11.0%	12
Instructor	35.0%	48.6%	53
Lecturer	1.7%	0%	-
Other	15.0%	11.0%	12

Source: NMT Program Director Survey Questions A.9 and C.6

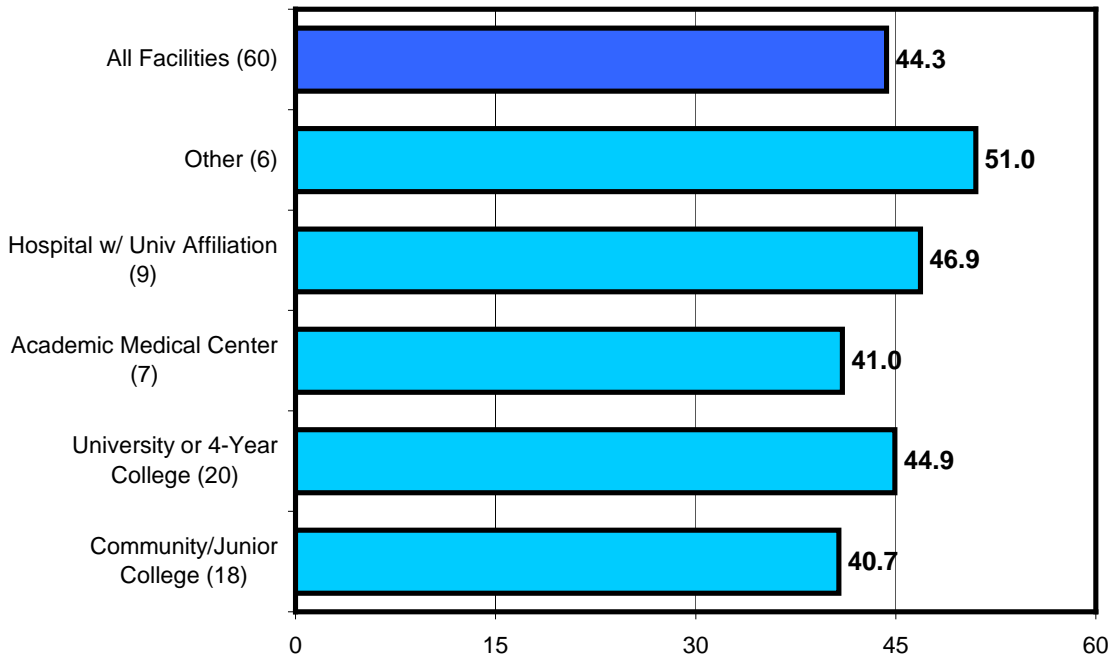
- Among the 109 faculty members who were not program directors, 34 held doctoral degrees, 29 held master's degrees, 33 held bachelor's degrees, 8 had associate degrees, and 5 had certificates.
- Proportionately, there were more doctoral degrees among program faculty than among program directors (31.2% of program faculty versus 8.3% of program directors).
- Figure 17 shows that the estimated number of years of service of full-time faculty in NMT education programs was 9.4 year. This varied from 8.0 in community colleges to 11.2 in 'Other' institutions.
- Figure 18 shows that the estimated average age of full-time faculty in NMT education programs was 44.3. This varied from 40.7 in community colleges to 47.0 in 'Other' institutions.

Figure 17. Estimated Number of Years of Service of Full-Time Faculty, By Type of Institution



Source: NMT Program Director Survey Questions B.1 and C.7 (processed)

Figure 18. Estimated Average Age of Full-Time Faculty, By Type of Institution



Source: NMT Program Director Survey Questions B.1 and C.8 (processed)

Impact of Other Faculty on Activity of Program Director

- Program directors with more program faculty lines reporting spending less time teaching than program directors with smaller numbers of faculty (Table 23).

Table 23. Number of Faculty Lines by Percent of Curriculum Taught by Program Director, 2006

Percent of Didactic NMT Curriculum Taught Personally by Program Director	Number of Faculty							
	0	1	2	3	4	5	6 or More	Total
0 to 25%	1	1	1	7	1	3	2	16
26% to 50%		7	2	1				10
51% to 75%	1	6	1	2	1			11
76% to 100%		6	2	1			2	11
All Percentages	2	20	6	11	2	3	4	48

Source: NMT Program Director Survey Questions B.14 and C.1

Borrowed Faculty

- To supplement budgeted faculty lines, a few programs borrowed faculty from other departments within their common institutions. Table 24 shows the range of departments from which faculty were borrowed.
- Borrowing faculty occurred mostly in university/four year college settings and in hospital programs with university affiliations. This may be due to a greater availability of other clinical teaching personnel in those settings.

Table 24. Number of Faculty Borrowed by Institutional Department from Which Faculty is Borrowed, 2006

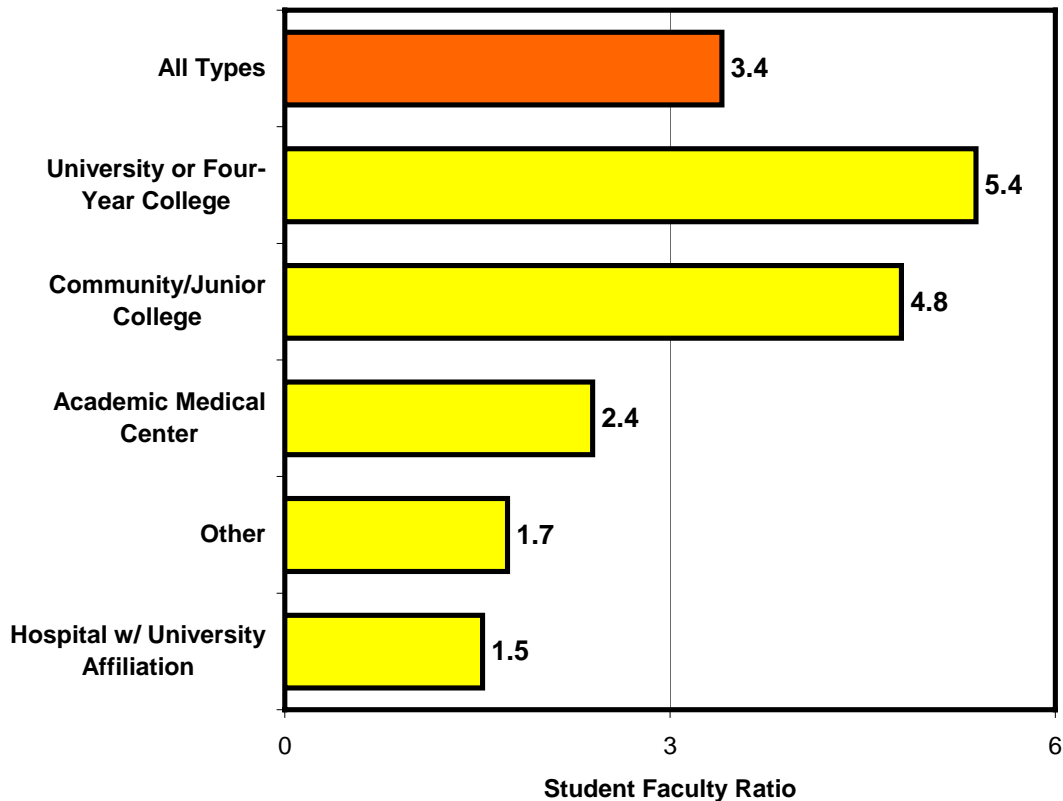
Number of Faculty Borrowed	Radiology	Biology	Chemistry	Pharmacy	Computer Science	Health Admin	Other
1	3	2	3	7	2	4	5
2	1	0	0	0	1	0	3
3	0	1	2	0	0	0	1
4	1	0	0	0	0	0	2
5 or More	3	0	0	0	0	0	2
None	52	57	55	53	57	56	47

Source: NMT Program Director Survey Questions C.2 and C.2a

Student/Faculty Ratios in NMT Programs

- Figure 19 shows that, on average, the student/faculty ratio for nuclear medicine technology education programs was 3.4 : 1. The lowest student faculty ratios (1.5 : 1) were found in hospital programs with university affiliations and the highest student faculty ratios are found in university/four year colleges (5.4 : 1).

Figure 19. Student/Faculty Ratios for Different Types of Sponsoring Institutions, 2006



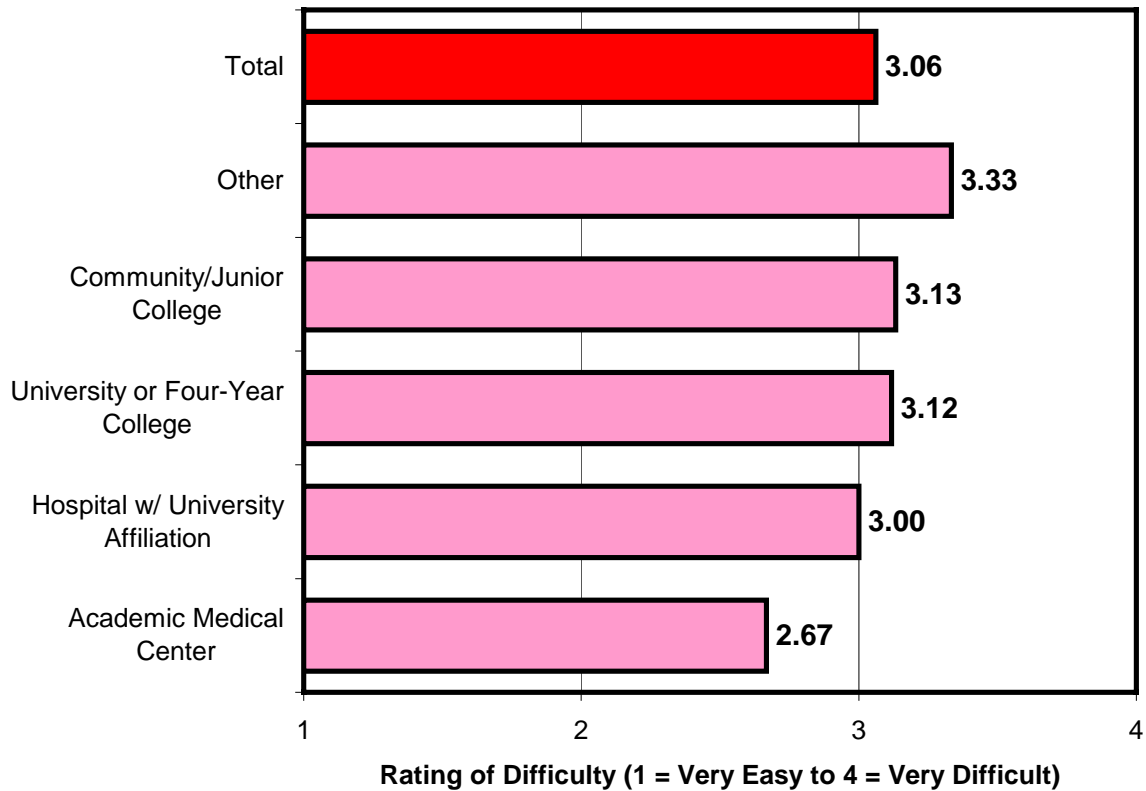
Ratio is 2005/06 Enrollment divided by FTE faculty (1 x FT + 0.5 x PT + 1).
Source: NMT Program Director Survey Questions B.1, C.4, and D.5

Faculty Recruitment in NMT Programs

Recruitment of faculty for NMT programs is challenging according to program directors who responded to the survey.

- Figure 20 shows that, overall, program directors rated recruitment of faculty for nuclear medicine technology education programs as difficult (3.06). On a scale of 1 (very easy) to 4 (very difficult), program directors in all settings except academic medical centers ranked recruitment of faculty as difficult.
- On average, NMT education program directors in academic medical centers ranked recruitment as somewhat difficult to difficult (2.67).

Figure 20. Rating of Difficulty Recruiting Faculty by Type of Sponsoring Institution, 2006



Source: NMT Program Director Survey questions B.1 and C.11

- Among the 12 NMT programs with current vacancies, the main reason cited for difficulty in filling faculty positions was non-competitive salaries (Table 25). In a profession with high clinical salaries relative to other allied health professions, non-competitive salaries in academic programs create problems for faculty recruitment.
- The second most cited reason for difficulty in recruiting was that candidates lacked the academic qualifications necessary for employment in an educational program.

