Maryland's Top 25 Demand Healthcare Occupations: Projected Demand and Reported Supply Provided by Maryland Higher Education Institutions

May 2004

Compiled by the Maryland Higher Education Commission (MHEC)
in collaboration with Department of Labor, Licensing, and Regulation (DLLR)

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EXECUTIVE SUMMARY

This report identifies: (1) Maryland's top 25 demand healthcare occupations and (2) any gaps between the supply and demand for these 25 healthcare occupations. Additional information on each healthcare occupation is provided to assist in developing strategies to bridge gaps between supply and demand. Strategies to close these gaps need to be tailored to specific occupations. There is not necessarily one strategy that fits all.

A supply/demand analysis of Maryland's top 25 demand healthcare occupations is provided on pages 1-17. Additional data on specific healthcare occupations are provided in Section III and the Appendices of this report.

A comparison is made between the projected demand for qualified healthcare workers in Maryland and the supply provided by Maryland higher education institutions. Included are data for 200+ healthcare programs offered by 15 colleges/universities, 16 community colleges, and 19 private career schools.

The supply/demand analysis compares: (1) the projected total annual openings from 2000 – 2010 and (2) the annual graduates of Maryland's postsecondary healthcare programs in FY 2002. The following findings are identified in the report:

- A gap between the projected demand and the reported supply is identified for 23 of the top 25 demand healthcare occupations.
- Substantial gaps of more than 40% are identified for 19 of the top 25 demand occupations. In other words, the reported supply of graduates from Maryland postsecondary healthcare programs met less than 60% of the occupational demand projected in FY 2002.
- The future gap may narrow for occupations with increased program enrollments and graduates reported by Maryland higher education institutions from FY 1993 to FY 2002. This is particularly true for occupations with new and/or expanded programs.
- The current gap may be less than reported for occupations requiring short-term training. This is due to the under-reporting of students completing: (1) postsecondary courses that are not part of formal certificate programs, (2) high school programs, and (3) training provided by employers for their employees.
- There may be significant implications if downward trends in enrollments/graduates continue and alternative sources of trained healthcare workers are unavailable for the occupations listed below. Maryland may successfully import trained practitioners (physicians/surgeons and dentists) because of the attraction of Maryland's world-renowned hospitals and medical institutions. However, alternative sources of trained workers may be less available for the occupations asterisked below:

Dentists	Diagnostic Medical Sonographers*	Medical and Clinical Lab Technologists*
Medical Transcriptionists*	Physicians and Surgeons	Radiologic Technologists/ Technicians *
Registered Nurses*	Respiratory Therapists/Technicians*	

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This report is available on the website of the Maryland Higher Education Commission :
http://www.mhec.state.md.us/publications/healthMay2004.pdf

I. INTRODUCTION

- This report compares the demand for qualified healthcare workers in Maryland and the supply provided by Maryland higher education institutions. Supply and demand data are presented for healthcare occupations based on data obtained from the following sources:

  Labor Demand: Maryland 2000 – 2010 Occupational Projections prepared by the Maryland Department of Labor, Licensing, and Regulation (DLLR) in 2003. Occupational projections are based on industry forecasts and employer occupational surveys that are used to determine future employment levels by occupation. The projections forecast occupational openings but not unfilled openings or job vacancies. The surveys do not request job vacancy information.

  Labor Supply from Maryland's Higher Education Institutions: Graduate and enrollment data compiled by the Maryland Higher Education Commission (MHEC) for healthcare programs offered by Maryland's public and private colleges and universities, community colleges, and private career schools.[1] Included is data for the 10-year period from FY 1993 to FY 2002.

- Maryland's top demand healthcare occupations are identified based on Maryland 2000 – 2010 Occupational Projections.[2] These top demand healthcare occupations are the focus of this report.

Notes:

- Maryland 2000 – 2010 Occupational Projections are based on a common methodology for projecting labor market demand for different occupations in Maryland. Other studies are available that forecast the demand for select healthcare occupations based on measures specific to that particular healthcare field. For example, the critical unmet demand for nurses is examined in depth in the report "*Maryland's Nursing Shortage: A Workforce Crisis*" produced by the Center for Health Workforce Development, University of Maryland Baltimore in March, 2003. A listing of this and other important reports is provided as **Appendix 1** of this document.

- This document reports projected demand for specific healthcare occupations and the number of graduates from Maryland's postsecondary healthcare programs. The reader should be cautioned in interpreting this data. This report does not address the migration of workers in and out

[1] The sources of the data include: (1) MHEC Enrollment Information System, (2) MHEC Degree Information System, (3) Private Career School Annual Reports, and (4) WIA Data Collection. These collections comprehensively report enrollments and completions for certificate and degree programs offered by Maryland's postsecondary education institutions. However, non-credit and credit courses that are not part of a formal certificate program are not included, unless program data is collected for purposes of the Workforce Investment Act (WIA).

[2] The healthcare occupations with the greatest demand based on three separate measures: (1) 2010 employment, (2) employment growth, and (3) total openings forecasted by the Maryland 2000—2010 Occupational Projections.

of the State. A trained healthcare workforce is mobile. What appears to be a gap between supply and demand may be filled in other ways. For example, workers trained outside the State may transfer to Maryland for employment or workers may complete training not reported, such as noncredit offerings at Maryland community colleges. Conversely, worker shortages may occur even when projected demand is less than the number of reported graduates. Maryland's healthcare graduates may not be available for employment in Maryland. Graduates may continue their education, seek employment outside of Maryland, change career fields, or elect not to work.

- This report provides the most available demand and supply data. In mid-2004, updated information will be released including 2002 – 2012 Maryland Occupational Projections and FY 2003 graduate/enrollment data for Maryland postsecondary healthcare programs.

II. MARYLAND'S TOP DEMAND HEALTHCARE OCCUPATIONS – PROJECTED DEMAND AND REPORTED SUPPLY FROM MARYLAND HIGHER EDUCATION INSTITUTIONS

A. PROJECTED DEMAND FOR MARYLAND'S TOP HEALTHCARE OCCUPATIONS

- **Figure 1** identifies the top demand healthcare occupations in Maryland based on three indicators of demand reported by the Maryland 2000 – 2010 Occupational Projections.[1] The same top occupations are reported by each of these indicators: (1) projected 2010 employment, (2) projected growth in employment from 2000 to 2010, and (3) projected total openings from 2000 to 2010.

- In combination, the 25 top demand healthcare occupations represent over 90% of the total employment projected for all healthcare occupations reported in the Maryland 2000-2010 Occupational Projections.[2]

[1] This report focuses on the supply and demand for human healthcare providers. Although important, excluded are top demand occupations in the veterinary field: (1) veterinary technologists/technicians and (2) veterinary assistants/laboratory animal caretakers.

[2] **Appendix 2** provides Maryland 2000-2010 Occupational Projections for all healthcare occupations.

Top Demand Healthcare Occupations in Maryland

Healthcare Occupations	2010 Employment	Employment Growth 2000-2010	Total Openings 2000-2010[1]
Registered Nurses	41,101	8,013	14,836
Nursing Aides/Orderlies/Attendants	25,623	5,848	8,391
Physicians & Surgeons	23,045	2,777	5,930
Medical Assistants	11,712	4,021	6,071
Licensed Practical & Licensed Vocational Nurses	8,216	1,749	3,407
Pharmacy Technicians & Aides	6,538	1,554	2,854
Respiratory Therapists/Technicians	6,078	1,275	2,508
Dentists	6,049	482	1,916
Radiologic Technologists/Technicians	5,398	781	1,795
Home Health Aides	5,364	1,670	2,145
Dental Assistants	4,798	1,398	2,007
Pharmacists	4,755	772	2,034
Medical Records & Health Information Technicians	4,528	1,482	2,163
Speech-Language Pathologists	3,217	811	1,424
Dental Hygienists	3,125	902	1,222
Medical & Clinical Lab Technologists	2,951	307	926
Emergency Medical Technicians & Paramedics	2,750	776	1,278
Chiropractors	2,513	667	1,087
Physical Therapists	2,490	547	1,046
Medical & Clinical Lab Technicians	2,468	314	820
Medical Transcriptionists	2,043	419	855
Physician Assistants	1,698	575	816
Diagnostic Medical Sonographers	1,680	386	671
Physical Therapist Assistants	1,602	547	856
Physical Therapist Aides	1,509	526	814

- Note the differences in the level of projected employment demand for the top healthcare occupations. The projected demand for registered nurses far exceeds that of any other healthcare occupation. Projected 2010 employment for registered nurses (41,101) is more than 27 times greater than the projected employment for physical therapist aides, the 25th ranked healthcare occupation (1,509). Projected total openings for registered nurses (14,836) are 18 times greater than for physical therapist aides (814).

[1] Total annual openings = (1) annual openings due to growth and (2) annual openings due to replacements.

- Among the top demand healthcare occupations, the same top 5 occupations are identified by each indicator. The Maryland 2000 – 2010 Occupational Projections forecast the greatest projected 2010 employment, employment growth, and total openings for: (1) registered nurses, (2) nursing aides/orderlies/attendants, (3) physicians & surgeons, (4) medical assistants, and (5) licensed practical & licensed vocational nurses.

- The substantial demand for nurses is evident from the Maryland 2000 – 2010 Occupational Projections. Nurses (registered nurses, licensed practical/vocational nurses, and nursing aides) are 3 of the top 5 demand occupations whether measured by 2010 employment, employment growth, or total openings.

- As illustrated by **Figure 2,** the rank order of the remaining 20 top demand healthcare occupations differs depending on the indicator of occupational demand used.

Top Demand Healthcare Occupations in Maryland

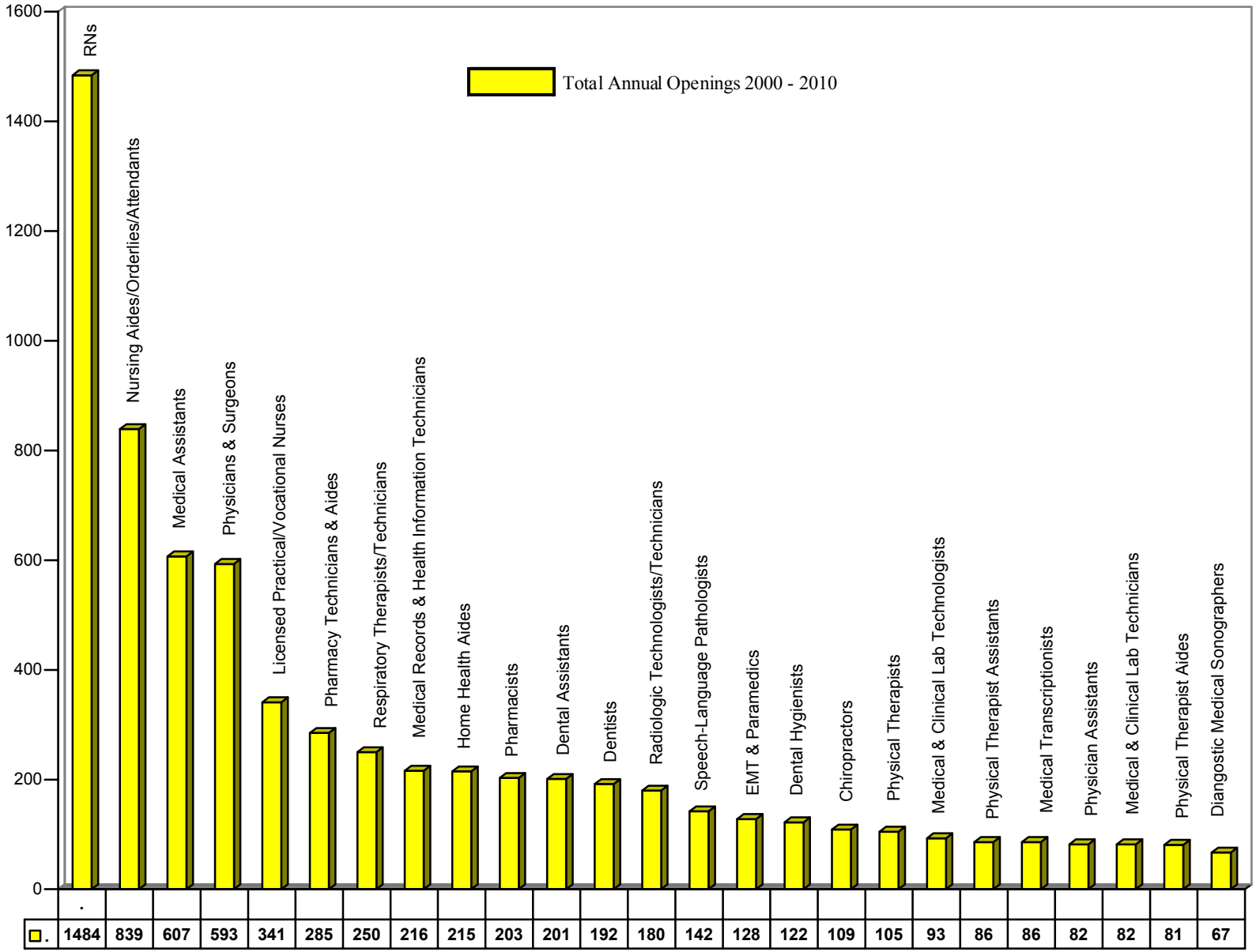
(Ranked by 2010 Employment, Employment Growth, and Total Openings)

Top Demand Healthcare Occupations	Ranked by 2010 Employment	Ranked by Employment Growth 2000 - 2010	Ranked by Total Openings 2000 - 2010
Registered Nurses	1	1	1
Nursing Aides/Orderlies/Attendants	2	2	2
Physicians & Surgeons	3	4	4
Medical Assistants	4	3	3
Licensed Practical & Licensed Vocational Nurses	5	5	5
Pharmacy Technicians & Aides	6	7	6
Respiratory Therapists/Technicians	7	10	7
Dentists	8	21	12
Radiologic Technologists & Technicians	9	13	13
Home Health Aides	10	6	9
Dental Assistants	11	9	11
Pharmacists	12	15	10
Medical Records & Health Information Technicians	13	8	8
Speech-Language Pathologists	14	12	14
Dental Hygienists	15	11	16
Medical & Clinical Lab Technologists	16	24	19
Emergency Medical Technicians & Paramedics	17	14	15
Chiropractors	18	16	17
Physical Therapists	19	18	18
Medical & Clinical Lab Technicians	20	25	23
Medical Transcriptionists	21	22	21
Physician Assistants	22	17	22
Diagnostic Medical Sonographers	23	23	25
Physical Therapist Assistants	24	19	20
Physical Therapist Aides	25	20	24

- **Figure 3** ranks the top demand healthcare occupations by total annual openings from 2000 – 2010. Year-to-year fluctuations in annual openings are to be expected during this 10-year period. Total annual openings are the average number of openings projected each year from 2000 – 2010. [1]

[1] Total annual openings are calculated by dividing the total projected openings from 2000 – 2010 by 10.

Maryland Occupational Projections 2000 -- 2010



Source: Department of Labor, Licensing, and Regulation (DLLR).

B. REPORTED SUPPLY OF HEALTHCARE WORKERS TRAINED BY MARYLAND HIGHER EDUCATION INSTITUTIONS

- Graduate and enrollment data are provided for Maryland's postsecondary programs that prepare graduates for the top demand healthcare occupations.[1] In combination, graduate/enrollment data measure the pipeline of potential trained workers from Maryland higher education institutions. Graduate data indicates the actual number of trained healthcare personnel produced annually while reported enrollments reflect the potential future number.

- Maryland's postsecondary programs are continually changing in response to the changing needs of the healthcare industry. **Figures 4** and **5** report data for over 200 healthcare programs offered by 50 Maryland postsecondary institutions from FY 1993 – FY 2002. Included are data for at least 50 new healthcare programs established during this period. Provided are enrollment and degree data reported to the Maryland Higher Education Commission by 15 college/universities, 16 community colleges, and 19 private career schools.[2] (**Appendix 3** provides a listing of the programs enrollment/graduate data included in this report.)

10-Year Trends in Enrollments and Graduates of Maryland Postsecondary Healthcare Programs:

- **Figure 4** provides enrollment and graduate trend data for programs that prepare graduates for the top demand healthcare occupations. Identified are: (1) enrollments and graduates reported in FY 1993 and FY 2002 and (2) the % change between FY 1993 and FY 2002. Programs are ranked by the percent of change in graduates and grouped as either:

    1. Programs with Increased Graduates & Increased Enrollments
    2. Programs with Increased Graduates & Decreased Enrollments
    3. Programs with Decreased Graduates & Increased Enrollments
    4. Programs with No Change or Decreased Graduates & Decreased Enrollments
    5. Programs with Data Not Reported in Both FY 1993 and FY 2002[3]

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[1] The healthcare occupations with the greatest demand as measured by: (1) 2010 employment, (2) employment growth, and (3) total annual openings forecasted by the Maryland 2000-2010 Occupational Projections.

[2] The sources of the data include: (1) MHEC Enrollment Information System, (2) MHEC Degree Information System, (3) Private Career School Annual Reports, and (4) WIA Data Collection. These collections comprehensively report enrollments and completions for certificate and degree programs offered by Maryland's postsecondary institutions. However, non-credit training and credit courses that are not part of a formal certificate program are not included, unless program data is collected for purposes of the Workforce Investment Act (WIA).

Graduates are students who complete the programs. Enrollments in degree programs are based on the initial major declared by students.

[3] Data are not available in FY 1993 and/or FY 2002 because either: (1) the programs are new and have no 1993 graduate data, (2) there are no programs offered in Maryland, or (3) the training is offered as courses for which data is not reported to the Maryland Higher Education Commission, unless provided as part of the WIA data collection.

10-Year Trends – Graduates and Enrollments in Maryland's Postsecondary Healthcare Programs

(Programs Grouped by % Change from FY 1993 to FY 2002)

	FY 1993 Enrollments	FY 2002 Enrollments	% Change 1993 – 2002 Enrollments	FY 1993 Graduates	FY 2002 Graduates	% Change 1993 – 2002 Graduates
1. Programs with Increased Graduates & Increased Enrollments						
Nursing Assistant *	371	1799	385%	167	1,248	647%
Medical Lab Technician *	268	444	66%	65	202	211%
Medical Records Technology *	321	627	95%	41	94	129%
Physical Therapist Assistant	55	168	205%	24	45	88%
Physician Assistant	117	258	121%	25	43	72%
Speech-Language Pathology	188	197	5%	67	80	19%
Emergency Medical Technology/Paramedic	397	436	10%	48	57	19%
Physical Therapy	187	246	32%	73	82	12%
Dental Assistant *	155	240	55%	81	85	5%
Medical Assistant	1,333	1,456	9%	398	404	2%
2. Programs with Increased Graduates & Decreased Enrollments						
Medical Transcription	33	17	-49%	8	9	13%
3. Programs with Decreased Graduates & Increased Enrollments						
Pharmacy (Pharmacists)	316	423	34%	106	89	-16%
Licensed Practical Nurse (LPN)	475	628	32%	196	161	-18%
Dental Hygiene	222	248	12%	93	76	-18%
4. Programs with No Change or Decreased Graduates & Decreased Enrollments						
Dental (Dentists)	387	380	-2%	99	99	0%
Registered Nurse (RN)	9,916	9,778	-1%	1,571	1,536	-2%
Medicine (Physicians & Surgeons)	1,065	1,060	-.5%	277	255	-8%
Medical Lab Technology	275	159	-42%	69	52	-25%
Radiologic Technology	1,106	729	-34%	142	96	-32%
Respiratory Therapy/Technician	421	200	-53%	74	50	-32%
Diagnostic Medical Sonography	255	133	-48%	58	38	-34%
5. Programs without Data in FY 1993 & FY 2002						
Pharmacy Technician & Aide*	-	109	-	-	80	-
Home Health Aide*	-	5	-	-	5	-
Physical Therapist Aide	-	0	-	-	0	-
Chiropractic	No Programs	No Programs	No Programs	No Programs	No Programs	No Programs

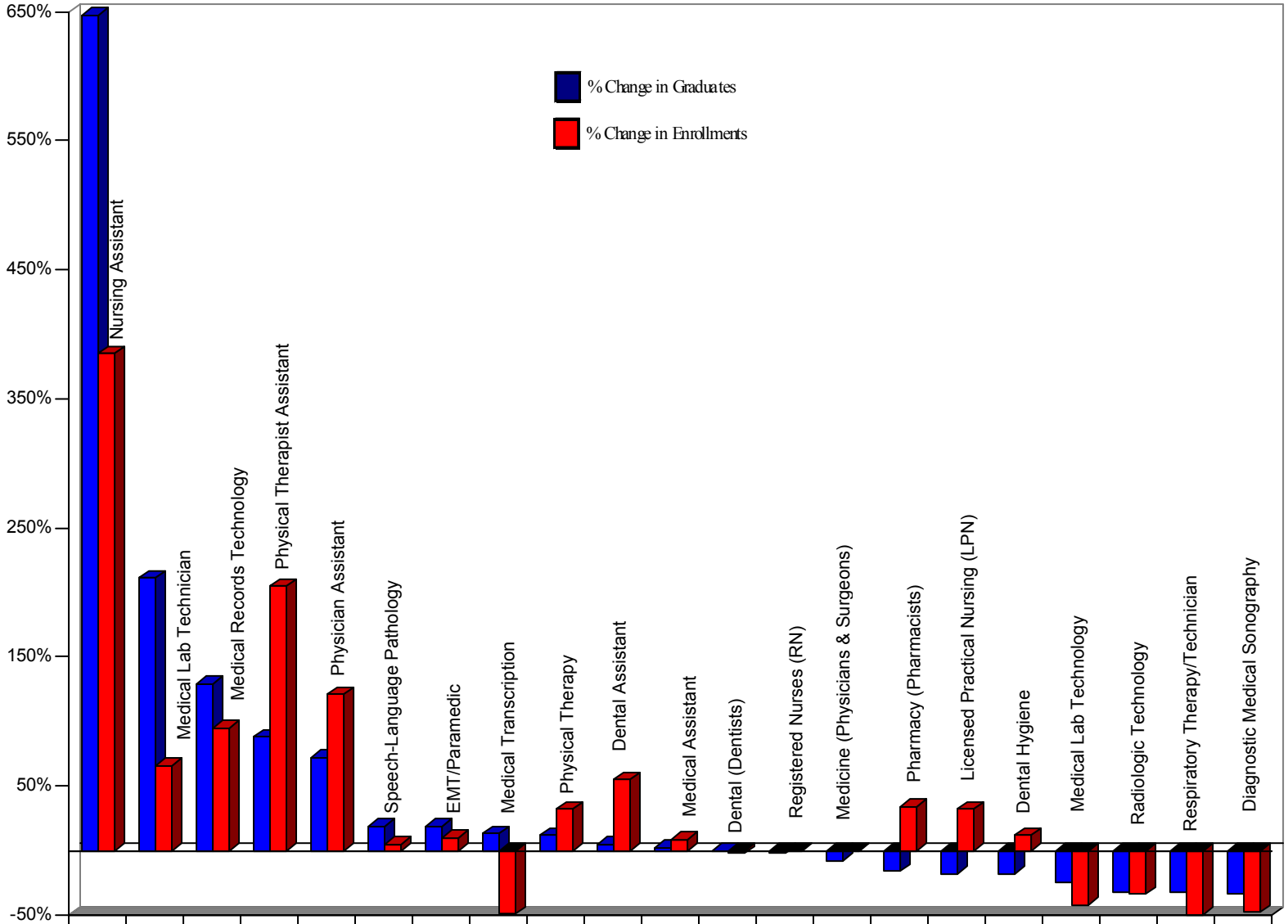
*Increases in enrollments/graduates due, in part, to the first time reporting in FY 2000 & 2001 of WIA eligible courses that are not part of formal certificate programs.

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

- **Figure 5** reports the percent of change from FY 1993 to FY 2002 in graduates and enrollments in Maryland postsecondary healthcare programs. Programs are listed according to the percent of change in graduates from FY 1993 to FY 2002.

- In interpreting the data on **Figure 5,** consider the additional data reported in **Figure 4** and in Section III. Note the base numbers upon which the percentages are calculated. Among the healthcare programs, there are substantial differences in the base numbers of graduates and enrollments reported for FY 1993. Small base numbers inflate the percent of change reported. For example, the 72% increase in graduates of physician assistant programs is computed using the base number of 25 graduates in FY 1993.

10-Year Trends – Percent of Change in Graduates and Enrollments in Maryland's Postsecondary Healthcare Programs (% Change from FY 1993 to FY 2002)



	Nursing Assistant	Medical Lab Technician	Medical Records Technology	Physical Therapist Assistant	Physician Assistant	Speech-Language Pathology	EMT/Paramedic	Medical Transcription	Physical Therapy	Dental Assistant	Medical Assistant	Dental (Dentists)	Registered Nurses (RN)	Medicine (Physicians & Surgeons)	Pharmacy (Pharmacists)	Licensed Practical Nursing (LPN)	Dental Hygiene	Medical Lab Technology	Radiologic Technology	Respiratory Therapy/Technician	Diagnostic Medical Sonography
% Change in Graduates	647%	211%	129%	88%	72%	19%	19%	13%	12%	5%	2%	0%	-2%	-8%	-16%	-18%	-18%	-25%	-32%	-32%	-34%
% Change in Enrollments	385%	66%	95%	205%	121%	5%	10%	-49%	32%	55%	9%	-2%	-1%	-0.50%	34%	32%	12%	-42%	-34%	-53%	-48%

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

C. COMPARISON OF PROJECTED DEMAND FOR MARYLAND'S TOP HEALTHCARE OCCUPATIONS AND REPORTED SUPPLY FROM MARYLAND HIGHER EDUCATION INSTITUTIONS

- **Figure 6** provides a comparison of supply and demand for the top demand healthcare occupations. It compares: (1) the projected total annual openings from 2000 – 2010 and (2) the annual graduates of Maryland's postsecondary healthcare programs in FY 2002. The occupations are listed according to the gap between projected total annual openings and FY 2002 graduates.

- Note the adjustments made to the reported FY 2002 graduates for Licensed Practical Nurse (LPN) and Registered Nurse (RN) programs on **Figures 6** and **7**. These adjustments were made to reduce double counting graduates earning multiple nursing certificates/degrees from FY 1993 to FY 2002. The number of LPN graduates and RN graduates reported on **Figures 6** and **7** were reduced by 35% and 7% respectively. [1]

- In total, a gap between the demand and supply is reported for 23 of the top 25 demand healthcare occupations. Substantial gaps of more than 40% are identified for 19 of the demand occupations. In other words, the reported supply of graduates from Maryland postsecondary healthcare programs was less than 60% of the occupational demand projected in FY 2002.

[1] An estimated 35% of the graduates of Licensed Practical Nursing (LPN) programs earned both LPN certificates and RN associate degrees during the period from FY 1993 – FY 2002. Therefore, the number LPN graduates was reduced by 35% on **Figures 6** and **7.** In addition, an estimated 7% of the RN graduates earned multiple nursing degrees from FY 1993—FY 2002. Therefore, the number of RN graduates was reduced by 7% on **Figures 6** and **7.** These adjustments were based on available data from public colleges/universities and extrapolations for private colleges/universities.

Comparison of
Projected Total Annual Openings for Top Demand Healthcare Occupations and Annual Graduates of Maryland's Postsecondary Programs
(Ranked by Gap)

Top Healthcare Occupations	Projected Total Annual Openings (2000 – 2010)	Graduates in FY 2002	Difference Between Projected Total Annual Openings & Graduates in 2002 (Gap)	
			#	%
Chiropractors	109	No Maryland Programs	109	100%
Physical Therapist Aides *	81	0	81	100%
Home Health Aides*	215	5	210	98%
Medical Transcriptionists	**86**	**9**	**77**	**90%**
Respiratory Therapists/Technicians	**250**	**50**	**200**	**80%**
Pharmacy Technicians & Aides *	285	80	205	72%
Licensed Practical/Vocational Nurses (LPN)	341	105	236	69%
Dental Assistants *	201	85	116	58%
Physicians and Surgeons	**593**	**255**	**338**	**57%**
Medical Records & Health Information Technicians*	216	94	122	56%
Pharmacists	203	89	114	56%
Emergency Medical Technicians/Paramedics *	128	57	71	55%
Dentists	**192**	**99**	**93**	**48%**
Physical Therapist Assistants	86	45	41	48%
Physician Assistants	82	43	39	48%
Radiologic Technologists/Technicians	**180**	**96**	**84**	**47%**
Speech-Language Pathologists	142	80	62	44%
Medical & Clinical Lab Technologists	**93**	**52**	**41**	**44%**
Diagnostic Medical Sonographers	**67**	**38**	**29**	**43%**
Dental Hygienists	122	76	46	38%
Medical Assistants *	607	404	203	33%
Physical Therapists	105	82	23	22%
Registered Nurses (RN)	**1,484**	**1,426**	**58**	**4%**
Nursing Aides/Orderlies/Attendants *	839	1,248	-409	-49%
Medical & Clinical Lab Technicians *	82	202	-120	-146%

*Under-reported are non-credit and credit courses that are not part of formal certificate programs.

Bold (Blue) Font = Decreased Enrollment & Decreased or No Change in Graduates

The reader is cautioned in interpreting this comparative data to consider the notes provided on pages 1-2 of this report.

Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, and (2) Department of Labor, Licensing, and Regulation.

- **Figure 7** compares: (1) the projected total annual openings from 2000 – 2010 for Maryland's top demand healthcare occupations and (2) reported FY 2002 graduates of Maryland's related postsecondary healthcare programs. The healthcare occupations are listed according to the total annual openings projected from 2000 – 2010.

- **Figure 7** also indicates trends in enrollments/graduates for programs preparing graduates for the top demand healthcare occupations. Programs with decreased enrollments and decreased or no change in graduates from FY 1993 to FY 2002 are indicated by a bold (blue) font.

