



The Research Department

**MEDICAL LABORATORY TECHNOLOGY in Ontario:
Provincial Labour Market Analysis and Human Resource Study**

PART ONE
MEDICAL LABORATORY TECHNOLOGISTS

June 2006

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Executive Summary

(Medical Laboratory Technologists)

Current labour market information

1. *The number of currently funded (available) positions (as of September 1, 2005) is identified as **1344 full-time, 462 part-time, plus 161 contract/casual** for a total of **1967** in all employment categories.*
2. *Vacancies in September 2005 were **16 full-time, 20 part-time and 9 casual** for a total of **45** (2.3% of the workforce) in all employment categories. Over the period of the study the number of vacancies averaged **43** (2.2% of the workforce) per annum in all categories, including an average of 17 (0.9% of the workforce) full-time positions.*
3. *The average historical growth, over the last two years (2003-2005), was identified as **79 full-time, 18 part-time and 16 contract/casual** for a total of **118** per annum (6.4 % of the mean workforce).*
4. *Utilising the 2003 funded positions for each specific work category as a base, the number of full-time positions increased by **158** (13.3%), part-time positions by **35** (8.2%) and contract/casual positions increased by **31** (20.7%).*
5. *The highest frequency of staff (19.1%) is in the 46-50 age range. However 67% are over 40 years of age.*
6. *Those staff likely to retire within the next five to ten years is projected at 28.5% of the workforce.*
7. *Total attrition averaged 186 positions annually over the period of the study; however, the net attrition averaged **95** positions annually. The most frequent reason given for overall attrition in individual facilities is staff transferring to other similar positions within Ontario (48 annually); the second being retirement (40 annually).*

Projections for the period

8. *Over the next three years respondents project a growth of 51 (17 annually) full-time positions, 37 (**12** annually) part-time positions plus 45 (15 annually) contract/casual positions for a total of 133 (44 annually).*
9. *Based upon mean vacancy levels, mean growth (historical and projected) from 2003 to 2008 and mean net attrition, the number of additional personnel needed each **YEAR** over the **next three years** is projected as follows:*
 - *Permanent full-time positions = **177 annually** (A mean of 1.3 positions per facility)*
 - *Permanent part-time positions = **65 annually** (A mean of 0.5 positions per facility)*
 - *Contract positions = **19 annually** (A mean of 0.1 positions per facility)*
 - *Casual positions = **34 annually** (A mean of 0.2 positions per facility)*

Background Information

BACKGROUND

This study of the Ontario labour market within the field of Medical Laboratory Science was conducted at the request of the Medical Laboratory Science Program at The Michener Institute. The Research Department began the study on September 6, 2005, completing it on June 7th 2006.

METHODOLOGY

The questionnaire was developed by the Research Department, in consultation with the Medical Laboratory Program. On September 6, 2005, a cover letter with questionnaire was mailed to 208 Medical Laboratory facilities (public and private) across Ontario. Reminder cards were mailed to all non-respondents on September 12, 2005. In addition, on October 4, 2005, a second mailing of the questionnaire with a new cover letter was sent to the non-respondents. In late November to mid-December, follow-up telephone calls were conducted with all non-respondents. A second round of telephone calls was conducted in mid-December. Responses were entered into an Excel spreadsheet, and the frequencies and totals for each question compiled in this report. Open-ended responses were solicited in several places in the questionnaire, and comments by the respondents are included.

During the course of the study an additional 10 sites were identified. By January 11, 2006, 121 respondents representing 131 sites had completed and returned the questionnaire. Thus, the overall **response rate was 60.1%**.

LIMITATIONS

The results from this study are meant to serve as only one source of information within the mosaic of health human resource planning for this profession across Ontario. Other factors, such as changing population demographics and growth, increased case loads and the ongoing introduction of new technology in this field were not considered as specific variables within the study and, while such factors may well have been considered on a qualitative level by respondents, there was no subsequent quantification in the analysis of the data.