Table 25. Reasons for Faculty Vacancies 2006

Reasons for Vacancies	Number
No Qualified Candidates	2
Few Qualified Candidates	4
Faculty Salaries Not Competitive	10
Candidates Lack Academic Qualifications	6
Other	4
Number With Vacancies	12

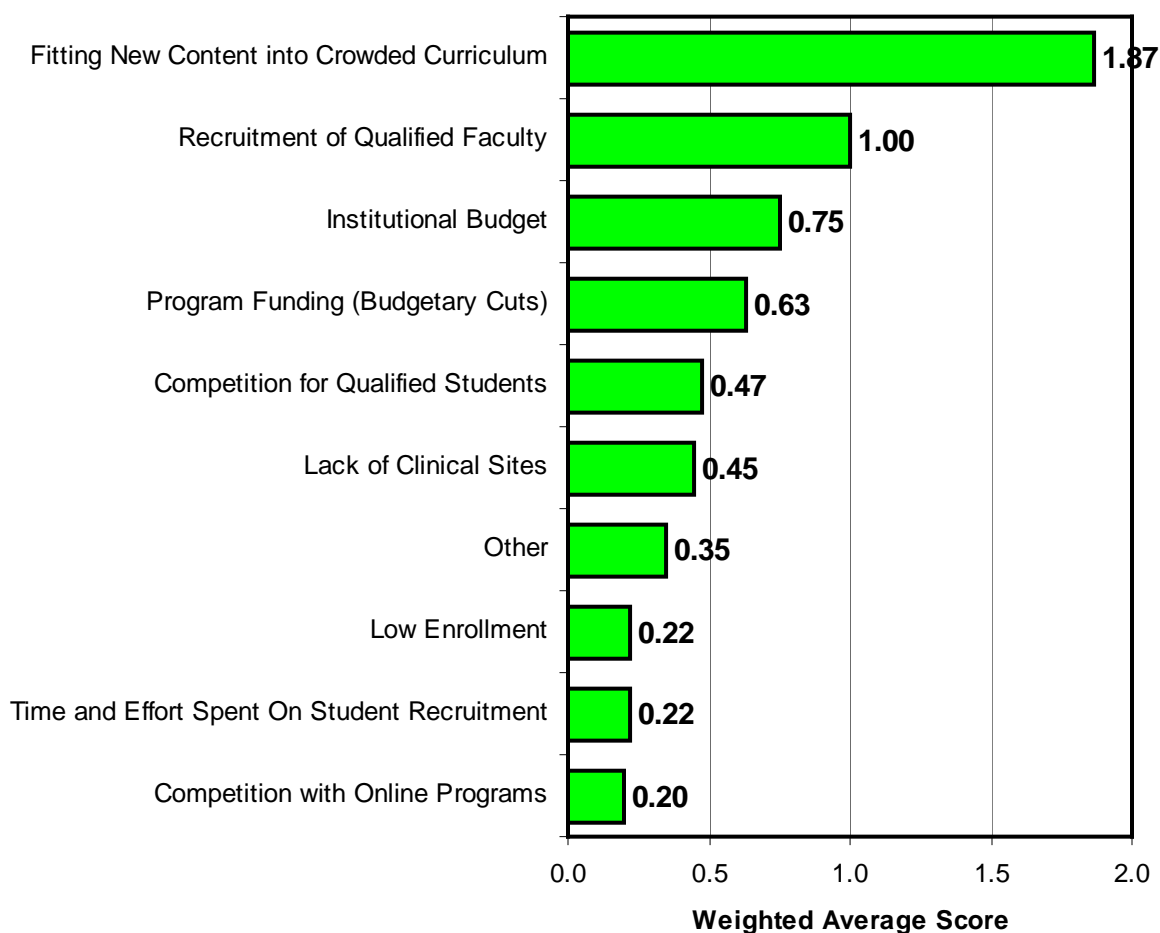
Source: NMT Program Director Survey Question C.12a

- About 7 of 8 (87.9%) of responding program directors indicated that their NMT educational program met the needs of their particular community of interest.

Key Issues for the Future

- When asked to rank the top three issues facing NMT education programs in the near future, program directors overwhelmingly cited fitting new content into an already crowded curriculum as their main concern, followed by recruitment of qualified faculty, and concerns about the institutional budget (Figure 21).
- Student recruitment and enrollments ranked low among concerns suggesting that interest in and demand for education programs remains healthy.

Figure 21. Key Issues Facing NMT Education Programs in the Near Future, 2006



Note: Score is based on 1st = 3, 2nd = 2, 3rd = 1, and the rest = 0.

'Other' Issues included: BS requirement for entry-level students to practice; Program Director learning enough new technology to teach; Only 1 FT faculty – Me!; Keeping faculty current with new technology; What to do regarding instruction of CT and/or PET; Time; Too many graduates from new program in area; Job Market Full -- Difficulty to recruit when no jobs available; Lack of State Licensure in NYS; Grads will need BS by 2015 to attain employment; and Current Textbook on NM.

Source: NMT Program Director Survey questions C. 16.

Number of Annual Graduating Classes in NMT Programs

- Table 26 shows that most NMT education programs (52) had only one graduating class each year. Five programs had two graduating classes, and one program had three.

Table 26. Number of Graduating Classes per Year for NMT Education Programs, by Type of Sponsoring Institution, 2006

Sponsoring Institution	Number of Graduating Classes per Year				
	One	Two	Three	Ten*	Total
Community/Junior College	17	1	0	0	18
University or Four-Year College	16	2	1	0	19
Academic Medical Center	7	0	0	0	7
Hospital w/ University Affiliation	6	2	0	1*	9
Other	6	0	0	0	6

*Suggests that respondent misunderstood question.

Source: NMT Program Director Survey questions B.1 and D.1

Number of Enrollments and Graduates in NMT Programs

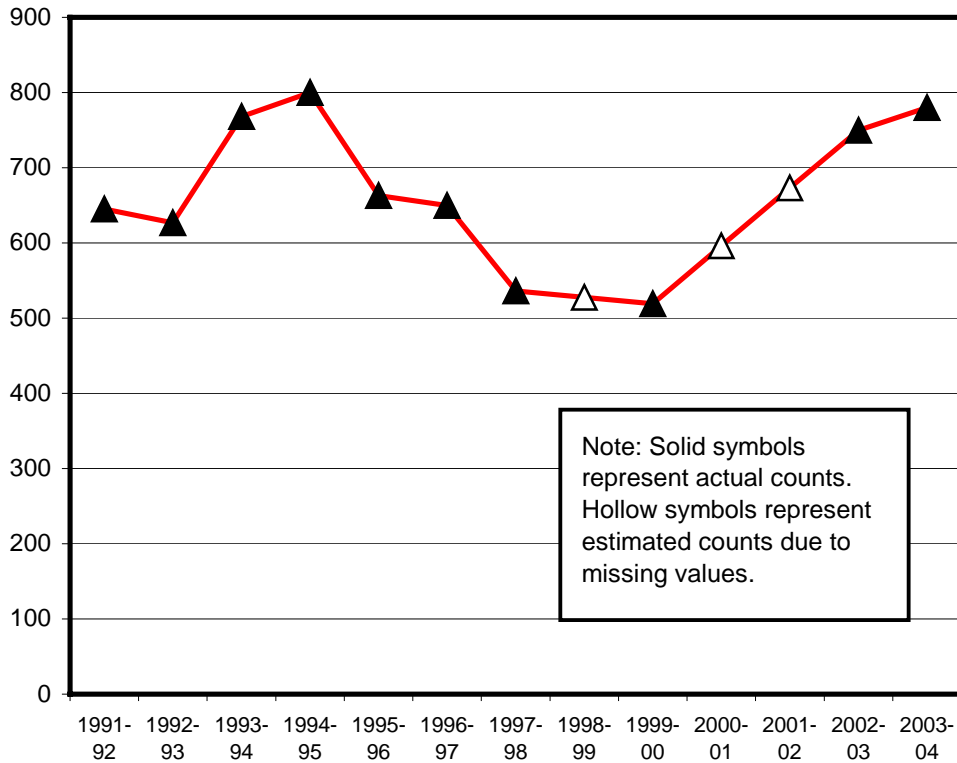
- Table 27 shows that, on average, the number of graduates in all settings had increased since 2004. Although there were declines in some settings in number of graduates from 2005 to 2006, overall, the figures show that the number of graduates was relatively stable.
- These figures are consistent with long-term trend data from the Federal IPEDS system, presented graphically in Figure 22. This figure shows clearly the cyclical nature of past educational production of NMTs nationally.
- Enrollment in programs also increased since 2004. There was little change in enrollments between 2005 and 2006, although in some settings there was a small decrease.
- Although it is difficult to estimate attrition in education programs, when enrollments are compared to graduations in subsequent years (especially for community colleges with two year programs), the figures suggest some attrition between enrollment and graduation.

Table 27. Average Numbers of Graduates and New Enrollments in NMT Education Programs By Sponsoring Institution

Sponsoring Institution (#)	Graduates			New Enrollments		
	'03/'04	'04/'05	'05/'06	'03/'04	'04/'05	'05/'06
Community/Junior College (18)	13.1	14.3	13.2	18.4	19.1	18.7
University or Four-Year College (19)	14.2	16.3	16.6	25.6	28.1	27.7
Academic Medical Center (7)	14.9	15.0	15.4	18.6	19.0	19.6
Hospital w/ University Affiliation (9)	8.8	10.2	10.6	9.6	10.2	10.8
Other (6)	6.0	7.8	7.3	6.7	8.7	8.7
Total	12.2	13.7	13.5	18.0	19.4	19.3

Source: NMT Program Director Survey questions B.1, D.2, and D.5.

Figure 22. Trends in NMT Degrees Awarded in the U.S., 1991-92 to 2003-04



Source: USDE, Integrated Postsecondary Education Data System, various years.

Reasons for Student Demand in NMT Programs

- Program directors attributed high student demand primarily to the relatively high salaries of NMTs (28.3%), more awareness by students of the NMT profession (26.7%), and increased market demand for NMTs (21.7%).
- “Other” reasons for increased enrollment cited by program directors included the addition of a clinical site, increased availability of instructors, and the attractiveness of the NMT credential.

Reasons for NMT Student Dismissals and Departures

- Twenty-two of sixty program directors dismissed students in 2005 for poor academic performance. The number of dismissals among programs for poor academic performance was most frequently one student, although one program dismissed 8 students and another dismissed 6. Seven program directors reported dismissing students for poor clinical performance.
- “Other” reasons cited for a few student departures included lack of interest, personal reasons, Hurricane Katrina, acceptance to medical school, and health problems.

Number of Qualified Applicants and Enrollment Caps in NMT Programs

NMT education programs have enrollment caps imposed by their institutions and/or by their accrediting agency. Demand for student slots remains high allowing most programs to maintain competitive admission standards. This is healthy for the profession since competition for admission to academic programs suggests that better qualified students are entering the profession.

- Among the 60 survey respondents, 46 reported an enrollment cap imposed by JRCNMT and 23 reported an institutionally imposed enrollment cap. Nine programs had enrollment limitations imposed by both their institutions and JRCNMT.
- Respondents overwhelmingly (93.2%) reported that their NMT admissions policies were competitive. Only 6.7% of directors indicated that admission was open to any candidate who met the minimum qualifications.
- Since the number of program applicants exceeds available student slots in NMT programs, 47.5% of NMT program directors reported maintaining a waiting list for the next available spot.
- Both of these indicators suggest that there was a healthy demand for NMT education among potential students.
- Table 28 shows that the number of qualified applicants for admission to nuclear medicine technology education programs exceeds available slots for admission for all types of programs. The ratio of applicants to slots is especially high in community/junior colleges and “Other” institutions (including technical colleges). This may be related to the shorter duration of these programs.

- University/four year colleges had the lowest ratio of applicants for admission to available student slots. Since these programs are typically four years in length, these figures suggest a student preference for shorter degree trajectories.

Table 28. Qualified Applicants and Enrollment Cap of NMT Education Programs By Sponsoring Institution, 2006

Sponsoring Institution	Qualified Applicants '06	Enrollment Cap	Qualified Applicants per Enrollment Cap
Community/Junior College	73.9	17.1	4.3
University or Four-Year College	51.3	22.6	2.3
Academic Medical Center	55.7	17.4	3.2
Hospital w/ University Affiliation	31.2	12.3	2.5
Other	30.7	8.5	3.6
Total	53.6	17.2	3.1

Source: NMT Program Director Survey questions B.1, D.4, and D9d

Current Students in NMT Programs

Many students enter academic institutions before deciding on a concentration in nuclear medicine technology. This suggests that internal marketing to newly enrolled students within an institution is needed to inform them of professional and career opportunities in nuclear medicine technology.

- Many program directors (45.5% of respondents) indicated that the majority of students entered the institution as freshmen/first year students without knowing they wanted to enroll in an NMT education program (Table 29).
- Only 12.7% of program directors indicated that 76% to 100% of their students entered their institution as freshmen/first year students with the intent of enrolling in an NMT education program.
- Table 29 also shows that this percentage has not changed dramatically over the past few years, declining slightly for hospitals with university affiliation, and increasing slightly for community colleges and four-year colleges.

Table 29. Number of Programs Reporting Different Percentages of Current Students Entering as Freshmen/First Year Students With Intent of Enrolling in NMT Program, by Sponsoring Institution, 2006

Sponsoring Institution (#)	Percent of Current Students Who Entered as Freshmen/First Year Students With Intent of Enrolling in NMT Program						
	0% - 25%	26% - 50%	51% - 75%	76% - 100%	Doesn't Apply	Don't Know	Rating of Change
Community/Junior College (18)	8	4		2	1	3	0.14
University or Four-Year College (18)	8	2	3	3		2	0.12
Academic Medical Center (7)	4			1	1	1	0.00
Hospital w/ University Affiliation (9)	3		1		3	2	-0.25
Other (5)	2			1	2		0.00
Total	25	6	4	7	7	8	0.07

Rating of Change computed from D.13: -2 x # Greatly Decreased - # Decreased + # Increased + 2 x Greatly Increased

Source: NMT Program Director Survey Questions B.1, D.12, and D.13

2005 Graduates and Certification Examinations

- Two-thirds (66.7%) of programs reported that 100% of graduating students in 2005 had taken a certification examination (Table 30). Three program directors reported that none of their graduates from 2005 had yet taken a certification examination.
- More than 85% of program directors reported that 76% to 100% of students graduating in 2005 had taken a certification examination.