- The current gap for the healthcare aides and assistants listed may be less than reported. Under-counted are students completing short-term training including: (1) postsecondary courses that are not part of formal certificate programs, (2) secondary programs, and (3) training provided by employers to their employees.

Dental Assistants	Home Health Aides	EMTs & Paramedics
Medical Assistants	Medical Records/Health Information Technicians	Pharmacy Technicians & Aides
Physical Therapist Aides		

- In the future, the gap may narrow for 8 healthcare occupations with increased enrollments and graduates reported by Maryland higher education institutions. Increased graduates and enrollments indicate an expansion of the current and future pipeline of qualified workers from Maryland postsecondary programs.

Dental Assistants	EMTs & Paramedics	Medical Assistants
Medical Records/Health Information Technicians	Physical Therapists	Physical Therapist Assistants
Physician Assistants	Speech-Language Pathologists	

- The gap also may decrease as a result of new and/or expanded healthcare programs. Three new pharmacy technician programs are expected to increase significantly the supply of trained pharmacy technicians by FY 2003. In addition, several new programs established from FY 1993—FY 2002 may increase future graduates prepared for the following occupations:

EMTs & Paramedics	Medical Assistants	Pharmacy Technicians & Aides
Physical Therapist Assistants	Physician Assistants	

- The future supply remains uncertain for the following programs with decreased graduates but increased enrollments from FY 1993—FY 2002:

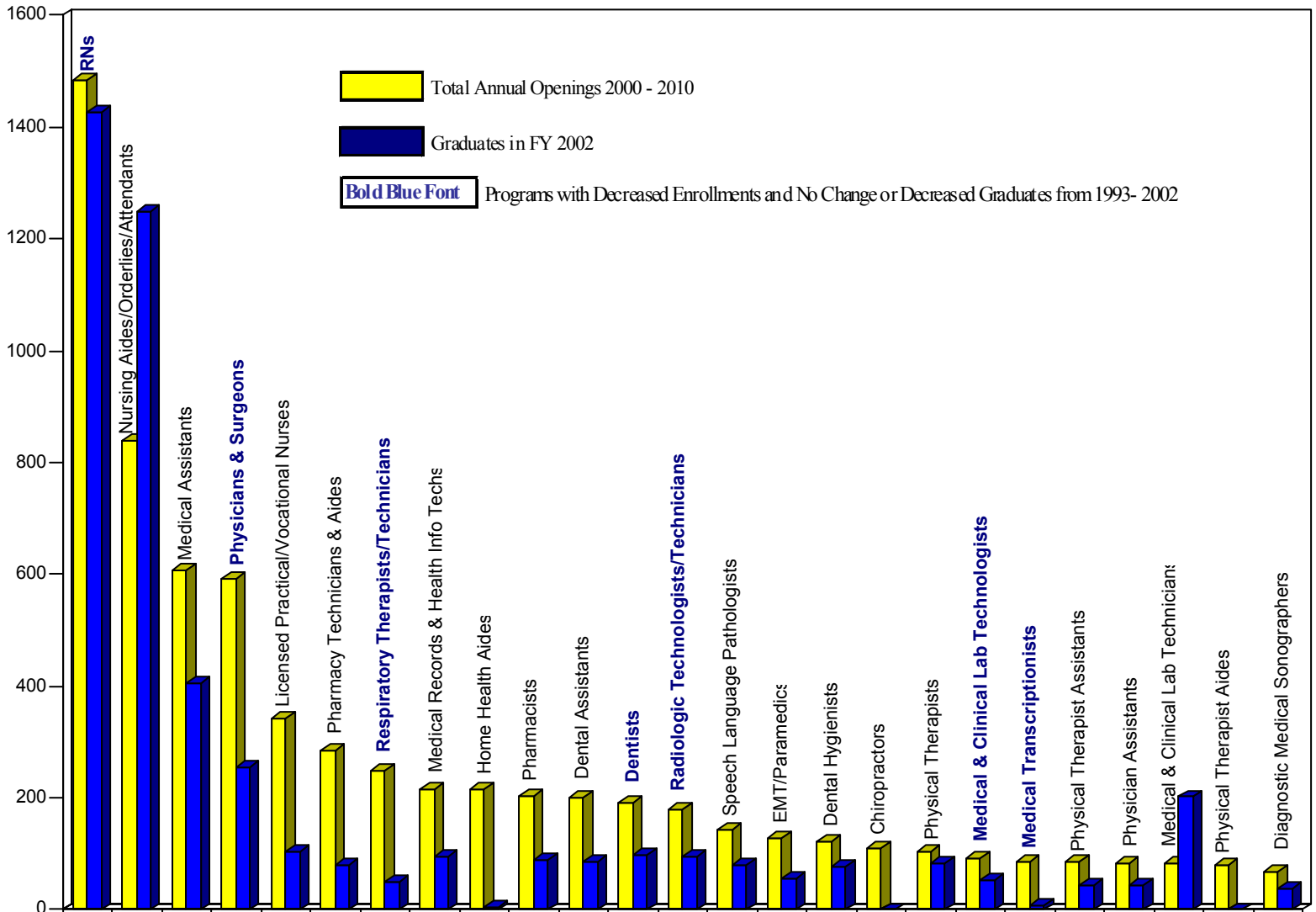
Dental Hygienists	Licensed Practical Nurses	Pharmacists

- There may be significant implications for the occupations listed below if the downward trends in enrollments/graduates continue and alternative sources of trained healthcare workers are unavailable. Maryland may successfully import trained practitioners (physicians/surgeons and dentists), because of the attraction of Maryland's world renowned hospitals and medical institutions. However, alternative sources of trained workers may be less available for the six occupations asterisked below:

Dentists	Diagnostic Medical Sonographers *	Medical & Clinical Lab Technologists *
Medical Transcriptionists *	Physicians and Surgeons	Radiologic Technologists/Technicians *
Registered Nurses *	Respiratory Therapists/Technicians *	

- With no chiropractic programs offered in Maryland, all trained chiropractors must be imported into the State.

Comparison of Supply and Demand for Top Demand Healthcare Occupations
Projected Total Annual Openings vs. Annual Graduates of Maryland's Postsecondary Healthcare Programs



.	1484	839	607	593	341	285	250	216	215	203	201	192	180	142	128	122	109	105	93	86	86	82	82	81	67
.	1426	1248	404	255	105	80	50	94	5	89	85	99	96	80	57	76	0	82	52	9	45	43	202	0	38

The reader is cautioned in interpreting this comparative data to consider the notes provided on pages 1-2 of this report.

Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

D. BRIDGING THE GAP BETWEEN THE PROJECTED DEMAND FOR MARYLAND'S TOP HEALTHCARE OCCUPATIONS AND REPORTED SUPPLY FROM MARYLAND HIGHER EDUCATION INSTITUTIONS

There are various approaches to reducing the unmet demand for Maryland's top healthcare occupations and bridging the gap between projected demand and reported supply. Identified below are some strategies to increase the supply and/or reduce the demand for qualified healthcare workers. There is not necessarily one strategy that fits all. Strategies to close gaps need to be tailored to specific occupations.

1. Increase the Supply of Qualified Healthcare Workers in Maryland

Future Supply:

- Increase retention and graduation rates of students enrolled in healthcare programs.
- Increase enrollment capacity in existing and/or new healthcare programs by: (1) expanding the supply of qualified instructors and clinical sites and (2) providing financial assistance to institutions.
- Increase access to healthcare programs by expanding: (1) student financial assistance, (2) the geographic distribution of health programs offered in the State, and (3) alternative training delivery methods including distance education and more flexible training schedules.
- Develop career paths and articulated training programs to minimize the time and cost of training and the need to repeat coursework.
- Increase the interest and ability of a diverse and non-traditional population to pursue health careers in Maryland. Attract youth, minorities, males, discharged military, dislocated workers, and other career changes to the healthcare fields.

Existing Supply:

- Import healthcare workers trained outside of Maryland.
- Offer inducements for the return of qualified healthcare workers who are either: (1) not working, (2) working in other fields, or (3) working outside of the State.
- Increase the training and advancement of existing healthcare workers to higher-level, higher-paid positions that are more difficult to fill.

2. Decrease the Demand (the Numbers Needed) for Maryland's Top Demand Healthcare Occupations

- Increase retention and reduce turnover of existing healthcare workers.
- Increase the efficiency and effectiveness of existing healthcare workers through: (1) increased use of technology and (2) effective utilization of clerical and patient care support staff to assist practitioners, therapists, nurses, and technologists.
- Promote wellness and preventive medicine.

E. MARYLAND'S REPORTED POSTSECONDARY HEALTHCARE PROGRAMS BY EDUCATIONAL LEVEL

- **Figure 8** identifies the educational level of Maryland's postsecondary healthcare programs included in this report. Listed are the education levels of programs that prepare graduates for the top demand healthcare occupations.

- Eight levels of postsecondary education are identified on **Figure 8**.

Credit or Non-Credit Courses	Private Career School Certificate	College Certificate	Associate Degree
Bachelor's Degree	Master's Degree	Doctoral Degree	1st Professional Degree

- When multiple levels of postsecondary education are offered, the healthcare program type is listed according to the lowest level reported.

- Note that education requirements in Maryland are increasing for practitioners, therapists, and nurses while decreasing for technicians and aides. Evidence of these trends is summarized below and reported on **Figure 8**.

    - The level of training increased for pharmacists, physical therapists, and respiratory therapists in Maryland.[1]

    - Maryland discontinued hospital-based diploma programs for licensed practical nurses (LPNs) in the mid-1990's. Currently, LPNs must complete approved certificate programs offered by colleges.

    - An increasing percentage of registered nurses (RNs) are completing bachelor's degree programs.[2]

    - By contrast, dental assisting certificate and associate degree programs were discontinued by Maryland community colleges and replaced by community college non-credit/credit courses and private career school certificate programs.

    - Only short-term training is required for new and emerging healthcare aide occupations (e.g. pharmacy aides, home health aides, physical therapist aides.)

    - Many healthcare technician occupations only require completion of certificate or associate degree programs.

[1] For pharmacists, 1st professional degree programs replaced bachelor's degree programs. In Maryland, doctoral degree programs in physical therapy are replacing bachelor and master degree programs. For respiratory therapists, associate and bachelor degree programs replaced certificate programs.

[2] In FY 2002, 49% of the RN's graduated from a bachelor's degree program compared to 42% in FY 1993.

Maryland's Reported Postsecondary Healthcare Programs by Educational Level
(Programs Grouped by Lowest Educational Level Reported)

Healthcare Programs	Credit or Non-Credit Courses	PCS Certificate	College Certificate	Associate Degree	Bachelor's Degree	Master's Degree	Doctoral Degree	1st Professional Degree
1st Professional Degree								
Dental (Dentists)								X
Medicine (Physicians/Surgeons)								X
Chiropractic								No MD Programs
Pharmacy (Pharmacists)					~~X~~			X
Physical Therapy					~~X~~	~~X~~		X
Graduate Degree								
Speech-Language Pathology						X	X	
Bachelor's Degree								
Medical Lab Technology					X	X	X	
Physician Assistants			X **	~~X~~	X	X		
Associate Degree								
Registered Nurse				X	X	X	X	
Dental Hygiene				X	X	X		
Respiratory Therapy			~~X~~	X	X			
Physical Therapy Assistant				X				
Certificate								
Radiologic Technology		X		X	X			
Diagnostic Medical Sonography		X	X	X				
Licensed Practical Nursing		~~X~~	X					
Medical Transcription			X	X				
Credit or Non-Credit Courses								
EMT/Paramedic	*	~~X~~	X	X	X	X		
Medical Assistant	*	X	X	X				
Medical Records Technology	X	X	X	X				
Medical Lab Technician	X	X	X	X				
Pharmacy Technician/Aide	X		X					
Dental Assistant	X	X	~~X~~	~~X~~				
Nursing Assistant	X	X	X					
Home Health Aide	X							
Physical Therapist Aides	X							

~~X~~ Strike-outs indicate levels of education that were discontinued during the period of FY 1993 – FY 2002.
*Enrollment/graduate data not included in Sections I—III of this report, because complete data is unavailable. (See Appendix 4 for available data.)
** Admissions prerequisites of a bachelor's degree for physician assistant certificate programs.

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

III. MARYLAND'S TOP DEMAND HEALTHCARE OCCUPATIONS – BY CAREER PATHWAYS AND HEALTH FIELDS

- Supply and demand data for the top 25 demand healthcare occupations are organized by Career Pathways and Health Fields in Section III.[1]

- Occupations are identified in more than one Career Pathway under Maryland's Career Cluster System.[2] For example, physicians are listed under Therapeutic and Diagnostic Services. Within this section, such occupations will be listed once under Therapeutic Services.

A. Therapeutic Services – Health Career Pathway

Health Fields		Occupations		Health Fields		Occupations
1.	Medicine	Physicians & Surgeons Physician Assistants		2.	Nursing	Registered Nurses (BSN & ADN) Licensed Practical Nurses Nurse Assistants Home Health Aides
3.	Dentistry	Dentists Dental Hygienists Dental Assistants		4.	Pharmacy	Pharmacists Pharmacy Technicians & Aides
5.	Physical Therapy	Physical Therapists Physical Therapist Assistants Physical Therapist Aides		6.	Chiropractics	Chiropractors
7.	Speech Pathology	Speech-Language Pathologists		8.	Emergency Medical Technology/Paramedics	Emergency Medical Technicians/Paramedics

B. Diagnostic Services – Health Career Pathway

Health Fields		Occupations		Health Fields		Occupations
1.	Health Technology	Diagnostic Medical Sonographers Radiologic Technologists/Technicians Respiratory Therapists/Technicians		2.	Medical Lab Technology	Medical Lab Technologists Medical Lab Technicians

C. Infomatics – Health Career Pathway

Health Fields		Occupations		Health Fields		Occupations
1.	Medical Assistant	Medical Assistants		2.	Medical Records	Medical Records & Health Information Technicians Medical Transcriptionists

[1] Included are healthcare occupations with the greatest demand as measured by: (1) 2010 employment, (2) employment growth, and (3) total annual openings forecasted by the Maryland 2000-2010 Occupational Projections.

[2] Under the leadership of the Maryland State Department of Education, Maryland business leaders organized the State's Career Cluster System. Maryland's 10 Career Clusters encompass virtually all careers and levels of education. Career Cluster 6 is Health and Bioscience. Career Pathways were defined based on the major business functions identified by Maryland's business leadership for the Career Cluster.

- For each of the 12 healthcare fields, the following data are provided:

    1. **Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions – FY 1993-2002**: A figure that charts 10-year trends in the number of graduates produced annually from healthcare programs offered by Maryland's postsecondary educational institutions.[1] Also reported on the figure are the total annual openings for related healthcare occupations as forecasted by the Maryland 2000 – 2010 Occupational Projections.[2]

    2. **Additional Demand and Supply Data:** Included are: (1) number of licensees in FY 2002, (2) educational requirements for licensure and/or employment, (3) 10-year trends in enrollments and graduates, and (4) a listing of the higher education institutions included in the enrollment/graduate data reported.

    3. **Enrollments and Graduates in Healthcare Programs Offered by Maryland Higher Education Institutions**: A table that reports 10-year enrollment and graduate data by level of education.

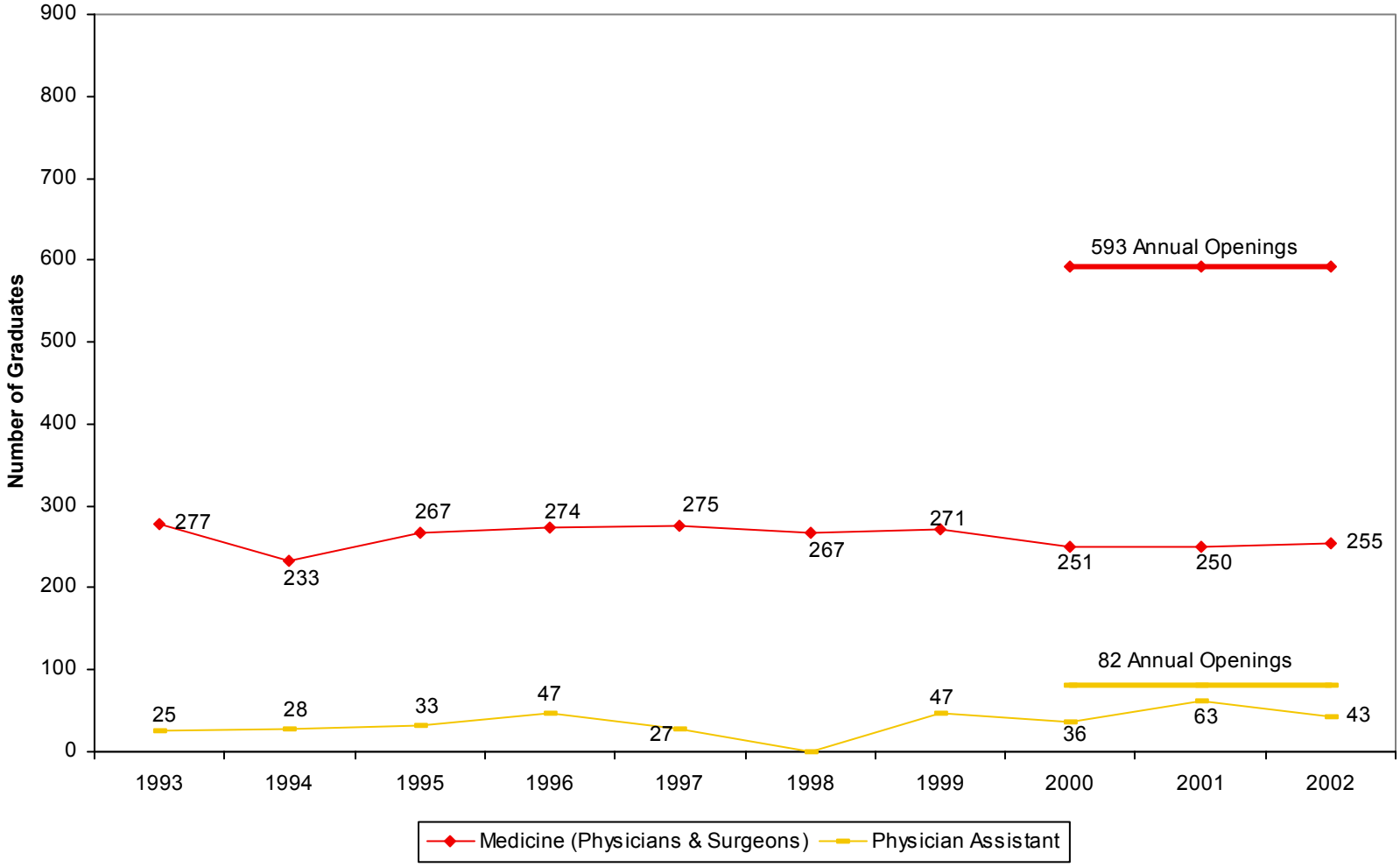
[1] In comparing the charts, please note that three different scales are used because of significant differences in the number of graduates reported in the health fields. The left axis of the charts is either: 300, 900, or 1,800 graduates.

[2] This report provides the most currently available data. In mid-2004, updated information will be released including 2002-2012 Maryland Occupational Projections and FY 2003 graduate/enrollment data for Maryland postsecondary healthcare programs.

A. THERAPEUTIC SERVICES – HEALTH CAREER PATHWAY

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)

Medicine



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Report, WIA Data Collections, (2) Department of Labor, Licensing, and Regulations.

FIELD OF MEDICINE

1. MEDICINE – PHYSICIANS & SURGEONS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for all physicians and surgeons is projected to increase by 14% to 23,045, with an estimated 593 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Anesthesiologists	$61.40	1,020	1,208	188	18%	19	16	35
Family & General Practitioners	$51.94	11,618	12,739	1,121	10%	112	181	293
Internists, General	$56.11	3,504	4,212	708	20%	71	54	125
Obstetricians & Gynecologists	$61.35	673	709	36	5%	4	10	14
Pediatricians, General	$49.43	689	825	136	20%	13	11	24
Psychiatrists	$56.67	1,400	1,684	284	20%	28	22	50
Surgeons	$61.19	1,293	1,577	284	22%	28	20	48
Physicians & Surgeons, All Other	$53.72	71	91	20	28%	2	1	3
Physicians & Surgeons, ALL	**NR**	**20,268**	**23,045**	**2,777**	**14%**	**278**	**315**	**593**

SUPPLY:

Existing Licensees: 23,000 Maryland licensed physicians were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least a 1st professional degree in medicine from an approved medical school accredited by the Liaison Committee on Medical Education (LCME) is required to be licensed to practice medicine in Maryland.

Medicine Program -- 1st Professional Degree Level. Trends in enrollments and graduates of Maryland's 1st professional degree programs in medicine are provided.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Medicine	**1065**	**1060**	**.5%**	**1023-1102**	**277**	**255**	**-8%**	**233-277**

- Enrollments increased by less than 1% and graduates decreased by 8% (from 277 to 255 graduates) from FY 1993 to FY 2002.
- 2 Maryland institutions offer programs included in the enrollment/graduate data reported:
  1st Professional Degree Programs – (1) Johns Hopkins University and (2) University of Maryland Baltimore.

2. PHYSICIAN ASSISTANTS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for physician assistants is projected to increase by 51% to 1,698, with an estimated 82 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Physician Assistants	**$31.62**	**1,123**	**1,698**	**575**	**51%**	**58**	**24**	**82**

SUPPLY:

Existing Licensees: 1,300 Maryland licensed physician assistants were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least a bachelor's degree and completion of an accredited physician assistant program is required to be a licensed physician assistant in Maryland. Trends in enrollments and graduates of Maryland's physician assistant programs are provided. Note that the certificate programs identified below require a bachelor's degree as an admissions prerequisite.

Physician Assistant Programs – (1) Certificate, (2) Bachelor's, & (3) Master's Degree Levels. *[Discontinued Associate Degrees]*.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Physician Assistant	**117**	**258**	**121%**	**105-258**	**25**	**43**	**72%**	**0-47**

- Enrollments increased by 121% and graduates increased by 72% (from 25 to 43 graduates) from FY 1993 to FY 2002.

- After a steady increase from FY 1993-1997, the number of annual graduates fluctuated significantly due to changes in program offerings, with certificate programs replacing associate programs. During this transition, no graduates were produced in FY 1998.

- Enrollments significantly increased in FY 2001 and FY 2002 as a result of the addition of: (1) new certificate programs requiring a prerequisite of a bachelor's degree and (2) new graduate degree programs.

- 4 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Certificate Programs Requiring a Bachelor's Degree for Admission – (1) Anne Arundel Community College (**new**) and (2) Community College of Baltimore County (**new**).
  Associate Degree Program – *[Discontinued program: (1) Community College of Baltimore County.]*
  Bachelor's Degree Program – (1) University of Maryland, Eastern Shore (**new**).
  Master's Degree Program -- (1) Towson University (**new**).

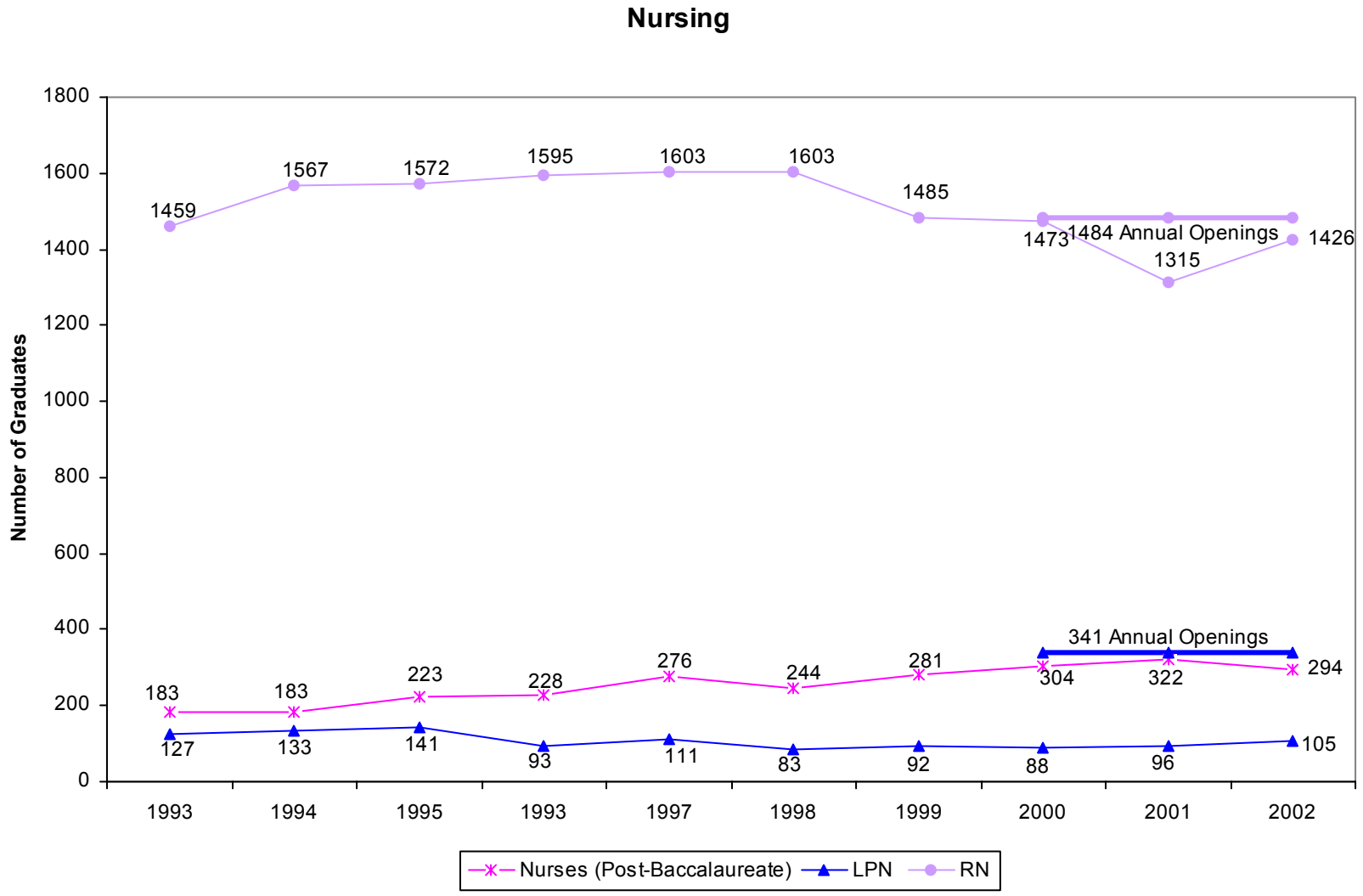
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Medicine

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Physician Assistant	Certificate	-	-	-	38	55	74	125	121	129	123	-
	Associate	117	127	120	83	61	31	6	9	8	5	-96%
	Bachelors	-	-	-	-	-	-	-	18	35	63	-
	Masters	-	-	-	-	-	-	-	-	34	67	-
	Sub-Total	**117**	**127**	**120**	**121**	**116**	**105**	**131**	**148**	**206**	**258**	**121%**
Medicine	1st Professional	1065	1099	1102	1081	1062	1039	1035	1023	1043	1060	.5%
Graduates												
Physician Assistant	Certificate	-	-	-	-	-	-	24	15	63	43	-
	Associate	25	28	33	47	27	0	23	21	-	-	-
	Sub-Total	**25**	**28**	**33**	**47**	**27**	**0**	**47**	**36**	**63**	**43**	**72%**
Medicine	1st Professional	277	233	267	274	275	267	271	251	250	255	-8%

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



The number of LPN graduates and RN graduates reported above were reduced by 35% and 7% respectively to avoid duplicate counting graduates with multiple nursing degrees/certificates.

Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF NURSING[1]

1. NURSES (POST-BACCALAUREATE)

DEMAND: Maryland Occupational Projections for 2000-2010 do not provide a breakdown of the demand for nurses requiring graduate degrees.

SUPPLY FROM MARYLAND HIGHER EDUCATION INSTITUTIONS: At least a master's degree in nursing is required of nursing instructors in Maryland. Trends in enrollments and graduates of Maryland's graduate degree programs in nursing are provided.

Nursing Programs -- Master's & Doctorate Degree Levels.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Nursing (Post-Baccalaureate)	**814**	**845**	**4%**	**814-912**	**183**	**294**	**61%**	**183-322**

- Enrollments increased by 4% and graduates increased by 61% (from 183 to 294 graduates) from FY 1993 to FY 2002.
- The number of graduates steadily increased, reaching a peak of 322 in FY 2001.
- There is concern that nurses are enrolling in out-of-state graduate programs specifically designed to prepare nursing instructors.
- 6 Maryland institutions offer programs included in the enrollment/graduate data reported:
  Master's Degree Programs -- (1) Bowie State University; (2) Coppin State College (**new**); (3) Johns Hopkins University; (4) Salisbury University; (5) Towson University; and (6) University of Maryland Baltimore.
  Doctorate Degree Programs -- (1) Johns Hopkins University and (2) University of Maryland Baltimore.

[1] The critical unmet demand for nurses is examined in depth in the report "*Maryland's Nursing Shortage: A Workforce Crisis*" produced by the Center for HealthWorkforce Development, University of Maryland Baltimore in March, 2003. A listing of this and other important reports is provided as **Appendix 1** of this document.

2. REGISTERED NURSES (RN)

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment increased by 24% to 41,101, with an estimated 1,483 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Registered Nurses	**$23.71**	**33,088**	**41,101**	**8,013**	**24%**	**801**	**683**	**1,484**

SUPPLY:

Existing Licensees: 50,000 Maryland licensed registered nurses were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least an associate degree in nursing is required to be a licensed registered nurse in Maryland. Trends in enrollments and graduates of Maryland's associate and bachelor's degree programs in nursing are provided.