ACKNOWLEDGEMENTS

The Research team conducting this study acknowledges with appreciation the cooperation of the staff within the Ontario medical laboratory facilities in supplying the information needed to complete this report. We also wish to recognize the staff of The Michener Institute Medical Laboratory Science Program, who reviewed our initial mailing list and provided suggestions regarding questions for inclusion in the questionnaire.

PROJECT TEAM

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Medical Laboratory Technology Labour Market Analysis and Human Resource Study

Q.1 Number of positions and vacancies for Laboratory Technologists (Sept. 2003 – Sept. 2005) (n=111)

	Number of Staff by Position Type		
	September 1, 2003	September 1, 2004	September 1, 2005
Permanent Full-time Positions			
# Filled Positions	1170	1194	1328
# Vacant Positions	16	20	16
Sub Totals	1186	1214	1344
Permanent Part-time Positions (total number of persons, not FTE)			
# Filled Positions	419	417	442
# Vacant Positions	8	9	20
Sub Totals	427	426	462
Contract Positions (e.g. coverage for leaves of absence)			
# Filled Positions	20	24	39
# Vacant Positions	7	4	0
Sub Totals	27	28	39
Casual Positions (on an as needed basis)			
# Filled Positions	93	104	113
# Vacant Positions	10	10	9
Sub Totals	103	114	122
Position Summary			
Total Filled Positions	1702	1739	1922
Total Vacancies	41	43	45
Total Funded Positions	1743	1782	1967

Notes:

- The total currently funded available positions is identified as **1344 (68%)** full-time, **462 (24%)** part-time, **39 (2%)** contract and **122 (6%)** casual.
- **Growth:** over the study period and using the current work force as a base, full time positions increased by **158 (8%)**, part-time positions by **35 (2%)**, contract positions by **12 (0.7%)** and casual positions by **19 (1%)**.
- **Vacancies:** are currently **16 (0.8%)** full-time, **20 (1.0%)** part-time and **9 (0.5%)** casual for a total of **45** positions.

Q.2 Impact of Vacancies (n=33)

(Figure in parentheses indicates the response frequency)

Impact on Staff

- Staff overworked/working overtime or extra shifts (10)
- Difficulty accommodating staff vacation requests (4)
- Difficulty covering shifts (4)
- Decreased staff morale (3)
- Working short-staffed (2)
- Increased sick time (1)
- Increased fatigue/frustration (1)
- A lot of time training and recruiting (1)

Impact on patients

- Increased turnaround times (4)

Miscellaneous

- Use Phlebotomists/assistants when we can be more efficient. (1)
- All staff pitches in including team leaders which they willingly do. (1)
- Quality initiatives are not main focus. (1)

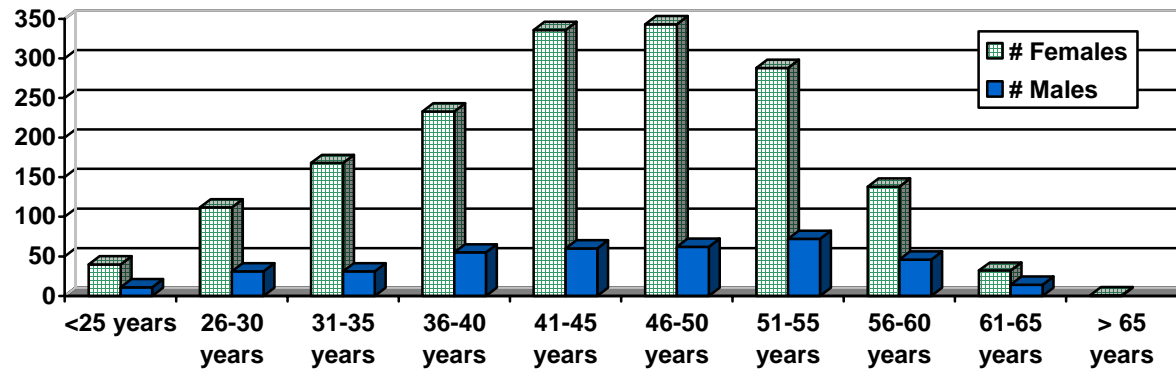
Q.3 Gender/Age Profile (n=108)

