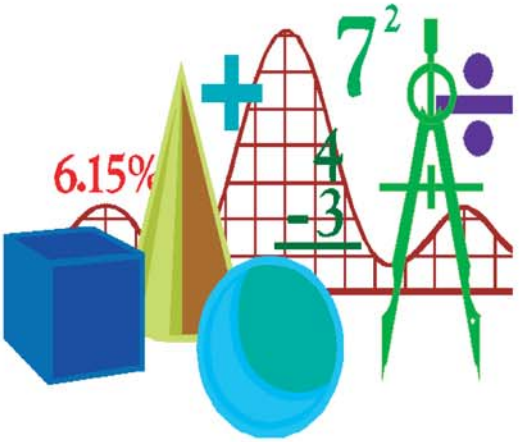
MATH & SCIENCE Knowledge and Skills:

Catalysts for Future Economic Growth Within Connecticut



Connecticut Department of Labor
Patricia Mayfield, Commissioner
www.ct.gov/dol

Acknowledgement

This report was prepared by Brandon T. Hooker, M.P.A., Research Analyst, Connecticut Department of Labor. Long-Term projections were developed by John Tirinizonie, State Labor Economist. Occupational data presented in this report were produced by Brandon T. Hooker and John Tirinzonie.

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Introduction

The technology that fuels the expansion of our global economy is founded, in part, through the advanced application of core mathematic and scientific principles. This ideal is synonymous with the overall "soft revolution," in which knowledge is replacing physical resources as the main driver of economic growth. U.S. employer demand for these technical skills has opened up job opportunities across a variety of industries, yet the nation on the whole faces a noticeable shortage of "homegrown" workers capable of performing these tasks.

Traditionally, companies have invested heavily in post-secondary education to enhance the skills of their current employees and ensure an ample supply of qualified workers will be readily available in the future. While some employers have little to no trouble filling their skill needs, a growing number of companies, particularly those involved in fast-paced, evolving technologies, remain hampered by recruitment and retention problems. In order to fill job openings, while reducing and controlling operating costs, corporations have steadily increased their filing of H-1B petitions and use of global service delivery methods (i.e., outsourcing).

Given the current economic conditions, Connecticut still remains in an advantageous position with regard to labor shortages, since it houses some of the world's best math, science, and engineering universities and ranks among the highest in concentration of high technology establishments and of scientists and engineers as share of the workforce. Yet, as our public and private institutions of higher learning steadily confer math, science, and engineering degrees to highly trained graduates, their numbers still remain below forecasted demand. Some reasoning for this stems not only from the decline of math and science graduates from our state public and private universities (The Connecticut Department of Higher Education)[1], but also from the personal choices our students make at an early age regarding their perceived skill and ability in math and science subjects (Organization for Economic Cooperation and Development)[2].

The Connecticut Department of Labor's 2002-2012 Occupational Projections predict that over 75% of the top 100 fastest growing jobs will be derived from fields that require a basic or advanced knowledge of math, science, or engineering principles. In one of numerous efforts to address this problem, the state has created the new Connecticut Center for Science and Exploration. The center will serve to spark student interest in the areas of math and science, by incorporating the "concept exploration" learning style that allows visitors to do real science in a real setting—focusing on transferable concepts and skills. Continued efforts such as this will aid the state's development of "homegrown" talent and ensure its place in today's free market economy.

The data presented here are the results of the Skills Based Projections System that integrates the Connecticut Department of Labor's 2002-2012 occupational projections with the Occupational Information Network (O*NET) data. This report examines Connecticut's math and science occupations in demand, current education issues, knowledge and skill sets required for the math and science "Jobs of the Future," employer responses to skilled labor shortages, suggestions for curtailing labor shortages: now and in the future, and the 100 fastest growing occupations within the state of Connecticut from 2002-2012.

[1] The Connecticut Department of Higher Education, "2003-2004 Degrees Conferred By Connecticut Institutions, Highlights, December 2004.

[2] The Organization for Economic Cooperation and Development, "Learning for Tomorrow's World—First Results from PISA 2003, 2004.

Math and Science Occupations In Demand

The Connecticut Department of Labor's 2002-2012 Industry and occupational forecast predicts that more than 75 percent of the top 100 fastest growing occupations will require knowledge in a single or combination of math and science skills. These specialized occupations, whether basic or advanced, fuel innovation and growth across our state's public and private industries. This makes the identification of labor shortages within key industries critical to maintaining Connecticut's competitive advantages within our industry clusters.

An industry cluster is a network of similar companies, specialized suppliers or service providers in a particular field that together create competitive advantages for members and the regional economy. If forecasted demands remain unmet, it could prove particularly damaging to our Aerospace, Bioscience, Insurance and Financial Services, Maritime, and Metal Manufacturing industry clusters, in which we have higher concentrations of employment in the state than in the nation as a whole (competitive advantage).

