FIFTEENTH ANNUAL REPORT ON PHYSICIAN ASSISTANT EDUCATIONAL PROGRAMS IN THE UNITED STATES, 1998-1999

INTRODUCTION

Founded in 1972, the Association of Physician Assistant Programs (APAP) serves as the national organization representing physician assistant (P.A.) educational programs in the United States. The Association serves as a conduit for communication among P.A. educators by sponsoring meetings, organizing research studies and providing a forum to conduct the business of the membership. Another important role for the Association is to serve as a resource for individuals and organizations interested in the aspects of the physician assistant profession that pertain to the selection and education of the P.A. students and the characteristics of physician assistant programs. In addition, APAP provides representation to various bodies that help to chart the course of the P.A. profession, including the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and the National Commission on Certification of Physician Assistants (NCCPA), among others.

As the primary organ for collection and dissemination of data about its member physician assistant educational programs, the Association publishes the "Physician Assistant Programs Directory."[1] The Directory provides a listing and description of APAP member programs. Each listing provides comprehensive information concerning each program's admission requirements, curriculum, institutional affiliates, credentials awarded and other descriptive data. The Directory also provides a summary of postgraduate educational programs for P.A.'s, information about accreditation and P.A. certification. As of June, 1998, there were 107 physician assistant programs accredited (full or provisional) by the Commission on Accreditation of Allied Health Educational Programs in the United States.[2]

In 1984, the process of establishing a national database on P.A. programs was initiated by Denis Oliver, Ph.D., Director of The University of Iowa Physician Assistant Program and then Past-President of the Association. The first national survey was developed and administered in the Fall of 1984. The questionnaire requested information on a variety of program "activities" including institutional sponsorship, financial support, program personnel (faculty and support staff), characteristics of applicants and students enrolled, curriculum, student attrition, and graduate employment characteristics. The findings from the 1984 survey were published as the First Annual Report on Physician Assistant Educational Programs in the United States, 1984-85 and, to date, a total of fifteen Annual Reports[3-16] have been published, including the present Report.

Dr. Oliver retired as author after publication of the eleventh Report. In 1995, the APAP Board of Directors authorized individuals from the Saint Francis College Department of Physician Assistant Sciences to author future Reports. Data from the annual report has been published in numerous other venues where discussions of the P.A. profession are ongoing. Examples of these publications include the Journal of Medical Education, AAPA News and the Journal of the American Academy of Physician Assistants. Selected data have been published in the Annual Reports to the President and Congress on the States of Health Personnel in the United States and in a publication of the Association of Academic Health Centers.

The data presented in the Report over the years represents responses from greater than 90% of the P.A. programs surveyed. This high rate of response leads the authors to present the findings contained herein to be representative of the physician assistant educational programs in the United States. Given that the basic elements of the annual survey have remained consistent over its thirteen year history, a significant amount of data has been generated that can be used to depict the "typical" or "average" P.A. educational endeavor. The consistency in collection of data has also provided the ability to detect trends or document changes as they occur over time. Identified trends have been analyzed to generate reports on the following items:

* Characteristics of AMA-accredited P.A. Programs that have Closed.[5]
* Characteristics of Graduate-Level P.A. Programs.[6,9]
* Analysis of Alien and U.S. Unlicensed Medical Graduates Admitted to P.A. Programs.[8]
* Analysis of P.A. Program Personnel Turnover.[10-16]
* A Review of Program Characteristics by Sponsoring Institution.[3]

METHODS

The Survey Instruments

Three questionnaires (surveys #1, #2 and an additional section: curriculum) were administered. The first survey and the curriculum section was a total of thirteen pages in length, mailed in October, 1998, to 107 programs that were identified as accredited from databases maintained by APAP and the American Academy of Physician Assistants (AAPA). Survey #1 consisted of three major sections (see the Appendix for a copy of the questionnaires):

A. General Program Information: Includes date of admission of first class, length of program, consortia membership, sponsoring institution, sources of financial support, student expenses and financial aid and credentials earned.
B. Program Personnel: Includes characteristics of program faculty and staff, clinical activity of P.A. personnel, and an assessment of program personnel turnover, attrition and recruitment.
C. Applicant/Student Information: Includes the number, gender, age, ethnicity, residency, academic and health care experience background of applicants and students enrolled, including the disabled. A section requesting information of unlicensed medical graduate (UMG) applicants and students enrolled is also included.
D. Supplemental Information: Includes vacation/down time and additional requirements for master's granting programs.

The Curriculum Section was six pages in length and requested information on:

A. Didactic Phase: Includes basic science courses and behavior/social science/professional issues/research related courses.
B. Introductory Clinical Sciences: Includes didactic clinical medicine, patient evaluation methods and clinical skills.
C. Clinical Phase of the Curriculum

Survey #2 was five pages in length, was mailed in November and requested information on:

A. Graduate Information: includes information on student attrition and deceleration, characteristics of recent and all graduate employment, program directors' opinions concerning employment opportunities and starting salary for recent graduates.

One of the goals of the current authors with the Annual Report was to make it more user friendly. To move closer to this end, the Annual Report application was moved "on-line" allowing the member programs to enter data directly over the Internet, facilitating the collection and analysis of data. Thirty-two programs (33.7% of the Survey #1 respondents) submitted their program's data via this method for Survey #1 and 16 respondents for Survey #2 during the production of the 15th Report. The authors anticipate that an increasing number of programs will supply data using this method during the production of the 16th Report.

Survey Period and Response Rate

Survey #1 and the curriculum section was mailed (10/9/98) to 107 P.A. programs, including eight programs enrolling students for the first time in the 1998-99 academic year. An initial deadline of November 13, 1998 was established. A total of 95 responses were received for a response rate of 88.8%.

The second survey was mailed upon receipt of survey #1 (all sections). If survey #1 was not received by the deadline, a follow-up letter was mailed, which included a copy of survey #2. Seventy survey #2's were received, with an additional 26 programs stating that they did not have graduate information to report.

Data Entry and Analysis

In the process of editing each questionnaire, obvious misinterpretations or inconsistencies in the responses to specific items were resolved by telephoning or e-mailing the person completing the survey. A series of contingency checks were made to identify invalid characters or extreme values in any field.

In general, analyses of the data consisted of descriptive statistics on the variables of interest, e.g. arithmetic mean,

standard deviation, median, and range of values. Medians were listed on tables when they differed significantly from the mean. T-tests were used to determine levels of statistical significance between groups. Regression equations were developed for program budget and student enrollment as well as various parameters associated with personnel salary and certain variables which were expected to influence salary, i.e., gender, months of experience, academic credentials and academic rank. Data are not reported when only one person is represented in a category.

Tables and figures presented in this report represent aggregate data from the respondents. Due to missing data and/or unusable answers, the number of respondents to a particular questionnaire item varied. In most cases, the maximum number of valid responses was 92, however, in some cases, data on nonrespondents was obtained from the APAP Directory or personal communication with nonrespondent programs, in which case a total of 107 programs were represented.

Quality Improvement

Given that the Report is an ongoing enterprise, the authors are interested in improving its usefulness to our customers. In 1995, the APAP Board of Directors approved the formation of an advisory board to review the planning and direction of the Report and to help to continually improve the product.

Constructive comments on how to improve the Report or any of its survey instruments are welcome at any time. Please address any comments to: Albert Simon, M.Ed., PA-C (e-mail: BSimon@sfcpa.edu) or Marie Link (e-mail: MLink@sfcpa.edu), Department of Physician Assistant Sciences, Saint Francis College, P.O. Box 600, Loretto, PA 15940.

The "Typical" P.A. Program

The data reported herein represents our best estimate of the population value for the variables involved and were used to describe the characteristics of the "typical" P.A. program. Mean and/or median values were reported for each characteristic examined. In calculating mean values, entries with zero values were usually included while 'missing' values were uniformly excluded. When only partial data were available, the number of respondents was identified.

In some cases, totals reported for a given category may not reflect a simple summation of the subcategories. For example, in the table presenting data on applicant age (Table 55), one program may report the total number of applicants, but not report data for any of the age subcategories for applicants. In such a case, means for each of the age groups are reported based on the programs that provided information. The programs that reported only the total number of applicants were included in the "total" figure (N=73), but not in the subcategory data (N=70). Thus, the number of responding programs upon which the category or subcategory means were based may differ. In addition to reporting aggregate data for the "typical program," program respondents were also compared on the basis of geographic region.

Analysis of Trends Over Time: 1984-1998

In comparing current data to similar data collected in previous years, trends occurring in various aspects of P.A. educational programs were identified. Specific variables for which comparisons have been made include program budget, student expenses and financial aid, salaries of program personnel, number of applicants and students enrolled, student characteristics (age, gender, ethnicity, health related experience, G.P.A. and attrition) and employment characteristics of program graduates (i.e., rate of employment, medical specialty, type of practice, starting salary).

Additional Copies of this Report

Copies of this Report may be purchased by contacting: Association of Physician Assistant Programs, 950 N. Washington Street, Alexandria, VA 22314-1552 (703-548-5538).

SECTION I. GENERAL PROGRAM CHARACTERISTICS

Listing of P.A. Programs by Geographical Region

Operational programs are listed by state and APAP consortium in Table 1. The Northeastern (N=22) and Midwestern (N=24) regions had the largest number of programs, while the Heartland (N=10) had the fewest number of programs. In total, 41 states (including the District of Columbia) currently have an operational P.A. program.

Table 1. Consortium Regions of Operational Physician Assistant Programs

NORTHEASTERN CONSORTIUM (N=22,): Connecticut, Maine, Massachusetts, New Jersey, New York

Albany-Hudson Valley	LeMoyne College	Springfield College
Bronx Lebanon Hosp. Center	Northeastern University	SUNY/Hlth Sci Brooklyn
Brooklyn Hosp/L.I. University	Quinnipiac College	SUNY/Stony Brook
Catholic Med. Ctr., Brooklyn	Rochester Institute of Tech.	Touro College
CUNY/Harlem Hospital	Rutgers University	**Univ. Of New England**
Cornell University	Seton Hall University	Wagner College/Staten Isl
D'Youville College	Sisters of Charity Medical Center	Yale University
Daemen College		

EASTERN CONSORTIUM (N=18): Maryland, Pennsylvania, Wash. D.C.

Allentown Coll. St. Francis de Sales	Gannon University	MCP - Hahnemann Univ Hlth Sci
Anne Arundel Comm. College	George Washington Univ.	PA College of Technology
Beaver College	Howard University	Phila College of Osteo. Med
Chatham College	King's College	Phila College of Textiles
Duquesne University	Lock Haven University	St. Francis College
Community College of Balt. County	Marywood University	Seton Hill College

SOUTHEASTERN CONSORTIUM (N=19): Alabama, Florida, Georgia, Kentucky, N.Carolina, S. Carolina, Tennessee, Virginia, West Virginia

Alderson-Broaddus College	Medical College of Georgia	Trevecca Nazarene University
Barry University	Medical Univ South Carolina	Univ. of Alabama - Birmingham
College of Health Science	Methodist College	University of Florida
College of West Virginia	Miami-Dade Community College	University of Kentucky
Duke University	Nova Southeastern University	University of South Alabama
East Carolina University	**South College**	Wake Forest University
Emory University		

MIDWESTERN CONSORTIUM (N=24): Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, North Dakota, Ohio, South Dakota, Wisconsin

Augsburg College	Marquette University	Univ of Osteopathic Med
Butler U/Clarian Health	Medical College of Ohio	University of St. Francis
Central Michigan Univ.	Midwestern University	Univ. of South Dakota
Cook County/Malcolm X	St. Louis University	University of WI - LaCrosse
Cuyahoga (P.A. and S.A.)	**Southern Illinois University**	**University of WI-Madison**
Finch Univ of Hlth Sci	University of Detroit Mercy	Wayne State University
Grand Valley State University	University of Iowa	Western Michigan University
Kettering College	Univ. of North Dakota	

HEARTLAND CONSORTIUM (N=10): Kansas, Louisiana, Nebraska, Oklahoma, Texas

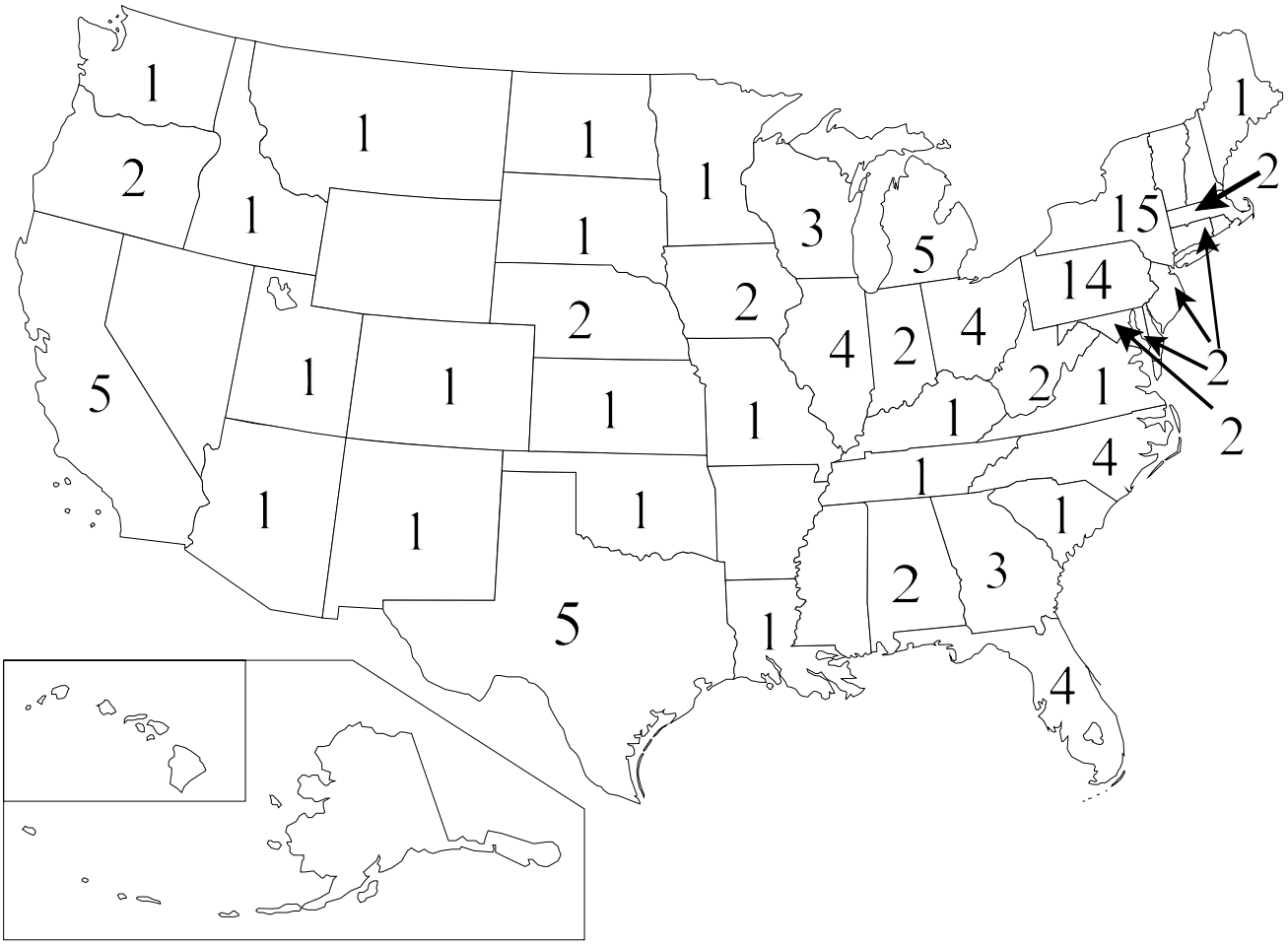
Baylor College of Medicine	University of Nebraska	University of Texas/Galveston
Interservice PA Program	Univ. of North Texas Hlth Sci Cent	University of Texas/SW Med Ctr
Louisiana St. University	University of Oklahoma	Wichita State University
Union College		

WESTERN CONSORTIUM (N=14): Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, Washington

Charles Drew Univ
Idaho State Univ
AZ School of Hlth Sci of Kirksville
Oregon Hlth Sci Univ
Pacific University
Rocky Mountain College
Stanford University
Univ of California at Davis
University of Colorado
University of New Mexico
Univ of Southern California
University of Utah
University of Washington
Western Univ. of Hlth Science

Nonrespondents to Survey #1; N=12

The above listing is based upon the newly established APAP Consortium guidelines. Each program responded as to which consortia they belonged.



The geographic distribution of the 107 operational P.A. Programs is shown in Figure 1.

Figure 1. Geographic Distribution of Programs

A summary of P.A. programs by sponsoring institution and by highest credential awarded is shown in Table 2 (next page). The majority of P.A. programs were sponsored by either a university (59%) or 4-year college (26%). Five programs were associated with a two-year college, seven programs were sponsored by a hospital, three with a medical college and one was sponsored by the armed services. The majority of programs (49.5%) awarded a baccalaureate degree on graduation, 33 programs awarded a master's degree (31%), and the remaining programs (N=21; 20%) awarded either a certificate or an associate degree as the highest credential granted. Over the past 5 years, thirteen baccalaureate programs converted to masters programs, three programs converted from a certificate to a baccalaureate

degree and two programs converted from an associate to baccalaureate program. Some programs offer a graduate degree on completion of additional courses (e.g., pub. hlth, prev. med., geriatrics, exer. sci.). These programs were not included as "entry-level" masters programs.

Table 2. P.A. Programs by Type of Sponsoring Institution and Credential Awarded*

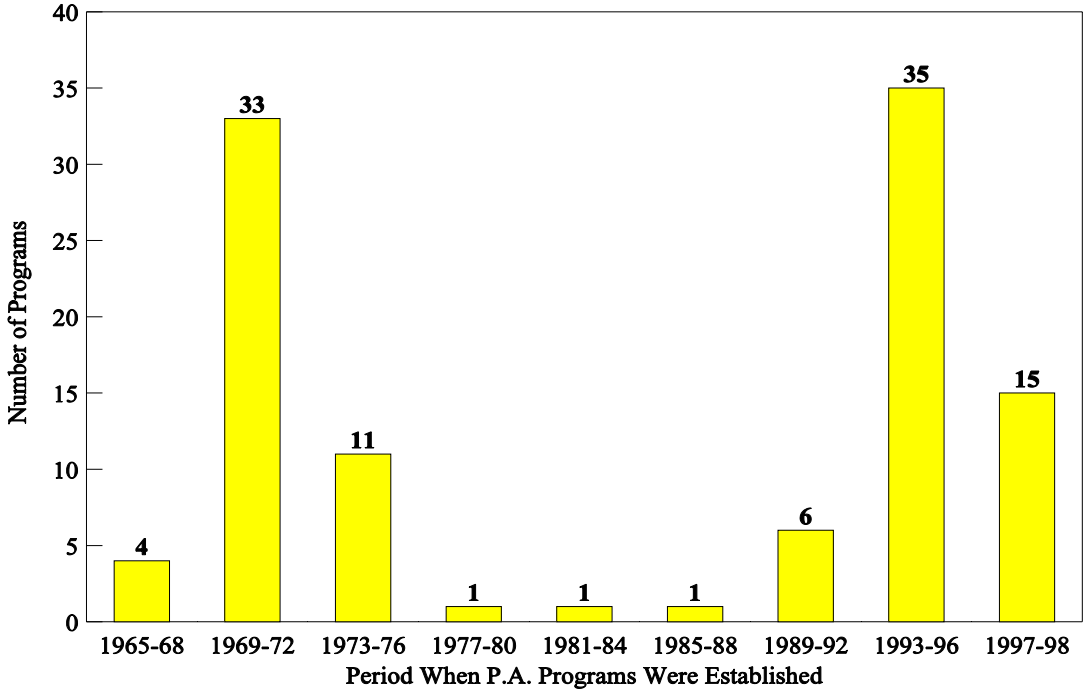
Type of Sponsoring Institution	N	%	Highest Credential Awarded	N	%
University	63	58.87	Master	33	30.84
4-Year College	28	26.17	Baccalaureate	53	49.53
Community College	5	4.67	Associate	6	5.60
Hospital**	7	6.54	Certificate	15	14.02
Medical College	3	2.80	**Total**	**107**	**100.00**
Military**	1	0.93			
Total	**107**	**100.00**			

* Nonrespondent information was drawn from APAP.
** Degrees granted from University/College Affiliates.

Year Current P.A. Programs Were Established, 1965 Through 1998

The distribution of respondent programs by year of their first entering class is shown in Figure 2. One hundred seven programs are represented, as the data for the nonrespondent programs were obtained from previous Report surveys or the Accredited Physician Assistant Programs[18] from AAPA/APAP.
The first P.A. program was established in 1965 at Duke University Medical Center and over the next four years (1965-1968) three additional programs were developed. With the passage by Congress of the Comprehensive Health Manpower Act in 1971, federal training grant support provided the stimulus for the rapid development of the majority

Figure 2. Programs By Year of First Entering Class



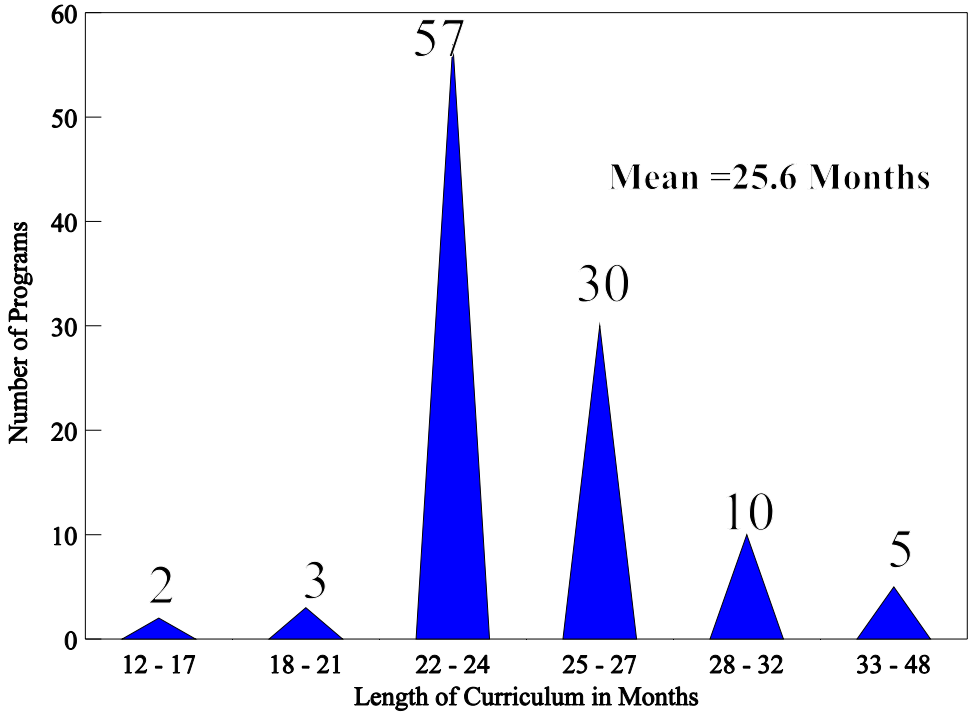
of current P.A. programs. Indeed, over the subsequent eight year period (1969 through 1976), forty-four new programs were established. Over the next twelve years, from 1977 through 1988, only three additional programs were established. In the years 1993-1996, 35 new programs were established and in 1997-1998, 15 new programs enrolled students for the first time.

Current P.A. Programs by Length of Curriculum

Historically, the length of the professional P.A. curriculum has varied across programs. For example, at some institutions, the P.A. program is a 4-year baccalaureate curriculum that admits students as freshmen. The first two years of this curriculum involves liberal arts and preparatory science courses followed by two years of professional P.A. studies. In some cases, these programs admit students with advanced standing at the beginning of the professional curriculum, typically two years in length. At the other extreme, graduate-level programs admit students who have completed all liberal arts and preparatory science courses and have earned a baccalaureate degree prior to admission. The graduate or master's level curriculum typically includes additional courses and/or experiences in research related activities in addition to the professional curriculum.

Figure 3 illustrates the diversity across programs relative to the length of the curriculum. The mean length of the curriculum was 25.6 months (N=107) with a range of 12 to 48 months. For convenience, the programs were organized into six groups. The majority of programs were between 22-24 months (57) and 25 to 27 months (30) in length. The median was 24 months. The length of the curriculum of P.A. programs has increased in the past several years, for example, in 1986 and 1990, the average length of the curriculum was reported as 23.7 and 24.0 months, respectively. The mean of 25.6 months represents a decrease of 1.2% from last year. Non-respondent information was obtained from the APAP Program Directory[1].

Figure 3. P.A. Programs by Length of Curriculum (N=107)

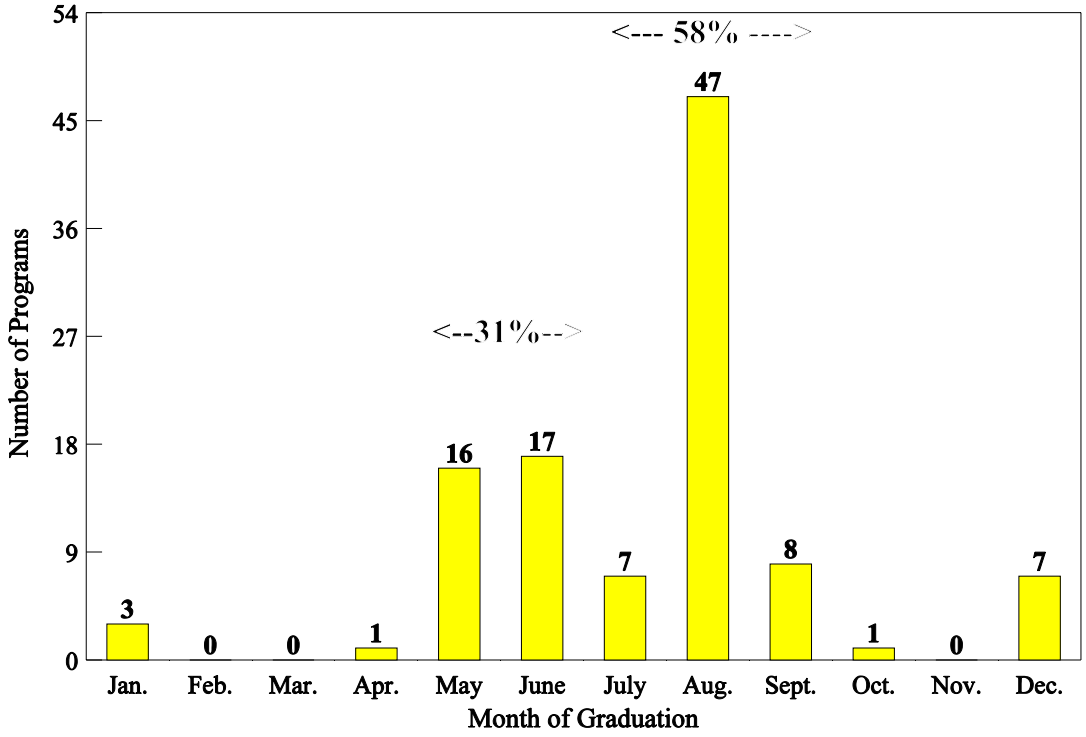


Current P.A. Programs by Month of Graduation

The distribution of P.A. programs by month of graduation is shown in Figure 4. Data for nonrespondent programs and those that have been newly established were supplemented by information from the 1998 P.A. Program Directory[1].

Currently, a majority (N=95; 88.8%) of programs graduate students over two periods, (a) between May and June (N=33; 30.8%) and (b) July, August and September (N=62; 57.9%.). It should be noted that two programs graduate two classes per year and one program graduates three classes per year.

Figure 4. P.A. Programs By Months of Graduation (N=107)



Financial Characteristics of P.A. Programs

Information concerning the sources of financial support for P.A. programs is shown in Table 3 (next page). Only data from those programs reporting financial support from the sources indicated were used to calculate the sample mean and range for each category. The number of programs reporting no support from a particular source (last column) is also shown. Note, data presented in the latter column excludes those programs that did not respond to a specific item. Most programs (N=57) reported support from more than one source, for example, 25 programs reported two sources, 17 programs three sources, 10 programs four sources and 5 programs reported five or more sources of support.

The sources of financial support were classified as either internal or external. Internal support referred to funds available from within the sponsoring institution and/or tuition and fees retained by the program. External support included those funds available from outside the institution, such as federal or state grants, support from public or private foundations, and/or from private industry.

The primary source of internal financial support for the majority (N=79) of programs was the sponsoring institution, providing an average of $501,150/year/program (S.D.=$291,745). Eleven programs reported that they received no

Table 3. Sources of Financial Support for Physician Assistant Programs

Source of Financial Support	Mean	Median	Range	N	# With No Support
Internal					
Sponsoring Institution	$501,150	$460,000	$ 49,000 - 1,770,000	79	11
Tuition and Fees (Retained by Program)	$547,353	$384,500	$ 3,000 - 1,847,000	34	56
External					
Federal Grants	$173,030	$136,000	$ 3,000 - 884,000	37	53
State Grants	$155,933	$150,000	$ 1,000 - 328,000	15	75
Foundations	$ 42,200	$ 20,000	$ 11,000 - 100,000	5	85
Private Donation	$ 51,714	$ 19,000	$ 10,000 - 200,000	7	83
Industry	$113,000	$104,000	$ 5,000 - 230,000	3	87
A.H.E.C. Support	$ 27,167	$ 17,500	$ 5,000 - 98,000	12	78
Other	$ 82,125	$ 59,000	$ 1,000 - 229,000	16	74
Total Program Support	**$740,898**	**$659,000**	**$100,000 - 2,163,000**	**90**	**0**

financial support from their sponsoring institution. Thirty-four respondents indicated that they received substantial support from student tuition and fees paid directly to the program (mean=$547,353, S.D.=$501,008). Fifty-six programs did not receive revenue from student tuition or fees.

External financial support for programs was primarily from federal training grants from the Department of Health and Human Services, Division of Medicine, Bureau of Health Professions. Thirty-seven programs (41% of the respondents to this item) received federal funds during 1998-1999 fiscal year. The amount of federal support ranged from $3,000 to $884,000, averaged $173,030 per program (S.D.=$141,470) and accounted for 23.4% of the total budget, slightly higher than the figure (21.5%) reported last year. Fifty-three programs indicated they did not receive federal grant support in 1998-1999. In addition to federal training grants, fifteen programs indicated they received state grants averaging $155,933 per year and sixteen programs reported financial assistance received from other sources (e.g., rate appeals, teaching contracts, hospitals, training grant, clinical service, scholarships, Title III and program projects) averaging $82,125 per program.

