

Utah's Medical Laboratory Workforce:

A study of medical/clinical laboratory technicians and medical technologist workforce supply estimates, trends, and capacity to provide services.

Prepared by

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April 2004

Acknowledgements

Utah's Medical Laboratory Workforce: A Study of Workforce Supply Estimates, Trends, and Capacity to Provide Service was funded by the Utah Medical Education Council. The data in this report was made available through the professional efforts of various state, federal, and private organizations.

Special appreciation is given to the following individuals for their expertise and assistance:

JoAnn Fenn, University of Utah Medical Laboratory Science Director
Stephen Miller, Intermountain Health Care
Leslie Hamilton, ARUP

Further acknowledgement and appreciation is given to the staff and consulting members of the Utah Medical Education Council.

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PREFACE

One of the responsibilities of the Utah Medical Education Council (UMEC) is to determine the number and mix of healthcare professionals needed to meet Utah's healthcare workforce requirements. Since 1997, the UMEC has provided objective policy analyses and information to evaluate the service capacity of Utah's healthcare workforce, both estimated and projected. The UMEC makes recommendations to the state governor and legislature in support of strategies needed to ensure that Utah has a healthcare workforce able to meet the needs of its growing and diverse population.

The UMEC places primary emphasis on determining physician workforce requirements. However, the potential physician shortage and changing practice patterns are making it essential that the requirements for the supporting healthcare professions are also determined. Since most of the diagnosis and much of the treatment monitoring require laboratory results, this study looks at the Utah medical laboratory workforce as a critical component of the services required in order for physicians to be able to provide diagnosis and treatment.

This report is limited because the laboratory professionals are not licensed in the state of Utah. The licensing of a health profession would have allowed comparison of the number actually working in Utah and the kinds of job settings where working. The lack of information on the number working and the location makes it difficult to determine current size of this group of trained healthcare professionals. Therefore, the UMEC has not conducted a survey of the current laboratory workforce to determine characteristics of the workforce as has been done for some licensed professions. Survey data would have provided insights as to such factors as age, geographic distribution, work setting, income by years of training, etc. This report is based on data from national sources and labor statistics.

Anecdotal information suggested that the shortage of laboratory professionals was perhaps the most critical of all the health professional shortages. This report is an attempt to document the trends in this profession and to determine what can be expected in meeting the workforce requirements for this profession.

A. BACKGROUND

In 2003, the Utah Medical Education Council compiled private, state, and federal data of Utah's Medical Laboratory professionals to assess the supply, demand, and characteristics of the state's workforce. This was done because the Utah Hospital Association's workforce committee asked for assistance in determining how critical the shortage they were experiencing might be over the next few years. The primary sources of data compiled for this report were the Utah Department of Workforce Services, Utah Governor's Office of Planning and Budget, American Society of Clinical Pathologist's Board of Registry (ASCP, BOR), Department of Labor Bureau of Labor Statistics, *Clinical Laboratory News*, *Laboratory Medicine*, and *CAP Today*.

In addition, the ASCP sent surveys to program directors of National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) accredited programs for Medical Technologists. The survey was used to request information regarding the program's status, the program's institutional base, the number of students enrolled and graduated and how many students from the year 2000 sought and found employment. Brief questionnaires were also sent to multiple laboratories throughout Utah. Responses were compiled from ARUP Laboratories, IHC (data includes all statewide facilities), St. Mark's Hospital (Mountain Star Health), Jordan Valley Hospital (IASIS), Davis Regional (IASIS) and Pioneer Valley Hospital (IASIS). Each facility asked for protection to keep unique data confidential. Hence, data was compiled and compared to the national data in areas where Utah is consistent with the national data, which information is presented to protect proprietary information. A summary of the findings is found below.

This report provides the following information:

- The estimated Utah supply and demand of Medical Laboratory Technicians and Medical Laboratory Technologists, along with a comparison to national averages
- Factors affecting the medical laboratory professional supply and utilization
- National trends in education and the impact on workforce supply; along with demographics
- State labor demands for medical laboratory professionals
- Key recommendations for policy makers

B. INTRODUCTION

Medical Technologists/ Clinical Laboratory Scientist (MT/CLS) usually have a bachelor's degree with a major in medical technology. Medical laboratory technicians/ clinical laboratory technicians (MLT/CLT) need either an associate's degree or on-the-job training and passing a certificate examination to show their competence. According to the U.S. Department of Labor Bureau of Labor Statistics, employment for MTs and MLTs provided about 295,000 jobs nationally in 2000. About half worked in hospitals. Most of the remaining jobs were found in medical laboratories, state health departments, reference labs or offices, and clinics of physicians. Agencies certifying MTs and MLTs include the Board of Registry (BOR) of the American Society for Clinical

Pathology (ASCP), the American Medical Technologists (AMT), the National Credentialing Agency (NCA) for Laboratory Personnel, and the Board of Registry of the American Association of Bioanalysts. Currently there is not a Utah state license requirement for clinical laboratory professionals. This means that Utah's workforce is analyzed based on trends nationally. There is no way for Utah to determine characteristics of those certified as an MLT or MT. It would be very helpful to know such things as: the number working, the approximate age and probable retirement, and other key factors that can be extrapolated from the Utah licensed healthcare professions.

The major findings of the study are presented below.