OCCUPATIONS IN HIGHEST DEMAND WITHIN OUR STATE'S MOST COMPETITIVE INDUSTRY CLUSTERS

AEROSPACE

- AEROSPACE ENGINEERS
- AEROSPACE OPERATIONS TECHNICIANS
- INDUSTRIAL ENGINEERS
- MACHINISTS
- MECHANICAL ENGINEERS

BIOSCIENCE

- BIOCHEMISTS & BIOPHYSICISTS
- MEDICAL SCIENTISTS
- PHARMACISTS
- PHARMACY TECHNICIANS

INSURANCE & FINANCIAL

- CLAIMS ADJUSTERS
- COMPUTER SYSTEMS ANALYSTS
- CUSTOMER SERVICE REPRESENTATIVES
- INSURANCE UNDERWRITERS

MARITIME

- ENGINEERING MANAGERS
- MECHANICAL DRAFTERS
- MECHANICAL ENGINEERING TECHNICIANS
- PLUMBERS AND PIPEFITTERS
- PRODUCTION MANAGERS

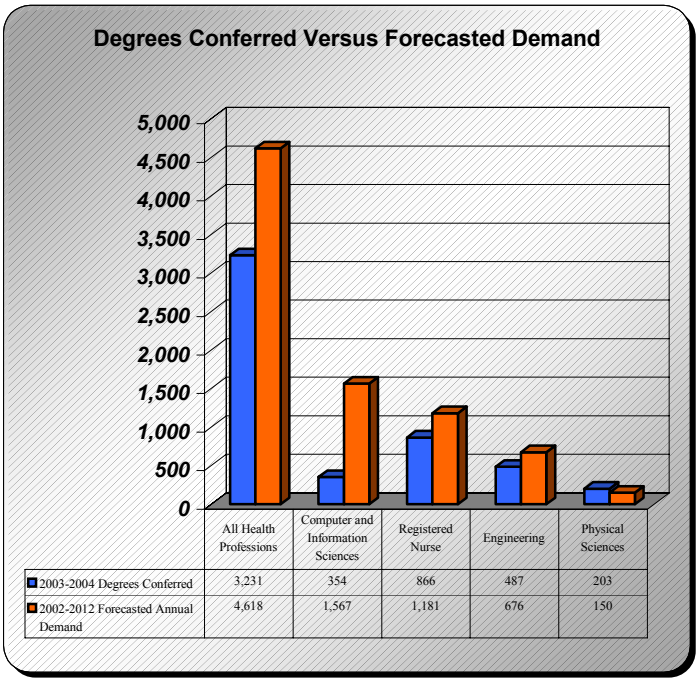
METAL MANUFACTURING

- INSPECTORS & TESTERS
- MACHINISTS
- PRODUCTION MANAGERS
- TEAM ASSEMBLERS
- TOOL & DIE MAKERS

Current Education Issues

In the United States, most young Americans, regardless of race or ethnic background, parents' income or educational attainment, believe that continuing to study after high school can pave the way toward financial success and personal growth. Connecticut, like the nation, pushed its public and private college enrollment to 172,735 in 2004, a 12% increase over its 1990 total (154,059). The State's higher education system awarded 33,642 degrees and certificates in 2003-2004, a 3.5% gain over the 2002-2003 period. Of those degrees, 56% were concentrated in the disciplines of business, education, health, social sciences, and liberal arts and sciences. Furthermore, the 2005 U.S. News and World Report's *America's Best Colleges Guide* consistently ranks a number of Connecticut's public/private colleges and universities among the highest in the nation for their excellence in math, science, and engineering. Despite the overall positive trend in education, there are causes for concern, namely the recent decline of students graduating from high demand programs that involve advanced applications of math and science principles.

The Department of Higher Education's analysis of our State's public and private universities highlighted some of the shortcomings that need to be addressed. The 2003-2004 Degrees Conferred By Connecticut Institutions publication reported declines or minimal growth in the number of biology, computer, and physical science bachelor's degrees earned from 2003-2004. This is particularly troubling since these program areas provide the necessary training to fill a number of our State's math and science labor shortages. The State is also facing a critical shortage in another well document area of education: its teachers. A total of 3,415 students received credentials that could lead to State teacher certification, the most popular being Elementary Education (1,086 students), Secondary Academic Subjects (836), Special Subjects, K-12 (536), Administration (442), and Special Education (278). However, only 24% of the total teacher degrees were in one of the top ten shortage areas for teachers. This is particularly noteworthy because teachers serve a key role as daily reminders of the importance of academic excellence, positively guiding the educational direction of tomorrow's workforce.