The total annual financial support from all sources for the 90 programs reporting averaged $740,898 per program (median=$659,000; S.D.=$424,551). An analysis of the association between total budget and total student enrollment was examined. Two correlations were derived, the first using full-time (F.T.) students enrolled ($r = 0.61$; $p<.001$) and the other utilizing the sum of F.T. and ½ of the part-time (P.T.) students ($r = 0.637$; $p<.001$). The results demonstrated a statistically significant relationship between enrollment and program budget.

The following prediction equations were derived from the data using a least squares analysis, estimating program budget and total student enrollment:

(a) Total Program Budget = (501.623) + (3.07 x # F.T. students enrolled) (in $1,000's)

(b) Total Program Budget = (497.206) + (3.19 x # (F.T. + P.T./2) students enrolled) (in $1,000's)

Thus, using equation “a” for a program with an enrollment of 50 F.T. students, one would predict a budget of $655,123 per year while equation “b” predicts, for a program with 50 F.T. and 10 P.T. students, a budget of $672,656/year.

In terms of the reported program budget, the cost of training the average P.A. student for one year of professional training can be roughly estimated by dividing the program budget by the total number of students enrolled (F.T. + P.T./2). Thus, for the 1998 academic year, the cost for the typical program was approximately $8,585 to educate each student (mean budget of $740,898 divided by an average enrollment 86.3 of students/program). This figure is 1.8% higher than in the previous year.

The estimated cost/student is based on number of students enrolled and reported "program" budget. It should be noted, however, that these figures may exclude (1) overhead costs provided by the institution, (2) faculty, other than "core" program faculty (e.g., basic science faculty) that are supported by their respective departments and (3) preceptors responsible for the clinical training of P.A. students. Therefore, the values reported herein may be substantially underestimated.

Program Budget and Federal Support by Region

A comparison of federal support and total program budget by geographic region is shown in Table 4. Programs located in the Western region reported the largest total budget ($1,182,920/program). The most federal grant support was located in the Northeastern region, averaging $258,500/program. Programs in the Heartland region reported the smallest total budget ($596,667/program) and had the least amount of support from federal training grants ($112,200/program). The proportion of total program budget derived from federal funds was lowest (16.4%) in the Western region, while programs in the Northeastern region derived over one-fourth of their total budgets from federal sources.

Table 4. Total Program Budget and Federal Training Grant Support by Geographic Region

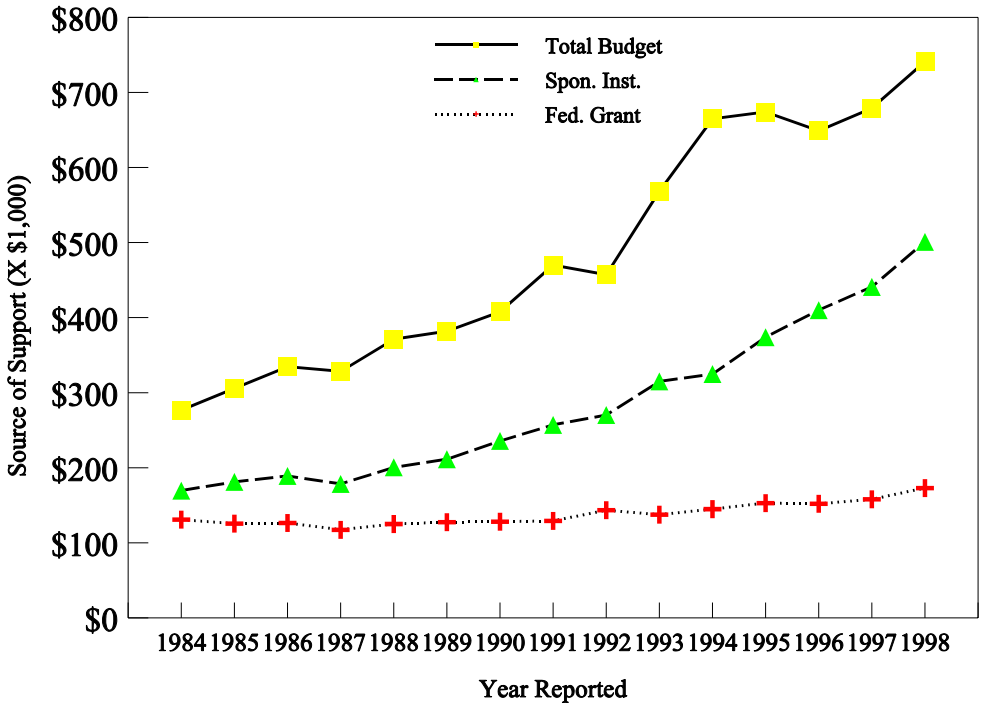
Geographic		Total Budget		Federal Grants		% of	Fed. Support	
Region	N	Mean	S.D.	Mean	S.D.	Budget	Yes	No
Northeastern	18	$ 771,278	$409,895	$258,500	$ 29,086	33.5%	6	12
Eastern	14	$ 640,059	$369,907	$141,000	$ 40,307	22.0%	3	11
Southeastern	18	$ 845,167	$510,564	$160,883	$ 40,610	19.0%	6	12
Midwestern	20	$ 723,000	$779,877	$128,833	$ 72,843	17.8%	7	13
Heartland	9	$ 596,667	$202,707	$112,200	$ 12,335	18.8%	5	4
Western	11	$1,182,920	$524,672	$193,555	$ 97,813	16.4%	10	1
Total	**90**	**$ 740,898**	**$424,551**	**$170,305**	**$141,470**	**23.4%**	**37**	**53**

Trends in P.A. program support from 1984 through 1998 are shown in Table 5 (next page) and shown graphically in Figure 5 (next page). The total budget column is not a summation of institutional and federal grant support. The total budget for 1998 increased by over $60,000 from the previous year. The level of training grants accounted for 23.4% of the total budget, no significant change from 1997. Overall, the total program budget increased an average of 11.2% annually from 1984 to 1998 and program support from the sponsoring institution increased by an average of 9.3% per year for this same period. Although federal support has remained within a narrow range over the years, the proportion of the total budget from federal training grants has decreased from 41% in 1985 to 23% in 1998. As shown in Figure 2 there has been a sustained increase in both the total program budget and institutional support since 1984. Since 1984, total program budget increased by over 168% while support from the sponsoring institution increased 195%. Although Federal training grant support has increased by 25.8% since 1993, the proportion of the total budget from this source has declined substantially.

Table 5. Trends in Physician Assistant Program Support, 1984 Through 1998

	Sponsor. Instit.		Federal Grant		Total Budget		% Budget Fed. Grant	
Year	N	Mean	N	Mean	N	Mean	N	Mean
1984-85	31	$169,581	27	$130,889	37	$276,919	27	35%
1985-86	35	$181,171	31	$125,484	38	$305,868	31	41%
1986-87	37	$189,135	25	$126,457	42	$334,690	33	39%
1987-88	39	$178,590	35	$117,429	45	$328,444	35	38%
1988-89	40	$200,700	34	$125,118	44	$371,386	34	34%
1989-90	35	$211,400	33	$127,600	44	$381,978	34	33%
1990-91	41	$235,780	36	$128,222	47	$409,745	36	31%
1991-92	44	$257,182	37	$129,243	48	$470,063	37	28%
1992-93	49	$270,346	35	$143,514	55	$457,200	35	31%
1993-94	47	$315,085	35	$137,514	55	$568,564	35	24%
1994-95	54	$324,889	41	$144,926	58	$664,797	41	22%
1995-96	65	$373,957	37	$152,514	71	$673,975	37	23%
1996-97	67	$410,456	35	$152,300	77	$648,871	35	22%
1997-98	85	$441,129	34	$157,765	90	$679,096	34	22%
1998-99	**79**	**$501,150**	**37**	**$173,030**	**90**	**$740,898**	**37**	**23%**

Figure 5. Trends in P.A. Program Support: 1984 Through 1998



Student Educational Expenses

For the class entering in 1998, respondents estimated student tuition and educational expenses for the entire length of the program. These results are shown in Table 6 (next page). No information was requested concerning living expenses. It should be noted that for the first five Annual Reports, tuition was reported for the student's ENTIRE professional program, for the next eight Annual Reports tuition was reported for the current academic year, however, with the 14th Annual Report, tuition and other educational expenses (e.g., books, fees, equipment) were again reported for the entire professional program.

Table 6. Tuition and Expenses of P.A. Students

Tuition for Entire Program	Mean	Range	N	Mean/Month/Program
Resident Student	$22,428	$2,050-72,500	92	$1,105
Nonresident Student	$27,922	$2,400-72,500	92	$1,375
Books, Fees, and Equipment	$ 4,225	$1,200-24,080	94	$ 208
Total Student Costs: (Tuition, Books, Fees, Equipment)				
Resident Student	$26,653	$3,400-85,000	92	$1,313
Nonresident Student	$32,147	$5,100-85,000	92	$1,584

On average, there was a $5,494 difference between resident and nonresident tuition among the 92 programs responding. Data are also expressed as the mean cost per student per month. The results of this computation are shown in the right column of Table 6, and indicate that the typical resident student paid an average tuition of $1,105 per month while the nonresident paid $1,375 per month, a 24% difference.

Expenses associated with books, equipment and fees averaged $4,225 per student for their entire professional training. These expenditures represented approximately 15.9% and 13.1% of the total educational expenses for resident and nonresident students, respectively. The total expenses incurred by the typical P.A. student for their entire P.A. education (includes tuition, books, equipment, and fees) averaged $26,653 for residents and $32,147 for nonresidents. The average total cost per month was $1,313 for residents and $1,584 for nonresident students.

As shown in Table 7, the majority of students (83.1%) received financial aid which averaged $13,808 per student per year and accounted for 104% of the costs of tuition, fees, books, and equipment ($13,327) for the typical resident

Table 7. Financial Aid Support Provided P.A. Students

Financial Aid Characteristic	Mean	Range	Number
% Receiving Financial Aid	83.1%	3-100%	83
Amount of Aid Received/Year	$13,808	$1,000-32,000	78

student. Using these values, one can estimate that the typical resident P.A. student would be indebted approximately $27,616 (2 X $13,808) at the conclusion of their professional education.

Student Expenses by Geographic Region

Tuition (for the entire curriculum) and total costs for P.A. students during the 1998-99 academic year are shown by geographic region in Table 8. The average resident tuition and total expenses incurred by P.A. students varied

Table 8. Expenses of P.A. Students by Geographic Region

Geographic		Mean Tuition		Total Costs/Month		% Receiving
Region	N	Resident	Nonresident	Resident	Nonresident	Finan.Aid
Northeastern	20	$26,726	$29,856	$1,316	$1,470	81.2%
Eastern	14	$30,799	$31,956	$1,517	$1,574	79.3%
Southeastern	17	$25,238	$30,737	$1,247	$1,514	86.1%
Midwestern	20	$17,916	$25,422	$ 903	$1,292	84.1%
Heartland	9	$ 9,642	$25,706	$ 494	$1,157	85.6%
Western	12	$21,472	$26,885	$1,231	$1,541	84.1%
Total	**92**	**$22,428**	**$27,922**	**$1,105**	**$1,375**	**83.1%**

extensively across geographic region. Resident tuition was highest for students enrolled in programs located in the Eastern region ($30,799/curriculum) and lowest for programs located in the Heartland region ($9,642/curriculum). Nonresident tuition varied less across regions with a difference of approximately $6,534 between the highest and lowest values. Total student expenses per month for both residents and nonresidents were highest among programs in the Eastern region and lowest in the Heartland region. The proportion of students receiving financial aid varied from 79.3% in the Eastern region to 86.1% in the Southeastern region.

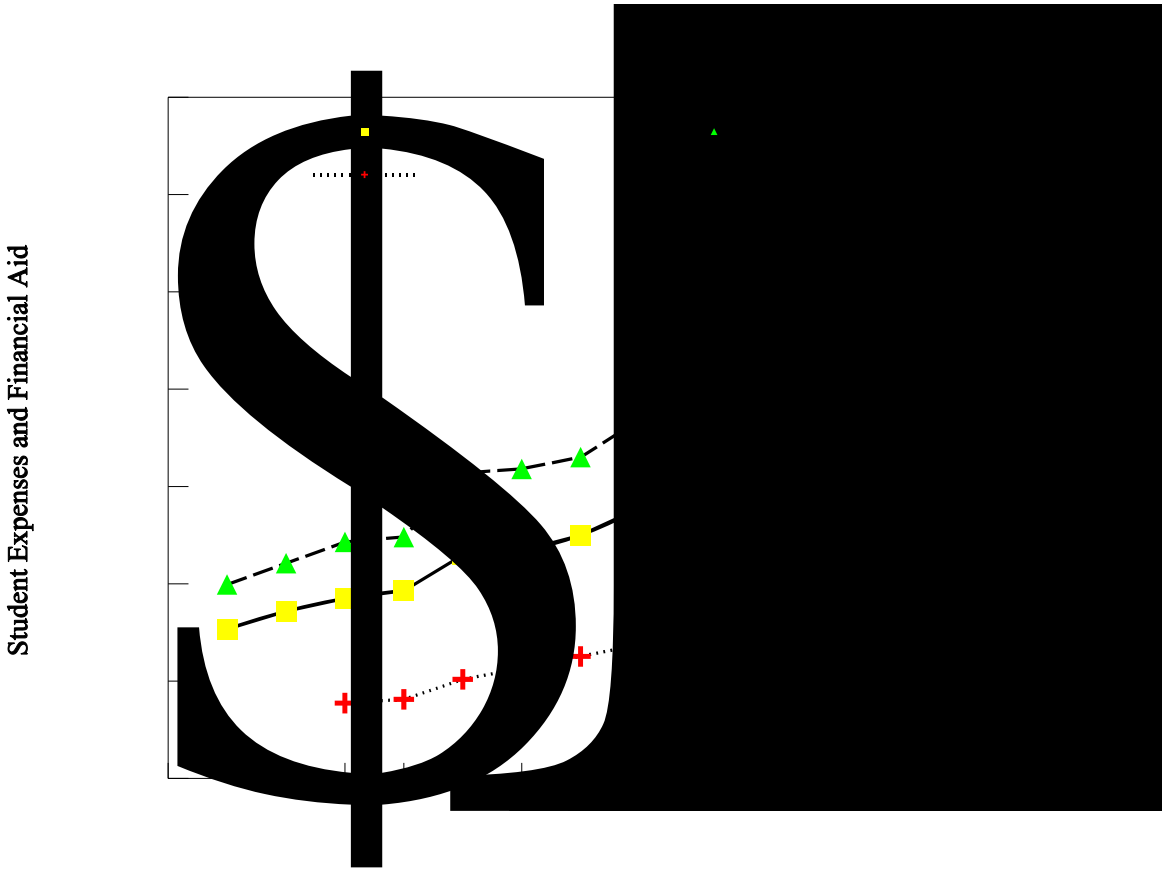
Trends in P.A. Student Expenses

Comparisons between tuition and student expenses, and the proportion of students receiving financial aid from 1984 through 1998, are shown in Table 9 and Figure 6 (next page). Tuition has increased 252% and 210% over the past fifteen years for resident and nonresident students, respectively, an average of 16.8% and 14.0% per year, respectively. Similarly, total student expenses (which includes tuition, books, equipment, and fees over the entire program) increased by 248% and 223% over the fifteen-year period for resident and nonresident students, respectively.

Table 9. Trends in P.A. Student Expenses, 1984 Through 1998

Academic	Mean Tuition				Total Expenses				% With Fin. Aid		Fin. Aid
	Resident		Nonresident		Resident		Nonresident				
Year	N	Mean	N	Mean	N	Mean	N	Mean	N	%	Received
1984-85	37	$ 6,378	36	$ 8,986	35	$ 7,669	34	$ 9,962	33	65%	N/A
1985-86	40	$ 7,098	40	$ 9,565	40	$ 8,588	40	$11,055	40	65%	N/A
1986-87	46	$ 7,626	43	$10,451	45	$ 9,247	42	$12,155	39	63%	$3,866
1987-88	47	$ 8,012	47	$10,775	47	$ 9,643	47	$12,494	43	63%	$4,060
1988-89	47	$ 9,472	47	$13,660	47	$11,485	47	$15,681	43	67%	$5,086
1989-90	47	$ 9,978	47	$14,174	47	$11,706	47	$15,902	43	69%	$5,663
1990-91	47	$10,620	47	$14,614	47	$12,495	46	$16,511	42	71%	$6,268
1991-92	48	$11,714	47	$16,240	48	$13,890	47	$18,440	45	71%	$6,860
1992-93	55	$13,092	55	$17,772	55	$15,694	55	$20,375	51	71%	$7,558
1993-94	55	$14,470	55	$18,774	55	$17,153	55	$21,457	49	71%	$8,755
1994-95	59	$16,030	59	$21,106	59	$18,676	59	$23,752	53	77%	$9,846
1995-96	69	$17,872	69	$22,702	69	$21,308	69	$26,132	64	79%	$11,251
1996-97	76	$20,132	76	$25,088	76	$23,695	76	$28,775	68	79%	$14,114
1997-98	91	$20,296	91	$26,228	91	$24,057	91	$29,989	84	85%	$13,890
1998-99	92	$22,428	92	$27,922	92	$26,653	92	$32,147	83	83%	$13,808

The proportion of students receiving financial aid averaged 71% from 1984 through 1998 and has varied within a narrow range, i.e., 63% to 85%, over time. It should be noted that the data shown in Table 9 and Figure 3 represents the tuition and costs expended by the typical student for the entire professional program and does not include pre-program academic preparation or living expenses. Beginning with the 1986 annual survey, respondents were asked to estimate the amount of financial aid received per student. Inspection of Figure 3 illustrates that while financial aid received by the typical student increased by approximately 257% since 1986, total expenses increased by 188% for resident and 164% for nonresident students during that same period. Unfortunately, since 1990-1991, student expenses increased 113.3% and 94.7% for resident and nonresidents, respectively, however, there was also a 101.3% increase in financial aid during that period. It should be noted that the amount of financial aid received has deceased during the last two years.



National Health Service Corps (N.H.S.C.) Support

The number and proportion of students receiving support from the National Health Service is shown in Table 10. Of the four types of support available, N.H.S. Corps Scholarships accounted for 91/119 (76%), followed by Loan Repayment (13%). In total, 48 scholarships were reported among the first year class and 60 among the second year class.

Table 10. Students: Public Health Service Scholarships

	N.H.S. Corps		COSTEP		Loan Repay.		Comm. School		Total
Class	N	%	N	%	N	%	N	%	N
1st Year	39	81.3%	1	2.1%	7	14.6%	1	2.1%	48
2nd Year	42	70.0%	7	11.7%	8	13.3%	3	5.0%	60
3rd Year	10	90.9%	0	0.0%	1	9.1%	0	0.0%	11
Total	**91**		**8**		**16**		**4**		**119**

SECTION II. PROGRAM PERSONNEL

Classification of Physician Assistant Program Personnel

In 1984, the first APAP survey yielded information on the "core" personnel employed by P.A. programs. Core personnel were defined as those who devoted at least 50% of their time directly to program-related activities. These findings indicated that a total of 258 individuals were employed by the 36 programs responding (7.2 individuals/program and 6.0 FTE's/program). At that time, the personnel were classified into four categories based on their position: administrative (106; 41%), clerical (45; 18%), educational (96; 37%), and research (11; 4%). The total number of employees per program ranged from 3 to 13 with an average of one employee for every 7.7 students enrolled in the typical program.

Program personnel (excluding clerical persons) were further classified into two groups, those that were credentialed as a P.A. and those that were not (herein referred to as non-P.A.'s). The reader is referred to previous Annual Reports for a more detailed description of these personnel for each year. Based on the personnel data over the past fifteen years, it has been shown that there are an average of 3.5 to 3.9 physician assistants (P.A.'s) employed per program. This figure excludes program directors, many of whom were P.A.'s.

For purposes of our present personnel analysis, program staff and faculty were divided into three groups: (a) program directors, (b) medical directors, (c) "program personnel" which included P.A.'s (excluding program directors) and non-P.A.'s (excluding program directors). The P.A. and non-P.A. groups were further subdivided into four categories (I, II, III, and IV) on the basis of their position titles as summarized in Table 11. Category I includes program personnel whose responsibilities were generally associated with the first-year curriculum, typically including courses

Table 11. Classification of Program Personnel by Category

Category	Typical Position Titles	
I	Lecturer/Instructor	Educational Specialist
	Educ./Acad. Coordinator	Course Coordinator
II	Clinical Coordinator	Clinical Skills Coordinator
	Clinical Instructor	
III	Assoc. or Assist. Director	Executive Assistant
	Program Assistant	Co-Director
IV	Admin. Secretary	Secretary
	Admin. Assistant	Data Manager
	Office Supervisor	

in the basic and behavioral sciences and/or the curriculum associated with history/physical examination skills as well as components of introduction to clinical medicine courses. Category II personnel were those involved in the second year or clinical rotation phase of the educational program. These individuals generally assumed clinical teaching or evaluation responsibilities and/or coordinated the students' clinical training assignments. Category III describes those individuals who had primarily administrative-level positions, but excluded those that were program or medical directors. Category IV included personnel who were mainly classified as support staff. Category IV personnel were not considered faculty.

It should be appreciated that program faculty and staff often share responsibilities across teaching, administrative and research activities. Despite this limitation, this classification is a useful way to describe and analyze core program personnel. The majority of the tables that follow in this section list Category IV personnel information, however it is not included in the total/mean columns. Please refer to each individual table to determine if it is included or not.

Number of P.A. and Non-P.A. Program Personnel by Category

The number of P.A. and non-P.A. program personnel by category is shown in Table 12. It should be noted that program directors are not included in Tables 12 through 31, unless specifically indicated. Across all four categories, there were 676 (203 Category IV) personnel reported by survey respondents (N=97; 7.0 per program), 409 P.A.'s and

Table 12. P.A. and Non-P.A. Program Personnel by Category

Characteristic	Personnel Category I	II	III	IV	Categories I - III	
Physician Assistants						
Total Number	194	184	31	0	409	409
# of Programs*	83	90	26	0	95	97
Mean #/Program	2.3	2.0	1.2	0.0	4.3**	4.2***
Non-Physician Assistants						
Total Number	36	10	18	203	64	64
# of Programs*	30	8	17	88	46	97
Mean #/Program	1.2	1.3	1.1	2.3	1.4**	0.7***

* Number of programs reporting at least one P.A. or non-P.A. in a category.
** Mean is based on number of programs reporting personnel in a category.
*** Mean based on all (N=97) programs.

267 non-P.A.'s. Ninety-five programs indicated that they had at least one Category I - III P.A. (mean of 4.3/program) and 46 programs indicated that individuals without a P.A. credential were employed in at least one of the I - III categories (mean of 1.4/program).

The majority of program personnel in Categories I - III were credentialed as P.A.'s (86%) as compared to non-P.A.'s (14%). Proportionately, there were relatively few non-P.A.'s in Category II positions (5.2% of Category II personnel). Across all programs (N=97), the mean per program is 4.2 P.A.'s and 0.7 non-P.A.'s.

Number of P.A. Program Personnel by Region

The total number of personnel (P.A. and non-P.A. personnel) associated with P.A. programs by geographic region and category is shown in Table 13 (next page). Physician assistant programs located in the Eastern region of the United States employed the greatest number of Category I - III P.A.'s per program, while the Heartland region employed the greatest number of non-P.A.'s per program. Programs located in the Northeastern and Midwestern regions had the fewest P.A.'s associated with the program (mean of 3.7/program and 3.6/program, respectively). Programs in the Eastern region employed the least number of Category I-III non-P.A.'s (0.1/program). Programs in the Heartland region employed the greatest number of Category IV personnel per program (2.9/program), while programs in the Eastern region employed the least (1.3/program).

Table 13. P.A. and Non-P.A. Program Personnel by Category and Region

Geographic Region	N	Personnel Category I	II	III	IV	Total	Mean per Program (Cat I-III)
Northeastern	20	21 (4)	46 (1)	6 (2)	0 (43)	73 (50)	3.7/(0.4)
Eastern	16	48 (1)	31 (0)	2 (1)	0 (20)	81 (22)	5.1/(0.1)
Southeastern	17	33 (9)	30 (1)	6 (4)	0 (41)	69 (55)	4.1/(0.8)
Heartland	9	24 (11)	16 (1)	4 (2)	0 (26)	44 (40)	4.9/(1.6)
Midwestern	21	35 (6)	33 (5)	7 (3)	0 (43)	75 (57)	3.6/(0.7)
Western	14	33 (5)	28 (2)	6 (6)	0 (30)	67 (43)	4.8/(0.9)
Total	**97**	**194 (36)**	**184 (10)**	**31 (18)**	**0 (203)**	**409 (267)**	**4.2/(0.7)**

* # of non-P.A. personnel are in parentheses, mean/program is based on N=97.

General Characteristics of P.A.'s and Non-P.A.'s Employed by Programs

The general characteristics of physician assistant personnel employed by P.A. programs, by category, excluding non-P.A. program personnel, are shown in Table 14. Across all categories, P.A.'s devoted an average of 90% of their time to the program; the majority were classified as full-time employees. There were some differences between categories in the percent of time the P.A. worked. Twenty of the 31 P.A.'s in Category III were employed on a full-time basis, whereas P.A.'s in Categories I and II averaged 0.90 FTE. The mean annual salary across all categories

Table 14. General Characteristics of Physician Assistant Personnel

	Personnel Category I	II	III	Total***
Characteristic	N = 194*	N = 184	N = 31	N = 385
Mean % Time	91.2%	90.3%	95.1%	90.4%
Annual Salary	N = 180	N = 150	N = 20	N = 350
Mean**	$54,175	$55,319	$65,702	$56,165
Range	$27,500 - $85,000	$30,000 - $75,000	$45,000-$81,550	$27,500-$85,000
Months in Position	N = 192	N = 180	N = 25	N = 397
Mean	36.2	34.5	77.0	40.1
Median	25.0	36.0	64.0	40.0
Range	1-240	1-299	2-384	1-384

* Number of P.A.'s in category.
** Salaries adjusted to 1 FTE
*** Includes one employee listed as a Category IV

was $56,165 with a range from $27,500 to $85,000. On average, individuals had been in their position for 40.1 months (range 1-384 months). There was some difference in mean salary across categories, ranging from $54,175 for Category I to $65,702 for Category III, a 21% increase. P.A.'s in Category III had held their positions for the longest period of time, averaging 77 months, while the majority of P.A.'s in Category I had been associated with the program for the least amount of time (median: 25 months).

Clinical Activity of Physician Assistant Personnel

General characteristics of the clinical activity of P.A. personnel are shown in Table 15. Note, P.A. credentialed program directors were **also** included in this analysis, however, medical directors **were not**. The following information was requested of respondents: the number of personnel that were clinically active, mean number of hours worked per week, number that were reimbursed for their clinical services, the amount paid for said services (mean

Table 15. General Characteristics of Clinically Active Physician Assistant Personnel

	P.A. Personnel Category			Program	
	I	II	III	Directors	Total
Characteristic	N=198	N=173	N=31	N=90	N=492
Clinical P.A.'s	128(65%)	100(58%)	14(45%)	32(36%)	274(56%)
Hrs Worked/Week					
Mean	11.1	14.4	7.9	10.0	12.0
(N)	(128)	(100)	(14)	(31)	273
Range	1-36	1-48	4-12	2-60	1-60
Number (%) Paid for Services	116(91%)	93(93%)	14(100%)	28(88%)	251(92%)
Mean Wage/Hour	$32.00	$32.31	$32.07	$36.17	$32.58
(N)	(98)	(76)	(10)	(26)	(210)
Annual Amount*	$17,050	$22,333	$12,161	$17,362	$18,768
Adjust. Salary**	$62,361	$56,554	$59,374	$71,497	$62,177
% Salary From Clinical Earnings	27.3%	39.5%	20.5%	24.3%	30.2%

* Estimated at 48 weeks per year.
** Base Salary + Clinical Earnings for those clinically active.

hourly wage) and whether their clinical earnings were included in the salary reported in the personnel table. Based on the data reported, the amount and percent of annual salary derived from clinical service was calculated. Lastly, for those personnel who received earnings through their clinical service in addition to their regular salary, a gross salary (combining program and clinical sources) was calculated. Over half (56%) of the program personnel that were credentialed as P.A.'s had clinical responsibilities in addition to their program activities. This proportion varied across the three categories and was greatest for those in category I (65%). Thirty-six percent of program directors (P.A.'s) also had clinical responsibilities.

On average, P.A.'s in Categories I-III spent 12.0 hours per week providing patient care; program directors who were P.A.'s spent an average of 10 hours per week. The range in time spent was very broad, from one hour per week to 60 hours per week. Ninety-two percent of P.A. personnel received additional compensation for their clinical services. Category III P.A.'s were the most likely to receive compensation and Category I the least likely. The mean hourly wage averaged $32.58/hour and varied from $32.00 for Category I to $36.17 per hour for program directors.

Given the mean number of hours worked per week, the average hourly wage and, assuming an average of 48 weeks were worked per year, the annual earnings from patient care services of the P.A.'s with clinical responsibility was estimated. On average, these individuals earned $18,768 from their clinical activity. Category III personnel had the

lowest additional income ($12,161) and those in category II had the highest ($22,333).

An "adjusted" annual income (base salary + clinical earnings) was determined for those indicating they received earnings from both sources. On average, there was a 14.1% increase over base salary for those personnel that were clinically active. And, clinical earnings accounted for over one-fifth of the personnel salary. It would appear that the base salary for clinically active personnel is lower than those not in practice. In subsequent tables, salary figures will not include clinical earnings.

General characteristics of non-P.A. credentialed personnel by category is shown in Table 16. Across categories, the typical non-P.A. in Categories I - III devoted 87% of their time to the program; the majority were classified as full-time employees.

Table 16. General Characteristics of Non-P.A. Personnel

	Personnel Category				
	I	II	III	IV	Total (Cat. I - III)
Characteristic	N = 36	N = 10	N = 18	N = 209	N = 64
Mean % Time	88.2%	95.0%	80.8%	93.3%	87.2%
Annual Salary*	N = 30	N = 10	N = 17	N = 186	N = 57
Mean	$54,804	$39,223	$48,837	$24,982	$50,291
Median	$54,795	$34,215	$53,532	$24,810	$49,500
Range	$29,053-$100,000	$27,300-$60,000	$21,000-$80,000	$12,417 - $48,808	$21,000-$100,000
Months in Position	N = 34	N = 10	N = 18	N = 198	N = 62
Mean	56.6	31.2	103.2	59.4	66.0
Median	29.0	18.0	55.0	29.0	27.5
Range	1-276	3-73	3-312	1 - 396	1-396

* Salaries adjusted to 1 FTE

The mean salary for non-P.A.'s across Categories I - III was $50,291, ranging from $21,000 to $100,000. On average, these individuals had been employed 66 months (median of 27.5, range of 1-396 months). Non-P.A.'s in Category I earned the highest average salary ($54,804). Non-P.A.'s in Category II had the lowest average salary ($39,223). Utilizing the median, Category II non-P.A.'s had been associated with the program for the shortest period of time, while Category III non-P.A.'s had been employed almost three times as long. Overall, non-P.A.'s had a lower average annual salary than did personnel who were P.A.'s. Category IV personnel had a mean salary of $24,982 with a broad range of $12,417 to $48,808. Category IV personnel had been in their position an average of 59.4 months (median: 29 months).