Table 30. Number of Programs Reporting Different Percentages of 2005 Graduates Who Had Taken the NMTCB or ARRT Credential Exam, By Sponsoring Institution, 2006

Sponsoring Institution (#)	Percent Taking Exam					
	0%	1-25%	26-50%	51-75%	76-99%	100%
Community/Junior College (18)	2	0	0	1	5	10
University or Four-Year College (17)	0	0	1	0	5	11
Academic Medical Center (7)	0	0	0	0	0	7
Hospital w/ University Affiliation (9)	1	1	0	1	0	6
Other (6)	0	0	0	1	1	4
Total (57)	3	1	1	3	11	38

Source: NMT Program Director Survey Questions B.1 and D.14

Passage of Certification Examination

- More than two thirds of program directors (67.7% of respondents) indicated that 100% of 2005 graduating students in their programs had passed the certification examination the first time (Table 31). An additional 23.6% of program directors indicated that between 76% and 99% of their 2005 graduating students had passed their certification examination the first time it was taken.
- This high pass rate suggests that education programs overall are providing appropriate academic preparation for NMT students entering the profession.

Table 31. Number of Programs Reporting Different Percentages of 2005 Graduates Who Passed the Exam the First Time, By Sponsoring Institution

Sponsoring Institution (#)	Percent Passing Exam the First Time				
	0%	26-50%	51-75%	76-99%	100%
Community/Junior College (16)	0	1	2	5	8
University or Four-Year College (17)	0	0	0	3	14
Academic Medical Center (7)	0	0	0	1	6
Hospital w/ University Affiliation (9)	1	0	0	2	6
Other (6)	0	1	0	2	3
Total (55)	1	2	2	13	37

Source: NMT Program Director Survey Questions B.1 and D.14a

Second Career Students in NMT Programs

- Second career students were reported in nearly all (96.4%) NMT education programs.
- Only 2 of 56 responding program directors indicated that there are no second career students currently enrolled in the NMT education program (Table 32). Four respondents indicated that 100% of their students are second career students.
- Among responding directors, 44.6% indicated that between 51% and 100% of their students were second career students. This high percentage suggests that in considering the future trajectory for NMT education programs, the expected need of second career students for appropriate adult learning curricula, for alternative methods of education (i.e., distance learning) and for evening and weekend classes should be considered.

Table 32. Number of NMT Programs by Percent of Second Career Students, By Sponsoring Institution, 2006

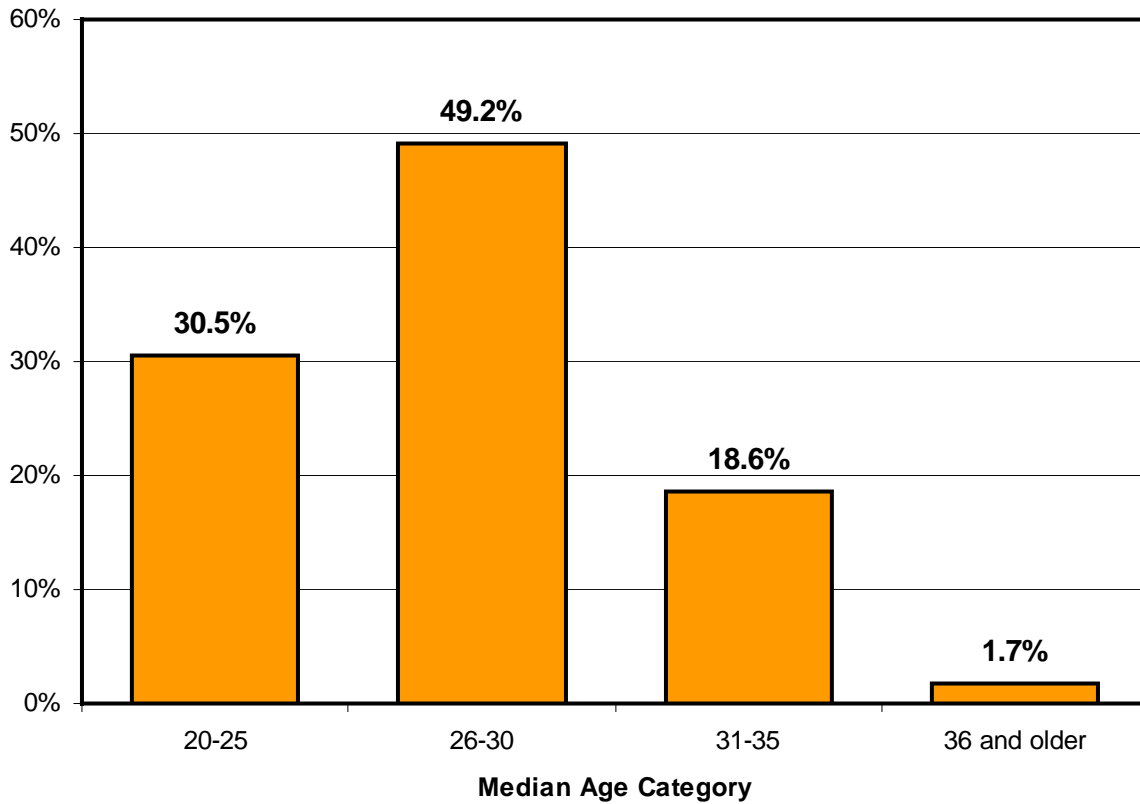
Sponsoring Institution (#)	Percent of Second Career Students					
	0%	1-25%	26-50%	51-75%	76-99%	100%
Community/Junior College (17)	0	1	2	7	7	0
University or Four-Year College (17)	1	9	5	2	0	0
Academic Medical Center (7)	0	3	2	0	0	2
Hospital w/ University Affiliation (9)	0	5	2	0	1	1
Other (6)	1	0	0	2	2	1
Total (56)	2	18	11	11	10	4

Source: NMT Program Director Survey Questions B.1 and D.15

Median Age of Current NMT Students

- The median age of students currently enrolled in NMT programs was higher than might be expected for college students. Figure 23 shows that 49% of directors estimated the median age of students currently enrolled in NMT programs at between 26 and 30 years of age. An additional 18.6% estimated the median age at between 31 and 35 years of age.
- Although given the opportunity on the survey to identify median age at less than 20 years of age, no program directors selected this response. About three of ten (30.5%) of respondents estimated the median age of students in their NMT program at between 20 and 25 years of age.

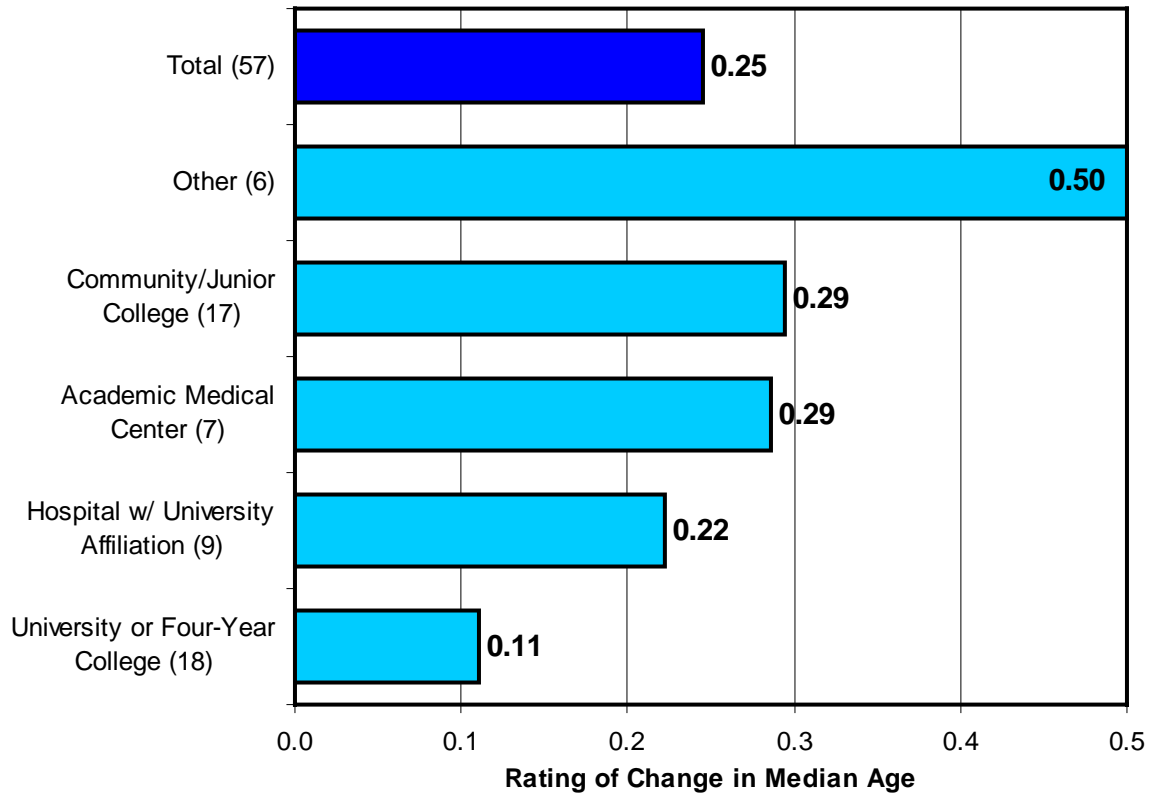
Figure 23. Estimated Median Age of Students Currently Enrolled in NMT Education Programs. 2006



Source: NMT Program Director Survey Question D.17

- On a scale with -2 representing greatly decreased numbers and +2 representing greatly increased numbers, program directors estimated that the age of students had increased slightly over the past few years (Figure 24). An increase in age was most often noted by program directors in “Other” institutions (0.5) and least often noted by program directors in university/four year college settings (0.11)

**Figure 24. Rating of Change in Median Age of NMT Students
By Sponsoring Institution, 2006**



Rating of Change Computed as: $-2 \times \# \text{ Greatly Decreased} - \# \text{ Decreased} + \# \text{ Increased} + 2 \times \text{Greatly Increased}$
 Source: NMT Program Director Survey Questions B.1 and D.17a

Students Entering NMT programs with Bachelor's Degrees

- Nearly half (49.1%) of respondents estimated that between 1% and 25% of students enrolling in NMT programs over the past five years already had a bachelor's degree (Table 33).
- An additional 29.8% of current program directors (17) indicated that between 26% and 50% of students enrolling in their NMT programs over the past five years already had a bachelor's degree.
- Of particular interest is that program directors in university/four year college programs indicated that students were enrolled in bachelor's degree programs, even though they already had a bachelor's degree.
- These findings are supported in the NMT workforce survey showing a high percentage of active NMTs with a previously obtained bachelor's degree in another area of study. Taken together, these two findings suggest the need for post bachelor's certificate or entry-level master's programs for the NMT profession.

Table 33. Number of NMT Programs Reporting Different Percentages of Students Enrolled in Past Five Years That Had a Bachelor’s Degree At Entry to NMT Program, 2006

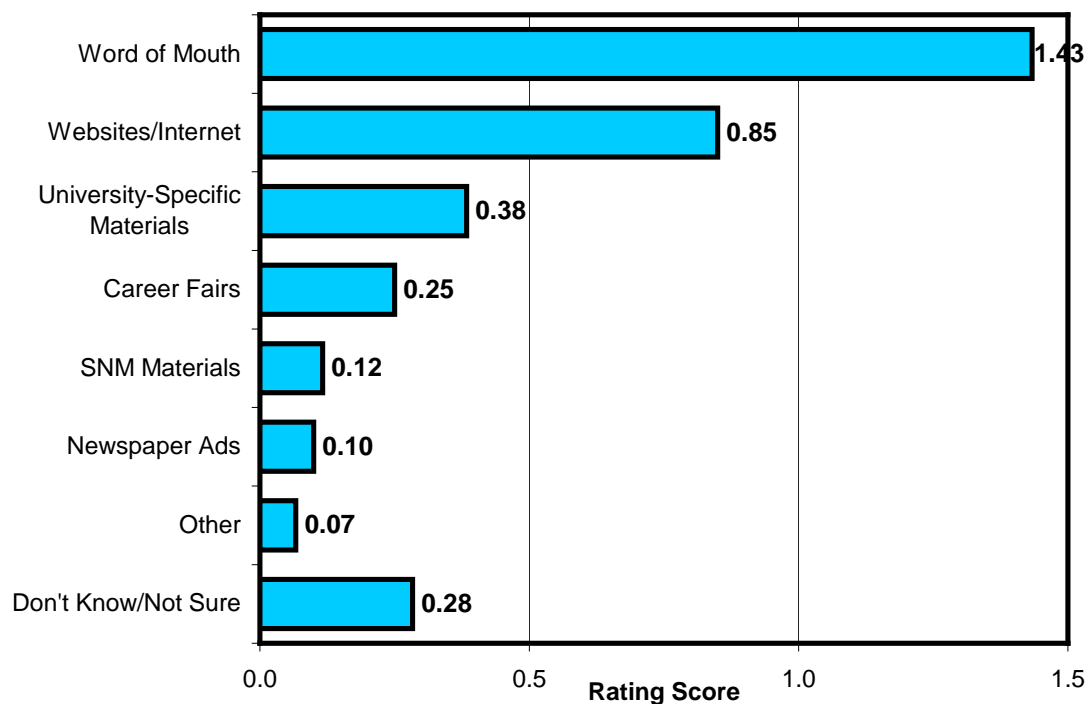
Sponsoring Institution (#)	Percent of Students with Bachelor’s Degree Before Entry					
	0%	1-25%	26-50%	51-75%	76-99%	100%
Community/Junior College (17)	1	8	7	0	1	0
University or Four-Year College (18)	1	13	3	0	1	0
Academic Medical Center (7)	0	2	2	1	2	0
Hospital w/ University Affiliation (9)	0	4	2	1	1	1
Other (6)	1	1	3	1	0	0
Total (57)	3	28	17	3	5	1

Source: NMT Program Director Survey Questions B.1 and D.19

Program Marketing

- When NMT program directors were asked to identify the most effective marketing strategies for their programs, word of mouth/referral of students was the most often selected primary and secondary strategy (Figure 25). The next most effective primary and secondary strategies were advertisement on websites and use of Internet resources.