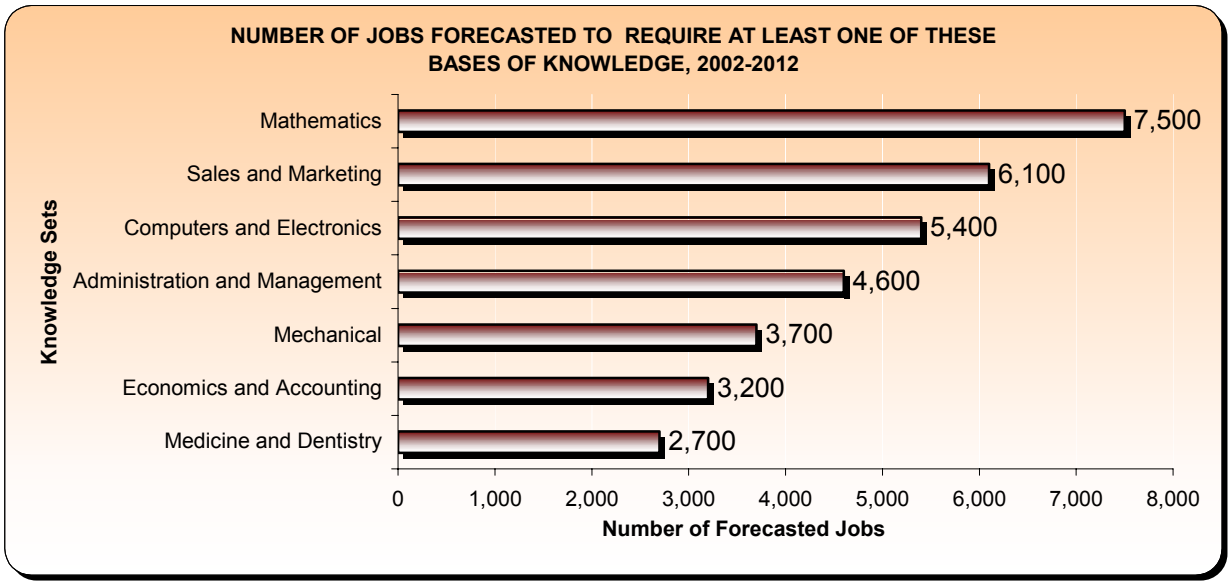


Teacher Shortage Area	Recipients
Special Ed., K-12	278
Mathematics, K-12	132
Music, K-12	97
School Psychologist	92
Remedial Language Arts	74
Speech Pathology	51
Spanish, 7-12	43
Technology Education	38
Consumer Economics, K-12	11
Bilingual Education, K-12	8
Total in 10 Shortage Areas	**824**
Total in All Areas	**3,415**
Percent in Shortage Areas	**24%**

Knowledge Sets Required for the Math and Science "Jobs of the Future"

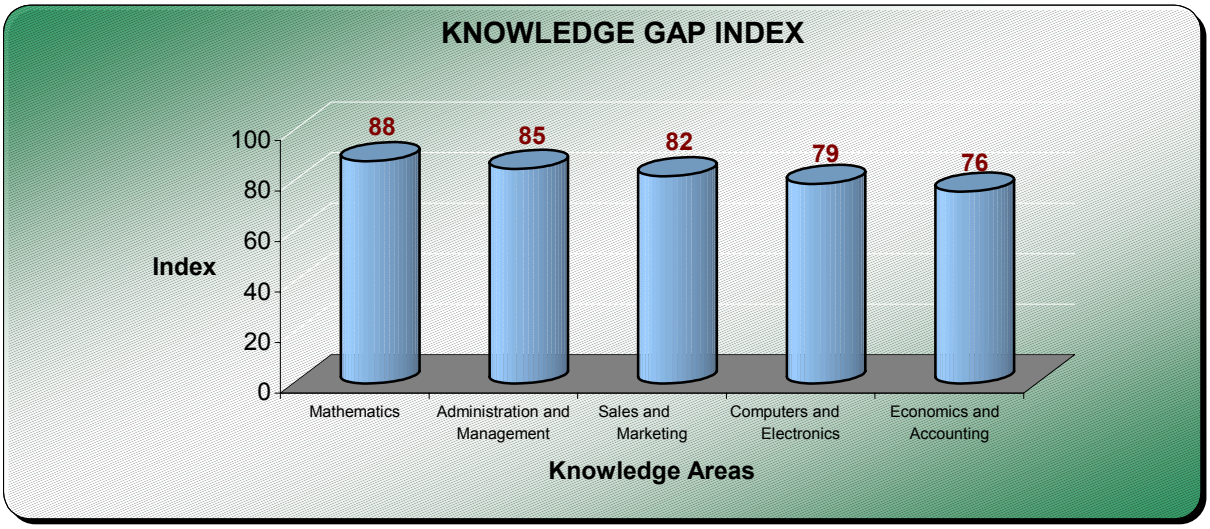
An analysis of Connecticut's current supply and future demand for a particular base of *knowledge* will enhance our state's ability to identify shortcomings in our current education systems. This valuable information will augment our state's ability to structure postsecondary curriculums in a manner that boosts Connecticut's production of highly skilled, "homegrown" talent to provide a workforce that meets employers' needs.

O*NET defines *knowledge* as "a learned set of facts and standards required by many work situations." In Connecticut, some of the knowledge sets in high demand over the next 10 years include: Mathematics, Sales and Marketing, Computers and Electronics, Administration and Management, and Economics and Accounting. Job seekers should be aware that the basic and advanced application of mathematic principles is forecasted to be the knowledge set in highest demand over the next 10 years. With this in mind, knowledge in the areas of arithmetic, algebra, geometry, calculus, and/or statistics will be critical for those seeking employment in occupations ranging from cashier to chemical engineer (**Mathematics**). For consumers, a welcome by-product of the global economy has been increased competition that works to drive prices lower and decreases the chances of product monopolization by a single private entity. Employers will be looking for job candidates that have knowledge in market strategy, sales techniques, and sales control systems to increase their market exposure and broaden their consumer bases (**Sales and Marketing**). Connecticut's future I/T workforce can increase its chances of gainful employment over the next 10 years if their base of knowledge includes circuit boards, electronic equipment, processors, and the advanced application and programming of computer hardware and software (**Computers and Electronics**). Employers are demanding that their future managers have knowledge in business principles involving strategic planning, resource allocation, and leadership techniques to increase their prospects for growth rather than stagnation (**Administration and Management)**. New financial accountability legislation (i.e., Sarbanes-Oxley Act of 2002) and the worrisome prospects of Social Security have pushed financial occupations to the forefront, so future job seekers within this field will be expected to have a knowledge of economic and/or accounting principles, financial markets, and banking to stand out in these highly competitive fields (**Economics and Accounting**). The chart below indicates the number of forecasted jobs requiring at least one of the high demand knowledge sets from 2002-2012.