	<25 years	26-30 years	31-35 years	36-40 years	41-45 years	46-50 years	51-55 years	56-60 years	61-65 years	> 65 years	Total
# Females	40	112	168	233	336	343	288	138	32	1	1691
# Males	11	31	31	55	60	62	72	46	14	1	383
Age range total (%)	51 (2.5%)	143 (6.9%)	199 (9.6%)	288 (13.9%)	396 (19.1%)	405 (19.5%)	360 (17.4%)	184 (8.9%)	46 (2.2%)	2 (0.1%)	2074
Female: Male ratio	3.6:1	3.6:1	5.4:1	4.2:1	5.6:1	5.5:1	4:1	3:1	2.3:1	1:1	4.4:1

Notes:

- The highest frequency of staff (19.1%) is in the 46-50 age range; however 67% are over 40 years of age.
- Those staff likely to retire within the next five to ten years is projected at 28.5% of the workforce.
- The overall female to male ratio is 4.4 : 1. (This ratio starts to become more balanced after age 50.)

Number of MLT's



Q.4 Attrition of Medical Laboratory Technologists from the Ontario workforce (2003 – 2005) (n=95)

	2003	2004	2005***
Maternity/parental leave of absence*	40	41	29
Other leave of absence*	1	8	8
Long-term disability or health problems	15	19	25
Retirement	34	36	49
Position lost due to lack of funds	2	3	2
Another position in a <i>different</i> field	7	5	5
Another position in the <i>same</i> field in the <i>same</i> province*	52	50	43
Another position in the <i>same</i> field in a <i>different</i> province**	5	7	4
Another position in the <i>same</i> field <i>outside</i> the country	3	2	1
Other reason****	19	17	25
Total staff leaving employment	178	188	191
Net loss of personnel (Excludes categories with *)	85	89	111

Notes:

- The total attrition reported was an annual mean of 186 positions; however when the categories reflecting a transient loss of personnel are excluded, the net attrition is an annual mean of 95 positions.
- The most frequent reason given for overall attrition in individual facilities is staff transferring to other similar positions within Ontario (48 annually); the second being retirement (40 annually).
- During the period of the study the percentage of retirees has increased by 44%
- During the period of the study the percentage of staff moving to similar positions within Ontario has dropped by 17%
- * These data were excluded when calculating the mean attrition
- **Different provinces include Alberta (2), British Columbia (2), Manitoba, Newfoundland (2), Nova Scotia, and Saskatchewan.
- *** Data is valid as of September 2005 and may be understated
- ****Other reasons for attrition include: termination (6), lay off's (2), resignation (2), personal reasons, pay is considerably less, moved to part-time voluntarily, family reasons, spousal transfer, deceased, closer to home, no longer in casual pool, end of contract.