C. SUPPLY AND DEMAND

Utah currently has three MT training programs:

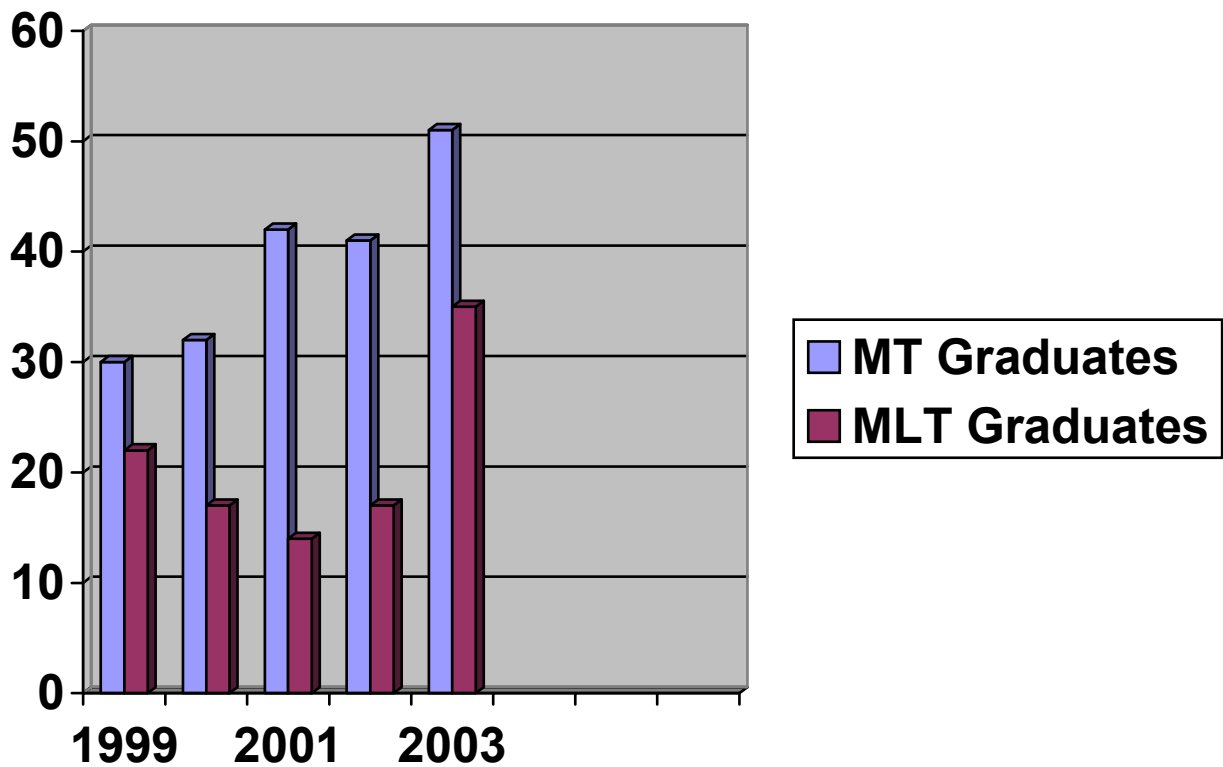
- Weber State University
- University of Utah
- Brigham Young University

There are two MLT training programs:

- Salt Lake Community College
- Weber State University

In 2000, the three MT programs graduated a total of 35 MT students with approximately 6 of these graduates leaving the state or going on to graduate programs. In 2003, the conservative estimate for MTs is 80-85 new job openings per year, and approximately 60 new job openings for MLTs. The current need for just MTs is more than twice the current state output. Clearly the number of students entering the states four-year MT programs and graduating is not keeping up with the demand. Similar numbers show the same trend for MLT students. In 2000, Weber State University and Salt Lake Community College graduated 15 students, or only 25% of the number needed to fill the 60 available MLT vacancies statewide.

The two year and four year programs can accept more students, but the applications are not there (lack of applicants is discussed more in depth under training capacity). In fact, from the survey sent to industry at the beginning of 2003, a single company projects the need to hire 40 MTs and 5 MLTs in 2004. One company's need alone equals the annual number of Utah graduates unless there is a marked increase in the number of graduates. The graph below depicts approximately the number of Utah MLT and MT graduates from 1999 through 2003. Note that Brigham Young University's graduating number was based on their yearly average, rather than actual number of graduates.



Since 1999, there is an increase in the annual number of MT graduates per year. This trend is in part due to Weber State’s Online MLT and MT program. This is a promising new program that still needs more time to clearly see how it will affect Utah’s medical laboratory workforce. It is important to mention that the increase in graduates is also a reflection of significant recruitment efforts by the University of Utah, Salt Lake Community College and Weber State University.

This upward trend has also been seen nationally. More than 55% of all program directors hypothesized that the increased pool for 2001 was related to the recent economic downturn and recent public awareness about the shortages has driven older students to the field because of a limping economy.

In December of 2000, representatives from the three MT programs in Utah hosted representatives of the clinical laboratory community to discuss the personnel shortage and recruitment strategies. A total of 14 facilities, primarily along the Wasatch Front, were invited and sent questionnaires to be returned prior to the meeting date. The facilities included: a large reference laboratory, healthcare organizations with multiple hospitals of various sizes, community hospitals and clinics, and a number of small rural hospital laboratories. Prior to the meeting, thirteen questionnaires had been completed. From the survey, it was learned that in rural Utah, the average time to fill an MT position is two years and one year for an MLT position. In more urban areas, it takes an average of three months to fill an MT position and 6-7 weeks to fill an MLT position. At the time of the survey, the thirteen responding facilities indicated 43.5 vacancies for MT

positions and 23 vacancies for MLTs (remember this survey was only sent to 14 of more than a hundred facilities in Utah).