Knowledge Gap Index

The Knowledge Gap Index is a standardized measure of the difference (gap) between the current supply and projected demand for workers in various areas of knowledge over a period of time. A larger Knowledge Gap score implies a relatively strong rate of growth and a relatively large number of projected openings, suggesting that areas with the highest Knowledge Gap Index scores are also those where training efforts may be most strongly warranted. The results of this index are reflective of the current and future direction of Connecticut as a diversified, technologically advanced, service-based economy.



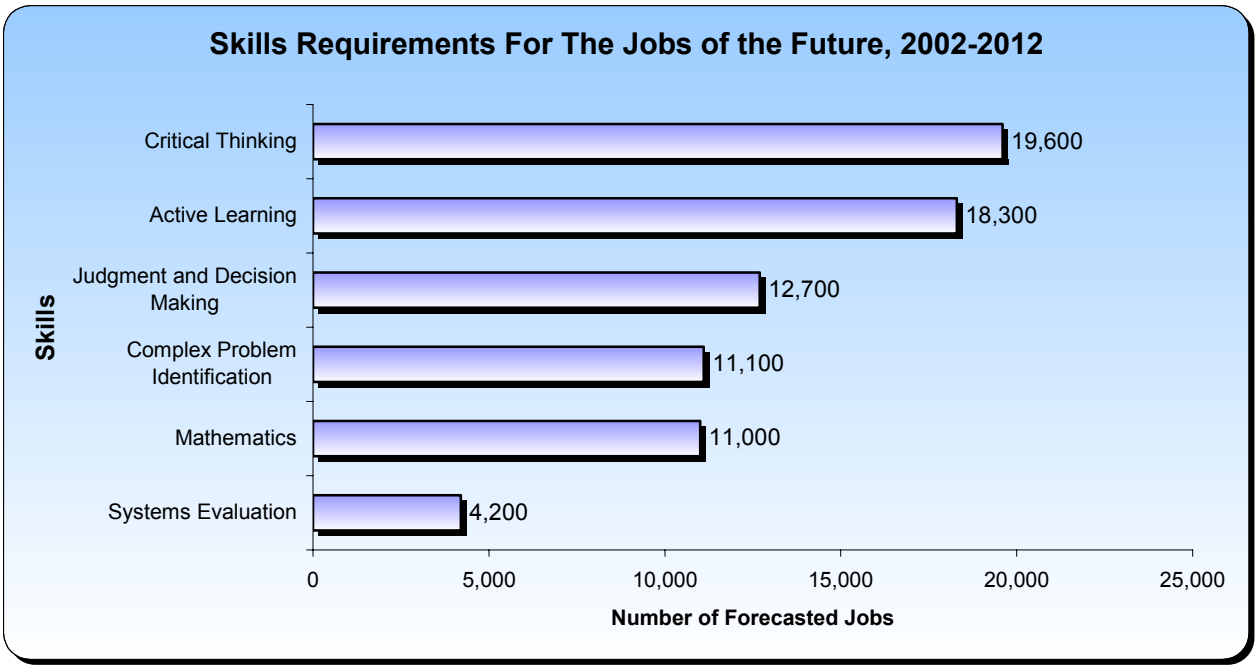
THE FASTEST GROWING OCCUPATIONS REQUIRING "KNOWLEDGE" IN MATH AND/OR SCIENCE

MATHEMATICS	ADMINISTRATION & MANAGEMENT	SALES & MARKETING	COMPUTER & ELECTRONICS	ECONOMICS & ACCOUNTING
Budget Analyst	Advertising and Promotions Manager	Advertising Manager	Computer and Information Systems Manager	Accountants and Auditors
Chemical Engineer	Food Service Manager	Advertising Sales Agent	Computer Software Engineer	Financial Analysts
Chemist	Gaming Manager	Market Research Analyst	Computer Systems Analyst	Financial Manager
Economist	General and Operations Manager	Public Relations Specialist	Database Administrator	General and Operations Manager
Registered Nurse		Sales Manager	Graphic Designer	Personal Financial Advisor

Skills Required for the Math & Science "Jobs of the Future"