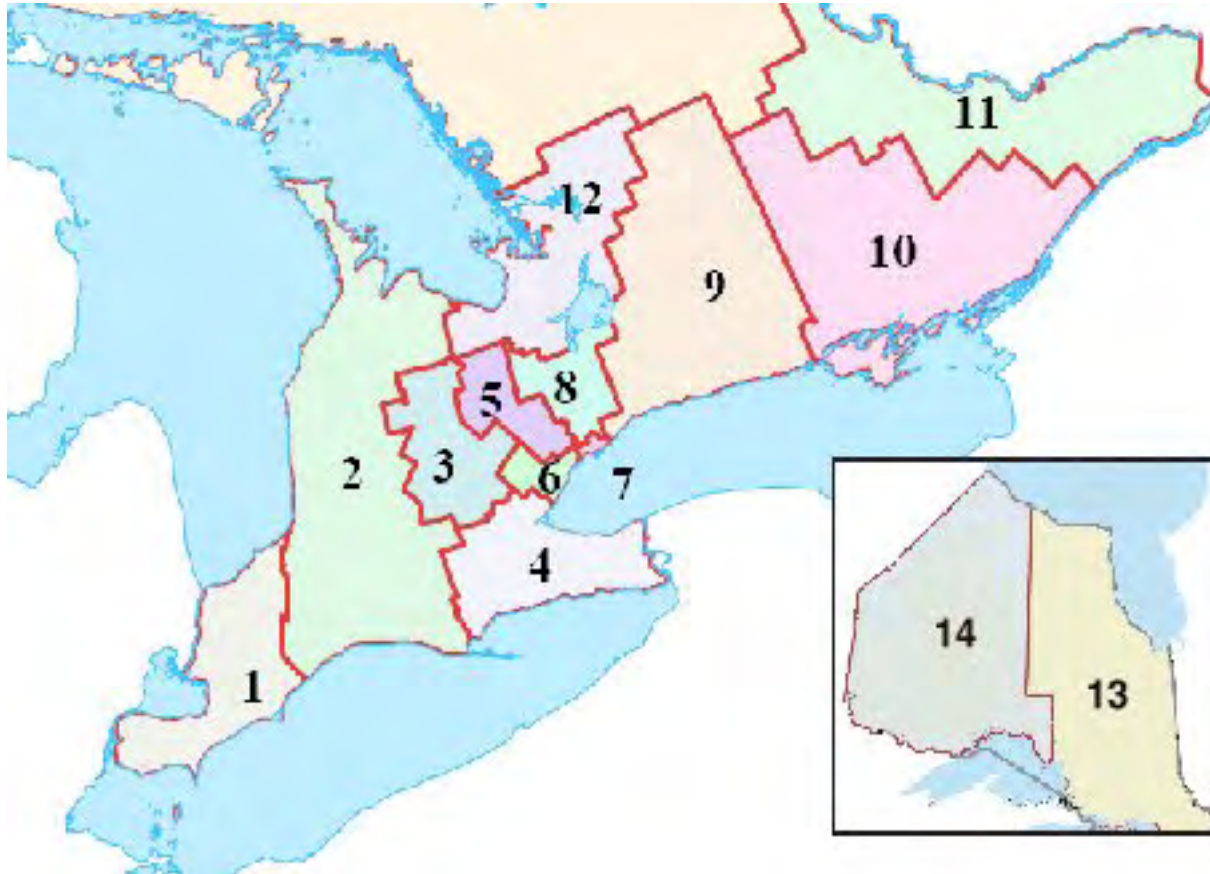
Q.5 Difficulty with recruitment or retention of staff over the last 12 months. (n=111)

Retention difficulty				Recruitment difficulty		
Comments	No	Yes	Health LHIN*	No	Yes	Comments
Difficulty retaining staff because of:	3		1	3		Difficulty recruiting for:
• Casual/part-time staff turnover(5)	12		2	7	4	• Casual/part-time positions (16)
• Increase workloads. We need confident MLT's because they often work alone.	1		3	1	1	• Small/rural/remote community (5)
• Staff constantly being convinced to transfer to other larger facilities.	5	1	4	2	2	• Not enough technologists available for hire (2)
• Signing bonus and one year incentive bonus - staff young and mobile - able to relocate - come and move on for next package.		1	5	1		• Difficulty recruiting; no reason specified (5)
• No full time jobs being available for long term part timers.	3		6	3		• Difficulty for recruiting Cytologists(2), Transfusion Medicine(2), Histology, Flow Cytometry, Electron Microscopy, Virology, Immunology and maternity leaves.
	4		7	3	1	• Bilingual positions
	4	1	8	2	3	• Positions with low wages
	3	4	9	3	3	• Technologists with a general background and/or experience
	5	2	10	4	2	
No Difficulty	10	2	11	7	4	No Difficulty:
• Ageing staff - tend to stay put.	1		12		2	• Haven't needed to hire more MLT's.
• As we have had no vacancies in past two years.	9		13	9	3	• Proximity to Quebec helps since the HGH salaries are higher than in Quebec.
	8		14	5	3	• Good pay and great location.
	68	11	Total Ontario	50	28	• Recruiting for part time positions. Both were filled locally.
	(86%)	(14%)		(64%)	(36%)	

Notes:

- *Local Health Integrated Network
- Significant mobility in the casual/part-time work categories identified.
- Smaller and rural facilities face recruitment challenges.
- Significant recruitment difficulties in MLT specialist areas.
- *Please note LHIN Geographic Boundaries on following page.