Characteristics of program personnel in Categories I - III, by ethnicity and gender, are shown in Table 17 (next page). It should be noted that data on P.A. and non-P.A. program personnel were combined for the analyses in Tables 17 and 21. Proportionately, there were more women (60%) among the P.A. and non-P.A. personnel; 60% of the white (228/379) and 57% of the non-white personnel (39/68) were women. In total, 68 P.A. program staff and/or faculty from 30 programs were identified as members of an ethnic minority (41 Black/African-American, 15 Latino/Hispanic, seven Asian, two Native American/Alaskan Native, and three Other). This constitutes 15.2% (68/447) of the total number of faculty and staff and 31% of the programs responding. In all categories except Black/African-American, males earned higher annual salaries than their female counterparts where comparisons were possible. Females were employed longer in their current position than males in every category, except Latino/Hispanic.

Table 17. Salary and Months in Position of Category I - III P.A. and Non-P.A. Personnel by Ethnicity and Sex

	Number of Personnel			Mean Annual Salary		Mean Months in Position	
Ethnicity	Male	Female	Total	Male	Female	Male	Female
White/Non-Hisp.	151	228	379	$59,959	$53,827	45.9	46.7
Black/African-Amer.	16	25	41	$51,181	$54,040	45.4	46.0
Latin/Hisp.	9	6	15	$58,702	$47,473	61.8	29.8
Asian/Pac. Isl.	2	5	7	$54,000	$52,940	13.5	45.4
Nat. Amer./Alaskan	0	2	2	---	$53,795	---	40.5
Other	2	1	3	$64,500	---	8.5	88.0
Total	**180**	**267**	**447**	**$59,100**	**$53,748**	**45.9**	**46.3**

Characteristics of program personnel in Category IV, by ethnicity and gender, are shown in Table 18. Category IV personnel consisted mainly of females (96.4%). Fifty-three (27%) Category IV P.A. program staff from 23 programs were identified as members of an ethnic minority. Utilization of the median reveals that females were employed longer in their current position than males, 28 and 20 months, respectively.

Table 18. Salary and Months in Position of Category IV Personnel by Ethnicity and Sex

	Number of Personnel			Mean Annual Salary		Mean (Median) Months in Position	
Ethnicity	Male	Female	Total	Male	Female	Male	Female
White/Non-Hisp.	5	136	141	$29,325	$24,187	52.0	54.6
Black/African-Amer.	1	33	34	---	$27,321	23.5	57.5
Latin/Hisp.	1	15	16	---	$26,510	17.0	45.5
Asian/Pac. Isl.	0	2	2	---	$28,218	---	23.0
Nat. Amer./Alaskan	0	1	1	---	---	---	264.0
Total	**7**	**187**	**194**	**$30,417**	**$25,006**	**27.9 (20)**	**56.2 (28)**

The relationship between salary, percent time, and months in position for P.A. and non-P.A. personnel by sex is shown in Table 19 (next page). Overall, male personnel earned higher annual salaries than female personnel. In one category, P.A. Category III, the women personnel earned more than the men. On average for Categories I - III, non-P.A. personnel had been in their positions substantially longer than P.A. personnel.

Table 19. Analysis of Salary, Percent Time and Months in Position of P.A. and Non-P.A. Personnel by Sex

	Mean Annual Salary				Mean % Time				Mean Months in Position			
Categories	Male	N	Female	N	Male	N	Female	N	Male	N	Female	N
Cat. I												
P.A.	$59,062	70	$54,179	102	93.5	85	90.9	112	39.9	84	44.6	112
Non-P.A.	$62,017	14	$48,492	16	89.0	20	87.2	16	44.8	18	69.8	16
Cat. II												
P.A.	$57,213	57	$55,231	100	89.8	65	89.4	111	43.9	65	36.1	111
Non-P.A.	$42,267	3	$37,919	7	100	3	92.9	7	8.7	3	40.9	7
Cat. III												
P.A.	$65,129	10	$66,488	13	96.0	10	88.6	14	95.6	10	72.9	14
Non-P.A.	$64,124	6	$39,208	11	67.5	6	87.5	12	113.3	6	98.2	12
Cat. IV												
Non-P.A.	$30,418	6	$24,813	180	83.8	8	93.7	201	27.9	8	56.6	196
Cat. I - III												
P.A.	$59,011	137	$55,413	215	92.2	160	90.1	237	45.0	159	42.3	237
Non-P.A.	$59,990	23	$43,312	34	85.7	29	88.4	35	56.0	27	73.8	35

Personnel by Region: Salary, Months in Position and Ethnicity

Data regarding salary and time in position for P.A. and non-P.A. personnel by geographic region is presented in Table 20. P.A.'s associated with programs located in the Western region reported the highest annual salary. The lowest mean P.A. salary was in the Eastern region. Non-P.A.'s in the Southeastern region had the highest salaries, while those in the Heartland region had the lowest salaries. P.A.'s salaries were higher than Non-P.A.'s in every region,

Table 20. Program Personnel: Salary and Time in Position by Region

Geographic Region	Mean Salary: Categories I - III				Months in Position	
	P.A.	N	Non-P.A.	N	P.A.	Non-P.A.
Northeastern	$57,206	62	$50,575	4	37.2	100.8
Eastern	$51,840	56	$52,225	2	49.3	8.5
Southeastern	$57,409	72	$54,055	15	49.5	65.9
Midwestern	$57,411	70	$50,944	19	29.7	47.5
Heartland	$57,378	33	$43,037	4	46.9	47.6
Western	$58,085	61	$46,835	13	55.0	100.0
Total	$56,606	354	$50,290	57	40.1	55.4

except Eastern. However, on average non-P.A.'s were employed for more months. There was not a statistically significant correlation ($r = 0.19$; $p > .01$) between time in position and salary.

The salaries of Category I - III P.A. program personnel (P.A.'s and non-P.A.'s) by ethnicity and geographic region are shown in Table 21 (next page). Mean salaries of White personnel were higher than their Black/African-American counterparts in four of the five regions reported where comparison could be made. Latino/Hispanic personnel had salaries higher than Black/African-Americans in the Western region.

Table 21. Analysis of Program Personnel by Geographic Region and Ethnicity
Category I - III

Geographic Region	Mean Annual Salary					
	White	N	Black/ African-Amer	N	Lat/Hisp	N
Northeastern	$57,660	54	$56,206	7	----------	1
Eastern	$51,374	48	$55,183	6	----------	0
Southeastern	$57,785	68	$53,097	14	$49,167	3
Midwestern	$56,469	83	$45,032	4	----------	0
Heartland	$56,136	34	----------	1	$52,333	3
Western	$56,487	53	$52,299	9	$60,666	7
Total	**$56,172**	**340**	**$52,774**	**41**	**$55,726**	**14**

The salaries of Category IV P.A. program personnel (P.A.'s and non-P.A.'s) by ethnicity and geographic region are shown in Table 22. Mean salaries of Black/African-American personnel were higher than their White counterparts in half of the regions.

Table 22. Analysis of Program Personnel by Geographic Region and Ethnicity
Category IV

Geographic Region	Mean Annual Salary					
	White	N	Black/African-American	N	Lat/Hisp	N
Northeastern	$24,347	19	$31,263	10	$33,500	2
Eastern	$23,680	11	$24,667	3	----------	0
Southeastern	$21,776	34	$27,912	5	----------	1
Midwestern	$25,038	30	$20,849	3	----------	0
Heartland	$25,529	14	$25,195	2	$19,667	3
Western	$27,182	22	$26,400	5	$26,860	8
Total	**$24,385**	**130**	**$27,540**	**28**	**$25,545**	**14**

Trends in P.A. Program Personnel Salaries from 1986 Through 1998

Trends in P.A. personnel salary from 1986 through 1998 are shown in Table 23 (next page). Note, salary data was not available for 1987-88. There has been a 101% increase in P.A. salaries (all categories combined) from 1985-86 to 1998-99, an average of 8% per year. Proportionately, the largest annual increase in salary (10.9%) for all categories occurred between 1989 and 1990.

Months in position did not vary substantially, averaging 41.6 months over the 14-year period (range of 36.3 to 51.4). A thorough discussion of personnel turnover is presented at the end of Section II.

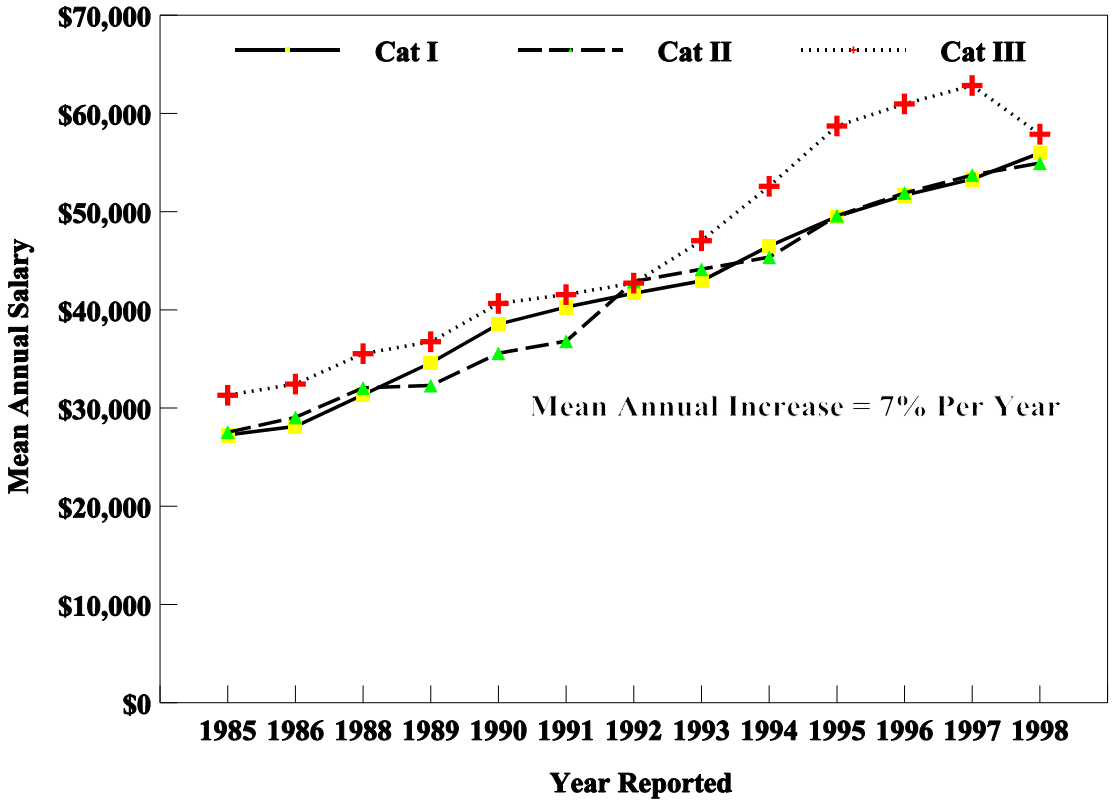
A three-way analysis of variance (ANOVA) of salary was conducted to investigate the effects of the following parameters: personnel category, gender and geographic region. Main effects were found for sex ($F=16.45$; $p<.001$; men higher than women) and geographic region ($F=5.74$; $p<.001$; the Southeast had higher salaries than the any other category). The category of personnel demonstrated no significant main effects. No significant interactions were found. Taken together, category, gender and region accounted for 23.4% of the variance in salaries ($R=.47$).

Table 23. Salary and Months in Position for P.A. Personnel, 1985 Through 1998

Categories	Cat. I	Cat. II	Cat. III	All Cat.	Months in Position
1985-86	$27,264	$27,553	$31,298	$27,769	36.6
1986-87	$28,129	$29,060	$32,451	$29,010	36.3
1988-89	$31,362	$32,054	$35,547	$32,099	39.9
1989-90	$34,610	$32,300	$36,756	$33,723	43.9
1990-91	$38,547	$35,578	$40,661	$37,404	40.1
1991-92	$40,280	$36,807	$41,552	$39,192	51.4
1992-93	$41,689	$42,885	$42,719	$42,471	42.0
1993-94	$42,945	$44,127	$47,038	$43,956	41.6
1994-95	$46,498	$45,357	$52,578	$46,549	42.5
1995-96	$49,510	$49,589	$58,720	$50,469	39.0
1996-97	$51,662	$51,906	$60,973	$52,550	41.6
1997-98	$53,314	$53,730	$62,849	$54,164	38.9
1998-99	$55,964	$54,943	$57,878	$55,729	46.5

Trends in salary for all categories of program personnel (data for P.A.'s and non-P.A.'s were combined) from 1985 through 1998 are illustrated in Figure 7. Salaries for personnel consistently increased each year with the largest increase occurring in 1990, with the exception of this year for Category III.

Figure 7. Trends in P.A. Program Salaries: 1985 Through 1998



Program Personnel: Academic Classification

The number of Category I - III personnel (P.A.'s and non-P.A.'s) classified as faculty and staff, as well as the tenure track status of those in faculty positions, are shown in Table 24.

For all categories combined, more than three fourths (N=400; 85%) of personnel were classified as faculty. This

Table 24. Program Personnel: Classification and Tenure Track Status

	Personnel Category							
	I		II		III		Total	
Classification	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Faculty	215	93.5%	152	78.4%	33	67.3%	400	84.6%
Staff	15	6.5%	42	21.6%	16	32.7%	73	15.4%
Tenure Status								
In Tenure Track*	61	28.4%	33	21.7%	8	24.2%	102	25.5%
Faculty Tenured**	18	8.4%	5	3.3%	3	9.1%	26	6.5%

* Percent of TOTAL faculty in tenure track not tenured.
** Percent of TOTAL faculty tenured (e.g., 18/215 = 8.4%)

distribution of individuals classified as faculty varied greatly between 67.3% for Category III and 93.5% for Category I. Recall, Category III includes typically administrative-type personnel who may be less likely to be appointed to an academic level position.

Overall, more than one-fourth (25.5%) of the faculty were on the tenure track. However, only 6.5% of the faculty were tenured. Viewed in another way, 25% of those faculty in a tenure track were tenured, with the highest proportion of these tenured faculty in Category III (37.5%).

Table 25 shows the academic classification and tenure status of Category I - III personnel by gender. The proportion of men and women holding faculty rank was similar (approximately 84%). A slightly larger proportion of male faculty were on tenure track compared to female faculty, 26.3% versus 24.9%, respectively. Although very few faculty were tenured (6.5%), a much larger proportion of male faculty were tenured (9.9%) as compared to female faculty (3.9%).

Table 25. Program Personnel: Classification and Tenure Track Status by Gender

	Female		Male		Total	
Personnel Classification	Number	(%)	Number	(%)	Number	(%)
Faculty Appointment	229	84.8%	171	84.2%	400	84.6%
Staff Appointment	41	15.2%	32	15.8%	73	15.4%
Tenure Status						
Tenure Track Faculty	57	24.9%	45	26.3%	102	25.5%
Tenured Faculty*	9	3.9%	17	9.9%	26	6.5%

* Percent of TOTAL faculty tenured.

A summary of the highest degree held by each category of program personnel is shown in Table 26. All but 2% of Category I - III program personnel were reported to have earned a bachelors or higher degree. Less than one-half of the P.A. and non-P.A. personnel held a baccalaureate degree (42%) as their highest degree. The same is true for those who held a master's degree (N=215; 45.5%). Fifty individuals (11%) were identified as having earned a doctorate, slightly lower than the distribution reported for the 1997-98 academic year. Proportionately, Category I and III personnel tended to have more doctorate degrees than those in Category II.

Table 26. Program Personnel: Highest Degree Held

	Program Personnel Categories								Categories I - III	
	I		II		III		IV			
Highest Degree	#	(%)	#	(%)	#	(%)	#	(%)	#	(%)
Doctorate	38	16.5%	2	1.0%	10	20.4%	1	1.6%	50	10.6%
Masters	110	47.8%	79	40.7%	26	53.1%	7	11.3%	215	45.5%
Bachelors	77	33.5%	110	56.7%	10	20.4%	36	58.1%	197	41.6%
Associate	5	2.2%	3	1.5%	3	6.1%	18	29.0%	11	2.3%
Total	**230**	**100.0%**	**194**	**100.0%**	**49**	**100.0%**	**62**	**100.0%**	**473**	**100.0%**

The number and academic rank of program faculty, by category, are shown in Table 27. The percentage of P.A. and non-P.A. faculty holding the academic rank of instructor/lecturer (N=157; 41.8%) or assistant professor (N=159; 42.3%) was about the same.

Table 27. Program Personnel: Academic Rank of Faculty

	Program Personnel Categories							
	I		II		III		Total	
Academic Rank	N	(%)	N	(%)	N	(%)	N	(%)
Full Professor	6	3.0%	2	1.4%	2	6.7%	10	2.7%
Associate Prof.	27	13.4%	16	11.0%	7	23.3%	50	13.3%
Assistant Prof.	79	39.3%	64	44.1%	16	53.3%	159	42.3%
Instructor/Lect.	89	44.3%	63	43.4%	5	16.7%	157	41.8%
Total	**201**	**100.0%**	**145**	**100.0%**	**30**	**100.0%**	**376**	**100.0%**

P.A. and Non-P.A. Personnel Salary Analysis

Salaries for Category I - III P.A. and non-P.A. program personnel by academic classification are shown in Table 28 (next page). The mean annual salary of faculty-level personnel was $55,424 (N=345), 22% higher than those appointed to staff positions ($45,603; N=79). In general, the annual salaries of non-P.A. personnel with faculty rank ($57,336, N=37) were 4% higher than salaries of P.A. personnel with faculty appointments ($55,195; N=308). Faculty salaries differed substantially between categories with Category III faculty earning the highest annual income.

Table 28. Faculty and Staff Salaries by Category

	Program Personnel Categories							
	I		II		III		Categories I - III	
Classification	Mean	N	Mean	N	Mean	N	Mean	N
Faculty								
P.A.	$54,051	162	$55,247	126	$64,137	20	$55,195	308
Non-P.A.	$57,634	24	$56,001	9	$58,555	4	$57,336	37
Total	**$54,513**	**186**	**$55,297**	**135**	**$63,206**	**24**	**$55,424**	**345**
Staff								
P.A.	$52,206	19	$51,964	28	----------	1	$52,331	48
Non-P.A.	$36,741	13	$30,546	5	$35,417	13	$35,187	31
Total	**$45,923**	**32**	**$48,719**	**33**	**$37,530**	**14**	**$45,603**	**79**

Among the personnel classified as staff, those that were P.A.'s earned a substantially higher (49%) salary ($52,331) than non-P.A.'s ($35,187). In comparison to the previous year (1997-98), there was less than a 1.5% increase in both the faculty and staff salaries.

The relationship between salary and gender of P.A. and non-P.A. faculty and staff is summarized in Table 29. Salaries for male faculty were 6% higher than those of female faculty ($57,547 versus $54,103, respectively). Male staff earned substantially higher salaries than did female staff, $52,354 vs. $43,135, respectively.

Table 29. Program Personnel Salary of Faculty and Staff in Categories I - III by Gender

	Female		Male	
Classification	Mean	N	Mean	N
Faculty				
P.A.	$54,179	180	$56,695	123
Non-P.A.	$53,307	17	$61,042	30
Total	**$54,103**	**197**	**$57,547**	**153**
Staff				
P.A.	$52,217	19	$52,496	19
Non-P.A.	$34,052	19	$51,000	2
Total	**$43,135**	**38**	**$52,354**	**21**

Compared to the previous year (1997-98), faculty salaries have increased 1.5% for females and 1.7% for males, while staff salaries increased by less than 1% for both females and males.

Annual salary of program personnel by highest degree earned for all categories is shown in Table 30 (next page). Doctoral-level personnel (N=41) earn the highest salary (overall for Categories I - III =$58,894) and bachelors degree level individuals the lowest ($50,737). Category III individuals earned substantially more at the doctorate and master's degree level; Category III personnel with doctorates earned the highest salary.

Table 30. Salary of Faculty and Staff Personnel by Highest Degree Held

Highest Degree	Program Personnel Categories I		II		III		IV		Categories I - III	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Doctorate	$57,634	33	----------	1	$64,107	7	----------	1	$58,894	41
Masters	$55,112	100	$57,082	74	$60,582	23	$28,508	6	$56,491	192
Bachelors	$48,736	69	$52,134	103	$49,752	6	$26,492	30	$50,737	178
Associate	$61,143	4	$44,500	2	----------	1	$23,446	14	$52,653	7
Not Reported	$55,017	3	$37,500	2	$47.583	4	$25,942	117	$47,820	9
Total	**$56,829**	**209**	**$53,966**	**182**	**$57,706**	**41**	**$25,978**	**168**	**$54,105**	**432**

The salary of personnel classified as faculty is shown by academic rank and category in Table 31. Overall, there was an increase in mean salary with higher academic rank. The range of mean salaries was broad, $51,942 at the rank of instructor in Category II to $69,450 for those at the full professor level in Category I.

Table 31. Salary of Program Faculty by Academic Rank and Category

Academic Rank	I		II		III		Total	
	Mean	N	Mean	N	Mean	N	Mean	N
Full Professor	$69,450	3	----------	1	----------	1	$67,670	5
Associate Prof.	$60,784	24	$55,017	14	$64,497	5	$59,338	43
Assistant Prof.	$54,432	76	$57,326	60	$65,023	14	$56,578	150
Instructor/Lect.	$51,976	88	$51,942	59	$59,974	3	$52,123	150
Not Reported	$48,543	10	$53,346	9	$68,327	4	$53,863	23
Total	**$54,046**	**201**	**$54,682**	**143**	**$64,853**	**27**	**$55,078**	**371**

Program Directors of Physician Assistant Programs

The general characteristics of program directors are shown in Table 32 (next page) and include percent of time, annual salary and months in position for P.A. and non-P.A. directors by gender and highest degree held. On average, program directors devoted 95% of their time to program-related activities. While the percentage of time ranged from 50% to 100%, the majority of the directors (N=80; 89%) were working full-time. Eighty-one percent of the directors were P.A.'s (N=65).

The mean average salary for program directors was $73,048, ranging from $50,866 to $104,500. Program directors who were non-P.A.'s earned a higher salary than those who were P.A.'s ($74,080 and $72,810, respectively). The average months in position varied from 75 months for physician assistant to 68 months for non-physician assistant. The median months in position was 40 months.

Male program directors had higher average salaries ($75,119) than did female directors ($70,977). The mean time in position of female directors exceeded that of male directors by approximately 20 months (84 versus 63 months, respectively). The median number of months in position for male and female program directors is 36 and 45 respectively. In comparison to the 1997-98 data, mean salaries increased by 4.3% ($73,048 versus $70,031).

Table 32. Characteristics of Program Directors

Characteristics	Mean	S.D.	Range	N
Percent Time	94.7%	13.2	50% - 100%	90
Annual Salary	$73,048	$10,764	$ 50,866 - 104,500	80
P.A.	$72,810	$10,128	$ 50,866 - 104,500	65
Non-P.A.	$74,080	$13,120	$ 52,666 - 101,331	15
Male	$75,119	$11,896	$ 50,866 - 104,500	42
Female	$70,977	$ 9,036	$ 52,666 - 87,500	38
Doctorate	$75,825	$12,206	$ 56,500 - 104,500	27
Masters	$71,954	$ 9,778	$ 50,866 - 94,000	47
Bachelors	$69,114	$ 8,127	$ 57,000 - 80,000	6
Months in Position	73.61	79.53	3-330	90
P.A.	75.32	76.11	3-312	70
Non-P.A.	67.60	90.22	3-330	20
Male	63.31	73.70	3-312	45
Female	83.91	83.71	3-330	45

Highest Degree Held	Female	%	Male	%	Total	%
Doctorate*	15	46.9%	17	53.1%	32	35.6%
Masters	24	46.2%	28	53.8%	52	57.8%
Baccalaureate	6	100.0%	0	0.0%	6	6.7%

* Includes Ph.D., Ed.D., J.D., Pharm.D. and M.D. Degrees

Program Director Salaries: Regional Differences

A summary of program directors' salary and months in position by geographic region is shown in Table 33. Program directors associated with programs located in the Eastern region had substantially lower mean salaries ($67,473) compared with the rest of the United States. Directors in the Heartland and Western regions had the highest mean salaries ($79,642 and $77,718, respectively). The lowest individual salary for a program director was in the Heartland

Table 33. Salary and Months in Position of Program Directors by Region

	Program Director Salary			Months in Position			
Geographic Region	N	Mean	Range	N	Mean	Median	Range
Northeastern	13	$ 72,676	$57,000- 85,400	17	104.6	60	5-330
Eastern	12	$ 67,473	$56,500- 77,000	16	67.4	37	6-256
Southeastern	16	$ 71,954	$52,300-104,500	17	71.9	38	3-312
Midwestern	19	$ 71,613	$52,667- 94,000	19	39.9	40	3- 91
Heartland	8	$ 77,718	$50,866- 91,800	9	77.6	60	3-276
Western	12	$ 79,642	$63,690-101,331	12	90.8	60	3-312
Total	**80**	**$ 73,048**	**$50,866-104,500**	**90**	**73.6**	**48.5**	**3-330**

region ($50,866) and the highest was in the Southeastern region ($104,500). Program directors in the Northeastern region had been employed in their positions the longest time, over eight years (105 months), and those in the

Midwestern region the shortest period of time (40 months). Please note that the median months in position are listed on the table. There is a significant difference between the mean and medians for each region except the Midwestern.

Medical Directors of Physician Assistant Programs

The characteristics of P.A. program medical directors are shown in Table 34. Percent time data were available for 81 medical directors, of which eight were employed as such on a full-time basis, the remainder, on average, devoted less than one-quarter (21%) of their time to program-related activities. The mean annual salary of the medical

Table 34. Characteristics of Program Medical Directors

	Mean	S.D.	Median	Range	N
Percent Time	28.9	28.2	20.0	5%-100%	81
Annual Salary	$101,066	$36,869	$100,000	$31,660-200,000	62
Female	$ 92,317	$36,039	$100,000	$31,660-150,000	17
Male	$104,371	$36,638	$107,200	$36,000-200,000	45
Months in Position	62.5	65.3	42.0	1-326	78
Female	61.6	71.5	37.0	1-325	19
Male	62.8	63.2	42.0	3-326	59

directors reporting (N=62) was $101,066 but varied extensively, ranging from $31,660 to $200,000. Female medical directors (N=17) earned a lower annual mean salary ($92,317) than did male medical directors ($104,371). The female medical director mean salary decreased 4% from the previous year ($95,968 vs. $92,317).

Overall, medical director salaries increased by 1.7% from the previous year. Respondents which originally had not made corrections for full-time equivalent were contacted in order to clarify figures. The majority of medical directors were male (59; 76%). The average months in position is slightly lower for females directors (61.6 months). The median months in position for female medical directors is 37 months, while the median number of months for male medical directors is 42 months.

Data concerning medical director salaries, months in position and geographic region are shown in Table 35. Medical directors of those programs in the Southeastern region had the highest mean salaries ($108,569). Those directors in the Heartland region had the lowest salaries ($84,366). The Midwestern region has the highest median salary

Table 35. Salary and Months in Position of Medical Directors by Region

Geographic Region	Medical Director's Salary*				Months in Position			
	N	Mean	Median	Range	N	Mean	Median	Range
Northeastern	12	$107,174	$107,200	$31,660-200,000	17	73.2	48.0	1-240
Eastern	11	$ 92,137	$100,000	$36,234-150,000	13	55.7	28.0	9-203
Southeastern	12	$108,569	$105,340	$66,416-150,000	15	57.3	47.0	8-180
Midwestern	13	$106,223	$110,000	$62,500-170,000	18	54.1	41.0	11-326
Heartland	6	$ 84,366	$ 81,409	$47,000-125,000	7	54.6	48.0	28-108
Western	8	$108,220	$ 98,800	$64,000-170,000	8	86.8	50.5	17-325
Total	**62**	**$101,066**	**$100,000**	**$31,660-200,000**	**78**	**62.5**	**42.0**	**1-326**

* Corrected for full-time equivalent.

($110,000). Medical directors in the Western region were in their positions for the longest period of time (86.8 months). It should be noted that the range in both salaries (range of $31,660 to $200,000) and months in position (from 1 to 326 months) was extensive. Please note that the mean months in position differ significantly from the

medians.

The medical specialties of P.A. program medical directors are shown in Table 36. The majority of medical directors (N=64; 82.1%) were practicing in primary care specialties, predominantly family medicine (N=46; 59%) and internal medicine (N=14; 18%). Only fourteen medical directors were in non-primary care specialties.

Table 36. Medical Specialties of P.A. Program Medical Directors

Primary Care Medical Specialty	N	(%)	Non-Primary Care Medical Specialty	N	(%)
Family Medicine	46	59.0%	Cardiology	5	6.4%
Internal Medicine	14	17.9%	Nephrology	1	1.3%
Pediatrics	4	5.1%	Psychiatry	1	1.3%
Obstetrics/Gyn.	0	0.0%	Emergency Med.	1	1.3%
Total	**64**	**82.1%**	Other	6	7.7%
				14	**17.9%**

Comparisons between Medical and Program Directors

A comparison between medical and program directors' salaries from 1984-85 through 1998-99 is shown in Table 37. Note, information concerning the characteristics of medical directors was not available in 1987-88.