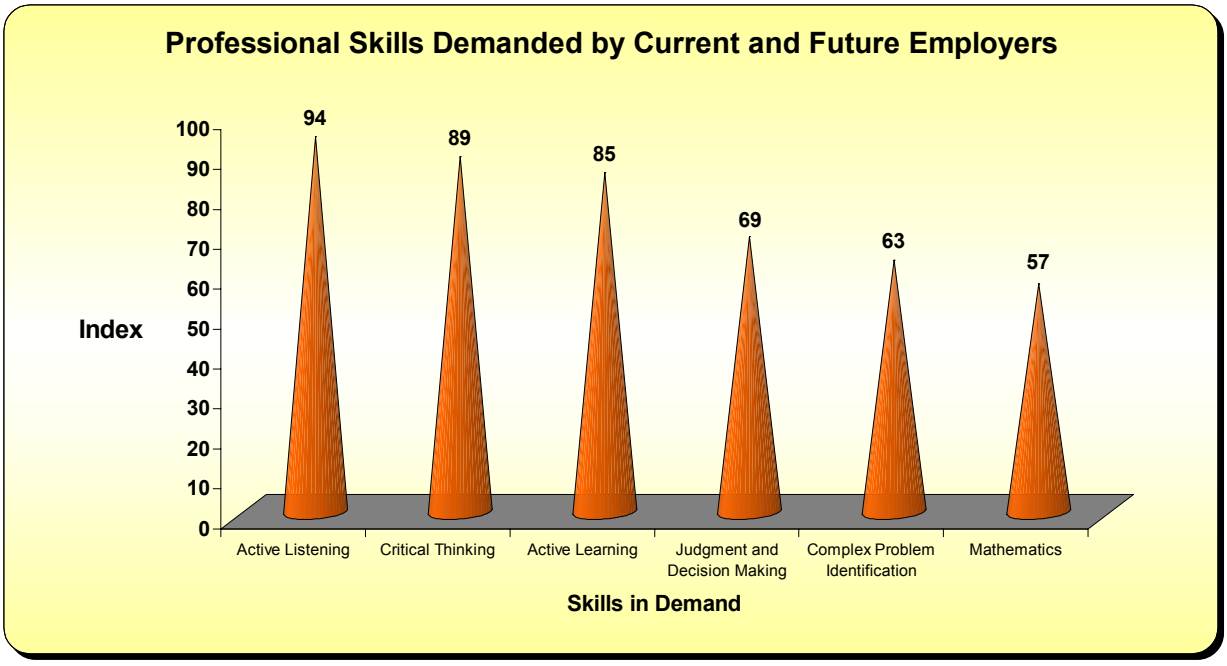
The recent Connecticut Department of Higher Education survey, *Employer Satisfaction With 2003 Public Higher Education Graduates in Connecticut*, found a vast majority of respondents indicating that their new employees had the skills necessary for promotion in the business. However, the study also highlighted where our state needs to improve, particularly in the teaching of "Professional Skills" (i.e., Active Listening, Critical Thinking, and Judgment and Decision Making), an area that encompasses a majority of the math and science jobs of the future.

ONET defines *skills* as "the learned capabilities that allow workers to master and perform the specific activities of their jobs." In Connecticut, the skill sets in highest demand for employment in math or science occupations over the next 10 years include: Critical Thinking, Active Learning, Judgment and Decision Making, Complex Problem Identification, and Mathematics. The number one skill requirement for the majority of our state's future jobs in math and science will be the use of logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to job-related problems (**Critical Thinking**). The ability of employees to understand the implications of changes outside of the workplace (legislation, technology, financial markets) and adjust to them accordingly will be a high priority for an increasing number of jobs in the future as well (**Active Learning**). Employment in future math and science occupations will also require the ability to not only discern the costs and benefits of their individual actions, but also take into account the results of their inaction (**Judgment and Decision Making**). Employers, particularly those in the scientific and financial communities, will also be looking for workers that can identify the complex problems and review related information to develop, evaluate and implement solutions (**Complex Problem Identification**). The state's future math and science workforce will also need to know how to identify measures or indicators of system performance and the actions needed to improve or correct performance. The chart below indicates the number of forecasted jobs requiring at least one of the high demand skills from 2002-2012.



Skills Gap Index

The Skills Gap Index is a standardized measure of the difference (gap) between the current supply and projected demand for workers in various skills over a period of time. A larger Skills Gap score means there is a high likelihood that the workforce will need training in this area to obtain gainful employment in the future. The top three skills in highest demand within math and science occupations are: Active Listening, Critical Thinking and Active Learning.



THE TOP TEN MATH & SCIENCE OCCUPATIONS MOST AFFECTED BY A STATEWIDE SKILLS SHORTAGE IN ACTIVE LISTENING, CRITICAL THINKING, AND ACTIVE LEARNING

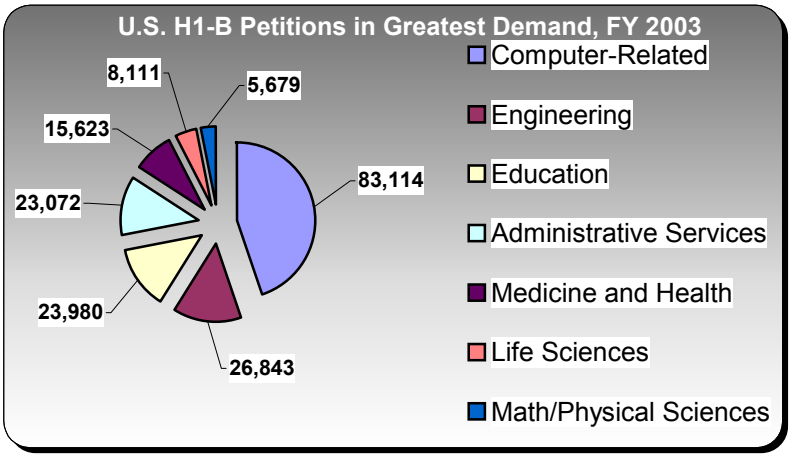
OCCUPATIONS REQUIRING MATH & SCIENCE	TOTAL ANNUAL OPENINGS
REGISTERED NURSES	1,181
ACCOUNTANTS AND AUDITORS	637
GENERAL AND OPERATIONS MANAGERS	583
NURSING AIDES	575
MANAGERS OF RETAIL SALES WORKERS	526
BOOKKEEPING CLERKS	526
MANAGEMENT ANALYSTS	360
COMPUTER SYSTEMS ANALYSTS	358
PERSONAL AND HOME CARE AIDES	356
POLICE AND SHERIFF'S PATROL OFFICERS	313