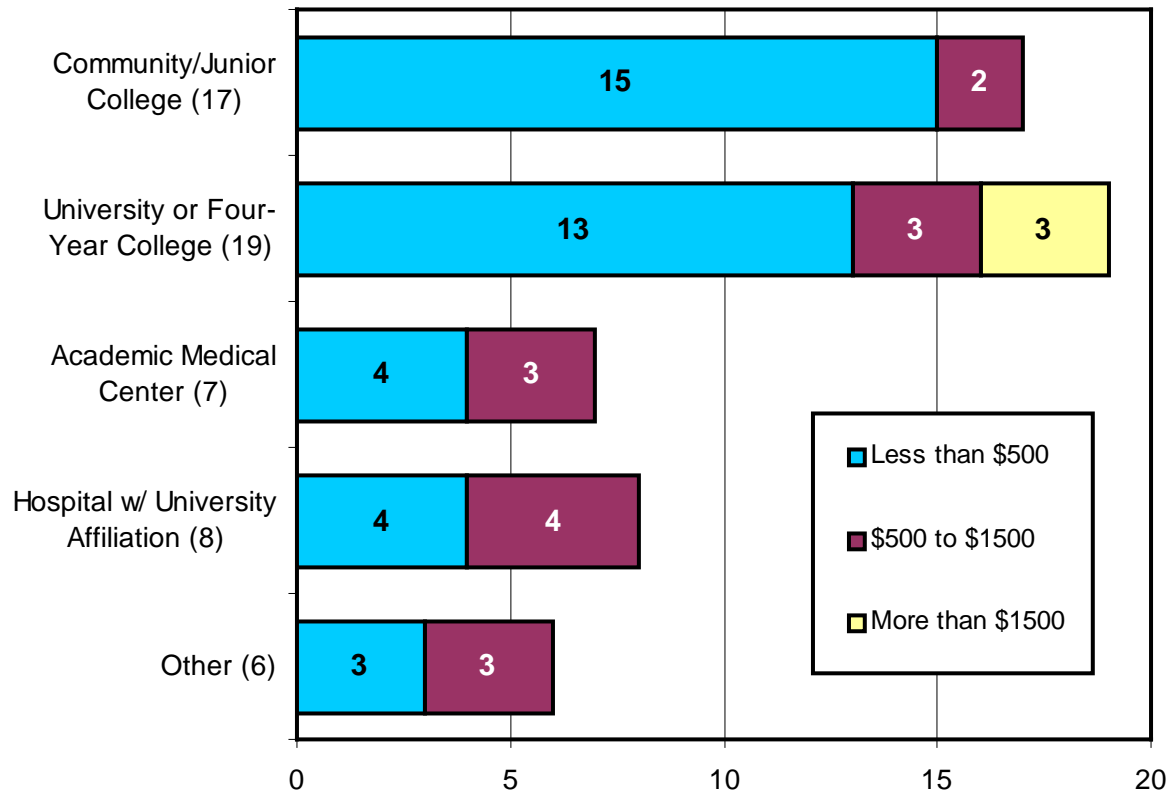
Figure 25. Rating of Selected Marketing Strategies for NMT Education Programs



‘Other’ category includes: College Catalog and Good NMT Salaries. Rating Score = 2 x 1st Rating + 1 x 2nd Rating
 Source: NMT Program Director Survey Question E.1.

- Most NMT programs (68.4%) reported marketing budgets under \$500 and 26.3% reported marketing budgets between \$500 and \$1,500 (Figure 26).
- Only 5% of programs had marketing budgets over \$1,500 and all those programs were located in university/four year colleges.

Figure 26. Annual Department Budget for Marketing NMT Program, By Sponsoring Institution, 2006



Source: NMT Program Director Survey Questions B.1 and E.2

Job Market for NMT Students

- Table 34 shows that most NMT program directors reported average to no difficulty for graduating students in finding employment after graduation. On a scale of +2 (very easy) to – 2 very difficult, on average program directors indicated a moderate level of difficulty (0.66) between average and easy.
- Only 8% of responding program directors reported that finding employment after graduation was either difficult or very difficult for their students.

Table 34. Number of Programs and Rating of Difficulty for Most Students to Find Employment After Graduation By Sponsoring Institution, 2006 (+2 = Very Easy; -2 = Very Difficult)

Sponsoring Institution (#)	Very Easy	Easy	Average	Difficult	Very Difficult	Average Score
Community/Junior College (18)	5	4	8	0	1	0.67
University or Four-Year College (19)	5	4	9	1	0	0.68
Academic Medical Center (7)	1	2	4	0	0	0.57
Hospital w/ University Affiliation (9)	2	2	2	2	1	0.22
Other (6)	3	2	1	0	0	1.33
Total (59)	16	14	24	3	2	0.66

Source: NMT Program Director Survey Questions B.1 and F.1

- The Pacific and Northeast regions had the best job market scores based on the survey responses (Table 35).

Table 35. Rating of Local Job Market for NMTs, by Region

USDHHS Region (# Respondents)	Job Market Score	% of Respondents Indicating Fewer Jobs Than Grads	Respondents	Total #
Pacific	0.50	0.0%	1	6
Northeast	0.20	40.0%	5	10
Mountain	0.00	0.0%	2	2
Southeast	-0.20	33.3%	15	20
New England	-0.50	75.0%	4	8
Northwest	-0.50	50.0%	2	2
Southwest	-0.60	60.0%	5	9
Mid Atlantic	-0.67	66.7%	6	15
Mid Central	-0.92	92.3%	13	20
Mid West	-1.00	100.0%	3	6
Total U.S.	-0.46	58.9%	57	98

Source: NMT Program Director Survey Questions B.1 and F.4 (processed)

Note: Score based on F.4: (-1 = Fewer jobs than grads to +2 = Many more jobs than grads)

Employment Opportunity for NMT graduates by Setting

- Hospital medical centers and mobile imaging units were identified by many program directors across institutional settings as having the most job openings.
- Cardiology specialty centers were also rated consistently high by program directors in all institutional settings, as were outpatient hospital clinics/centers. The recent NMT workforce survey revealed that over 15% of active NMTs work in cardiology specialty centers.
- Staffing organizations were also consistently rated as having some NMT positions with little variation across the types of institutions. The availability of employment with staffing organizations may indicate some level of shortage in NM departments. Staffing organizations are often contracted by health care providers to cover vacancies, vacations, and shortages until positions can be filled.
- Of interest is that directors in university/four year college programs selected pharmaceutical company, technology company, and consulting company as having jobs more frequently than program directors in other settings. This suggests that these non-traditional, non-clinical employers were more likely to expect a four-year college degree for employment.
- Table 36 shows ratings of employment opportunities for NMTs in the state in which their program are located. On a scale of 0 to 2 with 0 being no openings, 1 being some openings, and 2 being many openings, hospitals/medical centers and mobile units generally rated highest. The green shaded areas in the table indicate employers with the most job openings overall as ranked by program directors in different kinds of academic institutions. The areas shaded in red are employers ranked as having the fewest job openings by program directors in the respective types of institutions.

Table 36. Rating of Employment Opportunities in Selected Settings, by Type of Sponsoring Institution, 2006

Employment Setting	Community/Junior College	University or Four-Year College	Academic Medical Center	Hospital w/ University Affiliation	Other	Total
Academic Medical Center	0.79	0.79	0.60	0.50	1.00	0.74
Hospital/ Medical Center	1.19	1.06	0.86	0.88	1.25	1.06
Outpatient Hospital Clinic/Center	1.06	0.93	1.00	0.86	0.67	0.96
Freestanding Outpatient Radiology Center	0.92	0.92	0.83	0.71	0.33	0.83
Physician Office/ Private Radiologist	0.79	0.83	0.75	0.80	0.50	0.78
Cardiology Specialty Center	1.00	1.06	1.00	1.00	0.75	1.00
Oncology Specialty Center	0.64	0.64	0.50	0.67	0.67	0.64
Academic/ Educational institution	0.29	0.38	0	0.33	0	0.31
Radiopharmacy	0.50	0.31	0.40	0	0	0.38
Pharmaceutical Company	0.50	0.67	0.33	0.50	0.33	0.52
Technology Company	0.27	0.88	0.50	0.33	1.00	0.54
Consulting Company	0.20	0.86	0	0	0	0.38
Staffing Organization	0.80	0.80	1.00	0.50	1.00	0.81
Research Organization	0.20	0.43	0.67	0	0	0.32
Mobile Unit	1.00	1.08	1.25	1.00	1.00	1.06
Self-Employed	0.40	0.71	0	0	0	0.43

Note: Green cells have best employment ratings in each column; red cells have lowest.
Source: NMT Program Director Survey Question F. 6.

- Table 37 shows that hospitals/medical centers were rated as the employer type that hired the most new NMT graduates in all regions of the country. Outpatient Hospital Clinics/Centers and Cardiology Specialty Centers were rated second and third, respectively.

Table 37. Rating of the Numbers of Graduates Hired by Selected Employer Types, by Region in the U.S.

Employer Type	New England	Northeast	Mid Atlantic	Southeast	Mid Central	Southwest	Mid West	Mountain	Pacific	Northwest	Total
Hospital/ Medical Center	6.00	9.00	12.00	11.20	9.23	10.50	12.00	12.00	6.00	12.00	10.20
Outpatient Hospital Clinic/Center	0.00	5.40	1.00	3.00	2.54	1.50	3.00	3.00	3.00	3.00	2.62
Cardiology Specialty Center	0.00	4.80	4.00	2.60	1.62	3.75	3.00	1.50	0.00	3.00	2.56
Academic Medical Center	4.00	1.20	2.00	2.20	2.31	4.50	3.00	0.00	0.00	0.00	2.18
Freestanding OutPt Radiology Center	0.00	0.60	1.50	0.80	1.38	0.00	0.00	3.00	0.00	0.00	0.87
Mobile Unit	2.00	0.00	0.50	0.20	2.31	0.00	0.00	0.00	1.50	1.50	0.87
Physician Office/ Private Radiologist	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.50	0.00	1.50	0.44
Oncology Specialty Center	0.00	0.00	0.50	0.00	0.00	0.75	0.00	0.00	0.00	0.00	0.11
Radiopharmacy	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.11
Technology Company	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.05
Academic/ Educational Institution	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pharmaceutical Company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consulting Company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Staffing Organization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Research Organization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Self Employed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: NMT Education Program Director Survey, Questions F.6 and Region of Program

Note: Scores, which are averages across the regions and employer types, are computed as follows: 12 points for each 1st rank, 6 for each 2nd, 3 for each 3rd, and 0 for all others. The maximum possible score is 12 (when all respondents rate an employer type first); the minimum is 0 (when no-one rates an employer type either 1st, 2nd, or 3rd).

Results of Employment Search

- Program directors indicated that most of their graduates found good jobs after graduation (Table 38).
- Among program directors responding to the survey 87.9% indicated that all or most of their graduates obtain good jobs following graduation. Some program directors (10.3%) indicated that some graduates had difficulty finding jobs after graduation. Difficulty in the job market was most often cited by program directors from community/junior colleges.

Table 38. Job Market Experience of NMT Grads, By Sponsoring Institution, 2006

Sponsoring Institution (#)	All My Grads Get Good Jobs	Most of My Grads Get Good Jobs	Some of My Grads Have Trouble Finding Jobs	Don't Know/ Not Sure
Community/Junior College (18)	38.9%	44.4%	16.7%	0%
University or Four-Year College (18)	38.9%	50.0%	11.1%	0%
Academic Medical Center (7)	71.4%	28.6%	0%	0%
Hospital w/ University Affiliation (9)	22.2%	55.6%	11.1%	11.1%
Other (6)	83.3%	16.7%	0%	0%
Total (58)	44.8%	43.1%	10.3%	1.7%

Source: NMT Program Director Survey Questions B.1 and F.7

- Table 39 shows that finding a job was rated fastest for students in academic medical center (85.7% of students find jobs within one month of graduation) and “Other” programs (83.3%).
- Overall, 94.8% of program directors indicated that new graduates found jobs within 3 months of graduation from their NMT program.
- Only a small percentage of program directors (5.3%) indicated that it took 4 months or longer for their graduates to find jobs after graduation.

