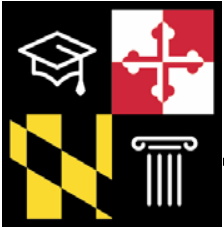

Using Data to Ensure Maryland's Higher Education Programs Meet State Workforce Needs

**Presentation to the
Capital Investment Workgroup of the
Commission to Develop the Maryland Model for
Funding Higher Education**

Maryland Higher Education Commission

July 16, 2008



Advisory Council on Workforce Shortage

- 21 member Advisory Council with representatives from higher ed, state agencies, business, General Assembly, and non-profits
- Charged with developing model to identify critical workforce occupations and determine occupations to be included in workforce financial aid programs
- Advisory Council must consider occupations that provide a public good or benefit to the State
- Advisory Council makes recommendations biennially



Workforce Model

- Occupational projections for 2004-2014 from the Department of Labor, Licensing and Regulation
- Projected wage data for 2000 – 2005 and 2003- 2005 – Bureau of Labor Statistics website
- Graduation data from the Maryland Higher Education Commission
- Comments from public hearings examining public good and benefit occupations
- Studies from other State agencies and organizations identifying workforce fields in short supply



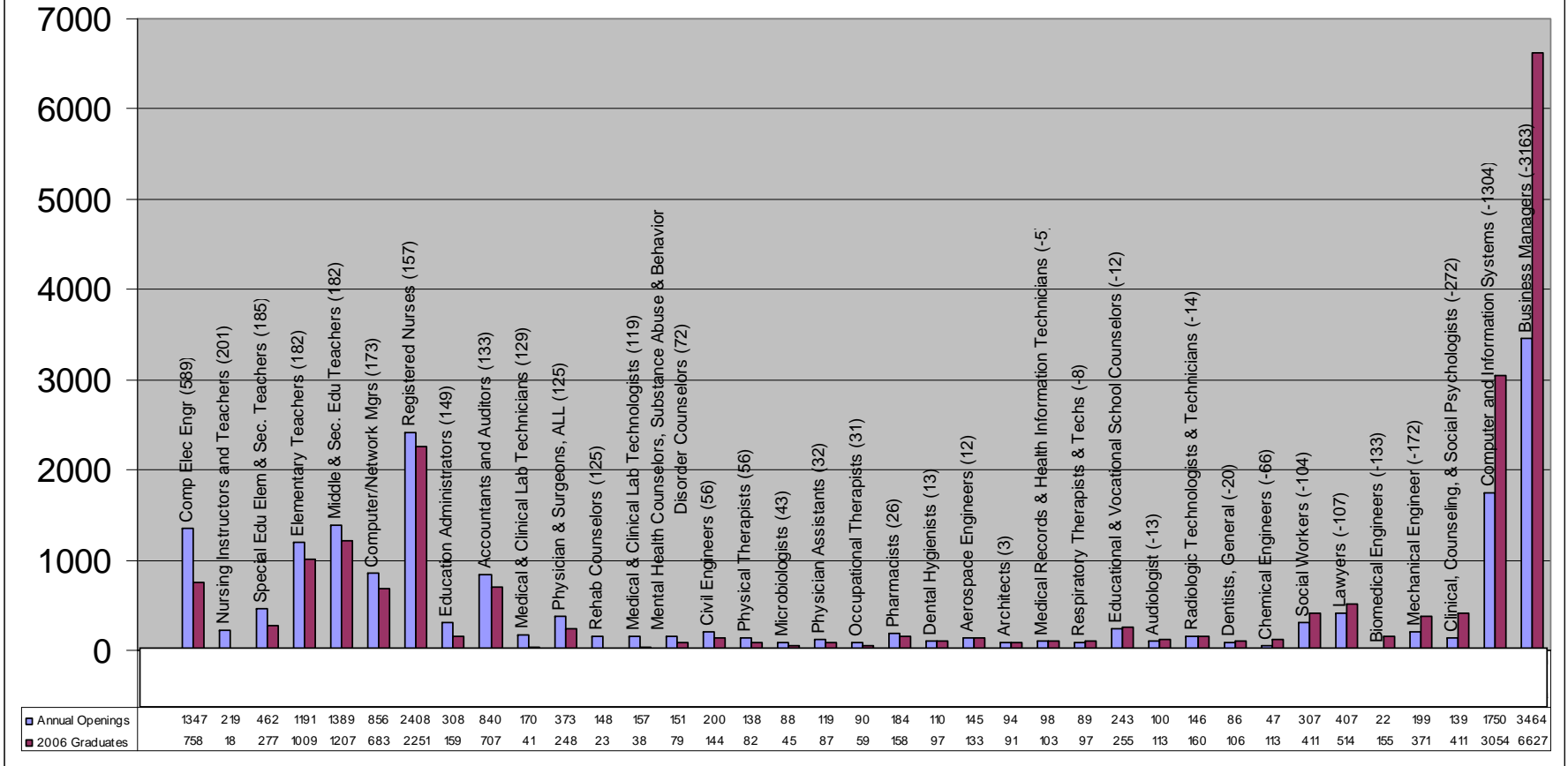
Workforce Model

- 253 occupations requiring an associate, bachelors, masters, doctorate or professional degree were identified
- Wage data for each occupation was examined
- 38 occupations with greater than average growth rate and greater than average wage growth were identified for further study
- 24 additional occupations were added from public hearing and other supporting documentation
- Total of 62 occupations were then matched with graduation data and a gap analysis was performed (standard occupational classification code was matched with classification of instructional program code)
- Occupations reduced to 37 since multiple programs can lead to employment in similar occupations

MHEC RANKING	Occupational Title	Estimated Employment 2004	Estimated Employment 2014	Ranked by 2014 Employment	Growth Openings	Ranked by Growth Openings	Total Openings	Ranked by Total Openings	Composite Score	Wage Growth 2000-2005
1	Business Managers ¹	103,270	120,560	1	17,290	1	34,640	1	3	2.03%
2	Registered Nurses	48,595	62,510	3	13,915	2	24,080	2	7	21.08%
3	Computer & Information Systems ²	57,345	69,255	2	11,905	3	20,425	3	8	13.53%
4	Computer Engineering and Electrical Engineering ³	31,360	42,200	4	10,850	4	14,455	4	12	21.71%