Registered Nursing Programs – (1) Associate & (2) Bachelor's Degree Levels.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Registered Nursing (RN)	**9,916**	**9,778**	**-1%**	**6,587-9,949**	**1,571**	**1,536**	**-2%**	**1,416-1,726**
					1,459	**1,426**	**With 7% Adjustment[1]**	

- Total enrollments decreased by 1% and graduates decreased by 2% (from 1,571 to 1,536 graduates) from FY 1993 to FY 2002.
- From FY 1993 to FY 2002, enrollments and graduates of associate degree programs decreased, while bachelor degree programs increased. Until FY 2001 and 2002, total enrollments were significantly down.
- Beginning in FY 1999 and continuing until FY 2002, graduates declined significantly reaching a low in FY 2001. Although graduates increased in FY 2002, the number of graduates has yet to return to the initial FY 1993 level.
- 23 Maryland institutions offer programs included in the enrollment/graduate data reported:
  Associate Degree Programs – (1) Allegany College of Maryland, (2) Anne Arundel Community College, (3) Baltimore City Community College, (4) Cecil Community College, (5) Chesapeake College (**new**), (6) College of Southern Maryland, (7) Community College of

[1] An estimated 7% of RN graduates earned multiple nursing degrees from FY 1993—FY 2002. To reduce duplicate counting, the number of RN graduates was reduced by 7%. These adjustments were based on data available for public colleges/universities and extrapolations for private colleges/universities.

Baltimore County, (8) Frederick Community College, (9) Hagerstown Community College, (10) Harford Community College, (11) Howard Community College, (12) Montgomery College, (13) Prince George's Community College, and (14) Wor-Wic Community College.

Bachelor's Degree Programs – (1) Bowie State University, (2) College of Notre Dame of Maryland, (3) Columbia Union College, (4) Coppin State College, (5) Johns Hopkins University, (6) Salisbury University, (7) Towson University, (8)Villa Julie College, and (9) University of Maryland Baltimore.

3. LICENSED PRACTICAL NURSES (LPN)

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for licensed practical nurses is projected to increase by 27% to 8,216, with an estimated 341 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Licensed Practical/Vocational Nurses	**17.39**	**6,467**	**8,216**	**1,749**	**27%**	**175**	**166**	**341**

SUPPLY FROM MARYLAND HIGHER EDUCATION INSTITUTIONS: At least a certificate in nursing approved by the Maryland Board of Nursing is required to be a licensed practical nurse (LPN) in Maryland. In the mid-1990's, hospital-based diploma programs were discontinued in Maryland. Trends in enrollments and graduates of Maryland's LPN nursing programs are provided.

Licensed Practical Nursing Programs – College Certificate Level *[Discontinued PCS Certificate Programs]*.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Licensed Practical Nursing (LPN)	**475**	**628**	**32%**	**375-628**	**196**	**161**	**-18%**	**128-217**
					127	**105**	**With 35% Adjustment[1]**	

- Enrollments increased by 32% and graduates decreased by 18% (from 196 to 161) from FY 1993 to FY 2002.
- Enrollments significantly declined following the elimination of all hospital-based diploma programs. With the establishment of several new community college programs, enrollments jumped 68% (375 to 628) from FY 2000 to FY 2002.
- 13 Maryland institutions offer programs included in the enrollment/graduate data reported:
  Private Career School Certificate Program – *[Discontinued -- Johnson School of Practical Nursing.]*

[1] An estimated 35% of LPN graduates earned multiple nursing certificates/degrees from FY 1993 – FY 2002. To reduce duplicate counting, the number of LPN graduates was reduced by 35%. These adjustments were made based on available data from public colleges/universities.

College Certificate Programs – (1) Allegany College of Maryland, (2) Anne Arundel Community College (**new**), (3) Baltimore City Community College (**new**), (4) Carroll Community College (**new**), (5) Cecil Community College (**new**), (6) Chesapeake College (**new**), (7) College of Southern Maryland, (8) Frederick Community College, (9) Harford Community College, (10) Howard Community College (**new**), (11) Prince George's Community College, and (12) Wor-Wic Community College.

Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Nursing

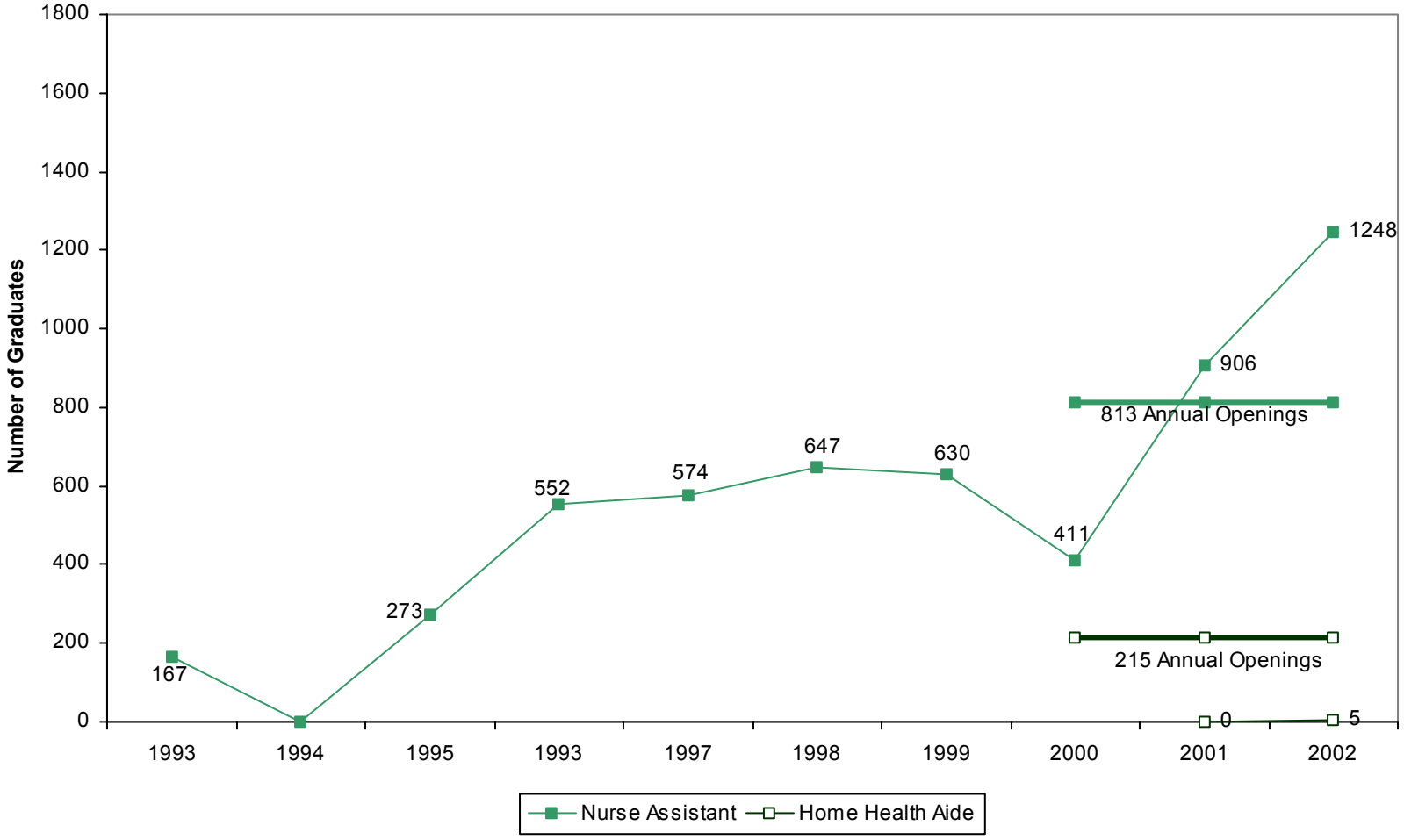
	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Licensed Practical Nurse (LPN)	PCS Certificate	191	217	222	0	0	0	0	0	0	0	-
	Certificate	284	347	358	391	395	410	394	375	457	628	121%
	Sub-Total	**475**	**564**	**580**	**391**	**395**	**410**	**394**	**375**	**457**	**628**	**32%**
Registered Nurse (RN)	Associate	7332	7098	6642	5936	5704	5562	4469	4288	5334	6697	-9%
	Bachelors	2584	2851	2804	2716	2528	2404	2299	2299	2565	3081	19%
	Sub-Total	**9916**	**9949**	**9446**	**8652**	**8232**	**7966**	**6768**	**6587**	**7899**	**9778**	**-1%**
Nursing (Post-Baccalaureate)	Masters	714	779	762	781	775	821	785	789	813	757	6%
	Doctorate	100	108	97	117	109	91	97	81	82	88	-12%
	Sub-Total	**814**	**887**	**859**	**898**	**884**	**912**	**882**	**870**	**895**	**845**	**4%**
Graduates												
Licensed Practical Nurse (LPN)	PCS Certificate	56	72	79	0	0	0	0	0	0	0	-
	Certificate	140	133	138	144	171	128	142	136	148	161	15%
	Sub-Total	**196**	**205**	**217**	**144**	**171**	**128**	**142**	**136**	**148**	**161**	**-18%**
	35% Reduction	127	133	141	93	111	83	92	88	96	105	
Registered Nurse (RN)	Associate	903	982	909	882	843	841	768	791	689	789	-13%
	Bachelors	668	705	784	836	883	885	831	795	727	747	12%
	Sub-Total	**1571**	**1687**	**1693**	**1718**	**1726**	**1726**	**1599**	**1586**	**1416**	**1536**	**-2%**
	7% Reduction	1459	1567	1572	1595	1603	1603	1485	1473	1315	1426	
Nursing (Post-Baccalaureate)	Masters	179	175	214	215	257	227	268	290	305	285	59%
	Doctorate	4	8	9	13	19	17	13	14	17	9	125%
	Sub-Total	**183**	**183**	**223**	**228**	**276**	**244**	**281**	**304**	**322**	**294**	**61%**

Note: Adjustments were made to reduce duplicate counting graduates earning multiple nursing degrees/certificates from FY 1993—FY 2002. Graduates of college LPN certificate programs were reduced by 35% and graduates of RN programs by 7%.

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)

Nursing (Continued)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

4. NURSING ASSISTANTS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for nursing aides, orderlies, attendants is projected to increase by 30% to 25,623, with an estimated 839 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Nursing Aides, Orderlies, Attendants	**$10.95**	**19,775**	**25,623**	**5,848**	**30%**	**585**	**254**	**839**

SUPPLY:

Existing Licensees: 47,551Maryland licensed nursing assistants and home health aides were reported in FY 2002.

Supply from Maryland Higher Education Institutions: Federal and State laws require all nursing assistants (Certified Nursing Assistants, Geriatric Nursing Assistants and Certified Medicine Aides) to be certified to work in licensed healthcare facilities. To be certified in Maryland, completion of on-the-job training or short term training programs approved by the Maryland Board of Nursing is required. Trends in enrollments and graduates of Maryland's Certified Nursing Assistant programs are provided.[1]

Certified Nursing Assistant Programs – (1) Non-Credit Course, (2) PCS Certificate, & (3) College Certificate Levels.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Nursing Assistant	**371**	**1,799**	**385%**	**0-1,799**	**167**	**1,248**	**647%**	**0-1,248**

- Enrollments increased by 385% and graduates increased by 647% (167 to 1,248) from FY 1993 to FY 2002. These increases were due to: (1) several new certificate programs offered by private career schools and (2) the first time reporting of data for non-credit WIA eligible training in FY 2001 and FY 2002. Training programs were created and/or expanded in response to new requirements for certified nursing assistants.
- 20 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Non-Credit Courses (WIA Eligible) – (1) Baltimore City Community College, (2) Carroll Community College, (3) Chesapeake College, (4) College of Southern Maryland, (5) Community College of Baltimore County, (6) Frederick Community College, (7) Garrett College, (8) Harford Community College, (9) Hagerstown Community College, (10) Howard Community College, (11) Prince George's Community College, and (12) Wor-Wic Community College.

[1] Graduate and enrollment data are provided for: (1) certificate programs and (2) WIA eligible courses offered by 12 community colleges and reported with WIA Data Collections. Comparable data is unavailable for courses at other Maryland community colleges. (**Appendices 4 and 5** report available data for community college non-credit courses and high school programs.)

Private Career School (PCS) Certificate Programs – (1) Adventist Health Care: Health Careers Training Center (**new**), (2) American Red Cross, Central Maryland Chapter (**new**), and (3) Americare School of Allied Health – Silver Spring (**new**). *[Discontinued programs: (1) Americare School of Allied Health – Baltimore, (2) Deaton,(3) Health Training Institute and (4) PTC]*
College Certificate Program – (1) Allegany College of Maryland (**new**).

5. HOME HEALTH AIDES

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for home health aides is projected to increase by 45% to 5,364, with an estimated 215 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Home Health Aides	**$8.59**	**3,694**	**5,364**	**1,670**	**45%**	**167**	**48**	**215**

SUPPLY:

Existing Licensees: 47,551Maryland licensed nursing assistants and home health aides were reported in FY 2002.

Supply from Maryland Higher Education Institutions: Completion of approved short-term training is required to be a certified home health aide in Maryland. Home health aide courses are offered at the community colleges. Enrollment and graduate data for Maryland's home health aide training offerings are provided.[1]

Home Health Aide Programs – Credit Course Level.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Home Health Aide	**-**	**5**	**-**	**-**	**-**	**5**	**-**	**-**

- There was first-time reporting of data for WIA eligible courses for home health aides in FY 2001 and FY 2002.
- 1 Maryland institution offered programs included in the enrollment/graduate data reported:
  Credit Courses (WIA Eligible) – College of Southern Maryland.

[1] Graduate and enrollment data are provided for WIA eligible courses offered by 1 community college and reported with WIA Data Collections. Comparable data is unavailable for courses at other Maryland community colleges. (**Appendix 4** reports available data for community college non-credit courses.)

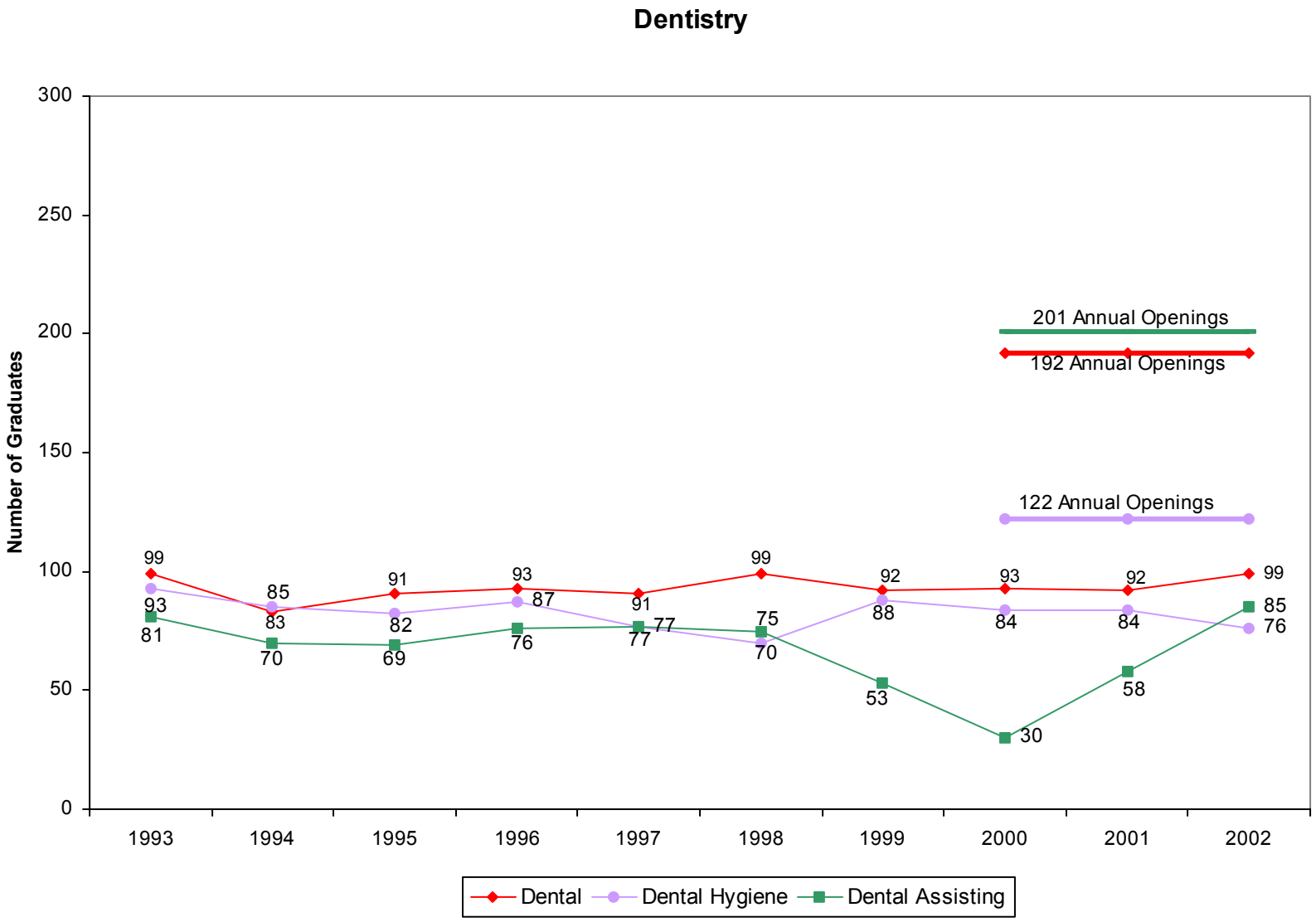
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Nursing Assistant and Home Health Aide

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Nurse Assistant & Aide	CC Courses(WIA)									797	1081	-
	PCS Certificate	371	0	441	809	885	1009	837	604	530	705	90%
	Certificate	0	0	0	0	0	0	0	0	0	13	-
	Sub-Total	**371**	**0**	**441**	**809**	**885**	**1009**	**837**	**604**	**1327**	**1799**	**385%**
Home Health Aide	CC Courses (WIA)	-	-	-	-	-	-	-	-	6	5	-
Graduates												
Nurse Assistant & Aide	CC Courses (WIA)									512	756	-
	PCS Certificate	167	0	273	552	574	647	630	411	394	492	195%
	Sub-Total	**167**	**0**	**273**	**552**	**574**	**647**	**630**	**411**	**906**	**1248**	**647%**
Home Health Aide	CC Courses (WIA)	-	-	-	-	-	-	-	-	0	5	-

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF DENTISTRY

1. DENTISTS

DEMAND: According to the Maryland Occupational Projections for 2000 – 2010, employment for dentists is projected to increase by 9% to 6,049 in 2010, with an estimated 192 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Dentists	**$45.75**	**5,567**	**6,049**	**482**	**9%**	**48**	**144**	**192**

SUPPLY:

Existing Licensees: 5,260 Maryland licensed dentists were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least a 1st professional degree in dentistry from a school accredited by the American Dental Association's Commission on Dental Accreditation is required to practice dentistry in Maryland. Trends in enrollments and graduates of Maryland's 1st professional degree program in dentistry are provided.

Dentistry Program -- 1st Professional Degree Level

Program	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Dentistry	**387**	**380**	**-2%**	**380-394**	**99**	**99**	**0%**	**83-99**

- Enrollments decreased by 2% and graduates remained unchanged at 99 from FY 1993 to FY 2002.

- 1 Maryland institution offered the program included in the enrollment/graduate data reported:
  1st Professional Degree Program -- University of Maryland Baltimore.

2. DENTAL HYGIENISTS

DEMAND: According to the Maryland Occupational Projections for 2000-2010, employment for dental hygienists is projected to increase by 41% to 3,125, with an estimated 122 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Dental Hygienists	**$22.03**	**2,223**	**3,125**	**902**	**41%**	**90**	**32**	**122**

SUPPLY:

Existing Licensees: 2,538 Maryland licensed dental hygienists were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least an associate degree from an accredited dental hygiene program is required to be a licensed dental hygienist in Maryland.[1] Trends in enrollments and graduates of Maryland's dental hygiene programs are provided.

Dental Hygienist Programs – (1) Associate, (2) Bachelor's, & (3) Master's Degree Levels.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Dental Hygiene	**222**	**248**	**12%**	**164-248**	**93**	**76**	**-18%**	**70-93**

- Enrollments increased by 12% and graduates decreased by 18% (from 93 to 76 graduates) from FY 1993 to FY 2002.
- Most graduates complete associate degree programs.
- 3 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Associate Degree Programs – (1) Allegany College of Maryland and (2) Baltimore City Community College.
  Bachelor's Degree Program – (1) University of Maryland Baltimore.
  Master's Degree Program – (1) University of Maryland Baltimore.

[1] The Commission on Dental Accreditation of the American Dental Association accredits dental hygiene programs.

3. DENTAL ASSISTANTS

DEMAND: According to the Maryland Occupational Projections for 2000-2010, employment for dental assistants is projected to increase by 41% to 4,798, with an estimated 201 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Dental Assistants	**$13.42**	**3,400**	**4,798**	**1,398**	**41%**	**140**	**61**	**201**

SUPPLY:

Existing Licensees: 5,383 Maryland licensed dental assistants were reported in FY 2002.

Supply from Maryland Higher Education Institutions: A State license is available (but not mandatory) to be employed as a dental assistant in Maryland. Licensure requires: (1) completion of formal training, (2) 6-months of job experience, and (3) passage of an examination. Currently, dental assistant training is provided at the non-degree level. Maryland community colleges discontinued their associate degree and certificate programs. Trends in enrollments and graduates of Maryland's dental assistant training are provided.[1]

Dental Assistant Programs – (1) Non-Credit Course & (2) PCS Certificate Levels. *[Discontinued College Certificate/Associate Programs]*

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Dental Assisting	**155**	**240**	**55%**	**108-240**	**81**	**85**	**5%**	**30-85**

- Enrollments increased by 55% and graduates increased by 5% (from 81 to 85 graduates) from FY 1993 to FY 2002.
- Increases were due in part to the first-time reporting of data for WIA eligible courses in FY 2001 and FY 2002.
- 8 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Non-Credit Courses (WIA Eligible) – (1) Anne Arundel Community College, (2) Montgomery College, (3) Prince George's Community College, and (4) Wor-Wic Community College.
  Private Career School (PCS) Certificate Programs – (1) Medix School.
  College Certificate Programs – *[Discontinued programs: (1) Allegany College of Maryland, (2) Baltimore City Community College, (3) Community College of Baltimore County, and (4) Montgomery College.]*
  Associate Degree Programs – *[Discontinued programs: (1) Community College of Baltimore County (2) Montgomery College.]*

[1] Graduate and enrollment data are provided for: (1) degree and certificate programs and (2) WIA eligible courses offered by 4 community colleges and reported with WIA Data Collections. Comparable data is unavailable for courses at other Maryland community colleges. (**Appendices 4 and 5** report available data for community college non-credit courses and high school programs.)

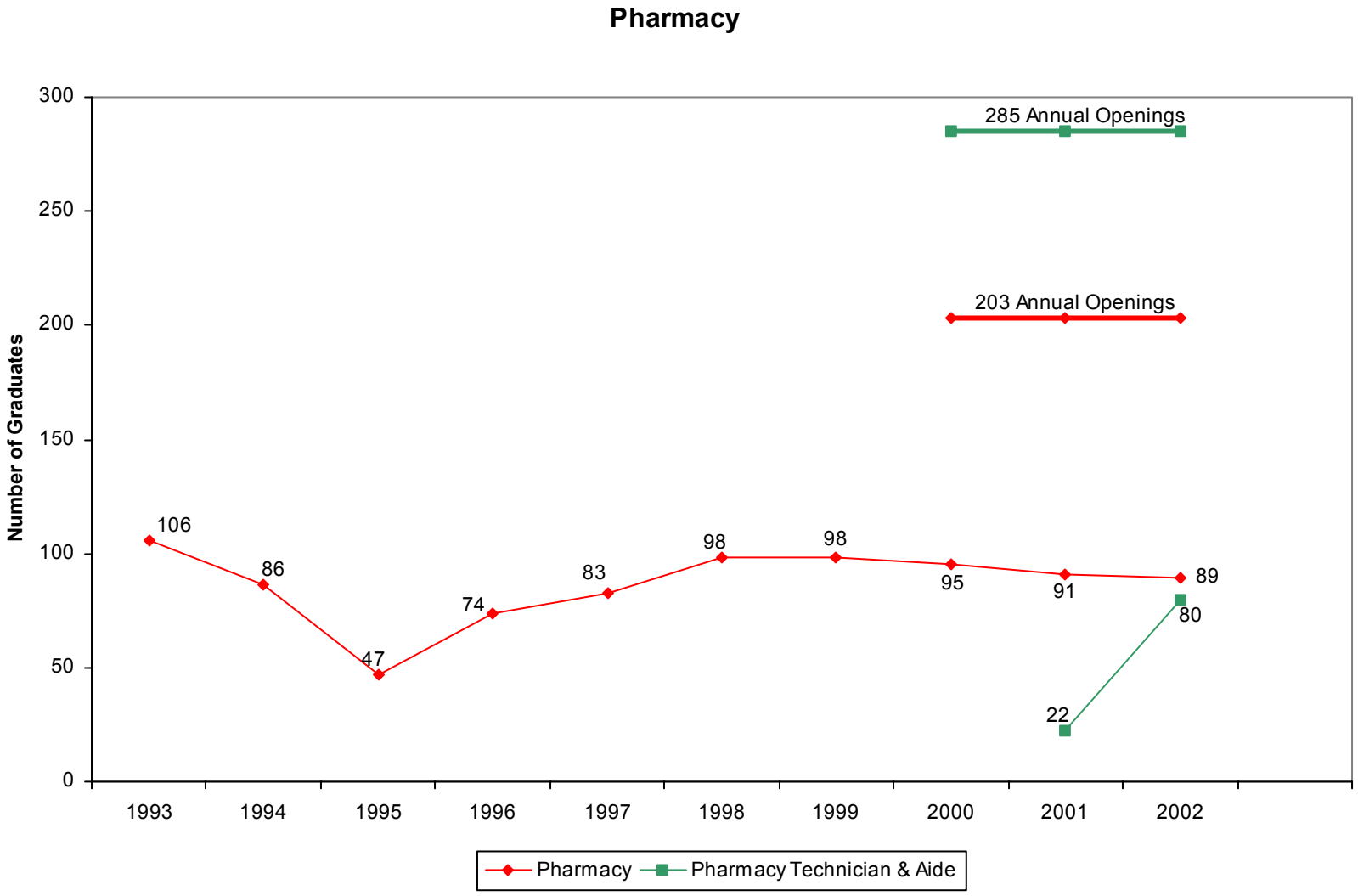
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Dentistry

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Dental Assisting	CC Courses(WIA)									58	107	-
	PCS Certificate	152	145	138	169	159	143	126	107	120	132	-13%
	Certificate	2	1	1	1	0	0	0	1	2	0	-
	Associate	1	2	1	0	0	0	0	0	2	1	0%
	Sub-Total	**155**	**148**	**140**	**170**	**159**	**143**	**126**	**108**	**182**	**240**	**55%**
Dental Hygiene	Associate	151	147	156	125	153	126	130	100	153	179	19%
	Bachelors	61	56	58	54	59	62	59	58	60	59	-3%
	Masters	10	11	7	6	6	6	10	6	9	10	0%
	Sub-Total	**222**	**214**	**221**	**185**	**218**	**194**	**199**	**164**	**222**	**248**	**12%**
Dentistry	1st Professional	387	390	394	392	391	387	388	387	387	380	-2%
	1st Prof. Cert.	51	63	66	62	67	67	64	67	68	67	31%
	Sub-Total	**438**	**453**	**460**	**454**	**458**	**454**	**452**	**454**	**455**	**447**	**2%**
Graduates												
Dental Assisting	CC Courses(WIA)									10	36	**-**
	PCS Certificate	76	70	69	76	77	75	53	30	48	49	-36%
	Certificate	5	-	-	-	-	-	-	-	-	-	-
	Sub-Total	**81**	**70**	**69**	**76**	**77**	**75**	**53**	**30**	**58**	**85**	**5%**
Dental Hygiene	Associate	61	57	52	58	48	44	56	56	56	46	-25%
	Bachelors	29	26	28	26	28	25	32	25	26	28	-3%
	Masters	3	2	2	3	1	1	0	3	2	2	-33%
	Sub-Total	**93**	**85**	**82**	**87**	**77**	**70**	**88**	**84**	**84**	**76**	**-18%**
Dentistry	1st Professional	99	83	91	93	91	99	92	93	92	99	0%
	1st Prof. Cert.	18	25	37	31	33	26	35	33	34	33	83%
	Sub-Total	**117**	**108**	**128**	**124**	**124**	**125**	**127**	**126**	**126**	**132**	**13%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF PHARMACY

1. PHARMACISTS

DEMAND: According to the Maryland Occupational Projections for 2000-2010, employment for pharmacists is projected to increase by 19% to 4,755, with an estimated 203 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Pharmacists	**$34.54**	**3,983**	**4,755**	**772**	**19%**	**77**	**126**	**203**

SUPPLY:

Existing Licensees: 6,853 Maryland licensed pharmacists were reported in FY 2002.