Table 37. Trends in Directors' Salaries and Months in Position from 1984 Through 1998

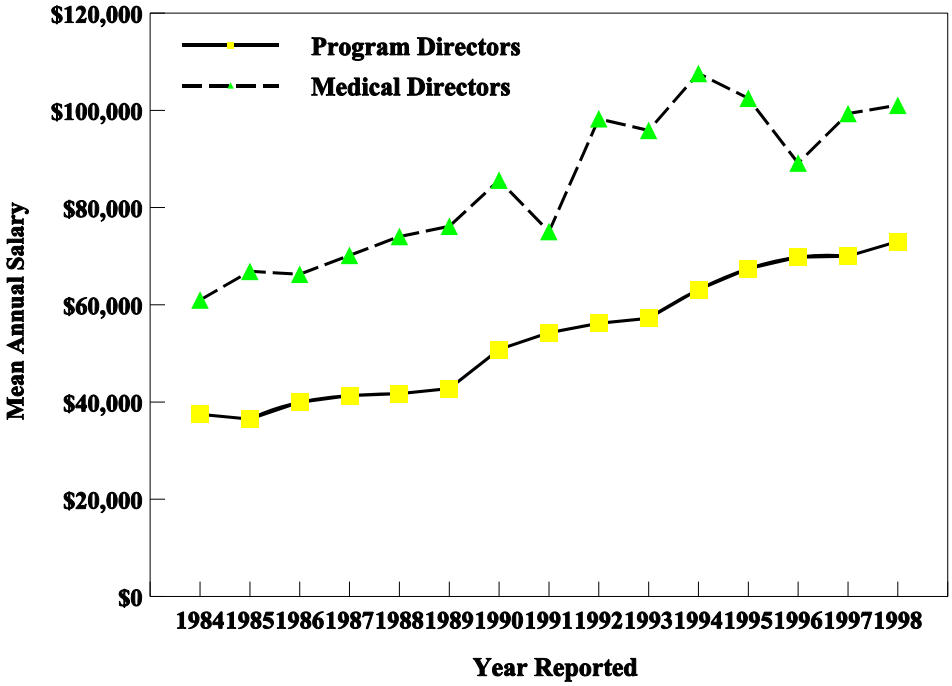
Academic	Program Director			Medical Director		
Year	Mean	Months	N	Mean	Months	N
1984-85	$37,499	64.5	31	$ 61,000	69.1	23
1985-86	$36,491	69.3	32	$ 66,900	70.1	21
1986-87	$39,939	68.8	38	$ 66,300	63.9	29
1987-88	$41,324	67.9	38	N/A		
1988-89	$41,730	90.3	42	$ 74,056	75.3	36
1989-90	$42,800	88.8	36	$ 76,168	78.8	32
1990-91	$50,824	85.5	41	$ 85,646	69.1	36
1991-92	$54,266	98.9	38	$ 75,071	72.3	39
1992-93	$56,206	91.4	51	$ 98,288	69.3	39
1993-94	$57,241	85.2	50	$ 95,882	53.8	33
1994-95	$63,115	89.9	55	$107,617	67.3	32
1995-96	$67,437	88.0	67	$102,509	61.7	55
1996-97	$69,808	91.7	72	$ 89,186	64.5	55
1997-98	$70,031	68.3	90	$ 99,372	54.8	75
1998-99	$73,048	73.6	80	$101,066	62.5	62
15-yr Mean	**$53,451**	**81.5**	**51**	**$ 85,449**	**66.6**	**41**

Between 1984 and 1998, there has been a 95% increase in the mean salary for program directors and a 66% increase for medical directors. The mean time in position has increased for program directors over this period (64.5 to 91.7 months). This year there was an increase in the months in position for programs and medical directors from last year. The 1998-99 mean annual salary for medical directors increased by 1.7% from the preceding year.

On average, in 1998, medical directors earned an annual salary approximately 38% higher than the typical program director ($101,066 versus $73,048). Over the fifteen-year period, the medical directors earned an annual salary of approximately 60% higher than the typical program director ($85,449 versus $53,451). Trends in salary for the

program and medical directors from 1984 through 1998 are in Figure 8 and clearly illustrates the variation in directors' salaries since 1984.

Figure 8. Program and Medical Directors' Salaries: 1984 Through 1998



A comparison of academic position and tenure status between the directors is shown in Table 38. The majority of medical and program directors held faculty level positions with 15% of these directors classified as staff. More program directors than medical directors in faculty-level positions were on a tenure track and less than one-fifth of the faculty directors were tenured.

Table 38. Program and Medical Directors: Position and Tenure Track Status

	Program Director		Medical Director	
Level of Position	Number	(%)	Number	(%)
Staff Appointment	9	10.0%	16	20.5%
Faculty Appointment	81	90.0%	62	79.5%
Total	**90**	**100.0%**	**78**	**100.0%**
Tenure Status				
Tenure Track Faculty	38	46.9%	22	35.5%
Faculty Tenured	17	21.0% *	10	16.1%

* Percent of TOTAL faculty tenured

Since 1985-86, the proportion of program and medical directors classified as faculty has remained relatively constant, averaging 80%; in 1998 around 85% of the directors were faculty. The proportion of faculty directors on the tenure track has averaged about 36% over time, and was 47% and 35.5%, respectively in 1998. The proportion of directors achieving tenured status in 1998 was lower than the mean of 21%.

A comparison between the academic rank of medical and program director faculty is shown in Table 39. A higher percentage of program directors (94%) held professorial rank (Assistant to Full Professor) as compared to medical directors (88%). In both cases, there were less than 15% of the directors classified as instructors or lecturers.

Table 39. Program and Medical Directors: Academic Rank

	Program Director		Medical Director	
Academic Rank of Faculty	Number	(%)	Number	(%)
Full Professor	7	8.9%	15	26.3%
Associate Professor	35	44.3%	17	29.8%
Assistant Professor	32	40.5%	18	31.6%
Instructor/Lecturer	5	6.3%	7	12.3%
Total	**79**	**100.0%**	**57**	**100.0%**

Regression Analysis of Salaries

Linear regression analysis was used to describe the relationship between salary and months in position for all core program faculty and staff. The resulting regression equations provide a means of determining salary while correcting for months in position. Table 40 identifies regression equations for each of the four P.A. and non-P.A. personnel categories, and for program and medical directors. Equations from Table 40 will "predict" salary within and across each category using the number of months as the independent variable. For example, one would predict that the salary

Table 40. Regression Equations for Salary and Months in Position for P.A. Program Personnel

Characteristic	Base	+	(Constant	x Months)	N
Category I	$ 48,989	+	($ 76.14	x _____)	203
Category II	$ 49,428	+	($ 61.88	x _____)	167
Category III	$ 53,301	+	($ 52.99	x _____)	40
Category IV	$ 24,400	+	($ 6.39	x _____)	187
Categories I- III	$ 49,858	+	($ 65.19	x _____)	410
Program Directors	$ 70,605	+	($ 33.80	x _____)	80
Medical Directors	$103,880	0	($ 13.65	x _____)	62

of a Category I individual who has been in his or her position for 36.2 months would be around $51,745 (i.e. $49,428 + $2,756), a value similar to that reported in Table 14 for the average Category I individual (i.e. $54,175) having been employed for a mean of 36.2 months.

P.A. Program Personnel Turnover

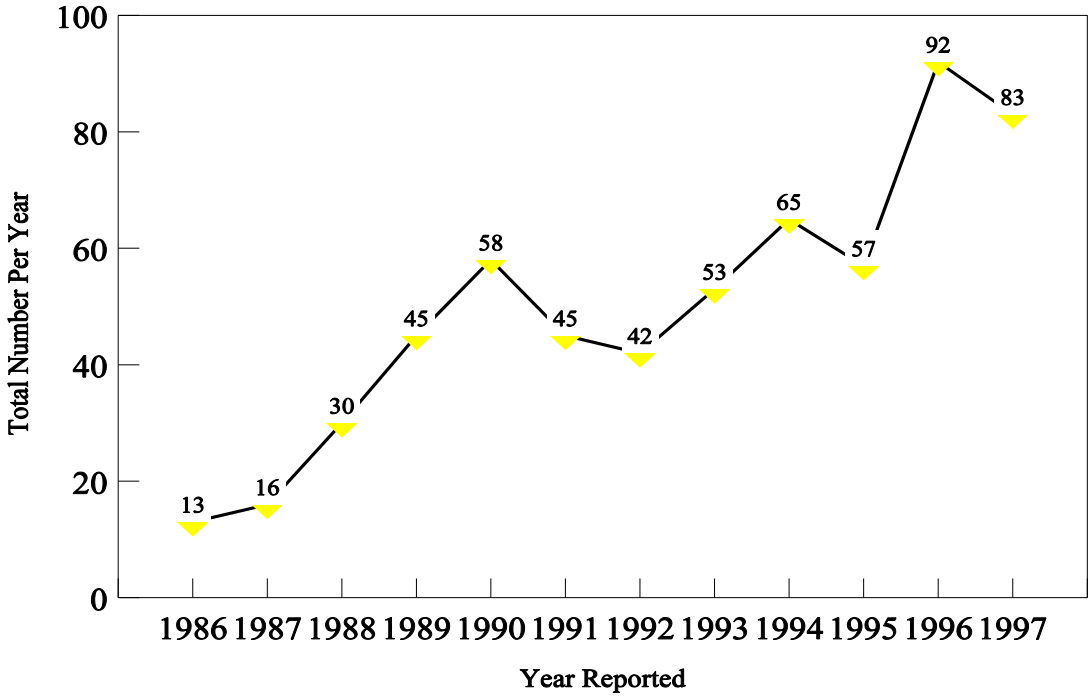
The 1998 survey requested updated information on personnel turnover for the period between September 1997 through August 1998. Program respondents were asked to provide data on the type, frequency and characteristics of personnel terminating and those employed to fill the position. We report herein the turnover activity for 1997-1998 as well as the cumulative data for the twelve-year period (1986-1997) in Table 41 (next page). Data are expressed as both total number and mean number of individuals per program for the time period identified. Over the twelve year-period examined, respondents reported that 599 personnel left their positions, averaging 9.3/program. As shown in Figure 9 (next page), there has been an overall increase in turnover since 1986, with slight decreases in 1991, 1992, 1995 and 1997.

Table 41. Program Personnel Turnover
1986 Through 1997

Academic Year	Total Number Departing	Mean/Program
1986-1987	13	0.3
1987-1988	16	0.3
1988-1989	30	0.6
1989-1990	45	0.9
1990-1991	58	1.2
1991-1992	45	0.8
1992-1993	42	0.8
1993-1994	53	0.9
1994-1995	65	0.9
1995-1996	57	0.7
1996-1997	92	1.0
1997-1998	83	0.9
12-year Total	599	9.3
12-year Mean	**49.9**	**0.9**

During the 1997-98 academic year, 83 P.A. program personnel departed (N=97 programs reported information) for an average of 0.9 per program. In 1997, personnel turnover per program decreased slightly from last year, however was similar to the overall 12-year mean of 49.9 personnel departing per year, an average of 0.9 persons departing/program.

Figure 9. Trends in Personnel Turnover: 1986 Through 1997



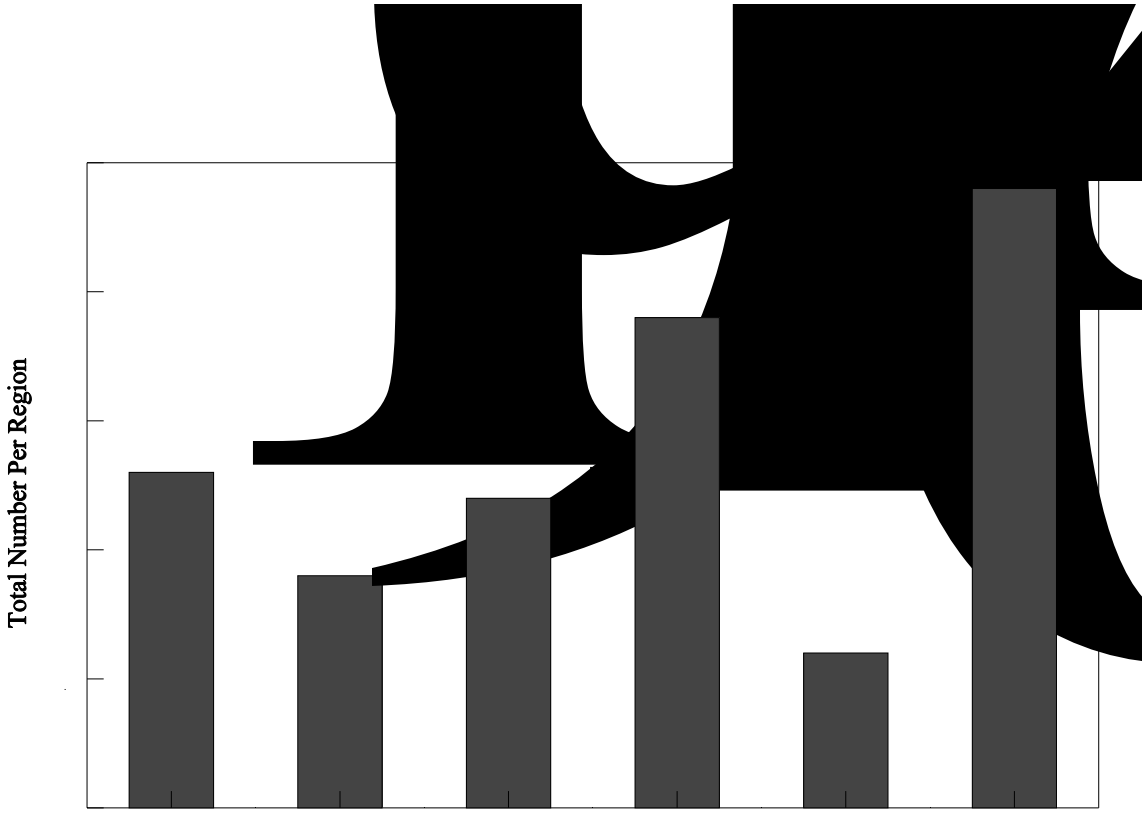
Our best estimate of the mean number of core program personnel is 9.2 per program, and includes one program and medical director, 4.2 P.A.'s and 0.7 non-P.A.'s and 2.3 Category IV personnel. Given the average turnover per year we estimate that 9.8% of program personnel departed this year (0.9/9.2), lower than the rate of 11.6% the previous year.

The number of personnel (and mean/program) departing over the past twelve years and those departing in 1997, by region, is shown in Table 42 and illustrated in Figure 10. Turnover varied by region. For example, programs in the

Table 42. Program Personnel Turnover by Region, 1986 Through 1997

Geographic Region	Number in 12 Years	Number in 1997	1997 Mean/ Program	N
Northeastern	109	13	0.65	20
Eastern	79	9	0.56	16
Southeastern	96	12	0.71	17
Midwestern	119	19	0.90	21
Heartland	82	6	0.67	9
Western	114	24	1.71	14
Total	**599**	**83**	**0.86**	**97**

Western region reported the highest turnover (1.71 per program) while programs in the Eastern region had the lowest rate of turnover (0.56).



A comparison of the number and category of personnel departing, those employed, percent of positions unfilled and mean number of weeks to fill the position are shown in Table 43 (next page). Overall, 83 program personnel (thirteen

Category IV) departed in 1997 with turnover highest among Category I personnel and least for Category III. On average 10.9 weeks were required to fill a position. Filling program director positions averaged 13.2 weeks while 3.2 weeks were required to fill Category III positions.

Table 43. Comparison of Personnel Turnover in 1997 by Category

Category	Number Departed	Number Employed	Percent Unfilled	Weeks to Fill Position
I	40	32	20.0%	11.7
II	18	12	33.3%	6.4
III	4	4	0.0%	3.2
IV	13	10	23.1%	14.7
Program Director	7	6	14.3%	13.2
Medical Director	1	1	0.0%	15.5
Total	**83**	**65**	**21.7%**	**10.9**

Table 44 shows the characteristics of personnel departing and those employed. On average, personnel departed in 1997 were older (3.4 years) than those employed. A higher percentage of females were employed than departed. Approximately the same distribution of ethnic personnel departing were employed.

Table 44. Characteristics of Personnel Departed and Employed in 1997

	Program Personnel			
Characteristic	Departed		Employed	
Mean Age (yrs)	41.1		37.7	
Range	20-65		22-63	
Gender	(%)	N	(%)	N
Male	39.8%	33	34.4%	22
Female	60.2%	50	65.6%	42
Ethnicity				
White	86.3%	69	86.7%	52
Non-White	13.7%	11	13.3%	8

The academic characteristics of personnel departing and those filling the vacated positions are shown in Table 45. Doctorate includes Ph.D., Ed.D., M.D. As indicated in Table 45, the majority of personnel employed held a masters degree (43%) as their highest credential, the majority of those departing held a baccalaureate degree (44%). In addition, the majority of personnel departing were P.A.'s (78%) and those employed to fill these positions were also P.A.'s (85%).

Table 45. P.A. Program Personnel Turnover in 1997:
Academic Characteristics

	Program Personnel			
Highest Degree	N	Departed	N	Employed
Associate/Certificate	4	4.9%	4	6.2%
Baccalaureate	36	43.9%	24	36.9%
Masters	30	36.6%	28	43.1%
Doctoral	12	14.6%	9	13.8%
P.A. Credentialed	64	78.0%	55	84.6%

The reasons cited for personnel turnover during 1997 and the twelve-year totals, are shown in Table 46. In 1997, less than one-fourth (23%) of the individuals departing did so for career advancement. Eleven cited geographic relocation as a reason for leaving their position. Previously the "Other" category included positions that were either eliminated by the program or the personnel were asked to resign, however the number of personnel terminated by the program was substantially higher than in previous years, so it was added as an official category last year. The "Other" category

Table 46. P.A. Program Personnel Turnover:
Reasons for Termination in 1997 Compared to the Twelve -Year Totals

	1997		12-Year Totals	
Reasons for Terminating	N	(%)	N	(%)
Career Advancement	14	22.6%	145	26.3%
Geographic Relocation	11	17.7%	104	18.8%
Return to Clinical Practice	6	9.7%	97	17.6%
Retired	6	9.7%	32	5.8%
Termination	5	8.1%	11	2.0%
Job Dissatisfaction	4	6.5%	27	4.9%
Returned to School	3	4.8%	24	4.3%
Salary Dissatisfaction	2	3.2%	21	3.8%
Family Obligations	2	3.2%	5	0.9%
Other	9	14.5%	86	15.6%
Total	**62**	**100%**	**552**	**100.0%**

includes reasons such as unknown, travel and illness. Over the twelve-year period, career advancement was the primary reason for departing followed by geographic relocation and a return to clinical practice.

A comparison of salaries and months in position between personnel departing and those employed is shown for each year in Table 47. On average, over the twelve-year period, there has been a mean salary increase of 4.6% for newly employed individuals as compared to those departing.

Table 47. Salaries of Departing and Newly Employed Personnel,
1986 Through 1997

Academic Year	N	Salary Departing	Months in Position	Salary New Employee	Months Prior Position
1986-1987	13	$30,868	41.3	$30,000	35.0
1987-1988	16	$30,900	73.1	$33,500	57.4
1988-1989	30	$33,000	43.5	$34,000	38.1
1989-1990	45	$34,000	41.8	$38,000	55.5
1990-1991	58	$38,200	22.7	$40,000	52.3
1991-1992	45	$38,960	39.4	$38,450	47.2
1992-1993	40	$44,748	48.1	$43,151	54.7
1993-1994	46	$43,857	31.5	$44,667	52.3
1994-1995	58	$44,118	48.4	$45,536	45.3
1995-1996	43	$46,771	35.0	$51,127	39.6
1996-1997	78	$47,523	48.9	$51,533	46.6
1997-1998	75	$48,926	42.0	$53,366	45.7
12-Year Mean	**547**	**$41,356**	**40.7**	**$43,274**	**48.1**

The greatest salary differences between departing and newly employed personnel were in 1989-90 (11.8%) and 1995-96 (9.3%). Overall, personnel departing had been in their positions an average of 41 months, while those employed

had been in their previous position seven months longer (48 months).

SECTION III. P.A. APPLICANT AND STUDENT CHARACTERISTICS

Physician Assistant Student Enrollment

The maximum capacity and current enrollment of P.A. students in the most recently enrolled classes, 1998-99 (first-year class), 1997-98 (second-year class) and 1996-97 (third-year class) are shown in Table 48. The proportion of maximum capacity that remained unfilled and the resident status of the students is also presented. The dates in parentheses indicate the academic year of admission and the number indicates the programs responding.

Table 48. Maximum Class Capacity and Current Enrollment in Physician Assistant Programs

		Maximum Capacity	Current Enrollment	% Capacity Unfilled	% Residents
First-Year Class	Mean	42.1	40.0	5.0%	65.7%
(1998-99)	Median	36.0	35.0	4.0%	60.0%
	Range	(10-179)	(13-170)	(0-16%)	(0-100%)
	Number	96	96	96	80
Second-Year Class	Mean	40.2	37.1	9.7%	68.4%
(1997-98)	Median	35.0	35.0	7.0%	65.0%
	Range	(10-179)	(10-170)	(0-40%)	(0-100%)
	Number	90	89	40	73
Third-Year Class	Mean	32.7	30.1	18.0%	70.2%
(1996-97)	Median	31.5	29.0	12.0%	60.0%
	Range	(8-50)	(17-49)	(0-60%)	(5.0-100%)
	Number	18	15	15	14
All Classes	Mean	87.4	82.5	8.5%	69.5%
	Median	70	74.0	7.5%	60.0%
	Range	(18-358)	(8-340)	(0-40%)	(0-100%)
	Number	96	96	96	79

* Includes both full- and part-time students.

The mean maximum capacity for the first-year class increased slightly from last year (41.0) and is reported as 42.1; the mean maximum capacity for the second-year class remained the same as last year (40.2); and the mean maximum capacity for the third-year class decreased from 35.9 to 32.7 students. The maximum capacity for all classes increased by 3.3 students per program from last year. It should be noted that some of the programs with students in a "third year" were cases where there was a 1-6 month overlap between the second and third year of the curriculum (i.e., programs that were 25, 28, 30 months in length). It should also be noted that six of the newly established programs had not matriculated students to the second-year at the time data was collected.

The medians for the maximum capacity and current enrollment of the classes are listed on the table. Note that the medians are lower than the mean in each category.

The percent of capacity unfilled for the first-year class was 5.0% and 9.7% for the senior class (the latter figure likely reflects factors like attrition during the previous year). Maximum capacity of P.A. programs varied extensively for both first- and second-year classes, ranging from 10 to 179. The maximum capacity for all classes averaged 87.4 students and with a mean enrollment of 82.5 students, approximately 8.5% of the maximum capacity (all classes) remained unfilled.

Current enrollment in the first-year class averaged 40 students per program (96 programs; range 13 to 170) and 37.1 students/program in the second-year class. In comparison, the number of first- and second-year students in the previous year was 40.4 and 38.8, respectively. It should be noted that the enrollment figures include both full-time and part-time students, the latter accounting for only 2.4% of the enrollment. On average, approximately 66% of the students in the first-year and 68% of the second-year class were residents of the state in which the program was located, figures lower than the previous year (i.e., 78% and 77%, respectively).

The current enrollment for all classes by gender and full- and part-time student status is shown in Table 49. The majority of both full-time and part-time students were female, averaging around 65%. Seventeen programs reported that a "third-year class" was enrolled. It should be noted that respondents were asked to identify only those classes

Table 49. Current Enrollment by Gender and Class-Year

	1st Year Class (N=96)			2nd Year Class (N=90)			3rd Year Class (N=17)		
Full-Time	Mean	(%)	Range	Mean	(%)	Range	Mean	(%)	Range
Male	15.0	37.5%	3-139	14.0	37.7%	1-138	10.2	31.2%	1-18
Female	25.0	62.5%	8- 97	23.1	62.3%	5- 98	22.5	68.8%	14-35
Total	**40.0**	**100%**		**37.1**	**100%**		**32.7**	**100%**	
	1st Year Class (N=12)			2nd Year Class (N=3)			3rd Year Class (N=0)		
Part-Time	Mean	(%)	Range	Mean	(%)	Range	Mean	(%)	Range
Male	3.2	36.4%	1-14	4.0	31.5%	3- 5	N/A	N/A	N/A
Female	5.6	63.6%	1-28	8.7	68.5%	4-18	N/A	N/A	N/A
Total	**8.8**	**100%**		**12.7**	**100%**				

enrolled in the "professional" component of the curriculum, thus, a 4-year program may only have two years of "P.A.-specific" curriculum. While twelve programs reported they enrolled part-time students in the first year; three programs indicated they had part-time students in the second year of the program and no programs reported part-time students in the third-year.

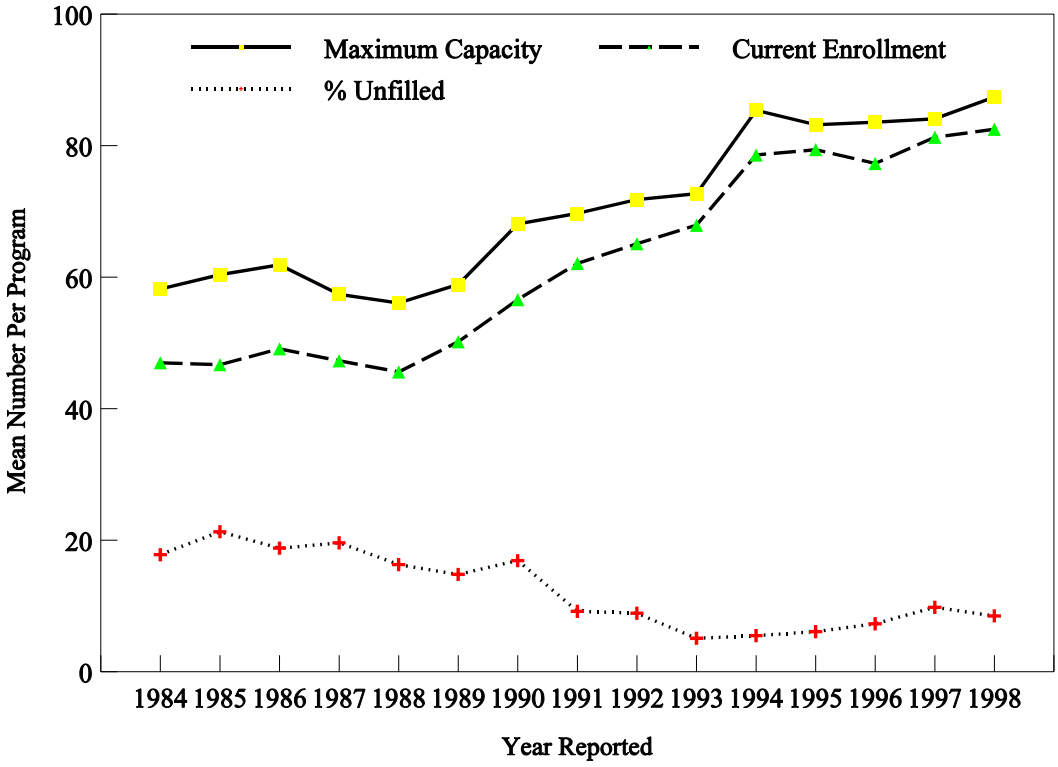
Trends in Maximum Capacity and Student Enrollment

The mean maximum class capacity, total student enrollment and percent of capacity unfilled from 1984 through 1998 are shown in Table 50 (next page). Maximum capacity over the past fifteen years averaged 71 students for all classes and ranged from 56.1 to 87.4. The percent of capacity that remained unfilled varied around a mean of 12.4%, however has remained below the mean since 1991. The trends in enrollment, maximum and unfilled capacity are illustrated in Figure 11 (next page). Total enrollment from 1984 through 1988 averaged 47.1 students/program and varied little during that period. In the subsequent ten years (1989-98) enrollment averaged 70.1 and showed an overall increase of 64%, from 50.2 students to 82.5 students.

Table 50. Total Student Enrollment of All Classes, 1984 Through 1998

Academic Year	Programs Responding	Maximum Capacity All Classes	Current Enrollment All Classes	Percent Capacity Unfilled
1984-1985	39	58.2	47.0	17.8%
1985-1986	44	60.4	46.7	21.3%
1986-1987	47	61.9	49.1	18.8%
1987-1988	48	57.4	47.3	19.6%
1988-1989	48	56.1	45.6	16.3%
1989-1990	45	58.9	50.2	14.8%
1990-1991	50	68.1	56.6	16.9%
1991-1992	50	69.7	62.1	9.2%
1992-1993	57	71.8	65.1	8.9%
1993-1994	56	72.7	67.9	5.1%
1994-1995	61	85.4	78.6	5.5%
1995-1996	68	83.2	79.4	6.1%
1996-1997	77	83.6	77.3	7.3%
1997-1998	95	84.1	81.3	9.8%
1998-1999	96	87.4	82.5	8.5%
15-Yr. Mean	**58.8**	**70.6**	**62.5**	**12.4%**

Figure 11. Trends in Enrollment: 1984 Through 1998



P.A. Applicants and Students Enrolled

The number of applicants and those enrolled in the most recent P.A. class (1998-99) is shown in Table 51. In addition, information on those accepted and the mean number of full- and part-time students is also provided. The typical program received 290 applications for the class entering in 1998-1999, ranging from 30 to 787 applicants. This represented a 14% decrease (48 applicants/program) from the 339 applicants per program the previous year. On average, 48 students were accepted and 42.6 students per program were enrolled in the first-year class (92 programs; range from 12-179); only 2.1% were part-time students (0.9/program). These findings mark an increase (32%) in first-year enrollment over the 16-year average (i.e., 42.6/program versus an average of 32.2/program). Seventeen percent

Table 51. Applicant and Student Characteristics, Class of 1998-99

	Number Applicants	Number Accepted	Number Enrolled F.T.*	Number Enrolled P.T.*	Number Enrolled Total
Mean	**290.4**	**48.0**	**41.7**	**0.9**	**42.6**
Median	249.0	40.0	36.0	0.0	36.0
Range	30-787	14-179	12-179	0-20	12-179
# Programs	73	83	92	92	92

* F.T. = Full-Time; P.T. = Part-Time

of the applicant pool was accepted (48/290) and of these, 89% were enrolled (42.6/48), thus an average of 11% of those accepted elected not to enroll in a particular program. Overall, 15% of the applicants were enrolled in 1998 (43/290). The ratio of applicants to enrollees was over 6.8:1, a lower ratio than the 8.4:1 value in the previous year.