In 2003 the Utah Medical Education Council did a follow-up survey of various hospital labs and reference labs. Based on the survey, UMEC estimates that Utah's hospital based labs will need between 2-3 MTs per year and between 0-2 MLTs per year for the next 10 years. UMEC's conservative estimate for Utah's reference laboratories (ARUP, Quest Diagnostics, Lab Corp, American Red Cross) projects the combined total need to be a minimum of 34-40 MTs and 5-10 MLTs each year for the next 5 years.

Utah is not the only state experiencing a high demand for MLTs and MTs. According to a 2000 Wage and Vacancy Survey of Medical Laboratories published by the American Society of Clinical Pathologist (ASCP) Board of Registry (BOR), a national certifying organization, there is a critical national workforce shortage of professional laboratorians. Over a 12-year comparison, the ASCP reports that the year 2000 had the highest vacancy rate reported per position. The report examined the number of budgeted, but unfilled positions between August 4, 2000 and October 10, 2000. This annual report confirms the continuing trend that most companies function critically understaffed and open positions often take three months or longer to fill. When the national workforce shortage of MLTs & MTs is compared to the national shortage of Registered Nurses, the laboratory profession is actually estimated to be at a higher vacancy rate at 12-14% compared to the nursing shortage of 11%. A more recent survey conducted by the ASCP BOR identified a vacancy rate as high as 20% for some laboratory positions that hospitals and clinical laboratories could not fill due to the lack of qualified candidates. Nationally the situation is so severe that in March of 2003, it was reported that leading professional organizations for clinical laboratory professionals and federal agencies had united to address the complex issues behind the increasing shortage of laboratory professionals. There are a total of eighteen professional societies, six government agencies, and six industry partners who have joined to form the Coordinating Council on the Clinical Laboratory Workforce (CCCLW) in a joint effort to identify and define the causes of the clinical laboratory shortage and identify strategies to alleviate this crisis.

To summarize, Utah currently has the potential to train 68 MTs on campus per year and 45 MLTs on campus each year. Since 1999 Utah averaged between 35 and 39 graduating MTs each year. The training programs are running at approximately half of their training capacity for MTs. On average Utah produces approximately 22 trained MLTs per year. These programs are also running at about 50% of training capacity. These numbers do not include Weber State's online training capacity.

Utah's current need for MTs is conservatively estimated at around 80-85 per year with the need for MLTs estimated at 60 jobs per year. With vacancy rates estimated at 9% to 20% and the deficit of qualified workers growing yearly, the shortage will only become more severe if not addressed now. Utah has the potential to produce nearly twice as many MLT and MTs per year.

It is also important to recognize the efforts of Weber State University and the University of Utah in recruitment. In fact, the University of Utah's recruitment efforts have increased enrollment in their MT program as much as 8-10 students per year. Despite extensive recruitment efforts by both universities, there is still a lack of applicants to the programs.

SALARY COMPARISON

Median annual earnings of **medical and clinical laboratory technologists** nationally were \$40,510 in 2000. The middle 50 percent earned between \$34,220 and \$47,460. The lowest 10 percent earned less than \$29,240, and the highest 10 percent earned more than \$55,560. Median annual earnings nationally in the industries employing the largest numbers of medical and clinical laboratory technologists in 2000 were as follows: Hospitals \$40,840 Medical and dental laboratories \$39,780 Offices and clinics of medical doctors \$38,850.

For **medical and clinical laboratory technicians**, median annual earnings were \$27,540 in 2000. The middle 50 percent earned between \$22,260 and \$34,320. The lowest 10 percent earned less than \$18,550, and the highest 10 percent earned more than \$42,370. The 2002 Wage and Vacancy Study reported by the ASCP BOR indicates that wages are increasing at a rate equal to or slightly higher than the national averages for inflation.

Another conclusion in the ASCP BOR report indicated that wages for medical laboratory positions are on the rise. This suggests that the market is trying to respond to the shortage by attracting workers with competitive salaries. Whether this tactic is successful or not needs to be evaluated over the next few years. However, the higher wages are bringing an invisible field under the spotlight and potentially helping some schools recruit students. Utah has responded to wage increase in the same manner as the rest of the nation. In 1999, the entry-level Utah wage for an MT was \$13.50 per hour or an annual salary of \$28,080. In 2002, the entry-level wage was \$17.55 per hour, an annual salary of \$36,504. This 30% increase during this economic downtime is an indication of how severe the shortage is.

According to CAP Today, September 2001, most of the MTs received an average of a 13 percent market adjustment in their salaries in an effort to retain employees. Starting salary is a little over \$30,000 per year. But this adjustment is still not attracting new people to the profession. In the same article, Dr. Paul Schreckenberger, Director of the program at the University of Illinois at Chicago, notes the programs are attracting only half of the number needed to fill projected openings. He believes that for the money, "we're asking too much. We need people who can pass a very rigorous science curriculum and a difficult certification exam. We demand bright, studious people, and then we put them to work in a lab where they are somewhat at risk, working with serum and pathogenic organisms. All this and we pay them half of what a nurse gets, half of what an IT employee gets."