Supply from Maryland Higher Education Institutions: Completion of an accredited degree program in pharmacy is required to be employed as a pharmacist in Maryland. The level of degree required for licensure depends upon the date of graduation. A 1st professional degree is required unless an individual is covered by the grandfather provision. In the early 1990's, the bachelor's degree program in pharmacy was discontinued and replaced by a 1st professional degree. Trends in enrollments and graduates of Maryland's entry-level pharmacy programs are provided.[1]

Pharmacy Program -- 1st Professional Degree Level. *[Discontinued Bachelor's Degree Program].*

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Pharmacy	**316**	**423**	**34%**	**296-423**	**106**	**89**	**-16%**	**47-106**

- Enrollments increased by 34% and graduates decreased by 16% (from 106 to 89) from FY 1993 to FY 2002.
- The number of graduates decreased when the bachelor's program was discontinued and replaced by the 1st professional degree. Enrollment in the 1st professional degree program has steadily increased since the 1st professional degree began in FY 1994. Enrollment is expected to level out at 480 in FY 2005 when the capacity of the physical facilities is reached.
- 1 Maryland institution offered programs included in the enrollment/graduate data reported:
  Bachelor's Degree Program – *[Discontinued: University of Maryland Baltimore].*
  1st Professional Degree Program -- University of Maryland Baltimore.

[1] A special non-traditional opportunity was offered to licensed pharmacists who wished to earn the new Doctor of Pharmacy degree. This program is no longer admitting new students. Enrollments and graduates of this program are not included in the data provided for entry-level pharmacists.

2. PHARMACY TECHNICIANS & AIDES

DEMAND: According to the Maryland Occupational Projections for 2000-2010, employment for pharmacy technicians is projected to increase by 41% to 4,220, with an estimated 199 annual openings. Employment for pharmacy aides is projected to increase by 17% to 2,318, with an estimated 86 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Pharmacy Technicians	**$12.73**	**3,002**	**4,220**	**1,218**	**41%**	**122**	**77**	**199**
Pharmacy Aides	**$11.13**	**1,982**	**2,318**	**336**	**17%**	**34**	**53**	**86**
Subtotal		**4,984**	**6,538**	**1,554**	**31%**	**156**	**130**	**285**

SUPPLY FROM MARYLAND POSTSECONDARY INSTITUTIONS: A State license is not required to be a pharmacy technician in Maryland. Voluntary pharmacy technician certification is available to those passing a national exam offered by the Pharmacy Technician Certification Board (PTCB). Nationally, there are efforts to establish standards of responsibility and education for pharmacy technicians. Currently, pharmacy technician training differs in many respects including length. Training for pharmacy technicians/aides is offered at the certificate and course level. Trends in enrollments and graduates of Maryland's pharmacy technician/aide programs are provided.[1]

Pharmacy Technician & Aide Programs – Non-Credit Course (WIA Eligible) & College Certificate Level.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Pharmacy Technician & Pharmacy Aide	**-**	**109**	**-**	**0-109**	**-**	**80**	**-**	**0-80**

- Enrollments and graduates are expected to increase significantly with the addition of several new pharmacy technician & aide programs offered at the certificate and non-degree levels.
- 79 completed non-credit training in FY 2002. In FY 2001 and FY 2002, there was first-time reporting of data for WIA eligible courses.
- 5 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Non-Credit Courses (WIA Eligible) -- (1) Community College of Baltimore County and (2) Montgomery College.
  College Certificate Programs: (1) Allegany College of Maryland (**new**), (2) Anne Arundel Community College (**new**), and (3) TESST College of Technology (**new**).

[1] Graduate and enrollment data are provided for: (1) certificate programs and (2) WIA eligible courses offered by 2 community colleges and reported with WIA Data Collections. Comparable data is unavailable for courses at other Maryland community colleges. (**Appendices 4 and 5** report available data for community college non-credit courses and high school programs.)

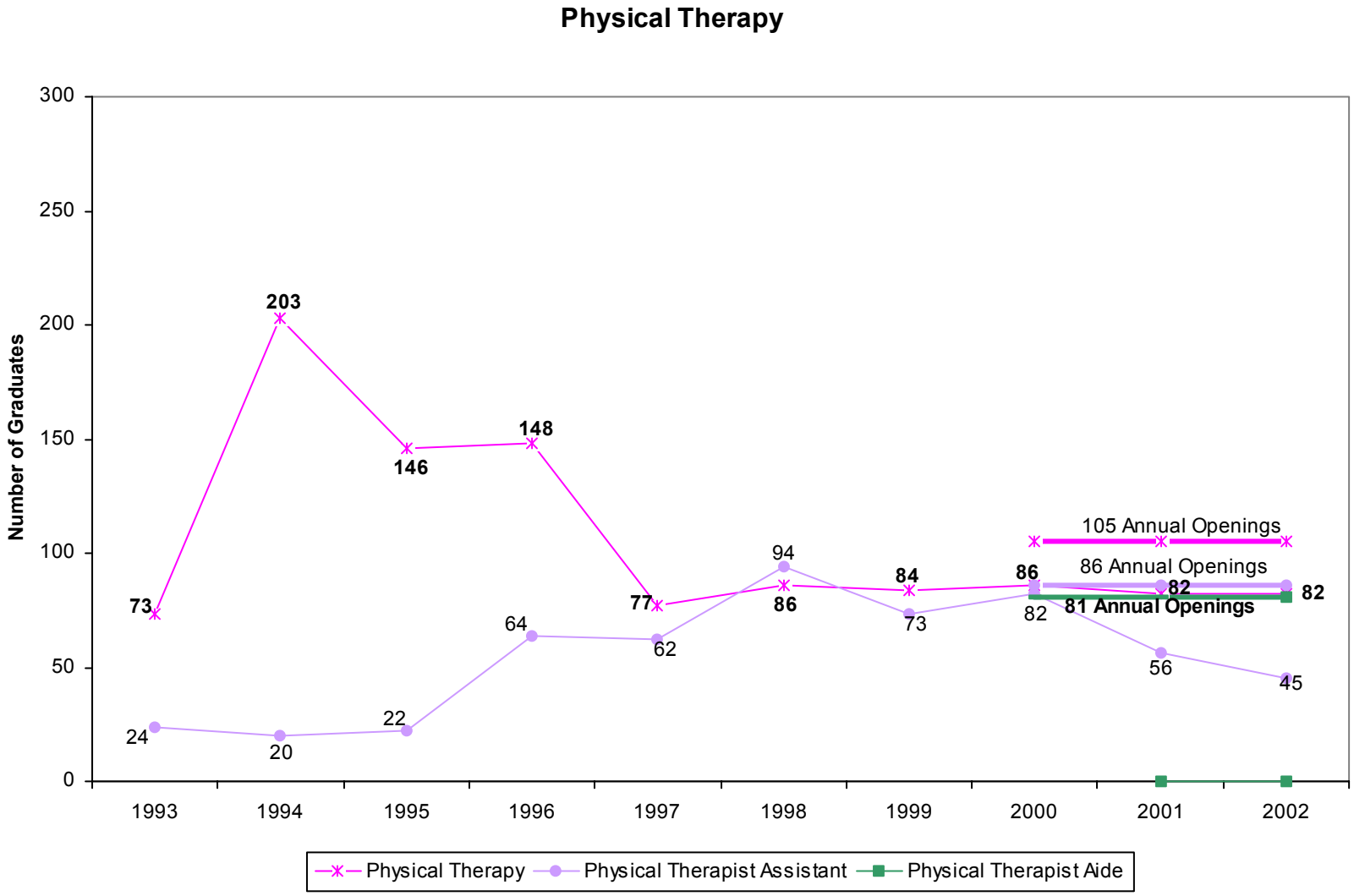
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Pharmacy

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Pharmacy Techician & Aide	CC Courses (WIA)	-	-	-	-	-	-	-	-	23	85	-
	Certificate	-	-	-	-	-	-	-	2	9	24	-
	Sub-Total								**2**	**32**	**109**	**-**
Pharmacy (Pharmacist)	Bachelors	316	192	47	-	-	-	-	-	-	-	-
	1st Professional	0	104	273	367	390	397	392	373	385	423	-
	Sub-Total	**316**	**296**	**320**	**367**	**390**	**397**	**392**	**373**	**385**	**423**	**34%**
Graduates												
Pharmacy Technician & Aide	CC Courses(WIA)	-	-	-	-	-	-	-	-	22	79	-
	Certificate	-	-	-	-	-	-	-	-	-	1	-
	Sub-Total	-	-	-	-	-	-	-	-	22	80	-
Pharmacy (Pharmacist)	Bachelors	106	86	47	-	-	-	-	-	-	-	-
	1st Professional	-	-	-	74	83	98	98	95	91	89	-
	Sub-Total	**106**	**86**	**47**	**74**	**83**	**98**	**98**	**95**	**91**	**89**	**-16%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections. Adjustments made to subtract from the totals enrollments and graduates of the Non-traditional Pharmacy 1st Professional Degree.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF PHYSICAL THERAPY

1. PHYSICAL THERAPISTS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for physical therapists is projected to increase by 28% to 2,490, with an estimated 105 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Physical Therapists	**$29.29**	**1,943**	**2,490**	**547**	**28%**	**55**	**50**	**105**

SUPPLY:

Existing Licensees: 3,500 Maryland licensed physical therapists were reported in FY 2002.

Supply from Maryland Higher Education Institutions: A degree from a physical therapy program accredited by the American Physical Therapy Association (APTA) is required to be a licensed physical therapist in Maryland. The level of degree required for licensure depends upon the date of graduation. At least a master's degree is required unless the individual is covered by the grandfather provision. Admissions to Maryland's master's programs in physical therapy are now closed and 1st professional degree programs are replacing them. Trends in enrollments and graduates of Maryland's programs in physical therapy are provided.

Physical Therapy Programs – 1st Professional Degree Level. *[Discontinued Bachelor's & Master's Degree Programs.]*

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Physical Therapy	**187**	**246**	**32%**	**187-275**	**73**	**82**	**12%**	**73-203**

- Enrollments increased by 32% and graduates increased by 12% (from 73 to 82 graduates) from FY 1993 to FY 2002.

- At the beginning of the 10-year period, bachelor's degree programs were replaced by master's degree programs that now are being replaced by 1st professional degree programs in Maryland.

- Two Maryland institutions offered programs included in the enrollment/graduate data reported:
  Bachelor's Degree Programs – *[Discontinued: (1) University of Maryland Baltimore and (2) University of Maryland, Eastern Shore.]*
  Master's degree programs – *[Admission now closed: (1) University of Maryland Baltimore and (2) University of Maryland, Eastern Shore.]*
  1st Professional Degree Programs – (1) University of Maryland Baltimore (**new**) and (2) University of Maryland, Eastern Shore (**new**).

2. PHYSICAL THERAPIST ASSISTANTS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for physical therapist assistants is projected to increase by 52% to 1,602, with an estimated 86 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Physical Therapist Assistants	**$16.99**	**1,055**	**1,602**	**547**	**52%**	**55**	**31**	**86**

SUPPLY:

Existing Licensees: 900 Maryland licensed physical therapist assistants were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least an associate degree from a program accredited by the American Physical Therapy Association (APTA) is required to be a licensed physical therapist assistant in Maryland. Most of these associate degree programs began in the 1990's. Trends in enrollments and graduates of Maryland's physical therapist assistant programs are provided.

Physical Therapy Assistant Programs – Associate Degree Level.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Physical Therapist Assistant	**55**	**168**	**205%**	**55-641**	**24**	**45**	**88%**	**20-94**

- Enrollments increased by 205% and graduates increased by 88% (from 24 to 45 graduates) from FY 1993 to FY 2002.

- After a peak enrollment of 641 in FY 1997, enrollments began a steady decline and have remained relatively low (187 and 168) in FY 2001 and FY 2002.

- 7 Maryland institutions offered programs included in the enrollment/graduate data reported.
  Associate Degree Programs – (1) Allegany College of Maryland (**new**), (2) Baltimore City Community College, (3) Carroll Community College (**new**), and (4) Montgomery College (**new**). In addition, the Chesapeake Area Consortium for Higher Education jointly offers the program with: (1) Anne Arundel Community College (**new**), (2) College of Southern Maryland (**new**), and (3) Chesapeake College (**new**).

3. PHYSICAL THERAPIST AIDES

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for physical therapy aides is projected to increase by 54% to 1,509, with an estimated 81 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Physical Therapist Aides	**$10.62**	**983**	**1,509**	**526**	**54%**	**53**	**28**	**81**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: Credit and non-credit courses are offered at the community colleges for physical therapist aides. Incomplete enrollment and graduate data for Maryland's physical therapist aide programs are provided.[1]

Physical Therapy Assistant Programs – Credit Course Level.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Physical Therapist Aide	**-**	**0**	**-**	**0-5**	**-**	**0**	**-**	**0**

- There was first time reporting of WIA eligible courses for physical therapist aides in FY 2001 and FY 2002.

- 1 Maryland institution offered programs included in the enrollment/graduate data reported.
  Credit Courses (WIA Eligible) – Chesapeake College.

[1] Graduate and enrollment data are provided for WIA eligible courses offered by 1 community college and reported with WIA Data Collections. Comparable data is unavailable for courses at other Maryland community colleges. (**Appendix 4** reports available data for community college non-credit courses.)

Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Physical Therapy

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Physical Therapy Aide	CC Courses(WIA)	-	-	-	-	-	-	-	-	5	0	-
Physical Therapy Assistant	Associate	55	184	393	510	641	458	424	215	182	168	205%
Physical Therapy	Bachelors	52	26	0	0	0	0	0	0	2	3	-94%
	Masters	135	230	266	272	275	272	259	220	176	122	-10%
	1st Professional	-	-	-	-	-	-	7	8	25	121	-
	Sub-Total	**187**	**256**	**266**	**272**	**275**	**272**	**266**	**228**	**203**	**246**	**32%**
Graduates												
Physical Therapy Aide	CC Courses(WIA)	-	-	-	-	-	-	-	-	0	0	-
Physical Therapy Assistant	Associate	24	20	22	64	62	94	73	82	56	45	88%
Physical Therapy	Bachelors	73	203	92	83	-	-	-	-	-	-	-
	Masters	-	-	54	65	77	86	84	86	82	81	-
	1st Professional	-	-	-	-	-	-	-	-	-	1	-
	Sub-Total	**73**	**203**	**146**	**148**	**77**	**86**	**84**	**86**	**82**	**82**	**12%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

FIELD OF CHIROPRACTICS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for chiropractors is projected to increase by 36% to 2,513, with an estimated 109 annual openings.

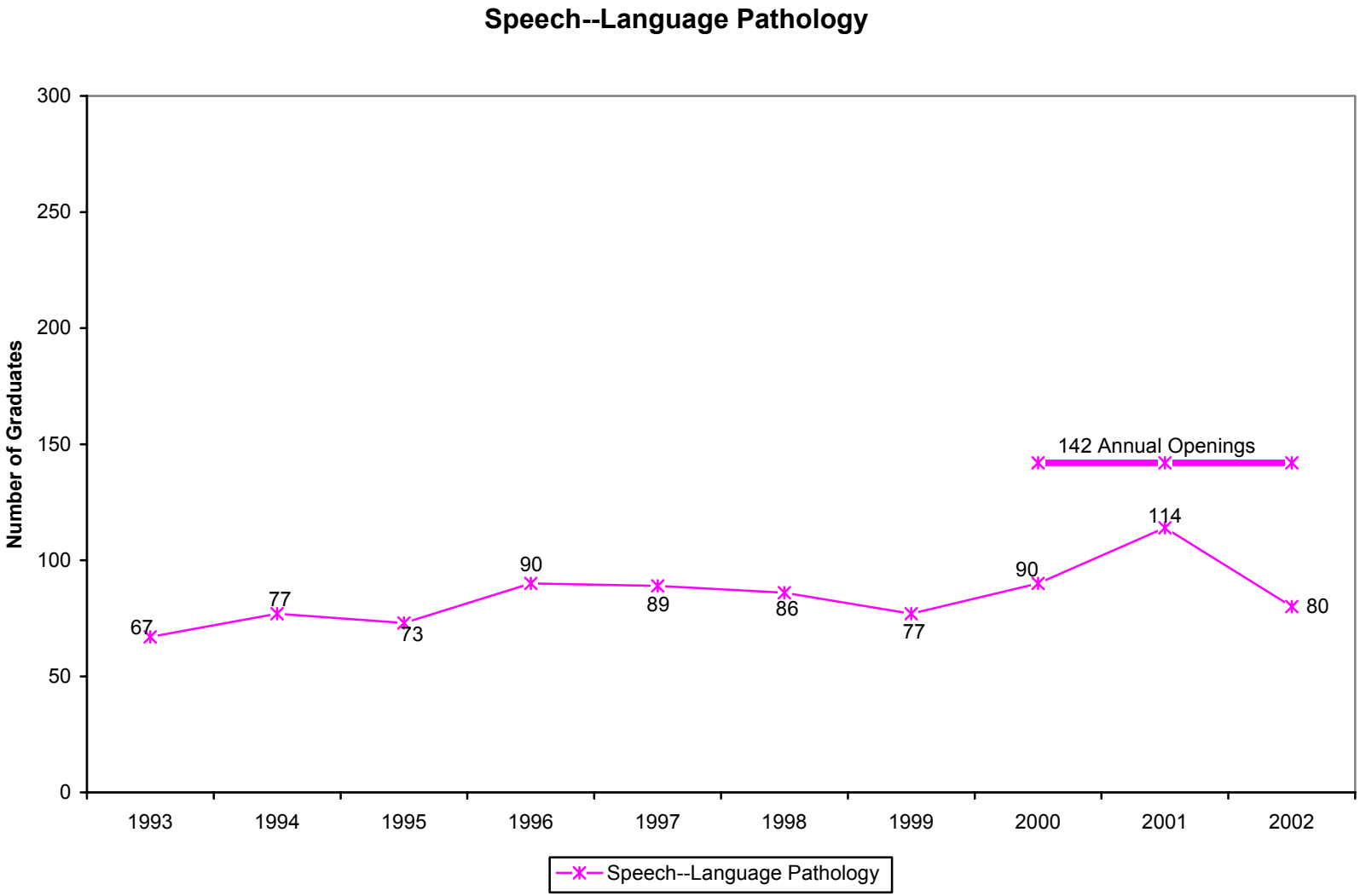
Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Chiropractors	**$30.96**	**1,846**	**2,513**	**667**	**36%**	**67**	**42**	**109**

SUPPLY:

Existing Licensee: 650 Maryland licensed chiropractors were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least a professional degree in chiropractics is required to be a licensed chiropractor in Maryland. There are no chiropractic programs offered by Maryland higher education institutions.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF SPEECH-LANGUAGE PATHOLOGY

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for speech-language pathologists is projected to increase by 34% to 3,217, with an estimated 142 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Speech-Language Pathologists	**$27.98**	**2,406**	**3,217**	**811**	**34%**	**81**	**61**	**142**

SUPPLY:

Existing Licensees: 2,033 Maryland licensed speech-language pathologists were reported in FY 2002.

Supply from Maryland Higher Education Institutions: At least a master's degree from an accredited program is required to be a licensed speech-language pathologist in Maryland.[1] Trends in enrollments and graduates of Maryland's graduate degree programs in speech-language pathology are provided.

Speech-Language Pathology Programs – (1) Master's & (2) Doctorate Degree Levels.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Speech-Language Pathology	**188**	**197**	**5%**	**188-240**	**67**	**80**	**19%**	**67-114**

- Enrollments increased by 5% and graduates increased by 19% (from 67 to 80 graduates) from FY 1993 to FY 2002.
- Most graduates completed master's degree programs.
- Three Maryland institutions offer programs included in the enrollment/graduate data reported:
  Master's Degree Programs – (1) Loyola College, (2) Towson University, and (3) University of Maryland, College Park.
  Doctorate Degree Programs – (1) University of Maryland, College Park.

[1] The Council on Academic Accreditation in Audiology and Speech-Language Pathology and the American Speech-Language-Hearing Association accredit programs in audiology and speech-language pathology.

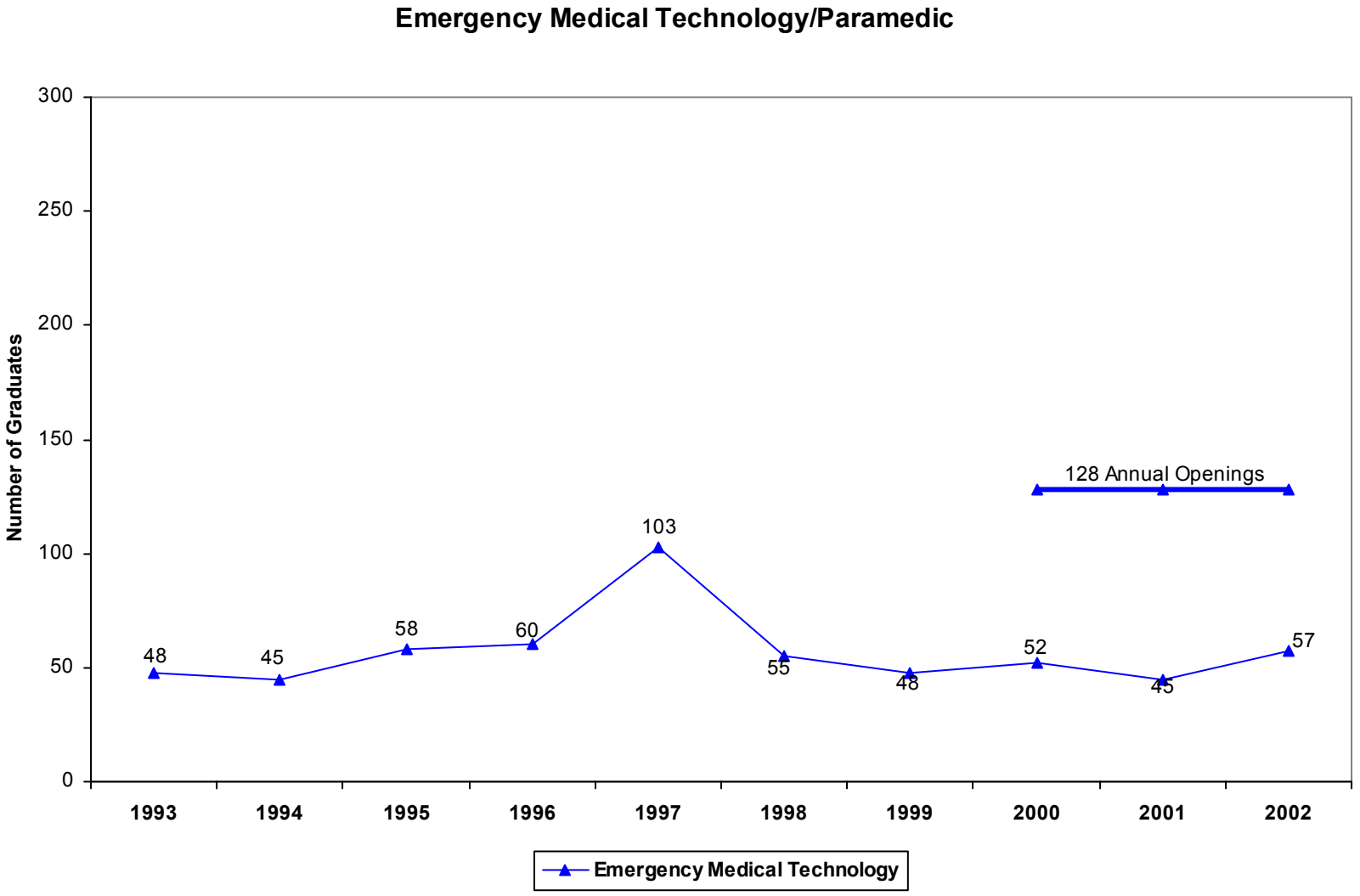
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Speech-Language Pathology

	Level	1993	4	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Speech-Language Pathology	Masters	179	190	208	199	187	195	225	233	195	192	7%
	Doctorate	9	5	3	5	2	6	7	7	7	5	-44%
	Sub-Total	**188**	**195**	**211**	**204**	**189**	**201**	**232**	**240**	**202**	**197**	**5%**
Graduates												
Speech-Language Pathology	Masters	67	76	72	89	86	85	77	90	114	80	19%
	Doctorate	0	1	1	1	3	1	0	0	0	0	-
	Sub-Total	**67**	**77**	**73**	**90**	**89**	**86**	**77**	**90**	**114**	**80**	**19%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF EMERGENCY MEDICAL TECHNOLOGY AND PARAMEDICS

DEMAND: According to the Maryland Occupational Projections for 2000-2010, employment for emergency medical technicians and paramedics is projected to increase by 39% to 2,749, with an estimated 128 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
EMT and Paramedics	**$13.59**	**1,974**	**2,750**	**776**	**39%**	**78**	**50**	**128**

SUPPLY:

Existing Licensees: 15,172 Emergency Medical Technicians-Basic (EMT-B), 2,091 Emergency Medical Technicians-Paramedic (EMT-P), 710 Emergency Medical Technicians-Cardiac Rescue Technicians (CRT) were reported in FY 2002.

Supply from Maryland Higher Education Institutions: Completion of a course approved by the Maryland Institute for Emergency Medical Services System (MIEMSS) is required to be certified in Maryland. The length of training required varies depending upon the specific certification. Currently, there are five levels of pre-hospital medical certification and training which are divided into two categories: Basic Life Support (BLS) and Advanced Life Support (ALS).

Basic Life Support (BLS) is provided by the:

- First Responder – 40 hours of training required.
- Emergency Medical Technician-Ambulance (EMT-A) – 100 hours of training required.
- Emergency Medical Technician-Basic (EMT-B) – 131 hours of training required.

Advanced Life Support (ALS) is provided by the:

- Cardiac Rescue Technician (CRT) – 240 hours of training required
- Emergency Medical Technician – Paramedic (EMT-P) – 500 hours of training required.

Trends in enrollments and graduates of Maryland's Advanced Life Support EMT programs are provided.[1]

[1] Graduate and enrollment data are provided for degree and certificate programs. Comparable data is unavailable for courses at Maryland community colleges. (**Appendices 4 and 5** report available data for community college non-credit courses and high school programs.)

Emergency Medical Technology Programs -- (1) College Certificate, (2) Associate, (3) Bachelor's, & (4) Master's Degree Levels. *[Discontinued PCS Certificate Programs]*.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
EMT	**397**	**436**	**10%**	**361-468**	**48**	**57**	**19%**	**45-103**

- Enrollments increased by 10% and graduates increased by 19% (from 48 to 57 graduates) from FY 1993 to FY 2002.

- Enrollments and graduates are anticipated to increase significantly as a result of several new certificate and associate degree programs.

- 12 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Private Career School (PCS) Certificate Program – *[Discontinued program: (1) May Emergency]*.
  College Certificate Programs – (1) Anne Arundel Community College, (2) Baltimore City Community College, (3) College of Southern Maryland **(new)**, (4) Community College of Baltimore County, (5) Frederick Community College **(new)**, (6) Hagerstown Community College, (7) Howard Community College **(new)**, (8) Prince George's Community College **(new)**, (9) Wor-Wic Community College **(new)**.
  Associate Degree Programs – (1) Anne Arundel Community College, (2) Baltimore City Community College, (3) Cecil Community College **(new)**, (4) College of Southern Maryland **(new)**, (5) Community College of Baltimore County, (6) Frederick Community College **(new)**, (7) Hagerstown Community College **(new)**, (8) Howard Community College **(new)**, (9) Prince George's Community College **(new)**, (10) Wor-Wic Community College **(new)**.
  Bachelor's Degree Programs – (1) University of Maryland, Baltimore County.
  Master's Degree Programs – (1) University of Maryland, Baltimore County.

Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

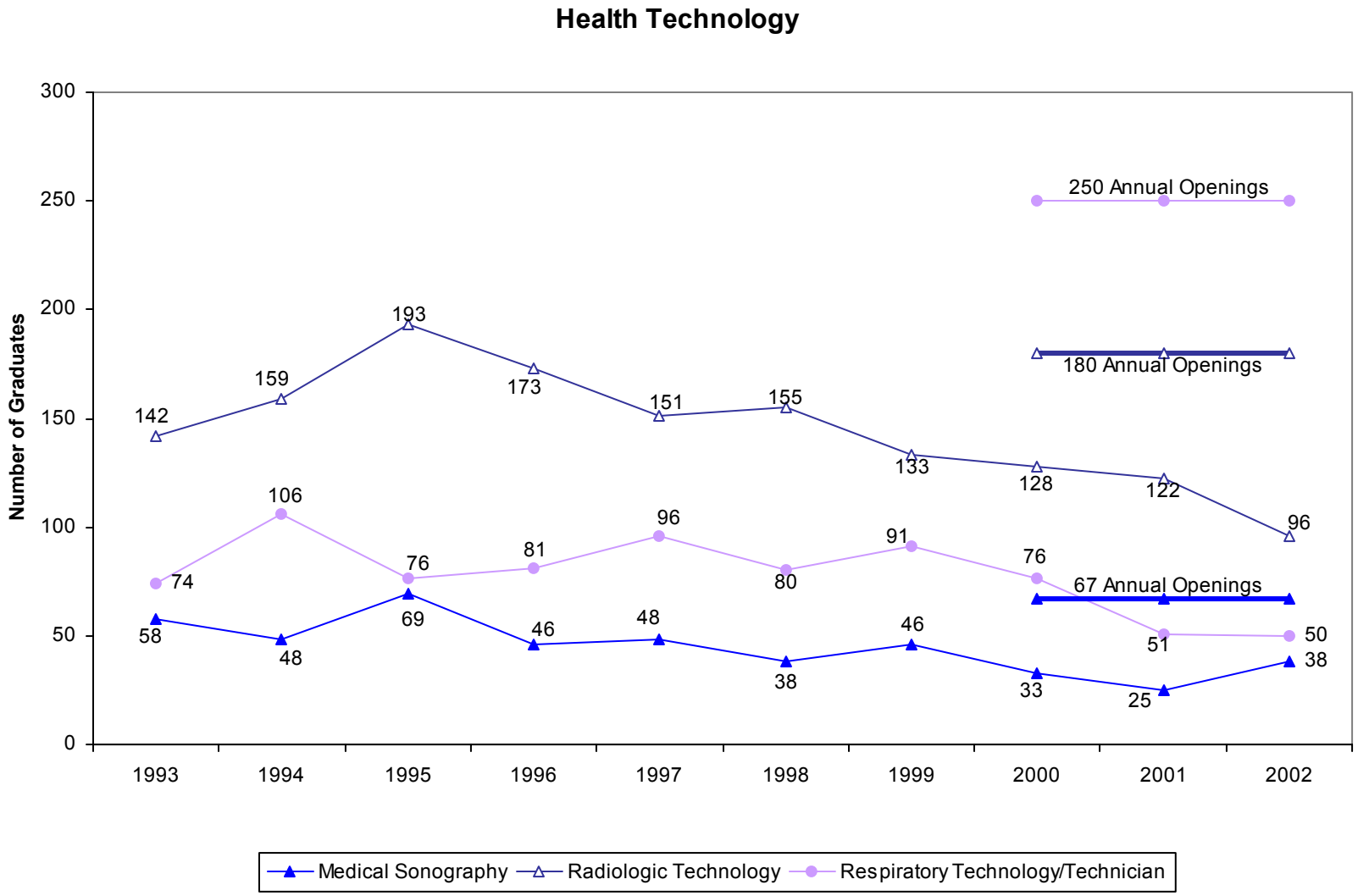
Emergency Medical Technology/Paramedic

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Emergency Medical Technology	PCS Certificate					86	-	-	-	-	-	-
	Certificate	107	111	109	106	77	101	80	95	92	94	-12%
	Associate	147	140	163	184	165	178	160	176	198	220	50%
	Bachelors	124	122	126	122	112	102	92	99	91	86	-31%
	Masters	19	21	27	36	28	40	29	32	37	36	89%
	Sub-Total	**397**	**394**	**425**	**448**	**468**	**421**	**361**	**402**	**418**	**436**	**10%**
Graduates												
Emergency Medical Technology	PCS Certificate	-	-	-	-	43	-	-	-	-	-	-
	Certificate	24	15	16	14	4	7	5	9	9	9	-63%
	Associate	8	4	11	8	17	19	4	11	14	18	125%
	Bachelors	15	19	28	33	30	21	28	25	13	20	33%
	Masters	1	7	3	5	9	8	11	7	9	10	900%
	Sub-Total	**48**	**45**	**58**	**60**	**103**	**55**	**48**	**52**	**45**	**57**	**19%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

B. DIAGNOSTIC SERVICES – CAREER PATHWAY

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF HEALTH TECHNOLOGY

1. DIAGNOSTIC MEDICAL SONOGRAPHERS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for diagnostic medical sonographers is projected to increase by 30% to 1,680, with an estimated 67 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Diagnostic Medical Sonographers	**$23.29**	**1,294**	**1,680**	**386**	**30%**	**39**	**28**	**67**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: A State license is not required to be a diagnostic medical sonographer. The Commission on Accreditation of Allied Health Education Programs (CAAHEP) accredits diagnostic medical sonography program including certificate programs and associate degree programs offered in Maryland. Trends in enrollments and graduates of Maryland's diagnostic medical sonography programs are provided.

Diagnostic Medical Sonography Programs -- PCS Certificate, College Certificate, and Associate Degree Levels

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Diagnostic Medical Sonography	**255**	**133**	**-48%**	**123-255**	**58**	**38**	**-34%**	**25-69**

- Enrollments decreased by 48% and graduates decreased by 34% (from 58 to 38 graduates) from FY 1993 to FY 2002.

- During this period, community college certificate and associate degree programs were discontinued at one community college. In FY 2002, 66% of the graduates completed certificate programs offered by private career schools.

- 4 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Private Career School (PCS) Certificate Programs – (1) The Johns Hopkins Hospital School of Medical Imaging and (2) Ultrasound Diagnostic School.
  College Certificate Programs – (1) Montgomery College. *[Discontinued program: (1) Community College of Baltimore County]*
  Associate Degree Programs – (1) Montgomery College. *[Discontinued program: (1) Community College of Baltimore County]*

2. RADIOLOGIC TECHNOLOGISTS/TECHNICIANS

DEMAND: According to Maryland Occupational Projections for 2000-2010, employment for radiologic technologists and technicians is projected to increase by 17% to 5,398, with an estimated 180 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Radiologic Technologists & Technicians	**$20.88**	**4,617**	**5,398**	**781**	**17%**	**78**	**101**	**180**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: To be a licensed radiologic technologist in Maryland, graduation is required from an approved associate degree or hospital-based program.[1] Trends in enrollments and graduates of Maryland's programs are provided.

Radiologic Technology Programs -- (1) PCS Certificate, (2) Associate, & (3) Bachelor's Degree Levels.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Radiologic Technology	**1,106**	**729**	**-34%**	**486-1,106**	**142**	**96**	**-32%**	**96-193**

- Enrollments decreased by 34% and graduates decreased by 32% (from 142 to 96 graduates) from FY 1993 to FY 2002.
- The first enrollments in the new bachelor's program were in FY 1998 and the first graduates in FY 2001.
- 15 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Private Career School (PCS) Certificate Program – (1) Greater Baltimore Medical Center School of Radiology, (2) Holy Cross Hospital School of Radiologic Technology, (3) Maryland General Hospital School of Radiologic Technology, (4) The Johns Hopkins Hospital Schools of Medical Imaging, and (5) Washington Adventist Hospital School of Radiography. *[Discontinued program: (1) Mercy Hospital]*.
  Associate Degree Programs – (1) Allegany College of Maryland, (2) Anne Arundel Community College, (3) Chesapeake College, (4) Community College of Baltimore County, (5) Hagerstown Community College, (6) Montgomery College, (7) Prince George's Community College, and (8) Wor-Wic Community College.
  Bachelor's Degree Program – (1) College of Notre Dame of Maryland **(new).** *[Discontinued program: (1) Hood College]*.

[1] The Commission on Accreditation of Allied Health Education Programs (CAAHEP) and the Joint Review Committee on Education in Radiologic Technology (JRCERT) accredit radiologic technology programs.

3. RESPIRATORY THERAPISTS/TECHNICIANS

DEMAND: According to Maryland Occupational Projections from 2000-2010, employment for respiratory therapists is projected to increase by 28% to 1,490, with an estimated 61 annual openings. Employment for respiratory therapy technicians is projected to increase by 26% to 4,588, with an estimated 189 annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Respiratory Therapists	**$20.53**	**1,168**	**1,490**	**322**	**28%**	**32**	**29**	**61**
Respiratory Therapy Technicians	**$20.29**	**3,635**	**4,588**	**953**	**26%**	**95**	**94**	**189**
Subtotal		**4,803**	**6,078**	**1,275**	**27%**	**127**	**123**	**250**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: To be a licensed respiratory therapist in Maryland, graduation is required from a program accredited by the Committee on Accreditation for Respiratory Care (CoARC) and the Commission on Accreditation of Allied Health Education Programs (CAAHEP). Currently, at least an associate degree is required for entry into the field of respiratory therapy. Discontinued is national certification of respiratory therapy technicians completing 1-year certificate programs. Currently, there are two levels of national certification: Certified Respiratory Therapist (CRT) and the advanced Registered Respiratory Therapist (RRT). Graduates of associate and bachelor's degree programs are eligible to take the examinations for CRT and RRT certification. Trends in enrollments and graduates of Maryland's respiratory therapy programs are provided.

Respiratory Therapy/Technician Programs -- (1) Associate & (2) Bachelor's Degree Levels. *[Discontinued College Certificate Programs]*

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Respiratory Therapy/Technician	**421**	**200**	**-53%**	**157-393**	**74**	**50**	**-32%**	**50-106**

- Enrollments decreased by 53% and graduates decreased by 32% (from 74 to 50 graduates) from FY 1993 to FY 2002.
- All certificate programs to prepare respiratory therapy technicians were discontinued by community colleges during this 10-year period.
- 7 institutions offer programs included in the enrollment/graduate data reported:
  College Certificate Programs – *[Discontinued programs: (1) Baltimore City Community College and (2) Community College of Baltimore County]*.
  Associate Degree Programs – (1) Allegany College of Maryland, (2) Baltimore City Community College, (3) Columbia Union College, (4) Community College of Baltimore County, (5) Frederick Community College, and (6) Prince George's Community College.
  Bachelor's Degree Program – (1) Columbia Union College and (2) Salisbury University.

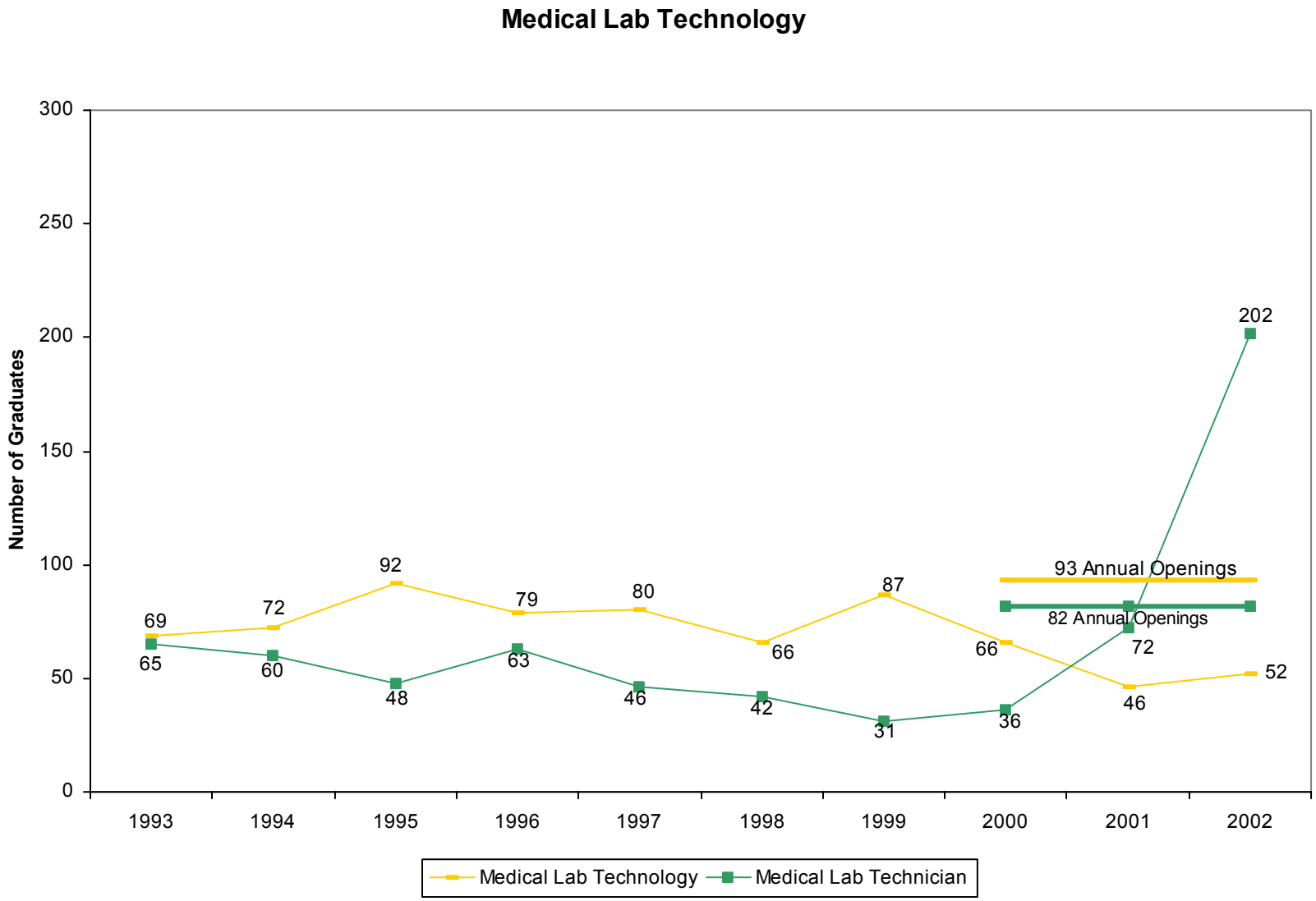
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)

Health Technology

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Diagnostic Medical Sonography	PCS Certificate	101	99	93	90	74	86	101	101	108	91	-10%
	Certificate	14	11	10	4	5	7	9	8	2	3	-79%
	Associate	140	108	83	70	60	63	78	33	13	39	-72%
	Sub-Total	**255**	**218**	**186**	**164**	**139**	**156**	**188**	**142**	**123**	**133**	**-48%**
Radiologic Technology	PCS Certificate	111	115	134	110	80	81	98	107	101	114	3%
	Associate	995	928	794	719	604	507	430	373	428	596	-40%
	Bachelors	-	-	-	-	-	6	7	6	7	19	-
	Sub-Total	**1106**	**1043**	**928**	**829**	**684**	**594**	**535**	**486**	**536**	**729**	**-34%**
Respiratory Therapy	Certificate	30	32	0	1	0	0	1	1	1	1	-97%
	Associate	329	292	300	317	296	230	125	128	138	170	-48%
	Bachelors	62	59	76	75	60	41	31	29	26	29	-53%
	Sub-Total	**421**	**383**	**376**	**393**	**356**	**271**	**157**	**158**	**165**	**200**	**-53%**
Graduates												
Diagnostic Medical Sonography	PCS Certificate	52	40	44	28	37	26	38	24	18	25	-52%
	Certificate	4	1	1	2	3	3	1	1	0	3	-25%
	Associate	2	7	24	16	8	9	7	8	7	10	400%
	Sub-Total	**58**	**48**	**69**	**46**	**48**	**38**	**46**	**33**	**25**	**38**	**-34%**
Radiologic Technology	PCS Certificate	32	36	48	40	26	27	27	37	32	24	-25%
	Associate	110	123	145	133	125	128	106	91	89	71	-35%
	Bachelors	-	-	-	-	-	-	-	-	1	1	-
	Sub-Total	**142**	**159**	**193**	**173**	**151**	**155**	**133**	**128**	**122**	**96**	**-32%**
Respiratory Therapy	Certificate	0	13	9	8	0	0	0	1	0	0	-
	Associate	60	59	52	51	77	61	74	61	44	39	-35%
	Bachelors	14	34	15	22	19	19	17	14	7	11	-21%
	Sub-Total	**74**	**106**	**76**	**81**	**96**	**80**	**91**	**76**	**51**	**50**	**-32%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF MEDICAL LAB TECHNOLOGY

1. MEDICAL AND CLINICAL LABORATORY TECHNOLOGISTS

DEMAND: According to the Maryland Occupational Projections from 2000-2010, employment for medical and clinical laboratory technologists is projected to increase by 12% to 2,951, with an estimated 93 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Medical and Clinical Laboratory Technologists	**$22.60**	**2,644**	**2,951**	**307**	**12%**	**31**	**62**	**93**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: A State license is not required to be a medical and clinical laboratory technologist. National certification is provided by the National Accrediting Agency for Clinical Laboratory Science (NAACLS).[1]

Medical Laboratory Technology Programs -- (1) Bachelor's, (2) Master's, & (3) Doctorate Degree Levels. Trends in enrollments and graduates of Maryland's medical and clinical laboratory technology programs are provided.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Medical Lab Technology	**275**	**159**	**-42%**	**159-333**	**69**	**52**	**-25%**	**46-92**

- Enrollments decreased by 42% and graduates decreased by 25% (from 69 to 52 graduates) from FY 1993 to FY 2002.
- Several bachelor's degree programs were discontinued during this 10-year period.
- 8 Maryland institutions offer programs included in the enrollment/graduate data reported:
  Bachelor's Degree Programs – (1) Columbia Union, (2) Loyola College, (3) Morgan State University, (4) Salisbury University, and (5) University of Maryland Baltimore. *[Discontinued programs: (1) Hood College, (2) Towson University, and (3) University of Maryland, Eastern Shore.]*
  Master's Degree Program – (1) University of Maryland Baltimore (**new**).
  Doctorate Degree Program – (1) University of Maryland Baltimore.

[1] Certification is available for: (1) clinical assistants, (2) cytogenetic technologists, (3) clinical laboratory scientists/medical technologists, (4) clinical laboratory technicians/medical laboratory technicians, (5) diagnostic molecular scientists, (6) histotechnicians, (7) histotechnologists, (8) pathologists' assistants, and (9) phlebotomists.

2. MEDICAL AND CLINICAL LABORATORY TECHNICIANS

DEMAND: According to the Maryland Occupational Projections from 2000-2010, employment for medical and clinical laboratory technicians is projected to increase by 15% to 2,468, with an estimated 82 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Medical and Clinical Laboratory Technicians	**$15.72**	**2,154**	**2,468**	**15%**	**314**	**31**	**51**	**82**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: A State license is not required to be a medical and clinical laboratory technician.

Medical Laboratory Technician – (1) Non-Credit Course, (2) Credit Course, (3) Private Career School Certificate, (4) College Certificate, & (4) Associate Degree Levels. Trends in enrollments and graduates of Maryland's medical and clinical laboratory technician programs are provided.[1]

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Medical Lab Technician	**268**	**444**	**66%**	**88-444**	**65**	**202**	**211%**	**31-202**

- Enrollments increased by 66% and graduates increased by 211% (65 to 202) from FY 1993 to FY 2002.
- Increased enrollments were due in part to the first-time reporting of data for WIA eligible courses in FY 2001 and FY 2002.
- 11 Maryland institutions offer training included in the enrollment/graduate data reported:
  Non-Credit Courses (WIA Eligible) – (1) Baltimore City Community College, (2) Cecil Community College, (3) Community College of Baltimore County, and (4) Wor-Wic Community College.
  Credit Courses (WIA Eligible) – (1) College of Southern Maryland.
  Private Career School (PCS) Certificate Program: (1) National Phlebotomy Association.
  College Certificate Programs – (1) Allegany College of Maryland and (2) Hagerstown Business College (**new**).
  Associate Degree Programs – (1) Allegany College of Maryland, (2) Columbia Union College, (3) Frederick Community College, and (4) Villa Julie College. *[Discontinued programs: (1) Community College of Baltimore County and (2) Montgomery College.]*

[1] Graduate and enrollment data are provided for: (1) degree and certificate programs and (2) WIA eligible courses offered by 5 community colleges and reported with WIA Data Collections. Comparable data is unavailable for courses at other Maryland community colleges. (**Appendices 4 and 5** report available data for community college non-credit courses and high school programs.)

Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)

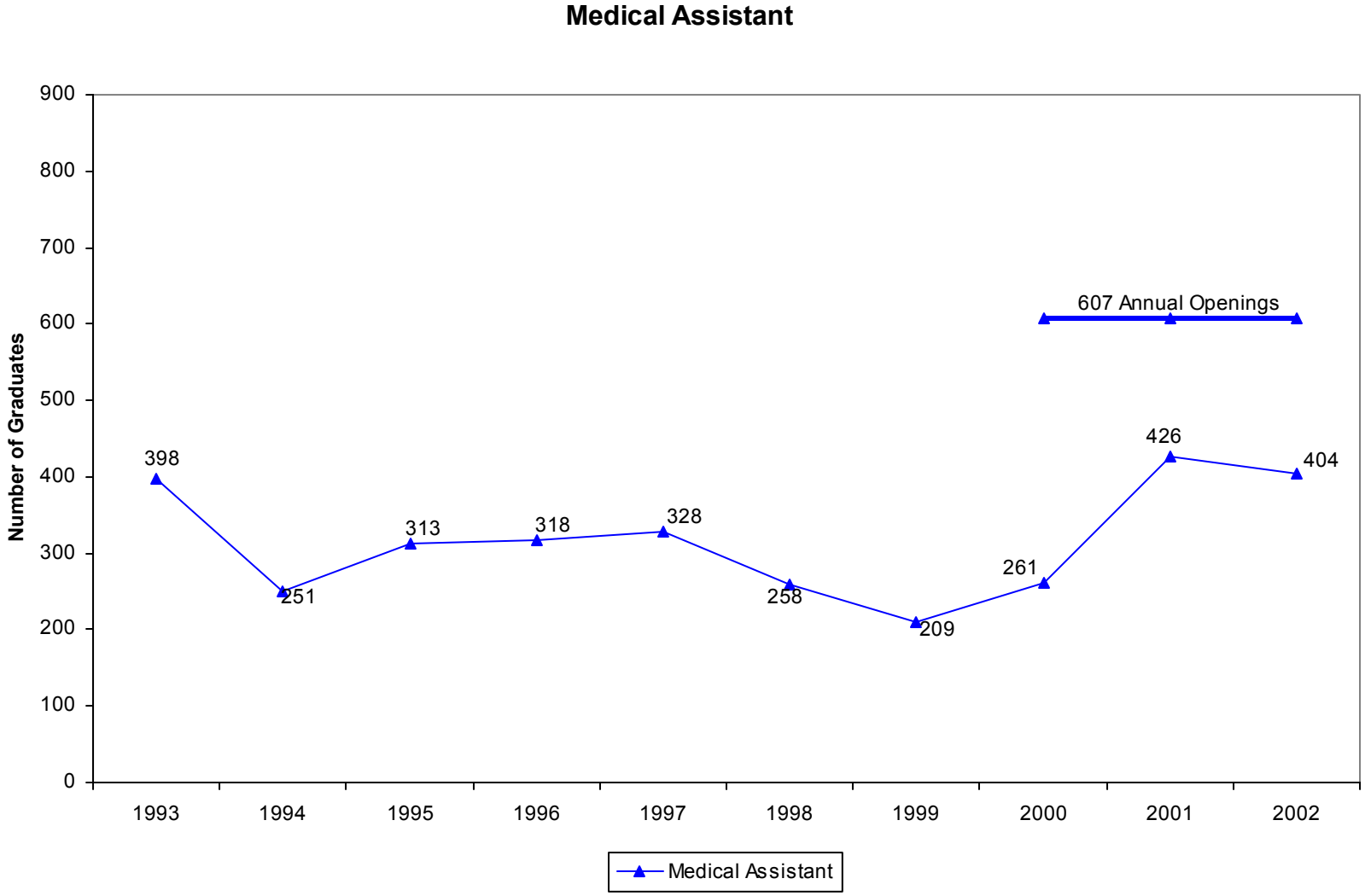
Medical Lab Technology

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Medical Lab Technician	CC Courses(WIA)									69	236	-
	PCS Certificate	-	-	-	-	-	-	-	5	7	10	-
	Certificate	47	34	25	16	22	32	33	39	47	137	191%
	Associate	221	214	198	142	115	84	55	61	82	61	-72%
	Sub-Total	**268**	**248**	**223**	**158**	**137**	**116**	**88**	**105**	**205**	**444**	**66%**
Medical Technology	Bachelors	230	239	265	281	246	206	143	153	141	115	-50%
	Masters	30	35	36	33	31	25	27	27	22	30	0%
	Doctorate	15	14	17	19	21	19	16	15	17	14	-7%
	Sub-Total	**275**	**288**	**318**	**333**	**298**	**250**	**186**	**195**	**180**	**159**	**-42%**
Graduates												
Medical Lab Technician	CC Courses(WIA)									24	157	-
	PCS Certificate	-	-	-	-	-	-	-	5	5	6	-
	Certificate	22	20	13	22	12	12	13	18	28	19	-14%
	Associate	43	40	35	41	34	30	18	13	15	20	-53%
	Sub-Total	**65**	**60**	**48**	**63**	**46**	**42**	**31**	**36**	**72**	**202**	**211%**
Medical Technology	Bachelors	55	57	80	71	65	53	69	53	32	42	-24%
	Masters	7	9	10	8	14	12	12	10	10	8	14%
	Doctorate	7	6	2	0	1	1	6	3	4	2	-71%
	Sub-Total	**69**	**72**	**92**	**79**	**80**	**66**	**87**	**66**	**46**	**52**	**-25%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

C. INFOMATICS – HEALTH CAREER PATHWAYS

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF MEDICAL ASSISTANT

DEMAND: According to the Maryland Occupational Projections from 2000-2010, employment for medical assistants is projected to increase by 52% to 11,712, with an estimated 607 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Medical Assistants	**$12.59**	**7,691**	**11,712**	**4,021**	**52%**	**402**	**205**	**607**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: A State license is not required to be a medical assistant in Maryland. However, national certification as a medical assistant requires completion of a certificate or associate degree program accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or the Accrediting Bureau of Health Education Schools (ABHES).

Medical Assistant Programs -- (1) PCS Certificate, (2) College Certificate, & (3) Associate Degree Levels. Trends in enrollments and graduates of Maryland's medical assistant programs are provided.[1]

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Medical Assistant	**1,333**	**1,456**	**9%**	**783-1,456**	**398**	**404**	**2%**	**209-426**

- Enrollment increased by 9% and graduates increased by 2% (398 to 404) from FY 1993 to FY 2002.
- During this period, new certificate and associate degree programs were added and others discontinued.
- 12 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Private Career School (PCS) Certificate Program – (1) Americare School of Allied Health– Silver Spring (**new**), (2) Medix School, and (3) Ultrasound Diagnostic School (**new**). *[Discontinued program: (1) NEC.]*
  College Certificate Programs – (1) Anne Arundel Community College, (2) College of Southern Maryland (**new**), (3) Prince George's Community College (**new**), (4) TESST College of Technology (**new**). *[Discontinued programs: (1) Hagerstown Business College and (2) Montgomery College.]*
  Associate Degree Programs – (1) Allegany College of Maryland (**new**), (2) Anne Arundel Community College, (3) Community College of Baltimore County (4) Hagerstown Business College, (4) Prince George's Community College (**new**). *[Discontinued program: (1) Montgomery College.]*

[1] Graduate and enrollment data are provided for degree and certificate programs. Comparable data is unavailable for courses at community colleges. (**Appendices 4 and 5** report available data for community college non-credit courses and high school programs.)

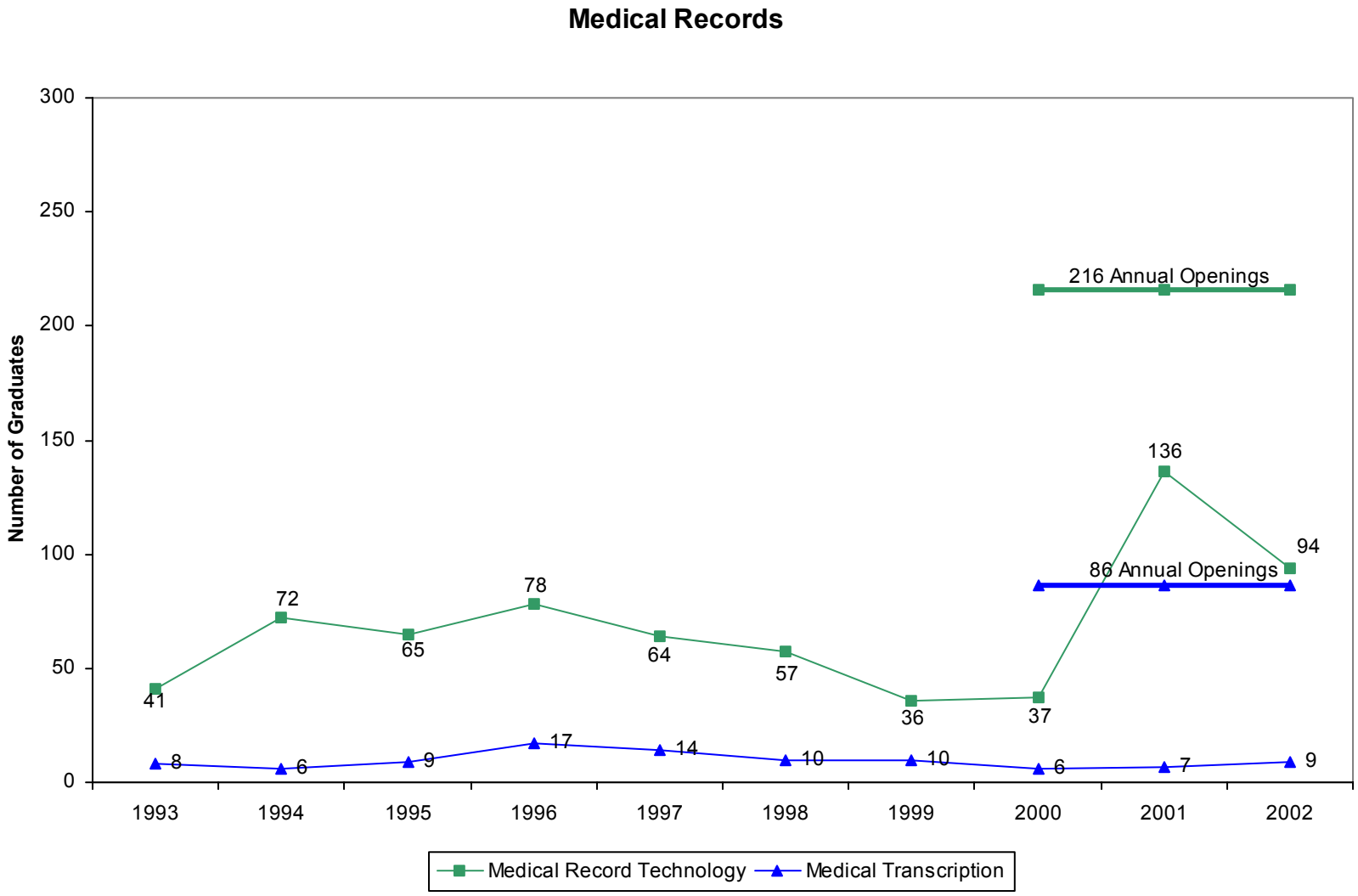
Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2003)

Medical Assistant

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Medical Assistant	PCS Certificate	1137	582	591	624	617	534	673	950	1126	1145	1%
	Certificate	91	125	112	121	114	98	79	99	98	96	5%
	Associate	105	164	169	164	145	151	195	205	208	215	105%
	Sub-Total	**1333**	**871**	**872**	**909**	**876**	**783**	**947**	**1254**	**1432**	**1456**	**9%**
Graduates												
Medical Assistant	PCS Certificate	375	230	266	243	258	185	162	208	370	355	-5%
	Certificate	8	9	28	36	31	29	21	20	19	7	-13%
	Associate	15	12	19	39	39	44	26	33	37	42	180%
	Sub-Total	**398**	**251**	**313**	**318**	**328**	**258**	**209**	**261**	**426**	**404**	**2%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993 – FY 2002)



Source: (1) Maryland Higher Education Commission – Degree Information System, Private Career School Annual Reports, WIA Data Collections, (2) Department of Labor, Licensing, and Regulation.