Applicants and Students Enrolled by Geographic Region

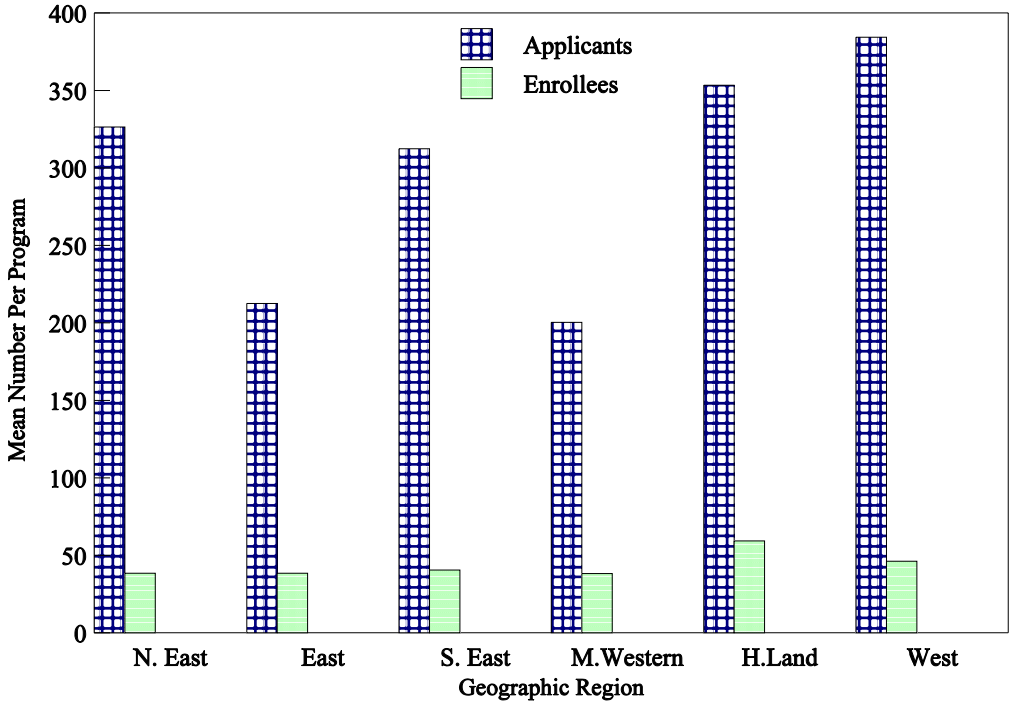
A comparison between the mean number of applicants by geographic region is shown in Table 52 and Figure 12 (next page), 'N' indicates the number of programs responding. Programs in the Western region averaged 384 applicants per program, while programs in the Midwestern region, 200 per program. Only one geographic region showed an

Table 52. Number of Applicants and Enrollees by Region

Geographic Region	Applicants N	Applicants Total	% Change Prev. Year	Enrollees N	Enrollees Total	Ratio
Northeastern	14	326.4	- 5.5%	20	42.6	7.7:1
Eastern	12	212.5	- 30.6%	14	38.5	5.5:1
Southeastern	14	312.4	- 21.2%	16	40.5	7.7:1
Midwestern	15	200.3	- 16.7%	20	38.2	5.2:1
Heartland	7	353.4	- 25.5%	8	59.3	6.0:1
Western	11	384.3	+ 8.6%	14	46.2	8.3:1
Total	**73**	**290.4**	**- 14.2%**	**92**	**42.6**	**6.8:1**

increase in the average number of applicants, the Western region with an 8.6% increase. The largest number of enrollees was in the Heartland region (59) and the smallest number was in the Eastern and Midwestern regions (38.5 and 38.2 respectively).

Figure 12. Applicants and Students Enrolled by Region, 1998-1999



Trends in P.A. Student Enrollment, 1983 Through 1998

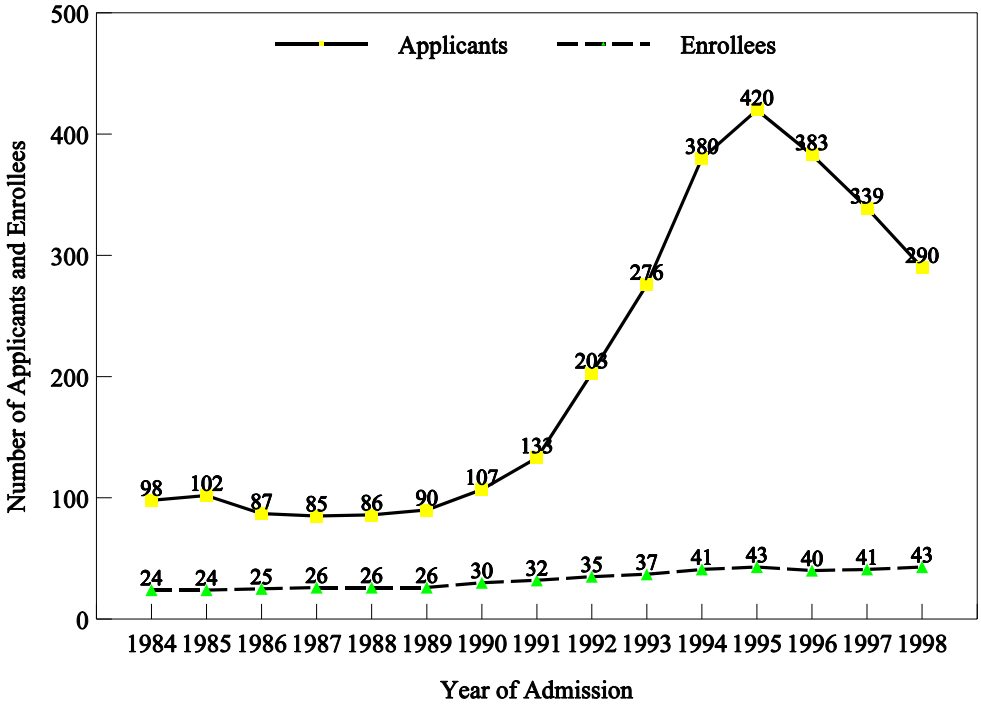
The number of applicants and students enrolled in P.A. programs for the sixteen-year period from 1983 through 1998 are shown in Table 53 and Figure 13 (next page). From 1984 through 1998 the number of the applicants ranged from 84.7 to 419.5 persons, and averaged 205.2 over the fifteen-year period. Figure 13 (next page) illustrates the trends in the number of applicants and students enrolled from 1984 through 1998. The mean number of applicants/program

Table 53. P.A. Applicants and Students Enrolled, 1983 Through 1998

Academic Year	Mean Number Applicants	(N)	Mean Number Accepted	(N)	Mean Number Enrolled	(N)	Mean Ratio Appl./Enroll
1983-84	N/A	--	N/A	--	24.0	43	N/A
1984-85	98.4	32	30.4	35	24.1	43	4.0:1
1985-86	101.8	25	44.5	35	24.3	42	4.0:1
1986-87	86.5	30	31.2	40	24.9	47	3.5:1
1987-88	84.7	31	30.2	42	25.6	47	3.3:1
1988-89	86.1	36	30.2	39	25.9	46	3.3:1
1989-90	90.2	33	33.0	40	26.1	46	3.5:1
1990-91	106.5	37	35.6	45	29.6	49	3.6:1
1991-92	133.2	33	36.8	41	32.2	47	4.1:1
1992-93	203.2	51	40.6	49	35.0	57	5.8:1
1993-94	275.7	52	39.6	46	37.0	55	7.4:1
1994-95	379.6	54	44.9	55	41.4	58	9.2:1
1995-96	419.5	53	44.7	62	42.9	71	9.8:1
1996-97	383.3	57	45.6	71	39.6	76	9.7:1
1997-98	338.6	74	46.0	83	40.5	91	8.4:1
1998-99	290.4	73	48.0	83	42.6	92	6.8:1
16-Yr. Mean	**205.2**	**45**	**38.8**	**51**	**32.2**	**57**	**6.1:1**

remained relatively constant from 1984 through 1989, then increased systematically by over 350% until 1995. Since 1996, the number of applicants/program has decreased by 31%. There had also been a systematic increase in enrollees from 1984 through 1995. Since then, the mean number enrolled has fluctuated between 39.5 and 42.9. The average number of enrollees over the fifteen-year period is 34.4 students/program.

Figure 13. Trends of Applicants and Students Enrolled: 1983 Through 1998



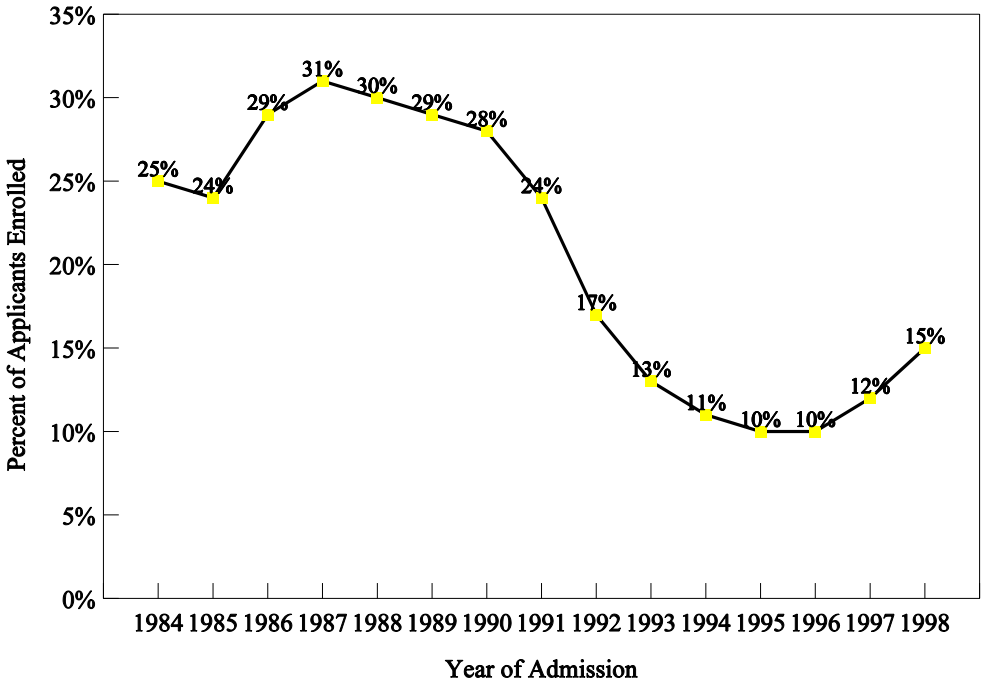
The mean number and relative proportion of male and female students enrolled in P.A. programs over the past fifteen years are shown in Table 54. The proportion of female and male P.A. students enrolled from 1983 through 1998

Table 54. First-Year Class Enrollment, 1983 Through 1998

Academic	Female			Male		Total	
Year	N	Mean	(%)	Mean	(%)	Mean	N
1983-84	39	13.6	58.4%	9.7	41.6%	24.0	43
1984-85	39	14.6	61.6%	9.1	38.4%	24.1	43
1985-86	42	15.3	63.0%	9.0	37.0%	24.3	41
1986-87	44	15.5	62.2%	9.4	37.8%	24.9	47
1987-88	47	15.7	61.6%	9.9	38.4%	25.6	47
1988-89	46	16.2	62.3%	9.8	37.7%	25.9	46
1989-90	46	16.4	62.8%	9.7	37.2%	26.1	46
1990-91	47	16.3	55.1%	13.3	44.9%	29.6	49
1991-92	47	19.4	60.2%	12.8	39.8%	32.2	47
1992-93	55	20.7	59.8%	13.9	40.2%	35.0	56
1993-94	55	22.2	61.5%	13.9	38.5%	37.0	55
1994-95	60	24.4	60.2%	16.1	39.8%	41.1	55
1995-96	71	22.8	58.2%	16.4	41.8%	39.2	71
1996-97	77	23.5	61.4%	14.8	38.6%	38.3	77
1997-98	95	24.4	61.9%	15.0	38.1%	39.4	95
1998-99	91	25.0	62.5%	15.0	37.5%	40.0	91
16-Yr Mean	**56**	**19.1**	**60.8%**	**12.4**	**39.2%**	**31.7**	**57**

remained relatively constant, averaging 60.8% and 39.2%, respectively. These figures include part-time students. Trends in the percent of applicants enrolled is illustrated in Figure 14. Although the number of applicants and students enrolled has increased since 1987-88, they have not done so at an equivalent rate. Thus, the proportion of applicants enrolled has systematically decreased from a high of 31% in 1987 to a low of 10% in 1996, with an increase to 15% in 1998.

Figure 14. Trends in Percent of Applicants Enrolled: 1984 Through 1998



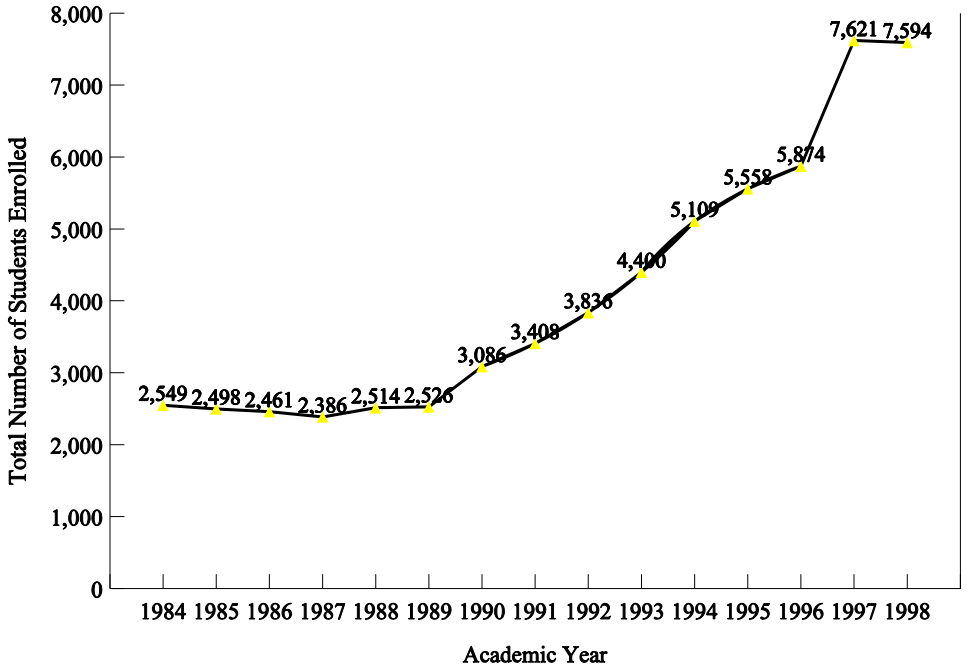
Total Enrollment in P.A. Programs

Figure 15 (next page) illustrates the trends in total student enrollment from 1984 through 1998. Estimates of total enrollment are based on summing mean values for enrollment in the 1st, 2nd and 3rd year classes, then multiplying by the number of programs represented. For the 96 programs we estimate total enrollment to be 7,594 in 1998. (The calculations were as follows, 1st yr. 96x40=3,840, 2nd yr. 89x37.1=3,302 and 3rd yr.15 x 30.1=452). If one would estimate 1st year enrollment based upon 107 programs, enrollment would be107x40=4,280, an increase of 440 students.

Total enrollment remained relatively constant from 1984 through 1989. Subsequently, there had been a linear and relatively steep sustained increase until 1996. In 1997, there was a dramatic increase of 30%. This year was the first decrease since 1986. The two factors influencing the number of P.A. students enrolled have been, (a) a larger number of first-year students enrolled and (b) an increase in the total number of programs.

In addition, since 1984 the number of P.A. programs has changed as follows: 53 (1984); 51 (1985); 49 (1986); 50 (1987); 51 (1988 and 1989); 55 (1990 and 1991) 59 (1992); 63 (1993); 67 (1994); 81 (1995); 89 (1996); 104 (1997); 107 in 1998.

Figure 15. Trends in Student Enrollment: 1984 Through 1998



Applicants and Students Enrolled by Age

The age distribution of applicants, students accepted and those enrolled for the first-year class is shown in Table 55. The data are expressed as the mean number of individuals per program within each of the age categories examined.

Table 55. Applicants and Enrollees by Age, Class of 1998-99

	All Applicants		Number Accepted		Number Enrolled	
	Mean	(%)	Mean	(%)	Mean	(%)
Age	(N=70)		(N=82)		(N=86)	
Under 20	9.7	3.5%	2.3	5.2%	1.4	3.4%
20-23	64.2	23.1%	8.7	19.7%	8.7	21.1%
24-26	66.4	23.9%	9.8	22.2%	9.3	22.6%
27-29	59.1	21.6%	7.2	16.3%	6.5	15.8%
30-33	30.9	11.1%	6.0	13.6%	5.4	13.1%
Over 33	46.7	16.8%	10.1	22.9%	9.9	24.0%
Total	**290.4**	**100.0%**	**48.0**	**100.0%**	**42.4**	**100.0%**
	(N=73)*		(N=83)		(N=92)	

* Number of programs reporting.

A little over one-fourth of the applicants were less than 24 years of age and approximately 45% were between 24-29 years. More than one-third (37%) of the students enrolled in the first-year class were over 30 years of age; over one-half were between the ages of 20 and 29 and only 3% were under 20 years of age.

Students Enrolled by Age and Geographic Region

The distribution of students enrolled in the 1998-99 class by age and geographic region is shown in Table 56. The table reports the percentage of students per program (N=86 programs) in each age category. Students enrolled in those

Table 56. P.A. Student Enrollment by Age and Region, Class of 1998-99

	Age at Application					
Geographic Region	< 20 (%)	20-23 (%)	24-26 (%)	27-29 (%)	30-33 (%)	>33 (%)
Northeastern	7.3%	24.6%	20.6%	12.8%	15.2%	19.5%
Eastern	9.3%	28.7%	21.5%	15.6%	9.8%	15.1%
Southeastern	0.6%	19.4%	26.4%	14.0%	12.6%	27.0%
Midwestern	0.1%	16.5%	20.5%	15.2%	17.1%	30.6%
Heartland	0.3%	27.1%	18.8%	16.0%	16.5%	21.3%
Western	0.2%	9.0%	17.0%	18.6%	18.4%	36.8%
Total	**3.4%**	**21.1%**	**22.6%**	**15.8%**	**13.1%**	**24.0%**

programs located in the Northeastern region tended to be younger than those in other regions, 32% were 23 years of age or less. Conversely, students in the Western and Midwestern regions were notably older than P.A. students in other regions, 36.8% and 30.6% were over 33 years of age, respectively.

Trends in Enrollment by Age

Trends in the age of enrolled students from 1983 to 1998 are shown in Figure 16 (next page). The data were grouped into the following three age categories: under 24 years of age, those between 24 and 29 years and those over 29 years of age. The proportion of enrollees less than 24 years of age increased to 24.5% in 1998, from a pattern of decrease through 1995. Those between the ages of 24 and 29 initially decreased from 1983 to 1989, and then plateaued with values fluctuating between 30% and 38%. The enrollment of students that were over 29 years of age had systematically increased over time beginning at 32% of the enrollees in 1983, peaking in 1992 (56%) and then decreasing to the current level of 37% of enrollees. This is the first year since 1986 that the percentage of students over 29 years of age was less than the 24 to 29 year old group.

Average Age of Applicants

The survey included questions asking the average age of all of the programs' applicants, accepted applicants and currently enrolled full- and part-time students. As a result of these questions, the average applicant age was 28.6, accepted applicant age was 28.5, full-time student age was 28.3 and the average age for the part-time student was 31.1. Table 57 (next page) lists average ages of these categories by geographic region. The Heartland and Western regions had the highest average age of applicants (30.4 and 30.3 respectively). The Midwestern region had the highest average age of accepted applicants (29.8). The Southeastern, Midwestern and Western regions had the highest average age for full-time students (range of 29.4 to 29.6). The Northeastern and Eastern regions had the lowest average age of applicants, accepted applicants and full-time students (less than 27.0).

Figure 16. Trends in Enrollee Age: 1983 Through 1998

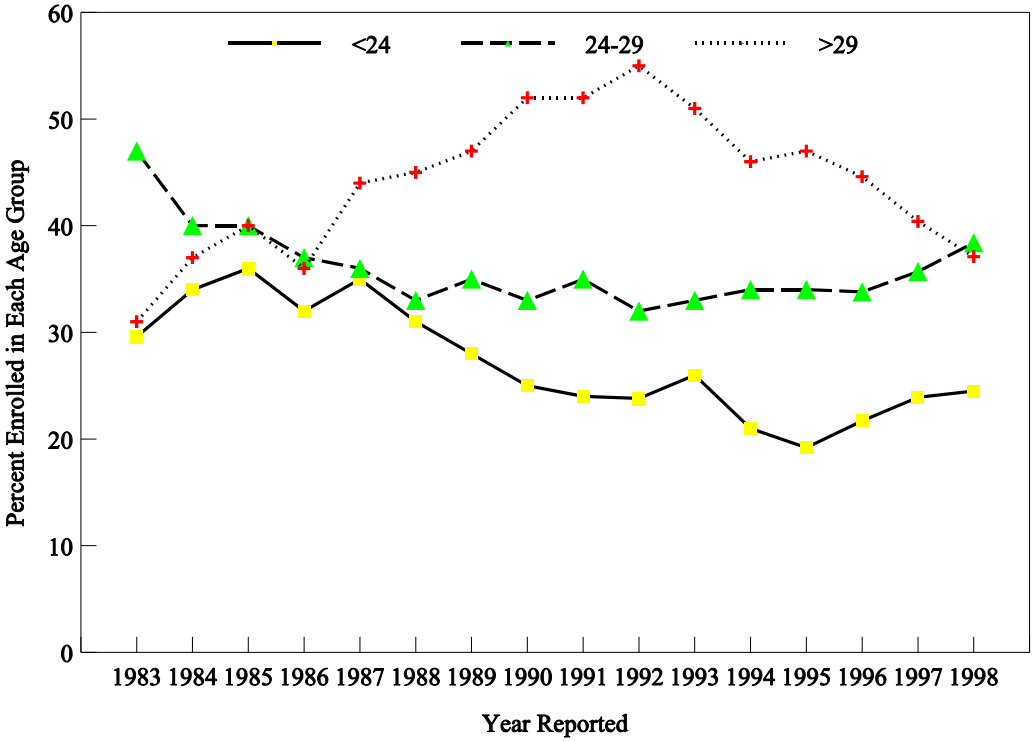


Table 57. Average Age of Applicants, Accepted Applicants and Enrollees by Region

Geographic Region	Applicants		Accepted Applicants		Enrollees Full-Time		Enrollees Part-Time	
	N	Average Age	N	Average Age	N	Average Age	N	Average Age
Northeastern	11	26.5	13	26.9	16	26.7	1	-------
Eastern	11	26.9	12	26.7	12	26.0	5	29.2
Southeastern	14	28.6	17	29.1	17	29.4	5	33.0
Midwestern	15	28.9	19	29.8	19	29.6	3	36.3
Heartland	5	30.4	7	29.1	9	28.8	0	-------
Western	9	30.3	10	29.0	11	29.4	1	-------
Total	**65**	**28.4**	**78**	**28.5**	**84**	**28.3**	**15**	**31.1**

Applicants and Students Enrolled by Ethnicity

The ethnicity of applicants and students enrolled in the first-year class is shown in Table 58 (next page). The data are expressed as the mean number and percentage of applicants and enrollees per program from each ethnicity category. Almost three-fourths of the applicants (73.7%) were White/Non-Hispanic; 6.3% were Black/African-American, 5.7% were Latino/Hispanic, 8.5% and 0.7% were Asian/Pacific Islander and Native American/Alaskan Native, respectively. Overall, 26% of the applicants were members of an ethnic minority, 24% of whom were Black/African-American. Among those enrolled, 78.9% were White/Non-Hispanic and the remainder (21.1%) were from an ethnic minority. A comparison between the proportion of minority applicants and those enrolled suggests that preference is not given to applicants on the basis of ethnicity, for example, 26% of the applicants and 21% of those enrolled were described as an ethnic minority. Thirty-eight of the 89 program respondents (43%) did not enroll

any Black/African-American students and thirty-three programs did not enroll any Hispanic students. Six programs (6.7%) did not enroll any type of minority student in 1998.

Table 58. Applicants and Students Enrolled by Ethnicity

	All Applicants		Number Enrolled		# of Programs
	Mean	(%)	Mean	(%)	w/o Minorities
Ethnicity	(N=70)		(N=88)		(N=89)
White/Non-Hispanic	214.1	73.7%	32.9	78.9%	0
Black/African-American	18.4	6.3%	2.4	5.8%	38
Latino/Hispanic	16.5	5.7%	2.4	5.8%	33
Asian/Pac. Islander	24.7	8.5%	2.7	6.5%	21
Nat. Amer./Alaskan	2.1	0.7%	0.4	1.0%	66
Other	14.0	4.8%	0.9	2.2%	61
Total (N=73)	**290.4**	**100%**	**41.7**	**100%**	**6**

Ethnic Representation of Applicants and Enrollees by Geographic Region

The mean number and proportion of P.A. applicants and students enrolled in the first-year class on the basis of both ethnicity and geographic region is in Table 59.

Table 59. Applicants and Enrollees by Ethnicity and Geographic Region

	Applicants				Enrollees			
Geographic	White		Non-White		White		Non-White	
Region	Mean	%	Mean	%	Mean	%	Mean	%
Northeastern	220.7	68.5%	101.5	31.5%	27.6	77.3%	8.1	22.7%
Eastern	169.7	78.4%	46.7	21.6%	29.6	82.2%	6.4	17.8%
Southeastern	252.5	82.4%	54.1	17.6%	35.0	84.1%	6.6	15.9%
Midwestern	174.9	82.9%	36.1	17.1%	28.4	85.8%	4.7	14.2%
Heartland	259.0	74.7%	87.8	25.3%	46.9	79.1%	12.4	20.9%
Western	251.2	68.3%	107.4	32.7%	27.1	68.3%	12.6	31.7%
Total	**214.4**	**73.9%**	**75.7**	**26.1%**	**32.9**	**78.9%**	**8.8**	**21.1%**

For purposes of comparing across programs, minorities were grouped into a single category and designated non-white. There was considerable variation in the proportion of minorities applying to, and enrolled in, programs across regions. Programs in the Western region had the largest proportion of non-white applicants at 33% and the Midwestern region the least number, with only 17% being non-white. The Western region enrolled the largest percentage (32%) of non-white students. Programs in the Midwestern region had a the fewest number of non-white enrollees (14%).

The number and percent of programs reporting no minority students enrolled in the first-year class is shown in Table 60 (next page). Six programs, in separate regions, had no minority students enrolled.

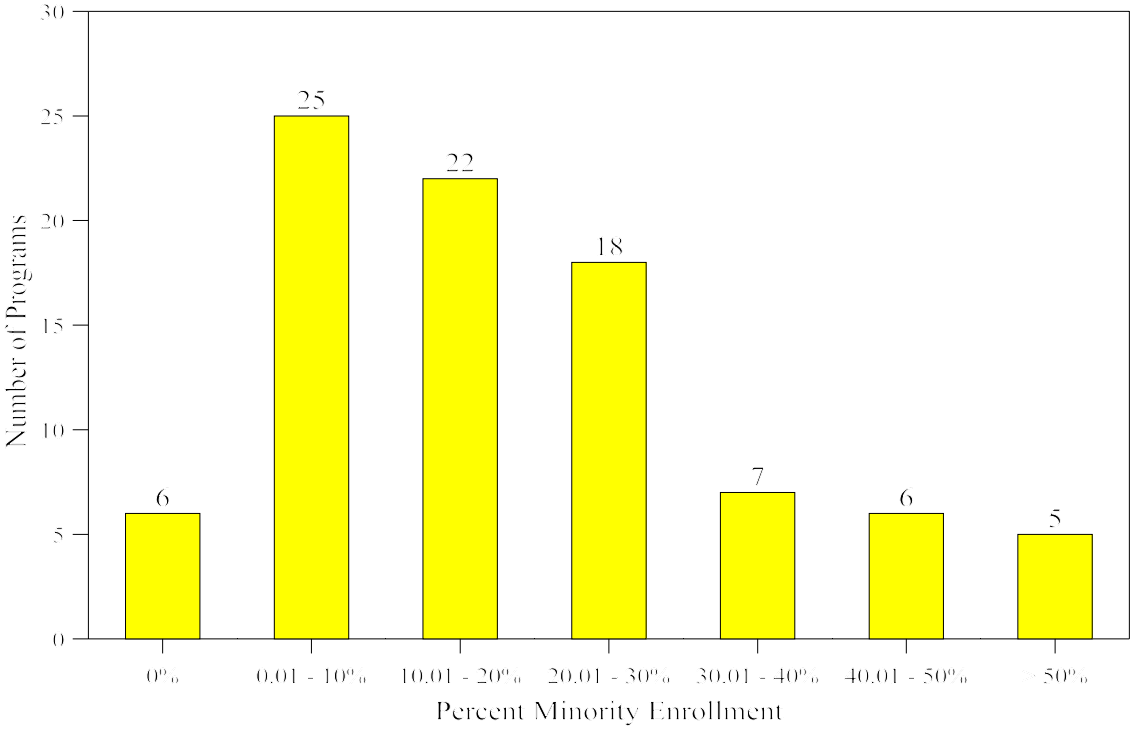
Table 60. Number of Programs with No Minority Enrollment
by Geographic Region

Geographic Region	N	# of Programs	(%)
Northeastern	19	1	5.3%
Eastern	14	3	21.4%
Southeastern	16	0	0.0%
Midwestern	20	2	10.0%
Heartland	8	0	0.0%
Western	12	0	0.0%
Total	**89**	**6**	**6.7%**

Number of Programs versus Percent Minority Student Enrollment

Figure 17 represents the number of programs with certain percentages of minority enrollment. There are 31 programs who have a larger percentage of minority enrollment than the mean of 21.1%; 58 programs have less. The average minority enrollment for programs with greater than 20% is 36.6%; for programs will less than 20% minority enrollment, 8.8%.

Figure 17. Number of Programs vs. Percentage of Minority Enrollment



Trends in Minority Student Enrollment, 1983 Through 1998

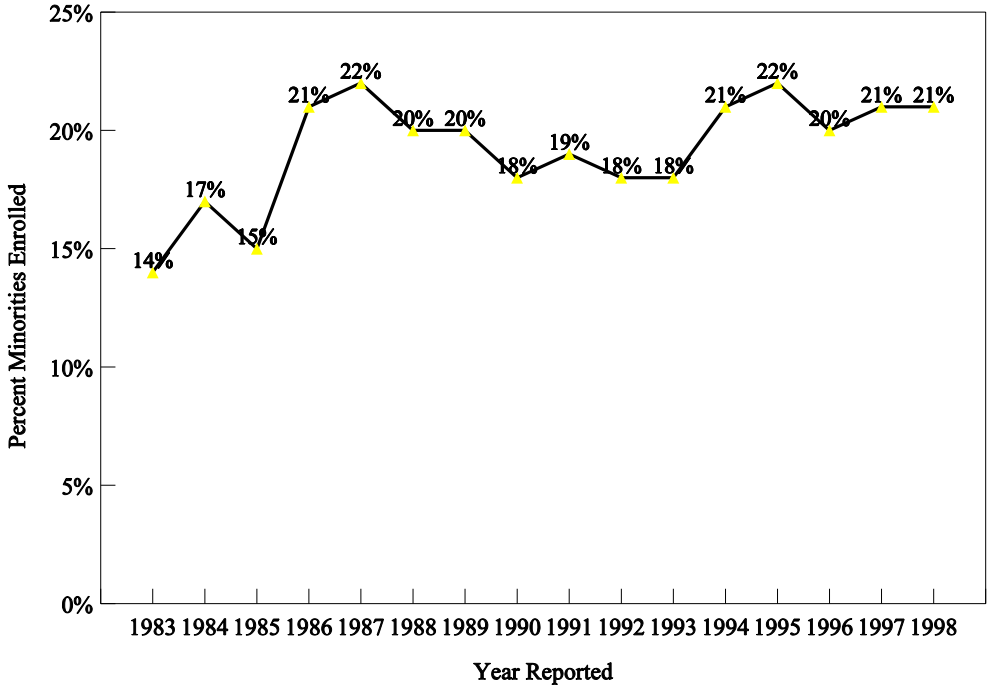
The proportion of minority and non-minority students enrolled in P.A. programs over a sixteen-year period (1983-84 through 1998-99) is shown in Table 61 (next page) and Figure 18 (next page). The proportion of non-white students in the first-year class increased from 14% in 1983 to a peak of 22% in 1987-88 and 1995-96. Expressed differently, the number of minority students has doubled from a mean of 4.0/program in 1983 to 8.8/program in 1998. For the 1998-99 academic year, non-white enrollment increased slightly to 21.1%.