The Executive Director of the American Society of Clinical Pathologists Board of Registry, Dr. Kory Ward-Cook in the CAP today September 2001 article says, "Some laboratories have used sign-on bonuses as a short-term strategy to recruit and retain laboratory staff. When labs couldn't fill positions, they started offering candidates signing bonuses, which worked initially to get people on board. But lab directors found that their turnover was rising because technologists were moving from facility to facility within a 50-mile radius simply because they could get another signing bonus."

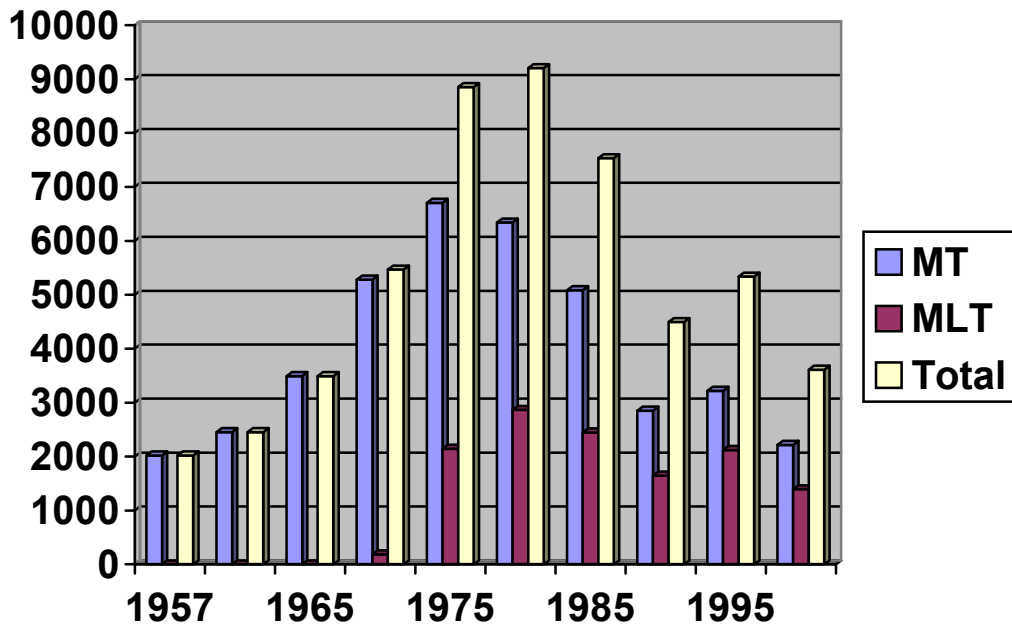
According to the ASCP Board of Registry's 2000 Wage and Vacancy Survey, the increase in beginning rates for MTs between 1996 and 1998 was only 3.2 percent, or about 1.6 percent per year. However, from 1998 to 2000, the increase was 7.7% or nearly 4% per year. During the same 1998-2000 period, salaries for experienced staff increased 11.9%. Starting wage increases from 1998 to 2000 were the largest reported since the 1990-1992 comparisons. "Salaries have gone up since 1998 more than they have in the 10 years previous combined," Dr. Ward-Cook says. "This is good news - this response is greater than inflation and will begin to help us become more competitive with other industries."

In summary, the natural market place wage adjustments are key indicators that there is a current shortage of enough qualified professionals to satisfy the current need. This trend should hold even greater weight considering the past two years where the U.S. has been experiencing an economic downturn. In fact, in 2003 alone, most MLT and MTs received at least a 7% wage increase.

CERTIFICATION TRENDS

It is estimated that up to 85% of physicians' decisions regarding a patient's diagnosis and treatment are based on the laboratory test results (CAP Today, Sept. 2000). The American Medical Technologists (AMT) projects that U.S. laboratories will need approximately 12,400 medical laboratory professionals annually between the years 2002 and 2010. Recently the Department of Labor has confirmed the same statistical projection. The average number of clinical laboratory personnel expected to enter the job market is approximately 4,200 people per year. In addition, many who do graduate in the field choose to work in places other than hospitals and clinical laboratories (discussed in greater depth under training capacity). If this trend continues, the shortage over the coming decade may have even more devastating effects as America's aging Baby Boom population will need healthcare that will result in triple the number of tests currently performed in the laboratory today by MLTs & MTs.

The following charts show national certification trends from 1957 through 1999. These are the latest data available at the time of publishing.



Review and Analysis of ASCP Certification Trends (1957 - 1999)

ASCP	MT	MLT	Total	ASCP	MT	MLT	Total
1957	2,021		2,021	1978	6,764	3,081	9,845
1958	2,182		2,182	1979	6,487	2,772	9,259
1959	2,349		2,349	1980	6,340	2,865	9,205
1960	2,453		2,453	1981	6,258	2,975	9,233
1961	2,664		2,664	1982	6,156	3,008	9,164
1962	2,951		2,951	1983	6,004	2,925	8,929
1963	2,559		2,559	1984	5,787	2,688	8,475
1964	3,198		3,198	1985	5,085	2,447	7,532
1965	3,491		3,491	1986	4,167	2,040	6,207
1966	3,656		3,656	1987	3,408	1,797	5,205
1967	3,852		3,852	1988	3,054	1,486	4,540
1968	4,136		4,136	1989	3,067	1,430	4,497
1969	4,727	37	4,764	1990	2,849	1,647	4,496
1970	5,281	188	5,469	1991	3,014	1,788	4,802
1971	5,308	494	5,802	1992	3,244	2,119	5,363
1972	5,585	638	6,223	1993	3,268	2,197	5,465
1973	4,611	1,092	5,703	1994	3,306	2,318	5,624
1974	6,720	2,115	8,835	1995	3,217	2,120	5,337
1975	6,706	2,145	8,851	1996	3,051	2,263	5,314
1976	6,720	2,509	9,229	1997	2,760	2,001	4,761
1977	6,864	2,860	9,724	1998	2,476	1,766	4,242
				1999	2,216	1,395	3,611