5	Middle and Secondary School Teachers, Except Special and Vocational Education ⁴	29,820	36,005	5	6,190	7	13,895	5	17	9.97%
6	Elementary School Teachers, Except Special Education	25,695	31,935	6	6,240	6	11,910	6	18	27.07%
7	Computer/Network Managers ⁵	15,240	22,065	8	6,815	5	8,560	7	20	26.11%
8	Accountants and Auditors	24,675	28,415	7	3,740	8	8,400	8	23	22.11%
9	Special Education Teachers, ALL ⁶	7,935	10,665	11	2,730	9	4,620	9	29	21.40%
10	Lawyers	14,165	16,420	9	2,250	10	4,070	10	29	35.32%
11	Physicians and Surgeons, ALL ¹²	9,615	14,470	10	2,070	11	3,730	11	32	N/A
12	Social Workers ⁷	7,595	8,805	12	1,765	12	3,065	13	37	2.13%
13	Education Administrators ⁸	7,350	8,600	13	1,250	13	3,075	12	38	23.26%
14	Educational, Vocational, and School Counselors	5,560	6,720	14	1,160	14	2,430	14	42	2.76%
15	Civil Engineers	5,405	6,540	15	1,135	15	1,995	16	46	32.80%
16	Health Specialties Teachers, Postsecondary & Nursing Instructors and Teachers ⁹	4,885	5,970	16	1,085	16	2,185	15	47	15.00%
17	Pharmacists	4,440	5,420	17	980	18	1,840	18	53	26.29%
18	Mechanical Engineers	4,670	5,375	18	705	26	1,985	17	61	25.29%
19	Medical and Clinical Laboratory Technicians	3,595	4,325	20	730	24	1,700	19	63	2.03%
20	Physical Therapists	3,130	4,205	22	1,075	17	1,385	26	65	13.94%
21	Radiologic Technologists and Technicians ¹⁰	3,445	4,260	21	815	21	1,460	23	65	23.53%
22	Mental Health Counselors, Substance Abuse and Behavioral Disorder Counselors ¹¹	3,195	3,965	24	780	23	1,505	21	68	16.44%
23	Rehabilitation Counselors	2,970	3,770	26	800	22	1,480	22	70	34.16%
24	Medical and Clinical Laboratory Technologists	3,580	4,180	23	600	30	1,565	20	73	1.68%
25	Clinical, Counseling, and School Psychologists	3,080	3,795	25	715	25	1,390	25	75	30.37%
26	Aerospace Engineers and Operations Technicians	4,285	4,680	19	395	32	1,450	24	75	14.07%
27	Dental Hygienist	2,310	3,205	29	900	19	1,095	28	76	11.03%
28	Physician Assistants	2,155	3,005	31	855	20	1,185	27	78	26.90%
29	Architects, Except Landscape and Naval	2,615	3,250	28	635	27	935	31	86	38.33%
30	Medical Records and Health Information Technicians	2,440	3,070	30	630	28	975	30	88	2.58%
31	Audiologist Speech-Language Pathologists & Audiologists ¹³	2,465	2,870	32	405	31	1,015	29	92	19.61%
32	Occupational Therapists	2,005	2,630	33	625	29	895	32	94	12.91%
33	Dentists, General	3,235	3,545	27	310	35	855	35	97	N/A
34	Respiratory Therapists and Technicians ¹⁴	1,875	2,235	34	355	34	885	33	101	N/A
35	Microbiologists	1,615	1,990	35	375	33	880	34	102	31.35%
36	Chemical Engineers	920	1,115	36	195	36	470	36	108	16.19%
37	Biomedical Engineers	415	560	37	145	37	215	37	111	41.66%