***LHIN Geographic Boundaries**



LHIN	Area
1	Erie St.Claire
2	South West
3	Waterloo Wellington
4	Hamilton Niagara Haldimand Brant
5	Central West
6	Mississauga Halton
7	Toronto Central
8	Central
9	Central East
10	South East
11	Champlain
12	North Simcoe Muskoka
13	North East
14	North West

Q.6 Source of Medical Laboratory Technologists hired within the last 12 months. (n=71)

Source of Employee	Number of Hires
New graduates from Michener	32
New grad from Michener Access & Options Program	3
New graduates from another educational institution	42
Medical Laboratory Technologists returning to the workforce	17
Medical Laboratory Technologists from other facilities within Ontario	49
Medical Laboratory Technologists from another province/territory within Canada	9
Medical Laboratory Technologists from outside Canada	6
Other*	4
Total hires reported	162

Notes:

- The most frequent source of staff is technologists from other facilities within Ontario.
- The respondents reported hiring 35 Michener graduates in the last 12 months, a market share of 45% of new graduates hired within the respondent group.
- *Other sources include: MLT returning from long term disability; Casual. Lab assistant from Medix school in Kitchener; Hired an American trained technologist who will be writing CSMLS exams in October 2005; Lab tech accepted phlebotomist (internal) position and then reapplied for temporary part time lab tech position

Q.7 Do recent graduates possess all of the skills/knowledge you require? (n=84)

The respondents indicated that:

- 1) they had no opinion or did not respond - **51%**
- 2) recent grads did not possess all the identified skills/knowledge - **11%**
- 3) recent graduates did possess all the necessary skills/knowledge - **38%**

11% of the respondents who answered NO to the above question identified the following items:

- Life skills absent: conflict resolution, work ethics, getting along with others.
- Lacking: knowledge of our computer system; knowledge of our laboratory policies; advanced knowledge of specialty areas such as Coagulation, Transplantation, Immunology; methods of development.
- Lack of department specific training and experience - some had very short on site exposure to the departments.
- Need specific training. Need team playing training.
- Would like some LIS specific knowledge. Eg. Medi Tech
- Need at least four years of experience before considering hiring.
- Technically they do but since this is such a small lab and RT's perform a lot of the background organization, documentation, and clerical work that would be done by others in a larger lab we tend to hire experienced staff who already have a sense of everything else that needs to be done to support that lab test.
- Takes at least 2 years of experience post graduation.
- Multi-tasking and prioritizing work is often weak. This required in multiple disciplinary environment.
- Unless they did their clinical training in our facility. They need to have a greater understanding of quality management and newer technology including lab information systems.
- Not familiar with POCT.
- We are highly regulated by health Canada. So in house training and sign off is required prior to practicing as a lab technologist.

38% of the respondents answered YES, some with qualifying comments, identified the following items:

- Need maturity. Need to handle stress better.
- Still require on-site training.
- For an entry level technologist
- We have had exceptional students and have hired them all in the last 2-3 years.
- The two new grads that were hired did their clinical placement in this facility so they were trained to work in this institution.