FACTORS AFFECTING EMPLOYMENT FLUCTUATIONS

A more careful analysis of this ASCP data gives some clues to what has been driving the changes in personnel entering laboratory science over the past fifty years. The steep rise in personnel being certified began at about the time Medicare started in 1966, an event which stimulated almost twenty years of increases in utilization and profitability of virtually all medical services. The decline in number of persons receiving ASCP certification began in about 1983, the year that Medicare introduced the Diagnostic Related Group (DRG) method of paying for in-patient services. Prior to 1983, payers, both Medicare and private, paid almost any amount billed under a fee-for-service system.

After Medicare's introduction of DRG's in 1983, there was a general sentiment that the profitability of much of healthcare, including clinical laboratories, was going to substantially diminish. The term "Managed Care" became part of everyone's vocabulary as the power of "the payer" began to be experienced by patients and providers. The number of medical laboratory training schools and their total graduates fell steeply during this post-1983 period as laboratories decreased technical personnel. Part of the reason for the decrease in lab testing volume was that the Health Care Financing Administration (HCFA) launched a large-scale attack on laboratory and general health care fraud and abuse during this same period and redefined chemistry profiles.

Because those receiving certification through the ASCP Board of Registry are only required to do so once, the number certified each year gives a snapshot of the number of person's entering the field. Although there are several other certification routes (e.g., AAB, AMT, NCA), most graduates of **NAACLS** approved training programs seek ASCP as one of their certifications. The number of total personnel receiving ASCP certification in 1999 fell to levels last seen 33 years earlier in 1966. The number of MTs fell back to 1959 numbers. Indeed, just the eleven years from 1974 through 1984 contain 59.5% of the MT's (70,806 out of 118,988), 51% of the MLTs (29,943 of 58,757) and 57% of total personnel (100,745 of 177,745) certified over the 26 years from 1974 through 1999. This suggests that a large number of certified technical staff, if they are still working in the field, have today already worked from 16 to 27 years (e.g., 1984 through 1974 to the current 2000). Therefore, the number of those choosing to retire could very soon vastly outstrip the number becoming certified.

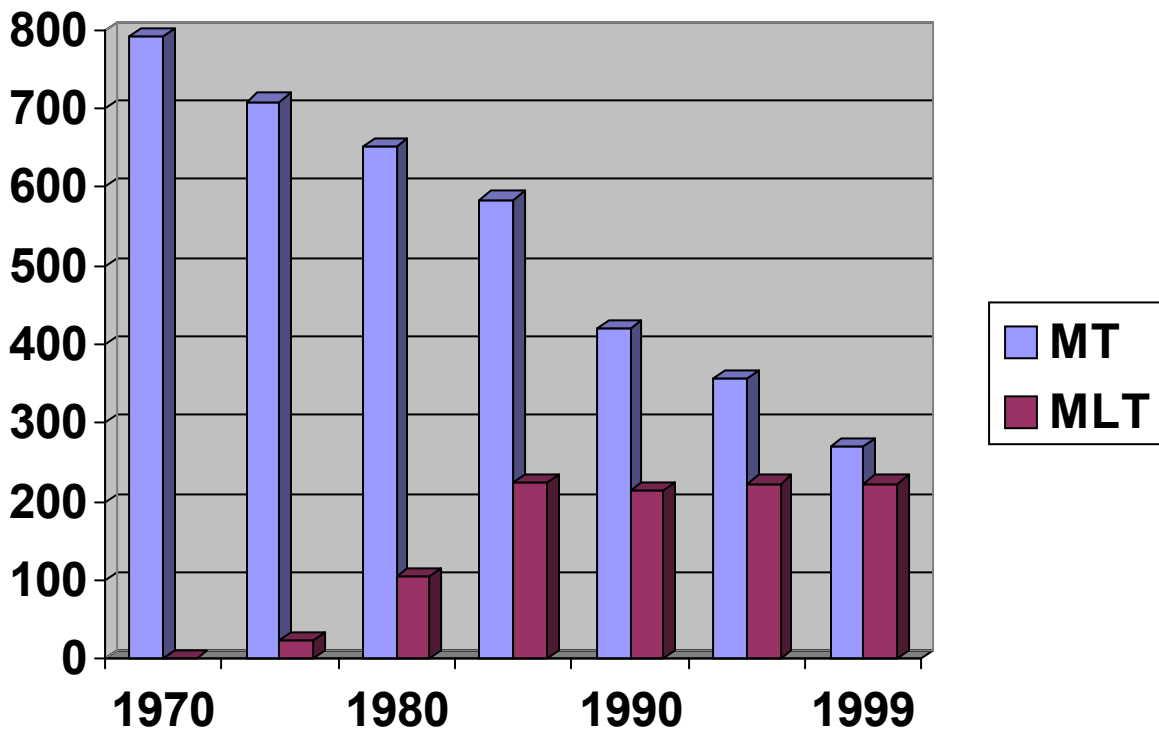
QUALIFIED APPLICANT POOL

Another significant problem is that training programs in recent years are finding it difficult to recruit students, causing the remaining MT/MLT programs to fall below the historical nine or ten students each would on average graduate per year. This suggests that clinical laboratory science as a profession (e.g., work, working conditions, outlook, pay) is being viewed by potential students as a less desirable field than some

of the alternatives available to them today. Utah follows this national trend as the training programs have room for more students than apply to the programs. This leads us to analyze the nation's training capacity in comparison with Utah's training capacity.