FIELD OF MEDICAL RECORDS

1. MEDICAL RECORDS AND HEALTH INFORMATION TECHNOLOGISTS

DEMAND: According to Maryland Occupational Projections from 2000-2010, employment for medical records and health information technicians is projected to increase by 49% to 4,528, with an estimated 216 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Medical Records & Health Information Technicians	**$13.05**	**3,046**	**4,528**	**1,482**	**49%**	**148**	**68**	**216**

SUPPLY FROM MARYLAND POSTSECONDARY EDUCATIONAL INSTITUTIONS: A State license is not required to be a medical records and health information technician.

Medical Records and Health Technology Programs -- (1) Non-Credit Course, (2) PCS Certificate, (2) College Certificate, & (3) Associate Degree Levels. Trends in enrollments and graduates of Maryland's medical records and health technology programs are provided.[1]

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Medical Records Technology	**321**	**627**	**95%**	**190-627**	**41**	**94**	**129%**	**36-136**

- Enrollments increased by 95% and graduates increased by 129% (41 to 94) from FY 1993 to FY 2002.
- The significant increases were due in part to the first-time reporting of data for WIA eligible, non-credit courses in FY 2001 and FY 2002.
- 9 Maryland institutions offered programs included in the enrollment/graduate data reported:
  Non-Credit Courses (WIA Eligible) – (1) Cecil Community College, and (2) Prince George's Community College.
  Private Career School (PCS) Certificate Program – (1) Medix School.
  College Certificate Programs – (1) Anne Arundel Community College (**new**), (2)Baltimore City Community College, (3) College of Southern Maryland (**new**), (4) Hagerstown Business College, (5) Montgomery College, (6) Prince George's Community College.
  [Discontinued program – (1) Community College of Baltimore County]

[1] Graduate and enrollment data are provided for WIA eligible, courses offered by 2 community colleges and reported with WIA Data Collections. Comparable data is unavailable for courses at other community colleges. (**Appendix 4** reports available data f or community college non-credit courses.)

Associate Degree Programs – (1) Baltimore City Community College, (2) Hagerstown Business College, (3) Montgomery College, (4) Prince George's Community College. [Discontinued program*: (1) Community College of Baltimore County.]*

2. MEDICAL TRANSCRIPTIONISTS

DEMAND: According to Maryland Occupational Projections from 2000-2010, employment for medical transcriptionists is projected to increase by 26% to 2,043, with an estimated 86 total annual openings.

Occupational Title	Hourly Wage	2000 Employment	2010 Employment	Change 2000-2010		Annual Openings in 2000-2010		
				#	%	Growth	Replacements	Total
Medical Transcriptionists	**$14.90**	**1,624**	**2,043**	**419**	**26%**	**42**	**44**	**86**

SUPPLY FROM MARYLAND HIGHER EDUCATION INSTITUTIONS: A State license is not required to be a medical transcriptionist.

Medical Records and Health Technology Programs -- (1) College Certificate & (2) Associate Degree Levels. Trends in enrollments and graduates of Maryland's medical transcription programs are provided.

Programs	Enrollments (FY 1993-FY 2002)				Graduates (FY 1993-FY 2002)			
	FY 1993	FY 2002	% Change	Range of Annual Enrollments	FY 1993	FY 2002	% Change	Range of Annual Graduates
Medical Transcription	**33**	**17**	**-49**	**14-39**	**8**	**9**	**13%**	**6-17**

- Enrollments decreased by 49% and graduates increased by 13% (8 to 9) from FY 1993 to FY 2002.

- 1 Maryland institution offered programs included in the enrollment/graduate data reported:
  College Certificate Programs – (1) Hagerstown Business College.
  Associate Degree Programs – (1) Hagerstown Business College.

Enrollments and Graduates of Healthcare Programs Offered by Maryland Higher Education Institutions (FY 1993-2002)

Medical Records

	Level	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	% Change 1993-2002
Enrollments												
Medical Record sTechnology	CC Courses(WIA)	-	-	-	-	-	-	-	-	332	330	-
	PCS Certificate	-	-	-	-	-	-	-	-	-	53	-
	Certificate	85	78	41	35	38	29	40	40	66	107	26%
	Associate	236	224	243	255	237	194	198	150	138	137	-42%
	Sub-Total	**321**	**302**	**284**	**290**	**275**	**223**	**238**	**190**	**536**	**627**	**95%**
Medical Transcription	Certificate	8	9	8	10	10	8	7	9	2	5	-38%
	Associate	25	30	23	24	15	15	16	10	12	12	-52%
	Sub-Total	**33**	**39**	**31**	**34**	**25**	**23**	**23**	**19**	**14**	**17**	**-49%**
Graduates												
Medical Records Technology	CC Courses(WIA)	-	-	-	-	-	-	-	-	76	8	-
	PCS Certificate	-	-	-	-	-	-	-	-	-	32	-
	Certificate	9	35	36	25	19	23	16	13	19	25	177%
	Associate	32	37	29	53	45	34	20	24	41	29	-9%
	Sub-Total	**41**	**72**	**65**	**78**	**64**	**57**	**36**	**37**	**136**	**94**	**129%**
Medical Transcription	Certificate	2	1	0	7	1	2	1	2	3	2	0%
	Associate	6	5	9	10	13	8	9	4	4	7	-17%
	Sub-Total	**8**	**6**	**9**	**17**	**14**	**10**	**10**	**6**	**7**	**9**	**13%**

Source: Maryland Higher Education Commission (MHEC) – Enrollment and Degree Information Systems, Private Career School Annual Reports, and WIA Data Collections.

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MARYLAND 2000 – 2010 OCCUPATIONAL PROJECTIONS

(All Healthcare Occupations)

Code	Occupations	Maryland Wages	2010 Employment	Openings 2000 -- 2010		
				Growth	Replace	Total
29-9199	All Other Health Professionals and Technicians	17.99	9,515	1,755	0	1,755
29-1061	Anesthesiologists	61.40	1,208	188	159	347
29-9091	Athletic Trainers	0.00	144	5	35	40
29-1121	Audiologists	24.27	566	201	91	292
29-2031	Cardiovascular Technologists and Technicians	20.55	737	159	126	285
29-1011	Chiropractors	30.96	2,513	667	420	1,087
31-9091	Dental Assistants	13.42	4,798	1,398	609	2,007
29-2021	Dental Hygienists	22.03	3,125	902	320	1,222
29-1020	Dentists	45.75	6,049	482	1,434	1,916
29-2032	Diagnostic Medical Sonographers	23.29	1,680	386	285	671
29-2051	Dietetic Technicians	12.21	982	165	209	374
29-1031	Dietitians and Nutritionists	19.41	1,367	264	308	572
29-2041	Emergency Medical Technicians and Paramedics	13.59	2,750	776	502	1,278
29-1062	Family and General Practitioners	51.94	12,739	1,121	1,806	2,927
29-1199	Health Diagnosing and Treating Practitioners, All Other	28.07	2,695	424	501	925
31-0000	Healthcare Support Occupations	11.34	67,373	17,191	9,858	27,049
31-9099	Healthcare Support Workers, All Other	11.82	8,656	1,683	1,868	3,551
31-1011	Home Health Aides	8.59	5,364	1,670	475	2,145
29-1063	Internists, General	56.11	4,212	708	544	1,252
29-2061	Licensed Practical and Licensed Vocational Nurses	17.39	8,216	1,749	1,658	3,407
31-9011	Massage Therapists	11.12	571	107	111	218
31-9092	Medical Assistants	12.59	11,712	4,021	2,050	6,071
29-2012	Medical and Clinical Laboratory Technicians	15.72	2,468	314	506	820
29-2011	Medical and Clinical Laboratory Technologists	22.60	2,951	307	619	926
31-9093	Medical Equipment Preparers	11.15	453	37	110	147
29-2071	Medical Records and Health Information Technicians	13.05	4,528	1,482	681	2,163
31-9094	Medical Transcriptionists	14.90	2,043	419	436	855
29-2033	Nuclear Medicine Technologists	25.26	337	47	64	111
31-1012	Nursing Aides, Orderlies, and Attendants	10.95	25,623	5,848	2,543	8,391
29-1064	Obstetricians and Gynecologists	61.35	709	36	106	142
29-9010	Occupational Health and Safety Specialists and Technicians	23.50	1,101	100	255	355

MARYLAND 2000 – 2010 OCCUPATIONAL PROJECTIONS

(All Healthcare Occupations)

Code	Occupations	Maryland Wages	2010 Employment	Openings 2000 -- 2010		
				Growth	Replace	Total
31-2012	Occupational Therapist Aides	12.51	78	16	19	35
31-2011	Occupational Therapist Assistants	16.74	373	107	79	186
29-1122	Occupational Therapists	27.69	1,217	278	240	518
29-2081	Opticians, Dispensing	13.20	751	75	129	204
29-1041	Optometrist	49.39	282	39	48	87
29-2091	Orthotists and Prosthests	20.23	62	10	14	24
29-1065	Pediatricians, General	49.43	825	136	107	243
29-1051	Pharmacists	34.54	4,755	772	1,262	2,034
31-9095	Pharmacy Aides	11.13	2,318	336	525	861
29-2052	Pharmacy Technicians	12.73	4,220	1,218	775	1,993
31-2022	Physical Therapist Aides	10.62	1,509	526	288	814
31-2021	Physical Therapist Assistants	16.99	1,602	547	309	856
29-1123	Physical Therapists	29.29	2,490	547	499	1,046
29-1071	Physician Assistants	31.62	1,698	575	241	816
29-1069	Physicians and Surgeons, All Other	53.72	91	20	10	30
29-1081	Podiatrists	38.77	94	17	14	31
31-1013	Psychiatric Aides	11.65	296	1	37	38
29-2053	Psychiatric Technicians	15.35	788	139	168	307
29-1066	Psychiatrists	56.67	1,684	284	219	503
29-1124	Radiatioin Therapists	28.27	136	26	21	47
29-2034	Radiologic Technologists and Technicians	20.88	5,398	781	1,014	1,795
29-1125	Recreational Therapists	17.09	427	38	97	135
29-1111	Registered Nurses	23.71	41,101	8,013	6,823	14,836
29-1126	Respiratory Therapists	20.53	1,490	322	292	614
29-2054	Respiratory Therapy Technicians	20.29	4,588	953	941	1,894
29-1127	Speech-Language Pathologists	27.98	3,217	811	613	1,424
29-1067	Surgeons	61.19	1,577	284	202	486
29-2055	Surgical Technologists	17.20	913	175	190	365
29-1131	Veterinarians	34.30	1,547	287	248	535
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	10.72	1,972	471	400	871
29-2056	Veterinary Technologists and Technicians	11.46	2,550	604	505	1,109

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD

(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
		1. DENTISTRY		
Dentistry (Dentists)	University of Maryland, Baltimore	1st Professional Degree		Baltimore City
Dental Hygienist	Allegany College of Maryland	Associate Degree		Allegany County
Dental Hygienist	Baltimore City Community College	Associate Degree		Baltimore City
Dental Hygienist	University of Maryland, Baltimore	Bachelor's Degree		Baltimore City
Dental Hygienist	University of Maryland, Baltimore	Master's Degree		Baltimore City
Dental Assistant	Anne Arundel Community College	Non-Credit Courses (WIA Eligible)		Anne Arundel County
Dental Assistant	Montgomery College	Non-Credit Courses (WIA Eligible)		Montgomery County
Dental Assistant	Prince George's Community College	Non-Credit Courses (WIA Eligible)		Prince George's County
Dental Assistant	Wor-Wic Community College	Non-Credit Courses (WIA Eligible)		Lower Shore
Dental Assistant	Medix School	Certificate -- Private Career School		Baltimore County
~~Dental Assistant~~	~~Allegany College of Maryland~~	~~Certificate -- College~~	~~Discontinued Program~~	~~Allegany County~~
~~Dental Assistant~~	~~Baltimore City Community College~~	~~Certificate -- College~~	~~Discontinued Program~~	~~Baltimore City~~
~~Dental Assistant~~	~~Community College of Baltimore County~~	~~Certificate -- College~~	~~Discontinued Program~~	~~Baltimore County~~
~~Dental Assistant~~	~~Montgomery College~~	~~Certificate -- College~~	~~Discontinued Program~~	~~Montgomery County~~
~~Dental Assistant~~	~~Community College of Baltimore County~~	~~Associate Degree~~	~~Discontinued Program~~	~~Baltimore County~~
~~Dental Assistant~~	~~Montgomery College~~	~~Associate Degree~~	~~Discontinued Program~~	~~Montgomery County~~
		2. CHIROPRACTICS		
Chiropractics (Chiropractors)	None	-	No Maryland Programs	-

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
3. EMERGENCY MEDICAL TECHNOLOGY/PARAMEDICS				
~~Emergency Medical Technician~~	~~May Emergency~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	~~Baltimore City~~
Emergency Medical Technician	Anne Arundel Community College	Certificate -- College		Anne Arundel County
Emergency Medical Technician	Baltimore City Community College	Certificate -- College		Baltimore City
Emergency Medical Technician	College of Southern Maryland	Certificate -- College	New Program	Southern Maryland
Emergency Medical Technician	Community College of Baltimore County	Certificate -- College		Baltimore County
Emergency Medical Technician	Frederick Community College	Certificate -- College	New Program	Frederick County
Emergency Medical Technician	Hagerstown Community College	Certificate -- College		Washington County
Emergency Medical Technician	Howard Community College	Certificate -- College	New Program	Howard County
Emergency Medical Technician	Prince George's Community College	Certificate -- College	New Program	Prince George's County
Emergency Medical Technician	Wor-Wic Community College	Certificate – College	New Program	Lower Shore
Emergency Medical Technician	Anne Arundel Community College	Associate Degree		Anne Arundel County
Emergency Medical Technician	Baltimore City Community College	Associate Degree		Baltimore City
Emergency Medical Technician	Cecil Community College	Associate Degree	New Program	Cecil County
Emergency Medical Technician	College of Southern Maryland	Associate Degree	New Program	Southern Maryland
Emergency Medical Technician	Community College of Baltimore County	Associate Degree		Baltimore County
Emergency Medical Technician	Frederick Community College	Associate Degree	New Program	Frederick County
Emergency Medical Technician	Hagerstown Community College	Associate Degree	New Program	Washington County
Emergency Medical Technician	Howard Community College	Associate Degree	New Program	Howard County
Emergency Medical Technician	Prince George's Community College	Associate Degree	New Program	Prince George's County
Emergency Medical Technician	Wor-Wic Community College	Associate Degree	New Program	Lower Shore
Emergency Medical Technician	University of Maryland, Baltimore County	Bachelor's Degree		Baltimore County
Emergency Medical Technician	University of Maryland, Baltimore County	Master's Degree		Baltimore County

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
	4. HEALTH TECHNOLOGY			
Diagnostic Medical Sonography	The Johns Hopkins School of Medical Imaging	Certificate – Private Career School		Baltimore City
Diagnostic Medical Sonography	Ultrasound Diagnostic School	Certificate – Private Career School		Prince George's County
Diagnostic Medical Sonography	Montgomery College	Certificate – College		Montgomery College
~~Diagnostic Medical Sonography~~	~~Community College of Baltimore County~~	~~Certificate – College~~	~~Discontinued Program~~	~~Baltimore County~~
Diagnostic Medical Sonography	Montgomery College	Associate Degree		Montgomery County
~~Diagnostic Medical Sonography~~	~~Community College of Baltimore County~~	~~Associate Degree~~	~~Discontinued Program~~	~~Baltimore County~~
Radiologic Technology	Greater Baltimore Medical Center	Certificate – Private Career School		Baltimore City
Radiologic Technology	Holy Cross Hospital School of Radiologic Technology	Certificate – Private Career School		Montgomery County
Radiologic Technology	Maryland General Hospital School of Radiologic Technology	Certificate – Private Career School		Baltimore City
Radiologic Technology	The Johns Hopkins Hospital School of Medical Imaging	Certificate – Private Career School		Baltimore City
Radiologic Technology	Washington Adventist Hospital School of Radiography	Certificate – Private Career School		Prince George's County
~~Radiologic Technology~~	~~Mercy Hospital~~	~~Certificate – Private Career School~~	~~Discontinued~~	~~Baltimore City~~
Radiologic Technology	Allegany College of Maryland	Associate Degree		Allegany County
Radiologic Technology	Anne Arundel Community College	Associate Degree		Anne Arundel County
Radiologic Technology	Chesapeake College	Associate Degree		Upper Shore
Radiologic Technology	Community College of Baltimore County	Associate Degree		Baltimore County
Radiologic Technology	Hagerstown Community College	Associate Degree		Washington County
Radiologic Technology	Montgomery College	Associate Degree		Montgomery County
Radiologic Technology	Prince George's Community College	Associate Degree		Prince George's County
Radiologic Technology	Wor-Wic Community College	Associate Degree		Lower Shore
Radiologic Technology	College of Notre Dame of Maryland	Bachelor's Degree	New Program	Baltimore City
~~Radiologic Technology~~	~~Hood College~~	~~Bachelor's Degree~~	~~Discontinued Program~~	~~Frederick County~~

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
~~Respiratory Therapy Technician~~	~~Baltimore City Community College~~	~~Certificate – College~~	~~Discontinued Program~~	~~Baltimore City~~
~~Respiratory Therapy Technician~~	~~Community College of Baltimore County~~	~~Certificate – College~~	~~Discontinued Program~~	~~Baltimore County~~
Respiratory Therapy	Allegany College of Maryland	Associate Degree		Allegany County
Respiratory Therapy	Baltimore City Community College	Associate Degree		Baltimore City
Respiratory Therapy	Columbia Union College	Associate Degree		Prince George's County
Respiratory Therapy	Community College of Baltimore County	Associate Degree		Baltimore County
Respiratory Therapy	Frederick Community College	Associate Degree		Frederick County
Respiratory Therapy	Prince George's Community College	Associate Degree		Prince George's County
Respiratory Therapy	Columbia Union College	Bachelor's Degree		Prince George's County
Respiratory Therapy	Salisbury University	Bachelor's Degree		Lower Shore
	5. MEDICAL ASSISTANT			
Medical Assistant	Americare School of Allied Health-Silver Spring	Certificate – Private Career School	New Program	Montgomery County
Medical Assistant	Medix School	Certificate – Private Career School		Baltimore County
Medical Assistant	Ultrasound School of Diagnosis	Certificate – Private Career School	New Program	Prince George's County
~~Medical Assistant~~	~~NEC~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	~~Baltimore City~~
Medical Assistant	Anne Arundel Community College	Certificate – College		Anne Arundel County
Medical Assistant	College of Southern Maryland	Certificate – College	New Program	Southern Maryland
Medical Assistant	Prince George's Community College	Certificate – College	New Program	Prince George's County
Medical Assistant	TESST College of Technology	Certificate – College	New Program	Prince George's County
~~Medical Assistant~~	~~Hagerstown Business College~~	~~Certificate – College~~	~~Discontinued Program~~	~~Washington County~~
~~Medical Assistant~~	~~Montgomery College~~	~~Certificate – College~~	~~Discontinued Program~~	~~Montgomery County~~
Medical Assistant	Allegany College of Maryland	Associate Degree	New Program	Allegany County
Medical Assistant	Anne Arundel Community College	Associate Degree		Anne Arundel County
Medical Assistant	Community College of Baltimore County	Associate Degree		Baltimore County
Medical Assistant	Hagerstown Business College	Associate Degree		Washington County
Medical Assistant	Prince George's Community College	Associate Degree	New Program	Prince George's County
~~Medical Assistant~~	~~Montgomery College~~	~~Associate Degree~~	~~Discontinued Program~~	~~Montgomery County~~

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
		6. MEDICAL LAB TECHNOLOGY		
Medical Lab Technology	Columbia Union College	Bachelor's Degree		Prince George's County
Medical Lab Technology	Loyola College	Bachelor's Degree		Baltimore City
Medical Lab Technology	Morgan State University	Bachelor's Degree		Baltimore City
Medical Lab Technology	Salisbury University	Bachelor's Degree		Lower Shore
Medical Lab Technology	University of Maryland, Baltimore	Bachelor's Degree		Baltimore City
~~Medical Lab Technology~~	~~Hood College~~	~~Bachelor's Degree~~	~~Discontinued Program~~	~~Frederick County~~
~~Medical Lab Technology~~	~~Towson University~~	~~Bachelor's Degree~~	~~Discontinued Program~~	~~Baltimore County~~
~~Medical Lab Technology~~	~~University of Maryland – Eastern Shore~~	~~Bachelor's Degree~~	~~Discontinued Program~~	~~Eastern Shore~~
Medical Lab Technology	University of Maryland, Baltimore	Master's Degree	New Program	Baltimore City
Medical Lab Technology	University of Maryland, Baltimore	Doctoral Degree		Baltimore City
Medical Lab Technician	Baltimore City Community College	Non-Credit Courses (WIA Eligible)		Baltimore City
Medical Lab Technician	Cecil Community College	Non-Credit Courses (WIA Eligible)		Cecil County
Medical Lab Technician	Community College of Baltimore County	Non-Credit Courses (WIA Eligible)		Baltimore County
Medical Lab Technician	Wor-Wic Community College	Non-Credit Courses (WIA Eligible)		Lower Shore
Medical Lab Technician	College of Southern Maryland	Credit Courses (WIA Eligible)		Southern Maryland
Medical Lab Technician	National Phlebotomy Association	Certificate – Private Career School		Prince George's County
Medical Lab Technician	Allegany College of Maryland	Certificate – College		Allegany County
Medical Lab Technician	Hagerstown Business College	Certificate – College	New Program	Washington County
Medical Lab Technician	Allegany College of Maryland	Associate Degree		Allegany County
Medical Lab Technician	Columbia Union College	Associate Degree		Prince George's County
Medical Lab Technician	Frederick Community College	Associate Degree		Frederick County
Medical Lab Technician	Villa Julie College	Associate Degree		Baltimore County
~~Medical Lab Technician~~	~~Community College of Baltimore County~~	~~Associate Degree~~	~~Discontinued Program~~	~~Baltimore County~~
~~Medical Lab Technician~~	~~Montgomery College~~	~~Associate Degree~~	~~Discontinued Program~~	~~Montgomery County~~

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
		7. MEDICAL RECORDS		
Medical Records	Cecil Community College	Non-Credit Courses (WIA Eligible)		Cecil County
Medical Records	Prince George's Community College	Non-Credit Courses (WIA Eligible)		Prince George's County
Medical Records	Medix School	Certificate – Private Career School		Baltimore County
Medical Records	Anne Arundel Community College	Certificate – College	New Program	Anne Arundel County
Medical Records	Baltimore City Community College	Certificate – College		Baltimore City
Medical Records	College of Southern Maryland	Certificate – College	New Program	Southern Maryland
Medical Records	Hagerstown Business College	Certificate – College		Washington County
Medical Records	Montgomery College	Certificate – College		Montgomery County
Medical Records	Prince George's Community College	Certificate – College		Prince George's County
~~Medical Records~~	~~Community College of Baltimore County~~	~~Certificate – College~~	~~Discontinued Program~~	~~Baltimore County~~
Medical Records	Baltimore City Community College	Associate Degree		Baltimore City
Medical Records	Hagerstown Business College	Associate Degree		Washington County
Medical Records	Montgomery College	Associate Degree		Montgomery County
Medical Records	Prince George's Community College	Associate Degree		Prince George's County
~~Medical Records~~	~~Community College of Baltimore County~~	~~Associate Degree~~	~~Discontinued Program~~	~~Baltimore County~~
Medical Transcription	Hagerstown Business College	Certificate – College		Washington County
Medical Transcription	Hagerstown Business College	Associate Degree		Washington County
		8. MEDICINE		
Medicine (Physicians/Surgeons)	Johns Hopkins University	1st Professional Degree		Baltimore City
Medicine (Physicians/Surgeons)	University of Maryland, Baltimore	1st Professional Degree		Baltimore City
Physician Assistant	Anne Arundel Community College	Certificate – College	New Program	Anne Arundel County
Physician Assistant	Community College of Baltimore County	Certificate – College	New Program	Baltimore County
~~Physician Assistant~~	~~Community College of Baltimore County~~	~~Associate Degree~~	~~Discontinued Program~~	~~Baltimore County~~
Physician Assistant	University of Maryland, Eastern Shore	Bachelor's Degree	New Program	Eastern Shore
Physician Assistant	Towson University	Master's Degree	New Program	Baltimore County

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
		9. NURSING		
Nursing (Post-Baccalaureate)	Bowie State University	Master's Degree		Prince George's County
Nursing (Post-Baccalaureate)	Coppin State College	Master's Degree	New Program	Baltimore City
Nursing (Post-Baccalaureate)	Johns Hopkins University	Master's Degree		Baltimore City
Nursing (Post-Baccalaureate)	Salisbury University	Master's Degree		Lower Shore
Nursing (Post-Baccalaureate)	Towson University	Master's Degree		Baltimore County
Nursing (Post-Baccalaureate)	University of Maryland, Baltimore	Master's Degree		Baltimore City
Nursing (Post-Baccalaureate)	Johns Hopkins University	Doctoral Degree		Baltimore City
Nursing (Post-Baccalaureate)	University of Maryland, Baltimore	Doctoral Degree		Baltimore City
Registered Nursing	Allegany College of Maryland	Associate Degree		Allegany County
Registered Nursing	Anne Arundel Community College	Associate Degree		Anne Arundel County
Registered Nursing	Baltimore City Community College	Associate Degree		Baltimore City
Registered Nursing	Cecil Community College	Associate Degree		Cecil County
Registered Nursing	Chesapeake College	Associate Degree	New Program	Upper Shore
Registered Nursing	College of Southern Maryland	Associate Degree		Southern Maryland
Registered Nursing	Community College of Baltimore County	Associate Degree		Baltimore County
Registered Nursing	Frederick Community College	Associate Degree		Frederick County
Registered Nursing	Hagerstown Community College	Associate Degree		Washington County
Registered Nursing	Harford Community College	Associate Degree		Harford County
Registered Nursing	Howard Community College	Associate Degree		Howard County
Registered Nursing	Montgomery College	Associate Degree		Montgomery County
Registered Nursing	Prince George's Community College	Associate Degree		Prince George's County
Registered Nursing	Wor-Wic Community College	Associate Degree		Lower Shore
Registered Nursing	Bowie State University	Bachelor's Degree		Prince Georges' County
Registered Nursing	College of Notre Dame of Maryland	Bachelor's Degree		Baltimore City
Registered Nursing	Columbia Union College	Bachelor's Degree		Prince George's County
Registered Nursing	Coppin State College	Bachelor's Degree		Baltimore City
Registered Nursing	Johns Hopkins University	Bachelor's Degree		Baltimore City
Registered Nursing	Salisbury University	Bachelor's Degree		Lower Shore
Registered Nursing	Towson University	Bachelor's Degree		Baltimore County
Registered Nursing	Villa Julie College	Bachelor's Degree		Baltimore County
Registered Nursing	University Of Maryland, Baltimore	Bachelor's Degree		Baltimore City

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
~~Licensed Practical Nursing~~	~~Johnson School of Practical Nursing~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	
Licensed Practical Nursing	Allegany College of Maryland	Certificate – College		Allegany County
Licensed Practical Nursing	Anne Arundel Community College	Certificate – College	New Program	Anne Arundel County
Licensed Practical Nursing	Baltimore City Community College	Certificate – College	New Program	Baltimore City
Licensed Practical Nursing	Carroll Community College	Certificate – College	New Program	Carrol County
Licensed Practical Nursing	Cecil Community College	Certificate – College	New Program	Cecil County
Licensed Practical Nursing	Chesapeake College	Certificate – College	New Program	Upper Shore
Licensed Practical Nursing	College of Southern Maryland	Certificate – College		Southern Maryland
Licensed Practical Nursing	Frederick Community College	Certificate – College		Frederick County
Licensed Practical Nursing	Harford Community College	Certificate – College		Harford County
Licensed Practical Nursing	Howard Community College	Certificate – College	New Program	Howard County
Licensed Practical Nursing	Prince George's Community College	Certificate – College		Prince George's County
Licensed Practical Nursing	Wor-Wic Community College	Certificate – College		Lower Shore
Certified Nursing Assistant	Baltimore City Community College	Non-Credit Courses (WIA Eligible)		Baltimore City
Certified Nursing Assistant	Carroll Community College	Non-Credit Courses (WIA Eligible)		Carrol County
Certified Nursing Assistant	Chesapeake College	Non-Credit Courses (WIA Eligible)		Upper Shore
Certified Nursing Assistant	College of Southern Maryland	Non-Credit Courses (WIA Eligible)		Southern Maryland
Certified Nursing Assistant	Community College of Baltimore County	Non-Credit Courses (WIA Eligible)		Baltimore County
Certified Nursing Assistant	Frederick Community College	Non-Credit Courses (WIA Eligible)		Frederick County
Certified Nursing Assistant	Garrett College	Non-Credit Courses (WIA Eligible)		Garrett County
Certified Nursing Assistant	Harford Community College	Non-Credit Courses (WIA Eligible)		Harford County
Certified Nursing Assistant	Hagerstown Community College	Non-Credit Courses (WIA Eligible)		Washington County
Certified Nursing Assistant	Howard Community College	Non-Credit Courses (WIA Eligible)		Howard County
Certified Nursing Assistant	Prince George's Community College	Non-Credit Courses (WIA Eligible)		Prince George's County
Certified Nursing Assistant	Wor-Wic Community College	Non-Credit Courses (WIA Eligible)		Lower Shore
Certified Nursing Assistant	Adventist Healthcare: Health Careers Training Center	Certificate – Private Career School	New Program	Montgomery County
Certified Nursing Assistant	American Red Cross, Central Maryland Chapter	Certificate – Private Career School	New Program	Baltimore City
Certified Nursing Assistant	Americare School of Allied Health-Silver Spring	Certificate – Private Career School	New Program	Montgomery County
~~Certified Nursing Assistant~~	~~Americare School of Allied Health-Baltimore~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	~~Baltimore City~~
~~Certified Nursing Assistant~~	~~Deaton~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	~~Baltimore City~~
~~Certified Nursing Assistant~~	~~Health Training Institute~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	~~Montgomery County~~
~~Certified Nursing Assistant~~	~~PTC~~	~~Certificate – Private Career School~~	~~Discontinued Program~~	~~Baltimore City~~