Table 61. Ethnicity of P.A. Students Enrolled from 1983 Through 1998

Academic Year	N	White Mean	White %	Non-white Mean	Non-white %	First Yr. Enrollment
1983-84	39	20.7	86.2%	4.0	13.8%	24.0
1984-85	39	20.3	83.4%	4.1	16.6%	24.5
1985-86	41	20.9	85.3%	3.6	14.7%	24.6
1986-87	47	19.6	78.8%	5.3	21.1%	24.9
1987-88	47	19.7	77.7%	5.9	22.3%	25.6
1988-89	46	20.8	79.7%	5.3	20.3%	25.9
1989-90	46	20.9	80.1%	5.2	19.9%	26.1
1990-91	48	24.6	82.3%	5.3	17.7%	29.9
1991-92	47	26.0	81.0%	6.1	19.0%	32.1
1992-93	56	26.9	82.5%	5.7	17.5%	32.6
1993-94	55	29.3	82.3%	6.3	17.7%	35.6
1994-95	58	33.2	77.5%	8.8	20.9%	42.0
1995-96	69	32.4	77.7%	9.3	22.3%	41.5
1996-97	76	31.3	79.6%	8.0	20.4%	39.6
1997-98	91	32.4	79.2%	8.5	20.8%	40.6
1998-99	89	32.9	78.9%	8.8	21.1%	42.6
16-yr. Mean	**56**	**25.8**	**80.1%**	**6.4**	**19.9%**	**32.0**

Minority student enrollment over sixteen years has averaged 20% per year (mean of 6.4 students/program). It should be noted that values for the 1992-93 and 1993-94 period may be under represented because some programs with large minority enrollments were non-respondents in both years.

Figure 18. Trends in Minority Student Enrollment: 1983 Through 1998



Academic Characteristics of P.A. Students

The academic profile of students at the time of enrollment are shown in Table 62. Over one-half (67%) of the students enrolled in 1998 had earned at least a baccalaureate degree (60% as their highest degree) while less than one-fifth (19%) entered with no academic degree. Only 14% of the enrollees had earned an associate level degree prior to

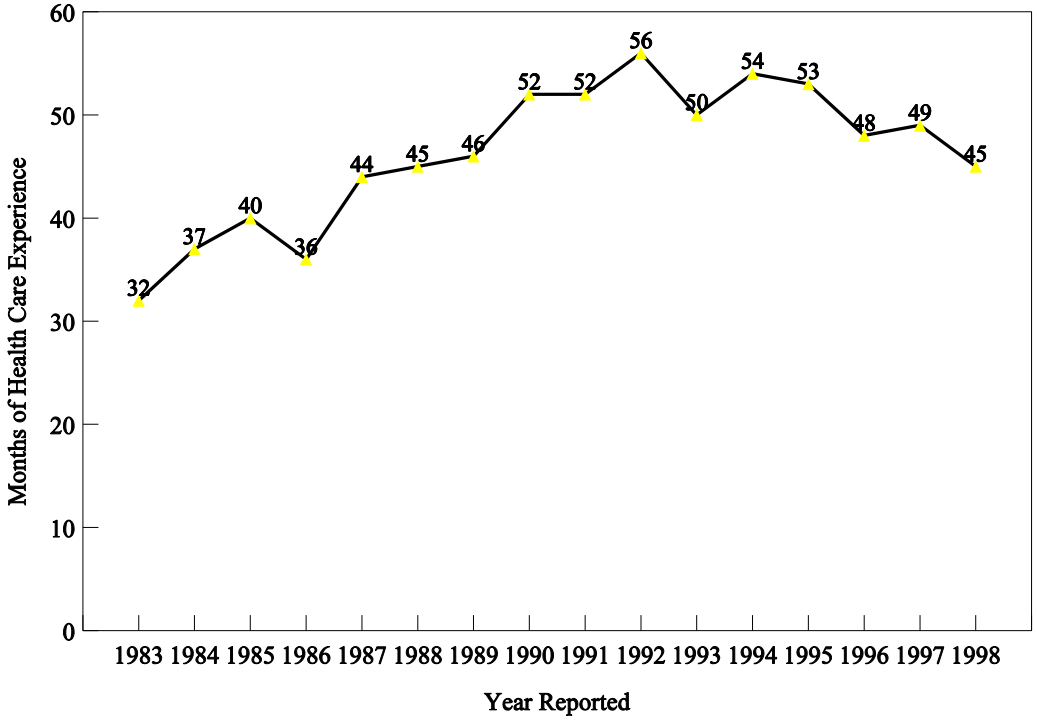
Table 62. Academic Characteristics of P.A. Students Enrolled in 1998

Highest Academic	Full-Time		Part-Time		Total	
Credential Earned	Mean	%	Mean	%	Mean	%
No Academic Degree	7.5	19.0%	0.1	12.5%	7.6	18.9%
Associate Degree	5.5	14.0%	0.1	12.5%	5.6	13.9%
Baccalaureate Degree	23.6	59.9%	0.5	62.5%	24.1	60.0%
Masters Degree	2.2	5.6%	0.1	12.5%	2.3	5.7%
Doctoral Degree	0.6	1.5%	0.0	0.0%	0.6	1.5%
Total	**39.4**	**100.0%**	**0.8**	**100.0%**	**40.2**	**100.0%**

entry. While 7.1% of the full-time students were admitted with a graduate-level degree, predominantly a masters degree (5.6%), a substantially larger proportion (12.5%) of part-time students were enrolled with a graduate degree.

The mean number of months of health care experience (H.C.E.) of students at the time of enrollment for 1998-1999 is 44.8 months. As shown in Figure 19, the months of health care experience systematically increased from 1983 through 1992 to a high of 56 months. Since that time, H.C.E. has had an overall decrease to 44.8 months in 1998.

Figure 19. Trends in Health Care Experience of Enrollees: 1983 Through 1998



Academic Characteristics of Enrolled P.A. Students by Geographic Region

A comparison of the academic degrees earned by entering students across regions is shown in Table 63. The data are expressed as the percentage of students per program in each degree category. Each of the regions had more than 50% of students entering with a baccalaureate degree. The Eastern region had the largest number of enrollees with no degree (32%). The Western region had 3.8% of its enrollees with a doctoral degree.

Table 63. Academic Characteristics of Enrollees by Region, Class of 1998-99

Geographic Region	N	Degree Characteristics: No Degree	Associate Degree	Bacc. Degree	Masters Degree	Doctoral Degree	Total Mean
Northeastern	19	24.1%	9.6%	62.1%	3.8%	0.4%	42.6
Eastern	14	32.1%	6.8%	55.4%	4.4%	1.3%	38.5
Southeastern	16	13.6%	8.0%	70.0%	7.0%	1.4%	40.5
Midwestern	20	9.4%	13.6%	62.5%	12.5%	2.0%	38.2
Heartland	8	27.5%	14.5%	50.6%	6.8%	0.4%	59.3
Western	12	16.4%	12.9%	53.6%	13.3%	3.8%	46.2
Total	**89**	**18.9%**	**13.9%**	**60.0%**	**5.7%**	**1.5%**	**39.5**

An analysis of grade point average (GPA) and mean number of months of health care experience by geographic region is shown in Table 64. The cumulative GPA of entering students ranged from 3.26 to 3.54 with a mean of 3.37.

Table 64. Grade Point Average and Mean Number of Months of Health Care Experience by Region, Class of 1998-99

Geographic Region	Grade Point Average: N	Mean	S.D.	Months of H.C.E.: N	Mean	S.D.
Northeastern	19	3.35	0.12	15	31.6	16.3
Eastern	14	3.31	0.13	14	42.5	18.1
Southeastern	17	3.37	0.14	17	43.6	14.2
Midwestern	19	3.39	0.13	19	52.2	35.5
Heartland	8	3.54	0.14	6	32.4	15.8
Western	9	3.26	0.18	10	63.4	36.5
Total	**86**	**3.37**	**0.15**	**81**	**44.8**	**27.0**

Programs in the Heartland regions reported the highest GPA for entering students (3.54). The average number of months of health related experience prior to admission varied extensively across regions. For example, students in programs located in the Northeastern region had completed an average of 31.6 months of health-related experience while those entering programs in the Western region had 63.4 months of health care experience. The average for all programs was under four years (44.8 months).

Unlicensed Medical Graduates: Applicants and Students Enrolled

The total number, mean number/program and proportion of unlicensed medical graduates (designated as UMG's) who applied to, and enrolled in, P.A. programs for the 1998-99 class is shown in Table 65 (next page). The total number of UMG applications to P.A. programs increased from 204 in 1997 to 243 in 1998, however, the number per program decreased from 3.5/program in 1997 to 3.2/program in 1998. There were 28 programs that received applications from UMG's in 1998. Thirty-one percent of the applicants were alien UMG's.

Table 65. Admission of Unlicensed Medical Graduates
Class Entering in 1998-99

Citizenship	Applied			Enrolled		
Status	N(N)*	Mean**	%	N(N)*	Mean	%
U.S. Citizen	164(20)	2.2	68.8%	18(10)	0.21	70.0%
Alien	79(19)	1.0	31.2%	11(6)	0.09	30.0%
Total	**243(28)**	**3.2**	**100.0%**	**27(10)**	**0.30**	**100.0%**

* N = Number of UMG applicants or enrollees; (N) = Number of programs with at least one UMG applicant or enrollee.

** Mean based on the total number of programs responding, including those with no UMG applicants or enrollees

Twenty-seven UMG's were enrolled in 1998, a decrease from 37 enrollees in 1998. Eleven percent of the UMG applicants were enrolled in a P.A. program in 1998, where 18% were enrolled in 1997. This year, a higher percentage of alien UMG were admitted (13.9%) as compared to the U.S.-citizen UMG's (11%).

Unlicensed Medical Graduates: Regional Analysis

The mean number of UMG applicants and enrollees by geographic region is shown in Table 66. Programs located in the Northeastern region received the largest number of UMG applications (mean of 6.8/program) while programs

Table 66. Unlicensed Medical Graduate Applicants and Enrollees by Region, 1998-99

Geographic Region	Applied		Enrolled	
	Mean	N	Mean	N
Northeastern	6.8	14	0.2	18
Eastern	1.8	11	0.6	13
Southeastern	0.5	14	0.3	15
Midwestern	0.2	17	0.3	20
Heartland	0.6	8	0.0	8
Western	3.3	10	0.6	14
Total	**3.2**	**74**	**0.3**	**88**

in the Midwestern region had the lowest number of UMG applicants, 0.2/program. Programs in the Western and Eastern regions enrolled the largest proportion of UMG's (0.6/program/region) and those in the Heartland region had no UMG's enrolled. With respect to the total applicant pool/program, UMG's accounted for only 1.1% (3.2/290) of all applicants and less than 1.0% (0.3/40) of all first-year enrollees in 1998.

The number and location of programs, by region, reporting no UMG applicants and/or enrollees for the most recently enrolled class are shown in Table 67 (next page). In total, there was a majority of programs that did not receive an application from an UMG (54/74; 73%) and a majority did not enroll an UMG (75/86; 87.2%) in the 1998-1999 class.

Table 67. Number of Programs Reporting No Applications and/or Enrollment of Unlicensed Medical Graduates by Region, 1998-99

Geographic	Applied		Enrolled	
Region	N/N*	%	N/N*	%
Northeastern	9/14	64.3%	17/19	89.5%
Eastern	7/11	63.6%	11/13	84.6%
Southeastern	11/14	78.6%	13/15	86.7%
Midwestern	14/17	82.4%	17/19	89.5%
Heartland	7/ 8	87.5%	8/ 8	100.0%
Western	6/10	60.0%	9/12	75.0%
Total	**54/74**	**73.0%**	**75/86**	**87.2%**

* N/N = number of programs with no UMG's/total number of programs reporting.

Trends in UMG Applications and Enrollment, 1987 Through 1998

Data concerning UMG applicants and UMG students enrolled from 1987 through 1998 is shown in Table 68. The total number and mean number per program of UMG applicants and UMG students enrolled, as well as the proportion of UMG's relative to the total pool of UMG applicants and enrollees is presented for each year examined. In addition, the proportion of UMG applicants that were enrolled is also included. These data are also illustrated in Figures 20 and 21 (next page). Overall there has been a total of 1,644 UMG applicants (averaging 137/year) over the twelve-year period examined. UMG applicants accounted for an average of 1.7% of the total applicant pool. Over the same period of time, there were 235 UMG's enrolled (20/year) which accounted for 1.1% of the total number of students enrolled. On average, only 16.4% of the UMG applicants were enrolled. Although there has been considerable variation in the number of UMG applicants (55-217) over the past twelve years, the number of UMG's enrolled has remained within fairly narrow limits (12-26).

Table 68. Unlicensed Medical Graduates: Applicants and Enrollees, 1987 Through 1998

Academic	UMG Applications			UMG's Enrolled			% of UMG Applicants
Year	Total N	Mean/ Program	%*	Total N	Mean/ Program	%*	Enrolled
1987-88	55	1.4	1.3%	17	0.40	1.4%	30.9%
1988-89	142	3.6	3.4%	23	0.51	1.9%	16.2%
1989-90	121	3.1	3.4%	18	0.39	1.5%	14.9%
1990-91	73	1.6	1.5%	26	0.51	1.7%	35.6%
1991-92	167	4.1	3.1%	18	0.40	1.2%	10.7%
1992-93	161	2.9	1.4%	13	0.20	0.6%	8.1%
1993-94	109	2.0	1.2%	12	0.20	1.5%	11.0%
1994-95	143	3.0	0.8%	22	0.39	1.0%	15.4%
1995-96	123	2.1	0.7%	24	0.33	0.9%	19.5%
1996-97	217	3.3	1.0%	20	0.29	0.7%	9.2%
1997-98	169	2.2	0.8%	24	0.27	0.5%	14.2%
1998-99	164	2.2	1.3%	18	0.21	1.2%	12.3%
12-Yr. Mean	**137**	**2.7**	**1.7%**	**20**	**0.34**	**1.1%**	**16.4%**

* Proportion of UMG's to total applicants and enrollees, respectively.

Figure 20 shows the mean number of UMG applicants and enrollees per program since 1987. Although the mean number of applicants has varied substantially over time, the mean number of UMG's enrolled per program has not fluctuated to the same extent. As shown in Figure 21, after a sharp decrease in the percent of UMG applicants enrolled in 1996, the percent of UMG applicants enrolled increased to 14.2% in 1997.

Figure 20. Trends in U.M.G. Applicants and Enrollees: 1987 Through 1998

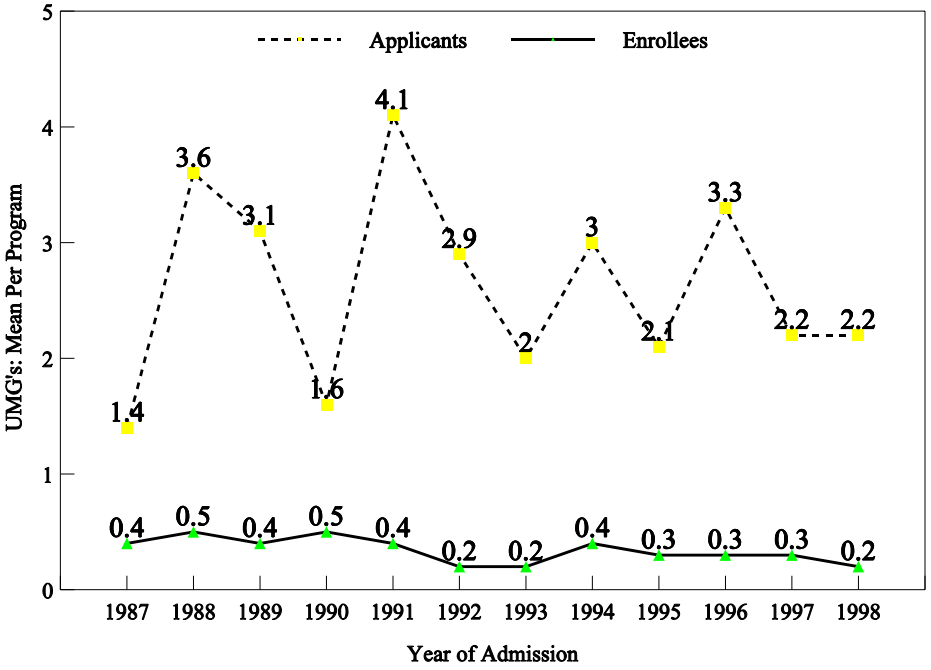
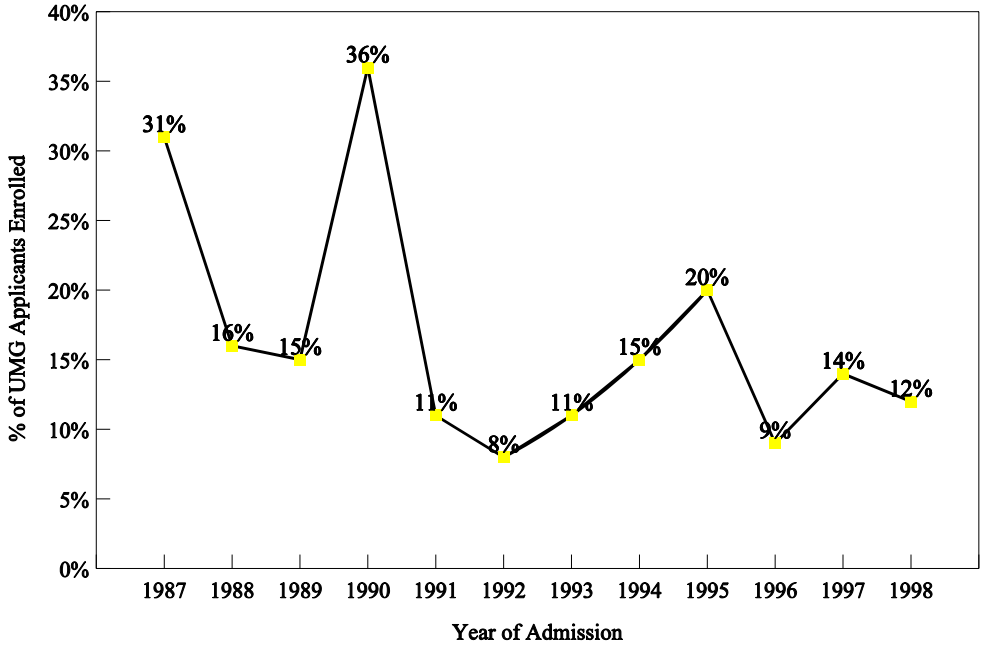


Figure 21. Percent of U.M.G. Applicants Enrolled: 1987 Through 1998



Disabled Students Enrolled in P.A. Programs

The number and proportion of students with a disability that were enrolled in the 1998-99 class is presented in Table 69. The number and proportion of enrollees who were classified as disabled was very small for the entering class (approximately 1% of the total number of students enrolled). There were approximately 16% more disabled male students than disabled female students. It should be noted that some students may have had an undetectable disability, thus, the figures reported herein may under-represent the actual number of disabled individuals.

Table 69. Enrollment of Disabled Students by Gender, 1998-99

	1st Year Enrolled		Disabled		Number of
Gender	N	%	N	%	Programs
Male	1401	37.4%	13	41.9%	92
Female	2345	62.6%	18	58.1%	92
Total	**3746**	**100.0%**	**31**	**100.0%**	**92**

SECTION IV. GRADUATE INFORMATION

Number and Attrition of Students by Gender

The number and gender of students graduating during the 1998-99 academic year, and those withdrawing and decelerating prior to graduation, are shown in Table 70. The mean number of 1998 graduates was 36.7/program and represented 93% of the students originally enrolled in this class. We estimate that there were a total of 2,789 P.A.'s

Table 70. Number of Graduates and Students Withdrawn or Decelerated in 1998-99 by Gender

	Number Graduated		Attrition of Students		Students Decelerated	
Gender	Mean	%	Mean	%	Mean	%
Female	21.9	92.8%	1.0	4.2%	0.7	3.0%
Male	14.8	93.1%	0.7	4.4%	0.4	2.5%
Total/Program	**36.7**	**92.9%**	**1.7**	**4.3%**	**1.1**	**2.8%**

* Proportion withdrawing or decelerating was calculated as:

$$(\sum_{P=1}^{N} W_p \text{ or } D_p)/(\sum_{P=1}^{N} G_p + W_p + D_p)$$

where: G_p = number graduated from program "p".
W_p = number withdrew from program "p".
D_p = number decelerated from program "p".

graduated from all programs graduating class in 1998 (76 programs x 36.7/program). It should be noted that nineteen of the new programs did not graduate students in 1998. Our estimated value for 1998 graduates was similar to the number reported as first takers on the 1998 National Certifying Examination (i.e., N=2,782). As in previous years, the majority (60%) of 1998 graduates were women.

The mean number of students withdrawing prior to graduation was 1.7 students/program for an overall attrition rate of 4.3%. Males and females higher similar rates, 4.2% and 4.4% respectively. The attrition rate was lower than in 1997 (5.1%) and considerably lower than the average of 8.9% over the previous fourteen years.

On average, the rate of deceleration was 2.8%. A decelerated student was defined as one who was enrolled, experienced academic, personal, and/or financial difficulty, but remained a student in the program on a part-time basis and/or was on a temporary leave of absence. The reasons cited for withdrawal are presented in Table 71. There were a total of 143 students withdrawing from the 1998 graduating class (as reported by 76 programs). The most common reasons for withdrawal were academic (49%) and personal (31%). It should be noted that the reasons cited for withdrawal were provided by program staff, rather than the students involved.

Table 71. Reasons for Student Withdrawal from the Program

Reason Given	N	(%)	Reason Given	N	(%)
Academic	70	49.0%	Career Change	7	4.9%
Personal	44	30.8%	Medical	0	0.0%
Financial	18	12.6%	Other	4	2.8%
			Total	**143**	**100.0%**

Attrition Rates of Students by Geographic Region

The mean number of graduates, attrition rates, and students decelerated by geographic region are shown in Table 72. Programs in the Heartland region had the largest graduating classes with a mean of 53.8 students per program, while programs in the Midwestern region had smaller graduating classes (29.2/program). The highest attrition rates occurred

Table 72. Number Graduated, Withdrawn and Decelerated by Geographic Region

Geographic Region	N	Mean # Graduated	Mean and Rate of Attrition		Mean and Rate of Deceleration	
Northeastern	18	32.2	1.8	5.1%	1.2	1.4%
Eastern	11	33.7	2.3	6.1%	1.5	4.0%
Southeastern	14	41.4	0.6	1.4%	0.2	0.5%
Midwestern	16	29.2	1.4	4.5%	0.4	1.3%
Heartland	6	53.8	3.7	6.0%	4.0	6.5%
Western	11	42.4	1.3	2.9%	1.3	2.9%
Total	**76**	**36.7**	**1.7**	**4.3%**	**1.1**	**2.8%**

in those programs located in the Eastern region (6.1%) while programs in the Southeastern region had the lowest attrition rates (1.4%). In comparison to the previous year, the number graduated/program in 1998 has increased (1.1%). The rate of attrition increased in two of the six regions (Heartland and Western); whereas deceleration increased in three regions (Northeastern, Heartland and Western). Programs in the Heartland region reported the largest rate of deceleration (6.5%), while programs in the Southeastern region had the lowest rate of deceleration.

The reasons for withdrawal by region are shown in Table 73. Programs in the Heartland region had the highest percentage of students withdraw for academic reasons (65.4%) while programs in the Southeastern region cited academic reasons for withdrawal 23.5% of the time. In the Northeastern region, 40.5% of the programs cited personal reasons for student withdrawal as compared with 15.4% in the Western region.

Table 73. Reasons for Withdrawal by Geographic Region

	Reasons for Withdrawal from Program						
Geographic	Academic		Personal		Other		
Region	N	%	N	%	N	%	Total
Northeastern	16	43.2%	15	40.5%	6	16.2%	37
Eastern	17	63.0%	6	22.2%	4	14.8%	27
Southeastern	4	23.5%	8	47.1%	5	29.4%	17
Midwestern	10	43.5%	8	34.8%	5	21.7%	23
Heartland	17	65.4%	5	19.2%	4	15.4%	26
Western	6	46.2%	2	15.4%	5	38.5%	13
Total	**70**	**49.0%**	**44**	**30.8%**	**29**	**20.3%**	**143**

Graduation, Attrition, and Deceleration of Students by Age

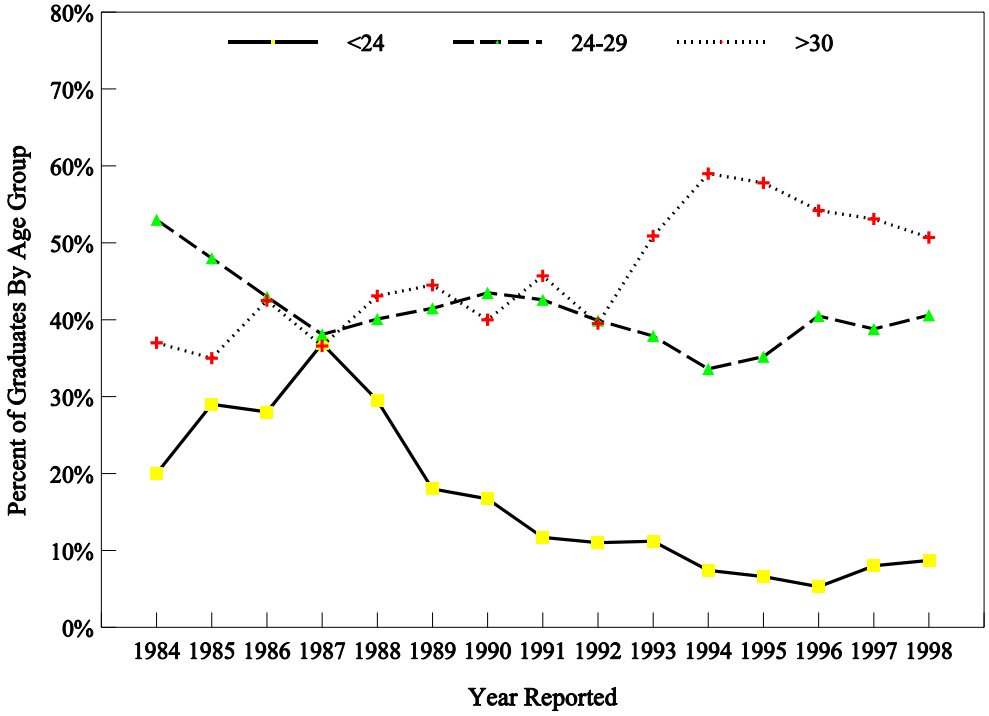
The mean number of graduates, attrition rates, and students decelerated for each age category is shown in Table 74. More than one-fourth (29.1%) of the graduates were between the ages of 20 and 26 upon graduation; 50.7% were 30 years of age or older and none were under the age of 20. Attrition was highest for those over 33; lowest for those between 24 and 29. Deceleration rates were highest for students between 24 and 26 years and least for those between 27 and 29 years.

Table 74. Number Graduated, Decelerated and Attrition Rates of 1998 Graduates by Age

		Number Graduated		Withdrew Prior to Graduation		Attrition Rate	Students Decelerated	
Age at Graduation	N	Mean	%	Mean	%	%	Mean	Rate
Under 20	75	0.0	0.0%	0.0	0.0%	0.0%	0.0	0.0%
20-23	75	3.2	8.7%	0.2	11.8%	5.7%	0.1	2.9%
24-26	75	7.5	20.4%	0.2	11.8%	2.5%	0.3	3.8%
27-29	75	7.4	20.2%	0.2	11.8%	2.6%	0.2	2.6%
30-33	75	6.8	18.5%	0.2	11.8%	2.8%	0.2	2.8%
Over 33	75	11.8	32.2%	0.8	47.1%	6.2%	0.4	3.1%
Total/Program	**75**	**36.7**	**100%**	**1.7**	**100.0%**	**4.3%**	**1.1**	**2.8%**

Figure 22 shows the trends in age from 1984 through 1998. The proportion of recent graduates in the youngest age group (<24) has generally decreased over time, with a slight increase during the previous two years. Conversely, the middle age group (24 - 29) has increased 20.8% since 1994. The graduates in the older age group (>30) has decreased 14% since 1994.

Figure 22. Trends in the Age of Graduates: 1984 Through 1998



The mean number of graduates, withdrawals, decelerated students and attrition rates for the 1998 graduating class by ethnicity is shown in Table 75. The majority of the recent graduates were White/Non-Hispanic (81.7%) and less than

Table 75. Number and Attrition Rates of 1998 Graduates by Ethnicity

		Mean Number Graduated		Withdrew Prior to Graduation		Attrition Rate	Students Decelerated	
Ethnicity	N	Mean	%	Mean	%	%	Mean	Rate
White/Non-Hispanic	76	30.0	81.7%	1.2	70.6%	3.8%	0.7	2.2%
Black/African-Amer.	76	2.4	6.5%	0.3	17.6%	10.3%	0.2	6.9%
Latino/Hispanic	76	2.2	6.0%	0.1	5.9%	4.2%	0.1	4.2%
Asian/Pac. Islander	76	1.7	4.6%	0.1	5.9%	5.6%	0.0	0.0%
Alaskan/Nat. Amer.	76	0.2	0.5%	0.0	0.0%	0.0%	0.0	0.0%
Other	76	0.2	0.5%	0.0	0.0%	0.0%	0.0	0.0%
Total/Program	**76**	**36.7**	**100.0%**	**1.7**	**100.0%**	**4.3%**	**1.1**	**2.8%**

one-fifth (18.3%) were minorities. Within the minority groups graduating, 36% were Black/African-American, 33% were Latino/Hispanics, 25.4% were Asian/Pacific Islander, 3% were Alaskan/Native American and the remainder were classified as Other. Fifty-four percent (N=41) of the 76 programs reported at least one Black/African-American among their 1998 graduates. Forty-one (54%) programs also graduated at least one Latino/Hispanic.