D. TRAINING CAPACITY

Laboratory science education and training programs are graduating only 4,800 students nationally per year, creating a critical shortage compared to the 12,400 needed. The shortage of qualified applicants to the training programs has partially contributed to a declining number of laboratory science programs over the years, but an even a bigger contributing factor is a lack of applicants to such programs. Only half of the programs in existence throughout the U.S. currently have full classes (MLO March 2001, p. 16 – C. Anne Pontius).



As mentioned earlier, Utah has three Medical Laboratory Science programs and all have capacity to train more than are applying. Furthermore, the projected number of high school graduates in the state of Utah could have potential implications on the laboratory profession's ability to recruit the numbers of applicants needed to meet future workforce requirements. Other factors, such as the age of Utah's current MLT/MT workforce, will all

have a more direct impact on the state's MLT/MT workforce over the next ten to fifteen years.

NAACLS TRAINING PROGRAMS FOR MLT & MT 1970 – 1999.

The number of programs accredited by the National Accrediting Agency for Clinical Laboratory Sciences is clearly decreasing. In 1998, there were 226 MLT programs and in 2001, there were a reported 216. More significant is the decrease in MT programs. From 1983 to 1999, the number of MT programs dropped from 638 to 273 and had dropped to 257 in 2001. The national capacity to produce qualified professionals continues in a downward spiral. What is more astounding, this trend has continued for almost two decades.

Not only are MT programs closing, the enrollment in the remaining programs is far below maximum class size. From 1983 to 1999, the enrollment declined from 8,296 to 5,117. "We will have an estimated shortfall of about 5,000 positions a year on the supply side in the next five to 10 years," says Kory Ward-Cook, PhD, MT (ASCP), vice president of the American Society of Clinical Pathologists Board of Registry, Chicago. Not surprisingly, that's expected to leave laboratories already struggling to fill open positions even shorter staffed. Dr. Ward-Cook, who oversees the ASCP Board of Registry's biennial wage and vacancy survey of medical laboratories, says she believes the 10.3 percent vacancy rate for MTs in 1998 is escalating. In less than four years, the escalation has increased from 10% to an estimated 12 – 14% in 2002. This isn't necessarily a new problem. Previous market cycles, most recently in the early 1990s, have resulted in a shortage of clinical laboratory personnel. However, the depth and complexity of the problem appears to be unprecedented.

Since 1984, the ASCP BOR has conducted annual surveys of medical laboratory science programs accredited by NAACLS. Three disparaging results were found:

1. Nationally, total enrollment dropped for MT programs. In 2000, overall enrollment for MT programs was reported as 2008, compared to 2148 for 1999 and 2470 for 1998.
2. 10% of MT graduates and 6% of MLT graduates enter another undergraduate or professional track upon completion.
3. Significantly more program directors reported that student recruitment was needed, 77% for MLT programs and 70% for MT programs.