Q.8 Projection regarding change in the number of funded positions (2005-2008) (n=66)

	September 1, 2005 to August 31, 2006	September 1, 2006 to August 31, 2007	September 1, 2007 to August 31, 2008	Total by category
Permanent full-time positions	+12	+26	+13	+51
Permanent part-time positions	+16	+14	+7	+37
Contract positions	+10	+6	+6	+22
Casual positions	+8	+6	+9	+23
Total	+46	+52	+35	+133
Year base (# staff)	1967	2013	2065	Mean Value 2015
Year end (#staff)	2013	2065	2100	Mean Value 2059
% increase (# staff)	2.3%	2.6%	1.7%	Mean Value 2.2%

Notes:

Mean annual growth is projected to be:

Full-time positions at **17** per annum (0.8%) of the mean work force)

Part-time positions at **12** per annum (0.6%) of the mean work force)

Contract positions at **7** per annum (0.4%) of the mean work force)

Casual positions at **8** per annum (0.4%) of the mean work force)

Total for all work categories is **44** per annum (2.2%) of the mean work force)

Q.9 Changes in duties or responsibilities of Medical Laboratory Technologists (n = 72)

(Figure in parentheses indicates the response frequency)

Changes noted by respondents:

- Quality Management/CQI (12)
- Quality Assurance/control (11)
- Computer technology (10)
- POCT (9)
- OLA (5)
- LIS system (4)
- Customer service (2)
- Multi-tasking (2)
- Stress Management (2)

Single frequency responses include:

- Administrative courses
- Auditing & action plans
- Document Control/ Management
- Ethics and respect in the workplace
- Flow cytometry
- Increased knowledge of laws/regulations
- Leadership training
- Molecular testing
- More interaction with physicians
- New blood processing method (2007)
- New instrumentation
- PCR Biotechnology
- Phlebotomy
- Rapid ID of micro organisms
- Team building skills

Q.10 Miscellaneous comments (n=17)

Human Resource items

- Of the resumes received in the past, ALL preferred full time employment. Upon phone interview/discussion, most demanded things I could not provide, e.g. Monday - Friday only. Many were unwilling to relocate for a 0.6 full time position; many do not want to deal directly with inpatients/outpatients.
- We foresee losing approximately five (5) of our senior staff in the next 5-8 years due to retirement.
- Recent announcements of MD's unloaded lab section raise issues of how lab services will be maintained in small community hospitals efficiently. i.e. funding changes! Money follow tests performed - which will impact staffing.
- One tech went on disability leaving one tech 24h/day. An assistant was hired, every second week - days. After 6 months another full time tech was hired permanent. Should the tech on disability return, one tech will be laid off here. During her job search, it was clear that vacant positions are not being advertised, thus "moveable" techs actively seeking to relocate found job search difficult. Graduates were approached privately for recruitment in some of these facilities.
- No comments except that we need to graduate more MLT's interested in working in small communities.
- Consideration should be given to placements or part of a placement in rural/northern sites. The work environment is very different than in large centers. We would welcome discussions with this region.

Medical Laboratory Education

- The study does not address the need for institutions such as Michener to provide means for technologists to (more easily) re-train in specialized and emerging areas such as Molecular Diagnostics. Before long, the need to re-train staff in specialized areas will be necessary. Technology changes too quickly and training institutions should be helping staff currently working in the field to adapt (become certified) in new and emerging areas of specialty.
- Computer skills are the biggest void with staff. This included general MS office/email procedure as well as familiarity with typical windows type programs and features (i.e. cut and paste, pull down options)
- More training on logical steps in trouble shooting and problem solving.
- It would be good to have the programs available in rural area via teleconference and correspondence. We are 2.5-3 hours from Toronto (with NO traffic). MOHAWK is closer and used to provide our training and staff. We may not interest staff graduates from Toronto.
- I would like to see more "day seminars" for example, if 3 or 4 blood bank specimens sent to hospitals to work on then meet to discuss answers and draw conclusions.

Other Miscellaneous comments

- Our lab took on the core lab responsibilities and duties in the fall of 2002. We belong to the Eastern Ontario Regional Laboratory Association (EDRLA) and recently approved the current test menu and practices. We do not anticipate changes for the next few years.
- This site services the needs of 150 developmentally disabled individuals. The lab is specifically here to collect their specimens, track and report. Lab testing and perform routine CBC's and urinalysis on site. The organization is funded and the lab is budgeted from the capital budget.