The Black/African-American students had the highest rate of attrition (10%), followed by Asian/Pacific Islander students (5.6%). The White/Non-Hispanics had an attrition rate of 3.8%. Proportionately, minority students were more likely to be decelerated, particularly the Black/African-American students (7%) as compared to White students (2%).

Trends in Student Attrition: 1984 Through 1998

Figure 23 (next page) shows the relative attrition rates from 1984 through 1998 for all students and for white and non-white students. Attrition rates have averaged 8.9% over the past fifteen years, ranging from a high of 14% in 1988 to a low of 4.3% in 1998. The 1998 attrition rate for white students was 3.8% and 9.6% for non-white students, the latter represents an increase from 1997. Before 1990, decelerated students were included in the attrition rates. If decelerated students were included this year, the adjusted attrition rate would be 11.4%. Since 1984, the rate of attrition has been over twice as high for non-white students, averaging 11.8% as compared to 5.3% for white students.

Sex and Ethnicity of 1998 P.A. Graduates by Geographic Region

The mean number and proportion of 1998 graduates by gender, ethnicity, and geographic region are shown in Table 76. Proportionately, more minority students graduated from programs in the Western region (33%) than from programs located in the Midwestern region (9.0%). The Heartland region had the highest proportion of male graduates (51%) and the Eastern region the highest proportion of female graduates (69%).

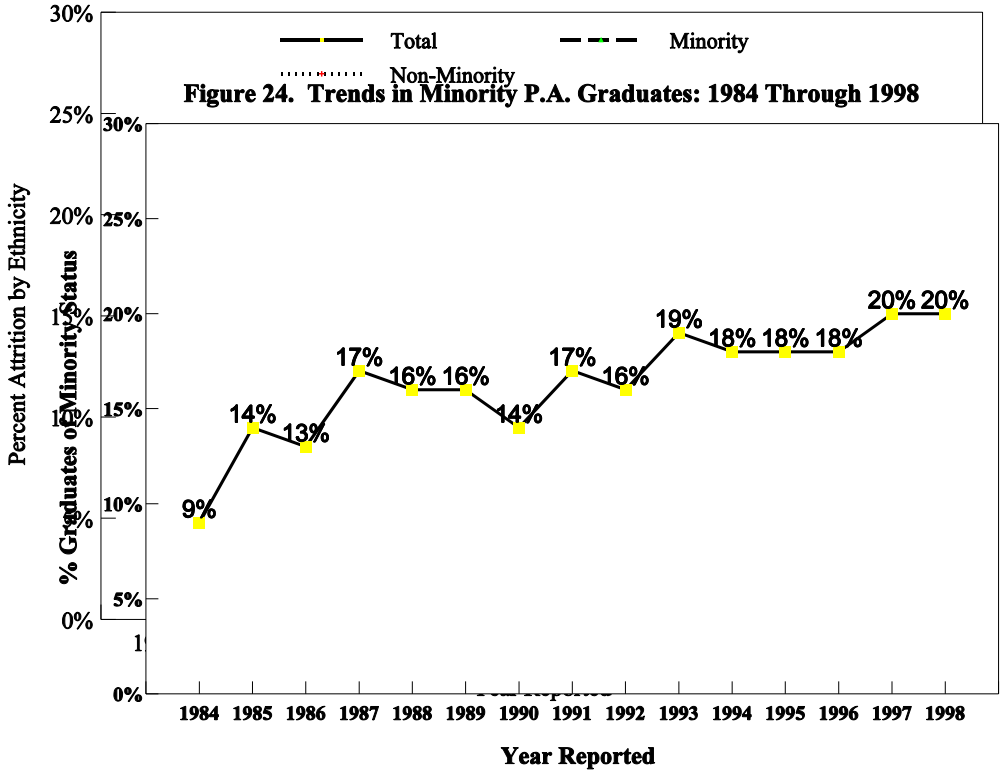
Table 76. 1998 Graduates by Sex, Ethnicity, and Geographic Region

Geographic		Mean # of	Gender		Ethnicity				
Region	N	Graduates	Male	Female	White	Black	Hispanic	Asian	Other
Northeastern	18	32.2	38.0%	62.0%	72.7%	7.8%	5.4%	7.2%	6.9%
Eastern	11	33.7	31.0%	69.0%	83.8%	8.6%	3.2%	2.4%	2.0%
Southeastern	14	41.4	45.8%	54.2%	86.0%	3.1%	2.5%	3.9%	4.5%
Midwestern	16	29.2	34.5%	65.5%	91.0%	3.0%	1.1%	2.5%	2.4%
Heartland	6	53.8	50.8%	49.2%	82.8%	5.6%	7.1%	3.4%	1.1%
Western	11	42.4	42.7%	57.3%	67.2%	6.4%	14.8%	8.2%	3.4%
Total	**76**	**36.7**	**40.3%**	**59.7%**	**80.3%**	**6.5%**	**6.0%**	**4.6%**	**2.6%**

Trends in the Graduation of Minorities

The graduation of minority P.A.'s has been monitored since 1984. Figure 24 shows the proportion of non-white P.A.

Figure 23: Trends in Student Attrition: 1984 Through 1998



graduates over the past fifteen years. During the fifteen-year period for which data was available, the graduation of non-white students averaged 16.4%, ranging from a high of 19.7% in 1998 to a low of 9.0% in 1984. The reader is referred to Figure 18 concerning enrollment of minority students which, over the past fifteen years, has averaged 19.9% (Table 61).

Employment Status of 1998 P.A. Graduates

A summary of the employment status of the recent graduates, as reported by 74 programs, is shown in Table 77. It should be noted that the time elapsed between a program's graduation date and the date the survey was completed varied.

Table 77. Employment Characteristics of 1998 P.A. Graduates

Employment Status	Mean Number Per Program	S.D.	Relative Frequency
Employed:			
As a P.A.	25.3	11.4	70.7%
Not as a P.A.	0.3	1.2	0.8%
Unemployed	4.2	6.9	11.7%
Continued with Education	0.1	0.2	0.3%
Unknown	5.9	6.7	18.7%
Total (N=74)	**35.8**	**19.7**	**100.0%**

The majority (70.7%) of recent graduates were employed as a physician assistant, a 15% decrease from 1997 graduates (84%). Over thirty percent of the graduates were either unemployed or their employment status was unknown, twice as many as last year (15%).

Number of Recent Graduates by State

The number of 1998 graduates, by state, is shown in Table 78 and includes the number of programs reporting from each state. Those states with the largest number of programs are those with the largest number of graduates, e.g., CA, NY, PA, TX. A total of 2,782 students from 76 programs completed their training in 1998. However, if we consider all programs that graduated P.A.'s in 1998 (i.e., 85 programs) we estimate that the total number of graduates would be approximately 3,120 (85 x 36.7).

Table 78. Number of 1998 Graduates by State

State	Number Prog.	Number Grads	State	Number Prog.	Number Grads	State	Number Prog.	Number Grads
AL	2	56	KS	1	42	OH	3	60
AZ	1	29	KY	1	48	OR	1	17
CA	5	280	MA	2	52	PA	9	316
CO	1	20	MD	1	27	SC	1	28
CT	2	60	MI	4	135	SD	1	16
DC	1	28	MO	1	28	TN	1	36
FL	2	152	MN	1	27	TX	4	244
GA	2	84	NC	3	94	UT	1	31
IA	2	55	ND	1	81	WA	1	65
ID	1	21	NE	1	37	WV	2	81
IL	1	26	NJ	2	61			
IN	2	34	NY	12	406			
						Total	**76**	**2782**

1998 Program Graduates: Employment Status by Geographic Region

The employment of recent graduates varied depending on the region where their program was located. Employment data are shown in Table 79. Programs located in the Southeastern region reported that over 80% of their 1998 graduates had secured employment at the time the program reported. Programs in the Northeastern region had the lowest proportion of graduates employed (61.6%). The overall proportion of recent graduates who were unemployed, including the "Other" category, averaged 28% across the regions.

Table 79. Employment Characteristics of 1998 Graduates by Geographic Region

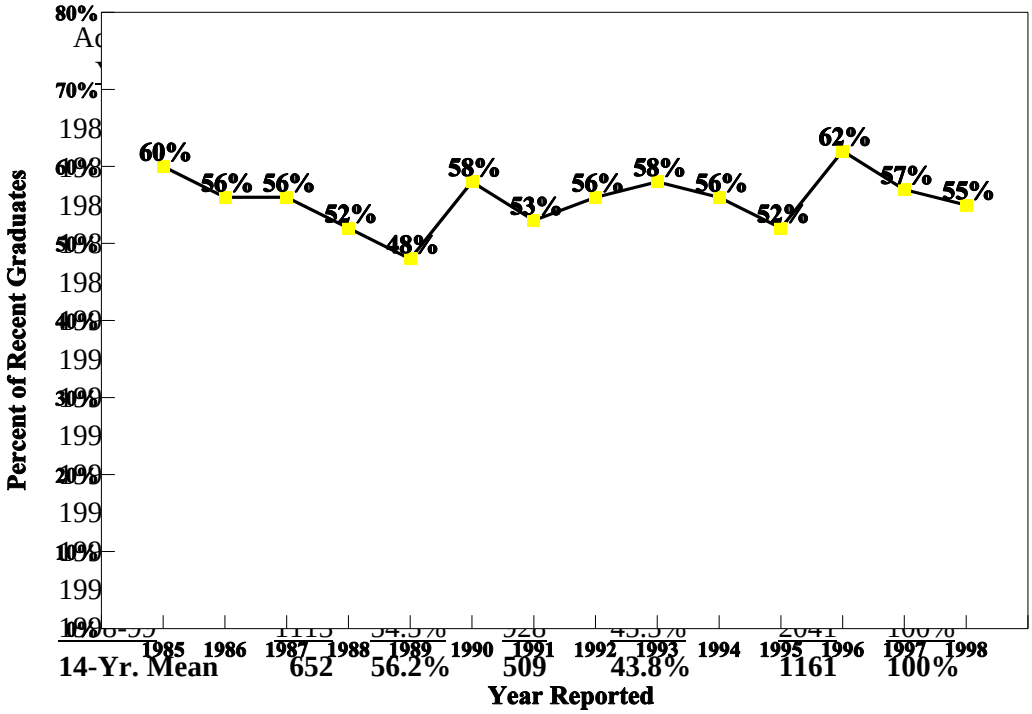
Geographic		Employed		Unemployed		Other		Total
Region	N	Mean	%	Mean	%	Mean	%	Mean
Northeastern	18	21.2	61.6%	2.7	7.8%	10.5	30.5%	34.4
Eastern	10	29.1	75.2%	5.3	13.7%	4.3	11.1%	38.7
Southeastern	14	32.6	85.6%	3.4	9.1%	2.0	5.3%	37.5
Midwestern	16	22.4	74.2%	3.1	10.3%	4.7	15.6%	30.2
Heartland	6	36.5	74.8%	6.0	12.3%	6.3	12.9%	48.8
Western	10	29.0	73.6%	7.6	19.3%	2.8	7.1%	39.4
Total	**74**	**25.8**	**71.7%**	**4.2**	**11.7%**	**6.0**	**16.7%**	**36.0**

Trends in Medical Specialty Selection of Recent Graduates, 1985 Through 1998

A comparison of the employment of recent graduates in primary and non-primary care medicine from 1985 through 1998 is shown in Table 80 and illustrated in Figure 25 (primary care includes F.M., G.I.M., Ob/Gyn, Peds)(next page). From 1985 through 1989 there was an overall decrease in the proportion of graduates entering primary care practice, from 60% in 1985 to a low of 48% in 1989, a decline averaging 3.8% per year. In the past eight years an average of 56.3% of the graduates have selected primary care medical specialities and the overall fourteen-year mean is 56.2%.

Table 80. Employment of Recent Graduates in Primary and Non-Primary

Figure 25. Recent Graduate Employment in Primary Care: 1985 Through 1998



Employment of Recent Graduates in Primary and Non-Primary Care by Geographic Region

The relative proportion of 1998 graduates entering primary and non-primary care medical specialties by region is shown in Table 81. Graduates from programs in the Western region had the highest level of employment in primary care medical specialties (72.8%). Graduates from the Northeastern region had the highest level of employment in non-primary care specialties (59.6%).

Table 81. Employment of 1998 Graduates in Primary and Non-Primary Care Medicine by Geographic Region

		Primary Care		Non-Primary Care	
Geographic Region	N	Mean	%	Mean	%
Northeastern	18	8.6	40.4%	12.7	59.6%
Eastern	10	16.7	60.3%	11.0	39.7%
Southeastern	14	17.2	53.3%	15.1	46.7%
Midwestern	16	15.6	64.2%	8.7	35.8%
Heartland	6	20.7	60.3%	13.6	39.7%
Western	10	19.8	72.8%	7.4	27.2%
Total	**74**	**15.0**	**54.5%**	**12.5**	**45.5%**

The distribution of recent graduates selecting primary care medical specialties from 1986 through 1997 is shown in Table 82 (next page). Over the period analyzed, family medicine and general internal medicine remained the primary

care specialties of choice, with family medicine increasing and general internal medicine decreasing, over time. The thirteen-year average was 68.4% for family medicine and 18.3% for general internal medicine. The selection of both obstetrics and gynecology and pediatrics also varied over time, ranging from 3.1% to 12.6% and 4.6% to 8.8%, respectively.

Table 82. Trends in the Primary Care Medical Specialty Selection of Recent Graduates, 1985 Through 1998

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Clinical	(40)*	(44)	(45)	(45)	(47)	(48)	(47)	(51)	(53)	(48)	(56)	(57)	(68)	(74)
Specialty	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Fam Md	60.4	57.7	63.6	63.5	57.5	68.5	72.2	71.1	71.0	76.0	75.4	73.1	73.2	75.1
Int Med	22.3	26.7	19.1	22.2	22.4	16.6	14.3	16.3	15.1	16.0	15.4	16.9	17.7	16.3
Gen Ped	8.8	8.7	8.1	5.9	7.5	6.1	5.9	5.9	8.4	4.6	5.2	6.4	5.3	5.6
Ob/Gyn	8.5	6.9	9.1	8.4	12.6	8.9	7.6	6.7	5.5	3.4	3.1	3.6	3.8	3.0

* Number of Programs responding

Trends in the graduates' selection of non-primary care medicine over the past fourteen years shown in Table 83. Surgery (plus sub-specialties) and medicine specialties accounted for the majority of positions (64.6%) selected by recent graduates in non-primary care. Selection of psychiatry by recent graduates has declined since 1987.

Table 83. Trends in the Non-Primary Care Medical Specialty Selection of Recent Graduates, 1985 Through 1998

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Clinical	(40)	(44)	(45)	(45)	(47)	(48)	(47)	(51)	(53)	(48)	(56)	(57)	(68)	(74)
Specialty	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Surgery	55.4	59.6	49.8	53.3	50.7	50.1	57.7	47.4	36.2	35.5	33.0	34.1	35.1	36.2
Med	23.4	15.2	24.1	23.4	23.0	25.3	20.4	22.6	35.4	25.1	29.4	30.6	29.1	28.4
Em Med	12.2	16.1	17.3	17.4	20.9	19.3	19.4	25.6	23.1	37.0	33.2	28.7	32.3	33.3
Psych.	4.3	4.7	5.3	3.0	2.4	1.9	1.2	1.6	0.9	1.1	0.8	1.0	1.5	0.7
Ind Med	4.7	4.3	3.4	2.8	3.0	3.3	1.5	2.8	4.4	1.3	3.6	5.6	2.0	1.4

A list of the specific internal medicine subspecialties selected by 1998 graduates is shown in Table 84, along with the number of graduates and programs represented. A total of 244 recent graduates from sixty-six programs were employed among eleven subspecialties. It should be noted that one of the armed services programs defined their graduate employment as "military medicine". Otherwise, the largest number of recent graduates selected cardiology (n=42; 25 programs), AIDS/infectious disease (n=23; 19 programs) gastroenterology (n=16; 10 programs) and oncology (n=15; 14 programs).

Table 84. Internal Medicine Subspecialties Selected by 1998 Graduates

Medical Area	# of Graduates	# of Programs	Medical Area	# of Graduates	# of Programs
Military Medicine	100	1	Dermatology	11	8
Cardiology	42	25	Chem. Dependency	11	6
AIDS/Inf. Diseases	23	19	Rehabilitation	4	3
Gastroenterology	16	10	Nephrology	4	2
Oncology	15	14	Other	22	13
			Total	**244**	**66**

A list of surgical subspecialties selected by the recent graduates is in Table 85. A total of 152 recent graduates from sixty-six P.A. programs selected surgical sub-specialty areas as their first position. Proportionately, these graduates

were employed most commonly in cardiovascular/cardiothoracic surgery (n=58; 38%), urology (n=28; 18%) and neurosurgery (n=23; 15%).

Table 85. Surgical Subspecialties Selected by 1998 Graduates

Surgical Area	Number of Graduates	Number of Programs	Surgical Area	Number of Graduates	Number of Programs
CV/CT	58	28	ENT	11	5
Urology	28	13	Plastic	10	5
Neurosurgery	23	16	Other Surg. Spec.	22	10
			Total	**152**	**66**

Medical Specialty Selection of Recent Graduates by Geographic Region

A comparison of medical specialty selection of recent graduates by geographic region is shown in Table 86. The data are presented as the mean number of recent graduates per program employed in each area. Medical specialties in which the largest proportion of recent graduates were employed is shown and include, family medicine, internal medicine (including subspecialties), and surgery (including subspecialties). Note, the "other" category is not included in the table. Graduates from the Western region selected family medicine preferentially (87.7%) and those from the

Table 86. Medical Specialties Selected by 1998 Graduates by Geographic Region

		Family Medicine		Internal Medicine*		Surgery*	
Geographic Region	N	Mean	%	Mean	%	Mean	%
Northeastern	18	5.1	51.5%	2.4	24.2%	2.4	24.2%
Eastern	10	8.8	48.9%	5.6	31.1%	3.6	20.0%
Southeastern	14	13.4	63.2%	4.6	21.7%	3.2	15.1%
Midwestern	16	11.2	65.1%	4.2	24.4%	1.8	10.5%
Heartland	6	16.9	50.6%	14.8	44.3%	1.7	5.1%
Western	10	19.9	87.7%	1.9	8.4%	0.9	4.0%
Total	**74**	**11.4**	**65.5%**	**3.7**	**21.3%**	**2.3**	**13.2%**

* Includes the sub-specialties

Eastern region had the least percentage entering family medicine (48.9%). Conversely, graduates from programs in the Northeast selected surgery more frequently (24.2%) than did graduates from other regions. Programs located in the Heartland region selected internal medicine more frequently than other regions.

Employment Characteristics of All Program Graduates, 1967 Through 1998

The following section presents information concerning *"ALL"* graduates (including recent graduates). For example, Duke University reported graduate data spanning 32 years (n=1149 graduates) while the University of Iowa reported data over 25 years (n=484). The employment characteristics of program graduates is shown in Table 87; 73 programs provided data within categories, 73 programs provided a total number of graduates. The mean number of graduates per program was reported as 391 (n=73 programs) with a mean of 15 classes that had graduated since inception (range of 1 to 32 classes). Thus, over this period, the average size of the graduating class has been approximately 26 students/program, a figure consistent with the graduate data presented in previous reports.

Data reported in Table 87 indicates that the majority of the graduates (68%) were employed as P.A.'s in either clinical practice (66.2%) or in administration, teaching or research positions (1.9%). Approximately 12.7 graduates/program were employed in a health field other than as a P.A., of these, 7 were physicians, 2 were nurses, and the remainder (3.7) were classified as "other". A small proportion (0.7%) were employed in a non-health related field. Approximately 1.1% of the graduates were currently enrolled as full-time students and of these, 42.7% were enrolled in medical or osteopathic school, 38.4% were in graduate school, and 18.9% were in baccalaureate level or other academic study.

Table 87. Employment Characteristics of All Program Graduates, 1967 Through 1998

Employment Classification	Mean Number Per Program	Median Number Per Program	Relative Frequency
Employed as a P.A.			
Clinical Practice	272.1	215.0	66.2%
Admin./Teach./Research	7.9	3.0	1.9%
Not Employed as a P.A.			
Health Field (not P.A.)	12.7	3.0	3.1%
Non-Health Field	2.8	0.0	0.7%
Full-Time Student	4.7	1.0	1.1%
Unemployed	15.1	5.0	3.7%
Unknown/Other	89.8	19.0	21.8%
Retired/Deceased	6.2	1.0	1.5%
Total	**391.1**	**378.0**	**100.0%**

The P.A. profession enjoys a relatively low, 3.7%, unemployment level. The majority (64.6%) of the unemployed P.A.'s were unemployed by personal choice, with 36.4% being recent graduates in the process of seeking a position. Thus, the actual unemployment level is probably less than 1%. On average, programs reported that they were unable to provide information on 21.8% of their graduates, while 1.5% of the graduates were retired or deceased.

Correcting for the unknown

In an effort to estimate the percentage of total graduates that were employed, given the relatively large (21.8%) "unknown" category, status, we performed the following analysis. The programs were divided into two groups, A and B. Group A, reporting <9% and group B, reporting >9%, in the "Unknown" category. Table 88 shows the results from this analysis. Over one-half (60.6%) of the programs were able to account for the employment status of ninety-seven percent of their graduates, reporting a mean "Unknown" category of 4.2% (group A) and, in turn, indicating

Table 88. Proportion of P.A.'s Working Clinically After Correcting for Missing Data

					P.A.'s Working Clinically		
Group	Criteria	N	%	"Unknown" Mean %	Mean %	S.D.	Range
A	<9% Unknown	40	60.6%	4.2%	83.6%	11.7	50-100
B	>9% Unknown	26	39.4%	41.6%	31.4%	29.6	10-100

that 83.6% of their graduates were employed clinically. Conversely, group B programs, with a mean "Unknown" category of 41.6%, reported that only 31.4% of their graduates were known to be clinically employed. On the basis of this information, it seems reasonable to conclude that most of the graduates included in the "Unknown" category were, in fact, employed clinically. Therefore, the proportion of P.A. graduates in clinical positions was probably more

in the range of 80%-85%, rather than the 66.2% value reported in Table 87.

Employment Characteristics of All Graduates by Geographic Region

Table 89 shows the employment characteristics of all P.A. graduates by geographic region. The data shown includes those graduates employed or unemployed, as well as the "Other/Unknown" category (which averages 23% of all graduates). Graduates of programs in the Heartland region were more likely to be in clinical practice (78%) than were those from other regions. The highest unemployment figures were for graduates from the Heartland region (4.9%) and the lowest reported in the Midwestern region (2.4%). Programs in four of the six regions could not account for

Table 89. Employment Characteristics of P.A. Graduates by Geographic Region, 1967 Through 1998

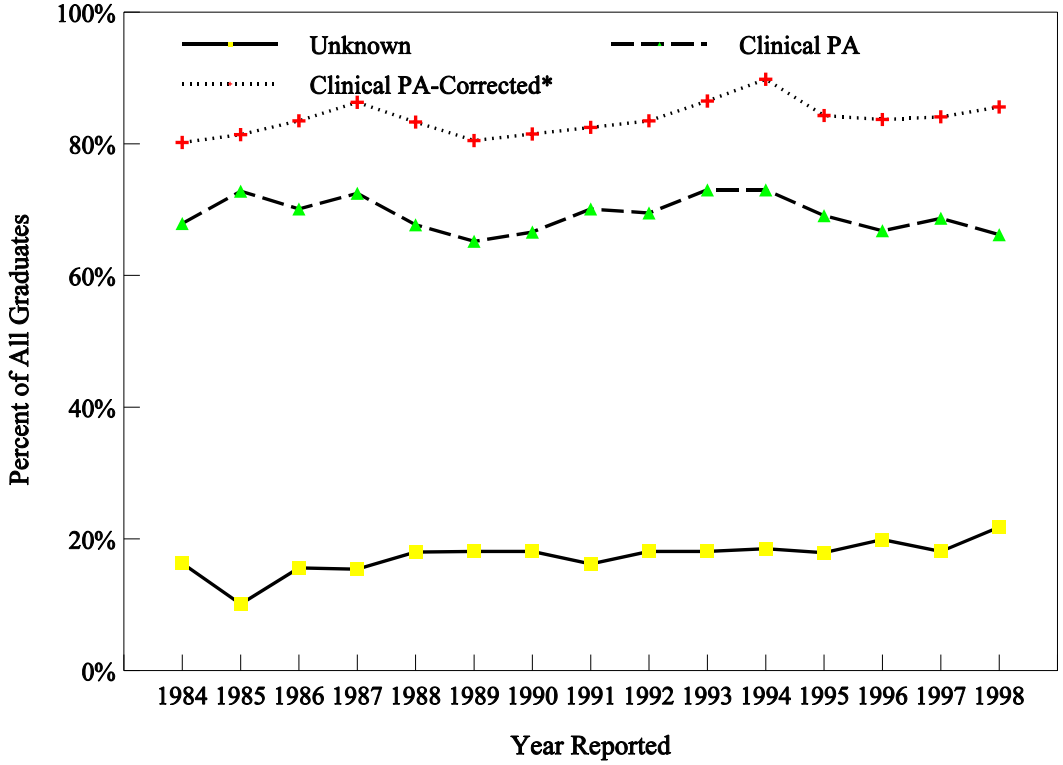
Geographic Region	N	Clinical P.A.		Employed Admin/Res/ Teaching		Not as P.A.		Unemployed		Unknown/ Other	
N.Eastern	17	163.8	55.9%	7.5	2.6%	10.3	3.5%	8.9	3.0%	102.3	34.9%
Eastern	10	221.6	61.8%	10.6	3.0%	18.7	5.2%	9.1	2.5%	98.7	27.5%
S.Eastern	14	397.6	73.0%	9.4	1.7%	36.7	6.7%	24.5	4.5%	76.7	14.1%
Midwestern	16	206.3	61.5%	3.7	1.1%	12.1	3.6%	8.1	2.4%	105.4	31.4%
Heartland	6	433.9	78.0%	8.3	1.5%	35.4	6.4%	27.5	4.9%	51.5	9.3%
Western	10	333.8	65.5%	11.3	2.2%	22.5	4.4%	17.1	3.4%	124.6	24.5%
Total	**73**	**272.1**	**66.2%**	**7.9**	**1.9%**	**20.2**	**4.9%**	**15.1**	**3.7%**	**96.0**	**23.3%**

over a fifth of their graduates while programs in the Heartland region had less than 10% of their graduates classified as "Unknown".

Trends In the Employment of All Graduates, 1984 Through 1998

Figure 26 (next page) illustrates the proportion of graduates employed in clinical practice and those reported as "Unknown". In addition, a corrected value for P.A.'s in clinical practice has been calculated by taking 85% of the value reported as "Unknown" and adding this to the reported value for P.A.'s in clinical practice. Although noted as being employed as a P.A., those in the administration/teaching and research category were not included as clinical P.A.'s. The proportion (uncorrected values) of graduates who were employed clinically ranged from 65.2% (1989) to 72.8% (1985) while the corrected values for these years were 81.4% and 80.5%, respectively. Both sets of values are plotted in Figure 26. This year, the corrected value is 85.6%; sixty-six percent were employed clinically, with 22% categorized as "Unknown".

Figure 26. Employment Status of All Graduates: 1984 Through 1998



Employment Characteristics: Medical Specialty Selection of All Graduates

The distribution of 272 graduates/program that were employed in clinical practice is shown in Table 90 by primary care medical specialty. The mean number per program and relative frequency are reported. It should be noted that the relative frequency includes the distribution across both primary (Table 90) and non-primary care (Table 91)

Table 90. Primary Care Specialties of P.A.'s in Clinical Practice, 1967 Through 1998

Clinical Specialty	Mean Number Per Program	Relative Frequency
Family Medicine	99.9	41.9%
General Internal Medicine	19.2	8.1%
Obstetrics/Gynecology	7.9	3.3%
General Pediatrics	9.3	3.9%
Geriatric Medicine	3.0	1.3%
Sub-Total Primary Care	**139.3**	**58.4%**

specialties. Also, both geriatric medicine and obstetrics and gynecology were classified as primary care specialties. As indicated, the typical program has a mean of 139 graduates (58.4% of the total) employed in a primary care specialty, predominantly family medicine (41.9%) and general internal medicine (8.1%).

The distribution of clinically active graduates in the non-primary care specialties is in Table 91. In total, 41.6% of the graduates were employed in non-primary care areas predominantly in emergency medicine (12.2%) surgical subspecialties (9.5%).

Table 91. Non-Primary Care Specialties of P.A.s in Clinical Practice, 1967 through 1998

Clinical Specialty	Mean Number Per Program	Relative Frequency
Emergency Medicine	21.0	12.2%
Surgical Subspecialties	22.7	9.5%
General Surgery	11.5	4.8%
Orthopaedics	10.1	4.2%
Int. Med. Subspecialties	9.3	3.9%
Industrial Medicine	7.7	3.2%
Correctional Medicine	6.3	2.6%
Psychiatry	2.1	0.9%
Pediatric Subspecialties	1.9	0.8%
Neurology	1.2	0.5%
Other	5.4	2.3%
Sub-Total Non-Primary Care	**99.2**	**41.6%**
Grand Total (66 Programs)	**238.5**	**100.0%**

A comparison between the mean number and proportion of graduates per program by medical specialty and region is shown in Table 92. The largest proportion of P.A.'s entering primary care medicine were graduates of programs located in the Western (76%) and Heartland (66%) regions. The majority of graduates from programs located in the

Table 92. Medical Specialty Selection of P.A.'s in Clinical Practice by Geographic Region, 1967 Through 1998

		Primary Care		Non-Primary Care	
Geographic Region	N	Mean	%	Mean	%
Northeastern	17	94.4	52.3%	86.2	47.7%
Eastern	10	125.2	54.5%	104.7	45.5%
Southeastern	14	165.9	47.4%	184.0	52.6%
Midwestern	16	123.2	62.8%	73.1	37.2%
Heartland	6	216.7	66.0%	111.4	34.0%
Western	10	189.4	76.0%	59.7	24.0%
Total	**73**	**139.3**	**58.4%**	**99.2**	**41.6%**

Southeastern region (52.6%) were employed in non-primary care. specialties. Only 51.4% of graduates from programs in the "East" (Northeast, East, Southeast regions) were employed in primary care versus 68.2% of the graduates from the "West" (Midwestern, Heartland, and Western regions).