Table 39. Approximate Time for New Graduates to Find Jobs After Graduation, By Sponsoring Institution, 2006

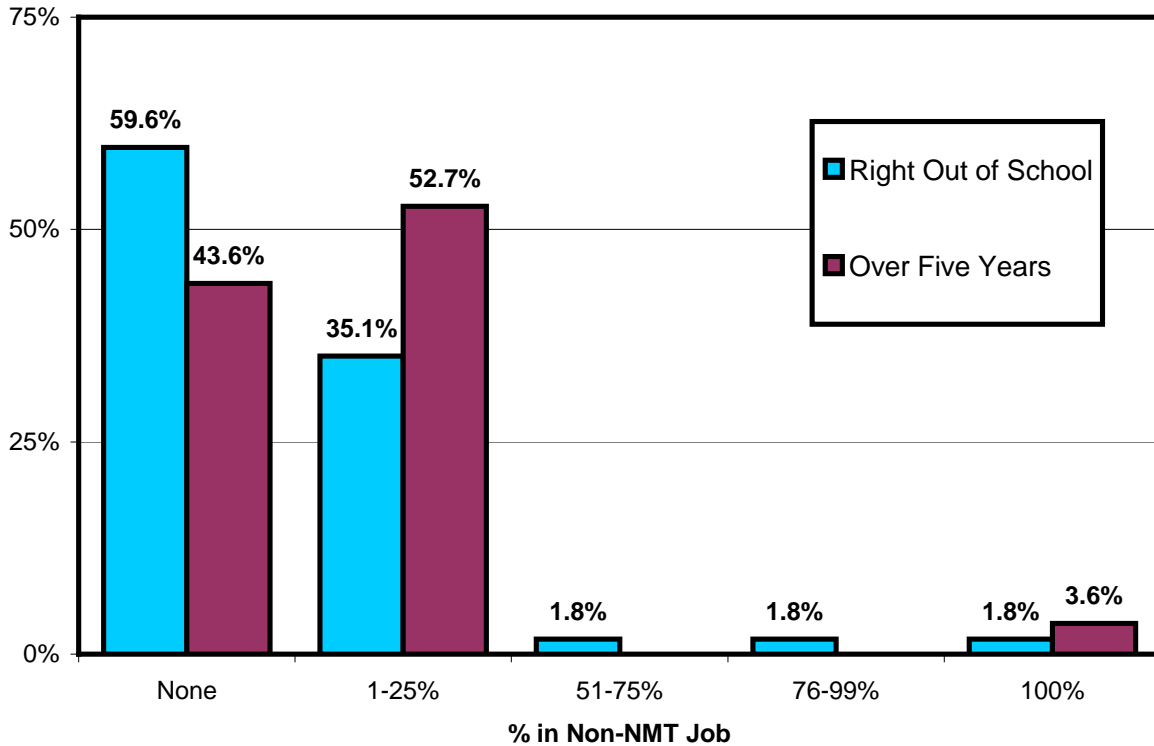
Sponsoring Institution (#)	Up To 1 Month	2 to 3 Months	4 to 5 Months	6 Months or More	Don't Know
Community/Junior College (18)	50.0%	44.4%	0%	5.6%	0%
University or Four-Year College (17)	64.7%	35.3%	5.9%	0%	0%
Academic Medical Center (7)	85.7%	14.3%	0%	0%	0%
Hospital w/ University Affiliation (9)	55.6%	22.2%	11.1%	0.0%	11.1%
Other (6)	83.3%	16.7%	0%	0%	0%
Total (57)	63.2%	31.6%	3.5%	1.8%	1.8%

Source: NMT Program Director Survey Questions B. 1 and F. 8.

NMT Graduates In Non-NMT Jobs

- Figure 27 shows that most NMT program directors reported that only a small percentage or no graduates take *non-NMT* jobs immediately after graduation or within five years of graduation. Almost three of five (59.6%) of program directors indicated that no graduating technologists took jobs outside the NMT profession.
- Further, only 35.1% of program directors indicate that between 1% and 25% of graduating students took non-NMT jobs on completion of their program.
- Although the percentage of graduates who took non-NMT jobs within five years of graduation was higher than the percentage of new graduates, there appear to be few NMT professionals who leave NM at graduation or for several years thereafter.

Figure 27. Percent of Graduates Taking Non-NMT Jobs Right Out of School and Over Five Years, 2006



Source: NMT Program Director Survey Questions B.1, F.9, and F.10

NMT Graduates Within the Past Five Years Attending Graduate School

- Many NMT graduates pursue graduate degrees at some point in their careers. Almost two-thirds (65.5%) of program directors indicated that between 1% and 25% of their graduates in the last five years pursued graduate education (Table 40).

Table 40. Number of Program Directors indicating Percent of NMT Graduates Pursuing Graduate Education within Past Five Years

% of Grads In the Past 5 Years Who Have Pursued Graduate Education	# of Program Directors
0%	9
1% to 25%	38
26% to 50%	4
51% to 75%	1
76%-99%	1
100%	0
Don't know	5

Source: NMT Program Director Survey Question G.5

Importance of a Bachelor’s Degree as Entry Level Requirement

Opinions varied among NMT program directors about the importance of establishing the bachelor’s degree as the entry-level requirement for NMTs.

- Table 41 shows that one third of all program directors (33.9%) reported that it was not important to migrate entry level to the bachelor’s degree. Among education program directors in community colleges, 83.3% indicate that it is not important to establish the bachelor’s degree as the entry-level qualification.
- Although the majority of program directors in hospital programs with university affiliations reported that that it was either very important (44.4%) or imperative (22.2%) to establish entry at bachelor’s, 22.2% of directors in hospital programs indicated it is not important.
- Overall, 66.1% of program directors reported that it is somewhat important, very important or imperative to move the entry-level academic credential for NMTs to the bachelor’s degree level.

Table 41. Ratings of the Importance of Bachelor’s Degree as Entry Level for NMT, By Sponsoring Institution, 2006

Sponsoring Institution (#)	Not Important	Somewhat Important	Very Important	Imperative
Community/Junior College (18)	83.3%	11.1%	5.6%	0.0%
University or Four-Year College (19)	5.3%	31.6%	42.1%	21.1%
Academic Medical Center (7)	0.0%	14.3%	42.9%	42.9%
Hospital w/ University Affiliation (9)	22.2%	11.1%	44.4%	22.2%
Other (6)	33.3%	33.3%	33.3%	0%
Total (59)	33.9%	20.3%	30.5%	15.3%

Source: NMT Program Director Survey questions B.1 and G.1

The Importance of Universal Licensure for NMTs

- There was little disagreement among program directors on the importance of universal licensure to the NMT profession. More than nine of ten (91.6%) of respondents indicated that it is either important or imperative that NMTs be licensed in all states (Table 42).
- Only 3.4% of program directors ranked licensure for NMTs in all states as unimportant.

**Table 42. Ratings of the Importance of Licensure for NMTs in All States,
By Sponsoring Institution, 2006**

Sponsoring Institution (#)	Not Important	Somewhat Important	Very Important	Imperative
Community/Junior College (18)	11.1%	11.1%	61.1%	16.7%
University or Four-Year College (19)	0%	0%	42.1%	57.9%
Academic Medical Center (7)	0%	0%	14.3%	85.7%
Hospital w/ University Affiliation (9)	0%	11.1%	44.4%	44.4%
Other (6)	0%	0%	50.0%	50.0%
Total (59)	3.4%	5.1%	45.8%	45.8%

Source: NMT Program Director Survey Questions B.1 and G.2

Number of Sponsoring Institutions Offering Graduate Degrees in Any Discipline

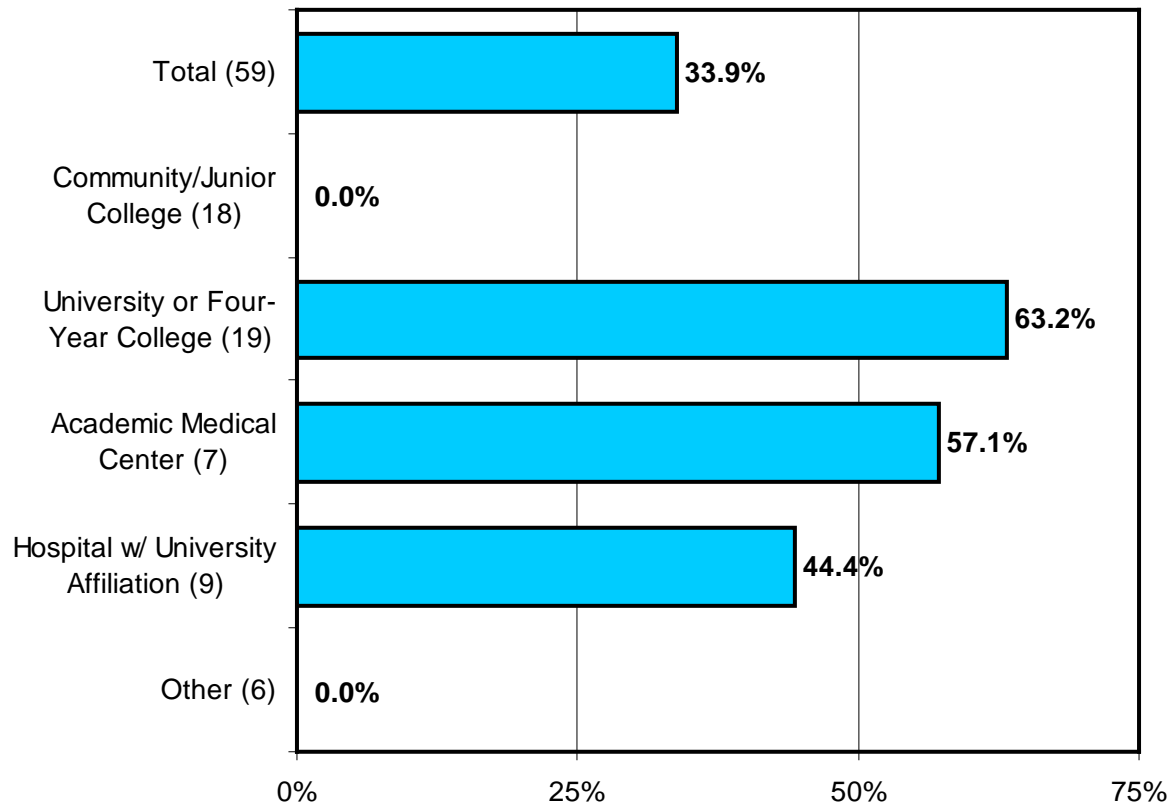
- Figure 28 shows that across all types of sponsoring institutions, 33.9% currently offer graduate education in some discipline.
- As would be expected, the percentages are highest (63.2%) in university/four year college settings, and 44.4% of hospitals with university affiliations and 57.1% of academic medical center programs have sponsoring institutions with graduate degree programs.

These statistics suggest that there might be possibilities for establishing graduate programs in some of these sponsoring institutions, since required infrastructure to support graduate education currently exists.

Importance of a Nuclear Medicine Practitioner Curriculum

- Table 43 shows that there was less consensus among program directors about the importance of creating a curriculum for a Nuclear Medicine Practitioner (NMP) Program with 23.7% of respondents indicating that it is not important, 39.0% indicating that it is somewhat important, 27.1% indicating that it is very important and 10.2% indicating it is imperative.

Figure 28. Percent of Institutions Offering Graduate Degrees, 2006



Source: NMT Program Director Survey Questions B.1 and G.4

Table 43. Ratings of the Importance of Creating an Nuclear Medicine Practitioner Curriculum, By Sponsoring Institution

Sponsoring Institution (#)	Not Important	Somewhat Important	Very Important	Imperative
Community/Junior College (18)	33.3%	33.3%	16.7%	16.7%
University or Four-Year College (19)	10.5%	42.1%	36.8%	10.5%
Academic Medical Center (7)	28.6%	28.6%	28.6%	14.3%
Hospital w/ University Affiliation (9)	11.1%	55.6%	33.3%	0%
Other (6)	50.0%	33.3%	16.7%	0%
Total (59)	23.7%	39.0%	27.1%	10.2%

Source: NMT Program Director Survey questions B.1 and G.3

- Table 44 shows, as expected, that 83.3% of NMT education program directors in community colleges reported it would be impossible to establish a NMT graduate program in their institution.

- Although program directors from other types of institutions expressed that it would be very or moderately difficult to establish an NMT program in their sponsoring institution, only a few indicated that it would be impossible.
- In university/four year college settings, 50% of directors suggest it would be very difficult and 44.4% indicate moderate difficulty in establishing a NMT graduate program.