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
Certified Nursing Assistant	Allegany College of Maryland	Certificate – College	New Program	Allegany County
Home Health Aide	College of Southern Maryland	Credit Courses (WIA Eligible)		Southern Maryland
		10. PHARMACY		
~~Pharmacy (Pharmacists)~~	~~University of Maryland, Baltimore~~	~~Bachelor's Degree~~	~~Discontinued~~	~~Baltimore County~~
Pharmacy (Pharmacists)	University of Maryland, Baltimore	1st Professional		Baltimore City
Pharmacy Technician & Aide	Allegany College of Maryland	Certificate – College	New Program	Allegany County
Pharmacy Technician & Aide	Anne Arundel Community College	Certificate – College	New Program	Anne Arundel County
Pharmacy Technician & Aide	TESST College	Certificate – College	New Program	Prince George's County
Pharmacy Technician & Aide	Community College of Baltimore County	Non – Credit Courses (WIA Eligible)		Baltimore County
Pharmacy Technician & Aide	Montgomery College	Non -- Credit Course (WIA Eligible)		Montgomery County
		11. PHYSICAL THERAPY		
~~Physical Therapy~~	~~University of Maryland, Baltimore~~	~~Bachelor's Degree~~	~~Discontinued Program~~	~~Baltimore City~~
~~Physical Therapy~~	~~University of Maryland, Eastern Shore~~	~~Bachelor's Degree~~	~~Discontinued Program~~	~~Eastern Shore~~
~~Physical Therapy~~	~~University of Maryland, Baltimore~~	~~Master's Degree~~	~~Admission now closed~~	~~Baltimore City~~
~~Physical Therapy~~	~~University of Maryland, Eastern Shore~~	~~Master's Degree~~	~~Admission now closed~~	~~Eastern Shore~~
Physical Therapy	University of Maryland, Baltimore	Doctoral Degree	New Program	Baltimore City
Physical Therapy	University of Maryland, Eastern Shore	Doctoral Degree	New Program	Eastern Shore
Physical Therapist Assistant	Allegany College of Maryland	Associate Degree	New Program	Allegany County
Physical Therapist Assistant	Anne Arundel Community College	Associate Degree	New Program	Anne Arundel County
Physical Therapist Assistant	Baltimore City Community College	Associate Degree		Baltimore City
Physical Therapist Assistant	Carroll Community College	Associate Degree	New Program	Carrol County
Physical Therapist Assistant	Chesapeake College	Associate Degree	New Program	Upper Shore
Physical Therapist Assistant	College of Southern Maryland	Associate Degree	New Program	Southern Maryland
Physical Therapist Assistant	Montgomery College	Associate Degree	New Program	Montgomery County
Physical Therapist Aide	Chesapeake College	Credit Courses (WIA Eligible)		Upper Shore

MARYLAND'S POSTSECONDARY HEALTHCARE PROGRAMS – BY HEALTH FIELD
(Programs with Enrollments/Graduates Data Included in Report)

PROGRAMS	MARYLAND INSTITUTIONS	EDUCATION LEVEL	PROGRAM STATUS	LOCATION
		12. SPEECH-LANGUAGE PATHOLOGY		
Speech-Language Pathology	Loyola College	Master's Degree		Baltimore City
Speech-Language Pathology	Towson University	Master's Degree		Baltimore County
Speech-Language Pathology	University of Maryland, College Park	Master's Degree		Prince George's County
Speech-Language Pathology	University of Maryland, College Park	Doctoral Degree		Prince George's County

ENROLLMENTS IN NON-CREDIT COURSES OFFERED BY MARYLAND COMMUNITY COLLEGES
(Courses Leading to Initial Licensure or Certification for the Top Demand Healthcare Occupations)

Courses	Enrollments[1] (Duplicate Count)				Enrollments included in Report [2] (Unduplicated Count)
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2002
Certified Nursing Assistant	871	1,089	2,273	3,706	1,081
Dental Assistant	163	389	253	259	107
Emergency Medical Technician (EMT-B)	720	94	200	167	-
EMT Paramedic (EMT-P)	41	25	33	43	-
Home Health Aide	72	158	43	27	5
Medical Assistant	28	22	390	997	-
Medical Coder	-	249	75	670	330
Medical Lab Technician[3]	133	206	262	720	236
Pharmacy Technician/Aide	22	121	125	197	85
Physician Assistant	1	23	-	-	-
Respiratory Therapist	-	36	-	-	-

Source: *Maryland Community Colleges FY 2002 Report on Non-Credit Open Enrollment and Contract Courses Leading to Initial or Continued Licensure or Certification,* Maryland Community College Association of Continuing Education and Training, Professional Licensure and Certification Affinity Group.

[1] Enrollments in individual non-credit courses are reported. Therefore, a student is counted multiple times as an enrollment, if a series of non-credit courses are required to complete training.

[2] Unduplicated enrollments reported in the WIA Data Collections and included in Sections I–III of "*Maryland's Top 25 Demand Healthcare Occupations: Projected Demand and Reported Supply Provided by Maryland Higher Education Institutions*".

[3] Medical Lab Technician includes:

	FY 1999	FY 2000	FY 2001	FY 2002
Medical Lab Technician	103	0	0	0
Phlebotomy Technician	30	206	262	360
Venipunct & Specimen Collection	0	0	0	360

ENROLLMENTS AND COMPLETIONS IN COURSES OFFERED BY MARYLAND HIGH SCHOOLS
(Training for Maryland's Top Demand Healthcare Occupations)

Courses	School Year 2001 -- 2002	
	Enrollments	**Completers[1]**
Certified Nursing Assistant[2]	1,549	613
Dental Assistant	25	4
Emergency Medical Technician	12	2
Medical Assistant	179	22
Medical Lab Technician	242	18
Pharmacy Technician/Aide	55	1

Source: Maryland State Department of Education.

[1] Completers are student who successfully completed the four health courses that comprise these secondary programs.

[2] Includes enrollments and completers in the following courses:

	Enrollments	**Completers**
Certified Nursing Assistant[2]	261	99
Health Professions and Related	1,288	514

MARYLAND LICENSING INFORMATION FOR SELECTED HEALTHCARE OCCUPATIONS

SOC Code	Health Occupation	Training Code	Minimum Education and Training	Description	Procedure for Licensure	Licensing Agency	No. Licensed (2002)
311012	Certified Nurse's Aide; General Nurse's Aide; Nursing Technician; Nurse Extender; Nursing Assistant; Geriatric Nursing Assistant; Medicine Aide and Support Technician	E1	On-the-job training or short-term training	Federal and state laws require all nursing assistants to be certified to work in licensed health care facilities including: Certified Nursing Assistant (CNA); Geriatric Nursing Assistant (GNA); and Certified Medicine Aide (CMA). The CNA certification is the basic level of certification. CNA training programs must be approved by the Board of Nursing. Applicants for GNA certification must complete an approved GNA course. Applicants must pass the Geriatric Nursing Assistant examination and meet Federal requirements for working in licensed comprehensive care facilities.	Examinations are provided by the Maryland Geriatric Nursing Assistant Testing Service (MDGNATS) referred to as ASI in Maryland.	DHMH, Maryland Board of Nursing, 4140 Patterson Avenue, Baltimore, MD 21215 (410) 585-1990	47,551
291011	Chiropractor	E3	First professional degree; 8 years of college from a Board approved institution	Applicants for licensure as a chiropractor must possess a bachelor's degree prior to entering an approved college of chiropractic; pass the National Board Examinations; and pass the State administered examination, which includes a section on Maryland law and regulations.	Examination by the National Board of Chiropractic Examiners and Jurisprudence and examination by Maryland Board of Chiropractic Examiners. The website is www.mdchiro.org.	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4726	650
292011	Cytotechnologist (pathology and life history of cells), Histotechnologist (pathological diseases), Clinical Laboratory Technologist/Technician, and Medical Laboratory Technician	E2	Bachelor's degree	Cytotechnogists generally seek voluntary certification and registration with the Board of Registry of the American Society for Clinical Pathology, the American Medical Technologists, National Credentialing Agency for Laboratory Personnel and the Board of Registry of the American Association of Bioanalysts.	No licensure is required.		
319091	Dental Assistant	E1	Short-term training	Applicants for dental assistant must be at least 18 years old; possess 24 hours of formal education; have six month's job experience; and pass an exam.	Board of Dental Examiners, Spring Grove State Hospital. The website is www.dhmh.state.md.us/dental.	DHMH, Spring Grove State Hospital, Benjamin Rush Bldg., 55 Wade Avenue, Baltimore, MD 21228 (410) 402-8500	5,383
292021	Dental Hygienist	E1	Associate degree	Applicants for dental hygienist licensure must be at least 18 years old; be of good moral character; have a four-year college degree; and pass the national exam.	Pass the national NERB exam to be licensed by the Board of Dental Examiners. The website is www.dhmh.state.md.us/dental.	DHMH, Spring Grove State Hospital, Benjamin Rush Bldg., 55 Wade Avenue, Baltimore, MD 21228 (410) 402-8500	2,538
291021	Dentist	E3	1st professional degree	A dentist must possess a degree from an accredited school of dentistry; be of a good moral character; and pass the national dental exam.	Graduate from a dental school accredited by the American Dental Association's Commission on Dental Accreditation. Pass written and practical examination by the Maryland State Board of Dental Examiners. The website is www.dhmh.state.md.us/dental.	DHMH, Spring Grove State Hospital, Benjamin Rush Bldg., 55 Wade Avenue, Baltimore, MD 21228 (410) 402-8500	5,260

Source: Department of Labor, Licensing, and Regulation.

MARYLAND LICENSING INFORMATION FOR SELECTED HEALTHCARE OCCUPATIONS

SOC Code	Health Occupation	Training Code	Minimum Education and Training	Description	Procedure for Licensure	Licensing Agency	No. Licensed (2002)
292041	Emergency Medical Technician-Basic (EMT-B)	E1	Approved course by MIEMSS	Applicants for licensure must pass the certification exam provided by the Maryland Institute for Emergency Medical Services System (MIEMSS).	Detail information is provided on the MIEMSS website at www.miemss.umaryland.com.	Maryland Institute for Emergency Medical Services Systems, Office of Education and Certification; 653 West Pratt Street, Baltimore, MD 21201 (410) 706-3666	15,172
292041	Emergency Medical Technician-Paramedic (EMT-P) and Cardiac Rescue Technician (CRT)	E1	Approved course by MIEMSS	Applicants for licensure must pass the National Registry Certification Exam.	Passing of licensure examination on all protocol and procedures is required by the Maryland Institute for Emergency Medical Services Systems, Office of Education and Certification. The website is www.miemss.umaryland.com.	Maryland Institute for Emergency Medical Services Systems, Office of Education and Certification; 653 West Pratt Street, Baltimore, MD 21201 (410) 706-3666	Paramedics - 2,091; Cardiac Rescue Technicians – 710
311011	Home Care Aide	E1	On-the-job training or short-term training	Applicants for home care aide licensure must meet training requirements of Federal law that are required to work in licensed home health agencies. Home health agencies provide verification that the individual meets the federal requirements.		DHMH, Maryland Board on Nursing, 4140 Patterson Avenue, Baltimore, MD 21215 (410) 585-1990	47,551
319092	Medical Assistant	E1	Certificate program or short-term training	No licensure is required.	No licensure is required.		
292012	Medical Laboratory Technician	E1	Short-term training	No licensure is required.	No licensure is required.		
292011	Medical Laboratory Technologist	E2	Bachelor's degree	No licensure is required.	No licensure is required.		
292071	Medical Records Technician, Health Information Coder and Health Information Technician	E1	Associate degree -- prefer graduates of an approved accredited medical records program	Medical records technicians generally pursue voluntary registration and certification with the Registered Health Information Technicians (RHIT). Pass written examination offered by the American Health Information Management Association (AHIMA), 233 North Michigan Avenue, Suite 150, Chicago, Illinois 60601-5800.	Website is www.ahima.org		
291111	Nurse; Registered Nurse; Nurse Practitioner; Nurse Midwife	E1	Associate degree	Nurses must complete a Board approved training program offered by a college or hospital; and pass the required examinations.	Pass examination by the Maryland Board of Nursing. The website is www.dhmh.state.md.us/mbn	DHMH, 4140 Patterson Avenue, Baltimore, MD 21215 (410) 585-1900	50,000
291051	Pharmacist	E2	Bachelor's or 1st Professional Degree	Pharmacist register with the Maryland Pharmacist Association, 650 West Lombard Street, Baltimore, MD 21201 (410) 727-0746.	Pass an examination on Maryland pharmacy laws and regulations offered by the Maryland Board of Pharmacy. The website is www.mdbop.org.	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4755	6,853

Source: Department of Labor, Licensing, and Regulation.

MARYLAND LICENSING INFORMATION FOR SELECTED HEALTHCARE OCCUPATIONS

SOC Code	Health Occupation	Training Code	Minimum Education and Training	Description	Procedure for Licensure	Licensing Agency	No. Licensed (2002)
292052	Pharmacy Technician	E1	Certificate program	Pharmacist technicians (Pharm.D graduates) register with the Maryland Pharmacist Association, 650 West Lombard Street, Baltimore, MD 21201 (410) 727-0746.	No licensure is required in Maryland.		
291123	Physical Therapist	E2	Bachelor degree, master's degree, or doctoral degree	An applicant for licensure as a physical therapist must have graduated from an accredited physical therapy or physical therapist program; and pass an examination. At least a master's degree is required unless an individual is covered by the grandfather provision.	Passing score on the national examination. Licensed by the Board of Physical Therapy Examiners. To schedule the national exam contact the Maryland Board of Physical Therapy Examiners. The website is www.dhmh.state.md.us/bphte	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4752	3,500
312021	Physical Therapist Assistant	E1	Associate degree from an approved program	Physical therapist assistants usually possess an associate degree from a Board approved physical therapist assistant program; and pass the national examination.	Passing score on the national examination. Licensed by the Board of Physical Therapy Examiners. To schedule the national exam contact the Maryland Board of Physical Therapy Examiners. Website is www.dhmh.state.md.us/bphte	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4752	900
291071	Physician Assistant	E2	Bachelor's degree or equivalency --prefer graduates of accredited PA educational programs (After October 1, 2003 the bachelor degree will be required)	Applicants must pass the Physician Assistants National Certifying Examination administered by the National Commission on Certification of Physician Assistants (NCCPA). To maintain the certification, the physician assistant must have 100 hours of continuing medical education every 2 years and pass a re-certification examination every 6 years	Licensure is granted by the Physician Quality Assurance Board, based on a passing grade of 220 on the Test of Spoken English and a grade of 550 on the Test of English as a Foreign Language. The national NCCPA exam is the only exam required for state licensure. NCCPA - National Commission on Certification of Physician Assistants, Suite 800, 157 Technology Parkway, Norcross, Georgia 30092-2913, (770) 734-4500	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4768	1,300
291062	Physician, Ophthalmologist, Medical Doctor, Medical Director and Pathologist	E3	1st professional degree; completion of an approved medical school accredited by the Liaison Committee on Medical Education (LCME)	Applicants for licensure have completed a program from an accredited medical school and residency; and achieved a passing score on all parts of the National Board of Medical Examiners Examination. National Board of Medical Examiners can be contacted at 1-800 767-6732	Completion of a 10-year clinical practice. Pass required national medical exam. Licensed by the Board of Physician Quality Assurance, 4201 Patterson Avenue , Baltimore, MD 21215 (410) 764-4777 For current detailed information for Maryland, see website at www.docboard.org	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4777	23,000
292034	Radiation Technician; Radiologic Technologist; Radiologist and Radiographic Technician (O), Nuclear Medicine Technologist (N), Radiographer and Radiation Oncology/Therapy Technologist (M), Radiation Oncology/Therapy Technologist (Radiation Therapist) (O), and Medical Radiation Technologist or Radiographer (R)	E1	Associate degree; or hospital-based training in an approved program	Registration by the American Registry of Radiologic Technologists (ARRT); website is www.arrt.org	Must be ARRT certified by passing the national examination. Licensed is granted by the Board of Physicians Quality Assurance.	DHMH, X-Ray Board, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4764	7,500

Source: Department of Labor, Licensing, and Regulation.

MARYLAND LICENSING INFORMATION FOR SELECTED HEALTHCARE OCCUPATIONS

SOC Code	Health Occupation	Training Code	Minimum Education and Training Required	Description	Procedure for Licensure	Licensing Agency	No. Licensed (2002)
291126	Respiratory Therapist	E1	Associate degree	Applicants for licensure must graduated from an approved respiratory care educational program and related work experience	Pass written law and practical examinations given by the Board of Respiratory Therapy, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4723. The website is www.dhmh.state.md.us/boardsahs	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4723	
292032	Sonographer	E1	Certificate program	Sonographers seek certification as a Registered Diagnostic Medical Sonographer (RDMS), or a Registered Diagnostic Cardiac Sonographer (RDCS), or a Registered Vascular Technologist (RVT) from the American Registry of Diagnostic Medical Sonographers (ARDMS). ARDMS certifies the competency of sonographers through registration and the ARDMS examination.	No licensure is required.		
291127	Speech and Language Pathologist/Therapist	E3	Master's degree -- preferred in speech-language pathology	Speech and language pathologists/therapists generally receive a Certificate of Clinical Competence (CCC) from the American Speech-Language Hearing Association (ASHA) in addition to State licensure.	Passed National Examination in speech-language pathology and written law examination given by the Board of Audiologists, Hearing Aid Dispensers and Speech-Language Pathologists. Also must complete 9 months of supervised practice after completion of Master's Degree. The website is www.dhmh.state.md.us/boardsahs	DHMH, 4201 Patterson Avenue, Baltimore, MD 21215 (410) 764-4723	2,033

Legend for Education Code: E1 = Less Than a Four Year Education E2 = Four Year E3 = More Than a Four Year Education

Notes:

- For all occupations, changes in contact information and requirements are occurring rapidly as more and more occupations come under the scrutiny of licensing and certification boards.
- DHMH is the Department of Health and Mental Hygiene (4201 Patterson Avenue, Baltimore, MD 21215).
- DLLR is the Department of Labor, Licensing and Regulation (500 North Calvert Street, Baltimore, MD 21201).

Source: Department of Labor, Licensing, and Regulation.

NATIONAL DATA ON SELECTED HEALTH PROFESSIONS

(Excerpts from "*Health Professions: Career and Education Directory 2002 – 2003*", American Medical Association)

Dentistry
- Dental Hygienist
- Dental Assistant

Emergency Medical Technician--Paramedic

Health Technology
- Diagnostic Medical Sonographer
- Radiographer
- Respiratory Therapist (Entry-Level)
- Respiratory Therapist (Advanced)

Medical Lab Technology
- Clinical Laboratory Scientist/Medical Technologist
- Clinical Laboratory Technician/Medical Laboratory Technician

Medical Assistant

Medical Records
- Health Information Technician
- Medical Transciptionist

Medicine
- Physician Assistant

Pharmacy
- Pharmacy Technician

Physical Therapy
- Physical Therapist
- Physical Therapist Assistant

Speech Language Pathology

Dentistry

Dental Hygienist

Occupational Description

Dental hygienists provide dental hygiene services as they work with dentists in the delivery of dental care to patients. Hygienists are licensed to use their knowledge and clinical skills to provide dental care to patients and their interpersonal skills to motivate and instruct patients on methods to prevent oral disease and maintain oral health.

Job Description

Although the range of services performed by dental hygienists varies from state to state, patient services rendered by dental hygienist frequently include

- performing patient screening procedures, such as reviewing health and dental history and taking blood pressure, pulse and temperature;
- taking and developing dental radiographs (x-rays);
- removing calculus and plaque (hard and soft deposits) from teeth;
- applying preventive materials to teeth (eg, sealants and fluorides);
- teaching patients appropriate oral hygiene techniques;
- counseling patients regarding good nutrition and its impact on oral health; and
- making impressions of patients' teeth for study casts.

Employment Characteristics

Most of the approximately 143,000 active dental hygienist in the United States today are employed by general dentists. Additionally, dental specialists (such as periodontists or pediatric dentists) employ dental hygienists. Most hygienists work one to one with patients in providing dental hygiene services.

Dental hygienists also may be employed to provide dental hygiene care for patients in hospitals, nursing homes, and public health clinics. Depending on the level of education and experience they have achieved, dental hygienists also can apply their skills and knowledge to other career activities, such as teaching. Research, public health, and business administration are other options. In addition, employment opportunities may be available with companies that market dental-related materials and equipment.

Among independent general practitioners, the average number of employees per dentist has remained relatively stable between 1994 and 1998, averaging 4.2 positions. Because 72.3% of independent general practitioners employ at least one dental hygienist, and 24% employ two or more hygienists, employment opportunities in this field are excellent.

As a career, dental hygiene also offers both stability and flexibility. As of 1999, for example, dental hygienists had been working in their current practices for an average of 7.1 years. Many hygienists also have considerable flexibility to undertake a full- or part-time schedule with evening or weekend hours.

The salaries of a dental hygienist varies, depending on the responsibilities associated with the specific position, the geographic location of employment, and the type of practice or other setting in which the hygienist works. The average national wage of a full-time dental hygienist employed by a general practitioner in 1998 was $25.70 per hour. Hygienists who work part-time averaged $27.70 per hour.

In addition, many dental hygienists receive benefit packages from their dentist/employers, which may include health insurance coverage, dues for membership in professional organizations, paid vacations and sick leave, and tuition assistance for continuing education. Most state dental boards require mandatory continuing education for maintenance of the dental hygiene license.

Educational Programs

Length. The majority of community college-based dental hygiene programs offer a 2-year associate degree. University-based dental hygiene programs may offer baccaulaureate and master's degrees, which generally require at least 2 or more years of further education.

Prerequisites. Admission requirements vary, depending on the institution. High school-level courses such as health, biology, psychology, chemistry, mathematics, and speech will be beneficial in a dental hygiene career. Many programs (50%) prefer individuals who have completed at least 1 year of college, and some baccalaureate degree programs require applicants to have completed 2 years of college.

Curriculum. Dental hygiene education programs provide supervised patient care experienced. Programs also include courses in the liberal arts (English, speech, sociology, and psychology); basic sciences (anatomy, microbiology, and pathology); and clinical sciences (dental hygiene, radiology, and dental materials). After completing a dental hygiene program, dental hygienists can pursue additional training in such areas as education, health administration, basic sciences, and public health.

Dentistry (Continued)

Dental Assistant

Occupational Description

The dental assistant increases the efficiency of the dental care team by aiding the dentist in the delivery of oral health care. The dental assistant performs a wide range of tasks requiring both interpersonal and technical skills. Duties range from aiding and educating patients to preparing dental instruments and performing administrative work.

Description

Dental assistants are responsible for helping patients feel comfortable before, during, and after treatment; assisting the dentist during treatment; taking and processing dental radiographs (x-rays); recording the patient's medical history and taking blood pressure and pulse; preparing and sterilizing instruments and equipment for the dentist's use; providing patients with oral care instructions following such procedures as surgery or placement of a restoration (filling); teaching patients proper brushing and flossing techniques; making impressions of patients' teeth for study casts; and performing administrative and scheduling tasks, including using a personal computer, communicating by telephone, and maintaining an inventory supply system.

Employment Characteristics

Most of the more than 200,000 active dental assistants are employed by general dentists. In addition, dental specialists employ dental assistants. Most assistants work chairside, although they may also participate in the business aspects of the practice. Besides dental offices, other employment settings available to dental assistants include schools and clinics (public health dentistry); hospitals (assisting dentists who are treating bedridden patients or in more elaborate dental procedures performed only in hospitals); dental school clinics; insurance companies (processing dental insurance claims); and vocational schools, technical institutes, community colleges, and universities (teaching others to be dental assistants).

Among independent general practitioners, the average number of employees per dentists has remained relatively stable between 1997 and 1998, averaging 4.2 positions.

Dental assisting also offers both flexibility and stability. Dental assistants have the flexibility to work full or part time. As of 1998, dental assistants had been working in their current practices for an average of 6 years.

The salary of a dental assistant varies, depending on the responsibilities associated with the specific position, the individual training, and the geographic location of employment. The average national wage of a full-time dental assistant employed by a general practitioner in 1998 was $13.00 per hour.

In addition to salary, dental assistants may receive benefit packages from their employers, including health and disability insurance coverage, dues for membership in professional organizations, an allowance for uniforms, profit sharing plans, and paid vacations.

Educational Programs

Length. Nine to 11 months.

Prerequisites. High school diploma or equivalent.

Certification. Dental assistants who pass an examination administered by the Dental Assisting National Board, Inc, may use the designation of Certified Dental Assistants (CDA). Dental assistants are eligible to take the examination if they have completed a dental assisting program accredited by the Commission on Dental Accreditation or have completed 2 years of full-time work experience as dental assistants. State regulations vary and some states offer registration or licensure in addition to this national certification program.

Emergency Medical Technician -- Paramedic

Emergency Medical Technician -- Paramedic

Occupational Description

Emergency medical technician-paramedics, working under the direction of a physician (often through radio communication), recognize, assess, and manage medical emergencies of acutely ill or injured patients in pre-hospital care settings. The EMT-paramedics work principally in advanced life-support units and ambulance services under medical supervision and direction.

Job Description

Emergency medical technician-paramedics practice the art and science of out-of-hospital medicine in conjunction with medical direction. Through performance of assessment and providing medical care, their goal is to prevent and reduce mortality and morbidity due to illness and injury. Paramedics primarily provide care to emergency patients in an out-of-hospital setting.

Paramedics possess the knowledge, skills, and attitudes consistent with the expectations of the public and the professions. Paramedics recognize that they are an essential component of the continuum of care and serve as linkages among health resources.

Paramedics strive to maintain high quality, reasonable cost health care by delivering patients directly to appropriate facilities. As an advocate for patients, paramedics seek to be proactive in affecting long-term health care by working in conjunction with other provider agencies, networks, and organizations. The emerging roles and responsibilities of the paramedic include public education, health promotion, and participation in injury and illness prevention programs. As the scope of service continues to expand, the paramedic will functions as a facilitator of access to care, as well as an initial treatment provider.

Paramedics are responsible and accountable to medical direction, the public, and their peers. They recognize the importance of research and actively participate in the design, development, evaluation, and publication of research. Paramedics seek to take part in life-long professional development and peer evaluation, and they assume an active role in professional and community oraganizations.

Educational Programs

Length. Some programs are designed as a part-time study model, whereas others are organized as full-time collegiate curricula. The average length of training is approximately 1,000 hours; new curriculum standards will probably result in a modest increase over the next few years.

Prerequisites. A prospective student is expected to be a high school graduate or the equivalent and to be able to meet the physical and mental demands of the occupation. In addition, certification as an EMT-ambulance is the typical prerequisite for entrance into the EMT-paramedic program (some programs offer a combination of EMT-ambulance and EMT-paramedic training).

Individuals who have acquired the equivalent of basic EMT training in the military services within the past 12 months and whose work experience is approved by a recognized state agency may be considered qualified to matriculate in an EMT-paramedic program.

Curriculum. The accreditation standards require that a course of instruction be composed of three components: didactic instruction, in-hospital clinical practice, and a supervised field internship in an advanced life-support unit that functions under an emergency medical services command authority. The courses of instruction are expected to be competency-based and supported by performance assessments. Instruction should provide the student with knowledge of acute and critical changes in physiology and psychological and clinical symptoms as they pertain to the prehospital emergency medical care of individuals of all ages. The curriculum should also provide students with an understanding of the ethical and legal responsibilities that they assume as students and that they are being prepared to assume as graduates.

Health Technology

Diagnostic Medical Sonographer

Occupational Description

The diagnostic medical sonographer provides patient services using medical ultrasound (high-frequency sound waves that produce images of internal structures). Working under the supervision of a physician responsible for the use and interpretation of ultrasound procedures, the sonographer helps gather sonographic data to diagnose a variety of conditions and diseases, as well as monitor fetal development.