Source: 2004-2014 Occupational Projections – Department of Labor Licensing and Regulation & 2000-2005 and 2003-2005 Wage Data – Bureau of Labor Statistics website

2006 Graduates vs. Annual Openings (Occupation data shown by greatest gap in descending order)





Top Priority Areas Showing Greatest Need

- Computer/Electrical Engineer
- Nursing Instructors and Teachers
- Special Education Elementary and Secondary Teachers
- Elementary Teachers
- Middle and Secondary Education Teachers
- Computer and Network Managers
- Registered Nurses
- Education Administrators
- Accountants and Auditors



Issue – Longevity of Identified Need Areas

- Capital Budget process is long-term
 - Takes several years to fund a capital project that is expected to last 30 years.
- Determine whether need is on-going versus short-term
 - Need exists now, but once demand is filled, will need disappear?
 - Nursing and Teaching/Education are two areas that have been identified as having ongoing capacity needs
- Need to balance duration of identified need areas with the length of time for planning and building new capital projects.



Other Considerations

- On-Line, Distance Education Courses
 - Can alternative course delivery help alleviate need to build new facilities?
- Supply of trained instructors
 - One limiting factor in nursing is the need for trained Nursing faculty
- Demographics
 - Aging Population – expected to increase the need for allied health professionals as people age and the need for healthcare rises
 - Baby Boom Echo – will demand for teachers drop once the Baby Boom Echo has passed through high school
- Economic Factors
 - Swings in the Economic cycle affect the demand for higher education in certain programs
 - Shifts in the State Economy
 - Manufacturing to Knowledge-based economy
 - Specific areas, e.g. Biotechnology

College and University Capital Projects Related to Workforce Development

Funded or Anticipated to Receive State Funds
between FY 2005 and 2014

**Maryland Public Four-Year Colleges and Universities
Capital Projects Related to Workforce Development: FY 2005 - 2013**

Institution	Workforce Need	FY 2005-2009	FY 2010-2013	Total
Bowie State University				
Center for Business and Graduate Studies	Accountants/ Auditors - Business	\$ 19,550,000	\$ -	\$ 19,550,000
Natural Science Lab and Crawford Science Building Expansion	Science	-	6,200,000	6,200,000
Coppin State University				
Grace Jacobs Building	Health/Nursing	3,375,000	5,700,000	9,075,000
Health and Human Science Building	Health/Nursing	64,709,000	-	64,709,000
New Science And Technology Center	STEM	6,291,000	146,791,000	153,082,000
Frostburg State University				
Center for Communications and Info Tech	Computer/Network Managers	2,200,000	70,050,000	72,250,000
Education Professions and Health Science Center	Teaching/Health Science	-	-	-
Salisbury University				
New Perdue School of Business	Accountants/ Auditors	4,627,000	44,450,000	49,077,000
Teacher Education and Technology Complex	Teaching	62,180,000	-	62,180,000
Towson University				
New College of Liberal Arts	Teaching, Science	73,121,000	77,850,000	150,971,000
New College of Health Professions	Health	-	7,900,000	7,900,000
University of Maryland, Baltimore				
Dental School	Health/Nursing	37,200,000	-	37,200,000
Howard Hall Renovation	STEM	4,665,000	21,400,000	26,065,000
Pharmacy Hall Addition and Renovation	Health/Nursing	59,450,000	8,600,000	68,050,000
University of Maryland Baltimore County				
Chemistry/Physics Building	Science, Engineering	3,000,000	-	3,000,000
University of Maryland Biotechnology Institute				
Center for Advanced Research in Biotechnology 2nd Building	Science	7,500,000	-	7,500,000
University of Maryland, College Park				
Biological Sciences Research Building	Health, STEM	61,705,000	-	61,705,000
Biology-Psychology Building Renovation	Science	1,500,000	-	1,500,000
Health and Human Performance Building	Health/Nursing	7,500,000	-	7,500,000
Engineering and Applied Science Building	Engineering	2,400,000	-	2,400,000
Munching Hall Renovation and Addition	Business	5,945,000	-	5,945,000
Public Health Conversion	Health	-	-	-
Teaching Center	Teaching	-	4,450,000	4,450,000
Physical Science Complex	Science	5,000,000	92,600,000	97,600,000
Chemistry Building Renovations	Science	-	41,250,000	41,250,000
University Teaching Center	Education	-	4,450,000	4,450,000
University of Maryland Eastern Shore				
Social Science, Education, and Health Science Building	Health, Education	3,063,000	-	3,063,000
New Engineering and Aviation Science	Engineering	-	95,900,000	95,900,000
University of Maryland University College				
Academic Technology Support Building	Computer/Engineer	15,000,000	-	15,000,000
University System of Maryland Total		\$ 449,981,000	\$ 627,591,000	\$ 1,077,572,000
St. Mary's College of Maryland				
Academic Building	Chemistry, Psychology, Teaching	24,003,000	-	24,003,000
Morgan State University				
New School of Business Complex	Accountants/ Auditors	3,100,000	-	3,100,000
New Center for the Built Environmental and Infrastructure Studies	Engineering, Architecture	5,613,704	-	5,613,704
Public Four-year Total		\$ 482,697,704	\$ 627,591,000	\$ 1,110,288,704