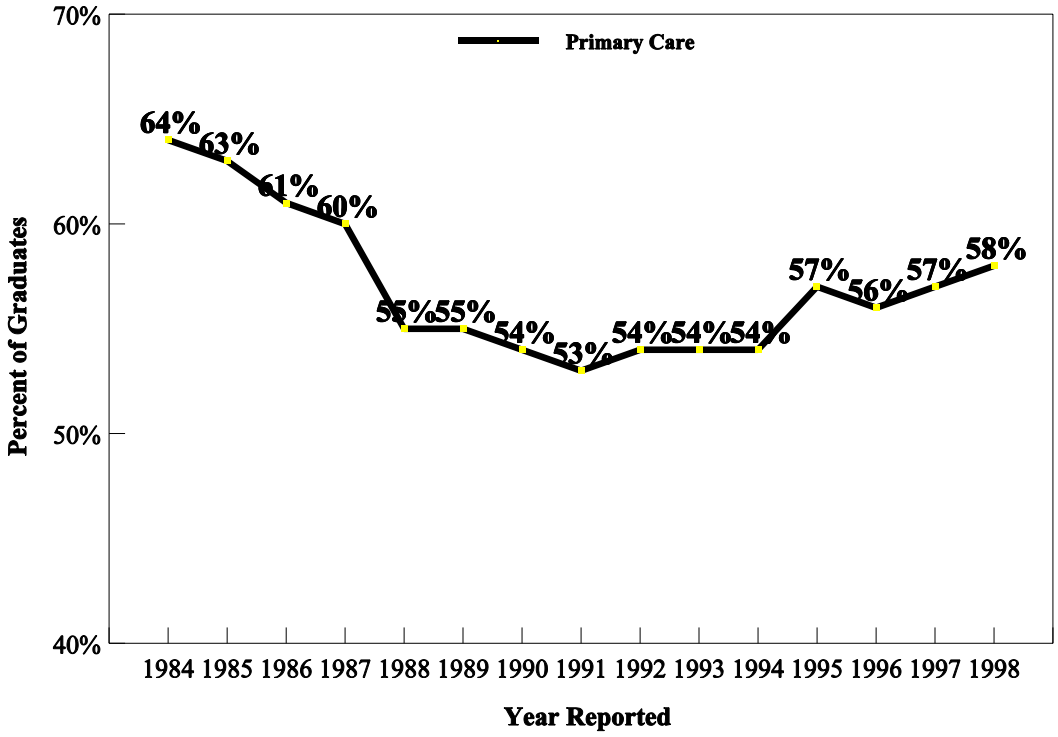
Trends in Medical Specialty Selection of Graduates, 1984 Through 1998

The employment of P.A.'s by primary care specialty, (including geriatrics), over the past fifteen years, is shown in Table 93 (next page) and illustrated in Figure 27 (next page). The proportion of P.A.'s employed in primary care medicine decreased from 63.9% (1984) plateauing around 53%-54% from 1990 to 1994, with a slight increase to 58% in 1998. At the present, over half of all P.A.'s remain practicing in primary care medicine. Between 1984 and 1988, there was a systematic decrease, averaging 2% per year, in the proportion of graduates practicing in primary care medicine. From 1988 to the present, the proportion has remained relatively unchanged, ranging from 53% to 57%.

Table 93. Trends in Primary Care Medical Specialty Selection
of All P.A.'s in Clinical Practice, 1984 Through 1998

Years	Family Medicine	General Int. Med.	Peds.	Ob/Gyn	Primary Care
1967-84	40.2%	15.2%	5.0%	3.5%	63.9%
1967-85	37.5%	15.5%	5.4%	4.1%	62.5%
1967-86	37.3%	13.5%	5.8%	4.2%	60.8%
1967-87	37.8%	14.3%	3.6%	4.2%	59.9%
1967-88	35.0%	12.9%	2.8%	4.3%	55.0%
1967-89	33.7%	12.5%	4.1%	4.7%	55.0%
1967-90	31.8%	13.1%	4.3%	4.7%	53.8%
1967-91	32.2%	11.0%	4.6%	4.3%	53.2%
1967-92	34.5%	11.0%	4.3%	4.3%	53.9%
1967-93	33.9%	10.6%	4.0%	4.0%	53.9%
1967-94	36.2%	10.1%	4.0%	4.0%	54.2%
1967-95	38.5%	9.6%	4.0%	3.5%	56.9%
1967-96	38.0%	10.0%	3.6%	3.1%	55.8%
1967-97	39.5%	9.4%	3.7%	3.0%	56.5%
1967-98	41.9%	8.1%	3.9%	3.3%	58.4%
15-yr. Mean	**36.7%**	**11.9%**	**4.3%**	**4.0%**	**57.3%**

Figure 27. Proportion of P.A.s in Primary Care Medicine: 1984 Through 1998



The distribution of P.A.'s employed in non-primary care medicine for each of the past fifteen years and the average over that period is shown in Table 94 (next page). Surgical (14.3%), medical (3.9%) and emergency medicine (12.2%) specialties accounted for over one-fourth of the recent graduates' employment. The proportion of P.A.'s practicing in non-primary care specialties has changed less than 6% since 1988.

Table 94. Trends in Non-Primary Care Medical Specialty Selection of All P.A.'s in Clinical Practice, 1984 Through 1998

Year	Surg Spec	Gen Surgery	Med Spec	Psych	Emer Med	Indus Med	Other	Non-Prim Care
1967-84	11.6%	7.4%	5.0%	1.6%	N/A	N/A	10.4%	36.1%
1967-85	11.8%	8.2%	8.2%	1.5%	4.1%	1.5%	2.2%	37.5%
1967-86	11.5%	7.7%	5.4%	1.3%	4.3%	1.9%	7.1%	39.2%
1967-87	11.1%	9.4%	5.0%	1.5%	4.8%	1.8%	6.6%	40.2%
1967-88	11.2%	8.3%	4.6%	1.5%	5.1%	1.9%	12.4%	45.0%
1967-89	11.1%	7.6%	4.7%	1.6%	4.5%	2.0%	13.5%	45.0%
1967-90	12.8%	7.5%	5.0%	1.5%	5.3%	2.0%	12.1%	46.2%
1967-91	10.7%	7.5%	4.2%	1.4%	6.3%	1.9%	14.8%	46.8%
1967-92	10.8%	7.6%	4.8%	1.3%	6.8%	2.0%	12.8%	46.1%
1967-93	9.8%	7.2%	5.6%	1.5%	7.2%	2.1%	12.7%	46.1%
1967-94	10.9%	5.6%	5.9%	1.1%	8.2%	1.9%	12.3%	45.8%
1967-95	9.0%	5.1%	5.6%	1.2%	8.1%	1.9%	12.3%	43.1%
1967-96	9.4%	5.6%	5.4%	1.0%	8.6%	2.1%	12.3%	44.2%
1967-97	8.7%	5.0%	5.2%	0.9%	10.5%	2.1%	11.2%	43.5%
1967-98	9.5%	4.8%	3.9%	0.9%	12.2%	3.2%	7.1%	41.6%
15-Year Mean	**10.6%**	**7.0%**	**5.2%**	**1.5%**	**7.3%**	**2.0%**	**10.1%**	**43.1%**

Employment Characteristics of All Graduates: Type of Practice Setting

The practice setting of P.A.'s actively involved in clinical practice is shown in Table 95, representing data from 63 programs. The classification of practice setting was based on the American Medical Association's Application for Program Accreditation for the Assistant to the Primary Care Physician. Using this system, an H.M.O., a drug and alcohol rehabilitation clinic or an urgent care clinic would fall under the heading of Ambulatory Care Clinic, whereas,

Table 95. Practice Setting of P.A. Graduates, 1967 Through 1998

Practice Setting	Mean Number Per Program.	S.D.	Relative Frequency
Office	102.6	109.6	39.0%
Hospital/Institution	64.3	66.6	23.7%
Amb Care Clinic	60.3	79.9	28.4%
Other	46.4	24.9	8.9%
Total	**273.6**	**246.1**	**100.0%**

a correctional facility or mental health institute would be classified as an Institutional setting. Almost two-thirds of the graduates were located in either an office-based (39%) or hospital-based (24%) practice and 28.4% percent were practicing in an ambulatory care clinic.

Employment Characteristics of All Graduates by Geographic Region

The distribution of clinically active graduates by practice setting and region is shown in Table 96. There was a regional difference relative to the proportion of graduates located in office and hospital practice. That is, graduates from programs located in the Northeast were more likely to practice in a hospital setting than were graduates from programs located in the other regions, while, graduates from the Heartland region were more likely to be employed in an office setting.

Table 96. Type of Practice Setting of All Graduates by Geographic Region

Geographic		Office		Hosp./Instit.		Ambul. Clinic		Other/Unknown	
Region	N	Mean	%	Mean	%	Mean	%	Mean	%
Northeastern	16	38.6	23.7%	59.4	36.5%	46.1	28.3%	18.8	11.5%
Eastern	10	91.4	38.1%	67.8	28.2%	35.7	14.9%	45.3	18.9%
Southeastern	14	165.2	41.4%	101.4	25.4%	66.8	16.7%	65.9	16.5%
Midwestern	15	83.2	41.3%	43.7	21.7%	42.9	21.3%	31.5	15.6%
Heartland	6	211.6	48.5%	81.6	18.7%	88.3	20.3%	54.4	12.5%
Western	10	92.1	28.8%	39.5	12.3%	106.9	33.4%	81.7	25.5%
Total	**71**	**102.6**	**37.5%**	**64.3**	**23.5%**	**60.3**	**22.0%**	**46.4**	**17.0%**

Trends in Practice Setting of Graduates, 1984 Through 1998

The proportion of graduates in various practice settings, between 1984 and 1998, is shown in Table 97. The percent of graduates working in a hospital/institutional setting has decreased since 1992, from 34.0% to 22.8%. The remaining categories have fluctuated over that same time. Typically, P.A.'s were employed in either an office or hospital/institutional setting.

Table 97. Practice Setting of All Graduates, 1984 Through 1998

Year	Office	Hosp/Inst	Amb Care Clinic	Other/Unknown
1967-1984	40.8%	33.0%	20.2%	6.0%
1967-1985	38.4%	36.1%	19.0%	6.5%
1967-1986	37.5%	37.9%	19.9%	4.7%
1967-1987	36.7%	36.3%	22.5%	4.6%
1967-1988	36.1%	37.0%	19.1%	7.7%
1967-1989	35.7%	35.8%	19.2%	9.3%
1967-1990	38.2%	36.5%	14.9%	10.3%
1967-1991	35.4%	33.1%	20.3%	11.2%
1967-1992	33.9%	34.0%	21.3%	11.2%
1967-1993	36.8%	32.9%	22.3%	8.0%
1967-1994	36.1%	30.5%	24.9%	8.6%
1967-1995	35.4%	27.8%	21.4%	15.4%
1967-1996	38.0%	25.0%	23.5%	13.5%
1967-1997	38.4%	22.8%	21.9%	16.9%
1967-1998	37.5%	23.5%	22.0%	17.0%
15-Yr. Mean	**37.0%**	**32.1%**	**20.8%**	**10.1%**

Regional Variation and Trends in New Graduate Starting Salaries

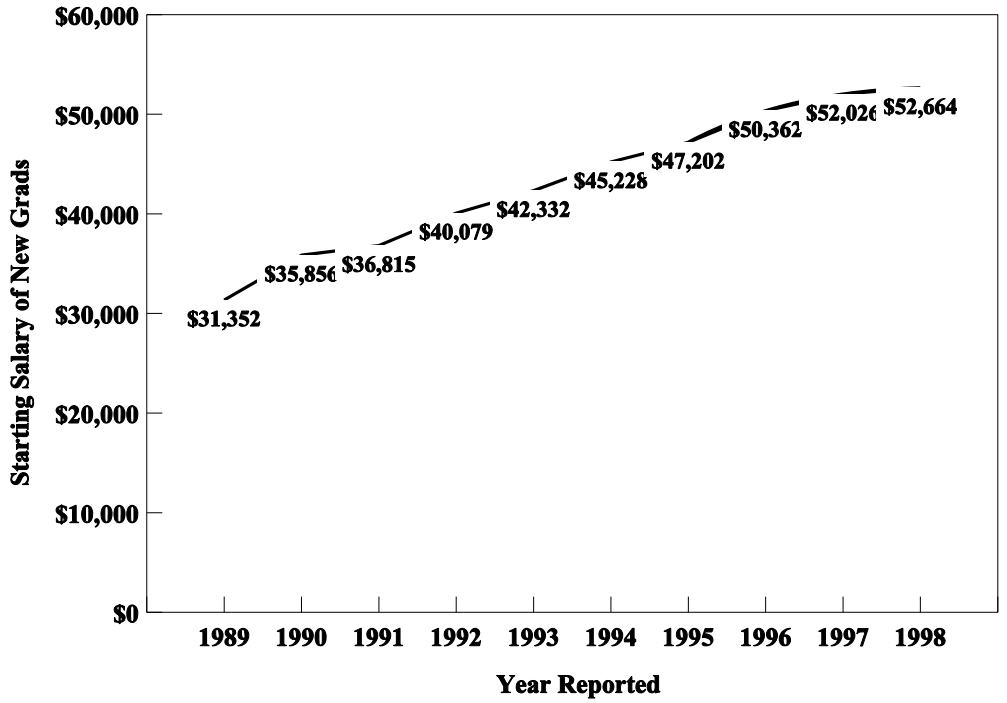
Table 98 shows the estimated starting salary of recent graduates in 1998 by region. The overall average was $52,664, an increase of 1.2% from the 1997 average of $52,026. Salaries were above $51,000 for those graduates from programs located in all but the Eastern region. The median starting salary was highest for those graduates from programs located in the Southeast.

Table 98. Program Directors' Perceptions of Starting Salaries for P.A. Graduates by Geographic Region

Geographic Region	N	Mean	Median	Change from 1997
Northeastern	15	$52,900	$53,000	+ 0.4%
Eastern	5	$49,267	$50,000	- 1.1%
Southeastern	14	$54,774	$55,000	+ 4.9%
Midwestern	12	$53,416	$54,700	+ 1.4%
Heartland	7	$51,541	$53,500	- 2.6%
Western	9	$51,500	$50,500	- 1.4%
Total	64	$52,664	$53,000	+ 1.2%

Salaries of graduates from programs located in the Southeastern region marked the greatest increase from 1997 (4.9%), while programs in the Heartland region reported a decrease of 2.6% from 1997. These data are also shown in Figure 28. Thus, starting salaries have increased each year by an average of 6.4% and there has been an overall increase in salaries of 68.0% since 1989.

Figure 28. Trends in Starting Salary for New Graduates: 1989 Through 1998



SECTION VI. ADDITIONAL INFORMATION FOR THE 15TH ANNUAL REPORT

Amount of Vacation/Down Time

Respondents were asked to identify the amount of vacation/down time (scheduled breaks greater than two days) that students have during the professional phase PA curriculum. Table 130 lists the average and median amount of vacation/down time by region.

Table 131. Amount of Vacation/Down Time by Region

Geographic Region	N	Mean (weeks)	Median (weeks)
Northeastern	16	9.10	7.5
Eastern	12	6.25	4.0
Southeastern	13	7.19	6.0
Midwestern	12	6.53	4.0
Heartland	4	9.75	6.0
Western	9	4.56	2.0
Total	66	7.16	4.0

The average amount of vacation time per program is 7.16 weeks (1.7 months) for the entire professional phase curriculum. The typical P.A. program reports the curriculum as 25.6 months. If vacation/down time is taken into account, the actual length of the program would be 23.9 months. The Northeastern region had the highest amount of vacation/down time (9.1 weeks/program), while the Western region only has 4.56 weeks/program.

Additional Requirements for Masters Granting Programs

Masters granting programs were asked to identify additional graduation requirements. A summary of the responses of 25 programs is found in Table 131. Twelve programs identified senior projects as an additional requirement. Three programs stated that they have no additional requirement for their masters degree.

Table 132. Additional Requirement for Masters Degree

Requirement	N
Senior Project	12
Capstone	2
Comps	2
Comps and Project	2
Project and Thesis	2
Capstone and Comps	1
Capstone and Project	1
None	3
Total	**25**

SUMMARY AND CONCLUSIONS

This report presents an update of physician assistant educational programs in the United States for the 1998-99 academic year. This is the fifteenth annual report to be published since 1984 and is based upon data drawn from the 1998 national survey of P.A. programs and includes APAP member programs and those enrolling students for the first time in 1998. Two surveys were administered. Survey #1 was mailed in October to 107 programs. The response rate for survey #1 was 88.8% (95 programs). The second survey was mailed in November, with a return of ninety-six surveys. Highlights of the findings are provided in this summary and includes a description of the "typical" P.A. program. Comparisons were also made across programs by geographic region.

As we have data extending from 1984, we were able to also examine trends which have occurred over the past fifteen years for certain variables. Trends were analyzed relative to program budget and student expenses, personnel salaries and turnover, curriculum and interdisciplinary education, applicant, student and graduate characteristics, and salaries for recent graduates.

SECTION I. General Characteristics of P.A. Programs

The majority of programs (N=91; 85%) were associated with either a University or 4-year College and most (N=53; 50%) awarded graduates a baccalaureate degree; thirty-three programs awarded a master's degree; the remainder awarded either an associate degree or only a certificate of completion. The majority (N=56; 52%) of the current P.A. Programs were established since 1989; forty-five percent of the programs were established in the period 1969 through 1976, an average of 5.2 programs/year. From 1977 through 1988 (12 years) only three new programs were developed. The "typical" P.A. curriculum was 25.6 months in length and ranged from 12 to 48 months. The majority of programs graduated their seniors over two periods, between May-June (N=33) and August-September (N=55).

P.A. programs received the majority of their financial support from the sponsoring institution, averaging $501,150 (68% of the budget) and federal training grants, averaging $173,030 (23% of the budget). Thirty-seven programs (41%) reported they received federal training grant support in 1998-1999. The average cost per program to educate a P.A. student was estimated to be $8,981/student/year, a figure derived by dividing the total budget by the total number of students enrolled. This value does not include other costs, for example, clinical preceptors and other educators whose wages are not included in the program's budget. Programs located in the Western region had the highest total budget ($1,182,920 per program) as well as the highest level of federal training grant support ($193,555 per program). Programs in the Heartland region had the lowest total budget, averaging $596,667 per program. Programs in the Eastern region had the lowest level of federal training grant support ($112,200).

The typical resident student paid an average of $22,428 for tuition, books, fees, and equipment for their entire professional education in a P.A. program, the non-resident student paid $27,922. Eighty-three percent of the students received financial aid averaging $13,808 per student per year. Students enrolled in programs located in the Eastern region had the highest resident tuition ($30,799/student/curriculum), while programs in the Heartland region had the lowest resident tuition ($9,642/student/curriculum).

Eighty-six percent of the students in programs located in the Southeastern region received financial aid, while only 79% of the students in the Eastern region received financial aid. For all students enrolled in 1998, only 1.3% (1st year students) and 1.8% (2nd year students) were awarded support from any of the several types of Public Health Service Corps Scholarships.

Trends from 1984 Through 1998

Total program budget increased an average of 11.2% annually from 1984 through 1998, a total increase of 168% over the past fifteen years. During this period, institutional support for the typical program increased an average of 11.2% per year, while federal training grant support remained relatively unchanged (15 year mean=$138,134) and accounted for an average of 30% of the total program budget (41% in 1985 down to 22% in 1997). Since 1984, both tuition and total student expenses have increased by over 220% while the proportion of students receiving financial assistance has increased to 83%. Since 1986, the amount of financial aid provided to students has increased by almost 260%, from $3,866/student/year to $13,808/student/year in 1998.

SECTION II. Program Personnel

In order to conduct an analysis of P.A. program personnel, the faculty and staff were divided into three major groups as follows: (1) program directors, (2) medical directors and (3) those faculty and staff associated with the educational and/or administrative aspects of the program (referred herein as program personnel). The latter group was subdivided on the basis of whether they were P.A.'s or non-P.A.'s and organized across four categories (I, II, III, IV) based on job titles and program responsibilities.

The typical P.A. program employed one medical (0.29) and one program director (0.95) and, on average, 4.3 P.A. credentialed and 1.4 non-P.A. faculty, and 2.3 Category IV personnel. Thus, the "core" personnel for the typical program amounted to approximately 9.24 FTE's including clerical and/or other types of support personnel. General characteristics were reported for directors and program faculty and staff, including, percent time working with the program, months in position, annual salary, highest degree held, academic classification and tenure track status, gender, and ethnicity. Annual salary was shown to vary by job category, geographic region, gender, ethnicity, academic classification, and highest degree held.

In comparison to the Category I - III personnel data gathered in 1997-98, salaries for P.A. program personnel increased by 3.7% and 3.7% for non-P.A.'s. Eighty- seven percent of the P.A. and 51% of the non-P.A. personnel were classified as faculty. Twenty-six percent were on a tenure track and 25% of the tenure track faculty were tenured. Forty-six percent of the Category I - III program personnel had earned a masters degree and 11% held a doctorate as their highest degree.

On average, 56% of the P.A. credentialed staff and faculty (including program directors) provided 12 hours per week of clinical practice in addition to their educational activities. Ninety-two percent were paid for their clinical service which averaged $32.58 per hour. Clinical earnings accounted for 30% of their salary.

In comparison to the 1997 data, the proportion of program directors who were credentialed as P.A.'s decreased from 82% to 81%, salaries increased by 4.3% and months in position increased from 68 to 74 months. The majority of program (90%) and medical (80%) directors were classified as faculty and were on a tenure track. Less than one-fourth were tenured. While all but one of the medical directors held M.D., D.O., or Ph.D. degrees, thirty-four percent of the program directors had doctoral-level degrees (typically the Ph.D. or Ed.D.). Since 1984, there has been a 95% increase in mean salary for program directors and 66% increase for medical directors. The time in position for both medical and program directors has fluctuated extensively over the fifteen year period.

Respondents also provided data on personnel turnover over the past year. For the period September 1997 through August 1998, turnover averaged 0.9 individual per program. Turnover across all programs was highest among Category I personnel (40/year) and lowest among Category III personnel. Six program director positions were filled during this period. Departing personnel had been in their positions an average of 42 months, those filling the position were in their previous position 46 months and were typically three years younger than their predecessors.

Vacated positions were filled within 10.9 weeks and were filled by individuals with similar academic and personal characteristics as those departing. The three primary reasons cited for the departure of personnel included, in descending order, career advancement, geographic relocation and return to clinical practice. In this past year, the

salary of those filling the vacated position was only 4.6% greater than the salary of the person leaving the position.

SECTION III. P.A. Applicant and Student Characteristics

In 1998, the average size of the entering P.A. class was 40.0 students, 63% of whom were women. The senior class averaged 37.1 students per program with only 9.7% of the maximum capacity of the class unfilled (due largely to attrition from the program). The typical program received 290 applications and reported a ratio of 6.8 applicants to students enrolled. Using the mean values of the responding programs, the total enrollment (all classes) across all 96 programs was estimated to be 7,594 (27 less students than the previous year). Similarly, the estimated first-year enrollment was 3,840 students with only 3% enrolled as part-time students. Programs located in the Western region had the largest number of applicants (384/program). The Heartland region had the largest number of students enrolled (59/program). Programs in the Midwest region had both the smallest number of applicants (200/program) and the fewest number of students enrolled (38.2/program).

The typical entering student was described as a white/non-Hispanic female over 27 years of age, with a grade point average of 3.37 and 45 months of health care experience prior to admission.

The proportion of minority students enrolled in the first-year class has increased from 13.8% in 1983-84 to 21.1% in the current year, with the majority of these students in the African-American ethnic group. All but six programs reported that at least one minority student was enrolled in the 1998 class.

Although there was relatively little change in the number of applicants and students enrolled between 1984 and 1989, the number of applicants and students enrolled from 1989 to the 1995 increased substantially, 325% and 52%, respectively, during that period. The number of applicants has decreased by 30.8% since 1995 (420/program to 290/program)

Information was also obtained on the number of unlicensed medical graduates (U.S.-born and alien) applying to and enrolling in P.A. programs during 1998. The total number of UMG applicants increased from 169 (2.2/program) in 1997 to 243 (3.2/program) in 1998. UMG enrollment has increased from 24 (0.3/program) in 1997 to 27 (0.3/program) in 1998. On average, 11.1% of the UMG applicants were admitted in 1998.

Almost one-half (38%; 28/74) of the programs received an UMG application while 14% (10/74) of the programs enrolled an UMG in 1998. In a broader perspective and with respect to the total applicant pool, UMG's accounted for only 1.0% of the total number of applicants and 1.0% of all students enrolled in the 1998 class.

Programs located in the Northeastern region accounted for the majority of UMG applicants, averaging 6.8/program, while programs in the Midwestern region only received an average of 0.2/program. Programs in the Eastern and Western region enrolled the highest proportion (0.6/program) of UMG’s, while programs in the Heartland region did not enroll any UMG’s in 1998.

SECTION IV. Graduate Information

The average size of the 1998 graduating class was 36.7/program and was highest for programs located in the Heartland region (54/program) and lowest in the Midwestern region (29.2/program). The majority of recent graduates were female (60%) and non-minority (82%). The attrition rates across programs averaged 4.3% (1.7 students per program) and the reasons for withdrawal were most frequently due to academic (49%) and/or personal (31%) problems. The attrition rate reported in 1998 was lower than the previous year (5.0%) and the fifteen-year average of 8.9%. Attrition was highest among minorities and younger students. Students from programs in the Eastern region had the highest attrition rate (6.1%) and those from programs in the Southeastern region the lowest attrition (1.4%).

On average, 1.1 students per program were decelerated for a deceleration rate of 2.8%. These students were not considered "withdrawn" and therefore not included in the attrition figures. Deceleration occurred more frequently among minorities and older students. The highest deceleration rates were reported by programs located in the Heartland region (6.5%) and lowest for programs in the Southeastern region (0.5%).

The proportion of 1998 graduates employed in primary care specialties decreased from the previous year (54.5% versus 56.9% in 1997) and those so employed remained principally in family medicine or general internal medicine. The most common non-primary care specialties selected by recent graduates were surgery (including subspecialties) and emergency medicine. The most common medicine subspecialties were cardiology and gastroenterology, while cardiothoracic and cardiovascular surgery were the most common surgical specialties selected.

Overall, the typical program has matriculated an average of 15 classes (range=1-32) and a total of 391 students. When adjustments were made for "unreported or unknown employment status", we estimated that between 80%-85% of the graduates were employed as a P.A. with less than 3% unemployed, most by personal choice. A majority (66%) of these graduates were employed in a primary care medical specialty in either an office (39%) or hospital setting (24%). These P.A.'s were typically employed in either family medicine (41.9%), general internal medicine (8.1%), or in a surgical subspecialty (9.5%). Graduates of programs located in the "western" half of the U.S. (Midwestern, Heartland, and Western regions) were more likely to be in clinical practice in primary care medicine and were typically located in either an office or ambulatory clinic as compared to graduates from programs located in the "eastern" half of the country.

Based on responses from program directors, starting salaries continued to increase, averaging $52,664, 1.2% above that reported for the 1997 academic year ($52,026). Programs in the Eastern region had the highest percent of employment (96%) while programs in the Heartland region had the lowest percent of employment of recent graduates.

REFERENCES

1. 1998 Physician Assistant Programs Directory. Association of Physician Assistant Programs, Sixteenth Edition, February, 1998.

2. Directory of Accredited Physician Assistant Programs. Association of Physician Assistants Programs, August, 1998.

3. Oliver, D., J. Baker, and W. Donahue. First Annual Report on Physician Assistant Educational Programs in the United States, 1984-85. Association of Physician Assistant Programs, May, 1985.

4. Oliver, D., J. Baker, and W. Donahue. Second Annual Report on Physician Assistant Educational Programs in the United States, 1985-86. Association of Physician Assistant Programs, May, 1986.

5. Oliver, D., J. Baker, and W. Donahue. Third Annual Report on Physician Assistant Educational Programs in the United States, 1986-87. Association of Physician Assistant Programs, May, 1987.

6. Oliver, D., J. Baker, and W. Donahue. Fourth Annual Report on Physician Assistant Educational Programs in the United States, 1987-88. Association of Physician Assistant Programs, May, 1988.

7. Oliver, D., J. Baker, and W. Donahue. Fifth Annual Report on Physician Assistant Educational Programs in the United States, 1988-89. Association of Physician Assistant Programs, May, 1989.

8. Oliver, D., J. Baker, and W. Donahue. Sixth Annual Report on Physician Assistant Educational Programs in the United States, 1989-90. Association of Physician Assistant Programs, May, 1990.

9. Oliver, D., J. Baker, and W. Donahue. Seventh Annual Report on Physician Assistant Educational Programs in the United States, 1990-91. Association of Physician Assistant Programs, May, 1991.

10. Oliver, D., J. Baker, and W. Donahue. Eighth Annual Report on Physician Assistant Educational Programs in the United States, 1991-92. Association of Physician Assistant Programs, May, 1992.

11. Oliver, D., J. Baker, and W. Donahue. Ninth Annual Report on Physician Assistant Educational Programs in the United States, 1992-93. Association of Physician Assistant Programs, May, 1993.

12. Oliver, D., J. Baker, and W. Donahue. Tenth Annual Report on Physician Assistant Educational Programs in the United States, 1993-94. Association of Physician Assistant Programs, May, 1994.

13. Oliver, D., J. Baker, and W. Donahue. Eleventh Annual Report on Physician Assistant Educational Programs in the United States, 1994-95. Association of Physician Assistant Programs, May, 1995.

14. Simon, A., M. Link, and A. Miko. Twelfth Annual Report on Physician Assistant Educational Programs in the United States, 1995-96. Association of Physician Assistant Programs, May, 1996.

15. Simon, A., M. Link, and A. Miko. Thirteenth Annual Report on Physician Assistant Educational Programs in the United States, 1996-97. Association of Physician Assistant Programs, May, 1997.

16. Simon, A., M. Link, and A. Miko. Fourteenth Annual Report on Physician Assistant Educational Programs in the United States, 1997-98. Association of Physician Assistant Programs, May, 1998.

17. Simon, A., M. Link, and A. Miko. Fifteenth Annual Report on Physician Assistant Educational Programs in the United States, 1998-99. Association of Physician Assistant Programs, May, 1999.

18. Accredited Physician Assistant Programs as of July 1998, American Academy of Physician Assistants, July, 1998.