Job Description

The sonographer provides patient services in a variety of medical settings in which the physician is responsible for the use and interpretation of ultrasound procedures. In assisting physicians in gathering sonographic data, the diagnostic medical sonographer is able to obtain, review, and integrate pertinent patient history and supporting clinical data to facilitate optimum diagnostic results; perform appropriate procedures and record anatomical, pathological, and/or physiological data for interpretation by a physician; record and process sonographic data and other pertinent observations made during the procedure for presentation to the interpreting physician; exercise discretion and judgment in the performance of sonographic services; provide patient education related to medical ultrasound; and promote principles of good health.

Employment Characteristics

Diagnostic medical sonographers may be employed in hospitals, clinics, private offices, and industry. There is also a need for suitability qualified educators, researchers, and administrators. The demand for sonographers continues to exceed the supply. The supply and demand ratio affects salaries, depending on experience and responsibilities.

According to the Society of Diagnostic Medical Sonographers, the salary for diagnostic medical sonographers with less than 1 year of experience is $30,700.

Educational Programs

Length. Program are between 1 and 4 year, depending on program design, objectives, and the degree or certificate awarded.

Prerequisites. Applicants to a 1-year program must posses qualifications in a clinically related allied health profession. Applicants to 2-year programs must be high school graduates (or equivalent) with an educational background in basic science, general physics, and algebra. All applicants must demonstrate satisfactory completion of the following courses at college level: general physics, biological science, algebra, and communication skills.

Curriculum. Curricula of accredited programs include physical sciences, applied biological sciences, patient care, clinical medicine, applications of ultrasound, instrumentation, related diagnostic procedures, and image evaluation. A plan for well-structured, competency-based clinical education is an essential part of the curriculum of all sonography programs.

Health Technology (Continued)

Radiographer

Occupational Description

Radiographers use radiation equipment to produce images of the tissues, organs, bones, and vessels of the body, as prescribed by physicians, to assist in the diagnosis of disease or injury. Radiographers continually strive to provide quality patient care and are particularly concerned with limiting radiation exposure to patients, themselves, and others. Radiographers use problem-solving and critical-thinking skills to Perform medical imaging procedures by adapting variable technical parameters of the procedure to the condition of the patient.

Job Description

Radiographers apply knowledge of anatomy, physiology, positioning, radiographic technique, and radiation biology and protection in the performance of their responsibilities. They must be able to communicate effectively with patients, other health professionals, and the public. Additional duties may include evaluating radiologic equipment, conducting a radiographic quality assurance program, providing patient education, and managing a medical imaging department The radiographer must display competence and compassion in meeting the special needs of the patient.

Employment Characteristics

Radiographers are employed in health care facilities—including specialized imaging centers, urgent care clinics, and private physician offices—and as educators or imaging departments administrators. Salaries and benefits are generally competitive with other health professions and vary according to experience and employment location. Thirty-four states require licensure as a condition of practice.

Educational Programs

Length. Programs are generally 2 to 4 years, depending on program design, objectives, and the degree or certificate awarded.

Curriculum. The curriculum of an accredited program includes an extensive component of technical and professional courses, including an emphasis on structured competency-based clinical education. Contact a particular program for information on specific courses and prerequisites.

Health Technology (Continued)

Respiratory Therapist (Entry-level)

Occupational Description

The entry-level therapist administers general respiratory care. Entry-level therapists may assume clinical responsibility for specified respiratory care modalities involving the application of well-defined therapeutic techniques under the supervision of a respiratory therapist and a physician.

Job Description

In fulfillment of the entry-level role, the respiratory therapist may perform the following tasks:

1. Review clinical data, history, and respiratory orders.
2. Collect clinical data by interview and examination of the patient. This includes collecting portions of the data by inspection, palpation, percussion, and auscultation of the patients.
3. Recommend and/or perform and review additional bedside procedures, x-rays, and laboratory test.
4. Evaluate data to determine the appropriateness of the prescribed respiratory care.
5. Assemble and maintain equipment used in respiratory care.
6. Assure cleanliness and sterility by the selection and/or performance of appropriate disinfecting techniques and monitor their effectiveness.
7. Initiate, conduct, and modify prescribed therapeutic procedures.

Employment Characteristics

Respiratory therapy personnel are employed in hospitals, nursing care facilities, clinics, doctors' offices, companies providing emergency oxygen services, and municipal organizations.

According to 1996 data from the American Association for Respiratory Care, an advanced respiratory therapist, on average, earns $26,707.

Educational Programs

Length. Programs are usually 2 years, leading to an associate degree.

Prerequisites. High school diploma or equivalent.

Curriculum. The knowledge and skills of the entry-level therapist are acquired through formal programs of didactic, laboratory, and clinical preparation. Courses include biological and physical sciences basic to understanding the functioning of the human breathing system, such as anatomy, physiology, medical terminology, chemistry, mathematics, microbiology, physics, therapeutic procedures, clinical medicine, and clinical expressions. Clinical training in routine and special procedures applicable to pediatric, adult, and geriatric patients also is provided.

Health Technology (Continued)

Respiratory Therapist (Advanced)

Occupational Description

The respiratory therapist applies scientific knowledge and theory to practical clinical problems of respiratory care. The advanced respiratory therapist is qualified to assume primary responsibility for all respiratory care modalities, including the supervision of respiratory therapy technician functions. The advanced respiratory therapist may be required to exercise considerable independent clinical judgment, under the supervision of a physician, in the respiratory care of patients.

Job Description

In fulfillment of the advanced therapist role, the respiratory therapist may perform the following tasks:

1. Review, collect, and recommend obtaining additional data. The therapist evaluates all data to determine the appropriateness of the prescribed respiratory care and participates in the development of the respiratory care plan.
2. Select, assemble, and check all equipment used in providing respiratory care.
3. Initiate and conduct therapeutic procedures and modify prescribed therapeutic procedures to achieve one or more specific objectives.
4. Maintain patient records and communicate relevant information to other members of the health care team.
5. Assist the physician in performing special procedures in a clinical laboratory, procedure room, or operating room.

Employment Characteristics

Respiratory therapy personnel are employed in hospitals, nursing care facilities, clinics, physicians' offices, companies providing emergency oxygen services, and municipal organizations.

According to 1996 data from the American Association for Respiratory Care, an advanced respiratory therapist, on average, earns $32,926.

Educational Programs

Length. Programs are usually 2 years, leading to an associate degree or, in a few instances, to a baccalaureate degree.

Prerequisites. High school diploma or equivalent.

Curriculum. The knowledge and skills for performing these functions are achieved through formal programs of didactic, laboratory, and clinical preparation. Biological and physical sciences basic to understanding the functioning of the human breathing system are included – anatomy, physiology, medical terminology, chemistry, mathematics, microbiology, physics, therapeutic procedures, clinical medicine, and clinical expressions. The program of study also includes social sciences basic to understanding how to relate to patients—psychology, communication skills, and medical ethics. Clinical training in routine and special procedures applicable to pediatric, adult, and geriatric patients also is provided.

Medical Lab Technology

Clinical Laboratory Scientist/ Medical Technologist

Occupational Description

Laboratory tests play an important role in the detection, diagnosis, and treatment of many diseases. Clinical laboratory scientists/medical technologists perform these tests in conjunction with pathologists (physicians who diagnose the causes and nature of disease) and other physicians or scientists who specialize in clinical chemistry, microbiology, or the other biological sciences. Clinical laboratory scientists/ medical technologists develop data on the blood, tissues, and fluids of the human body by using a variety of precise methodologies and technologies.

Job Description

In adition to possessing the skills of clinical laboratory technicians/medical laboratory technicians, clinical laboratory scientists/medical technologists perform complex analyses, fine-line discrimination, and error correction. They are able to recognize the interdependency of tests and have knowledge of physiological conditions affecting test results so that they can confirm these results and develop data that may be used by a physician in determining the presence, extent, and, as far as possible, cause of a disease.

Clinical laboratory scientists/medical technologists assume responsibility and are held accountable for accurate results. They establish and monitor quality assurance and quality improvement programs and design or modify procedures as necessary. Tests and procedures performed or supervised by clinical laboratory scientists/medical technologists in the clinical laboratory focus on major areas of hematology, microbiology, immunohematology, immunology, clinical chemistry, and urinalysis.

Employment Characteristics

Most clinical laboratory scientists/medical technologists are employed in hospital laboratories. Others are employed in physicians' private laboratories and clinics; by the armed forces; by city,state, and federal health agencies; in industrial medical laboratories; in pharmaceutical houses; in numerous public and private research programs dedicated to the study of specific diseases; and as faculty of accredited programs preparing medical laboratory personnel. Salaries vary depending on the employer and geographic location.

Based on a 2000 survey published in *Laboratory Medicine*, average entry-level salaries ranged from $29,000 to $43,000, and average manager salaries ranged from $44,000 to $63,000.

Educational Programs

Length. Programs are at least 1 year of professional/clinical education in conjunction with a baccalaureate degree.

Prerequisites. College courses and number of reuired credits are those necessary to ensure admission of a student who is prepared for the clinical educational program. Content areas should include general chemistry, general biological sciences, organic and/or biochemistry, microbiology, immunology, and mathematics. Survey courses do not qualify as fulfillment of chem.-istry and biological science prerequisites, and remedial mathematics courses will not satisfy the mathematics requirement,

College/University programs that integrate preprofessional and Professional coursework are structured with professional courses In the junior and senior years.

Curriculum. There must be a structured laboratory program, Including instruction pertaining to theory and practice in hematology, and clinical chemistry, microbiology, immunology, and immunohematology. The program must culminate in a baccaulareate degree for those students not already possessing the degree.

Medical Lab Technology (Continued)

Clinical Laboratory Technician/ Medical Laboratory Technician- Associate Degree

Occupational Description

Laboratory tests play an important role in the detection, diagnosis, and treatment of many diseases and in the promotion of health. Clinical laboratory techni – cians/medical laboratory technicians perform these tests under the supervision or direction of pathologists (physicians who diagnose the causes and nature of disease) and other physicians, clinical laboratory scientists/medical technologists, or other scientist who specialize in clinical chemistry, microbiology, or other biological sciences. Clinical laboratory technicians/medical laboratory technicians (associate degree) develop data on the blood, tissues, and fluids of the human body by using a variety of precise methodologies and technologies.

Job Description

Associate degree clinical laboratory technicians/medical laboratory technicians perform all the routine tests in an up-to-date medical laboratory and can demonstrate discrimination between closely similar items and correction of errors by the use of preset strategies. The technicians has knowledge of specific techniques and instruments and is able to recognize factors that directly affect procedures and results. The technicians also monitors quality assurance procedures.

Employment Characteristics

Most clinical laboratory technicians/medical labora-Tory technicians work in hospital laboratories, averaging a 40-hour week. Salaries vary, depending upon the employer and geographic location. Based on a 2000 survey published in *Laboratory Medicine,* average entry-level salaries ranged from $23,700 to $34,000.

Educational Programs

Length. The period of education is usually 2 academic years, with graduates receiving an associate degree.
Prerequisites. High school diploma or equivalent. The applicant also must meet the admission requirements of the sponsoring educational institution.
Curriculum. Clinical laboratory technician/medical laboratory Technician-associate degree programs are conducted in junior or Community colleges, in 2-year divisions of universities and colleges, or in other recognized institutions granting associate degrees. Courses are taught on campus and usually in affiliated hospitals. Classroom and laboratory classes focus on general knowledge and basic skills; understanding principles and master procedures of laboratory testing; and basic laboratory mathematics, computer technology, communication skills, and interpersonal relationships and responsibilities. The clinical courses include application of basic principles commonly used in the diagnostic laboratory. Technical instruction includes procedures in hematology, micro-Biology, immunohematology, immunology, clinical chemistry, and urinalysis.

Medical Assistant

Medical Assistant

Occupational Description

Medical assisting is a multiskilled allied health profession; practitioners work primarily in ambulatory settings such as medical offices and clinics. Medical assistants function as members of the health care delivery team and perform administrative and clinical procedures.

Job Description

Medical assistants work under the supervision of physicians in their offices or other medical settings. In accordance with respective state laws, they perform a broad range of administrative and clinical duties:

Administrative duties

- scheduling and receiving patients
- preparing and maintaining medical records
- performing basic secreatarial skills and medical transcription
- handling telephone calls and writing correspondence
- serving as a liaison between the physicians and other individuals
- managing practice fininances

Clinical duties

- asepsis and infection control
- taking patient histories and vital signs
- performing first aid and CPR
- preparing patients for procedures
- assisting the physician with examinations and treatments
- collecting and processing specimens
- performing selected diagnostic tests
- preparing and administering medications as directed by the physician

Both administrative and clinical duties involve maintenance of equipment and supplies for the practice. A medical assistant who is sufficiently qualified by education and/or experience may be resposnsible for supervising personnel, developing and conducting public outreach programs to market the physician's professional services, and participating in the negotiation of leases and of equipment and supply contracts.

Employment Characteristics

More medical assistants are employed by practicing physicians than any other type of allied health personnel. Medical assistants are usually employed in physicians' offices, where they perform a variety of administrative and clinical tasks to facilitate the work of the physician. The responsibilities of medical assistants vary, depending on whether they work in a clinic, hospital, large group practice, or small private office. With demand from more than 200,000 physicians, there are, and will probably continue to be, almost unlimited opportunities for formally educated medical assistants.

According ot the American Association of Medical Assistants (AAMA), the average entry-level salary in 1998 was $21,247.

Educational Programs

Length. Programs are either 2 years, resulting in an associate degree, or 1 year, resulting in a certificate or diploma.

Prerequisits. High school diploma or equivalent.

Curriculum. The curricula of accredited programs must ensure achievement of the *Entry-Level Competencies for the Medical Assistant.* The curriculum must include anatomy and physiology, medical terminology, medical law and ethics, psychology, communications (oral and written), medical assisting administrative procedures, and medical assisting clinical procedures. Programs must include and externship that provides practical experience in quailfied physicians' offices, accredited hospitals, or other health care facilities.

Medical Records

Health Information Technician

Occupational Description

Graduates of associate degree educational programs are known as health information technicians. Entry level heath information technicians may be employed in a variety of settings and they may assume a variety of job titles depending on their education, work experience, and place of employment. Common job titles held by health information technicians in today's job market include coder, medical record technician, abstractor, supervisor, etc. It is aniticipated that job titles will change as health care enterprises expand their reliance on information systems and technology. Health information technicians have, and will continue to assume, roles that support efforts toward the development of computer-based patient record systems and a national health information infrastructure.

Job Description

The tasks or functions performed by health information technicians are numerous and continually chaning within the work environment. The job title and work setting will dictate the actual tasks performed by the health information technicians. However, in general, these individuals perform tasks related to the use, analysis, validation, presentation, abstracting, coding, storage, security, retrieval, quality measurement, and control of health care data regardless of the physical medium in which information is maintained. Their task responsibilities may also include supervising personnel.

Employment Characteristics

Presently, opportunities for practice are found in numerous settings such as acute care general hospitals, managed care organizations, physician office practices, home health care agencies, long-term care facilities, correctional facilities, behavioral health care organizations, insurance companies, ambulatory settings, and state and federal health care agencies. Practice opportunities are unlimited.

According to the AHIMA, entry-level salaries average between $20.,000 and $40,000.

Educational Programs

Length. Programs are either 2 years, Offering an associate degree.

Prerequisites. High school diploma or equivalent.

Curriculum. In addition to general education courses, the professional component of the technician program requires biomedical sciences (anatomy, physiology, language of medicine, disease processes, and pharmacology); information technology (microcomputer applications and computers in health care); health data content and structure; health care delivery systems, organization and supervision, health care statistics, and data literacy; clinical quality assessment and performance improvement; clinical classification systems; reinbursement methodologies; legal and ethical issues; and supervised professional practice experiences in health information departments of health care facilities and agencies.

Medical Records (Continued)

Medical Transcription

Occupational Description

Medical Transcriptionists are specialist in medical language and healthcare documentation who interpret and transcribe dictation by physicians and other health professionals regarding patient assessment, workup, therapeutic procedures, clinical course, diagnosis, prognosis, and so on, editing dictated material for grammar and clarity as necessary and appropriate.

Medicine

Physician Assistant

Occupational Description

The physician assistant is academically and clinically prepared to practice medicine with the direction and responsible supervision of a doctor of medicine or osteopathy. The physician-PA team relationship is fundamental to the PA profession and enhances the delivery of high-quality health care. Within the physician-PA relationship, Pas make clinical decisions and provide a broad range of diagnostic, therapeutic, preventive, and health maintenance services. The clinical role of Pas includes primary and specialty care in medical and surgical practice settings. PA practice is centered on patient care and may include educational, research, and administrative activities.

The role of the physician assistant demands intelligence, sound judgment, intellectual honesty, appropriate interpersonal skills, and the capacity to react to emergencies in a calm and reasoned manner. An attitude of respect for self and others, adherence to the concepts of privilege and confidentiality in communicating with patients, and a commitment to the patient's welfare are essential attributes of the graduate PA. The professional curriculum for PA education includes basic medical, behavioral, and social sciences; introduction to clinical medicine and patient assessment; and supervised clinical practice.

Employment Characteristics

The 2000 Physician Assistant Census, published by the American Academy of Physician Assistants, indicates that of the more than 45,311 practicing physician assistants, over half are practicing in primary care. Family practice is the most common specialty for physician assistants (37%), followed by surgery and surgical subspecialties, general internal medicine, emergency medicine, orthopedics, occupational medicine, pediatrics, and subspecialties of internal medicine, such as cardiology.

The majority of physician assistants practice in ambulatory care settings. Solo and group practices employ 39% of all physician assistants. The number of physician assistants employed by hospitals is 25%, owing in part to the number of physician assistants working as house staff. The government employs almost 12% of the physician assistant workforce, primarily in the military and the Department of Veterans Affairs. The remaining members of the profession are participating in managed care organizations, rural and urban clinics, correctional facilities, and other settings.

Physician assistants work an average of 44 hours per week. The number of patient visits for physician assistants in outpatient settings average 99.4 per week; in inpatient settings the average is 59 patient visits per week. More than one-third of physician assistants have on-call responsibilities that average 106 hours per month.

Salaries vary depending on the experience of the individual, the practice specialty, job responsibilities, and the regioinal cost of living.

Educational Programs

Length. Although 25 to 27 months is most common, the length of programs varies, largely owing to a difference in student selection criteria and in the educational objectives of the individual program.

Prerequisites. Although requirements differ widely, a majority of programs require 2 years of undergraduate study and some work experience in health care. A balance of study in the applied behavioral sciences and the biological sciences is advised for students who wish to qualify for admission to a physician assistant program.

Curriculum. Accreditation standards require competency-based curricula. The professional curriculum for PA education includes basic medical, behavioral, and social sciences; clinical preparatory sciences, patient assessment, and supervised clinical practice; health policy; and professional practice issues. Four-year programs are designed to provide the student with a balance of traditional liberal arts courses and biological and applied behavioral science courses. These courses are prerequisites to clinical didactic and supervised clinical practice instruction common to both 2-year and 4-year programs.

Supervised clinical practice rotations in pediatrics, family medicine, internal medicine, prenatal care and gynecology, geriatrics, emergency medicine, psychiatry/behavioral medicine, and surgery offer advanced applied content and supervised clinical work experience in dealing with commonly encountered demands for the primary health care of individuals from infancy through child hood, adolecence, and the various phases of adulthood.

Pharmacy

Pharmacy Technician

Occupational Description

Pharmacy technicians assist licensed pharmacists by performing duties that do not require the professional skills and judgement of a licensed pharmacist and assisting in those duties that require the expertise of a pharmacists. Pharmacy technicians are employed in every practice setting where pharmacy is practiced, including institutional, community, home care, long-term care, mail order, and managed care pharmacies. Technicians are also employed in education, research, and the pharmaceutical industry.

Technicians may be trained on the job or by completing a formal program. Some formal training programs meet the program accredation standards established by the American Society of Health-System Pharmacists. After completing their training, technicians may become a Certified Pharmacy Technician (CPhT) by successfully taking the national certification examination offered by the Pharmacy Technician Certificaion Board.

Job Description

According to the 1991-1994 Scope of Pharmacy Practice Project, pharmacy technicians spend their time in the following ways:

- 26%--collect, organize, and evaluate information to assist pharmacist in serving patients
- 21%--develop and manage medication distribution and control systems; about half of this time is spent preparing, dispensing, distributing, and administering medications.
- 7%--provide drug information and education.

These percentages, however may vary widely for many reasons, including the wide range of training and qualifications of pharmacists, the use of technicians as directed by a given supervisory pharmacist, and variations in state pharmacy practice laws.

The ASHP Accreditation Standard for Pharmacy Technician Training Programs specifies that graduates of programs should be able to perform the following functions (among others):

- Assist the pharmacists in collecting, organizing, and evaluating information for direct patient care, drug use review, and departmental management.
- Receive and screen prescription medication orders for completeness and accuracy.
- Use pharmaceutical and medical terms, abbreviations, and symbols appropriately.
- Prepare and distribute medications in a variety of health system settings.
- Perform arithmetical calculations required for usual dosage determinations and solutions preparation.
- Use knowledge of general chemical and physical properties of drugs in manufacturing and packaging operations.
- Use Knowledge of proper aseptic technique and packaging in the preparation of medications.
- Collect payment and/or initiate billing for pharmacy services and goods.
- Purchase pharmaceuticals, devices, and supplies according to an established plan in a variety of health systems.
- Control medication, equipment, and device inventory according to an established plan in a variety of health systems.
- Maintain pharmacy equipment in preparing, storing, and distributing investigational drug products.
- Assist the pharmacist in monitoring the practice site and/or service area for compliance with federal, state, and local laws, regulations, and professional standards.
- Assist the pharmacist in preparing, storing, and distributing investigational drug products.
- Assist the pharmacist in the monitoring of drug therapy.
- Assist the pharmacist in identifying patients who desire counseling on the use of medications, equipment, and devices.
- Understand the use and side effects of prescription and nonprescription drugs used to treat common disease states.
- Appreciate the need to adapt the delivery of pharmacy services for the culturally diverse.
- Maintain confidentiality of patient information.
- Communicate clearly orally and in writing.
- Use computers to perform pharmacy functions.
- Demonstrate ethical conduct in all activities related to the delivery of pharmacy services.

Employment Characteristics

Pharmacy technicians typically provide their services in one or more of the following settings: health systems, community pharmacies, chain pharmacies, home care pharmacies, and pharmacy technician programs.

Educational Programs

Length. Programs are generally 15 weeks or longer and consist of a minimum of 600 hours of training (contact) time. Graduates generally receive a certificate or AS degree.

Prerequisites. Applicants should have a high school diploma or equivalent and meet institutional entrance requirements.

Curriculum. The professional curriculum includes formal instruction in didactic, practical, and laboratory areas of pharmacy practice. The curriculum consists of various aspects of pharmacy technician training pertinent to contemporary pharmacy practice. Courses include pharmacy mathematics/calculations, pharmacy for pharmacy technician, sterile products, pharmaceutical care delivery systems, computer systems for pharmacy, and payment for pharrmacy services.

Physical Therapy

Physical Therapist

Occupational Description

The physical therapist works with many different kinds of patients, from those recovering from accidents and people with disabilities to world-class athletes. Therapists help improve patients' strength and mobility, relieve pain, and prevent or limit permanent physical disabilities. Therapists take a personal and direct approach to meeting an indvidual's health goals, working closely with the patient and other health care practitioners. They provide the patient and the patients's family with instruction and home programs to ensure that healing continues after direct patient care has ended.

Physical therapists also work to keep people well and safe from injury, emphasizing the importance of fitness and condition and showing people how to avod injuries at work or play. Physical therapy promotes optimal physical performance and enables health-conscious people to increse their overall fitness level and muscular strenght and endurance.

Job Description

The physical therapists is able to evaluate a patient's

- joint motion,
- muscle strength and endurance,
- functional ability,
- muscle tone and reflexes,
- appearance and stability of walking,
- need and use of braces and artificial limbs,
- function of the heart and lungs,
- integrity of sensation and perception,
- performance of activities required in daily living, and
- developmental activities.

Physical therapy techniques include

- therapeutic exercise,
- joint mobilization and range-of-motion exercises,
- cardiovascular endurance training,
- relaxation exercises,
- therapeutic massage,
- biofeedback,
- training in activities of daily living,
- wound debridement,
- pulmonary physical therapy, and
- ambulation training.

Modalities, including traction, ultrasound, diathermy, electrotherapy, cryotherapy, hydrotherapy, and laser therapy, also can be applied during treatment program.

Employment Characteristics

Physical therapists work in hospitals as well as

- private physical therapy offices,
- community health centers,
- corporate or industrial health centers,
- sports facilities,
- research institutions,
- rehabilitation centers,
- nursing homes,
- home health agencies,
- schools,
- pediatric centers, and
- colleges and universities.

Average annual income for physical therapists is approximately $56,5000 depending on geographic location and practice setting. Physical therapists have the potential to earn more than $100,000 annually.

Educational Programs

Length. A 4-year college degree in physical therapy from an accredited education program is the current minimum educational requirement for entering the profession; the APTA, however, advocates the completion of a postbaccalaureate degree.

Prerequisites. A background in liberal arts and general education is encouraged, including high school courses in social sciences, biology, mathematics, physics, English, and chemistry and college courses in psychology, biology, physics, statistics, chemistry, English, professional writing, and humanities.

Curriculum. Educational programs include basic and clinical medical science courses and emphasize the theory and practice of physical therapy. The curriculum includes opportunities to apply and integrate theory through extensive clinical education and a variety of practice settings.

Physical Therapy (Continued)

Physical Therapist Assistant

Occupational Description

Physical therapist assistants work under the supervision of a physical therapist. Their duties include assisting the physical therapist in implementing treatment programs according to the plan of care, training patients in exercises and activities of daily living, conducting treatments, using special equipment, administering modalities and other treatment procedures, and reporting to the physical therapist on the patient's responses.

Employment Characteristics

Physical therapist assistants work in

- hospitals,
- private physical therapy offices,
- community health centers,
- corporate or industrial health centers,
- sports facilities,
- research institutions,
- rehabilitation centers,
- nursing homes,
- home health agencies,
- schools,
- pediatric centers, and
- colleges and universities.

The median income for a physical therapist assistant is $26,000; PTAs employed in the southern and western regions of the nation generally earn higher salaries.

Educational Programs

Length. These associate's degree programs—usually offered in a community college or junior college—are 2 years long.

Prerequisites. Successful completion of high school courses in social sciences, biology, mathematics, physics, English, and chemistry is encouraged but not required.

Curriculum. The curriculum includes 1 year of general education and 1 year of technical courses and clinical experience.

Speech Language Pathology

Speech Language Pathologist

Job Description

Speech-language pathologists are professionals educated in the study of human communication, its development, and its disorders. By evaluating the speech, language, cognitive-communication, and swallowing skills of children and adults, the speech-language pathologist determines what communication or swallowing problems exist and the best way to treat them.

Employment Characteristics

Speech-language pathologists may Work in a wide range of settings, including schools, Hospitals, rehabilitation centers, skilled nursing facilities, government health facilities, community clinics, geriatric facilities, health maintenance organizations (HMOs), public health departments, research laboratories, private practices, or industrial corporations.

The 2000 median salary for American Speech-Language-Hearing Association (ASHA)-certified speech-language pathologists was $44,000, for audiologists $48,000, and for professionals who hold dual certification $61,000. Those in supervisory positions can earn higher salaries, in addition to generous fringe benefits.

Educational Programs

A strong liberal arts focus is recommended on the undergraduate level. Typically, students obtain a degree in communication sciences and disorders. In both professions, graduate work is necessary for receiving credentials, including ASHA certification and most states licenses. A doctoral degree is required for work in some areas. In 2012, ASHA will require a doctoral degree to award certification in audiology.

FINANCIAL ASSISTANCE FOR STUDENTS IN HEALTHCARE PROGRAMS AND OTHER FINANCIAL ASSISTANCE

I. FINANCIAL ASSISTANCE FOR STUDENTS IN HEALTHCARE PROGRAMS	FY 2003 $	FY 2003 # of Awards	FY 2003 Average Award	Comments
Merit & Career Based Scholarships				
State Nursing Scholarship	$1,073,106	402	$2,669	
Optometry Tuition Reduction Program Interstate Compact				
Physical & Occupational Therapist & Assistants	$12,000	6	$2,000	
Subtotal	$1,085,106	408	$2,660	
Loan Assistant Repayment Program				
Loan Assistant Repayment Program - Primary Care Services (LARP-PCS)	$496,250	10	$49,625	
Maryland Dent-Care Assistant Repayment (MDC-LARP)	$164,995	5	$32,999	
Subtotal	$661,245	15	$44,083	
Healthcare Financial Assistance Programs	**$1,746,351**	**423**		

II. OTHER FINANCIAL ASSISTANCE (Financial assistance that includes, but is not limited to, students in healthcare)	FY 2003 $	FY 2003 # of Awards	FY 2003 Average Award	Comments
Merit & Career Based Scholarships				
Developmental Disabilities, Mental Health, Child Welfare & Juvenile Justice Workforce Tuition Assistance	$860,338	489	$1,759	
Firefighter, Ambulance & Rescue Squad Member Tuition Reimbursement	$330,444	141	$2,344	
HOPE	$2,359,600	883	$2,672	
Subtotal	$3,550,382	1,513		
Loan Assistant Repayment Program				
Joan Hoffman Loan Assistant Repayment Program (LARP)	$688,501	241	$2,857	
Subtotal	$688,501	241		
Other Financial Assistance *	**$4,238,883**	**1,754**		

Total	**$78,716,203**	**45,409**	**$1,733**	

III. ASSISTANCE TO INSTITUTIONS				
Health Personnel Incentive Program	$560,849	725	$774	underfunded *
Physician and Nurse Practitioners Programs	$79,500			
Assistance to Institutions	**$640,349**			

*Statute calls for reimbursement of $1,500 per student while actual award was only $725 per student.

Source: Maryland Higher Education Commission. (Additional information is available at www.mhec.state.md.us)