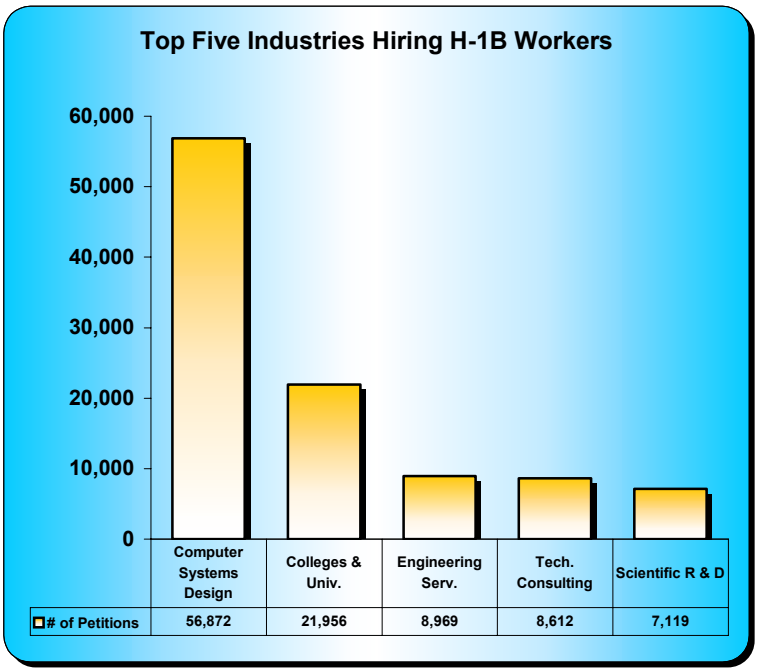
EMPLOYER RESPONSES TO SKILLED LABOR SHORTAGES

The global economy has changed the economic landscape for businesses, as increased competition forces them to seek out the most cost-effective means for providing high-quality goods and services. In an effort to quell production costs, employers invested in new forms of physical capital (machinery, computers, etc.) to augment production; but in regard to labor shortages, they have increased their use of H-1B temporary workers and global service delivery methods (i.e., outsourcing) to supplement their labor needs.

H1-B Workers

H1-B temporary workers are foreign nationals admitted to the United States to perform services in "specialty occupations," based on professional education, skills, and/or equivalent experience.[3] Major industries ranging from post-secondary institutions to technical consulting firms have sought out this workforce in an effort to provide the services their respective customers demand. In fiscal year 2003, the H1-B workforce was comprised mainly of workers who held at least a bachelor's degree in their respective field of study.[4] Furthermore, of the 217,000+ petitions approved in 2003, more than 75% of them were associated with the advanced application of math, science, and/or engineering principles. Regardless of demand, this labor force is still susceptible to shifts in the economy, as H-1B petitions fluctuated concurrently with national employment gains and losses during fiscal years 2000-2003. While this form of recruitment is not the primary means for acquiring talent, it has a foothold in everyday business and will continue to grow, if our nation's skilled labor shortage continues.





[3] U.S. Department of Homeland Security, "Characteristics of Specialty Occupation Workers (H1-B): Fiscal Year 2003, November 2004.
[4] U.S. Department of Homeland Security, "Characteristics of Specialty Occupation Workers (H1-B): Fiscal Year 2003, November 2004.

ISSUES SURROUNDING LABOR SHORTAGES: NOW AND IN THE FUTURE…

- ***Affordable Housing for First-Time Buyers***
- ***Increased Coordination Between Business and Education***
- ***Save Lost Generation of Labor Force in Urban School Districts***
- ***Integrate Rather than Alienate our Aging Workforce***
- ***Develop New Classroom Learning Approaches***

Affordable Housing for First-Time Buyers

Homeownership is an attractive tool for retaining Connecticut's highly skilled labor pool, since it dually benefits the respective town (long-term tax base) and the homeowner (builds equity, provides tax breaks, and creates a sense of pride). In 2004, Connecticut's median selling price for a home rose 15.9% over the year before; great news for private investors and sellers, but it left many first-time home buyers feeling priced out of the housing market and business leaders concerned about their prospects for attracting highly skilled talent. The Office of the State Treasurer reported that Connecticut businesses have found high housing costs to be a disincentive when trying to attract and retain skilled workers, especially those in the 25-44 age range. Without this skilled labor pool, businesses may not be inclined to locate or expand within the State.

I believe State and local governments should work on initiatives that promote the development of entry-level homes and perform a comprehensive review of real estate developers' concerns regarding regulatory practices that limit their ability to construct starter homes. In 2005, the State legislature approved a proposal for a $100 million Housing Trust Fund that will provide $20 million per year in the form of loans and grants to build housing for those seeking entry-level housing. Revitalization efforts such as this will be needed to retain our State's present and future highly skilled workforce.