Table 44. Degree of Difficulty Establishing an NM Graduate Program by Type of Sponsoring Institution

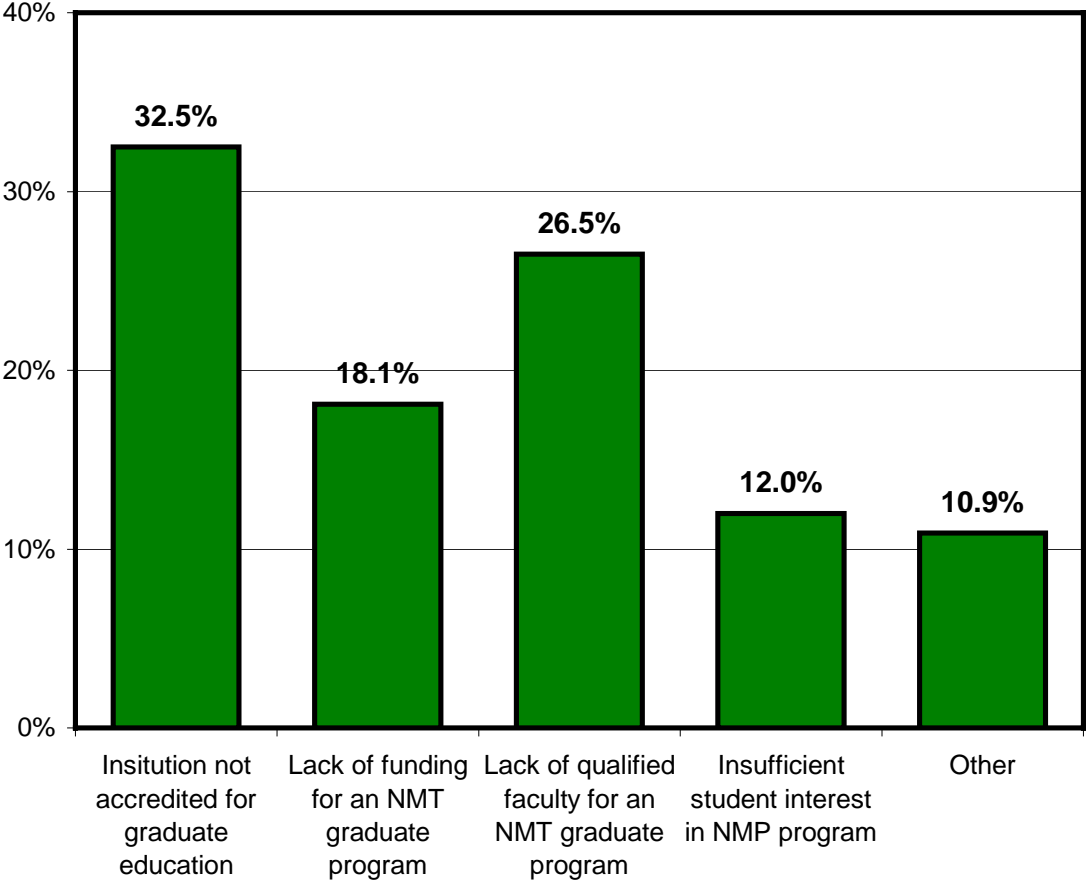
Type of Sponsoring Institution	Degree of Difficulty Establishing an NMT Graduate Degree Program				
	Impossible	Very Difficult	Moderately Difficult	Somewhat Easy	Total
Community/Junior College	83.3%	5.6%	11.1%	-	18
University of Four-year College	5.6%	50.0%	44.4%	-	18
Academic Medical Center	14.2%	42.9%	42.9%	-	7
Hospital with University Affiliation	11.1%	55.6%	22.2%	11.1%	9
Other	50.0%	50.0%	-	-	6

Source: NMT Program Director Survey Questions B. 1 and G. 6.

When asked to describe the reasons for difficulty in establishing an NMT/NMP graduate program at the sponsoring institution, program directors provided a variety of comments.

- Figure 29 shows that, among 83 reasons reported (program directors were permitted to select more than one), “institution not accredited for graduate education” was the most frequently selected response (32.5% of reasons selected). “Lack of qualified faculty” for an NMT/NMP graduate program represented another 26.5% of responses.
- Among program directors that selected “institution not accredited for graduate education”, two-thirds (66.6%) were program directors from community/junior college programs. Among program directors selecting “lack of qualified faculty for an NMT graduate program”, 36.4% were program directors in university/four year college programs.
- Among program directors selecting “lack of funding for an NMT graduate program” as a reason for difficulty in establishing a NMT/NMP graduate program, 46.7% were program directors in university/four year college programs.

Figure 29. Reasons for Difficulty in Establishing NMT/NMP Graduate Education Programs at Sponsoring Institutions, 2006



Source: NMT Program Director Survey questions B. 1 and G. 7.

References

U.S. Bureau of the Census, American FactFinder, 2005, Fact Sheet, http://factfinder.census.gov/servlet/ACSSAFFacts?_submenuId=factsheet_0&_sse=on (Accessed September 19, 2006).

U.S. Department of Education. Integrated Postsecondary Education Data System. Various years.

Wing P, Langelier MH, and De AP. Nuclear Medicine Technologists in the U.S., Findings from a 2005 Survey. Rensselaer, NY: Center for Health Workforce Studies. 2006.

Appendix A. Survey Questionnaire

SURVEY OF CURRENT NMT EDUCATION PROGRAM DIRECTORS

Center for Health Workforce Studies
University at Albany, School of Public Health

The Society of Nuclear Medicine (SNM) has retained the Center for Health Workforce Studies at the University at Albany to conduct a study of the nuclear medicine workforce in the U.S. This survey of NMT education program directors is an important component of this study designed to obtain up-to-date information about the education programs and their faculty and staff, and about student demographics and job markets for Nuclear Medicine Technologists. Please fill in the bubbles that correspond most closely to your situation or opinion and please print legibly for the open-ended questions. Your responses will be confidential and will be reported only in national, regional, and other totals, averages, and other summaries. This survey should take approximately 30 minutes to complete. Please use a blue or black pen or a pencil to complete this survey.

A. PERSONAL DEMOGRAPHICS

1. Year of birth:

Year

19

0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

2. Please indicate number of years as a Program Director:

0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

3. Please indicate your gender.

- Male Female

4. Please indicate your race/ethnicity.

- Asian or Pacific Islander
 Black/African American (Non-Hispanic)
 American Indian/ Alaska Native
 White (Non-Hispanic)
 Hispanic
 Other: _____

5. Is your position as Nuclear Medicine Technology Program Director a full or part-time appointment?

- Full-time 12-month appointment
 Full-time 9-month appointment
 Part-time appointment (less than 35 hours per week)
 Other. Please Describe _____

6. Is your position eligible for tenure?

- Yes No

6a. If yes, are you tenured at your institution?

- Yes No

7. How is tenure achieved at your institution?
Please mark all that apply.

- Research
 Publications in peer-reviewed journals/periodicals
 Institutional committee work
 Involvement with professional organizations
 Teaching
 Community service
 Other: Please describe _____

8. What is your current faculty position?
Please mark all that apply.

- Full-time faculty
 Part-time faculty
 Adjunct faculty
 NMT Program Director/Coordinator
 Dean
 Department Chair
 Other: Please describe _____

9. What is your faculty rank?

- Professor
 Associate Professor
 Assistant Professor
 Instructor
 Lecturer
 Other: Please Describe _____

10. Please indicate your highest level of education currently:

- Certificate (No degree)
- Associate's degree
- Bachelor's degree
- Master's degree
- Post-Master's Certificate
- Doctoral degree
- Other: Please describe _____

11. Please indicate your highest level of education **BEFORE** you became a program director.

- Certificate (No degree)
- Associate's degree
- Bachelor's degree
- Master's degree
- Post-Master's Certificate
- Doctoral degree
- Other: _____

12. Please indicate the academic discipline in which you received your degree(s). *Please choose the area which most accurately describes your area of concentration. Please mark all that apply.*

	▼ Assoc.	▼ Bach.	▼ Masters	▼ Doct.
Nuclear Medicine Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radiation Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radiologic Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nursing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health Education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health Services Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Physics/Biophysics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pharmacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, Please describe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Do you anticipate pursuing further education in the future?

- Yes No

13a. If yes, please indicate the level of education you expect to pursue.

- Associate's degree
- Bachelor's degree
- Master's degree
- Post-Master's Certificate
- Doctoral degree
- Other: _____

13b. If you expect to pursue further education, please indicate when you will enter a program.

- I am currently enrolled in an academic program
- I expect to enroll in the next year or two
- I expect to enroll in about five years
- Other: Please describe _____

14. What percent of the total didactic nuclear medicine technology curriculum do you personally teach in the classroom or laboratory?

- 0 to 25% 51% to 75%
 26% to 50% 76% to 100%

15. What is your current annual salary (in **thousands**) for program related responsibilities. *(If you work part time, please project your salary to a full time equivalent value).*

Annual Salary

\$ _____ ,000

0	0	0
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

16. Please indicate your future plans for the next five years.

- I expect to remain in my current position.
- I expect to leave my current position and seek a similar position at another educational institution.
- I expect to leave academics and return to clinical practice.
- I expect to leave nuclear medicine and seek employment in another field.
- I expect to retire.
- Other: Please describe _____

B. ABOUT YOUR NMT PROGRAM

1. Please describe your sponsor institution.

- Community/Junior college
- University or four-year college
- Academic medical center
- Hospital with university affiliation
- Other: Please describe _____

1a. If a college or university sponsors your program, please indicate the school/college in which your program is located.

- School/College of Health Related Professions
- School/College of Allied Health
- School/College of Medicine
- Other: _____

1b. If a college or university sponsors your program, please indicate the department in which your program is located.

- Nuclear Medicine Technology Department
- Radiologic Technology Department
- Biology Department
- Other: Please describe _____

2. Please indicate the academic award available at your program. *Please mark all that apply.*

- Certificate of completion
- Associate's degree
- Bachelor's degree
- Other: Please describe _____

3. If you offer a degree, please indicate the major in which that degree is awarded.

- Nuclear Medicine Technology
- Radiation Science
- Biology or Life Science
- Other: Please describe _____

4. Does your program have an articulation agreement with another program/academic institution?

- Yes  No

4a. If yes, please describe.

- Our program accepts students from other programs for degree completion.
- Our program transfers students to other programs for degree completion.

5. Is your program currently accredited by the JRCNMT?

- Yes No 

5a. If not, why not?

- The cost of accreditation is too great.
- The program has difficulty meeting the essentials for accreditation.
- The program is already regionally accredited and the additional accreditation is not necessary.
- There is too much paper work for JRCNMT accreditation.
- Other: Please describe _____

6. Continued funding for your program is:

- Secure
- Somewhat secure
- Tenuous

7. How many clinical affiliates are officially connected with your program?

- | | |
|-----------------------------|-----------------------------------|
| <input type="radio"/> 1-3 | <input type="radio"/> 31-40 |
| <input type="radio"/> 4-6 | <input type="radio"/> 41-50 |
| <input type="radio"/> 7-9 | <input type="radio"/> 51-60 |
| <input type="radio"/> 10-12 | <input type="radio"/> 61-70 |
| <input type="radio"/> 13-15 | <input type="radio"/> 71-80 |
| <input type="radio"/> 16-18 | <input type="radio"/> 81-90 |
| <input type="radio"/> 18-20 | <input type="radio"/> 91-100 |
| <input type="radio"/> 21-30 | <input type="radio"/> 101 or more |

8. Please describe the degree of difficulty in securing clinical affiliates/placements for your students.

- Very difficult
- Somewhat difficult
- Somewhat easy
- Very easy

9. Please indicate the time of day when courses are offered in your program. *Please mark all that apply.*

- Day
- Evening
- Weekends

10. Does your program offer opportunities for distance learning?

- Yes  No

10a. If yes, what percentage of your courses are taught online?

- 0% 51 – 75%
 1 – 25% 76 – 99%
 26 – 50% 100%

10b. If yes, are you planning to increase this percentage significantly over the next two years?

- Yes No

10c. If yes, what are the two most important reasons?

- | 1st | 2nd | |
|-----------------------|-----------------------|---------------------------------------|
| <input type="radio"/> | <input type="radio"/> | Cost savings |
| <input type="radio"/> | <input type="radio"/> | Students are demanding online courses |
| <input type="radio"/> | <input type="radio"/> | Part of an institution-wide strategy |
| <input type="radio"/> | <input type="radio"/> | To compete with other online programs |
| <input type="radio"/> | <input type="radio"/> | Other: _____ |

11. Does your nuclear medicine education program offer instruction in ... *Please mark all that apply.*

	Didactic		Clinical	
MRI	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
CT	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
Cross Sectional Anatomy	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
PET	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No
Molecular Biology	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> Yes	<input type="radio"/> No

12. Does your instructional and clinical program have unusual strength/emphasis in a particular area of imaging?

- Yes  No

12a. If yes, please describe. *Mark all that apply.*

- Instrumentation
 Oncology
 Cardiology
 Fusion Technology
 Neurology
 Other: Please describe _____

13. Does your program provide any continuing education opportunities for NMTs already in practice in your geographic area?