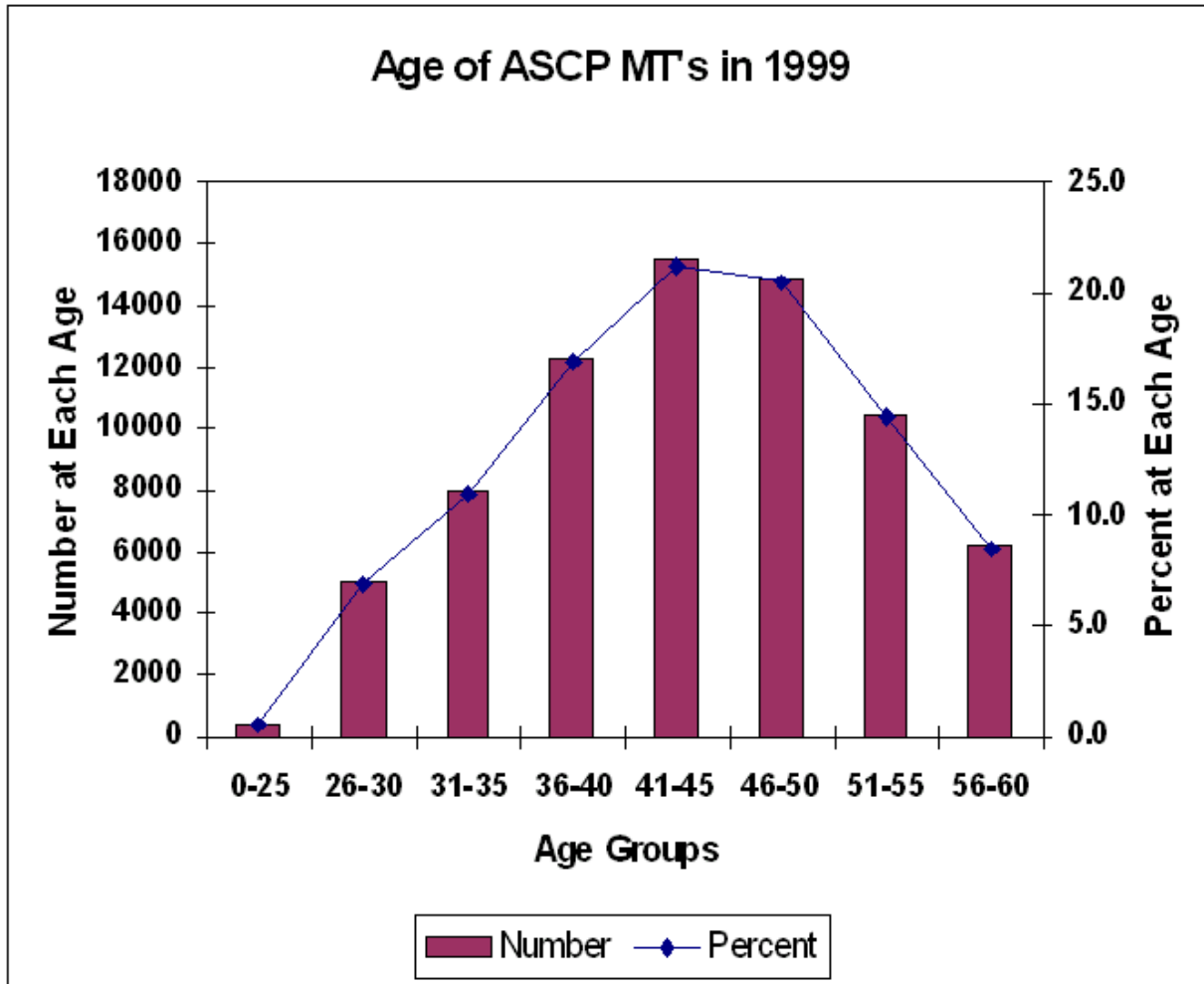
In summary, Utah presently has the potential to provide enough trained professionals if schools were running at full capacity. However, the ability to attract qualified students has become increasingly difficult. With the national trend more bleak than conditions in Utah, the best course of action would be to recruit students and fill the instate training programs, but there is little likelihood that Utah can attract enough students to fill existing capacity.

E. DEMOGRAPHICS

Another report also published by the ASCP BOR in 2000 reveals some demographics for MTs on a national level. It can be assumed that Utah is modeled similarly to the national level. 24% are male with 76% being female. 58% work in urban facilities, while 24% work in suburban areas, and 18% work in rural areas. The highest degree held for 97% of MTs is a bachelors, while 3% had graduate degrees. Government regulations and standards are driving the need for a workforce with a minimum of an associate's degree and an increasing trend to hire an applicant with a four-year degree. Some positions require the four-year degree. With the increased demand for college graduates, Utah's predicament will worsen during the next 10–20 years because:

1. There has been no increase in training capacity.
2. Even if there were an increase in training capacity, the universities are not receiving enough qualified applicants.
3. Over 70% of Utah's laboratory professionals are females. Utah's culture tends to lose many of these workers when they have children and decide to stay at home full time. Since a majority of Utah's laboratory professionals are women, this puts Utah at a greater disadvantage than other states.
4. The Utah State Office of Education (USOE) predicts that between 2003 and 2007 the number of high school seniors will fluctuate between 33,461 and 35,308. The projected number for each year is as follows: 34,199 in 2003, 33,461 in 2004, 34,519 in 2005, 34,410 in 2006, and 35,308 in 2007¹. These high school seniors represent the future in-state labor pool for which all industries will be competing. Because there will be a certain percentage of these high school graduates who will not qualify academically to enter into any laboratory training program, the in-state pool of potential recruits into the laboratory workforce is actually more constricted than what the projected number of high school graduates would indicate.

The graph below shows that nationally, more than half of the current workforce is over the age of 45. That indicates that in the next 10-20 years, 65% of the workforce will be retiring or already retired. This will increase the severity of the workforce shortage since there are not enough graduates to keep up with the current demand, nor the replacements needed for those retiring. Data collected by the various laboratories in Utah project the same trend will occur in Utah within the next 10–20 years. A majority of the current laboratory workers are expected to retire in the next 10–20 years. With a national shortage, increasing retirement, greater emphasis on bachelors-trained workers, and insufficient applicants for Utah training programs, Utah will experience increased difficulty in having an adequate laboratory workforce.



F. VARIOUS FACTORS TO CONSIDER

Employment requirements are expected to grow **at least as** fast as the average of the increased volume of laboratory tests due to population growth. According to the Department of Labor, the development of new types of tests, increased automation, and the use of computer technology, have made the work of MTs and MLTs more analytical and less hands-on. The complexity of tests performed, the level of judgment needed, and the amount of responsibility workers assume depend largely on the amount of education and experience they have. The changed work environment will require more MTs versus MLTs. The education and analytical skills obtained from a four-year MT degree are becoming increasingly important to employers. More interpretation and analytical thinking is required as automation expands within the lab. The Utah Medical Education Council is not able to predict the long-term impact of technology and automation on the need for laboratory professionals, but it is clear that there will be a greater need for MTs rather than MLTs.