Sources:

"Capital Improvements Authorized by the General Assembly, 1998 through 2007", Department of Budget and Management, July 2007
Maryland State Capital Budget Book, FY 2009, Department of Budget and Management

**Maryland Community Colleges
Capital Projects Related to Workforce Development: FY 2005-- FY 2014**

College	Projects	Workforce Need	State Share of Funding	
			FY 2005 - FY 2009	FY 2010 - FY 2014
Allegany	Technologies Building	Computer Science		\$ 8,000,000
Anne Arundel	Center for Applied Learning & Technology	Science & Technology	9,800,000	
	Careers Building Renovation	Computer Science	10,700,000	
	Math Building Renovation	Mathematics		1,600,000
Baltimore City	Bard Library - Liberty Campus	Math/Science/Ctr Teaching Excellence		31,000,000
Baltimore County	Science/Allied Health Building - Life Safety	Allied Health - Essex	2,700,000	
Carroll	Nursing & Allied Health Building	Nursing & Allied Health	3,160,000	
Cecil	New Elkton Center	Nursing & Allied Health	7,700,000	
	Bainbridge Center	Math & Science & BRAC		12,000,000
Chesapeake	Talbot Science Building Renovation	Allied Health & Science	6,800,000	
	Queen Anne's Technology Building Renovation	Science Technology		6,200,000
	Cambridge Center	Nursing & Allied Health		660,000
College of Southern Maryland	Science & Technology Building Renovation - La Plata	Allied Health & Science	14,300,000	
	New Academic Building - Prince Frederick	Science & General Education	10,900,000	
Frederick	New Classroom/Student Center	Science & General Education	14,700,000	
	Science/Technology Hall Renovation	Science & Technology		7,000,000
Hagerstown	Career Programs Building Renovation	Nursing & Allied Health	10,700,000	
	Technology Center Renovations	Science & Technology		2,200,000
Harford	Aberdeen Hall Renovation	Science & Allied Health	6,700,000	
	New Allied Health & Nursing Bldg.	Nursing & Allied Health		7,000,000
Howard	Clark Library/Science Tech Building Renovation	Science and Computer Tech.	8,500,000	
	New Allied Health Building	Nursing & Allied Health		22,000,000
	Nursing Building Renovations	Sciences		4,200,000
	New Science, Engineering & Technology Building	STEM Programs		22,000,000
	New Business/Computer Sci/Soc Sci/Teacher Ed. Bldg.	Computer Science & Teacher Ed.		14,200,000
	New Mathematics Building	Mathematics & Accounting		12,000,000
Montgomery	Bioscience Education Center - Germantown	Biology, Chemistry & Biotechnology	1,700,000	
	New Science Center - Rockville	Biology/Chemistry/Physics/Engineering		36,900,000
	Science West/East Renovations - Rockville	Mathematics and Math/Science Center		30,400,000
	Math & Science Center Renovation - Takoma Park	Science & Mathematics		4,100,000
Prince George's	New High Technology Center	Computer Science & Technology	13,000,000	
	New Center for Health Studies	Nursing & Allied Health	1,800,000	27,000,000
	Lanham Hall Renovation	Allied Health		12,500,000
Wor-Wic	Workforce Development Center	Computer Science	12,500,000	
	New Allied Health Building	Nursing & Allied Health		18,000,000
Total Projects & Costs	34 Projects		\$ 135,660,000	\$ 278,960,000