Q.10 Miscellaneous comments (Cont.)

- We are a "small" lab; it does not accurately represent our industry.
- We are a small hospital and dependant on the ministry keeping us open. I expect to maintain the status quo. Our staff lives in this village and are not likely to move or leave until retirement.

Summary and Discussion

This study has examined the human resources related to Medical Laboratory Technologists across Ontario and has identified a series of labour market parameters based on quantitative and qualitative data received from respondents representing 131 sites within the study population of hospitals in Ontario with medical laboratory facilities.

The major **quantitative** findings in the labour market for Medical Laboratory Technologists in Ontario are:

- A current vacancy level of **45** positions (**2.3%** of the workforce), including **16** full-time, **20** part-time, and **9** casual positions.
- A mean historic (2003 to 2005) annual growth of **79** full-time, **18** part-time and **16** contract/part-time positions representing **113** positions in all work categories (**5.6%** of the mean workforce)
- A mean projected (2005-2008) annual growth of **17** full-time, **12** part-time and **15** contract/part-time positions representing **44** positions in all work categories (2.2% of the mean workforce)
- A net attrition from the field of **95** per year.
- A mean attrition due to :
 - 48** transfers to other Ontario laboratory facilities
 - 40** retirements
 - 37** maternity/parental leaves of absence annually
- Retirements potentially reaching **29%** of the workforce within **5 to 10** years.
- A female:male ratio of approximately 4.4:1

Utilizing mean vacancy levels, mean growth and mean net attrition, the study supports the need for the following annually over each of the next three years:

- 177 Permanent full-time positions (an average of 1.3 per responding facility)**
- 65 Permanent part-time positions (an average of 0.5 per responding facility)**
- 19 Contract positions (an average of 0.1 per responding facility)**
- 34 Casual positions (an average of 0.2 per responding facility)**

***Note:**

The above may be partially offset by new Medical Laboratory Technologists who will graduate over the next three years at Michener and at other postsecondary institutions in Ontario. Projecting future needs and the growth of human resources in a specific specialty involves complex analysis. While future projections predicated on data received from the “field” such as in this study can be useful, a number of other factors need to be also considered prior to arriving at specific conclusions. These factors include, but are not limited to: population growth trends, changes in test volume, the impact of new technology, changes in the number of facilities and funding.

The respondents also provided significant amounts of **qualitative** data, the main themes/issues being as follows:

- Staff vacancies result in current staff working overtime and not being able to easily schedule vacation requests. The major impact upon patients appears to be longer turn around time for test results.
- Staff turnover is highest with those holding part-time or casual positions. These positions are also the most difficult to recruit for as job applicants primarily seek full-time positions with the associated benefits etc. Recruitment is also difficult for rural or small communities and for those employers looking for applicants certified in specific specialties such as flow cytometry, virology, immunology and electron microscopy.
- A wide variety of “additional skills” that should be part of the graduates skill set are identified. These include :
 - Coagulation
 - Conflict resolution
 - Immunology
 - Interpersonal skills
 - Knowledge of specific computer systems
 - Lab information systems
 - Multi tasking
 - Point of care testing
 - Stress management
 - Teamwork
 - Transplantation
 - Work ethics
- The most frequently stated “changes’ in the duties of MLT’s are
 - Laboratory information systems
 - Molecular testing
 - Point of care testing
 - Quality management practices
 - Use of computer technology
- In terms of human resource items, there is concern regarding the shortage of MLT’s and difficulties in recruiting applicants into:
 - Rural/small communities
 - Specific positions (part-time/casual/contract)
 - Specific specialties. (E.g. Immunology, Virology, Electron microscopy)
- Educationally, respondents indicated the need for training their staff in new emerging technologies such as
 - Computer skills
 - Problem solving
 - Molecular diagnostics
 - Troubleshooting

Recommendations:

Recognizing the dynamic and changing nature of this field, this study should be repeated in three years to determine whether or not significant changes have occurred in the labour marketplace and to gather further data on the longer term trends within this field.