- Yes  No

13a. If yes, please describe the course content available for continuing education credit. *Please mark all that apply.*

- Radiation safety
 Computers/ Instrumentation
 Radiopharmacy
 Cross Sectional Anatomy
 CT or MRI Technology
 PET
 PACS or RIS
 Other: Please describe _____

14. How many credit hours of classroom/laboratory instruction are required to meet the total academic requirements of your program? *Please include any required general education credits in the total.*

- 45 credit hours
 60 credit hours
 75 credit hours
 90 credit hours
 120 credit hours
 More than 120 credit hours
 Other: Please describe _____

14a. How many of these credit hours are acquired in the professional component of your nuclear medicine program? *Please indicate number of hours:* _____

15. How many hours of clinical practicum are required to meet the requirements of your program?

- Less than 1,000
 1,000 to 1,200
 1,201 to 1,400
 1,401 to 1,600
 1,601 to 1,800
 1,801 to 2,000
 Other: Please describe _____

C. PROGRAM FACULTY

When answering the following questions please include only faculty who teach in the NMT program. Please do not include yourself.

1. How many NMT faculty lines are budgeted and filled in your program? Please do not include your position.

- 1 4
 2 5
 3 6 or more

2. Does your program utilize/borrow faculty from other academic departments within your institution?

- Yes No

2a. If yes, please indicate from which academic areas your program draws other faculty. Please indicate how many faculty are drawn from each area. Please mark all that apply.

	1	2	3	4	5 or more
<input type="radio"/> Radiology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/> Biology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Chemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/> Pharmacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Computer Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input checked="" type="radio"/> Health Administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> Other _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Please indicate the number of technologist staff who teach on site at your clinical affiliates. Please include all staff at all sites.

- 1 11
 2 12
 3 13
 4 14
 5 15
 6 16
 7 17
 8 18
 9 19
 10 More than 20.

Indicate No. _____

3a. How many of these technologists are JRC qualified clinical supervisors/instructors? Please indicate number: _____

4. Please indicate the total number of full time and part time faculty teaching in your program. Please do not include yourself.

Full Time	Part Time
<input type="radio"/> 0	<input type="radio"/> 0
<input type="radio"/> 1	<input type="radio"/> 1
<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 3	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 5
<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 7	<input type="radio"/> 7
<input type="radio"/> 8	<input type="radio"/> 8
<input type="radio"/> 9	<input type="radio"/> 9
<input type="radio"/> 10 or more	<input type="radio"/> 10 or more

5. How many of your NMT faculty are tenured (excluding you)?

- 1 4
 2 5
 3 6 or more

6. Please indicate the faculty rank of all full-time NMT faculty members (excluding you):

	Prof	Assoc.	Assist.	Inst.	Lect.
Faculty #1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. What is the length of service in years of all full-time faculty members (excluding you) in your program?

	1-3	4-7	8-10	11-15	>15
Faculty #1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. What is the age of all of the full-time faculty members (excluding you) in your program?

	<30	30-40	41-50	51-60	>60
Faculty #1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. What is the educational level of all full-time faculty members (excluding you) in your program?

	Certif.	Assoc.	Bach.	Mast.	Doct.
Faculty #1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Faculty #6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Do you recruit part-time faculty members to teach courses in your program from the community of nuclear medicine technologists working in your geographic area? Please do not include technologists who provide guest lectures in your courses.

- Yes No

11. Please indicate your level of difficulty in recruiting faculty?

- Very difficult
 Somewhat difficult
 Somewhat easy
 Very easy

12. Do you currently have vacant faculty positions?

- Yes No

12a. If yes, please indicate the reason(s) for vacancy. Please mark all that apply.

- No qualified candidates.
 Only a few qualified candidates.
 Salaries are not competitive with those available in clinical practice.
 Candidates generally lack the academic qualifications for work in colleges/universities.
 Other: Please describe _____

13. Does your program provide training for clinical instructors working with your students?

- Yes No

14. In your opinion, is your program meeting the needs of your community of interest?

- Yes
 Somewhat
 No

15. If somewhat or no, why? Please mark all that apply.

- Can't produce enough graduates to meet needs
 Lack qualified faculty
 Lack staff help to support program activities
 Curriculum can't change fast enough
 Other: _____

16. What are the key issues facing your NMT program in the near future? Please mark the top 3 issues.

1st	2nd	3rd	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Recruitment of qualified faculty
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Time and effort spent on student recruitment
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Competition for qualified students
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Competition with online programs
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Institutional budget
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Lack of clinical sites
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Fitting new content into already crowded curriculum
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Low enrollment
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Program funding (budgetary cuts)
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other: _____

D. ABOUT YOUR STUDENTS

1. Please indicate the number of graduating classes produced annually by your program. If the number varies annually, please describe that variation.

- 1 3
 2 4

Other: Please describe _____

2. Please indicate the total size of all NMT graduating classes for the indicated years.

	03/04	04/05	05/06
Graduates:			

{Prog no.}

3. Please describe your current admission policy.

- Open enrollment (any candidate with minimum qualifications).
- Competitive enrollment (admission to the most qualified students)

4. How many qualified applicants applied for admission to your program in 2006?

Indicate No.: _____

5. Please indicate the total number of students who are/were officially admitted and enrolled in your NMT program in the indicated years. *Please include students at all levels in your program.*

03/04	04/05	05/06
Enrollment:		

6. What is your estimate of the total number of 2006/07 applications and admissions in your program, compared to 2005/06?

2006/07 Applicants

- Much higher
- Somewhat higher
- About the same
- Somewhat lower
- Much lower

2006/07 Admissions

- Much higher
- Somewhat higher
- About the same
- Somewhat lower
- Much lower

7. How many students actually started your program in 2005?

Indicate No.: _____

8. If there has been a significant change in enrollment in the past few years, please suggest possible reasons. *Please mark all that apply.*

If enrollment has **decreased**:

- Lack of recruitment resources
- Decreased market demand for NMTs
- Lack of student awareness about the profession
- Length of program compared to radiologic technology education
- Bad publicity surrounding healthcare work
- Low professional image for NMTs
- Other: _____

(continued in next column)

8. (continued)

If enrollment has **increased**:

- More recruitment effort (resources, career days, etc.)
- Increased market demand for NMTs
- More student awareness of profession
- Positive publicity surrounding healthcare work
- Salaries competitive with other disciplines
- Good professional image for NMTs
- Other: _____

9. Do you have an enrollment cap?

- Yes
- No

9a. If yes, please indicate who imposes this cap. *Please mark all that apply.*

- Institutional cap
- JRCNMT cap

9b. If yes, does this cap change from year to year?

- Yes
- No

9c. If yes, is this cap affected by the availability of clinical rotations?

- Yes
- No

9d. If you have an enrollment cap, please indicate the maximum number of students that can be admitted to the 2006/2007 class.

Indicate No.: _____

10. How many students left your program in 2005?

Indicate No.: _____

11. Please describe the reasons for departures. Please indicate the number of students who have left for the designated reason. *Please mark all that apply.*

- Dismissed for poor academic performance
- Dismissed for poor clinical performance
- Voluntary departure for lack of interest
- Voluntary departure for personal reason
- Other: Please describe _____

Number

12. In your opinion, what percentage of your current students entered your institution as freshmen/first year students with an intention to enroll in the NMT program?

- 0% 76 – 99%
 1 – 25% 100%
 26 – 50% Doesn't apply
 51 – 75% Don't know

13. How has this percentage changed over the past few years?

- Greatly Decreased
 Decreased
 Stable
 Increased
 Greatly Increased

14. What percentage of your 2005 graduates have taken the NMTCB or ARRT credential exam to date?

- 0% 51 – 75%
 1 – 25% 76 – 99%
 26 – 50% 100%

14a. What percentage of 2005 graduates who have taken a credentialing examination passed it the first time?

- 0% 51 – 75%
 1 – 25% 76 – 99%
 26 – 50% 100%

15. What percentage of the students in your program fit each of these categories?

	2nd career students	Part-time
0%	<input type="radio"/>	<input type="radio"/>
1 – 25%	<input type="radio"/>	<input type="radio"/>
26 – 50%	<input type="radio"/>	<input type="radio"/>
51 – 75%	<input type="radio"/>	<input type="radio"/>
76 – 99%	<input type="radio"/>	<input type="radio"/>
100%	<input type="radio"/>	<input type="radio"/>

16. Does your program maintain an official waiting list for the next available position?

- Yes No

17. Please estimate the **median** age of students currently enrolled in your program?

- Less than 20 31 – 35
 20 – 25 36 and older
 26 – 30

{Prog no.}

17a. How has the **median** age changed over the past few years?

- Greatly Decreased
 Decreased
 Stable
 Increased
 Greatly Increased

18. What percentage of the students currently enrolled in your program are male?

- 0 – 5% 21 – 25%
 6 – 10% 26 – 50%
 11 – 15% 51 – 99%
 16 – 20% 100%

18a. How have these percentages changed over the past few years?

- Greatly Decreased
 Decreased
 Stable
 Increased
 Greatly Increased

19. What percentage of the individuals enrolled in your program over the past five years had a bachelor's degree before they entered your program?

- 0% 51 – 75%
 1 – 25% 76 – 99%
 26 – 50% 100%

E. PROGRAM MARKETING

1. What are the two most effective marketing strategies for your program? *Please mark one in each column.*

- | 1st | 2nd | |
|-----------------------|-----------------------|----------------------------------------|
| <input type="radio"/> | <input type="radio"/> | Newspaper ads |
| <input type="radio"/> | <input type="radio"/> | Word of mouth/referral of students |
| <input type="radio"/> | <input type="radio"/> | SNM materials, i.e. brochures, posters |
| <input type="radio"/> | <input type="radio"/> | University specific material |
| <input type="radio"/> | <input type="radio"/> | Websites/Internet resources |
| <input type="radio"/> | <input type="radio"/> | Career fairs |
| <input type="radio"/> | <input type="radio"/> | Don't know/not sure |
| <input type="radio"/> | <input type="radio"/> | Other: |

2. How much of your annual department budget do you spend marketing your NMT program?

- Less than \$500.
- Between \$500 and \$1500.
- More than \$1500.

F. NMT JOB MARKET FOR STUDENTS

1. How difficult is it for most of your students to find employment after graduation?

- Very Difficult
- Difficult
- Average
- Somewhat Easy
- Very Easy

2. Do employers recruit on campus for your graduates?

- Yes
- No

3. Do the organizations in which students from your program perform clinical rotations offer jobs to students after graduation?

- Yes
- No

3a. If yes, what percentage of graduating students receive job offers from organizations in which they have completed a clinical rotation.

- 0%
- 1 – 25%
- 26 – 50%
- 51 – 75%
- 76 – 99%
- 100%

4. What is your overall assessment of employment opportunities for new NMT graduates within 50 miles of where your program is located?

- Many more jobs than NMT graduates
- Somewhat more jobs than NMT graduates
- About as many jobs as graduates
- Fewer jobs than graduates
- Don't know/Can't estimate

5. For the state in which your program is located, please indicate your assessment of employment opportunities for NMTs in the following settings:

N = No Openings S = Some M = Many DK = Don't Know

N	S	M	DK	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Academic medical center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hospital/Medical center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Outpatient hospital clinic/center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Freestanding outpatient radiology center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Physician office/ Private Radiologist
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cardiology specialty center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Oncology specialty center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Academic/Educational institution
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radiopharmacy
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pharmaceutical company
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Technology company
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Consulting company
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Staffing organization
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Research organization
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Mobile unit
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Self-employed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other: Please describe

6. Please indicate in rank order the three employers that hire the most new graduates from your program. Please mark only once in each column.

1st	2nd	3rd	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Academic medical center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Hospital/Medical center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Outpatient hospital clinic/center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Freestanding outpatient radiology center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Physician office/ Private Radiologist
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Cardiology specialty center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Oncology specialty center
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Academic/Educational institution
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Radiopharmacy
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Pharmaceutical company
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Technology company
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Consulting company
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Staffing organization
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Research organization
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Mobile unit
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Self-employed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Other: Please describe

7. How well do new graduates from your program actively searching for jobs do in the job market?

- All my graduates get good jobs.
- Most of my graduates get good jobs.
- Some of my graduates have trouble finding jobs.
- Most of my graduates have trouble finding jobs.
- Don't know/ Not sure

8. Approximately how long does it take, on average, for your new graduates to find jobs after graduation?

- Immediately to one month
- 2 to 3 months
- 4 to 5 months
- 6 months or more
- Don't know/Can't estimate

9. Over the past five years, what percentage of new graduates have taken a non-NMT job right out of school?

- 0%
- 1 – 25%
- 26 – 50%
- 51 – 75%
- 76 – 99%
- 100%

10. What percentage of your graduates from the past five years have eventually taken a non-NMT job?

- 0%
- 1 – 25%
- 26 – 50%
- 51 – 75%
- 76 – 99%
- 100%

G. ATTITUDES

1. What is your feeling about the importance of migrating the entry level education for the NMT profession to the bachelor degree level?

- Not important
- Somewhat important
- Very important
- Imperative

2. What is your feeling about the need for licensure in all states for NMTs?

- Not important
- Somewhat important
- Very important
- Imperative

3. What is your feeling about the creation of a curriculum for a nuclear medicine practitioner?

- Not important
- Somewhat important
- Very important
- Imperative

4. Does your institution currently offer graduate degrees?

- Yes
- No

5. What percentage of your graduates in the past 5 years have gone on to pursue a graduate degree?

- 0%
- 1 – 25%
- 26 – 50%
- 51 – 75%
- 76 – 99%
- 100%
- Don't know

6. Please describe the degree of difficulty in establishing a graduate degree program in nuclear medicine at your institution.