Experts estimate that on average 70-75% of a patient's medical record is composed of laboratory test results. If these trends continue, the shortage of clinical laboratory professionals will have a devastating affect on healthcare as America's Baby Boomer population ages. It is estimated that to provide the healthcare they will seek, the number of laboratory tests will be triple the number of tests performed today.

Technological advances will continue to have two opposing effects on employment through 2010. New, increasingly powerful diagnostic tests will encourage additional testing and spur employment. New diagnostic tools will require an increased need for qualified professionals who have the analytical and troubleshooting skills backed by a four-year degree. This assumption leads to the conclusion that the need for MTs will increase more than the need for MLTs. On the other hand, research and development efforts targeted at simplifying routine testing procedures may enhance the ability of non-laboratory personnel, physicians and patients, in particular, to perform tests now done in laboratories.

FACTORS CONTRIBUTING TO THE SHORTAGE OF LABORATORY PROFESSIONALS

- Invisibility of the profession and poor esteem
- Fewer educational programs & fewer clinical sites
- Aging laboratory workforce
- Other attractive jobs utilizing similar skills i.e. pharmaceutical industry
- Not very many part-time employment opportunities
- Smaller number of young people from which to recruit (the demographics)
- Lack of informed high school/college guidance personnel
- Human Resources wage comparisons are done only against other labs, but should be done with other industries/professions that attract students and graduates
- Low salary – relative to other professions and the allied healthcare professions.
- Decreased numbers of qualified student applicants to accredited programs

G. CONCLUSIONS

- Utah's supply is not keeping up with the demand for trained laboratory professionals. Utah has the potential to produce nearly 70 MT graduates and 45 MLT graduates but produces about half of that each year. This coupled with the aging workforce that will retire in the next 5-10 years will cut the professional laboratory workforce by more than half.
- There are not sufficient qualified or interested applicants applying to the MLT or MT programs. This is both a Utah and national problem as reported by the ASCP Board or Registry's 2001 Annual Survey of Medical Laboratory Science Programs. Other healthcare and science professions seem more enticing to students and the comparatively lower salary deters students from the field.

- As the Baby boomer population ages, Utah’s need for laboratory professionals will increase above the 80-85 MT and 60-65 MLT jobs per year. While there is a critical national shortage, Utah’s case will probably be more severe because of the state’s faster rate of growth and aging population. Both characteristics increase demands on all healthcare fields.
- The profession’s lack of visibility hurts its recruitment efforts.
- Although Applied Technology Colleges (ATCs) provide quality entry-level training for clinical laboratory science, there is a lack of effective recruitment from the university level and industry has yet to take full advantage of recognizing and hiring these students.

H. RECOMMENDATIONS

- Increase the visibility of the field by the UMEC working with the State Office of Education health careers awareness staff to enhance awareness of clinical laboratory science job opportunities. Market to K–12 students to enhance awareness of clinical laboratory science. The field is not as visible as other healthcare professions. Public education and awareness may trigger some interest in individuals who currently are not aware of the field.
- The UMEC will encourage current training programs to develop and emphasize fast track programs to capture individuals with other B.S. degrees. This alternative fast-track educational program for B.S. degreed science majors should be used to attract college graduates.
- Present laboratory technology to the Utah Department of Health for inclusion in the loan forgiveness program.
- The UMEC will work with industry to develop additional sources of financial assistance (e.g. partner with industries for things such as part-time work for students, scholarships, stipends, etc.) as a means of attracting more people to medical clinical laboratory work.
- The UMEC should convene a committee of industry and academia to develop strategies in student recruitment.
- The UMEC should work with the Tax Commission to investigate the feasibility and practicality of using state tax incentives to encourage industry support for health professions education.

I. BIBLIOGRAPHY

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2. Auxter, S. Why there's a shortage of clinical lab scientists. *Clinical Laboratory News*. 2002; 28(7):1, 6, 0.
3. Ward-Cook, K and Tannar S. 2000 wage and vacancy survey of medical laboratories. *Laboratory Medicine*. 2001;32(3):124-138.

Sources of Additional Information:

For a list of accredited and approved educational programs for clinical laboratory personnel, contact:

* National Accrediting Agency for Clinical Laboratory Sciences, 8410 W. Bryn Mawr Ave., Suite 670, Chicago, IL 60631. Internet: <http://www.naacls.org>

Information on certification is available from:

American Association of Bioanalysts, 917 Locust St., Suite 1100, St. Louis, MO 63101.

Internet: <http://www.aab.org>

American Medical Technologists, 710 Higgins Rd., Park Ridge, IL 60068. Internet:

<http://www.amt1.com>

American Society for Clinical Pathology, Board of Registry, 2100 West Harrison St., Chicago, IL 60612. Internet: <http://www.ascp.org/bor>

* National Credentialing Agency for Laboratory Personnel, P.O. Box 15945-289, Lenexa, KS 66285-5935. Internet: <http://www.nca-info.org>

Additional career information is available from:

* American Association of Blood Banks, 8101 Glenbrook Rd., Bethesda, MD 20814-2749. Internet: <http://www.aabb.org>

American Society for Clinical Laboratory Science, 7910 Woodmont Ave., Suite 530, Bethesda, MD 20814. Internet: <http://www.ascls.org>

American Society for Clinical Pathology, 2100 West Harrison St., Chicago, IL 60612. Internet: <http://www.ascp.org>