Increased Coordination Between Business and Education

Connecticut's educational system has always been the bridge that unites job seekers with employers. While a majority of our state's employers have voiced their satisfaction with the preparation of recent graduates, concerns still lie in the lack of communication with higher education regarding academic program content and planning. The Department of Higher Education and representatives from local chambers of commerce, trade groups and our State's industry clusters could meet biannually to discuss program planning initiatives, current trends in education and the economy, employer satisfaction with new hires, etc. This initiative would serve as a means of increasing the chances of our homegrown talent being employed within Connecticut.

Save Lost Generation of Labor Force in Urban School Districts

The Hudson Institute's publication, *Workforce* 2020, forecasted that by 2020, minority populations within the United States will have grown steadily, yet, in some cases, will make up a smaller share of the overall labor force. African-Americans are predicted to be nearly 14% of our nation's population, but only 11% of its workforce by 2020. Likewise, our nation's Hispanic population is on track to become the largest minority group in the U.S. (16.3% of the population) by 2020, yet represent only 14% of the labor force. When coupled with the double-digit high school dropout rates of African-American and Hispanic youths (Pew Hispanic Center), this stark trend will greatly impact the growth potential of not only Connecticut, but the nation as a whole. The good news is that it is just that, a trend, which is slowly reversing itself through increased State and local oversight, direct capital investment, and the hard work of community-based advocacy groups.

To spark student interest in a future career beyond high school, school boards could work with local businesses to expand their current career shadowing programs to include more students and create active internships. Aside from completing low-skill, routine activities, active internships would allow students to become involved by applying their current knowledge of math and science in a real workplace setting. This first-hand application of math and science skills will not only increase students' confidence in math and science subjects, but also allows the student to visualize themselves in that position in the future as well. These long-term investment initiatives could help to increase the number of minority applicants and future graduates at our State public and private universities, thus increasing the labor pool and reducing the chances for a skills shortage.

Integrate rather than Alienate our Aging Workforce

The baby boomer generation will reach retirement age within the next few years, but that does not mean their skills attained from years of experience are not applicable to today's economy. To best prepare for a skills shortage, government and private businesses could increase their development of, or implement mentoring programs between experienced workers approaching retirement and new hires. These programs could evolve into a professional skills (active listening, business contact development, time management, etc.) transfer system that works to soften the effect of the upcoming skills shortage within a company, facing the retirement of experienced staff.

Since a large number of new and future retirees will retain most of the knowledge and skills that made them successful, Connecticut could look to develop a business strategy that encourages this population to go into business for themselves. The Bureau of Labor Statistics reported workers age 45 and over made up over 54% of the self-employed, applying their skills in a wide range of areas including management, professional specialty and sales. Aside from the business aspect, efforts such as this could slow the exodus of retirees to other states, since they have a newfound incentive to remain within Connecticut. The State should continue to reach out to our aging workforce since they set the pace and provided the foundation for the dynamic economy we have today.

Develop New Classroom Learning Approaches

Over the years, Connecticut school boards have employed new learning strategies that have received mixed success. To augment these strategies, local school boards may want to reexamine skill and concept development from the "student's point of view." The Organization for Economic Cooperation and Development (OECD) argues that students who feel anxious about their ability to cope in mathematics learning situations may avoid them and thus lose important career and life opportunities. Furthermore, OECD finds that if a student feels alienated or disengaged from learning, his or her potential to master fundamental skills and concepts is likely to be reduced.

Current academic programs could be shaped to help students overcome their personal anxieties within a subject area. This may foster students' interest in a given subject beyond secondary school (career decision making) and help students acquire the skills to actively manage their own learning. Programs that address psychological barriers to achievement could potentially improve students' motivation to learn and reduce anxiety in areas they find difficult, a common barrier to academic performance.

TOP 100 FASTEST GROWING OCCUPATIONS

OCCUPATIONAL TITLE	Employment		Percent Change
	2002	2012	
Personal Financial Advisors	2,490	3,690	48.5%
Personal and Home Care Aides	5,520	8,200	48.5%
Medical Assistants	4,660	6,830	46.4%
Broadcast Technicians	440	620	42.9%
Network Systems and Data Communications Analysts	2,740	3,850	40.4%
Radiation Therapists	730	1,020	39.6%
Physician Assistants	800	1,110	38.1%
Interpreters and Translators	380	520	36.6%
Self-Enrichment Education Teachers	1,990	2,710	36.2%
Coin, Vending, and Amusement Machine Servicers and Repairers	700	950	35.9%
Environmental Engineers	780	1,060	35.9%
Surveying and Mapping Technicians	470	640	35.8%
Producers and Directors	880	1,200	35.3%
Mental Health and Substance Abuse Social Workers	1,770	2,400	35.3%
Database Administrators	2,000	2,700	34.9%
Landscape Architects	410	550	34.1%
Hotel, Motel, and Resort Desk Clerks	1,260	1,690	34.0%
Securities, Commodities, and Financial Services Sales Agents	6,790	9,050	33.2%
Floor Layers, Except Carpet, Wood, and Hard Tiles	420	550	32.2%
Amusement and Recreation Attendants	2,170	2,860	32.1%
Social and Human Service Assistants	7,760	10,230	31.9%
Medical Records and Health Information Technicians	1,370	1,790	31.3%
Medical and Public Health Social Workers	2,100	2,750	31.1%
Physical Therapist Aides	600	790	30.8%
Biochemists and Biophysicists	1,310	1,690	28.8%
Gaming Change Persons and Booth Cashiers	1,410	1,810	28.7%
Computer Software Engineers, Applications	6,510	8,360	28.3%
Gaming Dealers	3,590	4,580	27.8%
Medical Scientists, Except Epidemiologists	1,590	2,030	27.7%
Hazardous Materials Removal Workers	700	900	27.7%
Computer Specialists, All Other	1,460	1,860	27.5%
Computer Software Engineers, Systems Software	3,720	4,740	27.3%
Microbiologists	840	1,070	26.9%
Gaming Workers, All Other	1,450	1,830	26.8%
Gaming Surveillance Officers and Gaming Investigators	670	850	26.7%