- Impossible
- Very difficult
- Moderately difficult
- Somewhat easy
- Easy

7. Please describe the barriers to establishing a graduate program for nuclear medicine practitioners (NMP) at your institution. *Please mark all that apply.*

- My institution is not accredited for graduate education.
- There is a lack of funding for an NMP program.
- There is a lack of qualified faculty to staff an NMP program
- There would not be sufficient student interest in an NMP program
- Other. Please describe _____

H. NARRATIVE QUESTIONS

Feel free to use additional sheets, if necessary, indicating which question is being answered. Please write legibly or type.

1. Please describe any important changes in the student population and student needs that you have experienced in the past few years, including changes in technical proficiency, demographics, or other important changes.

2. Has distance learning affected your educational program? If so, please describe the impact(s)?

- 3.** Please detail any NMT workforce related concerns or issues that you feel have not been adequately addressed in this survey.

Thank You For Completing This Survey!

If you are completing this survey on paper, please send the completed questionnaire in the pre-addressed, postage paid envelope to:

The Center for Health Workforce Studies
School of Public Health, University at Albany
7 University Place, Room B334
Rensselaer, NY 12144-3458
Phone: (518) 402-0250
Fax: (518) 402-0252

Appendix B. Narrative Questions

This appendix lists all responses to the three open ended questions at the end of the survey instrument. They have been grouped according to type of institution to provide the reader with opportunity to look for patterns of interest.

H1: Please describe any important changes in the student population and student needs that you have experienced in the past few years, including changes in technical proficiency, demographics, or other important changes.

Community/Junior College

Competition for admission increased dramatically in 2000 and continues today. Students are now entering having taken the entire academic core prior to entrance. Shift in enrolments toward males is occurring.”

“Felt the need to teach "caring behaviors" in an intro class due to generational differences.”

“Finding qualified students is not a problem but admitting more students to a saturated job market is the problem. Increasing the ed requirements to a bachelors degree for an entry level position is unnecessary. Much of the advanced ...”

Fortunately, more students have at least a beginning command of Spanish and almost all are willing to take a Spanish course.

“It is a challenge to find qualified instructors to teach CT and cross-sectional anatomy.”

“Most students are very technically savvy. Their attention span seems to need to be entertained. They are looking for the jobs for the most money, not necessarily for the patient care and nuclear medicine expertise.”

Students need more clinical time, especially in newer modalities. In our geographical area, demographics have changed and the student population is predominantly foreign-born. This has been a problem in the last few years, since some employers are reluctant ...”

“The addition of a distance program in NM and PET has expanded my program nationwide. The current median age is quite high, most students are pursuing this as a second career. These students sometimes have difficulty adjusting to working in a hospital.”

“The demands of life for the non-traditional student are always increasing. Student have to work in addition to attending school, although the school schedule is rather inflexible, so the demands of life have to mold around school schedules - work, family, etc.”

“We are currently on the downward swing in relation to the job market. I anticipate that students will have more difficulty this year finding jobs. In turn, this will decrease the applicant pool. I have been through this cycle twice.”

“We have not been able to offer the program the past few years because of lack of instructors. With the ability to deliver online we can now offer the program because the instructors can work and teach at the same time, and students and work and learn at the same time.”

“n/a”

University or Four-Year College

“Currently enrolled students in this relatively new program will be the third class to graduate in August 2006. The average age of applicants has decreased as more students complete the three years of prerequisite and elective courses. The average number of ...”

“GPA's of students applying to program are getting much higher. Service background of students applying to program is growing. Student's technical proficiency is very high, therefore requiring technical proficiency by faculty. Distance Education is an ...”

“I have seen no great changes except when our applicant pool is low we get fewer really prepared students. Then a student or two per class has trouble w/ course work, so more dismissals & withdrawals.”

“More students that are parents.”

“Most freshmen students applying to our college enroll in either radiography or sonography. The students enrolling into NMT are usually transfer students with 30 hours or more with only a few freshmen level students. Applicants do not know about the NM option.”

“Nothing significant.”

“Students have changed drastically in regards to quality and care. I seem to have to press these issues more on certain students, not all of them.

“The demand for technical proficiency in fusion technology has increased since the inception of PET/CT. Curriculums are being loaded with topics that require a better understanding of biology and chemistry. Expectations of new graduates is increasing.”

“The overall expense of being a full time student is daunting and seems to be more of an issue every year.”

“Focus on change of career candidates. I would require a health-related BS BEFORE admission.....Give us better quality student to work with. This will be more valuable than a BS/MS in NMT....which only helps in research or academia. The job market only ...”

Academic Medical Center

“Finances necessitate that most of our students work at least part-time. This impacts their study as well as their ability to participate fully in the undergraduate experience. Poor high school preparation in math and science and language arts (especially ...”

“Most students need financial assistance to get through school. Students who come from community colleges seem to be less prepared than those who transfer from a four year school. We do not have good diversity among our students. Technically, they seem ...”

“There is a definite need to incorporate CT training in the NMT program, including clinical and Cross Sectional Anatomy. There are other courses that need to be mandated as well in PET training. I see a need to increase the program time.”

“Accommodations for persons with disabilities.”

Hospital with University Affiliation

“All our students now complete a degree in NMT.”

“Most of our academic affiliate students are extremely well trained in basic science education. We are overall very happy with the quality of selected students.”

“Most students enter the program looking for money rather than caring about the patient. Most students do not see this as a profession. The NMT is just another job and if something better comes up I think they would retrain in another field just for more money.”

“New high school grads do not have maturity, depth of knowledge in health care practices. I would highly recommend setting minimum admission criteria to BS in health science related subjects.”

“Oversaturation in the market. I feel that the education standards to become a nuclear technologist need to be raised to a bachelor’s level. Currently, students can graduate from a certificate such as ours and make the same income as someone who has gone through a degree program”

“Students are more dependent on being given the exact info they need to know. Also, they are very dependent on the internet for research purposes.”

“Students are much more computer-literate than they used to be. Our computer course now spends almost no time on basic computer. After a brief review of basics, we jump right into nuclear medicine uses. The negative aspect of this, students tend to spend ...”

“We are receiving more traditional students that are using our program to earn a Bachelor's degree from an affiliated institution.”

Other

“Older adult learners, second career, some come with expertise in other related fields, such as computer science, biology, chemistry, teaching.”

“We are seeing an influx of applicants with little or no health care experience, which makes assimilation into the hospital environment more challenging. We are also seeing older adult learners, which carries additional challenges in a learning environment”

“We have many students entering the program that already have bachelors degrees. In past it was mostly assoc degrees in RT. Now even RT students enter w/ bachelor’s degrees. They appreciate not having to complete another bachelor’s degree.”

Question H2: Has distance learning affected your educational program? If so, please describe the impact(s)?

Community/Junior College

“Distance clinical sites help to service the entire state.”

“I have taught 1 series of course by interactive TV and webcam for 7 cross-trained radiographers who were working in NMT had the qualifications for alternative eligibility for the NMTCB. The technology was adequate although somewhat cumbersome. Only 1 ...”

“It has positively enhanced my program.”

“NO, no programs have been offered in the state that I know of.”

“No”

“No”

“No”

“Not to date. In future, expect to use web as an aid. One of the strongest parts of our program is our on-campus lab which doesn't have broadcasting capabilities.”

“Not yet, though I hope in the future to offer a distance learning option.”

“Our Nuclear Medicine program is getting back on track because of distance learning. Most of the students interested in the program want online so they can work while learning Nuclear Medicine. Also, the instructors are working technologists-they have an ...”

“We are looking at the possibility of affiliation with a geographically distant community college, and classroom work would be accomplished via synchronous videoconferencing. This need is being pushed by the need for nuclear medicine technologists within ...”

“We intend to shift our class to online format.”

University or Four-Year College

“Absolutely -- we have no option but to embrace this if we are to attract additional clinical sites, provide advanced degrees to those in the workforce and make our courses more widely available for ongoing education credits for graduates.”

“No”

“No”

“No”

“Not to my knowledge”

“No, not an issue here.”

“The only distant learning that I have utilized is one online course which has worked out very well.”

“We are in process of implementing remote solutions.”

“We use a little in almost every class we teach and it is wildly popular with students.”

“We use distance learning very cautiously. Our institution prides ourselves on knowing our students and understanding their unique challenges to learning. This type of technology creates opportunities for expanding learning experiences, but it also creates ...”

Academic Medical Center

“No”

“Not sure, but not for distance learning in a medical field. It needs the personal touch.”

“Not sure.... our program doesn't seem to be affected, we continue to have interest.”

“The classroom portion of our program is offered almost exclusively online. We offer courses to students in a five state region with clinical affiliates locally. Consequently, we've increased our class size and therefore our faculty numbers are up as well.”

“Yes! Everyone thinks that everything can be offered at a distance, so why aren't we doing it? Distance education is a great tool, but it is not appropriate for every discipline.”

Hospital with University Affiliation

“Distance learning would not be effective in Nuclear Medicine. This would reduce the quality of the program. When I will only have students for a year, it is important to monitor there progress in didactic and clinical.”

“It has indirectly. None of our courses are totally online but nearly half have online component (WebCT) for discussion, practice quizzes and archiving of written materials and slide sets.”

“N/A”

“No”

“No”

“No”

“No”

“No”

“Not much”

Other

“I use online discussion as a way to enhance learning. I also give assignments and notes online. By doing this, I am able to cover more info in a shorter period of time. This adds to the classroom instruction and allows us to complete all didactic requirements.”

“No”

“No, we are a hospital based only program.”

“We have incorporated videoconferencing in our program, which utilizes a remote classroom to accommodate students in a larger geographic area. This poses additional technical challenges, and new skill sets that are needed for instructors to be proficient at distance learning.”

Question H3: Please detail any NMT workforce related concerns or issues that you feel have not been adequately addressed in this survey.

Community/Junior College

“BS entry level requirements (the White Paper) has divided the NM community, because it is narrow in the scope of all levels of education regarding nuclear medicine, and the information was not delivered properly by Leadership to the SNM members.”

“Local Proprietary school offering an NMT with limits hospital clinical sites and accepting an excessively large class on a regular basis.”

“Maybe should have asked if the current move to a BS for entry level was achieved in a fair manner. Were all categories of program directors represented in the original draft? Did all PDs feel their input was taken seriously by SNM?”

“N/A”

“None”

“State regulation of cross-certified individuals is not being addressed and is causing great consternation among both technologists and supervisors.”

“The discussion of the BS as the entry-level degree is far ahead of its time in my geographic region. The facilities that hire NMT graduates have no interest in the degrees of the employees; the technical education/certification out-weighs any other considerations.”

University or Four-Year College

“I am concerned about the NMT job market which went from great 2 or 3 yrs ago to not so good this year, at least in our local market. Some of our hospitals have even "laid off" NMTs. Job market is best in mobile PET and cardio clinics.”

“Again, I would require a health related BS BEFORE admission.....give us better quality student to work with. This will be more valuable than a BS/MS in NMT....which only helps in research or academia. The job market only requires certification.”

“I am not sure how the Nuclear Medicine Practitioner would be integrated into the NM team. Would there not be some overlapping of duties with the NM Physician? Would this professional be compensated adequately? I understand that the NMP is being ...”

“I had a bit of difficulty answering the questions in Section C. "Program Faculty" - there is NO other full time faculty other than myself - so since I was not to include myself in those answers - I wished there was a "0" response available. I was forced to ...”

“NYS does not yet license NMTs. In NYS NMTs cannot train or perform CTs, Only RTs can perform CTs. RTs are licensed.”

“Part of the survey focused on the number and composition of full-time faculty allocated to the program besides myself. Zero was not an option on numerically based questions and unfortunately for me zero full-time besides myself is a reality.”

“Regional accreditation is an issue. It think the SNM needs to make a stand for professional accreditation of our programs.”

“Technology becomes outdated over time. Our profession tends to let the technology of the day become its primary focus. Unfortunately, sometimes at the price of overlooking the humanities and sciences that it is built on. Technologists of the future will ...”

“The only issue in regards to workforce is the other modalities that are being brought into nuclear medicine imaging and having the resources to train not only the students but NMT's as well.”

Academic Medical Center

“I am all for the BS level and APN level NMT.”

“I think fusion imaging and the need to add those competencies to the existing curriculum is very important. According to what I hear from those in R&D in the scientific world, molecular biology/imaging will greatly change what technologists do and I don't ...”

Hospital with University Affiliation

“All workforce related concerns have been addressed.”

“I am new to the program as a director. I need this year to be able to answer this.”

“N/A”

“The huge issue of training NMTs for PET and PET/CT. Many of our graduates are hired by mobile PET units. These graduates have had minimal training in PET/CT. The bulk of training is on-the-job. Our field needs guidelines regarding this issue.”

Other

“ALL our didactic faculty are part time so questions did not apply. ALL didactic instruction is done here. Clinical affiliates only teach practicum.”

“Although there have been sufficient jobs available to employ all my graduates, there is a component of hostility from some NMT populations in the area that are concerned about us "saturating the market". To combat this, I am trying to be responsible and ...”

“The workforce concerns I have are for the projected shortage of techs anticipated. Surveys conducted are expressing concerns about a real shortage of techs by 2010. It seems like it will be difficult to meet employers' needs w/ existing schools.”