OCCUPATIONAL TITLE	Employment		Percent Change
	2002	2012	
Cardiovascular Technologists and Technicians	610	770	26.6%
Fitness Trainers and Aerobics Instructors	3,690	4,660	26.2%
Mental Health Counselors	1,670	2,100	26.2%
Computer Systems Analysts	9,560	12,050	26.1%
Physical Therapist Assistants	550	690	26.0%
Counselors, Social, and Religious Workers, All Other	1,930	2,420	25.4%
Art, Drama, and Music Teachers, Postsecondary	680	850	24.6%
Gaming Supervisors	660	820	24.1%
Public Relations Specialists	2,940	3,640	23.8%
Slot Key Persons	530	650	23.4%
Social and Community Service Managers	2,660	3,280	23.4%
Architects, Except Landscape and Naval	1,640	2,010	23.2%
Audio and Video Equipment Technicians	560	690	23.1%
Computer and Information Systems Managers	4,480	5,520	23.0%
Sales Managers	4,400	5,400	22.8%
Network and Computer Systems Administrators	3,670	4,510	22.6%
Business Teachers, Postsecondary	920	1,120	22.3%
Psychology Teachers, Postsecondary	470	580	22.2%
Teachers, Primary, Secondary, and Adult, All Other	6,110	7,450	21.9%
Health Specialties Teachers, Postsecondary	2,150	2,620	21.8%
Correctional Officers and Jailers	4,630	5,630	21.6%
Food Preparation and Serving Related Workers, All Other	1,100	1,340	21.5%
Floral Designers	1,010	1,220	21.4%
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	4,420	5,360	21.1%
Writers and Authors	1,410	1,710	21.0%
Health Diagnosing and Treating Practitioners, All Other	1,030	1,250	21.0%
Pharmacy Technicians	2,480	2,990	20.8%
Special Education Teachers, Middle School	1,330	1,610	20.6%
Special Education Teachers, Preschool, Kindergarten, and Elementary School	2,860	3,450	20.5%
Interior Designers	1,070	1,280	20.5%
Biological Science Teachers, Postsecondary	880	1,060	20.1%
Environmental Scientists and Specialists, Including Health	640	760	20.1%
English Language and Literature Teachers, Postsecondary	650	780	20.1%
Dental Hygienists	3,080	3,700	19.9%

TOP 100 FASTEST GROWING OCCUPATIONS, 70-100

OCCUPATIONAL TITLE	Employment		Percent Change
	2002	2012	
Pharmacists	2,680	3,220	19.9%
News Analysts, Reporters and Correspondents	980	1,180	19.9%
Cement Masons and Concrete Finishers	570	680	19.6%
Surveyors	600	720	19.4%
Taxi Drivers and Chauffeurs	3,750	4,480	19.4%
Biological Technicians	880	1,050	19.4%
Clinical, Counseling, and School Psychologists	2,750	3,270	19.2%
Postsecondary Teachers, All Other	3,260	3,890	19.2%
Demonstrators and Product Promoters	790	940	19.1%
Occupational Therapists	1,290	1,540	19.0%
Business Operations Specialists, All Other	10,230	12,150	18.9%
Home Health Aides	9,630	11,450	18.8%
Advertising and Promotions Managers	1,020	1,210	18.7%
Medical Transcriptionists	1,000	1,180	18.7%
Mathematical Science Teachers, Postsecondary	500	600	18.7%
Graduate Teaching Assistants	1,110	1,310	18.6%
Roofers	1,280	1,520	18.4%
Veterinary Technologists and Technicians	1,000	1,190	18.3%
Surgical Technologists	830	990	18.2%
Massage Therapists	580	680	18.1%
Obstetricians and Gynecologists	730	860	18.0%
Chemists	1,890	2,230	18.0%
Special Education Teachers, Secondary School	1,800	2,130	18.0%
Chemical Plant and System Operators	600	710	17.9%
Loan Officers	2,440	2,880	17.9%
Anesthesiologists	920	1,080	17.8%
Management Analysts	11,470	13,500	17.7%
Respiratory Therapists	1,140	1,340	17.7%
Compensation, Benefits, and Job Analysis Specialists	1,630	1,920	17.6%
Surgeons	1,200	1,410	17.6%
Physical Therapists	3,070	3,610	17.5%